Ruud *Commercial Achiever® Series* Package Heat Pump

RJNL-C High Efficiency Series

With ClearControl™
Nominal Sizes 7.5 & 10 Ton [26.4 & 35.2 kW]
ASHRAE 90.1-2010 Compliant Models

"Proper sizing and installation of equipment is critical to achieve optimal performance. Ask your Contractor for details or visit www.energystar.gov."

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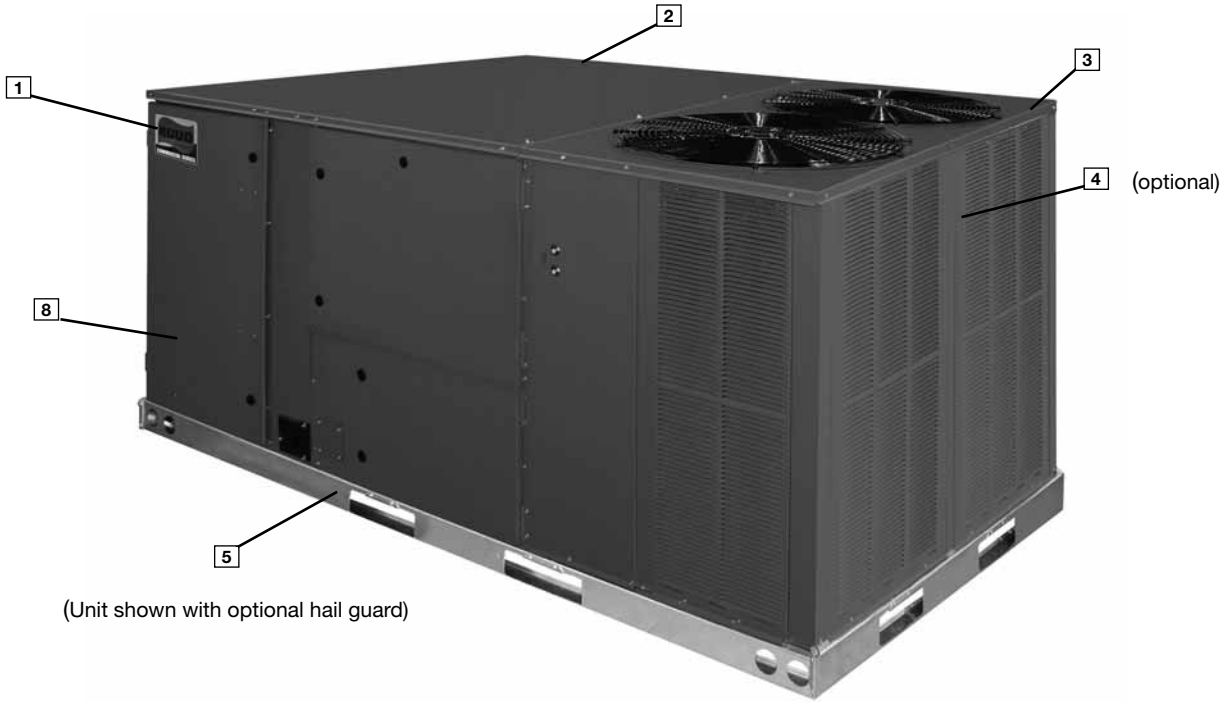
STANDARD FEATURES INCLUDE:

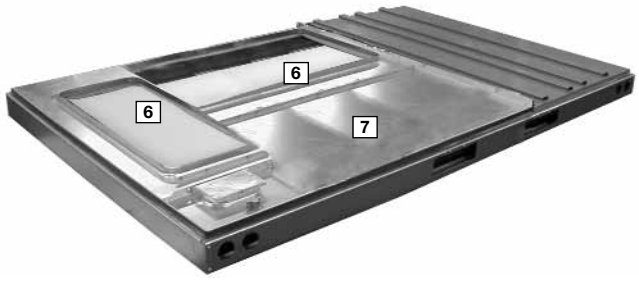
- R-410A HFC refrigerant.
- Complete factory charged, wired and run tested.
- Scroll compressors with internal line break overload and high-pressure protection.
- Convertible airflow.
- TXV refrigerant metering system.
- High Pressure and Low Pressure/Loss of charge protection standard on all models.
- Solid Core liquid line filter drier.
- Cooling operation up to 125 degree F ambient.
- Foil faced insulation encapsulated throughout entire unit minimizes airborne fibers from the air stream.
- Hinged major access door with heavy-duty gasketing, 1/4 turn latches and door retainers.
- Slide Out Indoor fan assembly for added service convenience.
- Powder Paint Finish meets ASTMB117 steel coated on each side for maximum protection. G90 galvanized.
- One piece top cover and one piece base pan with drawn supply and return opening for superior water management.
- Forkable base rails for easy handling and lifting.
- Single point electrical connections.
- Internally sloped slide out condensate pan conforms to ASHRAE 62 standards.
- High performance belt drive motor with variable pitch pulleys and quick adjust belt system.
- Permanently lubricated evaporator, condenser and gas heat inducer motors.
- Condenser motors are internally protected, totally enclosed with shaft down design.
- 2 inch filter standard with slide out design.
- 24 volt control system with resettable circuit breakers.
- Colored and labeled wiring.
- Copper tube/Aluminum Fin coils.
- Supplemental electric heat provides 100% efficient heating.
- Factory Installed ClearControl™, a Direct Digital Control (DDC) and sensors which can connect to LonWorks™ or BACnet® BAS systems for remote monitoring and control.



(Unit shown with optional hail guard)

Ruud Package equipment is designed from the ground up with the latest features and benefits required to compete in today's market. The clean design stands alone in the industry and is a testament to the quality, reliability, ease of installation and serviceability that goes into each unit. Outwardly, the large Ruud label **(1)** identifies the brand to the customer. The sheet-metal cabinet **(2)** uses nothing less than 18-gauge material for structural components with an underlying coat of G90. To ensure the leak-proof integrity of these units, the design utilizes a one-piece top with a 1/8" drip lip **(3)**, gasket-protected panels and screws. The optional Ruud hail guard **(4)** is its trademark, and sets the standard for coil protection in the industry. Every Ruud package unit uses the toughest finish in the industry, using electro deposition baked-on enamel tested to withstand a rigorous 1000-hour salt spray test, per ASTM B117.

Anything built to last must start with the right foundation. In this case, the foundation is 14-gauge, commercial-grade, full-perimeter base rails **(5)**, which integrate fork slots and rigging holes to save set-up time on the job site. The base pan is stamped, which forms a 1-1/8" flange around the supply and return cover and has eliminated the worry of water entering the conditioned space **(6)**. The drainpan **(7)** is made of material that resists the growth of harmful bacteria and is sloped for the latest IAQ benefits. The drainpan slides out for easy cleaning. The insulation has been placed on the underside of the basepan, removing areas that would allow for potential moisture accumulation, which can facilitate growth of harmful bacteria. All insulation is secured with both adhesive and mechanical fasteners, and all edges are hidden.

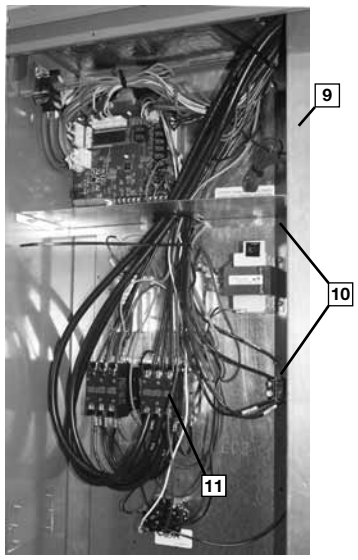


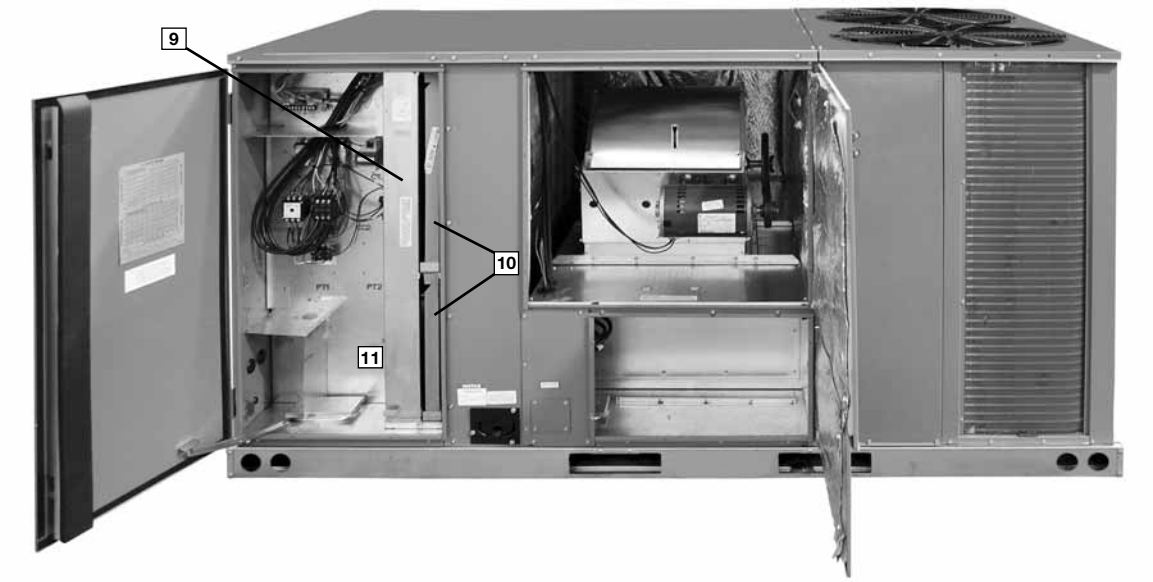
During development, each unit was tested to U.L. 1995, AHRI 340-370 and other Ruud-required reliability tests. Ruud adheres to stringent IS0 9002 quality procedures, and each unit bears the U.L. and AHRI certification labels located on the unit nameplate **(8)**. Contractors can rest assured that when a Ruud package unit arrives at the job, it is ready to go with a factory charge and quality checks.

Access to all major compartments is from the front of the unit, including the filter and electrical compartment, blower compartment, heating section, and outdoor section. Each panel is permanently embossed with the compartment name (control/filter access, blower access and furnace access).

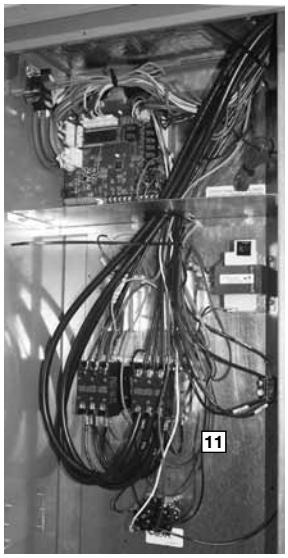
Control/filter blower and electric heat compartment access are through large, hinged-access panels secured with 1/4 turn fasteners. On the outside of the panel is the unit nameplate, which contains the model and serial number, electrical data and other important unit information.

The unit charging chart is located on the inside of the electrical and filter compartment door. Electrical wiring diagrams are found on the control box cover, which allows contractors to move them to more readable locations. To the right of the control box the model and serial number can be found. Having this information on the inside will assure model identification for the life of the product. The production line quality test assurance label is also placed in this location **(9)**. The two-inch throw-away filters **(10)** are easily removed on a tracked system for easy replacement.





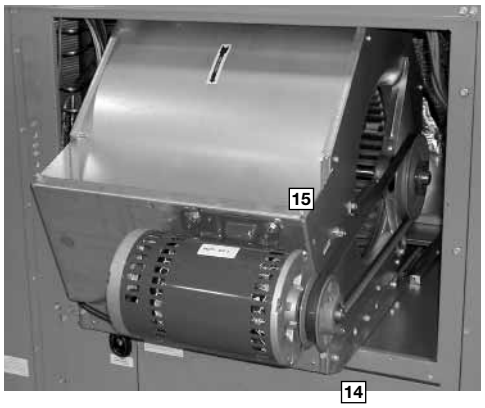
Inside the control box **(11)**, each electrical component is clearly identified with a label that matches the component to the wire diagram for ease of trouble shooting. All wiring is numbered on each end of the termination and color-coded to match the wiring diagram. The control transformer has a low voltage circuit breaker that trips if a low voltage electrical short occurs.



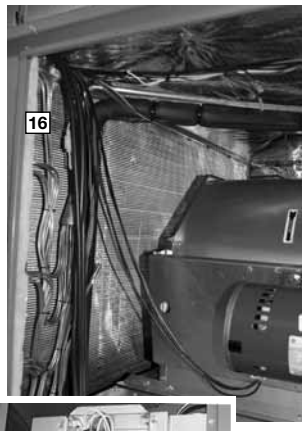
For added convenience in the field, a factory-installed convenience outlet **(12)** is available. Low and High voltage can enter either from the side or through the base. Low-voltage connections are made through the low-voltage terminal strip on the cooling control board. The high-voltage connection is terminated at the terminal block inside electric heat compartment. The suggested mounting for the field-installed disconnect is on the exterior side of the electrical control box.

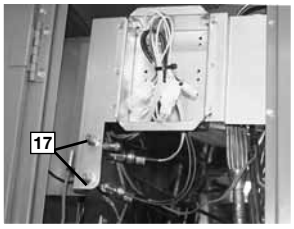
The externally mounted gauge ports, which are permanently identified by embossed wording that clearly identifies the high pressure connection and the low pressure connection, extend through the compressor access panel **(13)**. With the gauge ports mounted externally, an accurate diagnostic of system operation can be performed quickly and easily. The blower compartment access door is hinged and secured with 1/4 turn fasteners to allow easy maintenance of the blower assembly, the entire assembly slides out by removing the 3/8" screws from the blower retention bracket. The adjustable

motor pulley **(14)** can easily be adjusted by loosening the bolts on either side of the motor mount. Removing the bolts allows for easy removal of the blower pulley by pushing the blower assembly up to loosen the belt. Once the pulley is removed, the motor sheave can be adjusted to the desired number of turns, ranging from 1 to 6 turns open. Where the demands for the job require high static, Ruud has high-static drives available that deliver nominal airflow up to 2" of static. By referring to the airflow performance tables listed in the installation instructions, proper static pressure and CFM requirements can be dialed in. The scroll housing **(15)** and blower scroll provide quiet and efficient airflow. The blower sheave is secured by an “H” bushing which firmly secures the pulley to the blower shaft for years of trouble-free operation. The “H” bushing allows for easy removal of the blower pulley from the shaft, as opposed to the use of a set screw, which can score the shaft, creating burrs that make blower-pulley removal difficult.



The freeze sensor **(16)** is attached to the suction line in the blower section. The freeze sensor protects the compressor if evaporator coil gets too cold (below freezing) due to low airflow or low evaporator load and allows monitoring of the suction line temperature on the controller display. The high and low pressure switches **(17)** and the optional low ambient control are mounted on the gauge port lines inside the compressor access panel. The high pressure switch will shut off the compressor if pressure exceeds 610 PSIG. The low pressure switch is used for loss of charge protection. The low ambient control allows for cooling operation down to 0 degrees ambient by cycling the outdoor fans. Enhanced feature demand defrost control has high and low pressure control inputs with unique pressure switch logic built into the rooftop unit controller (RTU-C) to provide compressor and system protection without nuisance lock-outs. LED's and a LCD display on the unit controller provide diagnostic information for service personnel. **(18)**





As part of the ClearControl™ system which allows real time monitoring and communication between rooftop units, the RJNL-C Package Heat Pump has a Rooftop Unit Controller (RTU-C) factory mounted and wired in the control panel. The RTU-C is a solid-state microprocessor-based control board that provides flexible control and extensive diagnostics for all unit functions. The RTU-C through proportional/Integral control algorithms perform specific unit functions that govern unit operation in response to: zone conditions, system temperatures, system pressures, ambient conditions and electrical inputs. The RTU-C features a 16 x 2 character LCD display and a five-button keypad for local configuration and direct diagnosis of the system. New features include a clogged filter switch (CFS), fan proving switch (FPS), return air temperature sensor (RAT), discharge air temperature sensor (DAT) and outdoor air temperature sensor (OAT). Freeze sensors (FS) are used in place of freezestats to allow measurement of refrigerant suction line temperatures. The RJNL-C Package Heat Pump with the RTU-C is specifically designed to be applied in four distinct applications:

The RJNL-C is compatible with a third party building management system that supports the BACnet Application Specific Controller device profile, with the use of a field installed BACnet Communication Module. The BACnet Communication Module plugs onto the unit RTU-C controller and allows communication between the RTU-C and the BACnet MSTP network. A zone sensor, a BACnet network zone sensor, a BACnet thermostat or DDC controller may be used to send the zone temperature or thermostat demands to the RTU-C. The BACnet Communication Module is compatible with MSTP EIA-485 daisy chain networks communicating at 38.4 bps. It is compatible with twisted pair, shielded cables.

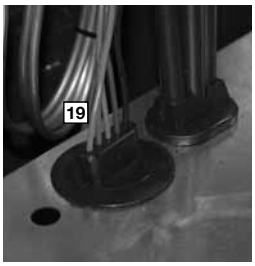
The RJNL-C is compatible with a third party building management system that supports the LonMark Space Comfort Controller (SCC) functional profile or LonMark Discharge Air Controller (DAC) functional profile. This is accomplished with a field installed LonMark communication module. The LonMark Communication Module plugs onto the RTU-C controller and allows communication between the RTU-C and a LonWorks Network. A zone sensor, a LonTalk network zone sensor, or a LonTalk thermostat or DDC controller may be used to send the zone temperature or thermostat demands to the RTU-C. The LonMark Communication Module utilizes an FTT-10A free topology transceiver communicating at 78.8 kbps. It is compatible with Echelon qualified twisted pair cable, Belden 8471 or NEMA Level 4 cables. The Module can communicate up to 1640 ft. with no repeater. The LonWorks limit of 64 nodes per segment applies to this device.

The RJNL-C is compatible with a programmable 24 volt thermostat. Connections are made via conventional thermostat screw terminals. Extensive unit status and diagnostics are displayed on the LCD screen of the RTU-C.

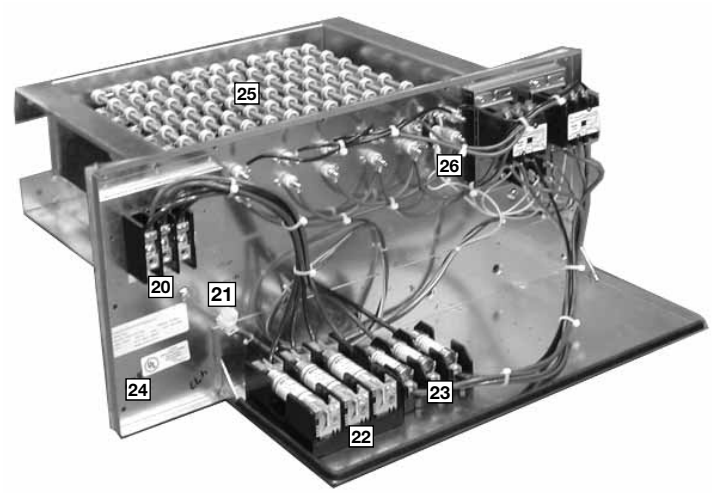
The RJNL-C is compatible with a zone sensor and mechanical or solid state time clock connected to the RTU-C. Extensive unit status and diagnostics are displayed on the LCD screen of the RTU-C.

A factory or field installed Comfort Alert® module is available for power phase-monitoring protection and additional compressor diagnostics. The alarms can be displayed on the RTU-C display, through the (BAS) network or connected to the "L-Terminal" of a thermostat for notification.

Inside the blower compartment the evaporator can also be viewed. The evaporator uses enhanced fin technology for maximum heat transfer. The thermal expansion valve and venturi distributor assure even distribution of refrigerant throughout the evaporator.



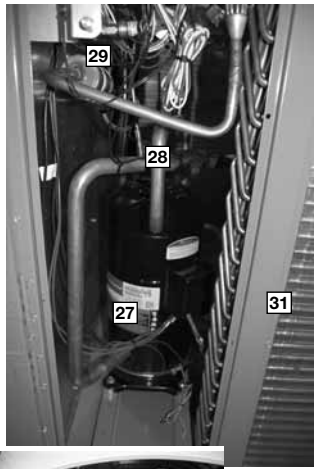
Wiring throughout the unit is neatly bundled and routed. Where wire harnesses go through the condenser bulkhead or blower deck, a molded wire harness assembly **(19)** provides an air-tight and water-tight seal, and provides strain relief. Care is also taken to tuck raw edges of insulation behind sheet metal to improve indoor air quality.



The heating compartment contains the latest electric furnace technology on the market. The 100% efficient electric furnace can be factory-installed or easily field-installed. Built with ease-of-installation in mind, the electric furnace is completely wired for slide-in, plug-and-play installation in the field. With choices of 15 to 40 kilowatt offerings, the contractor is assured to get the correct amount of heating output to meet the designed heating load.

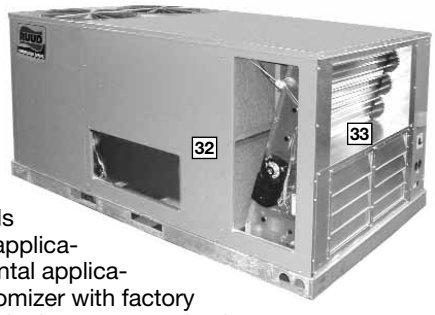
Power hook-up in the field is easy with single-point wiring to a terminal block **(20)** and a polarized plug for the low-voltage connection **(21)**. The electric furnace comes with fuses for the unit **(22)** and for the electric furnace **(23)**, and is UL certified **(24)**. The electric heating elements are of a wound-wire construction **(25)** and isolated with ceramic bushings. The limit switch **(26)** protects the design from over-temperature conditions. Each electric furnace has the capability to be converted from single-stage operation to two-stage operation by removing a jumper on the low-voltage terminal strip.

The compressor compartment houses the heartbeat of the unit. The scroll compressor **(27)** is known for its long life, and for reliable, quiet, and efficient operation. The suction and discharge lines **(28)** are designed to absorb the strain and stress that the starting torque, steady state operation, and shut down cycle imposed on the refrigerant tubing.

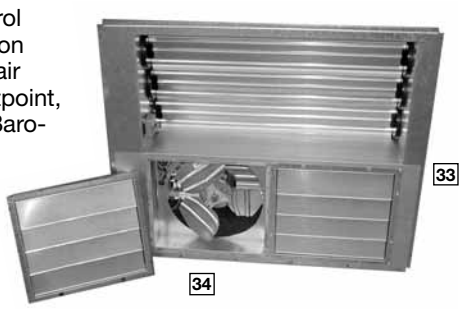


A liquid line bi-flow filter drier **(29)** is conveniently located near the TXV in the outdoor section. The condenser fan motors **(30)** can easily be accessed and maintained through the unit top. The polarized plug connection allows the motor to be changed quickly and eliminates the need to snake wires through the unit.

The outdoor coil uses the latest enhanced fin design **(31)** for the most effective method of heat transfer. Optional louvered panels offer hail protection to outdoor coils without obstructing airflow.



Each unit is designed for both downflow or horizontal applications **(32)** for job configuration flexibility. The return air compartment can also contain an economizer **(33)**. Three economizer models exist, two for downflow applications, and one for horizontal applications. (A downflow economizer with factory installed smoke detector in the return section is available.) Each unit is pre-wired for the economizer to allow quick plug-in installation. The economizer is also available as a factory-installed option. The economizer, which provides free cooling when outdoor conditions are suitable and also provides fresh air to meet local requirements, comes standard with single enthalpy controls. The controls can be upgraded to dual enthalpy easily in the field. The direct drive actuator combined with gear drive dampers has eliminated the need for linkage adjustment in the field.

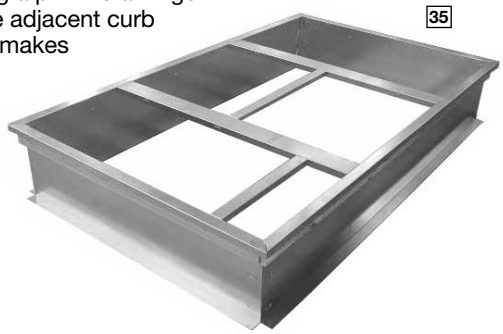


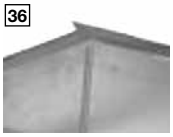
The economizer control has a minimum position setpoint, an outdoor-air setpoint, a mix-air setpoint, and a CO_2 setpoint. Barometric relief is standard on all economizers. Power Exhaust **(34)** is easily field-installed. The power exhaust is housed in the barometric relief opening and is easily slipped in with a plug-in assembly. The wire harness to the economizer also has accommodations for a return air mounted smoke detector.

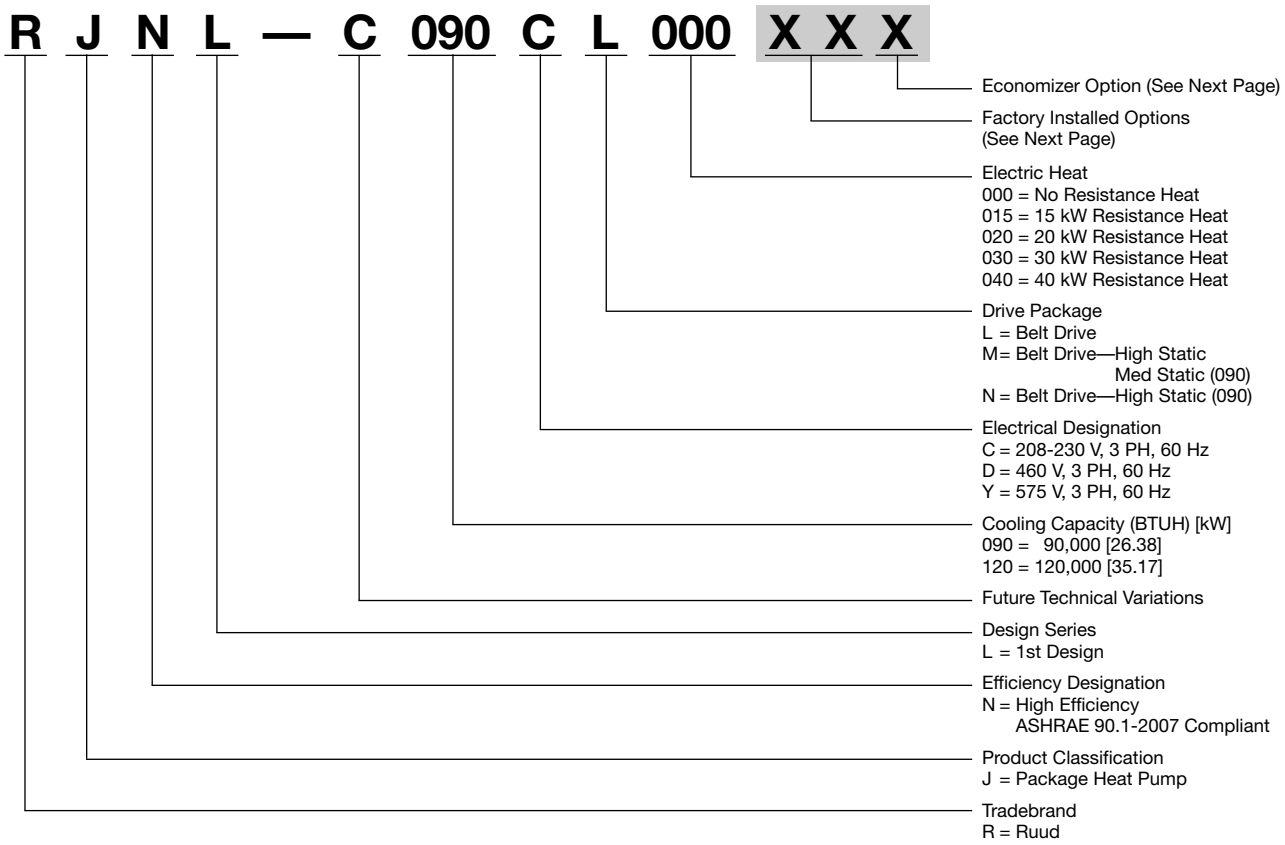
The damper minimum position, actual damper position, power exhaust on/off setpoint, mixed air temperature limit setpoint and Demand Controlled Ventilation (DCV) setpoint can be read and adjusted at the unit controller display or remotely through a network connection.

The Space CO_2 level, mixed air temperature, and Economizer Status (Free Cooling Available, Single or Dual Enthalpy) can be read at the unit controller display or remotely through a network connection. Economizer Faults will trigger a network Alarm and can be read at the unit controller display or remotely through a network connection.

The Ruud roofcurb **(35)** is made for toolless assembly at the jobsite by inserting a pin into a hinge in each corner of the adjacent curb sides **(36)**, which makes the assembly process quick and easy.







[ ] Designates Metric Conversions

FACTORY INSTALLED OPTION CODES FOR RJNL-C (7.5 & 10 TON) [26.4 & 35.2 kW]

Option Code	Hail Guard	Non-Powered Convenience Outlet	Low Ambient/ Comfort Alert
AD	x		
AG		x	
AR			x
JD	x		x
BJ	x	x	
CZ	x	x	x
JE		x	x

ECONOMIZER SELECTION FOR RJNL-C (7.5 & 10 TON) [26.4 & 35.2 kW]

	No Economizer	DDC Single Enthalpy Economizer With Barometric Relief	DDC Single Enthalpy Economizer With Barometric Relief And Smoke Detector
A	x		
H		x	
J			x

"x" indicates factory installed option.

Instructions for Factory Installed Option(s) Selection

Note: Three characters following the model number will be utilized to designate a factory-installed option or combination of options. If no factory option(s) is required, nothing follows the model number.

Step 1. After a basic rooftop model is selected, choose a *two-character* option code from the FACTORY INSTALLED OPTION SELECTION TABLE.

Proceed to Step 2.

Step 2. The last option code character is utilized for factory-installed economizers. Choose a character from the FACTORY INSTALLED ECONOMIZER SELECTION TABLE.

Examples:

RJNL-C090CL000**XX**X .....*(where **XX** is factory installed option)*

RJNL-C090CL000.....No options

RJNL-C090CL000**AAH** .....No option with factory installed economizer

RJNL-C090CL000**ADA** .....Hailguard with no factory installed economizer

RJNL-C090CL000**ADH** .....Options same as above with factory installed economizer

[ ] Designates Metric Conversions

SELECTION PROCEDURE

To select an RJNL-C Heat Pump unit to meet a job requirement, follow this procedure, with example, using data supplied in this specification sheet.

