INSTALLATION INSTRUCTIONS

PACKAGE AIR CONDITIONERS

FEATURING EARTH-FRIENDLY R-410A REFRIGERANT:

RACA13 - 13 SEER (2-5 TONS)
RACA14 - 14 SEER (2-5 TONS)
RACA15 - 15 SEER (2-5 TONS)

ENERGY STAR PARTNER

(14 SEER AND ABOVE)

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.

c UL us LISTED

Accredited by the RvA

ABS Quality Evaluations, Inc. Management System Certification

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

[ ] INDICATES METRIC CONVERSIONS

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IMPORTANT: *TO INSURE PROPER INSTALLATION AND OPERATION OF THIS PRODUCT, COMPLETELY READ ALL INSTRUCTIONS PRIOR TO ATTEMPTING TO ASSEMBLE, INSTALL, OPERATE, MAINTAIN OR REPAIR THIS PRODUCT. UPON UNPACKING OF THE FURNACE, INSPECT ALL PARTS FOR DAMAGE PRIOR TO INSTALLATION AND START-UP.*

I. 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

THE UNIT MUST BE PERMANENTLY GROUNDED. A GROUNDING LUG IS PROVIDED IN THE ELECTRIC HEAT KIT FOR A GROUND WIRE. (SEE FIGURES 11 AND 12.) 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.

II. INTRODUCTION

This booklet contains the installation and operating instructions for your self-contained 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 5, 10, or 15 kW electric heat. Cooling capacities of 2, 2½, 3, 3½, 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 energy consumption of the ignition system used with this unit is 9 watts.
2. 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 capillary tube assembly), 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.

⚠ 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. 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.

FIGURE 1
LED DESCRIPTION

D. COMFORT ALERT™ SYSTEM (5 TON RACA15 MODEL ONLY)

1. Comfort Alert™

The Comfort Alert™ diagnostics module is for troubleshooting air conditioning system failures. By monitoring and analyzing data from the compressor and the thermostat demand, the module can accurately detect the cause of electrical and system-related failures without any external sensors. A flashing LED indicator communicates the ALERT code and guides the service technician more quickly and accurately to the root cause of a problem.

POWER LED (Green): indicates voltage is present at the power connection of the module.

ALERT LED (Yellow): communicates an abnormal system condition through a unique flash code. The ALERT LED will flash a number of times consecutively, pause and then repeat the process. The number of consecutive flashes, defined as the Flash Code, correlates to a particular abnormal condition. Detailed descriptions of specific ALERT Flash Codes are shown in the Comfort Alert Diagnosis Chart in this manual.

TRIP LED (Red): indicates there is a demand signal from the thermostat but no current to the compressor is detected by the module. The TRIP LED typically indicates the compressor internal overload protector is open or may indicate missing high voltage supply power to the compressor.

When an abnormal system condition occurs, the Comfort Alert module displays the appropriate ALERT and/or TRIP LED. The yellow ALERT LED will flash a number of times consecutively, pause and then repeat the process. To identify a Flash Code number, count the number of consecutive flashes.

IMPORTANT: Every time the module powers up, the last ALERT Flash Code that occurred prior to shut down is displayed for one minute. The module will continue to display the flash code until the condition returns to normal or if 24VAC power is removed from the module.

The control box cover allows access to the Comfort Alert™ status LEDs. An abbreviated Comfort Alert™ diagnostic chart is provided on the control box cover.

2. High Pressure Control (HPC)

The high pressure control (HPC) keeps the compressor from operating in pressure ranges, which can cause damage to the compressor. This is an auto-reset control that opens near 610 PSIG and closes once the system pressure drops below 420 PSIG.

The high pressure control is wired in the 24VAC side of the control circuitry.

3. Low Pressure Control (LPC)

The low pressure control (LPC) keeps the compressor from operating in pressure ranges that can cause damage to the compressor. This is an auto-reset control that opens near 90 PSIG and closes once the system pressure rises above 135 PSIG.

The low pressure control is wired in the common side of the control circuitry.

4. Comfort Alert With Active Protection

A two-stage cooling thermostat is required for proper unit operation.

Manufacturer recommends the use of thermostats that provide active compressor protection via the L terminal when the Comfort-Alert module on the unit is connected to the L terminal on the thermostat.

The Comfort Alert diagnostics module diagnoses system and electrical problems in the air conditioning system. Abnormal conditions are indicated by flashing ALERT codes on the yellow LED on the Comfort Alert module. The flash codes are transmitted to the thermostat when the ***L*** terminal on the Comfort Alert Module is connected to the ***L*** terminal on the thermostat. The compatible thermostat displays a CHECK SYSTEM icon that flashes at the same rate as the yellow ALERT LED on the Comfort Alert module.

NOTE: The Comfort Alert™ module does not provide safety protection! It does not disconnect power from the unit.

Comfort Alert™ Flash Codes
1 – Long Run Time
2 – System Pressure Trip
3 – Short Cycling
4 – Locked Rotor
5 – Open Circuit
6 – Open Start Circuit (Single Phase) – Missing Phase (3-Phase)
7 – Open Run Circuit (Single Phase) – Reverse Phase (3-Phase)
8 – Welded Contactor
9 – Low Voltage

See Figure 32 and 33 (Comfort Alert Diagnostic Charts) for more troubleshooting information.

FIGURE 2

Active protection occurs under the following conditions:

1) Flash Code 2 - *System Pressure Trip*

Condition: Four consecutive compressor protector trips occur where the average run time until trip is between 1 minute and 15 minutes

Possible causes:

Low suction pressure

- Low pressure switch is open
- Low system charge

Blocked condenser coil

Restricted condenser air flow

Active Thermostat Reaction:

The thermostat will cycle the system ON for 5 minutes and OFF for five minutes to verify system fault. If this ON/OFF cycling repeats for 30 ten-minute cycles, the thermostat concludes there is a system problem and implements a hard lockout.

2) Flash Code 3 - *Short Cycling*

Condition: A pattern of short cycling emerges where the run time for the previous four cycles is less than three minutes each.

Possible causes:

High head pressure

- High pressure switch is open
- System overcharged
- Non-condensables in system

Faulty thermostat

Intermittent contactor

Active Thermostat Reaction:

The thermostat will cycle the system ON for 5 minutes and OFF for five minutes to verify the system fault. If this ON/OFF cycling repeats for 30 ten-minute cycles, the thermostat concludes there is a system problem and implements a hard lockout.

3) Flash Code 4 - *Locked Rotor*

Condition: The compressor internal overload trips where the average run time is less than 15 seconds.

Possible causes:

Bad run capacitor

Low line voltage

Excessive liquid refrigerant in compressor

Compressor bearings are seized

Faulty hard start components

Active Thermostat Reaction:

The thermostat implements a hard lockout once this error is sensed.

4) Flash Code 6 - *Open Start Circuit*

Condition: Current is detected in the run circuit but not in the start circuit.

Possible causes:

Bad run capacitor

Open circuit in compressor start wiring or connections.

Compressor start winding is damaged

Active thermostat reaction:

The thermostat implements a hard lockout after 3 hours.

5) Flash Code 7 - *Open Run Circuit*

Condition: Open circuit in compressor run wiring or connections. Compressor run winding is damaged.

Active Thermostat Reaction:

The thermostat implements a hard lockout after 3 hours.

V. EQUIPMENT PROTECTION (Corrosive Environment)

The metal parts of this unit may be subject to rust or deterioration if exposed to a corrosive environment. This oxidation could shorten the equipment's useful life. Corrosive elements include, but are not limited to, 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.

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 directly 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.
4. Elevating the unit off its slab or base enough to allow air circulation will help avoid holding water against the basepan.

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

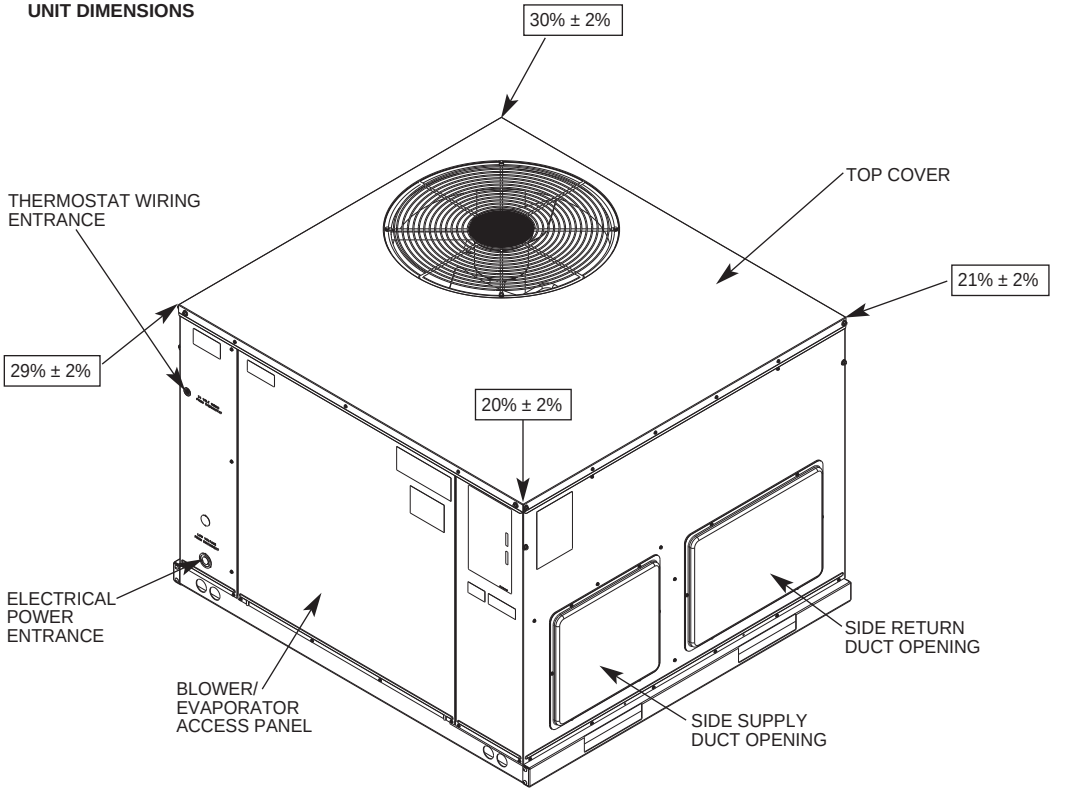
> **⚠ WARNING**
>
> **DISCONNECT ALL POWER TO THE UNIT BEFORE STARTING MAINTENANCE. FAILURE TO DO SO CAN RESULT IN SEVERE ELECTRICAL SHOCK OR DEATH.**

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 an automobile polish will provide some protection.
3. A 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 3
UNIT DIMENSIONS



CORNER WEIGHTS % OF TOTAL UNIT WEIGHT

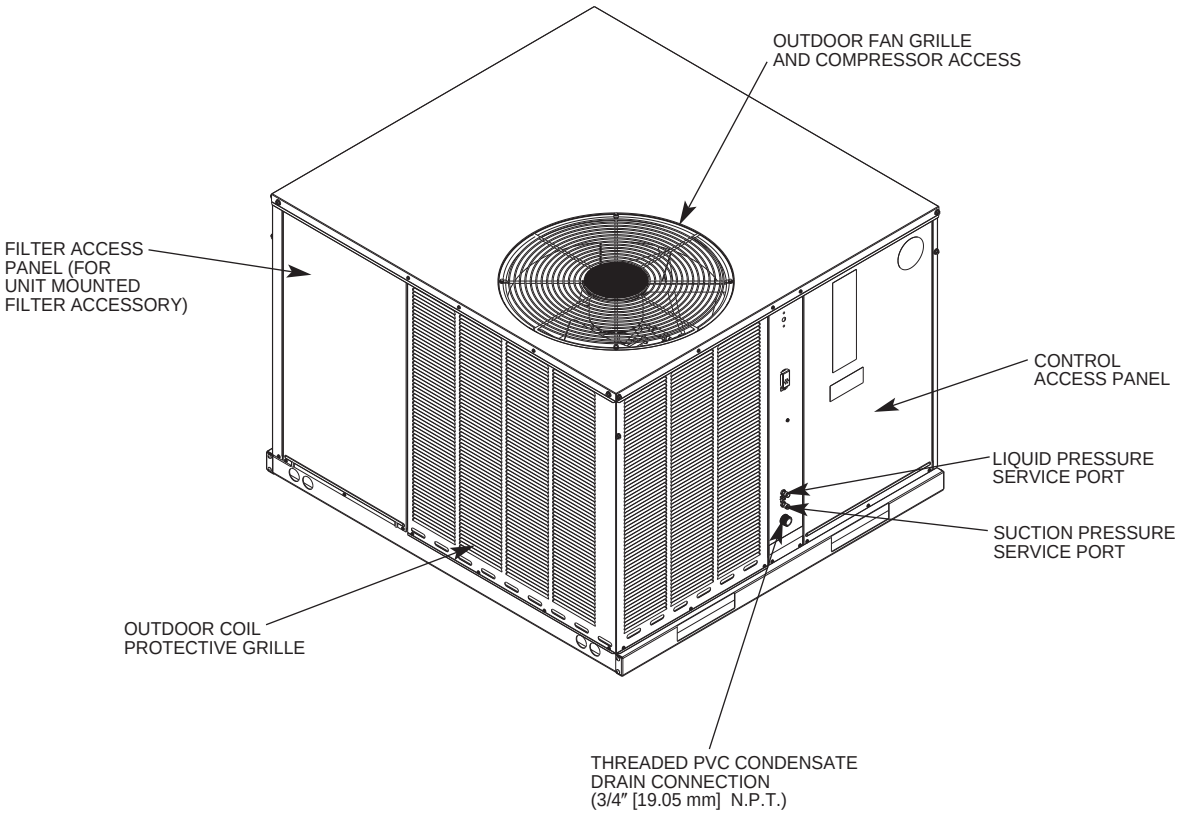
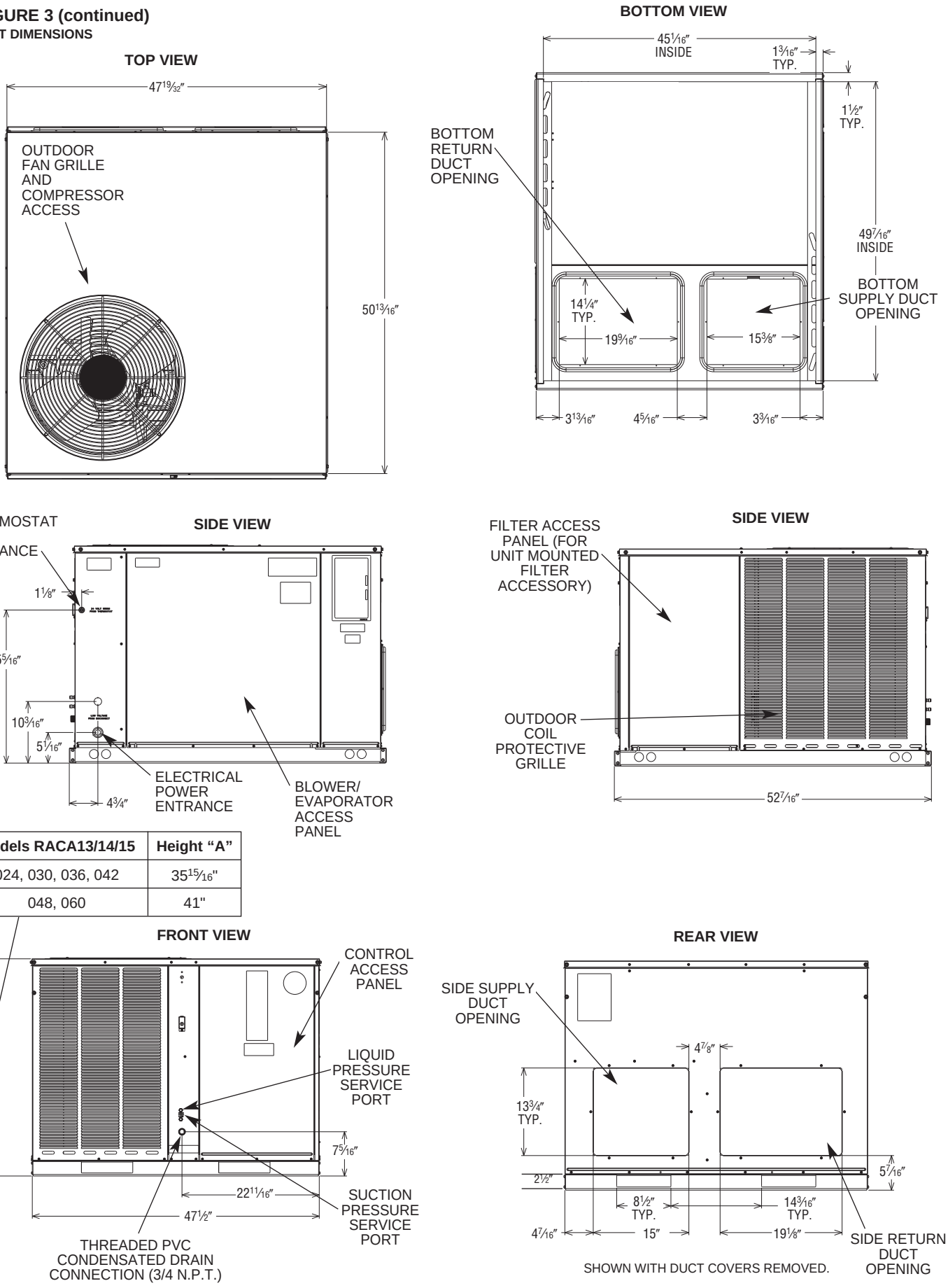


FIGURE 3 (continued)
UNIT DIMENSIONS



Models RACA13/14/15	Height "A"
024, 030, 036, 042	35 15/16"
048, 060	41"

IMPORTANT: *Unit must be level to prevent water migration.*

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 4 and 5.)

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.

C. CLEARANCES

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

1. Provide 36" minimum clearance at the front and right side of the unit for service access. Provide 12" minimum clearance on the left side of the unit for air inlet.
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 4 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 Electrical and Physical Data Table in this manual for weight of unit.) This is very important and user's responsibility.
2. For rigging and roofcurb details, see Figures 6 and 7. Use accessory lift brackets and 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.
6. 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, cover supply and return openings to prevent excessive condensation.*

FIGURE 4
PACKAGE AIR CONDITIONER – OUTSIDE SLAB INSTALLATION, BASEMENT OR CRAWL SPACE DISTRIBUTION SYSTEM.

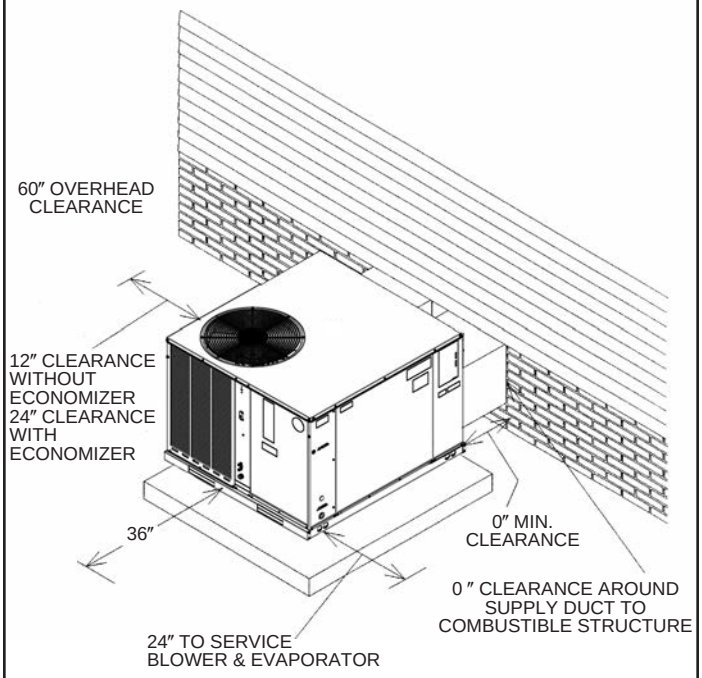


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FIGURE 5
PACKAGE AIR CONDITIONER – OUTSIDE SLAB INSTALLATION, CLOSET DISTRIBUTION SYSTEM. SLAB FLOOR CONSTRUCTION.

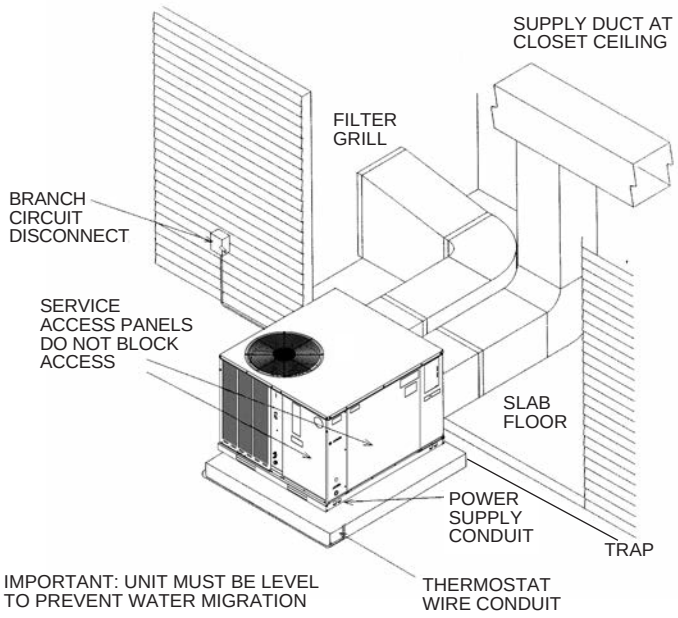

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FIGURE 6
PACKAGE AIR CONDITIONER – RIGGING FOR LIFTING

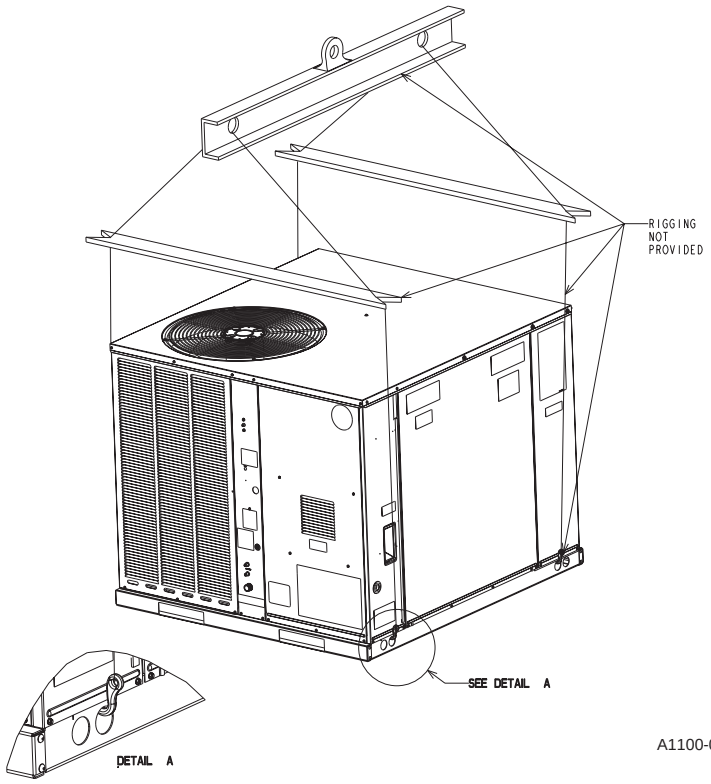

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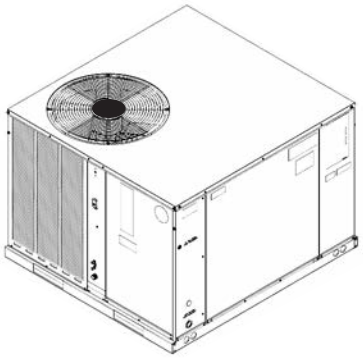
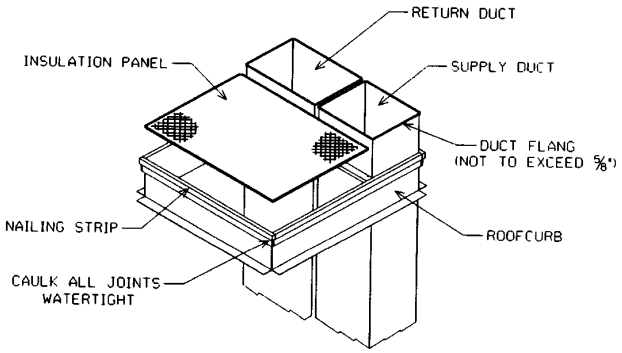
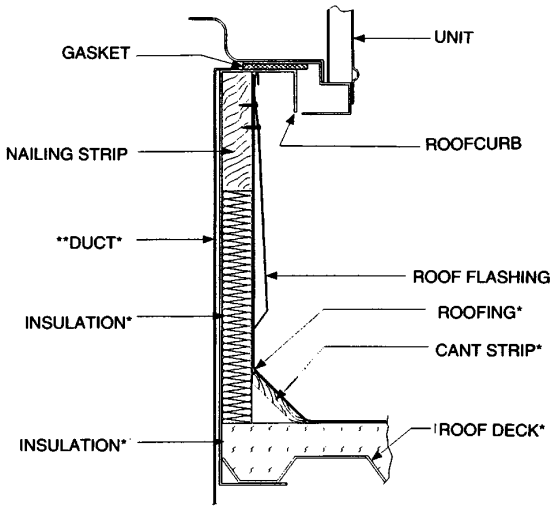
FIGURE 7
ROOFCURB INSTALLATION







*** 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.**

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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, 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.

