



Russell[™]
By Rheem

MODEL: RLKN Package Air Conditioner

FORM NO. SRR-973

Russell[™] By Rheem Package Air Conditioner



RLKN-B Standard Efficiency

- Nominal Sizes 6 Tons [21.1 kW]
(3 Phase Models Only)

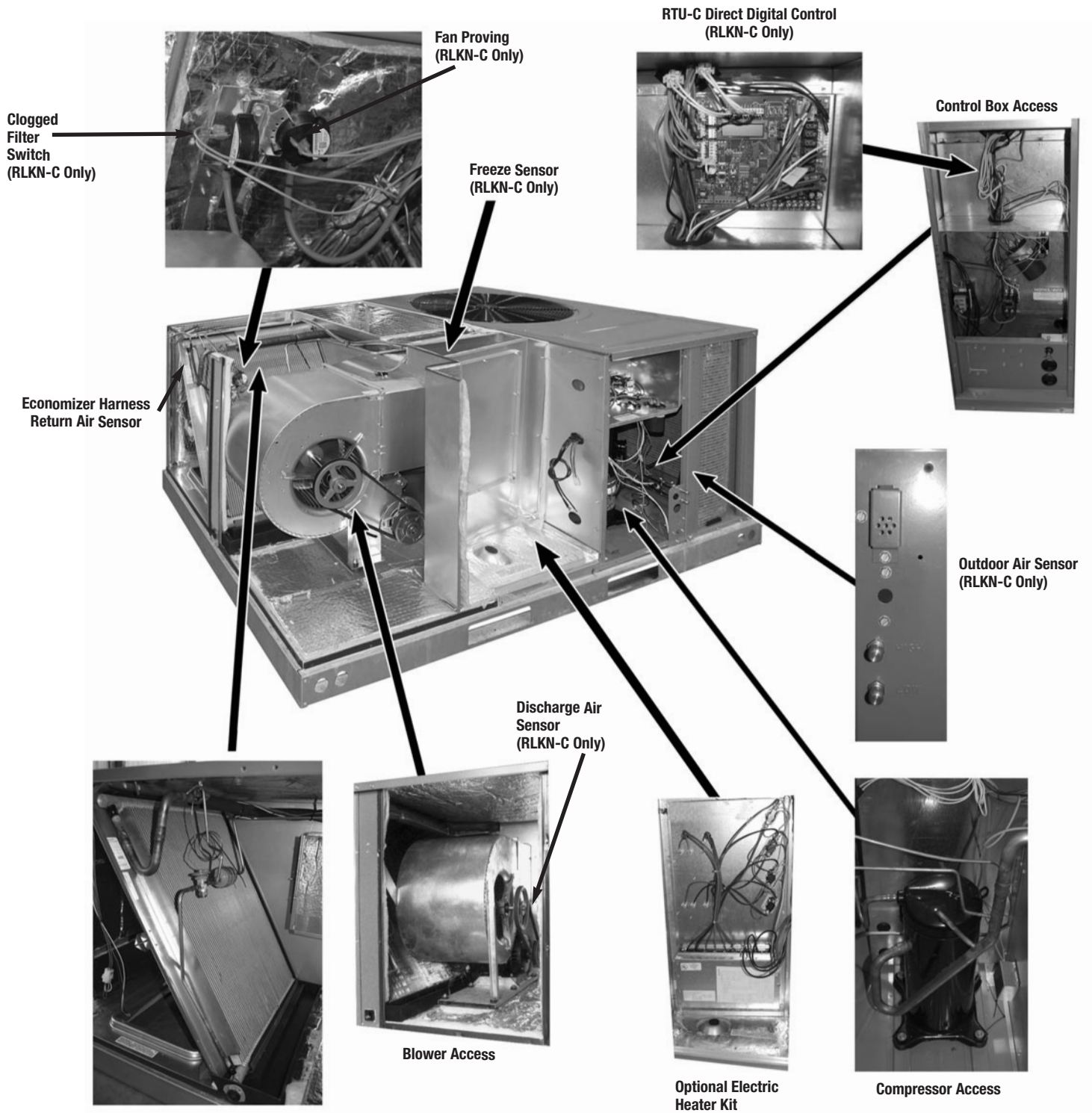
RLKN-C Standard Efficiency

- With Direct Digital Control



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Evaporator Coil/Filter Access

- Return air filters, normally provided, are removed in this photo.
- Non-corrosive plastic condensate pan

[] Designates Metric Conversions



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 compressor on all models.
- Convertible airflow.
- TXV refrigerant metering system.
- High Pressure and Low Pressure/Loss of charge protection standard on all models.
- Solid Core liquid line filter drier on each circuit.
- Single slab, single pass designed evaporator coil facilitates easy cleaning for maintained high efficiencies.
- Cooling operation up to 125 degree F ambient.
- Easily removable filter, blower, electric heat, and control access panels permits prompt service.
- 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.
- Externally mounted refrigerant gauge ports for easy service diagnostics.
- All 208/230V and 460V models are shipped from factory "VFD Ready" with mating plugs for a field installed VFD kit to provide 2-stage indoor airflow.
- Factory or field-installed electric heat kits available up to 24 kW.
- Easy to install plug-in; slip in, 100% fully modulating economizer.
- Forkable base rails for easy handling and lifting.
- Single point electrical and gas connections.
- 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.
- Colored and labeled wiring.
- Molded compressor plug.
- Micro Channel evaporators and condenser delivers superior performance with less refrigerant charge and less weight than conventional copper tube/aluminum fin coils. In addition the aluminum design has superior formicary corrosion protection and less potential for leaks due to elimination of tube rubbing potential. Its easier to clean and has a more robust surface.
- RLKN-C models equipped with factory installed Direct Digital Control (DDC), and sensors which can connect to LonWorks™ or BACnet® building automation systems for remote monitoring and control.

DIRECT DIGITAL CONTROL (RLKN-C MODELS)

As part of the Direct Digital Control system which allows real time monitoring and communication between rooftop units, the RLKN-C 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. 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 RLKN-C Package air Conditioner with the RTU-C is specifically designed to be applied in four distinct applications:

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

The RLKN-C is compatible with a third party building management system that supports the LonMark Space Comfort controller (SCC) functional profile or LonMark Discharge Air Controller (DAC) functional profile. This is accomplished with a field installed LonMark communication module. The LonMark

Communication Module plugs onto the RTU-C controller and allows communication between the RTU-C and a LonWorks Network. A zone sensor, a LonTalk network zone sensor, or a LonTalk thermostat or DDC controller may be used to send the zone temperature or thermostat demands to the RTU-C. The LonMark Communication Module utilizes an FTT-10A free topology transceiver communicating at 78.8 kbps. It is compatible with Echelon qualified twisted pair cable, Belden 8471 or NEMA Level 4 cables. The Module can communicate up to 1640 ft. with no repeater. The LonWorks limits of 64 nodes per segment applies to this device.

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

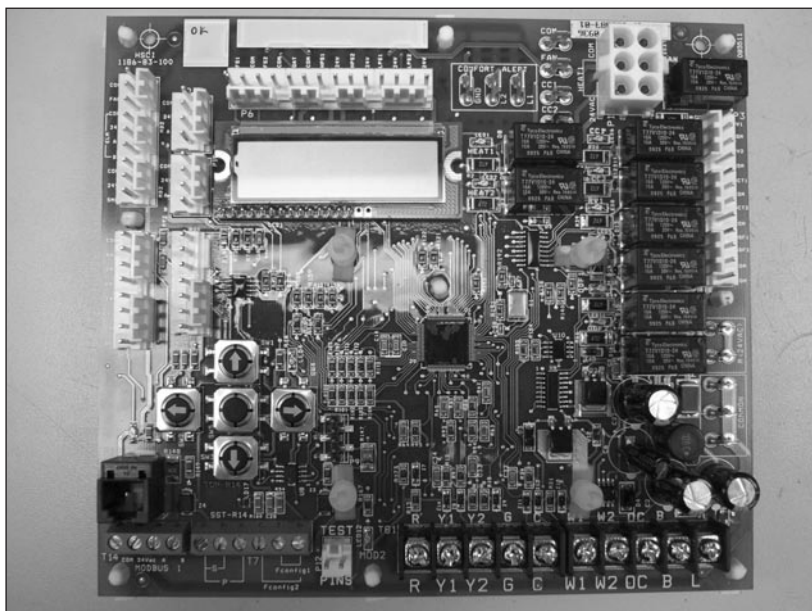
The RLKN-C is compatible with a zone sensor and mechanical or solid state time clock connected to the RTU-C. Extensive unit status and diagnostics are displayed on the LCD screen of the RTU-C.

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

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.

RTU-C/Direct Digital Control



RLKN-B SELECTION PROCEDURES

1. Determine cooling and heating requirements at design conditions.

Example:

Total cooling capacity61,000 BTUH [17.87 kW]
 Sensible cooling capacity44,000 BTUH [12.89 kW]
 Condenser entering air95°F [35°C]
 Evaporator entering air.....63°F [17°C] wb/76°F [24°C] db
 Indoor air flow2100 CFM [991 L/s]
 External static pressure.....1.0 in W.G.

2. Select unit to meet cooling requirements.

Since total cooling is within the range of 6 ton [21.1 kW] unit enter cooling performance from the RLKN-B073 table, at 95°F [35°C] outdoor temperature, 63°F [17°C] wb entering indoor air, and 2100 CFM [991 L/s]:

Total capacity.....65,000 BTUH [19.1 kW]
 Sensible Capacity55,400 BTUH [16.2 kW]
 Power input5.3 kW

And also, at 76°F [24°C] db indoor entering air, and using the formula at the bottom of the page:

Sensible capacity.....48,008 BTUH [14.07 kW]

3. Determine blower speed and power to meet the system requirements.

At the given external static pressure of 1.0 in W.G., the belt model must be selected. Enter the belt drive blower performance table at 2100 CFM [991 L/s] and 1.0 in W.G. ESP:

RPM.....1100
 Watts1025
 DriveL

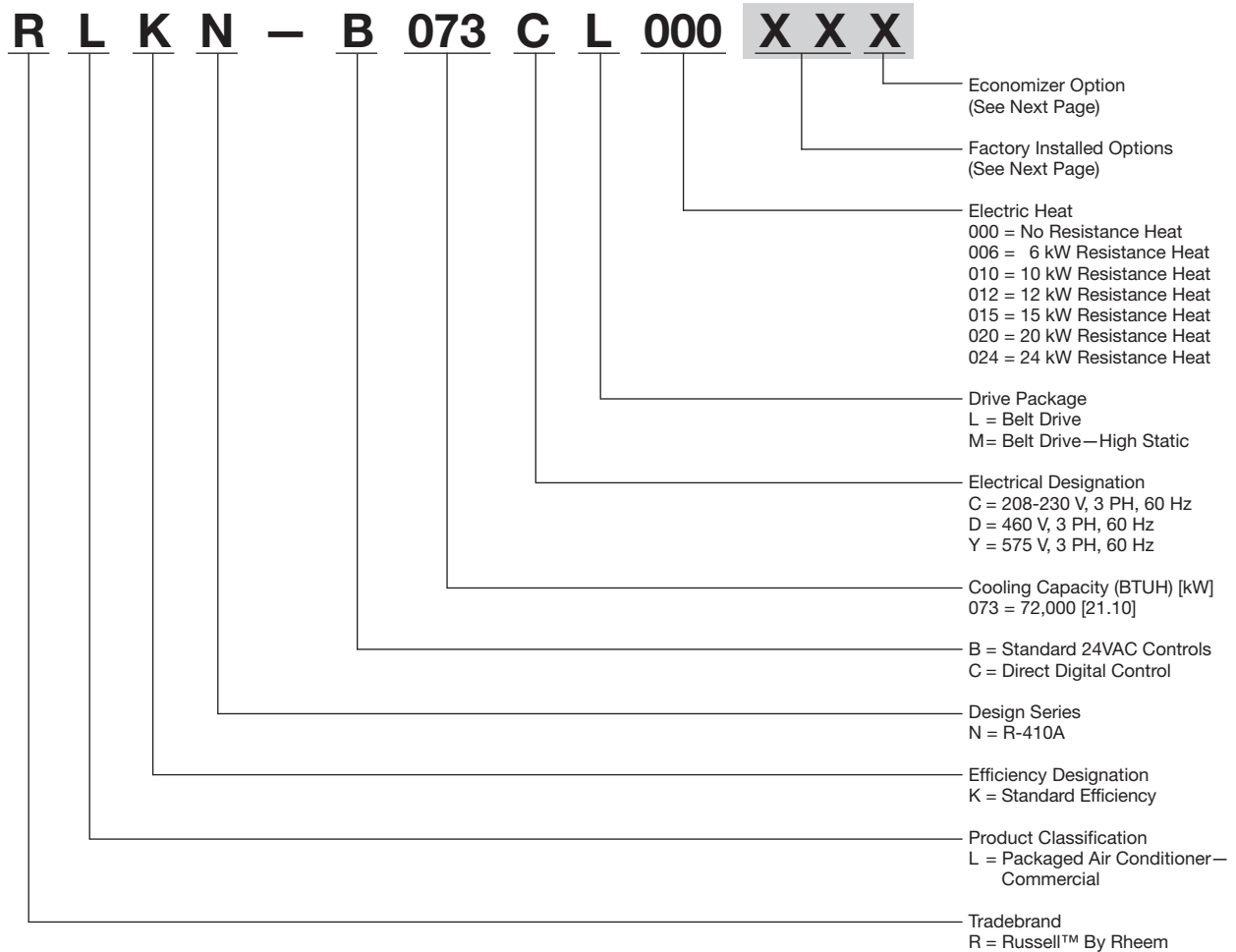
4. Calculate indoor blower BTUH heat effect.

