# Commercial Renaissance™ Line Packaged Gas Electric Units


## RGEC Commercial *Classic*® Series Packaged Gas Electric

Cooling Efficiencies up to:
3-5 Tons: 10.6 EER2 / 13.4 SEER2
6 Tons: 11.0 EER / 14.6 IEER
Nominal Sizes: 3, 4, 5 & 6 Tons [10.6, 14.0, 17.6 & 21.1 kW]
Cooling Capacities: 34.2 kBTU - 72.0 kBTU
Refrigerant Type: R-454B
ASHRAE 90.1 2022 Compliant Models

ISO 9001:2015

c UL us LISTED

AHRI CERTIFIED™ www.ahridirectory.org
Unitary Small AC
AHRI Standard 210/240
Certification applies only when the complete system is listed with AHRI.

AHRI CERTIFIED™ www.ahridirectory.org
Unitary Large AC
AHRI Standard 340/360
Certification applies only when the complete system is listed with AHRI.


## RGEC STANDARD FEATURES INCLUDE:

- Factory charged with R-454B refrigerant
- Wired and run tested
- Scroll compressors with internal line break overload and high pressure protection
- Convertible airflow – vertical down flow or horizontal side flow
- Forkable base rails for easy handling and lifting
- Cooling operation up to 125°F ambient
- Two-stage gas heat input with direct spark ignition system, solid state furnace controls, and optimized induced draft combustion
- MicroChannel evaporator and condenser coil
- PlusOne® ServiceSmart package includes:
  Qwik-Change Flex-Fit Rack
  Qwik-Slide Blower Assembly
  Qwik-Clean Drain Pan
- Overflow condensate sensor
- PlusOne Diagnostics with Dual 7-Segment LED Display to meet code compliance
- One-piece top cover and base pan with drawn supply and return opening
- Two-piece control door
- ¼ turn fasteners on filter access door
- Color-coded and labeled wiring
- External lockable gauge ports
- TXV refrigerant metering system
- Solid-core liquid line filter drier
- High pressure and low pressure/loss of charge protection with built-in Smart Logic
- Insulation encapsulated throughout entire unit
- 3-5 ton YB models include one single-stage compressor
- MERV 8 & MERV 13 filters are available as a field-installed accessory
- Standard Modbus interface

LOW GWP Refrigerant

For 2025, the Environmental Protection Agency (EPA) has set a global warming potential (GWP) limit of 700 for refrigerant used in most heating and cooling systems. This new requirement will result in a 78%* lower GWP than previous-generation refrigerants—with only minimal changes to system installation. For us, this is another step toward our ongoing sustainability goal of reducing greenhouse gas emissions, while still delivering an exceptional level of energy efficient, dependable comfort.

*When comparing the GWP of R-454B to R-410A refrigerant.

## FACTORY-INSTALLED OPTIONS:

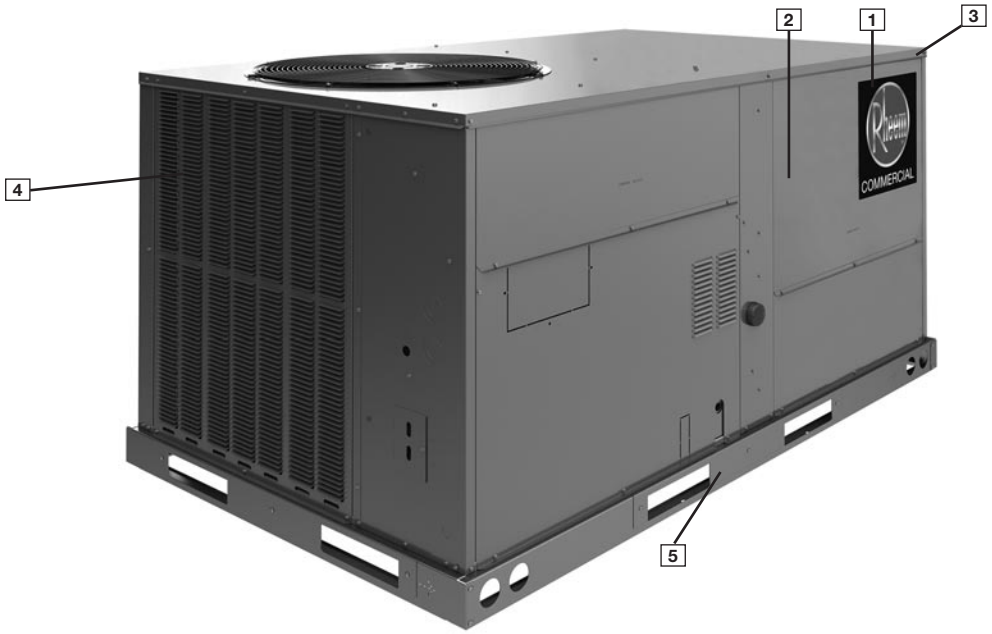
- Louvered panels
- Hinged access doors
- Stainless steel heat exchanger (20 year warranty)
- Low ambient/freeze stat
- Non-powered convenience outlet
- Unfused disconnect
- Circuit breaker
- Economizer (Title 24 and ASHRAE 90.1 2022 compliant)
- Supply and return smoke detector
- Return smoke detector
- ElectroFin® E-Coat for Microchannel Condenser Coil Coating
- ClearControl™ Direct Digital Control (DDC)
- Comfort Alert® Phase-monitor Protection
- Vertical Economizer

## FIELD-INSTALLED ACCESSORIES:

| Accessory | Model Number | Factory Installation Available? |
|---|---|---|
| Comfort Alert (1 Phase) DDC | RXRX-AZ03 | Yes |
| Comfort Alert (1 Phase) Non-DDC | RXRX-AZ04 | Yes |
| Comfort Alert (3 Phase) DDC | RXRX-AZ01 | Yes |
| Comfort Alert (3 Phase) Non-DDC | RXRX-AZ02 | Yes |
| Communication Card, BACnet® | RXRX-AY01 | No |
| Communication Card, LonWorks® | RXRX-AY02 | No |
| Concentric Adapter 3-4 Ton Drop | RXMC-DC01 | No |
| Concentric Adapter 5-6 Ton Drop | RXMC-DC02 | No |
| Concentric Diffuser 3-4 Ton Drop | RXRN-AED1800 | No |
| Concentric Diffuser 5-6 Ton Drop | RXRN-AED2000 | No |
| Concentric Diffuser 3-4 Ton Flush | RXRN-AEF1800 | No |
| Concentric Diffuser 5-6 Ton Flush | RXRN-AEF2000 | No |
| Convenience Outlet, Nonpowered | RXRX-BN01 | Yes |
| Dual Enthalpy Kit (for Honeywell® Jade™) | RXRX-BV01 | No |
| Dual Enthalpy Kit DDC (for Honeywell® DDC) | RXRX-BV02 | No |
| Dual Enthalpy, Temperature and Humidity Sensor (for Ruskin Basic Controller) | PD955878 | No |
| Dual Enthalpy, Temperature and Humidity Sensor (for Siemens®) | PD555460 | No |
| Economizer Universal DDC Interface Kit | RXRX-DDC01 | Yes |
| Economizer with No Controls (Downflow/Vertical) *MicroMetl Economizer, No Controls, Belimo Actuator* | RXRD-31MCDAM3 | No |
| Economizer w/Single Enthalpy (Downflow/Vertical) *MicroMetl Economizer with Honeywell® Jade™ Controls* | RXRD-01MCDAM3 | Yes |
| Economizer w/Single Enthalpy (Downflow/Vertical) *Ruskin Rooftop Systems® with RRS Basic Controller* | RXRD-41MCDAM3 | No |
| Economizer w/Single Enthalpy (Downflow/Vertical) *MicroMetl Economizer with Siemens Controls* | RXRD-11MCDAM3 | No |
| Economizer-w/Single Enthalpy (Downflow/Vertical) DDC *MicroMetl Economizer with Honeywell DDC Controls* | RXRD-01MCDBM3 | Yes |
| Economizer w/Single Enthalpy (Horizontal) *MicroMetl Economizer with Honeywell Jade Controls* | RXRD-01MCHAM3 | No |
| Economizer w/Single Enthalpy (Horizontal) *MicroMetl Economizer with Siemens Controls* | RXRD-11MCHAM3 | No |

*10kW options not available on 6 Ton models

| Accessory | Model Number | Factory Installation Available? |
|---|---|---|
| Economizer w/Single Enthalpy (Horizontal) *Ruskin Rooftop Systems with RRS Basic Controller* | RXRD-41MCHAM3 | No |
| Economizer w/Single Enthalpy (Horizontal) DDC *MicroMetl Economizer with Honeywell DDC Controls* | RXRD-01MCHBM3 | No |
| Flue Diverter (RGEC 75K, 100K & 120K) | RXRX-DEG03 | No |
| Freeze Stat Kit | RXRX-AM05 | Yes |
| Fresh Air Damper, Manual | RXRF-ACA1 | No |
| Fresh Air Damper, Motorized | RXRF-ACB1 | No |
| Low-Ambient Control Kit | RXRZ-A04 | Yes |
| LP Kit (RGEC 75K, 120K) | RXGJ-FP40 | No |
| LP Kit (RGEC 100K) | RXGJ-FP41 | No |
| MERV 8 Filter | RXMF-M08A21616 | No |
| MERV 13 Filter | RXMF-M13A21616 | No |
| Outdoor Coil Louver Kit | RXRX-ADD04C | Yes |
| Power Exhaust (230V) Horizontal *MicroMetl* | RXRX-CCF03C | No |
| Power Exhaust (230V) Horizontal *Ruskin Rooftop Systems* | RXRX-RCF03C | No |
| Power Exhaust (230V) Vertical *MicroMetl* | RXRX-CCF02C | No |
| Power Exhaust (230V) Vertical *Ruskin Rooftop Systems®* | RXRX-RCF02C | No |
| Power Exhaust (460V) Horizontal *MicroMetl* | RXRX-CCF03D | No |
| Power Exhaust (460V) Horizontal *Ruskin Rooftop Systems®* | RXRX-RCF03D | No |
| Power Exhaust (460V) Vertical *MicroMetl* | RXRX-CCF02D | No |
| Power Exhaust (460V) Vertical *Ruskin Rooftop Systems®* | RXRX-RCF02D | No |
| Roofcurb, 14" | RXKG-DCC14 | No |
| Roofcurb, 24" | RXKG-DCC24 | No |
| Roofcurb Adapter | RXRX-DCCAE | No |
| Sensor, Carbon Dioxide (Wall Mount) | RXRX-AR02 | No |
| Sensor, Room Humidity | RHC-ZNS4 | No |
| Sensor, Room Temperature and Relative Humidity | RHC-ZNS5 | No |
| Smoke Detector, Return (Field kit) | RXRX-BS01 | No |
| Smoke Detector, Return/ Supply (Field kit) | RXRX-BS02 | No |
| Unfused Service Disconnect | RXRX-BP01 | Yes |




## Cabinet and Foundation

Outwardly, the large Rheem® label **(1)** identifies the brand to the customer. The sheet-metal cabinet **(2)** uses 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)** as well as gasket-protected panels and screws. The Rheem hail guard (optional) **(4)** sets the standard for coil protection in the industry. Electro deposition, baked-on enamel that is tested to withstand a rigorous 1000-hour salt spray test, per ASTM B117.

