

INSTALLATION INSTRUCTIONS

PACKAGE GAS ELECTRIC RRNA SERIES (2-5 TONS)



RECOGNIZE THIS SYMBOL AS AN INDICATION OF IMPORTANT SAFETY INFORMATION!

▲ WARNING

IF THE INFORMATION IN THESE INSTRUCTIONS IS NOT FOLLOWED EXACTLY, A FIRE OR EXPLOSION MAY RESULT, CAUSING PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

▲ WARNING

THESE INSTRUCTIONS ARE INTENDED AS AN AID TO QUALIFIED 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, CARBON MONOXIDE POISONING, EXPLOSION, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

▲ WARNING

PROPOSITION 65: THIS FURNACE CONTAINS FIBERGLASS INSULATION. RESPIRABLE PARTICLES OF FIBERGLASS ARE KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER. EXHAUST GAS FROM THIS FURNACE CONTAINS CHEMICALS, INCLUDING CARBON MONOXIDE, KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

▲ WARNING

- Do not store or use gasoline or other flammable vapors and liquids, or other combustible materials in the vicinity of this or any other appliance.
- WHAT TO DO IF YOU SMELL GAS
 - Do not try to light any appliance.
 - Do not touch any electrical switch; do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department.
 - Do not return to your home until authorized by the gas supplier or fire department.
- DO NOT RELY ON SMELL ALONE TO DETECT LEAKS. DUE TO VARIOUS FACTORS, YOU MAY NOT BE ABLE TO SMELL FUEL GASES.
 - U.L. recognized fuel gas and CO detectors are recommended in all applications, and their installation should be in accordance with the manufacturer's recommendations and/or local laws, rules, regulations, or customs
- Improper installation, adjustment, alteration, service or maintenance can cause injury, property damage or death. Refer to this manual. Installation and service must be performed by a qualified installer, service agency or the gas supplier. In the commonwealth of Massachusetts, installation must be performed by a licensed plumber or gas fitter for appropriate fuel.

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

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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 CONNECTION WITH THE AIR CONDITIONER. YOU SHOULD BE AWARE THAT THE USE OF UNAUTHORIZED COMPONENTS, ACCESSORIES OR DEVICES MAY ADVERSELY AFFECT THE OPERATION OF THE AIR CONDITIONER AND MAY ALSO ENDANGER LIFE AND PROPERTY. THE MANUFACTURER DISCLAIMS ANY RESPONSIBILITY FOR SUCH LOSS OR INJURY RESULTING FROM THE USE OF SUCH UNAUTHORIZED COMPONENTS, ACCESSORIES OR DEVICES.

II. INTRODUCTION

This booklet contains the installation and operating instructions for your combination gas heating/electric cooling unit. There are some 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. **IMPORTANT:** Check the unit model number, heating size, electrical characteristics, and accessories to determine if they are correct.

IV. SPECIFICATIONS

A. GENERAL

The Combination Gas Heating/Electric Cooling Rooftop is available in 40,60, 80 and 100 BTU/Hr. heating inputs and cooling capacities of 2, 2½, 3, 3½, 4 and 5 nominal tons of cooling. 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.

WARNING

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

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 thermal expansion valve), a circulation air blower, a condenser fan, a heat exchanger assembly, gas burner and control assembly, combustion air motor and fan, and all necessary internal electrical wiring. The cooling system of these units is factory-evacuated, charged and performance tested. Refrigerant amount and type are indicated on rating plate.

V. SAFETY INFORMATION

WARNING

USE ONLY WITH TYPE OF GAS APPROVED FOR THIS UNIT. REFER TO THE UNIT RATING PLATE.

WARNING

INSTALL THIS UNIT ONLY IN A LOCATION AND POSITION AS SPECIFIED IN THE LOCATION REQUIREMENTS AND CONSIDERATIONS SECTION OF THESE INSTRUCTIONS. PROVIDE ADEQUATE COMBUSTION AND VENTILATION AIR TO THE UNIT SPACE AS SPECIFIED IN THE VENTING SECTION OF THESE INSTRUCTIONS.

WARNING

PROVIDE ADEQUATE COMBUSTION AND VENTILATION AIR TO THE UNIT SPACE AS SPECIFIED IN THE COMBUSTION AND VENTILATION AIR SECTION OF THESE INSTRUCTIONS.

WARNING

COMBUSTION PRODUCTS MUST BE DISCHARGED OUTDOORS. CONNECT THIS UNIT TO AN APPROVED VENT SYSTEM ONLY, AS SPECIFIED IN VENT PIPE INSTALLATION SECTION OF THESE INSTRUCTIONS.

WARNING

NEVER TEST FOR GAS LEAKS WITH AN OPEN FLAME. USE A COMMERCIALY AVAILABLE SOAP SOLUTION MADE SPECIFICALLY FOR THE DETECTION OF LEAKS TO CHECK ALL CONNECTIONS, AS SPECIFIED IN GAS SUPPLY AND PIPING SECTION OF THESE INSTRUCTIONS.

WARNING

ALWAYS INSTALL UNIT TO OPERATE WITHIN THE UNIT'S INTENDED TEMPERATURE-RISE RANGE WITH A DUCT SYSTEM WHICH HAS AN EXTERNAL STATIC PRESSURE WITHIN THE ALLOWABLE RANGE, AS SPECIFIED IN DUCTING SECTION OF THESE INSTRUCTIONS. SEE ALSO UNIT RATING PLATE.

WARNING

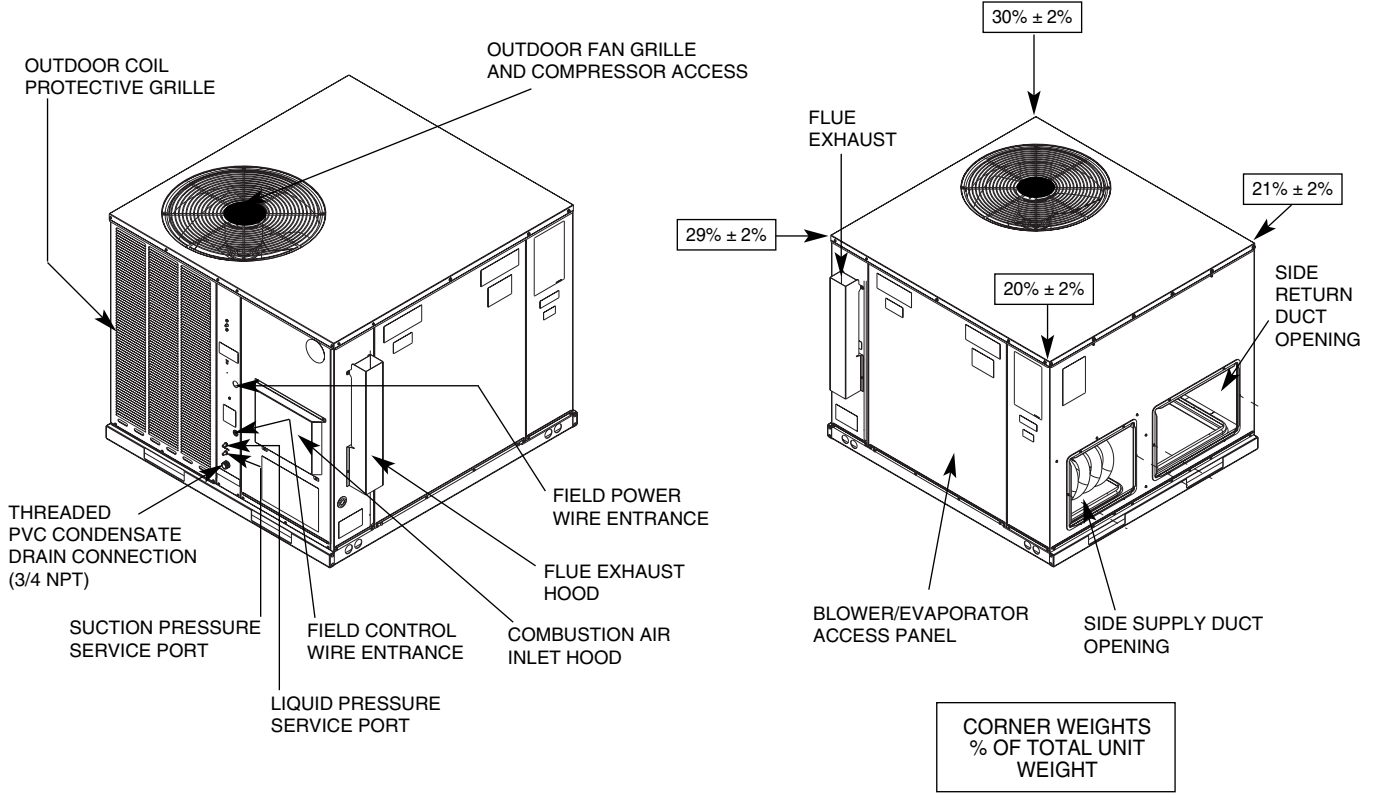
WHEN A UNIT IS INSTALLED SO THAT SUPPLY DUCTS CARRY AIR CIRCULATED BY THE UNIT TO AREAS OUTSIDE THE SPACE CONTAINING THE UNIT, THE RETURN AIR SHALL ALSO BE HANDLED BY DUCT(S) SEALED TO THE UNIT CASING AND TERMINATING OUTSIDE THE SPACE CONTAINING THE UNIT.

WARNING

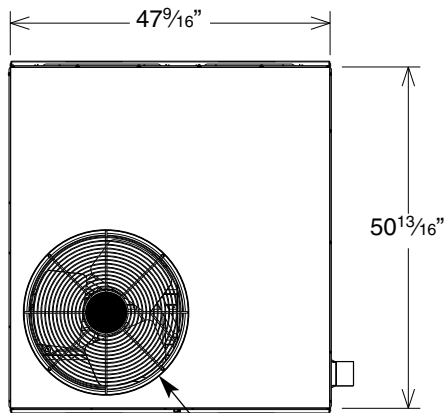
DO NOT USE THIS UNIT DURING CONSTRUCTION IF AIR LADEN CORROSIVE COMPOUNDS ARE PRESENT SUCH AS CHLORINE AND FLUORINE. OTHERWISE, PROVISIONS MUST BE TAKEN TO PROVIDE CLEAN, UNCONTAMINATED COMBUSTION AND VENTILATION AIR TO THE UNIT. COMBUSTION AND VENTILATION AIR CONTAMINATED WITH THESE COMPOUNDS FORMS ACIDS DURING COMBUSTION WHICH CORRODES THE HEAT EXCHANGER AND COMPONENT PARTS. SOME OF THESE CONTAMINANTS ARE FOUND IN, BUT NOT LIMITED TO, PANELING, DRY WALL, ADHESIVES, PAINTS, STAINS, VARNISHES, SEALERS, AND MASONRY CLEANING MATERIALS.