1. DETERMINE COOLING AND HEATING REQUIREMENTS AND SPECIFIC OPERATING CONDITIONS FROM PLANS AND SPECS.

Example:

Voltage—	230V—3 Phase—60 Hz
Total Cooling Capacity—	106,000 BTUH [31.0 kW]
Sensible Cooling Capacity—	82,000 BTUH [24.0 kW]
Heating Capacity—	130,000 BTUH [38.1 kW]
*Condenser Entering Air—	95°F [35.0°C] DB
*Evaporator Mixed Air Entering—	65°F [18.3°C] WB 78°F [25.6°C] DB
*Indoor Air Flow (vertical)—	3600 CFM [1699 L/s]
*External Static Pressure—	0.40 in. WG [.10 kPa]

2. SELECT UNIT TO MEET COOLING REQUIREMENTS.

Since total cooling is within the range of a nominal 10 ton [35.1 kW] unit, enter cooling performance table at 95°F [35.0 °C] DB condenser inlet air. Interpolate between 63°F [17.2 °C] WB and 67°F [19.4 °C] WB to determine total and sensible capacity and power input for 65°F [18.3 °C] WB evaporator inlet air at 4000 CFM [1888 L/s] indoor air flow (table basis):

Total Cooling Capacity = 121,950 BTUH [35.71 kW]
Sensible Cooling Capacity = 102,750 BTUH [30.09 kW]
Power Input (Compressor and Cond. Fans) = 9,400 watts

Use formula in note ① to determine sensible capacity at 78°F [25.6°C] DB evaporator entering air:

102,750 + (1.10 x 3,600 x (1 – 0.05) x (78 – 80))
Sensible Cooling Capacity = 95,226 BTUH [27.88 kW]

3. CORRECT CAPACITIES OF STEP 2 FOR ACTUAL AIR FLOW.

Select factors from airflow correction table at 3600 CFM [1699 L/s] and apply to data obtained in step 2 to obtain gross capacity:

Total Capacity = 121,950 x 0.99 = 120,731 BTUH [35.35 kW]
Sensible Capacity = 95,226 x 0.97 = 92,369 BTUH [27.05 kW]
Power Input = 9,400 x 0.99 = 9,306 Watts

These are Gross Capacities, not corrected for blower motor heat or power.

4. DETERMINE BLOWER SPEED AND WATTS TO MEET SYSTEM DESIGN.

Enter Indoor Blower performance table at 3600 CFM [1699 L/s]. Total ESP (external static pressure) per the spec of 0.40 in. WG [.10 kPa] includes the system duct and grilles. Add from the table 'Component Air Resistance', 0.08 in. WG [.02 kPa] for wet coil, 0 in. WG [.00 kPa] for downflow air flow, for a total selection static pressure of 0.48 (0.5) in. WG [.12 kPa], and determine:

RPM = 755
WATTS = 1,488
DRIVE = L (standard 2 H.P. motor)

5. CALCULATE INDOOR BLOWER BTUH HEAT EFFECT FROM MOTOR WATTS, STEP 4.

1,488 x 3.412 = 5,077 BTUH [1.49 kW]

6. CALCULATE NET COOLING CAPACITIES, EQUAL TO GROSS CAPACITY, STEP 3, MINUS INDOOR BLOWER MOTOR HEAT.

Net Total Capacity = 120,731 – 5,077 =
115,654 BTUH [33.86 kW]

Net Sensible Capacity = 92,369 – 5,077 =
87,292 BTUH [25.56 kW]

7. CALCULATE UNIT INPUT AND JOB EER.

Total Power Input = 9,306 (step 3) + 1,488 (step 4) = 10,794 Watts

$$EER = \frac{\text{Net Total BTUH [kW] (step 6)}}{\text{Power Input, Watts (above)}} = \frac{115{,}654}{10{,}794} = 10.71$$

8. SELECT UNIT HEATING CAPACITY.

From Heater Kit Table select kW to meet heating capacity requirement; multiply kW x 3412 to convert to BTUH.

Use 40 kW Heater Kit

Heater Kit Model:	Heater Kit Capacity:
RXJJ-CC40C	131,021 BTUH [38.4 kW]

Add indoor blower heat effect (step 5) to Heater Kit Capacity to get total heating capacity:

131,021 + 5,077 = 136,098 BTUH [39.9 kW]

9. CHOOSE MODEL RJNL-C120CL040

*NOTE: These operating conditions are typical of a commercial application in a 95°F/79°F [35°C/26°C] design area with indoor design of 76°F [24°C] DB and 50% RH and 10% ventilation air, with the unit roof mounted and centered on the zone it conditions by ducts.

[ ] Designates Metric Conversions

NOMINAL SIZES 7.5 & 10 TONS [26.4 & 35.2 kW]

Model RJNL-C Series	C090CL	C090CM	C090CN	C090DL
Cooling Performance[1]				CONTINUED →
Gross Cooling Capacity Btu [kW]	98,000 [28.71]	98,000 [28.71]	98,000 [28.71]	98,000 [28.71]
EER/SEER[2]	11.1/NA	11.1/NA	11.1/NA	11.1/NA
Nominal CFM/AHRI Rated CFM [L/s]	3000/2925 [1416/1380]	3000/2925 [1416/1380]	3000/2925 [1416/1380]	3000/2925 [1416/1380]
AHRI Net Cooling Capacity Btu [kW]	94,000 [27.54]	94,000 [27.54]	94,000 [27.54]	94,000 [27.54]
Net Sensible Capacity Btu [kW]	70,800 [20.74]	70,800 [20.74]	70,800 [20.74]	70,800 [20.74]
Net Latent Capacity Btu [kW]	23,200 [6.8]	23,200 [6.8]	23,200 [6.8]	23,200 [6.8]
IEER[3]	11.9	11.9	11.9	11.9
Net System Power kW	8.47	8.47	8.47	8.47
Heating Performance (Heat Pumps)				
High Temp. Btuh [kW] Rating	87,000 [25.49]	87,000 [25.49]	87,000 [25.49]	87,000 [25.49]
System Power KW/COP	7.5/3.4	7.5/3.4	7.5/3.4	7.5/3.4
Low Temp. Btuh [kW] Rating	52,000 [15.24]	52,000 [15.24]	52,000 [15.24]	52,000 [15.24]
System Power KW/COP	6.62/2.3	6.62/2.3	6.62/2.3	6.62/2.3
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[4]	88	88	88	88
Outdoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm] OD	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	24.88 [2.31]	24.88 [2.31]	24.88 [2.31]	24.88 [2.31]
Rows / FPI [FPcm]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Indoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	13.5 [1.25]	13.5 [1.25]	13.5 [1.25]	13.5 [1.25]
Rows / FPI [FPcm]	3 / 18 [7]	3 / 18 [7]	3 / 18 [7]	3 / 18 [7]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]
Outdoor Fan—Type	Propeller	Propeller	Propeller	Propeller
No. Used/Diameter in. [mm]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	8000 [3775]	8000 [3775]	8000 [3775]	8000 [3775]
No. Motors/HP	2 at 1/3 HP	2 at 1/3 HP	2 at 1/3 HP	2 at 1/3 HP
Motor RPM	1075	1075	1075	1075
Indoor Fan—Type	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]
Drive Type/No. Speeds	Belt/Variable	Belt/Variable	Belt/Variable	Belt/Variable
No. Motors	1	1	1	1
Motor HP	2	2	3	2
Motor RPM	1725	1725	1725	1725
Motor Frame Size	56	56	56	56
Filter—Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes	Yes
(No.) Size Recommended in. [mm x mm x mm]	(6)2x18x18 [51x457x457]	(6)2x18x18 [51x457x457]	(6)2x18x18 [51x457x457]	(6)2x18x18 [51x457x457]
Refrigerant Charge Oz. (Sys. 1/Sys. 2) [g]	350 [9922]	350 [9922]	350 [9922]	350 [9922]
Weights				
Net Weight lbs. [kg]	1009 [458]	1009 [458]	1017 [461]	1009 [458]
Ship Weight lbs. [kg]	1089 [494]	1089 [494]	1097 [498]	1089 [494]

See Page 15 for Notes.

[ ] Designates Metric Conversions

NOMINAL SIZES 7.5 & 10 TONS [26.4 & 35.2 kW]

Model RJNL-C Series	C090DM	C090DN	C090YL	C090YM
Cooling Performance[1]				CONTINUED →
Gross Cooling Capacity Btu [kW]	98,000 [28.71]	98,000 [28.71]	98,000 [28.71]	98,000 [28.71]
EER/SEER[2]	11.1/NA	11.1/NA	11.1/NA	11.1/NA
Nominal CFM/AHRI Rated CFM [L/s]	3000/2925 [1416/1380]	3000/2925 [1416/1380]	3000/2925 [1416/1380]	3000/2925 [1416/1380]
AHRI Net Cooling Capacity Btu [kW]	94,000 [27.54]	94,000 [27.54]	94,000 [27.54]	94,000 [27.54]
Net Sensible Capacity Btu [kW]	70,800 [20.74]	70,800 [20.74]	70,800 [20.74]	70,800 [20.74]
Net Latent Capacity Btu [kW]	23,200 [6.8]	23,200 [6.8]	23,200 [6.8]	23,200 [6.8]
IEER[3]	11.9	11.9	11.9	11.9
Net System Power kW	8.47	8.47	8.47	8.47
Heating Performance (Heat Pumps)				
High Temp. Btuh [kW] Rating	87,000 [25.49]	87,000 [25.49]	87,000 [25.49]	87,000 [25.49]
System Power KW/COP	7.5/3.4	7.5/3.4	7.5/3.4	7.5/3.4
Low Temp. Btuh [kW] Rating	52,000 [15.24]	52,000 [15.24]	52,000 [15.24]	52,000 [15.24]
System Power KW/COP	6.62/2.3	6.62/2.3	6.62/2.3	6.62/2.3
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[4]	88	88	88	88
Outdoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm] OD	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	24.88 [2.31]	24.88 [2.31]	24.88 [2.31]	24.88 [2.31]
Rows / FPI [FPcm]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Indoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	13.5 [1.25]	13.5 [1.25]	13.5 [1.25]	13.5 [1.25]
Rows / FPI [FPcm]	3 / 18 [7]	3 / 18 [7]	3 / 18 [7]	3 / 18 [7]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]
Outdoor Fan—Type	Propeller	Propeller	Propeller	Propeller
No. Used/Diameter in. [mm]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	8000 [3775]	8000 [3775]	8000 [3775]	8000 [3775]
No. Motors/HP	2 at 1/3 HP	2 at 1/3 HP	2 at 1/3 HP	2 at 1/3 HP
Motor RPM	1075	1075	1075	1075
Indoor Fan—Type	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]
Drive Type/No. Speeds	Belt/Variable	Belt/Variable	Belt/Variable	Belt/Variable
No. Motors	1	1	1	1
Motor HP	2	3	2	2
Motor RPM	1725	1725	1725	1725
Motor Frame Size	56	56	56	56
Filter—Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes	Yes
(No.) Size Recommended in. [mm x mm x mm]	(6)2x18x18 [51x457x457]	(6)2x18x18 [51x457x457]	(6)2x18x18 [51x457x457]	(6)2x18x18 [51x457x457]
Refrigerant Charge Oz. (Sys. 1/Sys. 2) [g]	350 [9922]	350 [9922]	350 [9922]	350 [9922]
Weights				
Net Weight lbs. [kg]	1009 [458]	1017 [461]	1009 [458]	1009 [458]
Ship Weight lbs. [kg]	1089 [494]	1097 [498]	1089 [494]	1089 [494]

See Page 15 for Notes.

[ ] Designates Metric Conversions

NOMINAL SIZES 7.5 & 10 TONS [26.4 & 35.2 kW]

Model RJNL-C Series	C090YN	C120CL	C120CM	C120DL
Cooling Performance[1]				CONTINUED →
Gross Cooling Capacity Btu [kW]	98,000 [28.71]	125,000 [36.62]	125,000 [36.62]	125,000 [36.62]
EER/SEER[2]	11.1/NA	11/NA	11/NA	11/NA
Nominal CFM/AHRI Rated CFM [L/s]	3000/2925 [1416/1380]	4000/4000 [1888/1888]	4000/4000 [1888/1888]	4000/4000 [1888/1888]
AHRI Net Cooling Capacity Btu [kW]	94,000 [27.54]	120,000 [35.16]	120,000 [35.16]	120,000 [35.16]
Net Sensible Capacity Btu [kW]	70,800 [20.74]	91,600 [26.84]	91,600 [26.84]	91,600 [26.84]
Net Latent Capacity Btu [kW]	23,200 [6.8]	28,400 [8.32]	28,400 [8.32]	28,400 [8.32]
IEER[3]	11.9	11.6	11.6	11.6
Net System Power kW	8.47	10.91	10.91	10.91
Heating Performance (Heat Pumps)				
High Temp. Btuh [kW] Rating	87,000 [25.49]	109,000 [31.94]	109,000 [31.94]	109,000 [31.94]
System Power KW/COP	7.5/3.4	9.39/3.4	9.39/3.4	9.39/3.4
Low Temp. Btuh [kW] Rating	52,000 [15.24]	69,000 [20.22]	69,000 [20.22]	69,000 [20.22]
System Power KW/COP	6.62/2.3	8.79/2.3	8.79/2.3	8.79/2.3
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[4]	88	88	88	88
Outdoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm] OD	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	24.88 [2.31]	28.8 [2.68]	28.8 [2.68]	28.8 [2.68]
Rows / FPI [FPcm]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Indoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	13.5 [1.25]	15.75 [1.46]	15.75 [1.46]	15.75 [1.46]
Rows / FPI [FPcm]	3 / 18 [7]	4 / 15 [6]	4 / 15 [6]	4 / 15 [6]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]
Outdoor Fan—Type	Propeller	Propeller	Propeller	Propeller
No. Used/Diameter in. [mm]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	8000 [3775]	8000 [3775]	8000 [3775]	8000 [3775]
No. Motors/HP	2 at 1/3 HP	2 at 1/2 HP	2 at 1/2 HP	2 at 1/2 HP
Motor RPM	1075	1075	1075	1075
Indoor Fan—Type	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]
Drive Type/No. Speeds	Belt/Variable	Belt/Variable	Belt/Variable	Belt/Variable
No. Motors	1	1	1	1
Motor HP	3	2	3	2
Motor RPM	1725	1725	1725	1725
Motor Frame Size	56	56	56	56
Filter—Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes	Yes
(No.) Size Recommended in. [mm x mm x mm]	(6)2x18x18 [51x457x457]	(3)2x18x18 [51x457x457] (3)2x18x24 [51x457x610]	(3)2x18x18 [51x457x457] (3)2x18x24 [51x457x610]	(3)2x18x18 [51x457x457] (3)2x18x24 [51x457x610]
Refrigerant Charge Oz. (Sys. 1/Sys. 2) [g]	350 [9922]	496 [14062]	496 [14062]	496 [14062]
Weights				
Net Weight lbs. [kg]	1017 [461]	1185 [538]	1193 [541]	1185 [538]
Ship Weight lbs. [kg]	1097 [498]	1265 [574]	1273 [577]	1265 [574]

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[ ] Designates Metric Conversions

NOMINAL SIZES 7.5 & 10 TONS [26.4 & 35.2 kW]

Model RJNL-C Series	C120DM	C120YL	C120YM
Cooling Performance[1]			
Gross Cooling Capacity Btu [kW]	125,000 [36.62]	125,000 [36.62]	125,000 [36.62]
EER/SEER[2]	11/NA	11/NA	11/NA
Nominal CFM/AHRI Rated CFM [L/s]	4000/4000 [1888/1888]	4000/4000 [1888/1888]	4000/4000 [1888/1888]
AHRI Net Cooling Capacity Btu [kW]	120,000 [35.16]	120,000 [35.16]	120,000 [35.16]
Net Sensible Capacity Btu [kW]	91,600 [26.84]	91,600 [26.84]	91,600 [26.84]
Net Latent Capacity Btu [kW]	28,400 [8.32]	28,400 [8.32]	28,400 [8.32]
IEER[3]	11.6	11.6	11.6
Net System Power kW	10.91	10.91	10.91
Heating Performance (Heat Pumps)			
High Temp. Btuh [kW] Rating	109,000 [31.94]	109,000 [31.94]	109,000 [31.94]
System Power KW/COP	9.39/3.4	9.39/3.4	9.39/3.4
Low Temp. Btuh [kW] Rating	69,000 [20.22]	69,000 [20.22]	69,000 [20.22]
System Power KW/COP	8.79/2.3	8.79/2.3	8.79/2.3
Compressor			
No./Type	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[4]	88	88	88
Outdoor Coil—Fin Type	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled
Tube Size in. [mm] OD	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	28.8 [2.68]	28.8 [2.68]	28.8 [2.68]
Rows / FPI [FPcm]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Refrigerant Control	TX Valves	TX Valves	TX Valves
Indoor Coil—Fin Type	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	15.75 [1.46]	15.75 [1.46]	15.75 [1.46]
Rows / FPI [FPcm]	4 / 15 [6]	4 / 15 [6]	4 / 15 [6]
Refrigerant Control	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]
Outdoor Fan—Type	Propeller	Propeller	Propeller
No. Used/Diameter in. [mm]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1
CFM [L/s]	8000 [3775]	8000 [3775]	8000 [3775]
No. Motors/HP	2 at 1/2 HP	2 at 1/2 HP	2 at 1/2 HP
Motor RPM	1075	1075	1075
Indoor Fan—Type	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]
Drive Type/No. Speeds	Belt/Variable	Belt/Variable	Belt/Variable
No. Motors	1	1	1
Motor HP	3	2	3
Motor RPM	1725	1725	1725
Motor Frame Size	56	56	56
Filter—Type	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes
(No.) Size Recommended in. [mm x mm x mm]	(3)2x18x18 [51x457x457] (3)2x18x24 [51x457x610]	(3)2x18x18 [51x457x457] (3)2x18x24 [51x457x610]	(3)2x18x18 [51x457x457] (3)2x18x24 [51x457x610]
Refrigerant Charge Oz. (Sys. 1/Sys. 2) [g]	496 [14062]	496 [14062]	496 [14062]
Weights			
Net Weight lbs. [kg]	1193 [541]	1185 [538]	1193 [541]
Ship Weight lbs. [kg]	1273 [577]	1265 [574]	1273 [577]

See Page 15 for Notes.

[ ] Designates Metric Conversions

NOTES:

1. 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. Units are suitable for operation to ±20% of nominal cfm. Units are certified in accordance with the Unitary Air Conditioner Equipment certification program, which is based on AHRI Standard 210/240 or 360.
2. EER and/or SEER are rated at AHRI conditions and in accordance with DOE test procedures.
3. Integrated Energy Efficiency Ratio (IEER) is rated in accordance with AHRI Standard 210/240 or 360.
4. Outdoor Sound Rating shown is tested in accordance with AHRI Standard 270.

COOLING PERFORMANCE DATA—C090

ENTERING INDOOR AIR @ 80°F [26.7°C] dbE ①											
wbE			71°F [21.7°C]			67°F [19.4°C]			63°F [17.2°C]		
CFM [L/s]			3840 [1812]	2925 [1380]	2560 [1208]	3840 [1812]	2925 [1380]	2560 [1208]	3840 [1812]	2925 [1380]	2560 [1208]
DR ①			.0	.02	.05	.0	.02	.05	.0	.02	.05
OUTDOOR DRY BULB TEMPERATURE °F [°C]	75 [23.9]	Total BTUH [kW]	120.0 [35.2]	113.6 [33.3]	111.0 [32.5]	114.9 [33.7]	108.7 [31.9]	106.2 [31.1]	110.7 [32.4]	104.8 [30.7]	102.4 [30.0]
		Sens BTUH [kW]	95.7 [28.1]	77.1 [22.6]	70.2 [20.6]	111.0 [32.5]	90.7 [26.6]	83.1 [24.4]	110.7 [32.5]	100.6 [29.5]	92.5 [27.1]
		Power	6.4	6.2	6.2	6.3	6.1	6.0	6.1	6.0	5.9
	80 [26.7]	Total BTUH [kW]	117.6 [34.5]	111.2 [32.6]	108.7 [31.9]	112.4 [32.9]	106.4 [31.2]	104.0 [30.5]	108.3 [31.7]	102.4 [30.0]	100.1 [29.3]
		Sens BTUH [kW]	90.2 [26.4]	72.3 [21.2]	65.7 [19.3]	105.4 [30.9]	86.0 [25.2]	78.7 [23.1]	108.3 [31.7]	95.8 [28.1]	88.1 [25.8]
		Power	6.7	6.5	6.5	6.6	6.4	6.3	6.4	6.3	6.2
	85 [29.4]	Total BTUH [kW]	114.8 [33.6]	108.6 [31.8]	106.1 [31.1]	109.6 [32.1]	103.7 [30.4]	101.4 [29.7]	105.5 [30.9]	99.8 [29.2]	97.5 [28.6]
		Sens BTUH [kW]	85.0 [24.9]	68.0 [19.9]	61.7 [18.1]	100.3 [29.4]	81.6 [23.9]	74.7 [21.9]	105.5 [30.9]	91.5 [26.8]	84.0 [24.6]
		Power	7.1	6.9	6.8	6.9	6.7	6.6	6.8	6.6	6.5
	90 [32.2]	Total BTUH [kW]	111.7 [32.7]	105.7 [31.0]	103.3 [30.3]	106.6 [31.2]	100.8 [29.5]	98.5 [28.9]	102.4 [30.0]	96.9 [28.4]	94.7 [27.8]
		Sens BTUH [kW]	80.4 [23.6]	64.2 [18.8]	58.2 [17.1]	95.8 [28.1]	77.8 [22.8]	71.1 [20.8]	102.4 [30.0]	87.7 [25.7]	80.5 [23.6]
		Power	7.4	7.2	7.1	7.3	7.1	7.0	7.1	6.9	6.9
	95 [35]	Total BTUH [kW]	108.3 [31.7]	102.5 [30.0]	100.2 [29.4]	103.2 [30.2]	97.6 [28.6]	95.4 [28.0]	99.0 [29.0]	93.7 [27.5]	91.6 [26.8]
		Sens BTUH [kW]	76.3 [22.4]	60.8 [17.8]	55.1 [16.2]	91.7 [26.9]	74.4 [21.8]	68.0 [19.9]	99.0 [29.0]	84.3 [24.7]	77.4 [22.7]
		Power	7.8	7.6	7.5	7.7	7.5	7.4	7.5	7.3	7.3
	100 [37.8]	Total BTUH [kW]	104.7 [30.7]	99.0 [29.0]	96.8 [28.4]	99.5 [29.2]	94.2 [27.6]	92.0 [27.0]	95.4 [28.0]	90.2 [26.4]	88.2 [25.8]
		Sens BTUH [kW]	72.9 [21.4]	57.9 [17.0]	52.5 [15.4]	88.1 [25.8]	71.6 [21.0]	65.4 [19.2]	95.4 [28.0]	81.4 [23.9]	74.8 [21.9]
		Power	8.3	8.0	7.9	8.1	7.9	7.8	8.0	7.8	7.7
	105 [40.6]	Total BTUH [kW]	100.7 [29.5]	95.3 [27.9]	93.1 [27.3]	95.6 [28.0]	90.4 [26.5]	88.4 [25.9]	91.4 [26.8]	86.5 [25.4]	84.5 [24.8]
		Sens BTUH [kW]	69.9 [20.5]	55.6 [16.3]	50.3 [14.8]	85.3 [25.0]	69.2 [20.3]	63.3 [18.6]	91.4 [26.8]	79.1 [23.2]	72.6 [21.3]
		Power	8.7	8.5	8.4	8.6	8.3	8.3	8.4	8.2	8.1
	110 [43.3]	Total BTUH [kW]	96.4 [28.3]	91.2 [26.7]	89.2 [26.1]	91.3 [26.8]	86.4 [25.3]	84.4 [24.7]	87.1 [25.5]	82.4 [24.1]	80.6 [23.6]
		Sens BTUH [kW]	67.4 [19.8]	53.6 [15.7]	48.6 [14.3]	82.7 [24.2]	67.3 [19.7]	61.5 [18.0]	87.1 [25.5]	77.2 [22.6]	71.0 [20.8]
		Power	9.2	9.0	8.9	9.1	8.8	8.7	8.9	8.7	8.6
	115 [46.1]	Total BTUH [kW]	91.8 [26.9]	86.9 [25.5]	84.9 [24.9]	86.7 [25.4]	82.0 [24.0]	80.2 [23.5]	82.5 [24.2]	78.1 [22.9]	76.3 [22.4]
		Sens BTUH [kW]	65.6 [19.2]	52.3 [15.3]	47.4 [13.9]	80.8 [23.7]	65.8 [19.3]	60.3 [17.7]	82.5 [24.2]	75.8 [22.2]	69.7 [20.4]
		Power	9.7	9.5	9.4	9.6	9.3	9.2	9.4	9.2	9.1

DR —Depression ratio
dbE —Entering air dry bulb
wbE—Entering air wet bulb

Total —Total capacity x 1000 BTUH
Sens —Sensible capacity x 1000 BTUH
Power —KW input

NOTES:
① When the entering air dry bulb is other than 80°F [27°C], adjust the sensible capacity from the table by adding [1.10 x CFM x (1 – DR) x (dbE – 80)].

HEATING PERFORMANCE DATA—C090

IDB			60°F [15.5°C]			70°F [21.1°C]			80°F [26.7°C]		
CFM [L/s]			3840 [1812]	2925 [1380]	2560 [1208]	3840 [1812]	2925 [1380]	2560 [1208]	3840 [1812]	2925 [1380]	2560 [1208]
OUTDOOR DRY BULB TEMPERATURE °F [°C]	0 [-17.8]	Total BTUH [kW]	33.5 [9.82]	32.8 [9.61]	32.5 [9.52]	30.1 [8.82]	29.4 [8.62]	29.2 [8.56]	26.7 [7.82]	26.1 [7.65]	25.8 [7.56]
		Power	9.6	10.0	10.1	9.6	10.0	10.1	9.6	10.0	10.1
	5 [26.7]	Total BTUH [kW]	39.4 [11.55]	38.5 [11.28]	38.2 [11.20]	36.0 [10.55]	35.2 [10.32]	34.9 [10.23]	32.5 [9.52]	31.8 [9.32]	31.5 [9.23]
		Power	9.2	9.6	9.7	9.2	9.6	9.7	9.2	9.6	9.7
	10 [-12.2]	Total BTUH [kW]	45.3 [13.28]	44.3 [12.98]	43.9 [12.87]	41.8 [12.25]	40.9 [11.99]	40.5 [11.87]	38.4 [11.25]	37.5 [10.99]	37.2 [10.90]
		Power	8.9	9.2	9.4	8.9	9.2	9.4	8.9	9.2	9.4
	15 [32.2]	Total BTUH [kW]	51.1 [14.98]	50.0 [14.65]	49.6 [14.54]	47.7 [13.98]	46.6 [13.66]	46.2 [13.54]	44.3 [12.98]	43.3 [12.69]	42.9 [12.57]
		Power	8.5	8.8	9.0	8.5	8.8	9.0	8.5	8.8	9.0
	20 [-6.6]	Total BTUH [kW]	57.0 [16.71]	55.7 [16.32]	55.2 [16.18]	53.6 [15.71]	52.4 [15.36]	51.9 [15.21]	50.1 [14.68]	49.0 [14.36]	48.6 [14.24]
		Power	8.1	8.5	8.6	8.1	8.5	8.6	8.1	8.5	8.6
	25 [37.8]	Total BTUH [kW]	62.9 [18.43]	61.5 [18.02]	60.9 [17.85]	59.4 [17.41]	58.1 [17.03]	57.6 [16.88]	56.0 [16.41]	54.8 [16.06]	54.3 [15.91]
		Power	7.8	8.1	8.2	7.8	8.1	8.2	7.8	8.1	8.2
	30 [-1.1]	Total BTUH [kW]	68.7 [20.13]	67.2 [19.69]	66.6 [19.52]	65.3 [19.14]	63.9 [18.73]	63.3 [18.55]	61.8 [18.11]	60.5 [17.73]	60.0 [17.58]
		Power	7.4	7.7	7.8	7.4	7.7	7.8	7.4	7.7	7.8
	35 [43.3]	Total BTUH [kW]	74.6 [21.86]	73.0 [21.39]	72.3 [21.19]	71.1 [20.84]	69.6 [20.40]	69.0 [20.22]	67.7 [19.84]	66.2 [19.40]	65.6 [19.23]
		Power	7.0	7.3	7.4	7.0	7.3	7.4	7.0	7.3	7.4
	40 [4.4]	Total BTUH [kW]	80.4 [23.56]	78.7 [23.06]	78.0 [22.86]	77.0 [22.57]	75.3 [22.07]	74.7 [21.89]	73.6 [21.57]	72.0 [21.10]	71.3 [20.90]
		Power	6.7	7.0	7.1	6.7	7.0	7.1	6.7	7.0	7.1
	45 [46.1]	Total BTUH [kW]	86.3 [25.29]	84.4 [24.74]	83.7 [24.53]	82.9 [24.30]	81.1 [23.77]	80.3 [23.53]	79.4 [23.27]	77.7 [22.77]	77.0 [22.57]
		Power	6.3	6.6	6.7	6.3	6.6	6.7	6.3	6.6	6.7
	50 [10]	Total BTUH [kW]	92.2 [27.02]	90.2 [26.44]	89.4 [26.20]	88.7 [26.00]	86.8 [25.44]	86.0 [25.20]	85.3 [25.00]	83.4 [24.44]	82.7 [24.24]
		Power	6.0	6.2	6.3	6.0	6.2	6.3	6.0	6.2	6.3

IDB—Indoor air dry bulb

[ ] Designates Metric Conversions

COOLING PERFORMANCE DATA—C120

ENTERING INDOOR AIR @ 80°F [26.7°C] dbE ①										
wbE			71°F [21.7°C]			67°F [19.4°C]			63°F [17.2°C]		
CFM [L/s]			4560 [2152]	4000 [1888]	3040 [1435]	4560 [2152]	4000 [1888]	3040 [1435]	4560 [2152]	4000 [1888]	3040 [1435]
DR ①			.03	.05	.01	.03	.05	.01	.03	.05	.01
OUTDOOR DRY BULB TEMPERATURE °F [°C]	75 [23.9]	Total BTUH [kW]	151.2 [44.3]	147.4 [43.2]	141.0 [41.3]	141.4 [41.4]	137.9 [40.4]	131.8 [38.6]	135.2 [39.6]	131.8 [38.6]	126.1 [37.0]
		Sens BTUH [kW]	115.7 [33.9]	104.8 [30.7]	87.4 [25.6]	132.2 [38.8]	120.6 [35.4]	101.7 [29.8]	135.2 [39.6]	131.8 [38.6]	113.0 [33.1]
		Power	8.0	7.9	7.8	8.0	7.9	7.7	7.9	7.8	7.6
	80 [26.7]	Total BTUH [kW]	148.0 [43.4]	144.4 [42.3]	138.1 [40.5]	138.2 [40.5]	134.8 [39.5]	128.9 [37.8]	132.0 [38.7]	128.7 [37.7]	123.1 [36.1]
		Sens BTUH [kW]	107.4 [31.5]	97.2 [28.5]	80.7 [23.7]	124.0 [36.4]	113.0 [33.1]	95.1 [27.9]	132.0 [38.7]	125.3 [36.7]	106.3 [31.2]
		Power	8.4	8.3	8.1	8.3	8.2	8.0	8.2	8.1	8.0
	85 [29.4]	Total BTUH [kW]	144.8 [42.4]	141.2 [41.4]	135.0 [39.6]	134.9 [39.5]	131.6 [38.6]	125.8 [36.9]	128.7 [37.7]	125.5 [36.8]	120.1 [35.2]
		Sens BTUH [kW]	100.5 [29.5]	90.7 [26.6]	75.0 [22.0]	116.9 [34.3]	106.4 [31.2]	89.3 [26.2]	128.7 [37.7]	118.7 [34.8]	100.6 [29.5]
		Power	8.8	8.7	8.5	8.7	8.6	8.4	8.6	8.5	8.3
	90 [32.2]	Total BTUH [kW]	141.4 [41.4]	137.9 [40.4]	131.9 [38.7]	131.6 [38.6]	128.3 [37.6]	122.7 [36.0]	125.4 [36.8]	122.3 [35.8]	116.9 [34.3]
		Sens BTUH [kW]	94.5 [27.7]	85.2 [25.0]	70.3 [20.6]	111.0 [32.5]	100.9 [29.6]	84.6 [24.8]	124.1 [36.4]	113.4 [33.2]	95.9 [28.1]
		Power	9.2	9.1	8.9	9.1	9.0	8.8	9.0	8.9	8.7
	95 [35]	Total BTUH [kW]	138.0 [40.4]	134.6 [39.4]	128.7 [37.7]	128.2 [37.6]	125.0 [36.6]	119.5 [35.0]	122.0 [35.8]	118.9 [34.8]	113.7 [33.3]
		Sens BTUH [kW]	89.8 [26.3]	80.9 [23.7]	66.6 [19.5]	106.3 [31.2]	96.6 [28.3]	80.9 [23.7]	119.3 [35.0]	108.9 [31.9]	92.1 [27.0]
		Power	9.7	9.5	9.3	9.6	9.4	9.2	9.5	9.4	9.2
	100 [37.8]	Total BTUH [kW]	134.5 [39.4]	131.2 [38.5]	125.4 [36.8]	124.7 [36.5]	121.6 [35.6]	116.3 [34.1]	118.5 [34.7]	115.5 [33.8]	110.5 [32.4]
		Sens BTUH [kW]	86.3 [25.3]	77.7 [22.8]	63.8 [18.7]	102.8 [30.1]	93.4 [27.4]	78.2 [22.9]	115.8 [33.9]	105.7 [31.0]	89.4 [26.2]
		Power	10.1	10.0	9.8	10.0	9.9	9.7	9.9	9.8	9.6
	105 [40.6]	Total BTUH [kW]	130.9 [38.4]	127.6 [37.4]	122.1 [35.8]	121.1 [35.5]	118.1 [34.6]	112.9 [33.1]	114.9 [33.7]	112.0 [32.8]	107.1 [31.4]
		Sens BTUH [kW]	83.8 [24.6]	75.4 [22.1]	62.1 [18.2]	100.4 [29.4]	91.2 [26.7]	76.4 [22.4]	113.5 [33.3]	103.6 [30.4]	87.6 [25.7]
		Power	10.6	10.5	10.3	10.5	10.4	10.2	10.4	10.3	10.1
	110 [43.3]	Total BTUH [kW]	127.2 [37.3]	124.1 [36.4]	118.6 [34.8]	117.4 [34.4]	114.5 [33.6]	109.5 [32.1]	111.2 [32.6]	108.4 [31.8]	103.7 [30.4]
		Sens BTUH [kW]	82.6 [24.2]	74.4 [21.8]	61.2 [17.9]	99.1 [29.1]	90.1 [26.4]	75.6 [22.2]	111.2 [32.6]	102.5 [30.0]	86.8 [25.4]
		Power	11.1	11.0	10.8	11.1	10.9	10.7	11.0	10.8	10.6
	115 [46.1]	Total BTUH [kW]	123.5 [36.2]	120.4 [35.3]	115.1 [33.7]	113.6 [33.3]	110.8 [32.5]	106.0 [31.1]	107.4 [31.5]	104.7 [30.7]	100.2 [29.4]
		Sens BTUH [kW]	82.6 [24.2]	74.4 [21.8]	61.4 [18.0]	99.0 [29.0]	90.1 [26.4]	75.7 [22.2]	107.4 [31.5]	102.5 [30.0]	87.0 [25.5]
		Power	11.7	11.6	11.3	11.6	11.5	11.2	11.5	11.4	11.1

DR —Depression ratio
dbE —Entering air dry bulb
wbE—Entering air wet bulb

Total —Total capacity x 1000 BTUH
Sens —Sensible capacity x 1000 BTUH
Power —KW input

NOTES:
① When the entering air dry bulb is other than 80°F [27°C], adjust the sensible capacity from the table by adding [1.10 x CFM x (1 – DR) x (dbE – 80)].