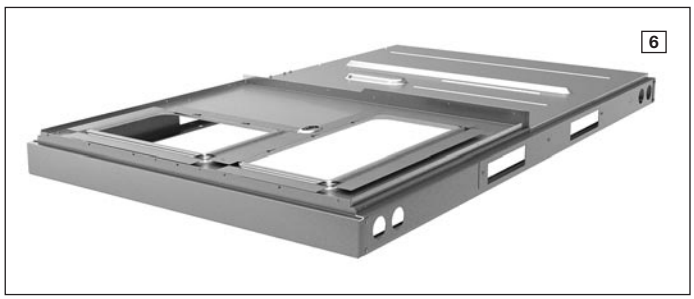
Anything built to last must start with the right foundation. Following that model, the foundation is comprised of 14-gauge, commercial-grade, full perimeter base rails **(5)** that integrate fork slots and rigging holes to save set-up time on the job site.

## Easy Installation

The Renaissance line features a footprint that simplifies the replacement process by eliminating the need for a new curb adapter and being able to match inlet, outlet and electrical connections of the most common/industry-standard configurations.

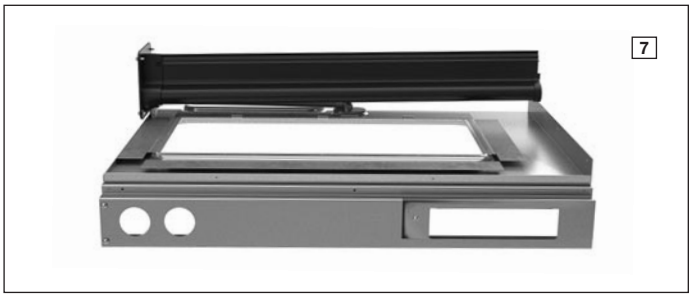
## Base Pan

The base pan is stamped to form a 7/8" flange around the supply and return cover, which eliminates the worry of water entering the conditioned space **(6)**. All insulation is secured with both adhesive and mechanical fasteners, and all edges are hidden.




## Drain Pan

The Qwik-Clean Drain Pan **(7)** is made from a composite material that resists the growth of harmful bacteria. With both side and center drain options, the drain pan slides out completely for easy cleaning. It also features a standard overflow switch.




## Test Standards

During development, each unit was tested to U.L. 60335-2-40, AHRI 210/240 (3-5 ton) or AHRI 340/360 (6 ton), as well as other Rheem-required reliability tests. Rheem adheres to stringent ISO 9001 quality procedures, and each unit bears the U.L. and AHRI certification labels located on the unit nameplate. Contractors can be assured that when a Rheem packaged unit arrives at the job, it is ready to go with a factory charge and quality checks.

## Easy Access

All major compartments are easily accessible from the front of the unit: the electrical compartment, blower compartment, heating section, and outdoor section. Each compartment has mechanical fasteners. Panels are permanently embossed with the compartment name (e.g. control/filter access, blower access, and electric heat access). The filter compartment is accessed through a large, mechanically fastened panel. Information is readily available on the outside of the panel, with a nameplate that contains the model and serial numbers, electrical data, and other important unit information. Hinged access is available as an option for the electrical, blower, and filter compartments.

## Charging Charts, Wiring Diagrams, & Labels


The unit charging chart is located on the outside of the compressor access panel. Electrical wiring diagrams are found on the control box cover, which allows contractors to move them to more readable locations. The model and serial numbers are located on the right of the control box. Having this information on the inside means easier model identification for the life of the product. The production line quality test assurance label is also placed in this location **(8)**.

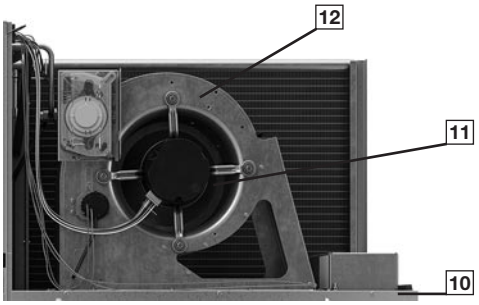
## Filter Rack


Located within the filter compartment, the Qwik-Change Flex-Fit Rack **(9)** allows easy changeover between 2" and 4" standard size and readily available filters.

## Blower Assembly

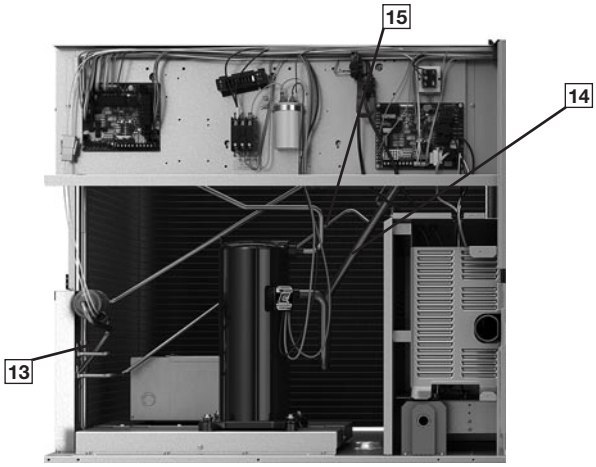
Removing three screws provides full access to the blower compartment. Inside, the Qwik-Slide Blower Assembly **(10)** is incredibly easy to access and remove. This makes servicing internal components such as blower motor, TXV, and microchannel coil much easier. The entire assembly slides out by removing the 3/8" screws from the blower retention bracket.

Where the demands for the job require high static, Rheem offers drives that deliver nominal airflow up to 1.5" 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 **(12)** and blower scroll provide quiet and efficient airflow.




## High and Low Pressure Switches & Freeze Stat

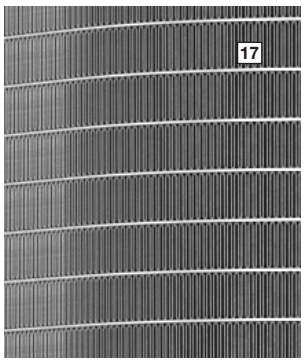
High pressure **(13)** and low pressure **(14)** switches are standard. They are located in the outdoor section along with the low-ambient control **(15)**. The optional Freeze Stat **(16)** (standard on models with ClearControl), is clipped onto the suction line in the blower compartment. The low ambient control allows the compressor to operate down to 0 degrees ambient temperature by cycling the outdoor fans on high pressure. The high-pressure switch shuts off the compressors if pressures exceeding 610 PSIG are detected. The low-pressure switch shuts off the compressors if low pressure is detected due to loss of charge. Built-in Smart Logic reduces nuisance calls by only shutting off compressors after the third detection. The freeze stat protects the compressor if the evaporator coil gets too cold (below freezing) due to low airflow.





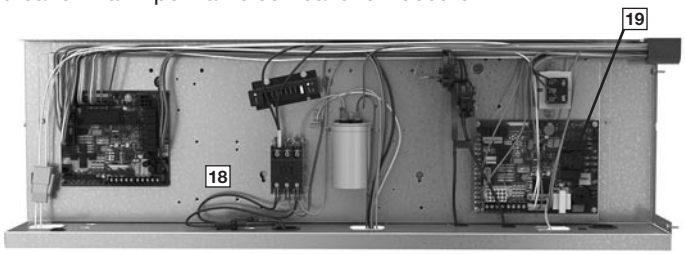
## MicroChannel Evaporator & TXV

The Microchannel Evaporator **(17)** is accessible through the blower compartment, and through the filter rack, to simplify cleaning. The evaporator uses microchannel technology for maximum heat transfer, light weight, fewer manually brazed connections and reduced refrigerant charge. The TXV metering device maintains superheat over a wide range of varying temperatures optimizing unit performance for all conditions.



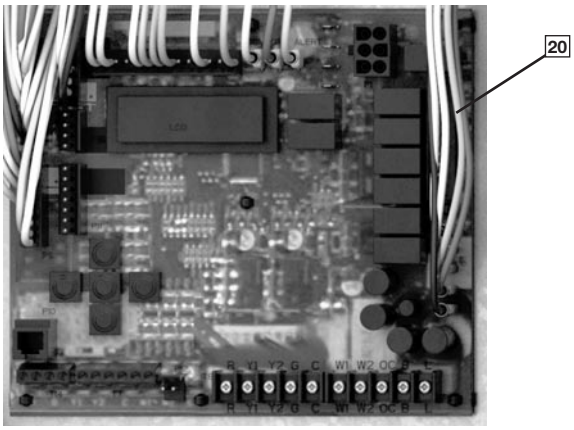
## Control Box

Inside the control box **(18)**, each electrical component is clearly labeled; that label matches the component to the wire diagram for ease of trouble shooting. All wiring is numbered on each end of the termination and is color-coded to match the wiring diagram. The integrated furnace control, incorporates the PlusOne Diagnostics: Dual 7-Segment LED Display **(19)** with easy-to-understand fault codes. The control transformer has a low voltage circuit breaker that trips if an electrical short occurs.




## ClearControl DDC System

The optional ClearControl Direct Digital Control (DDC) system consisting of a rooftop unit controller, temperature sensors, and pressure sensors, allows real-time monitoring and communication between rooftop units. The Rooftop Unit Controller (RTU-C) that is factory mounted and wired into 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, using proportional/integral control algorithms, performs 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 **(20)**. 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 freeze stats to allow measurement of refrigerant suction line temperatures.




The RGEC Gas Electric with the RTU-C is specifically designed to be applied in four distinct applications:

1. **BACnet Communication —** The RGEC 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.

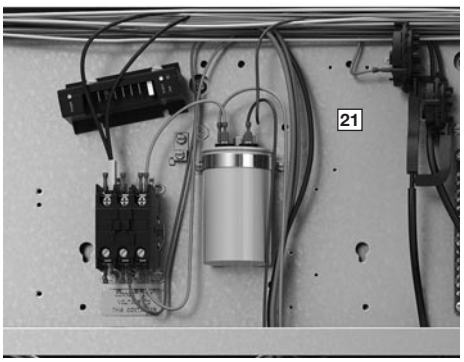
2. **LonWorks Communication —** The RGEC is compatible with a third party building management system that supports the LonMark Space Comfort Controller (SCC) functional profile or LonMark Discharge Air Controller (DAC) functional profile. This is accomplished with a field-installed LonMark communication 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 feet with no repeater. The LonWorks limit of 64 nodes per segment applies to this device.

3. **24V Thermostat Compatibility —** The RGEC 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.

4. **Zone Sensor Compatibility —** The RGEC is compatible with a zone sensor and a 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.

## Comfort Alert

A factory or field-installed Comfort Alert **(21)** 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.



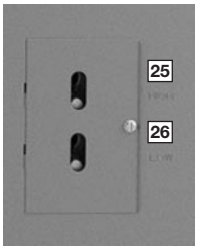
## Convenience Outlet, Disconnect, & Circuit Breaker

The convenience outlet option comes non-powered from the factory **(**23**)**, disconnect **(**24**)** and circuit breakers are available. Low and high voltage can enter from the side or through the base. Low-voltage connections are made through the low-voltage terminal strip. For ease of access, the U.L.-required low voltage barrier can be temporarily removed for low-voltage termination and then reinstalled. The high-voltage connection is terminated at the number 1 compressor contactor. The suggested mounting for the field-installed disconnect or circuit breaker is on the exterior side of the electrical control box.