BTUH = Watts x 3.413 = 3498

5. Calculate net cooling capacities.

Net total cooling = 65,000 – 3498 = 61,502 BTUH [18.02 kW]
 Net sensible cooling = 48,008 – 3498 = 44,510 BTUH [13.04 kW]

[] Designates Metric Conversions



[] Designates Metric Conversions

FACTORY INSTALLED OPTION CODES FOR RLKN-B073 (6 Ton) [21.1 kW]

| Option Code | Hail Guard | Non-Powered Convenience Outlet | Low Ambient/ Freeze Stat | Hinged Doors |
|-------------|------------|-----------------------------------|-----------------------------|--------------|
| AA | NO OPTIONS | | | |
| AD | x | | | |
| AG | | x | | |
| AP | | | x | |
| AV | | | | x |
| BY | x | | x | |
| BJ | x | x | | |
| JC | | x | x | |
| JK | x | | | x |
| JL | | x | | x |
| JP | | | x | x |
| CX | x | x | x | |
| KD | x | x | | x |
| KG | x | | x | x |
| KK | | x | x | x |
| DS | x | x | x | x |

Example: RLKN-B073CL000XXX (where XX is factory installed option)

Example: No Options

RLKN-B073CL000

Example: No Options with Factory Installed Economizer

RLKN-B073CL000AAF

Example: Options with Hailguard with no Factory Installed Economizer

RLKN-B073CL000ADA

Example: Options same as above with Factory Installed Economizer

RLKN-B073CL000ADF

ECONOMIZER SELECTION FOR RLKN-B073 (6 TON) [21.1 kW]

| | No Economizer | Economizer No Smoke Detector | Economizer With Smoke Detector |
|---|---------------|---------------------------------|-----------------------------------|
| A | x | | |
| F | | x | |
| G | | | x |

"x" indicates factory installed option.

[] Designates Metric Conversions

FACTORY INSTALLED OPTION CODES FOR RLKN-C073 (6 Ton) [21.1 kW]

| Option Code | Hail Guard | Non-Powered Convenience Outlet | Low Ambient/ Comfort Alert | Hinged Doors |
|-------------|------------|--------------------------------|----------------------------|--------------|
| AD | x | | | |
| AG | | x | | |
| AR | | | x | |
| AV | | | | x |
| JD | x | | x | |
| BJ | x | x | | |
| GZ | x | x | x | |
| JE | | x | x | |
| JK | x | | | x |
| JL | | x | | x |
| JQ | | | x | x |
| KH | x | | x | x |
| KD | x | x | | x |
| DT | x | x | x | x |
| KL | | x | x | x |

Example: RLKN-C073CL000XXX (where XX is factory installed option)

Example: No Options

RLKN-C073CL000

Example: No Options with Factory Installed Economizer

RLKN-C073CL000AAH

Example: Options with Hailguard with no Factory Installed Economizer

RLKN-C073CL000ADA

Example: Options same as above with Factory Installed Economizer

RLKN-C073CL000ADH

ECONOMIZER SELECTION FOR RLKN-C073 (6 TON) [21.1 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.

[] Designates Metric Conversions

NOMINAL SIZES 6 TONS [21.1 kW] ASHRAE 90.1-1989 COMPLIANT MODELS

| Model RLKN- Series | (B, C) 073CL | (B, C) 073CM | (B, C) 073DL | (B, C) 073DM |
|--|-------------------------|-------------------------|-------------------------|-------------------------|
| Cooling Performance¹ | | | | CONTINUED → |
| Gross Cooling Capacity Btu [kW] | 70,000 [20.51] | 70,000 [20.51] | 70,000 [20.51] | 70,000 [20.51] |
| EER/SEER ² | 11.2 / NA | 11.2 / NA | 11.2 / NA | 11.2 / NA |
| Nominal CFM/AHRI Rated CFM [L/s] | 2400/2100 [1133/991] | 2400/2100 [1133/991] | 2400/2100 [1133/991] | 2400/2100 [1133/991] |
| AHRI Net Cooling Capacity Btu [kW] | 68,000 [19.92] | 68,000 [19.92] | 68,000 [19.92] | 68,000 [19.92] |
| Net Sensible Capacity Btu [kW] | 46,000 [13.48] | 46,000 [13.48] | 46,000 [13.48] | 46,000 [13.48] |
| Net Latent Capacity Btu [kW] | 22,000 [6.45] | 22,000 [6.45] | 22,000 [6.45] | 22,000 [6.45] |
| IEER ² | 12.9 | 12.9 | 12.9 | 12.9 |
| Net System Power [kW] | 6.07 | 6.07 | 6.07 | 6.07 |
| Compressor | | | | |
| No./Type | 1/Two-Stage Scroll | 1/Two-Stage Scroll | 1/Two-Stage Scroll | 1/Two-Stage Scroll |
| Outdoor Sound Rating (dB)³ | 83 | 83 | 83 | 83 |
| Outdoor Coil—Fin Type | Louvered | Louvered | Louvered | Louvered |
| Tube Type | MicroChannel | MicroChannel | MicroChannel | MicroChannel |
| MicroChannel Depth [in] [mm] | 0.71 [18] | 0.71 [18] | 0.71 [18] | 0.71 [18] |
| Face Area sq. ft. [sq. m] | 16.4 [1.52] | 16.4 [1.52] | 16.4 [1.52] | 16.4 [1.52] |
| 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 | MicroChannel | MicroChannel | MicroChannel | MicroChannel |
| MicroChannel Depth [in] [mm] | 1.26 [32] | 1.26 [32] | 1.26 [32] | 1.26 [32] |
| Face Area sq. ft. [sq. m] | 5.95 [0.55] | 5.95 [0.55] | 5.95 [0.55] | 5.95 [0.55] |
| Rows / FPI [FPcm] | 1/20 [8] | 1/20 [8] | 1/20 [8] | 1/20 [8] |
| Refrigerant Control | TX Valve | TX Valve | TX Valve | TX Valve |
| Drain Connection No./Size in. [mm] | 1/0.75 [19.05] | 1/0.75 [19.05] | 1/0.75 [19.05] | 1/0.75 [19.05] |
| Outdoor Fan—Type | Propeller | Propeller | Propeller | Propeller |
| No. Used/Diameter in. [mm] | 1/24 [609.6] | 1/24 [609.6] | 1/24 [609.6] | 1/24 [609.6] |
| Drive Type/No. Speeds | Direct/1 | Direct/1 | Direct/1 | Direct/1 |
| CFM [L/s] | 4200 [1982] | 4200 [1982] | 4200 [1982] | 4200 [1982] |
| No. Motors/HP | 1/0.5 | 1/0.5 | 1/0.5 | 1/0.5 |
| Motor RPM | 1075 | 1075 | 1075 | 1075 |
| Indoor Fan—Type | FC Centrifugal | FC Centrifugal | FC Centrifugal | FC Centrifugal |
| No. Used/Diameter in. [mm] | 1/11x10 [279x254] | 1/11x10 [279x254] | 1/11x10 [279x254] | 1/11x10 [279x254] |
| Drive Type | Belt (Adjustable) | Belt (Adjustable) | Belt (Adjustable) | Belt (Adjustable) |
| No. Speeds | Single | Single | Single | Single |
| No. Motors | 1 | 1 | 1 | 1 |
| Motor HP | 2 | 2 | 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] | (4)2x16x16 [51x406x406] | (4)2x16x16 [51x406x406] | (4)2x16x16 [51x406x406] | (4)2x16x16 [51x406x406] |
| Refrigerant Charge Oz. [g] | 67 [1899] | 67 [1899] | 67 [1899] | 67 [1899] |
| Weights | | | | |
| Net Weight lbs. [kg] | 551 [250] | 553 [251] | 551 [250] | 553 [251] |
| Ship Weight lbs. [kg] | 579 [263] | 581 [264] | 579 [263] | 581 [264] |

[] Designates Metric Conversions

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 ±20% of nominal cfm. Units are certified in accordance with the Unitary Large Equipment certification program, which is based on AHRI Standard 340/360.
- EER and IEER are rated at AHRI conditions and in accordance with DOE test procedures and AHRI Standard 340/360.
- Outdoor Sound Rating shown is tested in accordance with AHRI Standard 270.

NOMINAL SIZES 6 TONS [21.1 kW] ASHRAE 90.1-1999 COMPLIANT MODELS

| Model RLKN- Series | (B, C) 073YL | (B, C) 073YM |
|--|-------------------------|-------------------------|
| Cooling Performance¹ | | |
| Gross Cooling Capacity Btu [kW] | 70,000 [20.51] | 70,000 [20.51] |
| EER/SEER ² | 11.2/NA | 11.2/NA |
| Nominal CFM/AHRI Rated CFM [L/s] | 2400/2100 [1133/991] | 2400/2100 [1133/991] |
| AHRI Net Cooling Capacity Btu [kW] | 68,000 [19.92] | 68,000 [19.92] |
| Net Sensible Capacity Btu [kW] | 46,000 [13.48] | 46,000 [13.48] |
| Net Latent Capacity Btu [kW] | 22,000 [6.45] | 22,000 [6.45] |
| IEER ² | 12.9 | 12.9 |
| Net System Power [kW] | 6.07 | 6.07 |
| Compressor | | |
| No./Type | 1/Two-Stage Scroll | 1/Two-Stage Scroll |
| Outdoor Sound Rating (dB)³ | | |
| | 83 | 83 |
| Outdoor Coil—Fin Type | | |
| Tube Type | Louvered | Louvered |
| MicroChannel Depth [in] [mm] | MicroChannel | MicroChannel |
| Face Area sq. ft. [sq. m] | 0.71 [18] | 0.71 [18] |
| Rows / FPI [FPcm] | 16.4 [1.52] | 16.4 [1.52] |
| | 1/23 [9] | 1/23 [9] |
| Indoor Coil—Fin Type | | |
| Tube Type | Louvered | Louvered |
| MicroChannel Depth [in] [mm] | MicroChannel | MicroChannel |
| Face Area sq. ft. [sq. m] | 1.26 [32] | 1.26 [32] |
| Rows / FPI [FPcm] | 5.95 [0.55] | 5.95 [0.55] |
| Refrigerant Control | 1/20 [8] | 1/20 [8] |
| Drain Connection No./Size in. [mm] | TX Valve | TX Valve |
| | 1/0.75 [19.05] | 1/0.75 [19.05] |
| Outdoor Fan—Type | | |
| No. Used/Diameter in. [mm] | Propeller | Propeller |
| Drive Type/No. Speeds | 1/24 [609.6] | 1/24 [609.6] |
| CFM [L/s] | Direct/1 | Direct/1 |
| No. Motors/HP | 4200 [1982] | 4200 [1982] |
| Motor RPM | 1/0.5 | 1/0.5 |
| | 1075 | 1075 |
| Indoor Fan—Type | | |
| No. Used/Diameter in. [mm] | FC Centrifugal | FC Centrifugal |
| Drive Type | 1/11x10 [279x254] | 1/11x10 [279x254] |
| No. Speeds | Belt (Adjustable) | Belt (Adjustable) |
| No. Motors | Single | Single |
| Motor HP | 1 | 1 |
| Motor RPM | 1.5 | 1.5 |
| Motor Frame Size | 1725 | 1725 |
| | 56 | 56 |
| Filter—Type | | |
| Furnished | Disposable | Disposable |
| (NO.) Size Recommended in. [mm x mm x mm] | Yes | Yes |
| | (4)2x16x16 [51x406x406] | (4)2x16x16 [51x406x406] |
| Refrigerant Charge Oz. [g] | | |
| | 67 [1899] | 67 [1899] |
| Weights | | |
| Net Weight lbs. [kg] | 546 [248] | 548 [249] |
| Ship Weight lbs. [kg] | 574 [260] | 576 [261] |

[] Designates Metric Conversions

NOTES:

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

GROSS SYSTEMS PERFORMANCE DATA — RLKN-B073/RLKN-C073

| | | ENTERING INDOOR AIR @ 80°F [26.7°C] dBE ① | | | | | | | | | | | | | | | | | |
|---------------|-----------------|---|-------------|-------------|-------------|---------------|-------------|-------------|-------------|---------------|-------------|-------------|-------------|---------------|-------------|-------------|-------------|---------------|------------|
| wbE | | 67°F [19.4°C] | | | | 63°F [17.2°C] | | | | 61°F [16.1°C] | | | | 59°F [15.0°C] | | | | | |
| CFM [L/s] | | 2310 [1090] | 2100 [991] | 1780 [840] | 1780 [840] | 2310 [1090] | 2100 [991] | 1780 [840] | 1780 [840] | 2310 [1090] | 2100 [991] | 1780 [840] | 1780 [840] | 2310 [1090] | 2100 [991] | 1780 [840] | 1780 [840] | | |
| DR ① | | 0.21 | 0.2 | 0.2 | 0.18 | 0.21 | 0.2 | 0.2 | 0.18 | 0.21 | 0.2 | 0.2 | 0.18 | 0.21 | 0.2 | 0.2 | 0.18 | | |
| 75 [23.9] | Total BTUH [kW] | 84.0 [24.6] | 82.5 [24.2] | 80.2 [23.5] | 79.1 [23.2] | 77.7 [22.8] | 75.5 [22.1] | 73.8 [21.6] | 72.4 [21.2] | 70.9 [20.8] | 69.7 [20.4] | 67.7 [19.8] | 66.6 [19.5] | 66.6 [19.5] | 66.6 [19.5] | 66.6 [19.5] | 66.6 [19.5] | 59°F [15.0°C] | 1780 [840] |
| | Sens BTUH [kW] | 44.8 [13.1] | 42.8 [12.5] | 39.8 [11.6] | 38.9 [11.4] | 37.7 [11.0] | 35.5 [10.3] | 33.8 [9.9] | 32.4 [9.5] | 30.9 [9.1] | 29.7 [8.7] | 27.7 [8.1] | 26.6 [7.8] | 26.6 [7.8] | 26.6 [7.8] | 26.6 [7.8] | 26.6 [7.8] | | |
| 80 [26.7] | Total BTUH [kW] | 82.4 [24.1] | 80.9 [23.7] | 78.7 [23.1] | 77.5 [22.7] | 76.1 [22.3] | 74.0 [21.7] | 72.2 [21.2] | 70.9 [20.8] | 69.3 [20.3] | 68.1 [20.0] | 66.2 [19.4] | 65.2 [19.1] | 65.2 [19.1] | 65.2 [19.1] | 65.2 [19.1] | 65.2 [19.1] | 59°F [15.0°C] | 1780 [840] |
| | Sens BTUH [kW] | 44.4 [13.0] | 42.4 [12.4] | 39.4 [11.5] | 38.9 [11.4] | 37.7 [11.0] | 35.5 [10.3] | 33.8 [9.9] | 32.4 [9.5] | 30.9 [9.1] | 29.7 [8.7] | 27.7 [8.1] | 26.6 [7.8] | 26.6 [7.8] | 26.6 [7.8] | 26.6 [7.8] | 26.6 [7.8] | | |
| 85 [29.4] | Total BTUH [kW] | 80.6 [23.6] | 79.2 [23.2] | 77.0 [22.6] | 75.7 [22.2] | 74.4 [21.8] | 72.3 [21.2] | 70.4 [20.6] | 69.1 [20.3] | 67.6 [19.8] | 66.3 [19.4] | 64.5 [18.9] | 63.4 [18.6] | 63.4 [18.6] | 63.4 [18.6] | 63.4 [18.6] | 63.4 [18.6] | 59°F [15.0°C] | 1780 [840] |
| | Sens BTUH [kW] | 43.8 [12.8] | 41.9 [12.3] | 38.9 [11.4] | 38.9 [11.4] | 37.7 [11.0] | 35.5 [10.3] | 33.8 [9.9] | 32.4 [9.5] | 30.9 [9.1] | 29.7 [8.7] | 27.7 [8.1] | 26.6 [7.8] | 26.6 [7.8] | 26.6 [7.8] | 26.6 [7.8] | 26.6 [7.8] | | |
| 90 [32.2] | Total BTUH [kW] | 78.6 [23.0] | 77.2 [22.6] | 75.1 [22.0] | 73.7 [21.6] | 72.4 [21.2] | 70.4 [20.6] | 68.4 [20.0] | 66.2 [19.4] | 63.4 [18.6] | 62.3 [18.2] | 60.5 [17.7] | 59.3 [17.4] | 59.3 [17.4] | 59.3 [17.4] | 59.3 [17.4] | 59.3 [17.4] | 59°F [15.0°C] | 1780 [840] |
| | Sens BTUH [kW] | 43.0 [12.6] | 41.1 [12.0] | 38.2 [11.2] | 37.3 [10.9] | 36.2 [10.6] | 34.9 [10.2] | 33.8 [9.9] | 32.4 [9.5] | 30.9 [9.1] | 29.7 [8.7] | 27.7 [8.1] | 26.6 [7.8] | 26.6 [7.8] | 26.6 [7.8] | 26.6 [7.8] | 26.6 [7.8] | | |
| 95 [35] | Total BTUH [kW] | 76.4 [22.4] | 75.1 [22.0] | 73.0 [21.4] | 71.6 [21.0] | 70.3 [20.6] | 68.3 [20.0] | 66.2 [19.4] | 65.0 [19.1] | 63.4 [18.6] | 62.3 [18.2] | 60.5 [17.7] | 59.3 [17.4] | 59.3 [17.4] | 59.3 [17.4] | 59.3 [17.4] | 59.3 [17.4] | 59°F [15.0°C] | 1780 [840] |
| | Sens BTUH [kW] | 42.0 [12.3] | 40.1 [11.8] | 37.3 [10.9] | 36.2 [10.6] | 35.0 [10.2] | 33.8 [9.9] | 32.4 [9.5] | 30.9 [9.1] | 29.7 [8.7] | 28.5 [8.3] | 27.3 [8.0] | 26.1 [7.7] | 26.1 [7.7] | 26.1 [7.7] | 26.1 [7.7] | 26.1 [7.7] | | |
| 100 [37.8] | Total BTUH [kW] | 74.0 [21.7] | 72.7 [21.3] | 70.7 [20.7] | 69.2 [20.3] | 67.9 [19.9] | 66.1 [19.4] | 63.8 [18.7] | 62.7 [18.4] | 61.0 [17.9] | 59.9 [17.6] | 58.3 [17.1] | 57.0 [16.7] | 57.0 [16.7] | 57.0 [16.7] | 57.0 [16.7] | 57.0 [16.7] | 59°F [15.0°C] | 1780 [840] |
| | Sens BTUH [kW] | 40.8 [11.9] | 39.0 [11.4] | 36.2 [10.6] | 35.0 [10.2] | 33.8 [9.9] | 32.4 [9.5] | 30.9 [9.1] | 29.7 [8.7] | 28.5 [8.3] | 27.3 [8.0] | 26.1 [7.7] | 24.9 [7.3] | 24.9 [7.3] | 24.9 [7.3] | 24.9 [7.3] | 24.9 [7.3] | | |
| 105 [40.6] | Total BTUH [kW] | 71.4 [20.9] | 70.2 [20.6] | 68.2 [20.0] | 66.6 [19.5] | 65.4 [19.2] | 63.6 [18.6] | 61.3 [18.0] | 60.2 [17.6] | 58.4 [17.1] | 57.4 [16.8] | 55.8 [16.3] | 54.5 [16.0] | 54.5 [16.0] | 54.5 [16.0] | 54.5 [16.0] | 54.5 [16.0] | 59°F [15.0°C] | 1780 [840] |
| | Sens BTUH [kW] | 39.3 [11.5] | 37.6 [11.0] | 34.9 [10.2] | 33.8 [9.9] | 32.4 [9.5] | 30.9 [9.1] | 29.7 [8.7] | 28.5 [8.3] | 27.3 [8.0] | 26.1 [7.7] | 24.9 [7.3] | 23.7 [7.0] | 23.7 [7.0] | 23.7 [7.0] | 23.7 [7.0] | 23.7 [7.0] | | |
| 110 [43.3] | Total BTUH [kW] | 68.7 [20.1] | 67.4 [19.8] | 65.6 [19.2] | 63.8 [18.7] | 62.7 [18.4] | 60.9 [17.9] | 58.5 [17.1] | 57.4 [16.8] | 55.6 [16.3] | 54.6 [16.0] | 53.1 [15.6] | 51.7 [15.2] | 51.7 [15.2] | 51.7 [15.2] | 51.7 [15.2] | 51.7 [15.2] | 59°F [15.0°C] | 1780 [840] |
| | Sens BTUH [kW] | 37.7 [11.1] | 36.0 [10.6] | 33.5 [9.8] | 32.4 [9.5] | 31.2 [9.1] | 29.7 [8.7] | 28.5 [8.3] | 27.3 [8.0] | 26.1 [7.7] | 24.9 [7.3] | 23.7 [7.0] | 22.5 [6.6] | 22.5 [6.6] | 22.5 [6.6] | 22.5 [6.6] | 22.5 [6.6] | | |
| 115 [46.1] | Total BTUH [kW] | 65.7 [19.2] | 64.5 [18.9] | 62.7 [18.4] | 60.8 [17.8] | 59.7 [17.5] | 58.1 [17.0] | 55.5 [16.3] | 54.5 [16.0] | 52.6 [15.4] | 51.7 [15.2] | 50.3 [14.7] | 49.7 [14.6] | 49.7 [14.6] | 49.7 [14.6] | 49.7 [14.6] | 49.7 [14.6] | 59°F [15.0°C] | 1780 [840] |
| | Sens BTUH [kW] | 35.9 [10.5] | 34.3 [10.0] | 31.8 [9.3] | 30.9 [9.1] | 29.7 [8.7] | 28.5 [8.3] | 27.3 [8.0] | 26.1 [7.7] | 24.9 [7.3] | 23.7 [7.0] | 22.5 [6.6] | 21.3 [6.2] | 21.3 [6.2] | 21.3 [6.2] | 21.3 [6.2] | 21.3 [6.2] | | |
| 120 [48.9] | Total BTUH [kW] | 62.5 [18.3] | 61.4 [18.0] | 59.7 [17.5] | 57.6 [16.9] | 56.6 [16.6] | 55.0 [16.1] | 52.3 [15.3] | 51.4 [15.1] | 49.5 [14.5] | 48.6 [14.2] | 47.2 [13.8] | 46.5 [13.6] | 46.5 [13.6] | 46.5 [13.6] | 46.5 [13.6] | 46.5 [13.6] | 59°F [15.0°C] | 1780 [840] |
| | Sens BTUH [kW] | 33.8 [9.9] | 32.3 [9.5] | 30.0 [8.8] | 29.7 [8.7] | 28.5 [8.3] | 27.3 [8.0] | 26.1 [7.7] | 24.9 [7.3] | 23.7 [7.0] | 22.5 [6.6] | 21.3 [6.2] | 20.1 [5.8] | 20.1 [5.8] | 20.1 [5.8] | 20.1 [5.8] | 20.1 [5.8] | | |
| 125 [51.7] | Total BTUH [kW] | 59.1 [17.3] | 58.0 [17.0] | 56.4 [16.5] | 54.2 [15.9] | 53.3 [15.6] | 51.8 [15.2] | 48.9 [14.3] | 48.0 [14.1] | 46.1 [13.5] | 45.2 [13.3] | 44.0 [12.9] | 43.1 [12.6] | 43.1 [12.6] | 43.1 [12.6] | 43.1 [12.6] | 43.1 [12.6] | 59°F [15.0°C] | 1780 [840] |
| | Sens BTUH [kW] | 31.6 [9.3] | 30.2 [8.8] | 28.0 [8.2] | 27.3 [8.0] | 26.1 [7.7] | 24.9 [7.3] | 23.7 [7.0] | 22.5 [6.6] | 21.3 [6.2] | 20.1 [5.8] | 18.9 [5.5] | 17.7 [5.1] | 17.7 [5.1] | 17.7 [5.1] | 17.7 [5.1] | 17.7 [5.1] | | |

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

① — 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

BELT-DRIVE AIRFLOW PERFORMANCE – RLKN-B073/RLKN-C073

| Air Flow CFM [L/s] | | Capacity 6 Ton [21.10 kW] | | 208/230-460 & 575—3 Phase | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------|------|--|------|---------------------------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|
| | | External Static Pressure—Inches of Water [kPa] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0.1 [.02] | | 0.2 [.05] | | 0.3 [.07] | | 0.4 [.10] | | 0.5 [.12] | | 0.6 [.15] | | 0.7 [.17] | | 0.8 [.20] | | 0.9 [.22] | | 1.0 [.25] | | 1.1 [.27] | | 1.2 [.30] | | 1.3 [.32] | | 1.4 [.35] | | 1.5 [.37] | |
| 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 | | |
| 1800 [850] | — | — | — | — | — | — | — | 785 | 560 | 850 | 605 | 895 | 650 | 930 | 670 | 975 | 720 | 1010 | 760 | 1050 | 800 | 1090 | 850 | 1120 | 890 | 1150 | 940 | 1180 | 980 | 1210 | 1015 |
| 1900 [897] | — | — | — | — | — | 785 | 580 | 830 | 615 | 875 | 660 | 915 | 700 | 955 | 740 | 990 | 770 | 1020 | 815 | 1070 | 855 | 1105 | 925 | 1135 | 960 | 1165 | 1015 | 1195 | 1075 | 1220 | 1115 |
| 2000 [944] | — | — | 775 | 600 | 815 | 625 | 860 | 675 | 895 | 720 | 930 | 750 | 975 | 800 | 1015 | 840 | 1050 | 900 | 1085 | 940 | 1120 | 1000 | 1145 | 1035 | 1175 | 1090 | 1205 | 1150 | 1230 | 1205 | |
| 2100 [991] | — | — | 810 | 650 | 840 | 680 | 880 | 740 | 920 | 780 | 955 | 820 | 995 | 880 | 1030 | 920 | 1065 | 960 | 1100 | 1025 | 1130 | 1060 | 1160 | 1130 | 1190 | 1180 | 1220 | 1250 | 1240 | 1295 | |
| 2200 [1038] | 780 | 660 | 825 | 700 | 865 | 750 | 910 | 810 | 945 | 850 | 980 | 880 | 1015 | 930 | 1050 | 1000 | 1080 | 1045 | 1120 | 1100 | 1145 | 1160 | 1180 | 1220 | 1205 | 1260 | 1230 | 1330 | 1255 | 1380 | |
| 2300 [1085] | 815 | 720 | 855 | 760 | 890 | 830 | 930 | 870 | 960 | 910 | 1000 | 960 | 1035 | 1005 | 1065 | 1060 | 1100 | 1130 | 1135 | 1180 | 1160 | 1250 | 1200 | 1325 | 1220 | 1370 | 1240 | 1425 | — | — | |
| 2400 [1133] | 845 | 780 | 880 | 835 | 920 | 900 | 950 | 945 | 990 | 990 | 1025 | 1050 | 1055 | 1110 | 1085 | 1155 | 1120 | 1215 | 1150 | 1335 | 1185 | 1355 | 1220 | 1430 | 1235 | 1470 | 1255 | 1525 | — | — | |
| 2500 [1180] | 870 | 855 | 910 | 915 | 945 | 975 | 980 | 1020 | 1020 | 1085 | 1045 | 1140 | 1080 | 1200 | 1110 | 1260 | 1135 | 1300 | 1175 | 1390 | 1205 | 1450 | 1230 | 1530 | 1250 | 1580 | 1295 | 1630 | — | — | |
| 2600 [1227] | 900 | 945 | 940 | 1005 | 975 | 1060 | 1005 | 1105 | 1040 | 1175 | 1065 | 1225 | 1100 | 1295 | 1135 | 1350 | 1165 | 1425 | 1200 | 1505 | 1225 | 1580 | 1240 | 1635 | 1270 | 1665 | — | — | — | — | |
| 2700 [1274] | 930 | 1075 | 970 | 1100 | 1000 | 1145 | 1030 | 1200 | 1060 | 1260 | 1090 | 1335 | 1125 | 1395 | 1155 | 1470 | 1185 | 1540 | 1220 | 1615 | 1235 | 1675 | 1255 | 1730 | — | — | — | — | — | — | |
| 2800 [1321] | 960 | 1150 | 1000 | 1195 | 1025 | 1240 | 1055 | 1305 | 1085 | 1350 | 1115 | 1440 | 1145 | 1510 | 1180 | 1560 | 1210 | 1620 | 1235 | 1740 | 1250 | 1775 | 1295 | — | — | — | — | — | — | — | |
| 2900 [1369] | 1000 | 1245 | 1025 | 1290 | 1055 | 1350 | 1080 | 1400 | 1120 | 1480 | 1145 | 1550 | 1180 | 1640 | 1210 | 1720 | 1225 | 1700 | 1250 | 1850 | 1290 | 1895 | — | — | — | — | — | — | — | — | |
| 3000 [1416] | 1025 | 1325 | 1050 | 1395 | 1080 | 1455 | 1115 | 1540 | 1145 | 1620 | 1175 | 1655 | 1210 | 1755 | 1225 | 1840 | 1245 | 1910 | 1295 | 1970 | — | — | — | — | — | — | — | — | — | — | |

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

| | | | | | | | | | | | | | | |
|----------------|-----------------------------------|------|------|-----|-----|-----|-----|------|------|------|------|------|------|------|
| Motor H.P. [w] | 1-1/2 [1118.5] | | | | | | | | | | | | | |
| Blower Sheave | 6.4 Pitch Diameter | | | | | | | | | | | | | |
| Motor Sheave | Adjustable 2.8-3.8 Pitch Diameter | | | | | | | | | | | | | |
| Turns Open | Adjustable 3.4-4.4 Pitch Diameter | | | | | | | | | | | | | |
| RPM | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| | 1100 | 1050 | 1000 | 945 | 895 | 845 | 780 | 1295 | 1230 | 1195 | 1145 | 1100 | 1050 | 1000 |

Factory sheave settings are shown in bold print.