HEATING PERFORMANCE DATA—C120

IDB			60°F [15.5°C]			70°F [21.1°C]			80°F [26.7°C]		
CFM [L/s]			4560 [2152]	4000 [1888]	3040 [1435]	4560 [2152]	4000 [1888]	3040 [1435]	4560 [2152]	4000 [1888]	3040 [1435]
OUTDOOR DRY BULB TEMPERATURE °F [°C]	0 [-17.8]	Total BTUH [kW]	45.2 [13.25]	44.7 [13.10]	43.9 [12.87]	41.7 [12.22]	41.3 [12.10]	40.6 [11.90]	38.3 [11.22]	37.9 [11.11]	37.3 [10.93]
		Power	11.3	11.5	11.8	11.3	11.5	11.8	11.3	11.5	11.8
	5 [26.7]	Total BTUH [kW]	51.9 [15.21]	51.4 [15.06]	50.5 [14.80]	48.5 [14.21]	48.0 [14.07]	47.2 [13.83]	45.0 [13.19]	44.6 [13.07]	43.8 [12.84]
		Power	10.9	11.1	11.4	10.9	11.1	11.4	10.9	11.1	11.4
	10 [-12.2]	Total BTUH [kW]	58.6 [17.17]	58.0 [17.00]	57.1 [16.73]	55.2 [16.18]	54.7 [16.03]	53.7 [15.74]	51.8 [15.18]	51.3 [15.03]	50.4 [14.77]
		Power	10.5	10.7	11.0	10.5	10.7	11.0	10.5	10.7	11.0
	15 [32.2]	Total BTUH [kW]	65.4 [19.17]	64.7 [18.96]	63.6 [18.64]	61.9 [18.14]	61.3 [17.97]	60.3 [17.67]	58.5 [17.14]	57.9 [16.97]	56.9 [16.68]
		Power	10.2	10.3	10.7	10.2	10.3	10.7	10.2	10.3	10.7
	20 [-6.6]	Total BTUH [kW]	72.1 [21.13]	71.4 [20.93]	70.2 [20.57]	68.7 [20.13]	68.0 [19.93]	66.8 [19.58]	65.2 [19.11]	64.6 [18.93]	63.5 [18.61]
		Power	9.8	10.0	10.3	9.8	10.0	10.3	9.8	10.0	10.3
	25 [37.8]	Total BTUH [kW]	78.8 [23.09]	78.1 [22.89]	76.7 [22.48]	75.4 [22.10]	74.7 [21.89]	73.4 [21.51]	72.0 [21.10]	71.3 [20.90]	70.0 [20.51]
		Power	9.4	9.6	9.9	9.4	9.6	9.9	9.4	9.6	9.9
	30 [-1.1]	Total BTUH [kW]	85.6 [25.09]	84.7 [24.82]	83.3 [24.41]	82.2 [24.09]	81.3 [23.83]	79.9 [23.42]	78.7 [23.06]	77.9 [22.83]	76.6 [22.45]
		Power	9.1	9.2	9.5	9.1	9.2	9.5	9.1	9.2	9.5
	35 [43.3]	Total BTUH [kW]	92.3 [27.05]	91.4 [26.79]	89.8 [26.32]	88.9 [26.05]	88.0 [25.79]	86.5 [25.35]	85.5 [25.06]	84.6 [24.79]	83.2 [24.38]
		Power	8.7	8.8	9.1	8.7	8.8	9.1	8.7	8.8	9.1
	40 [4.4]	Total BTUH [kW]	99.1 [29.04]	98.1 [28.75]	96.4 [28.25]	95.6 [28.02]	94.7 [27.75]	93.1 [27.28]	92.2 [27.02]	91.3 [26.76]	89.7 [26.29]
		Power	8.3	8.5	8.7	8.3	8.5	8.7	8.3	8.5	8.7
	45 [46.1]	Total BTUH [kW]	105.8 [31.01]	104.7 [30.68]	103.0 [30.19]	102.4 [30.01]	101.3 [29.69]	99.6 [29.19]	98.9 [28.98]	98.0 [28.72]	96.3 [28.22]
		Power	7.9	8.1	8.3	7.9	8.1	8.3	7.9	8.1	8.3
	50 [10]	Total BTUH [kW]	112.5 [32.97]	111.4 [32.65]	109.5 [32.09]	109.1 [31.97]	108.0 [31.65]	106.2 [31.12]	105.7 [30.98]	104.6 [30.66]	102.8 [30.13]
		Power	7.6	7.7	7.9	7.6	7.7	7.9	7.6	7.7	7.9

IDB—Indoor air dry bulb

[ ] Designates Metric Conversions

AIRFLOW PERFORMANCE—7.5 TON [26.4 kW]

Air Flow CFM [L/s]	Model RJNL-B090, C090																																			
	Voltage 208/230, 460, 575—3 Phase																																			
	External Static Pressure—Inches of Water [kPa]																																			
	0.1 [.02]		0.2 [.05]		0.3 [.07]		0.4 [.10]		0.5 [.12]		0.6 [.15]		0.7 [.17]		0.8 [.20]		0.9 [.22]		1.0 [.25]		1.1 [.27]		1.2 [.30]		1.3 [.32]		1.4 [.35]		1.5 [.37]		1.6 [.40]		1.7 [.42]		1.8 [.45]		1.9 [.47]		2.0 [.50]	
	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W
2400 [1133]	—	—	550	810	582	845	614	883	645	924	677	968	708	1015	740	1066	771	1119	802	1175	833	1234	864	1296	895	1361	924	1435	955	1508	985	1584	1016	1663	1046	1744	1077	1829	1107	1916
2500 [1180]	—	—	559	839	590	876	622	916	653	959	684	1004	715	1053	745	1105	776	1160	807	1218	837	1279	867	1343	897	1410	927	1490	957	1564	987	1641	1017	1721	1047	1804	1077	1890	1107	1979
2600 [1227]	—	—	569	872	600	910	630	952	661	997	691	1044	722	1095	752	1149	782	1205	812	1265	842	1328	871	1394	901	1462	931	1546	961	1622	990	1701	1019	1782	1049	1866	1078	1954	1107	2044
2700 [1274]	549	870	579	908	610	948	640	992	670	1038	699	1088	729	1140	759	1196	788	1255	818	1316	847	1381	876	1448	905	1519	935	1606	964	1683	993	1763	1022	1846	1050	1931	1079	2020	1107	2111
2800 [1321]	561	909	591	948	620	990	650	1036	679	1084	708	1135	737	1190	766	1247	795	1308	824	1371	853	1437	881	1507	910	1579	940	1667	968	1746	996	1827	1025	1911	1052	1998	1080	2088	1108	2181
2900 [1368]	573	951	602	992	631	1036	660	1083	689	1134	718	1187	746	1243	775	1302	803	1365	831	1430	860	1498	888	1569	915	1644	945	1732	973	1811	1000	1894	1028	1980	1055	2068	1082	2159	1109	2253
3000 [1416]	586	997	615	1040	643	1086	672	1135	700	1187	728	1242	756	1300	784	1361	812	1425	839	1492	867	1563	894	1636	923	1720	950	1798	977	1879	1004	1963	1031	2050	1058	2140	1084	2233	1111	2328
3100 [1463]	600	1047	628	1092	656	1140	684	1190	711	1244	739	1301	766	1361	794	1424	821	1490	848	1559	875	1631	902	1706	929	1787	956	1867	982	1950	1009	2035	1035	2123	1061	2215	1087	2309	1113	2405
3200 [1510]	615	1101	642	1147	669	1197	697	1250	724	1305	751	1364	777	1426	804	1491	831	1558	857	1629	884	1703	910	1780	936	1857	962	1939	988	2022	1013	2109	1039	2199	1064	2291	1090	2387	1115	2485
3300 [1557]	630	1158	657	1207	683	1258	710	1313	736	1370	763	1431	789	1495	815	1561	841	1631	867	1703	893	1779	919	1858	943	1930	968	2012	993	2098	1018	2186	1043	2277	1068	2371	1093	2468	1117	2567
3400 [1604]	646	1220	672	1270	698	1324	724	1380	750	1439	776	1502	801	1567	827	1636	852	1707	878	1781	903	1859	925	1924	950	2005	975	2089	999	2175	1024	2265	1048	2357	1072	2453	1096	2551	1120	2652
3500 [1652]	662	1285	688	1337	713	1393	739	1451	764	1512	789	1576	814	1644	839	1714	864	1787	889	1863	914	1943	933	2000	958	2082	982	2167	1006	2255	1029	2346	1053	2440	1077	2537	1100	2636	1124	2739
3600 [1699]	679	1355	704	1409	729	1466	754	1526	779	1589	804	1655	828	1724	853	1796	877	1871	901	1949	918	1998	942	2078	966	2162	989	2249	1012	2338	1035	2430	1058	2525	1081	2623	1104	2724	1127	2828

NOTE: L-Drive left section, M-Drive center section, N-Drive right section.

Drive Package	L						M						N					
Motor H.P. [W]	2.0 [1491.4]						3.0 [2237.1]						3.0 [2237.1]					
Blower Sheave	BK110H						BK90H						BK65H					
Motor Sheave	1VP-44						1VP-44						1VP-44					
Turns Open	1	2	**3**	4	5	6	1	2	**3**	4	5	6	1	2	3	4	**5**	6
RPM	708	676	**646**	612	580	548	868	830	**794**	752	713	673	1192	1134	1085	1031	**979**	919

NOTES: 1. Factory sheave settings are shown in bold type.
2. Do not set motor sheave below minimum or maximum turns open shown.
3. Re-adjustment of sheave required to achieve rated airflow at AHRI minimum External Static Pressure
4. Drive data shown is for horizontal airflow with dry coil. Add component resistance (below) to duct resistance to determine total External Static Pressure.

AIRFLOW CORRECTION FACTORS

ACTUAL—CFM [L/s]	2400 [1133]	2600 [1227]	2800 [1321]	3000 [1416]	3200 [1510]	3400 [1604]	3600 [1699]
TOTAL MBH	0.97	0.98	0.99	1.00	1.02	1.03	1.04
SENSIBLE MBH	0.87	0.92	0.97	1.02	1.07	1.12	1.17
POWER kW	0.98	0.99	0.99	1.00	1.01	1.01	1.02

NOTES: 1. Multiply correction factor times gross performance data.
2. Resulting sensible capacity cannot exceed total capacity.

[ ] Designates Metric Conversions

COMPONENT AIRFLOW RESISTANCE

Component	Standard Indoor Airflow—CFM [L/s]						
	2400 [1133]	2600 [1227]	2800 [1321]	3000 [1416]	3200 [1510]	3400 [1604]	3600 [1699]
	Resistance—Inches of Water [kPa]						
Wet Coil	0.047 [.012]	0.051 [.013]	0.055 [.014]	0.06 [.015]	0.065 [.016]	0.071 [.018]	0.076 [.019]
Downflow Economizer RA Damper 100% Open	0.05 [.012]	0.06 [.015]	0.07 [.017]	0.08 [.020]	0.09 [.022]	0.10 [.025]	0.11 [.027]
Horizontal Economizer RA Damper 100% Open	0.03 [.007]	0.04 [.009]	0.04 [.010]	0.05 [.011]	0.05 [.012]	0.06 [.014]	0.06 [.015]
Horizontal Economizer OA Damper 100% Open	0.08 [0.020]	0.08 [0.020]	0.08 [0.020]	0.10 [0.024]	0.11 [0.027]	0.12 [0.030]	0.13 [0.032]
Concentric Grill RXRN-FA65 or RXRN-FA75 with Transition RXMC-CD04	DNA	0.17 [0.042]	0.20 [0.050]	0.25 [0.062]	0.31 [0.077]	0.37 [0.092]	DNA
Concentric Grill RXRN-AA61 or RXRN-AA71 with Transition RXMC-CE05	DNA	DNA	DNA	DNA	DNA	DNA	0.17 [0.042]

NOTE: Add component resistance to duct resistance to determine external static pressure. DNA = Data not available.

AIRFLOW PERFORMANCE—10 TON [35.2 kW]

Air Flow CFM [L/s]	Model RJNL-B120 , C120																																			
	Voltage 208/230, 460, 575—3 Phase																																			
	External Static Pressure—Inches of Water [kPa]																																			
	0.1 [.02]		0.2 [.05]		0.3 [.07]		0.4 [.10]		0.5 [.12]		0.6 [.15]		0.7 [.17]		0.8 [.20]		0.9 [.22]		1.0 [.25]		1.1 [.27]		1.2 [.30]		1.3 [.32]		1.4 [.35]		1.5 [.37]		1.6 [.40]		1.7 [.42]		1.8 [.45]		1.9 [.47]		2.0 [.50]	
	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W
3200 [1510]	—	—	—	—	—	—	679	1177	707	1235	736	1294	764	1354	791	1414	818	1476	844	1538	870	1601	896	1666	921	1731	946	1797	970	1864	994	1931	1017	2000	1040	2069	1063	2140	1085	2211
3300 [1557]	—	—	—	—	662	1171	691	1230	719	1291	747	1352	775	1415	802	1478	828	1542	854	1607	880	1673	905	1740	930	1807	955	1876	979	1945	1002	2016	1025	2087	1048	2159	1070	2232	1091	2306
3400 [1604]	—	—	—	—	674	1226	703	1288	731	1352	758	1416	786	1481	812	1546	839	1613	865	1681	890	1749	915	1819	940	1889	964	1960	987	2032	1010	2105	1033	2179	1055	2254	1077	2329	1098	2406
3500[1652]	—	—	—	—	687	1287	715	1351	743	1417	770	1484	797	1551	823	1620	849	1689	875	1759	900	1830	925	1902	949	1975	973	2049	996	2124	1019	2199	1041	2276	1063	2353	1084	2431	1106	2510
3600 [1699]	—	—	671	1285	699	1352	727	1419	755	1488	782	1557	808	1627	834	1698	860	1770	885	1843	910	1916	934	1991	958	2066	982	2143	1005	2220	1027	2298	1049	2377	1071	2457	1092	2538	1113	2620
3700 [1746]	—	—	684	1353	712	1422	740	1492	767	1563	793	1635	820	1707	846	1781	871	1855	896	1931	920	2007	944	2084	968	2162	991	2241	1014	2321	1036	2402	1057	2484	1079	2566	1100	2650	1120	2734
3800 [1793]	669	1354	697	1425	725	1496	752	1569	779	1643	805	1717	831	1792	857	1869	882	1946	906	2024	931	2103	954	2183	977	2263	1000	2345	1023	2427	1044	2511	1066	2595	1087	2680	1107	2766	1127	2853
3900 [1840]	682	1428	710	1502	738	1576	765	1651	791	1728	817	1805	843	1883	868	1961	893	2041	917	2122	941	2203	964	2286	987	2369	1010	2453	1032	2538	1053	2624	1074	2711	1095	2799	1115	2887	—	—
4000 [1888]	696	1507	724	1584	751	1661	777	1738	804	1817	829	1897	855	1977	880	2059	904	2141	928	2224	951	2308	974	2393	997	2479	1019	2566	1041	2654	1062	2742	1083	2832	1103	2922	1123	3013	—	—
4100 [1935]	710	1592	737	1670	764	1750	790	1830	816	1912	842	1994	867	2077	891	2161	915	2246	939	2332	962	2418	985	2506	1007	2595	1029	2684	1050	2774	1071	2865	1092	2957	1112	3050	1131	3144	—	—
4200 [1982]	724	1680	751	1762	777	1844	803	1927	829	2011	854	2096	879	2181	903	2268	927	2356	950	2444	973	2533	995	2624	1017	2715	1039	2807	1060	2900	1080	2993	1100	3088	1120	3184	—	—	—	—
4300 [2029]	738	1774	764	1858	791	1943	816	2028	842	2115	866	2202	891	2291	915	2380	938	2470	961	2561	984	2653	1006	2746	1027	2840	1048	2934	1069	3030	1089	3126	1109	3223	1129	3321	—	—	—	—
4400 [2076]	752	1873	778	1959	804	2046	829	2135	854	2224	879	2314	903	2405	926	2497	950	2589	972	2683	995	2778	1016	2873	1038	2969	1058	3066	1079	3165	1099	3264	1118	3363	—	—	—	—	—	—
4500 [2123]	766	1976	792	2065	818	2155	843	2246	867	2338	892	2430	915	2524	939	2618	961	2714	984	2810	1006	2907	1027	3005	1048	3104	1069	3204	1089	3304	1108	3406	1127	3508	—	—	—	—	—	—
4600 [2171]	781	2084	806	2176	831	2268	856	2362	880	2456	904	2551	928	2648	951	2745	973	2842	995	2941	1017	3041	1038	3142	1059	3243	1079	3346	1099	3449	1118	3553	—	—	—	—	—	—	—	—
4700 [2218]	795	2197	820	2291	845	2386	870	2483	894	2579	917	2677	940	2776	963	2876	985	2976	1007	3078	1028	3180	1049	3283	1069	3387	1089	3492	1109	3598	1128	3705	—	—	—	—	—	—	—	—
4800 [2265]	810	2315	835	2412	859	2509	883	2608	907	2708	930	2808	953	2909	975	3012	997	3115	1018	3219	1039	3324	1060	3430	1080	3536	1099	3644	1119	3752	—	—	—	—	—	—	—	—	—	—

NOTE: L-Drive left of bold line, M-Drive right of bold line.

Drive Package	L						M					
Motor H.P. [W]	2.0 [1491.4]						3.0 [2237.1]					
Blower Sheave	BK90H						BK65H					
Motor Sheave	1VP-44						1VP-44					
Turns Open	1	**2**	3	4	5	6	1	2	3	4	**5**	6
RPM	853	**816**	779	739	700	661	1179	1127	1074	1018	**968**	915

NOTES: 1. Factory sheave settings are shown in bold type.
2. Do not set motor sheave below minimum or maximum turns open shown.
3. Re-adjustment of sheave required to achieve rated airflow at AHRI minimum External Static Pressure
4. Drive data shown is for horizontal airflow with dry coil. Add component resistance (below) to duct resistance to determine total External Static Pressure.

AIRFLOW CORRECTION FACTORS—10 TON [35.2 kW]

ACTUAL—CFM [L/s]	3200 [1510]	3300 [1557]	3400 [1604]	3500 [1652]	3600 [1699]	3700 [1746]	3800 [1793]	3900 [1840]	4000 [1888]	4100 [1935]	4200 [1982]	4300 [2029]	4400 [2076]	4500 [2123]	4600 [2171]	4700 [2218]	4800 [2265]
TOTAL MBH	0.96	0.97	0.97	0.98	0.97	1.00	0.98	1.01	0.98	1.02	0.99	1.02	0.99	1.02	1.00	1.02	1.00
SENSIBLE MBH	0.87	1.00	0.92	1.01	0.97	1.01	1.02	1.02	1.06	1.02	1.06	1.03	1.06	1.03	1.06	1.04	1.06
POWER kW	0.87	0.98	0.88	0.99	0.90	1.00	0.92	1.00	0.93	1.01	0.95	1.01	0.97	1.01	0.99	1.01	1.00

NOTES: 1. Multiply correction factor times gross performance data.
2. Resulting sensible capacity cannot exceed total capacity.

[ ] Designates Metric Conversions

AIRFLOW RESISTANCE—10 TON [35.2 kW]

Component	Standard Indoor Airflow—CFM [L/s]																
	3200 [1510]	3300 [1557]	3400 [1604]	3500 [1652]	3600 [1699]	3700 [1746]	3800 [1793]	3900 [1840]	4000 [1888]	4100 [1935]	4200 [1982]	4300 [2029]	4400 [2076]	4500 [2123]	4600 [2171]	4700 [2218]	4800 [2265]
	Resistance—Inches of Water [kPa]																
Wet Coil	0.07 [.02]	0.07 [.02]	0.07 [.02]	0.07 [.02]	0.08 [.02]	0.08 [.02]	0.08 [.02]	0.09 [.02]	0.09 [.02]	0.09 [.02]	0.09 [.02]	0.10 [.02]	0.10 [.02]	0.10 [.03]	0.10 [.03]	0.11 [.03]	0.11 [.03]
Downflow Economizer RA Damper Open	0.09 [.02]	0.10 [.02]	0.10 [.02]	0.11 [.03]	0.11 [.03]	0.12 [.03]	0.12 [.03]	0.13 [.03]	0.13 [.03]	0.14 [.03]	0.14 [.03]	0.15 [.04]	0.15 [.04]	0.16 [.04]	0.16 [.04]	0.17 [.04]	0.17 [.04]
Horizontal Economizer RA Damper Open	0.05 [.01]	0.05 [.01]	0.06 [.01]	0.06 [.01]	0.06 [.02]	0.06 [.02]	0.07 [.02]	0.07 [.02]	0.07 [.02]	0.07 [.02]	0.08 [.02]	0.08 [.02]	0.08 [.02]	0.09 [.02]	0.09 [.02]	0.09 [.02]	0.10 [.02]
Horizontal Economizer OA Damper Open	0.11 [.03]	0.12 [.03]	0.12 [.03]	0.13 [.03]	0.13 [.03]	0.14 [.03]	0.14 [.04]	0.15 [.04]	0.15 [.04]	0.16 [.04]	0.16 [.04]	0.17 [.04]	0.17 [.04]	0.18 [.04]	0.19 [.05]	0.19 [.05]	0.20 [.05]
Concentric Grill RXRN-FA65 or RXRN-FA75 & Transition RXMC-CD04	0.31 [.08]	0.34 [.08]	0.37 [.09]	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
Concentric Grill RXRN-AA61 or RXRN-AA71 & Transition RXMC-CE05	DNA	DNA	DNA	DNA	0.17 [.04]	0.18 [.04]	0.18 [.04]	0.20 [.05]	0.21 [.05]	0.23 [.06]	0.24 [.06]	0.25 [.06]	0.27 [.07]	DNA	DNA	DNA	DNA
Concentric Grill RXRN-AA66 or RXRN-AA76 & Transition RXMC-CF06	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	0.31 [.08]	0.31 [.08]	0.32 [.08]

Note: Add component resistance to duct resistance to determine external static pressure.
DNA = Data not available.

208/240 VOLT, THREE PHASE, 60 HZ, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION												
Single Power Supply for Both Unit and Heater Kit								Separate Power Supply for Both Unit and Heater Kit				
Model No. RJNL-	Heater Kit					Heat Pump			Heater Kit		Heat Pump		
	RXJJ- Heater Kit Nominal kW	No. of Sequence Steps	Rated Heater kW @ 208/240V	Heater kBTU/Hr @ 208/240V	Heater Amps @ 208/240V	Unit Min. Ckt. Ampacity @ 208/240V	Over Current Protective Device Size		Min. Ckt. Ampacity 208/240V	Max. Fuse Size 208/240V	Min. Circuit Ampacity 208/240V	Over Current Protective Device Size	
							Min./Max. 208V	Min./Max. 240V				Min./Max. 208V	Min./Max. 240V
C090CL	No Heat	—	—	—	—	43/43	50/60	50/60	—	—	43/43	50/60	50/60
	CC15C	1	10.8/14.4	36.84/49.13	30.1/34.7	81/87	90/90	100/100	38/44	40/45	—	—	—
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	93/101	100/100	110/110	50/58	50/60	—	—	—
	CC30C	1	21.6/28.8	73.69/98.25	60.2/69.4	119/130	125/125	150/150	76/87	80/90	—	—	—
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	144/159	150/150	175/175	101/116	110/125	—	—	—
C090CM	No Heat	—	—	—	—	43/43	50/60	50/60	—	—	43/43	50/60	50/60
	CC15C	1	10.8/14.4	36.84/49.13	30.1/34.7	81/87	90/90	100/100	38/44	40/45	—	—	—
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	93/101	100/100	110/110	50/58	50/60	—	—	—
	CC30C	1	21.6/28.8	73.69/98.25	60.2/69.4	119/130	125/125	150/150	76/87	80/90	—	—	—
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	144/159	150/150	175/175	101/116	110/125	—	—	—
C090CN	No Heat	—	—	—	—	45/45	60/60	60/60	—	—	45/45	60/60	60/60
	CC15C	1	10.8/14.4	36.84/49.13	30.1/34.7	83/89	100/100	100/100	38/44	40/45	—	—	—
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	95/103	110/110	125/125	50/58	50/60	—	—	—
	CC30C	1	21.6/28.8	73.69/98.25	60.2/69.4	121/132	150/150	150/150	76/87	80/90	—	—	—
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	146/161	175/175	175/175	101/116	110/125	—	—	—
C120CL	No Heat	—	—	—	—	50/50	60/70	60/70	—	—	50/50	60/70	60/70
	CC15C	1	10.8/14.4	36.84/49.13	30.1/34.7	88/94	100/110	100/110	38/44	40/45	—	—	—
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	100/108	110/110	125/125	50/58	50/60	—	—	—
	CC30C	1	21.6/28.8	73.69/98.25	60.2/69.4	126/137	150/150	150/150	76/87	80/90	—	—	—
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	151/166	175/175	175/175	101/116	110/125	—	—	—
C120CM	No Heat	—	—	—	—	52/52	60/80	60/80	—	—	52/52	60/80	60/80
	CC15C	1	10.8/14.4	36.84/49.13	30.1/34.7	90/96	100/110	110/110	38/44	40/45	—	—	—
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	102/110	110/125	125/125	50/58	50/60	—	—	—
	CC30C	1	21.6/28.8	73.69/98.25	60.2/69.4	128/139	150/150	150/150	76/87	80/90	—	—	—
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	153/168	175/175	200/200	101/116	110/125	—	—	—