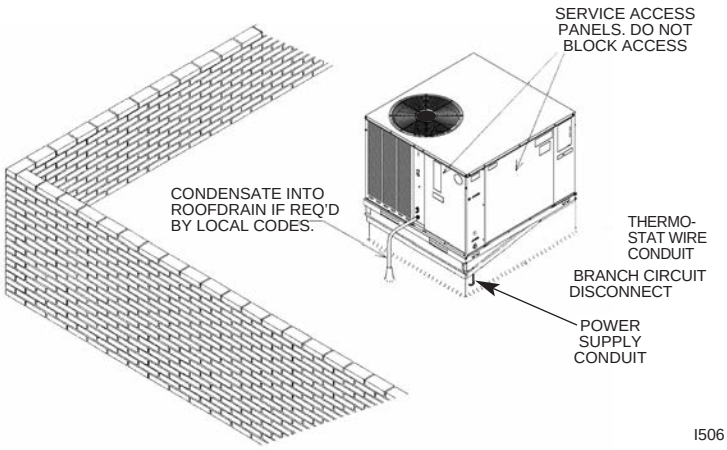
Place the unit as close to the space to be conditioned as possible, allowing clearance dimensions as indicated. Run ducts should be run as directly as possible to supply and return outlets. Use of non-flammable waterproof flexible connectors on both supply and return connections at the unit to reduce 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.

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

FIGURE 8
PACKAGE AIR CONDITIONER FLAT ROOFTOP INSTALLATION, ATTIC OR DROP CEILING DISTRIBUTION SYSTEM. MOUNTED ON ROOFCURB, CURB MUST BE LEVEL.



VIII. FILTERS

Filters are not provided with this unit. They may 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 Airflow Performance Table - or Electrical and Physical Data Table - for recommended filter size.

However, if an internal filter is required, an optional internal filter kit is available for downflow applications only. For installation, see Filter Kit Installation Instruction.

FIGURE 9
PITCHED ROOFTOP INSTALLATION,
ATTIC OR DROP CEILING DISTRIBUTION SYSTEM. MUST BE MOUNTED LEVEL

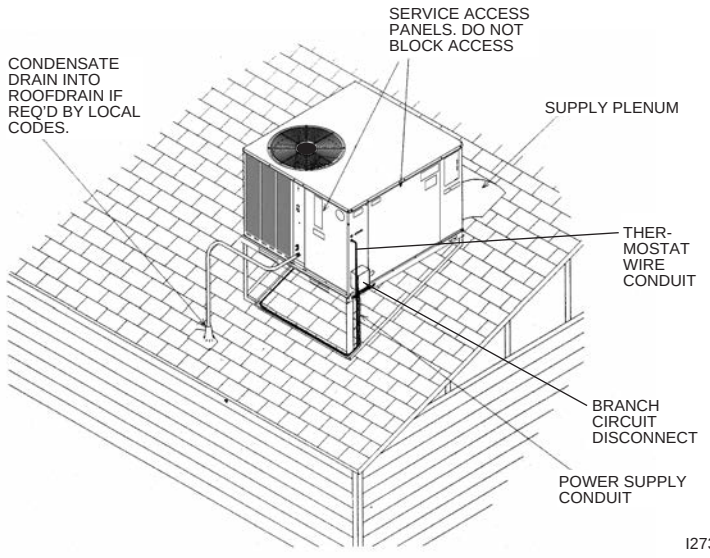
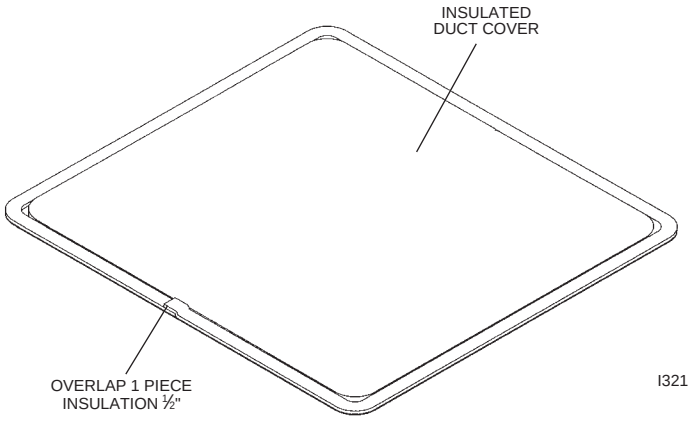


FIGURE 10
COVER GASKET DETAIL



IX. CONVERSION PROCEDURE

1. HORIZONTAL TO DOWNFLOW
   a. Remove screws and covers from the downflow supply and return sections. Both covers are accessible from the inside of the unit.
   b. Install gasket (supplied with parts bag) around perimeter of cover on the insulated side. In other words, the gasket is applied to the **opposite** side of flange than shown in Figure 10.
   c. Install covers on the outside of the unit over the horizontal supply and return opening using existing screws.
2. DOWNFLOW TO HORIZONTAL
   a. Remove screws and covers from outside of supply and return sections.
   b. Install gasket (supplied with parts bag) around perimeter of covers as illustrated in “Cover Gasket Detail.”
   c. Install covers in bottom of unit with insulated side up. NOTE: Slip back flange of cover under tab on bottom supply duct opening.
   d. Secure covers to base of unit with screw engaging prepunched holes in unit base.

X. CONDENSATE DRAIN

The evaorator coil condensate drain ends with a threaded 3/4" nominal PVC stub. A trap is built in for proper condensate drainage and to prevent debris from being drawn into the unit. Do not connect drain to closed sewer line. Connection to a vented sewer line is allowed. It is recommended that a PVC cement not be used so that the drain line can be easily cleaned in the future.

IMPORTANT: DO NOT INSTALL AN EXTERNAL TRAP. DOING SO CAN CAUSE IMPROPER DRAINAGE OF THE CONDENSATE AND RESULT IN FLOODING WITHIN THE UNIT.

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

⚠ WARNING

TURN OFF THE MAIN ELECTRICAL POWER AT THE BRANCH CIRCUIT DISCONNECT CLOSEST TO THE UNIT BEFORE ATTEMPTING ANY WIRING. FAILURE TO DO SO CAN CAUSE ELECTRICAL SHOCK RESULTING IN PERSONAL INJURY OR DEATH.

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 in accordance with the N.E.C., C.E.C., or local codes.
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.
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 in the unit control box. Connect ground wire to ground lug.
   b. WITH ELECTRIC HEAT - Connect the field wires to the terminal block on the electric heater kit. Connect the ground wire to the ground lug on the heater kit.

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

6. The pigtail wires in the electric heat box are factory wired to the contactor in the control box and are protected by internal fuses in the hinged fuse box mounted under the control box. See label on fuse box cover for fuse sizing.
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 Table B:
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.
3. Splice copper wire pigtails to aluminum wire with U.L. recognized connectors for copper-aluminum splices (Table B). 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.

TABLE A
BRANCH CIRCUIT COPPER WIRE SIZE (BASED ON 1% VOLTAGE DROP)*

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

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 approximately 11" from the unit top in the corner post adjacent to the control box. See Figure 11. 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. See Figure 11.
3. Figure 12 shows representative low voltage connection diagrams. Read your thermostat installation instructions for any special requirements for your specific thermostat. Two stage units (5 ton) require use of a thermostat capable of 2 stages of cooling.

   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

1. 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.

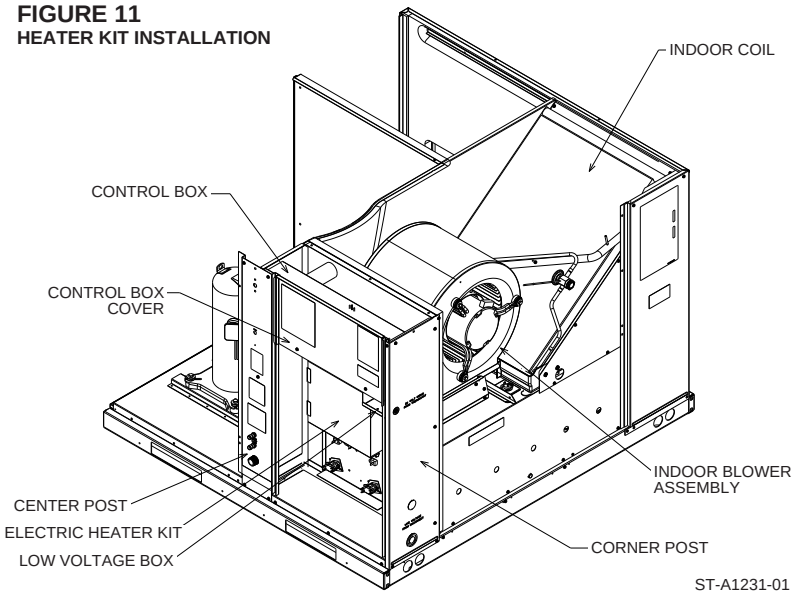
E. GROUNDING

⚠ WARNING

THE UNIT MUST BE PERMANENTLY GROUNDED. A GROUNDING LUG IS PROVIDED IN THE ELECTRIC HEAT KIT FOR A GROUND WIRE. (SEE FIGURES 11 AND 13.) FAILURE TO GROUND THIS UNIT CAN RESULT IN FIRE OR ELECTRICAL SHOCK CAUSING PROPERTY DAMAGE, SEVERE PERSONAL INJURY OR DEATH.

GROUNDING MAY ALSO BE ACCOMPLISHED BY GROUNDING THE POWER LINE CONDUIT TO THE UNIT. MAKE SURE THE CONDUIT NUT LOCKING TEETH HAVE PIERCED THE INSULATING PAINT FILM OF THE SIDE PANEL.

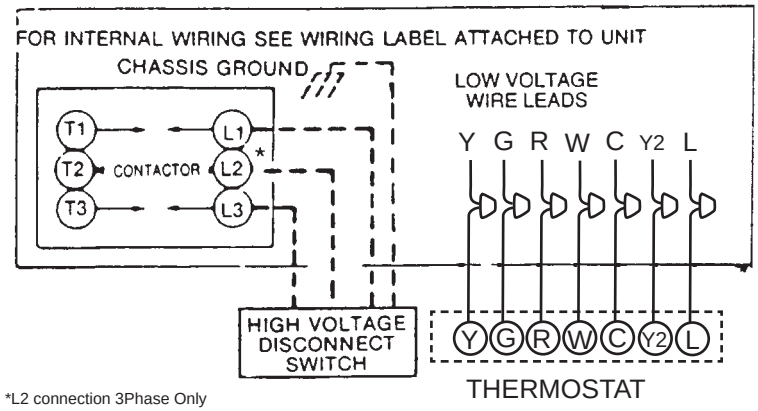
FIGURE 11
HEATER KIT INSTALLATION



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 12
VOLTAGE CONNECTIONS DIAGRAMS — STANDARD CONTROL WIRING



*L2 connection 3Phase Only

Y - Cooling (Low Stage in 2 Stage Systems)
G - Fan Only
R - 24v
W - Heating
C - Common
Y2 - High Stage Cooling (Two Stage Only)
L - Alert Codes (Optional with Comfort Alert and Compatiable Thermostat)

XII. INDOOR AIR FLOW 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.

XIII. CRANKCASE HEAT (OPTIONAL)

At initial startup or after extended shutdown periods, make sure crankcase heat is energized for at least 12 hours before compressor is started (disconnect switch closed and wall thermostat “OFF” position).

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

XIV. PRE-START CHECK

1. Is unit properly located and slightly slanted toward 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 4.)
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. Has crankcase heat been on for at least 12 hours?

XV. 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 control box cover. 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. 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_____
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.

XVI. OPERATION

Most single phase units are operated PSC (no 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. The thermostat should not be moved 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.*

Some models may be factory equipped with a start relay and start capacitor.

Some units are equipped with a time delay control (TDC1). The control allows the blower to operate for up to 60 seconds after the thermostat is satisfied.

Units with Comfort Alert (5 ton): Green light should be on. Yellow and red lights should be off. If red light is on or yellow light is flashing see Comfort Alert diagnosis chart in this manual.

XVII. AUXILIARY HEAT

A. 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.

⚠ 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.

XVIII. BLOWER MOTOR SPEED TAPS

Note: These instructions to be used in conjunction with airflow tables.

After determining necessary CFM and speed tap, follow the steps below to change speeds.

Units with PSC Blower Motors:

1. Remove blower access panel.
2. Locate wire terminals on the motor. All wires to a PSC motor are high voltage. The wire connected to the L (low), M (medium), or H (high) terminal determines the motor speed. Adjust blower speed by moving wire between these speed terminals. This speed will apply in both heating and cooling modes (they are not individually selectable). Wires to numbered terminals should not be moved.
3. Replace blower access panel.

Units with X-13 Motors

1. Remove blower access panel.
2. Locate wire terminals on the motor. Numbered terminals are 24V blower taps (See airflow tables for corresponding speed). The C terminal is 24V common. L, N, and G terminals are high voltage and must remain unchanged.
3. Cooling speed can be adjusted by moving appropriate wire between taps at the blower (Do not connect wires to unspecified speed taps).
4. Replace blower access panel.

XIX. GENERAL DATA - RACA13 MODELS
NOMINAL SIZES 2-5 TONS [7-17.6 kW]

Model RACA13 Series	024AJD***AA	030AJD***AA	036ACD***AA	036AJD***AA
Cooling Performance[1]				Continued ->
Gross Cooling Capacity Btu [kW]	24,800 [7.27]	30,200 [8.85]	35,400 [10.37]	35,400 [10.37]
EER/SEER[2]	11.4/13.5	12/13.5	11.6/13.5	11.6/13.5
Nominal CFM/AHRI Rated CFM [L/s]	800/900 [378/425]	1000/1000 [472/472]	1200/1200 [566/566]	1200/1200 [566/566]
AHRI Net Cooling Capacity Btu [kW]	24,000 [7.03]	29,000 [8.5]	34,000 [9.96]	34,000 [9.96]
Net Sensible Capacity Btu [kW]	18,400 [5.39]	21,300 [6.24]	24,200 [7.09]	24,200 [7.09]
Net Latent Capacity Btu [kW]	5,600 [1.64]	7,700 [2.26]	9,800 [2.87]	9,800 [2.87]
Net System Power kW	2.1	2.37	2.93	2.93
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[5]	76	76	76	76
Outdoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.71 [18]	0.71 [18]	0.71 [18]	0.71 [18]
Face Area sq. ft. [sq. m]	7.1 [0.66]	9.9 [0.92]	9.8 [0.91]	9.8 [0.91]
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 [25.4]	1 [25.4]	1 [25.4]	1 [25.4]
Face Area sq. ft. [sq. m]	3.6 [0.33]	3.6 [0.33]	3.6 [0.33]	3.6 [0.33]
Rows / FPI [FPcm]	1 / 17 [7]	1 / 23 [9]	1 / 23 [9]	1 / 17 [7]
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]	1/22 [558.8]	1/22 [558.8]	1/22 [558.8]	1/22 [558.8]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	2500 [1180]	2500 [1180]	2700 [1274]	2700 [1274]
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]	1/9x7 [229x178]	1/10x9 [254x229]	1/12x9 [305x229]	1/12x9 [305x229]
Drive Type	Direct	Direct	Direct	Direct
No. Speeds	Multiple	Multiple	Multiple	Multiple
No. Motors	1	1	1	1
Motor HP	1/4	1/2	1/2	1/2
Motor RPM	1075	1075	1075	1075
Motor Frame Size	48	48	48	48
Filter - Type	Field Supplied	Field Supplied	Field Supplied	Field Supplied
Furnished	No	No	No	No
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x20x20 [25x508x508]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]
Refrigerant Charge Oz. [g]	42.7 [1211]	46.8 [1327]	52.7 [1494]	52.7 [1494]
Weights				
Net Weight lbs. [kg]	398 [181]	403 [183]	411 [186]	411 [186]
Ship Weight lbs. [kg]	408 [185]	413 [187]	421 [191]	421 [191]

GENERAL DATA - RACA13 MODELS
NOMINAL SIZES 2-5 TONS [7-17.6 kW]

Model RACA13 Series	042ACT***AA	042AJT***AA	048ACT***AA	048AJT***AA
Cooling Performance[1]				Continued ->
Gross Cooling Capacity Btu [kW]	41,000 [12.01]	41,000 [12.01]	47,500 [13.92]	47,500 [13.92]
EER/SEER[2]	12/13.5	12/13.5	11.5/13.5	11.5/13.5
Nominal CFM/AHRI Rated CFM [L/s]	1400/1300 [661/613]	1400/1300 [661/613]	1600/1550 [755/731]	1600/1550 [755/731]
AHRI Net Cooling Capacity Btu [kW]	40,000 [11.72]	40,000 [11.72]	46,000 [13.48]	46,000 [13.48]
Net Sensible Capacity Btu [kW]	29,000 [8.5]	29,000 [8.5]	32,500 [9.52]	32,500 [9.52]
Net Latent Capacity Btu [kW]	11,000 [3.22]	11,000 [3.22]	13,500 [3.96]	13,500 [3.96]
Net System Power kW	3.27	3.27	4.00	4.00
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[5]	76	76	78	78
Outdoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.71 [18]	0.71 [18]	0.71 [18]	0.71 [18]
Face Area sq. ft. [sq. m]	14.1 [1.31]	14.1 [1.31]	16.3 [1.51]	16.3 [1.51]
Rows / FPI [FPcm]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]
Indoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	1 [25.4]	1 [25.4]	1 [25.4]	1 [25.4]
Face Area sq. ft. [sq. m]	3.6 [0.33]	3.6 [0.33]	4.1 [0.38]	4.1 [0.38]
Rows / FPI [FPcm]	1 / 17 [7]	1 / 17 [7]	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]	1/22 [558.8]	1/22 [558.8]	1/22 [558.8]	1/22 [558.8]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	3500 [1652]	3500 [1652]	3300 [1557]	3300 [1557]
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]	1/12x9 [305x229]	1/12x9 [305x229]	1/12x9 [305x229]	1/12x9 [305x229]
Drive Type	Direct	Direct	Direct	Direct
No. Speeds	Multiple	Multiple	Multiple	Multiple
No. Motors	1	1	1	1
Motor HP	3/4	3/4	3/4	3/4
Motor RPM	1075	1075	1075	1075
Motor Frame Size	48	48	48	48

GENERAL DATA - RACA13 MODELS
NOMINAL SIZES 2-5 TONS [7-17.6 kW]

Model RACA13 Series	060ACT***AA	060AJT***AA
Cooling Performance[1]		
Gross Cooling Capacity Btu [kW]	59,000 [17.29]	59,000 [17.29]
EER/SEER[2]	11/13	11/13
Nominal CFM/AHRI Rated CFM [L/s]	2000/1700 [944/802]	2000/1700 [944/802]
AHRI Net Cooling Capacity Btu [kW]	57,000 [16.7]	57,000 [16.7]
Net Sensible Capacity Btu [kW]	39,500 [11.57]	39,500 [11.57]
Net Latent Capacity Btu [kW]	17,500 [5.13]	17,500 [5.13]
Net System Power kW	5.17	5.17
Compressor		
No./Type	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[5]	79	79
Outdoor Coil - Fin Type	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.71 [18]	0.71 [18]
Face Area sq. ft. [sq. m]	16.3 [1.51]	16.3 [1.51]
Rows / FPI [FPcm]	1 / 23 [9]	1 / 23 [9]
Indoor Coil - Fin Type	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	1.26 [32]	1.26 [32]
Face Area sq. ft. [sq. m]	4 [0.37]	4 [0.37]
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]	1/22 [558.8]	1/22 [558.8]
Drive Type/No. Speeds	Direct/1	Direct/1
CFM [L/s]	3400 [1604]	3400 [1604]
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]	1/12x9 [305x229]	1/12x9 [305x229]
Drive Type	Direct	Direct
No. Speeds	Multiple	Multiple
No. Motors	1	1
Motor HP	1	1
Motor RPM	1075	1075
Motor Frame Size	48	48
Filter - Type	Field Supplied	Field Supplied
Furnished	No	No
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x24x30 [25x610x762]	(1)1x24x30 [25x610x762]
Refrigerant Charge Oz. [g]	66.1 [1874]	66.1 [1874]
Weights		
Net Weight lbs. [kg]	512 [232]	512 [232]
Ship Weight lbs. [kg]	522 [237]	522 [237]

GENERAL DATA - RACA14 MODELS
NOMINAL SIZES 2-5 TONS [7-17.6 kW]

Model RACA14 Series	024AJD***AA	030AJD***AA	036ACD***AA	036AJD***AA
Cooling Performance[1]				Continued ->
Gross Cooling Capacity Btu [kW]	24,800 [7.27]	30,200 [8.85]	35,400 [10.37]	35,400 [10.37]
EER/SEER[2]	11.6/14	12/14	11.8/14	11.8/14
Nominal CFM/AHRI Rated CFM [L/s]	800/900 [378/425]	1000/1000 [472/472]	1200/1200 [566/566]	1200/1200 [566/566]
AHRI Net Cooling Capacity Btu [kW]	24,000 [7.03]	29,000 [8.5]	34,000 [9.96]	34,000 [9.96]
Net Sensible Capacity Btu [kW]	18,400 [5.39]	21,300 [6.24]	24,200 [7.09]	24,200 [7.09]
Net Latent Capacity Btu [kW]	5,600 [1.64]	7,700 [2.26]	9,800 [2.87]	9,800 [2.87]
Net System Power kW	2.07	2.37	2.89	2.89
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[5]	76	76	76	76
Outdoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.71 [18]	0.71 [18]	0.71 [18]	0.71 [18]
Face Area sq. ft. [sq. m]	7.1 [0.66]	9.9 [0.92]	9.8 [0.91]	9.8 [0.91]
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 [25.4]	1 [25.4]	1 [25.4]	1 [25.4]
Face Area sq. ft. [sq. m]	3.6 [0.33]	3.6 [0.33]	3.6 [0.33]	3.6 [0.33]
Rows / FPI [FPcm]	1 / 17 [7]	1 / 23 [9]	1 / 23 [9]	1 / 17 [7]
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]	1/22 [558.8]	1/22 [558.8]	1/22 [558.8]	1/22 [558.8]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	2500 [1180]	2500 [1180]	2700 [1274]	2700 [1274]
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]	1/9x7 [229x178]	1/10x9 [254x229]	1/12x9 [305x229]	1/12x9 [305x229]
Drive Type	Direct	Direct	Direct	Direct
No. Speeds	Multiple	Multiple	Multiple	Multiple
No. Motors	1	1	1	1
Motor HP	1/4	1/2	1/2	1/2
Motor RPM	1075	1075	1075	1075
Motor Frame Size	48	48	48	48
Filter - Type	Field Supplied	Field Supplied	Field Supplied	Field Supplied
Furnished	No	No	No	No
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x20x20 [25x508x508]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]
Refrigerant Charge Oz. [g]	42.7 [1211]	46.8 [1327]	52.7 [1494]	52.7 [1494]
Weights				
Net Weight lbs. [kg]	398 [181]	403 [183]	411 [186]	411 [186]
Ship Weight lbs. [kg]	408 [185]	413 [187]	421 [191]	421 [191]

GENERAL DATA - RACA14 MODELS
NOMINAL SIZES 2-5 TONS [7-17.6 kW]

Model RACA14 Series	042ACT***AA	042AJT***AA	048ACT***AA	048AJT***AA
Cooling Performance[1]				Continued ->
Gross Cooling Capacity Btu [kW]	41,000 [12.01]	41,000 [12.01]	47,500 [13.92]	47,500 [13.92]
EER/SEER[2]	12/14	12/14	11.7/14	11.7/14
Nominal CFM/AHRI Rated CFM [L/s]	1400/1300 [661/613]	1400/1300 [661/613]	1600/1550 [755/731]	1600/1550 [755/731]
AHRI Net Cooling Capacity Btu [kW]	40,000 [11.72]	40,000 [11.72]	46,000 [13.48]	46,000 [13.48]
Net Sensible Capacity Btu [kW]	29,000 [8.5]	29,000 [8.5]	32,500 [9.52]	32,500 [9.52]
Net Latent Capacity Btu [kW]	11,000 [3.22]	11,000 [3.22]	13,500 [3.96]	13,500 [3.96]
Net System Power kW	3.27	3.27	3.89	3.89
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[5]	76	76	78	78
Outdoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.71 [18]	0.71 [18]	0.71 [18]	0.71 [18]
Face Area sq. ft. [sq. m]	14.1 [1.31]	14.1 [1.31]	16.3 [1.51]	16.3 [1.51]
Rows / FPI [FPcm]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]
Indoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	1 [25.4]	1 [25.4]	1 [25.4]	1 [25.4]
Face Area sq. ft. [sq. m]	3.6 [0.33]	3.6 [0.33]	4.1 [0.38]	4.1 [0.38]
Rows / FPI [FPcm]	1 / 17 [7]	1 / 17 [7]	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]	1/22 [558.8]	1/22 [558.8]	1/22 [558.8]	1/22 [558.8]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	3500 [1652]	3500 [1652]	3300 [1557]	3300 [1557]
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]	1/12x9 [305x229]	1/12x9 [305x229]	1/12x9 [305x229]	1/12x9 [305x229]
Drive Type	Direct	Direct	Direct	Direct
No. Speeds	Multiple	Multiple	Multiple	Multiple
No. Motors	1	1	1	1
Motor HP	3/4	3/4	3/4	3/4
Motor RPM	1075	1075	1075	1075
Motor Frame Size	48	48	48	48
Filter - Type	Field Supplied	Field Supplied	Field Supplied	Field Supplied
Furnished	No	No	No	No
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]
Refrigerant Charge Oz. [g]	53.6 [1520]	53.6 [1520]	69.3 [1965]	69.3 [1965]
Weights				
Net Weight lbs. [kg]	441 [200]	441 [200]	477 [216]	477 [216]
Ship Weight lbs. [kg]	451 [205]	451 [205]	487 [221]	487 [221]

GENERAL DATA - RACA14 MODELS
NOMINAL SIZES 2-5 TONS [7-17.6 kW]

