



PACKAGE AIR CONDITIONER
RLRL-C/H SERIES

Ruud Commercial Ultra Series™ Package Air Conditioner



RLRL-C Series

With ClearControl™

Nominal Sizes 7.5 & 10 Tons [26.4 & 35.2 kW]

ASHRAE 90.1-2007 Compliant Models

RLRL-H Series

With ClearControl™ & VFD Technology

Nominal Sizes 7.5 & 10 Tons [26.4 & 35.2 kW]

ASHRAE 90.1-2010 Compliant Models



RELY ON RUUD.™

FORM NO. S22-961 REV. 1

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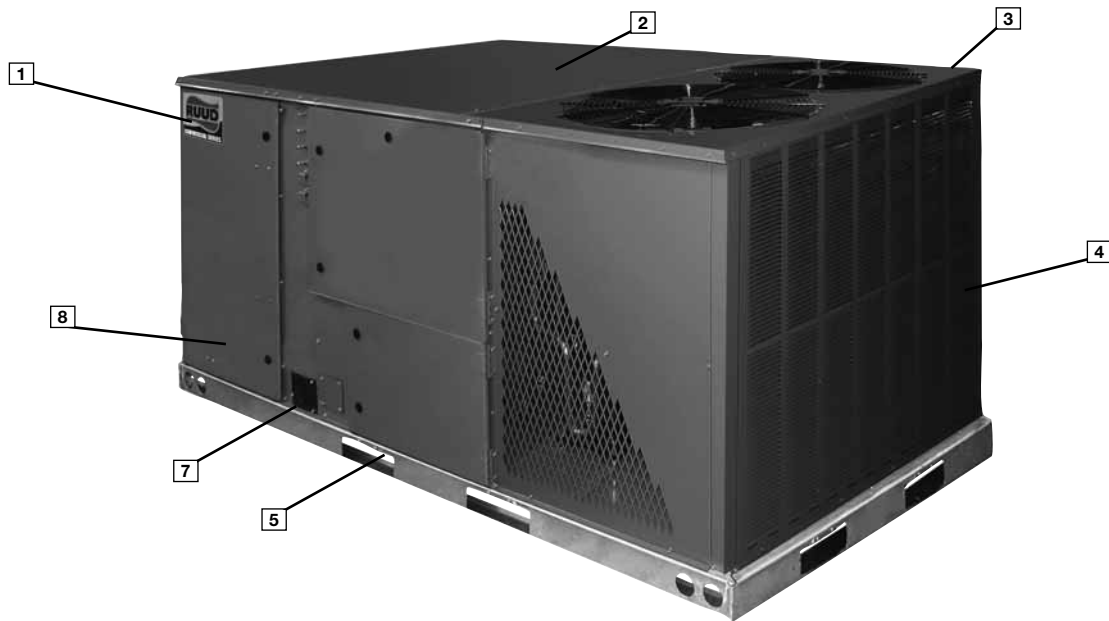
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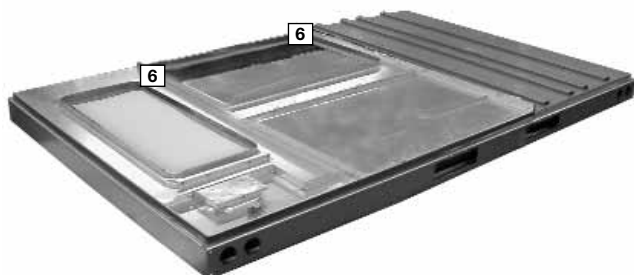
RLRL-C/H STANDARD FEATURES INCLUDE:

- R-410A HFC refrigerant.
- Complete factory charged, wired and run tested.
- Scroll compressors with internal line break overload and high-pressure protection.
- Two stage operation, two independent circuits.
- Convertible airflow—vertical downflow or horizontal sideflow.
- TXV refrigerant metering system on each circuit.
- High Pressure and Low Pressure/Loss of charge protection standard on all models.
- Solid Core liquid line filter drier on each circuit.
- Single slab, single pass designed evaporator and condenser coils facilitate easy cleaning for maintained high efficiencies.
- 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 ASTM B117 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 Evaporator coils.
- MicroChannel condenser coil.
- Molded compressor plug.
- Supplemental electric heat provides 100% efficient heating.
- Factory Installed Direct Digital Control (DDC) and sensors which can connect to LonWorks™ or BACnet® BAS systems for remote monitoring and control.
- -H models with supply fan Variable Frequency Drive (VFD) meets ASHRAE 90.1-2010 and California Title 24.



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 *Commercial Series*™ 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 Ruud hail guard (optional) (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 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. The drainpan (7) is made of material that resists the growth of harmful bacteria and is sloped for the latest IAQ benefits. Furthermore, the drain pan slides out for easy cleaning.

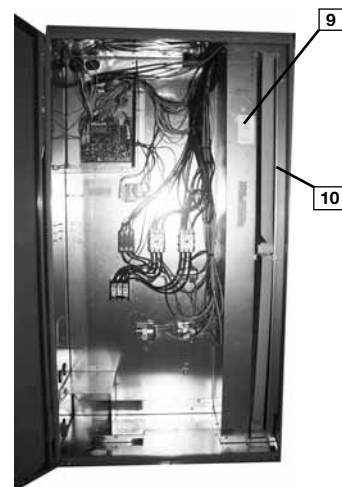


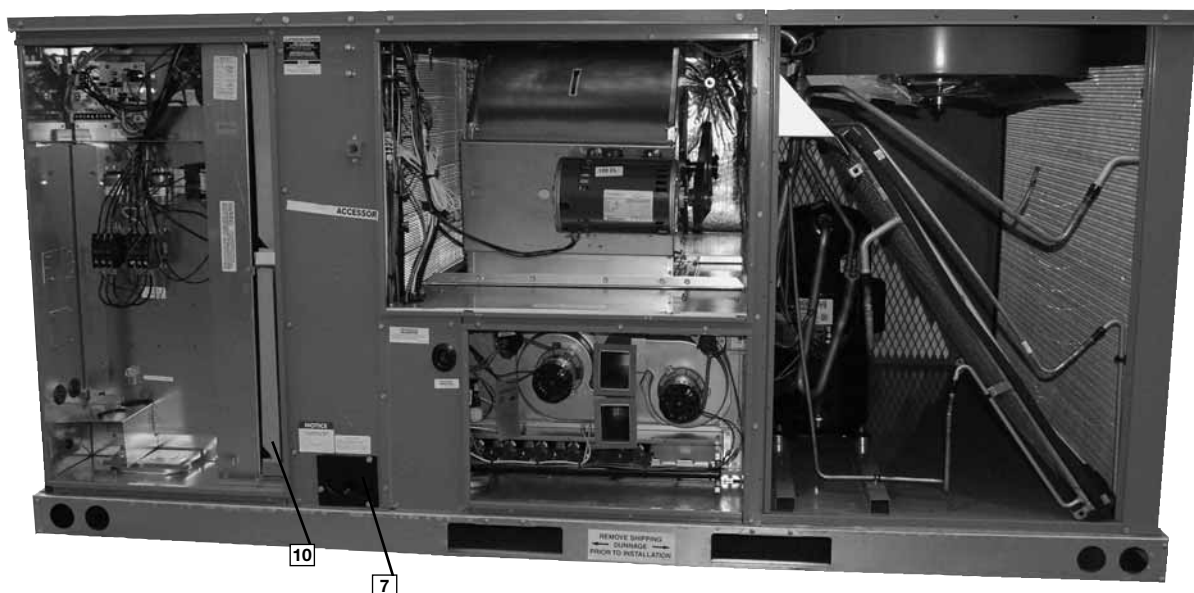
During development, each unit was tested to U.L. 1995, AHRI 340-370 and other Ruud-required reliability tests. Ruud adheres to stringent ISO 9002 quality procedures, and each unit bears the U.L. and AHRI certification labels located on the unit nameplate (8). Contractors can rest assured that when a 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 compartment has 1/4 turn fasteners and hinged access. Each panel is permanently embossed with the compartment name (control/filter access, blower access and electric heat access).

Electrical and filter compartment access is through a large, hinged-access panel. On the outside of the panel is the unit nameplate, which contains the model and serial number, electrical data and other important unit information.

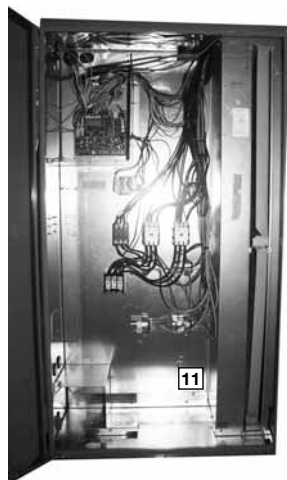
The unit charging chart is located on the inside of the electrical and filter compartment door. Electrical wiring diagrams are found on the control box cover, which allows contractors to move them to more readable locations. To the right of the control box the model and serial number can be found. Having 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 throwaway 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. There is a blower contactor and compressor for each compressor.

As part of the ClearControl™ system which allows real time monitoring and communication between rooftop units, the RLRL-C/H Package Air Conditioner 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. (12) 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 RLRL-C/H Package Air Conditioner with ClearControl™ is specifically designed to be applied in four distinct applications:



The RLRL-C/H 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 ClearControl™ 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.

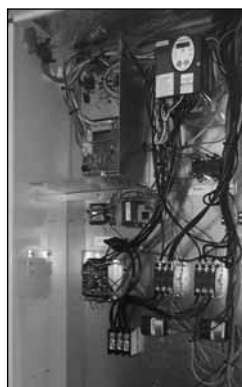
The RLRL-C/H is compatible with a third party building management system that supports the LonMark Space Comfort Controller (SCC) functional profile or LonMark Discharge Air Controller (DAC) functional profile. This is accomplished with a field installed LonMark communication module. The LonMark Communication Module plugs onto the RTU-C controller and allows communication between ClearControl™ 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 RLRL-C/H 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 RLRL-C/H 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.

-H models with factory installed supply fan, VFD (Variable Frequency Drive) optimizes energy usage year round by providing a lower speed for first stage cooling operation improving IEER's by up to 33% over the conventional constant fan system. Furthermore, operating in the constant fan mode at the reduced speed can use as little as 1/8th of the energy of a conventional constant fan system. Also, by operating at a lower speed on first stage cooling up to 126% more moisture is removed improving comfort during low load operation. The VFD supply fan factory option meet's California Title 24 and ASHRAE 90.1-2010 requirements for multi blower speed control. VFD also ramps up to the desired speed reducing stress on the supply fan components and reducing the noise from sudden inrush of air. Because the airflow is cut in half during first stage cooling and constant fan operation, noise is much less during these modes of operation.



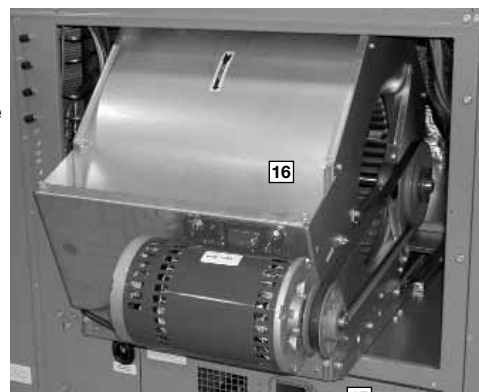
For added convenience in the field, a factory-installed convenience outlet (13) is available. Low and High voltage can enter either from the side or through the base. Low-voltage connections are made integrated cooling control. The high-voltage connection is terminated at the number 1 compressor contactor. The suggested mounting for the field-installed disconnect is on the exterior side of the electrical control box.



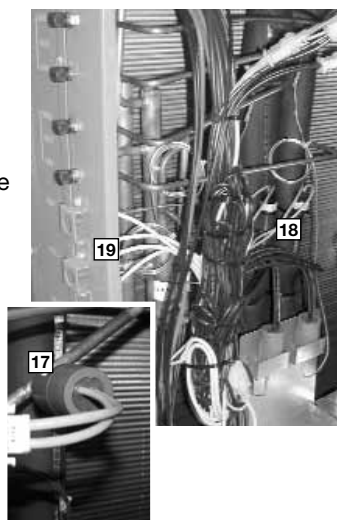
To the right of the electrical and filter compartment are the externally mounted gauge ports, which are permanently identified by embossed wording that clearly identifies the compressor circuit, high pressure connection and low pressure connection (14). With the gauge ports mounted externally, an accurate diagnostic of system operation can be performed quickly and easily. The blower compartment is to the right of the gauge ports and can be



accessed by 1/4 turn fasteners. To allow easy maintenance of the blower assembly, the entire assembly easily slides out by removing the 3/8" screws from the blower retention bracket. The adjustable motor pulley (15) 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 0 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 (16) 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.

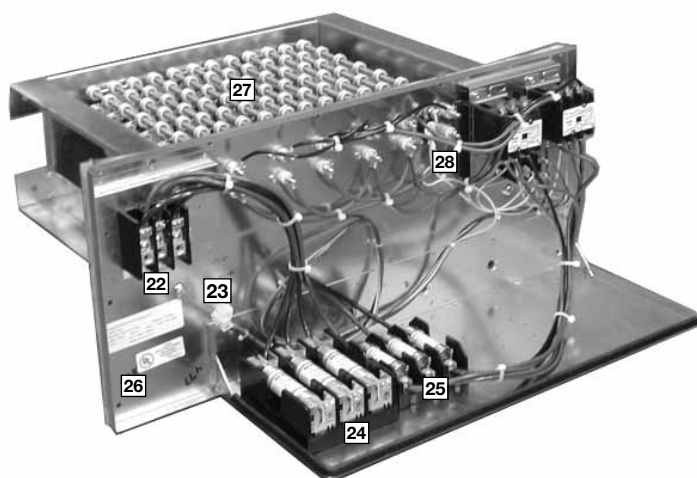
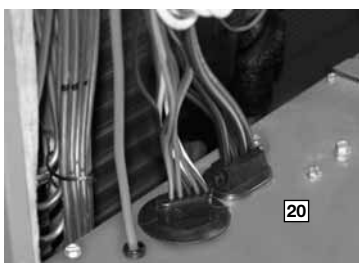


Also inside the blower compartment is the low-ambient control (17), low-pressure switch (18), high-pressure switch (19) and freeze sensor refrigerant safety device (20). The low-ambient control allows for operation of the compressor down to 0 degrees ambient temperature by cycling the outdoor fans on high pressure. The high-pressure switch will shut off the compressors if pressures in excess of 610 PSIG are detected, this may occur if the outdoor fan motor fails. The low-pressure switch shuts off the compressors if low pressure is detected due to loss of charge. The freeze sensor protects the compressor if the evaporator coil gets too cold (below freezing) due to low airflow, and allows monitoring of the suction line temperature on the controller display. Each factory-installed option is brazed into the appropriate high or low side and wired appropriately. Use of polarized plugs and schrader fittings allow for easy field installation.



Inside the blower compartment the interlaced evaporator can also be viewed. The evaporator uses enhanced fin technology for maximum heat transfer. The TXV metering device assures even distribution of refrigerant throughout the evaporator. (Note: 6 ton single stage has an orifice refrigerant control.)

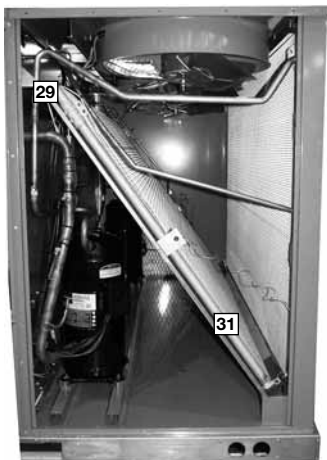
Wiring throughout the unit is neatly bundled and routed. Where wire harnesses go through the condenser bulkhead or blower deck, a molded wire harness assembly (20) provides an air-tight and water-tight seal, and provides strain relief. Care is also taken to tuck raw edges of insulation behind sheet metal 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 up to six 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 (22) and a polarized plug for the low-voltage connection (23). The electric furnace comes with fuses for the unit (24) and for the electric furnace (25), and is UL certified (26). The electric heating elements are of a wound-wire construction (27) and isolated with ceramic bushings. The limit switch (28) 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.

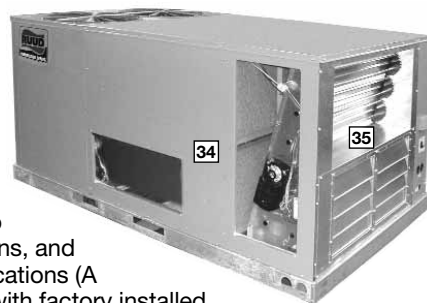
The compressor compartment houses the heartbeat of the unit. The scroll compressor (29) is known for its long life, and for reliable, quiet, and efficient operation. Each compressor has molded compressor plug eliminating potential for mis wiring. The suction and discharge lines are designed with shock loops (30) to absorb the strain and stress that the starting torque, steady state operation, and shut down cycle impose on the refrigerant tubing. Each compressor and circuit is independent for built-in redundancy, and each circuit is clearly marked throughout the system. Each unit has two stages of efficient cooling operation, first stage is approximately 50% of second stage (072 single stage).



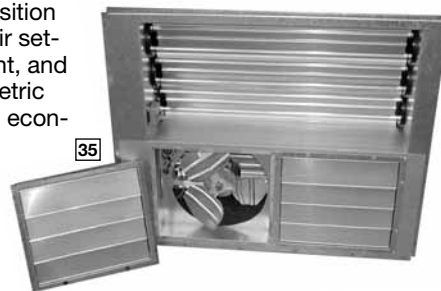
Each unit comes standard with filter dryer (31). The condenser fan motor (32) can easily be accessed and maintained through the compressor compartment. The polarized plug connection allows the motor to be changed quickly and eliminates the need to snake wires through the unit.

The outdoor coil uses the latest enhanced fin design (33) for the most effective method of heat transfer. The outdoor coil is protected by optional louvered panels, which allow unobstructed airflow while protecting the unit from both Mother Nature and vandalism.

Each unit is designed for both downflow or horizontal applications (34) for job configuration flexibility. The return air compartment can also contain an economizer (35).



Three 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 CO₂ setpoint. Barometric relief is standard on all economizers. Power Exhaust 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 smoke detector.

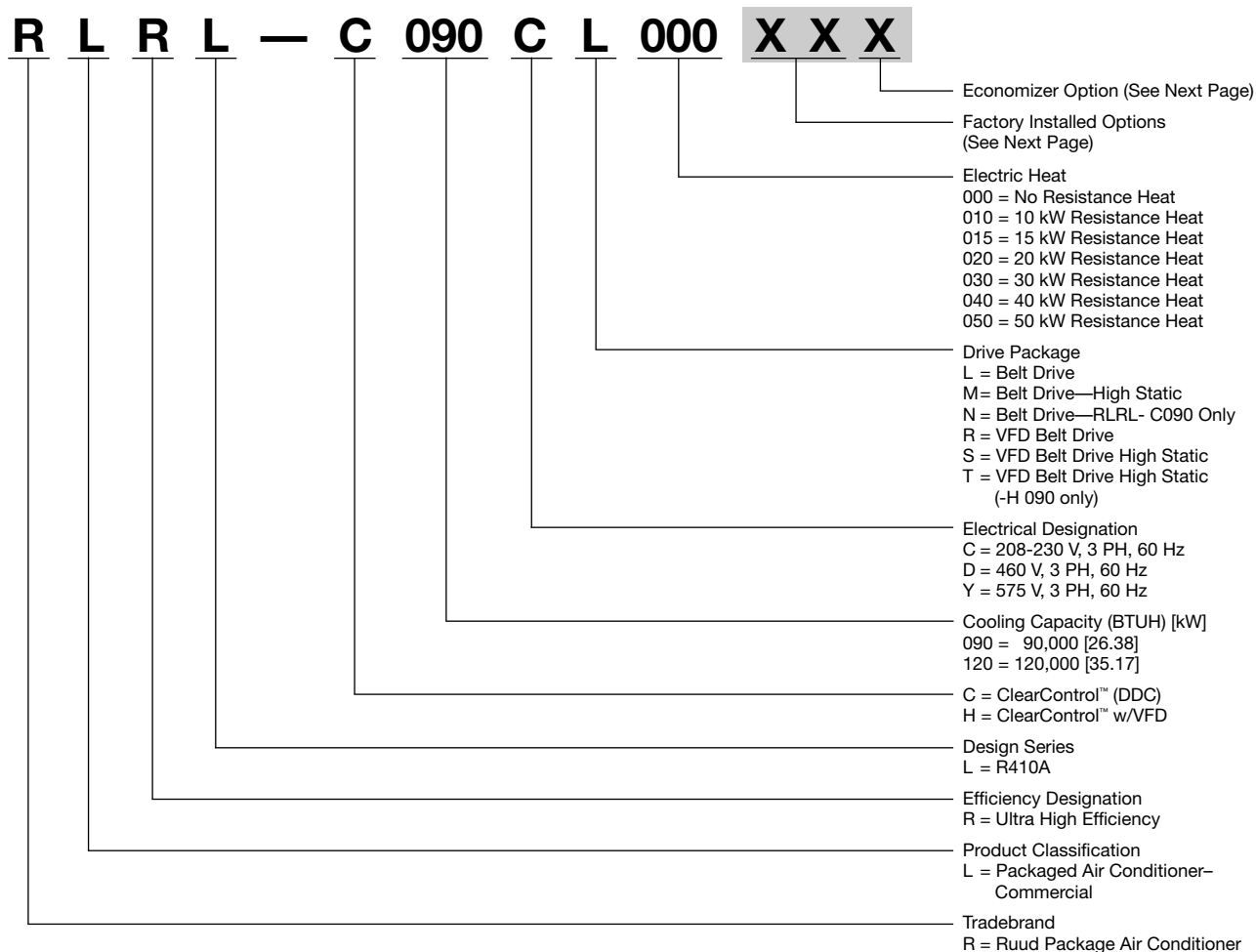


The damper minimum position, actual damper position, power exhaust on/off setpoint, mixed air temperature limit setpoint and Demand Controlled Ventilation (DCV) setpoint can be read and adjusted at the unit controller display or remotely through a network connection.

The Space CO₂ 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 (36) is made for toolless assembly at the job-site by engaging a pin into the hinged corners of adjacent curb sides, which makes the assembly process quick and easy.





[] Designates Metric Conversions

6 TO 12.5 TON [21.1 TO 44.0 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

"X" indicates factory installed option.

ECONOMIZER SELECTION FOR LRL 7 TO 10 TON [26.4 TO 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:

RLRL-C120CL000.....this unit has no factory installed options.

RLRL-C120CL000**ADA**.....this unit is equipped with *hail guards*.

RLRL-C120CL000**JDA**.....this unit is equipped with *hail guards, low ambient and comfort alert*.

RLRL-C120CL000**JDH**.....this unit is equipped as above *and* includes an *Economizer with single enthalpy sensor and with barometric relief*.

RLRL-C120CL000**AAJ**.....this unit is equipped with an *Economizer with single enthalpy sensor and barometric relief with smoke detector*.

[] Designates Metric Conversions

To select an RLRL-C/H Cooling and Heating 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—	208/240V 3 Phase
Total cooling capacity—	106,000 BTUH [31.26 kW]
Sensible cooling capacity—	82,000 BTUH [24.03 kW]
Heating capacity—	150,000 BTUH [43.96 kW]
*Condenser Entering Air—	95°F [35°C] DB
*Evaporator Mixed Air Entering—	65°F [18°C] WB; 78°F [26°C] DB
*Indoor Air Flow (vertical)—	3600 CFM [1699 L/s]
*External Static Pressure—	.40 in. WG

2. SELECT UNIT TO MEET COOLING REQUIREMENTS.

Since total cooling is within the range of a nominal 10 ton [35.2 kW] unit, enter cooling performance table at 95°F [35°C] DB condenser inlet air. Interpolate between 63°F [2°C] and 67°F [19°C] to determine total and sensible capacity and power input for 65°F [18°C] WB evap inlet air at 4000 CFM [1888 L/s] indoor air flow (table basis):

Total Capacity = 118,900 BTUH [34.80 kW]
Sensible Capacity = 99,950 BTUH [29.29 kW]
Power Input (Compressor and Cond. Fans) = 8,950 watts

Use formula $[1.10 \times \text{CFM} \times (1 - \text{DR}) \times (\text{dbE} - 80)]$ in note ① to determine sensible capacity at 80°F [26.7°C] DB evaporator entering air:

Sensible Capacity = 92,268 BTUH [27.24 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, $118,900 \times .98 = 116,522$ BTUH [34.15 kW]
Sensible Capacity, $92,268 \times .95 = 87,655$ BTUH [25.67 kW]
Power Input $11,650 \times .99 = 8,861$ 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 .40 in. includes the system duct and grilles. Add from the table "Component Air Resistance," .076 for wet coil, .13 for vertical air flow, for a total selection static pressure of .606 (.6) inches of water, and determine:

RPM = 796
WATTS = 1,650
DRIVE = L (standard 2 H.P. motor)

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

$$\text{BTUH} = 1,650 \times 3.412 = 5,630$$

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

$$\begin{aligned} \text{Net Total Capacity} &= 116,522 - 5,630 = \\ &110,892 \text{ BTUH [32.5 kW]} \end{aligned}$$

$$\begin{aligned} \text{Net Sensible Capacity} &= 87,655 - 5,630 = \\ &82,025 \text{ BTUH [24.04 kW]} \end{aligned}$$

7. CALCULATE UNIT INPUT AND JOB EER.

$$\begin{aligned} \text{Total Power Input} &= 88,610 \text{ (step 3)} + 1,650 \\ &\text{(step 4)} = 10,511 \text{ Watts} \end{aligned}$$

$$\text{EER} = \frac{\text{Net Total BTUH [kW]} \text{ (step 6)}}{\text{Power Input, Watts (above)}} = \frac{110,892}{10,511} = 10.55$$

8. SELECT UNIT HEATING CAPACITY.

Units with heater kits section find unit heater kw and convert watts to BTU: add blower BTUH heat effect (step 5).