VI. UNIT DIMENSIONS FOR CLEARANCES SEE FIGURE 9.

FIGURE 1



TOP VIEW



BOTTOM VIEW

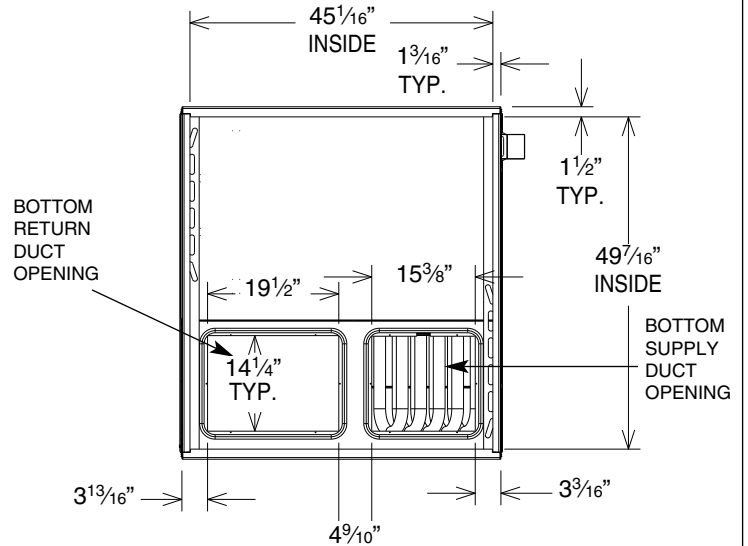
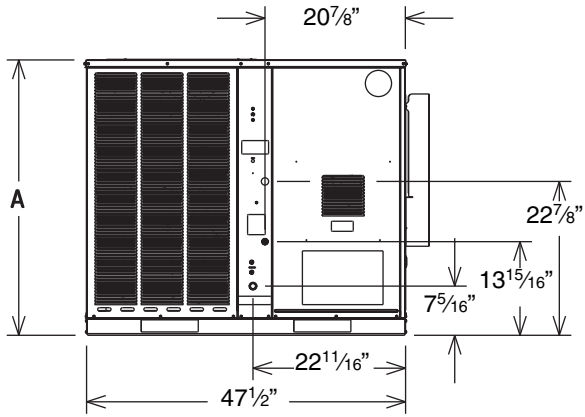
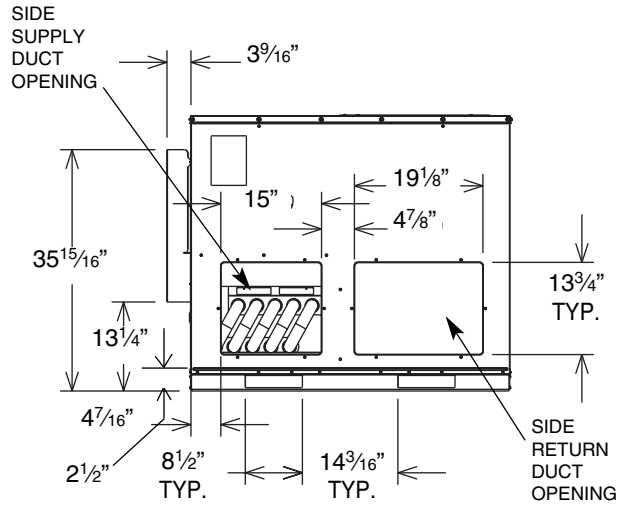


FIGURE 1 (CONTINUED)

FRONT VIEW



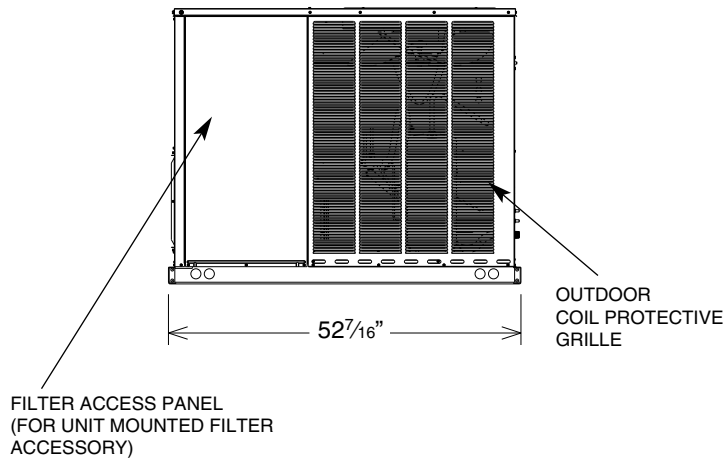
BACK VIEW



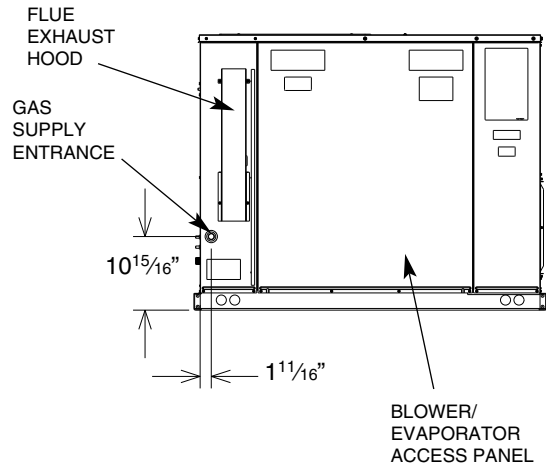
SHOWN WITH DUCT COVERS REMOVED.

MODEL	"A" HEIGHT
024, 030, 036	35 ¹⁵ / ₁₆ "
042, 048, 060	41

SIDE VIEW



SIDE VIEW



VII. INSTALLATION

A. GENERAL

1. INSTALLATION — Install this unit in accordance with The American National Standard Z223.1-latest edition booklet entitled “National Fuel Gas Code,” and the requirements or codes of the local utility or other authority having jurisdiction.

Additional helpful publications available from the “National Fire Protection Association” are: NFPA-90A - Installation of Air Conditioning and Ventilating Systems 1985 or latest edition. NFPA-90B - Warm Air Heating and Air Conditioning Systems 1984.

These publications are available from:

National Fire Protection Association, Inc.
Batterymarch Park
Quincy, MA 02269

NOTE: Remove wood shipping base before installing unit.

1. **PRE-INSTALLATION CHECK-POINTS** — Before attempting any installation, carefully consider the following points:

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

2. LOCATION CONSIDERATIONS

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

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

1. Avoid having lawn sprinkler heads spray directly on the unit cabinet.
2. In coastal areas locate the unit on the side of the building away from the waterfront.
3. Shielding by a fence or shrubs may give some protection.
4. Elevate the unit off its slab or base enough to allow air circulation and avoid holding water against the basepan.

WARNING

DISCONNECT ALL POWER TO UNIT BEFORE STARTING MAINTENANCE. FAILURE TO DO SO CAN CAUSE ELECTRICAL SHOCK RESULTING IN PERSONAL INJURY OR DEATH.

REGULAR MAINTENANCE WILL REDUCE THE BUILDUP OF CONTAMINANTS AND HELP TO PROTECT THE UNIT’S FINISH.

1. Frequent washing of the cabinet, fan blade and coil with fresh water will remove most of the salt or other contaminants that build up on the unit.
2. Regular cleaning and waxing of the cabinet with a good automobile polish will provide some protection.
3. Use a good liquid cleaner 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.

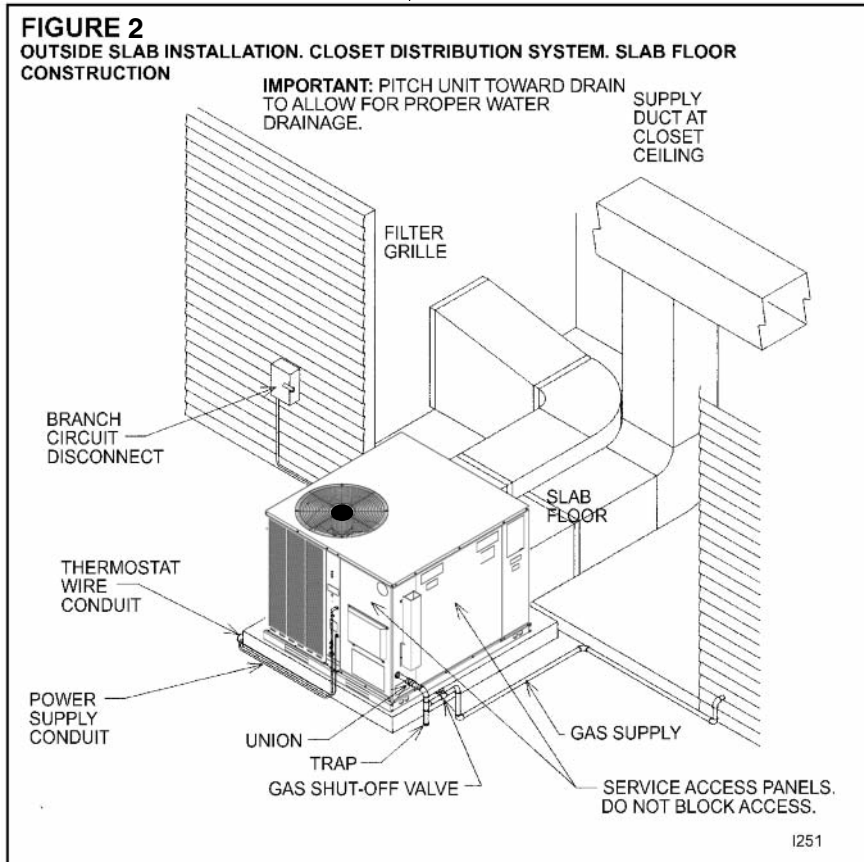
B. OUTSIDE INSTALLATION

⚠ WARNING

THESE UNITS ARE DESIGNED CERTIFIED FOR OUTDOOR INSTALLATION ONLY. INSTALLATION INSIDE ANY PART OF A STRUCTURE CAN RESULT IN INADEQUATE UNIT PERFORMANCE AS WELL AS PROPERTY DAMAGE. INSTALLATION INSIDE CAN ALSO CAUSE RECIRCULATION OF FLUE PRODUCTS INTO THE CONDITIONED SPACE RESULTING IN PERSONAL INJURY OR DEATH.