COMPONENT AIR RESISTANCE

| Component | Standard Indoor Airflow—CFM [L/s] | | | | | |
|-------------------|-----------------------------------|-------------|-------------|-------------|-------------|-------------|
| | 2200 [944] | 2400 [1133] | 2600 [1227] | 2800 [1321] | 3200 [1510] | 3400 [1605] |
| | Resistance—Inches Water [kPa] | | | | | |
| Wet Coil | .079 | .090 | .102 | .118 | .128 | .135 |
| Downflow | .061 | .079 | .089 | .100 | .108 | .112 |
| R.S.I. Economizer | .09 | .10 | .11 | .12 | .13 | .15 |
| R.A. Damper | | | | | | |

- NOTES:
- Performance shown with dry coil & standard 2" [50.8 mm] filters.
 - Standard CFM @ .075 lbs./cu. ft.
 - Motor efficiency = 80%
 - BHP = $\frac{\text{Watts} \times \text{Motor Eff.}}{746}$
 - Add component resistance to duct static to determine E.S.P. as shown on charts.

[] Designates Metric Conversions

ELECTRICAL DATA – RLKN SERIES

| | | (B, C) 073CL | (B, C) 073CM | (B, C) 073DL | (B, C) 073DM | (B, C) 073YL | (B, C) 073YM |
|------------------|--|--------------|--------------|--------------|--------------|--------------|--------------|
| 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 |
| | Phase | 3 | 3 | 3 | 3 | 3 | 3 |
| | Hz | 60 | 60 | 60 | 60 | 60 | 60 |
| | Minimum Circuit Ampacity | 31 | 31 | 16 | 16 | 11 | 11 |
| | Minimum Overcurrent Protection Device Size | 35 | 35 | 20 | 20 | 15 | 15 |
| | Maximum Overcurrent Protection Device Size | 45 | 45 | 20 | 20 | 15 | 15 |
| Compressor Motor | No. | 1 | 1 | 1 | 1 | 1 | 1 |
| | Volts | 208/230 | 208/230 | 460 | 460 | 575 | 575 |
| | Phase | 3 | 3 | 3 | 3 | 3 | 3 |
| | RPM | 3450 | 3450 | 3450 | 3450 | 3450 | 3450 |
| | HP, Compressor 1 | 5 | 5 | 5 | 5 | 5 | 5 |
| | Amps (RLA), Comp. 1 | 17.6 | 17.6 | 8.5 | 8.5 | 6.3 | 6.3 |
| | Amps (LRA), Comp. 1 | 136 | 136 | 66.1 | 66.1 | 55.3 | 55.3 |
| Condenser Motor | No. | 1 | 1 | 1 | 1 | 1 | 1 |
| | Volts | 208/230 | 208/230 | 460 | 460 | 575 | 575 |
| | Phase | 1 | 1 | 1 | 1 | 1 | 1 |
| | HP | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 |
| | Amps (FLA, each) | 2.3 | 2.3 | 1.5 | 1.5 | 1 | 1 |
| | Amps (LRA, each) | 5.6 | 5.6 | 3.1 | 3.1 | 2.2 | 2.2 |
| | | | | | | | |
| Evaporator Fan | No. | 1 | 1 | 1 | 1 | 1 | 1 |
| | Volts | 208/230 | 208/230 | 460 | 460 | 575 | 575 |
| | Phase | 3 | 3 | 3 | 3 | 3 | 3 |
| | HP | 2 | 2 | 2 | 2 | 1 1/2 | 1 1/2 |
| | Amps (FLA, each) | 6.2 | 6.2 | 3 | 3 | 2.1 | 2.1 |
| | Amps (LRA, each) | 47 | 47 | 24 | 24 | 13.1 | 13.1 |
| | | | | | | | |

| 208/240 VOLT, THREE PHASE, 60 HZ, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION | | | | | | | | | | | | |
|--|-----------------------------------|-----------------------------|----------------------------------|---------------------------------|-----------------------------|--------------------------------------|---|-----|-----------------------------------|-------------------------------|--------------------------------------|---|
| Single Power Supply for Both Unit and Heater Kit | | | | | | | | | | | | |
| Model No. RLKN- | RXJJ- Heater Kit Nominal kW | No. of Sequence Steps | Rated Heater kW @ 208/240V | Heater kBtu/Hr @ 208/240V | Heater Amp @ 208/240V | Air Conditioner | | | Heater Kit | | | |
| | | | | | | Unit Min. Ckt. Ampacity @ 240V | Max. Over Current Protective Device Size | | Min. Ckt. Ampacity 208/240V | Max. Fuse Size 208/240V | Air Conditioner | |
| | | | | | | | 208 | 240 | | | Min. Circuit Ampacity 208/240V | Max. Over Current Protective Device Size 240V |
| | No Heat | — | — | — | — | 31/31 | 45 | 45 | — | — | 31/31 | 45 |
| | A06C | 1 | 4.2/5.6 | 14.33/19.1 | 11.7/13.5 | 31/31 | 45 | 45 | 15/17 | 15/20 | 31/31 | 45 |
| | A10C | 1 | 7.2/9.6 | 24.56/32.75 | 20/23.1 | 31/37 | 45 | 45 | 25/29 | 25/30 | 31/31 | 45 |
| | A15C | 1 | 10.8/14.4 | 36.84/49.13 | 30.1/34.7 | 46/52 | 50 | 60 | 38/44 | 40/45 | 31/31 | 45 |
| | A20C | 1 | 14.4/19.2 | 49.13/65.5 | 40/46.3 | 58/66 | 60 | 70 | 50/58 | 50/60 | 31/31 | 45 |
| | A24C | 1 | 18/24 | 61.41/81.88 | 50/57.7 | 71/80 | 80 | 80 | 63/73 | 70/80 | 31/31 | 45 |
| | No Heat | — | — | — | — | 31/31 | 45 | 45 | — | — | 31/31 | 45 |
| | A06C | 1 | 4.2/5.6 | 14.33/19.1 | 11.7/13.5 | 31/31 | 45 | 45 | 15/17 | 15/20 | 31/31 | 45 |
| | A10C | 1 | 7.2/9.6 | 24.56/32.75 | 20/23.1 | 31/37 | 45 | 45 | 25/29 | 25/30 | 31/31 | 45 |
| | A15C | 1 | 10.8/14.4 | 36.84/49.13 | 30.1/34.7 | 46/52 | 50 | 60 | 38/44 | 40/45 | 31/31 | 45 |
| | A20C | 1 | 14.4/19.2 | 49.13/65.5 | 40/46.3 | 58/66 | 60 | 70 | 50/58 | 50/60 | 31/31 | 45 |
| | A24C | 1 | 18/24 | 61.41/81.88 | 50/57.7 | 71/80 | 80 | 80 | 63/73 | 70/80 | 31/31 | 45 |

| 480 VOLT, THREE PHASE, 60 HZ, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION | | | | | | | | | | | | |
|--|-----------------------------------|-----------------------------|------------------------------|-----------------------------|-------------------------|--------------------------------------|---|----|-------------------------------|---------------------------|----------------------------------|---|
| Single Power Supply for Both Unit and Heater Kit | | | | | | | | | | | | |
| Model No. RLKN- | RXJJ- Heater Kit Nominal kW | No. of Sequence Steps | Rated Heater kW @ 480V | Heater kBtu/Hr @ 480V | Heater Amp @ 480V | Air Conditioner | | | Heater Kit | | | |
| | | | | | | Unit Min. Ckt. Ampacity @ 480V | Max. Over Current Protective Device Size | | Min. Ckt. Ampacity 480V | Max. Fuse Size 480V | Air Conditioner | |
| | | | | | | | 20 | 40 | | | Min. Circuit Ampacity 480V | Max. Over Current Protective Device Size 480V |
| | No Heat | — | — | — | — | 16 | 20 | 20 | — | — | 16 | 20 |
| | A06D | 1 | 5.6 | 19.1 | 6.7 | 16 | 20 | 20 | 9 | 15 | 16 | 20 |
| | A10D | 1 | 9.6 | 32.75 | 11.6 | 19 | 20 | 20 | 15 | 15 | 16 | 20 |
| | A15D | 1 | 14.4 | 49.13 | 17.4 | 26 | 30 | 35 | 22 | 25 | 16 | 20 |
| | A20D | 1 | 19.2 | 65.5 | 23.3 | 33 | 40 | 40 | 30 | 30 | 16 | 20 |
| | A24D | 1 | 24 | 81.88 | 28.9 | 40 | 40 | 40 | 37 | 40 | 16 | 20 |
| | No Heat | — | — | — | — | 16 | 20 | 20 | — | — | 16 | 20 |
| | A06D | 1 | 5.6 | 19.1 | 6.7 | 16 | 20 | 20 | 9 | 15 | 16 | 20 |
| | A10D | 1 | 9.6 | 32.75 | 11.6 | 19 | 20 | 20 | 15 | 15 | 16 | 20 |
| | A15D | 1 | 14.4 | 49.13 | 17.4 | 26 | 30 | 35 | 22 | 25 | 16 | 20 |
| | A20D | 1 | 19.2 | 65.5 | 23.3 | 33 | 40 | 40 | 30 | 30 | 16 | 20 |
| | A24D | 1 | 24 | 81.88 | 28.9 | 40 | 40 | 40 | 37 | 40 | 16 | 20 |

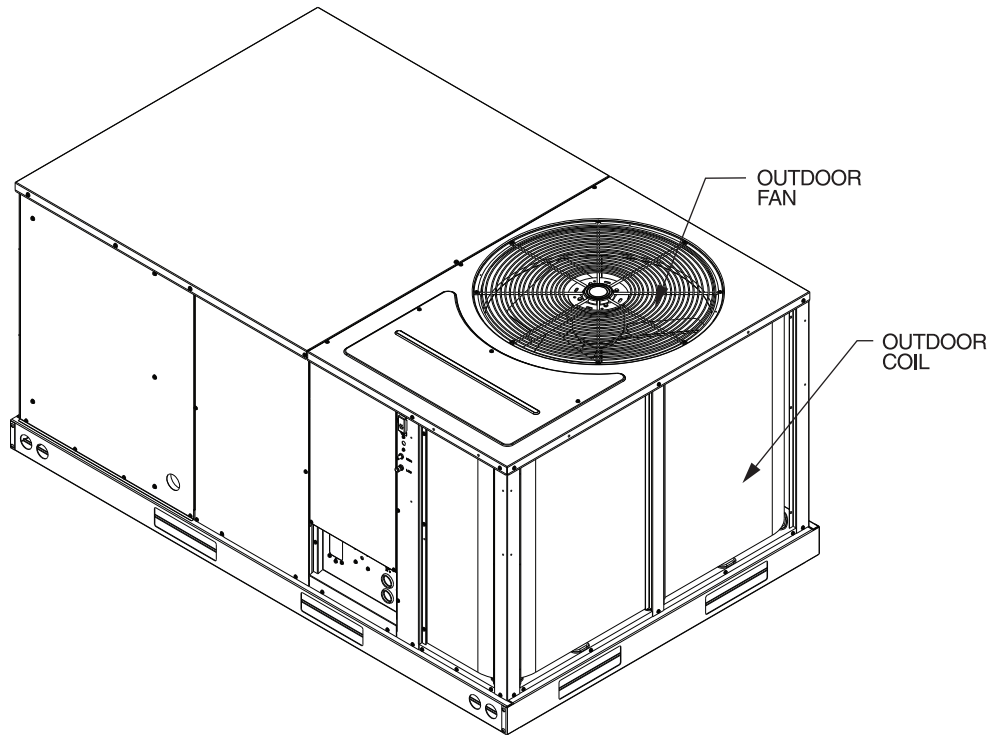
*= For Canadian use only. Uses "p" fuses for inductive circuit.

+ = Field installed only.