480 VOLT, THREE PHASE, 60 HZ, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION													
Single Power Supply for Both Unit and Heater Kit										Separate Power Supply for Both Unit and Heater Kit			
Model No. RJNL-	Heater Kit					Heat Pump			Heater Kit		Heat Pump		
	RXJJ- Heater Kit Nominal kW	No. of Sequence Steps	Rated Heater kW @ 480V	Heater kBTU/Hr @ 480V	Heater Amps @ 480V	Unit Min. Ckt. Ampacity @ 480V	Over Current Protective Device Size		Min. Ckt. Ampacity 480V	Max. Fuse Size 480V	Min. Circuit Ampacity 480V	Over Current Protective Device Size	
							Min./Max. 480V	Min./Max. 480V				Min./Max. 480V	Min./Max. 480V
C090DL	No Heat	—	—	—	—	21	25/30	—	—	—	21	25/30	—
	CC15D	1	14.4	49.13	17.4	43	50/50	—	22	25	—	—	—
	CC20D	1	19.2	65.5	23.1	50	60/60	—	29	30	—	—	—
	CC30D	1	28.8	98.25	34.7	65	70/70	—	44	45	—	—	—
	CC40D	1	38.4	131	46.2	79	90/90	—	58	60	—	—	—
C090DM	No Heat	—	—	—	—	21	25/30	—	—	—	21	25/30	—
	CC15D	1	14.4	49.13	17.4	43	50/50	—	22	25	—	—	—
	CC20D	1	19.2	65.5	23.1	50	60/60	—	29	30	—	—	—
	CC30D	1	28.8	98.25	34.7	65	70/70	—	44	45	—	—	—
	CC40D	1	38.4	131	46.2	79	90/90	—	58	60	—	—	—
C090DN	No Heat	—	—	—	—	22	25/30	—	—	—	22	25/30	—
	CC15D	1	14.4	49.13	17.4	44	50/50	—	22	25	—	—	—
	CC20D	1	19.2	65.5	23.1	51	60/60	—	29	30	—	—	—
	CC30D	1	28.8	98.25	34.7	66	80/80	—	44	45	—	—	—
	CC40D	1	38.4	131	46.2	80	90/90	—	58	60	—	—	—
C120DL	No Heat	—	—	—	—	28	35/40	—	—	—	28	35/40	—
	CC15D	1	14.4	49.13	17.4	50	60/60	—	22	25	—	—	—
	CC20D	1	19.2	65.5	23.1	57	60/60	—	29	30	—	—	—
	CC30D	1	28.8	98.25	34.7	72	80/80	—	44	45	—	—	—
	CC40D	1	38.4	131	46.2	86	90/90	—	58	60	—	—	—
C120DM	No Heat	—	—	—	—	29	35/45	—	—	—	29	35/45	—
	CC15D	1	14.4	49.13	17.4	51	60/60	—	22	25	—	—	—
	CC20D	1	19.2	65.5	23.1	58	70/70	—	29	30	—	—	—
	CC30D	1	28.8	98.25	34.7	73	80/80	—	44	45	—	—	—
	CC40D	1	38.4	131	46.2	87	100/100	—	58	60	—	—	—

600 VOLT, THREE PHASE, 60 HZ, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION

Single Power Supply for Both Unit and Heater Kit									Separate Power Supply for Both Unit and Heater Kit				
Model No. RJNL-	Heater Kit					Heat Pump			Heater Kit		Heat Pump		
	RXJJ- Heater Kit Nominal kW	No. of Sequence Steps	Rated Heater kW @ 600V	Heater kBTU/Hr @ 600V	Heater Amps @ 600V	Unit Min. Ckt. Ampacity @ 600V	Over Current Protective Device Size		Min. Ckt. Ampacity 600V	Max. Fuse Size 600V	Min. Circuit Ampacity 600V	Over Current Protective Device Size	
							Min./Max. 600V	Min./Max. 600V				Min./Max. 600V	Min./Max. 600V
C090YL	No Heat	—	—	—	—	16	20/20	—	—	—	16	20/20	—
	CC15Y	1	14.4	49.13	13.9	34	40/40	—	18	20	—	—	—
	CC20Y	1	19.2	65.5	18.5	40	45/45	—	24	25	—	—	—
	CC30Y	1	28.8	98.25	28.9	53	60/60	—	37	40	—	—	—
	CC40Y	1	38.4	131	38.5	65	70/70	—	49	50	—	—	—
C090YM	No Heat	—	—	—	—	16	20/20	—	—	—	16	20/20	—
	CC15Y	1	14.4	49.13	13.9	34	40/40	—	18	20	—	—	—
	CC20Y	1	19.2	65.5	18.5	40	45/45	—	24	25	—	—	—
	CC30Y	1	28.8	98.25	28.9	53	60/60	—	37	40	—	—	—
	CC40Y	1	38.4	131	38.5	65	70/70	—	49	50	—	—	—
C090YN	No Heat	—	—	—	—	17	20/25	—	—	—	17	20/25	—
	CC15Y	1	14.4	49.13	13.9	35	45/45	—	18	20	—	—	—
	CC20Y	1	19.2	65.5	18.5	41	50/50	—	24	25	—	—	—
	CC30Y	1	28.8	98.25	28.9	54	60/60	—	37	40	—	—	—
	CC40Y	1	38.4	131	38.5	66	80/80	—	49	50	—	—	—
C120YL	No Heat	—	—	—	—	20	25/30	—	—	—	20	25/30	—
	CC15Y	1	14.4	49.13	13.9	38	45/45	—	18	20	—	—	—
	CC20Y	1	19.2	65.5	18.5	44	50/50	—	24	25	—	—	—
	CC30Y	1	28.8	98.25	28.9	57	60/60	—	37	40	—	—	—
	CC40Y	1	38.4	131	38.5	69	80/80	—	49	50	—	—	—
C120YM	No Heat	—	—	—	—	21	25/30	—	—	—	21	25/30	—
	CC15Y	1	14.4	49.13	13.9	39	50/50	—	18	20	—	—	—
	CC20Y	1	19.2	65.5	18.5	45	60/60	—	24	25	—	—	—
	CC30Y	1	28.8	98.25	28.9	58	70/70	—	37	40	—	—	—
	CC40Y	1	38.4	131	38.5	70	80/80	—	49	50	—	—	—

ELECTRICAL DATA – RJNL-C SERIES

		C090CL	C090CM	C090CN	C090DL	C090DM	C090DN	C090YL	C090YM	C090YN
Unit Information	Unit Operating Voltage Range	187-253	187-253	187-253	414-506	414-506	414-506	517-632	517-632	517-632
	Volts	208/230	208/230	208/230	460	460	460	575	575	575
	Minimum Circuit Ampacity	43/43	43/43	45/45	21	21	22	16	16	17
	Minimum Overcurrent Protection Device Size	50/50	50/50	60/60	25	25	25	20	20	20
	Maximum Overcurrent Protection Device Size	60/60	60/60	60/60	30	30	30	20	20	25
Compressor Motor	No.	1	1	1	1	1	1	1	1	1
	Volts	200/230	200/230	200/230	460	460	460	575	575	575
	Phase	3	3	3	3	3	3	3	3	3
	RPM	3450	3450	3450	3450	3450	3450	3450	3450	3450
	HP, Compressor 1	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4
	Amps (RLA), Comp. 1	25/25	25/25	25/25	12.2	12.2	12.2	9	9	9
	Amps (LRA), Comp. 1	164/164	164/164	164/164	100	100	100	78	78	78
	HP, Compressor 2	—	—	—	—	—	—	—	—	—
	Amps (RLA), Comp. 2	—	—	—	—	—	—	—	—	—
	Amps (LRA), Comp. 2	—	—	—	—	—	—	—	—	—
Condenser Motor	No.	2	2	2	2	2	2	2	2	2
	Volts	208/230	208/230	208/230	460	460	460	575	575	575
	Phase	1	1	1	1	1	1	1	1	1
	HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3
	Amps (FLA, each)	2.4/2.4	2.4/2.4	2.4/2.4	1.4	1.4	1.4	1	1	1
	Amps (LRA, each)	3.9/3.9	3.9/3.9	3.9/3.9	1.8	1.8	1.8	1.5	1.5	1.5
Evaporator Fan	No.	1	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	460	460	460	575	575	575
	Phase	3	3	3	3	3	3	3	3	3
	HP	2	2	3	2	2	3	2	2	3
	Amps (FLA, each)	8/8	8/8	13/13	4	4	7	4	4	8
	Amps (LRA, each)	56/56	56/56	74.5/74.5	28	28	38.1	19	19	20

ELECTRICAL DATA – RJNL-C SERIES

		C120CL	C120CM	C120DL	C120DM	C120YL	C120YM
Unit Information	Unit Operating Voltage Range	187-253	187-253	414-506	414-506	517-632	517-632
	Volts	208/230	208/230	460	460	575	575
	Minimum Circuit Ampacity	50/50	52/52	28	29	20	21
	Minimum Overcurrent Protection Device Size	60/60	60/60	35	35	25	25
	Maximum Overcurrent Protection Device Size	70/70	80/80	40	45	30	30
Compressor Motor	No.	1	1	1	1	1	1
	Volts	200/230	200/230	460	460	575	575
	Phase	3	3	3	3	3	3
	RPM	3450	3450	3450	3450	3450	3450
	HP, Compressor 1	12 3/4		12 3/4	12 3/4	12 3/4	12 3/4
	Amps (RLA), Comp. 1	30.1/30.1	30.1/30.1	16.7	16.7	12.2	12.2
	Amps (LRA), Comp. 1	225/225	225/225	114	114	80	80
	HP, Compressor 2	—	—	—	—	—	—
	Amps (RLA), Comp. 2	—	—	—	—	—	—
	Amps (LRA), Comp. 2	—	—	—	—	—	—
Condenser Motor	No.	2	2	2	2	2	2
	Volts	208/230	208/230	460	460	460	460
	Phase	1	1	1	1	1	1
	HP	1/2	1/2	1/2	1/2	1/2	1/2
	Amps (FLA, each)	2.3/2.3	2.3/2.3	1.5	1.5	1	1
	Amps (LRA, each)	5.6/5.6	5.6/5.6	3.1	3.1	2.2	2.2
Evaporator Fan	No.	1	1	1	1	1	1
	Volts	208/230	208/230	460	460	575	575
	Phase	3	3	3	3	3	3
	HP	2	3	2	3	2	3
	Amps (FLA, each)	8/8	13/13	4	7	4	8
	Amps (LRA, each)	56/56	74.5/74.5	28	38.1	19	20

UNIT DIMENSIONS
PACKAGE
HEAT PUMPS

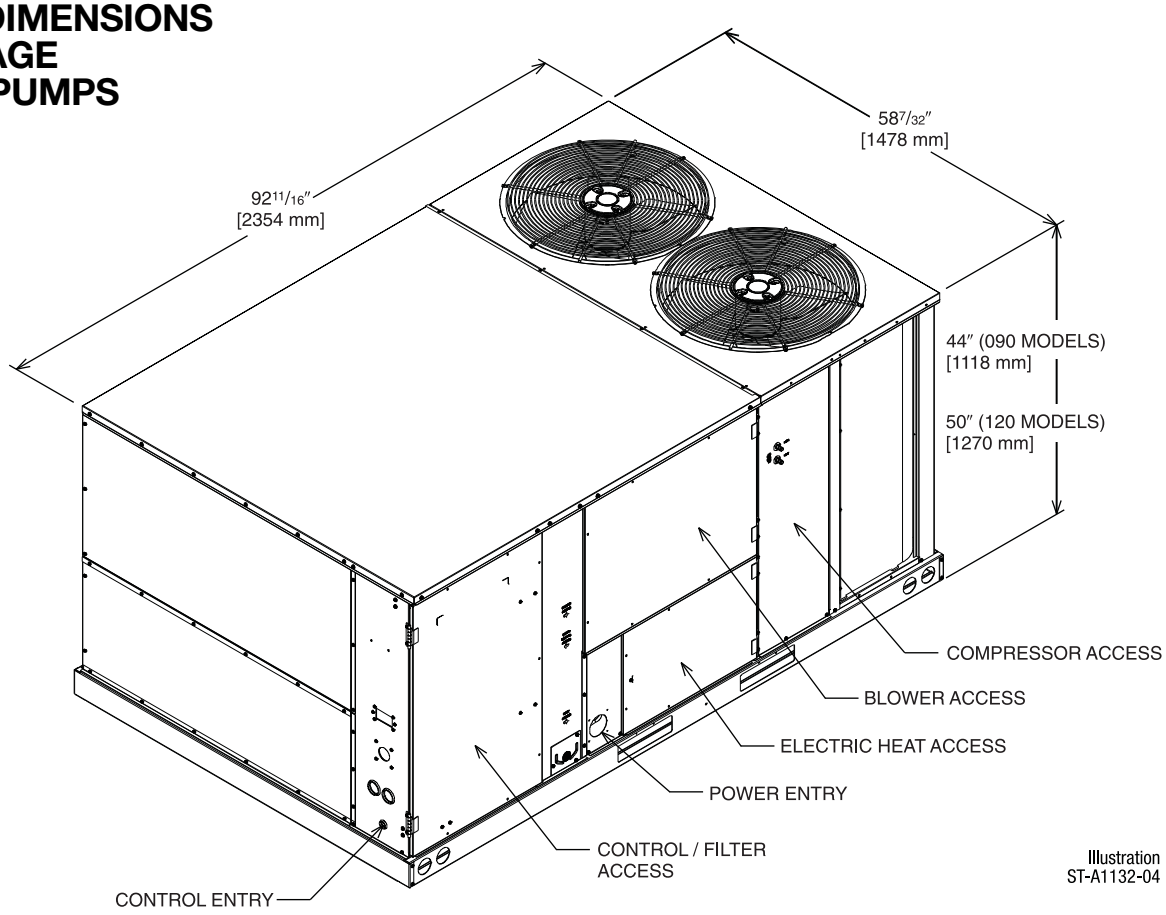


Illustration
ST-A1132-04

BOTTOM VIEW

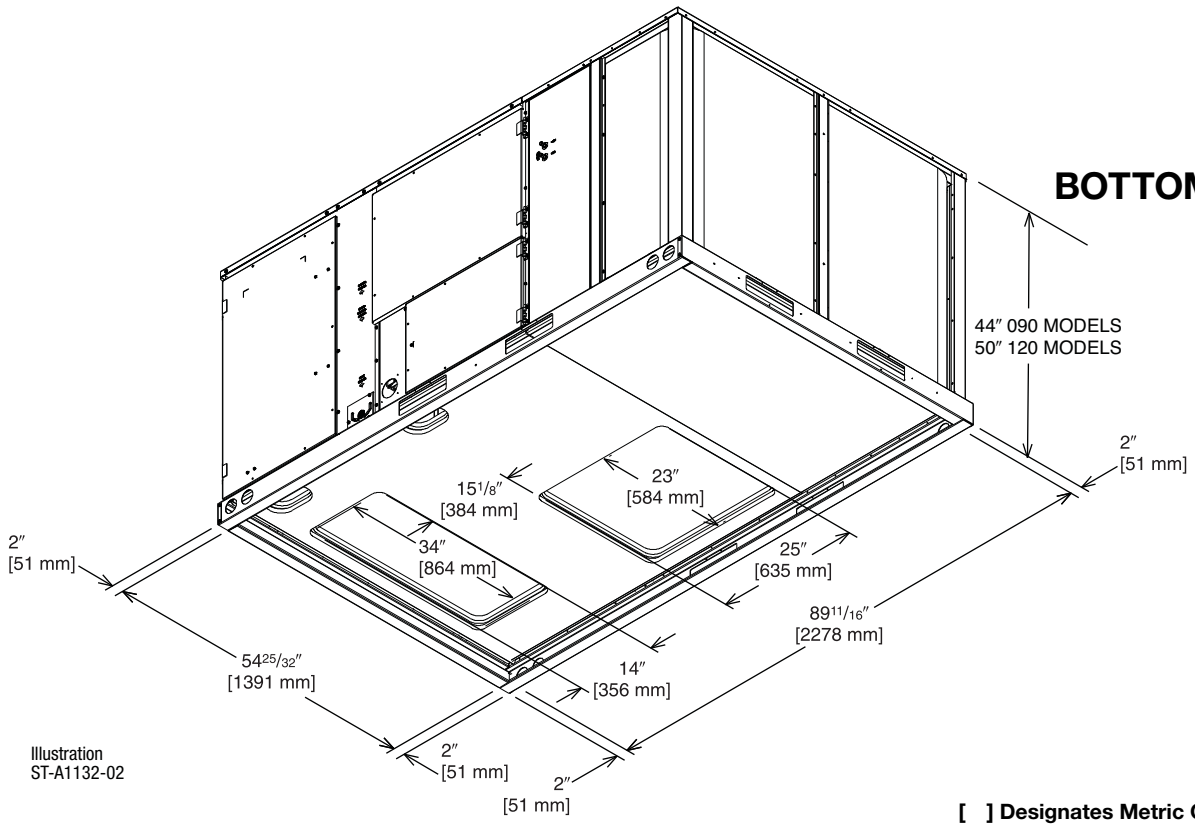


Illustration
ST-A1132-02

[ ] Designates Metric Conversions

UNIT DIMENSIONS
PACKAGE
HEAT PUMPS

SUPPLY AND RETURN DIMENSIONS FOR HORIZONTAL APPLICATION

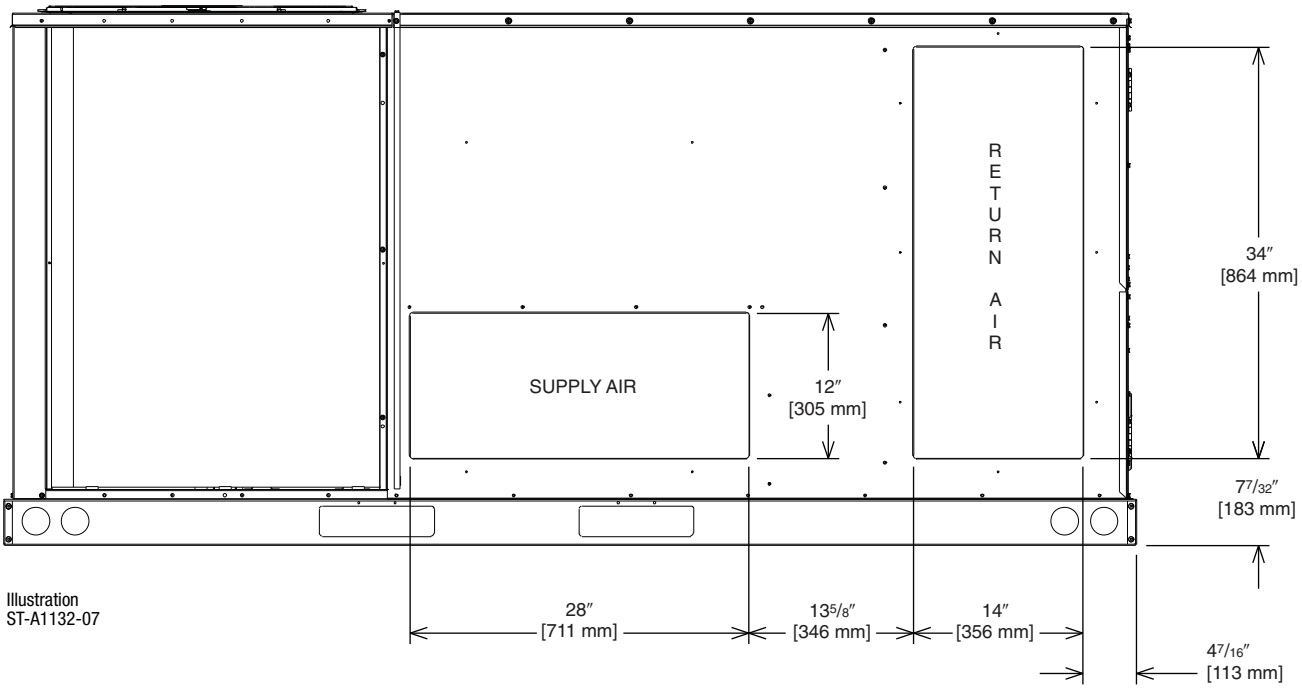


Illustration
ST-A1132-07

SUPPLY AND RETURN DIMENSIONS FOR DOWNFLOW APPLICATIONS

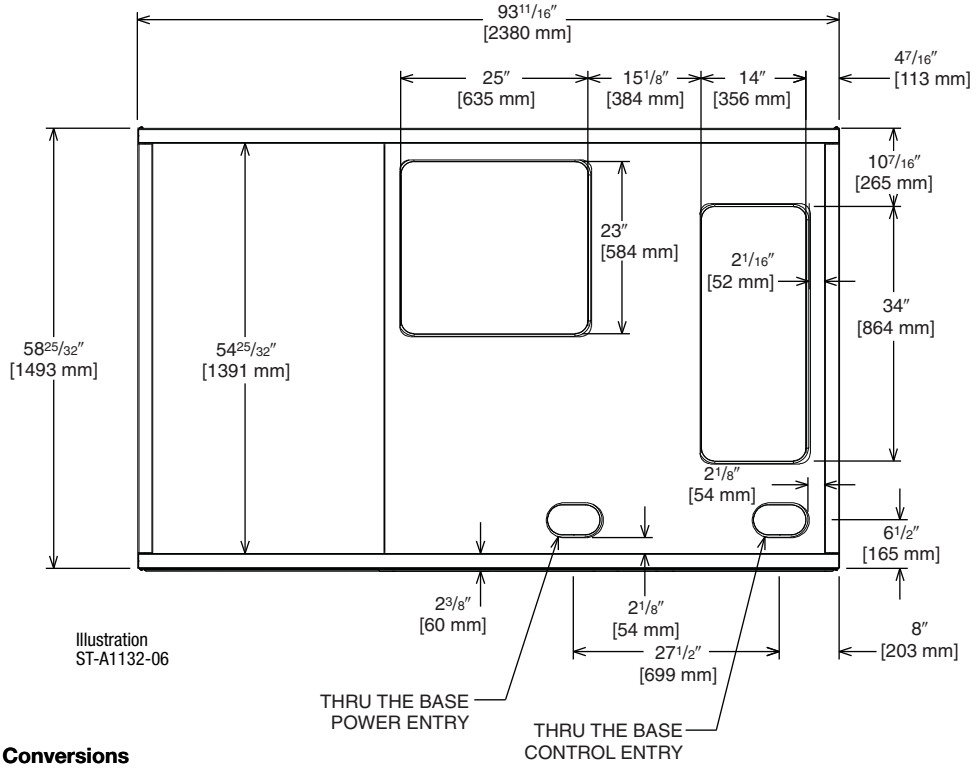
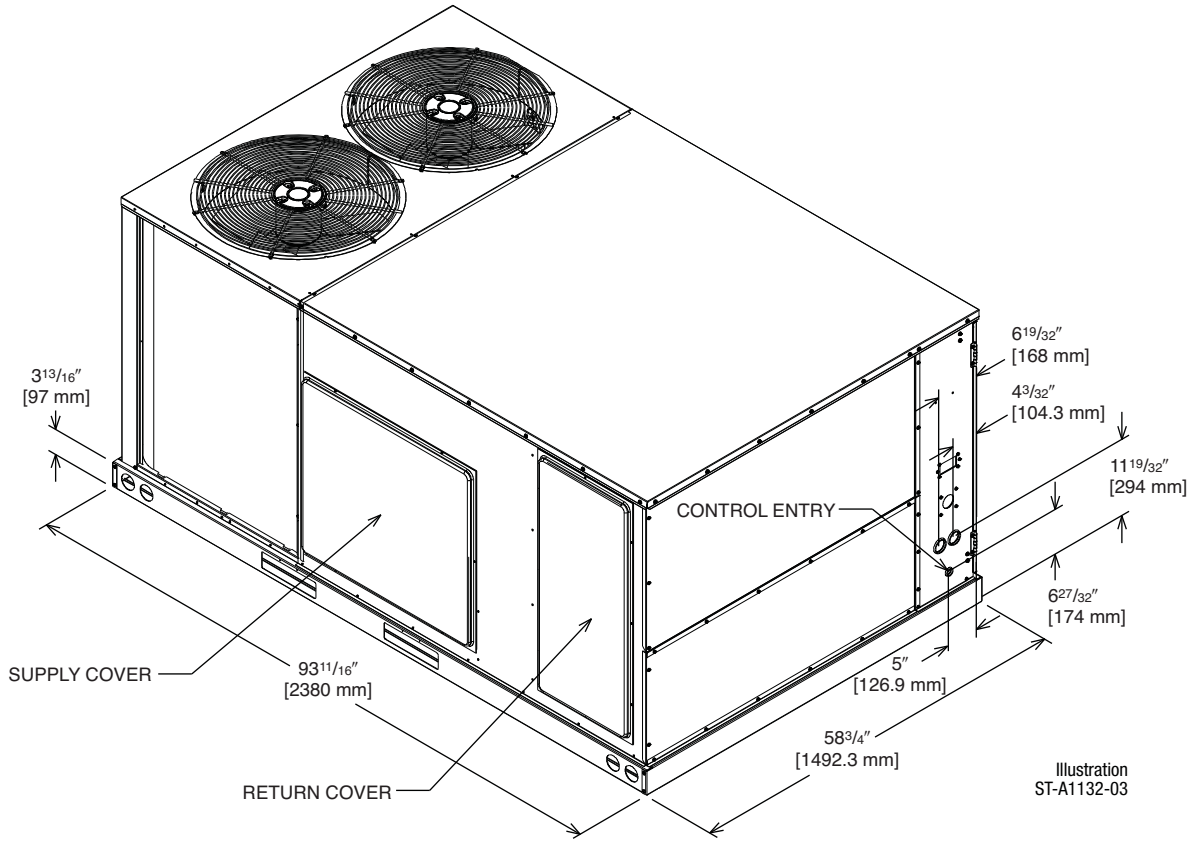


Illustration
ST-A1132-06

[ ] Designates Metric Conversions

UNIT DIMENSIONS
PACKAGE
HEAT PUMPS



[ ] Designates Metric Conversions

CORNER WEIGHTS

Capacity Tons [kW]	Corner Weights by Percentage			
	A	B	C	D
7.5-10 [26.4-35.2]	32%	26%	20%	22%

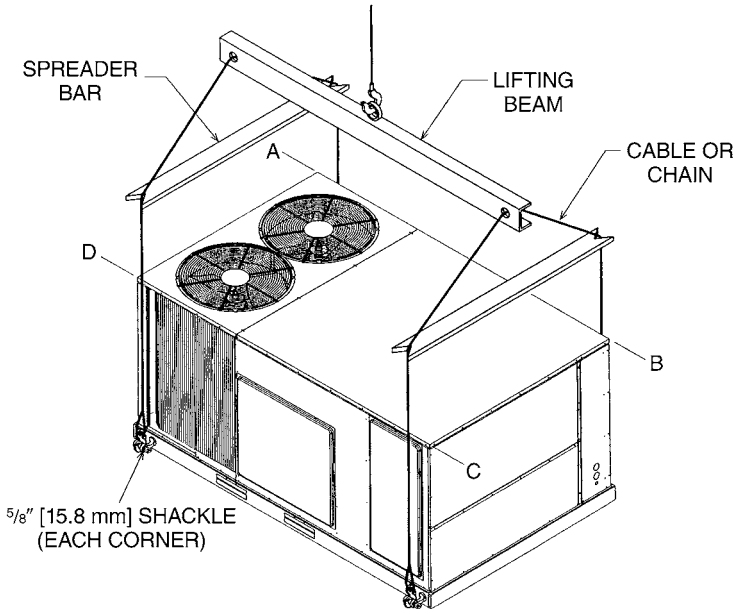


Illustration
ST-A0718-01

CLEARANCES

The following minimum clearances are recommended for proper unit performance and serviceability.

Recommended Clearance In. [mm]	Location
48 [1219]	A - Front
18 [457]	B - Condenser Coil
18 [457]	C - Duct Side
18 [457]	*D - Evaporator End
60 [1524]	E - Above
*Without Economizer. 48" [1219 mm] With Economizer	

[ ] Designates Metric Conversions

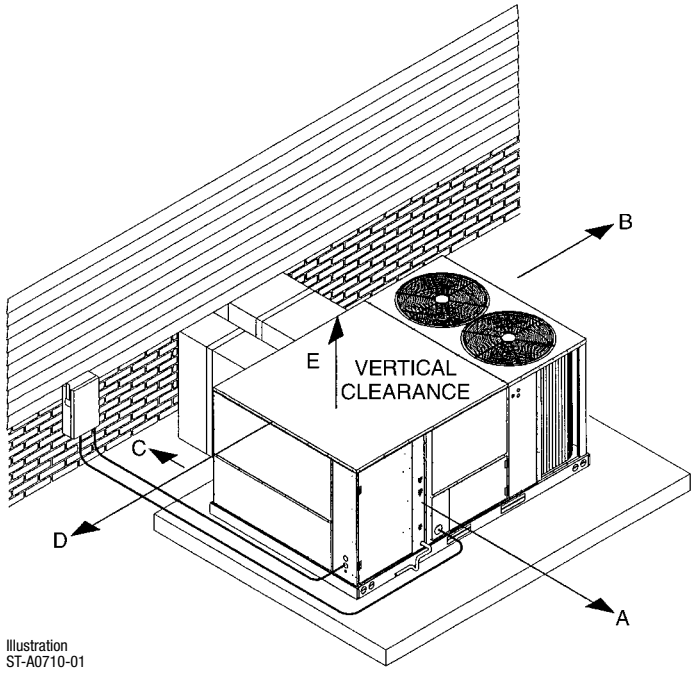


Illustration
ST-A0710-01

FIELD INSTALLED ACCESSORY EQUIPMENT

Accessory	Model Number	Shipping Weight Lbs. [kg]	Installed Weight Lbs. [kg]	Factory Installation Available?
Thermostats	See Thermostat Specification Sheet for Details (T22-001)			No
Electric Heaters	RXJJ-CC15 (C,D,Y)	46 [20.9]	36 [16.3]	Yes
	RXJJ-CC20 (C,D,Y)	46 [20.9]	36 [16.3]	Yes
	RXJJ-CC30 (C,D,Y)	47 [21.3]	37 [16.8]	Yes
	RXJJ-CC40 (C,D,Y)	49 [22.2]	39 [17.7]	Yes
Economizer w/Single Enthalpy	AXRD-PJCM3	90 [40.8]	81 [36.7]	Yes
Economizer w/Single Enthalpy and Smoke Detector	AXRD-SJCM3	91 [41.3]	82 [57.2]	Yes
Dual Enthalpy Kit	RXRX-AV03	3 [1.4]	1 [.5]	No
Horizontal Economizer w/Single Enthalpy	AXRD-RJCM3	94 [42.6]	89 [40.4]	No
Carbon Dioxide Sensor	RXRX-AR02	3 [1.4]	2 [1.0]	No
Power Exhaust	RXRX-BFF02 (C,D,Y)	43 [19.5]	38 [17.2]	No
Manual Fresh Air (Left Panel Mounted)	AXRF-KDA1	38 [17.2]	31 [14.0]	No
Manual Fresh Air (Return Panel)	AXRF-JDA1	26 [11.8]	21 [9.5]	No
Motorized Fresh Air (Return Panel)	AXRF-JDB1	43 [19.5]	38 [17.2]	No
Motor Kit for RXRF-KDA1	RXRX-AW02	35 [15.9]	27 [12.2]	No
Modulating Motor Kit w/Position Feedback for RXRF-KDA1	RXRX-AW04	38 [17.2]	30 [13.6]	No
Roofcurb, 14"	RXKG-CAE14	90 [40.8]	85 [38.5]	No
Roofcurb, 24"	RXKG-CAE24	140 [63.5]	135 [61.2]	No
Roofcurb Adapters	RXRX-CDCE50	300 [136.1]	290 [131.5]	No
	RXRX-CFCE54	325 [147.4]	315 [142.9]	No
	RXRX-CFCE56	350 [158.8]	340 [154.2]	No
	RXRX-CGCC12	450 [204.1]	410 [186.0]	No
Concentric Diffuser (Step-Down, 20" Round)	RXRN-FA65	139 [63.0]	60 [27.2]	No
Concentric Diffuser (Flush, 20" Round)	RXRN-FA75	54 [24.4]	42 [19.0]	No
Concentric Diffuser (Step-Down, 18 x 28)	RXRN-AA61	200 [90.7]	185 [83.9]	No
Concentric Diffuser (Step-Down, 18 x 32)	RXRN-AA66	247 [112.0]	227 [103.0]	No
Concentric Diffuser (Flush, 18 x 28)	RXRN-AA71	170 [77.1]	155 [70.3]	No
Concentric Diffuser (Flush, 18 x 32)	RXRN-AA76	176 [79.8]	161 [73.0]	No
Downflow Transition (Rect. to Round)	RXMC-CD04	15 [6.8]	13 [5.9]	No
Downflow Transition (Rect. to Rect., 18 x 28)	RXMC-CE05 ①	18 [8.2]	16 [7.3]	No
Downflow Transition (Rect. to Rect., 18 x 32)	RXMC-CF06 ②	20 [9.1]	18 [8.2]	No
Low-Ambient Control Kit	RXRZ-A03	3 [1.4]	2 [1.0]	Yes
Outdoor Coil Louver Kit (090)	AXRX-AAD01H	25 [11.3]	22 [10.0]	Yes
Outdoor Coil Louver Kit (120)	AXRX-AAD01J	29 [13.2]	26 [11.8]	Yes
Non-Powered Convenience Outlet	RXRX-AN01	2 [1.0]	1.5 [0.7]	Yes
Comfort Alert (1 per compressor)	RXRX-AZ01	3 [1.4]	2 [0.9]	Yes
BACnet Communication Card	RXRX-AY01	1 [0.5]	1 [0.5]	No
LonWorks Communication Card	RXRX-AY02	1 [0.5]	1 [0.5]	No

NOTES: ① Used with RXRN-AA61 and RXRN-AA71 concentric diffusers.
② Used with RXRN-AA66 and RXRN-AA76 concentric diffusers.

