

INSTALLATION INSTRUCTIONS FOR PACKAGED AIR CONDITIONERS

RACB SERIES (2-5 TONS) WITH R-410A REFRIGERANT ~~R-410A~~



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



RECOGNIZE THIS SYMBOL AS AN INDICATION OF IMPORTANT SAFETY INFORMATION!

▲WARNING

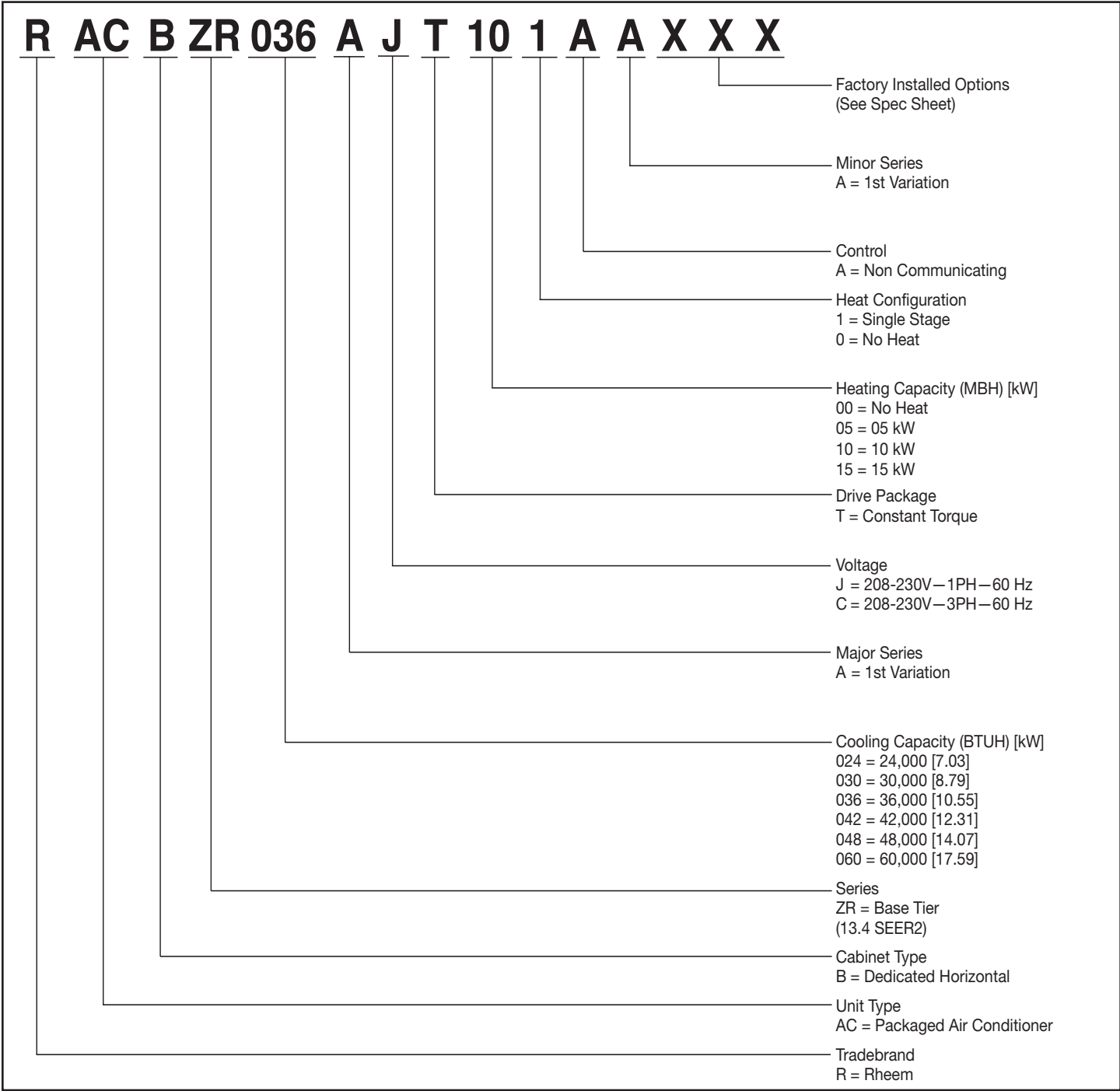
THESE INSTRUCTIONS ARE INTENDED AS AN AID TO QUALIFIED, LICENSED SERVICE PERSONNEL FOR PROPER INSTALLATION, ADJUSTMENT AND OPERATION OF THIS UNIT. READ THESE INSTRUCTIONS THOROUGHLY BEFORE ATTEMPTING INSTALLATION OR OPERATION. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN IMPROPER INSTALLATION,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



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1. BREAKDOWN PAGE



2. IMPORTANT SAFETY AND GENERAL INFORMATION

2.1 Introduction

This booklet contains the installation and operating instructions for your 3 ton, 4 ton, 5 ton, or 6 ton combination gas heating/electric cooling unit. There are some precautions that should be taken to ensure proper operation. 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.

⚠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.

2.2 Agency Performance Audit and Efficiency Testing Notice

NOTICE: BREAK-IN PERIOD

Prior to agency testing, run the compressor for 16 hours at 115°f outdoor ambient temperature and 80° dry bulb / 75° wet bulb indoor ambient temperature.

NOTICE: EFFICIENCY TESTING NOTICE

For purposes of verifying or testing efficiency ratings, the test procedure in title 10 Appendix M to Subpart B of Part 430 (Uniform Test Method for Measuring the Energy Consumption of Central Air Conditioners and Heat Pumps) and the clarifying provisions provided in the standards listed below that were applicable at the date of manufacture should be used for test set up and performance.

SETUP

- ASHRAE 37 - 2009 (RA 2019)

PERFORMANCE:

- ANSI/ASHRAE 90.1 - 2019
- ANSI/ASHRAE 103 (2017)
- AHRI Operations for Unitary Small AC Equipment 210/240 (2017) for 3-5T

SAFETY

UL 1995 5th Edition

2.3. Importance of a Quality Installation

Optimal system performance and longevity depend upon a quality and proper installation. Failure to properly setup and commission this unit could result in undesirable operation and subsequent faults and potential failures.

Carefully follow all guidelines listed in the manual and industry best practices. Conform to all local code requirements. Contact your local technical representative with any questions or concerns.

2.4. Importance of Air Flow and Setup

Optimal system performance is also dependent upon having the ideal airflow across the condensing and evaporating coils, and upon matching the charge weight to the manufacturer's spec for the unit. Improper or restricted air flow, and incorrect charge weight, will hinder the performance of the unit. Please refer to the manufacturer's recommended clearances for setting the unit and the included guide for setting air flow. Refer to the rating plate for the charge weight.

2.5. Checking Product and Inspection

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. IMPORTANT: Check the unit model number, heating size, electrical characteristics, and accessories to determine if they are correct.

2.6. 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.

WARNING

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

WARNING

UNITS ARE NOT DESIGN CERTIFIED TO BE INSTALLED INSIDE THE STRUCTURE. DOING SO CAN CAUSE INADEQUATE UNIT PERFORMANCE AS WELL AS PROPERTY DAMAGE AND CARBON MONOXIDE POISONING RESULTING IN PERSONAL INJURY OR DEATH.

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.

WARNING

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

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.

WARNING

DISCONNECT MAIN ELECTRICAL POWER TO THE UNIT BEFORE ATTEMPTING TO CHANGE BLOWER SPEEDS. FAILURE TO DO SO MAY RESULT IN ELECTRICAL SHOCK OR SEVERE PERSONAL INJURY OR DEATH.