Model RACA14 Series	060ACT***AA	060AJT***AA
Cooling Performance[1]		
Gross Cooling Capacity Btu [kW]	59,000 [17.29]	59,000 [17.29]
EER/SEER[2]	11.6/14	11.6/14
Nominal CFM/AHRI Rated CFM [L/s]	2000/1700 [944/802]	2000/1700 [944/802]
AHRI Net Cooling Capacity Btu [kW]	57,000 [16.7]	57,000 [16.7]
Net Sensible Capacity Btu [kW]	39,500 [11.57]	39,500 [11.57]
Net Latent Capacity Btu [kW]	17,500 [5.13]	17,500 [5.13]
Net System Power kW	4.94	4.94
Compressor		
No./Type	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[5]	79	79
Outdoor Coil - Fin Type	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	1 [25.4]	1 [25.4]
Face Area sq. ft. [sq. m]	15.3 [1.42]	15.3 [1.42]
Rows / FPI [FPcm]	1 / 23 [9]	1 / 23 [9]
Indoor Coil - Fin Type	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	1.26 [32]	1.26 [32]
Face Area sq. ft. [sq. m]	4 [0.37]	4 [0.37]
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]	1/22 [558.8]	1/22 [558.8]
Drive Type/No. Speeds	Direct/1	Direct/1
CFM [L/s]	3400 [1604]	3400 [1604]
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]	1/12x9 [305x229]	1/12x9 [305x229]
Drive Type	Direct	Direct
No. Speeds	Multiple	Multiple
No. Motors	1	1
Motor HP	1	1
Motor RPM	1075	1075
Motor Frame Size	48	48
Filter - Type	Field Supplied	Field Supplied
Furnished	No	No
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x24x30 [25x610x762]	(1)1x24x30 [25x610x762]
Refrigerant Charge Oz. [g]	83.1 [2356]	83.1 [2356]
Weights		
Net Weight lbs. [kg]	512 [232]	512 [232]
Ship Weight lbs. [kg]	522 [237]	522 [237]

GENERAL DATA - RACA15 MODELS
NOMINAL SIZES 2-5 TONS [7-17.6 kW]

Model RACA15 Series	024AJT***AA	030AJT***AA	036ACT***AA	036AJT***AA
Cooling Performance[1]				Continued ->
Gross Cooling Capacity Btu [kW]	24,600 [7.21]	29,600 [8.67]	36,000 [10.55]	36,000 [10.55]
EER/SEER[2]	12/15	12/15	12/15	12/15
Nominal CFM/AHRI Rated CFM [L/s]	800/900 [378/425]	1000/975 [472/460]	1200/1200 [566/566]	1200/1200 [566/566]
AHRI Net Cooling Capacity Btu [kW]	24,000 [7.03]	29,000 [8.5]	35,000 [10.25]	35,000 [10.25]
Net Sensible Capacity Btu [kW]	18,100 [5.3]	21,500 [6.3]	25,400 [7.44]	25,400 [7.44]
Net Latent Capacity Btu [kW]	5,900 [1.73]	7,500 [2.2]	9,600 [2.81]	9,600 [2.81]
Net System Power kW	2.03	2.21	2.77	2.77
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[5]	76	76	76	76
Outdoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.71 [18]	0.71 [18]	0.71 [18]	0.71 [18]
Face Area sq. ft. [sq. m]	7.1 [0.66]	9.9 [0.92]	9.8 [0.91]	9.8 [0.91]
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 [25.4]	1 [25.4]	1 [25.4]	1 [25.4]
Face Area sq. ft. [sq. m]	3.6 [0.33]	3.6 [0.33]	3.6 [0.33]	3.6 [0.33]
Rows / FPI [FPcm]	1 / 17 [7]	1 / 17 [7]	1 / 17 [7]	1 / 17 [7]
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]	1/22 [558.8]	1/22 [558.8]	1/22 [558.8]	1/22 [558.8]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	2500 [1180]	2500 [1180]	2700 [1274]	2700 [1274]
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]	1/10x9 [254x229]	1/10x9 [254x229]	1/12x9 [305x229]	1/12x9 [305x229]
Drive Type	Direct	Direct	Direct	Direct
No. Speeds	Multiple	Multiple	Multiple	Multiple
No. Motors	1	1	1	1
Motor HP	1/3	1/2	1/2	1/2
Motor RPM	1075	1075	1075	1075
Motor Frame Size	48	48	48	48
Filter - Type	Field Supplied	Field Supplied	Field Supplied	Field Supplied
Furnished	No	No	No	No
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x20x20 [25x508x508]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]
Refrigerant Charge Oz. [g]	42.6 [1208]	46.8 [1327]	52.7 [1494]	52.7 [1494]
Weights				
Net Weight lbs. [kg]	403 [183]	403 [183]	411 [186]	411 [186]
Ship Weight lbs. [kg]	413 [187]	413 [187]	421 [191]	421 [191]

GENERAL DATA - RACA15 MODELS
NOMINAL SIZES 2-5 TONS [7-17.6 kW]

Model RACA15 Series	042ACT***AA	042AJT***AA	048ACT***AA	048AJT***AA
Cooling Performance[1]				Continued ->
Gross Cooling Capacity Btu [kW]	41,000 [12.01]	41,000 [12.01]	47,500 [13.92]	47,500 [13.92]
EER/SEER[2]	12/15	12/15	12/15	12/15
Nominal CFM/AHRI Rated CFM [L/s]	1400/1300 [661/613]	1400/1300 [661/613]	1600/1550 [755/731]	1600/1550 [755/731]
AHRI Net Cooling Capacity Btu [kW]	40,000 [11.72]	40,000 [11.72]	46,000 [13.48]	46,000 [13.48]
Net Sensible Capacity Btu [kW]	28,600 [8.38]	28,600 [8.38]	33,000 [9.67]	33,000 [9.67]
Net Latent Capacity Btu [kW]	11,400 [3.34]	11,400 [3.34]	13,000 [3.81]	13,000 [3.81]
Net System Power kW	3.28	3.28	3.66	3.66
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[5]	76	76	78	78
Outdoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.71 [18]	0.71 [18]	0.71 [18]	0.7 [17.8]
Face Area sq. ft. [sq. m]	14.1 [1.31]	14.1 [1.31]	16.3 [1.51]	16.3 [1.51]
Rows / FPI [FPcm]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]
Indoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	1 [25.4]	1 [25.4]	1.26 [32]	1.26 [32]
Face Area sq. ft. [sq. m]	3.6 [0.33]	3.6 [0.33]	4.1 [0.38]	4.1 [0.38]
Rows / FPI [FPcm]	1 / 17 [7]	1 / 17 [7]	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]	1/22 [558.8]	1/22 [558.8]	1/22 [558.8]	1/22 [558.8]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	3500 [1652]	3500 [1652]	3300 [1557]	3300 [1557]
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]	1/12x9 [305x229]	1/12x9 [305x229]	1/12x9 [305x229]	1/12x9 [305x229]
Drive Type	Direct	Direct	Direct	Direct
No. Speeds	Multiple	Multiple	Multiple	Multiple
No. Motors	1	1	1	1
Motor HP	3/4	3/4	3/4	3/4
Motor RPM	1075	1075	1075	1075
Motor Frame Size	48	48	48	48
Filter - Type	Field Supplied	Field Supplied	Field Supplied	Field Supplied
Furnished	No	No	No	No
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]
Refrigerant Charge Oz. [g]	61.3 [1738]	61.3 [1738]	85.3 [2418]	85.3 [2418]
Weights				
Net Weight lbs. [kg]	445 [202]	445 [202]	492 [223]	492 [223]
Ship Weight lbs. [kg]	455 [206]	455 [206]	502 [228]	502 [228]

GENERAL DATA - RACA15 MODELS
NOMINAL SIZES 2-5 TONS [7-17.6 kW]

Model RACA15 Series	060ACT***AA	060AJT***AA
Cooling Performance[1]		
Gross Cooling Capacity (2nd Stage) Btu [kW]	59,500 [17.43]	59,500 [17.43]
SEER[2]	15	15
EER (1st stage / 2nd stage)	20.9/11.4	20.9/11.4
AHRI Rated CFM (1st / 2nd stage) [L/s]	1250/1850 [590/873]	1250/1850 [590/873]
AHRI Net Cooling Capacity (1st / 2nd stage) Btu [kW]	49,500/57,000 [14.5/16.7]	49,500/57,000 [14.5/16.7]
Net Sensible Capacity (1st / 2nd stage) Btu [kW]	33,800/40,700 [9.9/11.92]	33,800/40,700 [9.9/11.92]
Net Latent Capacity (1st / 2nd stage) Btu [kW]	15,700/16,300 [4.6/4.78]	15,700/16,300 [4.6/4.78]
Net System Power (1st / 2nd stage) kW	2.14/5.02	2.14/5.02
Compressor		
No./Type	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[5]	78	78
Outdoor Coil - Fin Type	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	1 [25.4]	1 [25.4]
Face Area sq. ft. [sq. m]	15.3 [1.42]	15.3 [1.42]
Rows / FPI [FPcm]	1 / 23 [9]	1 / 23 [9]
Indoor Coil - Fin Type	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	1.26 [32]	1.26 [32]
Face Area sq. ft. [sq. m]	4 [0.37]	4 [0.37]
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]	1/22 [558.8]	1/22 [558.8]
Drive Type/No. Speeds	Direct/1	Direct/1
CFM [L/s]	3300 [1557]	3300 [1557]
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]	1/12x9 [305x229]	1/12x9 [305x229]
Drive Type	Direct	Direct
No. Speeds	Multiple	Multiple
No. Motors	1	1
Motor HP	1	1
Motor RPM	1075	1075
Motor Frame Size	48	48
Filter - Type	Field Supplied	Field Supplied
Furnished	No	No
(NO.) Size Recommended in. [mm x mm x mm]	(1)1x24x30 [25x610x762]	(1)1x24x30 [25x610x762]
Refrigerant Charge Oz. [g]	89.6 [2540]	89.6 [2540]
Weights		
Net Weight lbs. [kg]	515 [234]	515 [234]
Ship Weight lbs. [kg]	525 [238]	525 [238]

XX. ELECTRICAL DATA

ELECTRICAL DATA - RACA13 SERIES										
		024AJD***AA	030AJD***AA	036ACD***AA	036AJD***AA	042ACT***AA	042AJT***AA	048ACT***AA	048AJT***AA	060ACT***AA
Unit Information	Unit Operating Voltage Range	187-253	187-253	187-253	187-253	187-253	187-253	187-253	187-253	197-253
	Volts	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230
	Phase	1	1	3	1	3	1	3	1	3
	Hz	60	60	60	60	60	60	60	60	60
	Minimum Circuit Ampacity	17	20	16	22	24	30	25	33	32
	Minimum Overcurrent Protection Device Size	20	20	20	25	25	30	25	35	35
	Maximum Overcurrent Protection Device Size	25	30	20	35	35	45	35	50	45
Compressor Motor	No.	1	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230
	Phase	1	1	3	1	3	1	3	1	3
	RPM	3450	3450	3450	3450	3450	3450	3450	3450	3500
	HP, Compressor 1	2 1/6	2 2/3	3 1/3	3 1/3	3 1/2	3 1/2	4	4	5
	Amps (RLA), Comp. 1	11.2	12.8	9	14.1	13.2	17.9	13.1	19.9	17.8
	Amps (LRA), Comp. 1	60.8	64	71	77	88	112	83.1	109	110
Condenser Motor	No.	1	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230
	Phase	1	1	1	1	1	1	1	1	1
	HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3
	Amps (FLA, each)	1.5	1.5	1.5	1.5	1.5	1.5	2	2	2
	Amps (LRA, each)	3	3	3	3	3	3	3.9	3.9	3.9
Evaporator Fan	No.	1	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230
	Phase	1	1	1	1	1	1	1	1	1
	HP	1/4	1/2	1/2	1/2	3/4	3/4	3/4	3/4	1
	Amps (FLA, each)	1.3	2.4	2.5	2.5	6	6	6	6	7.6
	Amps (LRA, each)	2.3	5.1	4.6	4.6					

ELECTRICAL DATA - RACA13 SERIES										
		060AJT***AA								
Unit Information	Unit Operating Voltage Range	197-253								
	Volts	208/230								
	Phase	1								
	Hz	60								
	Minimum Circuit Ampacity	41								
	Minimum Overcurrent Protection Device Size	45								
	Maximum Overcurrent Protection Device Size	60								
Compressor Motor	No.	1								
	Volts	208/230								
	Phase	1								
	RPM	3500								
	HP, Compressor 1	5								
	Amps (RLA), Comp. 1	24.4								
	Amps (LRA), Comp. 1	144.2								
Condenser Motor	No.	1								
	Volts	208/230								
	Phase	1								
	HP	1/3								
	Amps (FLA, each)	2								
	Amps (LRA, each)	3.9								
Evaporator Fan	No.	1								
	Volts	208/230								
	Phase	1								
	HP	1								
	Amps (FLA, each)	7.6								
	Amps (LRA, each)									

ELECTRICAL DATA - RACA14 SERIES										
		024AJD***AA	030AJD***AA	036ACD***AA	036AJD***AA	042ACT***AA	042AJT***AA	048ACT***AA	048AJT***AA	060ACT***AA
Unit Information	Unit Operating Voltage Range	187-253	187-253	187-253	187-253	187-253	187-253	187-253	187-253	197-253
	Volts	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230
	Phase	1	1	3	1	3	1	3	1	3
	Hz	60	60	60	60	60	60	60	60	60
	Minimum Circuit Ampacity	17	20	16	22	24	30	25	33	32
	Minimum Overcurrent Protection Device Size	20	20	20	25	25	30	25	35	35
	Maximum Overcurrent Protection Device Size	25	30	20	35	35	45	35	50	45
Compressor Motor	No.	1	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230
	Phase	1	1	3	1	3	1	3	1	3
	RPM	3450	3450	3450	3450	3450	3450	3450	3450	3500
	HP, Compressor 1	2 1/6	2 2/3	3 1/3	3 1/3	3 1/2	3 1/2	4	4	5
	Amps (RLA), Comp. 1	11.2	12.8	9	14.1	13.2	17.9	13.1	19.9	17.8
	Amps (LRA), Comp. 1	60.8	64	71	77	88	112	83.1	109	110
Condenser Motor	No.	1	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230
	Phase	1	1	1	1	1	1	1	1	1
	HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3
	Amps (FLA, each)	1.5	1.5	1.5	1.5	1.5	1.5	2	2	2
	Amps (LRA, each)	3	3	3	3	3	3	3.9	3.9	3.9
Evaporator Fan	No.	1	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230
	Phase	1	1	1	1	1	1	1	1	1
	HP	1/4	1/2	1/2	1/2	3/4	3/4	3/4	3/4	1
	Amps (FLA, each)	1.3	2.4	2.5	2.5	6	6	6	6	7.6
	Amps (LRA, each)	2.3	5.1	4.6	4.6					

ELECTRICAL DATA - RACA14 SERIES										
		060AJT***AA								
Unit Information	Unit Operating Voltage Range	197-253								
	Volts	208/230								
	Phase	1								
	Hz	60								
	Minimum Circuit Ampacity	41								
	Minimum Overcurrent Protection Device Size	45								
	Maximum Overcurrent Protection Device Size	60								
Compressor Motor	No.	1								
	Volts	208/230								
	Phase	1								
	RPM	3500								
	HP, Compressor 1	5								
	Amps (RLA), Comp. 1	24.4								
	Amps (LRA), Comp. 1	144.2								
Condenser Motor	No.	1								
	Volts	208/230								
	Phase	1								
	HP	1/3								
	Amps (FLA, each)	2								
	Amps (LRA, each)	3.9								
Evaporator Fan	No.	1								
	Volts	208/230								
	Phase	1								
	HP	1								
	Amps (FLA, each)	7.6								
	Amps (LRA, each)									

ELECTRICAL DATA - RACA15 SERIES										
		024AJT***AA	030AJT***AA	036ACT***AA	036AJT***AA	042ACT***AA	042AJT***AA	048ACT***AA	048AJT***AA	060ACT***AA
Unit Information	Unit Operating Voltage Range	187-253	187-253	187-253	187-253	187-253	187-253	187-253	187-253	197-253
	Volts	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230
	Phase	1	1	3	1	3	1	3	1	3
	Hz	60	60	60	60	60	60	60	60	60
	Minimum Circuit Ampacity	19	21	17	24	24	30	25	33	30
	Minimum Overcurrent Protection Device Size	20	25	20	25	25	30	25	35	50
	Maximum Overcurrent Protection Device Size	25	30	25	35	35	45	35	50	45
Compressor Motor	No.	1	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230
	Phase	1	1	3	1	3	1	3	1	3
	RPM	3450	3450	3450	3450	3450	3450	3450	3450	3450
	HP, Compressor 1	2 1/6	2 2/3	3 1/3	3 1/3	3 1/2	3 1/2	4	4	5
	Amps (RLA), Comp. 1	11.2	12.8	9	14.1	13.2	17.9	13.1	19.9	16.2
	Amps (LRA), Comp. 1	60.8	64	71	77	88	112	83.1	109	110
Condenser Motor	No.	1	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230
	Phase	1	1	1	1	1	1	1	1	1
	HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3
	Amps (FLA, each)	1.5	1.5	1.5	1.5	1.5	1.5	2	2	2
	Amps (LRA, each)	3	3	3	3	3	3	3.9	3.9	3.9
Evaporator Fan	No.	1	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230
	Phase	1	1	1	1	1	1	1	1	1
	HP	1/3	1/2	1/2	1/2	3/4	3/4	3/4	3/4	1
	Amps (FLA, each)	2.8	2.8	4.1	4.1	6	6	6	6	7.6
	Amps (LRA, each)									

ELECTRICAL DATA - RACA15 SERIES										
		060AJT***AA								
Unit Information	Unit Operating Voltage Range	197-253								
	Volts	208/230								
	Phase	1								
	Hz	60								
	Minimum Circuit Ampacity	46								
	Minimum Overcurrent Protection Device Size	50								
	Maximum Overcurrent Protection Device Size	70								
Compressor Motor	No.	1								
	Volts	208/230								
	Phase	1								
	RPM	3450								
	HP, Compressor 1	5								
	Amps (RLA), Comp. 1	28.8								
	Amps (LRA), Comp. 1	152.9								
Condenser Motor	No.	1								
	Volts	208/230								
	Phase	1								
	HP	1/3								
	Amps (FLA, each)	2								
	Amps (LRA, each)	3.9								
Evaporator Fan	No.	1								
	Volts	208/230								
	Phase	1								
	HP	1								
	Amps (FLA, each)	7.6								
	Amps (LRA, each)									

Indoor Airflow Performance RACA13/14 - 230 Volts

Nominal Cooling Capacity Tons [kW]	Motor Speed from Factory		Manufacturer Recommended Cooling Airflow (Min/Max)	Blower Size/ Motor HP [W] # of Speeds Motor Type	Motor Speed / Tap		External Static Pressure - Inches W.C. [kPa] (Side Discharge-Dry Coil)									
	Cool	Heat					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]
2.0 [7.03]	High	High	700 CFM / 950 CFM	9x7 Blower 1/4 HP [186] 2 Speed (PSC Motor)	Low	CFM	822 [388]	789 [372]	750 [354]	696 [328]	624 [294]	496 [234]	402 [190]			
						RPM	917	954	994	1031	1051	1075	1105			
						Watts	226	216	203	188	175	150	136			
					High	CFM	992 [468]	928 [438]	873 [412]	810 [382]	741 [350]	659 [311]	490 [231]			
						RPM	1055	1068	1080	1096	1106	1119	1136			
						Watts	271	256	245	227	214	199	175			
2.5 [8.79]	Low	Low	850 CFM / 1150 CFM	10x9 Blower 1/2 HP [372] 3 Speed (PSC Motor)	Low	CFM	1093 [516]	1062 [501]	1001 [472]	930 [439]	815 [385]	728 [344]	663 [313]	571 [269]		
						RPM	900	935	969	999	1030	1053	1064	1082		
						Watts	375	358	335	313	283	264	249	229		
					Med	CFM	1239 [585]	1184 [559]	1114 [526]	1043 [492]	959 [453]	827 [390]	744 [351]	657 [310]		
						RPM	961	983	1006	1030	1052	1074	1084	1097		
						Watts	429	409	384	360	334	303	287	266		
					High	CFM	1362 [643]	1292 [610]	1213 [572]	1133 [535]	1027 [485]	872 [412]	800 [378]	700 [330]		
						RPM	1049	1061	1073	1085	1097	1109	1116	1124		
						Watts	500	472	454	427	405	371	360	339		
3.0 [10.55]	Low	Low	1000 CFM / 1400 CFM	12x9T Blower 1/2 HP [372] 2 Speed (PSC Motor)	Low	CFM	1310 [618]	1246 [588]	1186 [560]	1128 [532]	1038 [490]	955 [451]	847 [400]	738 [348]		
						RPM	834	867	895	918	949	971	989	1019		
						Watts	460	447	435	424	407	396	380	362		
					High	CFM	1644 [776]	1568 [740]	1488 [702]	1421 [671]	1330 [628]	1248 [589]	1133 [535]	1003 [473]		
						RPM	981	996	1009	1421	1330	1248	1058	1072		
						Watts	664	641	620	1421	1330	1248	545	526		
3.5 [12.31]	Tap 3	Tap 3	1200 CFM / 1600 CFM	12x9T Blower 3/4 HP [559] 3 Speed (Constant Torque)	Tap 1 Low	CFM	1336 [631]	1312 [619]	1295 [611]	1241 [586]	1200 [566]	1161 [548]	1119 [528]	1072 [506]	1001 [472]	939 [443]
						RPM	827	856	874	913	949	983	1013	1048	1092	1127
						Watts	298	308	313	325	341	352	361	374	387	402
					Tap 2 Medium	CFM	1336 [631]	1312 [619]	1295 [611]	1241 [586]	1200 [566]	1161 [548]	1119 [528]	1072 [506]	1001 [472]	939 [443]
						RPM	827	856	874	913	949	983	1013	1048	1092	1127
						Watts	298	308	313	325	341	352	361	374	387	402
					Tap 3 High	CFM	1591 [751]	1563 [738]	1558 [735]	1519 [717]	1490 [703]	1458 [688]	1410 [665]	1363 [643]	1277 [603]	1122 [530]
						RPM	949	981	999	1027	1051	1086	1109	1129	1140	1158
						Watts	476	490	501	515	527	542	546	543	522	478
4.0 [14.07]	Tap 3	Tap 3	1350 CFM / 1850 CFM	12x9T Blower 3/4 HP [559] 3 Speed (Constant Torque)	Tap 1 Low	CFM	1467 [692]	1448 [683]	1404 [663]	1373 [648]	1339 [632]	1306 [616]	1250 [590]	1210 [571]	1164 [549]	1087 [513]
						RPM	826	855	884	910	939	969	1003	1030	1067	1108
						Watts	328	344	348	363	379	387	398	408	418	434
					Tap 2 Medium	CFM	1634 [771]	1595 [753]	1547 [730]	1530 [722]	1487 [702]	1462 [690]	1438 [679]	1378 [650]	1352 [638]	1298 [613]
						RPM	894	923	950	981	1000	1030	1051	1079	1106	1126
						Watts	432	446	451	468	479	490	508	510	520	520
					Tap 3 High	CFM	1941 [916]	1915 [904]	1878 [886]	1814 [856]	1773 [837]	1709 [807]	1655 [781]	1570 [741]	1488 [702]	1374 [648]
						RPM	1028	1047	1068	1091	1104	1113	1124	1136	1142	1147
						Watts	708	725	729	727	717	696	673	647	618	571
5.0 [17.59]	Tap 3	Tap 3	1600 CFM / 2100 CFM	12x9R Blower 1 HP [746] 3 Speed (Constant Torque)	Tap 1 Low	CFM	1768 [834]	1730 [816]	1693 [799]	1626 [767]	1599 [755]	1558 [735]	1522 [718]	1503 [709]	1444 [681]	1399 [660]
						RPM	938	959	983	1011	1025	1052	1089	1090	1117	1134
						Watts	520	533	541	560	563	578	599	599	605	615
					Tap 2 Medium	CFM	1926 [909]	1890 [892]	1864 [880]	1822 [860]	1794 [847]	1758 [830]	1710 [807]	1670 [788]	1579 [745]	1493 [705]
						RPM	999	1014	1040	1061	1079	1096	1119	1128	1138	1144
						Watts	654	660	674	688	699	708	714	705	683	661
					Tap 3 High	CFM	2096 [989]	2057 [971]	2003 [945]	1951 [921]	1890 [892]	1819 [858]	1756 [829]	1686 [796]	1610 [760]	1498 [707]
						RPM	1069	1092	1106	1116	1121	1129	1138	1140	1148	1154
						Watts	829	846	840	822	807	782	768	730	708	679

Notes: (1) Set 3-1/2 and 4 ton Cool to Tap 2 for AHRI rated performance. (2) Set 13 SEER 5 ton Cool to Tap 2 for AHRI rated performance. (3) Set 14 SEER 5 ton Cool to Tap 1 for AHRI rated performance.