(Typical outdoor slab installation is shown in Figure 2.)

1. Select a location where external water drainage cannot collect around unit.
2. Provide a slab sufficiently high enough above grade to prevent surface water from entering the unit. Where snowfall is anticipated, mount the unit above the anticipated maximum snow depth for your area. The slab should be isolated from the foundation wall.
3. Pitch the slab approximately $\frac{1}{2}''$ so that the unit will be pitched toward the drain. See Figure 3.
4. The location of the unit should be such as to provide proper access for inspection and servicing as shown in Figure 9.



5. Locate unit where operating sounds will not disturb owner or neighbors.
6. 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.
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 combustion air to enter the combustion air inlet.

C. ATTACHING EXHAUST AND COMBUSTION AIR INLET HOODS

IMPORTANT: Do not operate this unit without the exhaust and combustion air inlet hood properly installed. These hoods are shipped in a carton in the return air compartment inside the unit and must be attached when the unit is installed. See Figure 4.

To attach exhaust and combustion air inlet hood:

1. Remove 3 screws securing filter access panel and remove filter access panel. For location of filter access panel, see Figure 1.
2. Remove both exhaust and combustion air inlet hoods from their carton, located inside the return air compartment.
3. Attach filter access panel.
4. Attach the combustion air inlet hood and the exhaust hood each with 4 screws as shown in Figure 4. Screws are in parts bag shipped in the burner compartment.
5. Vent the unit using the flue exhaust hood, as supplied from the factory, without alteration or addition. The only exception is with factory approved additions. Consult your local utility or other authority having jurisdiction for accepted venting techniques.

D. COVER PANEL INSTALLATION/CONVERSION PROCEDURE

1. HORIZONTAL TO DOWNFLOW

- a. Remove screws and covers from the supply and return bottom sections. NOTE: Rotate the supply cover 90° and remove.
- b. Install gasket (supplied with parts bag) around perimeter of cover on the insulated side. See Figure 6.
- c. Secure covers to the side of the unit using existing screws and those supplied in the parts bag.

2. DOWNFLOW TO HORIZONTAL

- a. Remove screws and covers from the supply and return bottom sections.
- b. Install gasket (supplied with parts bag) around perimeter of cover as illustrated in Figure 5.

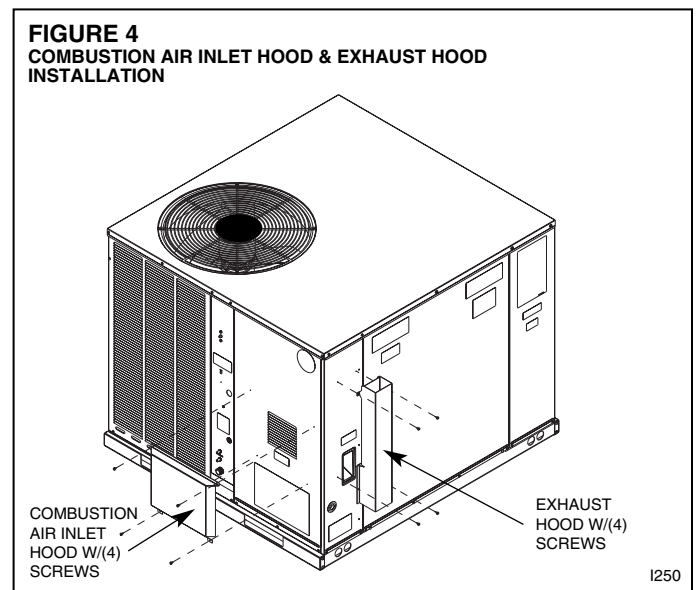
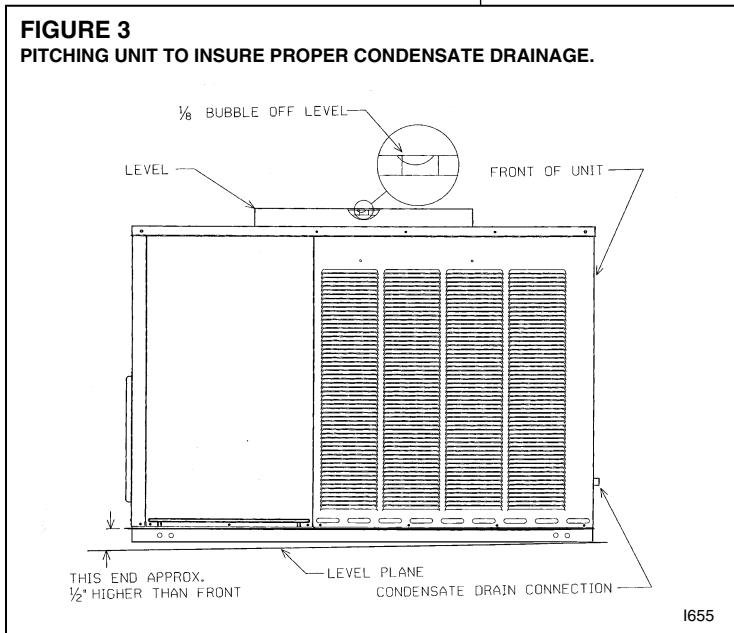


FIGURE 5

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

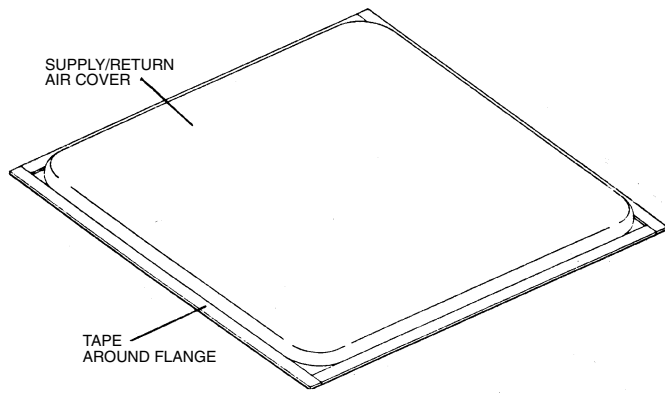
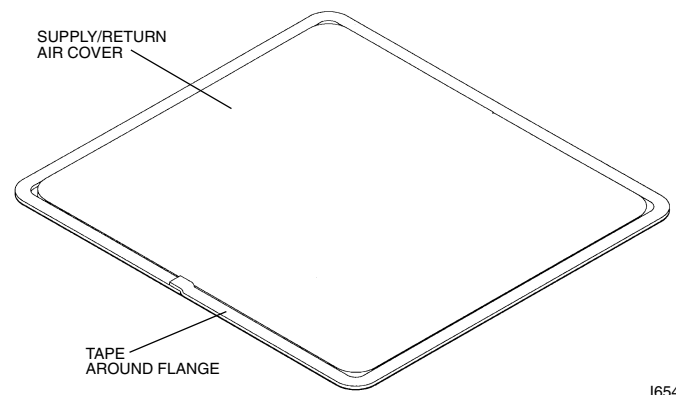


FIGURE 6

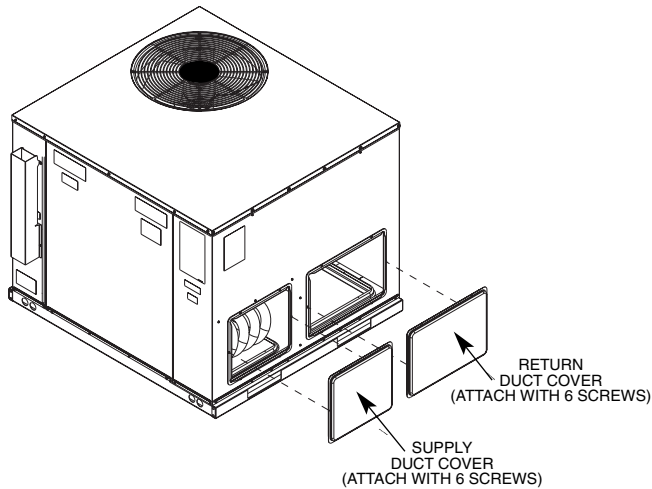
COVER GASKET DETAIL FOR UNITS SHIPPED FOR SIDE DISCHARGE APPLICATION BEING CONVERTED TO DOWNFLOW



1654

FIGURE 7

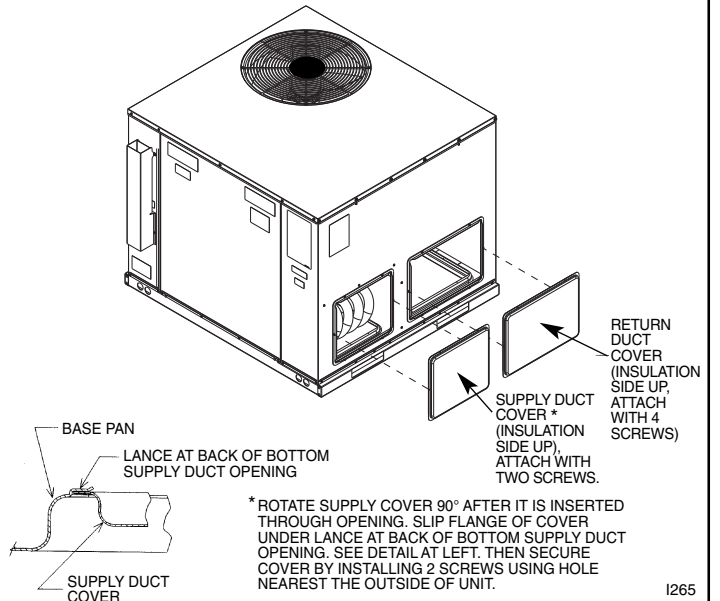
DUCT COVER INSTALLATION SIDE MOUNTING



1264

FIGURE 8

DUCT COVER INSTALLATION BASE PAN MOUNTING



1265

- c. Install covers in the unit bottom with the insulated side up. NOTE: Supply cover must be inserted through supply opening with narrow side toward unit. Once cover is through opening, rotate 90° and slip back flange of cover under tab at the back of bottom duct opening. See Figure 8.
- d. Secure supply cover to base of unit with 2 screws, engaging prepunched holes in raised duct opening flange.
- e. Secure return covers to base of unit with screws engaging prepunched holes in raised duct opening flange.

