INSTALLATION INSTRUCTIONS

PACKAGE HEAT PUMPS

RQNA-B SERIES

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

ARI PERFORMANCE CERTIFIED
Standard 210/240 UHP

Accredited by the RvA
ABS Quality Evaluations, Inc. Management System Certification
ANAB ACCREDITED

ISO 9001:2000
Certificate Number: 30164

DO NOT DESTROY THIS MANUAL

PLEASE READ CAREFULLY AND KEEP IN A SAFE PLACE FOR FUTURE REFERENCE BY A SERVICEMAN

92-20522-39-03
SUPERSEDES 92-20522-39-02

I. TABLE OF CONTENTS

⚠ Recognize this symbol as an indication of Important Safety Information!

⚠ WARNING

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

⚠ WARNING

THE MANUFACTURER'S WARRANTY DOES NOT COVER ANY DAMAGE OR DEFECT TO THE HEAT PUMP 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 HEAT PUMP. YOU SHOULD BE AWARE THAT THE USE OF UNAUTHORIZED COMPONENTS, ACCESSORIES OR DEVICES MAY ADVERSELY AFFECT THE OPERATION OF THE HEAT PUMP AND MAY ALSO ENDANGER LIFE AND PROPERTY. THE MANUFACTURER DISCLAIMS ANY RESPONSIBILITY FOR SUCH LOSS OR INJURY RESULTING FROM THE USE OF SUCH UNAUTHORIZED COMPONENTS, ACCESSORIES OR DEVICES.

II. INTRODUCTION

This booklet contains the installation and operating instructions for your package heat pump. 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, heating size, electrical characteristics, and accessories to determine if they are correct.

IV. EQUIPMENT PROTECTION FROM THE ENVIRONMENT

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

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

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

⚠ WARNING

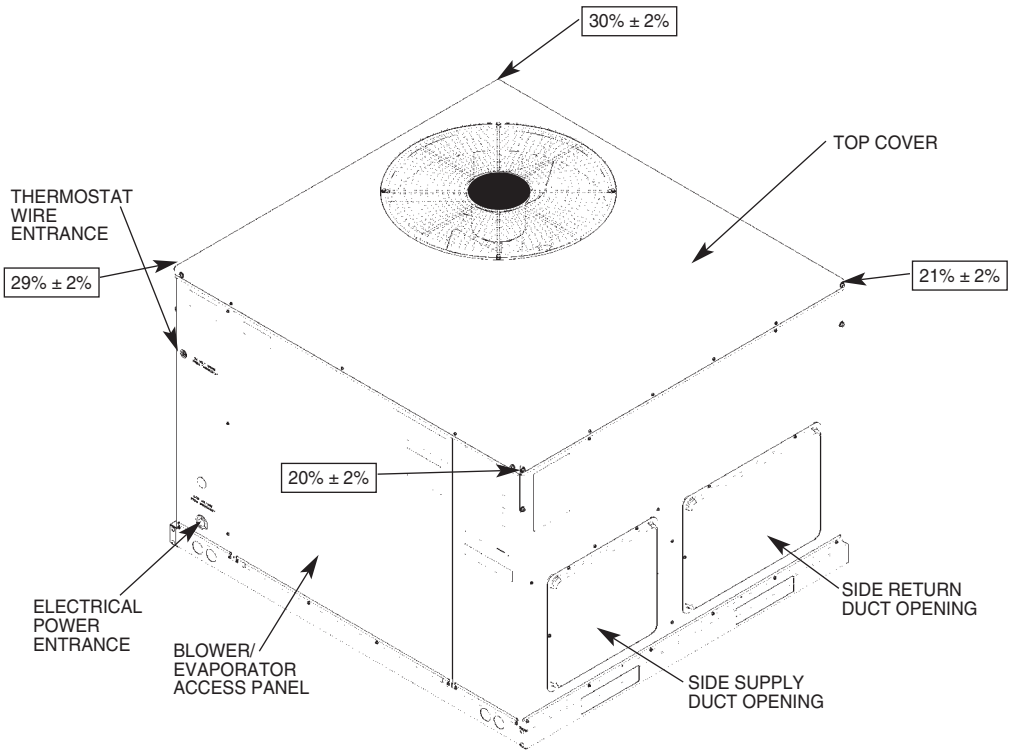
DISCONNECT ALL POWER TO THE UNIT BEFORE STARTING MAINTENANCE. FAILURE TO DO SO CAN RESULT IN SEVERE ELECTRICAL SHOCK OR DEATH.

1. Frequent washing of the cabinet, fan blade and coil with fresh water will remove most of the salt or other contaminants that build up on the unit.
2. Regular cleaning and waxing of the cabinet with 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.

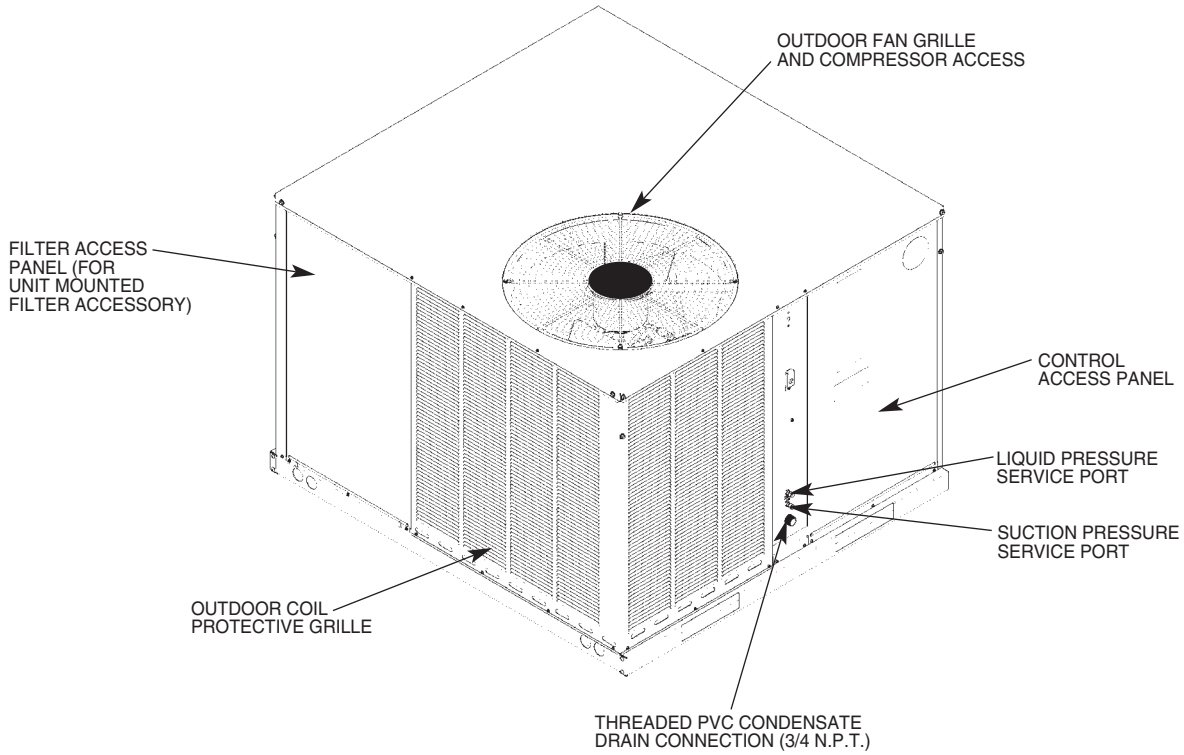
Several different types of protective coatings are offered in some areas. These coatings may provide some benefit, but the effectiveness of such coating materials cannot be verified by the equipment manufacturer.

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

FIGURE 1
UNIT DIMENSIONS AND ACCESS LOCATIONS



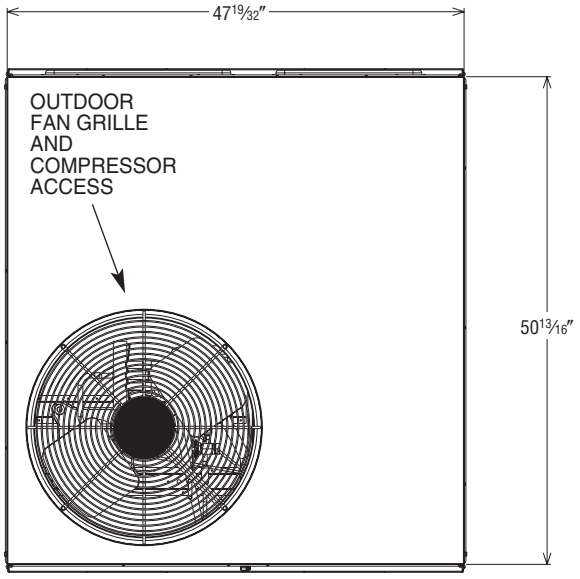
CORNER WEIGHTS % OF TOTAL UNIT WEIGHT



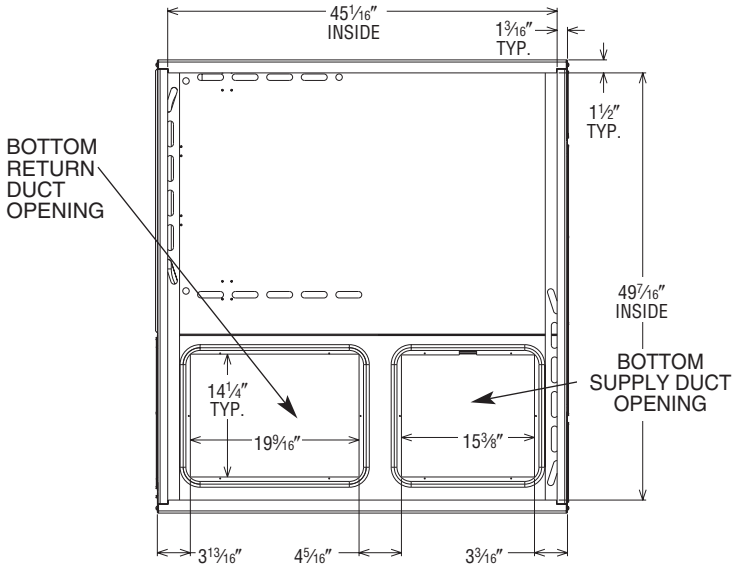
IMPORTANT: *Unit must be level to prevent water migration.*

FIGURE 1
UNIT DIMENSIONS AND ACCESS LOCATIONS

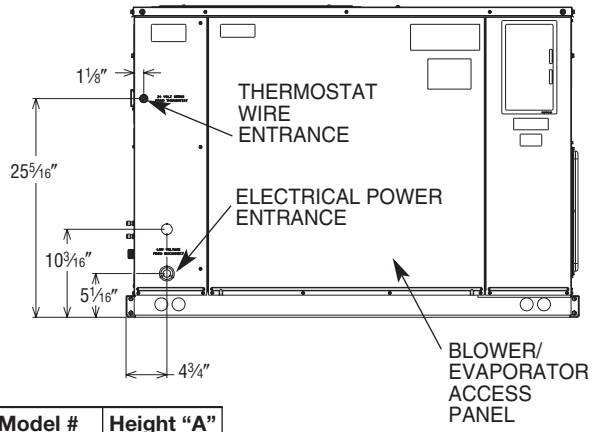
TOP VIEW



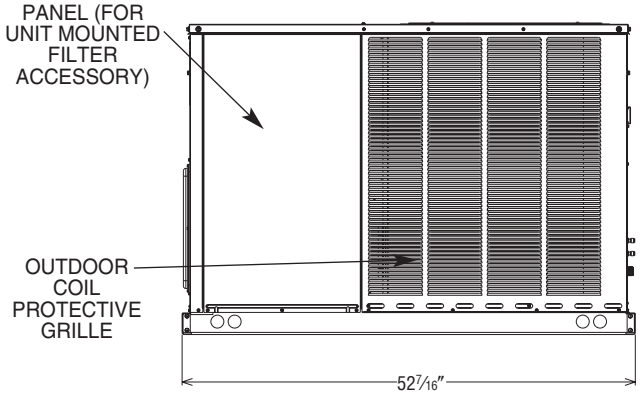
BOTTOM VIEW



SIDE VIEW



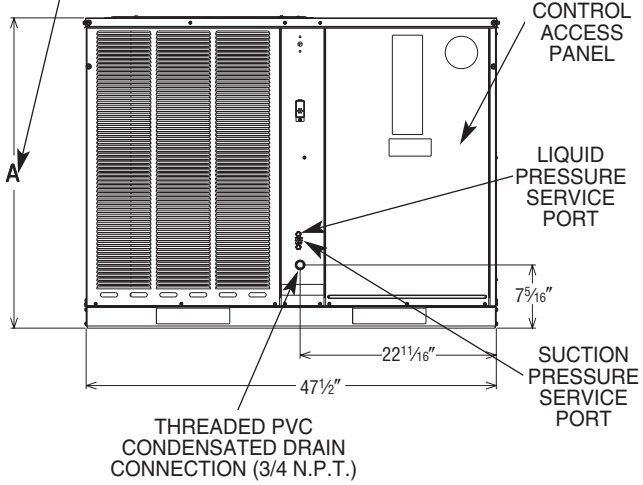
SIDE VIEW



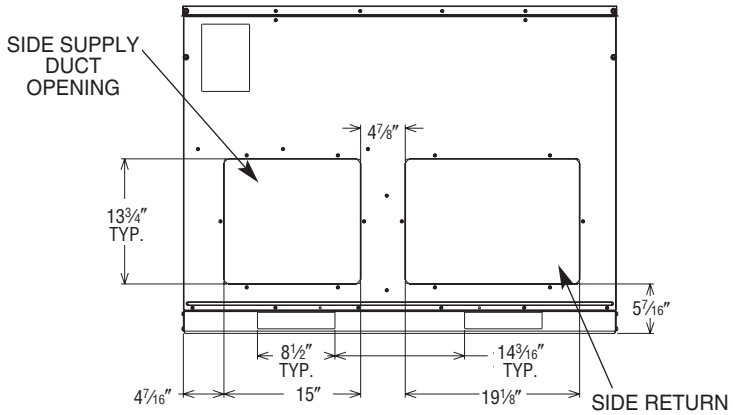
Model #	Height "A"
B024	35 5/16"
B030, B036 B042, B048	41"

IMPORTANT:
INSTALLATION MUST NOT INTERFERE WITH DRAINAGE OPENINGS IN BOTTOM OF UNIT UNDER OUTDOOR COIL.

FRONT VIEW



REAR VIEW



SHOWN WITH DUCT COVERS REMOVED.