Down Discharge Pressure Drop (Add to External Static Pressure)							
CFM [L/s]	800 [378]	1000 [472]	1200 [566]	1400 [661]	1600 [755]	1800 [849]	2000 [944]
Pressure Drop - Inches W.C. [kPa]	.02 [.005]	.05 [.012]	.07 [.017]	.1 [.025]	.12 [.030]	.15 [.037]	.17 [.042]

Indoor Airflow Performance RACA13/14 - 208 Volts

Nominal Cooling Capacity Tons [kW]	Motor Speed from Factory		Manufacturer Recommended Cooling Airflow (Min/Max)	Blower Size/ Motor HP [W] # of Speeds Motor Type	Motor Speed / Tap		External Static Pressure - Inches W.C. [kPa] (Side Discharge-Dry Coil)									
	Cool	Heat					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]
2.0 [7.03]	High	High	700 CFM / 950 CFM	9x7 Blower 1/4 HP [186] 2 Speed (PSC Motor)	Low	CFM	706 [333]	685 [323]	661 [312]	614 [290]	523 [247]	437 [206]	334 [158]			
						RPM	844	886	943	989	1036	1067	1095			
						Watts	202	193	182	169	151	135	120			
					High	CFM	925 [437]	874 [412]	813 [384]	763 [360]	681 [321]	534 [252]	441 [208]			
						RPM	1004	1027	1058	1070	1091	1116	1128			
						Watts	253	238	220	210	192	167	155			
2.5 [8.79]	Low	Low	850 CFM / 1150 CFM	10x9 Blower 1/2 HP [372] 3 Speed (PSC Motor)	Low	CFM	967 [456]	947 [447]	892 [421]	813 [384]	740 [349]	681 [321]	613 [289]	504 [238]		
						RPM	819	876	916	966	995	1018	1040	1066		
						Watts	339	322	302	279	261	246	230	205		
					Med	CFM	1119 [528]	1081 [510]	1029 [486]	968 [457]	851 [402]	774 [365]	699 [330]	613 [289]		
						RPM	891	930	965	995	1026	1047	1059	1078		
						Watts	391	375	354	330	297	278	263	241		
					High	CFM	1311 [619]	1249 [589]	1168 [551]	1089 [514]	985 [465]	861 [406]	779 [368]	699 [330]		
						RPM	1010	1031	1046	1066	1080	1095	1106	1113		
						Watts	458	437	409	387	360	332	314	300		
3.0 [10.55]	Low	Low	1000 CFM / 1400 CFM	12x9T Blower 1/2 HP [372] 2 Speed (PSC Motor)	Low	CFM	1163 [549]	1115 [526]	1075 [507]	1012 [478]	926 [437]	841 [397]	753 [355]	647 [305]		
						RPM	771	804	844	870	910	932	968	992		
						Watts	392	387	380	367	356	345	330	316		
					High	CFM	1543 [728]	1484 [700]	1422 [671]	1345 [635]	1251 [590]	1177 [555]	1071 [505]	939 [443]		
						RPM	939	957	975	1345	1251	1177	1037	1051		
						Watts	586	572	555	1345	1251	1177	481	459		
3.5 [12.31]	Tap 3	Tap 3	1200 CFM / 1600 CFM	12x9T Blower 3/4 HP [559] 3 Speed (Constant Torque)	Tap 1 Low	CFM	1346 [635]	1304 [615]	1264 [597]	1232 [581]	1185 [559]	1139 [538]	1092 [515]	1048 [495]	993 [469]	908 [429]
						RPM	819	850	883	906	944	972	1014	1047	1083	1122
						Watts	291	302	310	319	333	338	353	362	374	389
					Tap 2 Medium	CFM	1346 [635]	1304 [615]	1264 [597]	1232 [581]	1185 [559]	1139 [538]	1092 [515]	1048 [495]	993 [469]	908 [429]
						RPM	819	850	883	906	944	972	1014	1047	1083	1122
						Watts	291	302	310	319	333	338	353	362	374	389
					Tap 3 High	CFM	1596 [753]	1547 [730]	1520 [717]	1499 [707]	1471 [694]	1421 [671]	1383 [653]	1332 [629]	1262 [596]	1085 [512]
						RPM	940	973	988	1020	1038	1068	1102	1122	1136	1154
						Watts	461	475	484	497	503	516	527	531	505	458
4.0 [14.07]	Tap 3	Tap 3	1350 CFM / 1850 CFM	12x9T Blower 3/4 HP [559] 3 Speed (Constant Torque)	Tap 1 Low	CFM	1474 [696]	1431 [675]	1394 [658]	1355 [639]	1327 [626]	1284 [606]	1243 [587]	1198 [565]	1134 [535]	1057 [499]
						RPM	819	852	878	907	936	961	993	1024	1064	1101
						Watts	324	334	340	355	366	374	382	396	410	422
					Tap 2 Medium	CFM	1617 [763]	1585 [748]	1547 [730]	1512 [714]	1486 [701]	1449 [684]	1430 [675]	1355 [639]	1337 [631]	1280 [604]
						RPM	891	917	940	965	992	1015	1046	1080	1098	1123
						Watts	422	433	440	451	463	475	482	496	506	507
					Tap 3 High	CFM	1906 [900]	1876 [885]	1839 [868]	1807 [853]	1756 [829]	1697 [801]	1642 [775]	1555 [734]	1482 [699]	1372 [648]
						RPM	1021	1043	1064	1079	1097	1110	1123	1128	1140	1145
						Watts	679	699	694	707	698	686	671	635	610	566
5.0 [17.59]	Tap 3	Tap 3	1600 CFM / 2100 CFM	12x9R Blower 1 HP [746] 3 Speed (Constant Torque)	Tap 1 Low	CFM	1738 [820]	1680 [793]	1663 [785]	1626 [767]	1603 [757]	1554 [733]	1503 [709]	1445 [682]	1432 [676]	1386 [654]
						RPM	933	969	979	1001	1021	1045	1066	1100	1104	1125
						Watts	505	526	529	541	545	562	567	585	586	593
					Tap 2 Medium	CFM	1884 [889]	1882 [888]	1841 [869]	1801 [850]	1760 [831]	1680 [793]	1651 [779]	1584 [748]	1508 [712]	1428 [674]
						RPM	999	1014	1048	1064	1072	1105	1121	1131	1142	1147
						Watts	636	646	661	672	675	688	686	678	662	635
					Tap 3 High	CFM	2081 [982]	1969 [929]	2001 [944]	1960 [925]	1896 [895]	1818 [858]	1764 [833]	1664 [785]	1593 [752]	1499 [707]
						RPM	1050	1102	1095	1104	1115	1126	1130	1140	1143	1147
						Watts	790	815	819	813	793	772	749	725	699	663

Notes: (1) Set 3-1/2 and 4 ton Cool to Tap 2 for AHRI rated performance. (2) Set 13 SEER 5 ton Cool to Tap 2 for AHRI rated performance. (3) Set 14 SEER 5 ton Cool to Tap 1 for AHRI rated performance.

Down Discharge Pressure Drop (Add to External Static Pressure)							
CFM [L/s]	800 [378]	1000 [472]	1200 [566]	1400 [661]	1600 [755]	1800 [849]	2000 [944]
Pressure Drop - Inches W.C. [kPa]	.02 [.005]	.05 [.012]	.07 [.017]	.1 [.025]	.12 [.030]	.15 [.037]	.17 [.042]

Indoor Airflow Performance RACA15 - 208/230V

Nominal Cooling Capacity Tons [kW]	Motor Speed from Factory		Manufacturer Recommended Cooling Airflow (Min/Max)	Blower Size/ Motor HP [W] & # of Speeds	Motor Speed / Tap		External Static Pressure - Inches W.C. [kPa] (Side Discharge-Dry Coil)									
	Cool	Heat					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]
2.0 [7.03]	Tap 3	Tap 3	700 CFM / 950 CFM	10X9 Blower 1/3 HP [249] 3 Speed (Constant Torque)	Tap 1 Low	CFM	917 [433]	865 [408]	826 [390]	771 [364]	730 [345]	677 [320]	628 [296]	596 [281]		
						RPM	772	810	860	905	945	985	1013	1052		
						Watts	142	149	159	164	175	177	180	189		
					Tap 2 Medium	CFM	931 [439]	880 [415]	854 [403]	795 [375]	743 [351]	694 [328]	655 [309]	608 [287]		
						RPM	789	1425	874	921	965	1002	1041	1070		
						Watts	155	159	170	176	185	188	196	200		
					Tap 3 High	CFM	1005 [474]	956 [451]	916 [432]	878 [414]	808 [381]	778 [367]	734 [346]	698 [329]		
						RPM	822	872	907	954	998	1036	1070	1103		
						Watts	178	192	198	208	212	224	224	234		
2.5 [8.79]	Tap 3	Tap 3	850 CFM / 1150 CFM	10X9 Blower 1/3 HP [249] 3 Speed (Constant Torque)	Tap 1 Low	CFM	917 [433]	865 [408]	826 [390]	771 [364]	730 [345]	677 [320]	628 [296]	596 [281]		
						RPM	772	810	860	905	945	985	1013	1052		
						Watts	142	149	159	164	175	177	180	189		
					Tap 2 Medium	CFM	1013 [478]	980 [463]	939 [443]	893 [421]	864 [408]	792 [374]	752 [355]	687 [324]		
						RPM	820	854	901	934	976	1022	1064	1097		
						Watts	171	177	187	190	202	207	217	222		
					Tap 3 High	CFM	1227 [579]	1180 [557]	1160 [547]	1123 [530]	1090 [514]	1054 [497]	1008 [476]	882 [416]		
						RPM	930	976	1006	1029	1065	1089	1124	1154		
						Watts	264	276	288	291	300	305	311	292		
3.0 [10.55]	Tap 3	Tap 3	1000 CFM / 1400 CFM	12x9T Blower 1/2 HP [372] 3 Speed (Constant Torque)	Tap 1 Low	CFM	1108 [523]	1081 [510]	1040 [491]	951 [449]	916 [432]	857 [404]	776 [366]	722 [341]		
						RPM	713	752	796	845	873	920	966	1001		
						Watts	188	199	213	222	229	241	252	261		
					Tap 2 Medium	CFM	1169 [552]	1115 [526]	1086 [513]	1047 [494]	983 [464]	931 [439]	855 [404]	784 [370]		
						RPM	749	803	819	856	901	938	985	1029		
						Watts	217	231	233	246	259	266	277	289		
					Tap 3 High	CFM	1434 [677]	1419 [670]	1387 [655]	1340 [632]	1310 [618]	1258 [594]	1198 [565]	1160 [547]	1085 [512]	930 [439]
						RPM	866	882	920	944	981	1008	1051	1078	1106	1131
						Watts	372	377	390	399	413	421	426	443	445	412
3.5 [12.31]	Tap 3	Tap 3	1200 CFM / 1600 CFM	12x9T Blower 3/4 HP [559] 3 Speed (Constant Torque)	Tap 1 Low	CFM	1336 [631]	1312 [619]	1295 [611]	1241 [586]	1200 [566]	1161 [548]	1119 [528]	1072 [506]	1001 [472]	939 [443]
						RPM	827	856	874	913	949	983	1013	1048	1092	1127
						Watts	298	308	313	325	341	352	361	374	387	402
					Tap 2 Medium	CFM	1336 [631]	1312 [619]	1295 [611]	1241 [586]	1200 [566]	1161 [548]	1119 [528]	1072 [506]	1001 [472]	939 [443]
						RPM	827	856	874	913	949	983	1013	1048	1092	1127
						Watts	298	308	313	325	341	352	361	374	387	402
					Tap 3 High	CFM	1591 [751]	1563 [738]	1558 [735]	1519 [717]	1490 [703]	1458 [688]	1410 [665]	1363 [643]	1277 [603]	1122 [530]
						RPM	949	981	999	1027	1051	1086	1109	1129	1140	1158
						Watts	476	490	501	515	527	542	546	543	522	478
4.0 [14.07]	Tap 3	Tap 3	1350 CFM / 1850 CFM	12x9T Blower 3/4 HP [559] 3 Speed (Constant Torque)	Tap 1 Low	CFM	1467 [692]	1448 [683]	1404 [663]	1373 [648]	1339 [632]	1306 [616]	1250 [590]	1210 [571]	1164 [549]	1087 [513]
						RPM	826	855	884	910	939	969	1003	1030	1067	1108
						Watts	328	344	348	363	379	387	398	408	418	434
					Tap 2 Medium	CFM	1634 [771]	1595 [753]	1547 [730]	1530 [722]	1487 [702]	1462 [690]	1438 [679]	1378 [650]	1352 [638]	1298 [613]
						RPM	894	923	950	981	1000	1030	1051	1079	1106	1126
						Watts	432	446	451	468	479	490	508	510	520	520
					Tap 3 High	CFM	1941 [916]	1915 [904]	1878 [886]	1814 [856]	1773 [837]	1709 [807]	1655 [781]	1570 [741]	1488 [702]	1374 [648]
						RPM	1028	1047	1068	1091	1104	1113	1124	1136	1142	1147
						Watts	708	725	729	727	717	696	673	647	618	571
5.0 [17.59]	1st Stage Tap 2	Tap 1	1600 CFM / 2100 CFM	12x9R Blower 1 HP [746] 5 Speed (Constant Torque)	Tap 1 Heat / 1st Stg Cool	CFM	1233 [582]	1158 [547]	1136 [536]	1090 [514]	1039 [490]	969 [457]	902 [426]	847 [400]	791 [373]	752 [355]
						RPM	734	774	793	822	860	892	934	957	983	1011
						Watts	223	231	238	248	259	269	288	284	295	306
					Tap 2 Heat / 1st Stg Cool	CFM	1433 [676]	1407 [664]	1354 [639]	1329 [627]	1270 [599]	1235 [583]	1195 [564]	1137 [537]	1083 [511]	1030 [486]
						RPM	821	843	868	888	929	944	975	1004	1040	1065
						Watts	319	331	342	346	365	368	381	391	406	412
					Tap 3 Unused	CFM	1768 [834]	1730 [816]	1693 [799]	1626 [767]	1599 [755]	1558 [735]	1522 [718]	1503 [709]	1444 [681]	1399 [660]
						RPM	938	959	983	1011	1025	1052	1089	1090	1117	1134
						Watts	520	533	541	560	563	578	599	599	605	615
	2nd Stage Tap 4				Tap 4 2nd stage Low Static Cool	CFM	1926 [909]	1890 [892]	1864 [880]	1822 [860]	1794 [847]	1758 [830]	1710 [807]	1670 [788]	1579 [745]	1493 [705]
						RPM	999	1014	1040	1061	1079	1096	1119	1128	1138	1144
						Watts	654	660	674	688	699	708	714	705	683	661
					Tap 5 2nd Stage High Static Cool	CFM	2096 [989]	2057 [971]	2003 [945]	1951 [921]	1890 [892]	1819 [858]	1756 [829]	1686 [796]	1610 [760]	1498 [707]
						RPM	1069	1092	1106	1116	1121	1129	1138	1140	1148	1154
						Watts	829	846	840	822	807	782	768	730	708	679

Notes: (1) Set 2 through 4 ton Cool to Tap 2 for AHRI rated performance. (2) Set 5 ton 1st Stage Cool to Tap 1 for AHRI rated performance.

Down Discharge Pressure Drop (Add to External Static Pressure)							
CFM [L/s]	800 [378]	1000 [472]	1200 [566]	1400 [661]	1600 [755]	1800 [849]	2000 [944]
Pressure Drop - Inches W.C. [kPa]	.02 [.005]	.05 [.012]	.07 [.017]	.1 [.025]	.12 [.030]	.15 [.037]	.17 [.042]

XXII. HEATER KITS CHARACTERISTICS

AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION: RACA-

208/240 VOLT, SINGLE PHASE, 60 Hz, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION (13 SEER single phase models not for sale in the US)													
Single Power Supply for Both Unit and Heater Kit									Separate Power Supply for Both Unit and Heater Kit				
RHEEM; RUUD Model Number	Heater Kit					Air Conditioner			Heater Kit		Air Conditioner		
	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
RACA13024AJD***AA	No Heat	-----	-----	-----	-----	17/17	20/25	20/25	-----	-----	17/17	20/25	20/25
	A05J	1	3.6/4.8	12.28/16.38	17.3/20.0	24/27	25/25	30/30	22/25	25/25	17/17	20/25	20/25
	A10J	1	7.2/9.6	24.57/32.76	34.6/40.0	45/52	45/45	60/60	44/50	45/50	17/17	20/25	20/25
RACA13030AJD***AA	No Heat	-----	-----	-----	-----	20/20	20/30	20/30	-----	-----	20/20	20/30	20/30
	A05J	1	3.6/4.8	12.28/16.38	17.3/20.0	25/28	25/25	30/30	22/25	25/25	20/20	20/30	20/30
	A10J	1	7.2/9.6	24.57/32.76	34.6/40.0	47/53	50/50	60/60	44/50	45/50	20/20	20/30	20/30
RACA13036AJD***AA	No Heat	-----	-----	-----	-----	22/22	25/35	25/35	-----	-----	22/22	25/35	25/35
	A05J	1	3.6/4.8	12.28/16.38	17.3/20.0	25/29	25/25	30/30	22/25	25/25	22/22	25/35	25/35
	A10J	1	7.2/9.6	24.57/32.76	34.6/40.0	47/54	50/50	60/60	44/50	45/50	22/22	25/35	25/35
	A15J	1	10.8/14.4	36.85/49.13	51.9/60.0	68/79	70/70	80/80	65/75	70/80	22/22	25/35	25/35
RACA13042AJT***AA	No Heat	-----	-----	-----	-----	30/30	30/45	30/45	-----	-----	30/30	30/45	30/45
	A05J	1	3.6/4.8	12.28/16.38	17.3/20.0	30/33	30/30	35/35	22/25	25/25	30/30	30/45	30/45
	B10J	1	7.2/9.6	24.57/32.76	34.6/40.0	51/58	60/60	60/60	44/50	45/50	30/30	30/45	30/45
	B15J	1	10.8/14.4	36.85/49.13	51.9/60.0	73/83	80/80	90/90	65/75	70/80	30/30	30/45	30/45
RACA13048AJT***AA	No Heat	-----	-----	-----	-----	33/33	35/50	35/50	-----	-----	33/33	35/50	35/50
	A05J	1	3.6/4.8	12.28/16.38	17.3/20.0	33/33	35/35	35/35	22/25	25/25	33/33	35/50	35/50
	B10J	1	7.2/9.6	24.57/32.76	34.6/40.0	51/58	60/60	60/60	44/50	45/50	33/33	35/50	35/50
	B15J	1	10.8/14.4	36.85/49.13	51.9/60.0	73/83	80/80	90/90	65/75	70/80	33/33	35/50	35/50
RACA13060AJT***AA	No Heat	-----	-----	-----	-----	41/41	45/60	45/60	-----	-----	41/41	45/60	45/60
	A05J	1	3.6/4.8	12.28/16.38	17.3/20.0	41/41	45/45	45/45	22/25	25/25	41/41	45/60	45/60
	B10J	1	7.2/9.6	24.57/32.76	34.6/40.0	53/60	60/60	60/60	44/50	45/50	41/41	45/60	45/60
	B15J	1	10.8/14.4	36.85/49.13	51.9/60.0	75/85	80/80	90/90	65/75	70/80	41/41	45/60	45/60

AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION: RACA-

208/240 VOLT, THREE PHASE, 60 Hz, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION													
Single Power Supply for Both Unit and Heater Kit								Separate Power Supply for Both Unit and Heater Kit					
RHEEM; RUUD Model Number	Heater Kit					Air Conditioner			Heater Kit		Air Conditioner		
	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
RACA13036ACD***AA	No Heat	-----	-----	-----	-----	16/16	20/20	20/20	-----	-----	16/16	20/20	20/20
	A10C	1	7.2/9.6	24.57/32.76	20.0/23.1	29/32	30/30	35/35	25/29	25/30	16/16	20/20	20/20
	A15C	1	10.8/14.4	36.85/49.13	30.1/34.7	41/47	45/45	50/50	38/44	40/45	16/16	20/20	20/20
RACA13042ACT***AA	No Heat	-----	-----	-----	-----	24/24	25/35	25/35	-----	-----	24/24	25/35	25/35
	A10C	1	7.2/9.6	24.57/32.76	20.0/23.1	33/37	35/35	40/40	25/29	25/30	24/24	25/35	25/35
	A15C	1	10.8/14.4	36.85/49.13	30.1/34.7	46/51	50/50	60/60	38/44	40/45	24/24	25/35	25/35
RACA13048ACT***AA	No Heat	-----	-----	-----	-----	25/25	25/35	25/35	-----	-----	25/25	25/35	25/35
	A10C	1	7.2/9.6	24.57/32.76	20.0/23.1	33/37	35/35	40/40	25/29	25/30	25/25	25/35	25/35
	A15C	1	10.8/14.4	36.85/49.13	30.1/34.7	46/51	50/50	60/60	38/44	40/45	25/25	25/35	25/35
RACA13060ACT***AA	No Heat	-----	-----	-----	-----	32/32	35/45	35/45	-----	-----	32/32	35/45	35/45
	A10C	1	7.2/9.6	24.57/32.76	20.0/23.1	35/39	35/35	40/40	25/29	25/30	32/32	35/45	35/45
	A15C	1	10.8/14.4	36.85/49.13	30.1/34.7	48/53	50/50	60/60	38/44	40/45	32/32	35/45	35/45

208/240 VOLT, SINGLE PHASE, 60 Hz, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION													
Single Power Supply for Both Unit and Heater Kit									Separate Power Supply for Both Unit and Heater Kit				
RHEEM; RUUD Model Number	Heater Kit					Air Conditioner			Heater Kit		Air Conditioner		
	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
RACA14024AJD***AA	No Heat	-----	-----	-----	-----	17/17	20/25	20/25	-----	-----	17/17	20/25	20/25
	A05J	1	3.6/4.8	12.28/16.38	17.3/20.0	24/27	25/25	30/30	22/25	25/25	17/17	20/25	20/25
	A10J	1	7.2/9.6	24.57/32.76	34.6/40.0	45/52	45/45	60/60	44/50	45/50	17/17	20/25	20/25
RACA14030AJD***AA	No Heat	-----	-----	-----	-----	20/20	20/30	20/30	-----	-----	20/20	20/30	20/30
	A05J	1	3.6/4.8	12.28/16.38	17.3/20.0	25/28	25/25	30/30	22/25	25/25	20/20	20/30	20/30
	A10J	1	7.2/9.6	24.57/32.76	34.6/40.0	47/53	50/50	60/60	44/50	45/50	20/20	20/30	20/30
RACA14036AJD***AA	No Heat	-----	-----	-----	-----	22/22	25/35	25/35	-----	-----	22/22	25/35	25/35
	A05J	1	3.6/4.8	12.28/16.38	17.3/20.0	25/29	25/25	30/30	22/25	25/25	22/22	25/35	25/35
	A10J	1	7.2/9.6	24.57/32.76	34.6/40.0	47/54	50/50	60/60	44/50	45/50	22/22	25/35	25/35
	A15J	1	10.8/14.4	36.85/49.13	51.9/60.0	68/79	70/70	80/80	65/75	70/80	22/22	25/35	25/35
RACA14042AJT***AA	No Heat	-----	-----	-----	-----	30/30	30/45	30/45	-----	-----	30/30	30/45	30/45
	A05J	1	3.6/4.8	12.28/16.38	17.3/20.0	30/33	30/30	35/35	22/25	25/25	30/30	30/45	30/45
	B10J	1	7.2/9.6	24.57/32.76	34.6/40.0	51/58	60/60	60/60	44/50	45/50	30/30	30/45	30/45
	B15J	1	10.8/14.4	36.85/49.13	51.9/60.0	73/83	80/80	90/90	65/75	70/80	30/30	30/45	30/45
RACA14048AJT***AA	No Heat	-----	-----	-----	-----	33/33	35/50	35/50	-----	-----	33/33	35/50	35/50
	A05J	1	3.6/4.8	12.28/16.38	17.3/20.0	33/33	35/35	35/35	22/25	25/25	33/33	35/50	35/50
	B10J	1	7.2/9.6	24.57/32.76	34.6/40.0	51/58	60/60	60/60	44/50	45/50	33/33	35/50	35/50
	B15J	1	10.8/14.4	36.85/49.13	51.9/60.0	73/83	80/80	90/90	65/75	70/80	33/33	35/50	35/50
RACA14060AJT***AA	No Heat	-----	-----	-----	-----	41/41	45/60	45/60	-----	-----	41/41	45/60	45/60
	A05J	1	3.6/4.8	12.28/16.38	17.3/20.0	41/41	45/45	45/45	22/25	25/25	41/41	45/60	45/60
	B10J	1	7.2/9.6	24.57/32.76	34.6/40.0	53/60	60/60	60/60	44/50	45/50	41/41	45/60	45/60
	B15J	1	10.8/14.4	36.85/49.13	51.9/60.0	75/85	80/80	90/90	65/75	70/80	41/41	45/60	45/60

208/240 VOLT, THREE PHASE, 60 Hz, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION													
Single Power Supply for Both Unit and Heater Kit									Separate Power Supply for Both Unit and Heater Kit				
RHEEM; RUUD Model Number	Heater Kit					Air Conditioner			Heater Kit		Air Conditioner		
	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
RACA14036ACD***AA	No Heat	-----	-----	-----	-----	16/16	20/20	20/20	-----	-----	16/16	20/20	20/20
	A10C	1	7.2/9.6	24.57/32.76	20.0/23.1	29/32	30/30	35/35	25/29	25/30	16/16	20/20	20/20
	A15C	1	10.8/14.4	36.85/49.13	30.1/34.7	41/47	45/45	50/50	38/44	40/45	16/16	20/20	20/20
RACA14042ACT***AA	No Heat	-----	-----	-----	-----	24/24	25/35	25/35	-----	-----	24/24	25/35	25/35
	A10C	1	7.2/9.6	24.57/32.76	20.0/23.1	33/37	35/35	40/40	25/29	25/30	24/24	25/35	25/35
	A15C	1	10.8/14.4	36.85/49.13	30.1/34.7	46/51	50/50	60/60	38/44	40/45	24/24	25/35	25/35
RACA14048ACT***AA	No Heat	-----	-----	-----	-----	25/25	25/35	25/35	-----	-----	25/25	25/35	25/35
	A10C	1	7.2/9.6	24.57/32.76	20.0/23.1	33/37	35/35	40/40	25/29	25/30	25/25	25/35	25/35
	A15C	1	10.8/14.4	36.85/49.13	30.1/34.7	46/51	50/50	60/60	38/44	40/45	25/25	25/35	25/35
RACA14060ACT***AA	No Heat	-----	-----	-----	-----	32/32	35/45	35/45	-----	-----	32/32	35/45	35/45
	A10C	1	7.2/9.6	24.57/32.76	20.0/23.1	35/39	35/35	40/40	25/29	25/30	32/32	35/45	35/45
	A15C	1	10.8/14.4	36.85/49.13	30.1/34.7	48/53	50/50	60/60	38/44	40/45	32/32	35/45	35/45