⚠ WARNING

THIS UNIT MUST NOT BE INSTALLED DIRECTLY ON WOOD FLOORING, CLASS A, CLASS B OR CLASS C ROOF COVERING MATERIALS, OR ANY OTHER COMBUSTIBLE STRUCTURE EXCEPT AS SPECIFIED IN FIGURE 13. FAILURE TO ADHERE TO THIS WARNING CAN CAUSE A FIRE OR EXPLOSION RESULTING IN PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

E. CLEARANCES

The following minimum clearances must be observed for proper unit performance and serviceability. See Figure 9.

1. Provide 48" minimum clearance at front of the unit. Provide 24" minimum clearance on right side of unit. If economizer is used, a 24" minimum clearance is required on left side of unit. (See Figure 9.) If no economizer is required, then a 12" clearance is required on left side of unit.
2. Provide 60" minimum clearance between top of unit and maximum 3 foot overhang.
3. Unit is design certified for 2" minimum clearance between supply duct and a combustible structure for the first 3 feet of duct. 0" clearance is allowed after 3 feet.

**FIGURE 9
CLEARANCES**

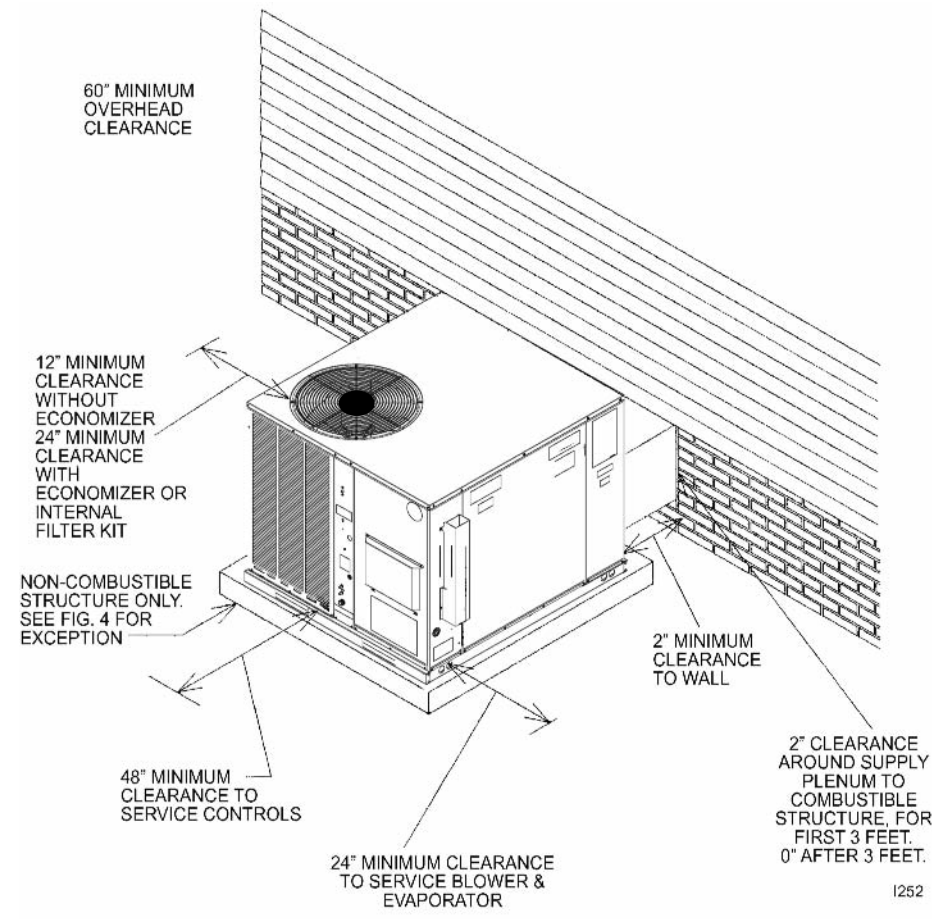


FIGURE 10
EXCEPTION TO NON-COMBUSTIBLE FLOORING REQUIREMENT

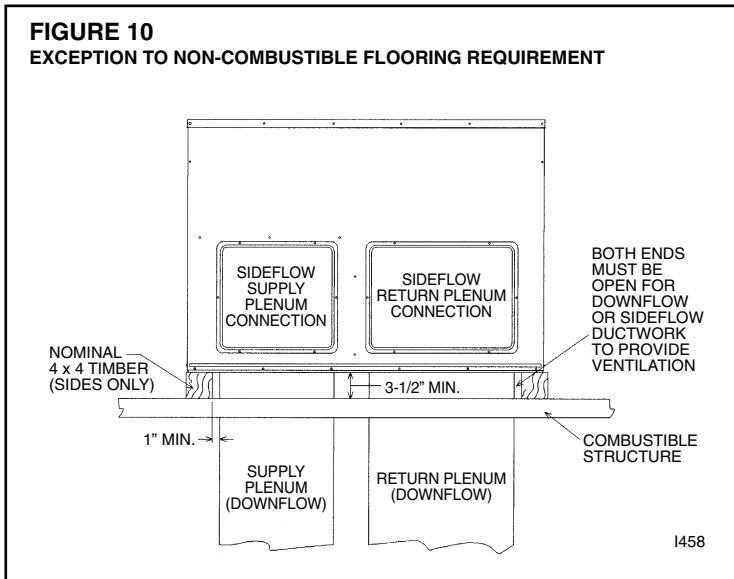


FIGURE 11
FLAT ROOFTOP INSTALLATION, ATTIC OR DROP CEILING DISTRIBUTING SYSTEM. MOUNTED ON ROOFCURB. PITCH UNIT TOWARD DRAIN.

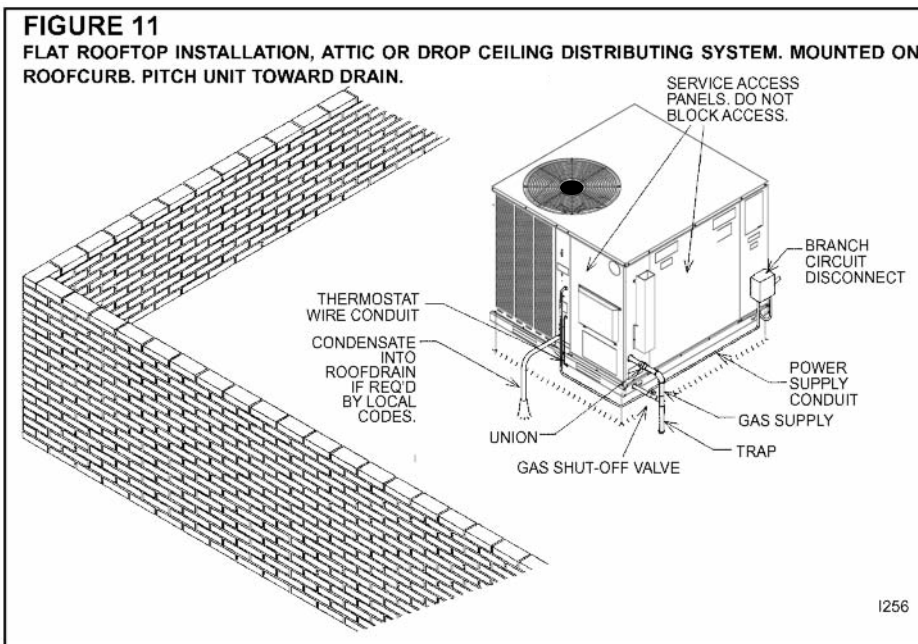


FIGURE 12
PITCHED ROOFTOP INSTALLATION, ON ANGLE-IRON STAND, SIDE FLOW DUCTWORK, ATTIC OR DROP CEILING DISTRIBUTING SYSTEM. PITCH UNIT TOWARD DRAIN.

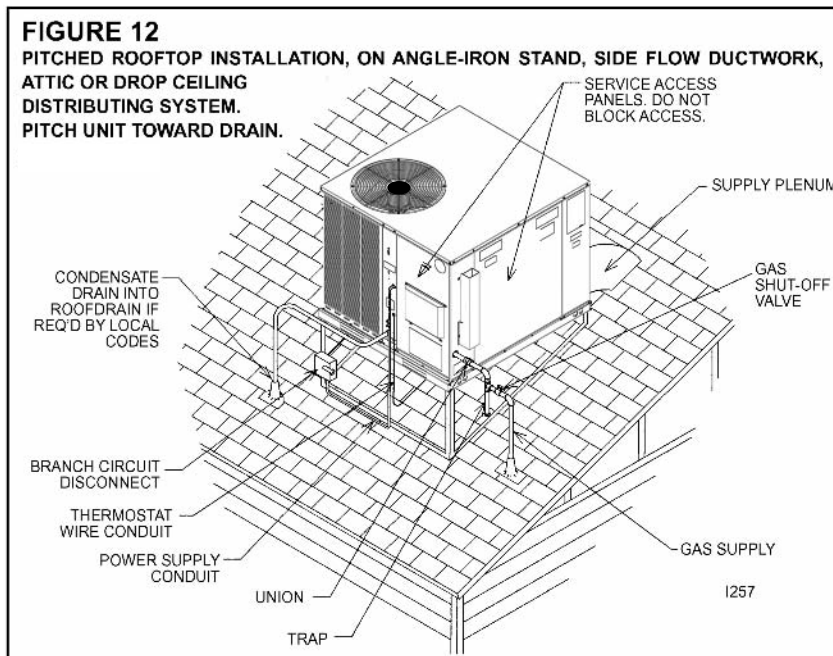
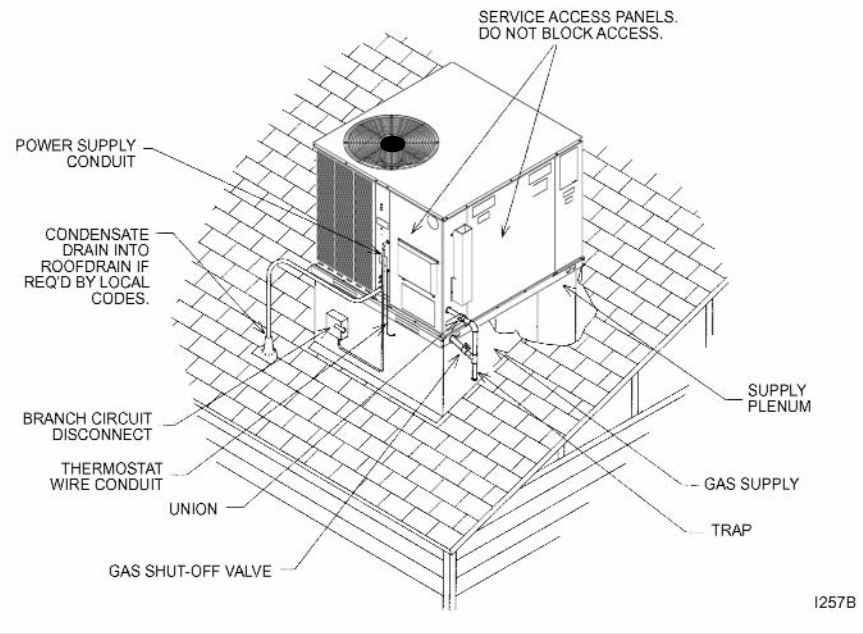


FIGURE 13

PITCHED ROOFTOP INSTALLATION, ON ROOFJACK, DOWNFLOW DUCTWORK, ATTIC OR DROP CEILING DISTRIBUTING SYSTEM. PITCH UNIT TOWARD DRAIN.