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

V. 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 2 and 3.)

1. Select a location where external water drainage cannot collect around the unit.
2. Provide a level concrete slab extending 3" beyond all four sides of the unit. The slab should be sufficient above grade to prevent ground water from entering the unit. ***IMPORTANT:*** *To prevent transmission of noise or vibration, slab should not be connected to building structure.*
3. The location of the unit should be such as to provide proper access for inspection and servicing.
4. Locate unit where operating sounds will not disturb owner or neighbors.
5. Locate unit so roof runoff water does not pour directly on the unit. Provide gutter or other shielding at roof level. Do not locate unit in an area where excessive snow drifting may occur or accumulate.
6. It is essential that the unit be elevated above the base pad to allow for condensate drainage and possible refreezing of condensation. Provide a base pad which is slightly pitched away from the structure. Route condensate off base pad to an area which will not become slippery and result in personal injury. ***IMPORTANT:*** *Do not interfere with openings in bottom of unit.*
7. Where snowfall is anticipated, the height of the unit above the ground level must be considered. Mount unit high enough to be above average area snowfall and to allow for proper condensate drainage. ***IMPORTANT:*** *Do not interfere with openings in bottom of unit.*

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 2 for illustration of minimum installation-service clearances.

D. ROOFTOP INSTALLATION

1. Before locating the unit on the roof, make sure that the strength of the roof and beams is adequate at that point to support the weight involved. (See specification sheet for weight of unit.) This is very important and user's responsibility.
2. For rigging and roofcurb details, see Figures 4 and 5. 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 during defrosting must be provided.
5. The unit should be placed on a solid and level roofcurb or platform of adequate strength. ***IMPORTANT:*** *Do not interfere with opening in bottom of unit.* (See Figures 6 and 7.)

FIGURE 2
PACKAGE HEAT PUMP
OUTSIDE SLAB INSTALLATION, BASEMENT OR CRAWL SPACE DISTRIBUTION SYSTEM

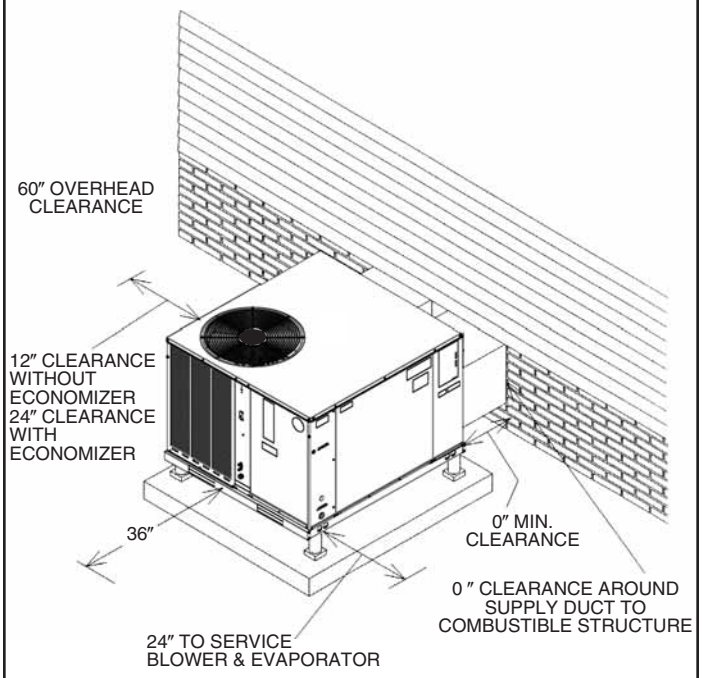


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FIGURE 3
PACKAGE HEAT PUMP
OUTSIDE SLAB INSTALLATION, CLOSET DISTRIBUTION SYSTEM. SLAB FLOOR CONSTRUCTION

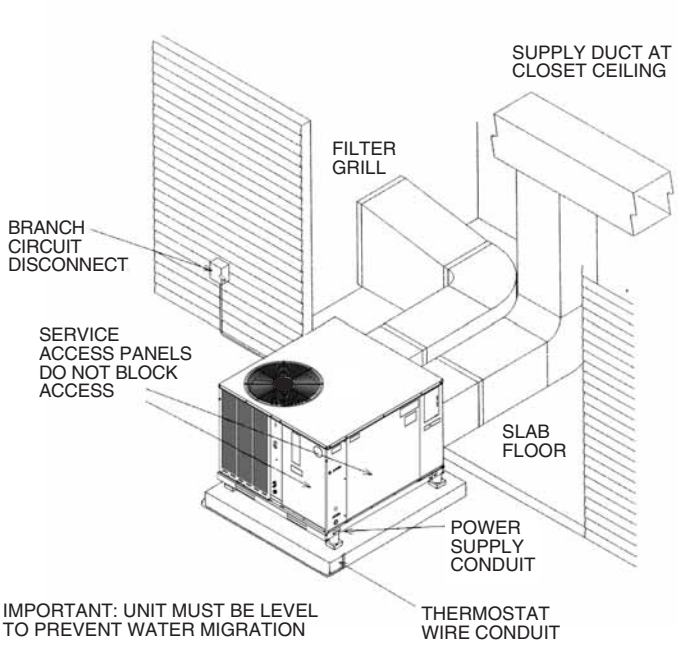

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FIGURE 4
PACKAGE HEAT PUMP
RIGGING FOR LIFTING

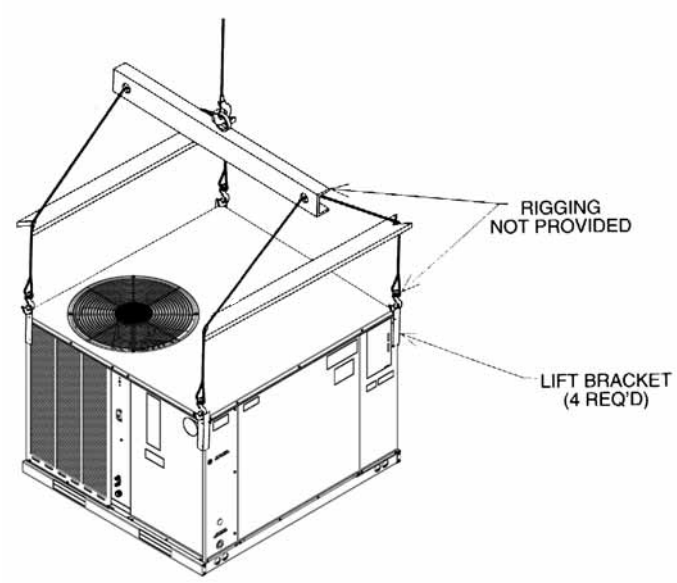

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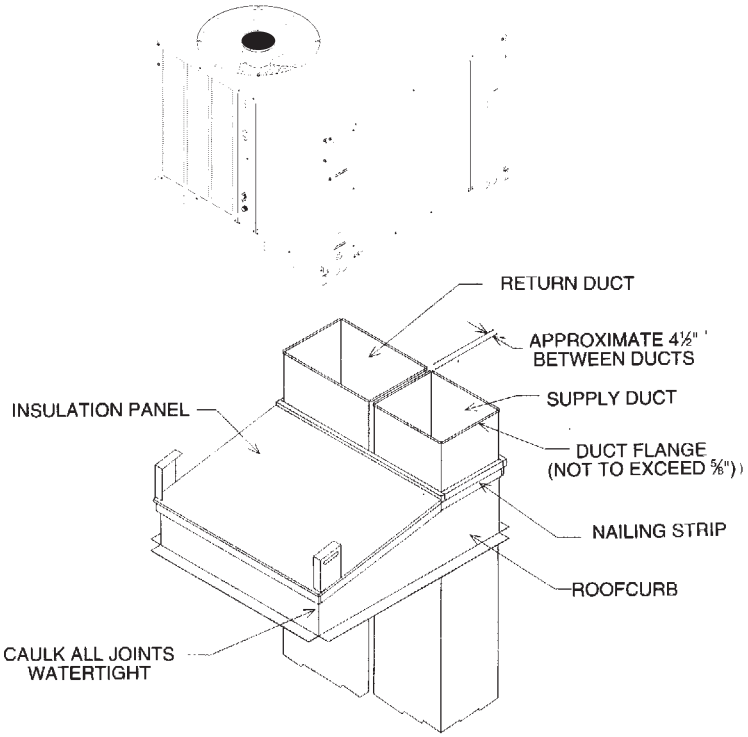
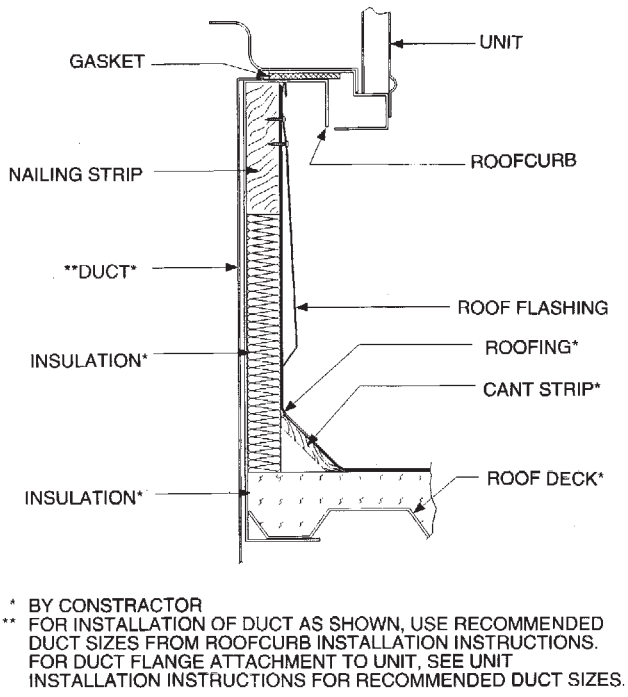
FIGURE 5
PACKAGE HEAT PUMP
ROOFCURB INSTALLATION





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.*

VI. DUCTWORK

Ductwork should be fabricated by the installing contractor in accordance with local codes and NFPA90A. Industry manuals may be used as a guide when sizing and designing the duct system - contact Air Conditioning Contractors of America, 1513 16th St. N.W., Washington, D.C. 20036.

⚠ WARNING

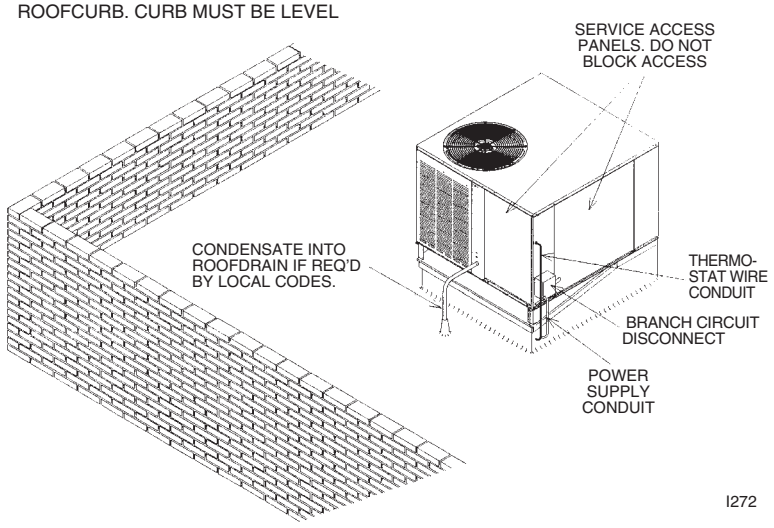
DO NOT, UNDER ANY CIRCUMSTANCES, CONNECT RETURN DUCTWORK TO ANY OTHER HEAT PRODUCING DEVICE SUCH AS A FIREPLACE INSERT, STOVE, ETC. UNAUTHORIZED USE OF SUCH DEVICES MAY RESULT IN FIRE, CARBON MONOXIDE POISONING, EXPLOSION, PROPERTY DAMAGE, SEVERE PERSONAL INJURY OR DEATH.

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

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

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

FIGURE 6
PACKAGE HEAT PUMP
FLAT ROOFTOP INSTALLATION, ATTIC OR DROP CEILING DISTRIBUTION SYSTEM. MOUNTED ON ROOFCURB. CURB MUST BE LEVEL



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

When installing ductwork use noncombustible flexible connectors between ductwork and unit to reduce noise and vibration transmission into the ductwork.

VII. 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 which will work for downflow or horizontal applications. For installation, see Filter Kit Installation Instruction.

FIGURE 7
PACKAGE HEAT PUMP
PITCHED ROOFTOP INSTALLATION, ATTIC OR DROP CEILING DISTRIBUTING SYSTEM. MUST BE MOUNTED LEVEL.

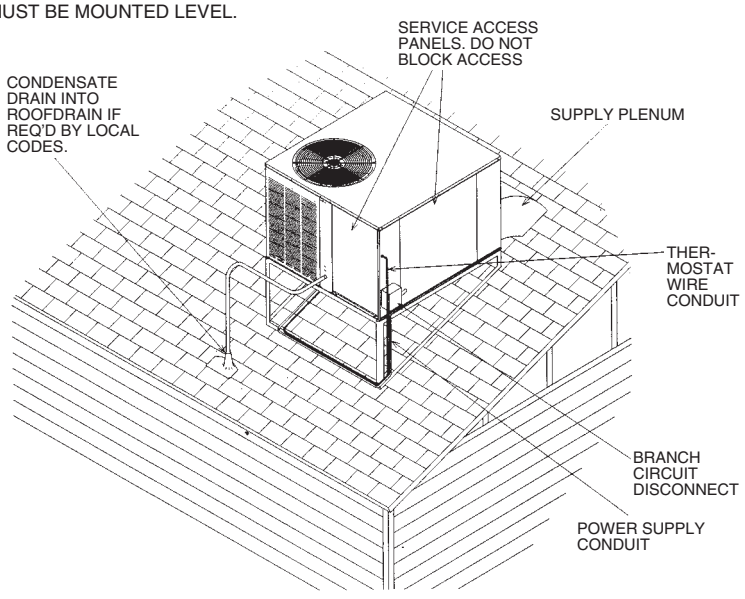
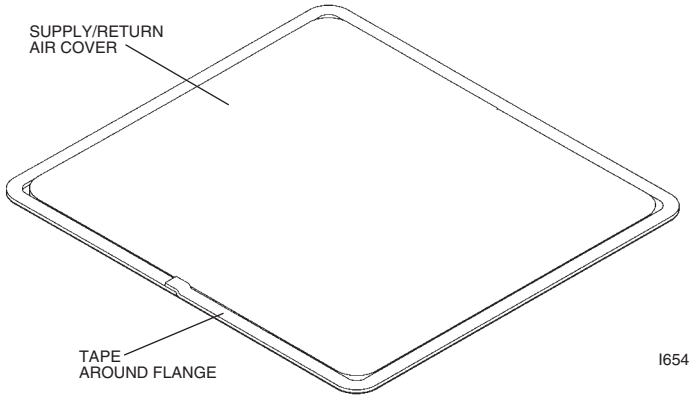


FIGURE 8
COVER GASKET DETAIL
FOR UNITS SHIPPED FOR SIDE DISCHARGE
APPLICATION BEING CONVERTED TO DOWNFLOW



VIII. CONVERSION PROCEDURE

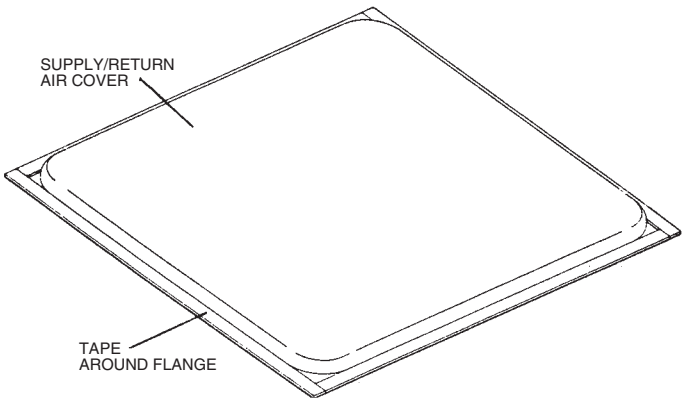
1. HORIZONTAL TO DOWNFLOW
   a. Remove screws and covers from the downflow supply and return sections. Both covers are accessible from the inside of the unit.
      NOTE: Supply cover must be rotated 90º before it can be removed.
   b. Install gasket (supplied with parts bag) around perimeter of cover on the insulated side. See Figure 8.
   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," Figure 9.
   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.

