INSTALLATION INSTRUCTIONS

Package Air Conditioners Featuring Industry Standard R-410A Refrigerant

R-410A

RLPN-C 14 SEER (3-5 TONS) SERIES
RLQN-C 15 SEER (3-5 TONS) SERIES



ENERGY STAR

(14 SEER ONLY)

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

RECOGNIZE THIS SYMBOL AS AN INDICATION OF IMPORTANT SAFETY INFORMATION!

⚠ WARNING

THESE INSTRUCTIONS ARE INTENDED AS AN AID TO QUALIFIED, LICENSED SERVICE PERSONNEL FOR PROPER INSTALLATION, ADJUSTMENT AND OPERATION OF THIS UNIT. READ THESE INSTRUCTIONS THOROUGHLY BEFORE ATTEMPTING INSTALLATION OR OPERATION. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN IMPROPER INSTALLATION, ADJUSTMENT, SERVICE OR MAINTENANCE POSSIBLY RESULTING IN FIRE, ELECTRICAL SHOCK, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

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Accredited by the RvA
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ISO 9001:2008
Certificate Number: 30164

DO NOT DESTROY THIS MANUAL
PLEASE READ CAREFULLY AND KEEP IN A SAFE PLACE FOR FUTURE REFERENCE BY A SERVICEMAN

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Recognize this symbol as an indication of Important Safety Information!

⚠ WARNING

PROPOSITION 65: THIS APPLIANCE CONTAINS FIBERGLASS INSULATION. RESPIRABLE PARTICLES OF FIBERGLASS ARE KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER..

⚠ WARNING

THE MANUFACTURER'S WARRANTY DOES NOT COVER ANY DAMAGE OR DEFECT TO THE AIR CONDITIONER CAUSED BY THE ATTACHMENT OR USE OF ANY COMPONENTS, ACCESSORIES OR DEVICES (OTHER THAN THOSE AUTHORIZED BY THE MANUFACTURER) INTO, ONTO OR IN CONJUNCTION WITH THE AIR CONDITIONER. YOU SHOULD BE AWARE THAT THE USE OF UNAUTHORIZED COMPONENTS, ACCESSORIES OR DEVICES MAY ADVERSELY AFFECT THE OPERATION OF THE AIR CONDITIONER AND MAY ALSO ENDANGER LIFE AND PROPERTY. THE MANUFACTURER DISCLAIMS ANY RESPONSIBILITY FOR SUCH LOSS OR INJURY RESULTING FROM THE USE OF SUCH UNAUTHORIZED COMPONENTS, ACCESSORIES OR DEVICES.

II. INTRODUCTION

This booklet contains the installation and operating instructions for your package air conditioner. There are a few precautions that should be taken to derive maximum satisfaction from it. Improper installation can result in unsatisfactory operation or dangerous conditions.

Read this booklet and any instructions packaged with separate equipment required to make up the system prior to installation. Give this booklet to the owner and explain its provisions. The owner should retain this booklet for future reference.

III. CHECKING PRODUCT RECEIVED

Upon receiving the unit, inspect it for any damage from shipment. Claims for damage, either shipping or concealed, should be filed immediately with the shipping company. Check the unit model number, electrical characteristics, and accessories to determine if they are correct.

IV. SPECIFICATIONS

A. GENERAL

The Packaged Air Conditioner is available without heat or with 6, 10, 12, 15, 20 or 24 kW electric heat. Cooling capacities of 3, 4 and 5 nominal tons of cooling are available. Units are convertible from end supply and return to bottom supply and return by relocation of supply and return air access panels. See cover installation detail.

The units are weatherized for mounting outside of the building.

The information on the rating plate is in compliance with the FTC and DOE rating for single phase units. The following information is for three phase units which **are not** covered under the DOE certification program.

1. The efficiency rating of this unit is a product thermal efficiency rating determined under continuous operating conditions independent of any installed system.

B. MAJOR COMPONENTS

The unit includes a hermetically-sealed refrigerating system (consisting of a compressor, condenser coil, evaporator coil with thermal expansion valve), a circulation air blower, a condenser fan, and all necessary internal electrical wiring. The cooling system of these units is factory-evacuated, charged and performance tested. Refrigerant amount and type are indicated on rating plate.

C. R-410A REFRIGERANT

All units are factory charged with R-410A refrigerant.

1. Specification of R-410A:

Application: **R-410A is not a drop-in replacement for R-22;** equipment designs must accommodate its higher pressures. It cannot be retrofitted into R-22 units.

Pressure: The pressure of R-410A is approximately 60% (1.6 times) greater than R-22. Recovery and recycle equipment, pumps, hoses and the like need to have design pressure ratings appropriate for R-410A. *Manifold sets need to range up to 800 psig high-side and 250 psig low-side with a 550 psig low-side retard. Hoses need to have a service pressure rating of 800 psig. Recovery cylinders need to have a 400 psig service pressure rating.* DOT 4BA400 or DOT BW400.

Combustibility: At pressures above 1 atmosphere, mixture of R-410A and air can become combustible. **R-410A and air should never be mixed in tanks or supply lines, or be allowed to accumulate in storage tanks. Leak checking should never be done with a mixture of R-410A and air.** Leak checking can be performed safely with nitrogen or a mixture of R-410A and nitrogen.

2. Quick Reference Guide For R-410A

- R-410A refrigerant operates at approximately 60% higher pressure (1.6 times) than R-22. Ensure that servicing equipment is designed to operate with R-410A.
- R-410A refrigerant cylinders are pink.
- R-410A, as with other HFC's is only compatible with POE oils.
- Vacuum pumps will not remove moisture from POE oil.

- R-410A systems are to be charged with liquid refrigerants. Prior to March 1999, R-410A refrigerant cylinders had a dip tube. These cylinders should be kept upright for equipment charging. Post March 1999 cylinders do not have a dip tube and should be inverted to ensure liquid charging of the equipment.
- Do not install a suction line filter drier in the liquid line.
- A liquid line filter drier is standard on every unit.
- Desiccant (drying agent) must be compatible for POE oils and R-410A.

3. Evaporator Coil / TXV

The thermostatic expansion valve is specifically designed to operate with R-410A. **DO NOT use an R-22 TXV. The existing evaporator must be replaced with the factory specified TXV evaporator specifically designed for R-410A.**

4. Tools Required For Installing & Servicing R-410A Models

Manifold Sets:
-Up to 800 PSIG High side
-Up to 250 PSIG Low Side
-550 PSIG Low Side Retard

Manifold Hoses:
-Service Pressure Rating of 800 PSIG

Recovery Cylinders:
-400 PSIG Pressure Rating
-Dept. of Transportation 4BA400 or BW400

⚠ CAUTION

R-410A systems operate at higher pressures than R-22 systems. Do not use R-22 service equipment or components on R-410A equipment.

V. EQUIPMENT PROTECTION FROM THE ENVIRONMENT

The metal parts of this unit may be subject to rust or deterioration in adverse environmental conditions. This oxidation could shorten the equipment's useful life. Salt spray, fog or mist in seacoast areas, sulphur or chlorine from lawn watering systems, and various chemical contaminants from industries such as paper mills and petroleum refineries are especially corrosive.

If the unit is to be installed in an area where contaminants are likely to be a problem, special attention should be given to the equipment location and exposure.

1. Avoid having lawn sprinkler heads spray direction on the unit cabinet.
2. In coastal areas, locate the unit on the side of the building away from the waterfront.
3. Shielding provided by a fence or shrubs may give some protection.

Regular maintenance will reduce the buildup of contaminents and help to protect the unit's finish.

⚠ WARNING

DISCONNECT ALL POWER TO THE UNIT BEFORE STARTING MAINTENANCE. FAILURE TO DO SO CAN RESULT IN SEVERE ELECTRICAL SHOCK OR DEATH.

1. Frequent washing of the cabinet, fan blade and coil with fresh water will remove most of the salt or other contaminants that build up on the unit.
2. Regular cleaning and waxing of the cabinet with a good automobile polish will provide some protection.
3. A good liquid cleaner may be used several times a year to remove matter that will not wash off with water.

Several different types of protective coatings are offered in some areas. These coatings may provide some benefit, but the effectiveness of such coating materials cannot be verified by the equipment manufacturer.

The best protection is frequent cleaning, maintenance and minimal exposure to contaminants.

FIGURE 1
UNIT DIMENSIONS

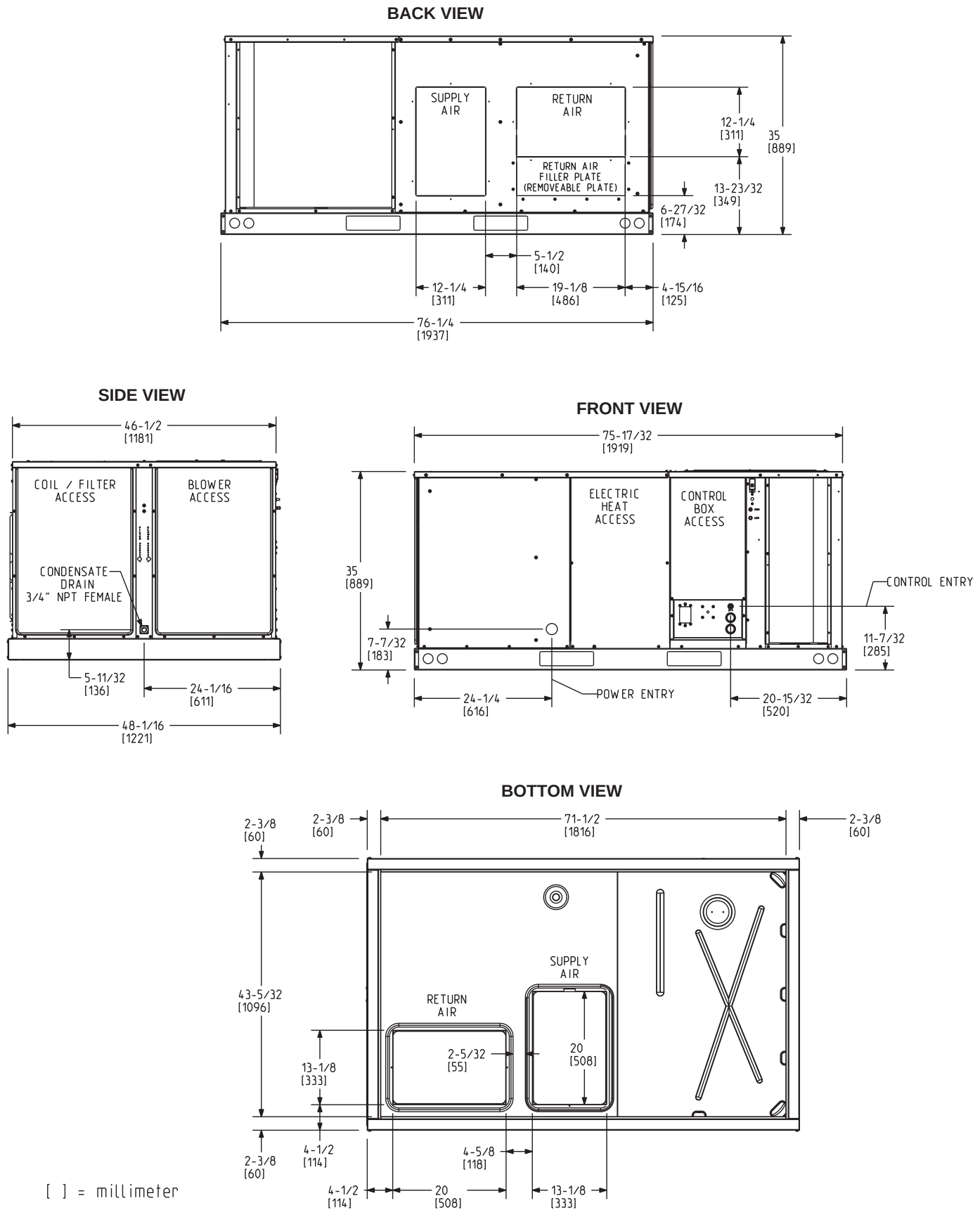
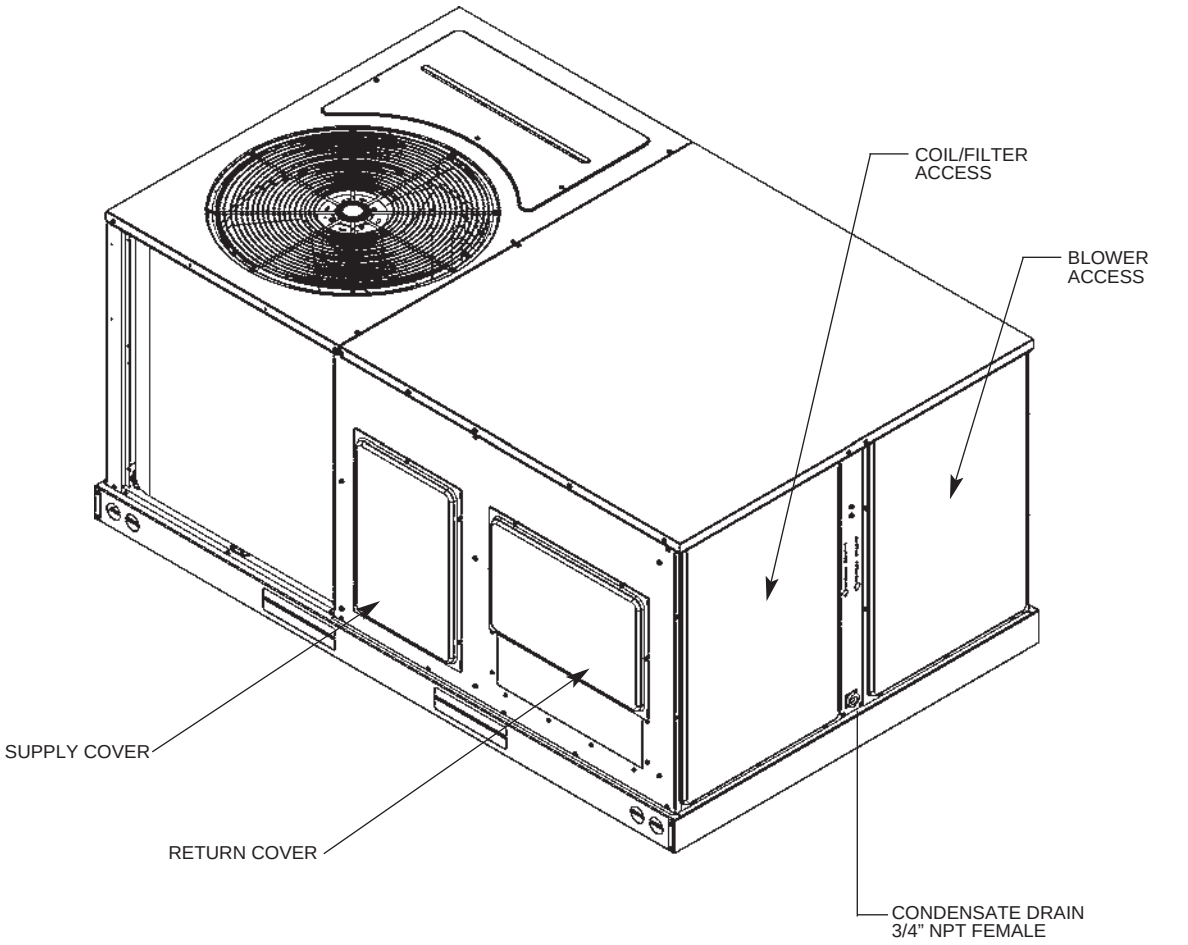