CC50C	Heater Kit
kW x 3412	= 163,776 BTUH [48.00 kW]
	+ 5,630 BTUH [1.65 kW]
Heating Capacity=	169,406 BTUH [49.65 kW]

CHOOSE MODEL RLRL-C/H120CL050

*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

NOM. SIZES 7.5-10 TONS [26.4-35.2 kW] ASHRAE 90.1-2010 COMPLIANT MODELS

Model RLRL- Series Model RLRL- Series (with VFD)	C090CL H090CR	C090CM H090CS	C090CN H090CT	C090DL H090DR
Cooling Performance¹				CONTINUED →
Gross Cooling Capacity Btu [kW]	95,000 [27.83]	95,000 [27.83]	95,000 [27.83]	95,000 [27.83]
EER/SEER ²	13/NA	13/NA	13/NA	13/NA
Nominal CFM/AHRI Rated CFM [L/s]	3000/2600 [1416/1227]	3000/2600 [1416/1227]	3000/2600 [1416/1227]	3000/2600 [1416/1227]
AHRI Net Cooling Capacity Btu [kW]	92,000 [26.96]	92,000 [26.96]	92,000 [26.96]	92,000 [26.96]
Net Sensible Capacity Btu [kW]	66,200 [19.4]	66,200 [19.4]	66,200 [19.4]	66,200 [19.4]
Net Latent Capacity Btu [kW]	25,800 [7.56]	25,800 [7.56]	25,800 [7.56]	25,800 [7.56]
IEER ³ (Standard / VFD)	14/15.8	14/15.8	14/15.8	14/15.8
Net System Power kW	7.04	7.04	7.04	7.04
Compressor				
No./Type	2/Scroll	2/Scroll	2/Scroll	2/Scroll
Outdoor Sound Rating (dB)⁵	88	88	88	88
Outdoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	1 [25.4]	1 [25.4]	1 [25.4]	1 [25.4]
Face Area sq. ft. [sq. m]	27 [2.51]	27 [2.51]	27 [2.51]	27 [2.51]
Rows / FPI [FPcm]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]
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 / 15 [6]	3 / 15 [6]	3 / 15 [6]	3 / 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 1/3 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	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)
No. Speeds (Standard / VFD)	Single / Multiple	Single / Multiple	Single / Multiple	Single / Multiple
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]	105.6/105.6 [2994/2994]	105.6/105.6 [2994/2994]	105.6/105.6 [2994/2994]	105.6/105.6 [2994/2994]
Weights				
Net Weight lbs. [kg]	1020 [463]	1020 [463]	1028 [466]	1020 [463]
Ship Weight lbs. [kg]	1057 [479]	1057 [479]	1065 [483]	1057 [479]

NOTES:

- Cooling Performance is rated at 95° F ambient, 80° F entering dry bulb, 67° F entering wet bulb. Gross capacity does not include the effect of fan motor heat. AHRI capacity is net and includes the effect of fan motor heat. Units are suitable for operation to $\pm 20\%$ of nominal cfm. Units are certified in accordance with the Unitary Air Conditioner Equipment certification program, which is based on AHRI Standard 340/360.
- EER and/or SEER are rated at AHRI conditions and in accordance with DOE test procedures.
- Integrated Energy Efficiency Ratio (IEER) is rated in accordance with AHRI Standard 340/360.
- Outdoor Sound Rating shown is tested in accordance with AHRI Standard 270.

[] Designates Metric Conversions

NOM. SIZES 7.5-10 TONS [26.4-35.2 kW] ASHRAE 90.1-2010 COMPLIANT MODELS

Model RLRL- Series Model RLRL- Series (with VFD)	C090DM H090DS	C090DN H090DT	C090YL	C090YM
Cooling Performance¹				CONTINUED →
Gross Cooling Capacity Btu [kW]	95,000 [27.83]	95,000 [27.83]	95,000 [27.83]	95,000 [27.83]
EER/SEER ²	13/NA	13/NA	13/NA	13/NA
Nominal CFM/AHRI Rated CFM [L/s]	3000/2600 [1416/1227]	3000/2600 [1416/1227]	3000/2600 [1416/1227]	3000/2600 [1416/1227]
AHRI Net Cooling Capacity Btu [kW]	92,000 [26.96]	92,000 [26.96]	92,000 [26.96]	92,000 [26.96]
Net Sensible Capacity Btu [kW]	66,200 [19.4]	66,200 [19.4]	66,200 [19.4]	66,200 [19.4]
Net Latent Capacity Btu [kW]	25,800 [7.56]	25,800 [7.56]	25,800 [7.56]	25,800 [7.56]
IEER ³ (Standard / VFD)	14/15.8	14/15.8	14	14
Net System Power kW	7.04	7.04	7.04	7.04
Compressor				
No./Type	2/Scroll	2/Scroll	2/Scroll	2/Scroll
Outdoor Sound Rating (dB)⁵				
	88	88	88	88
Outdoor Coil—Fin Type				
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	1 [25.4]	1 [25.4]	1 [25.4]	1 [25.4]
Face Area sq. ft. [sq. m]	27 [2.51]	27 [2.51]	27 [2.51]	27 [2.51]
Rows / FPI [FPcm]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]
Indoor Coil—Fin Type				
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 / 15 [6]	3 / 15 [6]	3 / 15 [6]	3 / 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 1/3 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	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)
No. Speeds (Standard / VFD)	Single / Multiple	Single / Multiple	Single	Single
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]				
	105.6/105.6 [2994/2994]	105.6/105.6 [2994/2994]	105.6/105.6 [2994/2994]	105.6/105.6 [2994/2994]
Weights				
Net Weight lbs. [kg]	1020 [463]	1028 [466]	1020 [463]	1020 [463]
Ship Weight lbs. [kg]	1057 [479]	1065 [483]	1057 [479]	1057 [479]

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 $\pm 20\%$ of nominal cfm. Units are certified in accordance with the Unitary Air Conditioner Equipment certification program, which is based on AHRI Standard 340/360.
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 340/360.
4. Outdoor Sound Rating shown is tested in accordance with AHRI Standard 270.

[] Designates Metric Conversions

NOM. SIZES 7.5-10 TONS [26.4-35.2 kW] ASHRAE 90.1-2010 COMPLIANT MODELS

Model RLRL- Series Model RLRL- Series (with VFD)	C090YN	C120CL H120CR	C120CM H120CS	C120DL H120DR
Cooling Performance¹				CONTINUED →
Gross Cooling Capacity Btu [kW]	95,000 [27.83]	124,000 [36.33]	124,000 [36.33]	124,000 [36.33]
EER/SEER ²	13/NA	12.5/NA	12.5/NA	12.5/NA
Nominal CFM/AHRI Rated CFM [L/s]	3000/2600 [1416/1227]	4000/3575 [1888/1687]	4000/3575 [1888/1687]	4000/3575 [1888/1687]
AHRI Net Cooling Capacity Btu [kW]	92,000 [26.96]	120,000 [35.16]	120,000 [35.16]	120,000 [35.16]
Net Sensible Capacity Btu [kW]	66,200 [19.4]	87,600 [25.67]	87,600 [25.67]	87,600 [25.67]
Net Latent Capacity Btu [kW]	25,800 [7.56]	32,400 [9.49]	32,400 [9.49]	32,400 [9.49]
IEER ³ (Standard / VFD)	14	13.8/15.6	13.8/15.6	13.8/15.6
Net System Power kW	7.04	9.62	9.62	9.62
Compressor				
No./Type	2/Scroll	2/Scroll	2/Scroll	2/Scroll
Outdoor Sound Rating (dB)⁵	88	88	88	88
Outdoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	1 [25.4]	1 [25.4]	1 [25.4]	1 [25.4]
Face Area sq. ft. [sq. m]	27 [2.51]	27 [2.51]	27 [2.51]	27 [2.51]
Rows / FPI [FPcm]	1 / 23 [9]	2 / 23 [9]	2 / 23 [9]	2 / 23 [9]
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]	15.8 [1.47]	15.75 [1.46]
Rows / FPI [FPcm]	2 / 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 1/3 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	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)
No. Speeds (Standard / VFD)	Single	Single / Multiple	Single / Multiple	Single / Multiple
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]	107.5/110.7 [3048/3138]	153.6/156.8 [4355/4445]	153.6/156.8 [4355/4445]	153.6/156.8 [4355/4445]
Weights				
Net Weight lbs. [kg]	1028 [466]	1169 [530]	1177 [534]	1169 [530]
Ship Weight lbs. [kg]	1065 [483]	1206 [547]	1214 [551]	1206 [547]

NOTES:

- Cooling Performance is rated at 95° F ambient, 80° F entering dry bulb, 67° F entering wet bulb. Gross capacity does not include the effect of fan motor heat. AHRI capacity is net and includes the effect of fan motor heat. Units are suitable for operation to $\pm 20\%$ of nominal cfm. Units are certified in accordance with the Unitary Air Conditioner Equipment certification program, which is based on AHRI Standard 340/360.
- EER and/or SEER are rated at AHRI conditions and in accordance with DOE test procedures.
- Integrated Energy Efficiency Ratio (IEER) is rated in accordance with AHRI Standard 340/360.
- Outdoor Sound Rating shown is tested in accordance with AHRI Standard 270.

[] Designates Metric Conversions

NOM. SIZES 7.5-10 TONS [26.4-35.2 kW] ASHRAE 90.1-2010 COMPLIANT MODELS

Model RLRL- Series	C120DM	C120YL	C120YM
Model RLRL- Series (with VFD)	H120DS		
Cooling Performance¹			
Gross Cooling Capacity Btu [kW]	124,000 [36.33]	124,000 [36.33]	124,000 [36.33]
EER/SEER ²	12.5/NA	12.5/NA	12.5/NA
Nominal CFM/AHRI Rated CFM [L/s]	4000/3575 [1888/1687]	4000/3575 [1888/1687]	4000/3575 [1888/1687]
AHRI Net Cooling Capacity Btu [kW]	120,000 [35.16]	120,000 [35.16]	120,000 [35.16]
Net Sensible Capacity Btu [kW]	87,600 [25.67]	87,600 [25.67]	87,600 [25.67]
Net Latent Capacity Btu [kW]	32,400 [9.49]	32,400 [9.49]	32,400 [9.49]
IEER ³ (Standard / VFD)	13.8/15.6	13.8	13.8
Net System Power kW	9.62	9.62	9.62
Compressor			
No./Type	2/Scroll	2/Scroll	2/Scroll
Outdoor Sound Rating (dB)⁵			
	88	88	88
Outdoor Coil—Fin Type			
Tube Type	Louvered	Louvered	Louvered
MicroChannel Depth in. [mm]	MicroChannel	MicroChannel	MicroChannel
Face Area sq. ft. [sq. m]	1 [25.4]	1 [25.4]	1 [25.4]
Rows / FPI [FPcm]	27 [2.51]	27 [2.51]	27 [2.51]
	2 / 23 [9]	2 / 23 [9]	2 / 23 [9]
Indoor Coil—Fin Type			
Tube Type	Louvered	Louvered	Louvered
Tube Size in. [mm]	Rifled	Rifled	Rifled
Face Area sq. ft. [sq. m]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Rows / FPI [FPcm]	15.75 [1.46]	15.75 [1.46]	15.75 [1.46]
Refrigerant Control	4 / 15 [6]	4 / 15 [6]	4 / 15 [6]
Drain Connection No./Size in. [mm]	TX Valves	TX Valves	TX Valves
	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]
Outdoor Fan—Type			
No. Used/Diameter in. [mm]	Propeller	Propeller	Propeller
Drive Type/No. Speeds	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]
CFM [L/s]	Direct/1	Direct/1	Direct/1
No. Motors/HP	8000 [3775]	8000 [3775]	8000 [3775]
Motor RPM	2 at 1/3 HP	2 at 1/3 HP	2 at 1/3 HP
	1075	1075	1075
Indoor Fan—Type			
No. Used/Diameter in. [mm]	FC Centrifugal	FC Centrifugal	FC Centrifugal
Drive Type	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]
No. Speeds (Standard / VFD)	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)
No. Motors	Single / Multiple	Single	Single
Motor HP	1	1	1
Motor RPM	3	2	3
Motor Frame Size	1725	1725	1725
	56	56	56
Filter—Type			
Furnished	Disposable	Disposable	Disposable
(NO.) Size Recommended in. [mm x mm x mm]	Yes	Yes	Yes
	(3)2x18x18 [51x457x457]	(3)2x18x18 [51x457x457]	(3)2x18x18 [51x457x457]
	(3)2x18x24 [51x457x610]	(3)2x18x24 [51x457x610]	(3)2x18x24 [51x457x610]
Refrigerant Charge Oz. (Sys. 1/Sys. 2) [g]			
	153.6/156.8 [4355/4445]	153.6/156.8 [4355/4445]	153.6/156.8 [4355/4445]
Weights			
Net Weight lbs. [kg]	1177 [534]	1169 [530]	1177 [534]
Ship Weight lbs. [kg]	1214 [551]	1206 [547]	1214 [551]

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 $\pm 20\%$ of nominal cfm. Units are certified in accordance with the Unitary Air Conditioner Equipment certification program, which is based on AHRI Standard 340/360.
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 340/360.
4. Outdoor Sound Rating shown is tested in accordance with AHRI Standard 270.

[] Designates Metric Conversions

GROSS SYSTEMS PERFORMANCE DATA—C/H090

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]			3600 [1699]	2600 [1227]	2400 [1133]	3600 [1699]	2600 [1227]	2400 [1133]	3600 [1699]	2600 [1227]	2400 [1133]
DR ①			.0	.03	.05	.0	.03	.05	.0	.03	.05
OUTDOOR DRY BULB TEMPERATURE °F [°C]	75 [23.9]	Total BTUH [kW]	121.5 [35.6]	113.6 [33.3]	112.0 [32.8]	115.0 [33.7]	107.5 [31.5]	106.0 [31.1]	109.4 [32.1]	102.3 [30.0]	100.9 [29.6]
		Sens BTUH [kW]	82.0 [24.0]	61.6 [18.0]	57.8 [16.9]	95.3 [27.9]	73.3 [21.5]	69.2 [20.3]	105.8 [31.0]	82.6 [24.2]	78.3 [22.9]
		Power	5.2	5.0	5.0	5.1	5.0	4.9	5.1	4.9	4.9
	80 [26.7]	Total BTUH [kW]	118.2 [34.6]	110.5 [32.4]	108.9 [31.9]	111.6 [32.7]	104.4 [30.6]	102.9 [30.1]	106.1 [31.1]	99.2 [29.1]	97.8 [28.7]
		Sens BTUH [kW]	80.8 [23.7]	60.8 [17.8]	57.1 [16.7]	94.0 [27.5]	72.5 [21.2]	68.5 [20.1]	104.6 [30.6]	81.8 [24.0]	77.5 [22.7]
		Power	5.5	5.3	5.3	5.4	5.3	5.2	5.4	5.2	5.2
	85 [29.4]	Total BTUH [kW]	114.8 [33.6]	107.3 [31.4]	105.8 [31.0]	108.2 [31.7]	101.2 [29.7]	99.7 [29.2]	102.7 [30.1]	96.0 [28.1]	94.7 [27.7]
		Sens BTUH [kW]	79.4 [23.3]	59.8 [17.5]	56.2 [16.5]	92.6 [27.1]	71.5 [20.9]	67.5 [19.8]	102.7 [30.1]	80.8 [23.7]	76.6 [22.4]
		Power	5.8	5.6	5.6	5.8	5.6	5.5	5.7	5.5	5.5
	90 [32.2]	Total BTUH [kW]	111.3 [32.6]	104.0 [30.5]	102.6 [30.1]	104.7 [30.7]	97.9 [28.7]	96.5 [28.3]	99.2 [29.1]	92.7 [27.2]	91.4 [26.8]
Sens BTUH [kW]		77.6 [22.7]	58.5 [17.1]	55.1 [16.1]	90.8 [26.6]	70.2 [20.6]	66.3 [19.4]	99.2 [29.1]	79.5 [23.3]	75.4 [22.1]	
Power		6.2	6.0	5.9	6.1	5.9	5.9	6.1	5.9	5.8	
95 [35]	Total BTUH [kW]	107.7 [31.6]	100.7 [29.5]	99.3 [29.1]	101.2 [29.7]	94.5 [27.7]	93.2 [27.3]	95.6 [28.0]	89.4 [26.2]	88.1 [25.8]	
	Sens BTUH [kW]	75.6 [22.2]	57.1 [16.7]	53.7 [15.7]	88.9 [26.0]	68.7 [20.1]	65.0 [19.0]	95.6 [28.0]	78.1 [22.9]	74.0 [21.7]	
	Power	6.6	6.3	6.3	6.5	6.3	6.3	6.5	6.2	6.2	
100 [37.8]	Total BTUH [kW]	104.0 [30.5]	97.2 [28.5]	95.9 [28.1]	97.5 [28.6]	91.1 [26.7]	89.8 [26.3]	92.0 [27.0]	85.9 [25.2]	84.7 [24.8]	
	Sens BTUH [kW]	73.2 [21.4]	55.3 [16.2]	52.1 [15.3]	86.6 [25.4]	67.0 [19.6]	63.3 [18.5]	92.0 [27.0]	76.3 [22.4]	72.4 [21.2]	
	Power	7.0	6.7	6.7	6.9	6.7	6.7	6.9	6.6	6.6	
105 [40.6]	Total BTUH [kW]	100.3 [29.4]	93.7 [27.5]	92.4 [27.1]	93.7 [27.5]	87.6 [25.7]	86.4 [25.3]	88.2 [25.8]	82.4 [24.1]	81.3 [23.8]	
	Sens BTUH [kW]	70.8 [20.7]	53.4 [15.6]	50.2 [14.7]	84.0 [24.6]	65.1 [19.1]	61.6 [18.0]	88.2 [25.8]	74.4 [21.8]	70.7 [20.7]	
	Power	7.4	7.2	7.1	7.4	7.1	7.1	7.3	7.1	7.0	
110 [43.3]	Total BTUH [kW]	96.5 [28.3]	90.2 [26.4]	88.9 [26.0]	89.9 [26.3]	84.0 [24.6]	82.9 [24.3]	84.4 [24.7]	78.9 [23.1]	77.8 [22.8]	
	Sens BTUH [kW]	67.9 [19.9]	51.3 [15.0]	48.2 [14.1]	81.1 [23.8]	62.9 [18.4]	59.6 [17.5]	84.4 [24.7]	72.3 [21.2]	68.6 [20.1]	
	Power	7.9	7.6	7.6	7.8	7.6	7.5	7.8	7.5	7.5	
115 [46.1]	Total BTUH [kW]	92.5 [27.1]	86.5 [25.3]	85.3 [25.0]	86.0 [25.2]	80.4 [23.6]	79.2 [23.2]	80.5 [23.6]	75.2 [22.0]	74.1 [21.7]	
	Sens BTUH [kW]	64.8 [19.0]	48.9 [14.3]	46.0 [13.5]	78.1 [22.9]	60.6 [17.8]	57.3 [16.8]	80.5 [23.6]	69.9 [20.5]	66.3 [19.4]	
	Power	8.4	8.1	8.1	8.4	8.1	8.0	8.3	8.0	8.0	

GROSS SYSTEMS PERFORMANCE DATA—C/H120

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]			4800 [2266]	3575 [1687]	3200 [1510]	4800 [2266]	3575 [1687]	3200 [1510]	4800 [2266]	3575 [1687]	3200 [1510]
DR ①			.0	.04	.07	.0	.04	.07	.0	.04	.07
OUTDOOR DRY BULB TEMPERATURE °F [°C]	75 [23.9]	Total BTUH [kW]	156.5 [45.9]	147.3 [43.2]	144.5 [42.3]	148.9 [43.6]	140.2 [41.1]	137.5 [40.3]	142.7 [41.8]	134.4 [39.4]	131.8 [38.6]
		Sens BTUH [kW]	105.2 [30.8]	81.5 [23.9]	74.8 [21.9]	123.2 [36.1]	97.5 [28.6]	90.2 [26.4]	137.2 [40.2]	110.0 [32.2]	102.1 [29.9]
		Power	7.1	6.9	6.8	7.0	6.8	6.7	6.9	6.7	6.6
	80 [26.7]	Total BTUH [kW]	152.4 [44.7]	143.5 [42.0]	140.7 [41.2]	144.9 [42.5]	136.4 [40.0]	133.8 [39.2]	138.7 [40.6]	130.5 [38.2]	128.0 [37.5]
		Sens BTUH [kW]	103.7 [30.4]	80.5 [23.6]	73.9 [21.7]	121.8 [35.7]	96.5 [28.3]	89.3 [26.2]	135.8 [39.8]	108.9 [31.9]	101.2 [29.7]
		Power	7.5	7.2	7.2	7.3	7.1	7.1	7.2	7.0	7.0
	85 [29.4]	Total BTUH [kW]	148.2 [43.4]	139.5 [40.9]	136.8 [40.1]	140.6 [41.2]	132.4 [38.8]	129.9 [38.1]	134.5 [39.4]	126.6 [37.1]	124.2 [36.4]
		Sens BTUH [kW]	101.8 [29.8]	79.1 [23.2]	72.7 [21.3]	119.8 [35.1]	95.1 [27.9]	88.1 [25.8]	134.1 [39.3]	107.7 [31.6]	100.1 [29.3]
		Power	7.9	7.6	7.6	7.8	7.5	7.5	7.7	7.4	7.4
	90 [32.2]	Total BTUH [kW]	143.8 [42.1]	135.4 [39.7]	132.8 [38.9]	136.3 [39.9]	128.3 [37.6]	125.9 [36.9]	130.1 [38.1]	122.5 [35.9]	120.1 [35.2]
		Sens BTUH [kW]	99.6 [29.2]	77.5 [22.7]	71.2 [20.9]	117.7 [34.5]	93.5 [27.4]	86.6 [25.4]	130.1 [38.1]	106.1 [31.1]	98.6 [28.9]
		Power	8.3	8.1	8.0	8.2	8.0	7.9	8.1	7.9	7.8
95 [35]	Total BTUH [kW]	139.3 [40.8]	131.2 [38.4]	128.7 [37.7]	131.8 [38.6]	124.1 [36.4]	121.7 [35.7]	125.6 [36.8]	118.2 [34.6]	116.0 [34.0]	
	Sens BTUH [kW]	97.2 [28.5]	75.7 [22.2]	69.6 [20.4]	115.3 [33.8]	91.7 [26.9]	84.9 [24.9]	125.6 [36.8]	104.2 [30.5]	97.0 [28.4]	
	Power	8.8	8.5	8.5	8.7	8.4	8.3	8.6	8.3	8.2	
100 [37.8]	Total BTUH [kW]	134.7 [39.5]	126.8 [37.2]	124.4 [36.4]	127.2 [37.3]	119.7 [35.1]	117.4 [34.4]	121.0 [35.5]	113.9 [33.4]	111.7 [32.7]	
	Sens BTUH [kW]	94.4 [27.7]	73.5 [21.5]	67.6 [19.8]	112.5 [33.0]	89.5 [26.2]	82.9 [24.3]	121.0 [35.5]	102.1 [29.9]	95.0 [27.8]	
	Power	9.3	9.0	8.9	9.2	8.9	8.8	9.1	8.8	8.7	
105 [40.6]	Total BTUH [kW]	129.9 [38.1]	122.3 [35.8]	120.0 [35.2]	122.4 [35.9]	115.2 [33.8]	113.0 [33.1]	116.2 [34.0]	109.4 [32.1]	107.3 [31.4]	
	Sens BTUH [kW]	91.3 [26.8]	71.1 [20.8]	65.4 [19.2]	109.4 [32.1]	87.1 [25.5]	80.7 [23.6]	116.2 [34.0]	99.7 [29.2]	92.8 [27.2]	
	Power	9.8	9.5	9.4	9.7	9.4	9.3	9.6	9.3	9.2	
110 [43.3]	Total BTUH [kW]	125.0 [36.6]	117.6 [34.5]	115.4 [33.8]	117.4 [34.4]	110.5 [32.4]	108.4 [31.8]	111.2 [32.6]	104.7 [30.7]	102.7 [30.1]	
	Sens BTUH [kW]	87.8 [25.7]	68.3 [20.0]	62.9 [18.4]	105.8 [31.0]	84.3 [24.7]	78.2 [22.9]	111.2 [32.6]	96.9 [28.4]	90.3 [26.5]	
	Power	10.4	10.1	10.0	10.3	10.0	9.9	10.2	9.9	9.8	
115 [46.1]	Total BTUH [kW]	119.9 [35.1]	112.9 [33.1]	110.7 [32.4]	112.3 [32.9]	105.7 [31.0]	103.7 [30.4]	106.1 [31.1]	99.9 [29.3]	98.0 [28.7]	
	Sens BTUH [kW]	84.0 [24.6]	65.4 [19.2]	60.1 [17.6]	102.0 [29.9]	81.3 [23.8]	75.4 [22.1]	106.1 [31.1]	93.9 [27.5]	87.5 [25.6]	
	Power	11.0	10.6	10.5	10.9	10.5	10.4	10.7	10.4	10.3	

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)].