[ ] Designates Metric Conversions

THERMOSTATS

200-Series *
Programmable

300-Series *
Deluxe
Programmable

400-Series *
Special Applications/
Programmable

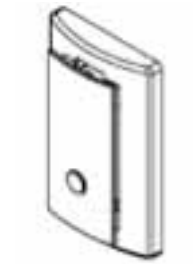
500-Series *
Communicating/
Programmable

Brand		Descripter (3 Characters)	Series (3 Characters)	System (2 Characters)	Type (2 Characters)
UHC	**-**	**TST**	**213**	**UN**	**MS**
UHC=Ruud		TST=Thermostat	200=Programmable 300=Deluxe Programmable 400=Special Applications/ Programmable 500=Communicating/ Programmable	GE=Gas/Electric UN=Universal (AC/HP/GE) MD=Modulating Furnace DF=Dual Fuel CM=Communicating	SS=Single-Stage MS=Multi-Stage

** Photos are representative. Actual models may vary.*

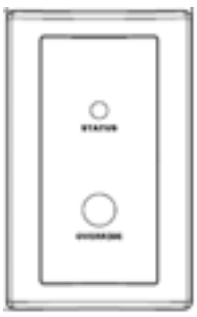
For detailed thermostat match-up information, see specification sheet form number T22-001.

FLUSH MOUNT ROOM TEMPERATURE SENSORS FOR NETWORKED DDC APPLICATIONS



ROOM TEMPERATURE SENSOR RHC-ZNS1
with TIMED OVERRIDE BUTTON

10kΩ room temperature sensor transmits room temperature to DDC system. Timed override button allows tenant to change from unoccupied temperature setpoint to occupied temperature setpoint for a preset time.



ROOM TEMPERATURE SENSOR RHC-ZNS2
with TIMED OVERRIDE BUTTON and STATUS INDICATOR

10kΩ room temperature sensor transmits room temperature to DDC system. Timed override button allows tenant to change from unoccupied temperature setpoint to occupied temperature setpoint for a preset time. Status Indicator Light transmits ALARM flash code to occupied space.

ROOM TEMPERATURE SENSOR RHC-ZNS3
with SETPOINT ADJUSTMENT and TIMED OVERRIDE BUTTON

10kΩ room temperature sensor with setpoint adjustment transmits room temperature to DDC system along with desired occupied room temperature setpoint. Timed override button allows tenant to change from unoccupied temperature setpoint to occupied temperature setpoint for a preset time.

COMMUNICATION CARDS
Field Installed

BACnet® COMMUNICATION CARD RXRX-AY01

The field installed BACnet® Communication Card allows the RTU-C unit controller to communicate with a third party building management system that supports the BACnet Application Specific Controller device profile. The BACnet® Communication Module plugs onto the unit RTU-C controller and allows communication between the RTU-C and the BACnet MSTP network.

LonWorks® COMMUNICATION CARD RXRX-AY02

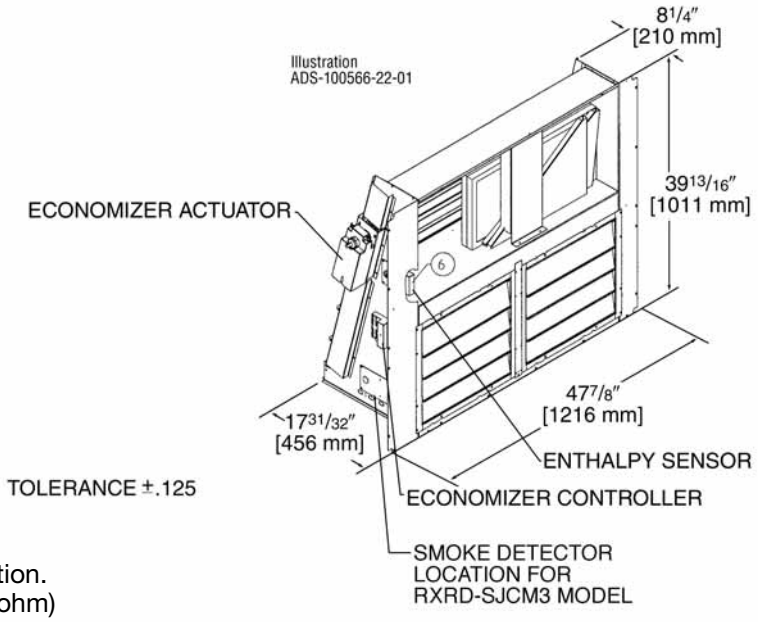
The field installed LonWorks® Communication Card allows the RTU-C unit controller to communicate with a third party building management system that supports the LonMark Space Comfort Controller (SCC) functional profile or LonMark Discharge Air Controller (DAC) functional profile. The LonMark Communication Module plugs onto the RTU-C controller and allows communication between the RTU-C and a LonWorks Network.

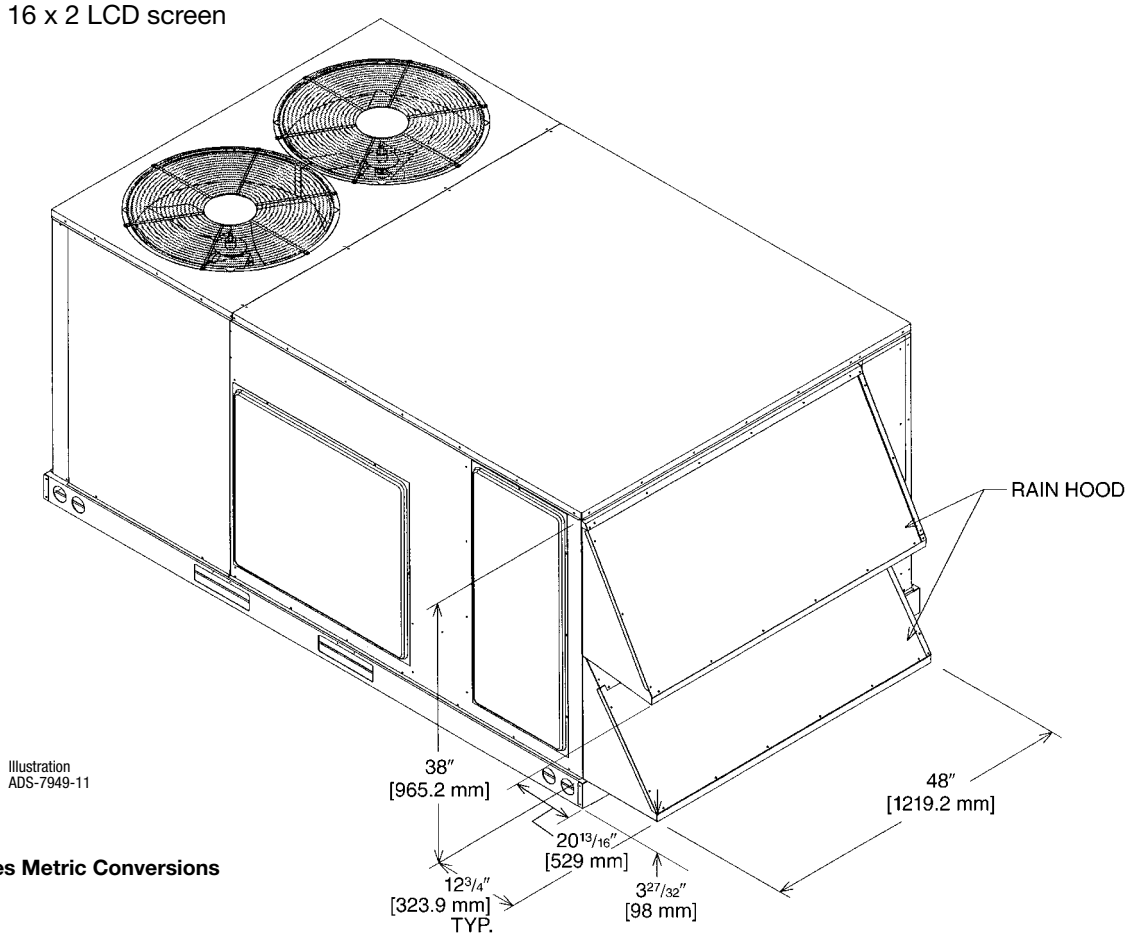
ECONOMIZERS

Use to Select Factory Installed Options Only

AXRD-PJCM3—Single Enthalpy (Outdoor) with DDC
AXRD-SJCM3—Single Enthalpy w/Smoke Detector ar
RXRX-AV03—Dual Enthalpy Upgrade Kit
RXRX-AR02—Optional Wall-Mounted CO_2 Sensor

- Features **Honeywell** Controls
- Available Factory Installed or Field Accessory
- Gear Driven Direct Drive Actuator
- Fully Modulating (0-100%)
- Low Leakage Dampers
- Slip-In Design for Easy Installation
- Plug-In Polarized 12-pin and 4-pin Electrical Connections
- Pre-Configured—No Field Adjustments Necessary
- Standard Barometric Relief Damper
- Single Enthalpy with Dual Enthalpy Upgrade Kit Available
- CO_2 Input Sensor Available
- Field Assembled Hood Ships with Economizer
- Economizer Ships Complete for Downflow Duct Application.
- Optional Remote Minimum Position Potentiometer (270 ohm) (Honeywell #S963B1136) is available from Prostock.
- Field Installed Power Exhaust Available
- Prewired for Smoke Detector
- If connected to a Building Automation System (BAS), all economizer functions can be viewed on the (BAS) or 16 x 2 LCD screen
- If connected to a thermostat, all economizer functions can be viewed on 16 x 2 LCD screen





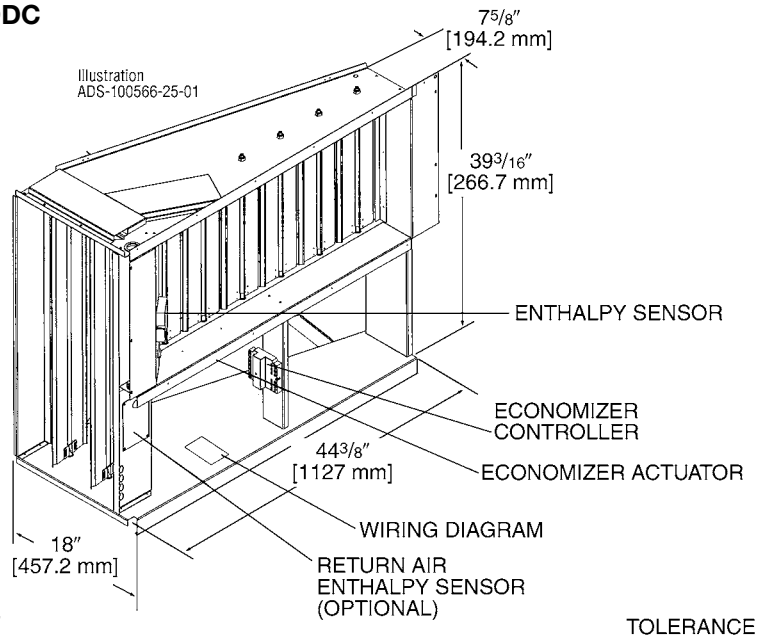
[ ] Designates Metric Conversions

ECONOMIZER FOR HORIZONTAL DUCT INSTALLATION

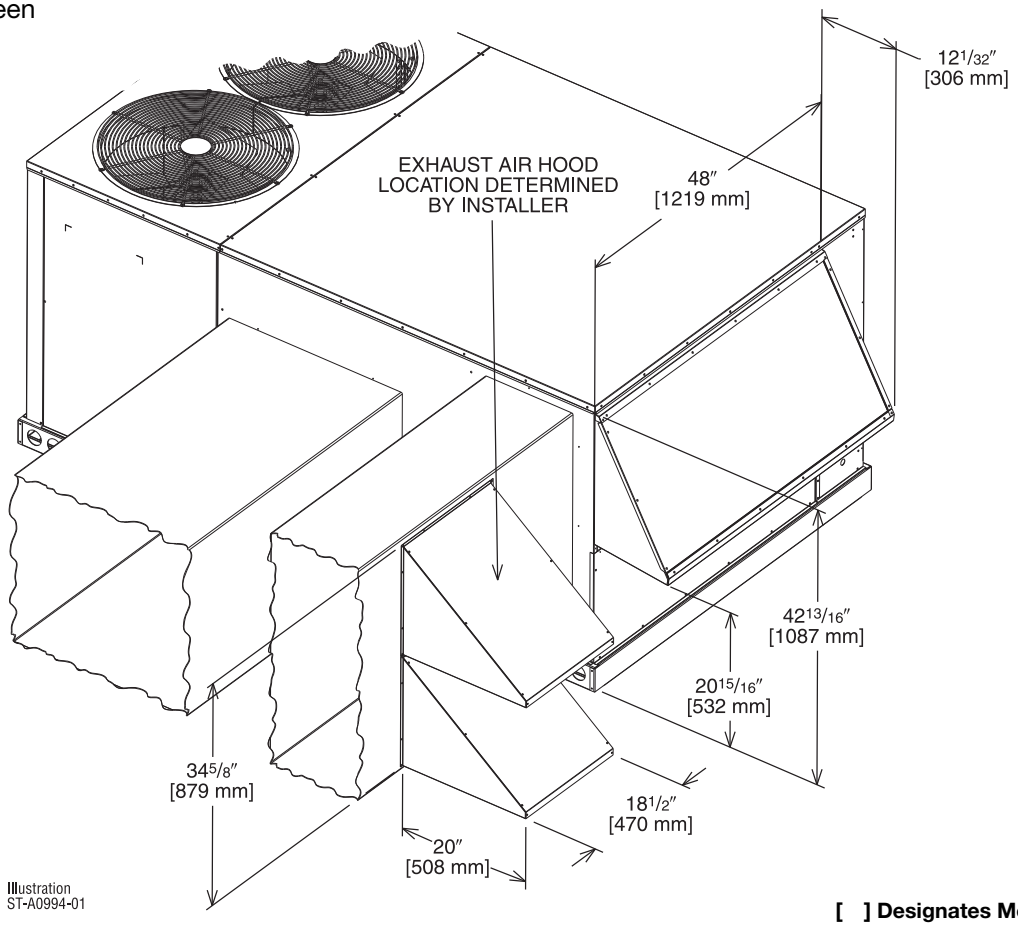
Field Installed Only

AXRD-RJCM3—Single Enthalpy (Outdoor) with DDC
RXRX-AV03—Dual Enthalpy Upgrade Kit
RXRX-AR02—Wall-mounted CO_2 Sensor

- Features **Honeywell** Controls
- Available as a Field Installed Accessory Only
- Gear Driven Direct Drive Actuator
- Fully Modulating (0-100%)
- Low Leakage Dampers
- Slip-In Design for Easy Installation
- Plug-In Polarized 12-pin and 4-pin Electrical Connections
- Pre-Configured—
  No Field Adjustments Necessary
- Standard Barometric Relief Damper
- Single Enthalpy with Dual Enthalpy Upgrade Kit Available
- CO_2 Input Sensor Available
- Field Assembled Hood Ships with Economizer
- Economizer Ships Complete for Horizontal Duct Application
- Optional Remote Minimum Position Potentiometer (270 ohm) (Honeywell #S963B1136) is available from Prostock
- Field Installed Power Exhaust Available
- If connected to a Building Automation System (BAS), all economizer functions can be viewed on the (BAS) or 16 x 2 LCD screen
- If connected to thermostat, all economizer functions can be viewed on 16 x 2 LCD screen



TOLERANCE ± .125



[ ] Designates Metric Conversions

POWER EXHAUST KIT FOR AXRD-PJCM3(-), AXRD-RJCM3(-), RXRD-SJCM3 ECONOMIZERS

RXRX-BFF02 (C, D, or Y*)

***Voltage Code**

VERTICAL AIRFLOW

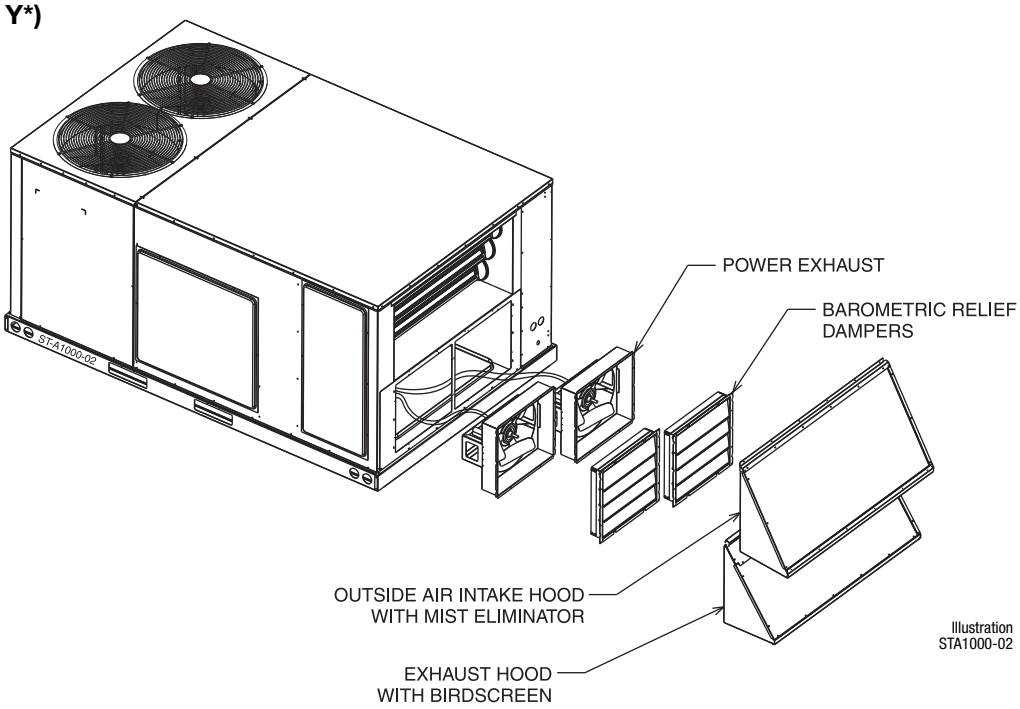


Illustration STA1000-02

HORIZONTAL AIRFLOW

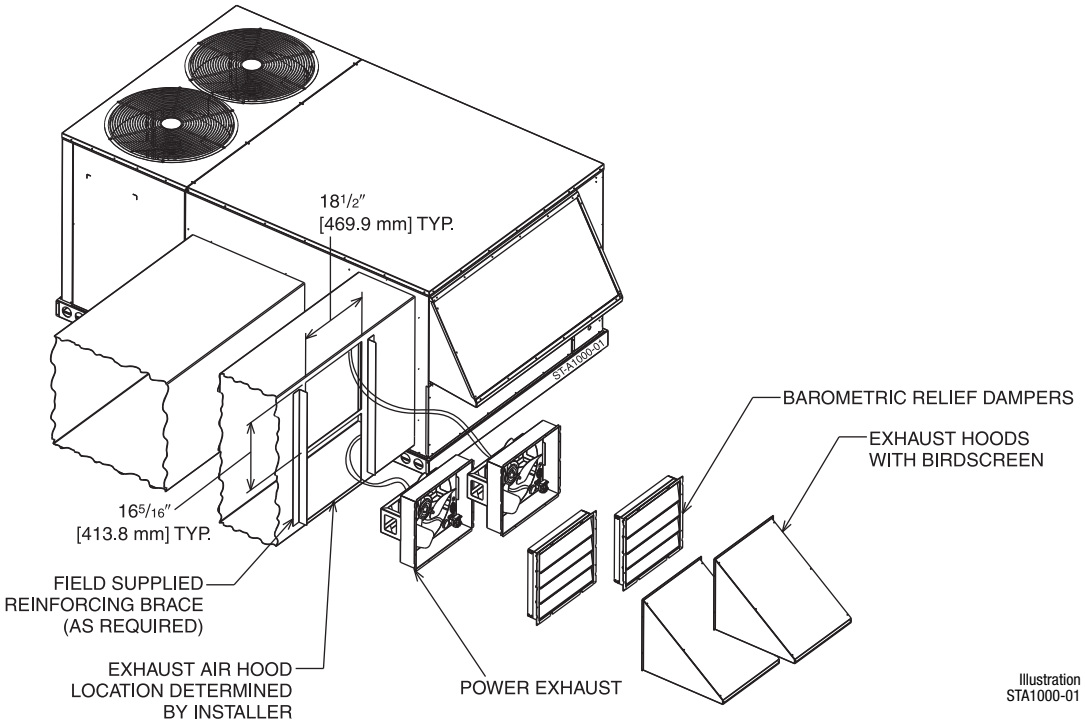


Illustration STA1000-01

Model No.	No. of Fans	Volts	Phase	HP (ea.)	Low Speed		High Speed ①		FLA (ea.)	LRA (ea.)
					CFM [L/s] ②	RPM	CFM [L/s] ②	RPM		
RXRX-BFF02C	2	208-230	1	0.33	2200 [1038]	1518	2500 [1179]	1670	1.48	3.6
RXRX-BFF02D	2	460	1	0.33	2200 [1038]	1518	2500 [1179]	1670	0.75	1.8
RXRX-BFF02Y	2	575	1	0.33	2200 [1038]	1518	2500 [1179]	1670	0.81	1.5

NOTES: ① Power exhaust is factory set on high speed motor tap.
② CFM is per fan at 0" w.c. external static pressure.

[ ] Designates Metric Conversions

FRESH AIR DAMPER

MOTORIZED DAMPER KIT
RXRX-AW02
(Motor Kit for RXRF-KDA1)

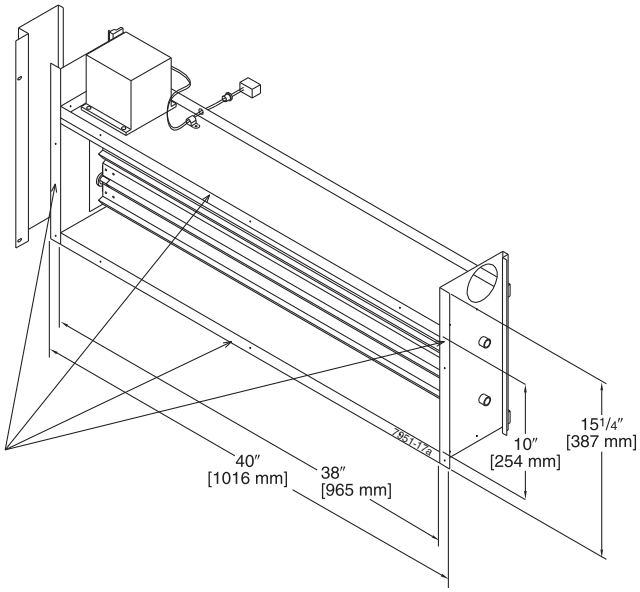


Illustration
ST-7951-17

[ ] Designates Metric Conversions

AXRF-KDA1 (Manual)

DOWNFLOW OR HORIZONTAL APPLICATION

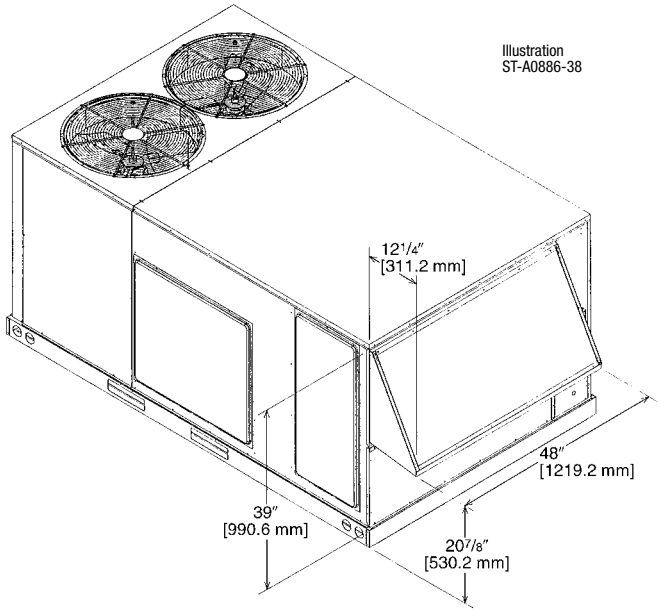


Illustration
ST-A0886-38

RXRX-AW04
(Modulating Motor Kit with position feedback for AXRF-KDA1)

- Features **Honeywell** Controls
- Gear Driven Direct Drive Actuator
- Fully Modulating (0-100%)
- Low Leakage Dampers
- Slip-In Design for Easy Installation
- Plug-In Polarized 12-pin and 4-pin Electrical Connections
- Pre-Configured—No Field Adjustments Necessary
- Addition of Dual Enthalpy Upgrade Kit allows limited economizer function
- CO_2 Sensor Input Available for Demand Control Ventilation (DCV)
- Optional Remote Minimum Position Potentiometer (270 ohm) (Honeywell #S963B1136) is available from Prostock.
- All fresh air damper functions can be viewed at the RTU-C unit controller display
- If connected to a Building Automation System (BAS), all fresh air damper functions can be viewed on the (BAS), or 16 x 2 LCD screen
- If connected to thermostat, all fresh air damper functions can be viewed on 16 x 2 LCD screen

FRESH AIR DAMPER (Cont.)

AXRF-JDA1 (Manual)
AXRF-JDB1 (Motorized)

DOWNFLOW APPLICATION

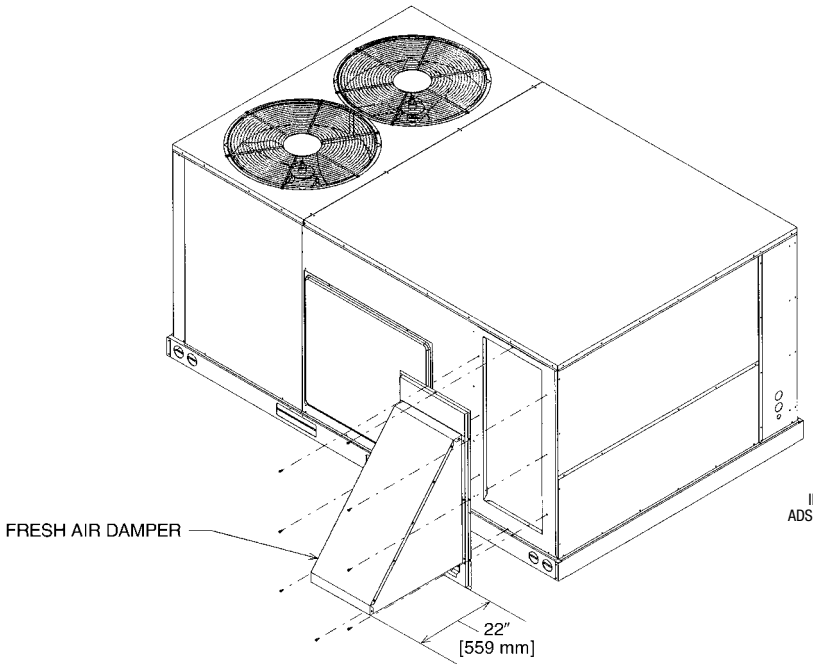
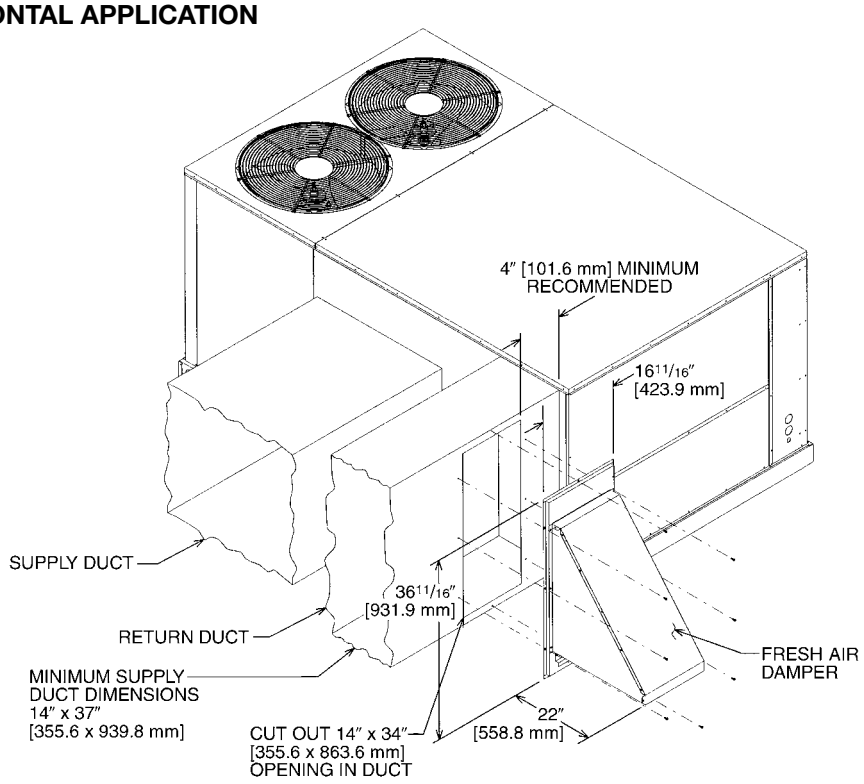


Illustration
ADS-7937-58

HORIZONTAL APPLICATION

Illustration
ST-A0901-01



[ ] Designates Metric Conversions

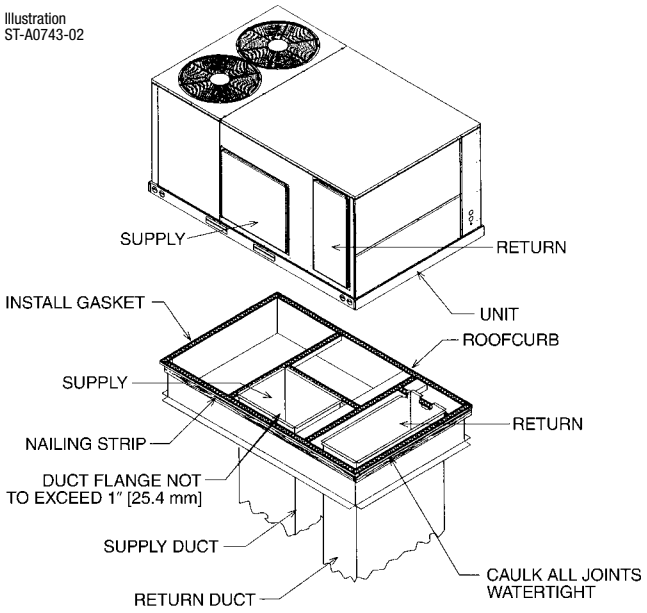
ROOFCURBS (Full Perimeter)

- Ruud's new roofcurb design can be utilized on 7.5 and 10 ton [26.4 and 35.2 kW] RJNL-C models.
- Two available heights (14" [356 mm] and 24" [610 mm]) for ALL models.
- Quick assembly corners for simple and fast assembly.
- Opening provided in bottom pan to match the "Thru the Curb" electrical connection opening provided on the unit base pan.
- 2" [51 mm] x 4" [102 mm] Nailer provided.
- Insulating panels not required because of insulated outdoor base pan.
- Sealing gasket (28" [711 mm]) provided with Roofcurb.
- Packaged for easy field assembly.