208/240 VOLT, SINGLE PHASE, 60 Hz, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION													
Single Power Supply for Both Unit and Heater Kit									Separate Power Supply for Both Unit and Heater Kit				
RHEEM; RUUD Model Number	Heater Kit					Air Conditioner			Heater Kit		Air Conditioner		
	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
RACA15024AJT***AA	No Heat	-----	-----	-----	-----	19/19	20/25	20/25	-----	-----	19/19	20/25	20/25
	A05J	1	3.6/4.8	12.28/16.38	17.3/20.0	26/29	30/30	30/30	22/25	25/25	19/19	20/25	20/25
	A10J	1	7.2/9.6	24.57/32.76	34.6/40.0	47/54	50/50	60/60	44/50	45/50	19/19	20/25	20/25
RACA15030AJT***AA	No Heat	-----	-----	-----	-----	21/21	25/30	25/30	-----	-----	21/21	25/30	25/30
	A05J	1	3.6/4.8	12.28/16.38	17.3/20.0	26/29	30/30	30/30	22/25	25/25	21/21	25/30	25/30
	A10J	1	7.2/9.6	24.57/32.76	34.6/40.0	47/54	50/50	60/60	44/50	45/50	21/21	25/30	25/30
RACA15036AJT***AA	No Heat	-----	-----	-----	-----	24/24	25/35	25/35	-----	-----	24/24	25/35	25/35
	A05J	1	3.6/4.8	12.28/16.38	17.3/20.0	27/31	30/30	35/35	22/25	25/25	24/24	25/35	25/35
	A10J	1	7.2/9.6	24.57/32.76	34.6/40.0	49/56	50/50	60/60	44/50	45/50	24/24	25/35	25/35
	A15J	1	10.8/14.4	36.85/49.13	51.9/60.0	70/81	70/70	90/90	65/75	70/80	24/24	25/35	25/35
RACA15042AJT***AA	No Heat	-----	-----	-----	-----	30/30	30/45	30/45	-----	-----	30/30	30/45	30/45
	A05J	1	3.6/4.8	12.28/16.38	17.3/20.0	30/33	30/30	35/35	22/25	25/25	30/30	30/45	30/45
	B10J	1	7.2/9.6	24.57/32.76	34.6/40.0	51/58	60/60	60/60	44/50	45/50	30/30	30/45	30/45
	B15J	1	10.8/14.4	36.85/49.13	51.9/60.0	73/83	80/80	90/90	65/75	70/80	30/30	30/45	30/45
RACA15048AJT***AA	No Heat	-----	-----	-----	-----	33/33	35/50	35/50	-----	-----	33/33	35/50	35/50
	A05J	1	3.6/4.8	12.28/16.38	17.3/20.0	33/33	35/35	35/35	22/25	25/25	33/33	35/50	35/50
	B10J	1	7.2/9.6	24.57/32.76	34.6/40.0	51/58	60/60	60/60	44/50	45/50	33/33	35/50	35/50
	B15J	1	10.8/14.4	36.85/49.13	51.9/60.0	73/83	80/80	90/90	65/75	70/80	33/33	35/50	35/50
RACA15060AJT***AA	No Heat	-----	-----	-----	-----	46/46	50/70	50/70	-----	-----	46/46	50/70	50/70
	A05J	1	3.6/4.8	12.28/16.38	17.3/20.0	46/46	50/50	50/50	22/25	25/25	46/46	50/70	50/70
	B10J	1	7.2/9.6	24.57/32.76	34.6/40.0	53/60	60/60	60/60	44/50	45/50	46/46	50/70	50/70
	B15J	1	10.8/14.4	36.85/49.13	51.9/60.0	75/85	80/80	90/90	65/75	70/80	46/46	50/70	50/70

208/240 VOLT, THREE PHASE, 60 Hz, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION													
Single Power Supply for Both Unit and Heater Kit									Separate Power Supply for Both Unit and Heater Kit				
RHEEM; RUUD Model Number	Heater Kit					Air Conditioner			Heater Kit		Air Conditioner		
	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
RACA15036ACT***AA	No Heat	-----	-----	-----	-----	17/17	20/25	20/25	-----	-----	17/17	20/25	20/25
	A10C	1	7.2/9.6	24.57/32.76	20.0/23.1	31/34	35/35	35/35	25/29	25/30	17/17	20/25	20/25
	A15C	1	10.8/14.4	36.85/49.13	30.1/34.7	43/49	45/45	50/50	38/44	40/45	17/17	20/25	20/25
RACA15042ACT***AA	No Heat	-----	-----	-----	-----	24/24	25/35	25/35	-----	-----	24/24	25/35	25/35
	A10C	1	7.2/9.6	24.57/32.76	20.0/23.1	33/37	35/35	40/40	25/29	25/30	24/24	25/35	25/35
	A15C	1	10.8/14.4	36.85/49.13	30.1/34.7	46/51	50/50	60/60	38/44	40/45	24/24	25/35	25/35
RACA15048ACT***AA	No Heat	-----	-----	-----	-----	25/25	25/35	25/35	-----	-----	25/25	25/35	25/35
	A10C	1	7.2/9.6	24.57/32.76	20.0/23.1	33/37	35/35	40/40	25/29	25/30	25/25	25/35	25/35
	A15C	1	10.8/14.4	36.85/49.13	30.1/34.7	46/51	50/50	60/60	38/44	40/45	25/25	25/35	25/35
RACA15060ACT***AA	No Heat	-----	-----	-----	-----	30/30	50/45	50/45	-----	-----	30/30	50/45	50/45
	A10C	1	7.2/9.6	24.57/32.76	20.0/23.1	35/39	50/50	50/50	25/29	25/30	30/30	50/45	50/45
	A15C	1	10.8/14.4	36.85/49.13	30.1/34.7	48/53	50/50	60/60	38/44	40/45	30/30	50/45	50/45

XXIII. WIRING DIAGRAMS

FIGURE 13
WIRING DIAGRAM

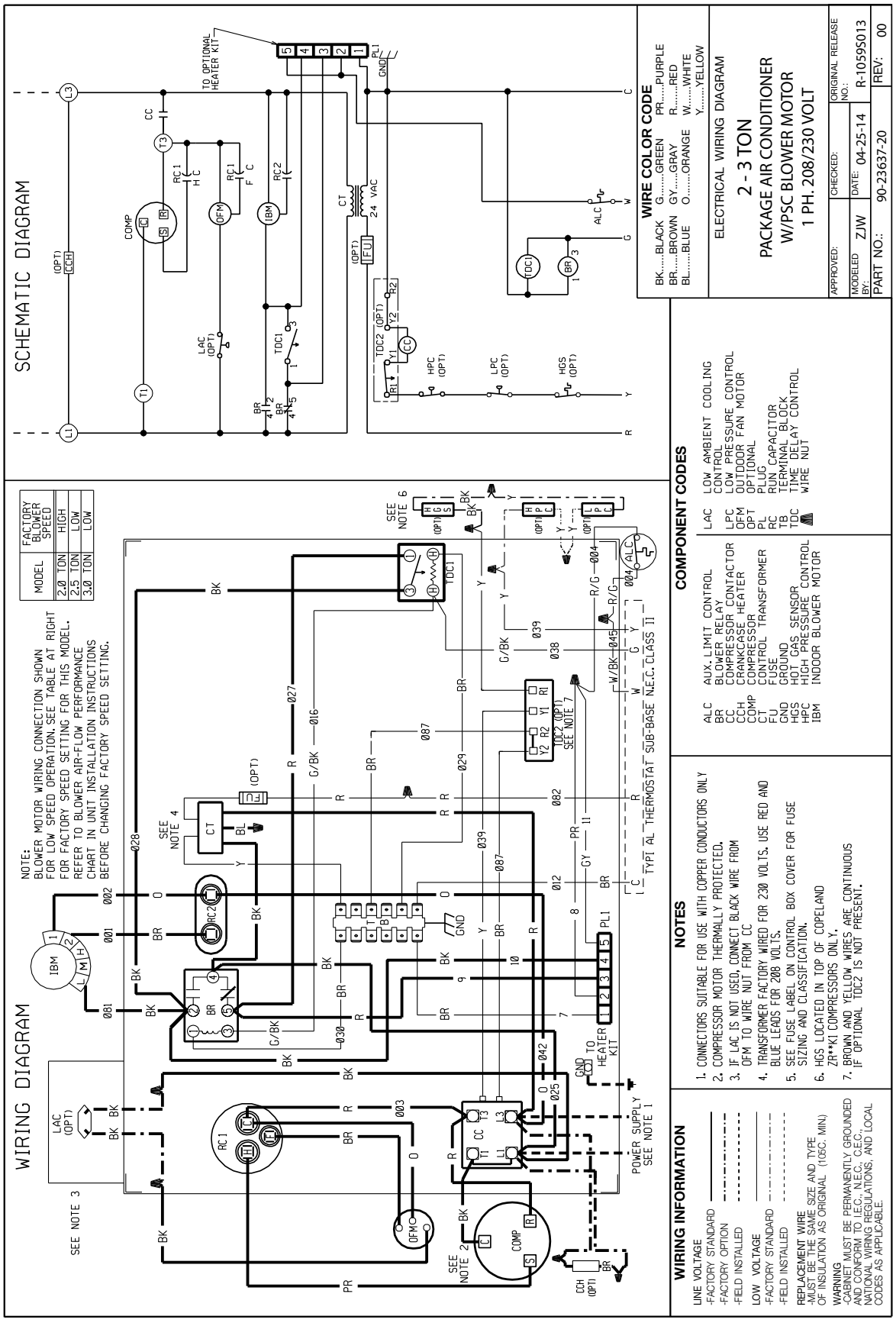


FIGURE 14
WIRING DIAGRAM

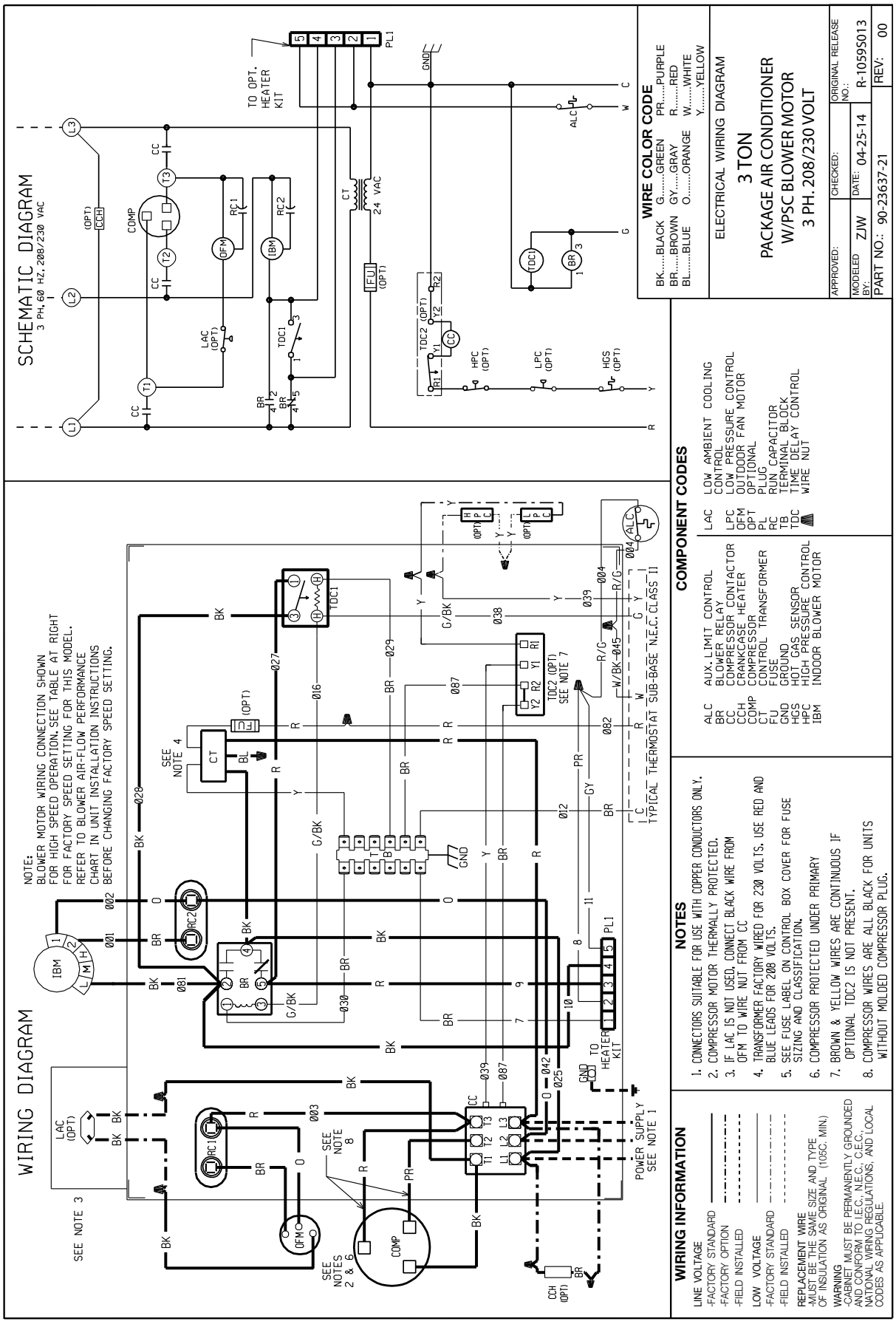


FIGURE 15
WIRING DIAGRAM

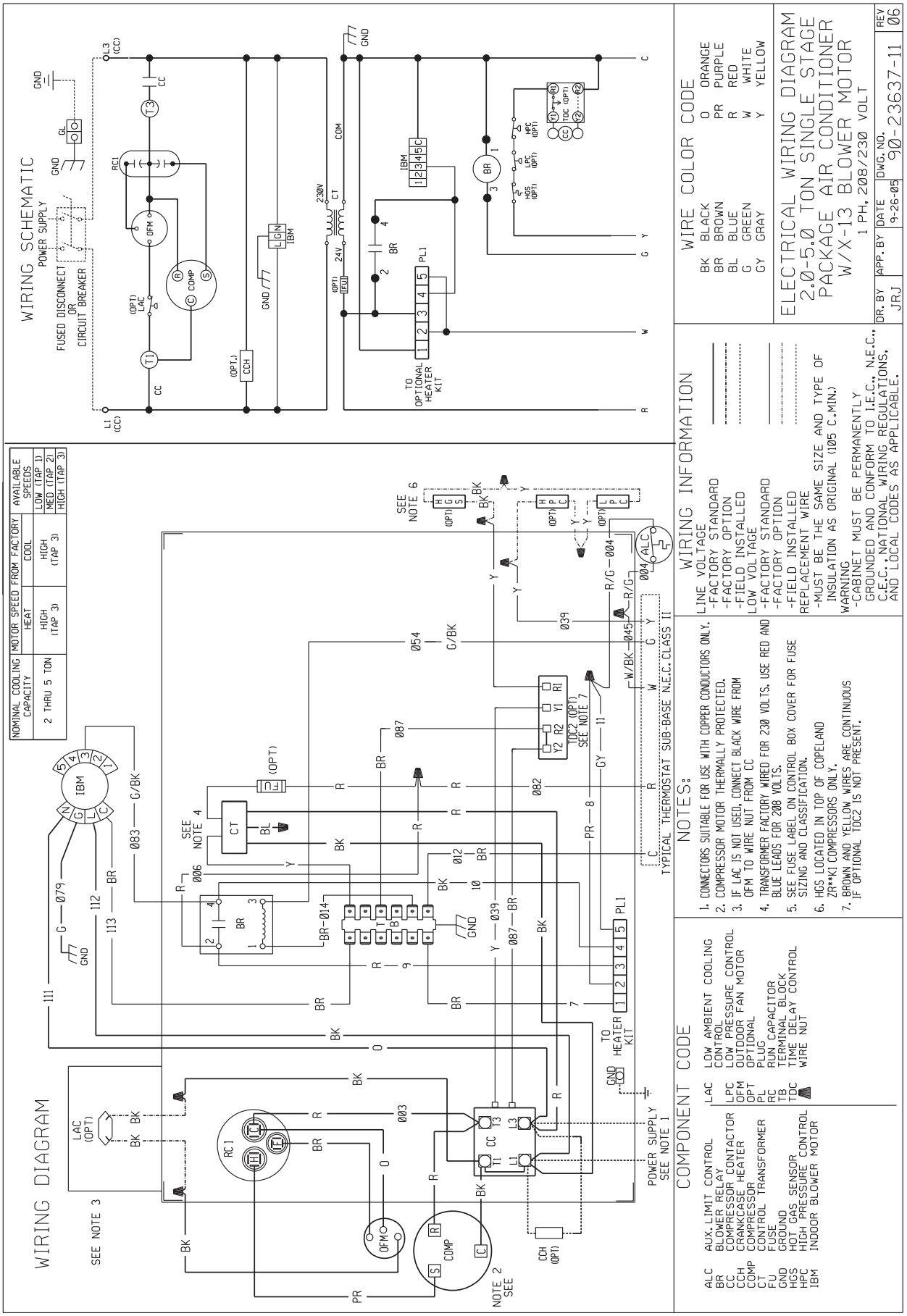
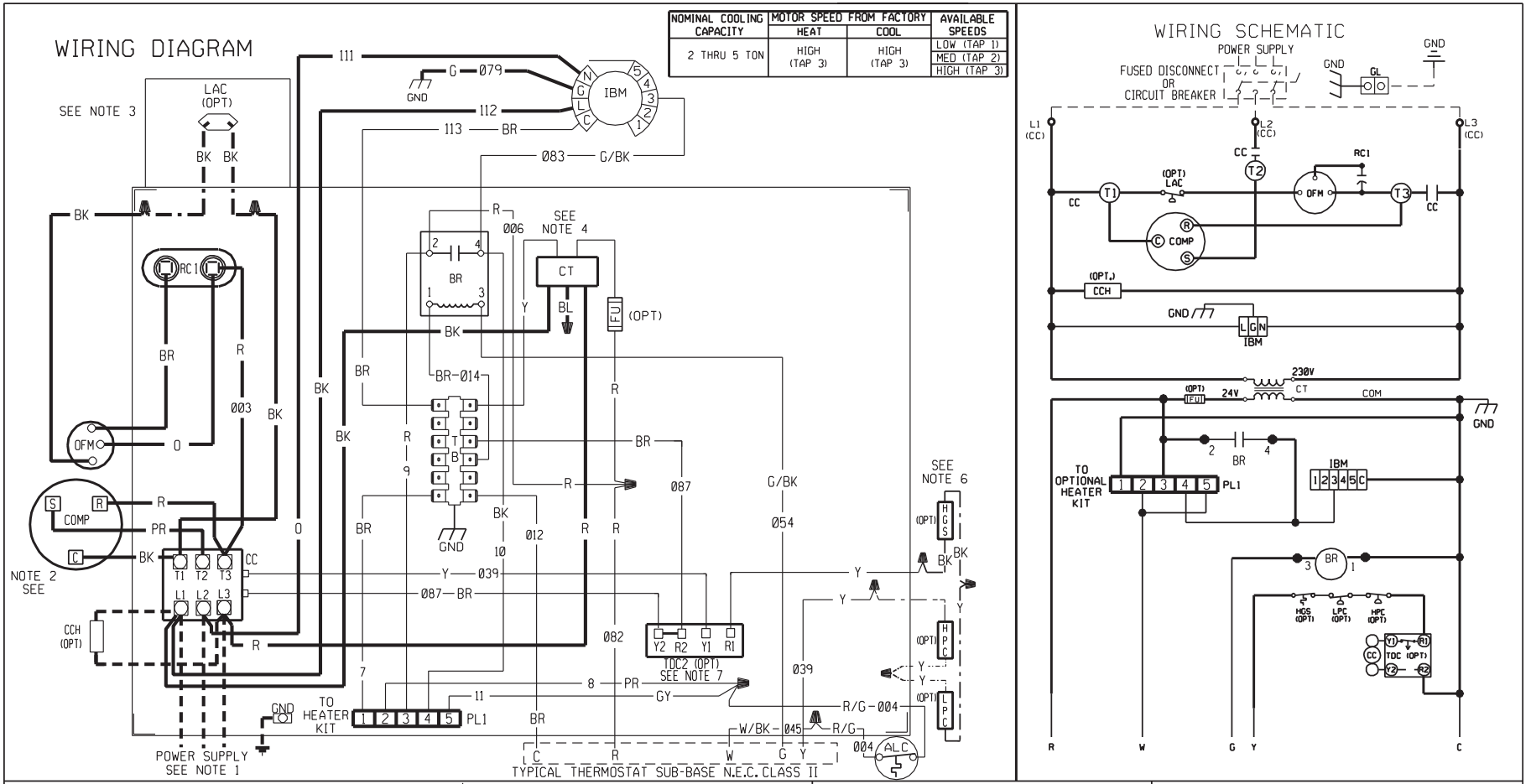


FIGURE 16
WIRING DIAGRAM



COMPONENT CODE

ALC	AUX. LIMIT CONTROL	LAC	LOW AMBIENT COOLING CONTROL
BR	BLOWER RELAY	LPC	LOW PRESSURE CONTROL
CC	COMPRESSOR CONTACTOR	OFM	OUTDOOR FAN MOTOR
CCH	CRANKCASE HEATER	OPT	OPTIONAL
COMP	COMPRESSOR	PL	PLUG
CT	CONTROL TRANSFORMER	RC	RUN CAPACITOR
FU	FUSE	TB	TERMINAL BLOCK
GND	GROUND	TDC	TIME DELAY CONTROL
HGS	HOT GAS SENSOR		WIRE NUT
HPC	HIGH PRESSURE CONTROL		
IBM	INDOOR BLOWER MOTOR		

NOTES:

1. CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
2. COMPRESSOR MOTOR THERMALLY PROTECTED.
3. IF LAC IS NOT USED, CONNECT BLACK WIRE FROM OFM TO WIRE NUT FROM CC
4. TRANSFORMER FACTORY WIRED FOR 230 VOLTS. USE RED AND BLUE LEADS FOR 208 VOLTS.
5. SEE FUSE LABEL ON CONTROL BOX COVER FOR FUSE SIZING AND CLASSIFICATION.
6. HGS LOCATED IN TOP OF COPELAND ZR**K1 COMPRESSORS ONLY.
7. BROWN AND YELLOW WIRES ARE CONTINUOUS IF OPTIONAL TDC2 IS NOT PRESENT.

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., NATIONAL WIRING REGULATIONS, AND LOCAL CODES AS APPLICABLE.

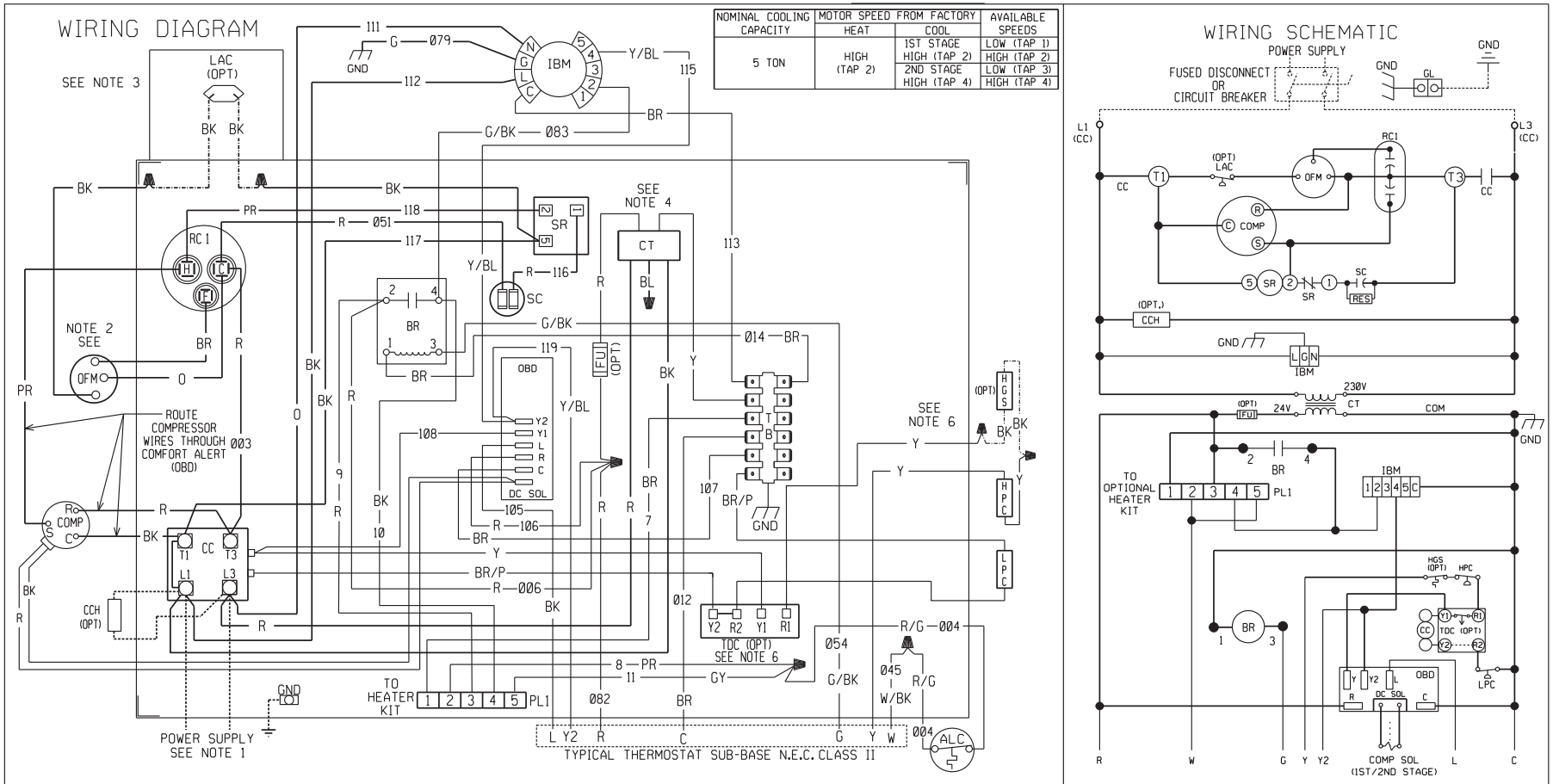
WIRE COLOR CODE

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

ELECTRICAL WIRING DIAGRAM
3.0-5.0 TON SINGLE STAGE PACKAGE AIR CONDITIONER W/X-13 BLOWER MOTOR
3 PH, 208/230 VOLT

DR. BY	APP. BY	DATE	DWG. NO.	REV
JRJ		9-26-05	90-23637-12	06

FIGURE 17
WIRING DIAGRAM



COMPONENT CODE

ALC	AUX. LIMIT CONTROL	LAC	LOW AMBIENT COOLING CONTROL
BR	BLOWER RELAY	LPC	LOW PRESSURE CONTROL
CC	COMPRESSOR CONTACTOR	OBD	ON-BOARD DIAGNOSTICS
CCH	CRANKCASE HEATER	OFM	OUTDOOR FAN MOTOR
COMP	COMPRESSOR	OPT	OPTIONAL
CT	CONTROL TRANSFORMER	PL	PLUG
FU	FUSE	RC	RUN CAPACITOR
GND	GROUND	SC	START CAPACITOR
HGS	HOT GAS SENSOR	SR	START RELAY
HPC	HIGH PRESSURE CONTROL	TB	TERMINAL BLOCK
IBM	INDOOR BLOWER MOTOR	TDC	TIME DELAY CONTROL
			WIRE NUT

NOTES:

1. CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
2. COMPRESSOR MOTOR THERMALLY PROTECTED.
3. IF LAC IS NOT USED, CONNECT BLACK WIRE FROM OFM TO WIRE NUT FROM CC
4. TRANSFORMER FACTORY WIRED FOR 230 VOLTS. USE RED AND BLUE LEADS FOR 208 VOLTS.
5. SEE FUSE LABEL ON CONTROL BOX COVER FOR FUSE SIZING AND CLASSIFICATION.
6. BROWN AND YELLOW WIRES ARE CONTINUOUS IF OPTIONAL LIMITS AND/OR TDC ARE NOT PRESENT.