## External Lockable Gauge Ports

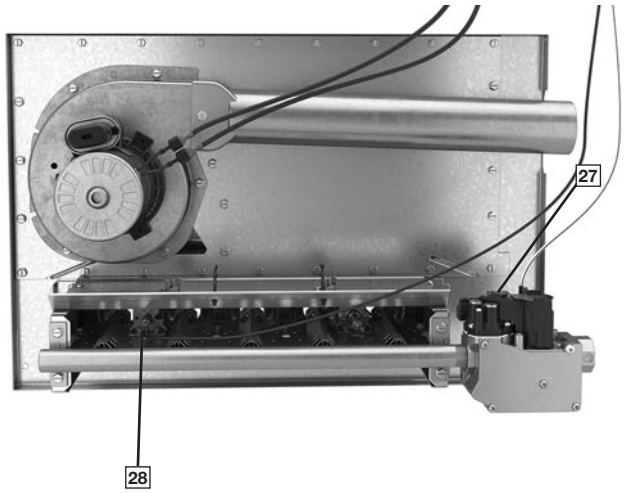
To the right left of the compressor compartment are the externally mounted lockable gauge ports. They are permanently identified by embossed lettering that identifies the compressor circuit, high pressure connection, **(**25**)** and low pressure connection **(**26**)**. Because the gauge ports are mounted externally, an accurate diagnostic of system operation can be performed without removing access panels. The plastic caps on the Shrader fitting ensure the gauge ports are leak proof, and the red cover on the caps indicates that this unit is charged with A2L refrigerant.




## Furnace & Gas Heat Exchanger

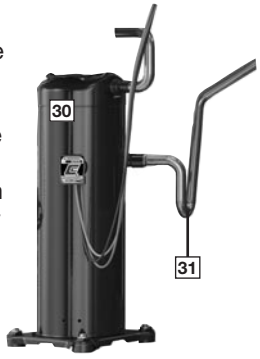
The furnace compartment contains the latest technology on the market. Each furnace is equipped with a two-stage gas valve **(**27**)** to provide two stages of gas heat input. The first stage operates at 70% of the second stage (full fire), 81% steady state efficiency is maintained. Stainless steel heat exchangers can be factory installed for those applications that have high fresh-air requirements or in applications with corrosive environments. The direct spark igniter **(**28**)** ensures reliable ignition in the most adverse conditions. This is coupled with remote flame sensor so the flame is carried across the entire length of the burner assembly. Gas supply can be routed from the side or up through the base. Each furnace has the following safety devices to ensure consistent and reliable operation after ignition:

- Stainless steel heat exchanger warranty increases from 10 years to 20 years.
- Pressures switches to ensure adequate combustion airflow before ignition.
- Rollout switches to prevent obstruction or cracks in the heat exchanger.
- A limit device to protect the furnace from over-temperature problems.



## Compressor

The compressor compartment houses the heartbeat of the unit. The scroll compressor **(30)** is known for its long life and for reliable, quiet, and efficient operation. The suction and discharge lines are designed with shock loops **(31)** to absorb the strain and stress that the starting torque, steady state operation, and shut-down cycle impose on the refrigerant tubing. 3-5 ton YB units include one single-stage compressor, and 6 ton YB units include one two-stage compressor.

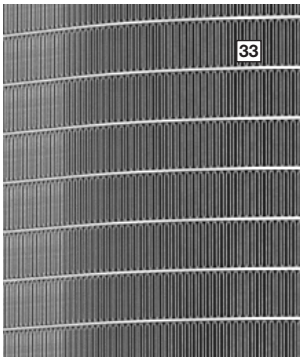



## Condenser Fans

The condenser fan motor **(32)** can easily be accessed and maintained through the top of the unit. A down-mount fan provides corrosion protection and easy removal. The polarized plug connection allows the motor to be changed quickly and eliminates the need to snake wires through the unit.


## MicroChannel Condenser Technology

The outdoor coil uses the latest microchannel technology **(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 the environment and vandalism.

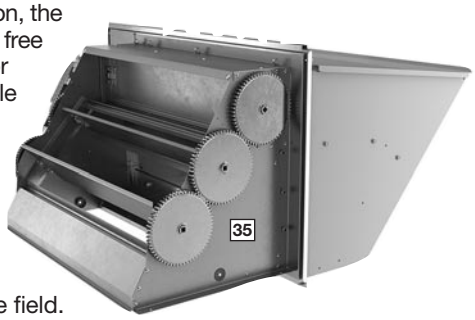



## Coil Coating

Every unit offers the option of factory-applied ElectroFin® E-Coat condenser coating **(34)** that delivers superior corrosion resistance for outdoor coils to operate in the harshest of environments.


## Economizer and Dampers

Each unit is designed for both down flow or horizontal applications **(35)** for job configuration flexibility. The return air compartment can also contain an economizer. Each unit is pre-wired for the economizer to allow quick, plug-in installation. Available as a factory-installed option, the economizer provides free cooling when outdoor conditions are suitable and also provides fresh air to meet local requirements. It comes standard with single enthalpy controls, which can be upgraded to dual enthalpy easily in the field.




The economizer control has a minimum position set point, an outdoor-air set point, a mixed-air set point, and a $CO_2$ set point. 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 plugin 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 set point, mixed air temperature limit set point, and Demand Controlled Ventilation (DCV) set point can be read and adjusted at the unit controller display or remotely through a network connection. The Space $CO_2$ level, mixed air temperature, and Economizer Status (free cooling available, single or dual enthalpy) can be read at the unit controller display or remotely through a network connection. Economizer faults will trigger a network alarm and can be read at the unit controller display or remotely through a network connection.

## Roofcurb

The Rheem roofcurb **(36)** is made for tool-less assembly at the jobsite by engaging tabs in slots of adjacent curb sides, which makes the assembly process quick and easy.

## Refrigerant Leak Detection

In the event of a detected refrigerant leak, the refrigerant leak detection sensor will trigger mitigation procedure that shuts off the compressor(s) and turns on the indoor blower motor.

The sensor is installed on the bracket facing the filter rack. From the outside of the unit, the sensor is not visible.

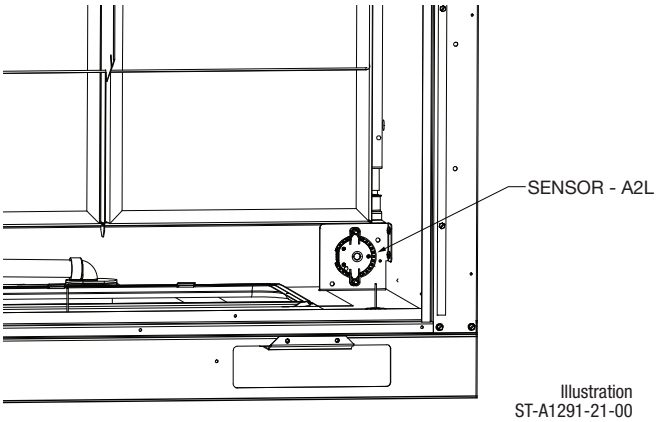



Illustration
ST-A1291-21-00

# HUMIDIDRY DEHUMIDIFICATION SYSTEM

With the factory-installed dehumidification option, in addition to a thermostat or space temperature sensor that is normally present, an indoor relative humidity sensor is installed in the occupied space and connected to the Rooftop Unit Controller (RTU-C) which then controls the capacity of the cooling coil to remove moisture from the supply air and maintain space relative humidity below an adjustable limit visible on the RTU-C display. The default value is the ASHRAE recommended limit of 60% RH. With this option, a refrigerant reheat coil is installed downstream from the evaporator coil. When the space humidity is too high and reheat is energized, this coil uses some of the heat that is normally rejected to the outside by the condenser coil to instead reheat the cold air from the evaporator coil just enough to avoid overcooling and providing “neutral air” to the occupied space. On a two-stage system, it is possible for both a thermostat and humidistat to register readings above set point. Under this condition, the system runs in the high stage dehumidification cycle, and the VFD operates on high speed. This provides dry conditioned air.

Because the demand for dehumidification can be different from the cooling demand, the unit will first satisfy the demand for cooling and then if the space humidity is still too high, dehumidification mode is energized. When in dehumidification mode, the supply air leaving the unit will be near the entering air temperature, but at a much lower humidity. The unit will exit the dehumidification mode when the humidity set point is satisfied; or if the load is increased, it will return to normal cooling mode. Reheat is not available during the gas-heating mode.

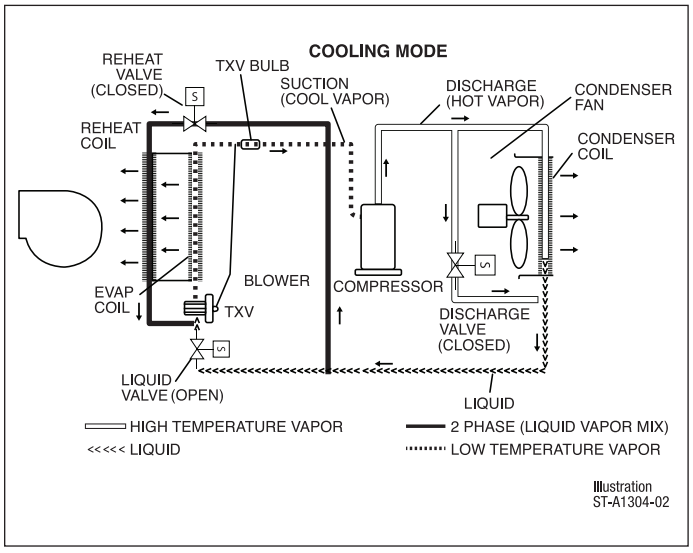



**Figure 1** shows the refrigerant path during the normal cooling mode. The liquid refrigerant leaves the TXV with the sudden pressure drop causing the liquid to expand to a vapor and absorbing the heat from the supply air going through the evaporator coil. The refrigerant vapor then travels to the compressor where it is elevated to a higher pressure and temperature. The superheated refrigerant vapor next carries the heat to the outside coil where the heat is then rejected and the refrigerant condenses into a subcooled liquid where the process repeats itself.