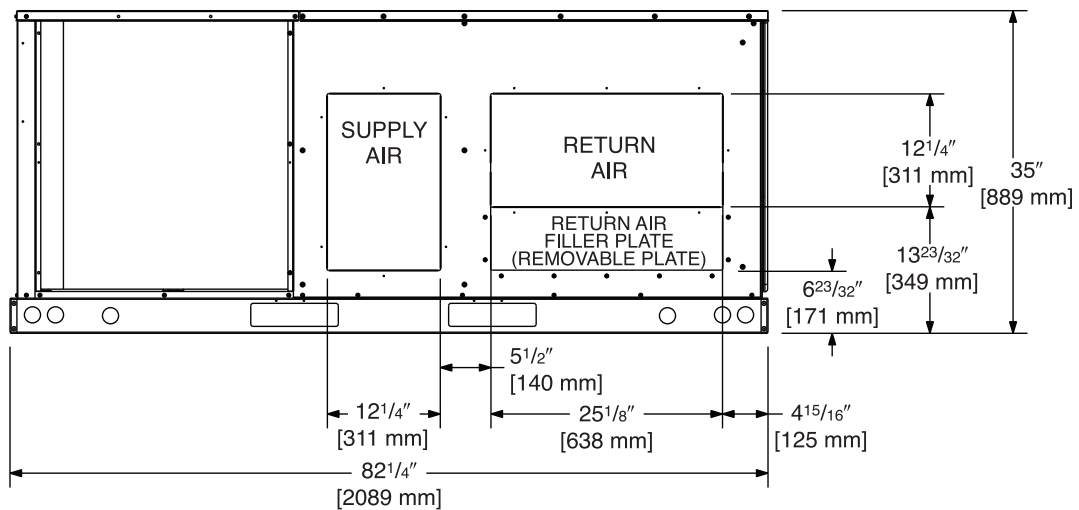
| 600 VOLT, THREE PHASE, 60 HZ, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION | | | | | | | | | | | |
|--|-----------------------------------|-----------------------------|------------------------------|-----------------------------|-------------------------|--|---|--|-------------------------------|---------------------------|----------------------------------|
| Single Power Supply for Both Unit and Heater Kit | | | | | | Separate Power Supply for Both Unit and Heater Kit | | | | | |
| Model No. RLKN- | RXJJ- Heater Kit Nominal kW | No. of Sequence Steps | Heater Kit | | | Air Conditioner | | | Heater Kit | | |
| | | | Rated Heater kW @ 600V | Heater kBtu/hr @ 600V | Heater Amp @ 600V | Unit Min. Ckt. Ampacity @ 600V | Max. Over Current Protective Device Size 600V | | Min. Ckt. Ampacity 600V | Max. Fuse Size 600V | Min. Circuit Ampacity 600V |
| B073YL/ C073YL | No Heat | — | — | — | — | 11 | 15 | | — | — | 11 |
| | A15Y | 1 | 14.4 | 49.13 | 13.9 | 20 | 20 | | 18 | 20 | 11 |
| | A20Y | 1 | 19.2 | 65.5 | 18.8 | 27 | 30 | | 24 | 25 | 11 |
| | A24Y | 1 | 24 | 81.88 | 23.1 | 32 | 35 | | 29 | 30 | 11 |
| B073YM/ C073YM | No Heat | — | — | — | — | 11 | 15 | | — | — | 11 |
| | A15Y | 1 | 14.4 | 49.13 | 13.9 | 20 | 20 | | 18 | 20 | 11 |
| | A20Y | 1 | 19.2 | 65.5 | 18.8 | 27 | 30 | | 24 | 25 | 11 |
| | A24Y | 1 | 24 | 81.88 | 23.1 | 32 | 35 | | 29 | 30 | 11 |

*= For Canadian use only. Uses "P" fuses for inductive circuit.
+ = Field installed only.

6 TON [21.1 kW] MODEL



BACK VIEW



[] Designates Metric Conversions

Diagram of the front panel of the unit showing dimensions and access points:

- Top width: $46\frac{1}{2}"$ [1181 mm]
- Left side access: COIL / FILTER ACCESS
- Right side access: BLOWER ACCESS
- Bottom left access: CONDENSATE DRAIN $\frac{3}{4}"$ NPT FEMALE
- Bottom left height: $5\frac{11}{32}"$ [136 mm]
- Bottom right width: $24\frac{1}{16}"$ [611 mm]
- Bottom total width: $48\frac{1}{16}"$ [1221 mm]

Technical drawing of the ST-A1143 unit showing dimensions in inches and millimeters. The unit is rectangular with a return air grille on the left and a supply air grille on the right. Dimensions include overall width (77 15/32 inches), overall height (43 7/32 inches), and individual grille dimensions (26 inches wide, 20 inches high).

Dimensions (inches and millimeters):

- Overall Width: 77 15/32" [1968 mm]
- Overall Height: 43 7/32" [1098 mm]
- Return Air Grille Width: 26" [660 mm]
- Return Air Grille Height: 13 1/8" [333 mm]
- Supply Air Grille Width: 13 1/8" [333 mm]
- Supply Air Grille Height: 20" [508 mm]
- Top Panel Width: 41 1/2" [114 mm]
- Top Panel Height: 4 5/8" [118 mm]
- Top Panel Thickness: 2 5/32" [55 mm]
- Bottom Panel Thickness: 2 3/8" [60 mm]
- Right Panel Thickness: 2 3/8" [60 mm]

Labels:

- RETURN AIR
- SUPPLY AIR

Illustration ST-A1143

Technical drawing of the ST-A1143 control cabinet, showing dimensions and internal components. The drawing includes the following dimensions and labels:

- Overall width: 81 17/32" [2071 mm]
- Overall height: 35" [889 mm]
- Internal width (left section): 30 1/4" [768 mm]
- Internal width (right section): 20 15/32" [520 mm]
- Internal height (bottom section): 11 7/32" [285 mm]
- Internal height (top section): 7 7/32" [183 mm]
- Internal components labeled: ELECTRIC HEAT ACCESS, CONTROL BOX ACCESS, CONTROL ENTRY, and POWER ENTRY.

[] Designates Metric Conversions

WEIGHTS

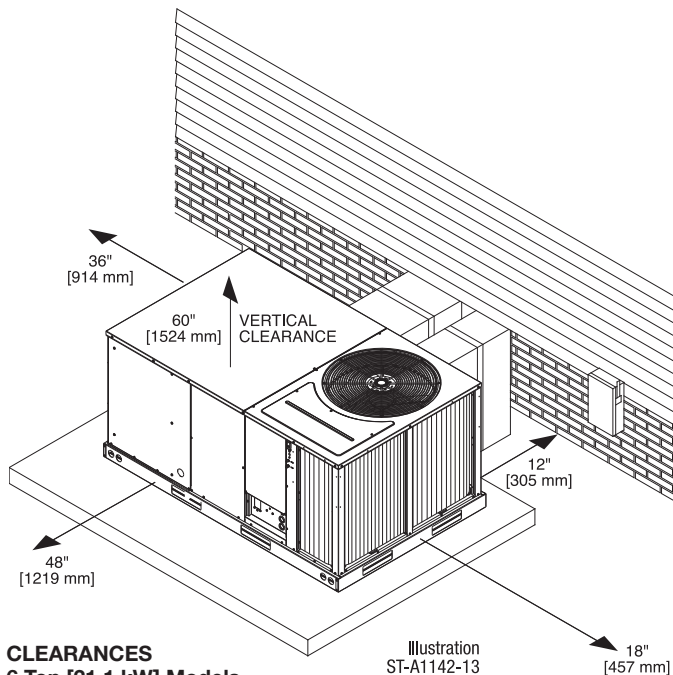
| Accessory | 6 Ton [21.1 kW] | |
|--|----------------------|-----------------------|
| | Shipping lbs [kg] | Operating lbs [kg] |
| Economizer with Single Enthalpy, Downflow/Sideflow | 80 [36] | 70 [32] |
| Power Exhaust | 21 [10] | 17 [8] |
| Fresh Air Damper (Manual) | 14 [6] | 12 [5] |
| Fresh Air Damper (Motorized) | 16 [7] | 14 [6] |
| Roof Curb 14" | 92 [42] | 88 [40] |
| Roof Curb 24" | 108 [49] | 104 [47] |
| Concentric Diffuser 18" Flush | 37 [17] | 26 [12] |
| Concentric Diffuser 20" Flush | 54 [24] | 42 [19] |
| Side Discharge Concentric Diffuser RXRN-FA60 | — | — |
| Side Discharge Concentric Diffuser RXRN-FA65 | 55 [25] | 40 [18] |
| VFD Kit | 7 [3] | 5 [2] |

CLEARANCES

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

| Recommended Clearance in. [mm] | Location |
|-----------------------------------|--------------------|
| 48 [1219] | A - Front |
| 18 [457] | B - Condenser Coil |
| *12 [305] | C - Duct Side |
| 36 [914] | D - Evaporator End |
| 60 [1524] | E - Above |
| *57" [1448 mm] With Economizer | |

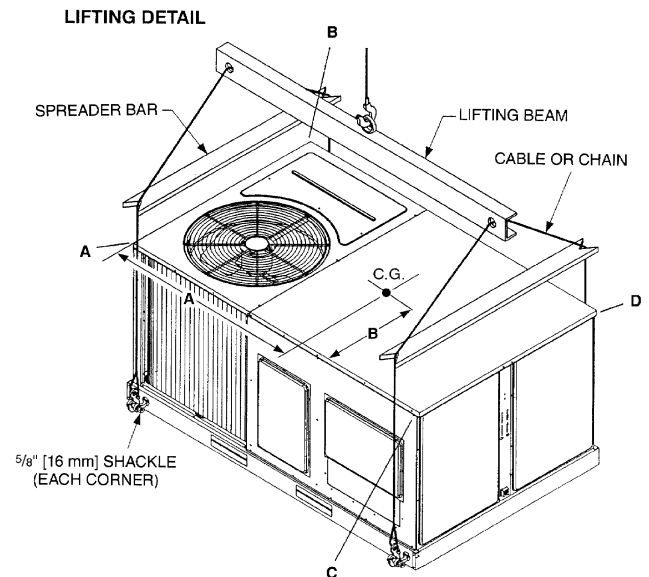
NOTE: Supply duct may be installed with "0" inch clearance to combustible materials, provided 1" [25.4 mm] minimum. Fiberglass insulation is applied either inside or on the outside of the duct.



CENTER OF GRAVITY (C.G.)

| Capacity Tons [kW] | A in. [mm] | B in. [mm] |
|--------------------|------------|--------------|
| 6 [21.1] | 39 [991] | 26 1/8 [664] |

| Capacity Tons [kW] | Corner Weights by Percentage | | | |
|--------------------|------------------------------|-----|-----|-----|
| | A | B | C | D |
| 6 [21.1] | 23% | 29% | 21% | 27% |



[] Designates Metric Conversions

ACCESSORY EQUIPMENT

| Accessory Description | Model Application | Accessory Model No. | Factory Installed |
|--|-------------------|---------------------|-------------------|
| Roofcurb, 14" | RLKN-(B,C)073 | RXKG-CAD14 | No |
| Roofcurb, 24" | RLKN-(B,C)073 | RXKG-CAD24 | No |
| Roofcurb adapters | RLKN-(B,C)073 | RXR-CCCE50 | No |
| Economizer (JADE) with single enthalpy ① | RLKN-B073 | AXRD-01RCCAM3 | Yes |
| Economizer (JADE) with smoke detector ① | RLKN-B073 | AXRD-01RCCBM3 | Yes |
| Dual enthalpy kit for economizer (JADE) | RLKN-B073 | RXR-AV02 | No |
| Economizer (DDC) with single enthalpy ① | RLKN-C073 | AXRD-01RHCCM3 | Yes |
| Economizer (DDC) with smoke detector ① | RLKN-C073 | AXRD-01RHCDM3 | Yes |
| Dual enthalpy kit for economizer (DDC) | RLKN-C073 | RXR-AV03 | No |
| CO ₂ sensor | RLKN-(B,C)073 | RXR-AR02 | No |
| Power exhaust (C, D, Y voltages) | RLKN-(B,C)073 | AXRX-BGF03 (C,D,Y) | No |
| Fresh air damper, manual | RLKN-(B,C)073 | AXRF-FCA1 | No |
| Fresh air damper, motorized | RLKN-(B,C)073 | AXRF-JHB1 | No |
| Rectangular-to-round 20" duct adapters for concentric diffuser | RLKN-(B,C)073 | RXMC-CC04 | No |
| Concentric diffuser 20", step type | RLKN-(B,C)073 | RXRN-FA65 | No |
| Concentric diffuser 20", flush type | RLKN-(B,C)073 | RXRN-FA75 | No |
| Louver kit, 3-sided | RLKN-(B,C)073 | AXRX-AAD01B | Yes |
| Compressor time delay | RLKN-B073 | RXMD-B04 | No |
| Low ambient control | RLKN-(B,C)073 | RXRZ-A04 | Yes |
| Convenience outlet (requires separate power supply) | RLKN-(B,C)073 | RXR-AN02 | Yes |
| Freeze stat control | RLKN-B073 | RXR-AM01 | Yes |
| Comfort Alert | RLKN-C073 | RXR-AZ01 | Yes |
| BACnet® Communication Card | RLKN-C073 | RXR-AY01 | No |
| LonWorks™ Communication Card | RLKN-C073 | RXR-AY02 | No |
| VFD Kit, 208/230V, Non-communicating | RLKN-B073C | RXR-NC02 | No |
| VFD Kit, 460V, Non-communicating | RLKN-B073D | RXR-ND02 | No |
| VFD Kit, 208/230V, Communicating | RLKN-C073C | RXR-PC02 | No |
| VFD Kit, 460V, Communicating | RLKN-C073C | RXR-PD02 | No |

*Voltage

C = 208-230 VAC-3PH-60HZ

D = 460 VAC-3PH-60HZ

Y = 575 VAC-3PH-60HZ

NOTES: ① Economizer is designed for downflow or horizontal applications.