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., NATIONAL WIRING REGULATIONS, AND LOCAL CODES AS APPLICABLE.

WIRE COLOR CODE

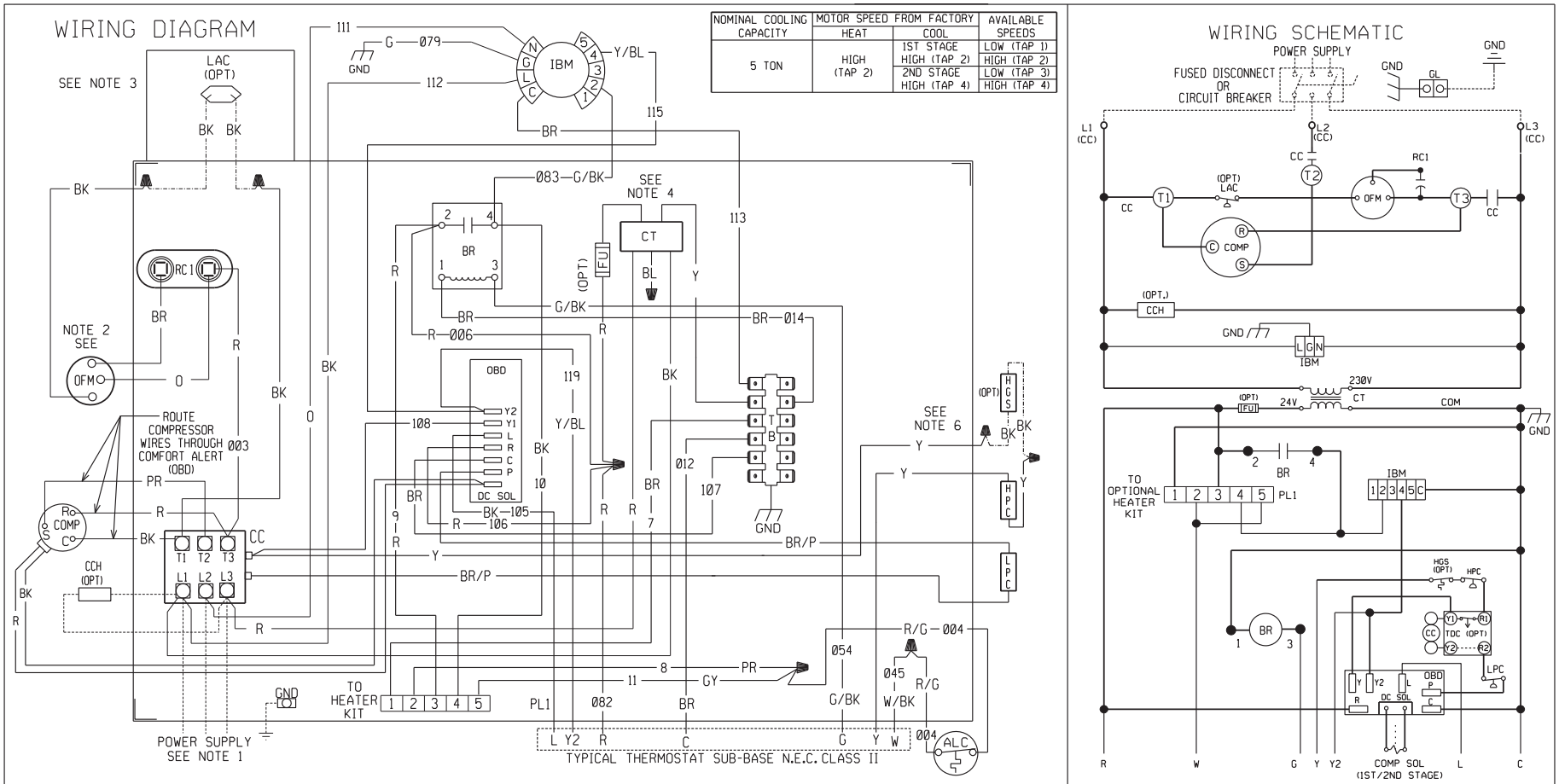
BK	BLACK	O	ORANGE
BR	BROWN	PR	PURPLE
BL	BLUE	R	RED
G	GREEN	W	WHITE
GY	GRAY	Y	YELLOW

ELECTRICAL WIRING DIAGRAM

5.0 TON
PACKAGE AIR CONDITIONER
W/X-13 BLOWER MOTOR
1 PH, 208/230 VOLT

DR. BY	APP. BY	DATE	DWG. NO.	REV
JRJ		11-9-05	90-23637-13	09

FIGURE 18
WIRING DIAGRAM



NOMINAL COOLING CAPACITY	MOTOR SPEED FROM FACTORY		AVAILABLE SPEEDS
	HEAT	COOL	
5 TON	HIGH (TAP 2)	1ST STAGE	LOW (TAP 1)
		HIGH (TAP 2)	HIGH (TAP 2)
		2ND STAGE	LOW (TAP 3)
		HIGH (TAP 4)	HIGH (TAP 4)

COMPONENT CODE

ALC	AUX. LIMIT CONTROL	LAC	LOW AMBIENT COOLING CONTROL
BR	BLOWER RELAY	LPC	LOW PRESSURE CONTROL
CC	COMPRESSOR CONTACTOR	OBD	ON-BOARD DIAGNOSTICS
CCH	CRANKCASE HEATER	OFM	OUTDOOR FAN MOTOR
COMP	COMPRESSOR	OPT	OPTIONAL
CT	CONTROL TRANSFORMER	PL	PLUG
FU	FUSE	RC	RUN CAPACITOR
GND	GROUND	SC	START CAPACITOR
HGS	HOT GAS SENSOR	SR	START RELAY
HPC	HIGH PRESSURE CONTROL	TB	TERMINAL BLOCK
IBM	INDOOR BLOWER MOTOR		WIRE NUT

NOTES:

1. CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
2. COMPRESSOR MOTOR THERMALLY PROTECTED.
3. IF LAC IS NOT USED, CONNECT BLACK WIRE FROM OFM TO WIRE NUT FROM CC
4. TRANSFORMER FACTORY WIRED FOR 230 VOLTS. USE RED AND BLUE LEADS FOR 208 VOLTS.
5. SEE FUSE LABEL ON CONTROL BOX COVER FOR FUSE SIZING AND CLASSIFICATION.
6. BROWN AND YELLOW WIRES ARE CONTINUOUS IF OPTIONAL LIMITS ARE NOT PRESENT.

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., NATIONAL WIRING REGULATIONS, AND LOCAL CODES AS APPLICABLE.

WIRE COLOR CODE

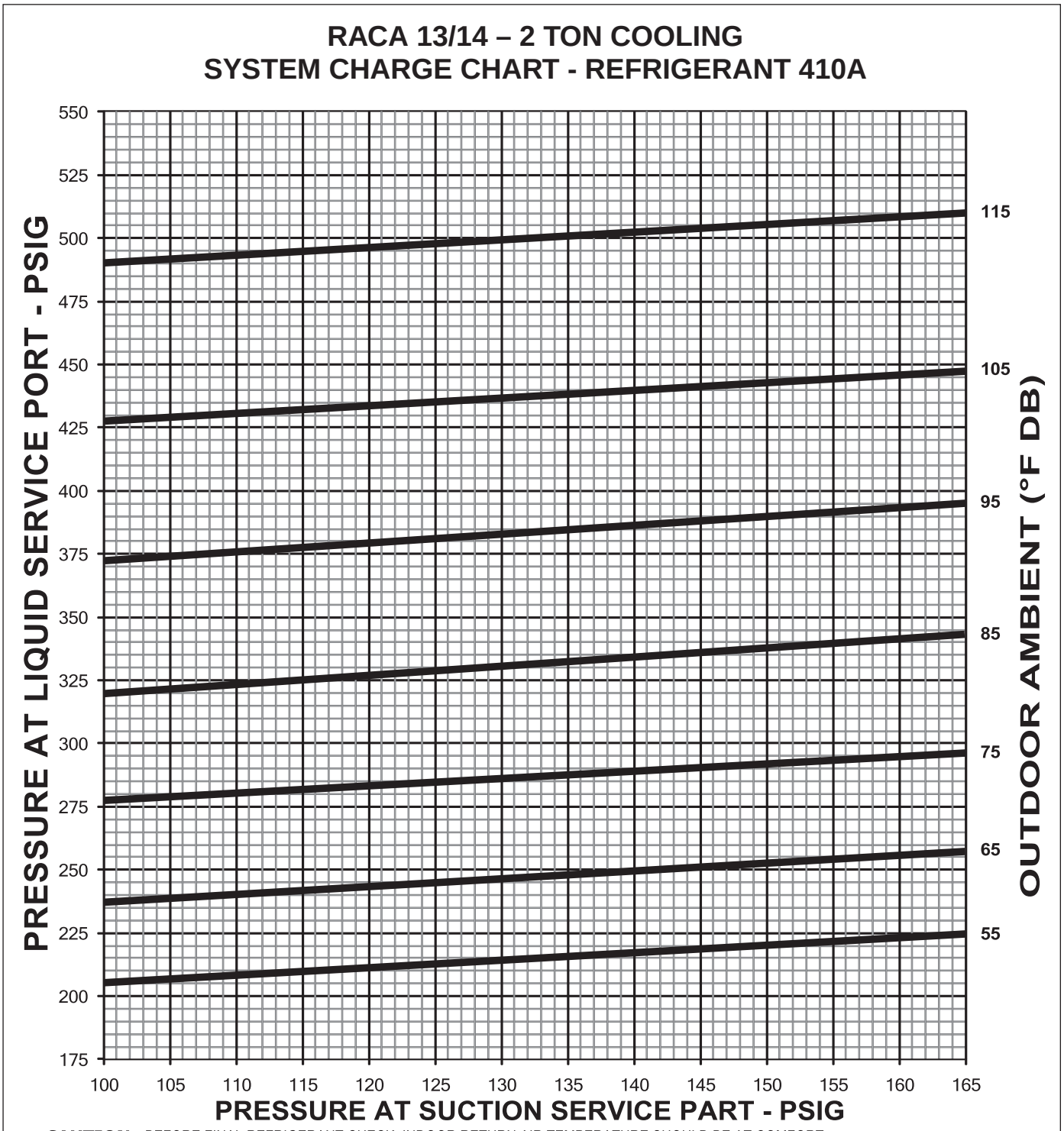
BK	BLACK	O	ORANGE
BR	BROWN	PR	PURPLE
BL	BLUE	R	RED
G	GREEN	W	WHITE
GY	GRAY	Y	YELLOW

ELECTRICAL WIRING DIAGRAM
5.0 TON
PACKAGE AIR CONDITIONER
W/X-13 BLOWER MOTOR
3 PH, 208/230 VOLT

DR. BY	APP. BY	DATE	DWG. NO.	REV
JRJ		11-10-05	90-23637-14	09

XXIV. CHARGE CHARTS

FIGURE 19
SYSTEM CHARGE CHARTS



CAUTION: BEFORE FINAL REFRIGERANT CHECK, INDOOR RETURN AIR TEMPERATURE SHOULD BE AT COMFORT CONDITIONS FOR MOST ACCURATE RESULTS.

NOTE: DESIGN SUB-COOLING (AT SERVICE PORT) @ 95° OUTDOOR = 16°F

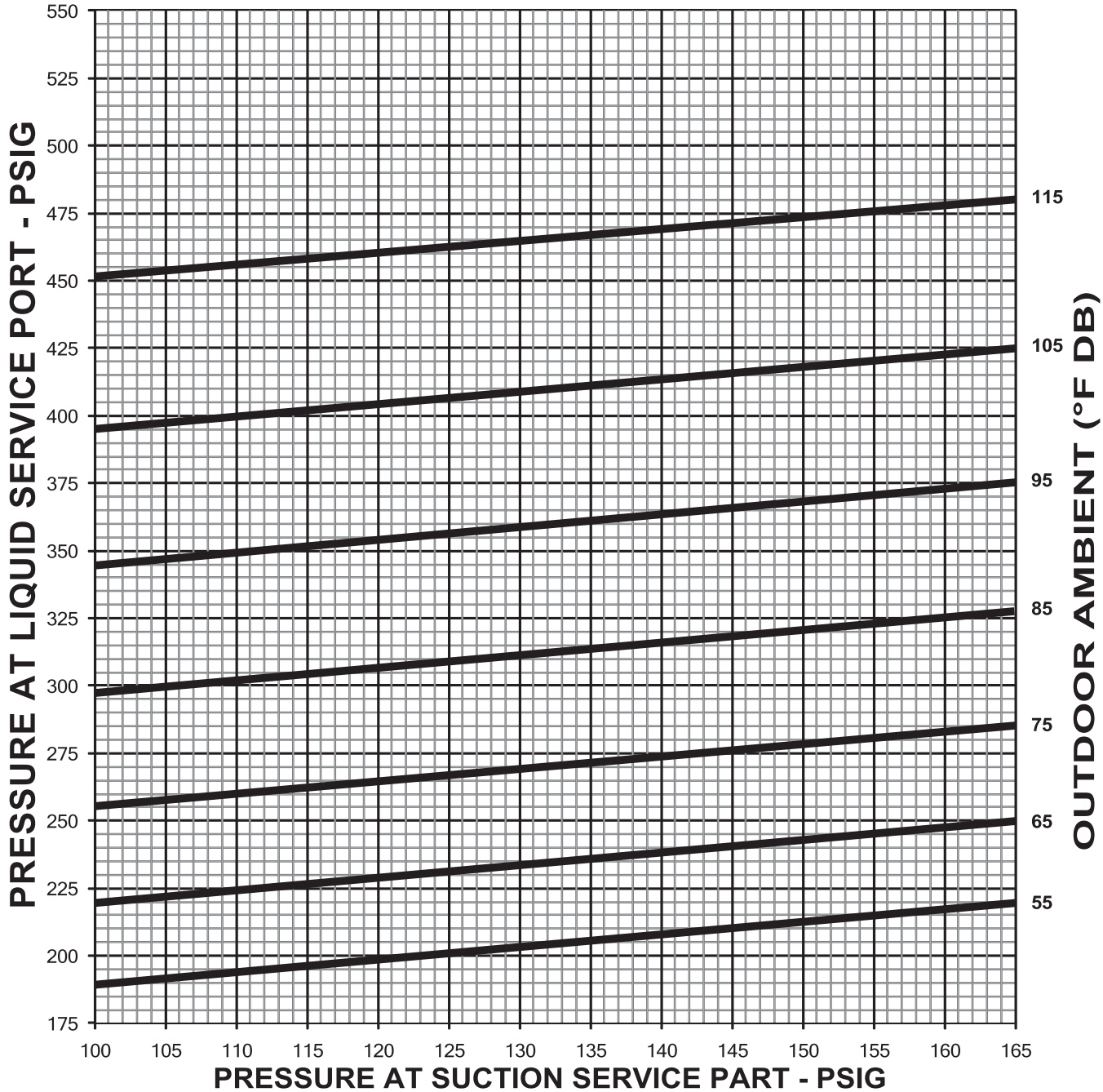
INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND LIQUID PORTS ON UNIT.
2. MEASURE AIR TEMPERATURE TO OUTDOOR COIL.
3. PLACE AN "X" ON THE APPROPRIATE CHART WHERE THE SUCTION AND LIQUID PRESSURES CROSS.
4. IF "X" IS BELOW AMBIENT TEMPERATURE LINE, ADD CHARGE AND REPEAT STEP 3.
5. IF "X" IS ABOVE AMBIENT TEMPERATURE LINE, RECOVER EXCESS CHARGE AND REPEAT STEP 3.

92-104780-02-00

FIGURE 20
SYSTEM CHARGE CHARTS

RACA 13/14 – 2.5 TON COOLING
SYSTEM CHARGE CHART - REFRIGERANT 410A



CAUTION: BEFORE FINAL REFRIGERANT CHECK, INDOOR RETURN AIR TEMPERATURE SHOULD BE AT COMFORT CONDITIONS FOR MOST ACCURATE RESULTS.

NOTE: DESIGN SUB-COOLING (AT SERVICE PORT) @ 95° OUTDOOR = 16°F

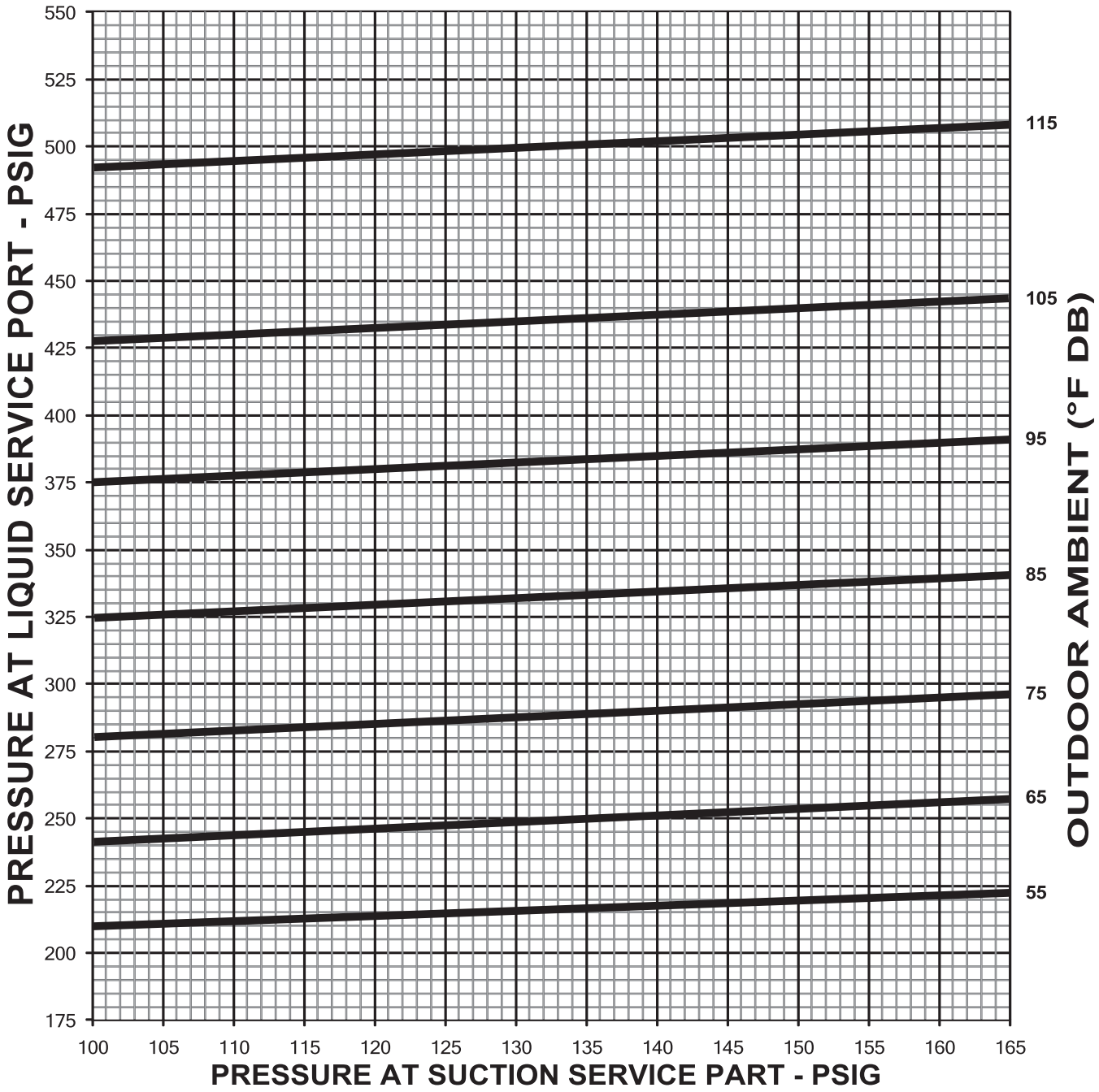
INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND LIQUID PORTS ON UNIT.
2. MEASURE AIR TEMPERATURE TO OUTDOOR COIL.
3. PLACE AN "X" ON THE APPROPRIATE CHART WHERE THE SUCTION AND LIQUID PRESSURES CROSS.
4. IF "X" IS BELOW AMBIENT TEMPERATURE LINE, ADD CHARGE AND REPEAT STEP 3.
5. IF "X" IS ABOVE AMBIENT TEMPERATURE LINE, RECOVER EXCESS CHARGE AND REPEAT STEP 3.

92-104780-03-00

FIGURE 21
SYSTEM CHARGE CHARTS

RACA 13/14 – 3 TON COOLING
SYSTEM CHARGE CHART - REFRIGERANT 410A



CAUTION: BEFORE FINAL REFRIGERANT CHECK, INDOOR RETURN AIR TEMPERATURE SHOULD BE AT COMFORT CONDITIONS FOR MOST ACCURATE RESULTS.

NOTE: DESIGN SUB-COOLING (AT SERVICE PORT) @ 95° OUTDOOR = 17°F

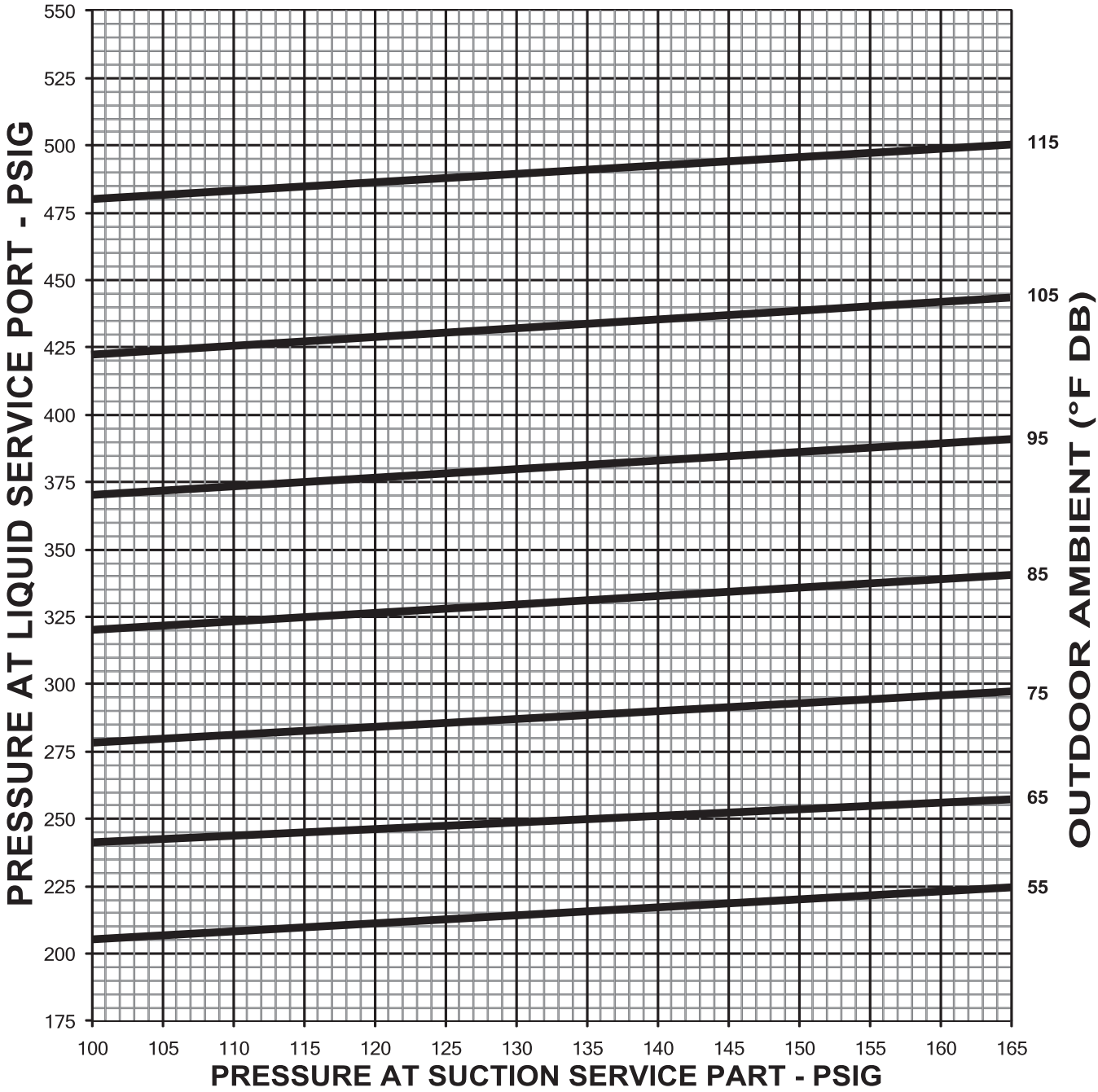
INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND LIQUID PORTS ON UNIT.
2. MEASURE AIR TEMPERATURE TO OUTDOOR COIL.
3. PLACE AN "X" ON THE APPROPRIATE CHART WHERE THE SUCTION AND LIQUID PRESSURES CROSS.
4. IF "X" IS BELOW AMBIENT TEMPERATURE LINE, ADD CHARGE AND REPEAT STEP 3.
5. IF "X" IS ABOVE AMBIENT TEMPERATURE LINE, RECOVER EXCESS CHARGE AND REPEAT STEP 3.