FIGURE 2
UNIT VIEWS



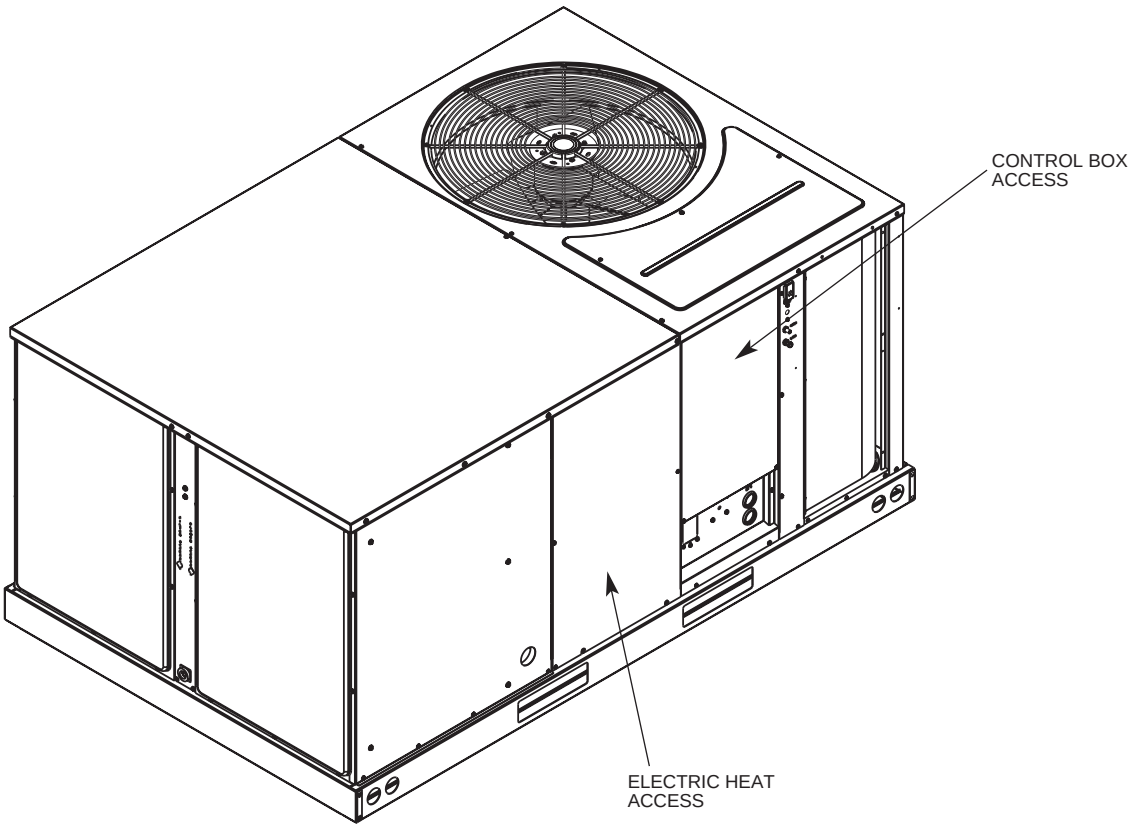
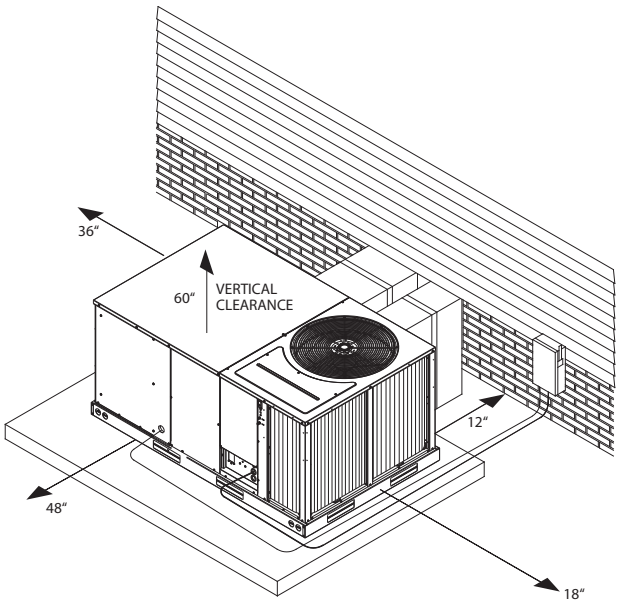
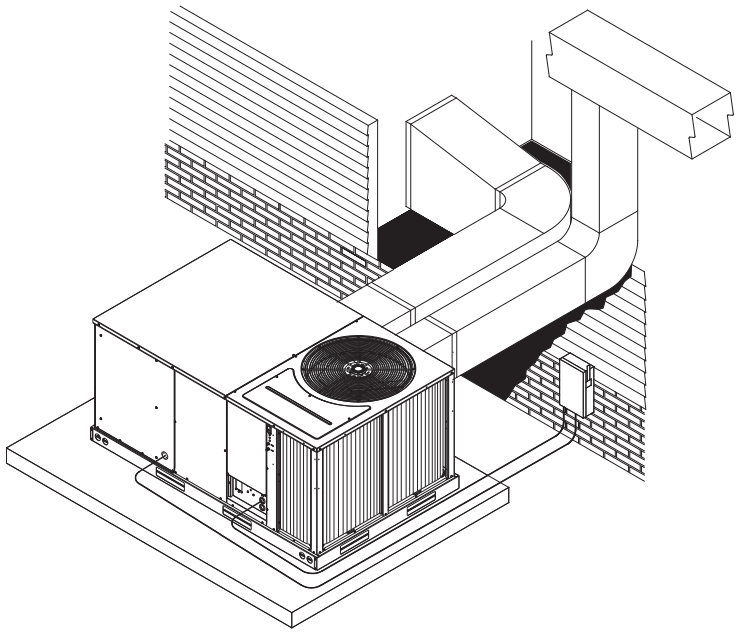


FIGURE 3
PACKAGE AIR CONDITIONER – OUTSIDE SLAB INSTALLATION, BASEMENT OR CRAWL SPACE DISTRIBUTION SYSTEM



*Allow 57" for
economizer on duct side.

FIGURE 4
PACKAGE AIR CONDITIONER – OUTSIDE SLAB INSTALLATION, CLOSET DISTRIBUTION SYSTEM. SLAB FLOOR CONSTRUCTION



VI. INSTALLATION

A. GENERAL

1. PRE-INSTALLATION CHECK-POINTS

   Before attempting any installation, the following points should be carefully considered:

   a. Structural strength of supporting members. (rooftop installation)
   b. Clearances and provision for servicing.
   c. Power supply and wiring.
   d. Air duct connections.
   e. Drain facilities and connections.
   f. Location for minimum noise.

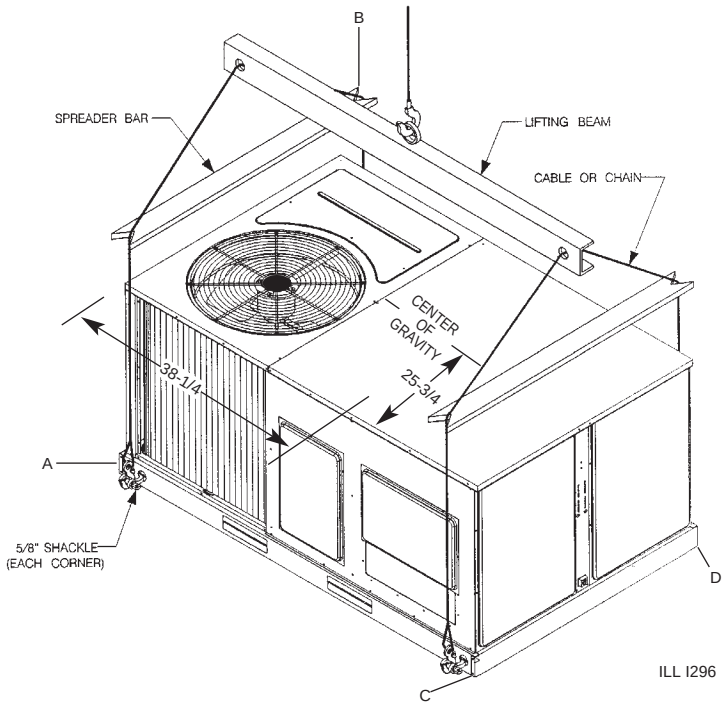
2. LOCATION

   These units are designed for outdoor installations. They can be mounted on a slab or rooftop. They are not to be installed within any part of a structure such as an attic, crawl space, closet, or any other place where condenser air flow is restricted or other than outdoor ambient conditions prevail. Since the application of the units is of the outdoor type, it is important to consult your local code authorities at the time the first installation is made.

B. OUTSIDE SLAB INSTALLATION (Typical outdoor slab installations are shown in Figures 3 and 4.)

1. Select a location where external water drainage cannot collect around the unit.
2. Provide a level concrete slab extending 3" beyond all four sides of the unit. The slab should be sufficient above grade to prevent ground water from entering the unit. ***IMPORTANT:*** *To prevent transmission of noise or vibration, slab should not be connected to building structure.*
3. The location of the unit should be such as to provide proper access for inspection and servicing.
4. Locate unit where operating sounds will not disturb owner or neighbors.
5. Locate unit so roof runoff water does not pour directly on the unit. Provide gutter or other shielding at roof level. Do not locate unit in an area where excessive snow drifting may occur or accumulate.
6. Remove compressor shipping supports (if so equipped) after installation.

FIGURE 5
PACKAGE AIR CONDITIONER – RIGGING FOR LIFTING



CORNER WEIGHTS BY PERCENTAGE			
A	B	C	D
23%	27%	23%	27%

C. CLEARANCES

The following minimum clearances must be observed for proper unit performance and serviceability.

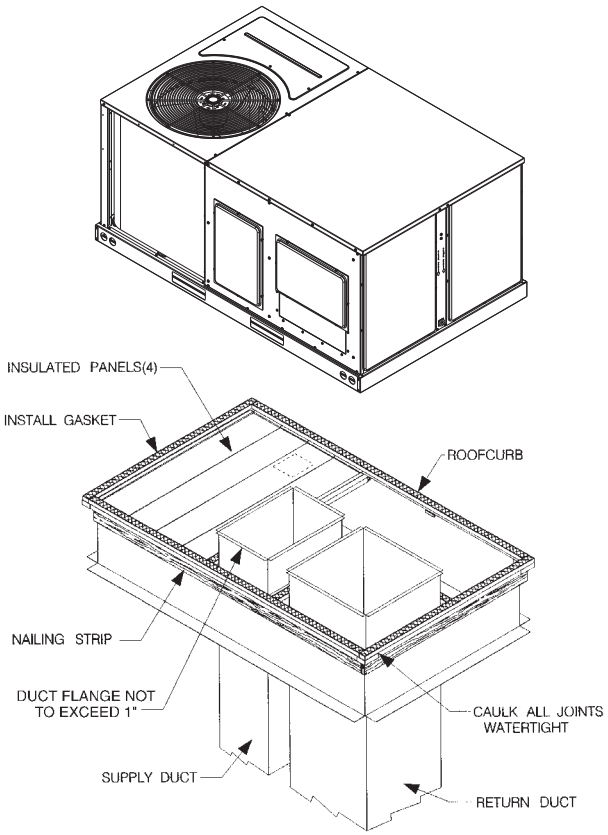
1. Provide 48" minimum clearance at the front of the unit. Provide 36" minimum clearance at the left and right side of the unit for service access.
2. Provide 60" minimum clearance between top of unit and maximum 3 foot overhang.
3. Unit is design certified for application on combustible flooring with 0" minimum clearance.
4. See Figure 3 for illustration of minimum installation-service clearances.

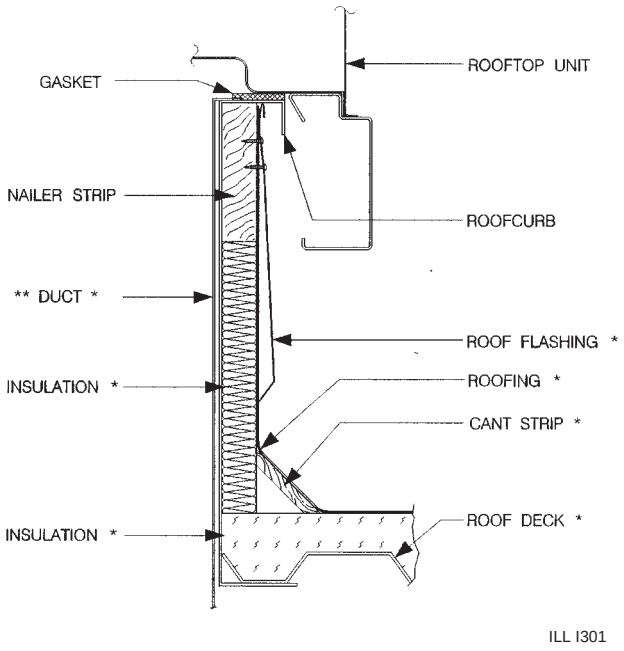
D. ROOFTOP INSTALLATION

1. Before locating the unit on the roof, make sure that the strength of the roof and beams is adequate at that point to support the weight involved. (See specification sheet for weight of unit.) This is very important and user's responsibility.
2. For rigging and roofcurb details, see Figures 5 and 6. Use field-furnished spreaders.
3. For roofcurb assembly, see Roofcurb Installation Instructions.
4. If the roofcurb is not used, provisions for disposing of condensate water runoff must be provided.
5. The unit should be placed on a solid and level roofcurb or platform of adequate strength. See Figure 7.
6. The location of the unit on the roof should be such as to provide proper access for inspection and servicing.
7. Remove compressor shipping supports (if so equipped) after installation.

IMPORTANT: *If unit will not be put into service immediately, cover supply and return openings to prevent excessive condensation.*

FIGURE 6
PACKAGE AIR CONDITIONER – ROOFCURB INSTALLATION





* BY CONTRACTOR

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

⚠ WARNING

DO NOT, UNDER ANY CIRCUMSTANCES, CONNECT RETURN DUCTWORK TO ANY OTHER HEAT PRODUCING DEVICE SUCH AS A FIREPLACE INSERT, STOVE, ETC. UNAUTHORIZED USE OF SUCH DEVICES MAY RESULT IN FIRE, CARBON MONOXIDE POISONING, EXPLOSION, PROPERTY DAMAGE, SEVERE PERSONAL INJURY OR DEATH.

VII. DUCTWORK

Ductwork should be fabricated by the installing contractor in accordance with local codes and NFPA90A. Industry manuals may be used as a guide when sizing and designing the duct system - contact Air Conditioning Contractors of America, 2800 Shirlington Road, Suite 300, Arlington, VA 22206, http://www.acca.org.

The unit should be placed as close to the space to be air conditioned as possible allowing clearance dimensions as indicated. Ducts should be run as directly as possible to supply and return outlets. Use of non-flammable waterproof flexible connectors on both supply and return connections at the unit to reduce noise transmission is recommended.

It is preferable to install the unit on the roof of the structure if the registers or diffusers are located on the wall or in the ceiling. A slab installation could be considered when the registers are low on a wall or in the floor.

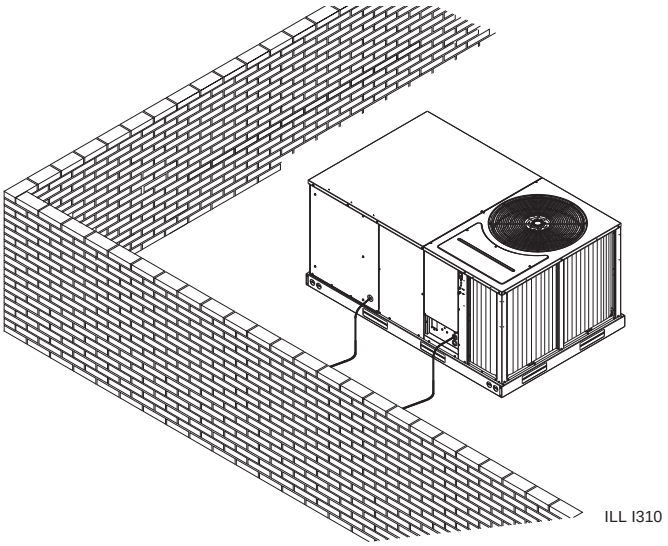
On ductwork exposed to outside air conditions of temperature and humidity, use a minimum of 2" of insulation and a vapor barrier. Distribution system in attic, furred space or crawl space should be insulated with at least 2" of insulation with vapor barrier. One-half to 1" thickness of insulation is usually sufficient for ductwork inside the air conditioned space.

Balancing dampers should be provided for each branch duct in the supply system. Ductwork should be properly supported from the structure.

When installing ductwork, consider the following items:

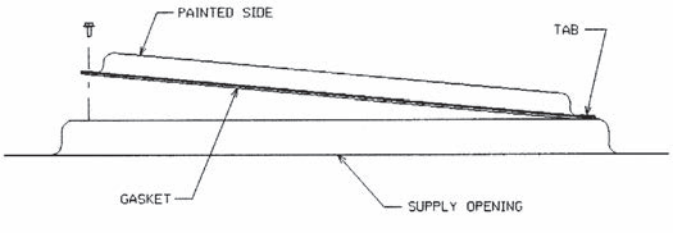
1. Noncombustible flexible connectors should be used between ductwork and unit to reduce noise and vibration transmission into the ductwork.
2. When auxiliary heaters are installed, use noncombustible flexible connectors and clearance to combustible material of 0" for the first 3 feet of discharge duct. Clearance to unit top and side is 0".