FLUSH MOUNT ROOM TEMPERATURE SENSORS FOR NETWORKED DDC APPLICATIONS



ROOM TEMPERATURE SENSOR with TIMED OVERRIDE BUTTON

RHC-ZNS1

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 with TIMED OVERRIDE BUTTON and STATUS INDICATOR

RHC-ZNS2

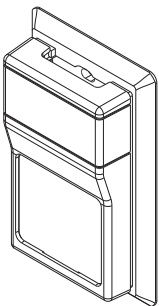
10k Ω room temperature sensor transmits room temperature to DDC system. Timed override button allows tenant to change from unoccupied temperature setpoint to occupied temperature setpoint for a preset time. Status Indicator Light transmits ALARM flash code to occupied space.



ROOM TEMPERATURE SENSOR with SETPOINT ADJUSTMENT and TIMED OVERRIDE BUTTON

RHC-ZNS3

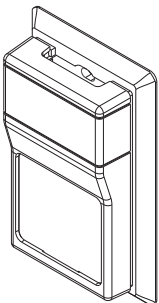
10k Ω room temperature sensor with setpoint adjustment transmits room temperature to DDC system along with desired occupied room temperature setpoint. Timed override button allows tenant to change from unoccupied temperature setpoint to occupied temperature setpoint for a preset time.



ROOM HUMIDITY SENSOR

RHC-ZNS4

Transmits room relative humidity to DDC System.



ROOM TEMPERATURE AND RELATIVE HUMIDITY SENSOR

RHC-ZNS5

Transmits room temperature and relative humidity to DDC System.

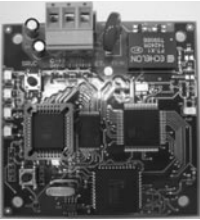
COMMUNICATION CARDS

Field Installed



BACnet® COMMUNICATION CARD RXRX-AY01

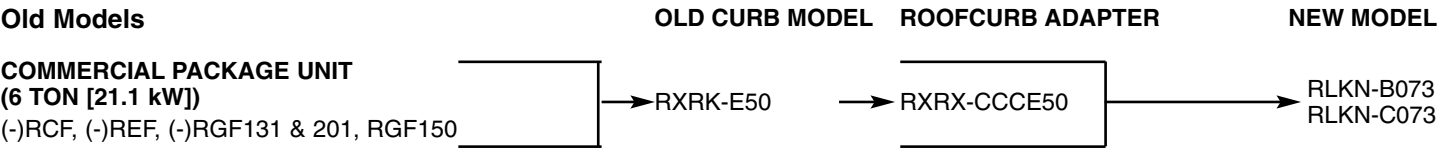
The field installed BACnet® Communication Card allows the RTU-C unit controller to communicate with a third party building management system that supports the BACnet Application Specific Controller device profile. The BACnet® Communication Module plugs onto the unit RTU-C controller and allows communication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

ROOFCURB ADAPTER



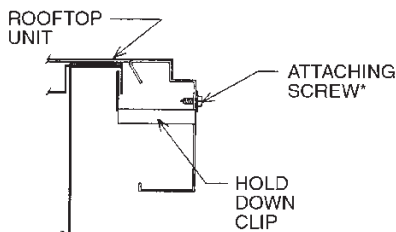
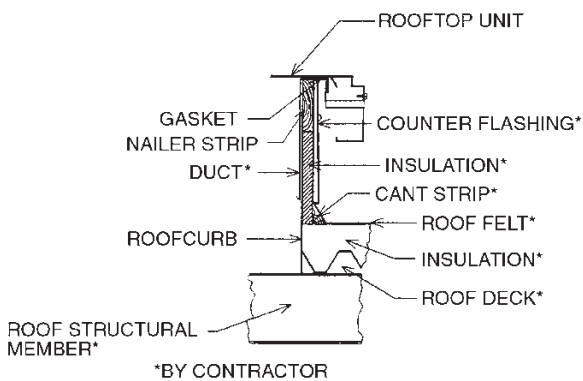
[] Designates Metric Conversions

ROOFCURBS (Full Perimeter)

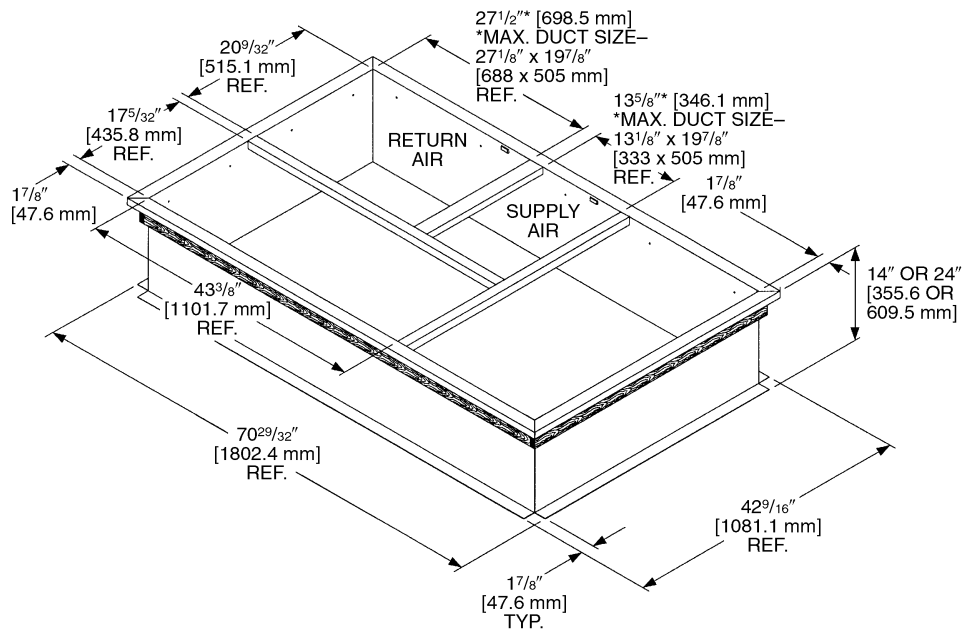
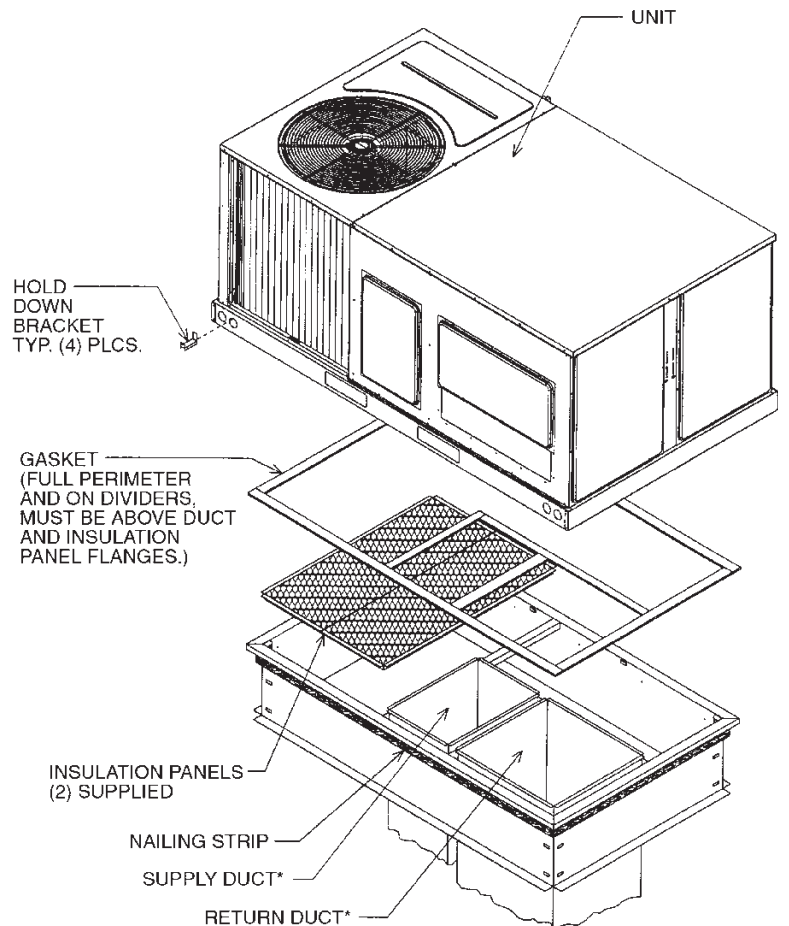
- Russell™ By Rheem's new roofcurb design can be utilized on 3 through 6 ton [21.1 kW] models.
- Two available heights (14" [356 mm] and 24" [610 mm]) for ALL models.
- Quick assembly corners for simple and fast assembly.
- Opening provided in bottom pan to match the "Thru the Curb" electrical connection opening provided on the unit base pan.
- 2" [51 mm] x 4" [102 mm] Nailers provided.
- Insulating panels provided.
- Sealing gasket (28" [711 mm]) provided with Roofcurb.
- Packaged for easy field assembly.

| Roofcurb Model | Height of Curb |
|----------------|----------------|
| RXKG-CAD14 | 14" [356 mm] |
| RXKG-CAD24 | 24" [610 mm] |

[] Designates Metric Conversions



TYPICAL INSTALLATION



ECONOMIZERS (JADE)— FOR RLKN-B073

AXRD-01RCCAM3—6 Ton [21.1 kW] Models
AXRD-01RCCBM3—6 Ton [21.1 kW] Models

RXXR-AV02—6 Ton [21.1 kW] Models

RXXR-AR02—6 Ton [21.1 kW] Models

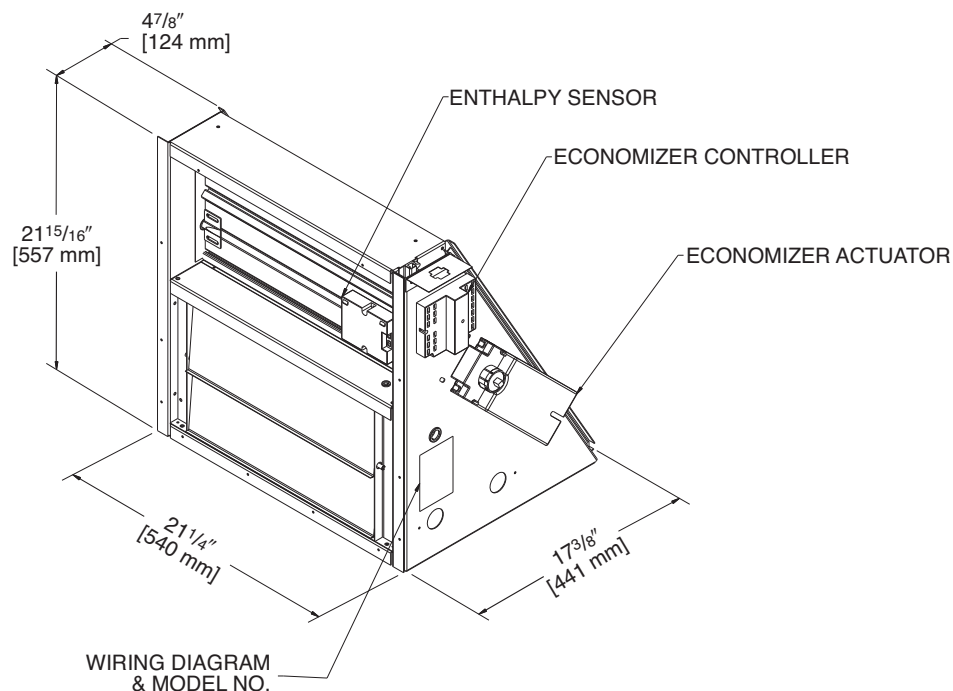
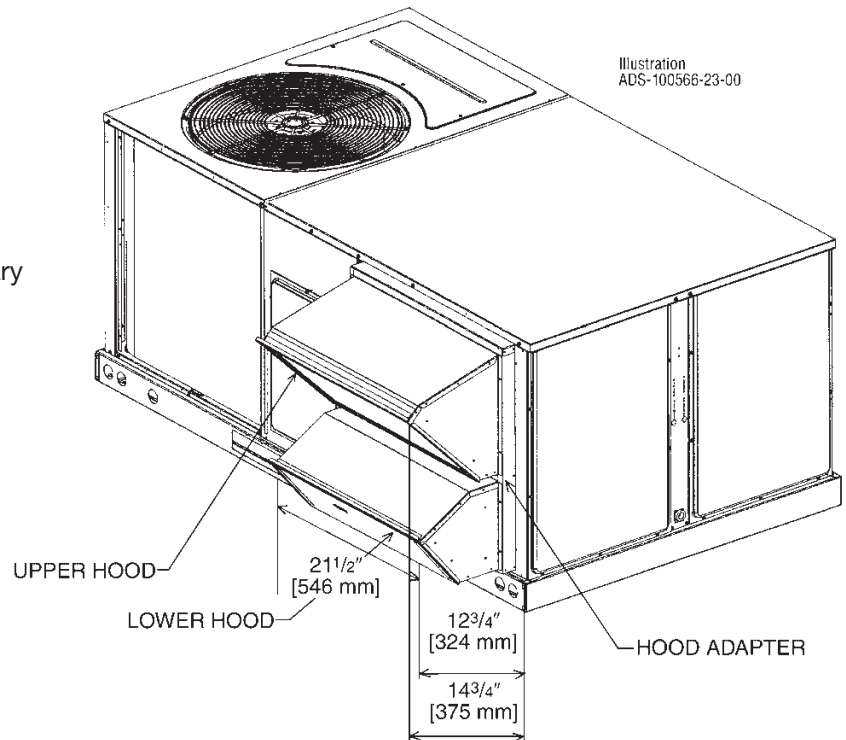
Single Enthalpy (with Barometric Relief)
Single Enthalpy and Smoke Detector

Dual Enthalpy Kit

Optional CO₂ Sensor

- Features **Honeywell JADE™** Digital Controls
- Available factory installed or field accessory
- Gear Driven Direct Drive Actuator
- Fully Modulating (0-100%)
- Low Leakage Dampers
- Horizontal or Downflow Applications
- Slip-In Design for Easy Installations
- Plug-In Polarized 12-pin Electrical Connections
- Pre-configuring—No Field Adjustments Necessary
- Standard Barometric Relief Damper Provided
- Single Enthalpy with Dual Enthalpy upgrade kit
- CO₂ Input Sensor Available (field installed)
- Economizer slips in complete for downflow or horizontal duct applications
- Field assembled hood ships with Economizer
- Field installed power exhaust available.