[] Designates Metric Conversions

Air Flow CFM [L/s]	Model RLRL-C090		Voltage 208/230, 460, 575 — 3 Phase 60 Hz										External Static Pressure—Inches of Water [kPa]																													
			0.1 [0.02]		0.2 [0.05]		0.3 [0.07]		0.4 [0.10]		0.5 [0.12]		0.6 [0.15]		0.7 [0.17]		0.8 [0.20]		0.9 [0.22]		1.0 [0.25]		1.1 [0.27]		1.2 [0.30]		1.3 [0.32]		1.4 [0.35]		1.5 [0.37]		1.6 [0.40]		1.7 [0.42]		1.8 [0.45]		1.9 [0.47]		2.0 [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	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	1076	1829	1104	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	1105	1979		
2600 [1227]	—	—	569	872	610	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	1106	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	1515	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	109	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	1727	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	2109	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	966	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	972	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 of bold line, M-Drive right of bold line, N-Drive right of double line.

Drive Package	L						M						N					
Motor H.P. [W]	2 [1491.4]						2 [1491.4]						3 [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.

1. Factory sheave ratings 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 AHR minimum External Static Pressure.
4. Drive data shown is for airflow with dry coil. Add component resistance (below) to duct resistance to determine total External Static Pressure.

[] Designates Metric Conversions

AIRFLOW PERFORMANCE—7.5 TON [26.4 kW]—60 Hz—SIDEFLOW (Cont.)

Airflow CFM [L/s]	Airflow Correction Factors*			Component Airflow Resistance					Concentric Grill RXRN-FA65 or RXRN-FA75 & Transition RXMC-CC04
				Wet Coil	Downflow	Downflow Economizer RA Damper Open	Horizontal Economizer RA Damper Open		
	Total MBH	Sensible MBH	Power kW	Resistance — Inches of Water [kPa]					
2400 [1133]	0.97	0.87	0.98	0.09 [.02]	0.08 [.02]	0.10 [.02]	0.10 [.02]	0.13 [.03]	
2500 [1180]	0.97	0.90	0.98	0.10 [.02]	0.08 [.02]	0.10 [.02]	0.10 [.02]	0.15 [.04]	
2600 [1227]	0.98	0.92	0.99	0.10 [.02]	0.09 [.02]	0.11 [.03]	0.11 [.03]	0.17 [.04]	
2700 [1274]	0.98	0.94	0.99	0.11 [.03]	0.09 [.02]	0.11 [.03]	0.11 [.03]	0.19 [.05]	
2800 [1321]	0.99	0.97	0.99	0.11 [.03]	0.10 [.02]	0.12 [.03]	0.12 [.03]	0.21 [.05]	
2900 [1368]	1.00	0.99	1.00	0.12 [.03]	0.10 [.02]	0.12 [.03]	0.12 [.03]	0.23 [.06]	
3000 [1416]	1.00	1.02	1.00	0.12 [.03]	0.11 [.03]	0.13 [.03]	0.13 [.03]	0.25 [.06]	
3100 [1463]	1.01	1.04	1.00	0.13 [.03]	0.11 [.03]	0.13 [.03]	0.13 [.03]	0.28 [.07]	
3200 [1510]	1.02	1.06	1.01	0.13 [.03]	0.11 [.03]	0.14 [.03]	0.14 [.03]	0.31 [.08]	
3300 [1557]	1.02	1.06	1.01	0.13 [.03]	0.11 [.03]	0.14 [.03]	0.14 [.03]	0.34 [.08]	
3400 [1604]	1.02	1.06	1.01	0.13 [.03]	0.11 [.03]	0.15 [.04]	0.15 [.04]	0.37 [.09]	
3500 [1652]	1.02	1.06	1.01	0.14 [.03]	0.11 [.03]	0.15 [.04]	0.15 [.04]	0.40 [.10]	
3600 [1699]	1.02	1.06	1.01	0.14 [.03]	0.11 [.03]	0.15 [.04]	0.15 [.04]	0.44 [.11]	

*Multiply correction factor times gross performance data—resulting sensible capacity cannot exceed total capacity.

[] Designates Metric Conversions

AIRFLOW PERFORMANCE—10 TON [35.1 kW]—60 Hz—SIDEFLOW

Air Flow CFM [L/s]	Model RLRL-C120		Voltage 208/230, 460, 575 — 3 Phase 60 Hz		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	RPM	W	RPM	W	RPM	W	RPM	W			
3200 [1510]	—	—	—	—	691	1029	721	1101	752	1173	781	1246	810	1320	838	1394	866	1469	893	1544	920	1620	946	1697	971	1774	995	1852	1019	1930	1043	2009	1065	2089	1087	2169	1109	2250	1130	2332	—	—	—	—	—	—	—	—	
3300 [1557]	—	—	672	1014	703	1087	734	1161	764	1236	793	1312	822	1388	850	1465	877	1542	904	1620	930	1698	955	1777	980	1857	1004	1937	1028	2018	1051	2100	1073	2182	1095	2264	1116	2348	1136	2431	—	—	—	—	—	—	—	—	
3400 [1604]	—	—	686	1074	717	1150	747	1227	776	1304	805	1382	833	1461	861	1540	888	1620	914	1700	940	1781	965	1862	990	1945	1013	2027	1037	2111	1059	2195	1081	2279	1103	2364	1123	2450	1143	2536	—	—	—	—	—	—	—	—	
3500 [1652]	668	1061	699	1139	730	1218	759	1297	789	1377	817	1457	845	1538	872	1620	899	1702	925	1785	950	1869	975	1953	999	2037	1023	2122	1045	2208	1068	2295	1089	2382	1110	2469	1131	2557	1150	2646	—	—	—	—	—	—	—	—	
3600 [1699]	682	1129	713	1210	743	1291	772	1373	801	1455	829	1538	857	1621	884	1705	910	1790	936	1875	961	1961	985	2048	1009	2135	1032	2222	1054	2311	1076	2400	1098	2489	1118	2579	1138	2670	1158	2761	—	—	—	—	—	—	—	—	
3700 [1746]	696	1202	727	1285	756	1369	785	1453	814	1538	842	1623	869	1709	895	1796	921	1883	946	1971	971	2059	995	2148	1019	2237	1041	2328	1063	2418	1085	2510	1106	2602	1126	2694	1146	2787	1165	2881	—	—	—	—	—	—	—		
3800 [1793]	711	1281	741	1366	770	1452	799	1539	827	1626	854	1714	881	1802	907	1891	933	1981	957	2071	982	2162	1005	2253	1028	2345	1051	2438	1073	2531	1094	2625	1114	2719	1134	2814	1154	2910	1172	3006	—	—	—	—	—	—	—		
3900 [1840]	725	1364	755	1451	784	1540	812	1629	840	1719	867	1809	893	1900	919	1991	944	2083	969	2176	993	2269	1016	2363	1038	2458	1061	2553	1082	2648	1103	2745	1123	2842	1142	2939	1161	3037	—	—	—	—	—	—	—	—	—	—	
4000 [1888]	740	1452	769	1542	797	1633	825	1724	853	1817	879	1909	905	2003	931	2097	956	2191	980	2286	1003	2382	1026	2478	1049	2575	1070	2673	1091	2771	1112	2870	1132	2969	1151	3069	1169	3170	—	—	—	—	—	—	—	—	—	—	
4100 [1935]	754	1545	783	1637	811	1731	839	1825	866	1919	892	2015	918	2110	943	2207	967	2304	991	2402	1014	2500	1037	2599	1059	2698	1080	2798	1101	2899	1121	3000	1140	3102	1159	3204	—	—	—	—	—	—	—	—	—	—	—	—	
4200 [1982]	769	1643	797	1738	825	1834	852	1930	879	2027	905	2125	930	2223	955	2322	979	2422	1003	2522	1025	2622	1048	2724	1069	2826	1090	2928	1111	3031	1130	3135	1149	3239	1168	3344	—	—	—	—	—	—	—	—	—	—	—	—	
4300 [2029]	784	1746	812	1843	839	1942	866	2041	892	2140	918	2240	943	2341	967	2442	991	2544	1014	2647	1037	2750	1059	2854	1080	2958	1100	3063	1120	3169	1140	3275	1158	3382	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
4400 [2076]	799	1854	826	1954	854	2055	880	2156	906	2258	931	2361	956	2464	980	2568	1003	2672	1026	2777	1048	2883	1070	2989	1090	3096	1111	3203	1130	3311	1149	3420	1168	3529	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
4500 [2123]	814	1967	841	2069	868	2173	894	2277	920	2381	944	2486	969	2592	992	2698	1015	2805	1038	2912	1059	3021	1081	3129	1101	3239	1121	3348	1140	3459	1159	3570	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
4600 [2171]	829	2085	856	2190	882	2296	908	2402	933	2509	958	2616	982	2725	1005	2833	1028	2943	1050	3053	1071	3163	1092	3274	1112	3386	1131	3499	1150	3612	1169	3725	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
4700 [2218]	844	2208	871	2315	897	2424	922	2532	947	2642	971	2752	995	2862	1018	2974	1040	3086	1062	3198	1083	3311	1103	3425	1123	3539	1142	3654	1161	3769	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4800 [2265]	860	2336	886	2446	912	2557	937	2668	961	2780	985	2892	1008	3005	1031	3119	1053	3233	1074	3348	1095	3464	1115	3580	1134	3697	1153	3814	1171	3932	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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

Drive Package	L										M									
Motor H.P. [W]	2 [1491.4]										3 [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	1	2	3	4	5	6		
RPM	857	822	785	747	706	667	1160	1117	1068	1014	960	902	1160	1117	1068	1014	960	902		

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.

[] Designates Metric Conversions

AIRFLOW PERFORMANCE—10 TON [35.1 kW]—60 Hz—SIDEFLOW (Cont.)

Airflow CFM [L/s]	Airflow Correction Factors*			Component Airflow Resistance						
	Total MBH	Sensible MBH	Power kW	Wet Coil	Downflow	Downflow Economizer RA Damper Open	Horizontal Economizer RA Damper Open	Concentric Grill RXRN-FA665 or RXRN-FA75 & Transition RXMC-CD04	Concentric Grill RXRN-AA61 or RXRN-AA71 & Transition RXMC-CE05	Concentric Grill RXRN-AA66 or RXRN-AA76 & Transition RXMC-CF06
3200 [1510]	0.96	0.87	0.98	0.06 [.01]	0.05 [.01]	0.09 [.02]	0.05 [.01]	0.31 [.08]	—	—
3300 [1557]	0.97	0.88	0.99	0.07 [.02]	0.05 [.01]	0.10 [.02]	0.05 [.01]	0.34 [.08]	—	—
3400 [1604]	0.97	0.90	0.99	0.07 [.02]	0.05 [.01]	0.10 [.02]	0.06 [.01]	0.37 [.09]	—	—
3500 [1652]	0.98	0.92	0.99	0.07 [.02]	0.06 [.01]	0.11 [.03]	0.06 [.01]	—	—	—
3600 [1699]	0.98	0.93	0.99	0.08 [.02]	0.06 [.01]	0.11 [.03]	0.06 [.01]	0.16 [.04]	—	—
3700 [1746]	0.99	0.95	1.00	0.08 [.02]	0.06 [.01]	0.12 [.03]	0.06 [.01]	0.18 [.04]	—	—
3800 [1793]	0.99	0.97	1.00	0.08 [.02]	0.07 [.02]	0.12 [.03]	0.07 [.02]	0.19 [.05]	—	—
3900 [1840]	1.00	0.99	1.00	0.08 [.02]	0.07 [.02]	0.13 [.03]	0.07 [.02]	0.20 [.05]	—	—
4000 [1888]	1.00	1.00	1.01	0.09 [.02]	0.07 [.02]	0.13 [.03]	0.07 [.02]	0.21 [.05]	—	—
4100 [1935]	1.00	1.02	1.01	0.09 [.02]	0.08 [.02]	0.14 [.03]	0.07 [.02]	0.23 [.06]	—	—
4200 [1982]	1.01	1.04	1.01	0.09 [.02]	0.08 [.02]	0.14 [.03]	0.08 [.02]	0.24 [.06]	—	—
4300 [2029]	1.01	1.06	1.01	0.10 [.02]	0.08 [.02]	0.15 [.04]	0.08 [.02]	0.25 [.06]	—	—
4400 [2076]	1.02	1.07	1.02	0.10 [.02]	0.08 [.02]	0.15 [.04]	0.08 [.02]	0.27 [.07]	—	—
4500 [2123]	1.02	1.09	1.02	0.10 [.02]	0.09 [.02]	0.16 [.04]	0.09 [.02]	—	—	—
4600 [2171]	1.03	1.11	1.02	0.10 [.02]	0.09 [.02]	0.16 [.04]	0.09 [.02]	—	—	0.30 [.07]
4700 [2218]	1.03	1.12	1.03	0.11 [.03]	0.09 [.02]	0.17 [.04]	0.09 [.02]	—	—	0.31 [.08]
4800 [2265]	1.04	1.14	1.03	0.11 [.03]	0.10 [.02]	0.17 [.04]	0.10 [.02]	—	—	0.32 [.08]

*Multiply correction factor times gross performance data—resulting sensible capacity cannot exceed total capacity.

[] Designates Metric Conversions

ELECTRICAL DATA – RLRL- SERIES										
		C090CL H090CR	C090CM H090CS	C090CN H090CT	C090DL H090DR	C090DM H090DS	C090DN H090DT	C090YL	C090YM	C090YN
Unit Information	Unit Operating Voltage Range	187-253	187-253	187-253	414-506	414-506	414-506	518-632	518-632	518-632
	Volts	208/230	208/230	208/230	460	460	460	575	575	575
	Minimum Circuit Ampacity	44/44	44/44	49/49	21	21	24	16	16	21
	Minimum Overcurrent Protection Device Size	50/50	50/50	60/60	25	25	30	20	20	25
	Maximum Overcurrent Protection Device Size	50/50	50/50	60/60	25	25	30	20	20	25
Compressor Motor	No.	2	2	2	2	2	2	2	2	2
	Volts	200/240	200/240	200/240	480	480	480	600	600	600
	Phase	3	3	3	3	3	3	3	3	3
	RPM	3450	3450	3450	3450	3450	3450	3450	3450	3450
	HP, Compressor 1	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4
	Amps (RLA), Comp. 1	13.6/13.6	13.6/13.6	13.6/13.6	6.1	6.1	6.1	4.2	4.2	4.2
	Amps (LRA), Comp. 1	83.1/83.1	83.1/83.1	83.1/83.1	41	41	41	33	33	33
	HP, Compressor 2	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4
	Amps (RLA), Comp. 2	13.6/13.6	13.6/13.6	13.6/13.6	6.1	6.1	6.1	4.2	4.2	4.2
	Amps (LRA), Comp. 2	83.1/83.1	83.1/83.1	83.1/83.1	41	41	41	33	33	33
Compressor 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)	4.7/4.7	4.7/4.7	4.7/4.7	2.4	2.4	2.4	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 – RLRL- SERIES

		C120CL H120CR	C120CM H120CS	C120DL H120DR	C120DM H120DS	C120YL	C120YM
Unit Information	Unit Operating Voltage Range	187-253	187-253	414-506	414-506	518-632	518-632
	Volts	208/230	208/230	460	460	575	575
	Minimum Circuit Ampacity	49/49	54/54	23	26	18	23
	Minimum Overcurrent Protection Device Size	60/60	60/60	25	30	20	30
	Maximum Overcurrent Protection Device Size	60/60	60/60	25	30	20	30
Compressor Motor	No.	2	2	2	2	2	2
	Volts	200/240	200/240	480	480	575	575
	Phase	3	3	3	3	3	3
	RPM	3450	3450	3450	3450	3450	3450
	HP, Compressor 1	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4
	Amps (RLA), Comp. 1	15.9/15.9	15.9/15.9	7.1	7.1	5.1	5.1
	Amps (LRA), Comp. 1	110/110	110/110	52	52	39.5	39.5
	HP, Compressor 2	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4
	Amps (RLA), Comp. 2	15.9/15.9	15.9/15.9	7.1	7.1	5.1	5.1
	Amps (LRA), Comp. 2	110/110	110/110	52	52	39.5	39.5
Compressor Motor	No.	2	2	2	2	2	2
	Volts	208/230	208/230	460	460	575	575
	Phase	1	1	1	1	1	1
	HP	1/3	1/3	1/3	1/3	1/3	1/3
	Amps (FLA, each)	2.4/2.4	2.4/2.4	1.4	1.4	1	1
	Amps (LRA, each)	4.7/4.7	4.7/4.7	2.4	2.4	1.5	1.5
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

ELECTRICAL DATA – RLRL- SERIES							
		C180CL H180CR	C180CM H180CS	C180DL H180DR	C180DM H180DS	C180YL	C180YM
Unit Information	Unit Operating Voltage Range	187-253	187-253	414-506	414-506	518-632	518-632
	Volts	208/230	208/230	460	460	575	575
	Minimum Circuit Ampacity	75/75	79/79	38	40	29	30
	Minimum Overcurrent Protection Device Size	90/90	90/90	45	45	35	35
	Maximum Overcurrent Protection Device Size	100/100	100/100	50	50	35	35
Compressor Motor	No.	2	2	2	2	2	2
	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	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2
	Amps (RLA), Comp. 1	25/25	25/25	12.8	12.8	9.6	9.6
	Amps (LRA), Comp. 1	164/164	164/164	100	100	78	78
	HP, Compressor 2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2
	Amps (RLA), Comp. 2	25/25	25/25	12.8	12.8	9.6	9.6
	Amps (LRA), Comp. 2	164/164	164/164	100	100	78	78
Compressor Motor	No.	3	3	3	3	3	3
	Volts	208/230	208/230	460	460	575	575
	Phase	1	1	1	1	1	1
	HP	1/3	1/3	1/3	1/3	1/3	1/3
	Amps (FLA, each)	2.4/2.4	2.4/2.4	1.4	1.4	1	1
	Amps (LRA, each)	4.7/4.7	4.7/4.7	2.1	2.4	1.8	1.8
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	3	5	3	5	3	5
	Amps (FLA, each)	11.5/11.5	14.9/14.9	4.6	6.6	3.5	5.3
	Amps (LRA, each)	74.5/74.5	82.6/82.6	38.1	46.3	20	39.4

ELECTRICAL DATA – RLRL- SERIES							
		C240CL H240CR	C240CM H240CS	C240DL H240DR	C240DM H240DS	C240YL	C240YM
Unit Information	Unit Operating Voltage Range	187-253	187-253	414-506	414-506	518-632	518-632
	Volts	208/230	208/230	460	460	575	575
	Minimum Circuit Ampacity	95/95	103/103	49	52	37	39
	Minimum Overcurrent Protection Device Size	110/110	125/125	60	60	40	45
	Maximum Overcurrent Protection Device Size	110/110	125/125	60	60	45	50
Compressor Motor	No.	2	2	2	2	2	2
	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	10	10	10	10	10	10
	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	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2
	Amps (RLA), Comp. 2	27.6/27.6	27.6/27.6	12.8	12.8	9.6	9.6
	Amps (LRA), Comp. 2	191/191	191/191	100	100	78	78
Compressor Motor	No.	6	6	6	6	6	6
	Volts	208/230	208/230	460	460	575	575
	Phase	1	1	1	1	1	1
	HP	1/3	1/3	1/3	1/3	1/3	1/3
	Amps (FLA, each)	2.4/2.4	2.4/2.4	1.4	1.4	1	1
	Amps (LRA, each)	4.7/4.7	4.7/4.7	2.4	2.4	1.8	1.8
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	5	7 1/2	5	7 1/2	5	7 1/2
	Amps (FLA, each)	14.7/14.7	23.1/23.1	6.6	9.6	5.3	7.8
	Amps (LRA, each)	82.6/82.6	136/136	46.3	67	39.4	53.8

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. RLRL-	Heater Kit			Air Conditioner				Heater Kit					
	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	Air Conditioner		
							Min./Max 208V	Min./Max. 240V			Min. Circuit Ampacity 208/240V	Min./Max. 208V	Over Current Protective Device Size Min./Max. 240V
C090CL	No Heat	—	—	—	—	44/44	50/50	50/50	—	—	44/44	50/50	50/50
	CC10C	1	7.2/9.6	24.56/32.75	20/23.1	44/44	50/50	50/50	25/29	25/30	44/44	50/50	50/50
	CC15C	1	10.8/14.4	36.84/49.13	30/34.6	48/54	50/50	60/60	38/44	40/45	44/44	50/50	50/50
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	60/68	60/60	70/70	50/58	50/60	44/44	50/50	50/50
	CC30C	1	21.6/28.8	73.69/98.25	60/69.3	85/97	90/90	100/100	75/87	80/90	44/44	50/50	50/50
C120CL	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	111/126	125/125	150/150	101/116	110/125	44/44	50/50	50/50
	No Heat	—	—	—	—	49/49	60/60	60/60	—	—	49/49	60/60	60/60
	CC10C	1	7.2/9.6	24.56/32.75	20/23.1	49/49	60/60	60/60	25/29	25/30	49/49	60/60	60/60
	CC15C	1	10.8/14.4	36.84/49.13	30/34.6	49/54	60/60	60/60	38/44	40/45	49/49	60/60	60/60
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	60/68	60/60	70/70	50/58	50/60	49/49	60/60	60/60
C090CM	CC30C	1	21.6/28.8	73.69/98.25	60/69.3	85/97	90/90	100/100	75/87	80/90	49/49	60/60	60/60
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	111/126	125/125	150/150	101/116	110/125	49/49	60/60	60/60
	CC50C	1	36.1/48	123.16/163.75	100.1/115.5	136/155	150/150	175/175	126/145	150/150	49/49	60/60	60/60
	No Heat	—	—	—	—	44/44	50/50	50/50	—	—	44/44	50/50	50/50
	CC10C	1	7.2/9.6	24.56/32.75	20/23.1	44/44	50/50	50/50	25/29	25/30	44/44	50/50	50/50
C120CM	CC15C	1	10.8/14.4	36.84/49.13	30/34.6	48/54	50/50	60/60	38/44	40/45	44/44	50/50	50/50
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	60/68	60/60	70/70	50/58	50/60	44/44	50/50	50/50
	CC30C	1	21.6/28.8	73.69/98.25	60/69.3	85/97	90/90	100/100	75/87	80/90	44/44	50/50	50/50
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	111/126	125/125	150/150	101/116	110/125	44/44	50/50	50/50
	CC50C	1	36.1/48	123.16/163.75	100.1/115.5	142/161	150/150	175/175	126/145	150/150	54/54	60/60	60/60
C090CN	No Heat	—	—	—	—	54/54	60/60	60/60	—	—	54/54	60/60	60/60
	CC10C	1	7.2/9.6	24.56/32.75	20/23.1	54/54	60/60	60/60	25/29	25/30	54/54	60/60	60/60
	CC15C	1	10.8/14.4	36.84/49.13	30/34.6	54/60	60/60	60/60	38/44	40/45	54/54	60/60	60/60
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	67/75	70/70	80/80	50/58	50/60	54/54	60/60	60/60
	CC30C	1	21.6/28.8	73.69/98.25	60/69.3	92/103	100/100	110/110	75/87	80/90	54/54	60/60	60/60
C090CN	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	117/132	125/125	150/150	101/116	110/125	54/54	60/60	60/60
	CC50C	1	36.1/48	123.16/163.75	100.1/115.5	142/161	150/150	175/175	126/145	150/150	54/54	60/60	60/60
	No Heat	—	—	—	—	49/49	60/60	60/60	—	—	49/49	60/60	60/60
	CC10C	1	7.2/9.6	24.56/32.75	20/23.1	49/49	60/60	60/60	25/29	25/30	49/49	60/60	60/60
	CC15C	1	10.8/14.4	36.84/49.13	30/34.6	54/60	60/60	60/60	38/44	40/45	49/49	60/60	60/60
C090CN	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	67/75	70/70	80/80	50/58	50/60	49/49	60/60	60/60
	CC30C	1	21.6/28.8	73.69/98.25	60/69.3	92/103	100/100	110/110	75/87	80/90	49/49	60/60	60/60
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	117/132	125/125	150/150	101/116	110/125	49/49	60/60	60/60
	CC50C	1	36.1/48	123.16/163.75	100.1/115.5	142/161	150/150	175/175	126/145	150/150	49/49	60/60	60/60
	No Heat	—	—	—	—	49/49	60/60	60/60	—	—	49/49	60/60	60/60
C090CN	CC10C	1	7.2/9.6	24.56/32.75	20/23.1	49/49	60/60	60/60	25/29	25/30	49/49	60/60	60/60
	CC15C	1	10.8/14.4	36.84/49.13	30/34.6	54/60	60/60	60/60	38/44	40/45	49/49	60/60	60/60
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	67/75	70/70	80/80	50/58	50/60	49/49	60/60	60/60
	CC30C	1	21.6/28.8	73.69/98.25	60/69.3	92/103	100/100	110/110	75/87	80/90	49/49	60/60	60/60
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	117/132	125/125	150/150	101/116	110/125	49/49	60/60	60/60