FIGURE 7
PACKAGE AIR CONDITIONER – FLAT ROOFTOP INSTALLATION, ATTIC OR DROP CEILING DISTRIBUTION SYSTEM. MOUNTED ON ROOFCURB. CURB MUST BE LEVEL



ILL I310

FIGURE 8
COVER GASKET DETAIL



ILL I631

VIII. FILTERS

This unit is provided with 2 - 25" x 16" x 1" disposable filters. When replacing filters, ensure they are inserted fully to the back to prevent bypass.

IX. CONVERSION PROCEDURE

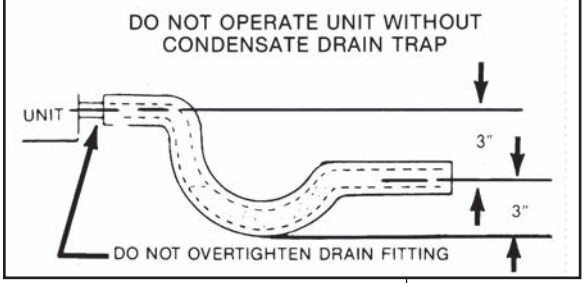
DOWNFLOW TO HORIZONTAL

1. Remove the screws and covers from the outside of the supply and return sections.
2. Install the covers in the bottom supply and return openings with the painted side up. See Figure 8. Use the existing gasket to seal the covers.
3. Secure the supply cover to the base of the unit with 1 screw, engaging prepunched tab in unit base.
4. Secure the return cover to the base of the unit with screws, engaging prepunched holes in the unit base.

X. CONDENSATE DRAIN

The condensate drain connection of the evaporator is 3/4" nominal female pipe thread. **IMPORTANT:** Install a condensate trap to ensure proper condensate drainage. See Figure 9.

FIGURE 9
CONDENSATE DRAIN



XI. ELECTRICAL WIRING

Field wiring must comply with the National Electrical Code* and local ordinances that may apply.

*C.E.C. in Canada

A. POWER WIRING

1. It is important that proper electrical power is available at the unit. Voltage should not vary more than 10% from that stamped on the unit rating plate. On three phase units, phases must be balanced within 3%.
2. Install a branch circuit disconnect within sight of the unit and of adequate size to handle the starting current. Reference Figure 10 for proper location.
3. For branch circuit wiring (main power supply to unit disconnect), the minimum wire size can be determined from Table A using the circuit ampacity found on the unit nameplate.

TABLE A

COPPER WIRE SIZE — AWG (1% VOLTAGE DROP)

Supply Wire Length Feet	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155
300	4	3	2	2	1	1/0	1/0	2/0	2/0	3/0	3/0	3/0	4/0	4/0	4/0	4/0	250	250	250	250	300	300	300	300	300	350	350	350	350
250	4	4	3	3	2	1	1	1/0	1/0	2/0	2/0	2/0	3/0	3/0	3/0	4/0	4/0	4/0	4/0	4/0	250	250	250	250	250	350	350	350	350
200	6	4	4	4	3	2	2	1	1	1/0	1/0	1/0	2/0	2/0	2/0	3/0	3/0	3/0	3/0	3/0	4/0	4/0	4/0	4/0	4/0	300	300	300	300
150	8	6	6	4	4	4	3	3	2	2	1	1	1/0	1/0	1/0	1/0	2/0	2/0	2/0	2/0	2/0	3/0	3/0	3/0	3/0	4/0	4/0	4/0	4/0
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50	14	12	10	10	8	8	6	6	6	4	4	4	3	3	3	2	2	2	2	2	1	1	1	1	1/0	1/0	1/0	1/0	2/0

Circuit Ampacity

NOTE:
1. Wire size based on 60ºC type copper conductors below 100 ampacity.
2. Wire size based on 75ºC type copper conductors for 100 ampacity and above.

4. This unit incorporates single point electrical connection for unit and electric heat accessory.
5. Power wiring must be run in grounded rain-tight conduit. Connect the power field wiring as follows:
   a. NO ELECTRIC HEAT - Connect the field wires directly to the contactor pigtail in the electric heat access area. Connect ground wire to ground lug.
   b. WITH ELECTRIC HEAT - Connect the field wires to the terminal block on the electric heater kit in the electric heat access area. Connect the ground wire to the ground lug on the heater kit.

NOTE: For field installation of a heater kit, follow the instructions provided with the heater kit.

6. The pigtail wires in the electric heat access area are factory wired to the contactor in the control box.
7. DO NOT connect aluminum field wires to electric heat kit power input terminals.

B. SPECIAL INSTRUCTIONS FOR POWER WIRING WITH ALUMINUM CONDUCTORS

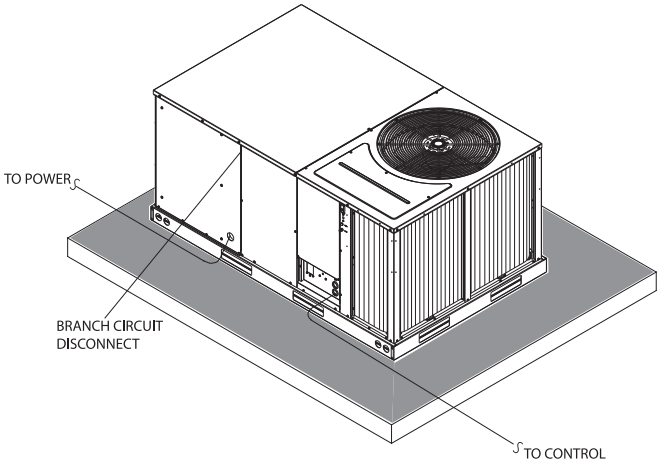
1. Select the equivalent aluminum wire size from the tabulation below:

TABLE B. WIRE SIZES

AWG Copper Wire Size	AWG Aluminum Wire Size	Connector Type and Size (or equivalent)	
#12	#10	T&B Wire Nut	PT2
#10	#8	T&B Wire Nut	PT3
#8	#6	Ilsco Split Bolt	AK-6
#6	#4	Ilsco Split Bolt	AK-4
#4	#2	Ilsco Split Bolt	AK-2
#3	#1	Ilsco Split Bolt	AK-1/0
#2	#0	Ilsco Split Bolt	AK-1/0
#1	#00	Ilsco Split Bolt	AK-2/0
#0	#000	Ilsco Split Bolt	AK-4/0

2. Attach a length (6" or more) of recommended size copper wire to the unit terminals L1 and L3 for single phase, L1, L2, L3 for three phase.

FIGURE 10
RECOMMENDED LOCATION OF BRANCH CIRCUIT DISCONNECT



3. Splice copper wire pigtails to aluminum wire with U.L. recognized connectors for copper-aluminum splices. Follow these instructions very carefully to make a positive and lasting connection;
   a. Strip insulation from aluminum conductor.
   b. Coat the stripped end of the aluminum wire with the recommended inhibitor and wire brush aluminum surface through inhibitor. Inhibitors: Brundy, Pentex "A"; Alcoa, No. 2EJC; T&B KPOR Shield.
   c. Clean and recoat aluminum conductor with inhibitor.
   d. Make the splice using the above listed wire nuts or split bolt connectors.
   e. Coat the entire connection with inhibitor and wrap with electrical insulating tape.

WARRANTY MAY NOT APPLY IF CONNECTIONS ARE NOT MADE PER INSTRUCTIONS

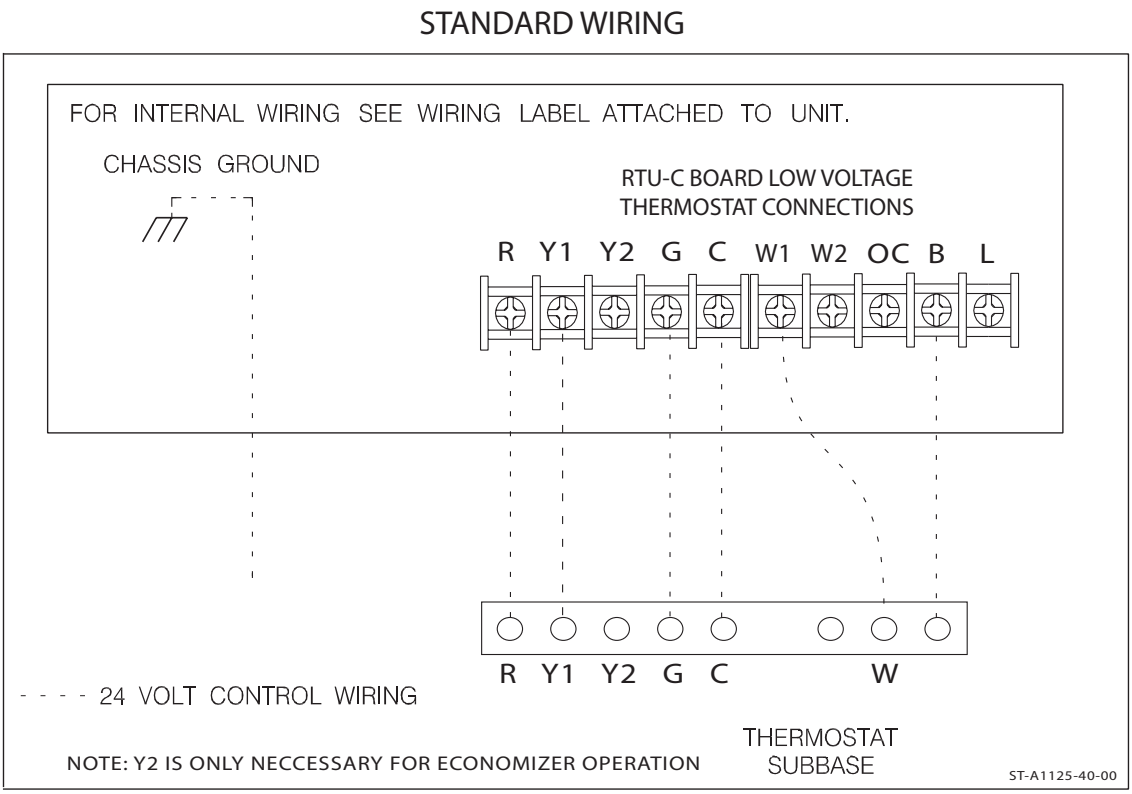
C. CONTROL WIRING (Class II)

1. Low voltage wiring should not be run in conduit with power wiring.
2. Control wiring is routed through the 7/8" hole adjacent to the compressor access panel. Use a minimum #18 AWG thermostat wire. For wire lengths exceeding 50', use #16 AWG thermostat wire. The low voltage wires are connected to the unit pigtails which are supplied with the unit in the low voltage connection box located below the unit control box.

FIGURE 11
HEATER KIT INSTALLATION



FIGURE 12
LOW VOLTAGE CONNECTIONS DIAGRAMS



3. Figure 12 shows representative low voltage connection diagrams. Read your thermostat installation instructions for any special requirements for your specific thermostat.
   NOTE — Units installed in Canada require that an outdoor thermostat (30,000 min. cycles of endurance) be installed and be wired with C.E.C. Class I wiring.

D. INTERNAL WIRING

IMPORTANT: *Some single phase models are equipped with a single pole contactor. Caution must be exercised when servicing as only one leg of the power supply is broken with the contactor.*

Some models are equipped with electronically commutated blower motors which are constantly energized unless the main unit disconnect is in the off position.

1. A diagram of the internal wiring of this unit is located on the inside of the compressor access panel. If any of the original wire as supplied with the appliance must be replaced, the wire gauge and insulation must be the same as original wiring.

E. GROUNDING

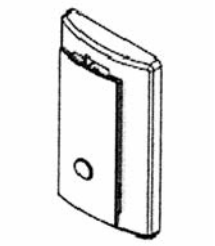
⚠ WARNING

THE UNIT MUST BE PERMANENTLY GROUNDED. A GROUNDING LUG IS PROVIDED IN THE ELECTRIC HEAT KIT ACCESS AREA FOR A GROUND WIRE. FAILURE TO GROUND THIS UNIT CAN RESULT IN FIRE OR ELECTRICAL SHOCK CAUSING PROPERTY DAMAGE, SEVERE PERSONAL INJURY OR DEATH.

F. THERMOSTAT

The thermostat should be mounted on an inside wall about five feet above the floor in a location where it will not be affected by unconditioned air, sun, or drafts from open doors or other sources. READ installation instructions in thermostat package CAREFULLY because each has some different wiring requirements.

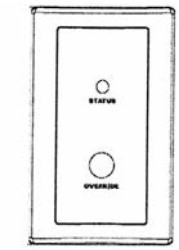
FIGURE 13
FLUSH MOUNT ROOM TEMPERATURE SENSOR FOR NETWORKED DDC APPLICATIONS (REPLACES THERMOSTAT)



ROOM TEMPERATURE SENSOR WITH TIMED OVERRIDE BUTTON

ZNS-101

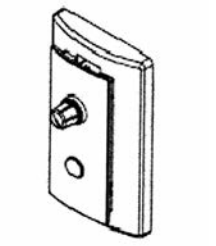
←10kΩ room temperature sensor transmits room temperature to DDC system. Times override buttons allows tenant to change from unoccupied temperature setpoint to occupied temperature setpoint for a preset time.



ROOM TEMPERATURE SENSOR WITH TIMED OVERRIDE BUTTON AND STATUS INDICATOR

ZNS-102

←10kΩ room temperature sensor transmits room temperature to DDC system. Times 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

ZNS-103

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

XII. INDOOR AIR FLOW DATA

Direct-drive blower models are shipped factory wired for the proper speed at a typical external static. See Blower Performance Data. Belt-drive blower models have motor sheaves set for proper CFM at a typical external static.

XIII. UNITS WITH ECM BLOWER MOTORS (CV & DV MODELS ONLY)

The ECM (Brushless permanent magnet) motor used on the blower in this product is programmed to operate over a wide range of external static pressures (0.0” - 1.0” W.C.) with essentially constant air flow (CFM). Motor efficiency on ECM type motors is higher than that of P.S.C. type motors normally used on this type product. See air flow performance data tables.

The ECM motor is programmed to provide a “soft” start and stop. On a call for heat or cool, the motor will gradually ramp up to the field selected CFM speed. This eliminates the sudden rush of air and noise normally associated with a P.S.C. type motor. Once the thermostat and blower delay are satisfied, the motor will gradually ramp down as well.

IMPORTANT: Units equipped with ECM motors cannot be used in by-pass zoning applications.

IMPORTANT: The A.C. power plug to the blower motor has locking tabs. It has been shown that by applying excessive force to the A.C. cable half of the connector it is possible to force the connector in backwards. It will not seat and “click” properly but will make connection. If A.C. power is applied with the connector reversed the motor will be immediately destroyed. Do not force power plug into motor connector backwards.

NOTE: Because of the harmonic content of the A.C. Line current to the ECM motor a conventional ammeter will not read correct motor amps. Only a true RMS meter will give accurate AMP readings.

IMPORTANT: The flexibility of ECM motors and the fact that this flexibility is contained in programmed memory, not hardware, emphasizes the need for exact motor numbers for replacement motors. Because they all look the same, ECM MOTORS FROM DIFFERENT PRODUCTS OR DIFFERENT MODELS OF THE SAME PRODUCT MUST NOT BE INTERCHANGED.

IMPORTANT: If an ECM motor is replaced, it is important that the motor be mounted as the original, as far into the blower wheel as practical for proper motor cooling.

IMPORTANT: The ECM motor is controlled directly from the room thermostat (in all modes except heating). In cooling, the motor is controlled from the thermostat “Y” terminal. When the “Y” or “R” thermostat circuit is opened a 30 second delay will occur before the blower motor will cycle. In the heating mode the furnace control board controls the ECM through the blower relay. When the “W” thermostat circuits are opened, a 90 second delay will occur before the blower will cycle off. When the “G” to “R” thermostat cir-

cuit is opened for low speed blower, there is no “off’ delay. All thermostat sub-base combinations as recommended and provided through the Parts Department have been tested and are compatible with the ECM motor used in this equipment. Some thermostats may not be compatible with the ECM motor provided in this unit. With thermostat in off state, the voltage on control lines “G”, “Y”, or W with respect to 24 vac common should be less than 3.5 VAC. If the measured voltage is too high, thermostat is incompatible with the ECM motor and will cause the motor to run when it should be off.