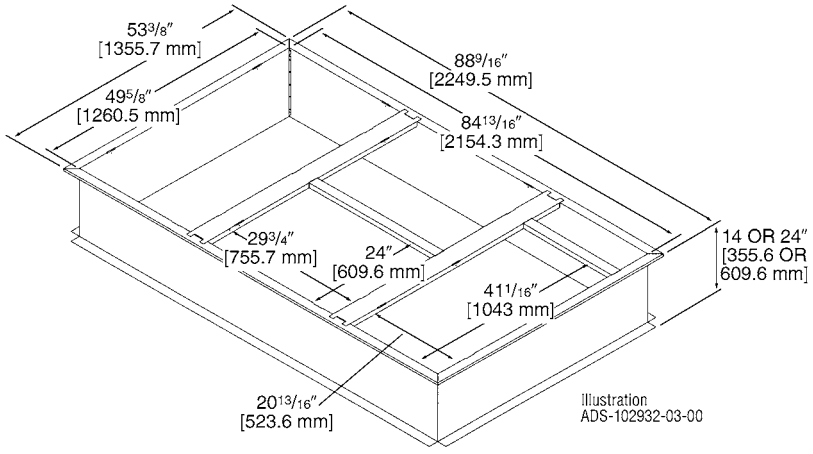
Roofcurb Model	Height of Curb
RXKG-CAE14	14" [356 mm]
RXKG-CAE24	24" [610 mm]

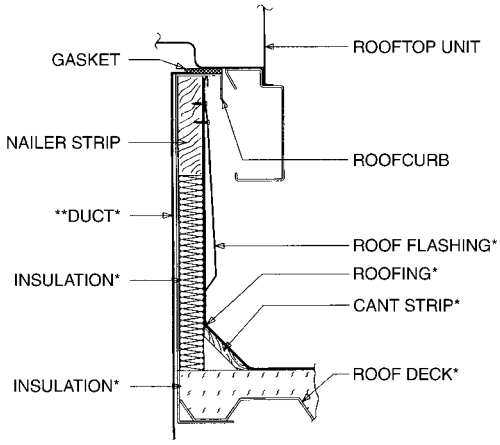
TYPICAL INSTALLATION

Illustration
ST-A0743-02



ROOFCURB INSTALLATION





*BY CONTRACTOR

**FOR INSTALLATION OF DUCT AS SHOWN, USE RECOMMENDED DUCT SIZES FROM ROOFCURB INSTALLATION INSTRUCTIONS. FOR DUCT FLANGE ATTACHMENT TO UNIT, SEE UNIT INSTALLATION INSTRUCTIONS FOR RECOMMENDED DUCT SIZES.

Illustration
ST-A0743-02

[ ] Designates Metric Conversions

ROOFCURB ADAPTERS

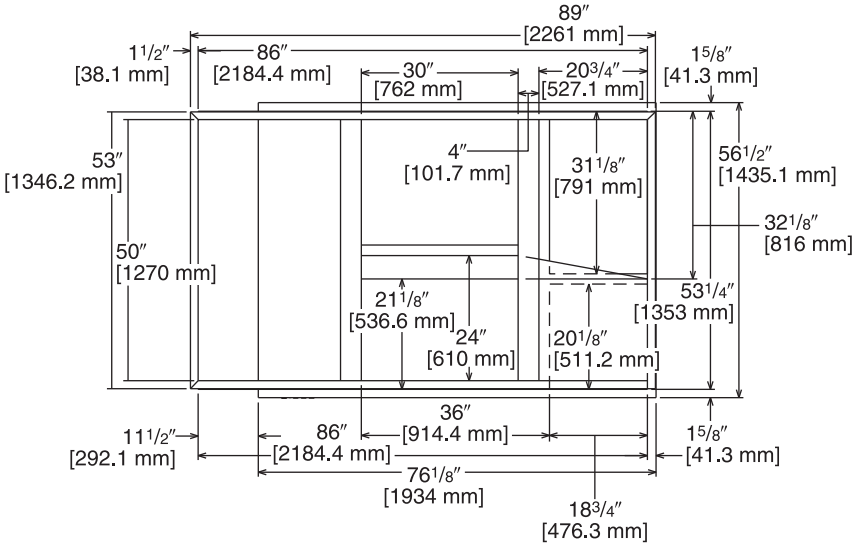
OLD MODELS	OLD ROOFCURB	ROOFCURB ADAPTER	NEW MODELS (All Share Common Footprint)
(-)RCF, (-)REF-075/076 (-)RGF-150075, (-)RGF-131076 (-)RGF-201076	RXRK-E50	RXRX-CDCE50	
(-)RGF-200075 (-)RGG, (-)REG, (-)RCG-075 (-)RGF, (-)REF, (-)RCF-085 (-)RGF, (-)REF, (-)RCF-100 (-)RGG, (-)REG, (-)RCG-100	RXRK-E54	RXRX-CFCE54	(-)JNL-C090 (-)JNL-C120
(-)RGF, (-)REF, (-)RCF-125	RXRK-E56	RXRX-CFCE56	
(-)PDC-075 (-)PDC-100/101	RXPK-C12	RXRX-CGCC12	

NOTE: Ductwork modifications may be necessary if the capacity and/or indoor airflow rate of replacement unit is not equivalent to that of the unit being replaced.

ROOFCURB ADAPTERS (Cont.)

RXRX-CDCE50

Illustration
ADS-7952-02
Sheet 2



TOP VIEW

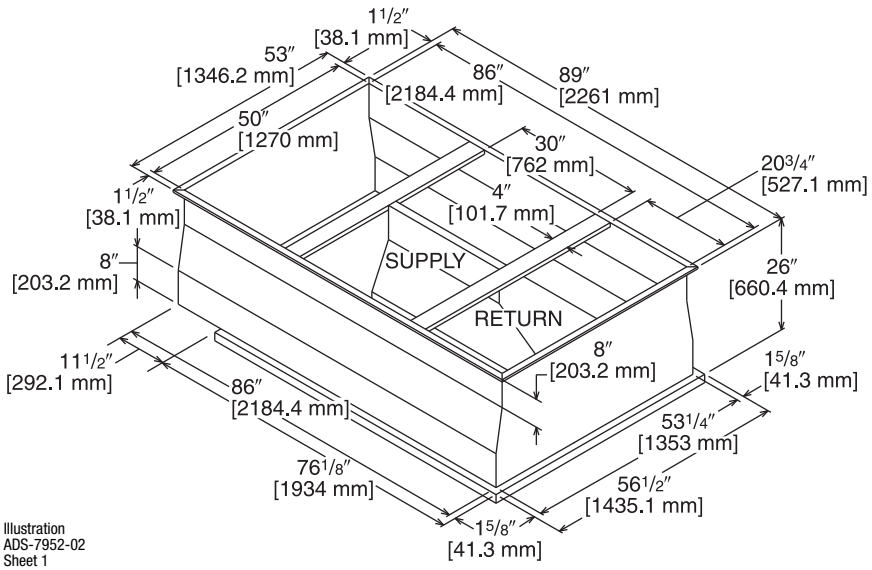


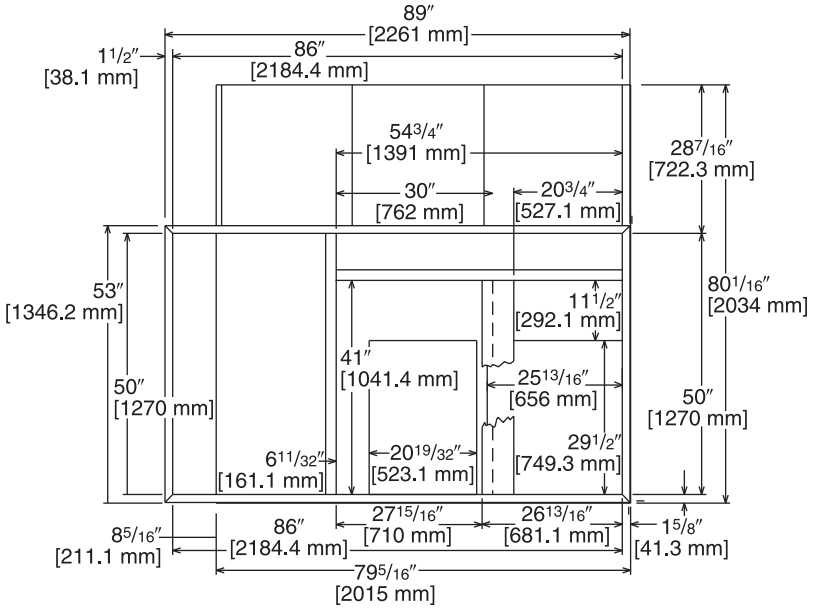
Illustration
ADS-7952-02
Sheet 1

[ ] Designates Metric Conversions

ROOFCURB ADAPTERS (Cont.)

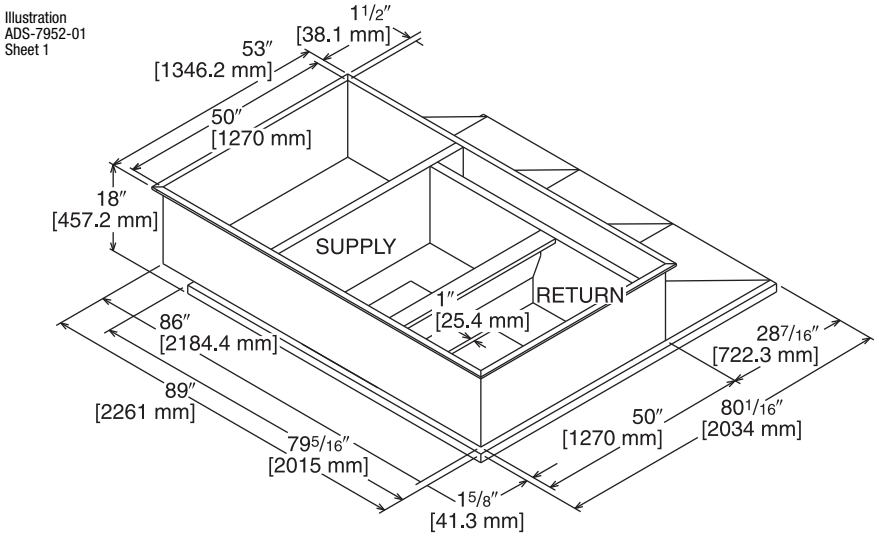
RXRX-CFCE54

Illustration
ADS-7952-01
Sheet 2



TOP VIEW

Illustration
ADS-7952-01
Sheet 1

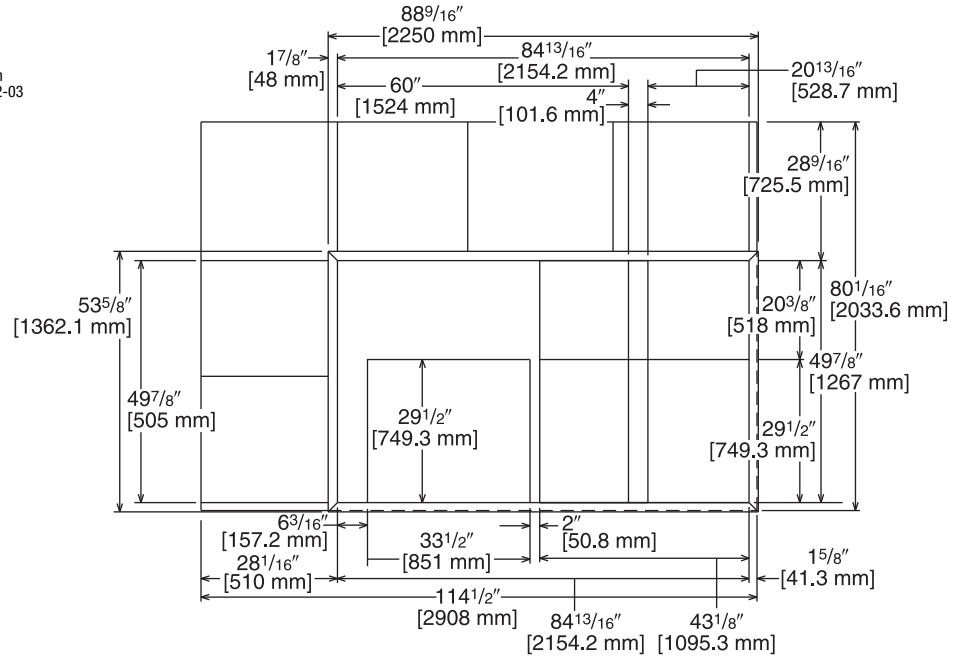


[ ] Designates Metric Conversions

ROOFCURB ADAPTERS (Cont.)

RXRX-CFCE56

Illustration
ADS-7952-03
Sheet 2



TOP VIEW

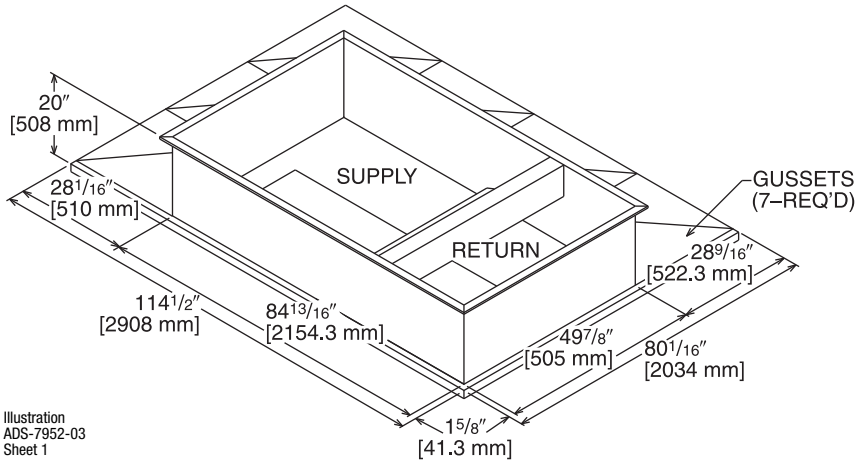


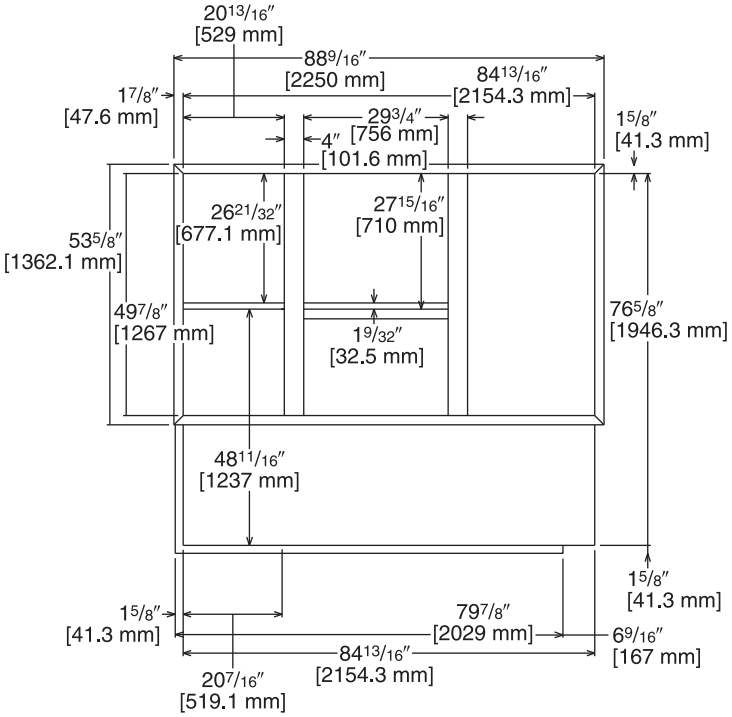
Illustration
ADS-7952-03
Sheet 1

[ ] Designates Metric Conversions

ROOFCURB ADAPTERS (Cont.)

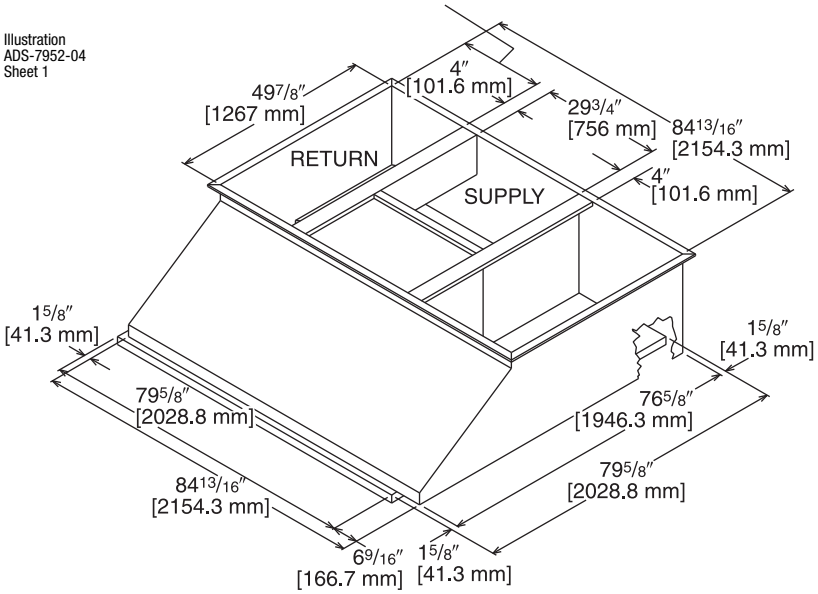
RXRX-CGCC12

Illustration
ADS-7952-04
Sheet 2



TOP VIEW

Illustration
ADS-7952-04
Sheet 1



[ ] Designates Metric Conversions

CONCENTRIC DIFFUSER APPLICATION

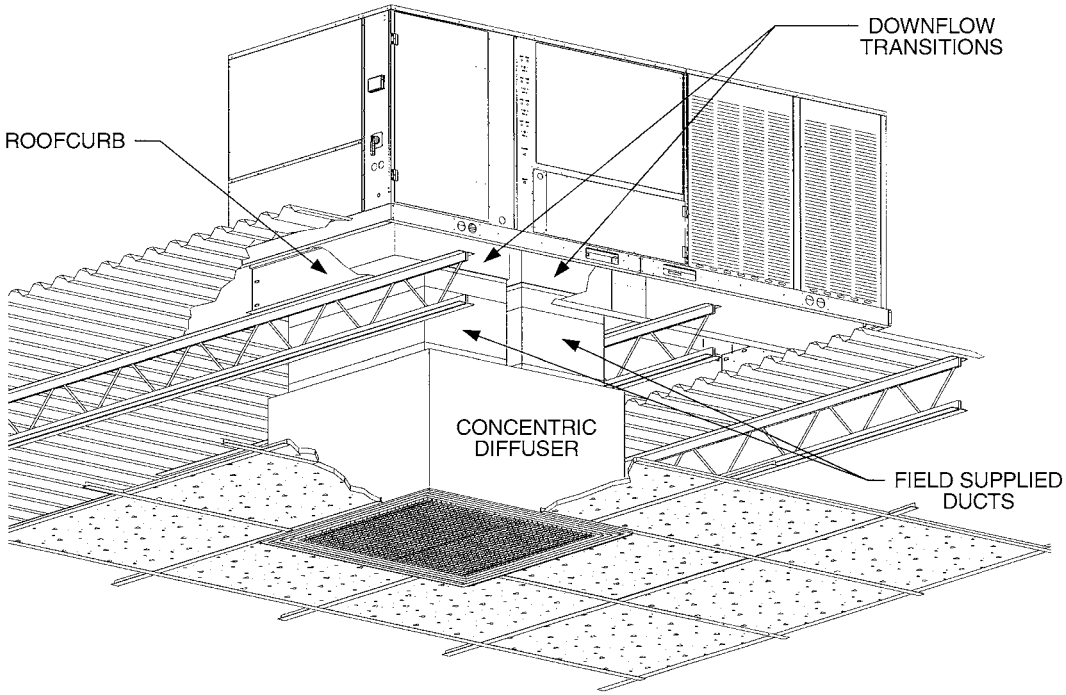


Illustration
ST-A0840-02

DOWNFLOW TRANSITION DRAWINGS

RXMC-CE05

- Used with RXRN-AA61 or RXRN-AA71 Concentric Diffusers.

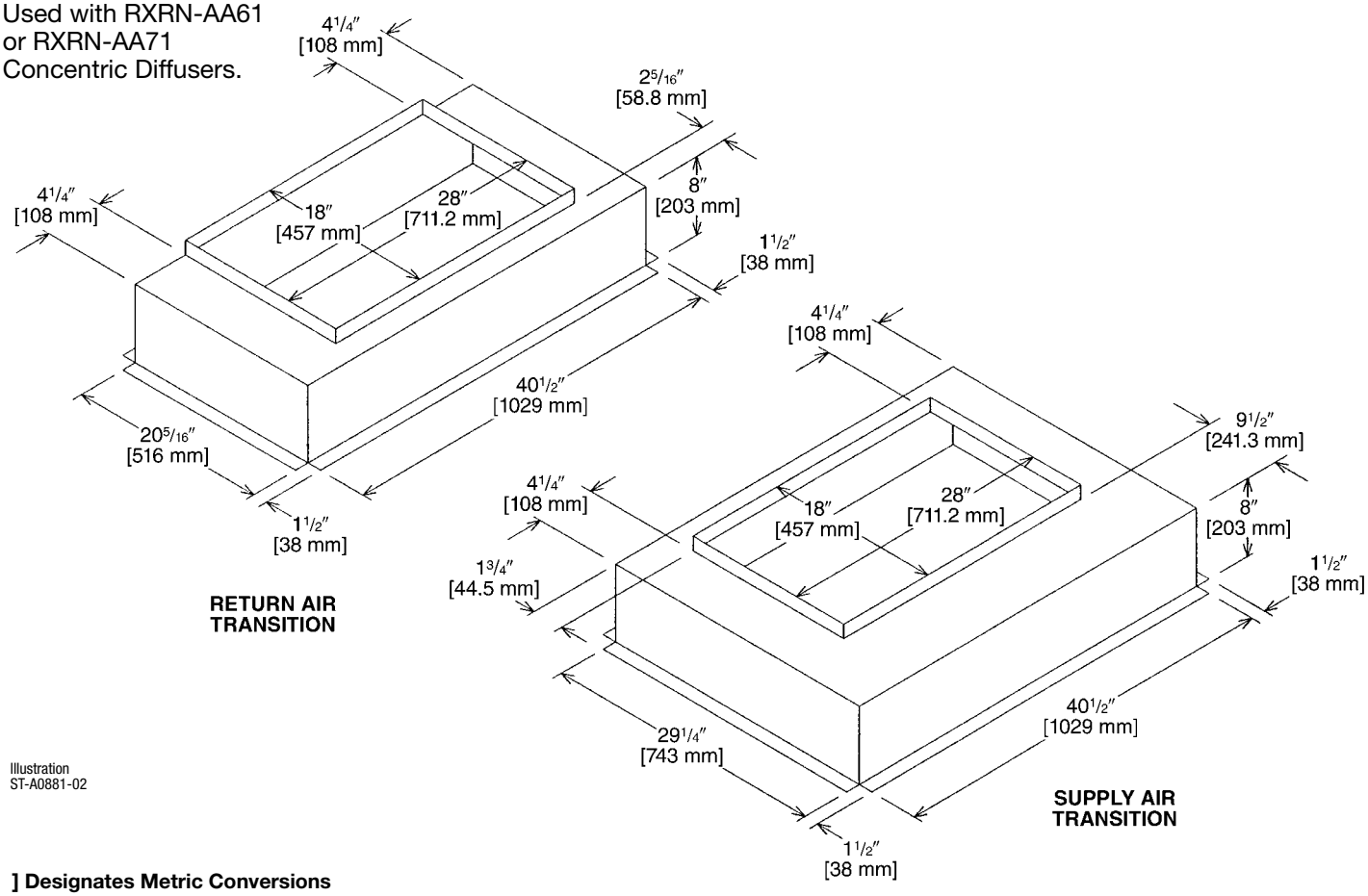


Illustration
ST-A0881-02

[ ] Designates Metric Conversions

DOWNFLOW TRANSITION DRAWINGS (Cont.)

RXMC-CF06

- Used with RXRN-AA66 or RXRN-AA76 Concentric Diffusers.

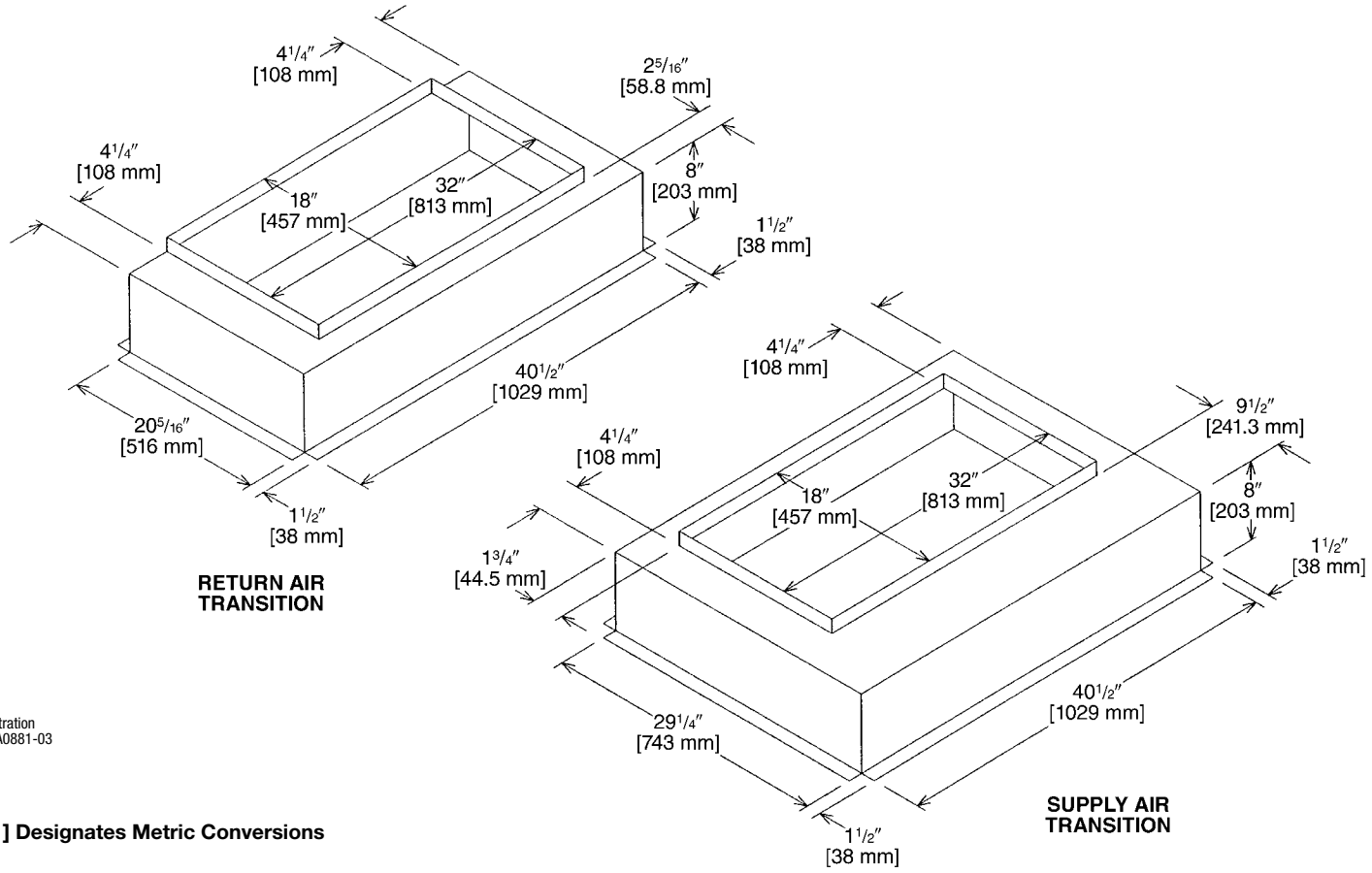


Illustration
ST-A0881-03

[ ] Designates Metric Conversions

DOWNFLOW TRANSITION DRAWINGS (Cont.)

RXMC-CD04

- Used with RXRN-FA65 or RXRN-FA75 Concentric Diffusers.