IX. CONDENSATE DRAIN

The indoor coil condensate drain ends with a threaded (3/4" NPT) 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. It is recommended that a PVC cement not be used so that the drain line can be easily cleaned in the future.

NOTE: Do not install an external trap.

FIGURE 9
COVER GASKET DETAIL
FOR UNITS SHIPPED FOR DOWNFLOW APPLICATION
BEING CONVERTED TO SIDE DISCHARGE



X. CONDENSATE DRAIN, OUTDOOR COIL

The outdoor coil during heating operation will sweat or run water off. The outdoor coil will also run water off during the defrost cycle. See Section V, Installation, for mounting precautions.

XI. ELECTRICAL WIRING

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

*C.E.C. in Canada

A. POWER WIRING

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

1. Do not run low voltage wiring in conduit with power wiring.
2. Control wiring is routed through the 7/8" hole approximately 11" from the unit top in the corner post adjacent to the control box. 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 10.
3. It is necessary that only heat pump thermostats be used. Please contact your distributor for part number information.
4. Figure 11 shows representative low voltage connection diagrams. Read your thermostat installation instructions for any special requirements for your specific thermostat. These connection diagrams are wired to minimize the amount of auxiliary electric heaters to be energized during defrost.

   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.

C. INTERNAL WIRING

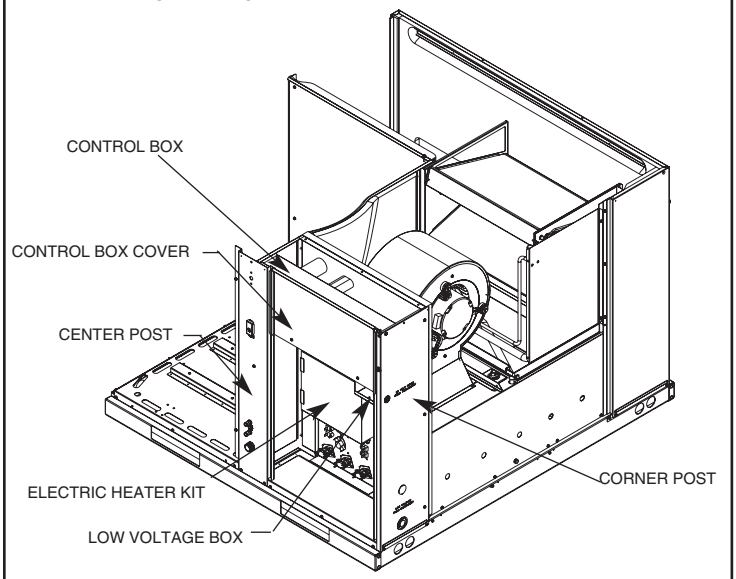
1. A diagram of the internal wiring of this unit is located on the electrical control box cover. If any of the original wire as supplied with the appliance must be replaced, the wire gauge and insulation must be the same as original wiring.

D. GROUNDING

⚠ WARNING

THE UNIT MUST BE PERMANENTLY GROUNDED. A GROUNDING LUG IS PROVIDED IN THE ELECTRIC HEAT KIT FOR A GROUND WIRE. (SEE FIGURES 9 AND 10.) FAILURE TO GROUND THIS UNIT CAN RESULT IN FIRE OR ELECTRICAL SHOCK CAUSING PROPERTY DAMAGE, SEVERE PERSONAL INJURY OR DEATH.

FIGURE 10
HEATER KIT INSTALLATION

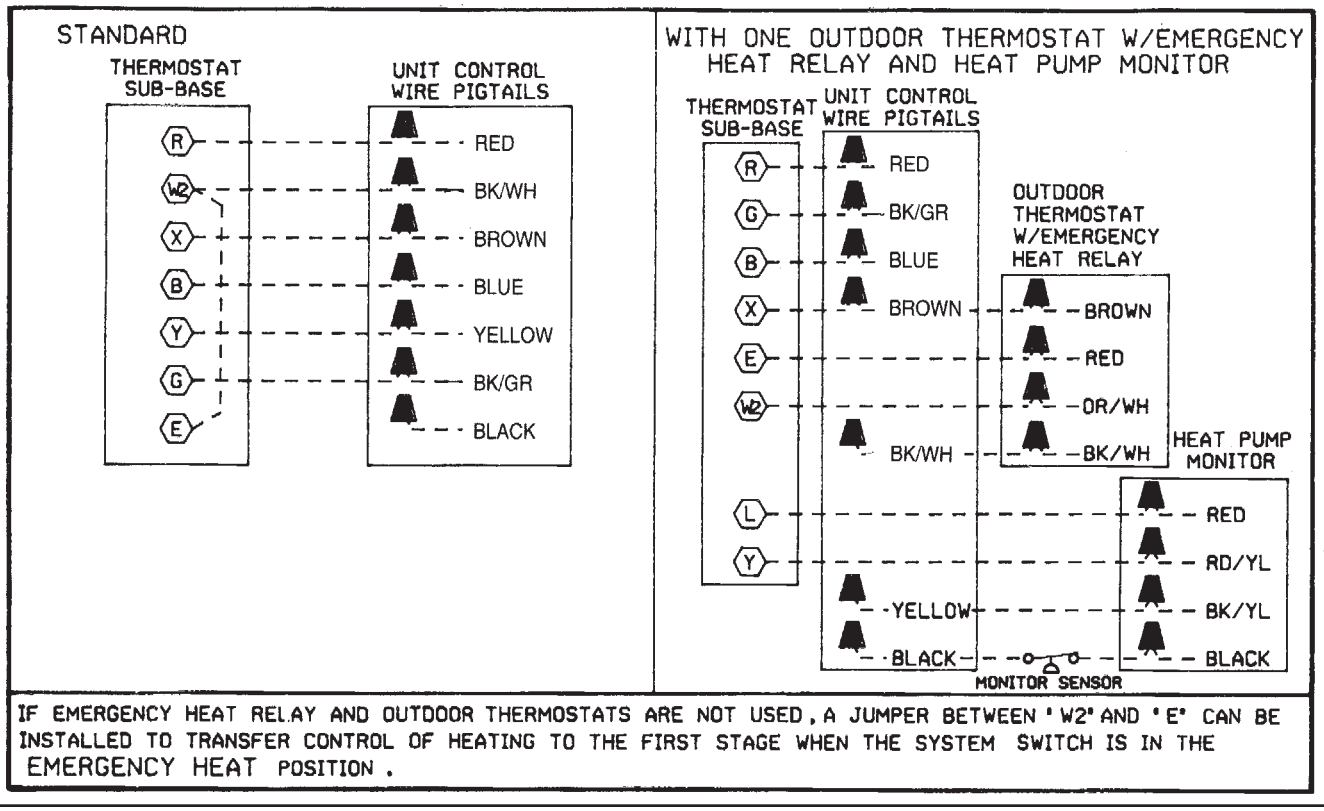


GROUNDING MAY ALSO BE ACCOMPLISHED BY GROUNDING THE POWER LINE CONDUIT TO THE UNIT. MAKE SURE THE CONDUIT NUT LOCKING TEETH HAVE PIERCED THE INSULATING PAINT FILM OF THE SIDE PANEL.

E. THERMOSTAT

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

FIGURE 11
VOLTAGE CONNECTIONS DIAGRAMS



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. See Table E for blower performance.

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 indoor condensate drain?
2. Is ductwork insulated, weatherproofed, with proper spacing to combustible materials?
3. Is air free to travel to and from outdoor coil? (See Figure 2.)
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 (if required) been on for at least 12 hours?
9. Is unit elevated to allow for outdoor coil condensate drainage during heating operation and defrost?

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. Turn thermostat system switch to “HEAT.” Unit should stop. Wait 5 minutes, then raise temperature setting to above room temperature. Unit should run in heating mode and after about 30 to 50 seconds auxiliary heaters, if installed, should come on.
9. Check the refrigerant charge using the instructions located on control box cover. Replace service port caps. Service port cores are for system access only and will leak if not tightly capped.
10. Turn thermostat system switch to proper mode “HEAT” or “COOl” and set thermostat to proper temperature setting. Record the following after the unit has run some time.

A. Operating Mode _____
B. Discharge Pressure (High) _____PSIG
C. Vapor Pressure at Compressor (Low) _____PSIG
D. Vapor Line Temperature at Compressor _____°F.
E. Indoor Dry Bulb_____°F.
F. Indoor Wet Bulb _____°F.
G. Outdoor Dry Bulb _____°F.
H. Outdoor Wet Bulb _____°F.
I. Voltage at Contactor _____Volts
J. Current at Contactor _____Amps
K. Model Number_____
L. Serial Number _____
M. Location_____
N. Owner _____
O. Date_____

11. Adjust discharge air grilles and balance system.
12. Check ducts for condensation and air leaks.
13. Check unit for tubing and sheet metal rattles.
14. Instruct the owner on operation and maintenance.
15. Leave “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. Do not move the thermostat to cycle unit without waiting five minutes. To do so may cause the compressor to stop on an automatic open overload device or blow a fuse. Poor electrical service can cause nuisance tripping in overloads or blow fuses.

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

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

Most single phase 208/240 volt units are equipped with a time delay control (TDC1). The control allows the blower to operate for up to 90 seconds after the thermostat is satisfied.

XVII. AUXILIARY HEAT

The amount of auxiliary heat required depends on the heat loss of the structure to be heated and the capacity of the heat pump. It is good practice to install strip heat to maintain at least 60ºF indoor temperatures in case of compressor failure. The auxiliary heat is energized by the second stage of the thermostat. The amount of electric heat that is allowed to come on, as determined by the output of the heat pump, may be controlled by an outdoor thermostat.

⚠ 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.

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. The reversing valve coil is de-energized when the changeover relay is energized.
2. In the heating mode, the first heat stage of the thermostat will energize the compressor contactor and the indoor blower relay. The second heat stage will turn on one or more supplementary resistance heaters. The reversing valve is energized except in defrost. If required or considered desirable, the resistance heat may also be controlled by outdoor thermostats.

XVIII. DEMAND DEFROST CONTROL

The demand defrost control is a printed circuit board assembly consisting of solid state control devices with electro-mechanical outputs. The demand defrost control monitors the outdoor ambient temperature, outdoor coil temperature, and the compressor run-time to determine when a defrost cycle is required.

DEFROST INITIATION

A defrost will be initiated when the three conditions below are satisfied:

1) The outdoor coil temperature is below 35°F.
2) The compressor has operated for at least 34 minutes with the outdoor coil temperature below 35°F.
3) The measured difference between the ambient temperature and the outdoor coil temperature is greater than the calculated delta T.

Additionally, a defrost will be initiated if six hours of accumulated compressor run-time has elapsed without a defrost with the outdoor coil temperature below 35°F.

DEFROST TERMINATION

Once a defrost is initiated, the defrost will continue until fourteen minutes has elapsed or the coil temperature has reached the terminate temperature. The terminate temperature is factory set at 70°F, although the temperature can be changed to 50°F, 60°F, 70°F or 80°F by relocating a jumper on the board.

TEMPERATURE SENSORS

The coil sensor is clipped to a tube on the outdoor coil at the point fed by the distribution tubes from the expansion device (short 3/8″ dia. tube). The air sensor is located behind a cover on the control access side of the unit.

If the ambient sensor fails the defrost control will initiate a defrost every 34 minutes with the coil temperature below 35°F.

If the coil sensor fails the defrost control will not initiate a defrost.

TEST MODE

The test mode is initiated by shorting the TEST pins. In this mode of operation, the enable temperature is ignored and all timers are sped up by a factor of 240. To initiate a manual defrost, short the TEST pins. Remove the short when the system switches to defrost mode. The defrost will terminate on time (14 minutes) or when the termination temperature has been achieved. *Short TEST pins again to terminate the defrost immediately.*

TROUBLE SHOOTING DEMAND DEFROST

Set the indoor thermostat select switch to heat and thermostat lever to a call for heat.

Jumper the “test pins” to put the unit into defrost. If the unit goes into defrost and comes back out of defrost, the indication is that the control is working properly.

If the unit did not go into defrost using the test pins, check to ensure that 24V is being supplied to the control board. If 24V is present then replace the control.