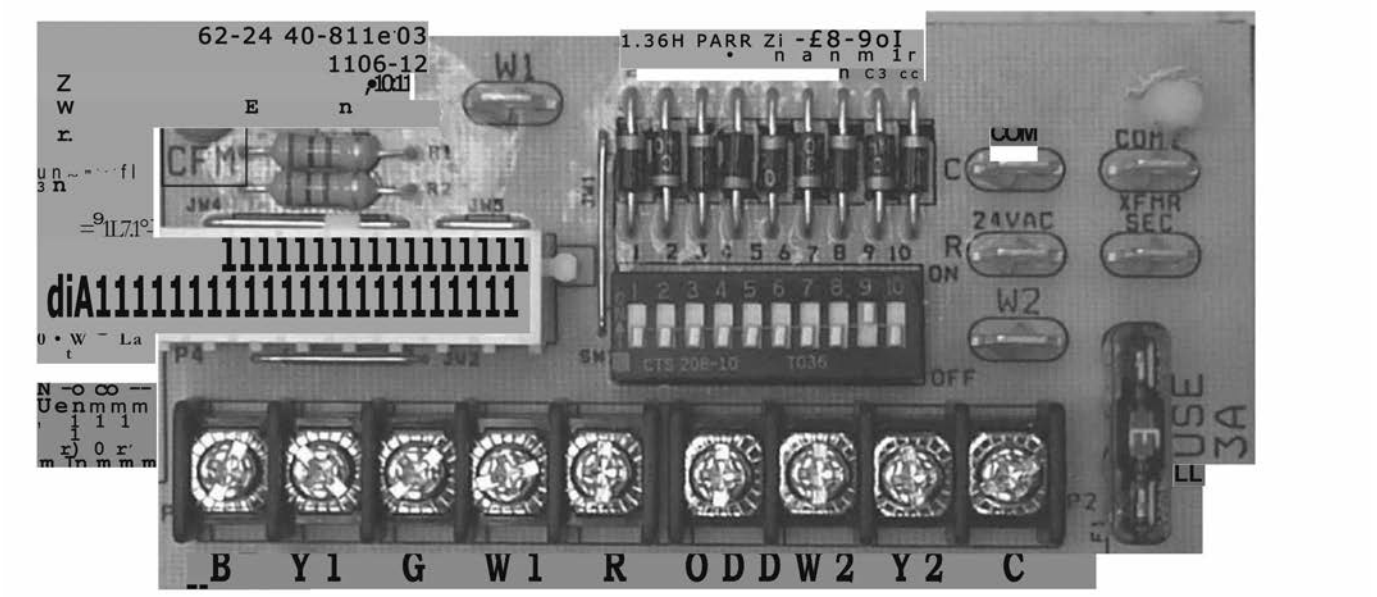
A. ECM MOTOR INTERFACE CONTROL AND SETTINGS (CV & DV UNITS ONLY)

The CV & DV series units use ECM blower motors to deliver a constant level of airflow over a wide range of external static pressures (up to 1.5” W.C.). The interface board provides the required communications between the thermostat/IFC and the ECM blower motor. The interface board features:

• An automotive-style ATC blade fuse for transformer protection (3 amp).

FIGURE 14
ECM INTERFACE BOARD

DO NOT WIRE DIRECTLY TO THIS BOARD. THERMOSTAT SHOULD BE WIRED TO PIGTAILS LOCATED BELOW THE CONTROL BOX.



(THIS BOARD IS LOCATED IN THE BLOWER SECTION)

FIGURE 15
ECM MOTOR SETTINGS



(This board is located in the blower section)

• An on-board LED to indicate blower CFM.

• Inputs for two-stages of cooling: Y1 (first stage) and Y2 (second stage)

The DIP switches on the interface board are used to define the operation of the ECM motor (see Table C).

TABLE C
SWITCH FUNCTIONS

Switch	Function
1 & 2	Heating & Fan Airflow Settings
3 & 4	Cooling Airflow Adjustment
5 & 6	Cooling Airflow Settings
7 & 8	Not Used
9 & 10	Not Used

Refer to Figure 15 for switch identification and factory default settings.

IMPORTANT: Disconnect power to unit when changing DIP switch positions. Even if blower is not operating, the motor will not recognize changes in DIP switch positions until unit power is removed and then restored.

B. TRANSFORMER PROTECTION

The ECM interface board is equipped with an automotive-style 3 amp ATC blade fuse for transformer protection. (See Figure 14.) If a short circuit occurs on the secondary side of the transformer, the fuse will open

C. USING THE ON-BOARD LED TO DETERMINE BLOWER CFM

The ECM interface board LED, which is located in the blower section (see Figure 14), indicates blower output by flashing. The LED will pause 1/10 second between each flash. After the blower CFM has been displayed, the LED will illuminate dimly for 10 seconds before repeating the sequence. (See Table D.)

TABLE D
LED FLASH CODES

Interface board DIP switch settings	LED Output
1400 CFM	• Flashes 14 times • Illuminate dimly 10 seconds, repeat sequence
1600 CFM	• Flashes 16 times • Illuminate dimly 10 seconds, repeat sequence
1800 CFM	• Flashes 18 times • Illuminate dimly 10 seconds, repeat sequence
2000 CFM	• Flashes 21 times • Illuminate dimly 10 seconds, repeat sequence
2200 CFM	• Flashes 24 times • Illuminate dimly 10 seconds, repeat sequence

D. AIRFLOW ADJUSTMENTS

FIGURE 16
HEATING AIRFLOW SETTING

CFM	SWITCH 1 POSITION	SWITCH 2 POSITION
1800	OFF	OFF
2000	ON	OFF
2200	OFF	ON
1800	ON	ON

FIGURE 17
COOLING AIRFLOW ADJUSTMENT

SELECTION	SWITCH 3 POSITION	SWITCH 4 POSITION	COOLING AIRFLOW ADJUSTMENT
A	OFF	OFF	NONE
B	ON	OFF	10%
C	OFF	ON	-10%
D	ON	ON	NONE

Cooling airflow may be adjusted +10% or —10% from nominal airflow using switches 3 & 4. Refer to Figure 33 for switch positions to achieve the desired adjustments in airflow.

FIGURE 18
COOLING AIRFLOW SETTING

1ST STAGE COOLING CFM	2ND STAGE COOLING CFM	SWITCH 5 POSITION	SWITCH 6 POSITION
1400	1800	OFF	OFF
1600	2000	ON	OFF
1600	2200	OFF	ON
1400	1800	ON	ON

XIV. CRANKCASE HEAT (OPTIONAL)

Crankcase heat is not required on scroll type compressors, but may be necessary for difficult starting situations.

XV. PRE-START CHECK

1. Is unit properly located and slightly slanted toward indoor condensate drain?
2. Is ductwork insulated, weatherproofed, with proper spacing to combustible materials?
3. Is air free to travel to and from outdoor coil? (See Figure 3.)
4. Is the wiring correct, tight, and according to unit wiring diagram?
5. Is unit grounded?
6. Are field supplied air filters in place and clean?
7. Do the outdoor fan and indoor blower turn freely without rubbing, and are they tight on the motor shafts?
8. Are the compressor shipping supports removed (if so equipped)?

XVI. STARTUP

1. Turn thermostat to “OFF,” turn “on” power supply at disconnect switch.
2. Turn temperature setting as high as it will go.
3. Turn fan switch to “ON.”
4. Indoor blower should run. Be sure it is running in the right direction.
5. Turn fan switch to “AUTO.” Turn system switch to “COOL” and turn temperature setting below room temperature. Unit should run in cooling mode.
6. Is outdoor fan operating correctly in the right direction?
7. Is compressor running correctly.
8. Check the refrigerant charge using the instructions located on compressor access panel. Replace service port caps. Service port cores are for system access only and will leak if not tightly capped.
9. Turn thermostat system switch to proper mode “HEAT” or “COOl” and set thermostat to proper temperature setting. Record the following after the unit has run some time.
   A. Operating Mode _____
   B. Discharge Pressure (High)_PSIG
   C. Vapor Pressure at Compressor (Low) _____PSIG
   D. VaporLine Temperature at Compressor _____°F.
   E. Indoor Dry Bulb_____°F.
   F. Indoor Wet Bulb _____°F.
   G. Outdoor Dry Bulb _____°F.
   H. Outdoor Wet Bulb_____°F.
   I. Voltage at Contactor _____Volts
   J. Current at Contactor _____Amps
   K. Model Number_____
   L. Serial Number _____
   M. Location_____
   N. Owner _____
   O. Date_____
10. Adjust discharge air grilles and balance system.
11. Check ducts for condensation and air leaks.
12. Check unit for tubing and sheet metal rattles.
13. Instruct the owner on operation and maintenance.
14. Leave “INSTALLATION” and ”USE AND CARE“ instructions with owner.

XVII. OPERATION

IMPORTANT: *The compressor has an internal overload protector. Under some conditions, it can take up to 2 hours for this overload to reset. Make sure overload has had time to reset before condemning the compressor.*

XVIII. AUXILIARY HEAT

⚠ WARNING

ONLY ELECTRIC HEATER KITS SUPPLIED BY THIS MANUFACTURER AS DESCRIBED IN THIS PUBLICATION HAVE BEEN DESIGNED, TESTED, AND EVALUATED BY A NATIONALLY RECOGNIZED SAFETY TESTING AGENCY FOR USE WITH THIS UNIT. USE OF ANY OTHER MANUFACTURED ELECTRIC HEATERS INSTALLED WITHIN THIS UNIT MAY CAUSE HAZARDOUS CONDITIONS RESULTING IN PROPERTY DAMAGE, FIRE, BODILY INJURY OR DEATH.

CONTROL SYSTEM OPERATION

1. In the cooling mode, the thermostat will, on a call for cooling, energize the compressor contactor and the indoor blower relay. The indoor blower can be operated continuously by setting the thermostat fan switch at the “ON” position.
2. In the heating mode, the thermostat will energize one or more supplementary resistance heaters.

XIX. GENERAL DATA - RLPN MODELS
NOMINAL SIZES 3-5 TONS [10.6-17.6 kW]

Model RLPN- Series	C036CL000	C036CM000	C036DL000	C036DM000
Cooling Performance[1]				Continued ->
Gross Cooling Capacity Btu [kW]	36,200 [10.61]	36,200 [10.61]	36,200 [10.61]	36,200 [10.61]
EER/SEER[2]	11.5/14	11.5/14	11.5/14	11.5/14
Nominal CFM/AHRI Rated CFM [L/s]	1200/1250 [566/590]	1200/1250 [566/590]	1200/1250 [566/590]	1200/1250 [566/590]
AHRI Net Cooling Capacity Btu [kW]	34,600 [10.14]	34,600 [10.14]	34,600 [10.14]	34,600 [10.14]
Net Sensible Capacity Btu [kW]	25,300 [7.41]	25,300 [7.41]	25,300 [7.41]	25,300 [7.41]
Net Latent Capacity Btu [kW]	9,300 [2.72]	9,300 [2.72]	9,300 [2.72]	9,300 [2.72]
Net System Power kW	2.95	2.95	2.95	2.95
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[5]	78	78	78	78
Outdoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.7 [18]	0.7 [18]	0.7 [18]	0.7 [18]
Face Area sq. ft. [sq. m]	13.9 [1.29]	13.9 [1.29]	13.9 [1.29]	13.9 [1.29]
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 [25]	1 [25]	1 [25]	1 [25]
Face Area sq. ft. [sq. m]	4.8 [0.45]	4.8 [0.45]	4.8 [0.45]	4.8 [0.45]
Rows / FPI [FPcm]	1 / 20 [8]	1 / 20 [8]	1 / 20 [8]	1 / 20 [8]
Refrigerant Control	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]
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]	3680 [1737]	3680 [1737]	3680 [1737]	3680 [1737]
No. Motors/HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP
Motor RPM	1075	1075	1075	1075
Indoor Fan - Type	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]
Drive Type	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)
No. Speeds	Single	Single	Single	Single
No. Motors	1	1	1	1
Motor HP	1/2	1/2	1/2	1/2
Motor RPM	1725	1725	1725	1725
Motor Frame Size	48	56	48	56
Filter - Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes	Yes
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]
Refrigerant Charge Oz. [g]	54 [1531]	54 [1531]	54 [1531]	54 [1531]
Weights				
Net Weight lbs. [kg]	485 [220]	485 [220]	485 [220]	485 [220]
Ship Weight lbs. [kg]	492 [223]	492 [223]	492 [223]	492 [223]

NOTES:

1. Cooling Performance is rated at 95° F ambient, 80° F entering dry bulb, 67° F entering wet bulb. Gross capacity does not include the effect of fan motor heat. AHRI capacity is net and includes the effect of fan motor heat. Units are suitable for operation to ±20% of nominal cfm. Units are certified in accordance with the Unitary Air Conditioner Equipment certification program, which is based on AHRI Standard 210/240 or 360.
2. EER and/or SEER are rated at AHRI conditions and in accordance with DOE test procedures.
3. Outdoor Sound Rating shown is tested in accordance with AHRI Standard 270.

GENERAL DATA - RLPN MODELS
NOMINAL SIZES 3-5 TONS [10.6-17.6 kW]

Model RLPN- Series	C048CL000	C048CM000	C048DL000	C048DM000
Cooling Performance[1]				**Continued ->**
Gross Cooling Capacity Btu [kW]	48,000 [14.06]	48,000 [14.06]	48,000 [14.06]	48,000 [14.06]
EER/SEER[2]	11.5/14	11.5/14	11.5/14	11.5/14
Nominal CFM/AHRI Rated CFM [L/s]	1600/1500 [755/708]	1600/1500 [755/708]	1600/1500 [755/708]	1600/1500 [755/708]
AHRI Net Cooling Capacity Btu [kW]	46,000 [13.48]	46,000 [13.48]	46,000 [13.48]	46,000 [13.48]
Net Sensible Capacity Btu [kW]	34,000 [9.96]	34,000 [9.96]	34,000 [9.96]	34,000 [9.96]
Net Latent Capacity Btu [kW]	12,000 [3.52]	12,000 [3.52]	12,000 [3.52]	12,000 [3.52]
Net System Power kW	3.93	3.93	3.93	3.93
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[5]	78	78	78	78
Outdoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.7 [18]	0.7 [18]	0.7 [18]	0.7 [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]	1.3 [32]	1.3 [32]	1.3 [32]	1.3 [32]
Face Area sq. ft. [sq. m]	4.8 [0.45]	4.8 [0.45]	4.8 [0.45]	4.8 [0.45]
Rows / FPI [FPcm]	1 / 20 [8]	1 / 20 [8]	1 / 20 [8]	1 / 20 [8]
Refrigerant Control	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]
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]	3680 [1737]	3680 [1737]	3680 [1737]	3680 [1737]
No. Motors/HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP
Motor RPM	1075	1075	1075	1075
Indoor Fan - Type	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]
Drive Type	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)
No. Speeds	Single	Single	Single	Single
No. Motors	1	1	1	1
Motor HP	1/2	3/4	1/2	3/4
Motor RPM	1725	1725	1725	1725
Motor Frame Size	48	56	48	56
Filter - Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes	Yes
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]
Refrigerant Charge Oz. [g]	68 [1928]	68 [1928]	68 [1928]	68 [1928]
Weights				
Net Weight lbs. [kg]	509 [231]	510 [231]	509 [231]	510 [231]
Ship Weight lbs. [kg]	516 [234]	517 [235]	516 [234]	517 [235]

NOTES:

1. Cooling Performance is rated at 95° F ambient, 80° F entering dry bulb, 67° F entering wet bulb. Gross capacity does not include the effect of fan motor heat. AHRI capacity is net and includes the effect of fan motor heat. Units are suitable for operation to ±20% of nominal cfm. Units are certified in accordance with the Unitary Air Conditioner Equipment certification program, which is based on AHRI Standard 210/240 or 360.
2. EER and/or SEER are rated at AHRI conditions and in accordance with DOE test procedures.
3. Outdoor Sound Rating shown is tested in accordance with AHRI Standard 270.