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.

WARNING

IMPORTANT: ALL MANUFACTURER PRODUCTS MEET CURRENT FEDERAL OSHA GUIDELINES FOR SAFETY. CALIFORNIA PROPOSITION 65 WARNINGS ARE REQUIRED FOR CERTAIN PRODUCTS, WHICH ARE NOT COVERED BY THE OSHA STANDARDS.

CALIFORNIA'S PROPOSITION 65 REQUIRES WARNINGS FOR PRODUCTS SOLD IN CALIFORNIA THAT CONTAIN, OR PRODUCE, ANY OF OVER 600 LISTED CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR BIRTH DEFECTS SUCH AS FIBERGLASS INSULATION, LEAD IN BRASS, AND COMBUSTION PRODUCTS FROM NATURAL GAS.

ALL "NEW EQUIPMENT" SHIPPED FOR SALE IN CALIFORNIA WILL HAVE LABELS STATING THAT THE PRODUCT CONTAINS AND/OR PRODUCES PROPOSITION 65 CHEMICALS. ALTHOUGH WE HAVE NOT CHANGED OUR PROCESSES, HAVING THE SAME LABEL ON ALL OUR PRODUCTS FACILITATES MANUFACTURING AND SHIPPING. WE CANNOT ALWAYS KNOW "WHEN, OR IF" PRODUCTS WILL BE SOLD IN THE CALIFORNIA MARKET.

YOU MAY RECEIVE INQUIRIES FROM CUSTOMERS ABOUT CHEMICALS FOUND IN, OR PRODUCED BY, SOME OF OUR HEATING AND AIR-CONDITIONING EQUIPMENT, OR FOUND IN NATURAL GAS USED WITH SOME OF OUR PRODUCTS. LISTED BELOW ARE THOSE CHEMICALS AND SUBSTANCES COMMONLY ASSOCIATED WITH SIMILAR EQUIPMENT IN OUR INDUSTRY AND OTHER MANUFACTURERS.

- GLASS WOOL (FIBERGLASS) INSULATION
- CARBON MONOXIDE (CO)
- FORMALDEHYDE
- BENZENE

MORE DETAILS ARE AVAILABLE AT THE WEBSITES FOR OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION), AT WWW.OSHA.GOV AND THE STATE OF CALIFORNIA'S OEHHA (OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT), AT WWW.OEHHA.ORG. CONSUMER EDUCATION IS IMPORTANT SINCE THE CHEMICALS AND SUBSTANCES ON THE LIST ARE FOUND IN OUR DAILY LIVES. MOST CONSUMERS ARE AWARE THAT PRODUCTS PRESENT SAFETY AND HEALTH RISKS, WHEN IMPROPERLY USED, HANDLED AND MAINTAINED.

EFFICIENCY TESTING NOTICE

For purposes of verifying or testing efficiency ratings, the test procedure in Title 10 Part 431 Appendix A to Subpart F (Uniform Test Method for Measuring the Energy Consumption of Small Large and Very Large Commercial Packaged Air Conditioning and Heating Equipment), Title 10 Part 431.76 Subpart D (Uniform Test Method for Measuring Energy Consumption of Commercial Warm Air Furnaces), and the clarifying provisions provided in the AHRI Operations Manuals for Unitary Large Equipment 340/360, 365 and Commercial Furnaces that were applicable at the date of manufacture should be used for test set up and performance.

3. GENERAL SPECIFICATIONS

3.1. Major Components

The unit includes a hermetically-sealed refrigerating system consisting of a scroll compressor, condenser coil, evaporator coil with TXV, a circulation air blower, a condenser fan, a heat exchanger assembly, gas burner and control assembly, combustion air motor and 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.

3.2. Product Data Information

3.2.1. Dimensional Information

IMPORTANT: This unit must be mounted level in both directions to allow water to drain from the condenser section and condensate pan.

FIGURE 1
UNIT DIMENSIONS AND ACCESS LOCATIONS

3. GENERAL SPECIFICATIONS

3.2. Product Data Information

3.2.1. Dimensional Information (Cont.)

Model	Height "A"
024, 030, 036, 042	29 1/8"
048, 060	37 1/8"