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. RLRL-	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	Air Conditioner		Heater Kit		Air Conditioner	
							Over Current Protective Device Size	Min./Max. 208V	Min. Ckt. Ampacity 208/240V	Max. Fuse Size 208/240V	Min. Circuit Ampacity 208/240V	Over Current Protective Device Size Min./Max. 208V
H090CR	No Heat	—	—	—	—	44/44	50/50	50/50	—	—	44/44	50/50
	CC10C	1	7.2/9.6	24.56/32.75	20/23.1	44/44	50/50	50/50	25/29	25/30	44/44	50/50
	CC15C	1	10.8/14.4	36.84/49.13	30/34.6	48/54	50/50	60/60	38/44	40/45	44/44	50/50
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	60/68	60/60	70/70	50/58	50/60	44/44	50/50
	CC30C	1	21.6/28.8	73.69/98.25	60/69.3	85/97	90/90	100/100	75/87	80/90	44/44	50/50
H120CR	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	111/126	125/125	150/150	101/116	110/125	44/44	50/50
	No Heat	—	—	—	—	49/49	60/60	60/60	—	—	49/49	60/60
	CC10C	1	7.2/9.6	24.56/32.75	20/23.1	49/49	60/60	60/60	25/29	25/30	49/49	60/60
	CC15C	1	10.8/14.4	36.84/49.13	30/34.6	49/54	60/60	60/60	38/44	40/45	49/49	60/60
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	60/68	60/60	70/70	50/58	50/60	49/49	60/60
H090CS	CC30C	1	21.6/28.8	73.69/98.25	60/69.3	85/97	90/90	100/100	75/87	80/90	49/49	60/60
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	111/126	125/125	150/150	101/116	110/125	49/49	60/60
	CC50C	1	36.1/48	123.16/163.75	100.1/115.5	136/155	150/150	175/175	126/145	150/150	49/49	60/60
	No Heat	—	—	—	—	44/44	50/50	50/50	—	—	44/44	50/50
	CC10C	1	7.2/9.6	24.56/32.75	20/23.1	44/44	50/50	50/50	25/29	25/30	44/44	50/50
H120CS	CC15C	1	10.8/14.4	36.84/49.13	30/34.6	48/54	50/50	60/60	38/44	40/45	44/44	50/50
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	60/68	60/60	70/70	50/58	50/60	44/44	50/50
	CC30C	1	21.6/28.8	73.69/98.25	60/69.3	85/97	90/90	100/100	75/87	80/90	44/44	50/50
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	111/126	125/125	150/150	101/116	110/125	44/44	50/50
	CC50C	1	36.1/48	123.16/163.75	100.1/115.5	142/161	150/150	175/175	126/145	150/150	54/54	60/60
H090CT	No Heat	—	—	—	—	54/54	60/60	60/60	—	—	54/54	60/60
	CC10C	1	7.2/9.6	24.56/32.75	20/23.1	54/54	60/60	60/60	25/29	25/30	54/54	60/60
	CC15C	1	10.8/14.4	36.84/49.13	30/34.6	54/60	60/60	60/60	38/44	40/45	54/54	60/60
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	67/75	70/70	80/80	50/58	50/60	54/54	60/60
	CC30C	1	21.6/28.8	73.69/98.25	60/69.3	92/103	100/100	110/110	75/87	80/90	54/54	60/60
H090CT	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	117/132	125/125	150/150	101/116	110/125	54/54	60/60
	CC50C	1	36.1/48	123.16/163.75	100.1/115.5	142/161	150/150	175/175	126/145	150/150	54/54	60/60
	No Heat	—	—	—	—	49/49	60/60	60/60	—	—	49/49	60/60
	CC10C	1	7.2/9.6	24.56/32.75	20/23.1	49/49	60/60	60/60	25/29	25/30	49/49	60/60
	CC15C	1	10.8/14.4	36.84/49.13	30/34.6	54/60	60/60	60/60	38/44	40/45	49/49	60/60
H090CT	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	67/75	70/70	80/80	50/58	50/60	49/49	60/60
	CC30C	1	21.6/28.8	73.69/98.25	60/69.3	92/103	100/100	110/110	75/87	80/90	49/49	60/60
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	117/132	125/125	150/150	101/116	110/125	49/49	60/60
	CC50C	1	36.1/48	123.16/163.75	100.1/115.5	142/161	150/150	175/175	126/145	150/150	49/49	60/60
	No Heat	—	—	—	—	49/49	60/60	60/60	—	—	49/49	60/60

480 VOLT, THREE PHASE, 60 HZ, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION													
Single Power Supply for Both Unit and Heater Kit													
Model No. RLRL-	Heater Kit					Air Conditioner					Heater Kit		
	RXJ-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	25/25	—	—	—	21	25/25	—
	CC10D	1	9.6	32.75	11.5	21	25/25	—	15	15	21/0	25/25	0/0
	CC15D	1	14.4	49.13	17.3	27	30/30	—	22	25	21/0	25/25	0/0
	CC20D	1	19.2	65.5	23.1	34	35/35	—	29	30	21/0	25/25	0/0
	CC30D	1	28.8	98.25	34.6	49	50/50	—	44	45	21/0	25/25	0/0
C120DL	CC40D	1	38.4	131	46.2	63	70/70	—	58	60	21/0	25/25	0/0
	No Heat	—	—	—	—	23	25/25	—	—	—	23	25/25	—
	CC10D	1	9.6	32.75	11.5	23	25/25	—	15	15	23/0	25/25	0/0
	CC15D	1	14.4	49.13	17.3	27	30/30	—	22	25	23/0	25/25	0/0
	CC20D	1	19.2	65.5	23.1	34	35/35	—	29	30	23/0	25/25	0/0
C090DM	CC30D	1	28.8	98.25	34.6	49	50/50	—	44	45	23/0	25/25	0/0
	CC40D	1	38.4	131	46.2	63	70/70	—	58	60	23/0	25/25	0/0
	CC50D	1	48	163.75	57.7	78	80/80	—	73	80	23/0	25/25	0/0
	No Heat	—	—	—	—	21	25/25	—	—	—	21	25/25	—
	CC10D	1	9.6	32.75	11.5	21	25/25	—	15	15	21/0	25/25	0/0
C120DM	CC15D	1	14.4	49.13	17.3	27	30/30	—	22	25	21/0	25/25	0/0
	CC20D	1	19.2	65.5	23.1	34	35/35	—	29	30	21/0	25/25	0/0
	CC30D	1	28.8	98.25	34.6	49	50/50	—	44	45	21/0	25/25	0/0
	CC40D	1	38.4	131	46.2	63	70/70	—	58	60	21/0	25/25	0/0
	No Heat	—	—	—	—	26	30/30	—	—	—	26	30/30	—
C090DN	CC10D	1	9.6	32.75	11.5	26	30/30	—	15	15	26/0	30/30	0/0
	CC15D	1	14.4	49.13	17.3	31	35/35	—	22	25	26/0	30/30	0/0
	CC20D	1	19.2	65.5	23.1	38	40/40	—	29	30	26/0	30/30	0/0
	CC30D	1	28.8	98.25	34.6	52	60/60	—	44	45	26/0	30/30	0/0
	CC40D	1	38.4	131	46.2	67	70/70	—	58	60	26/0	30/30	0/0
C090DN	CC50D	1	48	163.75	57.7	81	90/90	—	73	80	26/0	30/30	0/0
	No Heat	—	—	—	—	24	30/30	—	—	—	24	30/30	—
	CC10D	1	9.6	32.75	11.5	24	30/30	—	15	15	24/0	30/30	0/0
	CC15D	1	14.4	49.13	17.3	31	35/35	—	22	25	24/0	30/30	0/0
	CC20D	1	19.2	65.5	23.1	38	40/40	—	29	30	24/0	30/30	0/0
C090DN	CC30D	1	28.8	98.25	34.6	52	60/60	—	44	45	24/0	30/30	0/0
	CC40D	1	38.4	131	46.2	67	70/70	—	58	60	24/0	30/30	0/0
	No Heat	—	—	—	—	24	30/30	—	—	—	24	30/30	—
	CC10D	1	9.6	32.75	11.5	24	30/30	—	15	15	24/0	30/30	0/0
	CC15D	1	14.4	49.13	17.3	31	35/35	—	22	25	24/0	30/30	0/0

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. RLRL-	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	Air Conditioner		Heater Kit		Air Conditioner		
							Min./Max 480V	Protective Device Size Min./Max. 480V	Min. Ckt. Ampacity 480V	Max. Fuse Size 480V	Min. Circuit Ampacity 480V	Over Current Protective Device Size Min./Max. 480V	
H090DR	No Heat	—	—	—	—	21	25/25	—	—	—	21	25/25	—
	CC10D	1	9.6	32.75	11.5	21	25/25	—	15	15	21/0	25/25	0/0
	CC15D	1	14.4	49.13	17.3	27	30/30	—	22	25	21/0	25/25	0/0
	CC20D	1	19.2	65.5	23.1	34	35/35	—	29	30	21/0	25/25	0/0
	CC30D	1	28.8	98.25	34.6	49	50/50	—	44	45	21/0	25/25	0/0
	CC40D	1	38.4	131	46.2	63	70/70	—	58	60	21/0	25/25	0/0
H120DR	No Heat	—	—	—	—	23	25/25	—	—	—	23	25/25	—
	CC10D	1	9.6	32.75	11.5	23	25/25	—	15	15	23/0	25/25	0/0
	CC15D	1	14.4	49.13	17.3	27	30/30	—	22	25	23/0	25/25	0/0
	CC20D	1	19.2	65.5	23.1	34	35/35	—	29	30	23/0	25/25	0/0
	CC30D	1	28.8	98.25	34.6	49	50/50	—	44	45	23/0	25/25	0/0
	CC40D	1	38.4	131	46.2	63	70/70	—	58	60	23/0	25/25	0/0
	CC50D	1	48	163.75	57.7	78	80/80	—	73	80	23/0	25/25	0/0
H090DS	No Heat	—	—	—	—	21	25/25	—	—	—	21	25/25	—
	CC10D	1	9.6	32.75	11.5	21	25/25	—	15	15	21/0	25/25	0/0
	CC15D	1	14.4	49.13	17.3	27	30/30	—	22	25	21/0	25/25	0/0
	CC20D	1	19.2	65.5	23.1	34	35/35	—	29	30	21/0	25/25	0/0
	CC30D	1	28.8	98.25	34.6	49	50/50	—	44	45	21/0	25/25	0/0
	CC40D	1	38.4	131	46.2	63	70/70	—	58	60	21/0	25/25	0/0
H120DS	No Heat	—	—	—	—	26	30/30	—	—	—	26	30/30	—
	CC10D	1	9.6	32.75	11.5	26	30/30	—	15	15	26/0	30/30	0/0
	CC15D	1	14.4	49.13	17.3	31	35/35	—	22	25	26/0	30/30	0/0
	CC20D	1	19.2	65.5	23.1	38	40/40	—	29	30	26/0	30/30	0/0
	CC30D	1	28.8	98.25	34.6	52	60/60	—	44	45	26/0	30/30	0/0
	CC40D	1	38.4	131	46.2	67	70/70	—	58	60	26/0	30/30	0/0
	CC50D	1	48	163.75	57.7	81	90/90	—	73	80	26/0	30/30	0/0
H090DT	No Heat	—	—	—	—	24	30/30	—	—	—	24	30/30	—
	CC10D	1	9.6	32.75	11.5	24	30/30	—	15	15	24/0	30/30	0/0
	CC15D	1	14.4	49.13	17.3	31	35/35	—	22	25	24/0	30/30	0/0
	CC20D	1	19.2	65.5	23.1	38	40/40	—	29	30	24/0	30/30	0/0
	CC30D	1	28.8	98.25	34.6	52	60/60	—	44	45	24/0	30/30	0/0
	CC40D	1	38.4	131	46.2	67	70/70	—	58	60	24/0	30/30	0/0

600 VOLT, THREE PHASE, 60 HZ, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION													
Separate Power Supply for Both Unit and Heater Kit													
Model No. RLRL-	Single Power Supply for Both Unit and Heater Kit					Air Conditioner							
	Heater Kit					Heater Kit			Air Conditioner				
	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 600V		Min. Ckt. Ampacity 600V	Max. Fuse Size 600V	Min. Circuit Ampacity 600V	Over Current Protective Device Size 600V	
C090YL	No Heat	—	—	—	—	16	Min./Max. 600V	Min./Max. 600V	—	—	16	Min./Max. 600V	Min./Max. 600V
	CC10Y	1	9.6	32.75	9.2	17	20/20	20/20	12	15	16/0	20/20	0/0
	CC15Y	1	14.4	49.13	13.9	23	25/25	25/25	18	20	16/0	20/20	0/0
	CC20Y	1	19.2	65.5	18.5	29	30/30	30/30	24	25	16/0	20/20	0/0
	CC30Y	1	28.8	98.25	27.7	40	40/40	40/40	35	35	16/0	20/20	0/0
C120YL	CC40Y	1	38.4	131	37	52	60/60	60/60	47	50	16/0	20/20	0/0
	No Heat	—	—	—	—	18	20/20	20/20	—	—	18	20/20	—
	CC10Y	1	9.6	32.75	9.2	18	20/20	20/20	12	15	18/0	20/20	0/0
	CC15Y	1	14.4	49.13	13.9	23	25/25	25/25	18	20	18/0	20/20	0/0
	CC20Y	1	19.2	65.5	18.5	29	30/30	30/30	24	25	18/0	20/20	0/0
C090YM	CC30Y	1	28.8	98.25	27.7	40	40/40	40/40	35	35	18/0	20/20	0/0
	CC40Y	1	38.4	131	37	52	60/60	60/60	47	50	18/0	20/20	0/0
	CC50Y	1	48	163.75	46.2	63	70/70	70/70	58	60	18/0	20/20	0/0
	No Heat	—	—	—	—	16	20/20	20/20	—	—	16	20/20	—
	CC10Y	1	9.6	32.75	9.2	17	20/20	20/20	12	15	16/0	20/20	0/0
C120YM	CC15Y	1	14.4	49.13	13.9	23	25/25	25/25	18	20	16/0	20/20	0/0
	CC20Y	1	19.2	65.5	18.5	29	30/30	30/30	24	25	16/0	20/20	0/0
	CC30Y	1	28.8	98.25	27.7	40	40/40	40/40	35	35	16/0	20/20	0/0
	CC40Y	1	38.4	131	37	52	60/60	60/60	47	50	16/0	20/20	0/0
	No Heat	—	—	—	—	23	30/30	30/30	—	—	23	30/30	—
C090YN	CC10Y	1	9.6	32.75	9.2	23	30/30	30/30	12	15	23/0	30/30	0/0
	CC15Y	1	14.4	49.13	13.9	28	30/30	30/30	18	20	23/0	30/30	0/0
	CC20Y	1	19.2	65.5	18.5	34	35/35	35/35	24	25	23/0	30/30	0/0
	CC30Y	1	28.8	98.25	27.7	45	45/45	45/45	35	35	23/0	30/30	0/0
	CC40Y	1	38.4	131	37	57	60/60	60/60	47	50	23/0	30/30	0/0
	CC50Y	1	48	163.75	46.2	68	70/70	70/70	58	60	23/0	30/30	0/0
	No Heat	—	—	—	—	21	25/25	25/25	—	—	21	25/25	—
	CC10Y	1	9.6	32.75	9.2	22	25/25	25/25	12	15	21/0	25/25	0/0
	CC15Y	1	14.4	49.13	13.9	28	30/30	30/30	18	20	21/0	25/25	0/0
	CC20Y	1	19.2	65.5	18.5	34	35/35	35/35	24	25	21/0	25/25	0/0
	CC30Y	1	28.8	98.25	27.7	45	45/45	45/45	35	35	21/0	25/25	0/0
	CC40Y	1	38.4	131	37	57	60/60	60/60	47	50	21/0	25/25	0/0

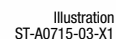


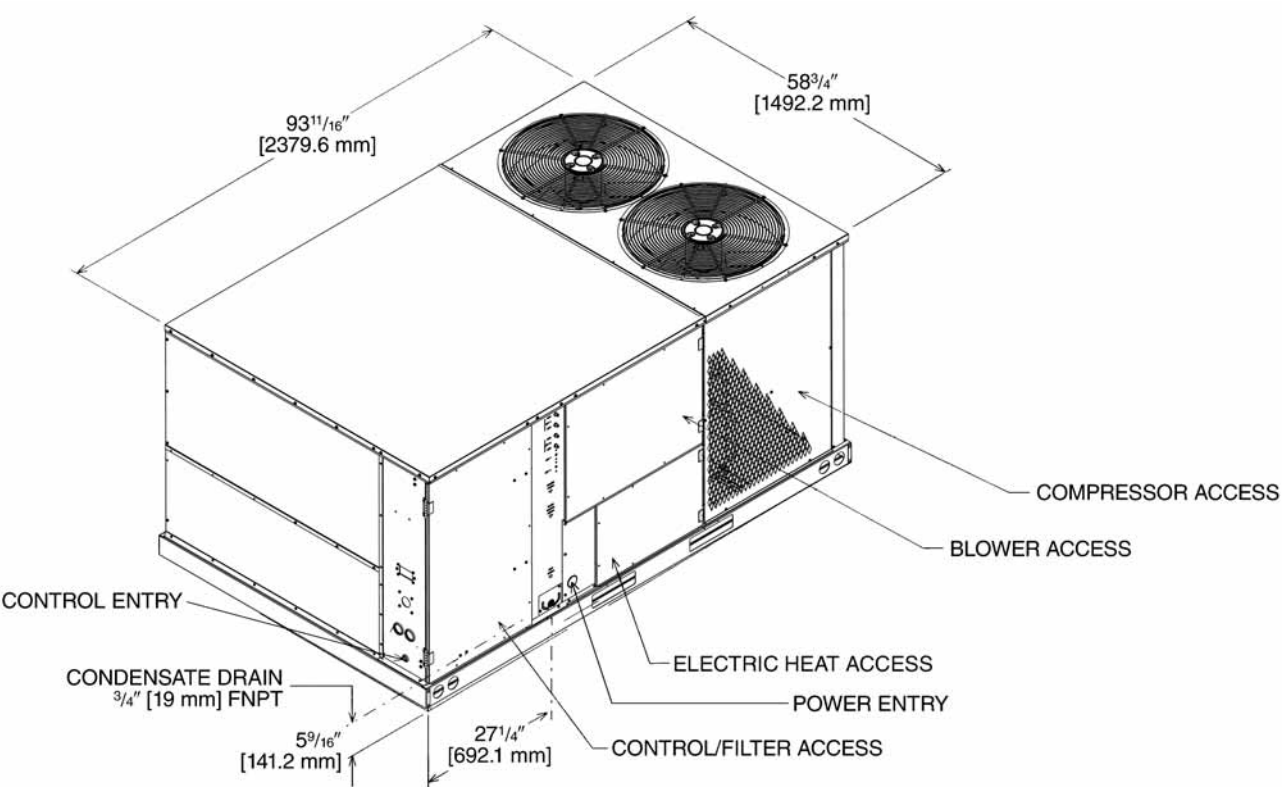
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RELY ON RUUD.™ 31

PACKAGE AIR CONDITIONER

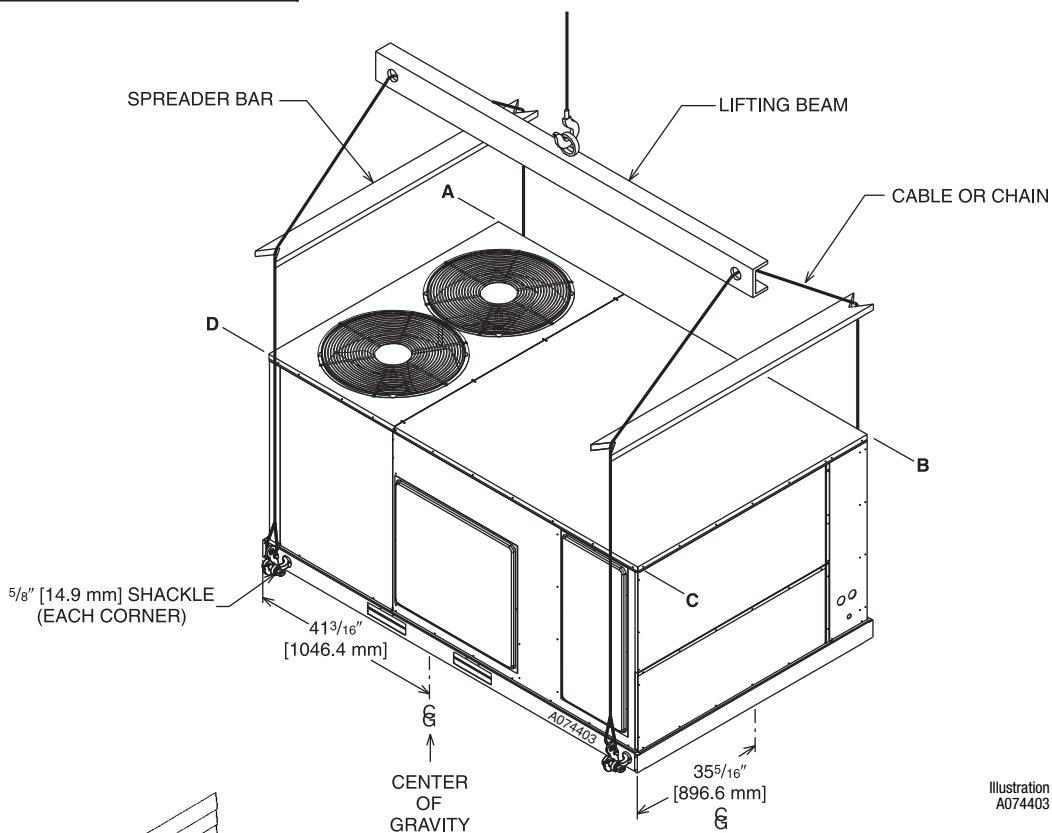


[] Designates Metric Conversions

WEIGHTS

Accessory	Shipping—lbs [kg]	Operating—lbs [kg]
Economizer	90 [40.82]	81 [36.70]
Power Exhaust	44 [19.96]	42 [19.05]
Fresh Air Damper (Manual)	26 [11.79]	21 [9.53]
Fresh Air Damper (Motorized)	43 [19.50]	38 [17.24]
Roof Curb 14"	90 [40.82]	85 [38.60]
Roof Curb 24"	140 [63.50]	135 [61.23]

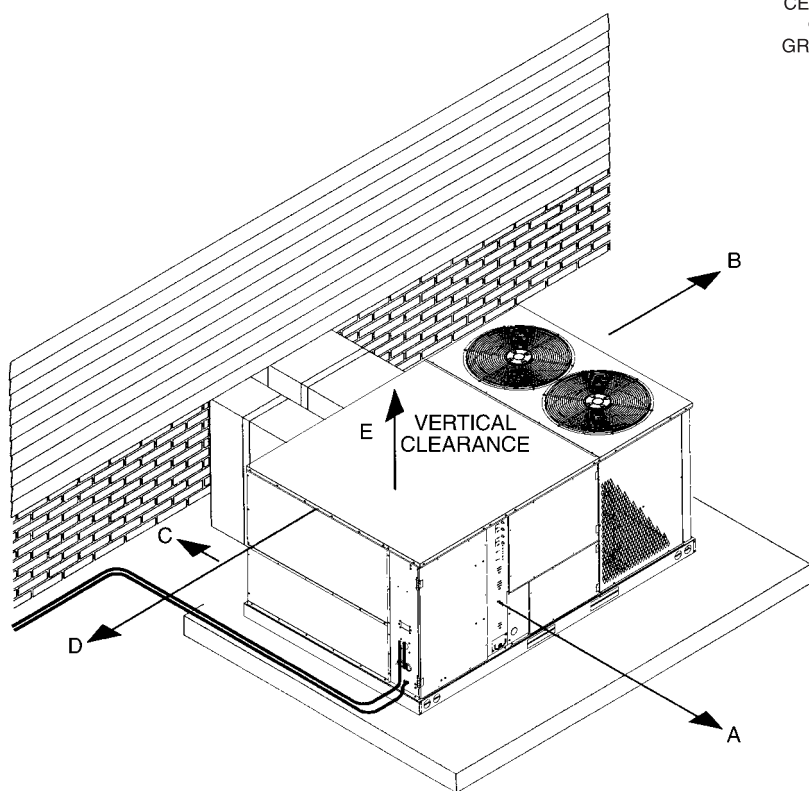
Capacity Tons [kW]	Corner Weights by Percentage			
	A	B	C	D
6-12.5 [21.1-44.0]	33%	27%	17%	23%



CLEARANCES

The following minimum clearances must be observed 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

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-CC10 (C,D,Y)	46 [20.9]	36 [16.3]	Yes
	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
	RXJJ-CC50 (C,D,Y)	51 [23.1]	41 [18.6]	Yes
Economizer w/Single Enthalpy	AXRD-PJCM3	90 [40.8]	81 [36.7]	Yes
Economizer w/Single Enthalpy and Smoke Dectector	AXRD-SJCM3	91 [41.3]	82 [37.2]	Yes
Dual Enthalpy Kit	RXRX-AV03	1 [0.5]	1 [0.5]	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]	21 [9.5]	No
Motor Kit for RXRF-KDA1 (Left Panel Mounted)	RXRX-AW02	35 [15.19]	27 [17.7]	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, 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 Adapters (Rect. to Round)	RXMC-CD04	15 [6.8]	13 [5.9]	No
Downflow Adapters (Rect. to Rect., 18 x 28)	RXMC-CE05 ①	18 [8.2]	16 [7.3]	No
Downflow Adapters (Rect. to Rect., 18 x 32)	RXMC-CF06 ②	20 [9.1]	18 [8.2]	No
Low-Ambient Control Kit (1 Per Compressor)	RXRZ-C02	3 [1.4]	2 [1.0]	Yes
Outdoor Louver Kit	AXRX-AAD02A (7.5 Ton)	29 [13.1]	26 [11.8]	Yes
Outdoor Louver Kit	AXRX-AAD03A (10 Ton)	32 [14.5]	28 [12.7]	Yes
Unwired 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		Descriptor (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 ZNS-101 **with TIMED OVERRIDE BUTTON**

10k Ω 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 ZNS-102 **with TIMED OVERRIDE BUTTON and STATUS INDICATOR**

10k Ω 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 ZNS-103 **with SETPOINT ADJUSTMENT and TIMED OVERRIDE BUTTON**

10k Ω 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.