GENERAL DATA - RLPN MODELS
NOMINAL SIZES 3-5 TONS [10.6-17.6 kW]

Model RLPN- Series	C060CL000	C060CM000	C060DL000	C060DM000
Cooling Performance[1]				Continued ->
Gross Cooling Capacity Btu [kW]	60,000 [17.58]	60,000 [17.58]	60,000 [17.58]	60,000 [17.58]
EER/SEER[2]	11.5/14	11.5/14	11.5/14	11.5/14
Nominal CFM/AHRI Rated CFM [L/s]	2000/1800 [944/849]	2000/1800 [944/849]	2000/1800 [944/849]	2000/1800 [944/849]
AHRI Net Cooling Capacity Btu [kW]	58,500 [17.14]	58,500 [17.14]	58,500 [17.14]	58,500 [17.14]
Net Sensible Capacity Btu [kW]	41,700 [12.22]	41,700 [12.22]	41,700 [12.22]	41,700 [12.22]
Net Latent Capacity Btu [kW]	16,800 [4.92]	16,800 [4.92]	16,800 [4.92]	16,800 [4.92]
Net System Power kW	4.95	4.95	4.95	4.95
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[5]	83	83	83	83
Outdoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.7 [18]	0.7 [18]	0.7 [18]	0.7 [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]	1.3 [32]	1.3 [32]	1.3 [32]	1.3 [32]
Face Area sq. ft. [sq. m]	4.8 [0.45]	4.8 [0.45]	4.8 [0.45]	4.8 [0.45]
Rows / FPI [FPcm]	1 / 20 [8]	1 / 20 [8]	1 / 20 [8]	1 / 20 [8]
Refrigerant Control	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]
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]	3930 [1855]	3930 [1855]	3930 [1855]	3930 [1855]
No. Motors/HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP
Motor RPM	1075	1075	1075	1075
Indoor Fan - Type	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]
Drive Type	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)
No. Speeds	Single	Single	Single	Single
No. Motors	1	1	1	1
Motor HP	3/4	1	3/4	1
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]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]
Refrigerant Charge Oz. [g]	63 [1786]	63 [1786]	63 [1786]	63 [1786]
Weights				
Net Weight lbs. [kg]	517 [235]	522 [237]	517 [235]	522 [237]
Ship Weight lbs. [kg]	524 [238]	529 [240]	524 [238]	529 [240]

NOTES:

1. Cooling Performance is rated at 95° F ambient, 80° F entering dry bulb, 67° F entering wet bulb. Gross capacity does not include the effect of fan motor heat. AHRI capacity is net and includes the effect of fan motor heat. Units are suitable for operation to ±20% of nominal cfm. Units are certified in accordance with the Unitary Air Conditioner Equipment certification program, which is based on AHRI Standard 210/240 or 360.
2. EER and/or SEER are rated at AHRI conditions and in accordance with DOE test procedures.
3. Outdoor Sound Rating shown is tested in accordance with AHRI Standard 270.

GENERAL DATA - RLQN MODELS
NOMINAL SIZES 3-5 TONS [10.6-17.6 kW]

Model RLQN- Series	C036CL000	C036CM000	C036DL000	C036DM000
Cooling Performance[1]				**Continued ->**
Gross Cooling Capacity Btu [kW]	36,200 [10.61]	36,200 [10.61]	36,200 [10.61]	36,200 [10.61]
EER/SEER[2]	12.5/15	12.5/15	12.5/15	12.5/15
Nominal CFM/AHRI Rated CFM [L/s]	1200/1250 [566/590]	1200/1250 [566/590]	1200/1250 [566/590]	1200/1250 [566/590]
AHRI Net Cooling Capacity Btu [kW]	35,400 [10.37]	35,400 [10.37]	35,400 [10.37]	35,400 [10.37]
Net Sensible Capacity Btu [kW]	26,200 [7.68]	26,200 [7.68]	26,200 [7.68]	26,200 [7.68]
Net Latent Capacity Btu [kW]	9,200 [2.7]	9,200 [2.7]	9,200 [2.7]	9,200 [2.7]
Net System Power kW	2.72	2.72	2.72	2.72
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[5]	78	78	78	78
Outdoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.7 [18]	0.7 [18]	0.7 [18]	0.7 [18]
Face Area sq. ft. [sq. m]	13.9 [1.29]	13.9 [1.29]	13.9 [1.29]	13.9 [1.29]
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 [25]	1 [25]	1 [25]	1 [25]
Face Area sq. ft. [sq. m]	4.8 [0.45]	4.8 [0.45]	4.8 [0.45]	4.8 [0.45]
Rows / FPI [FPcm]	1 / 20 [8]	1 / 20 [8]	1 / 20 [8]	1 / 20 [8]
Refrigerant Control	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]
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]	3680 [1737]	3680 [1737]	3680 [1737]	3680 [1737]
No. Motors/HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP
Motor RPM	1075	1075	1075	1075
Indoor Fan - Type	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]
Drive Type	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)
No. Speeds	Single	Single	Single	Single
No. Motors	1	1	1	1
Motor HP	1/2	1/2	1/2	1/2
Motor RPM	1725	1725	1725	1725
Motor Frame Size	48	56	48	56
Filter - Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes	Yes
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]
Refrigerant Charge Oz. [g]	54 [1531]	54 [1531]	54 [1531]	54 [1531]
Weights				
Net Weight lbs. [kg]	485 [220]	485 [220]	485 [220]	485 [220]
Ship Weight lbs. [kg]	492 [223]	492 [223]	492 [223]	492 [223]

GENERAL DATA - RLQN MODELS
NOMINAL SIZES 3-5 TONS [10.6-17.6 kW]

Model RLQN- Series	C048CL000	C048CM000	C048DL000	C048DM000
Cooling Performance[1]				**Continued ->**
Gross Cooling Capacity Btu [kW]	48,000 [14.06]	48,000 [14.06]	48,000 [14.06]	48,000 [14.06]
EER/SEER[2]	12.5/15	12.5/15	12.5/15	12.5/15
Nominal CFM/AHRI Rated CFM [L/s]	1600/1600 [755/755]	1600/1600 [755/755]	1600/1600 [755/755]	1600/1600 [755/755]
AHRI Net Cooling Capacity Btu [kW]	46,500 [13.62]	46,500 [13.62]	46,500 [13.62]	46,500 [13.62]
Net Sensible Capacity Btu [kW]	35,700 [10.46]	35,700 [10.46]	35,700 [10.46]	35,700 [10.46]
Net Latent Capacity Btu [kW]	10,800 [3.16]	10,800 [3.16]	10,800 [3.16]	10,800 [3.16]
Net System Power kW	3.69	3.69	3.69	3.69
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[5]	78	78	78	78
Outdoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.7 [18]	0.7 [18]	0.7 [18]	0.7 [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]	1.3 [32]	1.3 [32]	1.3 [32]	1.3 [32]
Face Area sq. ft. [sq. m]	4.8 [0.45]	4.8 [0.45]	4.8 [0.45]	4.8 [0.45]
Rows / FPI [FPcm]	1 / 20 [8]	1 / 20 [8]	1 / 20 [8]	1 / 20 [8]
Refrigerant Control	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]
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]	3680 [1737]	3680 [1737]	3680 [1737]	3680 [1737]
No. Motors/HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP
Motor RPM	1075	1075	1075	1075
Indoor Fan - Type	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]	1/10x10 [254x254]
Drive Type	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)
No. Speeds	Single	Single	Single	Single
No. Motors	1	1	1	1
Motor HP	1/2	3/4	1/2	3/4
Motor RPM	1725	1725	1725	1725
Motor Frame Size	48	56	48	56
Filter - Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes	Yes
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]
Refrigerant Charge Oz. [g]	68 [1928]	68 [1928]	68 [1928]	68 [1928]
Weights				
Net Weight lbs. [kg]	509 [231]	510 [231]	509 [231]	510 [231]
Ship Weight lbs. [kg]	516 [234]	517 [235]	516 [234]	517 [235]

GENERAL DATA - RLQN MODELS
NOMINAL SIZES 3-5 TONS [10.6-17.6 kW]

Model RLQN- Series	C060CV000	C060DV000
Cooling Performance[1]		
Gross Cooling Capacity Btu [kW]	59,000 [17.29]	59,000 [17.29]
SEER[2]	15	15
EER (1st stage / 2nd stage)	19.9/11.5	19.9/11.5
AHRI Rated CFM (1st / 2nd stage) [L/s]	1375 / 1800 [649 / 849]	1375 / 1800 [649 / 849]
AHRI Net Cooling Capacity (1st / 2nd stage) Btu [kW]	49,000 / 57,000 [14.3/16.7]	49,000 / 57,000 [14.3/16.7]
Net Sensible Capacity (1st / 2nd stage) Btu [kW]	34,800 / 40,800 [10.2/12.0]	34,800 / 40,800 [10.2/12.0]
Net Latent Capacity (1st / 2nd stage) Btu [kW]	14,200 / 16,200 [4.2 / 4.8]	14,200 / 16,200 [4.2 / 4.8]
Net System Power (1st / 2nd stage) [kW]	2.1 / 4.8	2.1 / 4.8
Compressor		
No./Type	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[5]	83	83
Outdoor Coil - Fin Type	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.7 [18]	0.7 [18]
Face Area sq. ft. [sq. m]	16.4 [1.52]	16.4 [1.52]
Rows / FPI [FPcm]	1 / 23 [9]	1 / 23 [9]
Indoor Coil - Fin Type	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	1.3 [32]	1.3 [32]
Face Area sq. ft. [sq. m]	4.8 [0.45]	4.8 [0.45]
Rows / FPI [FPcm]	1 / 20 [8]	1 / 20 [8]
Refrigerant Control	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/0.75 [19.05]	1/0.75 [19.05]
Outdoor Fan - Type	Propeller	Propeller
No. Used/Diameter in. [mm]	1/24 [609.6]	1/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1
CFM [L/s]	3930 [1855]	3930 [1855]
No. Motors/HP	1 at 1/3 HP	1 at 1/3 HP
Motor RPM	1075	1075
Indoor Fan - Type	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/11x10 [279x254]	1/11x10 [279x254]
Drive Type	Direct	Direct
No. Speeds	Multiple	Multiple
No. Motors	1	1
Motor HP	1	1
Motor RPM	1050	1050
Motor Frame Size	48	48
Filter - Type	Disposable	Disposable
Furnished	Yes	Yes
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]	(1)1x16x25 [25x406x635] (1)1x16x25 [25x406x635]
Refrigerant Charge Oz. [g]	63 [1786]	63 [1786]
Weights		
Net Weight lbs. [kg]	513 [233]	569 [258]
Ship Weight lbs. [kg]	520 [236]	576 [261]

XX. MISCELLANEOUS

ELECTRICAL DATA – RLPN SERIES									
		C036CL000	C036CM000	C036DL000	C036DM000	C048CL000	C048CM000	C048DL000	C048DM000
Unit Information	Unit Operating Voltage Range	187-253	187-253	414-506	414-506	187-253	187-253	414-506	414-506
	Volts	208/230	208/230	460	460	208/230	208/230	460	460
	Minimum Circuit Ampacity	16/16	16/16	10	10	21/21	22/22	11	11
	Minimum Overcurrent Protection Device Size	20/20	20/20	15	15	25/25	25/25	15	15
	Maximum Overcurrent Protection Device Size	20/20	20/20	15	15	30/30	30/30	15	15
Compressor Motor	No.	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	460	460	208/230	208/230	460	460
	Phase	3	3	3	3	3	3	3	3
	RPM	3450	3450	3450	3450	3450	3450	3450	3450
	HP, Compressor 1	3	3	3	3	4	4	4	4
	Amps (RLA), Comp. 1	9/9	9/9	5.6	5.6	13.1/13.1	13.1/13.1	6.1	6.1
	Amps (LRA), Comp. 1	71/71	71/71	38	38	83.1/83.1	83.1/83.1	41	41
Condenser Motor	No.	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	460	460	208/230	208/230	460	460
	Phase	1	1	1	1	1	1	1	1
	HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3
	Amps (FLA, each)	1.5/1.5	1.5/1.5	1	1	1.5/1.5	1.5/1.5	1	1
	Amps (LRA, each)	3/3	3/3	1.9	1.9	3/3	3/3	1.9	1.9
Evaporator Fan	No.	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	460	460	208/230	208/230	460	460
	Phase	3	3	3	3	3	3	3	3
	HP	1/2	3/4	1/2	3/4	1/2	3/4	1/2	3/4
	Amps (FLA, each)	2.8/2.8	2.8/2.8	1.4	1.4	2.8/2.8	3.4/3.4	1.4	1.6
	Amps (LRA, each)	11.3/11.3	16.8/16.8	6.2	8.4	11.3/11.3	16.8/16.8	6.2	8.4

ELECTRICAL DATA – RLPN SERIES

		C060CL000	C060CM000	C060DL000	C060DM000
Unit Information	Unit Operating Voltage Range	187-253	187-253	414-506	414-506
	Volts	208/230	208/230	460	460
	Minimum Circuit Ampacity	26/26	27/27	13	13
	Minimum Overcurrent Protection Device Size	30/30	35/35	15	15
	Maximum Overcurrent Protection Device Size	40/40	40/40	20	20
Compressor Motor	No.	1	1	1	1
	Volts	208/230	208/230	460	460
	Phase	3	3	3	3
	RPM	3450	3450	3450	3450
	HP, Compressor 1	5	5	5	5
	Amps (RLA), Comp. 1	16/16	16/16	7.8	7.8
	Amps (LRA), Comp. 1	110/110	110/110	52	52
Condenser Motor	No.	1	1	1	1
	Volts	208/230	208/230	460	460
	Phase	1	1	1	1
	HP	1/3	1/3	1/3	1/3
	Amps (FLA, each)	2.2/2.2	2.2/2.2	1	1
	Amps (LRA, each)	4.9/4.9	4.9/4.9	1.9	1.9
Evaporator Fan	No.	1	1	1	1
	Volts	208/230	208/230	460	460
	Phase	3	3	3	3
	HP	3/4	1	3/4	1
	Amps (FLA, each)	3.4/3.4	4.1/4.1	1.6	2
	Amps (LRA, each)	16.8/16.8	24/24	8.4	12

ELECTRICAL DATA – RLQN SERIES

		C036CL000	C036CM000	C036DL000	C036DM000	C048CL000	C048CM000	C048DL000	C048DM000	C060CV000	C060DV000
Unit Information	Unit Operating Voltage Range	187-253	187-253	414-506	414-506	187-253	187-253	414-506	414-506	187-253	414-506
	Volts	208/230	208/230	460	460	208/230	208/230	460	460	208/230	460
	Minimum Circuit Ampacity	16/16	16/16	10	10	21/21	22/22	11	11	32/32	16
	Minimum Overcurrent Protection Device Size	20/20	20/20	15	15	25/25	25/25	15	15	40/40	20
	Maximum Overcurrent Protection Device Size	20/20	20/20	15	15	30/30	30/30	15	15	45/45	20
Compressor Motor	No.	1	1	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	460	460	208/230	208/230	460	460	208/230	460
	Phase	3	3	3	3	3	3	3	3	3	3
	RPM	3450	3450	3450	3450	3450	3450	3450	3450	3450	3450
	HP, Compressor 1	3	3	3	3	4	4	4	4	5	5
	Amps (RLA), Comp. 1	9/9	9/9	5.6	5.6	13.1/13.1	13.1/13.1	6.1	6.1	16.2/16.2	7.6
	Amps (LRA), Comp. 1	71/71	71/71	38	38	83.1/83.1	83.1/83.1	41	41	110/110	52
Condenser Motor	No.	1	1	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	460	460	208/230	208/230	460	460	208/230	460
	Phase	1	1	1	1	1	1	1	1	1	1
	HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3
	Amps (FLA, each)	1.5/1.5	1.5/1.5	1	1	1.5/1.5	1.5/1.5	1	1	2.2/2.2	1
	Amps (LRA, each)	3/3	3/3	1.9	1.9	3/3	3/3	1.9	1.9	4.9/4.9	1.9
Evaporator Fan	No.	1	1	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	460	460	208/230	208/230	460	460	208/230	460
	Phase	3	3	3	3	3	3	3	3	3	3
	HP	1/2	1/2	1/2	1/2	1/2	3/4	1/2	3/4	1	1
	Amps (FLA, each)	2.8/2.8	2.8/2.8	1.4	1.4	2.8/2.8	3.4/3.4	1.4	1.6	9.1/9.1	4.6
	Amps (LRA, each)	11.3/11.3	16.8/16.8	6.2	8.4	11.3/11.3	16.8/16.8	6.2	8.4	0/0	0