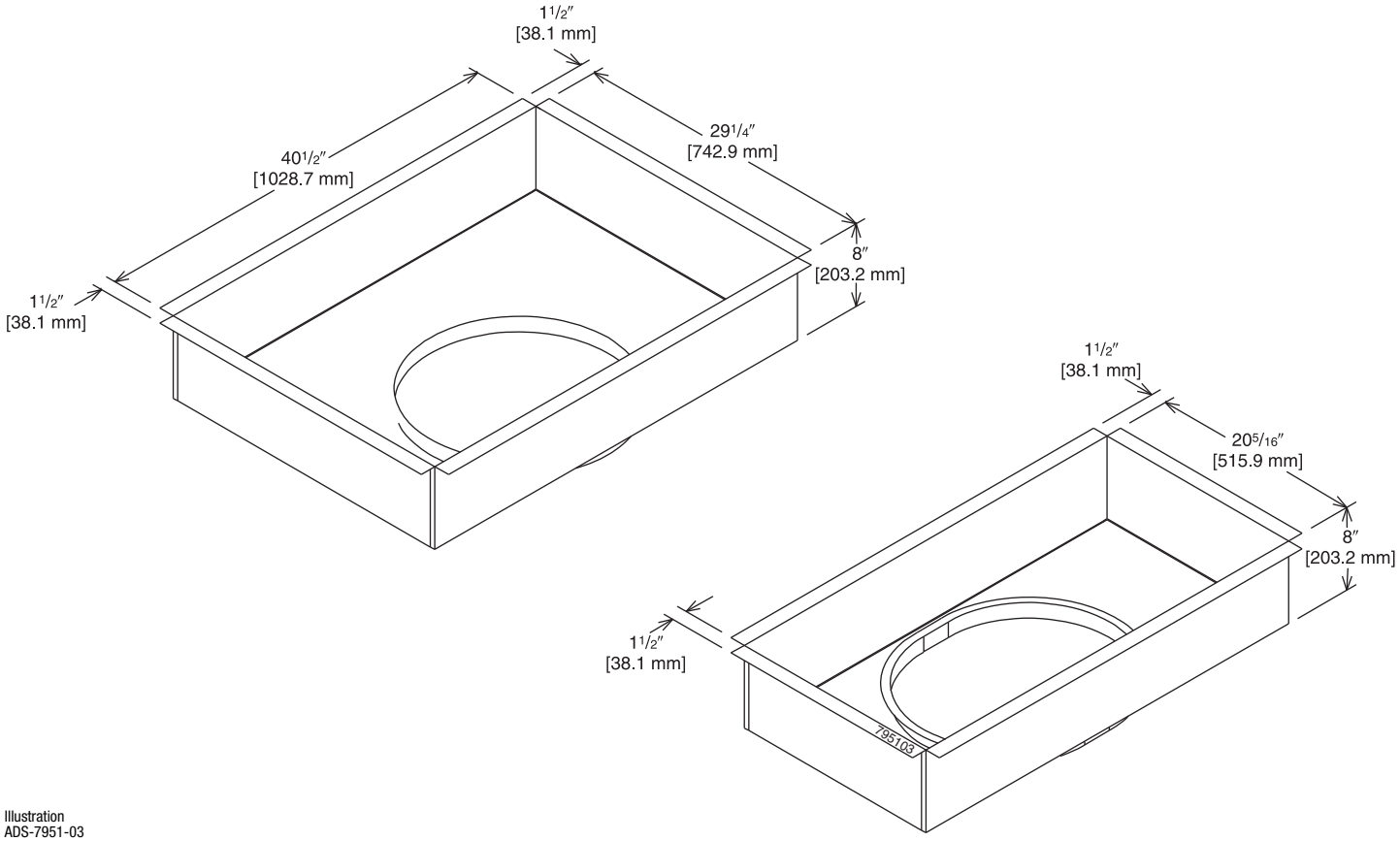


Illustration
ADS-7951-03

[ ] Designates Metric Conversions

CONCENTRIC DIFFUSER—STEP DOWN

RXRN-FA65 (7.5 Ton [29.9 kW] Model)

For Use With Downflow Transition (RXMC-CD04) and 20" [508 mm] Round Supply and Return Ducts

- All aluminum diffuser with aluminum return air eggcrate.
- Built-in anti-sweat gasket.
- Molded fiberglass supports.
- Built-in hanging supports.
- Diffuser box constructed of sheetmetal insulated with 1" [25.4 mm] 1.5 lbs. [.7 kg] duct liner.

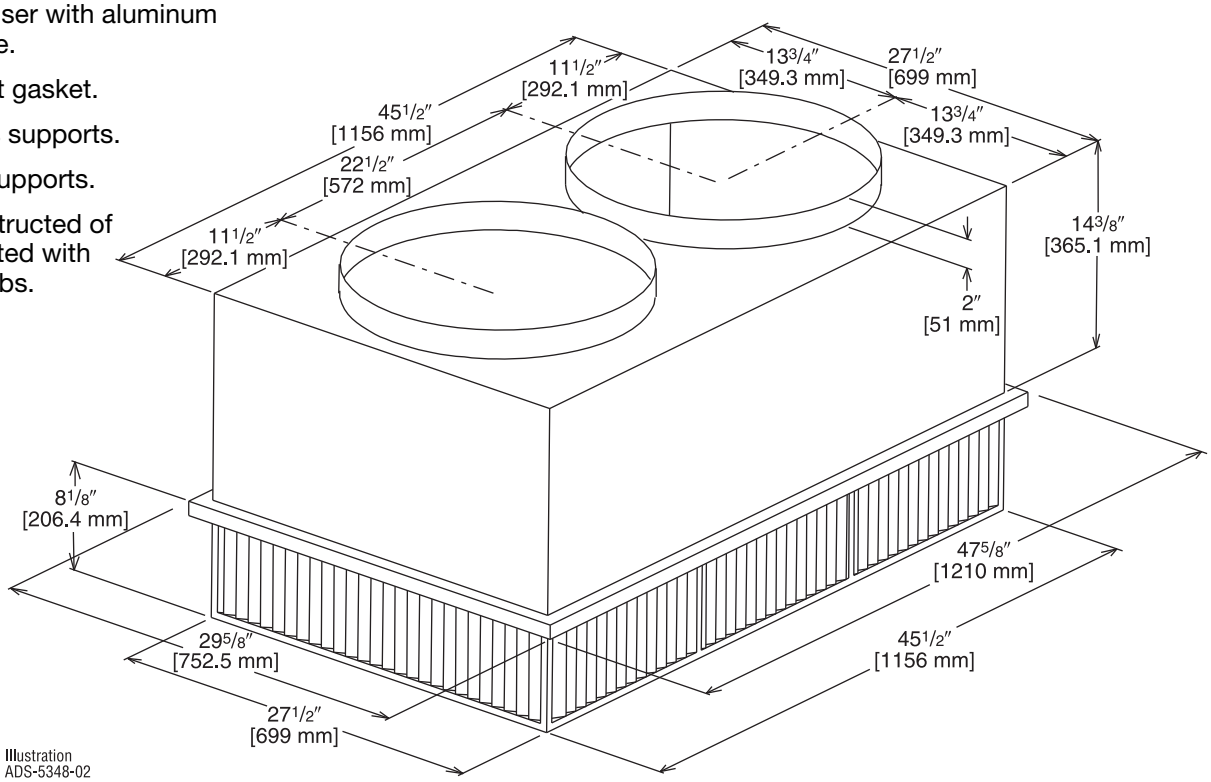


Illustration ADS-5348-02

ENGINEERING DATA①

Model No.	Flow Rate CFM [L/s]	Static Pressure in. w.c. [kPa]	Throw ② ③ Feet [m]	Neck Velocity fpm [m/s]	Noise Level ④ (dbA)
RXRN-FA65	2600 [1227]	0.17 [0.042]	24-29 [7.3-8.8]	669 [3.4]	20
	2800 [1321]	0.20 [0.050]	25-30 [7.6-9.1]	720 [3.7]	25
	3000 [1416]	0.25 [0.062]	27-33 [8.2-10.1]	772 [3.9]	25
	3200 [1510]	0.31 [0.077]	28-35 [8.5-10.7]	823 [4.2]	25
	3400 [1604]	0.37 [0.092]	30-37 [9.1-11.3]	874 [4.4]	30

NOTES: ① All data is based on the air diffusion council guidelines.
② Throw data is based on 75 FPM Terminal Velocities using isothermal air.
③ Throw is based on diffuser blades being directed in a straight pattern.
④ Actual noise levels may vary due to duct design and do not include transmitted unit noise. Adequate duct attenuation must be provided to reduce sound output from the unit.

[ ] Designates Metric Conversions

CONCENTRIC DIFFUSER—STEP DOWN 18" x 28" [457.2 x 711.2 mm]

RXRN-AA61 (10 Ton [35.2 kW] Model)

For Use With Downflow Transition (RXMC-CE05) and 18" x 28" [457.2 x 711.2 mm] Supply and Return Ducts

- All aluminum diffuser with aluminum return air eggcrate.
- Built-in anti-sweat gasket.
- Molded fiberglass supports.
- Built-in hanging supports.
- Diffuser box constructed of sheetmetal insulated with 1" [25.4 mm] 1.5 lbs. [.7 kg] duct liner.
- Double deflection diffuser with the blades secured by spring steel.

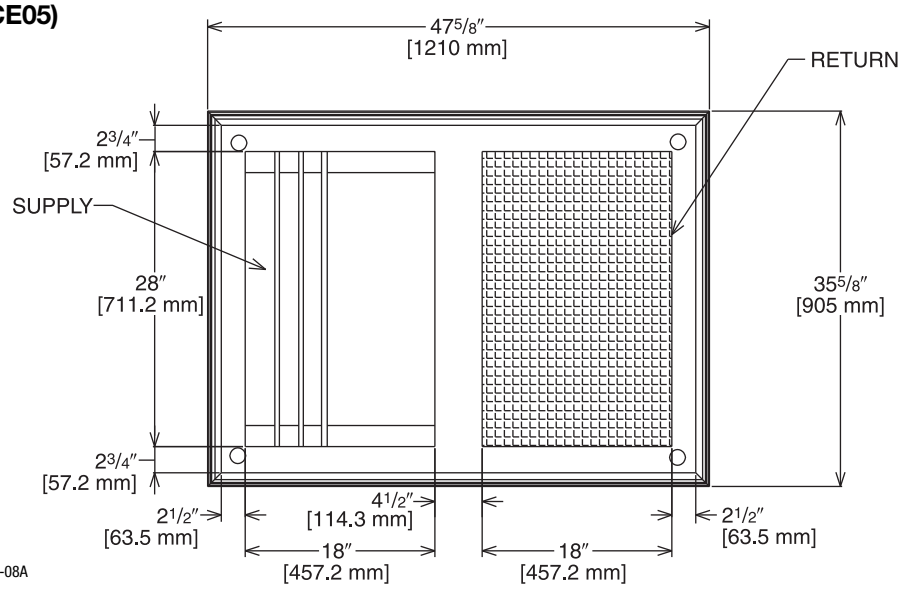


Illustration ADS-7951-08A

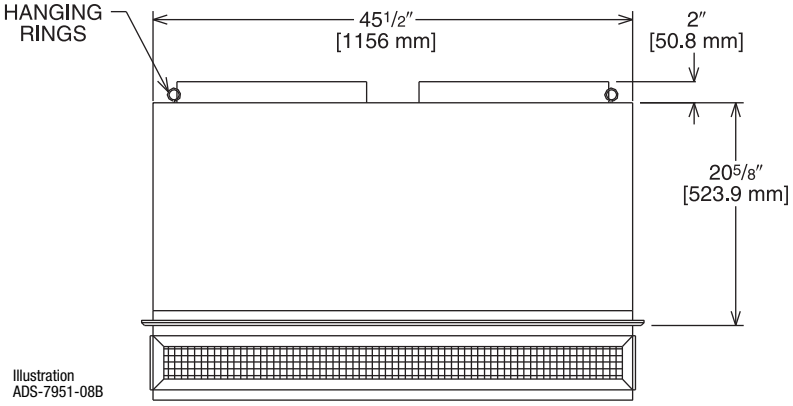


Illustration ADS-7951-08B

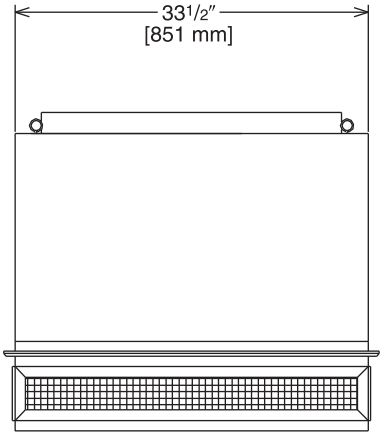


Illustration ADS-7951-08C

ENGINEERING DATA①

Model No.	Flow Rate CFM [L/s]	Static Pressure in w.c. [kPa]	Throw ② ③ Feet [m]	Neck Velocity fpm [m/s]	Noise Level ④ (dbA)
RXRN-AA61	3600 [1699]	0.17 [0.042]	25-33 [7.6-10.1]	851 [4.3]	30
	3800 [1793]	0.18 [0.045]	27-35 [8.2-10.7]	898 [4.6]	30
	4000 [1888]	0.21 [0.052]	29-37 [8.8-11.3]	946 [4.8]	30
	4200 [1982]	0.24 [0.060]	32-40 [9.8-12.2]	993 [5.0]	30
	4400 [2076]	0.27 [0.067]	34-42 [10.4-12.8]	1040 [5.3]	30

NOTES: ① All data is based on the air diffusion council guidelines.
② Throw data is based on 75 FPM Terminal Velocities using isothermal air.
③ Throw is based on diffuser blades being directed in a straight pattern.
④ Actual noise levels may vary due to duct design and do not include transmitted unit noise. Adequate duct attenuation must be provided to reduce sound output from the unit.

[ ] Designates Metric Conversions

FLUSH MOUNT CONCENTRIC DIFFUSER—FLUSH

RXRN-FA75 (7.5 Ton [26.4 kW] Models)

For Use With Downflow Transition (RXMC-CD04) and 20" [508 mm] Round Supply and Return Ducts

- All aluminum diffuser with aluminum return air eggcrate.
- Built-in anti-sweat gasket.
- Molded fiberglass supports.
- Built-in hanging supports.
- Diffuser box constructed of sheetmetal insulated with 1" [25.4 mm] 1.5 lbs. [.7 kg] duct liner.

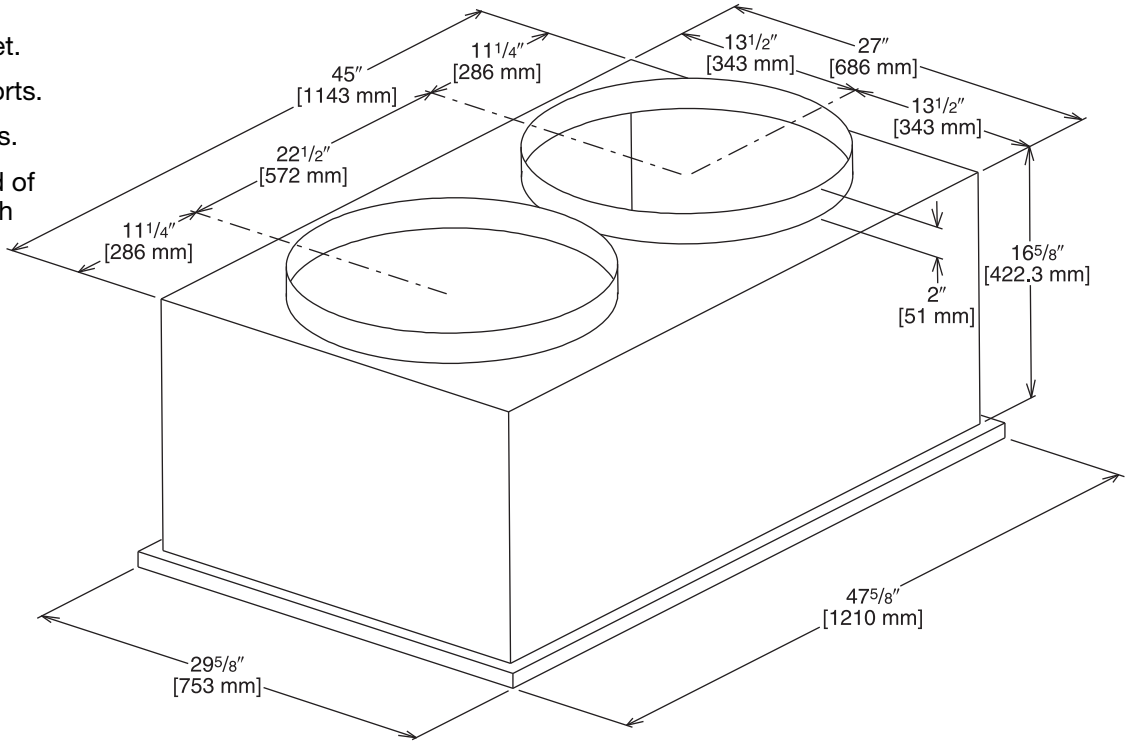


Illustration
ADS-5348-04

ENGINEERING DATA①

Model No.	Flow Rate CFM [L/s]	Static Pressure in. w.c. [kPa]	Throw ② ③ Feet [m]	Neck Velocity fpm [m/s]	Noise Level ④ (dbA)
RXRN-FA75	2600 [1227]	.17 [0.042]	19-24 [5.8-7.3]	663 [3.4]	30
	2800 [1321]	.20 [0.050]	20-28 [6.1-8.5]	714 [3.6]	35
	3000 [1416]	.25 [0.062]	21-29 [6.4-8.8]	765 [3.9]	35
	3200 [1510]	.31 [0.077]	22-29 [6.7-8.8]	816 [4.1]	40
	3400 [1604]	.37 [0.092]	22-30 [6.7-9.1]	867 [4.4]	40

NOTES: ① All data is based on the air diffusion council guidelines.
② Throw data is based on 75 FPM Terminal Velocities using isothermal air.
③ Throw is based on diffuser blades being directed in a straight pattern.
④ Actual noise levels may vary due to duct design and do not include transmitted unit noise. Adequate duct attenuation must be provided to reduce sound output from the unit.

[ ] Designates Metric Conversions

CONCENTRIC DIFFUSER—FLUSH and 18" x 28" [457.2 x 711.2 mm]

RXRN-AA71 (10 Ton [35.2 kW] Model)

For Use With Downflow Transition (RXMC-CE05) and 18" x 28" [457.2 x 711.2 mm] Supply and Return Ducts

- All aluminum diffuser with aluminum return air eggcrate.
- Built-in anti-sweat gasket.
- Molded fiberglass supports.
- Built-in hanging supports.
- Diffuser box constructed of sheetmetal insulated with 1" [25.4 mm] 1.5 lbs. [.7 kg] duct liner.

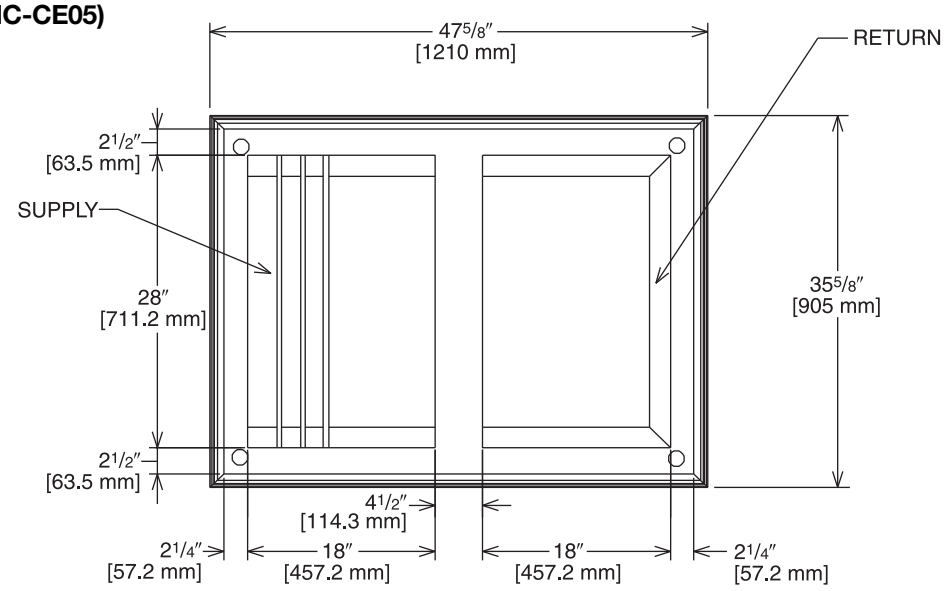


Illustration ADS-7951-06A

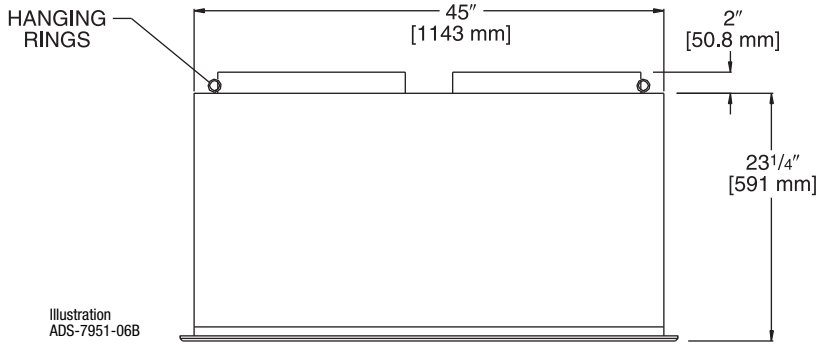


Illustration ADS-7951-06B

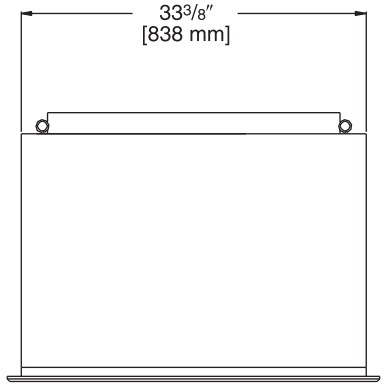


Illustration ADS-7951-06C

ENGINEERING DATA①

Model No.	Flow Rate CFM [L/s]	Static Pressure in w.c. [kPa]	Throw ② ③ Feet [m]	Neck Velocity fpm [m/s]	Noise Level ④ (dbA)
RXRN-AA71	3600 [1699]	0.17 [0.042]	22-29 [6.7-8.8]	844 [4.3]	35
	3800 [1793]	0.18 [0.045]	22-30 [6.7-9.1]	891 [4.5]	40
	4000 [1888]	0.21 [0.052]	24-33 [7.3-10.1]	938 [4.8]	40
	4200 [1982]	0.24 [0.060]	26-35 [7.9-10.7]	985 [5.0]	40
	4400 [2076]	0.27 [0.067]	28-37 [8.5-11.3]	1032 [5.2]	40

NOTES: ① All data is based on the air diffusion council guidelines.
② Throw data is based on 75 FPM Terminal Velocities using isothermal air.
③ Throw is based on diffuser blades being directed in a straight pattern.
④ Actual noise levels may vary due to duct design and do not include transmitted unit noise. Adequate duct attenuation must be provided to reduce sound output from the unit.

[ ] Designates Metric Conversions

Guide Specifications – RJNL-C090 thru C120

You may copy this document directly into your building specification. This specification is written to comply with the 2004 version of the "master format" as published by the Construction Specification Institute. www.csinet.org.

ROOFTOP PACKAGED HEAT PUMP

HVAC Guide Specifications

Size Range: 7.5 to 10 Nominal Tons

Section Description

23 06 80 Schedules for Decentralized HVAC Equipment

23 06 80.13 Decentralized Unitary HVAC Equipment Schedule

23 06 80.13.A. Rooftop unit schedule

1. Schedule is per the project specification requirements.

23 07 16 HVAC Equipment Insulation

23 07 16.13 Decentralized, Rooftop Units:

1. Interior cabinet surfaces shall be insulated with a minimum 3/4-in. thick, minimum 1-1/2 lb density, flexible fiberglass insulation bonded with a phenolic binder, with aluminum foil facing on the air side.
2. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.

23 09 13 Instrumentation and Control Devices for HVAC

23 09 13.23 Sensors and Transmitters

23 09 13.23.A. Thermostats

1. Thermostat must
   a. have capability to energize 2 different stages of cooling, and 2 different stages of heating and a reversing valve output.
   b. must include capability for occupancy scheduling.

23 09 23 Direct-digital Control system for HVAC

23 09 23.13 Decentralized, Rooftop Units:

23 09 23.13.A. RTU-C controller

1. Shall be ASHRAE 62-2001 compliant.
2. Shall accept 18-32VAC input power.
3. Shall have an operating temperature range from -40°F (-40°C) to 158°F (70°C), 10% - 95% RH (non-condensing).
4. Controller shall accept the following inputs: space temperature, setpoint adjustment, outdoor air temperature, indoor air quality, outdoor air enthalpy, fire shutdown, return air enthalpy, fan status, remote time clock/door switch.
5. Shall accept a CO_2 sensor in the conditioned space, and be Demand Control Ventilation (DCV) ready.
6. Shall provide the following outputs: Economizer, fan, cooling stage 1, cooling stage 2, heat stage 1, heat stage 2, heat stage 3/ exhaust/ reversing valve/ occupied.
7. Unit shall provide surge protection for the controller through a circuit breaker.
8. Shall have a field installed communication card allowing the unit to be Internet capable, and communicate at a Baud rate of 19.2K or faster
9. Shall have an LED display independently showing the status of activity on the communication bus, and processor operation.
10. Shall have either a field installed BACnet® plug-in communication card which includes an EIA-485 protocol communication port, or a field installed LonWorks™ plug-in communications card.
11. Software upgrades will be accomplished by local download. Software upgrades through chip replacements are not allowed.
12. Shall be shock resistant in all planes to 5G peak, 11ms during operation, and 100G peak, 11ms during storage.
13. Shall be vibration resistant in all planes to 1.5G @ 20-300 Hz.
14. Shall support a bus length of 4000 ft max, 60 devices per 1000 ft section, and 1 RS-485 repeater per 1000 ft sections.

23 09 23.13.B. Open protocol, direct digital controller:

1. Shall be ASHRAE 62-2001 compliant.
2. Shall accept 18-30VAC, 50-60Hz, and consumer 15VA or less power.
3. Shall have an operating temperature range from -40°F (-40°C) to 130°F (54°C), 10% - 90% RH (non-condensing).
4. Shall have either a field installed BACnet® plug-in communication card which includes an EIA-485 protocol communication port, or a field installed LonWorks™ plug-in communications card.
5. The BACnet® plug in communication card shall include built-in protocol for BACNET (MS/TP and PTP modes)
6. The LonWorks™ plug in communication card shall include the Echelon processor required for all Lon applications.
7. Shall allow access of up to 62 network variables (SNVT). Shall be compatible with all open controllers
8. Baud rate Controller shall be selectable through the EIA-485 protocol communication port.
9. Shall have an LED display independently showing the status of serial communication, running, errors, power, all digital outputs, and all analog inputs.
10. Shall accept the following inputs: space temperature, setpoint adjustment, outdoor air temperature, indoor air quality, outdoor air enthalpy, compressor lock-out, fire shutdown, enthalpy switch, and fan status/filter status/ humidity/ remote occupancy.

11. Shall provide the following outputs: economizer, fan, cooling stage 1, cooling stage 2, heat stage 1, heat stage 2, heat stage 3/ exhaust/ reversing valve.
12. Software upgrades will be accomplished by either local or remote download. No software upgrades through chip replacements are allowed.

23 09 33 Electric and Electronic Control System for HVAC

23 09 33.13 Decentralized, Rooftop Units:

23 09 33.13.A. General:

1. Shall be complete with self-contained low-voltage control circuit protected by a resettable circuit breaker on the 24-v transformer side. Transformer shall have 100VA capabilities.
2. Shall utilize color-coded wiring.
3. Shall include a central control terminal board to conveniently and safely provide connection points for vital control functions such as: smoke detectors, phase monitor, economizer, thermostat, DDC control options, loss of charge, freeze sensor, high pressure switches.
4. Unit shall include a minimum of one 10-pin screw terminal connection board for connection of control wiring.
5. Shall include integrated defrost system to prevent excessive frost accumulation during heating duty, and shall be controlled as follows:
   a. Defrost shall be initiated on the basis of Demand Defrost.
   b. The need for a defrost cycle is determined by one of two factors: Time or Frost Detection.
   c. Should six hours of compressor run time elapse without a defrost cycle and the coil temperature is below the frost accumulation temperature, a defrost cycle will be initiated.
   d. The control shall be capable of detecting frost accumulation on the outdoor coil and initiate a defrost cycle when the Dry Coil Delta T + the Coil Temperature Dependant Variable (10 degrees of degradation) is sensed.
   e. As the ambient temperature changes, the ambient change will be used to adjust the detection of frost accumulation.

23 09 33.23.B. Safeties:

1. Compressor over-temperature, over current.
2. Loss of charge switch.
   a. Units with 2 compressors shall have different colored wires for the circuit 1 and circuit 2 low and high pressure switches.
   b. Loss of charge switch shall use different color wire than the high pressure switch. The purpose is to assist the installer and service technician to correctly wire and or troubleshoot the rooftop unit.
   c. Loss of charge switch shall have a different sized connector than the high pressure switch. They shall physically prevent the cross-wiring of the safety switches between the high and low pressure side of the system.
3. High-pressure switch.
   a. Units with 2 compressors shall have different colored wires for the circuit 1 and circuit 2 low and high pressure switches.
   b. High pressure switch shall use different color wire than the low pressure switch. The purpose is to assist the installer and service person to correctly wire and or troubleshoot the rooftop unit.
   c. High pressure switch shall have a different sized connector than the loss of charge switch. They shall physically prevent the cross-wiring of the safety switches between the high and low pressure side of the system.
4. Freeze protection sensor, evaporator coil.
5. Automatic reset, motor thermal overload protector.

23 09 93 Sequence of Operations for HVAC Controls

23 09 93.13 Decentralized, Rooftop Units:

23 09 93.13 INSERT SEQUENCE OF OPERATION

23 40 13 Panel Air Filters

23 40 13.13 Decentralized, Rooftop Units:

23 40 13.13.A. Standard filter section shall

1. Shall consist of factory-installed, low velocity, throwaway 2-in. thick fiberglass filters of commercially available sizes.
2. Filters shall be accessible through an access panel as described in the unit cabinet section of this specification (23 81 19.13.H).

23 81 19 Self-Contained Air Conditioners

23 81 19.13 Small-Capacity Self-Contained Air Conditioners

23 81 19.13.A. General

1. Outdoor, rooftop mounted, electrically controlled, heating and cooling unit utilizing a(n) hermetic scroll compressor(s) for cooling duty and heat pump for heating duty.
2. Factory assembled, single-piece heating and cooling rooftop unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, and special features required prior to field start-up.
3. Unit shall use environmentally sound R-410a refrigerant.
4. Unit shall be installed in accordance with the manufacturer's instructions.
5. Unit must be selected and installed in compliance with local, state, and federal codes.

23 81 19.13.B. Quality Assurance

1. Unit meets ASHRAE 90.1-2004 minimum efficiency requirements.
2. 3 phase units are Energy Star qualified.
3. Unit shall be rated in accordance with AHRI Standards 210/240 and 340/360.
4. Unit shall be designed to conform to ASHRAE 15, 2001.
5. Unit shall be UL-tested and certified in accordance with ANSI Z21.47 Standards and UL-listed and certified under Canadian standards as a total package for safety requirements.
6. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.
7. Unit casing shall be capable of withstanding 500-hour salt spray exposure per ASTM B117 (scribed specimen).
8. Unit casing shall be capable of withstanding Federal Test Method Standard No. 141 (Method 6061) 5000-hour salt spray.
9. Unit shall be designed in accordance with ISO 9001:2000, and shall be manufactured in a facility registered by ISO 9001:2000.
10. Roof curb shall be designed to conform to NRCA Standards.
11. Unit shall be subjected to a completely automated run test on the assembly line. The data for each unit will be stored at the factory, and must be available upon request.
12. Unit shall be designed in accordance with UL Standard 1995, including tested to withstand rain.
13. Unit shall be constructed to prevent intrusion of snow and tested to prevent snow intrusion into the control box up to 40 mph.

23 81 19.13.C. Delivery, Storage, and Handling

1. Unit shall be stored and handled per manufacturer's recommendations.
2. Lifted by crane requires either shipping top panel or spreader bars.
3. Unit shall only be stored or positioned in the upright position.