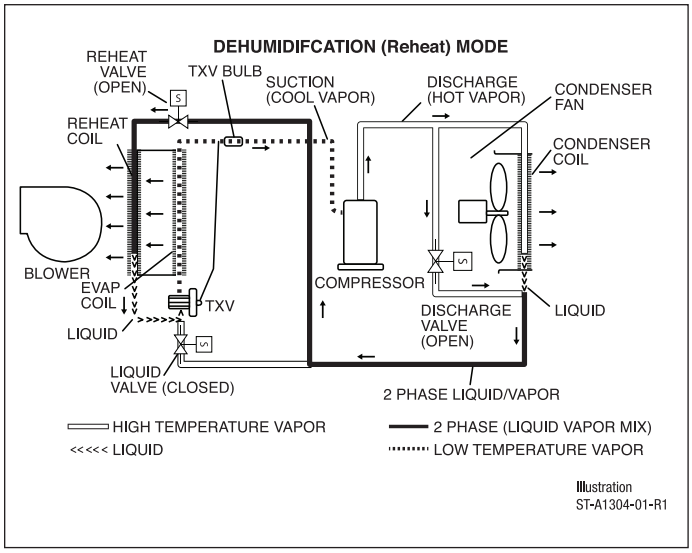



**Figure 2** shows the refrigerant path during the reheat mode. When the reheat cycle is energized by the RTU-C, the reheat solenoid valve, upstream of the reheat coil opens. The liquid solenoid valve ahead of the TXV, closes. The discharge solenoid valve, in the compressor discharge line, opens. The liquid refrigerant leaves the TXV with the sudden pressure drop causing the liquid to expand to a vapor and absorbing the heat from the supply air going through the evaporator coil. The refrigerant vapor then travels to the compressor where it is elevated to a higher pressure and temperature. The refrigerant next carries the heat to a parallel path between the outside condenser coil and a bypass circuit. Some of the heat is rejected outdoor. The ratio of heat rejected outdoors versus indoors is controlled by an outdoor fan motor controller (OFMC) that monitors the two-phase temperature and varies the fan speed. This 2-phase refrigerant vapor is then sent to the reheat coil. As the refrigerant travels through the reheat coil it condenses into a subcooled liquid where the process repeats itself.

| R | GE | C | Y | B | 036 | A | C | T | 10 | | 2 | A | A | *** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 23 | 4 | 5 | 6 | 789 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |

**1—Brand**
R = Rheem

**2, 3—Unit Type**
GE = Packaged Gas Electric

**4—Cabinet Type**
C = Small Commercial

**5—Refrigerant**
Y = R-454B

**6—Efficiency Level**
B = Standard Efficiency

**7, 8, 9—Capacity**
036 = 3 Ton
048 = 4 Ton
060 = 5 Ton
072 = 6 Ton

**10—Major series**
A = 1st Design

**11—Voltage**
J = 1 PH, 208-230 V, 60 Hz[1]
C = 3 PH, 208-230 V, 60 Hz
D = 3 PH, 460 V, 60 Hz
Y = 3 PH, 575 V, 60 Hz[2]

**12—Drive**
T = Direct Drive Standard Static Constant Torque
U = Direct Drive High Static Constant Torque[3]

**13, 14—Heat Capacity**
07 = 75,000 Btu/h
10 = 100,000 Btu/h
12 = 125,000 Btu/h

**15—Heat Configuration**
2 = 2 Stage
B = 2 Stage Stainless

**16—Control**
A = CoreCommand™ (Non-Communicating)
B = CoreCommand & Comfort Alert®
C = ClearControl™ (DDC)
D = ClearControl (DDC) & Comfort Alert

**17—Minor series**
A = 1st Design

**18, 19, 20—Option Code**
See next page

**NOTES:**

1. J voltage is not available on 6 ton models.
2. Y voltage is not available on HumidiDry® models.
3. U drive is not available with J voltage.

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# FACTORY-INSTALLED OPTION CODES FOR RGEC (3 TO 6 TON)

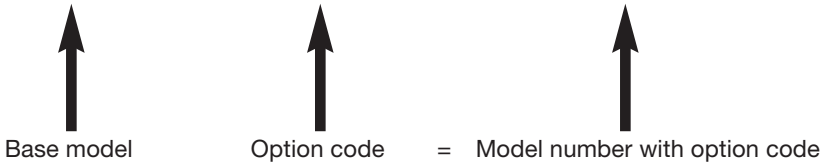
| 18 | | | | | 19 | | | | 20 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LV = Louver protection | | | | | LF = Low Ambient/Freeze Stat | | | | EC = Economizer | | | |
| RH[1] = HumidiDry/HGRH (Hot Gas Reheat) | | | | | NP = Non-powered Convenience Outlet | | | | SS = Supply and Return Smoke Detector | | | |
| HA = Hinged Access | | | | | DC = Disconnect Switch | | | | RS = Return Smoke Detector | | | |
| CC[2] = Coil Coating | | | | | | | | | | | | |
| Option code character highlighted below | | | | | | | | | | | | |
| **A** | None | | | | **A** | None | | | **0** | None | | |
| **B** | LV | | | | **B** | LF | | | **1** | EC | | |
| **C** | HA | | | | **C** | NP | | | **2** | RS | | |
| **D** | LV | HA | | | **D** | LF | NP | | **3** | EC | RS | |
| **E** | LV | CC | | | **E** | DC | | | **4** | SS | RS | |
| **F** | LV | HA | CC | | **F** | LF | DC | | **5** | EC | SS | RS |
| **N** | RH | | | | **H** | NP | DC | | | | | |
| **P** | LV | RH | | | **K** | LF | NP | DC | | | | |
| **Q** | RH | HA | | | | | | | | | | |
| **R** | LV | RH | CC | | | | | | | | | |
| **S** | LV | RH | HA | | | | | | | | | |
| **T** | LV | RH | HA | CC | | | | | | | | |

[1]RH Models with DDC Controls must include Low Ambient/Freeze Stat (LF)
[2]CC-requires LV (louver protection)

**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, “AAO” follows the model number.

- **Step 1:** In the table above, based on the desired features, choose option code character from highlighted options on the left side under the number 18. For example, the option code character “E” has Louver protection and Coil Coating.
- **Step 2:** In the table above, based on the desired features, choose option code character from highlighted options on the left side under the number 19. For example, the option code character “F” has Low Ambient / Freeze Stat and Disconnect switch.
- **Step 3:** In the table above, based on the desired features, choose option code character from highlighted options on the left side under the number 20. For example, the option code character “3” has Economizer and Return Smoke.
- The resulting option code from examples above is: “EF3”
- **Step 4:** Add your option code selection to the end of model number
  - Example: RGECYB036ACC152AA EF3 = RGECYB036ACC152AAEF3



To select an RGEC 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— | 230 V – 3 Phase – 60 Hz |
| Total Cooling Capacity— | 47,000 BTUH [13.8 kW] |
| Sensible Cooling Capacity— | 36,000 BTUH [10.6 kW] |
| Heating Capacity— | 75,000 BTUH [22 kW] |
| *Condenser Entering Air— | 95°F [35.0°C] DB |
| *Evaporator Mixed Air Entering— | 67°F [19.4°C] WB |
| | 78°F [25.6°C] DB |
| *Indoor Air Flow (vertical)— | 1600 CFM [755 L/s] |
| *External Static Pressure— | 0.6 in. WG [.15 kPa] |

**2. SELECT UNIT TO MEET COOLING REQUIREMENTS.**

Since total cooling is within range of a nominal 4-ton unit, use the cooling performance table at 95°F DB condenser inlet air. Interpolate between 1730 CFM [816 L/s] and 1400 CFM [660 L/s] to determine total and sensible capacity and Depression Ratio for inlet air at 1600CFM [755 L/s] indoor airflow (table basis)

Interpolation Formula:

$$MBH_1 + \left[ (CFM - CFM_1) \times \left( \frac{MBH_2 - MBH_1}{CFM_2 - CFM_1} \right) \right] = MBH$$

Total Cooling Capacity:

$$46{,}800 + \left[ (1{,}600 - 1{,}730) \times \left( \frac{45{,}200 - 46{,}800}{1{,}400 - 1{,}730} \right) \right] = 46{,}170 \text{ BTUH}$$

Total Cooling Capacity = 46,170 BTUH [13.5 kW]
Sensible Cooling Capacity = 33,7400 BTUH [9.9 kW]
DR = 0.2

When the entering dry bulb temperature (dbE) is not 80°F [26.7°C], the sensible capacity needs to be adjusted.
Note: total capacity is unaffected

Sensible Capacity Depression Formula:

$Cap_{sensible}$ + [1.10 x CFM x (1 – DR) x (dbE – 80)]

= 30,924 + [1.10 x 1,600 x (1 – 0.2) x (78 – 80)]
Sensible Cooling Capacity = 30,924 BTUH [9.1 kW]

**3. DETERMINE BLOWER SPEED AND BHP TO MEET SYSTEM DESIGN.**

Total ESP (external static pressure) per the spec of 0.6 in WG [.15 kPa] includes the system duct and grilles. Add from the table “Component Air Resistance,” 0.13 in. WG [0.04 kPa] for wet coil. Using the “Airflow Performance Table”, at the specified 1,600 CFM and 0.7 in. WG [0.17 kPa] ESP, determine blower wattage.

CFM = 1564
Watts = 440
Tap = 5

**4. CALCULATE INDOOR BLOWER BTUH HEAT EFFECT FROM MOTOR BHP IN STEP 3.**

Assuming an average of 85% motor efficiency, determine the amount of heat generated by the blower motor at the specified CFM and ESP by dividing the watts used by the motor efficiency and solving for the difference. Convert this value from watts to BTUH, multiplying by 3.41 BTUH/Watt

Watts = 440
Avg. Motor Efficiency = 85%

$$\text{Indoor Blower Motor Heat} = \left[ \left( \frac{\text{Watts}}{0.85} \right) - \text{Watts} \right] \times 3.41$$

= [(440/0.85)–440] x 3.41 = 77.6 BTUH [0.02 kW]

**5. CALCULATE THE NET COOLING CAPACITIES**

Net cooling capacities can be calculated by subtracting the motor heat from the gross cooling capacities.

Net Total Capacity = Gross Total Capacity – Indoor Blower Motor Heat

= 46,170 – 77 = 46,093 BTUH [13.5 kW]

Net Sensible Capacity = Gross Sensible Capacity – Indoor Blower Motor Heat

= 30,924 – 77 = 30,847 BTUH [9.0 kW]

**6. SELECT UNIT HEATING CAPACITY**

For Gas Heating, choose the gas heat capacity that closest matches the specified heat capacity requirements. In this selection, the 75,000 BTU input is selected.