XIX. GENERAL DATA - RQNA-B MODELS
NOMINAL SIZES 2-4 TONS [7.1-14.6 kW]

Model RQNA - B Series	B024JK	B030JK	B036CK	B036JK
Cooling performance[1]				**Continued ->**
Gross Cooling Capacity Btu [kW]	24,400 [7.15]	31,400 [9.2]	36,600 [10.72]	36,600 [10.72]
EER, SEER[2]	11/13	11/13	11/13	11/13
Nominal CFM/ARI Rated CFM [L/s]	800/800 [378/378]	1000/1050 [472/495]	1200/1200 [566/566]	1200/1200 [566/566]
ARI Net Cooling Capacity Btu [kW]	23,600 [6.91]	30,200 [8.85]	35,400 [10.37]	35,400 [10.37]
Net Sensible Capacity Btu [kW]	17,900 [5.24]	22,100 [6.48]	26,300 [7.71]	26,300 [7.71]
Net Latent Capacity Btu [kW]	5,700 [1.67]	8,100 [2.37]	9,100 [2.67]	9,100 [2.67]
Net System Power kW	2.14	2.74	3.22	3.22
Heating Performance (Heat Pumps)				
High Temp. Btuh [kW] Ratiing	23,000 [6.74]	29,000 [8.5]	34,200 [10.02]	34,200 [10.02]
System Power KW / COP	1.95/3.4	2.44/3.4	2.91/3.4	2.91/3.4
Low Temp. Btuh [kW] Rating	12,900 [3.78]	16,100 [4.72]	19,500 [5.71]	19,500 [5.71]
System Power KW / COP	1.89/2	2.29/2	2.72/2.1	2.72/2.1
HSPF (Btu/Watts-hr)	7.7	7.7	7.7	7.7
Compressor				
No/Type	1/Copeland Scroll	1/Copeland Scroll	1/Copeland Scroll	1/Copeland Scroll
Outdoor Sound Rating (dB)[3]	76	76	76	76
Outdoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm] OD	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	14.51 [1.35]	16.32 [1.52]	11.2 [1.04]	11.2 [1.04]
Rows / FPI [FPcm]	1 / 22 [9]	1 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Indoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	5.54 [0.51]	7.39 [0.69]	7.39 [0.69]	7.39 [0.69]
Rows / FPI [FPcm]	2 / 15 [6]	2 / 15 [6]	2 / 15 [6]	2 / 15 [6]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]
Outdoor Fan - Type	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]	2700 [1274]	2700 [1274]	2700 [1274]	2700 [1274]
No. Motors/HP	1 at 1/5 HP	1 at 1/5 HP	1 at 1/5 HP	1 at 1/5 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 [228.6x177.8]	1/10x9 [254x228.6]	1/10x9 [254x228.6]	1/10x9 [254x228.6]
Drive Type/No. Speeds	Direct/2	Direct/3	Direct/1	Direct/1
No. Motors	1	1	1	1
Motor HP	1/4	1/2	1/3	1/3
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]	86 [2438]	93 [2637]	122 [3459]	122 [3459]
Weights				
Net Weight lbs. [kg]	391 [177]	444 [201]	471 [214]	468 [212]
Ship Weight lbs. [kg]	401 [182]	455 [206]	482 [219]	479 [217]

GENERAL DATA - RQNA-B MODELS
NOMINAL SIZES 2-4 TONS [7.1-14.6 kW]

Model RQNA - B Series	B042CK	B042JK	B048CK	B048JK
Cooling performance[1]				
Gross Cooling Capacity Btu [kW]	44,500 [13.04]	44,500 [13.04]	50,000 [14.65]	50,000 [14.65]
EER, SEER[2]	11/13	11/13	11/13	11/13
Nominal CFM/ARI Rated CFM [L/s]	1400/1400 [661/661]	1400/1400 [661/661]	1600/1600 [755/755]	1600/1600 [755/755]
ARI Net Cooling Capacity Btu [kW]	43,500 [12.75]	43,500 [12.75]	48,500 [14.21]	48,500 [14.21]
Net Sensible Capacity Btu [kW]	31,800 [9.32]	31,800 [9.32]	36,000 [10.55]	36,000 [10.55]
Net Latent Capacity Btu [kW]	11,700 [3.42]	11,700 [3.43]	12,500 [3.66]	12,500 [3.66]
Net System Power kW	3.96	3.96	4.41	4.41
Heating Performance (Heat Pumps)				
High Temp. Btuh [kW] Ratiing	39,500 [11.57]	39,500 [11.57]	46,000 [13.48]	46,000 [13.48]
System Power KW / COP	3.34/3.4	3.34/3.4	4.11/3.28	4.11/3.28
Low Temp. Btuh [kW] Rating	22,800 [6.68]	22,800 [6.68]	27,400 [8.03]	28,000 [8.2]
System Power KW / COP	3.18/2.1	3.18/2.1	3.86/2.08	3.86/2.08
HSPF (Btu/Watts-hr)	7.7	7.7	7.7	7.7
Compressor				
No/Type	1/Copeland Scroll	1/Copeland Scroll	1/Copeland Scroll	1/Copeland Scroll
Outdoor Sound Rating (dB)[3]	76	76	78	78
Outdoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm] OD	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	16.32 [1.52]	16.32 [1.52]	16.32 [1.52]	16.32 [1.52]
Rows / FPI [FPcm]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Indoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	7.39 [0.69]	7.39 [0.69]	7.39 [0.69]	7.39 [0.69]
Rows / FPI [FPcm]	2 / 15 [6]	2 / 15 [6]	2 / 15 [6]	2 / 15 [6]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]
Outdoor Fan - Type	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]	3300 [1557]	3300 [1557]	3000 [1416]	3000 [1416]
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 [254x228.6]	1/10x9 [254x228.6]	1/10x9 [254x228.6]	1/10x9 [254x228.6]
Drive Type/No. Speeds	Direct/2	Direct/2	Direct/2	Direct/2
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]	158 [4479]	158 [4479]	150 [4252]	150 [4252]
Weights				
Net Weight lbs. [kg]	508 [230]	505 [229]	500 [227]	510 [231]
Ship Weight lbs. [kg]	519 [235]	516 [234]	511 [232]	521 [236]

NOTES:

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

XX. MISCELLANEOUS

ELECTRICAL DATA – RQNA-B SERIES									
		-B024JK	-B030JK	-B036CK	-B036JK	-B042CK	-B042JK	-B048CK	-B048JK
Unit Information	Unit Operating Voltage Range	187-253	187-253	187-253	187-253	187-253	187-253	187-253	187-253
	Minimum Circuit Ampacity	17/17	21/21	16/16	24/24	24/24	31/31	26/26	36/36
	Minimum Overcurrent Protection Device Size	20/20	25/25	20/20	30/30	30/30	40/40	30/30	45/45
	Maximum Overcurrent Protection Device Size	25/25	30/30	25/25	35/35	35/35	45/45	35/35	50/50
Compressor Motor	No.	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
	Phase	1	1	3	1	3	1	3	1
	HP	2	2 1/2	3	3	3 1/2	3 1/2	4	4
	RPM	3450	3450	3450	3450	3450	3450	3450	3450
	Amps (RLA)	10.9/10.9	13.5/13.5	10.3/10.3	16/16	12.4/12.4	17.9/17.9	12.4/12.4	22/22
	Amps (LRA)	54/54	72.5/72.5	77/77	88/88	88/88	95/95	88/88	137/137
Condenser Motor	No.	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
	Phase	1	1	1	1	1	1	1	1
	HP	1/5	1/5	1/5	1/5	1/3	1/3	1/3	1/3
	Amps (FLA)	1.3	1.3	1.3	1.3	2	2	2	2
	Amps (LRA)	2.2	2.2	2.2	2.2	3.9	3.9	3.9	3.9
Evaporator Fan	No.	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
	Phase	1	1	1	1	1	1	1	1
	HP	1/4	1/2	1/3	1/3	3/4	3/4	3/4	3/4
	Amps (FLA)	1.5	2.4	1.7	1.7	6	6	6	6
	Amps (LRA)	2.4	5.1	2.5	2.5	0	0	0	0

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

DIRECT-DRIVE BLOWER 208 AIRFLOW PERFORMANCE

Nominal Cooling Capacity [kW]	Motor Speed From Factory	Manufacturer Recommended Airflow Range (Min / Max)	Blower Size Motor HP & # of Speeds	Motor Speed		CFM Air Delivery / RPM / Watts - 208 Volts Side Discharge - Wet Coil External Static Pressure (IWC)						
						0.1 [.02]	0.2 [.05]	0.3 [.07]	0.4 [.10]	0.5 [.12]	0.6 [.15]	0.7 [.17]
2.0 Ton [7.03]	HIGH	700 CFM / 900 CFM [330.4 L/s / 424.8 L/s]	9 x 7 Blower 1/4 HP, 2 Speed Motor	Low	**CFM [L/s]**	675 [318.6]	657 [310]	634 [299.2]	602 [284.1]	560 [264.3]	505 [238.3]	435 [205.3]
					RPM	695	785	870	905	940	980	1020
					Watts	221	214	203	191	171	163	149
				High	**CFM [L/s]**	898 [423.8]	861 [406.3]	822 [387.9]	777 [366.7]	721 [340.3]	651 [307.2]	562 [265.2]
					RPM	940	965	995	1020	1045	1070	1090
					Watts	292	278	266	253	239	221	199
2.5 Ton [8.79]	LOW	875 CFM / 1125 CFM [413 L/s / 530.9 L/s]	10 x 9 Blower 1/2 HP, 2 Speed Motor	Low	**CFM [L/s]**	1076 [507.8]	1059 [499.8]	1032 [470]	996 [470.1]	950 [448.3]	896 [422.9]	832 [392.7]
					RPM	730	775	820	865	905	940	975
					Watts	356	349	341	331	320	305	287
				Medium	**CFM [L/s]**	1222 [576.7]	1197 [564.9]	1179 [556.4]	1162 [548.4]	1137 [536.6]	1097 [517.7]	1033 [487.5]
					RPM	765	810	855	890	920	960	995
					Watts	423	415	407	397	386	370	351
				High	**CFM [L/s]**	1514 [714.5]	1461 [689.5]	1415 [667.8]	1370 [646.6]	1322 [623.9]	1266 [597.5]	1197 [564.9]
					RPM	895	930	965	985	1005	1025	1045
					Watts	538	514	493	473	454	434	412
3.0 Ton [10.55]	High	1050 CFM / 1350 CFM [495.5 L/s / 637.1 L/s]	10 x 9 Blower 1/3 HP, 1 Speed Motor	High	**CFM [L/s]**	1222 [576.7]	1201 [566.8]	1173 [553.6]	1137 [536.6]	1090 [514.4]	1030 [486.1]	954 [450.2]
					RPM	785	805	830	870	905	950	990
					Watts	355	352	346	340	331	320	306
3.5 Ton [12.31]	Low	1225 CFM / 1575 CFM [578.1 L/s / 743.3 L/s]	10 x 9 Blower 3/4 HP, 2 Speed ECM Motor	Low	**CFM [L/s]**	1455 [686.7]	1431 [675.4]	1396 [658.8]	1360 [641.8]	1315 [620.6]	1285 [606.5]	1241 [585.7]
					RPM	824	856	889	931	968	1009	1041
					Watts	268	280	288	303	311	325	331
				High	**CFM [L/s]**	1559 [735.8]	1530 [722.1]	1488 [702.3]	1454 [686.2]	1417 [668.7]	1375 [648.9]	1336 [630.5]
					RPM	870	893	932	968	1007	1036	1072
					Watts	321	327	338	351	364	371	381
4 Ton [14.07]	Low	1350 CFM / 1700 CFM [637.1 L/s / 802.3 L/s]	10 x 9 Blower 3/4 HP, 2 Speed ECM Motor	Low	**CFM [L/s]**	1675 [790.5]	1658 [782.5]	1610 [759.8]	1580 [745.7]	1535 [724.4]	1491 [703.7]	1422 [671.1]
					RPM	923	944	979	1013	1045	1077	1098
					Watts	390	401	412	425	433	440	432
				High	**CFM [L/s]**	1770 [835.3]	1751 [826.4]	1706 [805.1]	1672 [789.1]	1624 [766.4]	1555 [73.2]	1463 [690.5]
					RPM	966	989	1018	1050	1078	1100	1115
					Watts	454	466	473	486	490	481	460

NOTE: EFFECT OF ELECTRIC HEAT STRIP ON AIRFLOW PERFORMANCE IS NEGLIGIBLE.

MINIMUM RECOMMENDED FILTER SIZES			
COOLING CAPACITY	1.5 TON	2.0 TON	2.5 - 4.0 TON
MINIMUM FILTER SIZE	16" X 20" X 1"	20" X 20" X 1"	24" X 24" X 1"

DOWN DISCHARGE PRESSURE DROP						
CFM	600	800	1000	1200	1400	1600
PRESS. DROP (IN. W.C.)	0	0.01	0.02	0.03	0.05	0.07

DIRECT-DRIVE BLOWER 230 AIRFLOW PERFORMANCE

Nominal Cooling Capacity [kW]	Motor Speed From Factory	Manufacturer Recommended Airflow Range (Min / Max)	Blower Size Motor HP & # of Speeds	Motor Speed		CFM Air Delivery / RPM / Watts - 230 Volts Side Discharge - Wet Coil External Static Pressure (IWC)						
						0.1 [.02]	0.2 [.05]	0.3 [.07]	0.4 [.10]	0.5 [.12]	0.6 [.15]	0.7 [.17]
2.0 Ton [7.03]	High	700 CFM / 900 CFM [330.4 L/s / 424.8 L/s]	9 x 7 Blower 1/4 HP, 2 Speed Motor	Low	**CFM [L/s]**	771 [363.9]	751 [354.4]	725 [342.2]	691 [326.1]	645 [304.4]	584 [275.6]	546 [257.7]
					RPM	825	870	910	950	985	1010	1030
					Watts	253	242	230	217	204	189	181
				High	**CFM [L/s]**	946 [446.5]	922 [435.1]	882 [416.3]	830 [391.7]	769 [362.9]	701 [330.8]	630 [297.3]
					RPM	990	1015	1035	1055	1070	1085	1100
					Watts	315	303	288	273	257	241	226
2.5 Ton [8.79]	Low	875 CFM / 1125 CFM [413 L/s / 530.9 L/s]	10 x 9 Blower 1/2 HP, 2 Speed Motor	Low	**CFM [L/s]**	1206 [569.2]	1182 [557.8]	1157 [546]	1128 [532.4]	1091 [514.9]	1044 [492.7]	983 [463.9]
					RPM	760	815	870	910	950	975	1000
					Watts	419	406	394	381	368	353	334
				Medium	**CFM [L/s]**	1411 [665.9]	1368 [645.6]	1327 [626.3]	1285 [606.5]	1238 [584.3]	1183 [558.3]	1116 [526.7]
					RPM	865	900	935	970	1000	1020	1035
					Watts	498	498	481	464	447	431	391
				High	**CFM [L/s]**	1641 [774.5]	1577 [744.3]	1515 [715]	1455 [656.7]	1393 [657.4]	1329 [627.2]	1262 [595.6]
					RPM	980	1000	1020	1035	1050	1065	1080
					Watts	589	565	543	523	503	481	456
3.0 Ton [10.55]	High	1050 CFM / 1350 CFM [495.5 L/s / 637.1 L/s]	10 x 9 Blower 1/3 HP, 1 Speed Motor	High	**CFM [L/s]**	1391 [656.5]	1357 [640.4]	1312 [619.2]	1258 [593.7]	1201 [566.8]	1145 [540.4]	1093 [515.8]
					RPM	835	875	915	940	965	985	1000
					Watts	428	419	406	392	378	365	355
3.5 Ton [12.31]	Low	1225 CFM / 1575 CFM [578.1 L/s / 743.3 L/s]	10 x 9 Blower 3/4 HP, 2 Speed ECM Motor	Low	**CFM [L/s]**	1467 [692.3]	1439 [679.1]	1408 [664.5]	1360 [641.8]	1331 [628.2]	1287 [749]	1259 [594.2]
					RPM	831	854	894	932	972	1005	1042
					Watts	276	282	297	307	319	326	341
				High	**CFM [L/s]**	1550 [731.5]	1520 [717.8]	1486 [701.3]	1449 [683.9]	1407 [664]	1382 [652.2]	1337 [631]
					RPM	867	890	930	974	1003	1039	1073
					Watts	317	323	339	355	362	377	385
4 Ton [14.07]	Low	1350 CFM / 1700 CFM [637.1 L/s / 802.3 L/s]	10 x 9 Blower 3/4 HP, 2 Speed ECM Motor	Low	**CFM [L/s]**	1692 [798.5]	1661 [783.9]	1633 [770.7]	1589 [749.9]	1560 [736.2]	1512 [713.6]	1442 [680.5]
					RPM	931	950	982	1016	1054	1082	1103
					Watts	404	409	424	434	450	453	443
				High	**CFM [L/s]**	1748 [825]	1718 [810.8]	1686 [795.7]	1647 [777.3]	1616 [762.7]	1543 [728.2]	1472 [694.7]
					RPM	955	978	1010	1043	1073	1096	1111
					Watts	440	446	462	475	484	473	459

NOTE: EFFECT OF ELECTRIC HEAT STRIP ON AIRFLOW PERFORMANCE IS NEGLIGIBLE.