F. ROOFTOP INSTALLATION

1. Before locating the unit on the roof, make sure that the roof structure is adequate to support the weight involved. (See electrical & physical tables in this book for weight of unit.) **THIS IS VERY IMPORTANT AND THE INSTALLER'S RESPONSIBILITY.**
2. For rigging and roofcurb details, see Figures 14, 15, and 16.
3. The location of the unit on the roof should be such as to provide proper access for inspection and servicing.

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

G. DUCTWORK

The installing contractor should fabricate ductwork in accordance with local codes. Use industry manuals 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 FIREPLACE INSERT, STOVE, ETC. UNAUTHORIZED USE OF SUCH DEVICES MAY RESULT IN FIRE, CARBON MONOXIDE POISONING, EXPLOSION, PERSONAL INJURY, OR PROPERTY DAMAGE.

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

On ductwork exposed to outside 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. ½" to 1" thick 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.

IMPORTANT: In the event that the return air ducts must be run through an “unconfined” space containing other fuel burning equipment, it is imperative that the user/homeowner must be informed against future changes in construction which might change this to a “confined space.” Also, caution the user/homeowner against any future installation of additional equipment (such as power ventilators, clothes dryers, etc., within the existing unconfined and/or confined space which might create a negative pressure within the vicinity of other solid, liquid, or gas fueled appliances.

H. RETURN AIR

▲ WARNING

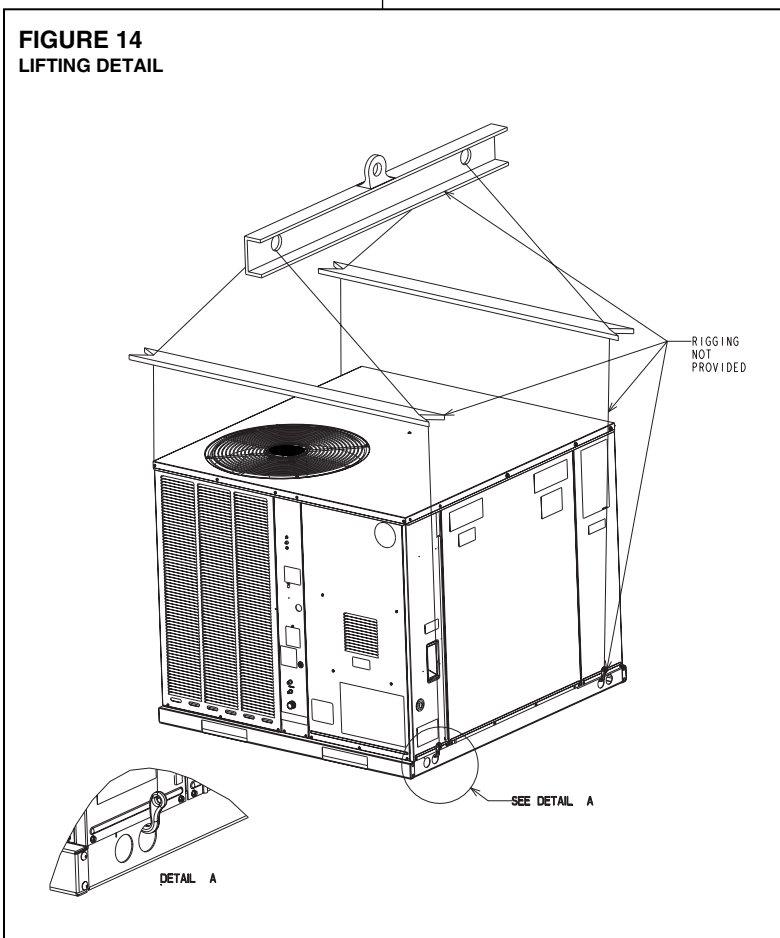
NEVER ALLOW PRODUCTS OF COMBUSTION OR THE FLUE PRODUCTS TO ENTER THE RETURN AIR DUCTWORK, OR THE CIRCULATING AIR SUPPLY. ALL RETURN DUCTWORK MUST BE ADEQUATELY SEALED AND SECURED TO THE FURNACE WITH SHEET METAL SCREWS, AND JOINTS TAPED. ALL OTHER DUCT JOINTS MUST BE SECURED WITH APPROVED CONNECTIONS AND SEALED AIRTIGHT.

FAILURE TO PREVENT PRODUCTS OF COMBUSTION FROM BEING CIRCULATED INTO THE LIVING SPACE CAN CREATE POTENTIALLY HAZARDOUS CONDITIONS, INCLUDING CARBON MONOXIDE POISONING THAT COULD RESULT IN PERSONAL INJURY OR DEATH.

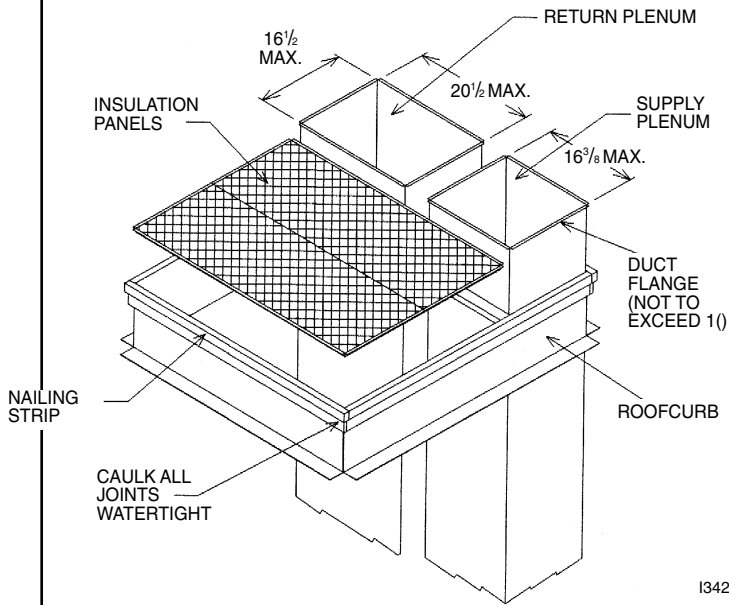
I. FILTERS

The installer must install field supplied filters in the return air duct. 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 air delivery tables for recommended filter size. A field installed internal filter kit RXRY-B01 is available.

FIGURE 14
LIFTING DETAIL

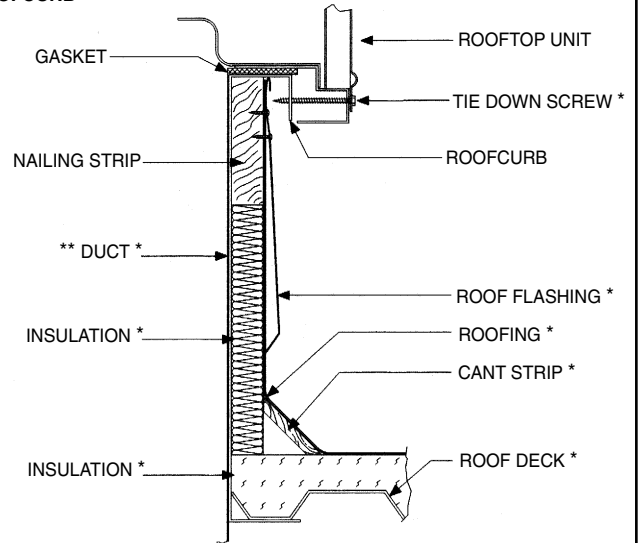


**FIGURE 15
ROOFCURB**



1342

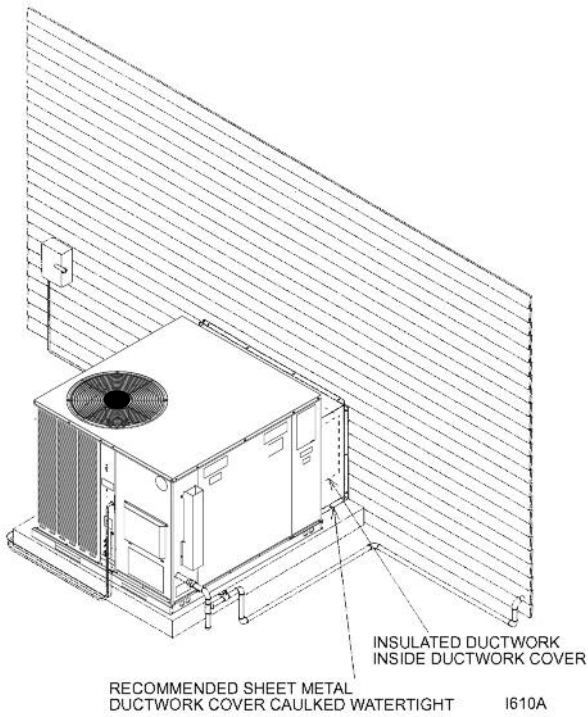
**FIGURE 16
ROOFCURB**



*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 (FIGURE 1) FOR SIZE OF DUCT OPENINGS.