ECONOMIZER FOR DOWNFLOW DUCT INSTALLATION

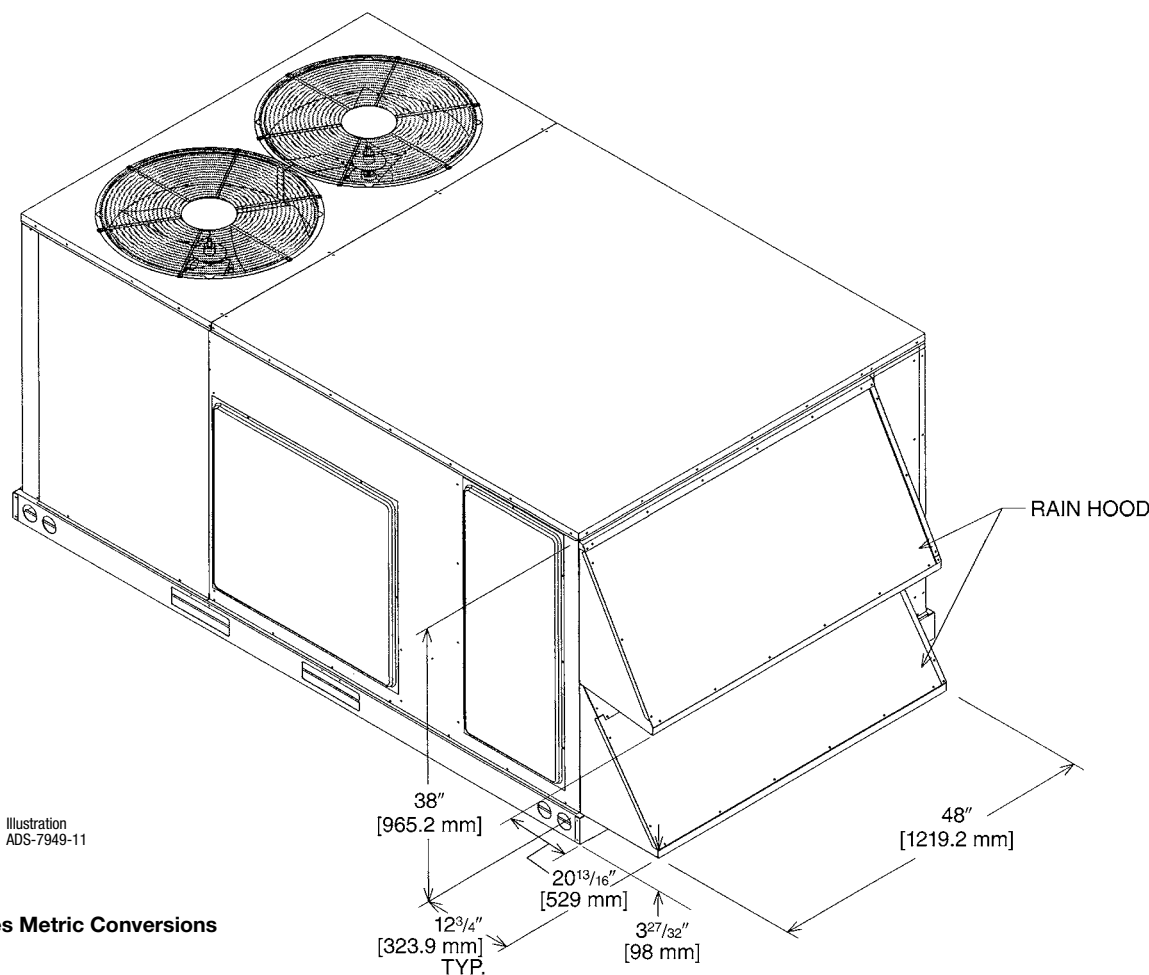
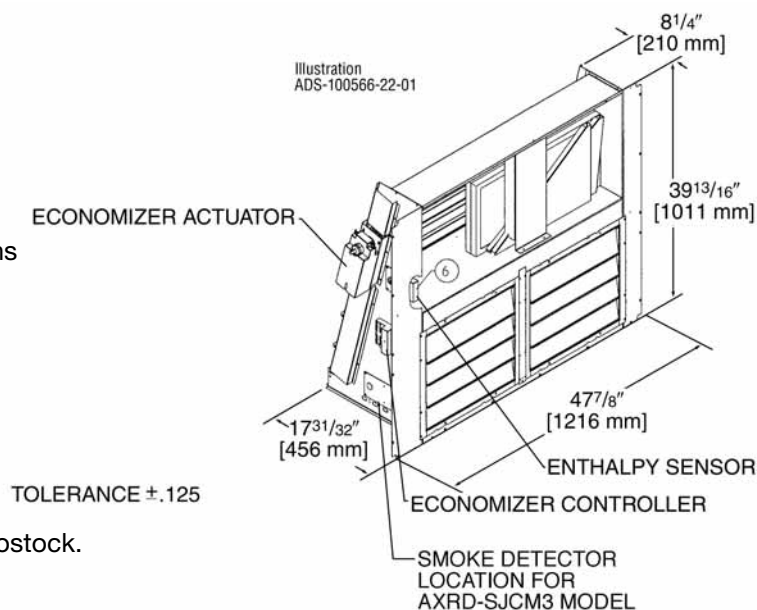
Use to Select Factory Installed Options Only

AXRD-PJCM3—Single Enthalpy (Outdoor) and AXRD-SJCM3 Single Enthalpy with Smoke Detector

RXXR-AV03—Dual Enthalpy Upgrade Kit

RXXR-AR02—Optional Wall-Mounted CO₂ 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
- CO₂ 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 thermostat, all economizer functions can be viewed on 16 x 2 LCD screen



[] Designates Metric Conversions

ECONOMIZER FOR HORIZONTAL DUCT INSTALLATION

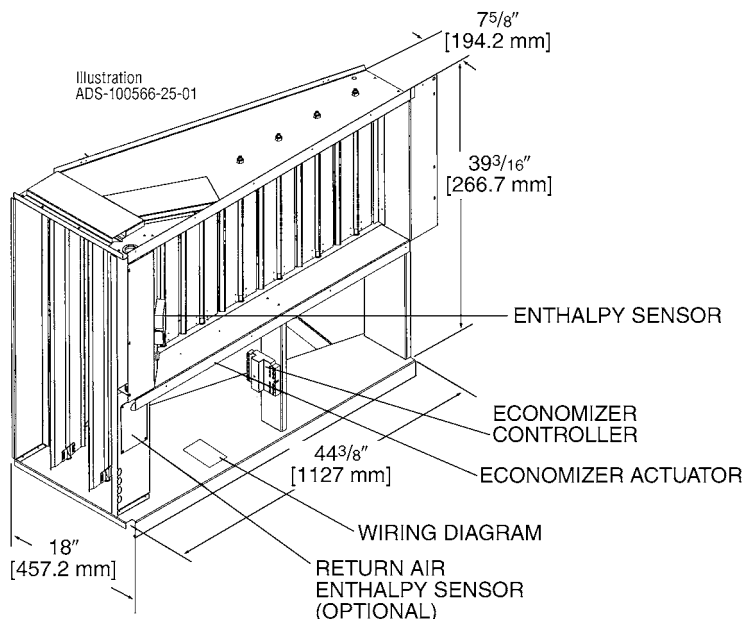
Field Installed Only

AXRD-RJCM3—Single Enthalpy (Outdoor)

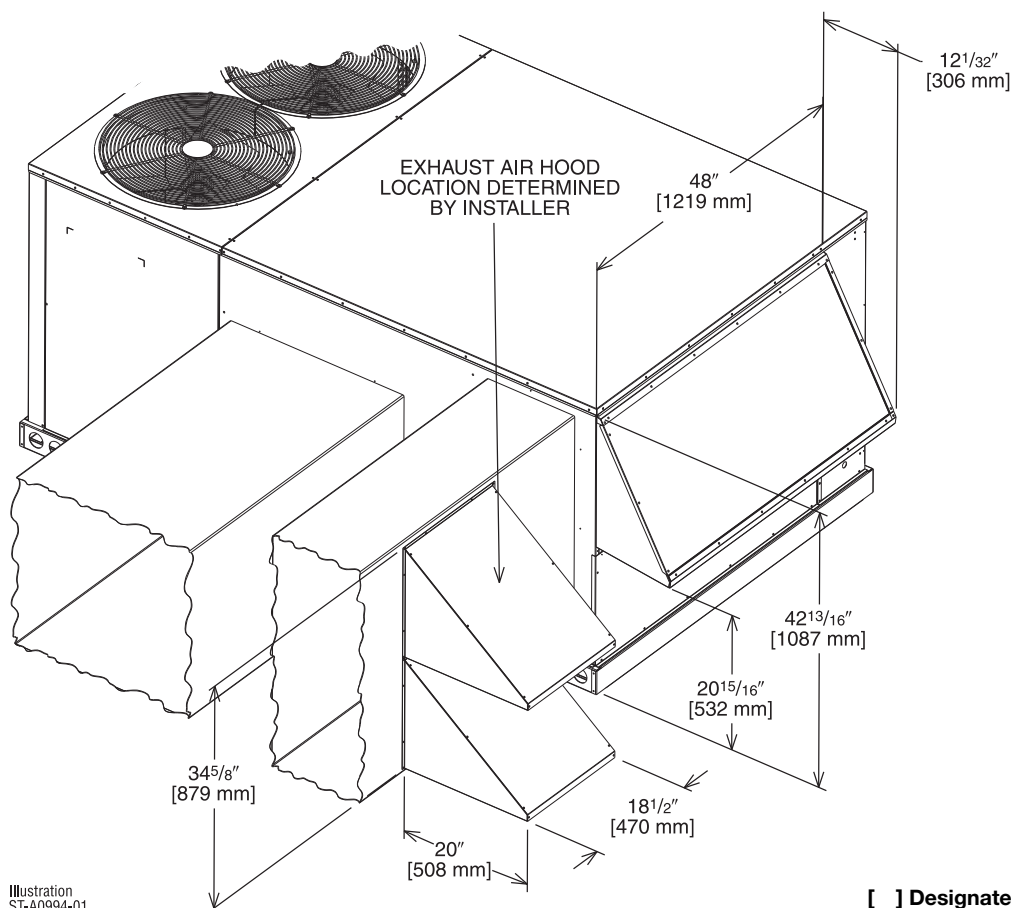
RXXR-AV03—Dual Enthalpy Upgrade Kit

RXXR-AR02—Wall-mounted CO₂ 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
- CO₂ 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



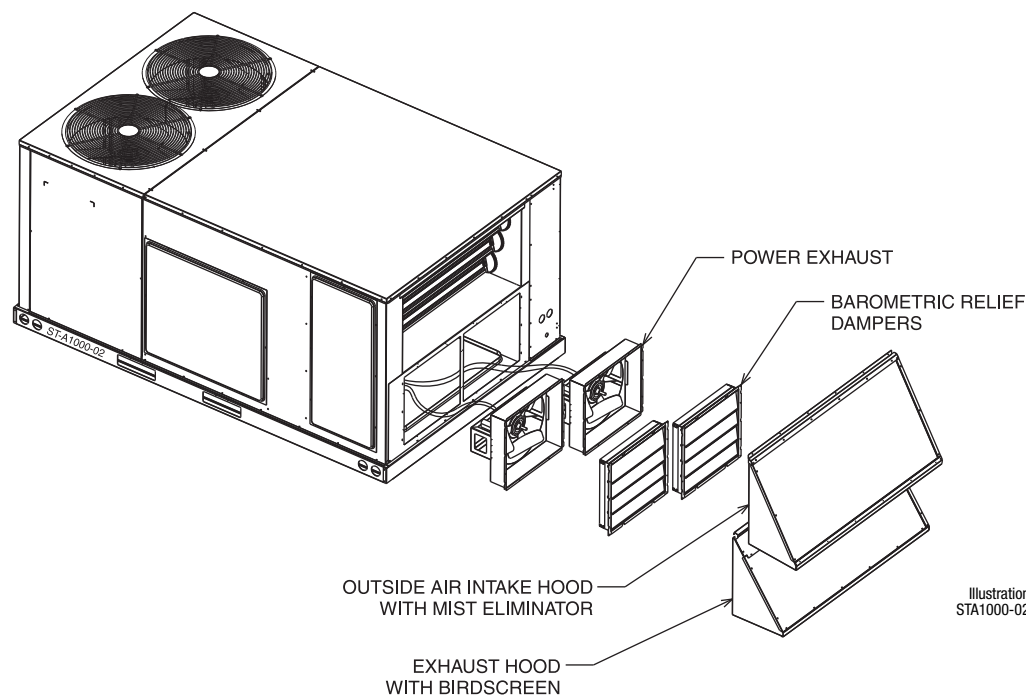
[] Designates Metric Conversions

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

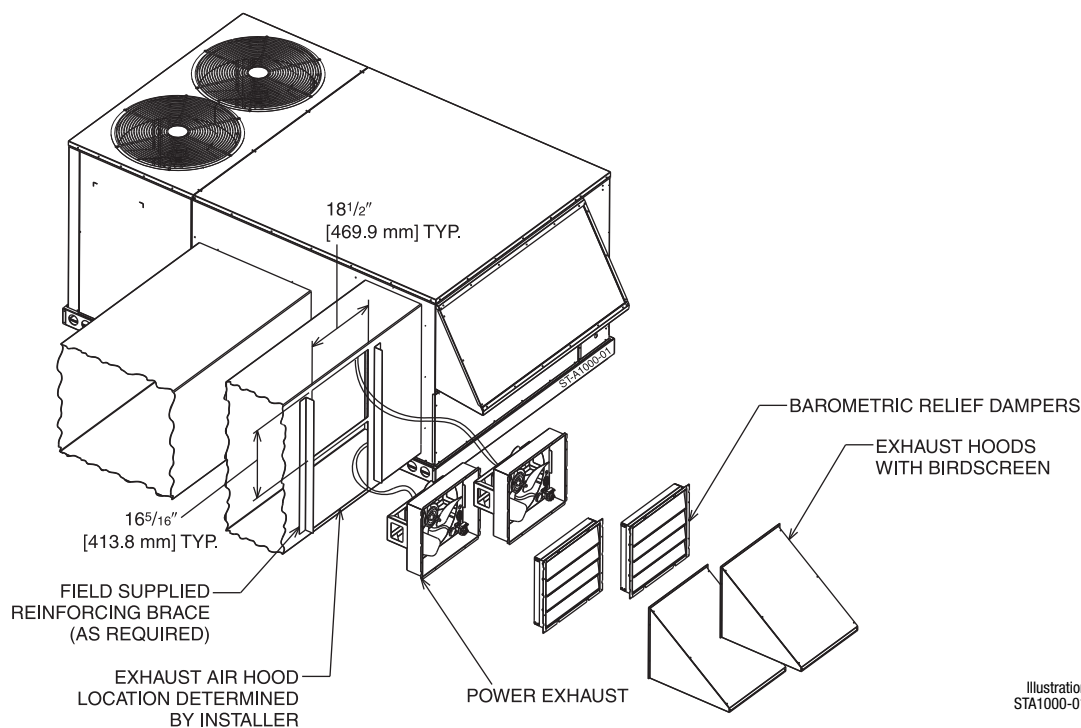
RXRX-BFF02 (C, D, or Y*)

*Voltage Code

VERTICAL AIRFLOW



HORIZONTAL AIRFLOW



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 AXRF-KDA1)

RXRX-AW04

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

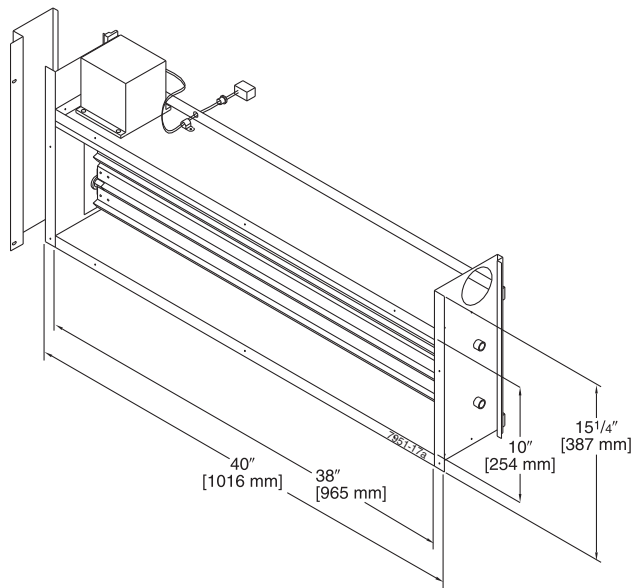


Illustration
ST-7951-17

AXRF-KDA1 (Manual)

DOWNFLOW OR
HORIZONTAL APPLICATION

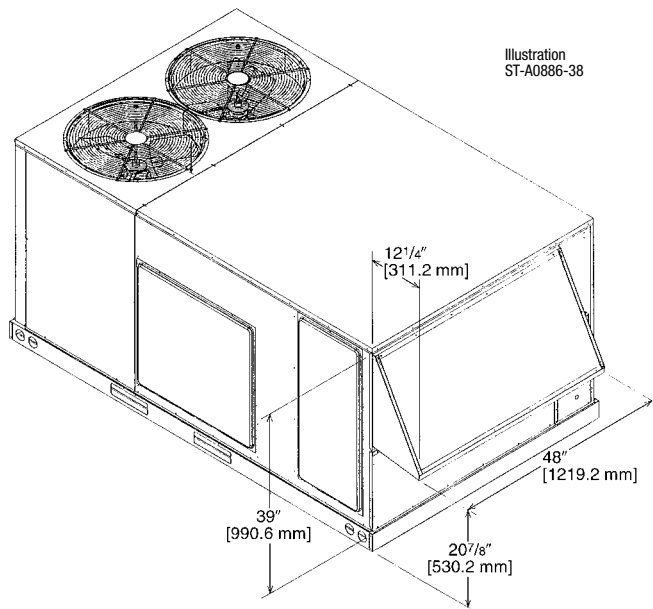


Illustration
ST-A0886-38

MOTORIZED DAMPER KIT

RXRX-AW02

(Motor Kit for AXRF-KDA1)

RXRX-AW04

(Modulating Motor Kit w/position feedback for AXRF-KDA1)

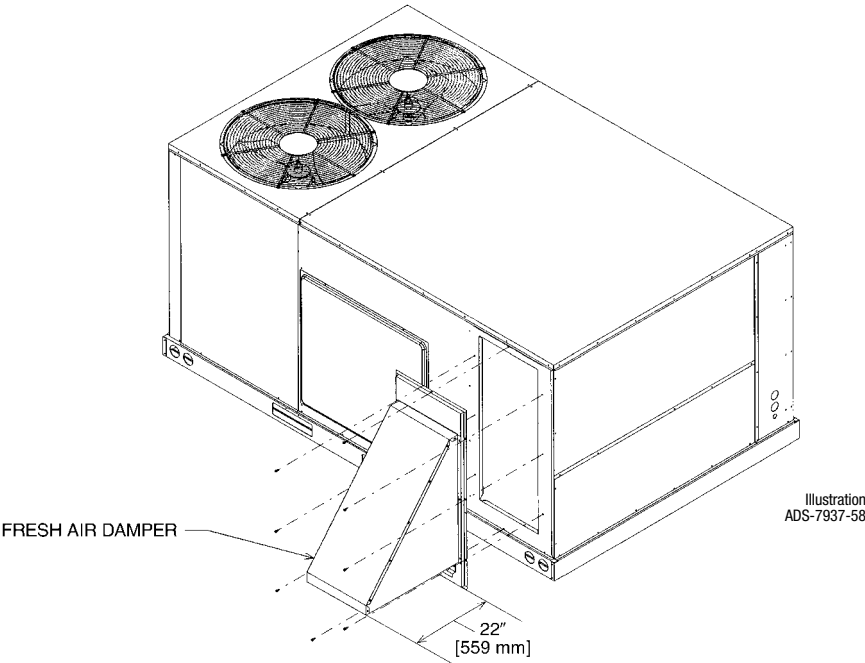
- Features **Honeywell** Controls
- Gear Driven Direct Drive Actuator
- Fully Modulating (0-100%)
- Low Leakage Dampers
- Slip-In Design for Easy Installation
- Plug-In Polarized 12-pin and 4-pin Electrical Connections
- Pre-Configured—No Field Adjustments Necessary
- Addition of Dual Enthalpy Upgrade Kit allows limited economizer function
- CO₂ 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)

[] Designates Metric Conversions

FRESH AIR DAMPER (Cont.)