MINIMUM RECOMMENDED FILTER SIZES			
COOLING CAPACITY	1.5 TON	2.0 TON	2.5 - 4.0 TON
MINIMUM FILTER SIZE	16" X 20" X 1"	20" X 20" X 1"	24" X 24" X 1"

DOWN DISCHARGE PRESSURE DROP						
CFM	600	800	1000	1200	1400	1600
PRESS. DROP (IN. W.C.)	0	0.01	0.02	0.03	0.05	0.07

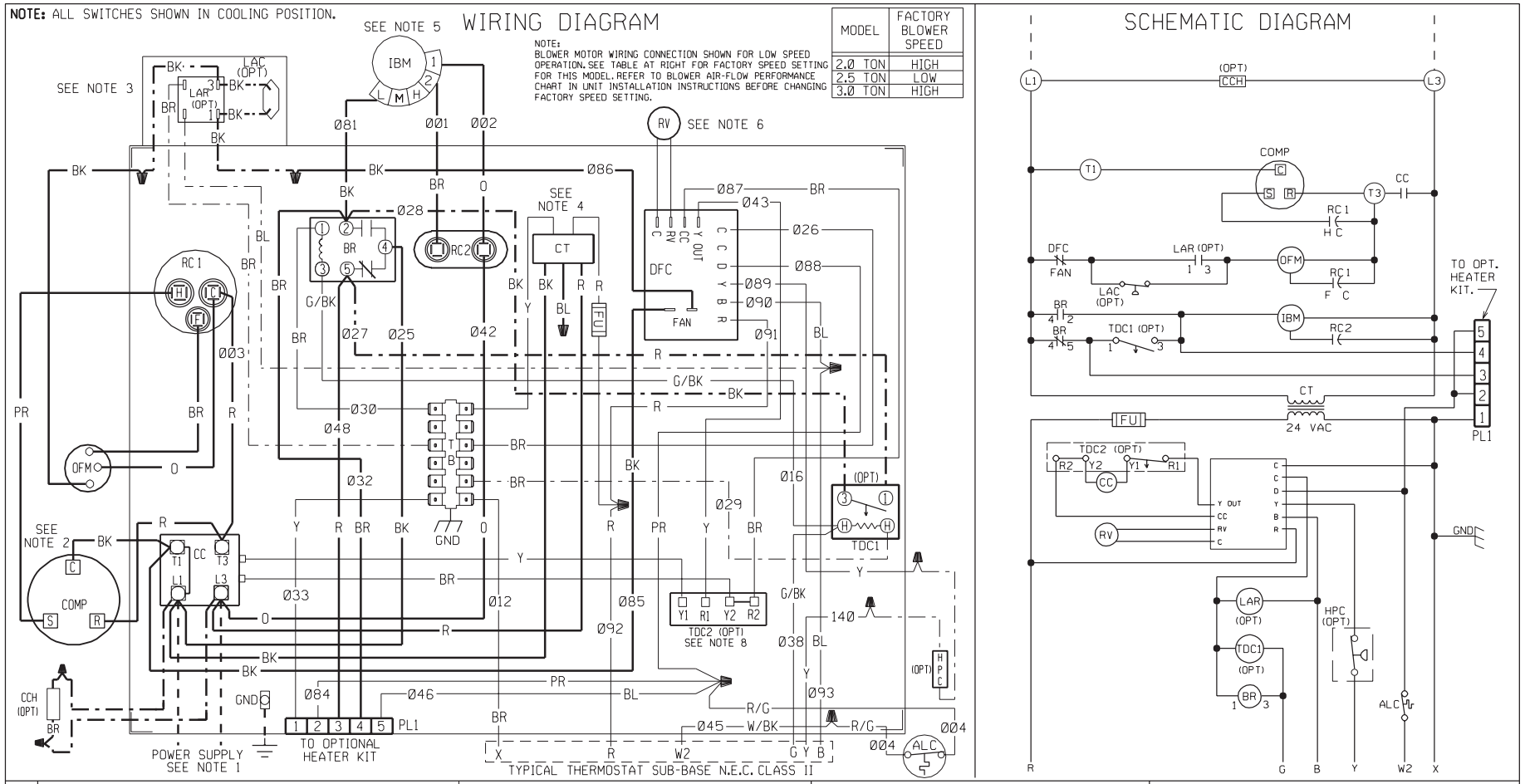
208-240 VOLT, SINGLE PHASE, 60 HZ, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION

SINGLE POWER SUPPLY FOR UNIT AND HEATER KIT										SEPARATE POWER SUPPLY FOR UNIT AND HEATER KIT				
Unit Model No. RQNA-	Heater Kit						Heat Pump			Heater Kit		Heat Pump		
	Model No. RXQJ-	No. of Elements	No. of Sequence Steps	kW 208/240V	KBTU/Hr 208/240V	Amps 208/240V	Min. Circuit Ampacity 208/240V	Overcurrent Protective Device Size		Min. Circuit Ampacity 208/240V	Max. Fuse Size 208/240V	Min. Circuit Ampacity 208/240V	Overcurrent Protective Device Size	
								Min./Max. @ 208 V	Min./Max. @ 240 V				Min./Max. @ 208 V	Min./Max. @ 240 V
B024JK	No Heat	–	–	–	–	–	17/17	20/25	20/25	–	–	17/17	20/25	20/25
	A05J	1	1	3.6/4.8	12.28/16.38	17.3/20.0	39/42	40/40	45/45	22/25	25/25	–	–	–
	A10J	2	2	7.2/9.6	24.56/32.75	34.6/40.0	60/67	60/60	70/70	44/50	45/50	–	–	–
B030JK	No Heat	–	–	–		–	21/21	25/30	25/30	–	–	21/21	25/30	25/30
	A05J	1	1	3.6/4.8	12.28/16.38	17.3/20.0	43/46	45/50	50/50	22/25	25/25	–	–	–
	A10J	2	2	7.2/9.6	24.56/32.75	34.6/40.0	64/71	70/70	80/80	44/50	45/50	–	–	–
B036JK	No Heat	–	–	–		–	24/24	30/35	30/35	–	–	24/24	30/35	30/35
	A10J	2	2	7.2/9.6	24.56/32.75	34.6/40.0	67/74	70/70	80/80	44/50	45/50	–	–	–
	A15J	3	2	10.8/14.4	36.84/49.13	51.9/60.0	88/99	90/90	100/100	65/75	70/80	–	–	–
B042JK	No Heat	–	–	–		–	31/31	35/45	35/45	–	–	31/31	35/45	35/45
	B10J	2	2	7.2/9.6	24.56/32.75	34.6/40.0	74/81	80/80	90/90	44/50	45/50	–	–	–
	B15J	3	2	10.8/14.4	36.84/49.13	51.9/60.0	96/106	100/100	110/110	65/75	70/80	–	–	–
B048JK	No Heat	–	–	–		–	36/36	45/50	45/50	–	–	36/36	45/50	45/50
	B10J	2	2	7.2/9.6	24.56/32.75	34.6/40.0	79/86	80/90	90/90	44/50	45/50	–	–	–
	B15J	3	2	10.8/14.4	36.84/49.13	51.9/60.0	101/111	110/110	125/125	65/75	70/80	–	–	–

208-240 VOLT, THREE PHASE, 60 HZ, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION

SINGLE POWER SUPPLY FOR UNIT AND HEATER KIT										SEPARATE POWER SUPPLY FOR UNIT AND HEATER KIT				
Unit Model No. RQNA-	Heater Kit						Heat Pump			Heater Kit		Heat Pump		
	Model No. RXQJ-	No. of Elements	No. of Sequence Steps	kW 208/240V	KBTU/Hr 208/240V	Amps 208/240V	Min. Circuit Ampacity 208/240V	Overcurrent Protective Device Size		Min. Circuit Ampacity 208/240V	Max. Fuse Size 208/240V	Min. Circuit Ampacity 208/240V	Overcurrent Protective Device Size	
								Min./Max. @ 208 V	Min./Max. @ 240 V				Min./Max. @ 208 V	Min./Max. @ 240 V
B036CK	No Heat	–	–	–		–	16/16	20/25	20/25	–	–	16/16	20/25	20/25
	A10C	3	3	7.2/9.6	24.56/32.75	20.0/23.1	41/45	45/45	45/45	25/29	25/30	–	–	–
	A15C	3	3	10.8/14.4	36.84/49.13	30.1/34.7	54/60	60/60	60/60	38/44	40/45	–	–	–
B042CK	No Heat	–	–	–		–	24/24	30/35	30/35	–	–	24/24	30/35	30/35
	A10C	3	3	7.2/9.6	24.56/32.75	20.0/23.1	49/53	50/50	60/60	25/29	25/30	–	–	–
	A15C	3	3	10.8/14.4	36.84/49.13	30.1/34.7	62/67	70/70	70/70	38/44	40/45	–	–	–
B048CK	No Heat	–	–	–		–	26/26	30/35	30/35	–	–	26/26	30/35	30/35
	A10C	3	3	7.2/9.6	24.56/32.75	20.0/23.1	51/55	60/60	60/60	25/29	25/30	–	–	–
	A15C	3	3	10.8/14.4	36.84/49.13	30.1/34.7	63/69	70/70	70/70	38/44	40/45	–	–	–

FIGURE 15
WIRING DIAGRAM



COMPONENT CODE

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

NOTES:

1. CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
2. COMPRESSOR MOTOR THERMALLY PROTECTED.
3. IF LAC/LAR IS NOT USED, CONNECT BLACK WIRE FROM OFM TO WIRE NUT FROM DR
4. TRANSFORMER FACTORY WIRED FOR 230 VOLTS. USE RED AND BLUE LEADS FOR 208 VOLTS.
5. MOTOR FACTORY WIRED FOR CORRECT SPEED.
6. THIS COMPONENT ENERGIZED IN HEATING.
7. SEE FUSE LABEL ON CONTROL BOX COVER FOR FUSE SIZING AND CLASSIFICATION.
8. BROWN & 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. AND LOCAL CODES AS APPLICABLE.

WIRE COLOR CODE

BK__BLACK	GY__GRAY	R___RED
BR__BROWN	O___ORANGE	W___WHITE
BL__BLUE	PK__PINK	Y___YELLOW
G___GREEN	PR__PURPLE	

ELECTRICAL WIRING DIAGRAM

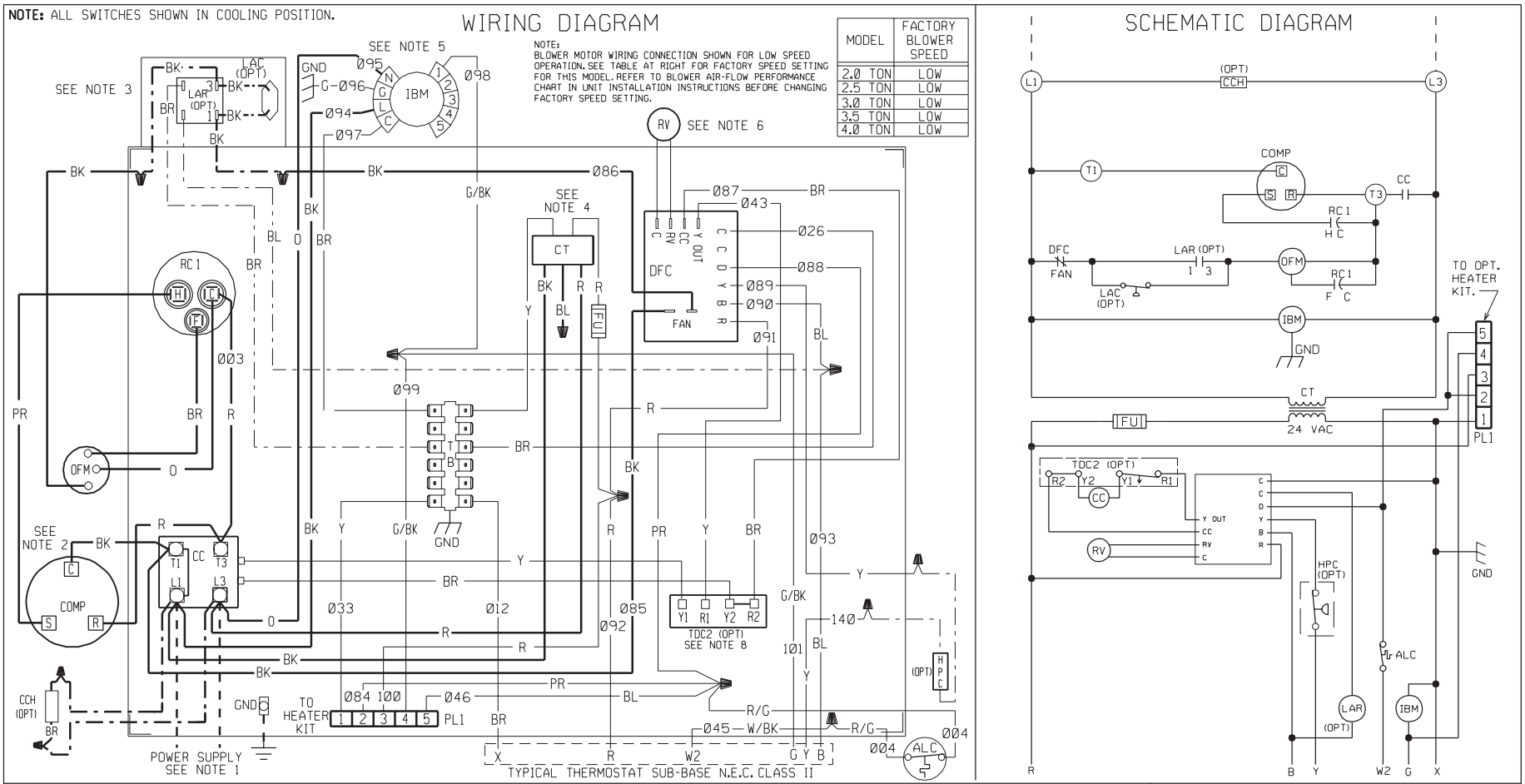
PACKAGE HEAT PUMP

1 PH, 208-230 VOLT
PSC INDOOR BLOWER MOTOR

DR. BY	APP. BY	DATE	DWG. NO.	REV
KDF		03-15-05	90-23621-12	04

DWG. NO. 90-23621-12 REV 04

FIGURE 16
WIRING DIAGRAM



COMPONENT CODE

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

NOTES:

1. CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
2. COMPRESSOR MOTOR THERMALLY PROTECTED.
3. IF LAC/LAR IS NOT USED, CONNECT BLACK WIRE FROM OFM TO WIRE NUT FROM DR
4. TRANSFORMER FACTORY WIRED FOR 230 VOLTS. USE RED AND BLUE LEADS FOR 208 VOLTS.
5. MOTOR FACTORY WIRED FOR CORRECT SPEED.
6. THIS COMPONENT ENERGIZED IN HEATING.
7. SEE FUSE LABEL ON CONTROL BOX COVER FOR FUSE SIZING AND CLASSIFICATION.
8. BROWN & 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. AND LOCAL CODES AS APPLICABLE.