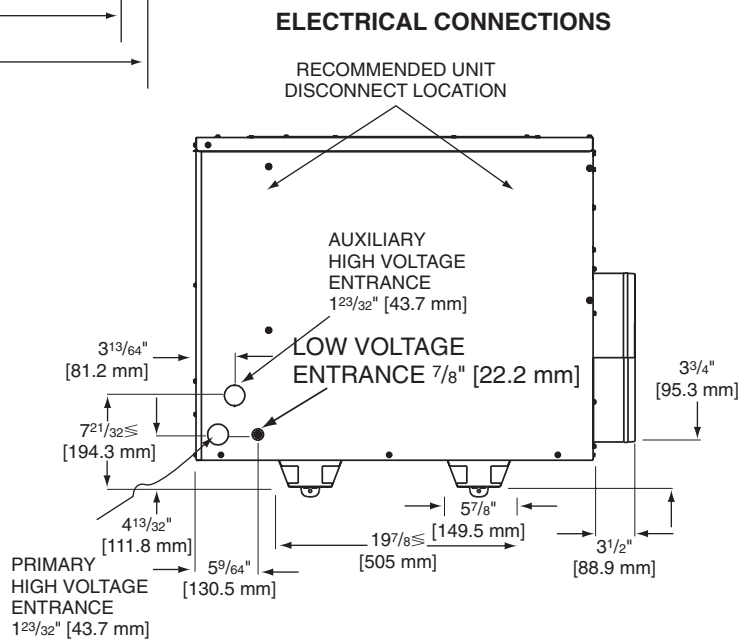
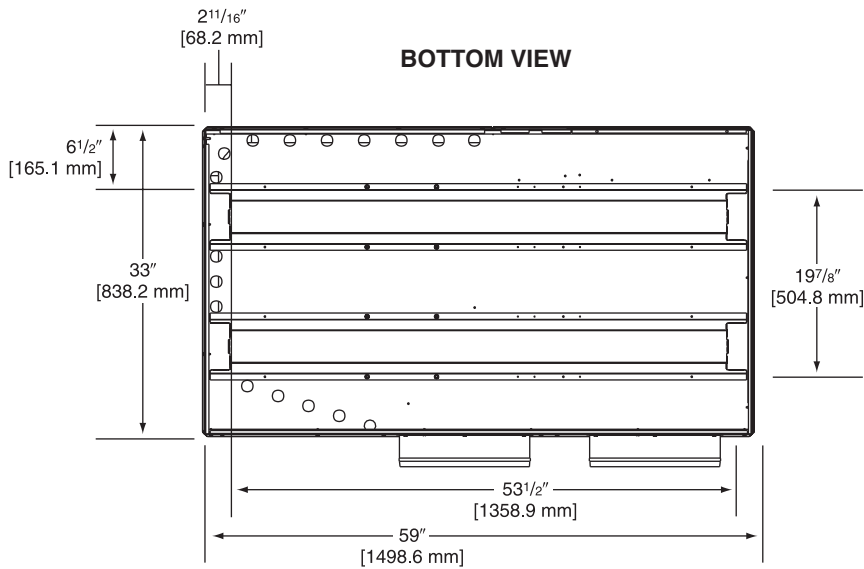
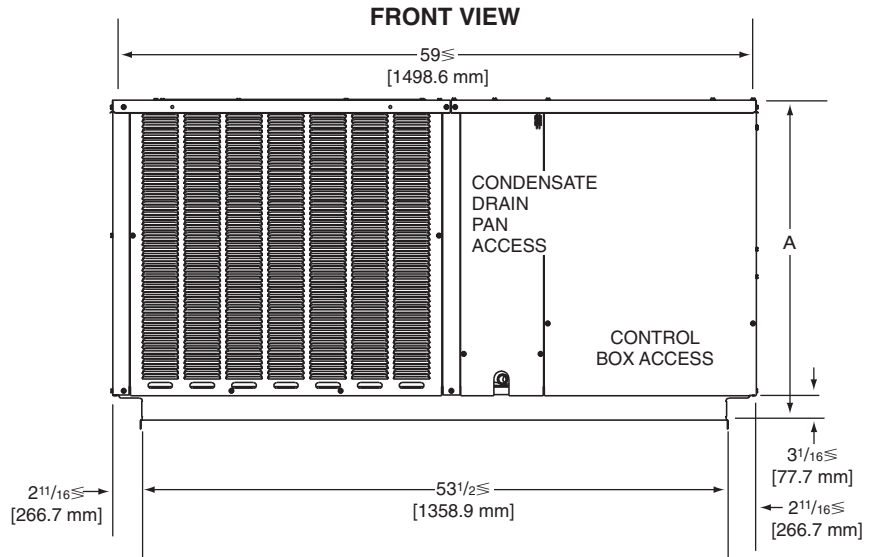
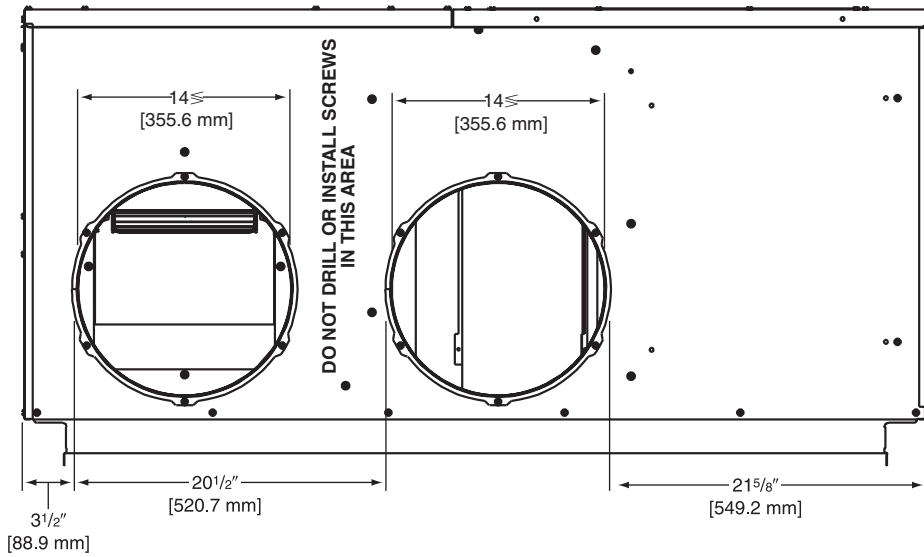
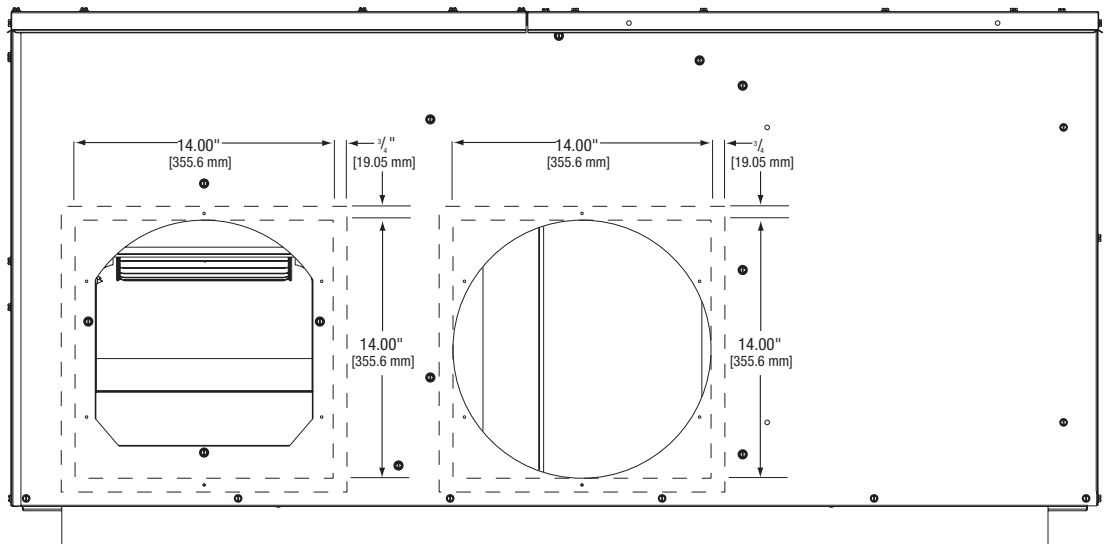


FIGURE 1 (continued)
DUCT CONNECTIONS

ROUND DUCT CONNECTIONS



SQUARE DUCT CONNECTIONS



IMPORTANT: DO NOT SCREW OR DRILL OUTSIDE THE DESIGNATED AREAS.

IMPORTANT: This product is designed to be operated with 14" round supply and return air ducts. Square ducts may be used, provided that a minimum length of 24" of round duct is used on the supply and return connections. This requirement is necessary to maintain blower performance.

4. INSTALLATION OF THE UNIT

4.1. General

4.1.1. Installation

Install this unit in accordance with The American National Standard Z223.1-latest edition booklet entitled “National Fuel Gas Code”, and the requirements or codes of the local utility or other authority having jurisdiction. Additional helpful publications available from the “National Fire Protection Association” are:

- NFPA-90A - Installation of Air Conditioning and Ventilating Systems 2018 or latest edition.
- NFPA-90B - Warm Air Heating and Air Conditioning Systems 2018 or latest edition.

These publications are available from:
National Fire Protection
Association, Inc.
NFPA.ORG

4.1.2. Pre-Installation Checkpoints

Before attempting any installation, carefully consider the following points:

- Structural strength of supporting members (Rooftop Installation)
- Clearances and provision for servicing
- Power supply and wiring
- Gas supply and piping
- Air duct connections and sizing
- Drain facilities and connections
- Location for minimum noise and vibration - away from bedroom windows

4.2. Tool and Refrigerant

4.2.1. Tools Required for Installing and 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
- Zero-loss fittings

Recovery Cylinders:

- 400 PSIG Pressure Rating

Dept. of Transportation

- 4BA400 or BW400

4.2.2. Specifications of R-410A

All units are factory charged with R-410a Refrigerant.

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.

4.2.3. Quick Reference Guide for R-410A

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.
- 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.

4.2.4. Evaporator Coil/TXV

The thermostatic expansion valve is specifically designed to operate with R-410A. **The existing evaporator must be replaced with the factory specified TXV evaporator specifically designed for R-410A.**

4. INSTALLATION OF THE UNIT

4.3. Choosing a Location

4.3.1. Unit Location: Allowable Clearances and Operational Issues

The unit location must comply with the allowable clearances listed in **Figure 2**. Failure to comply with the recommended clearances may result in operational issues such as decreased capacity, restricted condenser airflow, and condenser motor fatigue.