**7. CHOOSE MODEL** RGEC048ZRACT07

**[ ] Designates Metric Conversions**

# NOM. SIZES 3–6 TONS [10.6–21.1 kW]

| Model RGECYB Series | 036ACT<br>036ADT<br>036AJT | 036ACU | 036ADU | 036AYT | 036AYU |
|---|---|---|---|---|---|
| **Cooling Performance[A]** | | | | | CONTINUED → |
| Cooling Capacity Btu/h [kW] | 36,000 [10.55] | 36,000 [10.55] | 36,000 [10.55] | 36,000 [10.55] | 36,000 [10.55] |
| EER2/SEER2[B] | 10.6/13.4 | 10.6/13.4 | 10.6/13.4 | 10.6/13.4 | 10.6/13.4 |
| Nominal CFM/AHRI Rated CFM [L/s] | 1200/1175 [566/555] | 1200/1175 [566/555] | 1200/1175 [566/555] | 1200/1175 [566/555] | 1200/1175 [566/555] |
| AHRI Net Cooling Capacity Btu/h [kW] | 34,200 [10.02] | 34,200 [10.02] | 34,200 [10.02] | 34,200 [10.02] | 34,200 [10.02] |
| Net Sensible Capacity Btu/h [kW] | 25,600 [7.5] | 25,600 [7.5] | 25,600 [7.5] | 25,600 [7.5] | 25,600 [7.5] |
| Net Latent Capacity Btu/h [kW] | 8,600 [2.52] | 8,600 [2.52] | 8,600 [2.52] | 8,600 [2.52] | 8,600 [2.52] |
| Net System Power kW | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 |
| **Compressor** | | | | | |
| No./Type | 1/Scroll | 1/Scroll | 1/Scroll | 1/Scroll | 1/Scroll |
| **Outdoor Sound Rating (dB)[C]** | 78 | 78 | 78 | 78 | 78 |
| **Outdoor Coil - Fin Type** | Louvered | Louvered | Louvered | Louvered | Louvered |
| Tube Type | MicroChannel | MicroChannel | MicroChannel | MicroChannel | MicroChannel |
| MicroChannel Depth in. [mm] | 0.71 [18] | 0.71 [18] | 0.71 [18] | 0.71 [18] | 0.71 [18] |
| Face Area sq. ft. [sq. m] | 16.46 [1.53] | 16.46 [1.53] | 16.46 [1.53] | 16.46 [1.53] | 16.46 [1.53] |
| Rows/FPI [FPcm] | 1/23 [9] | 1/23 [9] | 1/23 [9] | 1/23 [9] | 1/23 [9] |
| **Indoor Coil - Fin Type** | Louvered | Louvered | Louvered | Louvered | Louvered |
| Tube Type | MicroChannel | MicroChannel | MicroChannel | MicroChannel | MicroChannel |
| MicroChannel Depth in. [mm] | 1 [25.4] | 1 [25.4] | 1 [25.4] | 1 [25.4] | 1 [25.4] |
| Face Area sq. ft. [sq. m] | 7.48 [0.69] | 7.48 [0.69] | 7.48 [0.69] | 7.48 [0.69] | 7.48 [0.69] |
| Rows/FPI [FPcm] | 1 / 20 [8] | 1 / 20 [8] | 1 / 20 [8] | 1 / 20 [8] | 1 / 20 [8] |
| Refrigerant Control | TX Valves | TX Valves | TX Valves | TX Valves | TX Valves |
| 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] | 1/0.75 [19.05] |
| **Outdoor Fan - Type** | Propeller | Propeller | Propeller | Propeller | Propeller |
| No. Used/Diameter in. [mm] | 1/26 [660.4] | 1/26 [660.4] | 1/26 [660.4] | 1/26 [660.4] | 1/26 [660.4] |
| Drive Type/No. Speeds | Direct/1 | Direct/1 | Direct/1 | Direct/1 | Direct/1 |
| CFM [L/s] | 4250 [2006] | 4250 [2006] | 4250 [2006] | 4250 [2006] | 4250 [2006] |
| No. Motors/HP | 1 at 1/5 | 1 at 1/5 | 1 at 1/5 | 1 at 1/5 | 1 at 1/5 |
| Motor RPM | 850 | 850 | 850 | 850 | 850 |
| **Indoor Fan - Type** | FC Centrifugal | FC Centrifugal | FC Centrifugal | FC Centrifugal | FC Centrifugal |
| No. Used/Diameter in. [mm] | 1/11x11 [279x279] | 1/11x11 [279x279] | 1/11x11 [279x279] | 1/11x11 [279x279] | 1/11x11 [279x279] |
| Drive Type | Direct | Direct | Direct | Direct | Direct |
| No. Speeds | Multiple | Multiple | Multiple | Multiple | Multiple |
| No. Motors | 1 | 1 | 1 | 1 | 1 |
| Motor HP | 3/4 | 1-1/2 | 1 | 3/4 | 1-1/2 |
| Motor RPM | 1050 | 1050 | 1050 | 1050 | 1050 |
| Motor Frame Size | 48 | 48 | 48 | 48 | 48 |
| **Filter - Type** | Disposable | Disposable | Disposable | Disposable | Disposable |
| Furnished | Yes | 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] | (4)2x16x16 [51x406x406] |
| **Refrigerant Charge Oz. [g]** | 72 [2041] | 72 [2041] | 72 [2041] | 72 [2041] | 72 [2041] |
| **Weights** | | | | | |
| Net Weight lbs. [kg] | 556 [252] | 562 [255] | 562 [255] | 606 [275] | 612 [278] |
| Ship Weight lbs. [kg] | 594 [269] | 600 [272] | 600 [272] | 644 [292] | 650 [295] |

See Page 18 for Notes.

**[ ] Designates Metric Conversions**

## NOTES:

A. Cooling Performance is rated at 95°F ambient, 80°F entering dry bulb, 67°F entering wet bulb. Gross capacity does not include the effect of fan motor heat. AHRI capacity is net and includes the effect of fan motor heat. Units are suitable for operation to 20% of nominal cfm. Units are certified in accordance with the Unitary Air Conditioner Equipment certification program, which is based on AHRI Standard 210/240.

B. EER/EER2 and/or SEER2 are rated at AHRI conditions and in accordance with DOE test procedures.

C. Outdoor Sound Rating shown is tested in accordance with AHRI Standard 270.

D. Integrated Energy Efficiency Ratio (IEER) is rated in accordance with AHRI Standard 340/360.

# WEIGHTED SOUND POWER LEVEL (dBA)

| Unit Size – Series | Standard Rating (dBA) | TYPICAL OCTAVE BAND SPECTRUM (dBA without tone adjustment) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| RGECYB036 | 78.0 | 48.7 | 58.1 | 63.9 | 67.0 | 67.8 | 64.7 | 60.6 | 54.7 |
| RGECYB048 | 85.3 | 58.2 | 64.7 | 75.1 | 74.7 | 75.5 | 72.3 | 67.8 | 61.0 |
| RGECYB060 | 86.0 | 58.2 | 62.5 | 76.7 | 75.0 | 75.2 | 77.0 | 69.0 | 60.0 |
| RGECYB072 | 85.0 | 54.9 | 67.3 | 69.4 | 73.8 | 73.4 | 71.2 | 69.6 | 65.3 |

Outdoor Sound Rating shown is tested in accordance with AHRI Standard 270.

# RGECYB HEATING PERFORMANCE

| 208-230V & 575V | | | | | | |
|---|---|---|---|---|---|---|
| **Tonnage** | **3-Ton** | | **4-Ton** | | **5-Ton** | |
| Heating Input BTU/h [kW] (High-Fire / Low-Fire) | 75,000/52,500 [21.98/115.39] | 100,000/70,000 [29.31/20.52] | 75,000/52,500 [21.98/115.39] | 120,000/84,000 [35.17/24.62] | 75,000/52,500 [21.98/115.39] | 120,000/84,000 [35.17/24.62] |
| Heating Output BTU/h [kW] (High-Fire / Low-Fire) | 60,750/42,525 [17.80/12.46] | 81,000/56,700 [23.74/16.62] | 60,750/42,525 [17.80/12.46] | 97,200/68,040 [28.49/19.94] | 60,750/42,525 [17.80/12.46] | 97,200/68,040 [28.49/19.94] |
| High-Fire Rise Range °F [°C] | 25-55 [13.9-30.6] | 35-65 [19.4-36.1] | 25-55 [13.9-30.6] | 40-70 [22.2-38.9] | 25-55 [13.9-30.6] | 35-65 [22.2-38.9] |
| Low-Fire Rise Range °F [°C] | 20-50 [11.1-27.8] | 25-55 [13.9-30.6] | 20-50 [11.1-27.8] | 30-60 [16-33] | 20-50 [11.1-27.8] | 25-55 [13.9-30.6] |
| Main Limit Temp °F | 145 | 125 | 145 | 125 | 145 | 125 |
| Rollout Temp. °F | 250 | 250 | 250 | 250 | 250 | 250 |
| Rating ESP In. W.C. | 0.33 | 0.28 | 0.33 | 0.28 | 0.33 | 0.28 |
| Maximum ESP In. W.C. | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Max Outlet Air Temp °F [°C] | 180 [82.2] | 190 [87.8] | 180 [82.2] | 180 [82.2] | 180 [82.2] | 180 [82.2] |
| % AFUE | 81.0 | 81.0 | 81.0 | 81.0 | 81.0 | 81.0 |
| % Steady State Efficiency | 81.0 | 81.0 | 81.0 | 81.0 | 81.0 | 81.0 |
| **460V** | | | | | | |
| **Tonnage** | **3-Ton** | | **4-Ton** | | **5-Ton** | |
| Heating Input BTU/h [kW] (High-Fire / Low-Fire) | 75,000/52,500 [21.98/115.39] | 100,000/70,000 [29.31/20.52] | 75,000/52,500 [21.98/115.39] | 120,000/84,000 [35.17/24.62] | 75,000/52,500 [21.98/115.39] | 120,000/84,000 [35.17/24.62] |
| Heating Output BTU/h [kW] (High-Fire / Low-Fire) | 60,750/42,525 [17.80/12.46] | 81,000/56,700 [23.74/16.62] | 60,750/42,525 [17.80/12.46] | 97,200/68,040 [28.49/19.94] | 60,750/42,525 [17.80/12.46] | 97,200/68,040 [28.49/19.94] |
| High-Fire Rise Range °F [°C] | 30-60 [16.7-33.3] | 35-65 [19.4-36.1] | 30-60 [16.7-33.3] | 40-70 [22.2-38.9] | 30-60 [16.7-33.3] | 35-65 [19.4-36.1] |
| Low-Fire Rise Range °F [°C] | 25-55 [13.9-30.6] | 30-60 [16.7-33.3] | 20-50 [11.1-27.8] | 35-65 [19.4-36.1] | 20-50 [11.1-27.8] | 30-60 [16.7-33.3] |
| Main Limit Temp °F | 145 | 125 | 145 | 125 | 145 | 125 |
| Rollout Temp. °F | 250 | 250 | 250 | 250 | 250 | 250 |
| Rating ESP In. W.C. | 0.33 | 0.28 | 0.33 | 0.28 | 0.33 | 0.28 |
| Maximum ESP In. W.C. | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Max Outlet Air Temp °F [°C] | 180 [82.2] | 190 [87.8] | 180 [82.2] | 180 [82.2] | 180 [82.2] | 180 [82.2] |
| % Steady State Efficiency | 81.0 | 81.0 | 81.0 | 81.0 | 81.0 | 81.0 |

Gas Valve Connection Pipe Size In. [mm] .50 [12.7]

**[ ] Designates Metric Conversions**

## ELECTRICAL DATA – RGECYB SERIES

| | | 036ACT07<br>036ACT10 | 036ACU07<br>036ACU10 | 036ADT07<br>036ADT10 | 036ADU07<br>036ADU10 | 036AJT07<br>036AJT10 | 036AYT07<br>036AYT10 | 036AYU07<br>036AYU10 |
|---|---|---|---|---|---|---|---|---|
| **Unit Information** | Unit Operating Voltage Range | 187-253 | 187-253 | 414-506 | 414-506 | 187-253 | 518-633 | 518-633 |
| | Volts | 208/230 | 208/230 | 460 | 460 | 208/230 | 575 | 575 |
| | Phase | 3 | 3 | 3 | 3 | 1 | 3 | 3 |
| | Hz | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| | Minimum Circuit Ampacity | 24 | 29 | 10 | 11 | 25 | 9 | 11 |
| | Minimum Overcurrent Protection Device Size | 30 | 35 | 15 | 15 | 30 | 15 | 15 |
| | Maximum Overcurrent Protection Device Size | 35 | 40 | 15 | 15 | 35 | 15 | 15 |
| **Compressor Motor** | No. | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Volts | 208/230 | 208/230 | 460 | 460 | 208/230 | 575 | 575 |
| | Phase | 3 | 3 | 3 | 3 | 1 | 3 | 3 |
| | Amps (RLA), Comp.1 | 12.8 | 12.8 | 5.1 | 5.1 | 13.5 | 4.5 | 4.5 |
| | Amps (LRA), Comp. 1 | 97.5 | 97.5 | 44.3 | 44.3 | 82.5 | 27.1 | 27.1 |
| **Condenser Motor** | No. | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Volts | 208/230 | 208/230 | 460 | 460 | 208/230 | 575 | 575 |
| | Phase | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | HP | 1/5 | 1/5 | 1/5 | 1/5 | 1/5 | 1/5 | 1/5 |
| | Amps (FLA, each) | 1 | 1 | 0.8 | 0.8 | 1 | 0.55 | 0.55 |
| | Amps (LRA, each) | 2.3 | 2.3 | 1.4 | 1.4 | 2.3 | 1.1 | 1.1 |
| **Evaporator Fan** | No. | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Volts | 208/230 | 208/230 | 460 | 460 | 208/230 | 208/230 | 208/230 |
| | Phase | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | HP | 3/4 | 1-1/2 | 3/4 | 1 | 3/4 | 3/4 | 1-1/2 |
| | Amps (FLA, each) | 6 | 11.5 | 2.7 | 3.5 | 6 | 2.4 | 4.6 |
| | Amps (LRA, each) | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