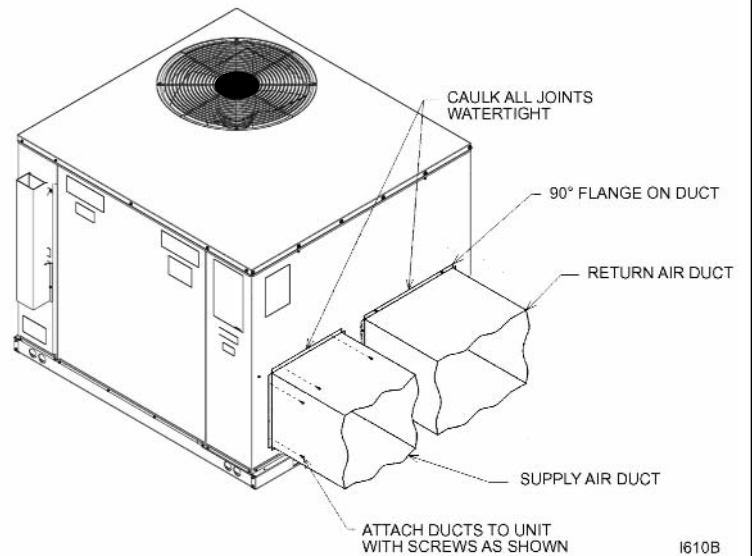
1255

**FIGURE 17
DUCTWORK COVER INSTALLATION DETAIL**



1610A

**FIGURE 18
RESIDENTIAL ROOFTOP DUCTWORK INSTALLATION DETAIL**



1610B

VIII. GAS SUPPLY, CONDENSATE DRAIN AND PIPING

A. GAS CONNECTION

IMPORTANT: Connect this unit only to gas supplied by a commercial utility.

1. Install gas piping in accordance with local codes and regulations of the local utility company. In the absence of local codes, the installation must conform to the specifications of the National Fuel Gas Code, ANSI Z223.1 - latest edition.

NOTE: The use of flexible gas connectors is not permitted.

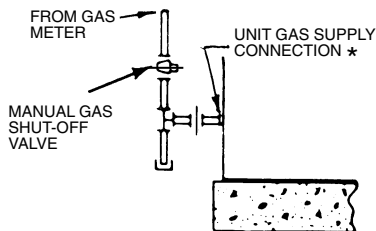
NOTE: The Commonwealth of Massachusetts requires the gas shut-off valve to be a T-handle gas cock.

2. Connect the gas line to the gas pipe inlet opening provided into the 1/2" inlet valve. See Figure 2 for typical piping.
3. Size the gas line to the furnace adequate enough to prevent undue pressure drop and never less than 1/2".
4. Install a drip leg or sediment trap in the gas supply line as close to the unit as possible.
5. Install an outside ground joint union to connect the gas supply to the control assembly at the burner tray.
6. Gas valves have been factory installed. Install a manual gas valve where local codes specify a shut-off valve outside the unit casing. (See Figure 19.)
7. Make sure piping is tight. **A pipe compound resistant to the action of liquefied petroleum gases must be used at all threaded pipe connections.**
8. **IMPORTANT:** Any additions, changes or conversions required for the furnace to satisfactorily meet the application should be made by a qualified installer, service agency or the gas supplier, using factory-specified or approved parts. In the commonwealth of Massachusetts, installation must be performed by a licensed plumber or gas fitter for appropriate fuel.

IMPORTANT: Disconnect the furnace and its individual shutoff valve from the gas supply piping during any pressure testing of that system at test pressures in excess of 1/2 psig or isolate the system from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of this gas supply system at pressures equal to or less than 1/2 PSIG.

FIGURE 19
SUGGESTED GAS PIPING

ROOF OR GROUND LEVEL INSTALLATION



*Factory supplied grommet must be utilized.

TABLE 1
GAS PIPE CAPACITY TABLE (CU. FT./HR.)

Nominal Iron Pipe Size, Inches	Equivalent Length of Pipe, Feet							
	10	20	30	40	50	60	70	80
1/2	132	92	73	63	56	50	46	43
3/4	278	190	152	130	115	105	96	90
1	520	350	285	245	215	195	180	170
1 1/4	1,050	730	590	500	440	400	370	350
1 1/2	1,600	1,100	890	760	670	610	560	530

TO CHECK FOR GAS LEAKS, USE A SOAP AND WATER SOLUTION OR OTHER APPROVED METHOD. DO NOT USE AN OPEN FLAME.

⚠ WARNING

DO NOT USE AN OPEN FLAME TO CHECK FOR LEAKS. THE USE OF AN OPEN FLAME CAN RESULT IN FIRE, EXPLOSION, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

IMPORTANT: Check the rating plate to make certain the appliance is equipped to burn the type of gas supplied. Care should be taken after installation of this equipment that the gas control valve not be subjected to high gas supply line pressure.

In making gas connections, avoid strains as they may cause noise and damage the controls. A backup wrench is required to be used on the valve to avoid damage.

The capacities of gas pipe of different diameters and lengths in cu. ft. per hr. with pressure drop of 0.5 in. and specific gravity of 0.60 (natural gas) are shown in Table 2.

After determining the pipe length, select the pipe size which will provide the minimum cubic feet per hour required for the gas input rating of the furnace. By formula:

$$\text{Cu. Ft. Per Hr. Required} = \frac{\text{Gas Input of Furnace (BTU/HR)}}{\text{Heating Value of Gas (BTU/FT}^3\text{)}}$$

The gas input of the furnace is marked on the furnace rating plate. The heating value of the gas (BTU/FT³) may be determined by consulting the local natural gas utility or the L.P. gas supplier.

B. LP CONVERSION

⚠ WARNING

THIS UNIT IS EQUIPPED AT THE FACTORY FOR USE ON NATURAL GAS ONLY. CONVERSION TO LP GAS REQUIRES A SPECIAL KIT SUPPLIED BY THE DISTRIBUTOR OR MANUFACTURER. MAILING ADDRESSES ARE LISTED ON THE FURNACE RATING PLATE, PARTS LIST AND WARRANTY. FAILURE TO USE THE PROPER CONVERSION KIT CAN CAUSE FIRE, CARBON MONOXIDE POISONING, EXPLOSION, PERSONAL INJURY, PROPERTY DAMAGE OR DEATH.

Convert the valve to use liquefied petroleum (LP) gas by replacing the pressure regulator spring with the conversion kit spring. This LP kit spring allows the regulator to maintain the proper manifold pressure for LP gas. The correct burner LP orifices are included in the kit. See Figure 20.

NOTE: Order the correct LP conversion kit from the furnace manufacturer. **See Conversion Kit Index shipped with unit for proper LP kit number. Furnace conversion to LP gas must be performed by a qualified technician.**

FIGURE 20



C. NOx MODELS

When converting units equipped with NOx inserts to LP gas, the stainless steel mesh inserts in the entrance of the tubular exchangers are not required to meet SCAQMD NOx emission levels. Carefully remove these inserts before firing this furnace on LP gas. This furnace is not designed to operate on LP gas with the NOx inserts in place.

Step by step instructions on removing the NOx inserts and retaining rod are included in the Conversion Kit Installation Instructions.

TABLE 2
LP GAS PIPE CAPACITY TABLE (CU. FT./HR.)

Maximum capacity of pipe in thousands of BTU per hour of undiluted liquefied petroleum gases (at 11 inches water column inlet pressure).
(Based on a Pressure Drop of 0.5 Inch Water Column)

Nominal Iron Pipe Size, Inches	Length of Pipe, Feet											
	10	20	30	40	50	60	70	80	90	100	125	150
1/2	275	189	152	129	114	103	96	89	83	78	69	63
3/4	567	393	315	267	237	217	196	182	173	162	146	132
1	1,071	732	590	504	448	409	378	346	322	307	275	252
1-1/4	2,205	1,496	1,212	1,039	913	834	771	724	677	630	567	511
1-1/2	3,307	2,299	1,858	1,559	1,417	1,275	1,181	1,086	1,023	976	866	787
2	6,221	4,331	3,465	2,992	2,646	2,394	2,205	2,047	1,921	1,811	1,606	1,496

Example (LP): Input BTU requirement of unit, 150,000
Equivalent length of pipe, 60 ft. = 3/4" IPS required.

D. ADJUSTING OR CHECKING FURNACE INPUT

- Natural Gas Line Pressure 5" - 10.5" W.C.
- LP Gas Line Pressure 11" - 13" W.C.
- Natural Gas Manifold Pressure 3.5" W.C
- LP Gas Manifold Pressure - 10" W.C.

Supply and manifold pressure taps are located on the gas valve body 1/8" N.P.T.

Use a properly calibrated manometer gauge for accurate gas pressure readings.

Only small variations in the gas flow should be made by means of the pressure regulator adjustment. Furnaces functioning on LP gas must be set by means of the tank or branch supply regulators. The furnace manifold pressure should be set at 10" W.C. at the gas control valve.

To adjust the pressure regulator, remove the regulator cap and turn the adjustment screw clockwise to increase pressure or counterclockwise to decrease pressure. **Then replace the regulator cap securely.**

Any necessary major changes in the gas flow rate should be made by changing the size of the burner orifices. To change orifice spuds, shut off the manual main gas valve and remove the gas manifold.

For elevations up to 2,000 feet, rating plate input ratings apply. For high altitudes (elevations over 2,000 ft.), see conversion kit index 92-21519-XX for derating and orifice spud sizes.

Check of input is important to prevent over-firing of the furnace beyond its design-rated input. NEVER SET INPUT ABOVE THAT SHOWN ON THE RATING PLATE. Use the following table or formula to determine input rate.

$$\text{Cu. Ft. Per Hr. Required} = \frac{\text{Heating Value of Gas (BTU/Cu. Ft.)} \times 3600}{\text{Time in Seconds (for 1 Cu. Ft.) of Gas}}$$

TABLE 3

METER TIME IN MINUTES AND SECONDS FOR NORMAL INPUT RATING OF FURNACES EQUIPPED FOR NATURAL OR LP GAS											
INPUT BTU/HR	METER SIZE CU. FT.	HEATING VALUE OF GAS BTU PER CU. FT.									
		900		1000		1040		1100		2500	
		MIN.	SEC.	MIN.	SEC.	MIN.	SEC.	MIN.	SEC.	MIN.	SEC.
40,000	ONE TEN	1 13	21 30	1 15	30 0	1 15	34 36	1 16	39 30	3 37	45 30
60,000	ONE TEN	0 9	54 0	1 10	0 0	1 10	3 24	1 11	6 0	2 25	30 0
80,000	ONE TEN	0 6	41 45	0 7	45 30	0 7	47 48	0 8	50 15	1 18	53 45
100,000	ONE TEN	0 5	33 24	0 6	36 0	0 6	38 15	0 6	40 36	1 15	30 0

Start the furnace and measure the time required to burn one cubic foot of gas. Prior to checking the furnace input, make certain that all other gas appliances are shut off, with the exception of pilot burners. Time the meter with only the furnace in operation.