AIRFLOW PERFORMANCE-3 TON [10.55 Kw] THREE PHASE BELT DRIVE

Air Flow CFM [L/s]	Capacity 3 Ton [10.55 kW]																											
	Voltage 208/230/460/575, 3-Phase																											
	External Static Pressure - Inches of Water [kPa]																											
	0.1 [.02]		0.2 [.05]		0.3 [.07]		0.4 [.10]		0.5 [.12]		0.6 [.15]		0.7 [.17]		0.8 [.20]		0.9 [.22]		1.0 [.25]		1.1 [.27]		1.2 [.30]		1.3 [.32]		1.4 [.35]		1.5 [.37]	
	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
900 [425]	—	—	—	—	699	223	765	261	827	292	886	318	941	338	993	352	1042	360	1087	362	1129	358	1168	348	1203	332	1235	310	1264	282
1000 [472]	—	—	662	228	717	258	781	293	842	323	899	346	952	364	1002	376	1049	381	1093	381	1133	374	1170	362	1203	344	1233	320	1260	289
1100 [519]	—	—	667	275	737	295	798	328	857	355	912	377	964	392	1012	401	1057	404	1099	402	1137	393	1172	378	1204	358	1232	331	1257	298
1200 [566]	643	278	693	298	756	334	817	365	873	390	927	409	976	422	1023	428	1066	429	1106	424	1143	413	1176	396	1205	373	1232	344	1255	309
1300 [614]	661	316	716	341	777	376	835	404	890	426	942	443	990	453	1035	458	1076	456	1114	449	1149	435	1180	416	1208	391	1232	359	1254	322
1400 [661]	669	352	739	387	799	419	855	445	908	465	958	479	1004	487	1047	489	1087	485	1123	475	1156	460	1185	438	1211	410	1234	377	1253	337
1500 [708]	702	399	763	434	821	464	876	487	927	505	975	517	1019	523	1060	522	1098	516	1132	504	1163	486	1191	462	1215	432	1236	396	1254	354

NOTE: L-DRIVE LEFT OF BOLD LINE, M-DRIVE RIGHT OF BOLD LINE

Drive Package	L						M						N Drive (Field Supplied)
Motor H.P. [W]	1/2 [373]						1/2 [373]						1/2 [373]
Blower Sheave	6.9" Pitch Diameter						6.4" Pitch Diameter						5.7" Pitch Diameter
Motor Sheave	2.4" - 3.4" Pitch Diameter						3.4" - 4.4" Pitch Diameter						3.4" - 4.4" Pitch Diameter
Turns Open	0	1	**2**	3	4	5	0	1	2	**3**	4	5	RPM Range - 1030-1330
RPM	910	869	**818**	775	728	682	1176	1145	1108	**1060**	996	968	

COMPONENT AIR RESISTANCE

Component	Standard Indoor Airflow -- CFM [L/s]					
	1000 [472]	1200 [566]	1400 [661]	1600 [755]	1800 [850]	2000 [944]
	Resistance -- Inches Water [kPa]					
Wet Coil	0.035	0.040	0.060	0.070	0.085	0.100
Downflow	0.055	0.060	0.066	0.072	0.080	0.086
R.S.I. Economizer R.A. Damper	0.05	0.06	0.07	0.08	0.09	0.10

NOTES:

1. Performance shown with dry coil & standard 2" [50.8 mm] filters.
2. Standard CFM @ .075 ibs./cu.ft.
3. Motor efficiency = 80%
4. BHP = Watts X Motor Efficiency/746.
5. Add component resistance to duct static to determine E.S.P as shown on charts.

[ ] Designates Metric Conversions

AIRFLOW PERFORMANCE-4 TON [14.07 Kw] THREE PHASE BELT DRIVE

Air Flow CFM [L/s]	Capacity 4 Ton [14.07 kW]																											
	Voltage 208/230/460/575, 3-Phase																											
	External Static Pressure - Inches of Water [kPa]																											
	0.1 [.02]		0.2 [.05]		0.3 [.07]		0.4 [.10]		0.5 [.12]		0.6 [.15]		0.7 [.17]		0.8 [.20]		0.9 [.22]		1.0 [.25]		1.1 [.27]		1.2 [.30]		1.3 [.32]		1.4 [.35]		1.5 [.37]	
	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
1200 [566]	—	—	—	—	—	—	817	425	879	440	940	456	999	475	1057	496	1113	519	1168	545	1221	572	1272	602	1322	634	1371	669	1420	704
1300 [614]	—	—	—	—	—	—	838	437	899	457	958	479	1015	503	1071	529	1126	558	1178	589	1230	622	1279	657	1327	695	1374	734	1421	773
1400 [661]	—	—	—	—	806	418	861	457	919	482	976	510	1032	539	1086	571	1138	605	1189	641	1239	680	1286	720	1333	763	1377	808	1421	853
1500 [708]	—	—	—	—	825	458	883	486	940	517	995	549	1048	584	1101	622	1151	661	1200	703	1248	746	1294	792	1338	841	1382	890	1426	939
1600 [755]	—	—	798	449	849	490	905	523	960	559	1013	598	1065	638	1115	681	1164	725	1211	772	1257	821	1301	873	1343	926	1385	979	1427	1032
1700 [802]	—	—	817	493	873	530	928	569	981	611	1032	654	1082	700	1130	748	1177	798	1222	851	1266	905	1308	962	1349	1021	1390	1080	1431	1139
1800 [850]	791	490	844	537	898	579	950	624	1002	670	1051	719	1099	771	1146	824	1190	880	1234	937	1276	997	1316	1059	1355	1124	1394	1189	—	—
1900 [897]	816	543	870	589	923	637	973	687	1023	739	1070	793	1116	850	1161	908	1204	969	1245	1033	1285	1098	1324	1166	1361	1235	1398	1304	—	—
2000 [944]	845	599	897	650	947	703	996	758	1044	816	1089	875	1134	937	1176	1002	1217	1068	1257	1137	1295	1207	1332	1280	1367	1355	—	—	—	—

NOTE: L-DRIVE LEFT OF BOLD LINE, M-DRIVE RIGHT OF BOLD LINE

Drive Package	L						M						N Drive (Field Supplied)
Motor H.P. [W]	1/2 [373]						3/4 [559]						3/4 [559]
Blower Sheave	6.9" Pitch Diameter						6.4" Pitch Diameter						6.4" Pitch Diameter
Motor Sheave	2.8" - 3.8" Pitch Diameter						3.4" - 4.4" Pitch Diameter						4.0" - 5.0" Pitch Diameter
Turns Open	0	1	**2**	3	4	5	0	1	2	**3**	4	5	RPM Range - 1080-1350
RPM	1029	984	**950**	915	855	816	1281	1207	1174	**1141**	1111	1071	

COMPONENT AIR RESISTANCE

Component	Standard Indoor Airflow -- CFM [L/s]					
	1000 [472]	1200 [566]	1400 [661]	1600 [755]	1800 [850]	2000 [944]
	Resistance -- Inches Water [kPa]					
Wet Coil	0.035	0.040	0.060	0.070	0.085	0.100
Downflow	0.055	0.060	0.066	0.072	0.080	0.086
R.S.I. Economizer R.A.	0.05	0.06	0.07	0.08	0.09	0.10

NOTES:

1. Performance shown with dry coil & standard 2" [50.8 mm] filters.
2. Standard CFM @ .075 ibs./cu.ft.
3. Motor efficiency = 80%
4. BHP = Watts X Motor Efficiency/746.
5. Add component resistance to duct static to determine E.S.P as shown on charts.

[ ] Designates Metric Conversions

AIRFLOW PERFORMANCE-5 TON [17.6 Kw] THREE PHASE BELT DRIVE

Air Flow CFM [L/s]	Capacity 5 Ton [17.6 kW] 14 SEER Voltage 208/230/460/575, 3-Phase External Static Pressure - Inches of Water [kPa]																													
	0.1 [.02]		0.2 [.05]		0.3 [.07]		0.4 [.10]		0.5 [.12]		0.6 [.15]		0.7 [.17]		0.8 [.20]		0.9 [.22]		1.0 [.25]		1.1 [.27]		1.2 [.30]		1.3 [.32]		1.4 [.35]		1.5 [.37]	
	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
1400 [661]	—	—	—	—	—	—	784	466	835	497	886	533	935	574	983	621	1030	674	1077	732	1122	795	1166	864	1209	939	1251	1019	1292	1104
1500 [708]	—	—	—	—	—	—	800	484	850	519	899	558	947	604	994	655	1040	711	1085	773	1129	841	1172	914	1214	992	1255	1076	1295	1166
1600 [755]	—	—	—	—	766	478	816	511	865	549	913	593	960	643	1006	698	1051	758	1095	824	1137	895	1179	972	1220	1055	1260	1143	1300	1231
1700 [802]	—	—	—	—	785	509	833	546	881	589	928	637	974	690	1018	749	1062	813	1105	883	1146	959	1187	1040	1227	1126	1265	1218	1303	1310
1800 [850]	—	—	755	505	804	550	851	591	898	637	943	689	988	747	1031	810	1074	878	1115	952	1156	1031	1195	1116	1234	1207	1271	1302	1308	1397
1900 [897]	716	491	776	560	823	600	869	645	915	695	959	751	1003	812	1045	879	1086	951	1127	1029	1166	1113	1204	1202	1242	1296	1278	1396	1314	1496
2000 [944]	745	562	797	615	843	658	889	707	933	762	976	821	1018	887	1059	958	1099	1034	1139	1116	1177	1203	1214	1296	1250	1394	1285	1498	1320	1602
2100 [991]	773	637	819	679	864	726	908	779	951	837	993	901	1034	970	1074	1045	1113	1125	1151	1211	1188	1303	1224	1399	1259	1502	1293	1609	—	—
2200 [1038]	797	706	842	751	886	803	929	860	971	922	1011	990	1051	1063	1090	1142	1128	1226	1165	1316	1200	1411	1235	1512	1269	1618	—	—	—	—
2300 [1085]	822	783	865	833	908	888	950	949	990	1015	1030	1087	1069	1164	1106	1247	1143	1335	1179	1429	1213	1528	1247	1633	1279	1743	—	—	—	—
2400 [1133]	847	870	889	924	931	983	971	1048	1011	1118	1049	1194	1087	1275	1123	1362	1159	1454	1193	1551	1227	1655	1259	1763	1291	1878	—	—	—	—
2500 [1179]	873	966	914	1023	954	1087	994	1155	1032	1229	1069	1309	1106	1394	1141	1485	1175	1581	1209	1683	1241	1790	1272	1903	—	—	—	—	—	—

NOTE: L-DRIVE LEFT OF BOLD LINE, M-DRIVE RIGHT OF BOLD LINE

Drive Package	L						M						N Drive (Field Supplied)
Motor H.P. [W]	3/4 [559]						1 [746]						1 [746]
Blower Sheave	6.9" Pitch Diameter						6.9" Pitch Diameter						6.4" Pitch Diameter
Motor Sheave	2.8" - 3.8" Pitch Diameter						4.0" - 5.0" Pitch Diameter						4.0" - 5.0" Pitch Diameter
Turns Open	0	1	**2**	3	4	5	0	1	2	**3**	4	5	RPM Range - 1080-1348
RPM	967	936	**900**	855	816	769	1248	1203	1163	**1123**	1078	1042	

COMPONENT AIR RESISTANCE

Component	Standard Indoor Airflow -- CFM [L/s]					
	1600 [755]	1800 [850]	2000 [944]	2200 [1038]	2400 [1133]	2600 [1227]
	Resistance -- Inches Water [kPa]					
Wet Coil	0.070	0.085	0.100	0.110	0.120	0.125
Downflow	0.072	0.080	0.086	0.093	0.100	0.107
R.S.I. Economizer R.A.	0.08	0.09	0.10	0.11	0.12	0.13

NOTES:

1. Performance shown with dry coil & standard 2" [50.8 mm] filters.
2. Standard CFM @ .075 ibs./cu.ft.
3. Motor efficiency = 80%
4. BHP = Watts X Motor Efficiency/746.
5. Add component resistance to duct static to determine E.S.P as shown on charts.

[ ] Designates Metric Conversions

5-TON 15 SEER 2-STAGE DV MODELS		CFM Setting		CFM [L/s] Air Delivery/RPM/Watts-208/230/460 Volts													
				Enternal Static Pressure--Inches W.C. [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]
1st Stage Cooling	FACTORY SETTING	**1400**	CFM	1393	1418	1443	1463	1470	1448	1456	1463	1415	1403	1376	1341	1289	1265	1229
			RPM	610	688	754	800	873	940	992	1026	1080	1130	1160	1186	1213	1254	1292
			Watts	215	266	314	350	409	466	515	550	599	653	683	710	742	791	835
	OPIONAL	**1600**	CFM	1579	1599	1626	1642	1647	1642	1651	1648	1644	1633	1616	1570	1523	1499	1397
			RPM	676	734	793	850	903	952	1004	1054	1095	1139	1186	1225	1265	1297	1321
			Watts	302	349	404	454	508	560	614	670	717	772	836	885	942	988	989
2nd Stage Cooling	Fan & Heating	FACTORY SETTING	**1800**	CFM	1758	1784	1796	1801	1820	1825	1834	1826	1832	1830	1814	1817	1795	1682	1561
				RPM	722	782	836	874	932	971	1022	1065	1114	1150	1189	1231	1273	1319	1348
				Watts	392	451	508	547	615	664	728	786	854	908	968	1036	1106	1147	1127
		OPIONAL	**2000**	CFM	2075	2087	2088	2085	2090	2101	2114	2106	2105	2101	2034	2001	1943	1855	1628
				RPM	798	843	897	936	981	1018	1057	1096	1136	1170	1203	1241	1272	1309	1349
				Watts	590	646	714	769	835	890	953	1014	1082	1137	1167	1193	1220	1241	1186
		OPIONAL	**2200**	CFM	2222	2220	2239	2244	2261	2236	2216	2180	2146	2110	2051	2010	1958	1863	1636
				RPM	841	883	933	971	1008	1046	1075	1106	1141	1173	1207	1238	1273	1312	1351
				Watts	717	777	856	921	984	1037	1054	1083	1115	1143	1176	1201	1233	1250	1195

NOTE: Reference "UNITS WITH ECM MOTORS" in Table of Contents for airflow adjustments.

AUXILIARY HEATER KITS CHARACTERISTICS AND APPLICATION–RLPN-C

Rheem Air Conditioning Division
Rating Plate Stamping Instructions
Electric Heat Data for Package Units

	RHEEM/RUUD								
	X	Y	Z	AA	BB	CC	DD	EE	FF
UNIT MODEL NUMBER RLPN-	HEATER KIT MODEL NO. RXJJ-	HEATER KW @ 208/240	HEATER KIT FLA	UNIT MIN. CKT. AMPACITY	MAX FUSE OR CKT. BKR. SIZE (CKT. BKR. MUST BE HACR TYPE FOR USA)	HEATER KIT MIN. CKT. AMPACITY	HEATER KIT MAX FUSE OR CKT. BKR. SIZE (CKT. BKR. MUST BE HACR TYPE FOR USA)	AIR COND. MIN. CKT. AMPACITY	AIR COND. MAX. FUSE OR CKT. BKR. SIZE (CKT. BKR. MUST BE HACR TYPE FOR USA)
C036CL	NONE	-	-	16/16	20/20	-	-	16/16	20/20
	A06C	4.2/5.6	11.7/13.5	19/21	20/25	15/17	15/20	16/16	20/20
	A10C	7.2/9.6	20/23.1	29/33	30/35	25/29	25/30	16/16	20/20
	A12C	8.4/11.2	23.4/27	33/38	35/40	30/34	30/35	16/16	20/20
	A15C	10.8/14.4	30.1/34.7	42/47	45/50	38/44	40/45	16/16	20/20
	A20C	14.4/19.2	40/46.3	54/62	60/70	50/58	50/60	16/16	20/20
C036CM	NONE	-	-	16/16	20/20	-	-	16/16	20/20
	A06C	4.2/5.6	11.7/13.5	19/21	20/25	15/17	15/20	16/16	20/20
	A10C	7.2/9.6	20/23.1	29/33	30/35	25/29	25/30	16/16	20/20
	A12C	8.4/11.2	23.4/27	33/38	35/40	30/34	30/35	16/16	20/20
	A15C	10.8/14.4	30.1/34.7	42/47	45/50	38/44	40/45	16/16	20/20
	A20C	14.4/19.2	40/46.3	54/62	60/70	50/58	50/60	16/16	20/20
C048CL	NONE	-	-	21/21	30/30	-	-	21/21	30/30
	A06C	4.2/5.6	11.7/13.5	21/21	30/30	15/17	15/20	21/21	30/30
	A10C	7.2/9.6	20/23.1	29/33	30/35	25/29	25/30	21/21	30/30
	A12C	8.4/11.2	23.4/27	33/38	35/40	30/34	30/35	21/21	30/30
	A15C	10.8/14.4	30.1/34.7	42/47	45/50	38/44	40/45	21/21	30/30
	A20C	14.4/19.2	40/46.3	54/62	60/70	50/58	50/60	21/21	30/30
C048CM	NONE	-	-	22/22	30/30	-	-	22/22	30/30
	A06C	4.2/5.6	11.7/13.5	22/22	30/30	15/17	15/20	22/22	30/30
	A10C	7.2/9.6	20/23.1	30/34	30/35	25/29	25/30	22/22	30/30
	A12C	8.4/11.2	23.4/27	34/39	35/40	30/34	30/35	22/22	30/30
	A15C	10.8/14.4	30.1/34.7	42/48	45/50	38/44	40/45	22/22	30/30
	A20C	14.4/19.2	40/46.3	55/63	60/70	50/58	50/60	22/22	30/30
C060CL	NONE	-	-	26/26	40/40	-	-	26/26	40/40
	A06C	4.2/5.6	11.7/13.5	26/26	40/40	15/17	15/20	26/26	40/40
	A10C	7.2/9.6	20/23.1	30/34	40/40	25/29	25/30	26/26	40/40
	A12C	8.4/11.2	23.4/27	34/39	40/40	30/34	30/35	26/26	40/40
	A15C	10.8/14.4	30.1/34.7	42/48	45/50	38/44	40/45	26/26	40/40
	A20C	14.4/19.2	40/46.3	55/63	60/70	50/58	50/60	26/26	40/40
	A24C	18/24	50/57.7	67/77	70/80	63/73	70/80	26/26	40/40
C060CM	NONE	-	-	27/27	40/40	-	-	27/27	40/40
	A06C	4.2/5.6	11.7/13.5	27/27	40/40	15/17	15/20	27/27	40/40
	A10C	7.2/9.6	20/23.1	31/35	40/40	25/29	25/30	27/27	40/40
	A12C	8.4/11.2	23.4/27	35/39	40/40	30/34	30/35	27/27	40/40
	A15C	10.8/14.4	30.1/34.7	43/49	45/50	38/44	40/45	27/27	40/40
	A20C	14.4/19.2	40/46.3	56/63	60/70	50/58	50/60	27/27	40/40
	A24C	18/24	50/57.7	68/78	70/80	63/73	70/80	27/27	40/40