[] Designates Metric Conversions



ECONOMIZERS

AXRD-01RHCCM3—6 Ton [21.1 kW] Models

AXRD-01RHCDM3—6 Ton [21.1 kW] Models

RXRX-AV03—6 Ton [21.1 kW] Models

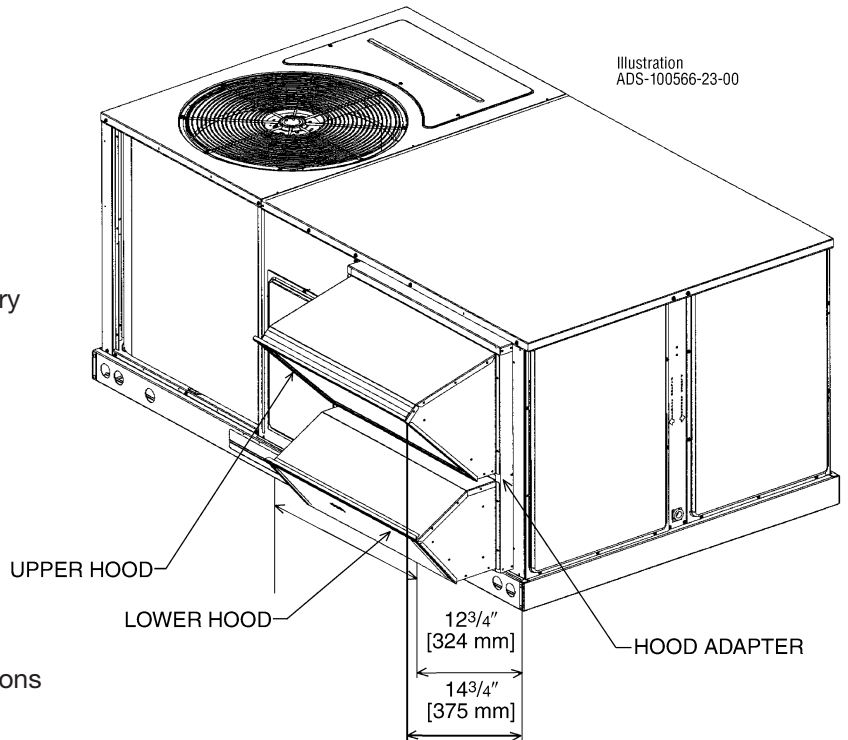
RXRX-AR02—6 Ton [21.1 kW] Models

- Features **Honeywell** Controls
- Available factory installed or field accessory
- Gear Driven Direct Drive Actuator
- Fully Modulating (0-100%)
- Extra Low Leakage Dampers California Title 24 Compliant
- Horizontal or Downflow Applications
- Slip-In Design for Easy Installations
- Plug-In Polarized 12-pin Electrical Connections
- Pre-configuring—No Field Adjustments Necessary
- Standard Barometric Relief Damper Provided
- Single Enthalpy with Dual Enthalpy upgrade kit
- CO₂ Input Sensor Available (field installed)
- Economizer slips in complete for downflow or horizontal duct applications
- Field assembled hood ships with Economizer
- Optional Remote minimum position (Honeywell #S963B1128) is available
- 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

DDC Economizer w/Single Enthalpy and Barometric Relief

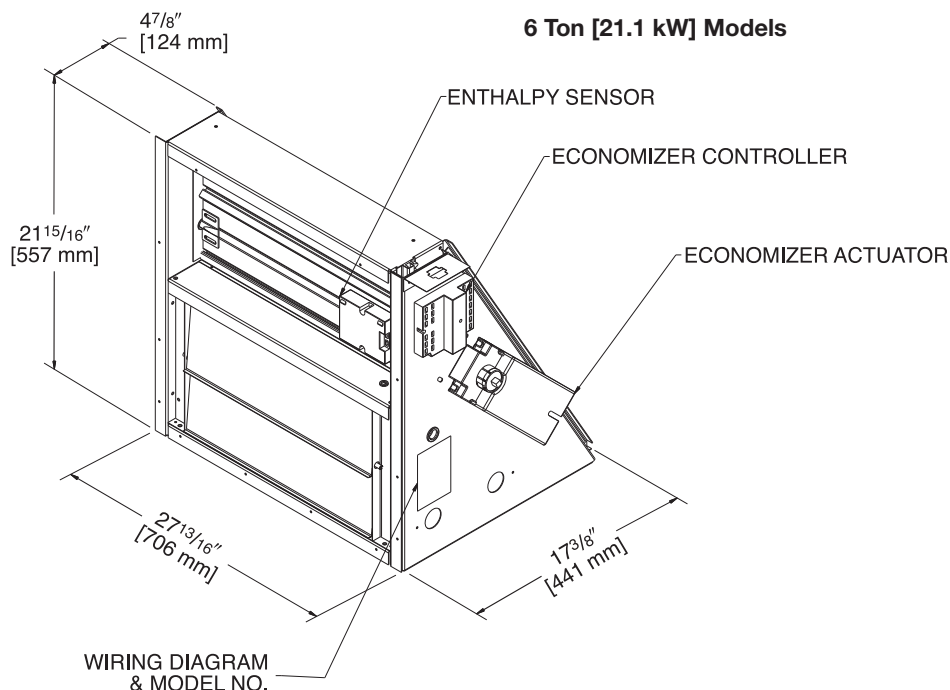
DDC Economizer w/Single Enthalpy, Barometric Relief and Smoke Detector

Dual Enthalpy Kit
Optional CO₂ Sensor



[] Designates Metric Conversions

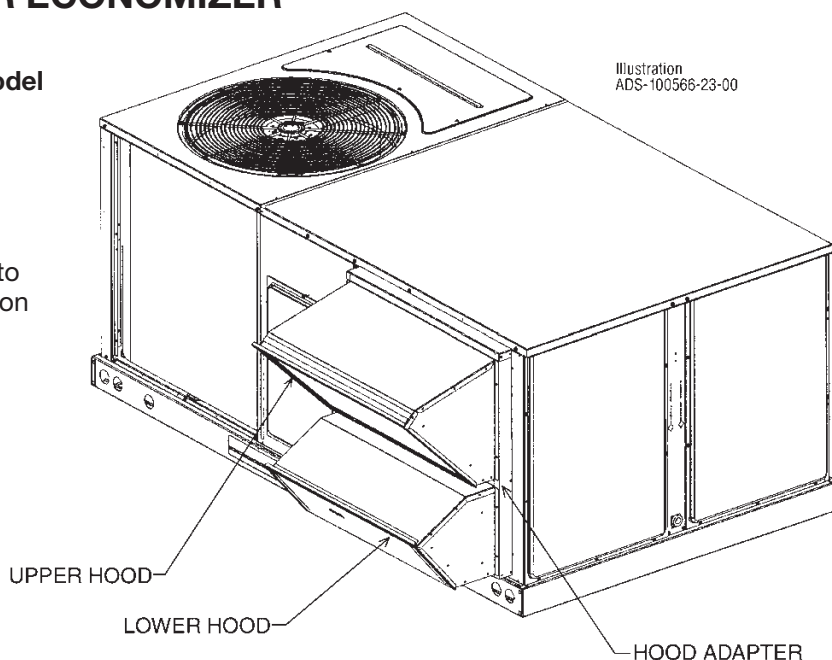
6 Ton [21.1 kW] Models



INTEGRAL POWER EXHAUST FOR ECONOMIZER (FIELD INSTALLED ONLY)

AXRX-BGF03(C,D,Y)—RLKN 6 Ton [21.1 kW] Model

- For **Honeywell** Economizer
- Downflow or horizontal applications
- Requires separate 208-230 volt – 1 PH power supply with disconnect or requires separate 460V - 1 PH power supply with disconnect.
- Adjustable switch on economizer, factory preset to energize power exhaust at 95% outside air position
- Polarized plug connects power exhaust relay to economizer



POWER EXHAUST KIT FOR AXRD-01CCAM3, AXRD-01CCBM3, AXRD-01RHCCM3 & AXRD-01RHCDM3 ECONOMIZERS

| Model No. | No. of Fans | Volts | Phase | Watts (ea.) | High Speed | | FLA (ea.) | LRA (ea.) |
|---------------|-------------|---------|-------|-------------|------------|------|-----------|-----------|
| | | | | | CFM ① | RPM | | |
| AXRX-BGF03C | 1 | 208/230 | 1 | 1000 | 2500 | 1725 | 4.4 | 23.7 |
| AXRX-BGF03D | 1 | 460 | 1 | 800 | 2370 | 1620 | 1.8 | 4.1 |
| AXRX-BGF03Y ② | 1 | 575 | 1 | 800 | 2370 | 1620 | 1.5 | 3.3 |

① CFM is at 0" w.c. external static pressure

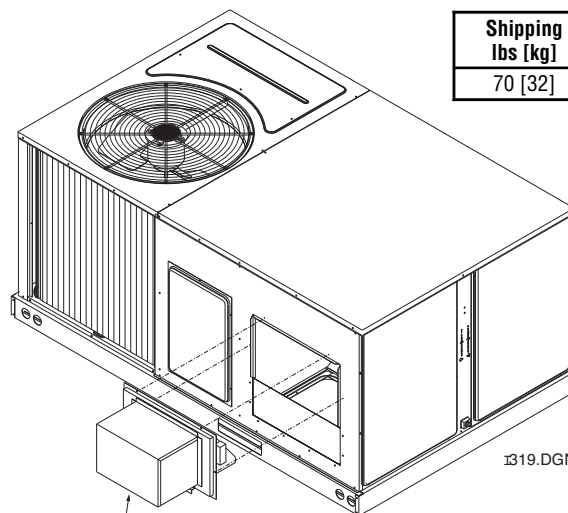
② Unit includes 575 to 460 Volt step-down transformer

FRESH AIR DAMPER

RLKN 6 Ton [21.1 kW] Models

AXRF-FCA1 (Manual)

AXRF-JHB1 (Motorized)



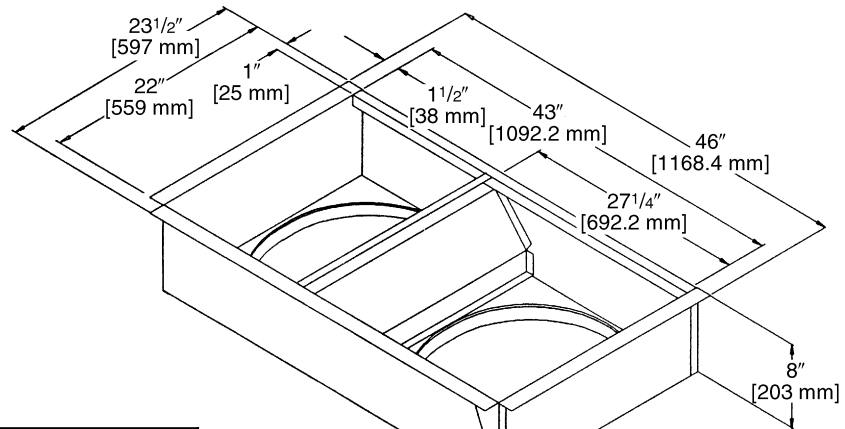
| Shipping lbs (kg) | Operating lbs (kg) |
|----------------------|-----------------------|
| 70 [32] | 67 [30] |

[] Designates Metric Conversions

FRESH AIR DAMPER

DUCT ADAPTERS (RLKN 6 TON [21.1 kW] MODELS)

Rectangular to Round Transitions (Downflow)



| Accessory Model No. | Model Application Tons [kW] | Size in. [mm] |
|---------------------|-----------------------------|----------------|
| RXMC-CC04 | 6 [21.1] | 20 [508] Round |

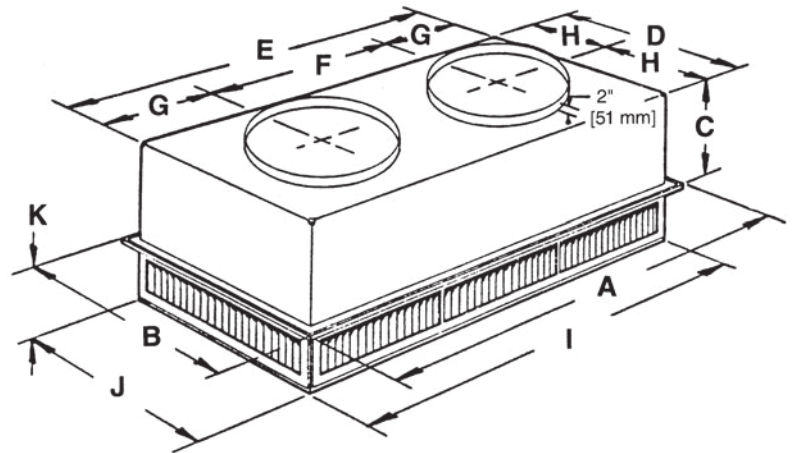
[] Designates Metric Conversions

PLACE 1/8" [3.18 mm] X 1/2" [12.7 mm] GASKET
ON UNDERSIDE OF 1 1/2" [38.1 mm] FLANGE

SIDE DISCHARGE CONCENTRIC DIFFUSER

RXRN-FA65 (6 Ton [21.1 kW] Models)

For Use With Duct Adapter (RXMC)