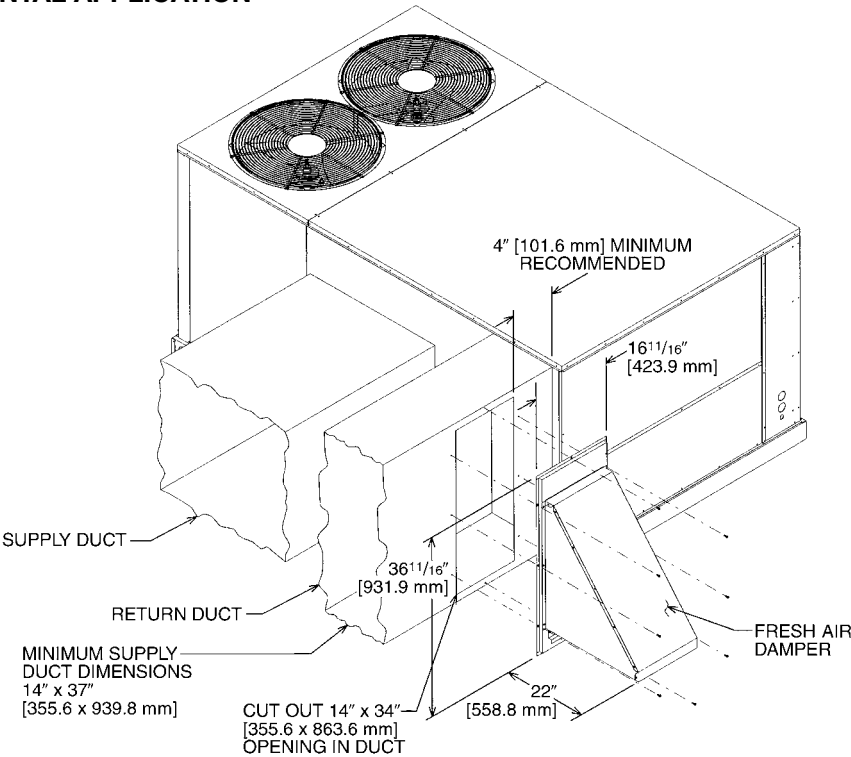
AXRF-JDA1 (Manual)
AXRF-JDB1 (Motorized)

DOWNFLOW APPLICATION



HORIZONTAL APPLICATION

Illustration
ST-A0901-01



[] Designates Metric Conversions

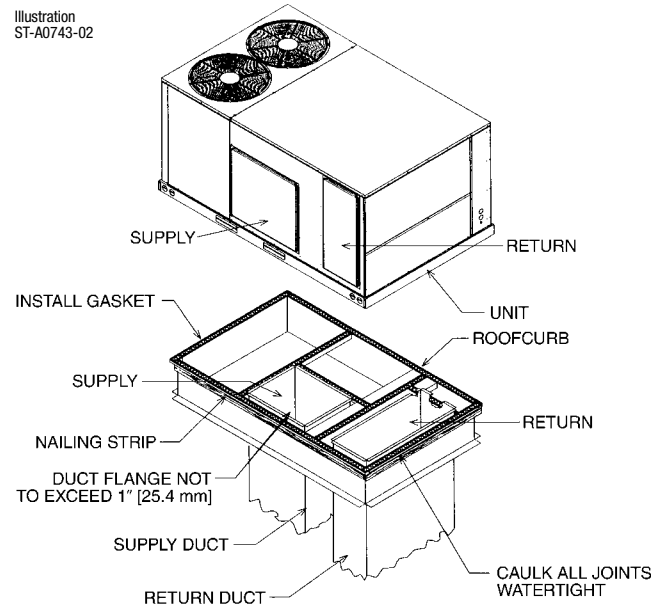
ROOFCURBS (Full Perimeter)

- Ruud's roofcurb design can be utilized on all 7.5-10 ton [26.4-35.2 kW] RLRL-C/H 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.
- 1" [25 mm] x 4" [102 mm] Nailer provided.
- Insulating panels not required because of insulated outdoor base pan.
- Sealing gasket (40' [12.2 m]) 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

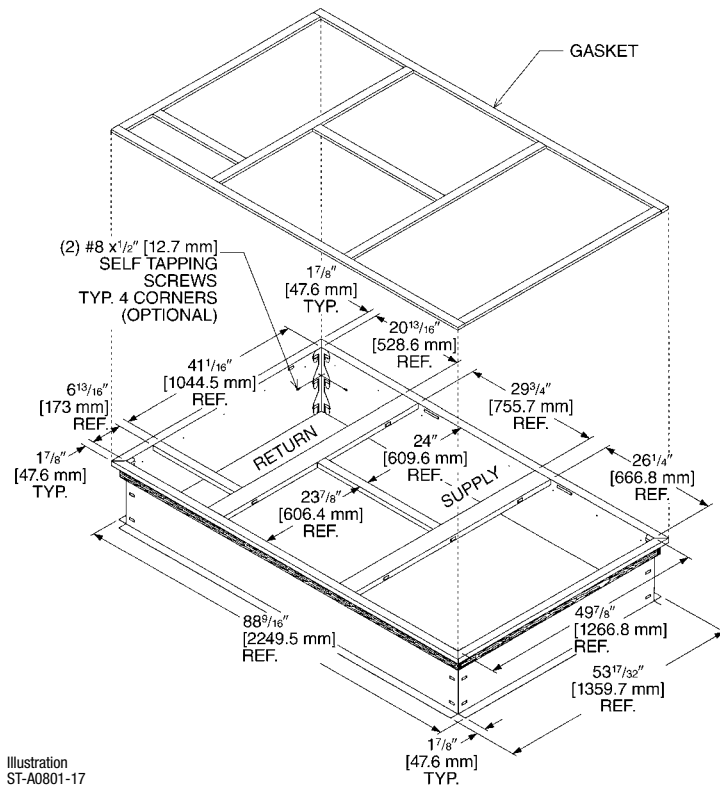
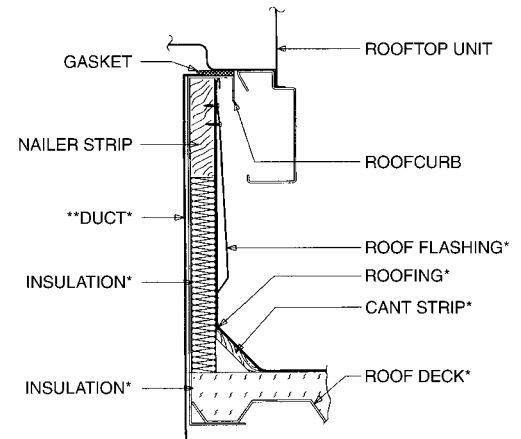


Illustration
ST-A0801-17



*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

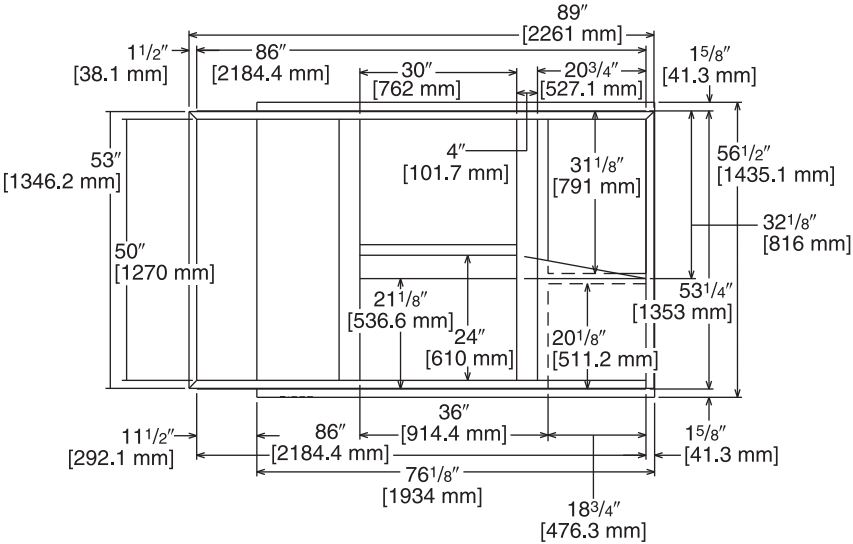
OLD MODELS	OLD ROOFCURB	ROOFCURB ADAPTER	NEW MODELS (All Share Common Cabinet)
(-)RCF, (-)REF-075/076 (-)RGF-150075, (-)RGF-131076 (-)RGF-201076	RXRK-E50	RXRK-CDCE50	RLRL-C/H090 RLRL-C/H120
(-)RGF-200075 (-)RGG, (-)REG, (-)RCG-075 (-)RGF, (-)REF, (-)RCF-085 (-)RGF, (-)REF, (-)RCF-100 (-)RGG, (-)REG, (-)RCG-100	RXRK-E54	RXRK-CFCE54	
(-)RGF, (-)REF, (-)RCF-125	RXRK-E56	RXRK-CFCE56	
(-)PDC-075 (-)PDC-100/101	RXPK-C12	RXRK-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.
RLRL-C072, C090, C102, C120, C151 fit on same roofcurb as the RLKB-A090, A102, A120, A150, A181, RLMB-A090, A102, A120, A150, RLNB-A090, A102, A120

ROOFCURB ADAPTERS (Cont.)

RXRX-CDCE50

Illustration
ADS-7952-02
Sheet 2



TOP VIEW

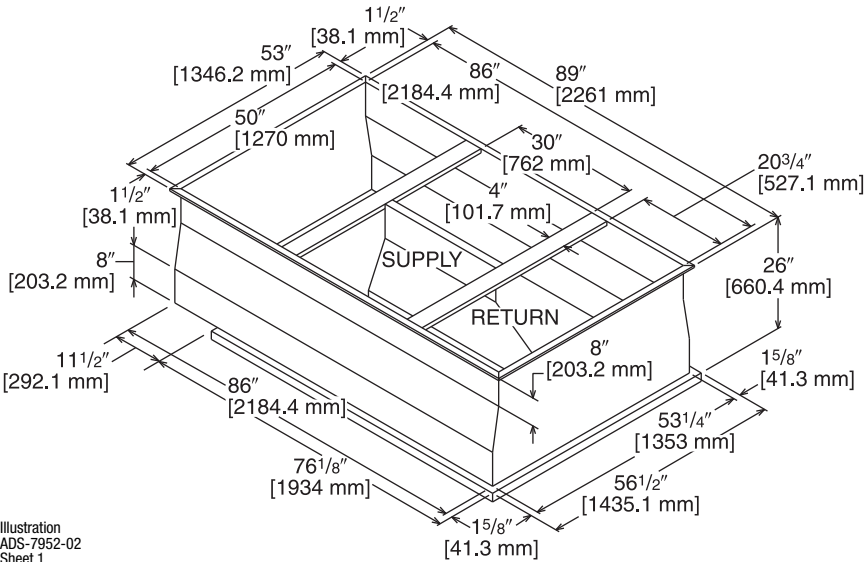


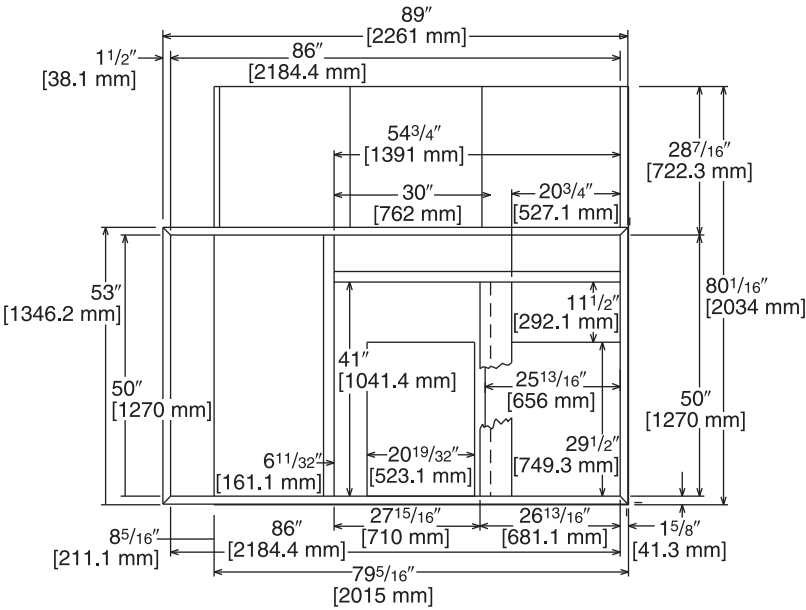
Illustration
ADS-7952-02
Sheet 1

[] Designates Metric Conversions

ROOFCURB ADAPTERS (Cont.)

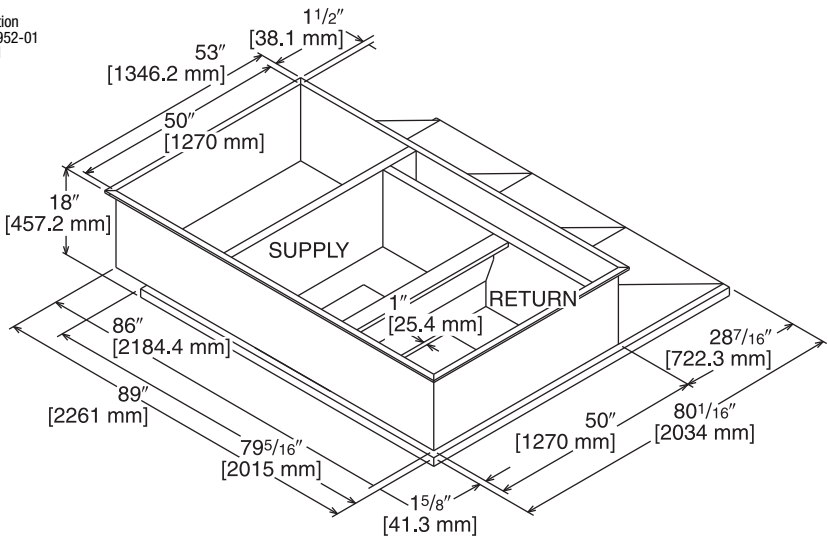
RXXR-CFCE54

Illustration
ADS-7952-01
Sheet 2



TOP VIEW

Illustration
ADS-7952-01
Sheet 1

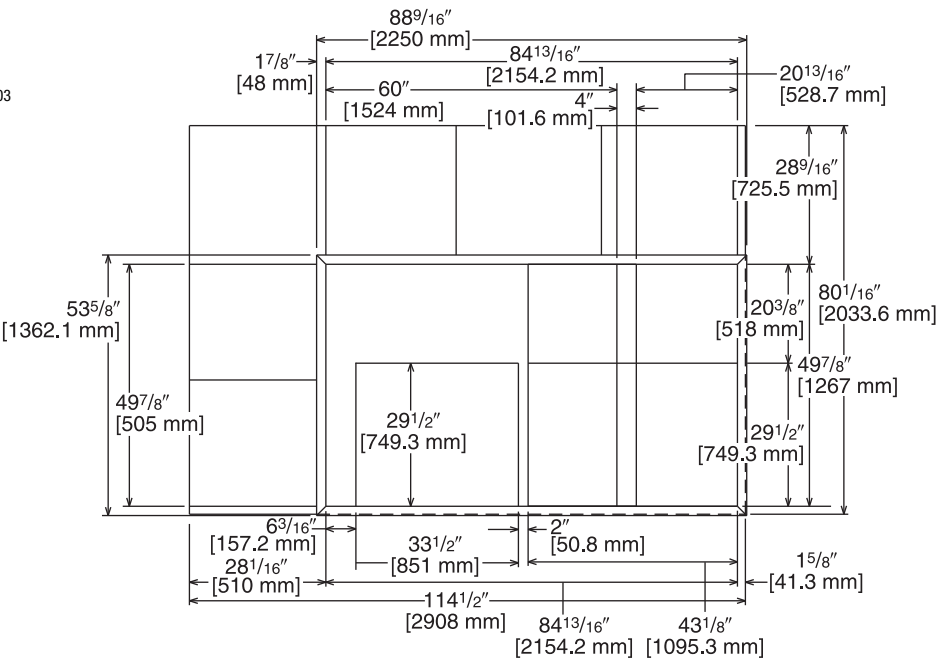


[] Designates Metric Conversions

ROOFCURB ADAPTERS (Cont.)

RXRX-CFCE56

Illustration
ADS-7952-03
Sheet 2



TOP VIEW

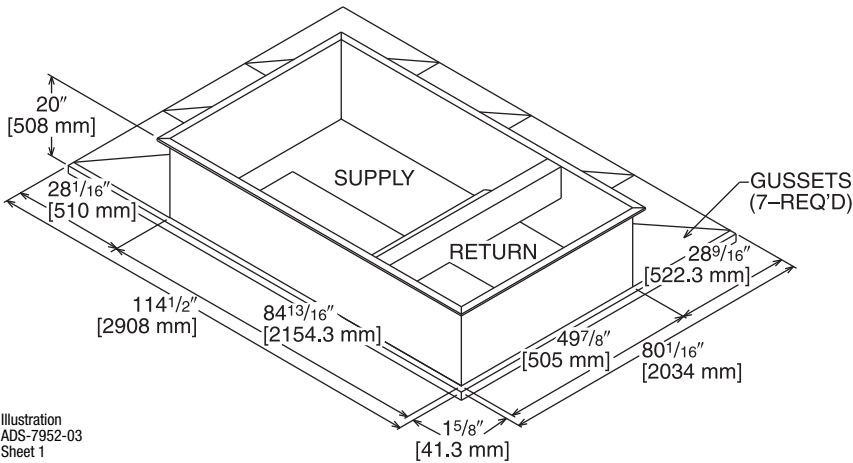


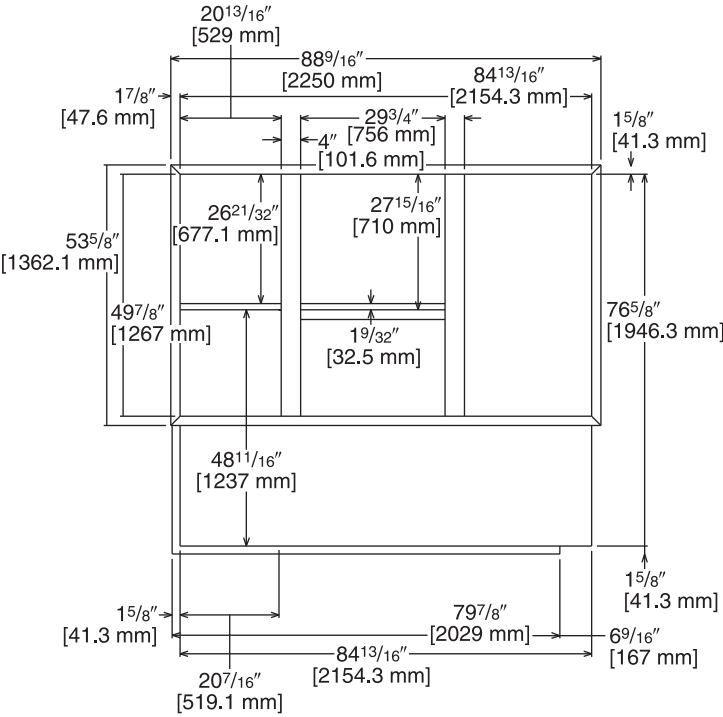
Illustration
ADS-7952-03
Sheet 1

[] Designates Metric Conversions

ROOFCURB ADAPTERS (Cont.)

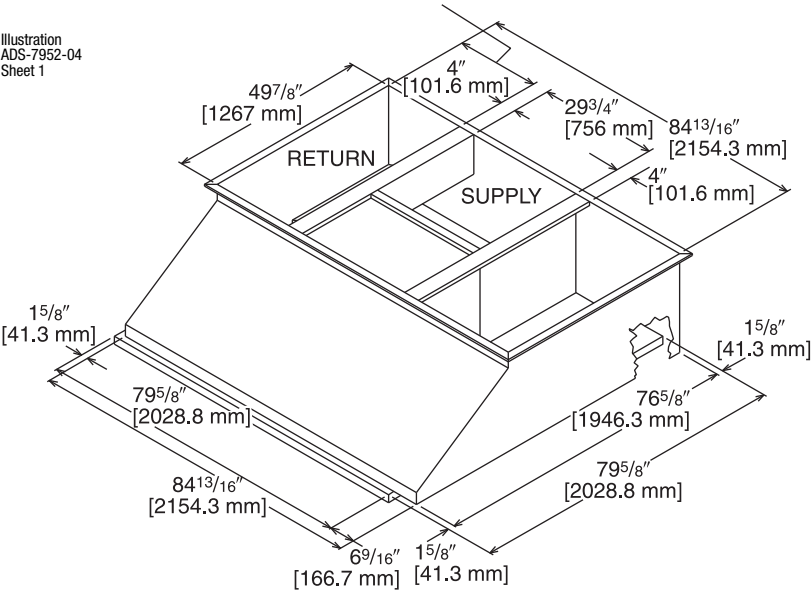
RXRX-CGCC12

Illustration
ADS-7952-04
Sheet 2



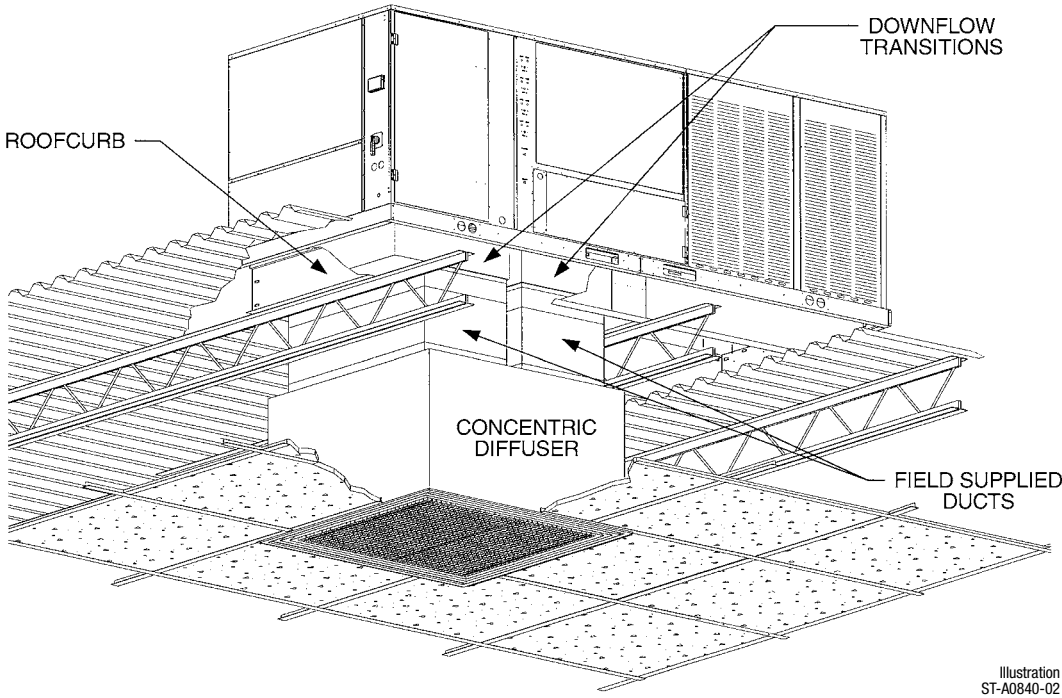
TOP VIEW

Illustration
ADS-7952-04
Sheet 1



[] Designates Metric Conversions

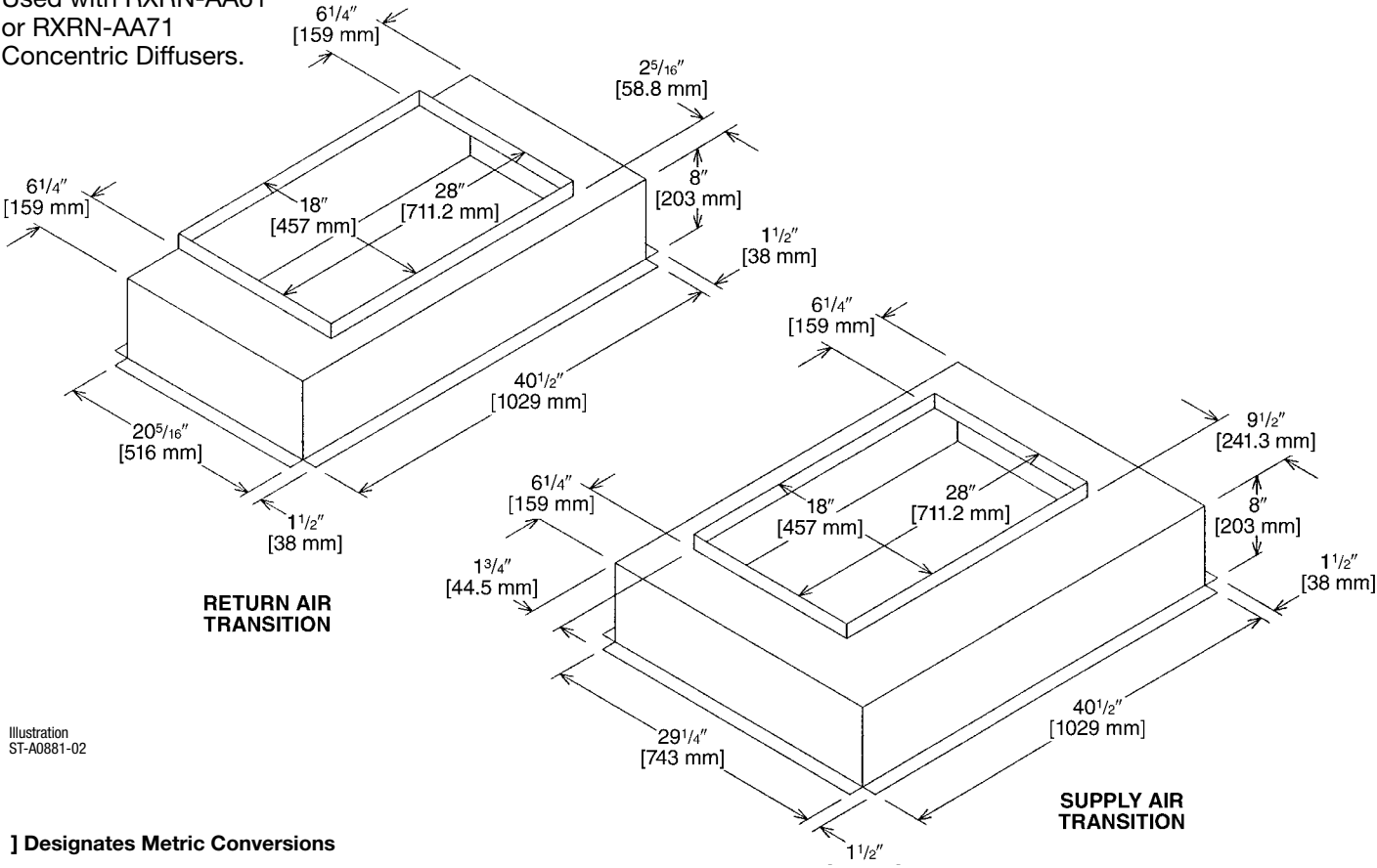
CONCENTRIC DIFFUSER APPLICATION



DOWNFLOW TRANSITION DRAWINGS

RXMC-CE05

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



[] Designates Metric Conversions

DOWNFLOW TRANSITION DRAWINGS (Cont.)