IMPORTANT NOTE FOR ALTITUDES ABOVE 2,000 FEET (610 METERS): The main burner orifices in your furnace and in these kits are sized for the nameplate input and intended for installations at elevations up to 2,000 feet in the USA or Canada, or for elevations of 2,000 - 4,500 feet (610 - 1,373 meters) in Canada if the unit has been derated at the factory. For elevations above 2,000 feet (610 meters) **IN THE USA ONLY** (see ANSI-Z223.1), the burner orifices must be sized to reduce the input 4% for each 1,000 feet (305 meters) above sea level.

NOTICE: DERATING OF THE HEATING INPUT FOR HIGH ALTITUDE IN THE FIELD IS UNLAWFUL IN CANADA (REFER TO CAN/CGA 2.17). UNITS INSTALLED IN ALTITUDES GREATER THAN 2,000 FEET (610 METERS) MUST BE SHIPPED FROM THE FACTORY OR FROM A FACTORY AUTHORIZED CONVERSION STATION WITH THE HEATING INPUT DERATED BY 10% SO AS TO OPERATE PROPERLY IN ALTITUDES FROM 2,000 - 4,500 FEET (610 - 1,373 METERS).

E. CONDENSATE DRAIN

The evaporator 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 the drain to a 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.

IX. WIRING

A. POWER SUPPLY

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.

- All wiring should be made in accordance with the National Electrical Code.**
Consult the local power company to determine the availability of sufficient power to operate the unit. Check the voltage at power supply to make sure it corresponds to the unit's RATED VOLTAGE REQUIREMENT. Install a branch circuit disconnect near the rooftop, in accordance with the N.E.C., C.E.C. or local codes.
- 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 nameplate. On three phase units, phases must be balanced within 3%.
- For branch circuit wiring (main power supply to unit disconnect), the minimum wire size for the length of run can be determined from Table 4 using the circuit ampacity found on the unit rating plate. Use the smallest wire size allowable in Table 4 from the unit disconnect to unit. The disconnect must be in sight and readily accessible of the unit.

TABLE 4
BRANCH CIRCUIT COPPER WIRE SIZE
(BASED ON 1% VOLTAGE DROP)*

	200	6	4	4	4	3	3	2	2
SUPPLY WIRE	150	8	6	6	4	4	4	3	3
LENGTH-FEET	100	10	8	8	6	6	6	4	4
	50	14	12	10	10	8	8	6	6
		15	20	25	30	35	40	45	50
		BRANCH CIRCUIT AMPACITY							

*Taken from National Electric Code

NOTES:

- Wire size based on 60°C rated wire insulation and 30°C Ambient Temp. (86°F).
- For more than 3 conductors in a raceway or cable, see the N.E.C. for derating the ampacity of each conductor.

When installed, the unit must be electrically grounded in accordance with local codes or, in the absence of local codes, with the National Electrical Code, **ANSI/NFPA 70**, if an external electrical source is utilized.

IMPORTANT: THIS UNIT IS APPROVED FOR USE WITH COPPER CONDUCTORS ONLY CONNECTED TO UNIT CONTACTOR.

WARRANTY MAY BE JEOPARDIZED IF ALUMINUM WIRE IS CONNECTED TO UNIT CONTACTOR.

Special instructions apply for power wiring with aluminum conductors: Warranty is void if connections are not made per instructions.

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

Select the equivalent aluminum wire size from the tabulation below:

Splice copper wire pigtails to aluminum wire with U.L. recognized connectors for copper-aluminum splices. Please exercise the following instructions very carefully to obtain a positive and lasting connection:

- Strip insulation from aluminum conductor.
- Coat the stripped end of the aluminum wire with the recommended inhibitor, and wire brush the aluminum surface through inhibitor. INHIBITORS: Brundy-Pentex "A"; Alcoa-No. 2EJC; T & B-KPOR Shield.
- Clean and recoat aluminum conductor with inhibitor.
- Make the splice using the above listed wire nuts or split bolt connectors.
- Coat the entire connection with inhibitor and wrap with electrical insulating tape.

TABLE 5

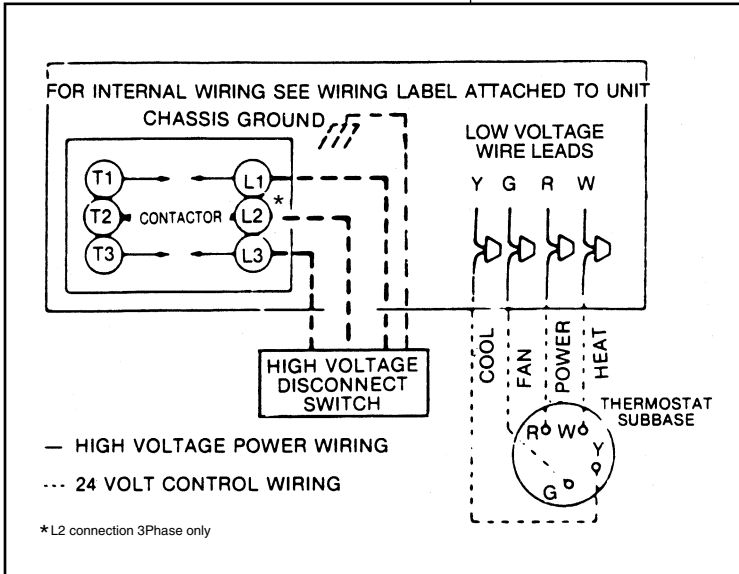
AWG Copper Wire Size	AWG Aluminum Wire Size	Connector Type and Size (or equivalent)	
#12	#10	T & B Wire Nut	PT2
#10	# 8	T & B Wire Nut	PT3
# 8	# 6	Sherman Split Bolt	TSP6
# 6	# 4	Sherman Split Bolt	TSP4
# 4	# 2	Sherman Split Bolt	TSP2

B. HOOK-UP

To wire unit, refer to the following hook-up diagram.

Refer to Figure 1 for location of wiring entrances.

Wiring to be done in the field between the unit and devices not attached to the unit, or between separate devices which are field installed and located, shall conform with the temperature limitation for Type T wire [63°F rise (35°C)] when installed in accordance with the manufacturer's instructions.



C. INTERNAL WIRING

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

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

Transformer is factory wired for 230 volts on 208/230 volt models and must be changed for 208 volt applications. See unit wiring diagram for 208 volt wiring.

D. THERMOSTAT

The room thermostat must be compatible with the spark ignition control on the unit. Generally, all thermostats that are not of the "current robbing" type are compatible with the integrated furnace control. The low voltage wiring should be sized as shown in Table 7.

Install the room thermostat in accordance with the instruction sheet packed in the box with the thermostat. Run the thermostat lead wires inside the blower compartment and connect to low voltage terminals as shown on the wiring diagram. Never install the thermostat on an outside wall or where it will be influenced by drafts, concealed hot or cold water pipes or ducts, lighting fixtures, radiation from fireplace, sun rays, lamps, televisions, radios or air streams from registers. Refer to instructions packed with the thermostat for "heater" selection or adjustment.

The following is a list of recommended thermostats to be used with or without an economizer:

SINGLE STAGE COOL W/O ECONOMIZER	TWO STAGE COOL W/ ECONOMIZER
MAPLE CHASE - MODEL #0970	HONEYWELL - MODEL #T7300-A1005
HONEYWELL - MODEL #T8602C	HONEYWELL - MODEL #T874D-1959
MAPLE CHASE - MODEL #0960	
WHITE RODGERS - MODEL #1F91-59	
ROBERTSHAW - MODEL #CM64A-USAJ	

TABLE 6

FIELD WIRE SIZE FOR 24 VOLT THERMOSTAT CIRCUITS						
Thermostat Load - Amps	SOLID COPPER WIRE - AWG.					
	3.0	16	14	12	10	10
2.5	16	14	12	12	12	10
2.0	18	16	14	12	12	10
	50	100	150	200	250	300
	Length of Run – Feet (1)					

(1) The total wire length is the distance from the furnace to the thermostat and back to the furnace.

NOTE: DO NOT USE CONTROL WIRING SMALLER THAN NO. 18 AWG.

X. FURNACE SECTION CONTROLS AND IGNITION SYSTEM

NORMAL FURNACE OPERATING SEQUENCE

This unit is equipped with an integrated direct spark ignition control.

1. The thermostat calls for heat.
2. The control board will run a self check to verify that the limit control and manual reset overtemperature control are closed and that the pressure switch is open. If so, the induced draft blower (inducer) begins a prepurge cycle.
3. The air proving negative pressure switch closes.
4. **15 seconds after the pressure switch closes**, the gas valve opens and the spark is initiated for a 7 second trial for ignition.
5. Burners ignite and flame sensor proves all burners have lit.
6. The circulating air blower is energized after 30 seconds.
7. The control board enters a normal operation loop in which all safety controls are monitored continuously.
8. Thermostat is satisfied and opens.
9. The gas valve is de-energized and closes, shutting down the burner flame.
10. The control board will de-energize the inducer after a five second post purge.
11. The circulating air blower is de-energized after 90 seconds.
 - The integrated control board has a three ignition system.
 - After a total of three trials for ignition without sensing main burner flame, the system goes into a 100% lockout mode.
 - After one hour, the ignition control repeats the prepurge and ignition cycles for 3 tries and then goes into 100% lockout mode again.
 - It continues this sequence of cycles and lockout each hour until ignition is successful or power is interrupted.
 - During the lockout mode, neither the spark ignition control or gas valve will be energized until the system is reset by turning the thermostat to the "OFF" position or interrupting the electrical power to the unit for 3 seconds or longer.
 - The induced draft blower and main burner will shut off when the thermostat is satisfied.
 - The circulating air blower will start and run on the heating speed if the thermostat fan switch is in the "ON" position.

The integrated furnace control is equipped with diagnostic LED. The LED is lit continuously when there is power to the control, with or without a call for heat. If the LED is not lit, there is either no power to the control or there is an internal component failure within the control, and the control should be replaced.

If the control detects the following failures, the LED will flash on for approximately 1/4 second, then off for 3/4 second for designated failure detections.

- 1 Flash: Failed to detect flame within the three tries for ignition.
- 2 Flash: Pressure switch or induced draft blower problem detected.
- 3 Flash: High limit or auxiliary limit open.
- 4 Flash: Flame sensed and gas valve not energized or flame sensed with no "W" signal.
- 5 Flash: Overtemperature switch open.