DIMENSIONAL DATA

| Model No. | A | B | C | D | E | F | G | H | I | J | K | Duct Size |
|-----------|---|--|--|--|---|--|--|--|---|--|---|-----------|
| RXRN-FA65 | 47 ⁵ / ₈ " [1210 mm] | 29 ⁵ / ₈ " [752 mm] | 14 ³ / ₈ " [365 mm] | 27 ¹ / ₂ " [699 mm] | 45 ¹ / ₂ " [1156 mm] | 22 ¹ / ₂ " [572 mm] | 11 ¹ / ₂ " [292 mm] | 13 ³ / ₄ " [349 mm] | 45 ¹ / ₂ " [1156 mm] | 27 ¹ / ₂ " [699 mm] | 8 ¹ / ₈ " [206 mm] | 20RD |

ENGINEERING DATA

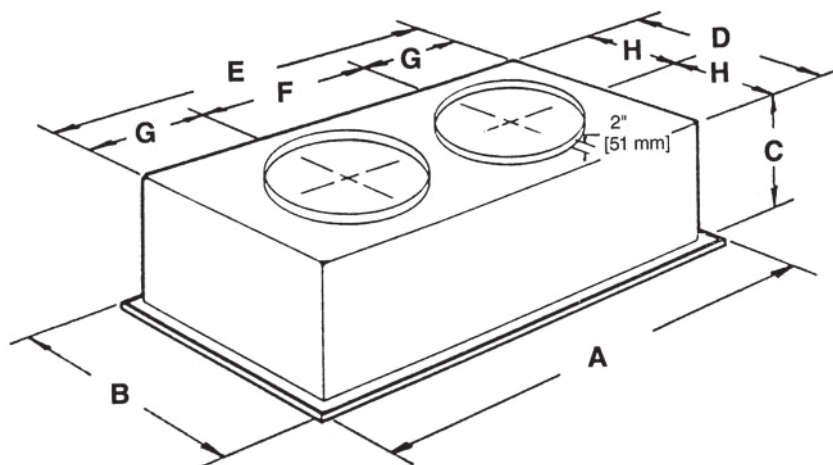
| Model No. | CFM [L/s] | Static Pressure | Throw Feet | Neck Vel. | Jet Vel. | Noise Level |
|-----------|-------------|-----------------|------------|-----------|----------|-------------|
| RXRN-FA65 | 2600 [1227] | .17 | 24-29 | 669 | 669 | 20 |
| | 2800 [1321] | .20 | 25-30 | 720 | 720 | 25 |
| | 3000 [1416] | .25 | 27-33 | 772 | 772 | 25 |
| | 3200 [1510] | .31 | 28-35 | 823 | 823 | 25 |
| | 3400 [1605] | .37 | 30-37 | 874 | 874 | 30 |

[] Designates Metric Conversions

FLUSH MOUNT CONCENTRIC DIFFUSER

RXRN-FA75 (6 Ton [21.1 kW] Models)

For Use With Duct Adapter (RXMC)



DIMENSIONAL DATA

| Model No. | A | B | C | D | E | F | G | H | Duct Size |
|-----------|---|--|--|-----------------|---|--|--|--|-----------|
| RXRN-FA75 | 47 ⁵ / ₈ " [1210 mm] | 29 ⁵ / ₈ " [752 mm] | 16 ⁵ / ₈ " [422 mm] | 27" [686 mm] | 45 ¹ / ₂ " [1156 mm] | 22 ¹ / ₂ " [572 mm] | 11 ¹ / ₄ " [286 mm] | 13 ¹ / ₂ " [343 mm] | 20RD |

ENGINEERING DATA

| Model No. | CFM [L/s] | Static Pressure | Throw Feet | Neck Vel. | Jet Vel. | Noise Level |
|-----------|-------------|-----------------|------------|-----------|----------|-------------|
| RXRN-FA75 | 2600 [1227] | .17 | 19-24 | 663 | 1294 | 30 |
| | 2800 [1321] | .20 | 20-28 | 714 | 1393 | 35 |
| | 3000 [1416] | .25 | 21-29 | 765 | 1492 | 35 |
| | 3200 [1510] | .31 | 22-29 | 816 | 1592 | 40 |
| | 3400 [1605] | .37 | 22-30 | 867 | 1692 | 40 |

[] Designates Metric Conversions

GUIDE SPECIFICATIONS – RLKN-B073/RLKN-C073

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

ELECTRIC HEAT PACKAGED ROOFTOP

HVAC Guide Specifications

Size Range: 6 Nominal Tons

| Section | Description |
|---------|-------------|
|---------|-------------|

| | |
|-----------------|---|
| 23 06 80 | Schedules for Decentralized HVAC Equipment |
|-----------------|---|

| | |
|--------------------|--|
| 23 06 80.13 | Decentralized Unitary HVAC Equipment Schedule |
|--------------------|--|

| | |
|-----------------------|------------------------------|
| 23 06 80.13.A. | Rooftop unit schedule |
|-----------------------|------------------------------|

1. Schedule is per the project specification requirements.

| | |
|-----------------|----------------------------------|
| 23 07 16 | HVAC Equipment Insulation |
|-----------------|----------------------------------|

| | |
|--------------------|--------------------------------------|
| 23 07 16.13 | Decentralized, Rooftop Units: |
|--------------------|--------------------------------------|

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

| | |
|-----------------|---|
| 23 09 13 | Instrumentation and Control Devices for HVAC |
|-----------------|---|

| | |
|--------------------|----------------------------------|
| 23 09 13.23 | Sensors and Transmitters: |
|--------------------|----------------------------------|

| | |
|-----------------------|--------------------|
| 23 09 13.23.A. | Thermostats |
|-----------------------|--------------------|

1. Thermostat must
 - a. have capability to energize 2 different stages of cooling, and 1 stage of heating.
 - b. must include capability for occupancy scheduling.
 - c. energize both “W” and “G” when calling for heat.

| | |
|-----------------|--|
| 23 09 23 | Direct-digital Control system for HVAC (RLKN-C073 Only) |
|-----------------|--|

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

11. Shall provide the following outputs: economizer, fan, cooling stage 1, cooling stage 2, heat stage 1, heat stage 2, heat stage 3/ exhaust.
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 replaceable fuse on the 24-v transformer side. Transformer size is 40VA.
2. Shall utilize color-coded wiring.
3. Unit shall provide a minimum of one 10-pin screw terminal connection board for connection of control wiring.
4. 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.

23 09 33.13.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. Automatic reset, motor thermal overload protector.
5. Freeze protection sensor, evaporator coil.

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**

1. Shall consist of factory-installed, low velocity, throwaway 1-in. thick fiberglass filters of commercially available sizes.
2. Unit shall use only one filter size. Multiple sizes are not acceptable.
3. Filter face velocity shall not exceed 365 fpm at nominal airflows.
4. Filters shall be accessible through an access panel as described in the unit cabinet section of the specification (23 81 19.13.H).
5. Filter rack will also accept 2-in thick fiberglass filters of commercially available sizes by removal of a tab.

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 hermetic scroll compressor for cooling duty and electric resistance heat 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 safe, 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 90.1-2010 minimum efficiency requirements.
2. Unit shall be rated in accordance with AHRI Standards 210/240.
3. Unit shall be designed to conform to ASHRAE 15-2010.
4. 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.
5. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.
6. Unit casing shall be capable of withstanding 500-hour salt spray exposure per ASTM B117 (scribed specimen).
7. Unit casing shall be capable of withstanding Federal Test Method Standard No. 141 (Method 6061) 5000-hour salt spray.

8. Unit shall be designed in accordance with ISO 9001:2008, and shall be manufactured in a facility registered by ISO 9001:2008.
9. Roof curb shall be designed to conform to NRCA Standards.
10. 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.
11. Unit shall be designed in accordance with UL Standard 1995, including tested to withstand rain.
12. 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 at $\pm 10\%$ voltage.
 2. Compressor with standard controls shall be capable of operation down to 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 Pre-paint 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 / 16°C): 60, Hardness: H-2H Pencil hardness.
 3. Evaporator fan compartment interior cabinet insulation shall conform to AHRI Standards 210/240 minimum exterior sweat criteria. Interior surfaces shall be insulated with a minimum 3/4-in. thick, 1 lb. density, flexible fiberglass insulation, aluminum foil-face coated 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 condensate drain pan made of a non-corrosive material. Unit must be installed at a slight angle to allow for complete drainage.
 - b. Shall comply with ASHRAE Standard 62.
 - c. Shall use a 3/4" x 14 NPT drain connection through the side of the drain pan. Connection shall be made per manufacturer's recommendations..
 7. Electrical Connections
 - a. All unit power wiring shall enter unit cabinet at a single, factory-prepared, knockout location.
 - b. Thru-the-base capability
 - i. Standard unit shall have a thru-the-base electrical location(s) using a raised, embossed portion of the unit basepan.
 - ii. No basepan penetration, other than those authorized by the manufacturer, is permitted.
 8. Component access panels (standard)
 - a. Cabinet panels shall be easily removable for servicing.
 9. Component access panels (optional)
 - a. Panels covering control box, indoor blower assembly, indoor blower motor and air filters shall have metal hinges and quarter (1/4) turn latches factory installed only.
- 23 81 19.13.J. Coils
 1. Aluminum MicroChannel evaporator and condenser coils on all models.
 - a. Shall have aluminum lanced fins thermally bonded to aluminum multi-port flat tube design (microchannel) tubes. Coils shall be furnace brazed and contain epoxy lined shrink wrap on all aluminum to copper connections.
 - b. Shall be leak tested using helium mass spectrometry. The leak rate shall not exceed 6.5×10^{-5} sccs of 100% helium at 200 psig, and qualified to UL 1995 burst test at 1950 psig.
 - c. Evaporator coil includes internal distributor plate to prevent mal-distribution of two-phase refrigerant.

23 81 19.13.K. Refrigerant Components

1. Refrigerant circuit shall include the following control, safety, and maintenance features:
 - a. Thermal Expansion Valves (TXV).
 - b. Refrigerant filter drier.
 - c. Service gauge connections on suction and liquid lines.
 - d. External pressure gauge ports access shall be located in front exterior of cabinet.
2. Compressors
 - a. Unit shall use one fully hermetic, scroll compressor.
 - b. Compressor motors shall be cooled by refrigerant gas passing through motor windings.
 - c. Compressors shall be internally protected from high discharge temperature conditions.
 - d. Compressors shall be protected from an over-temperature and over-amperage conditions by an internal, motor overload device.
 - e. Compressor shall be factory mounted on rubber grommets.
 - f. Compressor motors shall have internal line break thermal and current overload protection along with high pressure differential protection.
 - g. 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. Shall consist of factory-installed, low velocity, throw-away 1-in. thick fiberglass filters.
3. Filter face velocity shall not exceed 365 fpm at nominal airflows.
4. Filters shall be standard, commercially available sizes.
5. Only one size filter per unit is allowed.
6. Filter rack will also accept 2-in thick fiberglass filters of commercially available sizes by removal of a tab.

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.
 - 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.
3. High-Static Belt-driven Evaporator Fan Motor(s) and Drive(s):
 - a. High-static motor(s) and drive(s) shall be factory-installed to provide additional performance range.

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 shall:
 - 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

1. Integrated Economizers:
 - a. Integrated, gear-driven parallel modulating blade design type capable of simultaneous economizer and compressor operation.
 - b. Module designed for vertical or horizontal return configurations. Vertical return configuration 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. The barometric relief damper shall include seals, hardware and hoods to relieve building pressure. Damper shall gravity close upon unit shut down.
 - 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 enthalpy set point 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.
- l. Economizer controller shall accept a 0-10Vdc CO₂ sensor input over a CO₂ range of 0-2000 ppm for IAQ/DCV control. In this mode, dampers shall modulate the outdoor-air damper to provide ventilation based on the sensor input.
- m. Actuator shall be direct coupled to economizer gear. No linkage arms or control rods shall be acceptable.
- n. Economizer controller shall provide indications when in free cooling mode, in the DCV mode, or the exhaust fan contact is closed.
- o. Ultra Low Leak Dampers shall meet California Title 24 requirements.
- p. Economizer controller shall meet California Title 24 FDD (Fault Detection and Diagnostics) requirements.
2. Two-Position Damper
 - a. Damper shall be a Two-Position 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 damper and actuator motor.
 - d. Actuator shall be direct coupled to economizer 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. Thru-the-Base Connectors:
 - a. Kits shall provide connectors to permit electrical connections to be brought to the unit through the unit basepan.
7. 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 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.
8. Roof Curbs (Vertical):
 - a. Full perimeter roof curb with exhaust capability providing separate airstreams 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.
9. 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.
10. 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.
11. 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 set point shall have adjustment capability.
 - c. The sensor shall provide a 0-10Vdc output for a CO₂ input range of 0-2000 ppm.
12. 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:
 - i. One set of normally open alarm initiation contacts for connection to an initiating device circuit on a fire alarm control panel
 - ii. Two Form-C auxiliary alarm relays for interface with rooftop unit or other equipment.
 - iii. One Form-C supervision (trouble) relay to control the operation of the Trouble LED on a remote test/reset station.
 - iv. Capable of direct connection to two individual detector modules.
 - v. Can be wired to up to 14 other duct smoke detectors for multiple fan shutdown applications.
- 13. Non-Powered convenience outlet.
 - a. Outlet shall be powered from a separate 115-120v power source.
 - b. A transformer shall not be included.
 - c. Outlet shall be field-installed and internally mounted with easily accessible 115-v female receptacle.
 - d. Outlet shall include 15 amp GFI receptacle.
 - e. Outlet shall be accessible from outside the unit.
 - f. Outlet shall have a wet location, while in use cover.
- 14. 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.
- 15. Electric Heat:
 - a. Heating Section
 - i. 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.
 - ii. 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.

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

GENERAL TERMS OF LIMITED WARRANTY*

Rheem® 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 |



Russell™ By Rheem

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Before proceeding with installation, refer to installation instructions packaged with each model, as well as complying with all Federal, State, Provincial, and Local codes, regulations, and practices.

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