92-104780-01-00

FIGURE 22
SYSTEM CHARGE CHARTS

RACA 13/14 – 3.5 TON COOLING
SYSTEM CHARGE CHART - REFRIGERANT 410A



CAUTION: BEFORE FINAL REFRIGERANT CHECK, INDOOR RETURN AIR TEMPERATURE SHOULD BE AT COMFORT CONDITIONS FOR MOST ACCURATE RESULTS.

NOTE: DESIGN SUB-COOLING (AT SERVICE PORT) @ 95° OUTDOOR = 15°F

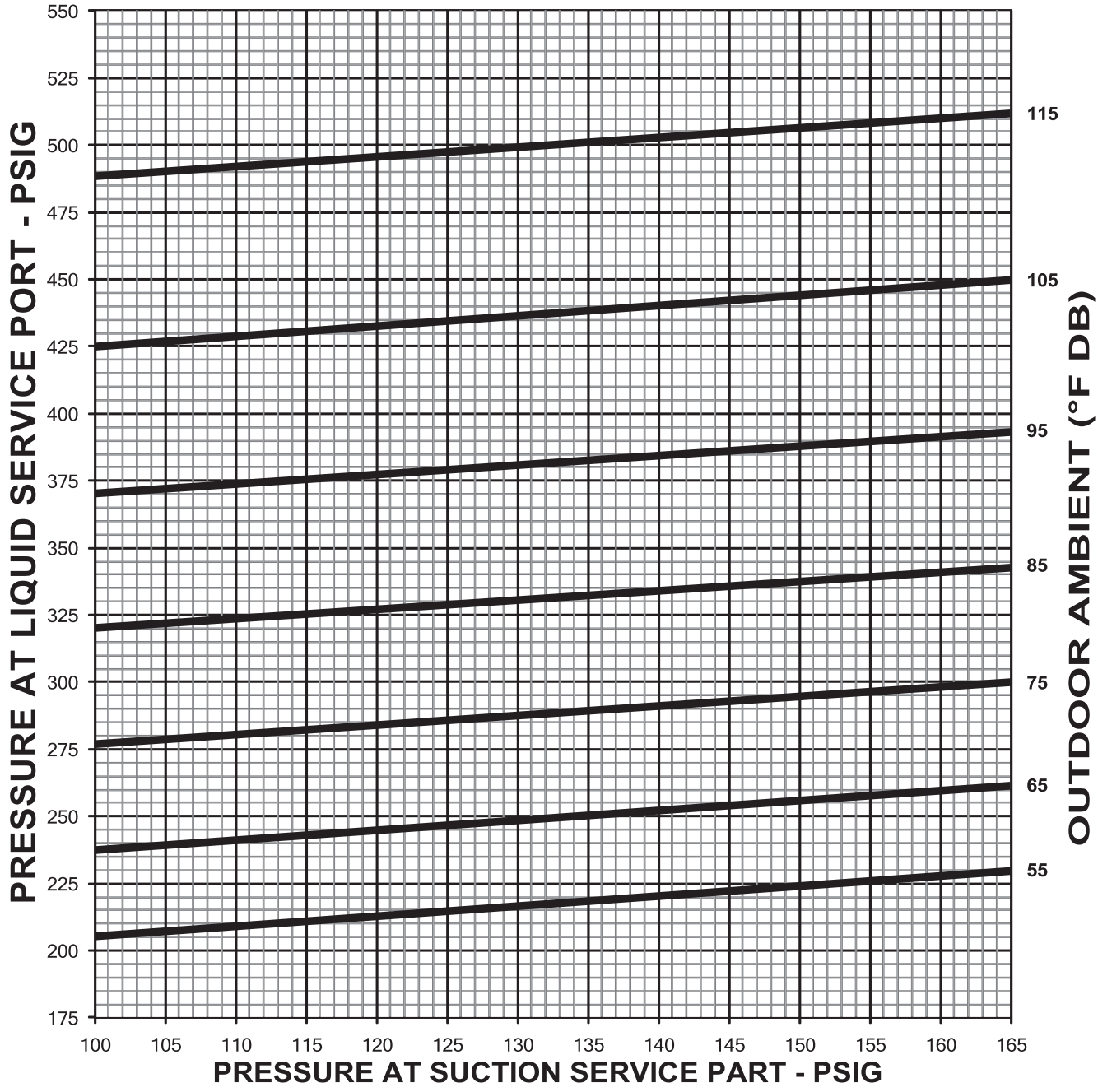
INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND LIQUID PORTS ON UNIT.
2. MEASURE AIR TEMPERATURE TO OUTDOOR COIL.
3. PLACE AN "X" ON THE APPROPRIATE CHART WHERE THE SUCTION AND LIQUID PRESSURES CROSS.
4. IF "X" IS BELOW AMBIENT TEMPERATURE LINE, ADD CHARGE AND REPEAT STEP 3.
5. IF "X" IS ABOVE AMBIENT TEMPERATURE LINE, RECOVER EXCESS CHARGE AND REPEAT STEP 3.

92-104780-04-00

FIGURE 23
SYSTEM CHARGE CHARTS

RACA 13/14 – 4 TON COOLING
SYSTEM CHARGE CHART - REFRIGERANT 410A



CAUTION: BEFORE FINAL REFRIGERANT CHECK, INDOOR RETURN AIR TEMPERATURE SHOULD BE AT COMFORT CONDITIONS FOR MOST ACCURATE RESULTS.

NOTE: DESIGN SUB-COOLING (AT SERVICE PORT) @ 95° OUTDOOR = 16°F

INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND LIQUID PORTS ON UNIT.
2. MEASURE AIR TEMPERATURE TO OUTDOOR COIL.
3. PLACE AN "X" ON THE APPROPRIATE CHART WHERE THE SUCTION AND LIQUID PRESSURES CROSS.
4. IF "X" IS BELOW AMBIENT TEMPERATURE LINE, ADD CHARGE AND REPEAT STEP 3.
5. IF "X" IS ABOVE AMBIENT TEMPERATURE LINE, RECOVER EXCESS CHARGE AND REPEAT STEP 3.

92-104780-05-00

FIGURE 24
SYSTEM CHARGE CHARTS

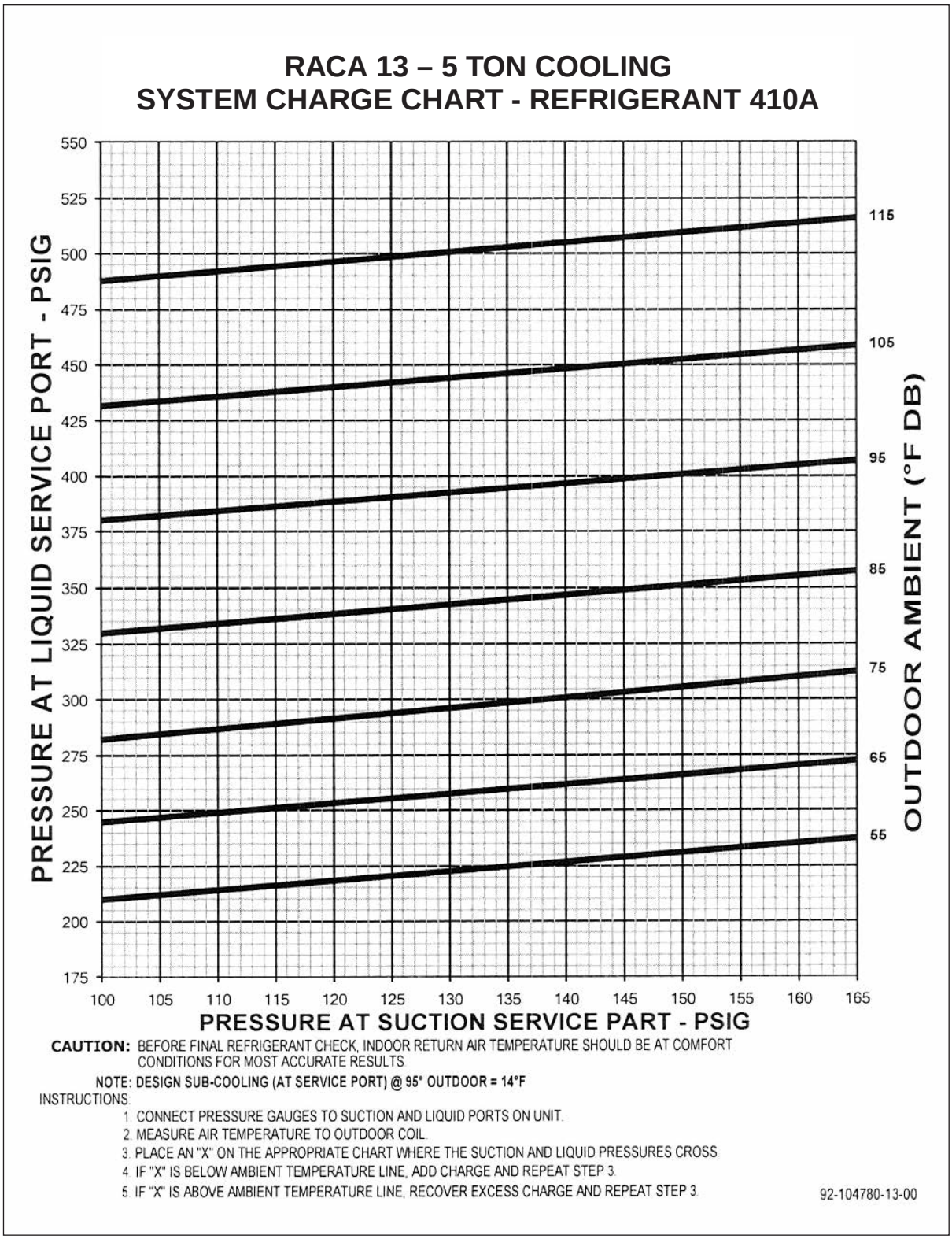
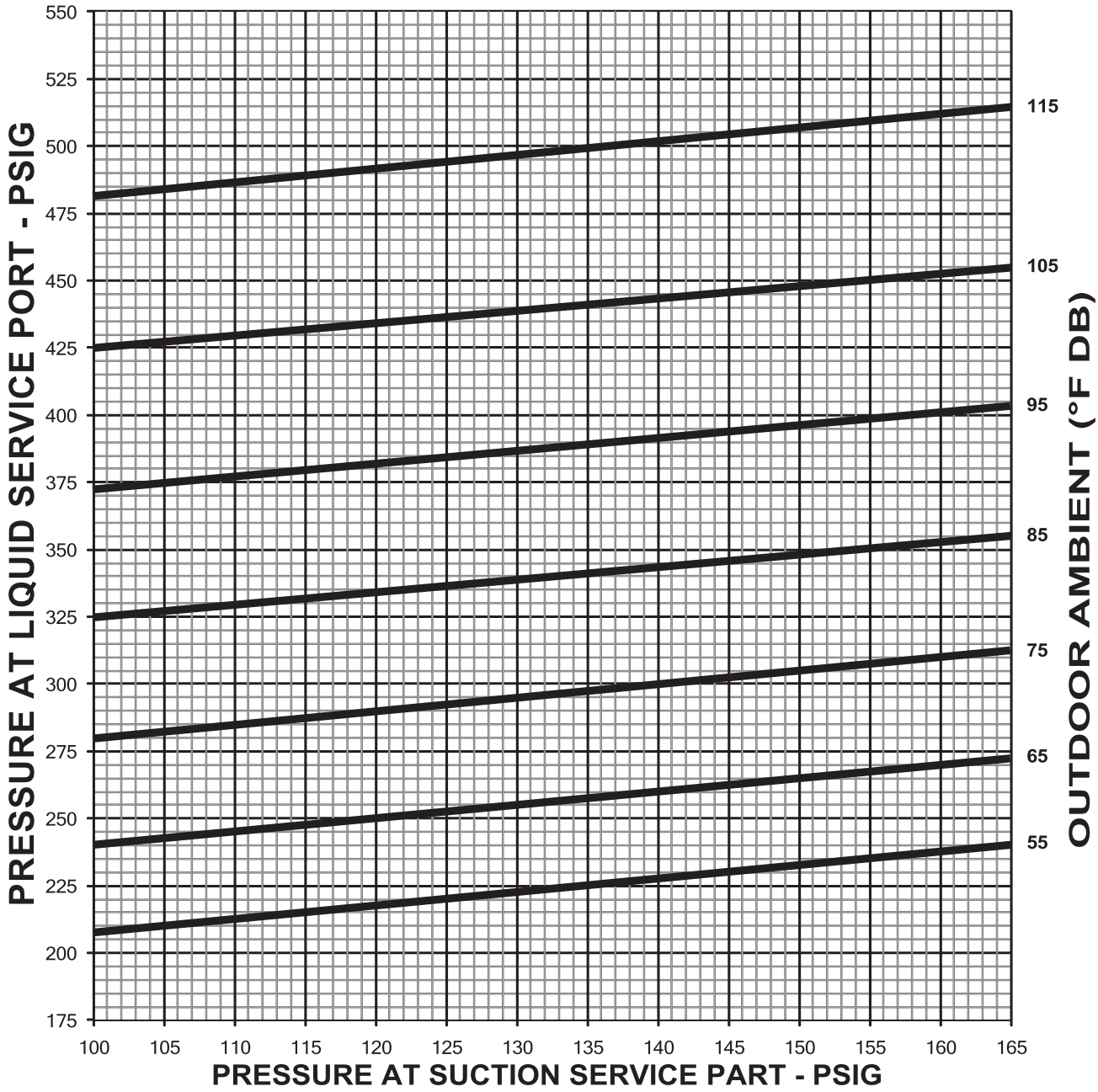


FIGURE 25
SYSTEM CHARGE CHARTS

RACA 14 – 5 TON COOLING
SYSTEM CHARGE CHART - REFRIGERANT 410A



CAUTION: BEFORE FINAL REFRIGERANT CHECK, INDOOR RETURN AIR TEMPERATURE SHOULD BE AT COMFORT CONDITIONS FOR MOST ACCURATE RESULTS.

NOTE: DESIGN SUB-COOLING (AT SERVICE PORT) @ 95° OUTDOOR = 14°F

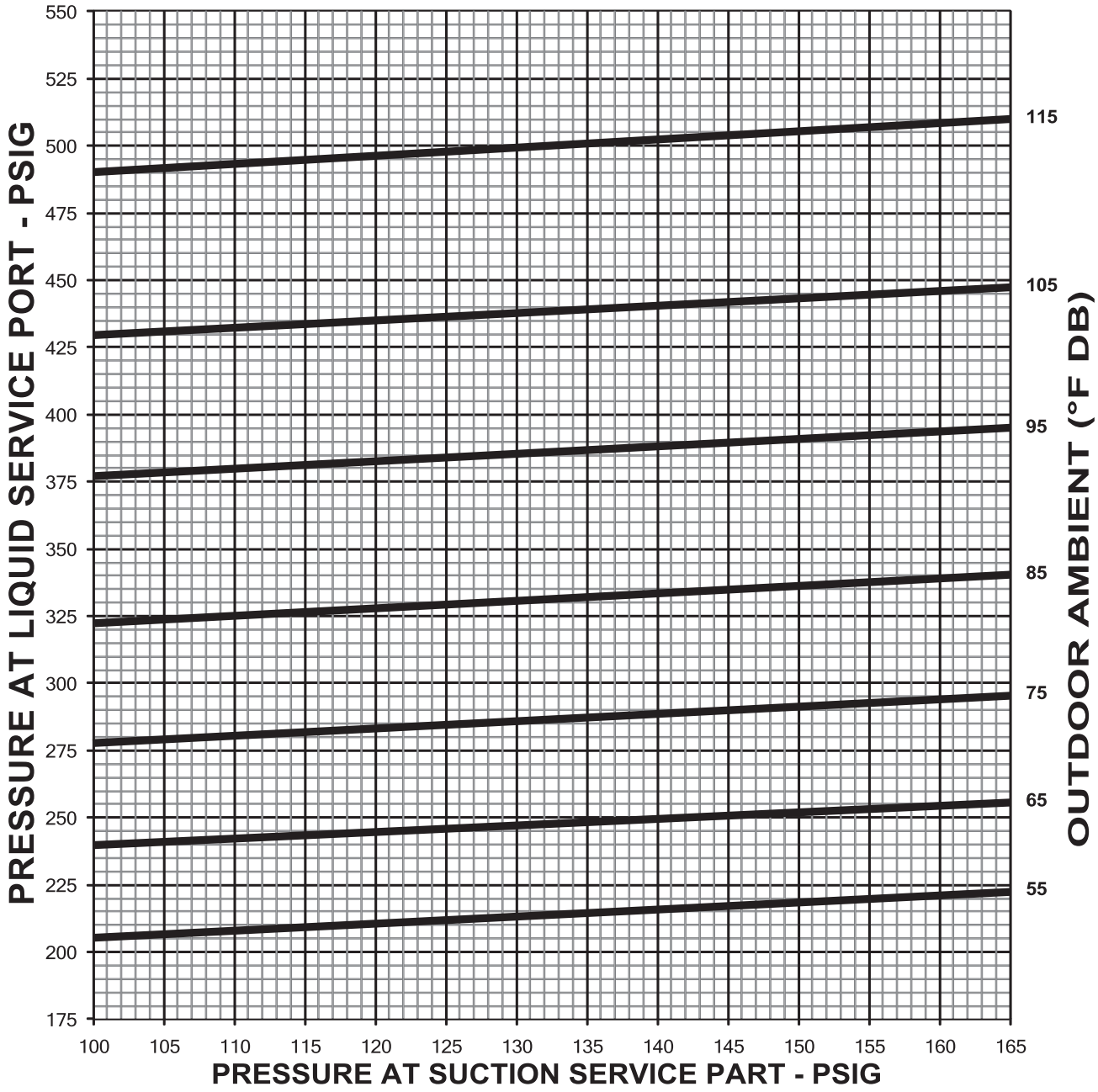
INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND LIQUID PORTS ON UNIT.
2. MEASURE AIR TEMPERATURE TO OUTDOOR COIL.
3. PLACE AN "X" ON THE APPROPRIATE CHART WHERE THE SUCTION AND LIQUID PRESSURES CROSS.
4. IF "X" IS BELOW AMBIENT TEMPERATURE LINE, ADD CHARGE AND REPEAT STEP 3.
5. IF "X" IS ABOVE AMBIENT TEMPERATURE LINE, RECOVER EXCESS CHARGE AND REPEAT STEP 3.

92-104780-06-00

FIGURE 26
SYSTEM CHARGE CHARTS

RACA 15 – 2 TON COOLING
SYSTEM CHARGE CHART - REFRIGERANT 410A



CAUTION: BEFORE FINAL REFRIGERANT CHECK, INDOOR RETURN AIR TEMPERATURE SHOULD BE AT COMFORT CONDITIONS FOR MOST ACCURATE RESULTS.

NOTE: DESIGN SUB-COOLING (AT SERVICE PORT) @ 95° OUTDOOR = 16°F

INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND LIQUID PORTS ON UNIT.
2. MEASURE AIR TEMPERATURE TO OUTDOOR COIL.
3. PLACE AN "X" ON THE APPROPRIATE CHART WHERE THE SUCTION AND LIQUID PRESSURES CROSS.
4. IF "X" IS BELOW AMBIENT TEMPERATURE LINE, ADD CHARGE AND REPEAT STEP 3.
5. IF "X" IS ABOVE AMBIENT TEMPERATURE LINE, RECOVER EXCESS CHARGE AND REPEAT STEP 3.

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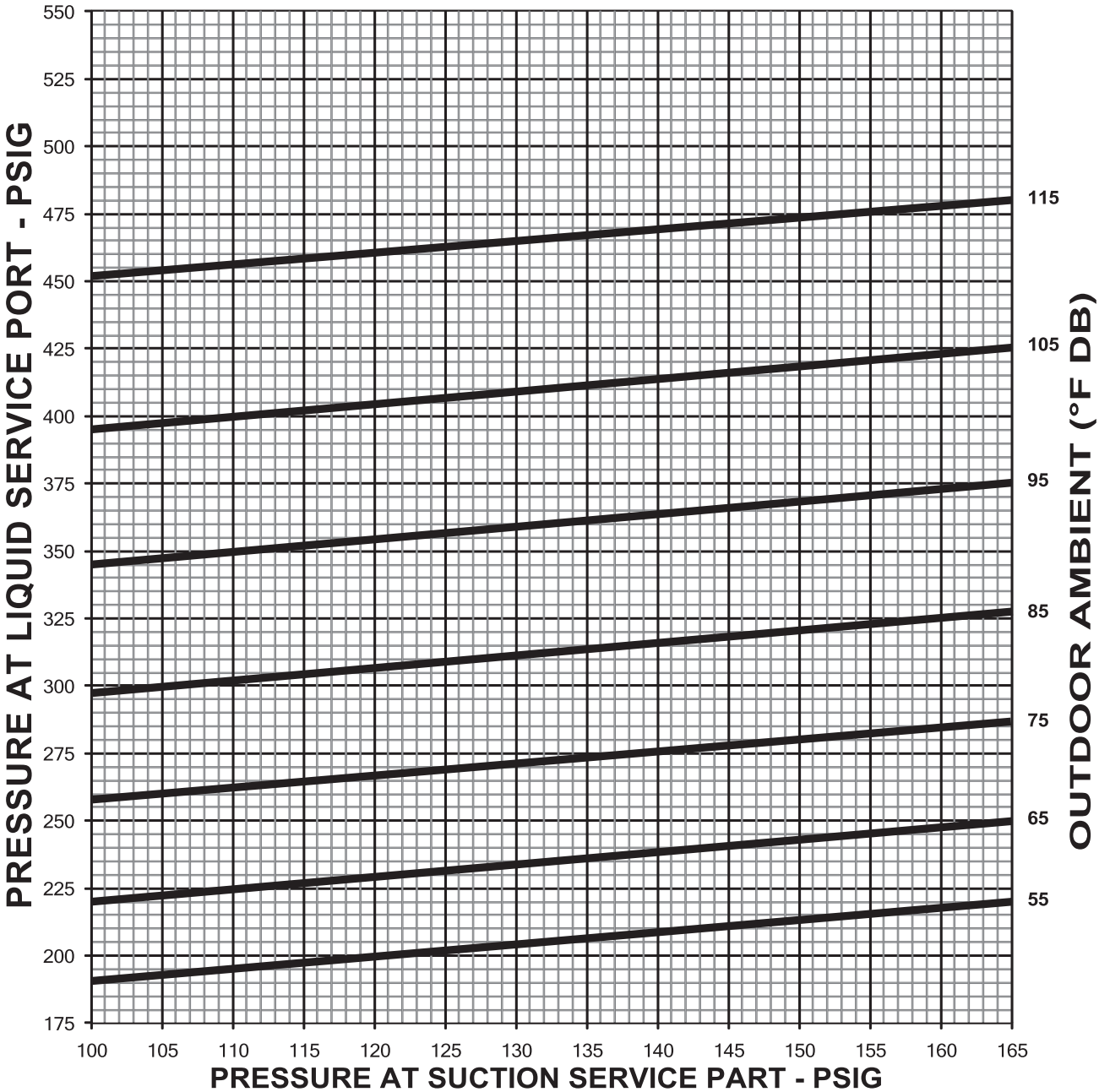
FIGURE 27
SYSTEM CHARGE CHARTS

RACA 15 – 2.5 TON COOLING
SYSTEM CHARGE CHART - REFRIGERANT 410A



CAUTION: BEFORE FINAL REFRIGERANT CHECK, INDOOR RETURN AIR TEMPERATURE SHOULD BE AT COMFORT CONDITIONS FOR MOST ACCURATE RESULTS.