4.3.2. Outside Installation

⚠WARNING: These units are designed certified for outdoor installation only. Installation inside any part of a structure can result in inadequate unit performance as well as property damage. Installation inside can also cause recirculation of flue products into the conditioned space resulting in personal injury or death.

1. Select a location where external water drainage cannot collect around unit.
2. Provide a level slab sufficiently high enough above grade to prevent surface water from entering the unit
3. Locate the unit to provide proper access for inspection and servicing as shown in **Figure 2**.
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. Where snowfall is anticipated, the height of the unit above the ground level must be considered. Mount unit high enough to be above anticipated maximum area snowfall and to allow combustion air to enter the combustion air inlet.
7. Select an area which will keep the areas of the vent, air intake, and A/C condenser fins free and clear of obstructions such as weeds, shrubs, vines, snow, etc. Inform the user accordingly.

4.3.3. Rooftop Installation

1. Before locating the unit on the roof, make sure that the roof structure is adequate to support the weight involved. (See Electrical & Physical Tables in this manual.) **THIS IS VERY IMPORTANT AND IS THE INSTALLER'S RESPONSIBILITY.**
2. The location of the unit on the roof should be such as to provide proper access for inspection and servicing.

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

4.3.4. Corrosive Environments

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, give special attention to the equipment location and exposure.

1. Avoid having lawn sprinkler heads spray directly on the unit cabinet.
2. In coastal areas, install the unit on the side of the building away from the waterfront.
3. In some situations, fencing or shrubs may give some protection against contaminants. Be mindful of the allowable clearances.

⚠WARNING: Disconnect all power to unit before starting maintenance. Failure to do so can cause electrical shock resulting in personal injury or death. Regular maintenance will reduce the buildup of contaminants and help to protect the unit's finish.

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 an automobile polish will provide some protection.

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 2
PACKAGED AIR CONDITIONER
 OUTSIDE SLAB INSTALLATION, BASEMENT OR CRAWL SPACE DISTRIBUTION SYSTEM

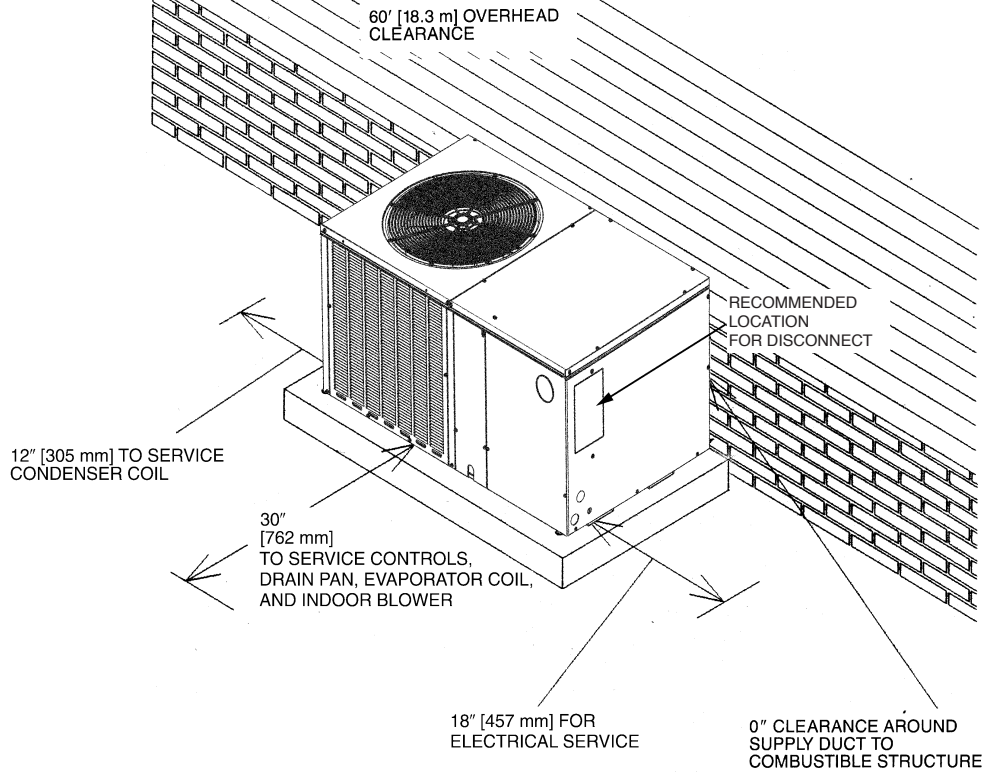
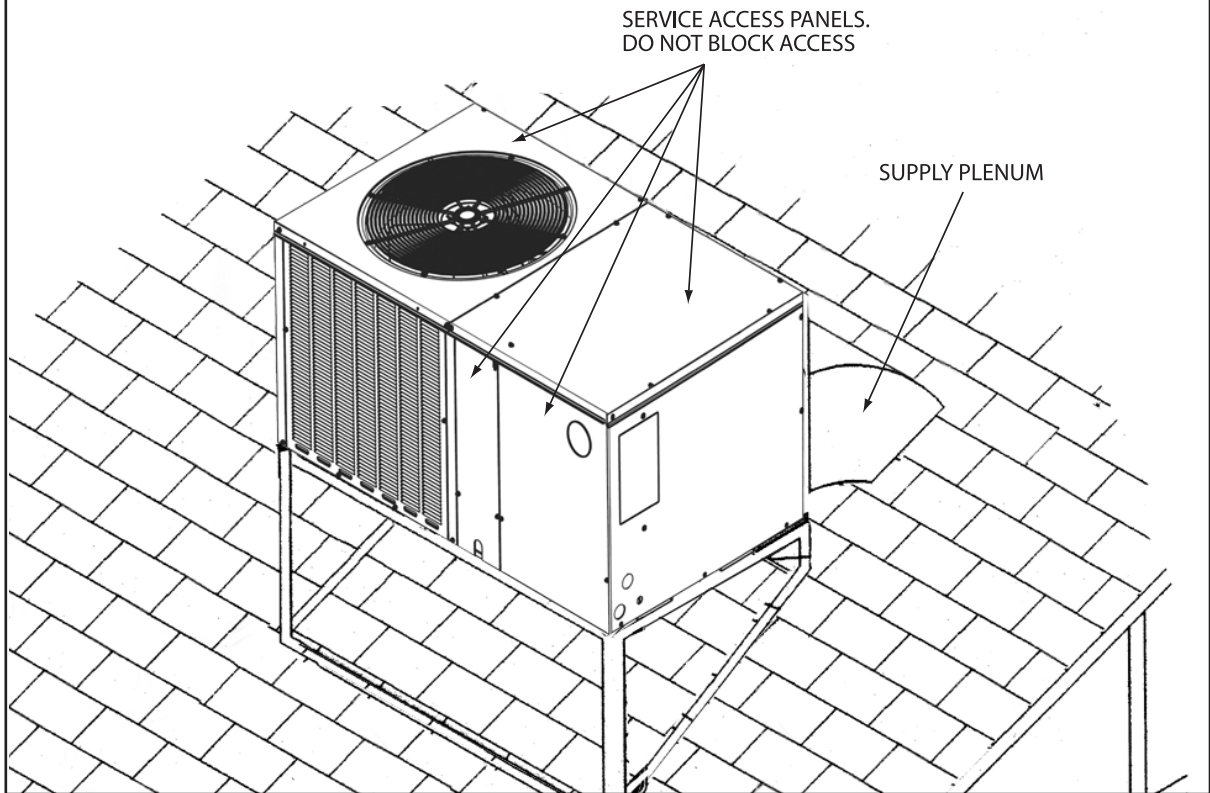


FIGURE 3
PACKAGED AIR CONDITIONER
 PITCHED ROOFTOP INSTALLATION, ATTIC OR DROP CEILING DISTRIBUTING SYSTEM.
 MUST BE MOUNTED LEVEL.