WIRE COLOR CODE

BK__BLACK	GY__GRAY	R___RED
BR__BROWN	O___ORANGE	W___WHITE
BL__BLUE	PK__PINK	Y___YELLOW
G___GREEN	PR__PURPLE	

ELECTRICAL WIRING DIAGRAM

PACKAGE HEAT PUMP

1 PH, 208-230 VOLT
X-13 INDOOR BLOWER MOTOR

DR. BY	APP. BY	DATE	DWG. NO.	REV
KDF		03-15-05	90-23621-13	05

DWG. NO. 90-23621-13 REV 05

FIGURE 17
WIRING DIAGRAM

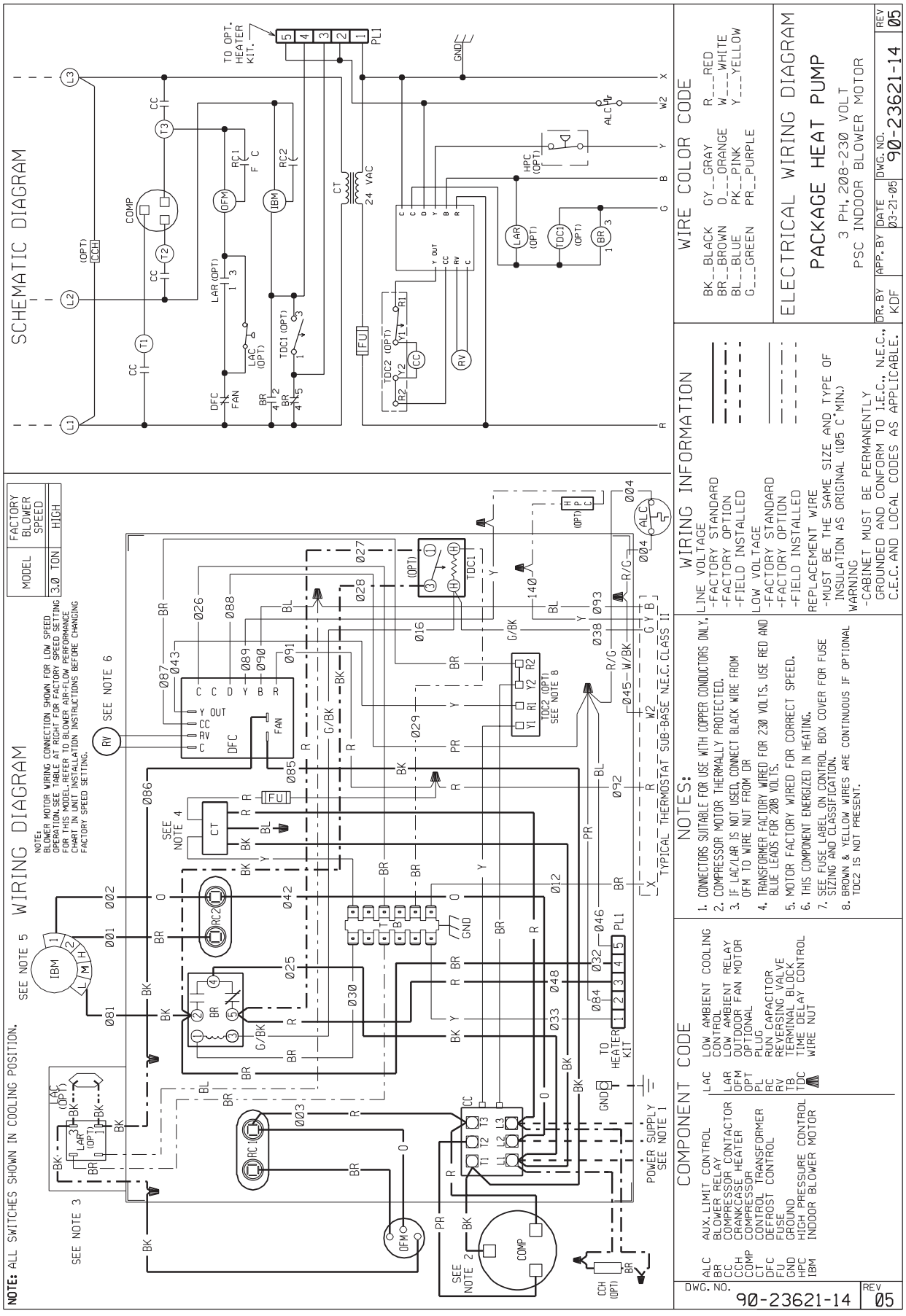
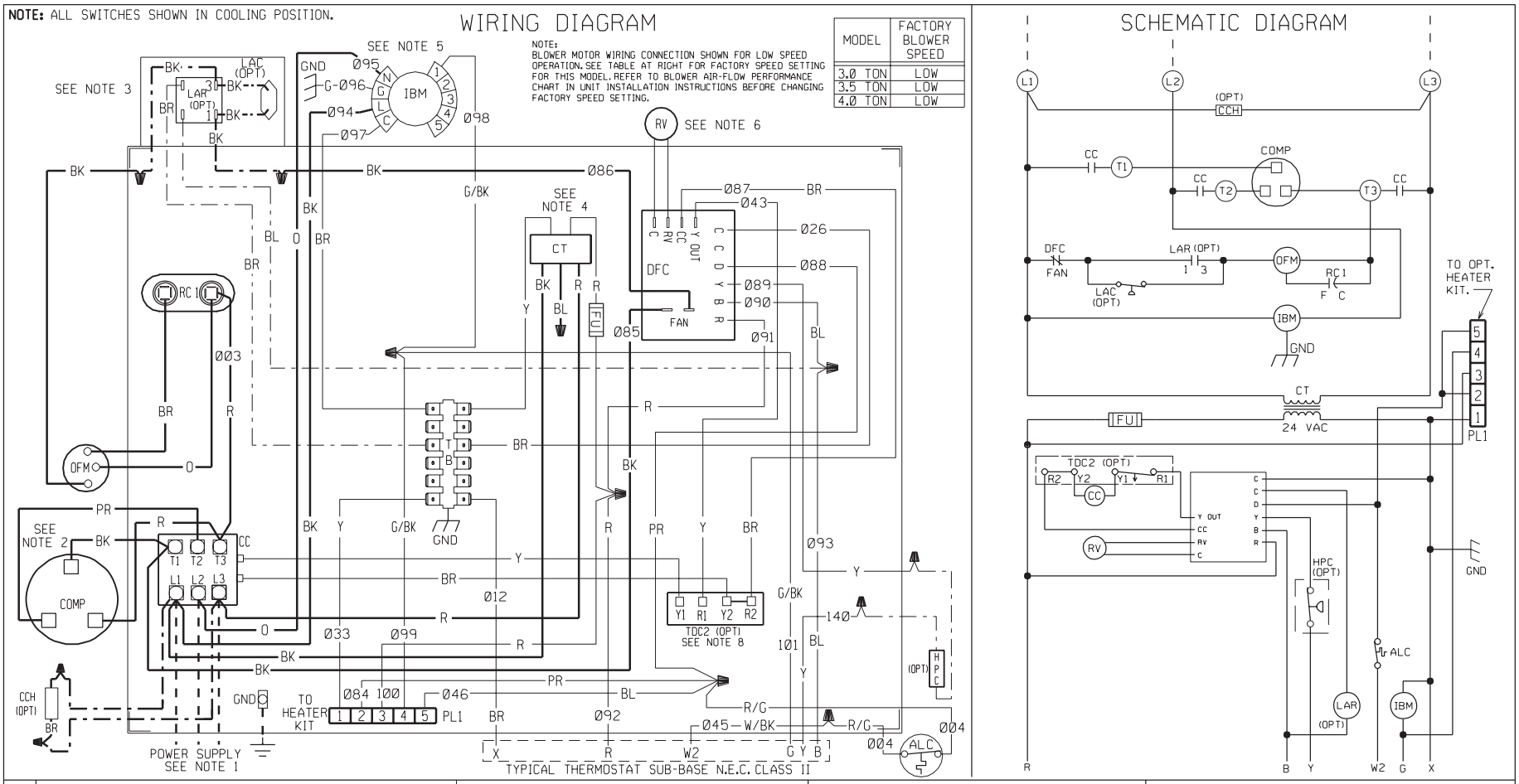


FIGURE 18
WIRING DIAGRAM



COMPONENT CODE

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

NOTES:

1. CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
2. COMPRESSOR MOTOR THERMALLY PROTECTED.
3. IF LAC/LAR IS NOT USED, CONNECT BLACK WIRE FROM OFM TO WIRE NUT FROM DR
4. TRANSFORMER FACTORY WIRED FOR 230 VOLTS. USE RED AND BLUE LEADS FOR 208 VOLTS.
5. MOTOR FACTORY WIRED FOR CORRECT SPEED.
6. THIS COMPONENT ENERGIZED IN HEATING.
7. SEE FUSE LABEL ON CONTROL BOX COVER FOR FUSE SIZING AND CLASSIFICATION.
8. BROWN & 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. AND LOCAL CODES AS APPLICABLE.

WIRE COLOR CODE

BK__BLACK	GY__GRAY	R___RED
BR__BROWN	O___ORANGE	W___WHITE
BL__BLUE	PK__PINK	Y___YELLOW
G___GREEN	PR__PURPLE	

ELECTRICAL WIRING DIAGRAM

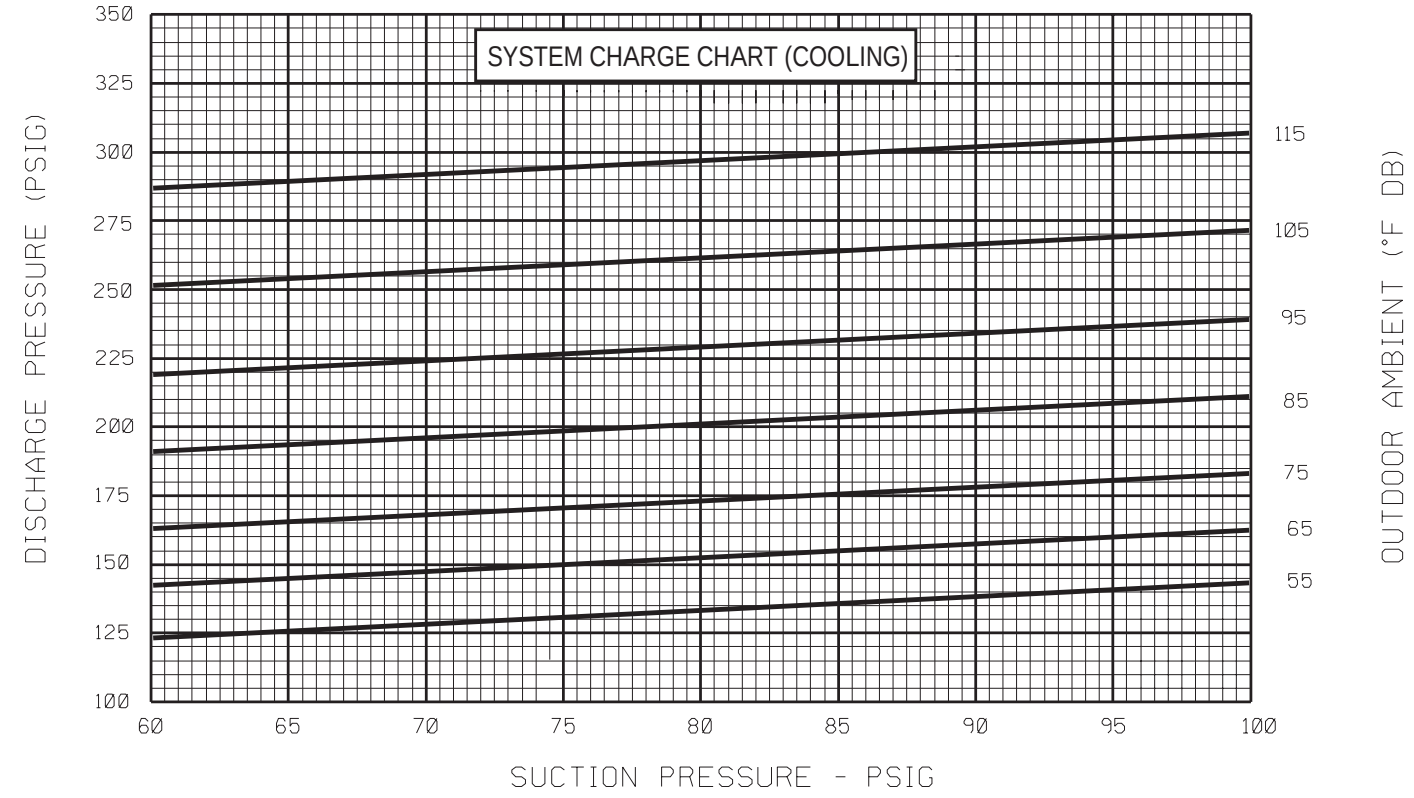
PACKAGE HEAT PUMP

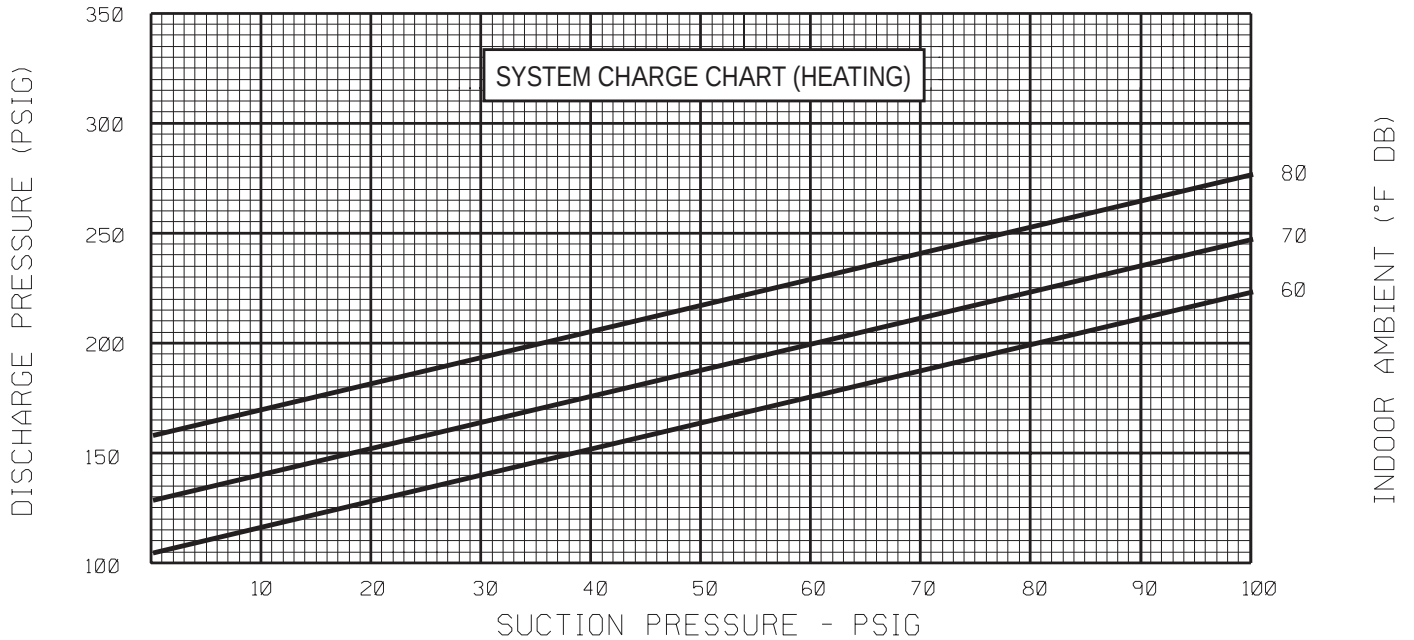
3 PH, 208-230 VOLT
X-13 INDOOR BLOWER MOTOR

DR. BY	APP. BY	DATE	DWG. NO.	REV
KDF		03-15-05	90-23621-15	05

DWG. NO. 90-23621-15 REV 05

2.0 TON HP





CAUTION: BEFORE FINAL REFRIGERANT CHECK, INDOOR RETURN AIR TEMPERATURE MUST BE BETWEEN 72°F & 76°F DB AT 50% R.H. (COOLING), AND NO ICE ON OUTDOOR COILS (HEATING).

INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND DISCHARGE PORTS ON UNIT.
2. MEASURE AIR TEMPERATURE TO: (a) OUTDOOR COIL FOR COOLING, (b) INDOOR COIL FOR HEATING.
3. PLACE AN "X" ON THE APPROPRIATE CHART WHERE THE SUCTION AND DISCHARGE 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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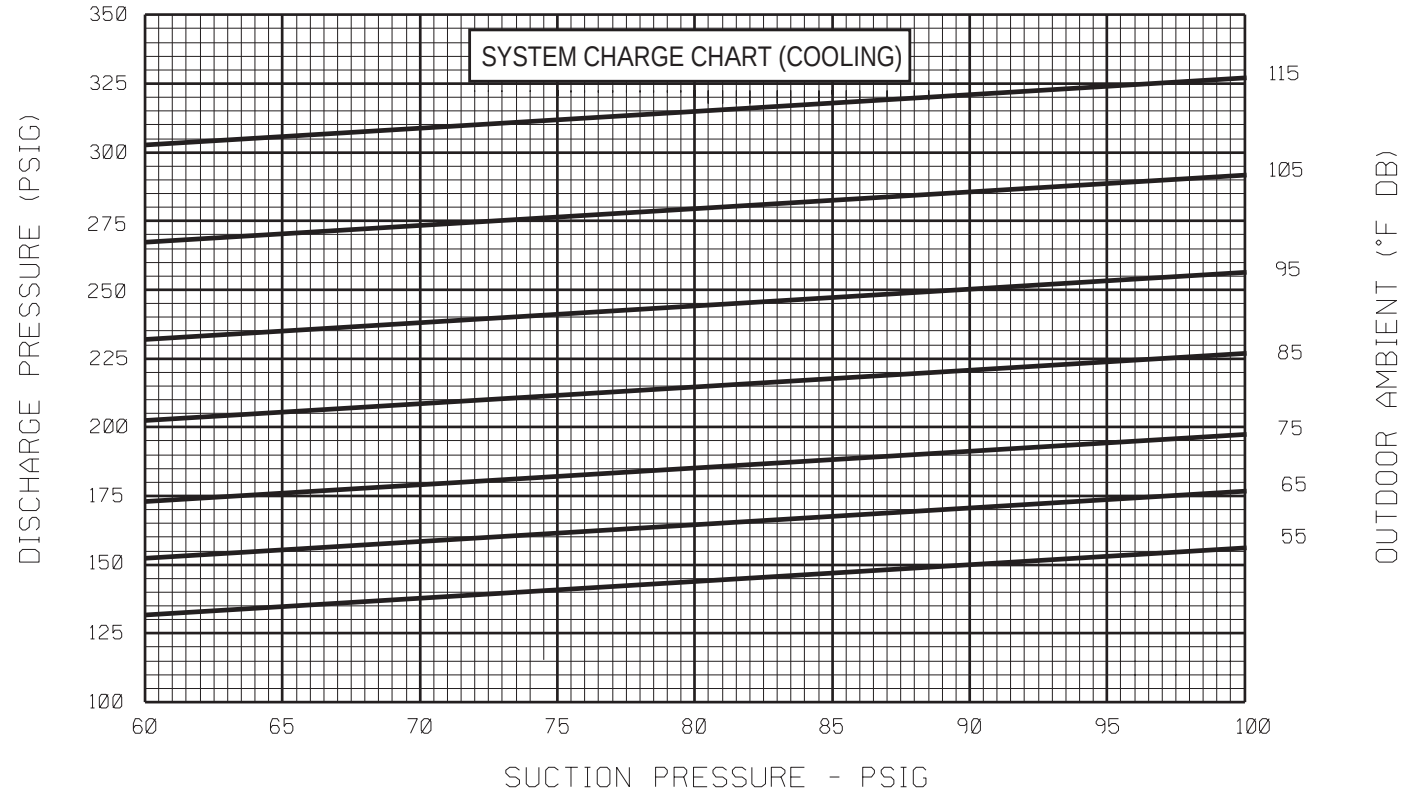
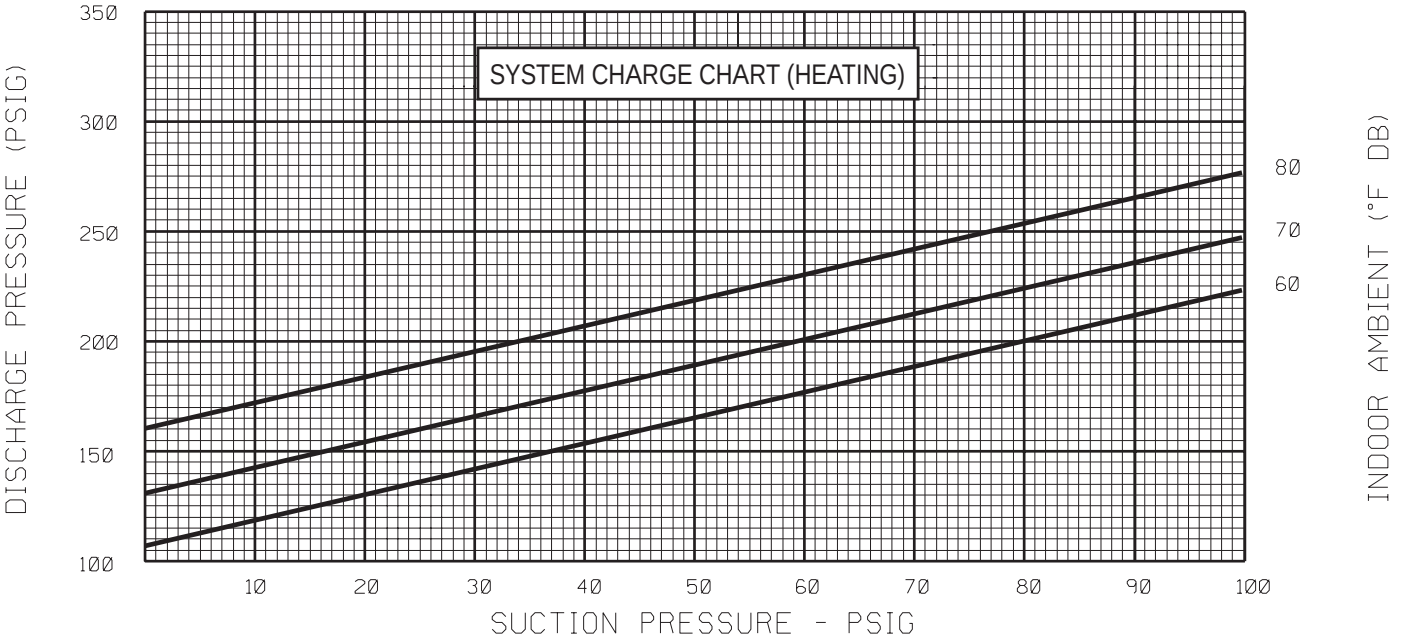
2.5 TON HP





CAUTION: BEFORE FINAL REFRIGERANT CHECK, INDOOR RETURN AIR TEMPERATURE MUST BE BETWEEN 72°F & 76°F DB AT 50% R.H. (COOLING), AND NO ICE ON OUTDOOR COILS (HEATING).

INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND DISCHARGE PORTS ON UNIT.
2. MEASURE AIR TEMPERATURE TO: (a) OUTDOOR COIL FOR COOLING, (b) INDOOR COIL FOR HEATING.
3. PLACE AN "X" ON THE APPROPRIATE CHART WHERE THE SUCTION AND DISCHARGE 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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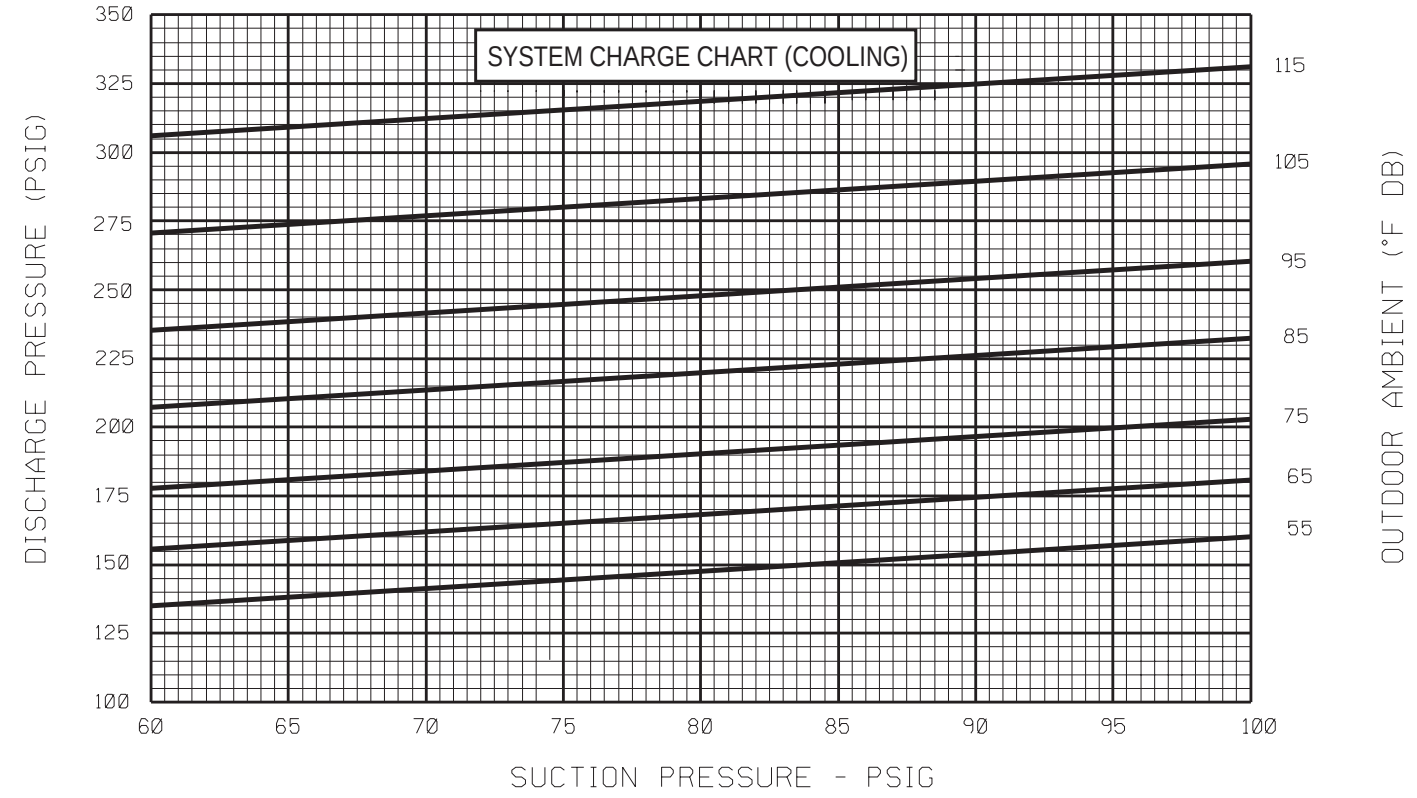
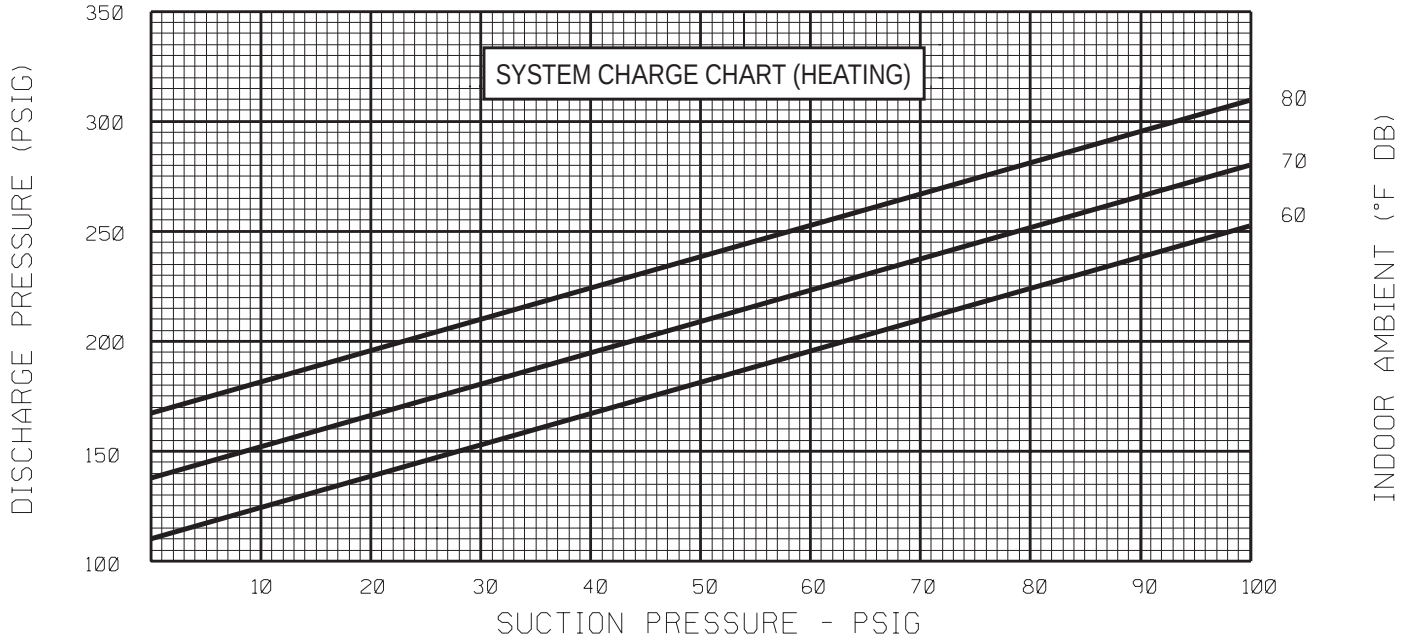
3.0 TON HP





CAUTION: BEFORE FINAL REFRIGERANT CHECK, INDOOR RETURN AIR TEMPERATURE MUST BE BETWEEN 72°F & 76°F DB AT 50% R.H. (COOLING), AND NO ICE ON OUTDOOR COILS (HEATING).

INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND DISCHARGE PORTS ON UNIT.
2. MEASURE AIR TEMPERATURE TO: (a) OUTDOOR COIL FOR COOLING, (b) INDOOR COIL FOR HEATING.
3. PLACE AN "X" ON THE APPROPRIATE CHART WHERE THE SUCTION AND DISCHARGE 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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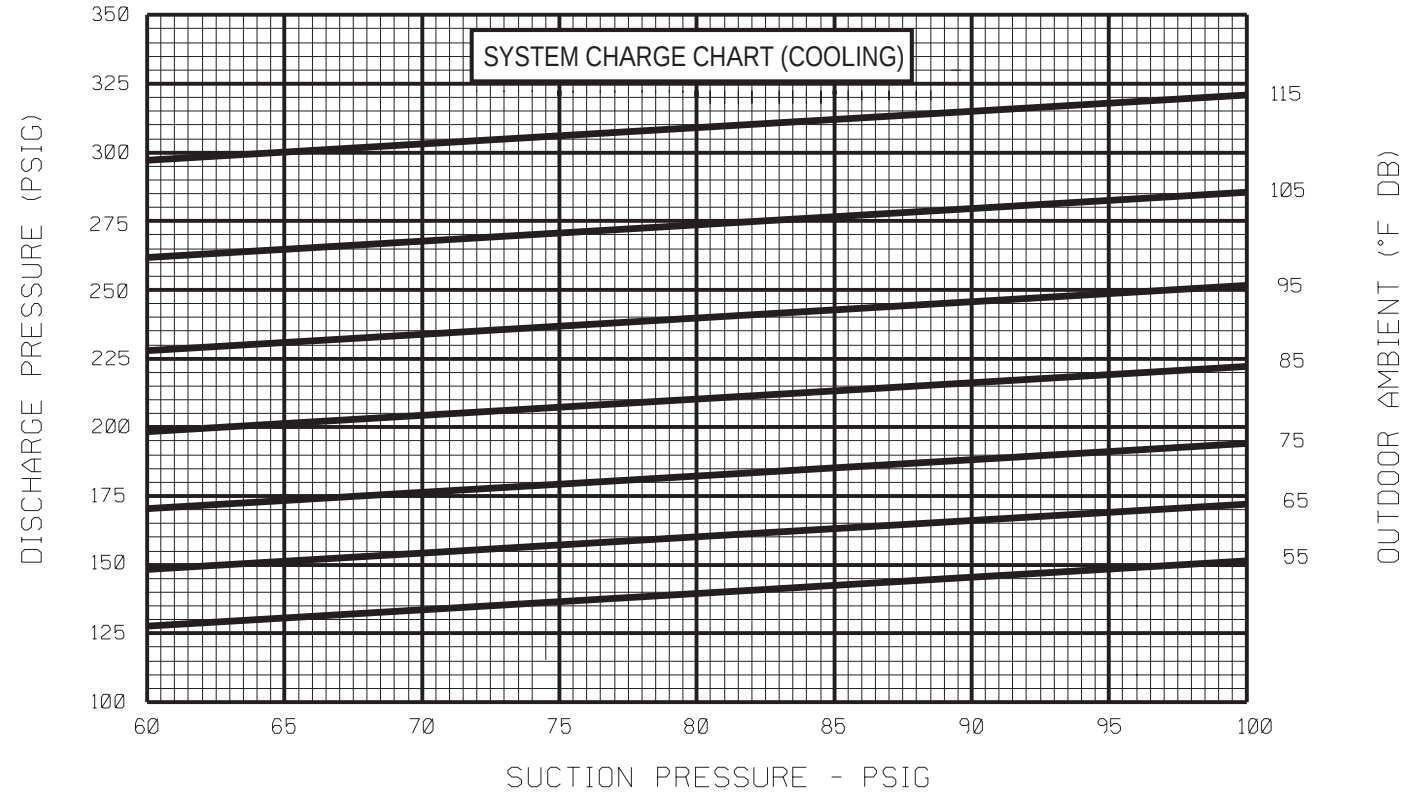
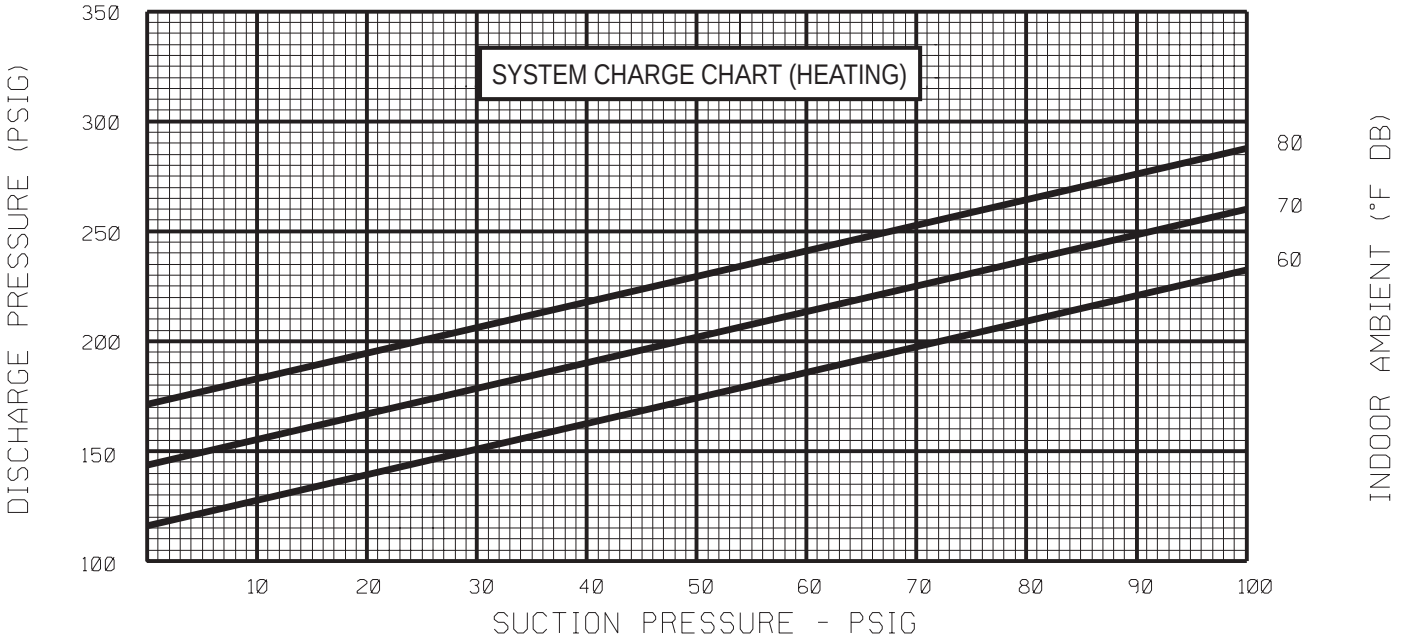
3.5 TON HP





CAUTION: BEFORE FINAL REFRIGERANT CHECK, INDOOR RETURN AIR TEMPERATURE MUST BE BETWEEN 72°F & 76°F DB AT 50% R.H. (COOLING), AND NO ICE ON OUTDOOR COILS (HEATING).

INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND DISCHARGE PORTS ON UNIT.
2. MEASURE AIR TEMPERATURE TO: (a) OUTDOOR COIL FOR COOLING, (b) INDOOR COIL FOR HEATING.
3. PLACE AN "X" ON THE APPROPRIATE CHART WHERE THE SUCTION AND DISCHARGE 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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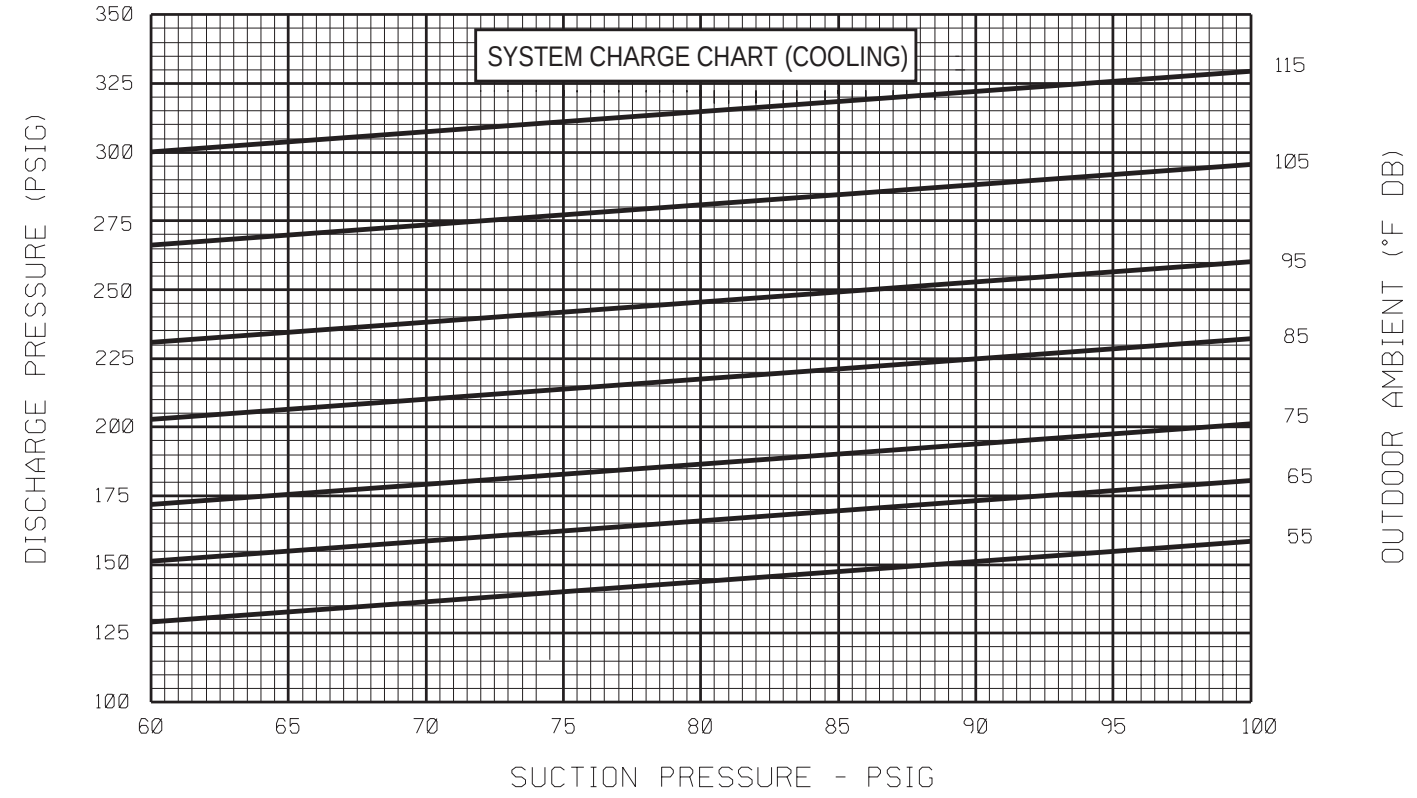
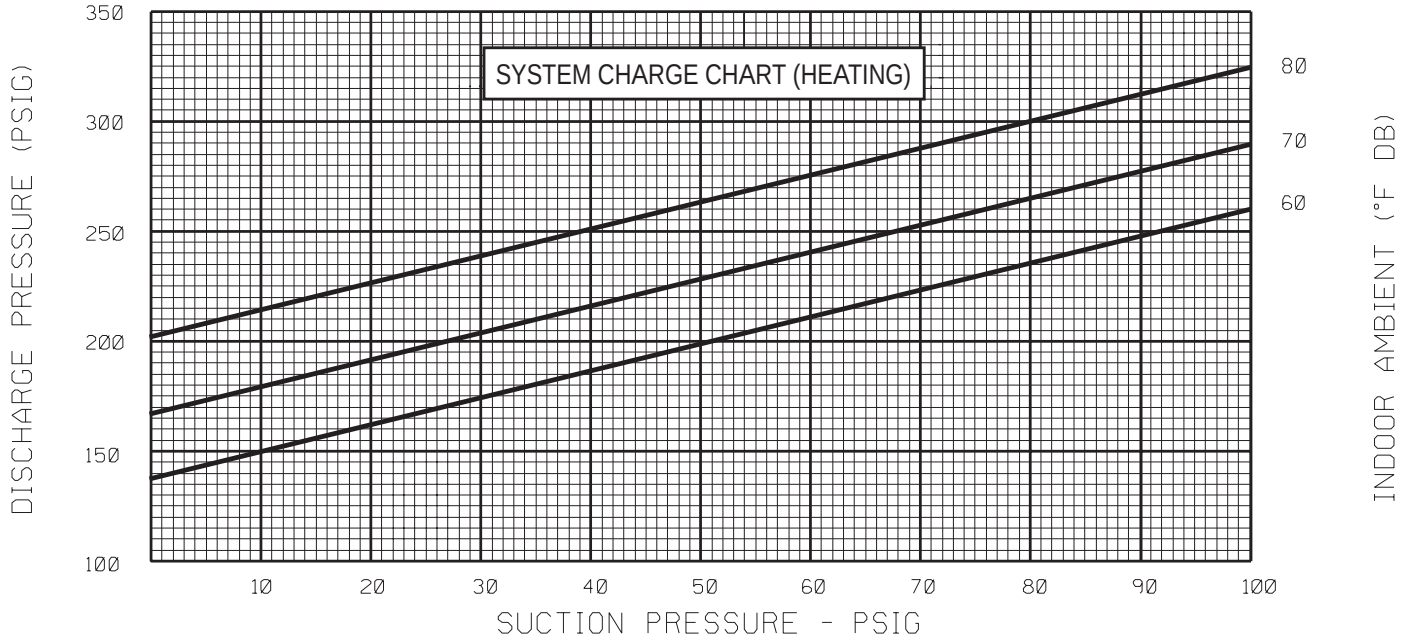
4.0 TON HP





CAUTION: BEFORE FINAL REFRIGERANT CHECK, INDOOR RETURN AIR TEMPERATURE MUST BE BETWEEN 72°F & 76°F DB AT 50% R.H. (COOLING), AND NO ICE ON OUTDOOR COILS (HEATING).

INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND DISCHARGE PORTS ON UNIT.
2. MEASURE AIR TEMPERATURE TO: (a) OUTDOOR COIL FOR COOLING, (b) INDOOR COIL FOR HEATING.
3. PLACE AN "X" ON THE APPROPRIATE CHART WHERE THE SUCTION AND DISCHARGE 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.

92-101877-05-01

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