NOTE: DESIGN SUB-COOLING (AT SERVICE PORT) @ 95° OUTDOOR = 16°F

INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND LIQUID PORTS ON UNIT.
2. MEASURE AIR TEMPERATURE TO OUTDOOR COIL.
3. PLACE AN "X" ON THE APPROPRIATE CHART WHERE THE SUCTION AND LIQUID PRESSURES CROSS.
4. IF "X" IS BELOW AMBIENT TEMPERATURE LINE, ADD CHARGE AND REPEAT STEP 3.
5. IF "X" IS ABOVE AMBIENT TEMPERATURE LINE, RECOVER EXCESS CHARGE AND REPEAT STEP 3.

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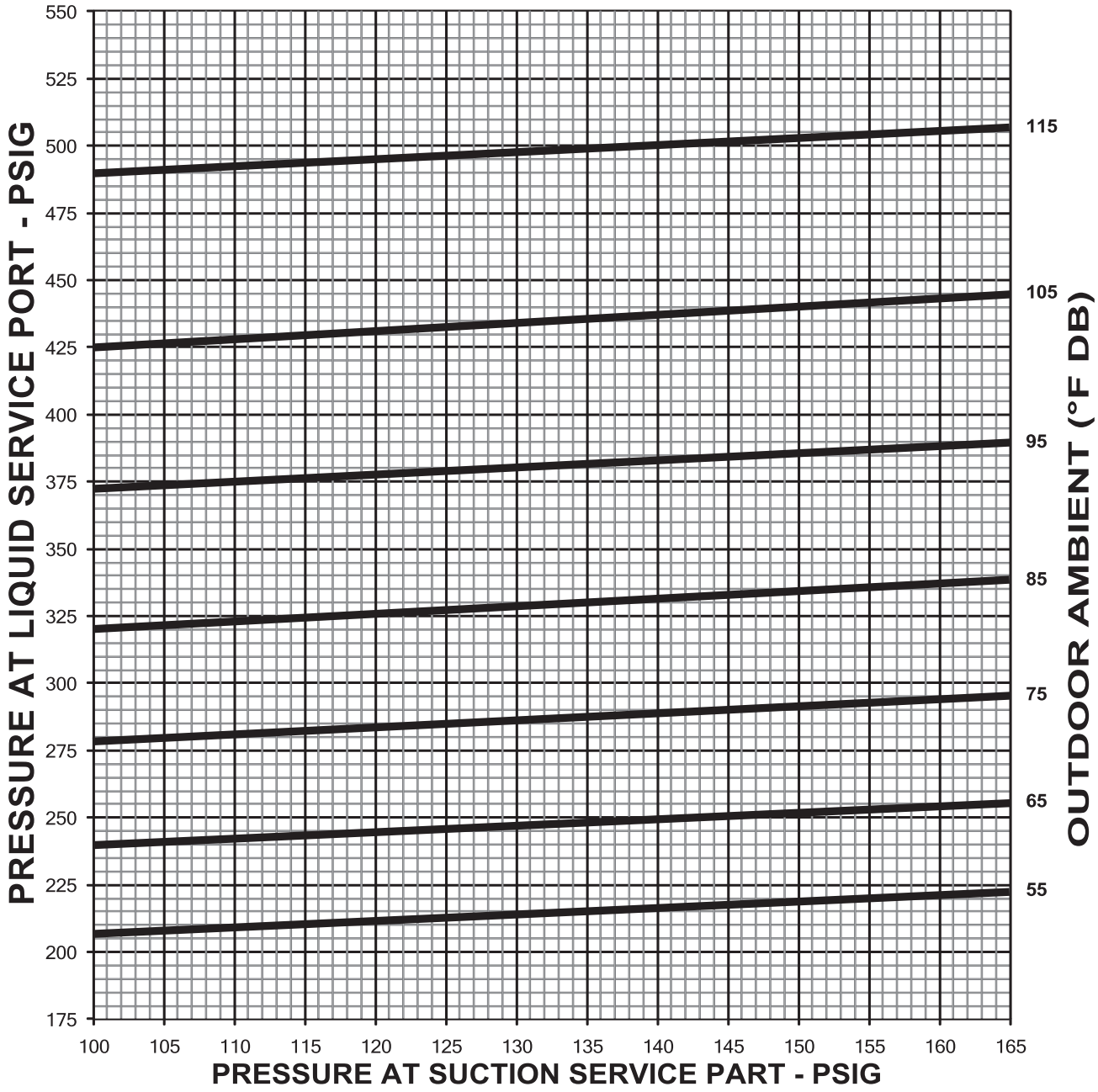
FIGURE 28
SYSTEM CHARGE CHARTS

RACA 15 – 3 TON COOLING
SYSTEM CHARGE CHART - REFRIGERANT 410A



CAUTION: BEFORE FINAL REFRIGERANT CHECK, INDOOR RETURN AIR TEMPERATURE SHOULD BE AT COMFORT CONDITIONS FOR MOST ACCURATE RESULTS.

NOTE: DESIGN SUB-COOLING (AT SERVICE PORT) @ 95° OUTDOOR = 16°F

INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND LIQUID PORTS ON UNIT.
2. MEASURE AIR TEMPERATURE TO OUTDOOR COIL.
3. PLACE AN "X" ON THE APPROPRIATE CHART WHERE THE SUCTION AND LIQUID PRESSURES CROSS.
4. IF "X" IS BELOW AMBIENT TEMPERATURE LINE, ADD CHARGE AND REPEAT STEP 3.
5. IF "X" IS ABOVE AMBIENT TEMPERATURE LINE, RECOVER EXCESS CHARGE AND REPEAT STEP 3.

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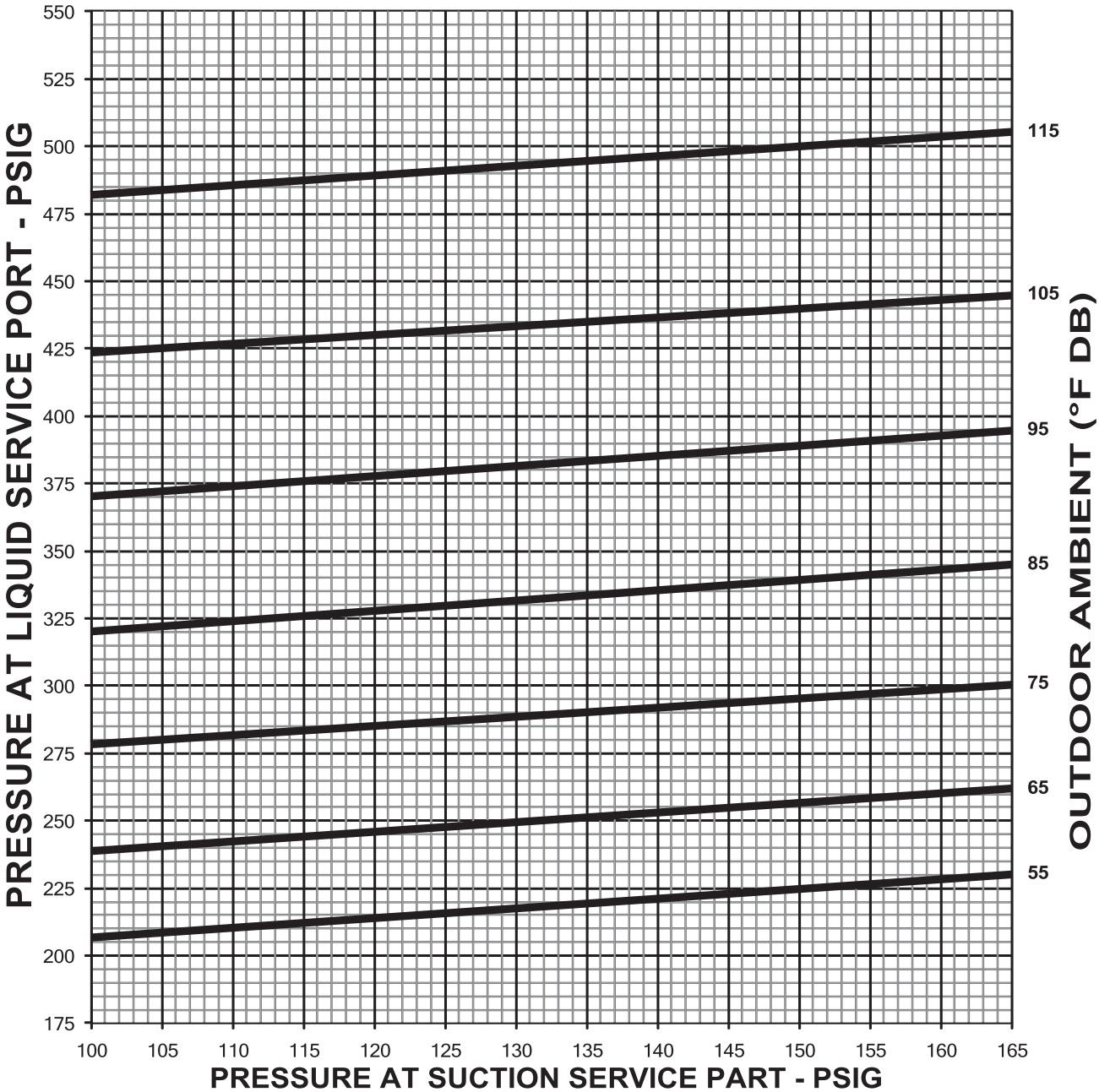
FIGURE 29
SYSTEM CHARGE CHARTS

RACA 15 – 3.5 TON COOLING
SYSTEM CHARGE CHART - REFRIGERANT 410A



CAUTION: BEFORE FINAL REFRIGERANT CHECK, INDOOR RETURN AIR TEMPERATURE SHOULD BE AT COMFORT CONDITIONS FOR MOST ACCURATE RESULTS.

NOTE: DESIGN SUB-COOLING (AT SERVICE PORT) @ 95° OUTDOOR = 16°F

INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND LIQUID PORTS ON UNIT.
2. MEASURE AIR TEMPERATURE TO OUTDOOR COIL.
3. PLACE AN "X" ON THE APPROPRIATE CHART WHERE THE SUCTION AND LIQUID PRESSURES CROSS.
4. IF "X" IS BELOW AMBIENT TEMPERATURE LINE, ADD CHARGE AND REPEAT STEP 3.
5. IF "X" IS ABOVE AMBIENT TEMPERATURE LINE, RECOVER EXCESS CHARGE AND REPEAT STEP 3.

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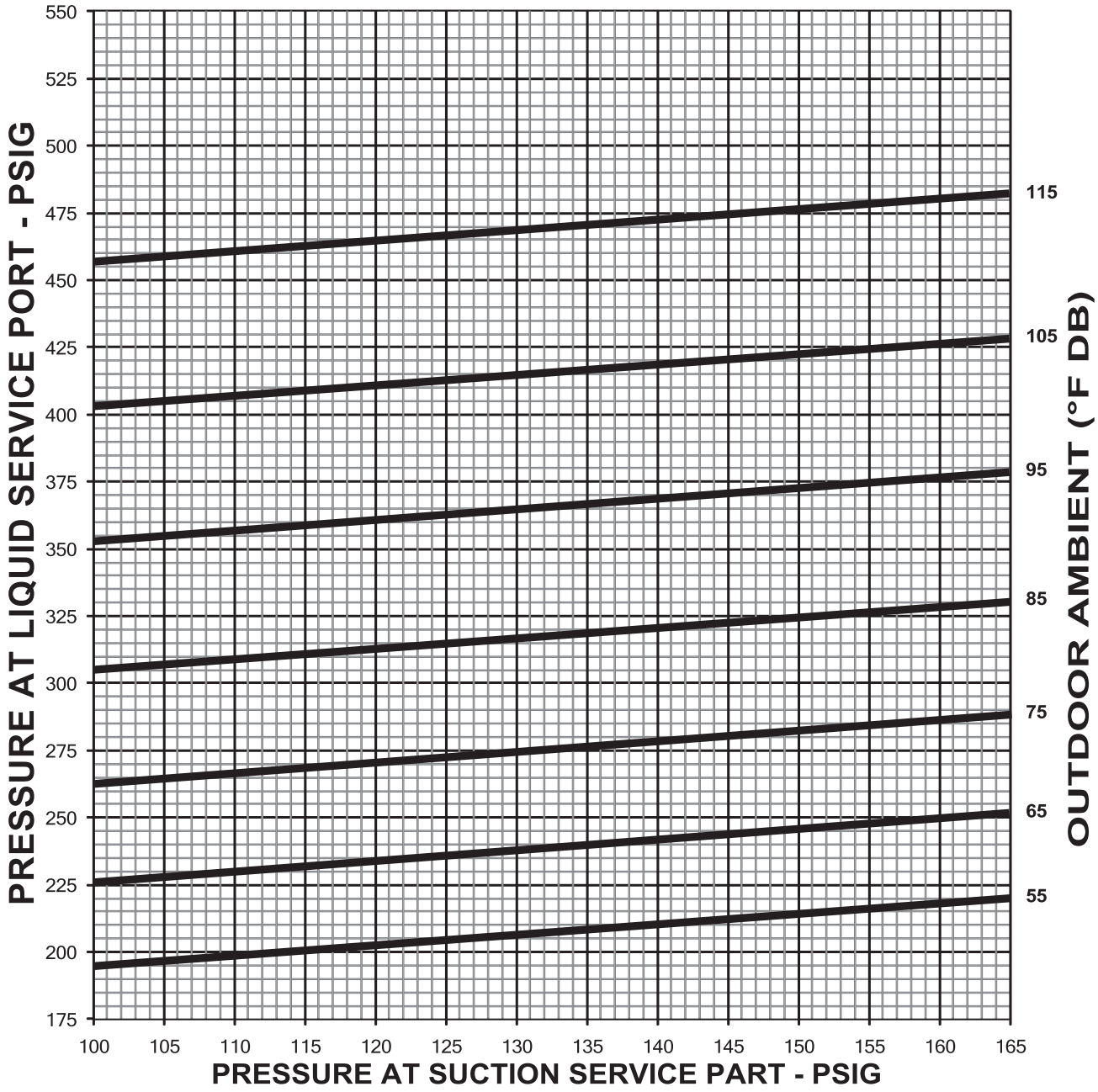
FIGURE 30
SYSTEM CHARGE CHARTS

RACA 15 – 4 TON COOLING
SYSTEM CHARGE CHART - REFRIGERANT 410A



CAUTION: BEFORE FINAL REFRIGERANT CHECK, INDOOR RETURN AIR TEMPERATURE SHOULD BE AT COMFORT CONDITIONS FOR MOST ACCURATE RESULTS.

NOTE: DESIGN SUB-COOLING (AT SERVICE PORT) @ 95° OUTDOOR = 16°F

INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND LIQUID PORTS ON UNIT.
2. MEASURE AIR TEMPERATURE TO OUTDOOR COIL.
3. PLACE AN "X" ON THE APPROPRIATE CHART WHERE THE SUCTION AND LIQUID PRESSURES CROSS.
4. IF "X" IS BELOW AMBIENT TEMPERATURE LINE, ADD CHARGE AND REPEAT STEP 3.
5. IF "X" IS ABOVE AMBIENT TEMPERATURE LINE, RECOVER EXCESS CHARGE AND REPEAT STEP 3.

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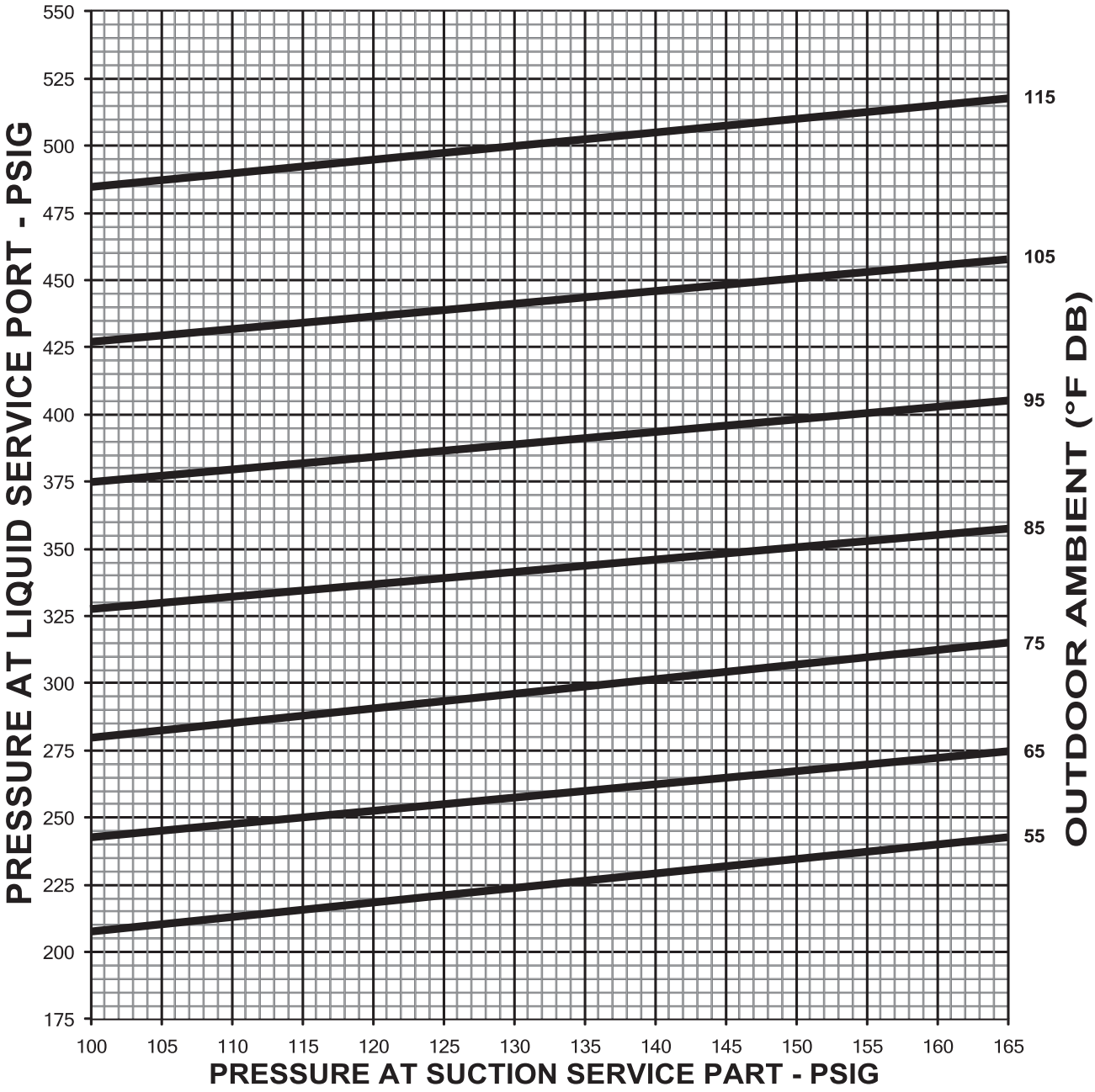
FIGURE 31
SYSTEM CHARGE CHARTS

RACA 15 – 5 TON COOLING
SYSTEM CHARGE CHART - REFRIGERANT 410A



CAUTION: BEFORE FINAL REFRIGERANT CHECK, INDOOR RETURN AIR TEMPERATURE SHOULD BE AT COMFORT CONDITIONS FOR MOST ACCURATE RESULTS.

NOTE: UNIT MUST BE IN HIGH STAGE TO DETERMINE CHARGE LEVEL. DESIGN SUB-COOLING (AT SERVICE PORT) @ 95° OUTDOOR = 16°F

INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND LIQUID PORTS ON UNIT.
2. MEASURE AIR TEMPERATURE TO OUTDOOR COIL.
3. PLACE AN "X" ON THE APPROPRIATE CHART WHERE THE SUCTION AND LIQUID PRESSURES CROSS.
4. IF "X" IS BELOW AMBIENT TEMPERATURE LINE, ADD CHARGE AND REPEAT STEP 3.
5. IF "X" IS ABOVE AMBIENT TEMPERATURE LINE, RECOVER EXCESS CHARGE AND REPEAT STEP 3.

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XXV. TROUBLESHOOTING

TROUBLE SHOOTING 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 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	• 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-condensibles 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

FIGURE 32
COMFORT ALERT DIAGNOSIS CHART
SINGLE PHASE UNIT

Status LED	Status LED Description	Status LED Troubleshooting Information
Green "POWER"	Module has power	Supply voltage is present at module terminals
Red "TRIP"	Thermostat demand signal Y1 is present, but the compressor is not running	1. Compressor internal overload is open 2. Broken wire or connector is not making contact 3. Low pressure switch open, if present 4. Compressor contactor has failed open
Yellow "ALERT" Flash Code 1	Long Run Time Compressor is running extremely long run cycles	1. Low refrigerant charge 2. Evaporator blower is not running 3. Evaporator coil is frozen 4. Faulty TXV 5. Condenser coil is dirty 6. Liquid line restriction (filter drier blocked if present in system) 7. Thermostat is malfunctioning
Yellow "ALERT" Flash Code 2	System Pressure Trip Discharge or suction pressure out of limits or compressor overloaded	1. Condenser coil poor air circulation (dirty, blocked, damaged) 2. Condenser fan is not running 3. Return air duct has substantial leakage 4. If low pressure switch is present, check flash code (1) information
Yellow "ALERT" Flash Code 3	Short Cycling Compressor is running only briefly	1. High head pressure 2. Thermostat demand signal is intermittent 3. Time delay relay defective, if present 4. Hot gas sensor defective, if present
Yellow "ALERT" Flash Code 4	Locked Rotor	1. Run capacitor has failed 2. Low line voltage (contact utility if voltage at disconnect is low) 3. Excessive liquid refrigerant in compressor 4. Compressor bearings are seized
Yellow "ALERT" Flash Code 5	Open Circuit	1. Compressor contactor has failed open 2. High pressure switch is open, If present 3. Open circuit in compressor supply wiring or connections 4. Unusually long compressor protector reset time due to extreme ambient temperature 5. Compressor windings are damaged
Yellow "ALERT" Flash Code 6	Open Start Circuit Current only in run circuit	1. Run capacitor has failed 2. Open circuit in compressor start wiring or connections 3. Compressor start winding is damaged
Yellow "ALERT" Flash Code 7	Open Run Circuit Current only in start circuit	1. Open circuit in compressor run wiring or connections 2. Compressor run winding is damaged
Yellow "ALERT" Flash Code 8	Welded Contactor Compressor always runs	1. Compressor contactor has failed closed 2. Thermostat demand signal not connected to module
Yellow "ALERT" Flash Code 9	Low Voltage Control circuit < 17VAC	1. Control circuit transformer is overloaded 2. Low line voltage (contact utility if voltage at disconnect is low)

- *Flash Code number corresponds to a number of LED flashes, followed by a pause and then repeated.*
- *TRIP and ALERT LEDs flashing at same time means control circuit voltage is too low for operation.*
- *Reset ALERT Flash code by removing 24VAC power from module.*
- *Last ALERT Flash code is displayed for 1 minute after module is powered on.*

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FIGURE 33
COMFORT ALERT DIAGNOSIS CHART
THREE PHASE UNIT

Status LED	Status LED Description	Status LED Troubleshooting Information
Green "POWER"	Module has power	Supply voltage is present at module terminals
Red "TRIP"	Thermostat demand signal Y1 is present, but the compressor is not running	1. Compressor internal overload is open 2. Broken wire or connector is not making contact 3. Low pressure switch open, if present 4. Compressor contactor has failed
Yellow "ALERT" LED on Solid	A short circuit or over-current condition exists on "P" terminal	A. Low refrigerant charge B. Evaportaor blower is not running C. Evaporator coil is frozen D. Faulty TXV E. Condenser coil is dirty F. Liquid line restriction (filter drier blocked, if present in system) G. Thermostat is malfunctioning
Yellow "ALERT" Flash Code 2	System Pressure Trip Discharge or suction pressure out of limits or compressor overloaded "Lockout"	1. Condenser coil poor air circulation (dirty, blocked, damaged) 2. Condenser fan is not running 3. Return air duct has substantial leakage 4. If low pressure switch is present: A. Low refrigerant charge B. Evaportaor blower is not running C. Evaporator coil is frozen D. Faulty TXV E. Condenser coil is dirty F. Liquid line restriction (filter drier blocked, if present in system) G. Thermostat is malfunctioning
Yellow "ALERT" Flash Code 3	Short Cycling Compressor is running only briefly "Lockout"	1. High head pressure 2. Thermostat demand signal is intermittent 3. Time delay relay defective, if present 4. Hot gas sensor defective, if present
Yellow "ALERT" Flash Code 4	Locked Rotor "Lockout"	1. Low line voltage (contact utility if voltage at disconnect is low) 2. Excessive liquid refrigerant in compressor 3. Compressor bearings are seized
Yellow "ALERT" Flash Code 5	Open Circuit	1. Compressor contactor has failed open 2. High pressure switch is open, if present 3. Open circuit in compressor supply wiring or connections 4. Unusually long compressor protector reset time due to extreme ambient temperature 5. Compressor windings are damaged
Yellow "ALERT" Flash Code 6	Missing Phase "Lockout"	1. Broken wire or connector on one phase 2. Compressor motor winding is damaged 3. Utility supply has dropped one phase
Yellow "ALERT" Flash Code 7	Reverse Phase "Lockout"	1. Compressor running backwards due to supply phase reversal
Yellow "ALERT" Flash Code 8	Welded Contactor Compressor always runs	1. Compressor contactor has failed closed 2. Thermostat demand signal not connected to module
Yellow "ALERT" Flash Code 9	Low Voltage Control circuit < 18VAC	1. Control circuit transformer is overloaded 2. Low line voltage (contact utility if voltage at disconnect is low)

- *Flash Code number corresponds to a number of LED flashes, followed by a pause and then repeated.*
- *TRIP and ALERT LEDs flashing at same time means control circuit voltage is too low for operation.*
- *Reset ALERT Flash code by removing 24VAC power from module.*
- *Last ALERT Flash code is displayed for 1 minute after module is powered on.*

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