4. INSTALLATION OF THE UNIT

4.4. 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, 1513 16th St. N.W., Washington, D.C. 20036.

▲ 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.

Place the unit as close to the space to be air conditioned as possible allowing clearance dimensions as indicated. Run ducts 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. Consider a slab installation 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.

Provide balancing dampers for each branch duct in the supply system. Properly support the ductwork from the structure.

4.5. Filters

Filters are not provided with this unit. They must be supplied and installed in the return air duct by the installer. A field installed filter grille is recommended for easy and convenient access to the filters for periodic inspection and cleaning. Filters must have adequate face area for the rated air quantity of the unit. See General Database for recommended filter size.

4.6. Condensate Drain

The indoor coil condensate drain ends with a PVC stub. A trap is provided in for proper condensate drainage and to prevent debris from being drawn into the unit. Do not connect drain to closed sewer line. It is not recommended that a PVC cement or other permanent installation be used so that the drain line and/or drain pan can be easily cleaned in the future. The drain trap is located in the control box during shipping. To install, slide clear plastic tube over drain pan connection. The white PVC trap can be oriented as required by installation.

FIGURE 4

REMOVABLE CONDENSATE DRAIN PAN AND REMOVAL PROCEDURE



A small side panel grants access to a removable, sloped drain pan, which helps to ensure indoor air quality (IAQ) throughout the life of the unit. A drain trap assembly is provided for convenience.

4.7. Electrical Wiring

4.7.1. Electrical Wiring

Field wiring must comply with the National Electrical Code* and applicable local codes.

*C.E.C. in Canada

4.7.2. 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. (See Heater Kit Tables.)
3. For branch circuit wiring (main power supply to unit disconnect), the minimum wire size can be determined from the National Electrical Code or Canadian Electrical Code or nameplate or from Heater Kit Tables.
4. This unit supports both single and dual point electrical connection for unit and electric heat accessory.
5. Power wiring must be run in grounded rain-tight conduit.

4.7.3. Power Wiring And Electrical Heater Kit

⚠ WARNING

TURN OFF ELECTRIC POWER AT THE FUSE BOX OR SERVICE PANEL BEFORE MAKING ANY ELECTRICAL CONNECTIONS.

ALSO, THE GROUND CONNECTION MUST BE COMPLETED BEFORE MAKING LINE VOLTAGE CONNECTIONS. FAILURE TO DO SO CAN RESULT IN ELECTRICAL SHOCK, SEVERE PERSONAL INJURY OR DEATH.

1. Turn off power to unit.
2. Remove control box access panel.
3. Remove unit indoor section top cover.
4. Remove wire notch cover from control bulkhead and discard. Retain screw.
5. Remove heater element cover plate from blower outlet opening and discard. Retain screws.
6. Mount heater fuse block assembly in location indicated with the three included screws.
7. Route wire harness assembly through wire notch in control bulkhead and mount element assembly in blower outlet opening with screws previously retained.
8. Center wire routing plate over notch in blower bulkhead and secure with screw previously retained.
9. Route and tie wiring as shown in Figure 5. Wiring must not contact moving parts or uninsulated electrical connections.
10. Replace unit indoor top cover.
11. Connect power and control wiring as indicated below:
 - a. **Single-point wiring:** Connect high voltage field power

leads to heater kit fuse block and connect included unit power pigtails from heater kit fuse block to unit contactor L1 and L3 connections. Connect ground lead to ground lug on heater kit fuse block.

- b. **Dual-circuit wiring:** Remove unit power pigtails from heater kit fuse block and discard. Connect one set of high voltage field power circuit leads to the heater kit fuse block and connect ground lead to ground lug on heater kit fuse block.
Connect the second set of high voltage field power leads to L1 and L3 on the unit contactor. Connect ground lead to ground lug on control box bulkhead.
 - c. Connect heater kit control plug to receptacle in control box.
12. Replace control box access panel.
 13. Restore power to unit and verify proper unit and heater kit operation.

4.7.4. Control Wiring (Class II)

1. Do not run low voltage wiring in conduit with power wiring.
2. Control wiring is routed through the 7/8" hole corner adjacent to the control box. See Electrical Connections, Figure 1. 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 within the unit control box. See Figure 5.
3. Figure 6 shows representative low voltage connection diagrams. Read your thermostat installation instructions for any special requirements for your specific thermostat.

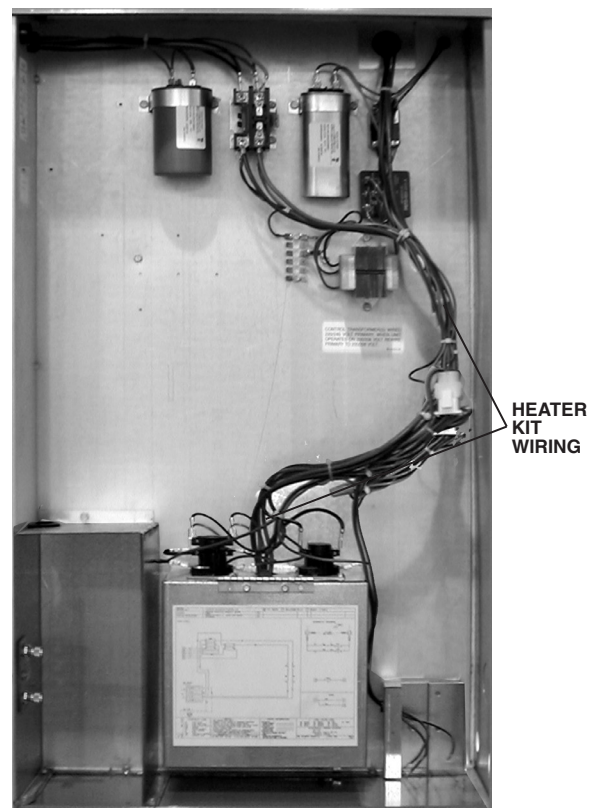
NOTE — Units installed in Canada require that an outdoor thermostat (30,000 min. cycles of endurance) be installed and be wired with C.E.C. Class I wiring.

FIGURE 5
HEATER KIT INSTALLATION



RECOMMENDED WIRING

HEATER ELEMENTS



HEATER KIT WIRING

4.7.5. Internal Wiring

A diagram of the internal wiring of this unit is located on the electrical control box cover. 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.

4.7.6. Grounding

WARNING

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

4.7.7. Thermostat

Mount the thermostat 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 air conditioner thermostat package CAREFULLY because each has some different wiring requirements.

4.8. Indoor Airflow Data

All 208/230 volt units are equipped with multi-speed indoor blower motors. Each unit is shipped factory wired for the proper speed at a normal external static. See Airflow Performance Table for blower performance.

4.9. Pre-Start Check

1. Is unit properly located and level?
2. Is ductwork insulated, weatherproofed, with proper spacing to combustible materials?
3. Is air free to travel to and from outdoor coil? (See Figure 1.)
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?

4.10. Pre-Start Check

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. Turn thermostat system switch to "HEAT." Unit should stop. Wait 5 minutes, then raise temperature setting to above room

temperature. After about 30 to 50 seconds auxiliary heaters, if installed, should come on.