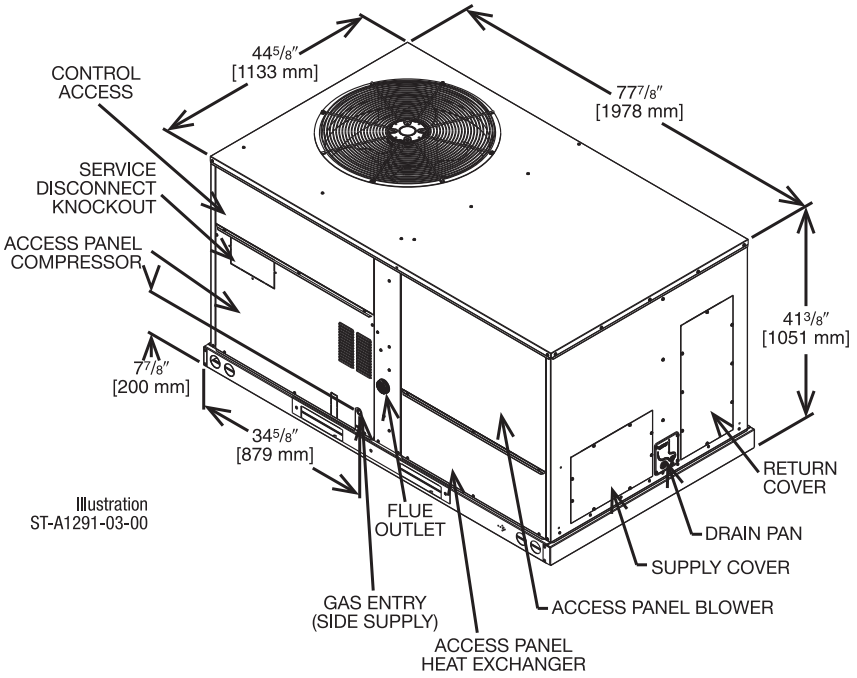



Illustration ST-A1291-03-00

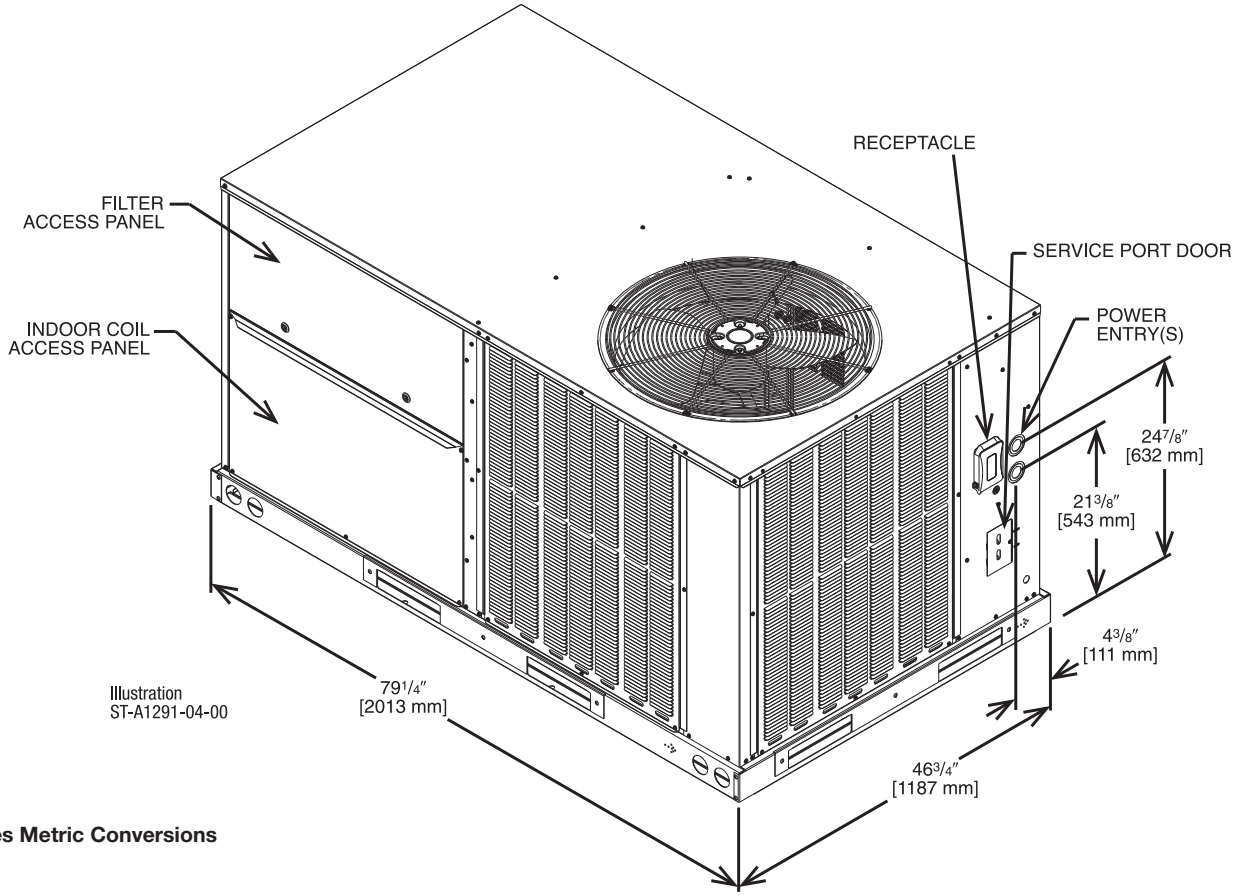
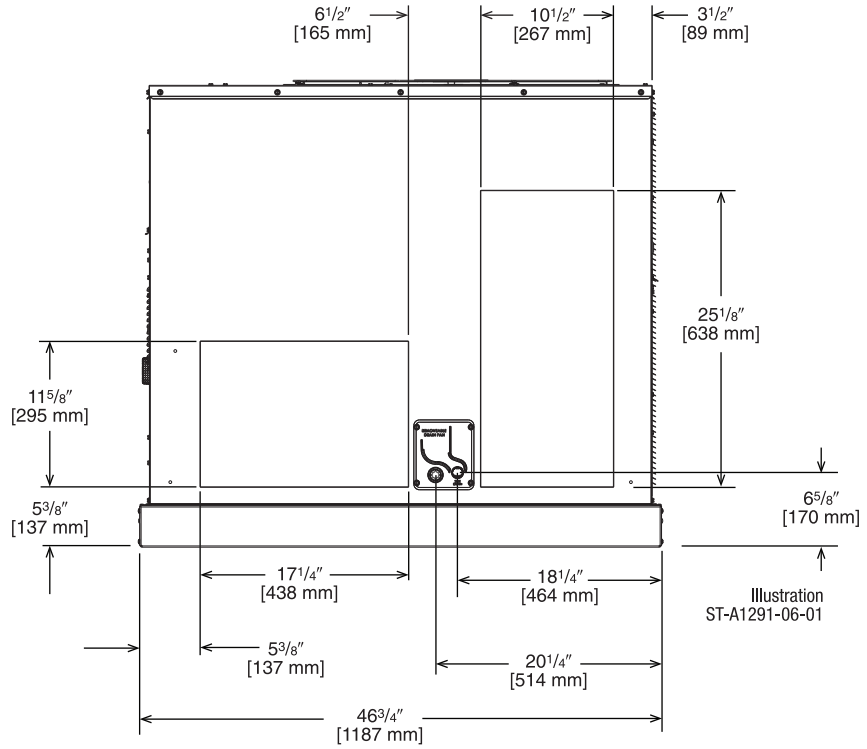


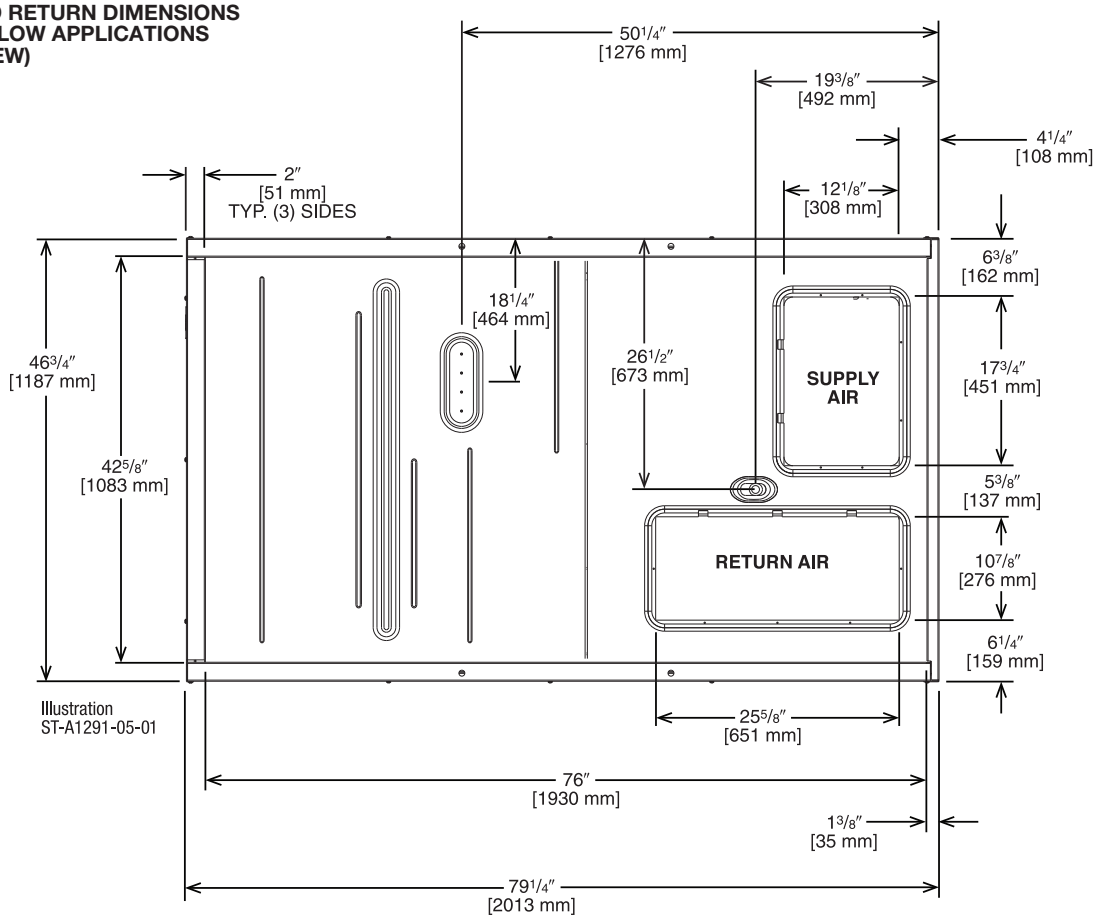

Illustration ST-A1291-04-00

**[ ] Designates Metric Conversions**

**SUPPLY AND RETURN DIMENSIONS FOR HORIZONTAL APPLICATIONS (SIDE VIEW)**




**SUPPLY AND RETURN DIMENSIONS FOR DOWNFLOW APPLICATIONS (BOTTOM VIEW)**




**[ ] Designates Metric Conversions**

# WEIGHTS

| Capacity Tons [kW] | Corner Weights by Percentage | | | |
|---|---|---|---|---|
| | A | B | C | D |
| 3.0-6.0 [10.6-21.1] | 21% | 40% | 12% | 27% |