AUXILIARY HEATER KITS CHARACTERISTICS AND APPLICATION–RLPN-C

Rheem Air Conditioning Division
Rating Plate Stamping Instructions
Electric Heat Data for Package Units

	RHEEM/RUUD								
	X	Y	Z	AA	BB	CC	DD	EE	FF
UNIT MODEL NUMBER RLPN-	HEATER KIT MODEL NO. RXJJ-	HEATER KW @ 480	HEATER KIT FLA	UNIT MIN. CKT. AMPACITY	MAX FUSE OR CKT. BKR. SIZE (CKT. BKR. MUST BE HACR TYPE FOR USA)	HEATER KIT MIN. CKT. AMPACITY	HEATER KIT MAX FUSE OR CKT. BKR. SIZE (CKT. BKR. MUST BE HACR TYPE FOR USA)	AIR COND. MIN. CKT. AMPACITY	AIR COND. MAX. FUSE OR CKT. BKR. SIZE (CKT. BKR. MUST BE HACR TYPE FOR USA)
C036DL	NONE	-	-	10	15	-	-	10	15
	A06D	5.6	6.7	11	15	9	15	10	15
	A10D	9.6	11.6	17	20	15	15	10	15
	A12D	11.2	13.5	19	20	17	20	10	15
	A15D	14.4	17.4	24	25	22	25	10	15
	A20D	19.2	23.3	31	35	30	30	10	15
C036DM	NONE	-	-	10	15	-	-	10	15
	A06D	5.6	6.7	11	15	9	15	10	15
	A10D	9.6	11.6	17	20	15	15	10	15
	A12D	11.2	13.5	19	20	17	20	10	15
	A15D	14.4	17.4	24	25	22	25	10	15
	A20D	19.2	23.3	31	35	30	30	10	15
C048DL	NONE	-	-	11	15	-	-	11	15
	A06D	5.6	6.7	11	15	9	15	11	15
	A10D	9.6	11.6	17	20	15	15	11	15
	A12D	11.2	13.5	19	20	17	20	11	15
	A15D	14.4	17.4	24	25	22	25	11	15
	A20D	19.2	23.3	31	35	30	30	11	15
C048DM	NONE	-	-	11	15	-	-	11	15
	A06D	5.6	6.7	11	15	9	15	11	15
	A10D	9.6	11.6	17	20	15	15	11	15
	A12D	11.2	13.5	19	20	17	20	11	15
	A15D	14.4	17.4	24	25	22	25	11	15
	A20D	19.2	23.3	32	35	30	30	11	15
C060DL	NONE	-	-	13	20	-	-	13	20
	A06D	5.6	6.7	13	20	9	15	13	20
	A10D	9.6	11.6	17	20	15	15	13	20
	A12D	11.2	13.5	19	20	17	20	13	20
	A15D	14.4	17.4	24	25	22	25	13	20
	A20D	19.2	23.3	32	35	30	30	13	20
	A24D	24	28.9	39	40	37	40	13	20
C060DM	NONE	-	-	13	20	-	-	13	20
	A06D	5.6	6.7	13	20	9	15	13	20
	A10D	9.6	11.6	18	20	15	15	13	20
	A12D	11.2	13.5	20	20	17	20	13	20
	A15D	14.4	17.4	25	25	22	25	13	20
	A20D	19.2	23.3	32	35	30	30	13	20
	A24D	24	28.9	39	40	37	40	13	20

AUXILIARY HEATER KITS CHARACTERISTICS AND APPLICATION–RLQN-C

Rheem Air Conditioning Division
Rating Plate Stamping Instructions
Electric Heat Data for Package Units

	RHEEM/RUUD								
	X	Y	Z	AA	BB	CC	DD	EE	FF
UNIT MODEL NUMBER RLQN-	HEATER KIT MODEL NO. RXJJ-	HEATER KW @ 208/240	HEATER KIT FLA	UNIT MIN. CKT. AMPACITY	MAX FUSE OR CKT. BKR. SIZE (CKT. BKR. MUST BE HACR TYPE FOR USA)	HEATER KIT MIN. CKT. AMPACITY	HEATER KIT MAX FUSE OR CKT. BKR. SIZE (CKT. BKR. MUST BE HACR TYPE FOR USA)	AIR COND. MIN. CKT. AMPACITY	AIR COND. MAX. FUSE OR CKT. BKR. SIZE (CKT. BKR. MUST BE HACR TYPE FOR USA)
C036CL	NONE	-	-	16/16	20/20	-	-	16/16	20/20
	A06C	4.2/5.6	11.7/13.5	19/21	20/25	15/17	15/20	16/16	20/20
	A10C	7.2/9.6	20/23.1	29/33	30/35	25/29	25/30	16/16	20/20
	A12C	8.4/11.2	23.4/27	33/38	35/40	30/34	30/35	16/16	20/20
	A15C	10.8/14.4	30.1/34.7	42/47	45/50	38/44	40/45	16/16	20/20
	A20C	14.4/19.2	40/46.3	54/62	60/70	50/58	50/60	16/16	20/20
C036CM	NONE	-	-	16/16	20/20	-	-	16/16	20/20
	A06C	4.2/5.6	11.7/13.5	19/21	20/25	15/17	15/20	16/16	20/20
	A10C	7.2/9.6	20/23.1	29/33	30/35	25/29	25/30	16/16	20/20
	A12C	8.4/11.2	23.4/27	33/38	35/40	30/34	30/35	16/16	20/20
	A15C	10.8/14.4	30.1/34.7	42/47	45/50	38/44	40/45	16/16	20/20
	A20C	14.4/19.2	40/46.3	54/62	60/70	50/58	50/60	16/16	20/20
C048CL	NONE	-	-	21/21	30/30	-	-	21/21	30/30
	A06C	4.2/5.6	11.7/13.5	21/21	30/30	15/17	15/20	21/21	30/30
	A10C	7.2/9.6	20/23.1	29/33	30/35	25/29	25/30	21/21	30/30
	A12C	8.4/11.2	23.4/27	33/38	35/40	30/34	30/35	21/21	30/30
	A15C	10.8/14.4	30.1/34.7	42/47	45/50	38/44	40/45	21/21	30/30
	A20C	14.4/19.2	40/46.3	54/62	60/70	50/58	50/60	21/21	30/30
C048CM	NONE	-	-	22/22	30/30	-	-	22/22	30/30
	A06C	4.2/5.6	11.7/13.5	22/22	30/30	15/17	15/20	22/22	30/30
	A10C	7.2/9.6	20/23.1	30/34	30/35	25/29	25/30	22/22	30/30
	A12C	8.4/11.2	23.4/27	34/39	35/40	30/34	30/35	22/22	30/30
	A15C	10.8/14.4	30.1/34.7	42/48	45/50	38/44	40/45	22/22	30/30
	A20C	14.4/19.2	40/46.3	55/63	60/70	50/58	50/60	22/22	30/30
C060CV	NONE	-	-	32/32	45/45	-	-	32/32	45/45
	A06C	4.2/5.6	11.7/13.5	32/32	45/45	15/17	15/20	32/32	45/45
	A10C	7.2/9.6	20/23.1	37/41	45/45	25/29	25/30	32/32	45/45
	A12C	8.4/11.2	23.4/27	41/46	45/50	30/34	30/35	32/32	45/45
	A15C	10.8/14.4	30.1/34.7	50/55	50/60	38/44	40/45	32/32	45/45
	A20C	14.4/19.2	40/46.3	62/70	70/70	50/58	50/60	32/32	45/45
	A24C	18/24	50/57.7	74/84	80/90	63/73	70/80	32/32	45/45

AUXILIARY HEATER KITS CHARACTERISTICS AND APPLICATION–RLQN-C

Rheem Air Conditioning Division
Rating Plate Stamping Instructions
Electric Heat Data for Package Units

	RHEEM/RUUD								
	X	Y	Z	AA	BB	CC	DD	EE	FF
UNIT MODEL NUMBER RLQN-	HEATER KIT MODEL NO. RXJJ-	HEATER KW @ 480	HEATER KIT FLA	UNIT MIN. CKT. AMPACITY	MAX FUSE OR CKT. BKR. SIZE (CKT. BKR. MUST BE HACR TYPE FOR USA)	HEATER KIT MIN. CKT. AMPACITY	HEATER KIT MAX FUSE OR CKT. BKR. SIZE (CKT. BKR. MUST BE HACR TYPE FOR USA)	AIR COND. MIN. CKT. AMPACITY	AIR COND. MAX. FUSE OR CKT. BKR. SIZE (CKT. BKR. MUST BE HACR TYPE FOR USA)
C036DL	NONE	-	-	10	15	-	-	10	15
	A06D	5.6	6.7	11	15	9	15	10	15
	A10D	9.6	11.6	17	20	15	15	10	15
	A12D	11.2	13.5	19	20	17	20	10	15
	A15D	14.4	17.4	24	25	22	25	10	15
	A20D	19.2	23.3	31	35	30	30	10	15
C036DM	NONE	-	-	10	15	-	-	10	15
	A06D	5.6	6.7	11	15	9	15	10	15
	A10D	9.6	11.6	17	20	15	15	10	15
	A12D	11.2	13.5	19	20	17	20	10	15
	A15D	14.4	17.4	24	25	22	25	10	15
	A20D	19.2	23.3	31	35	30	30	10	15
C048DL	NONE	-	-	11	15	-	-	11	15
	A06D	5.6	6.7	11	15	9	15	11	15
	A10D	9.6	11.6	17	20	15	15	11	15
	A12D	11.2	13.5	19	20	17	20	11	15
	A15D	14.4	17.4	24	25	22	25	11	15
	A20D	19.2	23.3	31	35	30	30	11	15
C048DM	NONE	-	-	11	15	-	-	11	15
	A06D	5.6	6.7	11	15	9	15	11	15
	A10D	9.6	11.6	17	20	15	15	11	15
	A12D	11.2	13.5	19	20	17	20	11	15
	A15D	14.4	17.4	24	25	22	25	11	15
	A20D	19.2	23.3	32	35	30	30	11	15
C060DV	NONE	-	-	16	20	-	-	16	20
	A06D	5.6	6.7	16	20	9	15	16	20
	A10D	9.6	11.6	21	25	15	15	16	20
	A12D	11.2	13.5	23	25	17	20	16	20
	A15D	14.4	17.4	28	30	22	25	16	20
	A20D	19.2	23.3	35	35	30	30	16	20
	A24D	24	28.9	42	45	37	40	16	20