9. Check the refrigerant charge using the instructions located on control box cover. Replace service port caps. Service port cores are for system access only and will leak if not tightly capped.
- 10 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. Vapor Line 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 _____
11. Adjust discharge air grilles and balance system.
12. Check ducts for condensation and air leaks.
13. Check unit for tubing and sheet metal rattles.
14. Instruct the owner on operation and maintenance.
15. Leave "USE AND CARE" instructions with owner.

4.11. Operation

Most single phase units are not equipped with start relay or start capacitor. It is important that such systems be off for a minimum of 5 minutes before restarting to allow equalization of pressures. Do not move the thermostat to cycle unit without waiting five minutes. To do so may cause the compressor to stop on an automatic open overload device or blow a fuse. Poor electrical service can cause nuisance tripping in overloads or blow fuses.

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.

These units are equipped with a time delay control (TDC1). The control allows the blower to operate for 45 to 90 seconds after the thermostat is satisfied.

4.11.1. 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 first heat stage of the thermostat will energize one or more supplementary resistance heaters. If required or considered desirable, the resistance heat may also be controlled by outdoor thermostats. In the heating mode, the thermostat will, on a call for heating, energize the indoor blower relay.

5. GENERAL DATA

GENERAL DATA - RACB NOMINAL SIZES 2-5 TONS [7-17.6 kW]

Model RACBZR Series	024AJT	030AJT	036AJT	042AJT
Cooling Performance ¹				Continued ->
Gross Cooling Capacity Btu [kW]	24,000 [7.03]	29,200 [8.56]	36,600 [10.72]	41,500 [12.16]
EER/SEER2	10.6/13.4	10.6/13.4	10.6/13.4	10.6/13.4
Nominal CFM/AHRI Rated CFM [L/s]	800/800 [378/378]	1000/1000 [472/472]	1200/1200 [566/566]	1400/1400 [661/661]
AHRI Net Cooling Capacity Btu [kW]	23,000 [6.74]	28,000 [8.2]	35,200 [10.31]	40,000 [11.72]
Net Sensible Capacity Btu [kW]	15,500 [4.54]	18,000 [5.27]	25,200 [7.38]	28,700 [8.41]
Net Latent Capacity Btu [kW]	7,500 [2.2]	10,000 [2.93]	10,000 [2.93]	11,300 [3.31]
Net System Power kW	1.95	2.4	2.95	3.5
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB) ⁵	79	80	80	80
Outdoor Coil - Fin Type				
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.472 [12]	0.4724395 [12]	0.4724395 [12]	0.4724395 [12]
Face Area sq. ft. [sq. m]	10.1 [0.94]	12.36 [1.15]	12.36 [1.15]	12.36 [1.15]
Rows / FPI [FPcm]	1 / 20 [8]	1 / 22 [9]	1 / 22 [9]	1 / 22 [9]
Indoor Coil - Fin Type				
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.787 [20]	0.787399 [20]	1 [25.4]	1.25984 [32]
Face Area sq. ft. [sq. m]	3.84 [0.36]	3.84 [0.36]	3.84 [0.36]	3.75 [0.35]
Rows / FPI [FPcm]	1 / 15 [6]	1 / 15 [6]	1 / 15 [6]	1 / 13 [5]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]
Outdoor Fan - Type				
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]	3400 [1604]	3400 [1604]	3400 [1604]	3400 [1604]
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	825	825	825	825
Indoor Fan - Type				
No. Used/Diameter in. [mm]	1/10x9 [254x229]	1/10x9 [254x229]	1/10x9 [254x229]	1/11x9 [279x229]
Drive Type	Direct	Direct	Direct	Direct
No. Speeds	Multiple	Multiple	Multiple	Multiple
No. Motors	1	1	1	1
Motor HP	1/2	1/2	1/2	3/4
Motor RPM	1050	1050	1050	1050
Motor Frame Size	48	48	48	48
Filter - Type				
Furnished	No	No	No	No
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x20x16 [25x508x406]	(1)1x20x20 [25x508x508]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]
Refrigerant Charge Oz. [g]				
	50.72 [1438]	48 [1361]	53.44 [1515]	80 [2268]
Weights				
Net Weight lbs. [kg]	277 [126]	285 [129]	285 [129]	242 [110]
Ship Weight lbs. [kg]	304 [138]	312 [142]	312 [142]	269 [122]

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. ARI 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 ARI Standard 210/240 or 360.
2. EER and/or SEER are rated at ARI conditions and in accordance with DOE test procedures.
3. Outdoor Sound Rating shown is tested in accordance with ARI Standard 270.
4. Standard 3/4" PVC P-Trap provided.

[] Designates Metric Conversions

5. GENERAL DATA

GENERAL DATA - RACB NOMINAL SIZES 2-5 TONS [7-17.6 kW]

Model RACBZR Series	048AJT	060AJT
Cooling Performance¹		
Gross Cooling Capacity Btu [kW]	49,000 [14.36]	60,000 [17.58]
EER/SEER2	10.6/13.4	10.6/13.4
Nominal CFM/AHRI Rated CFM [L/s]	1600/1600 [755/755]	2000/1900 [944/897]
AHRI Net Cooling Capacity Btu [kW]	47,000 [13.77]	57,000 [16.7]
Net Sensible Capacity Btu [kW]	32,500 [9.52]	40,100 [11.75]
Net Latent Capacity Btu [kW]	14,500 [4.25]	16,900 [4.95]
Net System Power kW	3.9	4.89
Compressor		
No./Type	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)⁵		
	75	78
Outdoor Coil - Fin Type		
Tube Type	Louvered	Louvered
MicroChannel Depth in. [mm]	0.6299 [16]	0.984 [25]
Face Area sq. ft. [sq. m]	16.14 [1.5]	16.19 [1.5]
Rows / FPI [FPcm]	1 / 22 [9]	1 / 22 [9]
Indoor Coil - Fin Type		
Tube Type	Louvered	Louvered
MicroChannel Depth in. [mm]	1 [25.4]	1.25984 [32]
Face Area sq. ft. [sq. m]	5.3 [0.49]	5.3 [0.49]
Rows / FPI [FPcm]	1 / 13 [5]	1 / 13 [5]
Refrigerant Control	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/1 [25.4]	1/1 [25.4]
Outdoor Fan - Type		
No. Used/Diameter in. [mm]	Propeller	Propeller
Drive Type/No. Speeds	1/24 [609.6]	1/24 [609.6]
CFM [L/s]	Direct/1	Direct/1
No. Motors/HP	4200 [1982]	4000 [1888]
Motor RPM	1 at 1/3 HP	1 at 1/3 HP
	1075	1075
Indoor Fan - Type		
No. Used/Diameter in. [mm]	FC Centrifugal	FC Centrifugal
Drive Type	1/11x9 [279x229]	1/11x9 [279x229]
No. Speeds	Direct	Direct
No. Motors	Multiple	Multiple
Motor HP	1	1
Motor RPM	3/4	1
Motor Frame Size	1050	1075
	48	48
Filter - Type		
Furnished	Field Supplied	Field Supplied
(NO.) Size Recommended in. [mm x mm x mm]	No	No
	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]
Refrigerant Charge Oz. [g]		
	64 [1814]	91.04 [2581]
Weights		
Net Weight lbs. [kg]	357 [162]	384 [174]
Ship Weight lbs. [kg]	384 [174]	411 [186]

NOTES:

- Cooling Performance is rated at 95°F ambient, 80°F entering dry bulb, 67°F entering wet bulb. Gross capacity does not include the effect of fan motor heat. ARI 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 ARI Standard 210/240 or 360.
- EER and/or SEER are rated at ARI conditions and in accordance with DOE test procedures.
- Outdoor Sound Rating shown is tested in accordance with ARI Standard 270.
- Standard 3/4" PVC P-Trap provided.