RXMC-CF06

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

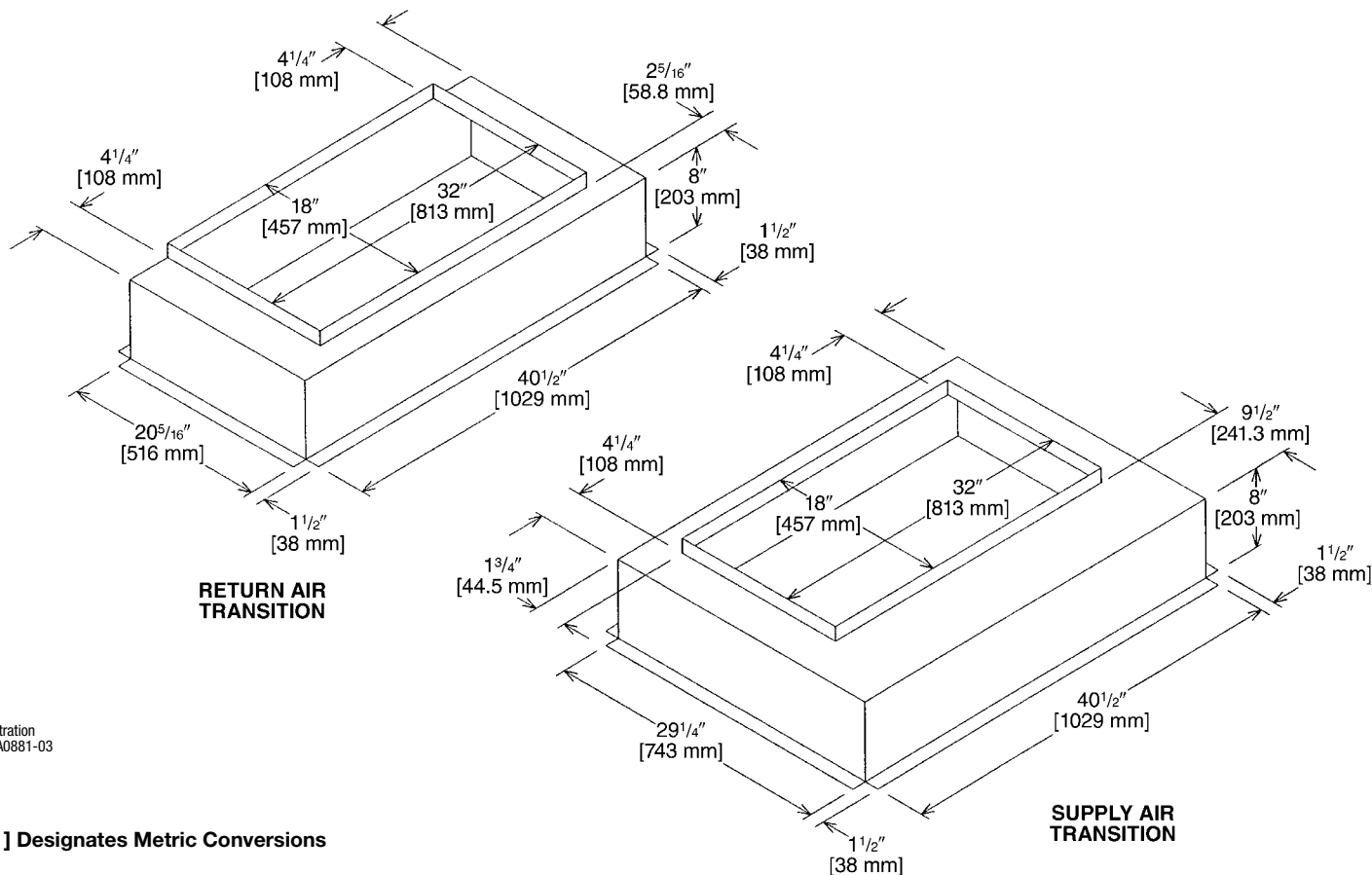


Illustration
ST-A0881-03

[] Designates Metric Conversions

DOWNFLOW TRANSITION DRAWINGS (Cont.)

RXMC-CD04

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

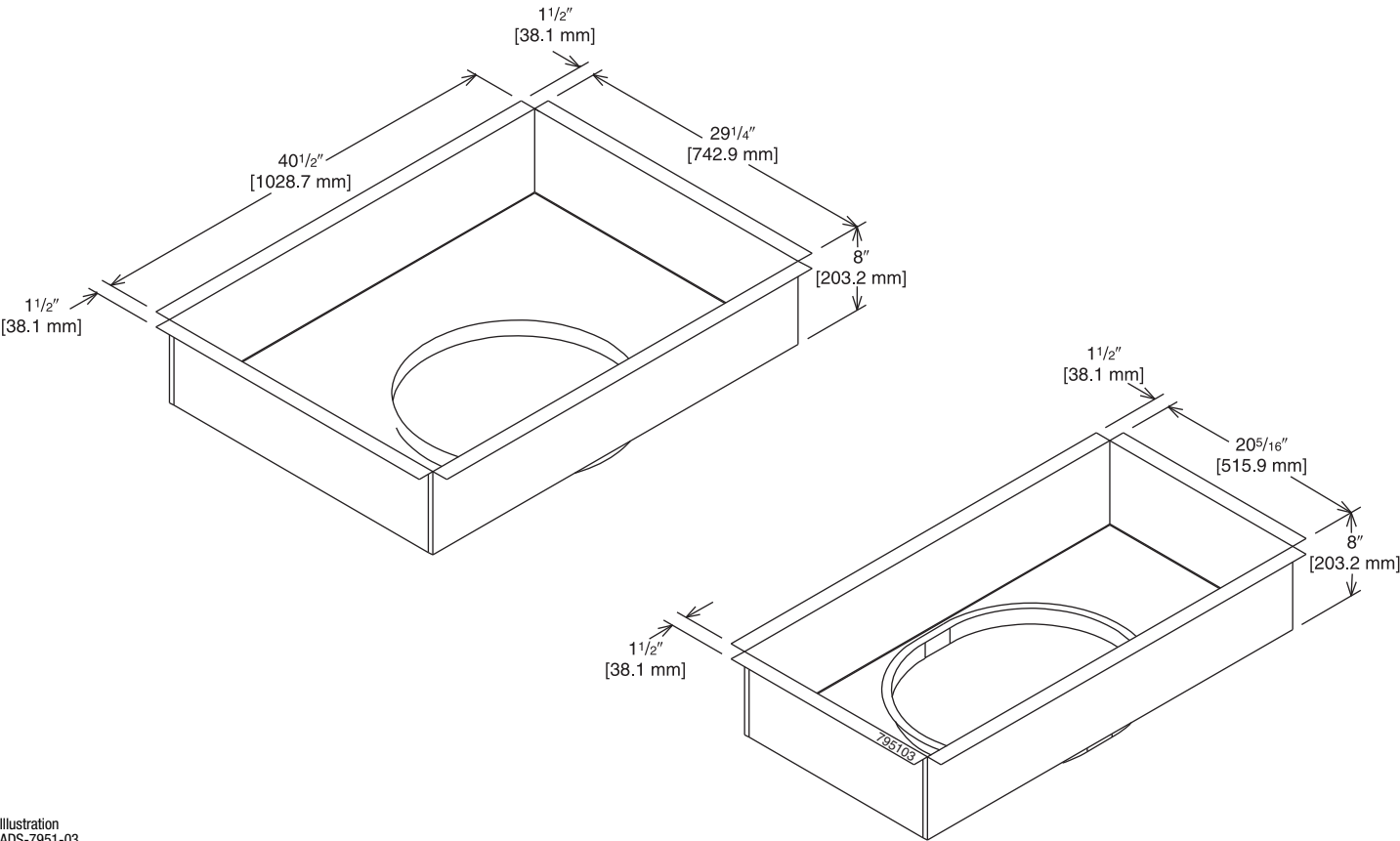


Illustration
ADS-7951-03

[] Designates Metric Conversions

CONCENTRIC DIFFUSER—STEP DOWN

RXRN-FA65 (7.5 & 8.5 Ton [26.4 & 29.9 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.

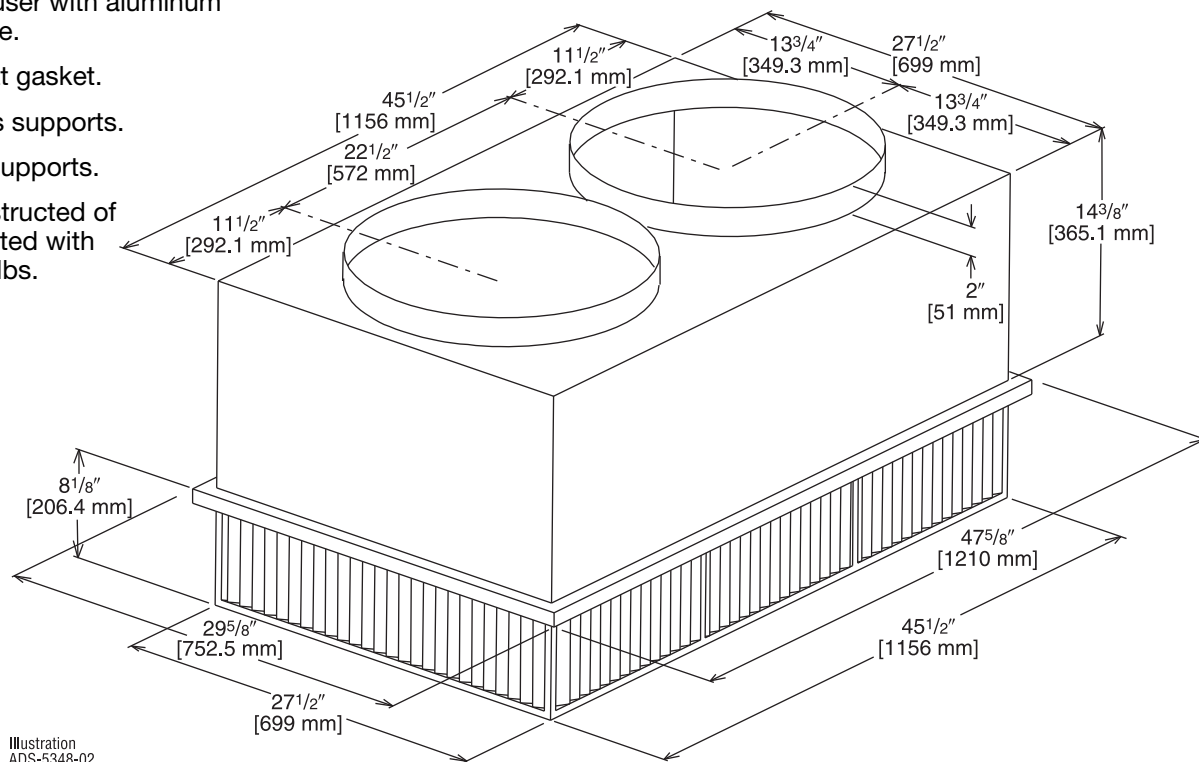


Illustration
ADS-5348-02

ENGINEERING DATA^①

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.

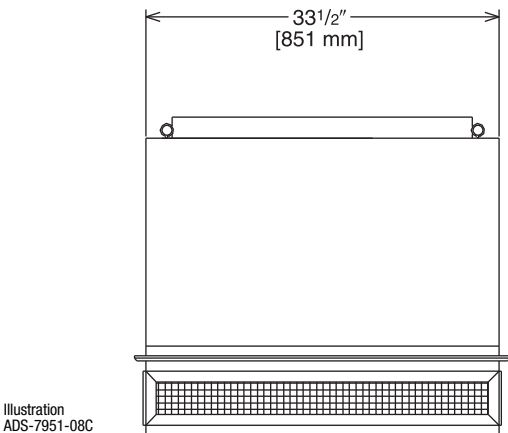
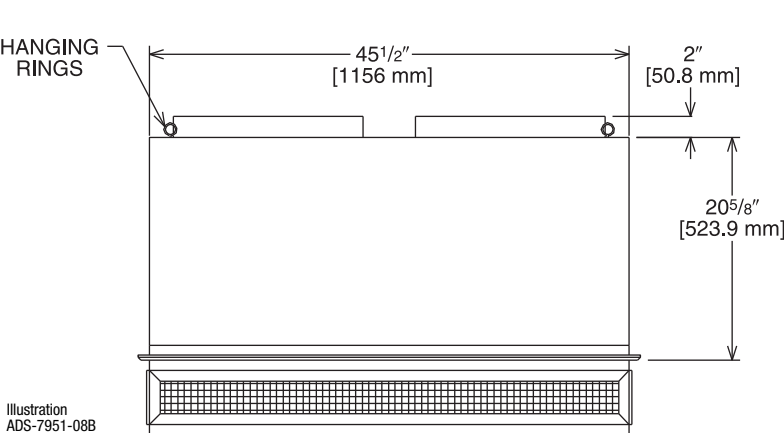
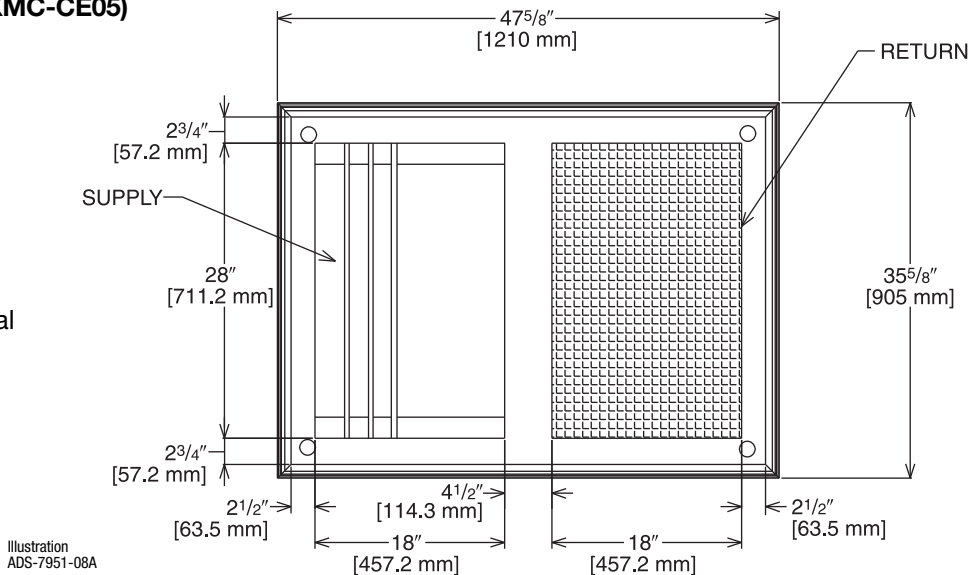
[] Designates Metric Conversions

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

RXRN-AA61 (8.5 & 10 Ton [29.9 kW & 35.2] Models)

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.



ENGINEERING DATA^①

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

CONCENTRIC DIFFUSER—STEP DOWN 18" x 32" [457.2 x 813 mm]

RXRN-AA66 (12.5 Ton [44.0 kW] Models)

**For Use With Downflow Transition (RXMC-CF06)
and 18" x 32" [457.2 x 813 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.

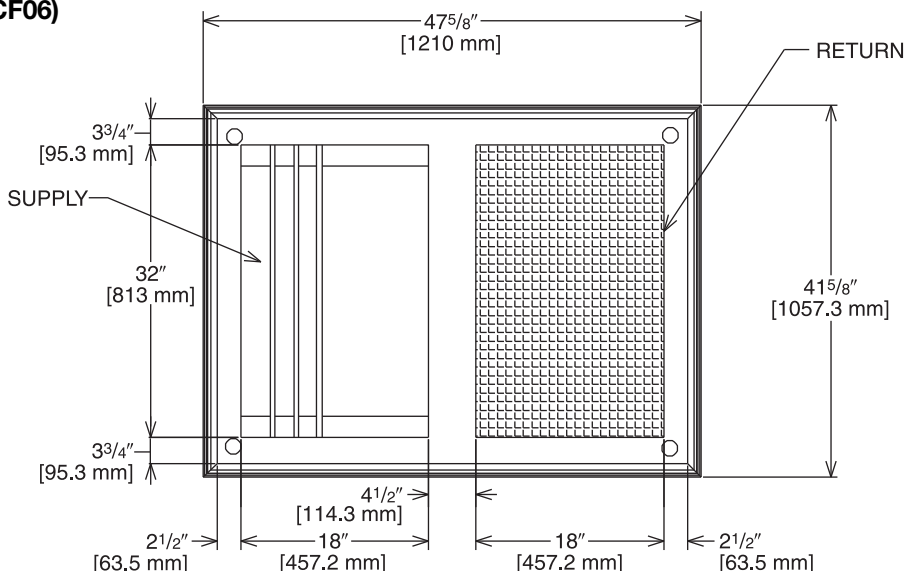


Illustration
ADS-7951-09A

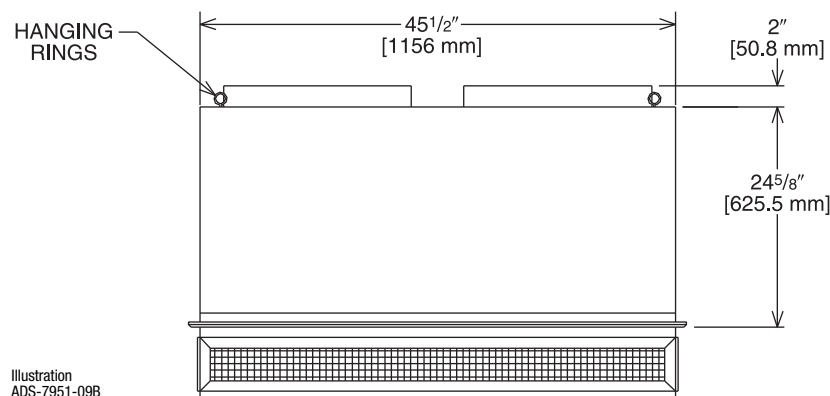


Illustration
ADS-7951-09B

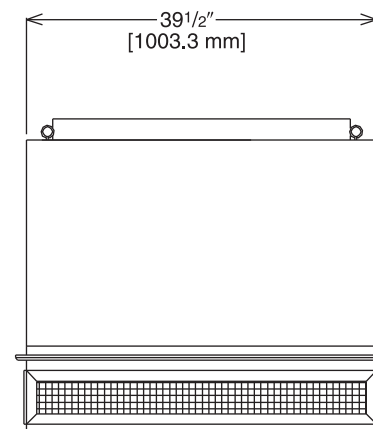


Illustration
ADS-7951-09C

ENGINEERING DATA^①

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-AA66	4600 [2171]	0.31 [0.077]	26-31 [7.9-9.4]	841 [4.3]	30
	4800 [2265]	0.32 [0.080]	27-32 [8.2-9.8]	878 [4.5]	30
	5000 [2359]	0.34 [0.085]	28-33 [8.5-10.1]	915 [4.6]	30
	5200 [2454]	0.36 [0.090]	28-34 [8.5-10.4]	951 [4.8]	30
	5400 [2548]	0.39 [0.097]	29-35 [8.8-10.7]	988 [6.0]	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 & 8.5 Ton [26.4 & 29.9 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.

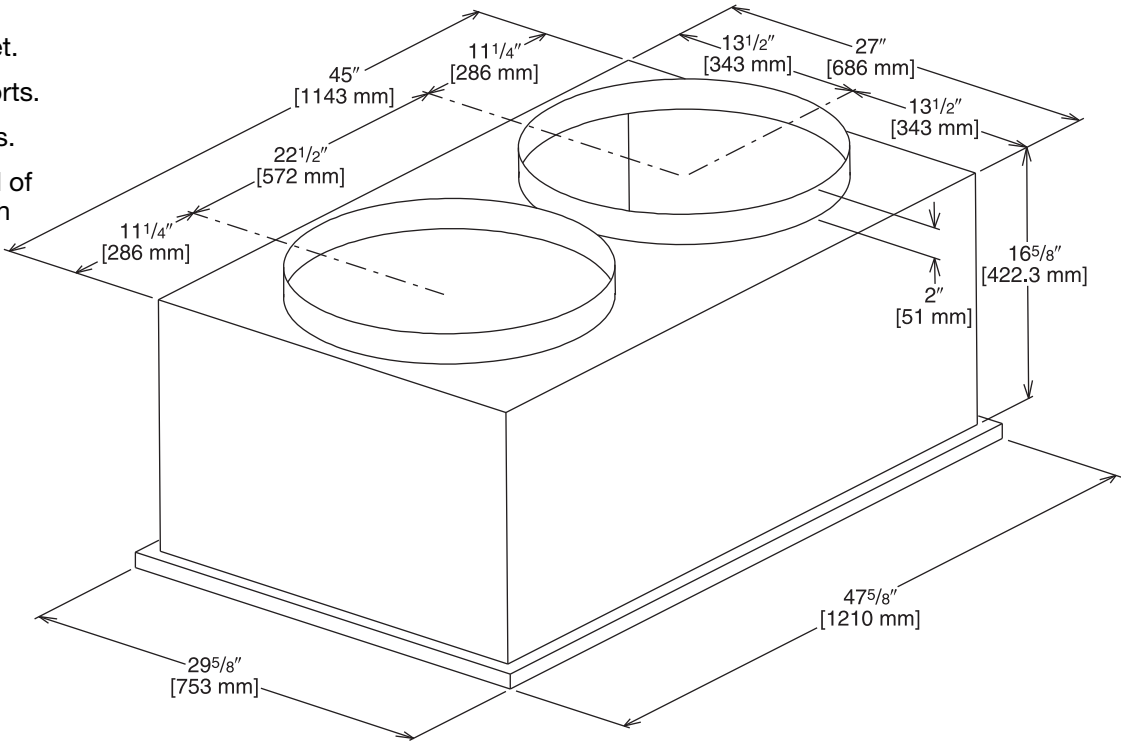


Illustration
ADS-5348-04

ENGINEERING DATA^①

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 (8.5 & 10 Ton [29.9 & 35.2] Models)

**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.

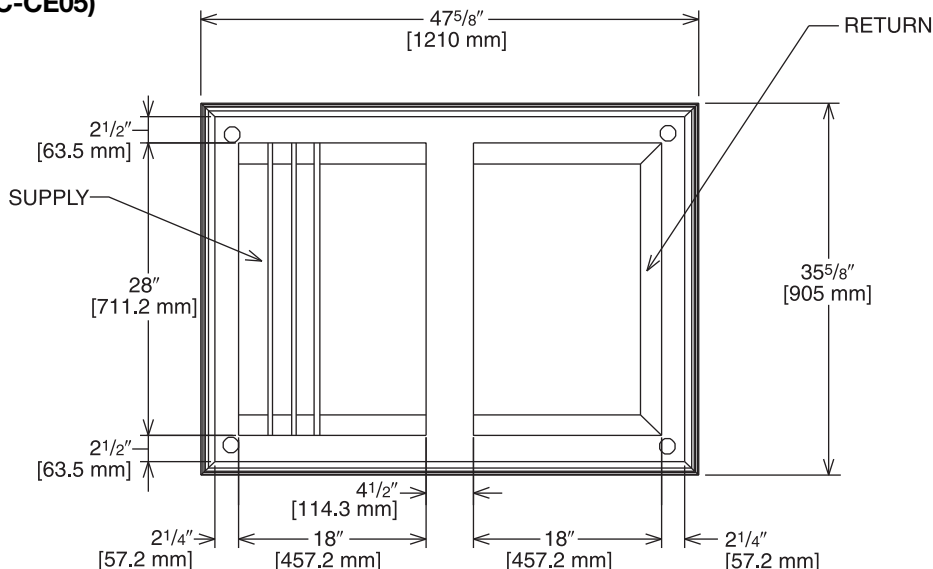


Illustration
ADS-7951-06A

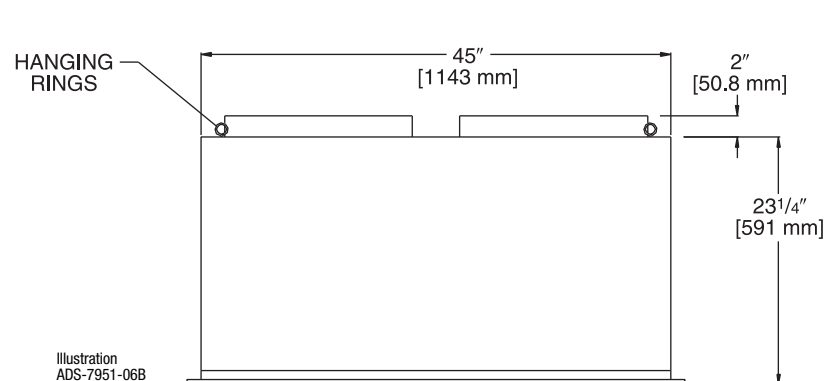


Illustration
ADS-7951-06B

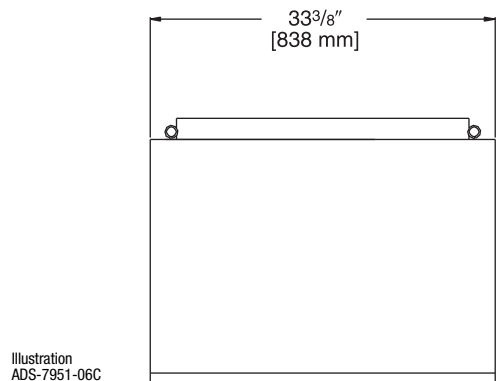


Illustration
ADS-7951-06C

ENGINEERING DATA^①

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 (dB)
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.