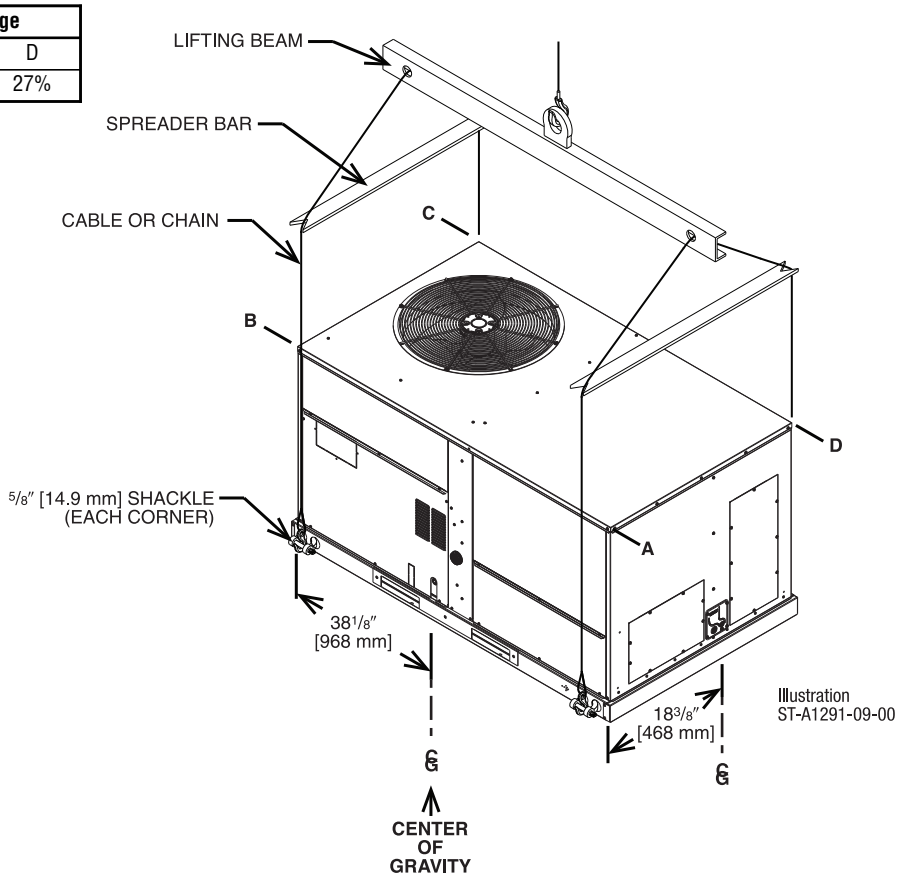
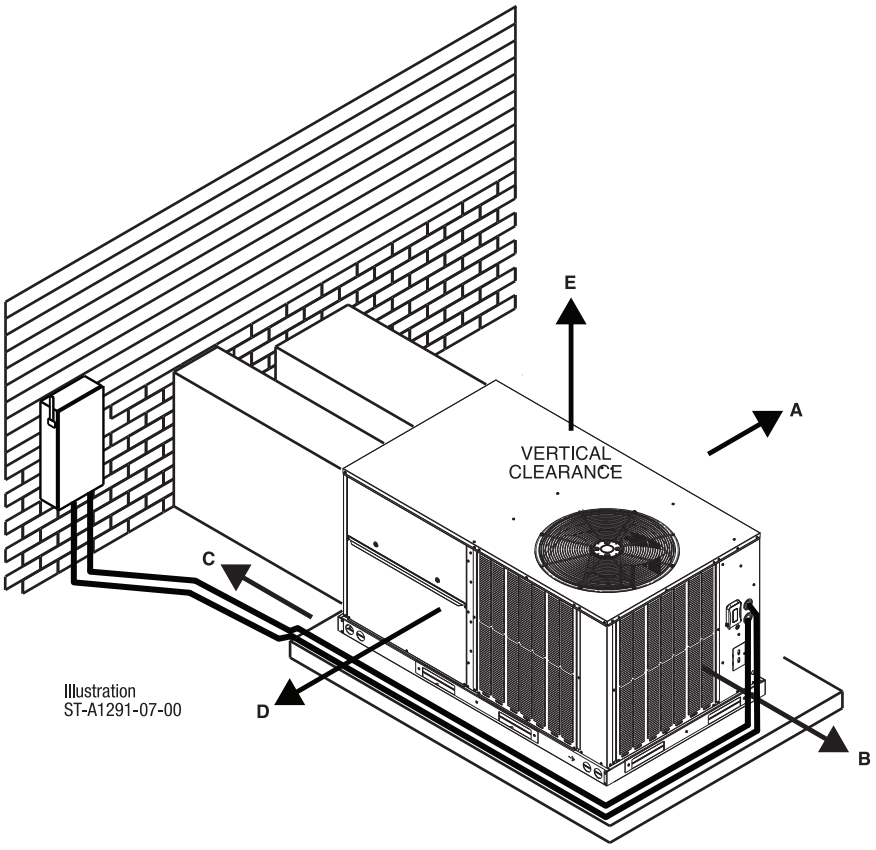



Illustration
ST-A1291-09-00




Illustration
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**CLEARANCES**

THE FOLLOWING MINIMUM CLEARANCES MUST BE OBSERVED FOR PROPER UNIT PERFORMANCE AND SERVICEABILITY.

| RECOMMENDED CLEARANCE In. [mm] | LOCATION |
|---|---|
| 48 [1219] | A - FRONT |
| 24 [609] | B - CONDENSER END |
| 48 [1219] ① | C - DUCT END |
| 24 [609] ② | *D - FILTER SIDE |
| 60 [1524] | E - ABOVE |

① 18" [457 mm] MINIMUM IF DRAINPAN WILL NOT BE REMOVED.

② 48" [1219 MM] MINIMUM IF ECONOMIZER IS INSTALLED.

**[ ] Designates Metric Conversions**

## Guide Specifications RGEC— 036–072

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## GAS HEAT PACKAGED ROOFTOP

**HVAC Guide Specifications**

**Size Range: 3 to 6 Nominal Tons**

1.00 General

A. 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.

B. 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.

C. Unit shall use environmentally safe, R-454B refrigerant.

D. Unit shall be installed in accordance with the manufacturer’s instructions.

E. Unit must be selected and installed in compliance with local, state, and federal codes.

1.01 Quality Assurance

A. Unit meets ASHRAE 90.1 2022 minimum efficiency requirements.

B. Unit shall be rated in accordance with AHRI Standards 210/240 or 340/360 and 10 CFR appendix M1 to subpart B or part 430.

C. Unit shall be designed to conform to ASHRAE 15.

D. Unit shall be UL-tested and certified in accordance with Standards and UL-listed and certified under Canadian standards as a total package for safety requirements.

E. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.

F. Unit casing shall be capable of withstanding 1000-hour salt spray exposure per ASTM B117 (scribed specimen).

G. Roof curb shall be designed to conform to NRCA Standards.

H. 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.

I. Unit shall be designed in accordance with UL Standard 60335-2-40 4th Edition. including tested to withstand rain.

1.02 Manufacturer Qualifications

A. Unit shall be designed in accordance with ISO 9001:2015, and shall be manufactured in a facility registered by ISO 9001:2015.

1.03 Installer Qualifications

A. The installer shall be trained to install and service equipment with A2L refrigerants.

1.04 Delivery, Storage, and Handling

A. Unit shall be stored and handled per manufacturer’s recommendations.

B. Lifted by crane requires either shipping top panel or spreader bars.

C. Unit shall only be stored or positioned in the upright position.

1.05 Unit Cabinet

A. Unit cabinet shall be constructed of galvanized steel.

B. Unit cabinet exterior paint shall be: pre-painted steel.

C. Evaporator fan compartment interior cabinet insulation shall conform to AHRI Standards 210 or 360 minimum exterior sweat criteria. Interior surfaces shall be insulated with a minimum 1/2-in. thick, 1.6 lb density, flexible fiberglass insulation, foil faced on the air side. Aluminum foil-faced fiberglass insulation shall be used in the gas heat compartment.

D. Base of unit shall have a location for thru-the-base gas and electrical connections standard.

E. Base Rail

i. Unit shall have base rails on a minimum of 4 sides.

ii. Holes shall be provided in the base rails for rigging shackles to facilitate maneuvering and overhead rigging.

iii. Holes shall be provided in the base rail for moving the rooftop for fork truck.

iv. Base rail shall be a minimum of 14 gauge thickness.

F. Condensate pan and connections:

i. Shall be a sloped condensate drain pan made of a non-corrosive material and be removable for cleaning.

ii. Shall comply with ASHRAE Standard 62.

iii. Shall use a 3/4" NPT drain connection, possible either through the bottom or side of the drain pan. Connection shall be made per manufacturer’s recommendations.

iv. Shall be able to be easily removed.

G. Top panel:
   i. Shall be a single piece top panel over indoor section.
H. Gas Connections
   A. All gas piping connecting to unit gas valve shall enter the unit cabinet at a single location on side of unit (horizontal plane).
   B. Thru-the-base-capability
      i. Standard unit shall have a thru-the-base gas-line locations using a continuous raised, flange around opening in the basepan.
      ii. No basepan penetration, other than those authorized by the manufacturer, is permitted.
I. Electrical Connections
   A. All unit power wiring shall enter unit cabinet a a single, factory-prepared, continuous raised flange opening in the basepan.
   B. Thru-the-base capability
      i. Standard unit shall have a thru-the-base electrical location(s) using a raised, continuous raised flange opening in the basepan.
      ii. No basepan penetration, other than those authorized by the manufacturer, is permitted.
J. Component access panels (standard)
   A. Cabinet panels shall be easily opened for servicing.
   B. Panels covering control box, indoor fan, indoor fan motor, gas components (where applicable), and filters shall have hinges with 1/4 turn fasteners on units with factory-installed hinged option.
   C. 1/4 turn fasteners shall be permanently attached.

1.06 Operating Characteristics

A. Unit shall be capable of starting and running at 115°F (46°C) ambient outdoor temperature, meeting maximum load criteria of AHRI Standard 210/240 or 340/360 at ± 10% voltage.
B. Compressor with standard controls shall be capable of operation down to 50°F (10°C), ambient outdoor temperatures. Low ambient accessory kit is necessary if mechanically cooling at ambient temperatures to 0°F (-17.7°C).
C. Unit shall discharge supply air vertically or horizontally as shown on contract drawings.
D. Unit shall be factory configured for vertical supply & return configurations.
E. Unit shall be field convertible from vertical to horizontal configuration.