[] Designates Metric Conversions

6. ELECTRICAL DATA

ELECTRICAL DATA – RACBZR SERIES

		024AJT	030AJT	036AJT	042AJT	048AJT	060AJT
Unit Information	Unit Operating Voltage Range	187-253	187-253	187-253	187-253	187-253	187-253
	Volts	208/230	208/230	208/230	208/230	208/230	208/230
	Phase	1	1	1	1	1	1
	Hz	60	60	60	60	60	60
	Minimum Circuit Ampacity	20	21	24	28	31	38
	Minimum Overcurrent Protection Device Size	25	30	35	40	45	50
	Maximum Overcurrent Protection Device Size	30	35	40	45	50	60
Compressor Motor	No.	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	208/230	208/230	208/230
	Phase	1	1	1	1	1	1
	RPM	3450	3450	3450	3450	3450	3450
	HP, Compressor 1	2	2 1/2	3	3 1/2	4	4 1/2
	Amps (RLA), Comp. 1	10.8	12.3	14.7	15.9	18.3	27.1
	Amps (LRA), Comp. 1	55	63	75	112.3	108	144
	HP, Compressor 2						
	Amps (RLA), Comp. 2						
Amps (LRA), Comp. 2							
Condenser Motor	No.	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	208/230	208/230	208/230
	Phase	1	1	1	1	1	1
	HP	1/3	1/3	1/3	1/3	1/3	1/3
	Amps (FLA, each)	1.5	1.5	1.5	1.5	1.8	1.8
	Amps (LRA, each)	3	3	3	3	3.3	3.3
Evaporator Fan	No.	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	208/230	208/230	208/230
	Phase	1	1	1	1	1	1
	HP	1/2	1/2	1/2	3/4	3/4	1
	Amps (FLA, each)	4.1	4.1	4.1	6	6	7.6
	Amps (LRA, each)	3					

- 1 Horsepower per Compressor
2. Amp Draw Per Motor. Multiply Value by Number of Motors to Determine Total Amps.

7. AIRFLOW PERFORMANCE

INDOOR AIRFLOW PERFORMANCE - RACB - 208 VOLTS

Nominal Cooling Capacity Tons	Motor Speed From Factory	Manufacturer Recommended Air-Flow Range (Min / Max) CFM	Blower Size/ Motor HP # of Speeds	& Motor Speed	CFM Air Delivery/RPM/Watts-208 Volts										
					External Static Pressure-Inches W.C.										
					0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	-0.90	-4.00	
2.0	Low (Tap 2)	700 / 900	10x9 1/4 2 Speed (X-13 Motor)	Low (Tap 2)	CFM	959	892	825	758	691	624	557	491	--	--
					RPM	582	606	655	723	808	851	906	996	--	--
					Watts	132	110	96	106	119	123	132	144	--	--
2.5	Low (Tap 2)	875 / 1125	10x9 1/3 2 Speed (X-13 Motor)	Low (Tap 2)	CFM	1229	1170	1112	1054	996	938	879	821	763	705
					RPM	607	634	698	761	815	880	946	989	1038	1091
					Watts	161	145	159	173	182	196	210	220	231	237
3.0	Low (Tap 2)	1050 / 1350	10x9 1/2 2 Speed (X-13 Motor)	Low (Tap 2)	CFM	1162	1099	1035	972	908	844	781	717	654	590
					RPM	603	626	690	752	815	906	941	984	1027	1096
					Watts	143	124	136	148	157	175	180	188	192	202
3.5	Low (Tap 2)	1225 / 1575	11x9 1/2 2 Speed (X-13 Motor)	High (Tap 1)	CFM	1306	1253	1200	1147	1095	1042	989	937	884	831
					RPM	632	679	733	787	841	883	941	1035	1067	1099
					Watts	174	187	201	215	227	235	248	266	273	277
4.0	Low (Tap 2)	1400 / 1800	11x9 3/4 2 Speed (X-13 Motor)	Low (Tap 2)	CFM	1328	1276	1223	1171	1118	1066	1013	961	--	--
					RPM	642	693	747	803	852	903	988	1031	--	--
					Watts	173	187	200	214	226	238	254	263	--	--
5.0	Low (Tap 2)	1750 / 2250	11x9 3/4 2 Speed (X-13 Motor)	High (Tap 1)	CFM	1508	1459	1409	1359	1310	1260	1210	1160	1111	1061
					RPM	698	738	789	839	888	933	983	1035	1103	1137
					Watts	243	255	271	285	299	310	322	332	343	343
3.5	Low (Tap 2)	1225 / 1575	11x9 1/2 2 Speed (X-13 Motor)	Low (Tap 2)	CFM	1531	1477	1423	1370	1316	1262	1208	1154	1101	1047
					RPM	602	619	668	715	757	801	844	878	918	954
					Watts	238	227	236	251	266	281	296	307	320	333
3.5	Low (Tap 2)	1225 / 1575	11x9 1/2 2 Speed (X-13 Motor)	High (Tap 1)	CFM	1724	1678	1632	1586	1540	1495	1449	1403	1357	1311
					RPM	639	671	715	759	794	834	875	911	948	977
					Watts	295	309	330	348	363	380	397	414	429	440
4.0	Low (Tap 2)	1400 / 1800	11x9 3/4 2 Speed (X-13 Motor)	Low (Tap 2)	CFM	1708	1658	1609	1559	1510	1460	1410	1361	1311	1262
					RPM	619	651	686	741	783	822	859	894	937	971
					Watts	280	284	298	323	339	355	370	385	402	415
4.0	Low (Tap 2)	1400 / 1800	11x9 3/4 2 Speed (X-13 Motor)	High (Tap 1)	CFM	1917	1872	1827	1782	1736	1691	1646	1601	1556	1510
					RPM	673	702	736	769	818	860	898	928	960	989
					Watts	377	392	409	426	451	473	490	504	518	531
5.0	Low (Tap 2)	1750 / 2250	11x9 3/4 2 Speed (X-13 Motor)	Low (Tap 2)	CFM	1954	1914	1874	1833	1793	1753	1713	1673	1632	1592
					RPM	719	747	779	818	857	894	928	963	998	1038
					Watts	439	451	469	491	512	534	553	573	590	611
5.0	Low (Tap 2)	1750 / 2250	11x9 3/4 2 Speed (X-13 Motor)	High (Tap 1)	CFM	2173	2136	2098	2061	2024	1986	1949	1911	1874	1837
					RPM	775	803	830	860	896	928	959	988	1019	1050