FIGURE 19
WIRING DIAGRAM

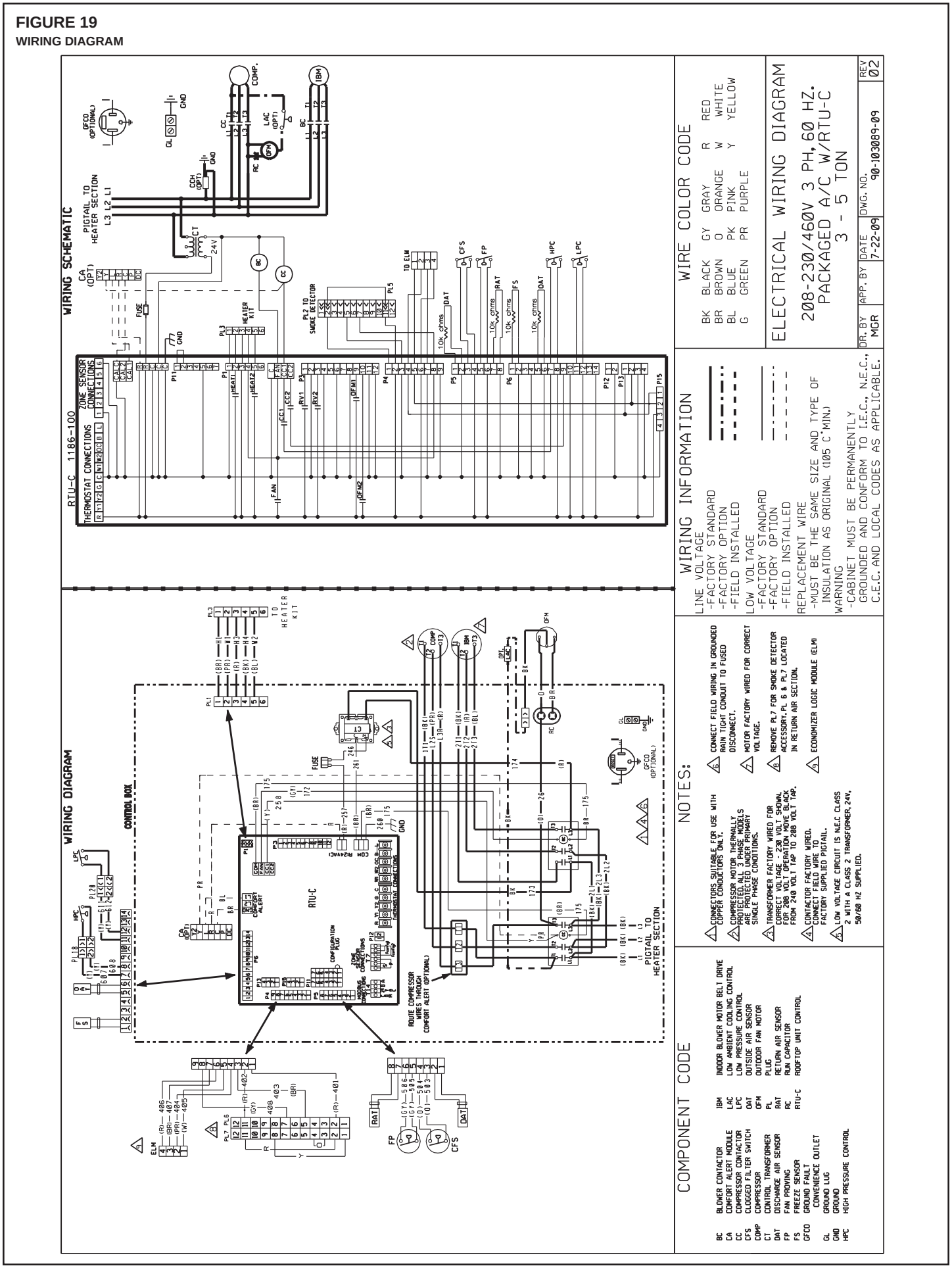


FIGURE 20
WIRING DIAGRAM

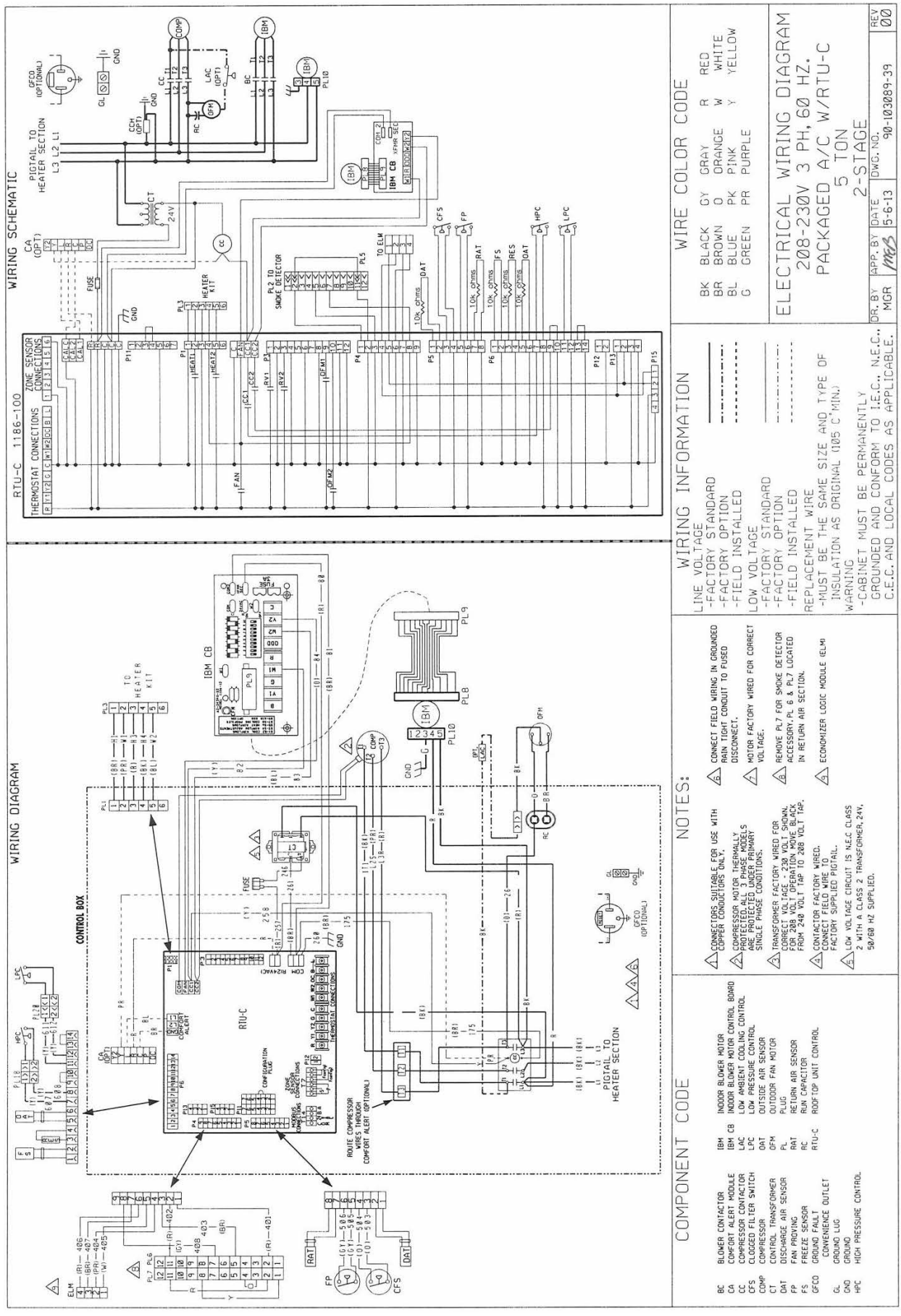
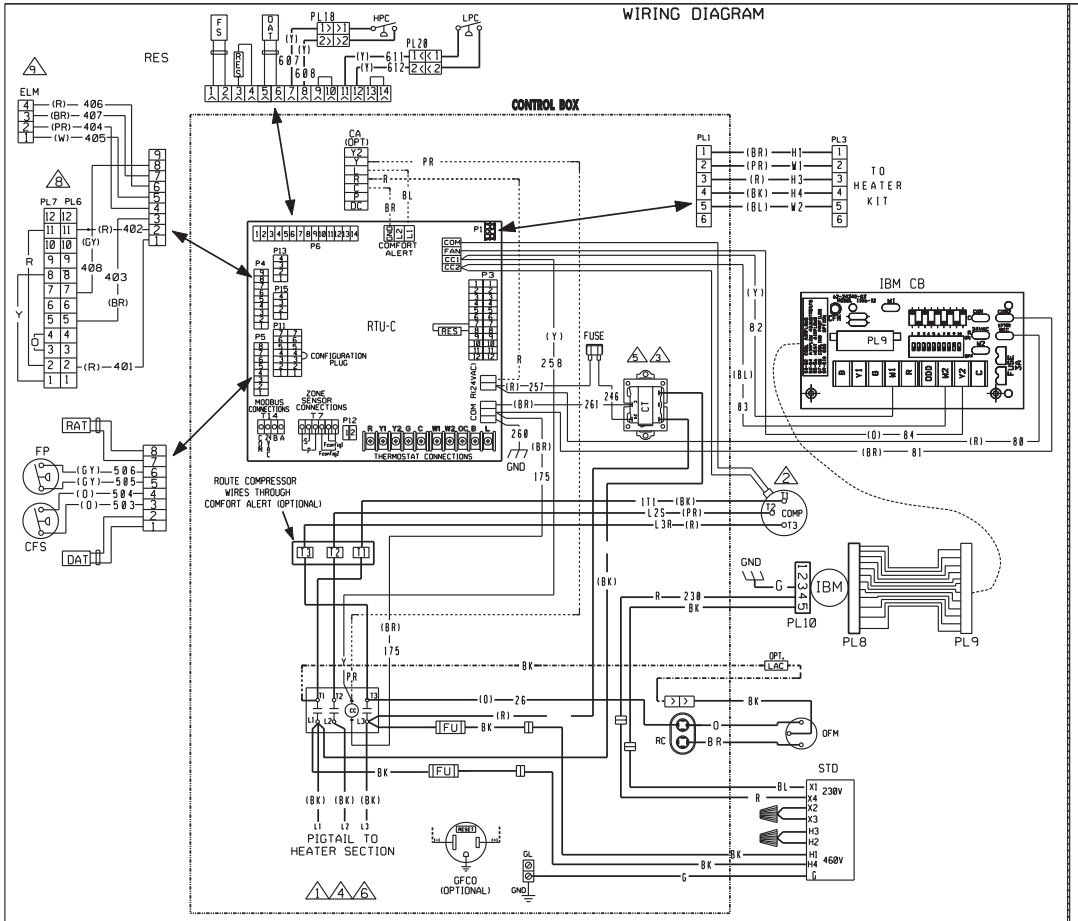
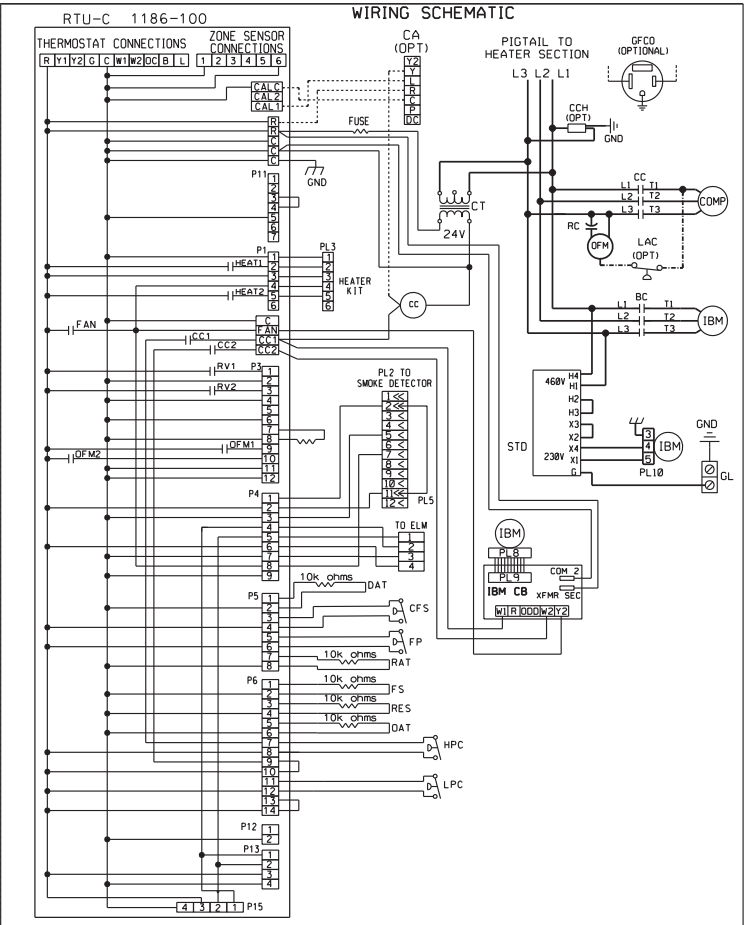


FIGURE 21
WIRING DIAGRAM





COMPONENT CODE

BC	BLOWER CONTACTOR	IBM	INDOOR BLOWER MOTOR
CA	COMFORT ALERT MODULE	IBM CB	INDOOR BLOWER MOTOR CONTROL BOARD
CC	COMPRESSOR CONTACTOR	LAC	LOW AMBIENT COOLING CONTROL
CFS	CLOGGED FILTER SWITCH	LPC	LOW PRESSURE CONTROL
COMP	COMPRESSOR	OAT	OUTSIDE AIR SENSOR
CT	CONTROL TRANSFORMER	OFM	OUTDOOR FAN MOTOR
DAT	DISCHARGE AIR SENSOR	PL	PLUG
FP	FAN PROVING	RAT	RETURN AIR SENSOR
FS	FREEZE SENSOR	RC	RUN CAPACITOR
GFCO	GROUND FAULT CONVENIENCE OUTLET	RES	RESISTOR
		RTU-C	ROOFTOP UNIT CONTROL
GL	GROUND LUG	STD	STEPDOWN TRANSFORMER
GND	GROUND		
HPC	HIGH PRESSURE CONTROL		

NOTES:

1. CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
2. COMPRESSOR MOTOR THERMALLY PROTECTED. ALL 3 PHASE MODELS ARE PROTECTED UNDER PRIMARY SINGLE PHASE CONDITIONS.
3. TRANSFORMER FACTORY WIRED FOR CORRECT VOLTAGE - 230 VOLT SHOWN. FOR 208 VOLT OPERATION MOVE BLACK FROM 240 VOLT TAP TO 208 VOLT TAP.
4. CONTACTOR FACTORY WIRED. CONNECT FIELD WIRE TO FACTORY SUPPLIED PIGTAIL.
5. LOW VOLTAGE CIRCUIT IS N.E.C CLASS 2 WITH A CLASS 2 TRANSFORMER, 24V, 50/60 HZ SUPPLIED.
6. CONNECT FIELD WIRING IN GROUNDED RAIN TIGHT CONDUIT TO FUSED DISCONNECT.
7. MOTOR FACTORY WIRED FOR CORRECT VOLTAGE.
8. REMOVE PL7 FOR SMOKE DETECTOR ACCESSORY. PL 6 & PL7 LOCATED IN RETURN AIR SECTION.
9. ECONOMIZER LOGIC MODULE (ELM)

WIRING INFORMATION

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

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

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

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

WIRE COLOR CODE

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

ELECTRICAL WIRING DIAGRAM
460V 3 PH, 60 HZ.
PACKAGED A/C W/RTU-C
5 TON
2-STAGE

DR. BY	APP. BY	DATE	DWG. NO.	REV
MGR		5-6-13	90-103089-40	Ø1

SYSTEM CHARGE CHART - REFRIGERANT 410A

OUTDOOR DRY BULB	3-TON	4-TON	5-TON

Pressure Requirements - Gross Charge Check ONLY

	Liquid Pressure / Vapor Pressure		
115	475 / 151	499 / 153	499 / 147
105	416 / 149	428 / 151	437 / 144
95	366 / 146	374 / 149	379 / 142
85	317 / 145	323 / 147	328 / 139
75	274 / 143	279 / 145	281 / 136
65	238 / 138	239 / 143	240 / 133
55	205 / 129	207 / 139	207 / 129

Sub Cooling Requirements - Final Charge Verification

115	18	18	17
105	17	17	16
95	17	15	15
85	16	13	13
75	15	12	11
65	15	11	10
55	14	11	10

NOTICE:

- **It is required to fine tune unit charge. Indoor ambient temperature must be between 72°F and 82°F dry bulb at the indoor coil.**
- Measure liquid line temperature at four (4) inches prior to metering device.
- Confirm the indoor supply air flow is correct, reference rated CFM in the unit Specification Sheets
- Allow the system to run long enough for temperatures and pressures to stabilize.
- Sub-cooling tolerance is +/- 1.5°F
- If obtaining rated sub-cooling values causes liquid/vapor pressures that are significantly different (>20 psig) from those listed on the table, there may be a component or air flow issue. Refer to unit Installation trouble shooting section for further support.

92-104690-01-01

TROUBLESHOOTING CHART

⚠ WARNING

DISCONNECT ALL POWER TO UNIT BEFORE SERVICING. CONTACTOR MAY BREAK ONLY ONE SIDE. FAILURE TO SHUT OFF POWER CAN CAUSE ELECTRICAL SHOCK RESULTING IN PERSONAL INJURY OR DEATH.

SYMPTOM	POSSIBLE CAUSE	REMEDY
Unit will not run	• Power off or loose electrical connection • Thermostat out of calibration-set too high • Defective contactor • Blown fuses • Transformer defective • High pressure control open (if provided) • Interconnecting low voltage wiring damaged	• Check for correct voltage at compressor contactor in control box • Reset • Check for 24 volts at contactor coil - replace if contacts are open • Replace fuses • Check wiring-replace transformer • Reset-also see high head pressure remedy-The high pressure control opens at 610 PSIG • Replace thermostat wiring
Condenser fan runs, compressor doesn't	• Run capacitor defective (single phase only) • Start relay defective (single phase on;y) • Loose connection • Compressor stuck, grounded or open motor winding, open internal overload. • Low voltage condition • Low voltage condition	• Replace • Replace • Check for correct voltage at compressor - check & tighten all connections • Wait at least 2 hours for overload to reset. If still open, replace the compressor. • At compressor terminals, voltage must be within 10% of rating plate volts when unit is operating • Add start kit components
Insufficient cooling	• Improperly sized unit • Improper airflow • Incorrect refrigerant charge • Air, non-condensibles or moisture in system • Incorrect voltage	• Recalculate load • Check - should be approximately 400 CFM per ton. • Charge per procedure attached to unit service panel • Recover refrigerant, evacuate & recharge, add filter drier • At compressor terminals, voltage must be within 10% of rating plate volts when unit is operating.
Compressor short cycles	• Incorrect voltage • Defective overload protector • Refrigerant undercharge	• At compressor terminals, voltage must be ±10% of nameplate marking when unit is operating. • Replace - check for correct voltage • Add refrigerant
Registers sweat	• Low evaporator airflow	• Increase speed of blower or reduce restriction - replace air filter
High head-low vapor pressures	• Restriction in liquid line, expansion device or filter drier • Flow check piston size too small • Incorrect capillary tubes • TXV does not open	• Remove or replace defective component • Change to correct size piston • Change coil assembly • Replace TXV
High head-high or normal vapor pressure - Cooling mode	• Dirty condenser coil • Refrigerant overcharge • Condenser fan not running • Air or non-condensibles in system	• Clean coil • Correct system charge • Repair or replace • Recover refrigerant, evacuate & recharge
Low head-high vapor pressures	• Flow check piston size too large • Defective Compressor valves • Incorrect capillary tubes	• Change to correct size piston • Replace compressor • Replace coil assembly
Low vapor - cool compressor - iced evaporator coil	• Low evaporator airflow • Operating below 65°F outdoors • Moisture in system • TXV limiting refrigerant flow	• Increase speed of blower or reduce restriction - replace air filter • Add Low Ambient Kit • Recover refrigerant - evacuate & recharge - add filter drier • Replace TXV
High vapor pressure	• Excessive load • Defective compressor	• Recheck load calculation • Replace
Fluctuating head & vapor pressures	• TXV hunting • Air or non-condensate in system	• Check TXV bulb clamp - check air distribution on coil - replace TXV • Recover refrigerant, evacuate & recharge
Gurgle or pulsing noise at expansion device or liquid line	• Air or non-condensibles in system	• Recover refrigerant, evacuate & recharge