1.07 Electrical Requirements

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

1.08 Evaporator fan compartment:

A. Interior cabinet surfaces shall be insulated with a minimum 1/2-in. thick, minimum 1.6 LB density, flexible fiberglass insulation bonded with foil face on the air side.
B. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.
C. Insulation shall also be mechanically fastened with welded pin and retainer washer.

1.09 Thermostats

A. Thermostat must
   i. Energize both “W” and “G” when calling for heat.
   ii. Have capability to energize 1 stage of cooling, and at least 1 stage of heating.
   iii. Include capability for occupancy scheduling.

1.10 Electronic Control System for HVAC

A. Shall be complete with self-contained low-voltage control circuit protected by a fuse on the 24-V transformer side.
B. Shall utilize color-coded wiring.
C. Unit shall include a minimum of one 8-pin screw terminal connection board for connection of control wiring.
D. The heat exchanger shall be controlled by the Core Command microprocessor. See heat exchanger section of this specification.

1.10.01 Safeties:

A. Compressor over-temperature, over current.
B. Low-pressure switch.
   i. Units shall have low pressure, loss of charge automatic reset device that will shut off compressor when tripped.
C. High-pressure switch.
   i. Unit shall be equipped with high pressure switch device that will shut off compressor when tripped.
D. Automatic reset, motor thermal overload protector.

E. The unit must be permanently grounded.
F. Components are not compatible between different refrigerants. Do not use R-410A service equipment or components on R-454B equipment. System or part failure could occur.
G. Heating section shall be provided with the following minimum protections:
    i. High-temperature limit switches.
    ii. Induced draft motor pressure switch.
    iii. Flame rollout switch.
    iv. Flame proving controls.

1.11 Standard Filter Section

A. Shall consist of factory-installed, low velocity, throwaway 2-in. thick fiberglass filters of commercially available sizes.
B. Unit will accept both 2-in. and 4-in. filters.
C. Filter face velocity shall not exceed 365 fpm at nominal airflows.
D. Filters shall be accessible through an access panel with “no-tool” removal as described in the unit cabinet section of the specification.
E. Filters access is specified in the unit cabinet section of this specification.
F. Filters shall be held in place by metal rods, facilitating easy removal and installation.

1.12 Coils

A. Standard Aluminum/MicroChannel Coils:
    i. Standard evaporator and condenser coils shall be aluminum.
    ii. Evaporator and condenser coils shall be leak tested to 150 psig, pressure tested to 400 psig, and qualified to burst test at 2,200 psi.

1.13 Refrigerant Components

A. Refrigerant circuit shall include the following control, safety, and maintenance features:
    i. TXV metering system shall prevent mal-distribution of two-phase refrigerant.
    ii. Refrigerant filter drier.
    iii. Service gauge connections on suction and discharge lines.
    iv. External pressure gauge ports access shall be located in front exterior of cabinet.
B. Compressors
    i. Unit shall use one fully hermetic scroll compressor.
    ii. 3-5 ton YB units include one single-stage compressor.
    iii. 6 ton YB units include one two-stage compressor.
    iv. Compressor motors shall be cooled by refrigerant gas passing through motor windings.
    v. Compressors shall be internally protected from high discharge temperature conditions.
    vi. Compressors shall be protected from an over-temperature and over-amperage conditions by an internal, motor overload device.
    vii. Compressor shall be factory mounted on rubber grommets.
    viii. Compressor motors shall have internal line break thermal and current overload protection.
    ix. Crankcase heaters shall not be required for normal operating range.
    x. Compressor shall have molded electrical plug.

1.14 Evaporator Fan and Motor

A. Evaporator fan motor:
    i. Shall have permanently lubricated bearings.
    ii. Shall have inherent automatic-reset thermal overload protection.
B. Direct Drive Evaporator Fan:
    i. Direct drive ECM technology with (5) dedicated speed selections as follows: fan, low, high, AC low static, AC high static.
    ii. Blower fan shall be double-inlet type with forward-curved blades.
    iii. Shall be constructed from steel with a corrosion resistant finish and dynamically balanced.

1.15 Condenser Fans and Motors

A. Condenser Fan Motors:
    i. Shall be a totally enclosed motor.
    ii. Shall use permanently lubricated bearings.
    iii. Shall have inherent thermal overload protection with an automatic reset feature.
    iv. Shall use a shaft-down design. Shaft-up designs including those with “rain-slinger devices” shall not be allowed.

B. Condenser Fans shall:
   i. Shall be a direct-driven propeller type fan
   ii. Shall have blades riveted to corrosion-resistant steel spiders and shall be dynamically balanced.

1.16 Gas Heat Compartment:

A. Aluminum foil-faced fiberglass insulation shall be used.
B. Insulation and adhesives shall meet NFPA 90A requirements for flame spread and smoke generation.
C. Insulation shall also be mechanically fastened with welded pin and retainer washer.

1.17 Gas Heat

A. Heat exchanger shall be an induced draft design. Positive pressure heat exchanger designs shall not be allowed.
B. Shall incorporate a direct-spark ignition system and redundant main gas valve.
C. Heat exchanger design shall allow combustion process condensate to gravity drain; maintenance to drain the gas heat exchanger shall not be required.
D. Gas supply pressure at the inlet to the rooftop unit gas valve must match that required by the manufacturer.
E. The heat exchanger shall be controlled by the CoreCommand microprocessor.
   i. The CoreCommand board shall notify users of fault using two 7 segment displays.
F. Standard Heat Exchanger construction
   i. Heat exchanger shall be of the tubular-section type constructed of a minimum of 20-gauge steel coated with a nominal 1.2 mil aluminum-silicone alloy for corrosion resistance.
   ii. Burners shall be of the in-shot type constructed of aluminum-coated steel.
   iii. Burners shall incorporate orifice for rated heat output up to 2,000 ft. (610m) elevation with a gas heating valve of 1050. Alternate orifices may be required depending on local gas heating valves and elevations.
   iv. Each heat exchanger tube shall contain restrictions similar to dimples for increased heating effectiveness.
G. Optional Stainless Steel Heat Exchanger construction
   i. Use energy saving, direct-spark ignition system.
   ii. Use a redundant main gas valve.
   iii. Burners shall be of the in-shot type constructed of aluminum-coated steel.
   iv. All gas piping shall enter the unit cabinet at a single location on side of unit (horizontal plane).
   v. The optional stainless steel heat exchanger shall be of the tubular-section type, constructed of a minimum of 20-gauge type 409 stainless steel.
   vi. Type 409 stainless steel shall be used in heat exchanger tubes.
H. Induced draft combustion motor and blower
   i. Shall be a direct-drive, single inlet, forward-curved centrifugal type.
   ii. Shall be made from steel with a corrosion-resistant finish.
   iii. Shall be permanently lubricated sealed bearings.
   iv. Shall have inherent thermal overload protection.
   v. Shall have an automatic reset feature.

1.18 Special Features

A. Integrated Economizers:
   i. Integrated, parallel modulating blade design type capable of simultaneous economizer and compressor operation.
   ii. Independent modules for vertical or horizontal return configurations shall be available. Vertical return modules shall be available as a factory-installed option.
   iii. Damper blades shall be galvanized steel. Plastic or composite blades on intake or return shall not be acceptable.
   iv. Shall include all hardware and controls to provide free cooling with outdoor air when temperature and/or humidity are below setpoints.
   v. Shall be equipped with driven dampers for both the outdoor ventilation air and the return air for positive air stream control.
   vi. Shall be equipped with low-leakage dampers, not to exceed 2% leakage at 1 in. wg pressure differential.
   vii. Shall be capable of introducing up to 100% outdoor air.
   viii. Shall be equipped with a barometric relief damper capable of relieving up to 100% return air.
   ix. Shall be designed to close damper(s) during loss-of-power situations with spring return built into motor.
   x. Enthalpy sensor shall be provided as standard. Outdoor air sensor set point shall be adjustable and shall range from 40 to 100°F / 4 to 38°C. Additional sensor options shall be available as accessories.

xi. 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%.
xii. 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 set point.
xiii. Dampers shall be completely closed when the unit is in the unoccupied mode.
xiv. 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.
xv. Economizer controller shall provide indications when in free cooling mode, in the DCV mode, or the exhaust fan contact is closed.
xvi. Economizer wire harness will have provision for smoke detector.

B. Manual damper
   i. 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.
C. Liquid Propane (LP) Conversion Kit (sold separately)
   i. Kit shall contain all the necessary hardware and instructions to convert a standard natural gas unit for use with liquefied propane, up to 2000 ft (610m) elevation.
D. Condenser Coil Hail Guard Assembly
   i. Shall protect against damage from hail.
   ii. Shall be louvered style.
D. Unit-Mounted, Non-Fused Disconnect Switch:
   i. Switch shall be factory-installed, internally mounted.
   ii. National Electric Code (NEC) and UL approved non-fused switch shall provide unit power shutoff.
   iii. Shall be accessible from outside the unit.
   iv. Shall provide local shutdown and lockout capability.
E. Convenience Outlet:
   i. Non-Powered convenience outlet.
   ii. Outlet shall be powered from a separate 115-120v power source.
   iii. A transformer shall not be included.
   iv. Outlet shall be field-installed and internally mounted with easily accessible 115-v female receptacle.
   v. Outlet shall include 15 amp GFI receptacle with independent fuse protection.
   vi. Outlet shall be accessible from outside the unit.
F. Flue
   i. Flue Discharge shall direct unit exhaust horizontally and have the capability of being directed vertically.
G. Propeller Power Exhaust:
   i. Power exhaust shall be used in conjunction with an integrated economizer.
   ii. Independent modules for vertical or horizontal return configurations shall be available.
   iii. Horizontal power exhaust is shall be mounted in return ductwork.
   iv. 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.
G. Roof Curbs (Vertical):
   i. Formed galvanized steel with wood nailer strip and shall be capable of supporting entire unit weight.
   ii. Permits installation and securing of ductwork to curb prior to mounting unit on the curb.
H. Return Air Enthalpy Sensor:
   i. The return air enthalpy sensor shall be used in conjunction with an outdoor air enthalpy sensor to provide differential enthalpy control.
   I. Indoor Air Quality (CO2) Sensor:
   i. Shall be able to provide demand ventilation indoor air quality (IAQ) control.
   ii. The IAQ sensor shall be available in duct mount, wall mount, or wall mount with LED display. The set point shall have adjustment capability.
J. Smoke detectors:
   i. Shall be a Four-Wire Controller and Detector.
   ii. Shall be environmental compensated with differential sensing for reliable, stable, and drift-free sensitivity.
   iii. Shall use magnet-activated test/reset sensor switches.
   iv. Shall have tool-less connection terminal access.

v. Shall have a recessed momentary switch for testing and resetting the detector.
vi. Controller shall include:
    a. One set of normally open alarm initiation contacts for connection to an initiating device circuit on a fire alarm control panel
    b. Two Form-C auxiliary alarm relays for interface with rooftop unit or other equipment.
    c. One Form-C supervision (trouble) relay to control the operation of the Trouble LED on a remote test/reset station.
    d. Capable of direct connection to two individual detector modules.
    e. Can be wired to up to 14 other duct smoke detectors for multiple fan shutdown applications.

K. Barometric relief
    i. Shall include damper, seals, hardware, and hoods to relieve excess building pressure.
    ii. Damper shall gravity-close upon shutdown.

L. Time Guard
    i. Shall prevent compressor short cycling by providing a 5-minute delay (±2 minutes) before restarting a compressor after shutdown for any reason.
    ii. One device shall be required per compressor.