8. HEATER KIT CHARACTERISTICS

AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION – RACB

208/240 VOLT, SINGLE PHASE, 60 Hz, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION													
Separate Power Supply for Both Unit and Heater Kit													
RHEEM Model Number	Single Power Supply for Both Unit and Heater Kit					Air Conditioner				Heater Kit			
	RXQJ-Heater Kit Nominal kW	No. of Sequence Steps	Rated Heater kW @ 208/240 V	Heater KBTU/Hr @ 208/240 V	Heater Amp. @ 208/240 V	Unit Min. Ckt. Ampacity @ 208/240 V	Over Current Protective Device Size		Min. Ckt. Ampacity 208/240V	Max. Fuse Size 208/240V	Min. Circuit Ampacity 208/240V	Over Current Protective Device Size	
							Min./Max. @ 208 V	Min./Max. @ 240 V				Min./Max. @ 208 V	Min./Max. @ 240 V
RACBZR024AJT	No Heat	-----	-----	-----	-----	20/20	25/30	25/30	-----	-----	20/20	25/30	25/30
	C05J	1	3.6/4.8	12.28/16.38	17.3/20.0	27/31	30/30	35/35	22/25	25/25	20/20	25/30	25/30
	C07J	1	5.4/7.2	18.43/24.57	26.0/30.0	38/43	40/40	45/45	33/38	35/40	20/20	25/30	25/30
	C10J	1	7.2/9.6	24.57/32.76	34.7/40.0	49/56	50/50	60/60	44/50	45/50	20/20	25/30	25/30
RACBZR030AJT	No Heat	-----	-----	-----	-----	21/21	30/35	30/35	-----	-----	21/21	30/35	30/35
	C05J	1	3.6/4.8	12.28/16.38	17.3/20.0	27/31	30/35	35/35	22/25	25/25	21/21	30/35	30/35
	C07J	1	5.4/7.2	18.43/24.57	26.0/30.0	38/43	40/40	45/45	33/38	35/40	21/21	30/35	30/35
	C10J	1	7.2/9.6	24.57/32.76	34.7/40.0	49/56	50/50	60/60	44/50	45/50	21/21	30/35	30/35
	C15J	1	10.8/14.4	36.85/49.13	52.0/60.0	71/81	80/80	90/90	65/75	70/80	21/21	30/35	30/35
RACBZR036AJT	No Heat	-----	-----	-----	-----	24/24	35/40	35/40	-----	-----	24/24	35/40	35/40
	C05J	1	3.6/4.8	12.28/16.38	17.3/20.0	27/31	35/40	35/40	22/25	25/25	24/24	35/40	35/40
	C07J	1	5.4/7.2	18.43/24.57	26.0/30.0	38/43	40/40	45/45	33/38	35/40	24/24	35/40	35/40
	C10J	1	7.2/9.6	24.57/32.76	34.7/40.0	49/56	50/50	60/60	44/50	45/50	24/24	35/40	35/40
	C15J	1	10.8/14.4	36.85/49.13	52.0/60.0	71/81	80/80	90/90	65/75	70/80	24/24	35/40	35/40
RACBZR042AJT	No Heat	-----	-----	-----	-----	28/28	40/45	40/45	-----	-----	28/28	40/45	40/45
	C05J	1	3.6/4.8	12.28/16.38	17.3/20.0	30/33	40/45	40/45	22/25	25/25	28/28	40/45	40/45
	C07J	1	5.4/7.2	18.43/24.57	26.0/30.0	40/45	40/45	45/45	33/38	35/40	28/28	40/45	40/45
	C10J	1	7.2/9.6	24.57/32.76	34.7/40.0	51/58	60/60	60/60	44/50	45/50	28/28	40/45	40/45
	C15J	1	10.8/14.4	36.85/49.13	52.0/60.0	73/83	80/80	90/90	65/75	70/80	28/28	40/45	40/45
	C20J	1	14.4/19.2	49.13/65.51	69.3/80.0	95/108	100/100	110/110	87/100	90/100	28/28	40/45	40/45
RACBZR048AJT	No Heat	-----	-----	-----	-----	31/31	45/50	45/50	-----	-----	31/31	45/50	45/50
	C05J	1	3.6/4.8	12.28/16.38	17.3/20.0	31/33	45/50	45/50	22/25	25/25	31/31	45/50	45/50
	C07J	1	5.4/7.2	18.43/24.57	26.0/30.0	40/45	45/50	45/50	33/38	35/40	31/31	45/50	45/50
	C10J	1	7.2/9.6	24.57/32.76	34.7/40.0	51/58	60/60	60/60	44/50	45/50	31/31	45/50	45/50
	C15J	1	10.8/14.4	36.85/49.13	52.0/60.0	73/83	80/80	90/90	65/75	70/80	31/31	45/50	45/50
	C20J	1	14.4/19.2	49.13/65.51	69.3/80.0	95/108	100/100	110/110	87/100	90/100	31/31	45/50	45/50
RACBZR060AJT	No Heat	-----	-----	-----	-----	38/38	50/60	50/60	-----	-----	38/38	50/60	50/60
	C05J	1	3.6/4.8	12.28/16.38	17.3/20.0	38/38	50/60	50/60	22/25	25/25	38/38	50/60	50/60
	C07J	1	5.4/7.2	18.43/24.57	26.0/30.0	42/47	50/60	50/60	33/38	35/40	38/38	50/60	50/60
	C10J	1	7.2/9.6	24.57/32.76	34.7/40.0	53/60	60/60	60/60	44/50	45/50	38/38	50/60	50/60
	C15J	1	10.8/14.4	36.85/49.13	52.0/60.0	75/85	80/80	90/90	65/75	70/80	38/38	50/60	50/60
	C20J	1	14.4/19.2	49.13/65.51	69.3/80.0	97/110	100/100	110/110	87/100	90/100	38/38	50/60	50/60

10. 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	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 450 PSIG Replace thermostat wiring
Condenser fan runs, compressor doesn't	<ul style="list-style-type: none"> Run or start capacitor defective (single phase only) Start relay defective (single phase only) Loose connection Compressor stuck, grounded or open motor winding, open internal overload. Low voltage condition Low voltage condition 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Improperly sized unit Improper airflow Incorrect refrigerant charge Air, non-condensibles or moisture in system Incorrect voltage 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Incorrect voltage Defective overload protector Refrigerant undercharge 	<ul style="list-style-type: none"> At compressor terminals, voltage must be $\pm 10\%$ of nameplate marking when unit is operating. Replace - check for correct voltage Add refrigerant
Registers sweat	<ul style="list-style-type: none"> Low evaporator airflow 	<ul style="list-style-type: none"> Increase speed of blower or reduce restriction - replace air filter
High head-low vapor pressures	<ul style="list-style-type: none"> Restriction in liquid line, expansion device or filter drier Flow check piston size too small Incorrect capillary tubes TXV does not open 	<ul style="list-style-type: none"> Remove or replace defective component Change to correct size piston Change coil assembly Replace TXV
High head-high or normal vapor pressure - Cooling mode	<ul style="list-style-type: none"> Dirty condenser coil Refrigerant overcharge Condenser fan not running Air or non-condensibles in system 	<ul style="list-style-type: none"> Clean coil Correct system charge Repair or replace Recover refrigerant, evacuate & recharge
High head-high or normal vapor pressure - Heating mode	<ul style="list-style-type: none"> Low air flow - condenser coil Refrigerant overcharge Air or non-condensibles in system Dirty condenser coil 	<ul style="list-style-type: none"> Check filters - correct to speed Correct system charge Recover refrigerant, evacuate & recharge Check filter - clean coil
Low head-high vapor pressures	<ul style="list-style-type: none"> Flow check piston size too large Defective Compressor valves Incorrect capillary tubes 	<ul style="list-style-type: none"> Change to correct size piston Replace compressor Replace coil assembly
Low vapor - cool compressor - iced evaporator coil	<ul style="list-style-type: none"> Low evaporator airflow Operating below 65°F outdoors Moisture in system TXV limiting refrigerant flow 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Excessive load Defective compressor 	<ul style="list-style-type: none"> Recheck load calculation Replace
Fluctuating head & vapor pressures	<ul style="list-style-type: none"> TXV hunting Air or non-condensate in system 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Air or non-condensibles in system 	<ul style="list-style-type: none"> Recover refrigerant, evacuate & recharge