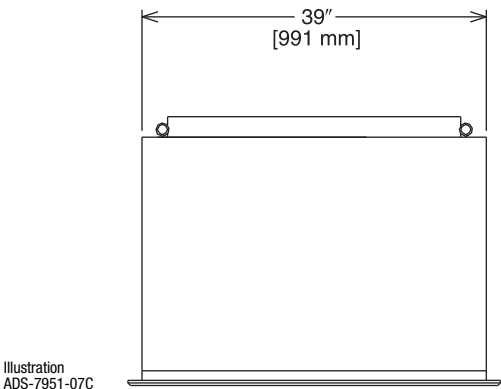
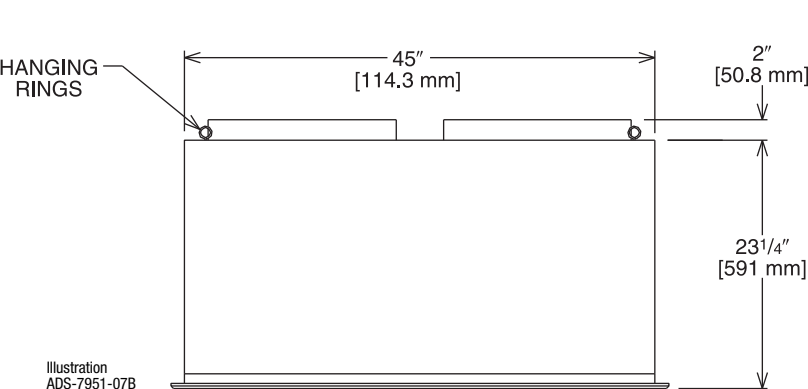
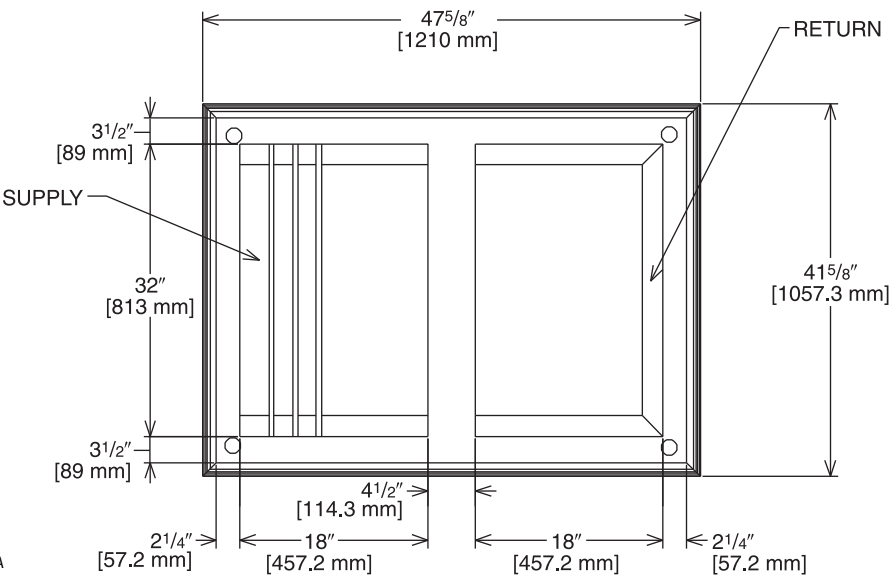
[] Designates Metric Conversions

CONCENTRIC DIFFUSER—FLUSH
18" x 32" [457.2 x 813 mm]

RXRN-AA76 (12.5 Ton [44.0 kW] Models)

For Use With Downflow Transition (RXMC-CF06)
and 18" x 32" [457.2 x 813 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.



ENGINEERING DATA^①

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-AA76	4600 [2171]	0.31 [0.077]	25-34 [7.6-10.4]	922 [4.7]	40
	4800 [2265]	0.32 [0.080]	26-35 [7.9-10.7]	962 [4.9]	40
	5000 [2359]	0.34 [0.085]	27-36 [8.2-11.0]	1002 [5.1]	40
	5200 [2454]	0.36 [0.090]	30-39 [9.1-11.9]	1043 [5.3]	45
	5400 [2548]	0.39 [0.097]	32-41 [9.8-12.5]	1083 [5.5]	45

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 – RLRL-C/H090 and 120

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ELECTRIC HEAT PACKAGED ROOFTOP**HVAC Guide Specifications**

Size Range: 6 to 12.5 Nominal Tons

<u>Section</u>	<u>Description</u>
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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.
 - 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 CO₂ 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, exhaust, 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, exhaust.
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.

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 $\pm 10\%$ 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 discharge supply air vertically or horizontally as shown on contract drawings.
4. Unit shall be factory configured for vertical supply & return configurations.
5. 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 except the 072 model which shall use small orifice refrigerant control expansion device.
 - 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 not be required for normal operating range.

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 CO₂ sensor input for IAQ/DCV control. In this mode, dampers shall modulate the outdoor-air damper to provide ventilation based on the sensor input.

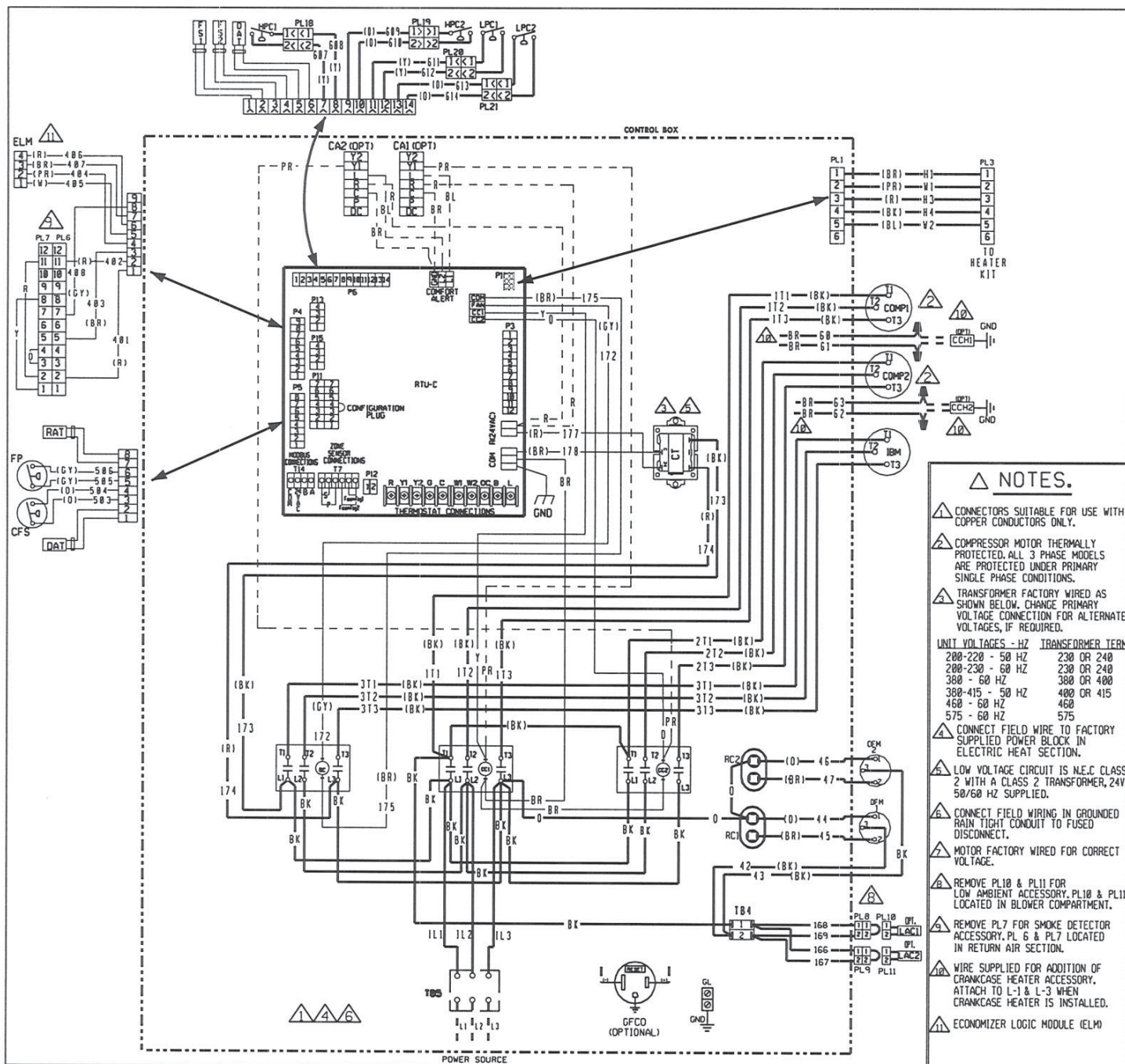
- n. Compressor lockout sensor on the unit controller is factory set at 35°F and is adjustable from 30°F (-1°C) to 50°F (10°C) and resets the cooling lockout at 5°F (+2.7°C) above the set point..
- o. Actuator shall be direct coupled to economizer gear. No linkage arms or control rods shall be acceptable.
- 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 (CO₂) 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:

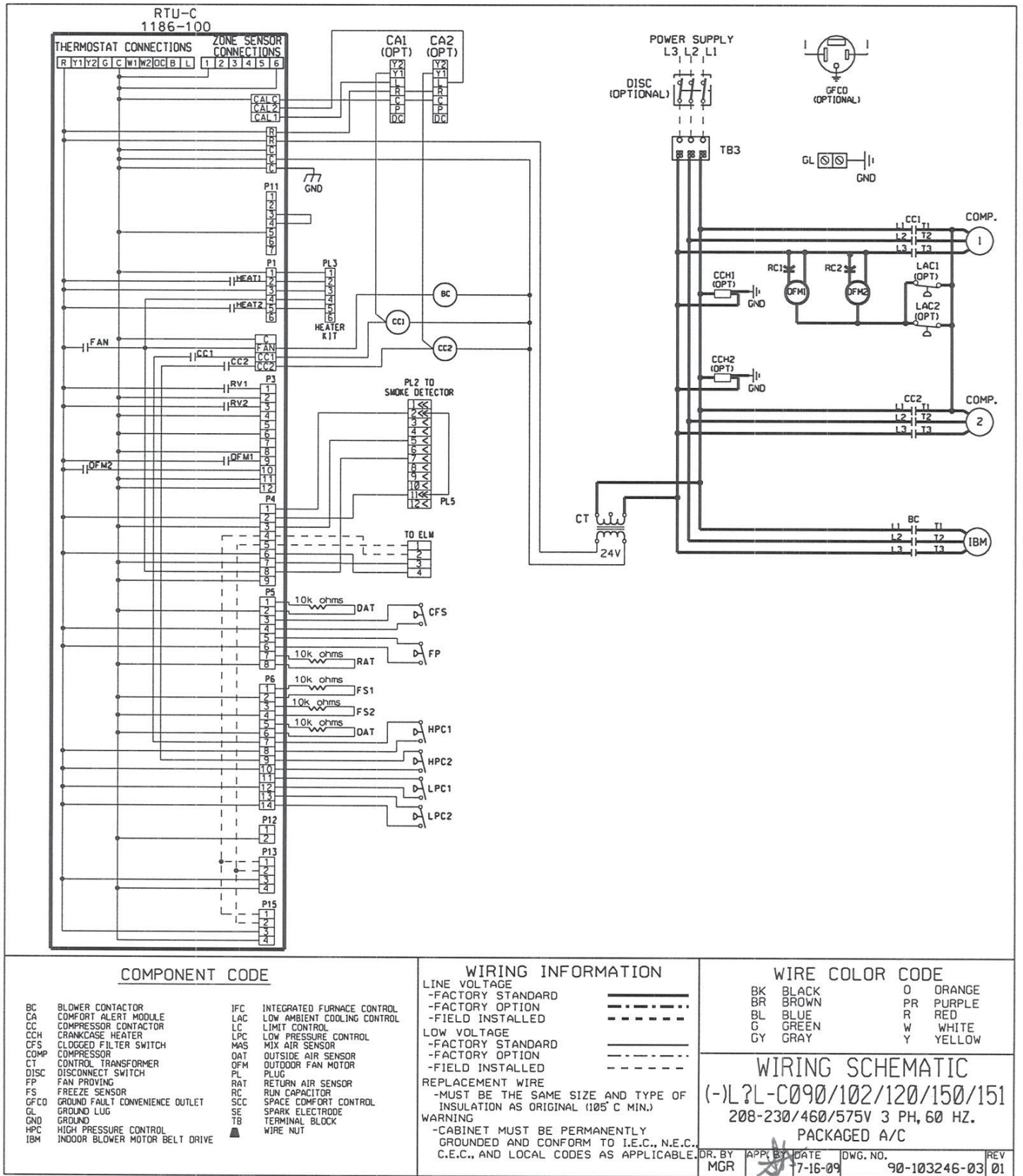
- a. Shall be a Four-Wire Controller and Detector.
- b. Shall be environmental compensated with differential sensing for reliable, stable, and drift-free sensitivity.
- c. Shall use magnet-activated test/reset sensor switches.
- d. Shall have a recessed momentary switch for testing and resetting the 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.

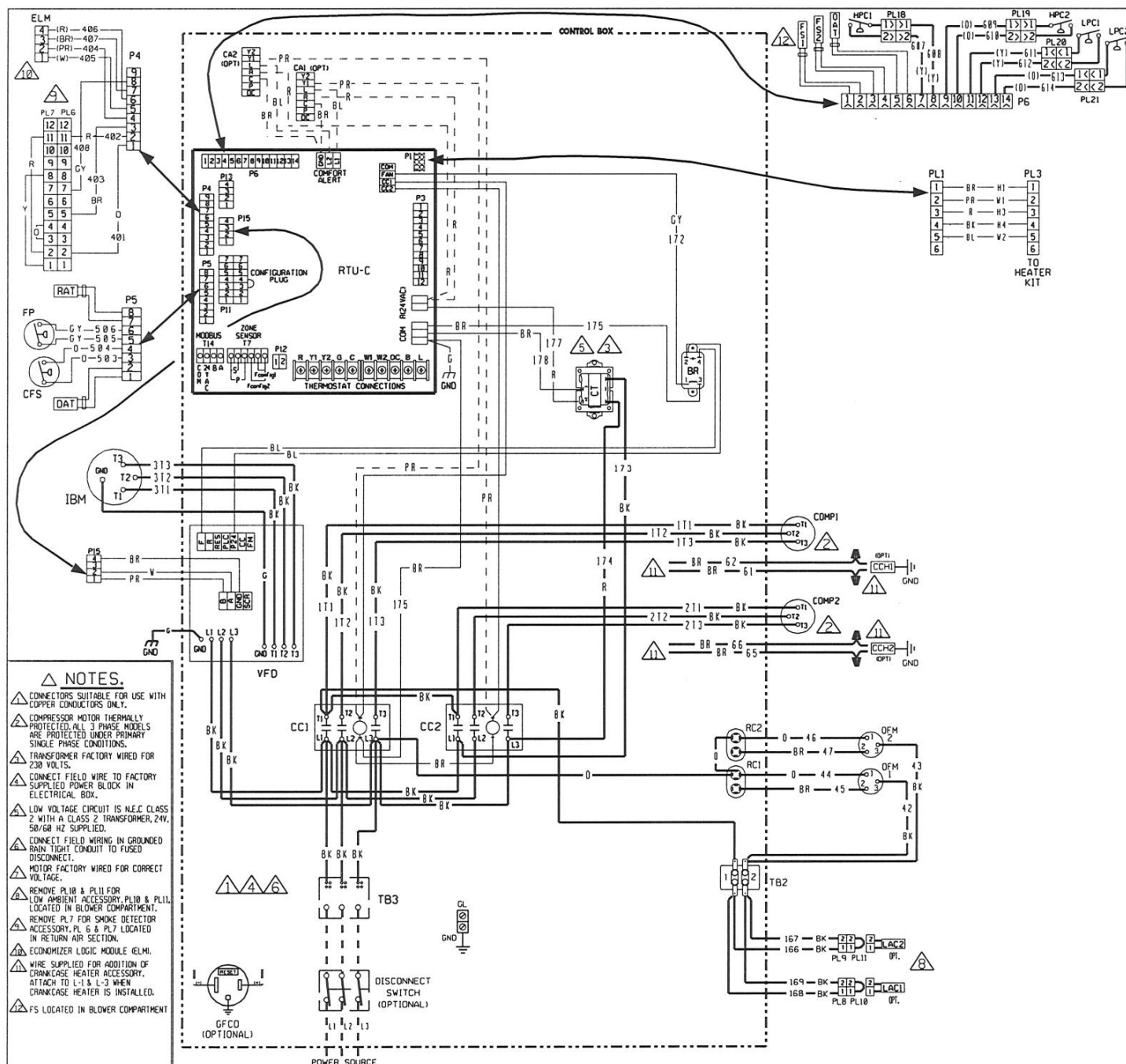
16. Electric Heat:

- 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.



DWG. NO. 90-103089-03 REV 02	<p>COMPONENT CODE</p> <p>BC BLOWER CONTACTOR CA COMFORT ALERT MODULE CC COMPRESSOR CONTACTOR CCH CRANKCASE HEATER CFS CLOGGED FILTER SWITCH COMP COMPRESSOR CT CONTROL TRANSFORMER DAT DISCHARGE AIR SENSOR DISC DISCONNECT SWITCH FP FAN PROVING FS FREEZE SENSOR GFCO GROUND FAULT CONVENIENCE OUTLET GL GROUND LUG GND GROUND HPC HIGH PRESSURE CONTROL IBM INDOOR BLOWER MOTOR BELT DRIVE</p> <p>LAC LOW AMBIENT COOLING CONTROL LPC LOW PRESSURE CONTROL OAT OUTSIDE AIR SENSOR OFM OUTDOOR FAN MOTOR PL PLUG RAT RETURN AIR SENSOR RC RUN CAPACITOR RTU-C ROOFTOP UNIT CONTROL TB TERMINAL BLOCK W WIRE NUT</p>	<p>WIRING INFORMATION</p> <p>LINE VOLTAGE -FACTORY STANDARD -FACTORY OPTION -FIELD INSTALLED</p> <p>LOW VOLTAGE -FACTORY STANDARD -FACTORY OPTION -FIELD INSTALLED</p> <p>REPLACEMENT WIRE -MUST BE THE SAME SIZE AND TYPE OF INSULATION AS ORIGINAL (105° C MIN.)</p> <p>WARNING -CABINET MUST BE PERMANENTLY GROUNDED AND CONFORM TO I.E.C., N.E.C., C.E.C., AND LOCAL CODES AS APPLICABLE.</p>	<p>WIRE COLOR CODE</p> <p>BK BLACK BR BROWN BL BLUE G GREEN GY GRAY</p> <p>O ORANGE PR PURPLE R RED W WHITE Y YELLOW</p> <p>WIRING DIAGRAM (-)L?L-C090/102/120/150/151 208-230/460/575V 3 PH, 60 HZ. PACKAGED A/C W/RTU-C</p> <p>DR. BY MGR APP. BY [Signature] DATE 4-15-09 DWG. NO. 90-103089-03 REV 03</p>





- NOTES.**
- CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
 - COMPRESSOR MOTOR THERMALLY PROTECTED. ALL 3 PHASE MODELS ARE PROTECTED UNDER PRIMARY SINGLE PHASE CONDITIONS.
 - TRANSFORMER FACTORY WIRING FOR 230 VOLTS.
 - CONNECT FIELD WIRE TO FACTORY SUPPLIED POWER BLOCK IN ELECTRICAL BOX.
 - LOW VOLTAGE CIRCUIT IS N.E.C. CLASS 2 WITH A CLASS 2 TRANSFORMER, 24V, 50/60 HZ SUPPLIED.
 - CONNECT FIELD WIRING IN GROUNDED RAIN TIGHT CONDUIT TO FUSED DISCONNECT.
 - MOTOR FACTORY WIRING FOR CORRECT VOLTAGE.
 - REMOVE PL10 & PL11 FOR LOW AMBIENT ACCESSORY. PL10 & PL11 LOCATED IN BLOWER COMPARTMENT.
 - REMOVE PL7 FOR SMOKE DETECTOR ACCESSORY. PL 6 & PL7 LOCATED IN RETURN AIR SECTION.
 - ECONOMIZER LOGIC MODULE (ELM).
 - WIRE SUPPLIED FOR ADDITION OF CRANKCASE HEATER ACCESSORY. ATTACH TO L-1 & L-3 WHEN CRANKCASE HEATER IS INSTALLED.
 - FS LOCATED IN BLOWER COMPARTMENT

COMPONENT CODE

BR BLOWER RELAY
CA COMFORT ALERT MODULE
CC COMPRESSOR CONTACTOR
CCH CRANKCASE HEATER
CFS CLOGGED FILTER SWITCH
COMP COMPRESSOR
CT CONTROL - TRANSFORMER
DAT DISCHARGE AIR SENSOR
DISC DISCONNECT SWITCH
FP FAN PROVING
FS FREEZE SENSOR
GFCD GROUND FAULT CONVENIENCE OUTLET
GL GROUND LUG
GND GROUND

HPC HIGH PRESSURE CONTROL
IBM INDOOR BLOWER MOTOR BELT DRIVE
LAC LOW AMBIENT COOLING CONTROL
LC LIMIT CONTROL
LPC LOW PRESSURE CONTROL
OAT OUTSIDE AIR SENSOR
OAF OUTDOOR FAN MOTOR
PLC PLUG
RAT RETURN AIR SENSOR
RC RUN CAPACITOR
RTU-C ROOFTOP UNIT CONTROL
TB TERMINAL BLOCK
VFD VARIABLE FREQUENCY DRIVE
WIRE NUT

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.

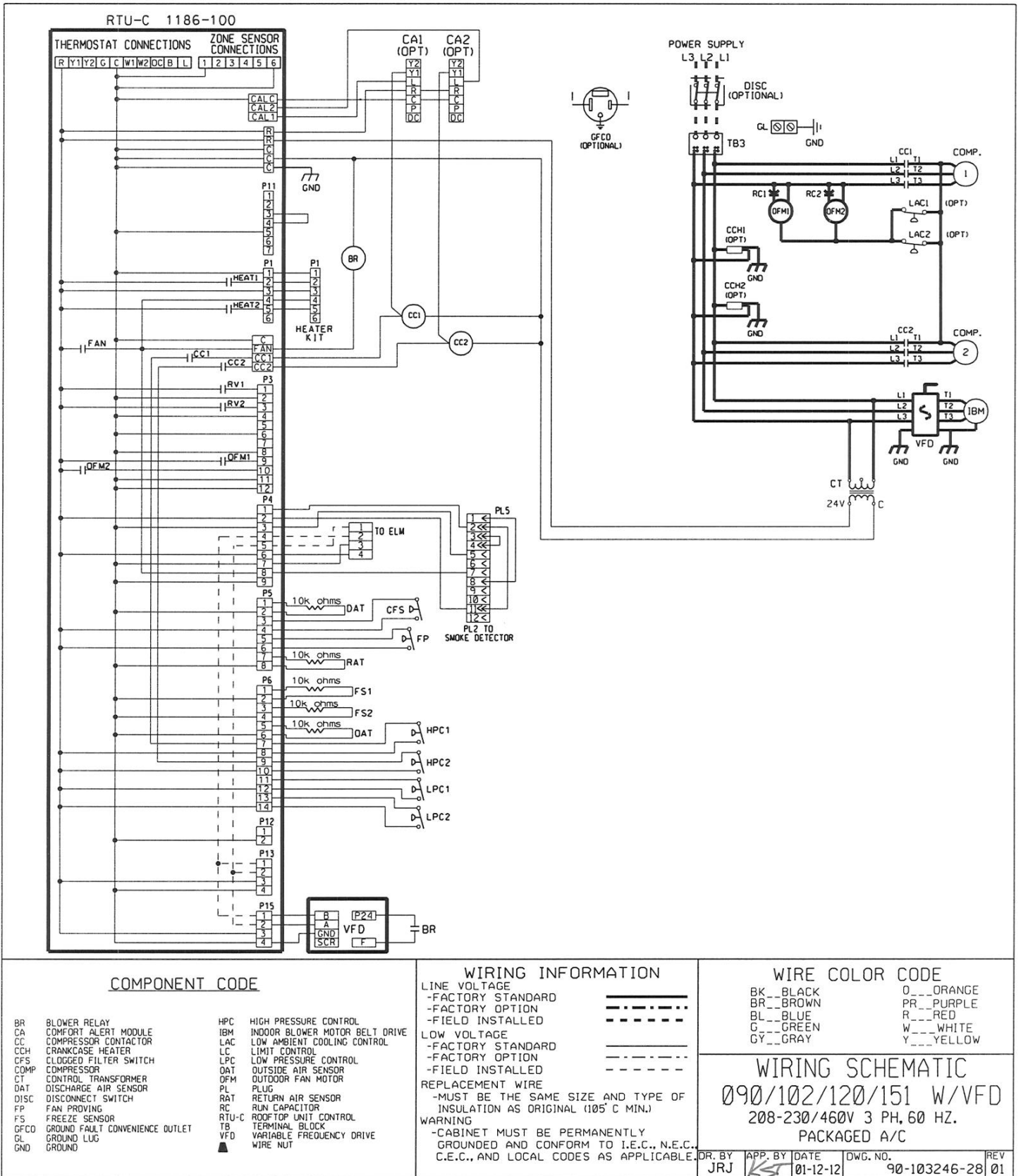
WIRE COLOR CODE

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

WIRING DIAGRAM

090/102/120/151 W/VFD
208-230/460V 3 PH, 60 HZ.
PACKAGED A/C W/RTU-C

DR. BY JRJ	APP. BY KST	DATE 01-12-12	DWG. NO. 90-103089-32	REV 00
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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.**

Compressor

3 Phase, Commercial Applications.....Five (5) Years

Parts

3 Phase, Commercial Applications.....One (1) Year



In keeping with its policy of continuous progress and product improvement, Ruud reserves the right to make changes without notice.

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