23 81 19.13.E. Project Conditions

1. As specified in the contract.

23 81 19.13.F. Operating Characteristics

1. Unit shall be capable of starting and running at 115°F (46°C) ambient outdoor temperature, meeting maximum load criteria of AHRI Standard 210/240 or 340/360 at ± 10% voltage.
2. Compressor with standard controls shall be capable of operation from 40°F (4°C) , ambient outdoor temperatures. Accessory low ambient kit is necessary if mechanically cooling at ambient temperatures below 40°F (4°C).
3. Unit shall be capable of simultaneous heating duty and defrost cycle operation when using accessory electric heaters.
4. Unit shall discharge supply air vertically or horizontally as shown on contract drawings.
5. Unit shall be factory configured for vertical supply & return configurations.
6. Unit shall be field convertible from vertical to horizontal configuration.

23 81 19.13.G. Electrical Requirements

1. Main power supply voltage, phase, and frequency must match those required by the manufacturer.

23 81 19.13.H. Unit Cabinet

1. Unit cabinet shall be constructed of galvanized steel, and shall be bonderized and coated with a baked enamel finish on all externally exposed surfaces.
2. Unit cabinet exterior paint shall be: film thickness, (dry) 0.003 inches minimum, gloss (per ASTM D523, 60°F): 60, Hardness: H-2H Pencil hardness.
3. Evaporator fan compartment interior cabinet insulation shall conform to AHRI Standards 210/240 or 340/360 minimum exterior sweat criteria. Interior surfaces shall be insulated with a minimum 3/4-in. thick, 1 lb density, flexible fiberglass insulation, aluminum foil-faced on the air side.
4. Base of unit shall have locations for thru-the-base electrical connections (factory installed or field installed), standard.
5. Base Rail
   a. Unit shall have base rails on all sides.
   b. Holes shall be provided in the base rails for rigging shackles to facilitate maneuvering and overhead rigging.
   c. Holes shall be provided in the base rail for moving the rooftop by fork truck.
   d. Base rail shall be a minimum of 14 gauge thickness.
6. Condensate pan and connections:
   a. Shall be a sloped condensate drain pan made of a non-corrosive material.
   b.Shall comply with ASHRAE Standard 62.
   c. Shall use a 1" -11 1/2 NPT drain connection, through the side of the drain pan. Connection shall be made per manufacturer's recommendations.
7. Top panel:
   a. Indoor section shall be a single piece top panel.
8. Electrical Connections
   a. All unit power wiring shall enter unit cabinet at a single, factory-prepared, knockout location.
   b. Thru-the-base capability
      (1.) Standard unit shall have a thru-the-base electrical location(s) using a raised, embossed portion of the unit basepan.
      (2.) No basepan penetration, other than those authorized by the manufacturer, is permitted.

9. Component access panels (standard)
   a. Cabinet panels shall be easily removable for servicing.
   b. Stainless steel metal hinges are standard on all doors.
   c. Panels covering control box, indoor fan, indoor fan motor, and electric or gas heater components (where applicable), shall have 1/4 turn latches.

23 81 19.13.J. Coils
1. Standard Aluminum/Copper Coils: on all models.
   a. Standard evaporator and condenser coils shall have aluminum lanced plate fins mechanically bonded to seamless internally grooved copper tubes with all joints brazed.
   b. Evaporator and Condenser coils shall be leak tested to 150 psig, pressure tested to 550 psig, and qualified to UL 1995 burst test at 2,200 psig.

23 81 19.13.K. Refrigerant Components
1. Refrigerant circuit shall include the following control, safety, and maintenance features:
   a. Thermal Expansion Valve (TXV) with venturi type distributor.
   b. Refrigerant filter drier.
   c. External service gauge connections to unit suction and discharge lines.
2. Compressors
   a. Unit shall use one fully hermetic, scroll compressor for each independent refrigeration circuit.
   b. Compressor motors shall be cooled by refrigerant gas passing through motor windings.
   d. Compressors shall be internally protected from high discharge temperature conditions.
   e. Compressors shall be protected from an over-temperature and over-amperage conditions by an internal, motor overload device.
   f. Compressor shall be factory mounted on rubber grommets.
   g. Compressor motors shall have internal line break thermal, current overload and high pressure differential protection.
   h. Crankcase heaters shall be utilized on all models to protect compressor with specific refrigerant charge.

23 81 19.13.L. Filter Section
1. Filters access is specified in the unit cabinet section of this specification.
2. Filters shall be held in place by a sliding filter tray, facilitating easy removal and installation.
3. Shall consist of factory-installed, low velocity, throw-away 2-in. thick fiberglass filters.
4. Filters shall be standard, commercially available sizes.
5. Filter face velocity shall not exceed 365 fpm at nominal airflows.

23 81 19.13.M. Evaporator Fan and Motor
1. Evaporator fan motor:
   a. Shall have permanently lubricated bearings.
   b. Shall have inherent automatic-reset thermal overload protection or circuit breaker.
   c. Shall have a maximum continuous bhp rating for continuous duty operation; no safety factors above that rating shall be required.
2. Belt-driven Evaporator Fan:
   a. Belt drive shall include an adjustable-pitch motor pulley.
   b. Shall use sealed, permanently lubricated ball-bearing type.
   c. Blower fan shall be double-inlet type with forward-curved blades.
   d. Shall be constructed from steel with a corrosion resistant finish and dynamically balanced.

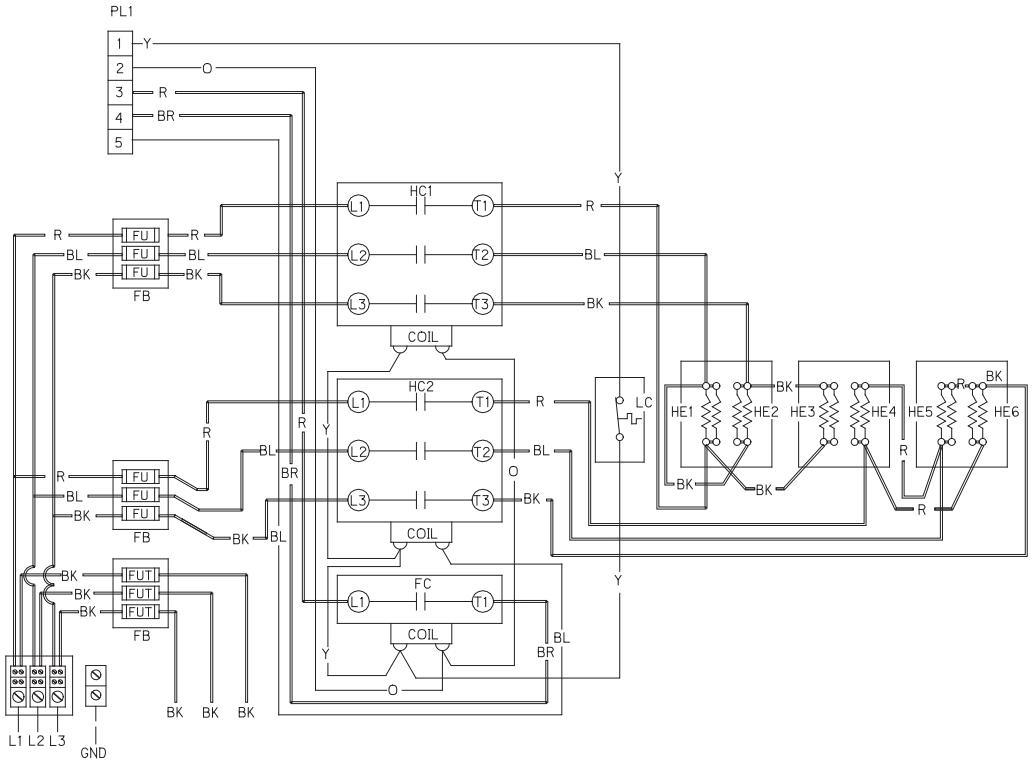
23 81 19.13.N. Condenser Fans and Motors
1. Condenser fan motors:
   a. Shall be a totally enclosed motor.
   b. Shall use permanently lubricated bearings.
   c. Shall have inherent thermal overload protection with an automatic reset feature.
   d. Shall use a shaft-down design. Shaft-up designs including those with “rain-slinger devices” shall not be allowed.
2. Condenser Fans:
   a. Shall be a direct-driven propeller type fan.
   b. Shall have aluminum blades riveted to corrosion-resistant steel spiders and shall be dynamically balanced.

23 81 19.13.O. Special Features, Options and Accessories
1. Integrated Economizers:
   a. Integrated, gear-driven parallel modulating blade design type capable of simultaneous economizer and compressor operation.
   b. Independent modules for vertical or horizontal return configurations shall be available. Vertical return modules shall be available as a factory installed option.
   c. Damper blades shall be galvanized steel with metal gears. Plastic or composite blades on intake or return shall not be acceptable.
   d. Shall include all hardware and controls to provide free cooling with outdoor air when temperature and/or humidity are below setpoints.

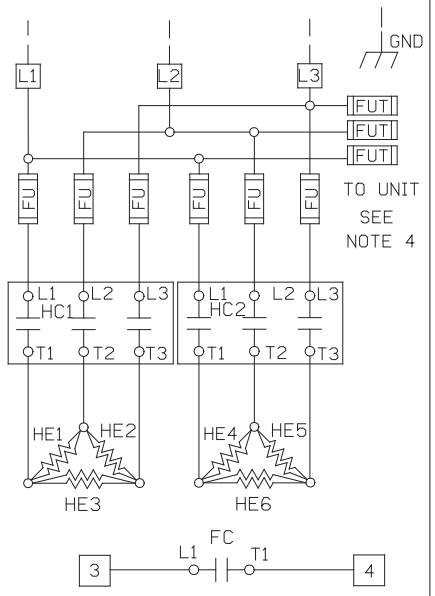
e. Shall be equipped with gear driven dampers for both the outdoor ventilation air and the return air for positive air stream control.
f. Shall be capable of introducing up to 100% outdoor air.
g. Shall be equipped with a barometric relief damper capable of relieving up to 100% return air.
h. Shall be designed to close damper(s) during loss-of-power situations with spring return built into motor.
i. An outdoor single enthalpy sensor shall be provided as standard. Outdoor air sensor setpoint shall be adjustable and shall range from the enthalpy equivalent of 63°F @ 50% rh to 73°F @ 50% rh. Additional sensor options shall be available as accessories.
j. The economizer controller shall also provide control of an accessory power exhaust unit function. Factory set at 70%, with a range of 0% to 100%.
k. The economizer shall maintain minimum airflow into the building during occupied period and provide design ventilation rate for full occupancy. A remote potentiometer may be used to override the damper setpoint.
l. Dampers shall be completely closed when the unit is in the unoccupied mode.
m. Economizer controller shall accept a 2-10Vdc CO_2 sensor input for IAQ/DCV control. In this mode, dampers shall modulate the outdoor-air damper to provide ventilation based on the sensor input.
n. Compressor lockout sensor on the unit controller is factory set at 35°F and is adjustable from 30°F (-1°C) to 50°F (10°C) and resets the cooling lockout at 5°F (+2.7°C) above the set point.
o. Actuator shall be direct coupled to economizer gear. No linkage arms or control rods shall be acceptable.
p. Economizer controller shall provide indications when in free cooling mode, in the DCV mode, or the exhaust fan contact is closed.
q. Economizer wire harness will have provision for smoke detector.

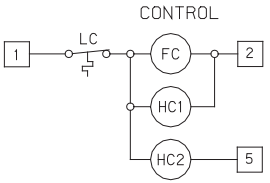
2. Two-Position Motorized Damper
   a. Damper shall be a Two-Position Motorized Damper. Damper travel shall be from the full closed position to the field adjustable %-open setpoint.
   b. Damper shall include adjustable damper travel from 25% to 100% (full open).
   c. Damper shall include single or dual blade, gear driven dampers and actuator motor.
   d. Actuator shall be direct coupled to damper gear. No linkage arms or control rods shall be acceptable.
   e. Damper will admit up to 100% outdoor air for applicable rooftop units.
   f. Damper shall close upon indoor (evaporator) fan shutoff and/or loss of power.
   g. The damper actuator shall plug into the rooftop unit's wiring harness plug. No hard wiring shall be required.
   h. Outside air hood shall include aluminum water entrainment filter
3. Manual damper
   a. Manual damper package shall consist of damper, air inlet screen, and rain hood which can be preset to admit up to 50% outdoor air for year round ventilation.
4. Head Pressure Control Package
   a. Controller shall control coil head pressure by condenser-fan cycling.
5. Condenser Coil Hail Guard Assembly
   a. Shall protect against damage from hail.
   b. Shall be louvered design.
6. Convenience Outlet:
   a. Non-Powered convenience outlet.
      (1.) Outlet shall be powered from a separate 115-120v power source.
      (2.) A transformer shall not be included.
      (3.) Outlet shall be factory-installed and internally mounted with easily accessible 115-v female receptacle.
      (4.) Outlet shall include 15 amp GFI receptacles.
      (5.) Outlet shall be accessible from outside the unit.
7. Fan/Filter Status Switch:
   a. Switch shall provide status of indoor evaporator fan (ON/OFF) or filter (CLEAN/DIRTY).
   b. Status shall be displayed either over communication bus (when used with direct digital controls) or through the controller LCD display inside the unit control box.
8. Propeller Power Exhaust:
   a. Power exhaust shall be used in conjunction with an integrated economizer.
   b. Independent modules for vertical or horizontal return configurations shall be available.
   c. Horizontal power exhaust is shall be mounted in return ductwork.
   d. Power exhaust shall be controlled by economizer controller operation. Exhaust fans shall be energized when dampers open past the 0-100% adjustable setpoint on the economizer control.
9. Roof Curbs (Vertical):
   a. Full perimeter roof curb with exhaust capability providing separate air streams for energy recovery from the exhaust air without supply air contamination.
   b. Formed galvanized steel with wood nailer strip and shall be capable of supporting entire unit weight.
   c. Permits installation and securing of ductwork to curb prior to mounting unit on the curb.

10. High-Static Indoor Fan Motor(s) and Drive(s):
    a. High-static motor(s) and drive(s) shall be factory-installed to provide additional performance range.
11. Outdoor Air Enthalpy Sensor:
    a. The outdoor air enthalpy sensor shall be used to provide single enthalpy control. When used in conjunction with a return air enthalpy sensor, the unit will provide differential enthalpy control. The sensor allows the unit to determine if outside air is suitable for free cooling.
13. Return Air Enthalpy Sensor:
    a. The return air enthalpy sensor shall be used in conjunction with an outdoor air enthalpy sensor to provide differential enthalpy control.
14. Indoor Air Quality (CO_2) Sensor:
    a. Shall be able to provide demand ventilation indoor air quality (IAQ) control.
    b. The IAQ sensor shall be available in wall mount with LED display. The setpoint shall have adjustment capability.
15. Smoke detectors:
    a. Shall be a Four-Wire Controller and Detector.
    b. Shall be environmental compensated with differential sensing for reliable, stable, and drift-free sensitivity.
    c. Shall use magnet-activated test/reset sensor switches.
    d. Shall have a recessed momentary switch for testing and resetting the detector.
    e. Controller shall include:
        (1.) One set of normally open alarm initiation contacts for connection to an initiating device circuit on a fire alarm control panel.
        (2.) Two Form-C auxiliary alarm relays for interface with rooftop unit or other equipment.
        (3.) One Form-C supervision (trouble) relay to control the operation of the Trouble LED on a remote test/reset station.
        (4.) Capable of direct connection to two individual detector modules.
        (5.) Can be wired to up to 14 other duct smoke detectors for multiple fan shutdown applications.
16. Electric Heat:
    a. Heating Section
        (1.) Heater element open coil resistance wire, nickel-chrome alloy, strung through ceramic insulators mounted on metal frame. Coil ends are staked and welded to terminal screw slots.
        (2.) Heater assemblies are provided with integral fusing for protection of internal heater circuits not exceeding 48 amps each. Auto reset thermo limit controls, magnetic heater contactors (24 v coil) and terminal block all mounted in electric heater control box (minimum 18 ga galvanized steel) attached to end of heater assembly.



SCHEMATIC DIAGRAM





COMPONENT CODE

FB	FUSE BLOCK
FU	FUSE (ONE TIME)
FUT	FUSE W/TIME DELAY
GND	GROUND
HE	HEATER ELEMENT
LC	LIMIT CONTROL
PL	PLUG
TDC	TIME DELAY CONTROL

NOTES:

1. USE COPPER WIRE ONLY.
2. CONNECT FIELD WIRING IN GROUNDED RAINTIGHT CONDUIT TO 60HZ SINGLE PHASE POWER.
3. SEE INSTALLATION INSTRUCTIONS FOR FIELD SIZING.
4. CONNECT UNIT POWER LEADS TO TERMINAL BLOCK IN ELECTRIC HEAT COMPARTMENT.
5. REPLACEMENT FUSES SHOULD BE NONRENEWABLE CARTRIDGE TYPE, EQUIVALENT TO ORIGINAL.

FACTORY INSTALLED FUSES

HEATER KIT	UNIT
(6) ONE-TIME 60 AMP	(3) TIME-DELAY 80 AMP

WIRING INFORMATION

LINE VOLTAGE
-FACTORY STANDARD ————————
-FACTORY OPTION —·—·—·—·—
-FIELD INSTALLED - - - - - - - -

LOW VOLTAGE
-FACTORY STANDARD ————————
-FACTORY OPTION —·—·—·—·—
-FIELD INSTALLED - - - - - - - -

REPLACEMENT WIRE
-MUST BE THE SAME SIZE AND TYPE OF INSULATION AS ORIGINAL (105° C MIN.)

WARNING
-CABINET MUST BE PERMANENTLY GROUNDED AND CONFORM TO N.E.C., (C.E.C.-CANADA) AND LOCAL CODES.

WIRE COLOR CODE

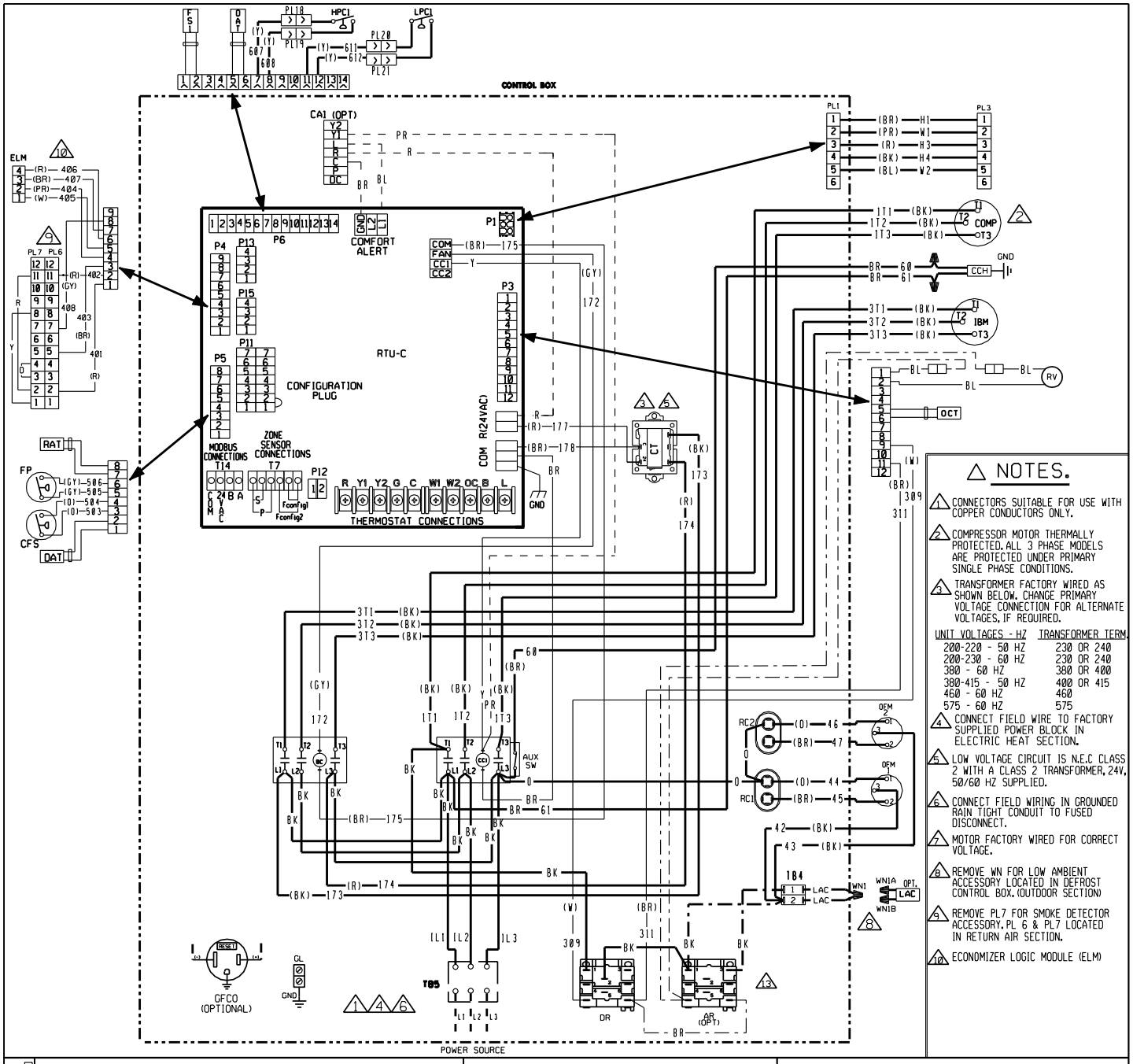
BK__BLACK	O___ORANGE
BR__BROWN	PR__PURPLE
BL__BLUE	R___RED
G___GREEN	W___WHITE
GY__GRAY	Y___YELLOW

ELECTRICAL WIRING DIAGRAM

38.4 KW
208/240 VOLT,
THREE PHASE, 60 HZ.

DR. BY	APP. BY	DATE	DWG. NO.	REV
MGR		1-19-99	90-42560-03	00

DWG. NO. 90-42560-03 REV 00



COMPONENT CODE

AR	AUXILLIARY RELAY	LAC	LOW AMBIENT COOLING CONTROL
BC	BLOWER CONTACTOR	LPC	LOW PRESSURE CONTROL
CA	COMFORT ALERT MODULE	OAT	OUTSIDE AIR SENSOR
CC	COMPRESSOR CONTACTOR	OCT	OUTSIDE COIL TEMPERATURE
CCH	CRANKCASE HEATER	OFM	OUTDOOR FAN MOTOR
CFS	CLOGGED FILTER SWITCH	PL	PLUG
COMP	COMPRESSOR	RAT	RETURN AIR SENSOR
CT	CONTROL TRANSFORMER	RC	RUN CAPACITOR
DAT	DISCHARGE AIR SENSOR	RTU-C	ROOFTOP UNIT CONTROL
DR	DEFROST RELAY	RV	REVERSING VALVE
DISC	DISCONNECT SWITCH	TB	TERMINAL BLOCK
FP	FAN PROVING		WIRE NUT
FS	FREEZE SENSOR		
GFCO	GROUND FAULT CONVENIENCE OUTLET		
GL	GROUND LUG		
GND	GROUND		
HPC	HIGH PRESSURE CONTROL		
IBM	INDOOR BLOWER MOTOR BELT DRIVE		

WIRING INFORMATION

LINE VOLTAGE
- FACTORY STANDARD
- FACTORY OPTION
- FIELD INSTALLED

LOW VOLTAGE
- FACTORY STANDARD
- FACTORY OPTION
- FIELD INSTALLED

REPLACEMENT WIRE
- MUST BE THE SAME SIZE AND TYPE OF INSULATION AS ORIGINAL (105° C MIN.)

WARNING
- CABINET MUST BE PERMANENTLY GROUNDED AND CONFORM TO I.E.C., N.E.C., C.E.C., AND LOCAL CODES AS APPLICABLE.

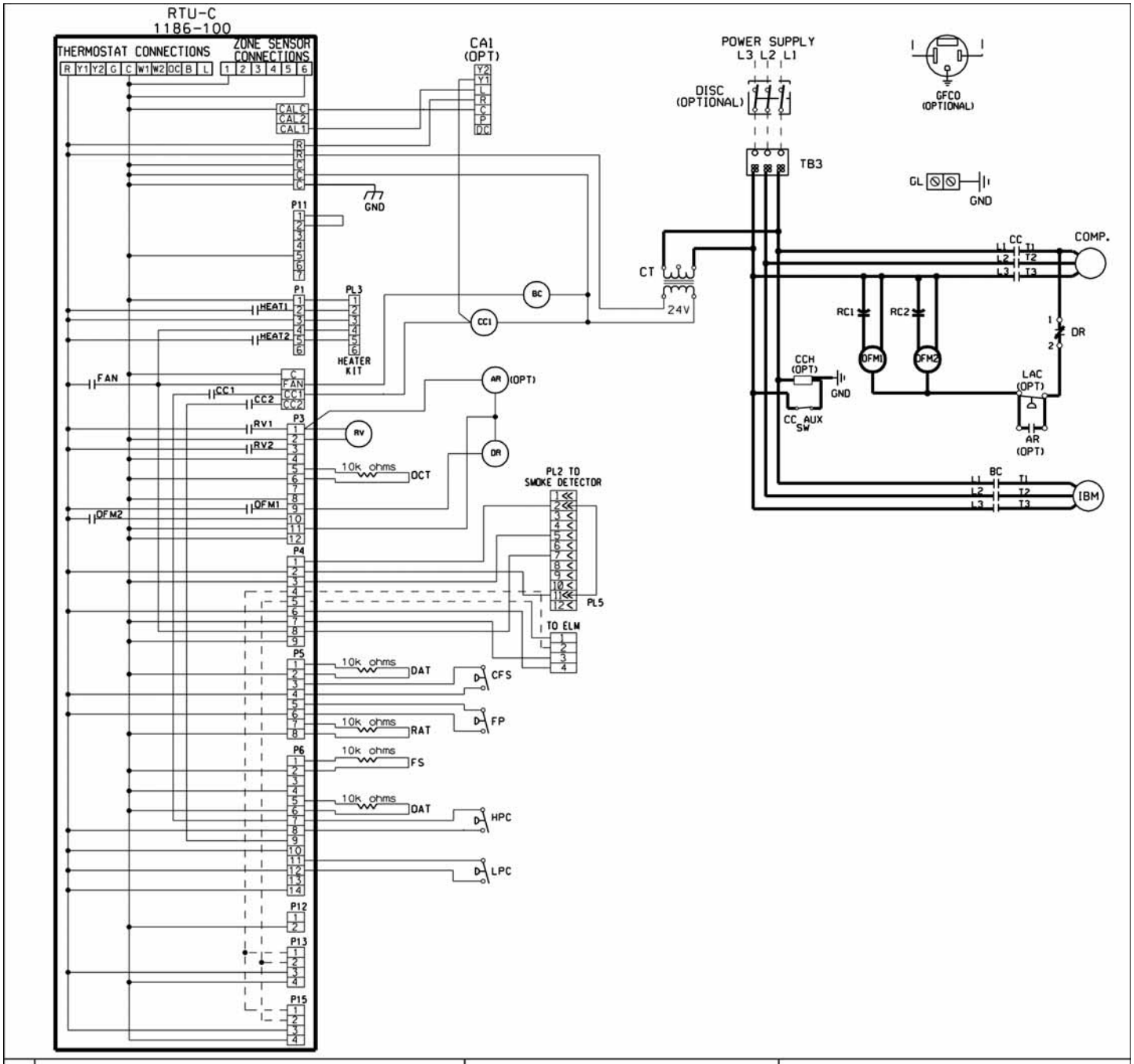
WIRE COLOR CODE

BK	BLACK	O	ORANGE
BR	BROWN	PR	PURPLE
BL	BLUE	R	RED
G	GREEN	W	WHITE
GY	GRAY	Y	YELLOW

WIRING DIAGRAM
RJNL-C090/120
208-230/460/575V 3 PH, 60 HZ.
HEAT PUMP W/RTU-C

DR. BY	APP. BY	DATE	DWG. NO.	REV
MGR		4-21-09	90-103232-01	02

DWG. NO. 90-103232-01 REV 02



COMPONENT CODE

BC	BLOWER CONTACTOR	IFC	INTEGRATED FURNACE CONTROL
CA	COMFORT ALERT MODULE	LAC	LOW AMBIENT COOLING CONTROL
CC	COMPRESSOR CONTACTOR	LC	LIMIT CONTROL
CCH	CRANKCASE HEATER	LPC	LOW PRESSURE CONTROL
CFS	CLOGGED FILTER SWITCH	MAS	MIX AIR SENSOR
COMP	COMPRESSOR	OAT	OUTSIDE AIR SENSOR
CT	CONTROL TRANSFORMER	OFM	OUTDOOR FAN MOTOR
DISC	DISCONNECT SWITCH	PL	PLUG
FP	FAN PROVING	RAT	RETURN AIR SENSOR
FS	FREEZE SENSOR	RC	RUN CAPACITOR
GFCO	GROUND FAULT CONVENIENCE OUTLET	SCC	SPACE COMFORT CONTROL
GL	GROUND LUG	SE	SPARK ELECTRODE
GND	GROUND	TB	TERMINAL BLOCK
HPC	HIGH PRESSURE CONTROL	▲	WIRE NUT
IBM	INDOOR BLOWER MOTOR BELT DRIVE		

WIRING INFORMATION

LINE VOLTAGE
- -FACTORY STANDARD
- -FACTORY OPTION
- -FIELD INSTALLED

LOW VOLTAGE
- -FACTORY STANDARD
- -FACTORY OPTION
- -FIELD INSTALLED

REPLACEMENT WIRE
- -MUST BE THE SAME SIZE AND TYPE OF INSULATION AS ORIGINAL (105° C MIN.)

WARNING
- -CABINET MUST BE PERMANENTLY GROUNDED AND CONFORM TO I.E.C., N.E.C., C.E.C., AND LOCAL CODES AS APPLICABLE.

WIRE COLOR CODE

BK	BLACK	O	ORANGE
BR	BROWN	PR	PURPLE
BL	BLUE	R	RED
G	GREEN	W	WHITE
GY	GRAY	Y	YELLOW

WIRING SCHEMATIC
RJNL-C090/120
208-230/460/575V 3 PH. 60 HZ.
PACKAGED A/C

DR. BY	APP. BY	DATE	DWG. NO.	REV
MGR		7-16-09	90-103264-01	00

90-103264-01 REV 00

BEFORE PURCHASING THIS APPLIANCE, READ IMPORTANT ENERGY COST AND EFFICIENCY INFORMATION AVAILABLE FROM YOUR RETAILER.

GENERAL TERMS OF LIMITED WARRANTY*

Ruud will furnish a replacement for any part of this product which fails in normal use and service within the applicable periods stated, in accordance with the terms of the limited warranty.

***For complete details of the Limited and Conditional Warranties, including applicable terms and conditions, contact your local contractor or the Manufacturer for a copy of the product warranty certificate.**

Conditional Parts (Registration Required)
1 Phase, Residential Applications .....Ten (10) Years
Compressor
1 Phase, Residential Applications.....Ten (10) Years
1 & 3 Phase, Commercial Applications .....Five (5) Years
Parts
1 & 3 Phase, Commercial Applications .....One (1) Year

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