OPERATING INSTRUCTIONS

This appliance is equipped with a direct spark intermittent ignition device. This device lights the main burners each time the room thermostat (closes) calls for heat. See operating instructions on the back of the furnace/controls access panel.

WARNING

DO NOT ATTEMPT TO MANUALLY LIGHT THIS FURNACE WITH A MATCH OR ANY OPEN FLAME. ATTEMPTING TO DO SO CAN CAUSE AN EXPLOSION OR FIRE RESULTING IN PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

TO START THE FURNACE

1. STOP! Read the safety information on the Operating Instructions Label located on this appliance.

WARNING

IF YOU DO NOT FOLLOW THESE INSTRUCTIONS EXACTLY, A FIRE OR EXPLOSION MAY RESULT CAUSING PROPERTY DAMAGE, PERSONAL INJURY OR LOSS OF LIFE.

2. Set the thermostat to its lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do NOT try to light the burner by hand.
5. Remove control door/access panel.
6. Move switch to the "OFF" position.
7. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP!
 - Do not try to light any appliance.
 - Do not touch any electric switch; do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department.If you don't smell gas, go to the next step.
8. Move the switch from "OFF" position to "ON" position.
9. Replace the control door.
10. Turn on all electric power to the appliance.
11. Set the thermostat to the desired setting.
12. If the appliance will not operate, follow the instructions below on how to shut down the furnace.

WARNING

THE SPARK IGNITOR AND IGNITION LEAD FROM THE IGNITION CONTROL ARE HIGH VOLTAGE. KEEP HANDS OR TOOLS AWAY TO PREVENT ELECTRICAL SHOCK. SHUT OFF ELECTRICAL POWER BEFORE SERVICING ANY OF THE CONTROLS. FAILURE TO ADHERE TO THIS WARNING CAN RESULT IN PERSONAL INJURY OR DEATH.

The initial start-up on a new installation may require the control system to be energized for some time until any air has bled through the system and fuel gas is available at the burners.

TO SHUT DOWN FURNACE

1. Set the thermostat to the lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Remove control door.
4. Move switch to the "OFF" position.
5. Replace control door.

WARNING

SHOULD OVERHEATING OCCUR OR THE GAS SUPPLY FAIL TO SHUT OFF, SHUT OFF THE MANUAL GAS VALVE TO THE APPLIANCE BEFORE SHUTTING OFF THE ELECTRICAL SUPPLY. FAILURE TO DO SO CAN RESULT IN AN EXPLOSION OR FIRE CAUSING PROPERTY DAMAGE, SEVERE PERSONAL INJURY OR DEATH!

BURNERS

Burners for these units have been designed so that field adjustment is not required. Burners are tray-mounted and accessible for easy cleaning when required.

MANUAL RESET OVERTEMPERATURE CONTROL

A manual reset overtemperature control is located on the burner shield. This device senses blockage in the heat exchanger or insufficient combustion air. This shuts off the main burners if excessive temperatures occur in the burner compartment.

Operation of this control indicates an abnormal condition. Therefore, the unit should be examined by a qualified installer, service agency, or the gas supplier before being placed back into operation.

WARNING

DO NOT JUMPER THIS DEVICE! DO NOT reset the overtemperature control without taking corrective action to assure that an adequate supply of combustion air is maintained under all conditions of operation. Failure to do so can result in carbon monoxide poisoning or death. Replace this control only with the identical replacement part.

PRESSURE SWITCH

This furnace has a pressure switch for sensing a blocked exhaust or a failed induced draft blower. It is normally open and closes when the induced draft blower starts, indicating air flow through the combustion chamber.

LIMIT CONTROL

The supply air high temperature limit cut-off is set at the factory and cannot be adjusted. It is calibrated to prevent the air temperature leaving the furnace from exceeding the maximum outlet air temperature. **WARNING: DO NOT JUMPER THIS DEVICE! Replace this control only with the identical replacement part.**

XI. SYSTEM OPERATING INFORMATION

ADVISE THE CUSTOMER

1. Keep the air filters clean. The heating system operates better, more efficiently and more economically.
2. Arrange the furniture and drapes so that the supply air registers and the return air grilles are unobstructed.
3. Close doors and windows. This reduces the heating load on the system.
4. Avoid excessive use of exhaust fans.
5. Do not permit the heat generated by television, lamps or radios to influence the thermostat operation.
6. Except for the mounting platform, keep all combustible articles three feet from the unit and exhaust system.
7. **IMPORTANT:** Replace all blower doors and compartment cover after servicing the unit. Do not operate the unit without all panels and doors securely in place.
8. Do not allow snow or other debris to accumulate in the vicinity of the appliance.

FURNACE SECTION MAINTENANCE

The unit's furnace should operate for many years without excessive scale build-up in flue passageways; however, it is recommended that a qualified installer, service agency, or the gas supplier annually inspect the flue passageways, the exhaust system and the burners for continued safe operation, paying particular attention to deterioration from corrosion or other sources.

If during inspection the flue passageways and exhaust system are determined to require cleaning, the following procedures should be followed (**by a qualified installer, service agency, or gas supplier**):

1. Turn off the electrical power to the unit and set the thermostat to the lowest temperature.
2. Shut off the gas supply to the unit either at the meter or at manual valve in the supply piping.

WARNING

LABEL ALL WIRES PRIOR TO DISCONNECTION WHEN SERVICING CONTROLS. WIRING ERRORS CAN CAUSE IMPROPER AND DANGEROUS OPERATION RESULTING IN FIRE, ELECTRICAL SHOCK, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

3. Remove the furnace controls access panel and the control box cover.
4. Disconnect the gas supply piping from the gas valve.
5. Disconnect the wiring to the induced draft blower motor, gas valve, flame sensor, and flame roll-out control, and ignitor cable. **Mark all wires disconnected for proper reconnection.**
6. Remove the screws (4) connecting the burner tray to the heat exchanger mounting panel.
7. Remove the burner tray and the manifold assembly from the unit.
8. Remove the screws (4) connecting the induced draft blower to the collector box and screws (16) connecting the collector box to the heat exchanger mounting panel. Remove the induced draft blower and the collector box from the unit.
9. Remove the turbulators from inside the heat exchangers by inserting the blade of a screwdriver under the locking tabs. Pop the tabs out of the expanded grooves of the heat exchanger. Slide the turbulators out of the heat exchangers.
10. Direct a water hose into the outlet of the heat exchanger top. Flush the inside of each heat exchanger tube with water. Blow out each tube with air to remove excessive moisture.
11. Reassemble (steps 1 through 10 in reverse order). **Be careful not to strip out the screw holes used to mount the collector box and inducer blower. Replace inducer blower gasket and collector box gasket with factory replacements if damaged.**

WARNING

HOLES IN THE EXHAUST TRANSITION OR HEAT EXCHANGER CAN CAUSE TOXIC FUMES TO ENTER THE HOME. THE EXHAUST TRANSITION OR HEAT EXCHANGER MUST BE REPLACED IF THEY HAVE HOLES OR CRACKS IN THEM. FAILURE TO DO SO CAN CAUSE CARBON MONOXIDE POISONING RESULTING IN PERSONAL INJURY OR DEATH.

The manufacturer recommends that a qualified installer, service agency or the gas supplier visually inspect the burner flames for the desired flame appearance at the beginning of the heating season and approximately midway in heating season.

The manufacturer also recommends that a qualified installer, service agency or the gas supplier clean the flame sensor with steel wool at the beginning of the heating season.

WARNING

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

LUBRICATION

IMPORTANT: DO NOT attempt to lubricate the bearings on the blower motor or the induced draft blower motor. Addition of lubricants can reduce the motor life and void the warranty.

The blower motor and induced draft blower motor are prelubricated by the manufacturer and do not require further attention.

A qualified installer, service agency or the gas supplier must periodically clean the motors to prevent the possibility of overheating due to an accumulation of dust and dirt on the windings or on the motor exterior. And, as suggested elsewhere in these instructions, the air filters should be kept clean because dirty filters can restrict air flow and the motor depends upon sufficient air flowing across and through it to prevent overheating.

COOLING SECTION MAINTENANCE

WARNING

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

It is recommended that at the beginning of each cooling season a qualified installer or service agency inspect and clean the cooling section of this unit. The following areas should be addressed: evaporator coil, condenser coil, condenser fan motor and venturi area.

To inspect the evaporator coil:

1. Remove the filter access panel and the blower/evaporator coil access panel.

WARNING

LABEL ALL WIRES PRIOR TO DISCONNECTION WHEN SERVICING THE UNIT. WIRING ERRORS CAN CAUSE IMPROPER AND DANGEROUS OPERATION RESULTING IN FIRE, ELECTRICAL SHOCK, PROPERTY DAMAGE, SEVERE PERSONAL INJURY OR DEATH.

2. Unplug the wires from the circulating air blower and the limit control. Remove the two screws and slide the blower out of the unit sideways.
3. Shine a flashlight on the evaporator coil (both sides) and inspect for accumulation of lint, insulation, etc.
4. If coil requires cleaning, follow the steps shown below.

Cleaning Evaporator Coil

1. Remove screws from condenser fan grille assembly and lay grille over on the unit top panel.
2. Remove the controls access panel and the control box cover.
3. Disconnect the outdoor fan motor wiring from the compressor contactor and capacitor. Remove the strain relief in the bulkhead and pull the fan motor wires through. Set grille assembly to the side.
4. Remove the screws that secure the unit top to the unit. Remove the top and set the unit top to the side.
5. The coil should be cleaned when it is dry. If the coil is coated with dirt or lint, vacuum it with a soft brush attachment. Be careful not to bend the coil fins.
6. If the coil is coated with oil or grease, clean it with a mild detergent-and-water solution. Rinse the coil thoroughly with water. **IMPORTANT: Do not** use excessive water pressure. Excessive water pressure can bend the fins and tubing of the coil and lead to inadequate unit performance. Be careful not to splash water excessively into unit.
7. Go to next section for cleaning the condenser coil.

Cleaning Condenser Coil, Drain Pan, Condensate Drain, Condenser Fan, Circulation Air Blower and Venturi

1. Remove the screws from the condenser coil protective grille and remove the grille from the unit. Ensure the filter access panel is still removed to access all of the screws securing the grille.
2. The coil should be cleaned when it is dry. If the coil is coated with dirt or lint, vacuum it with a soft brush attachment. Be careful not to bend the coil fins.
3. If the coil is coated with oil or grease, clean it with a mild detergent-and-water solution. Rinse the coil thoroughly with water. **IMPORTANT: Do not** use excessive water pressure. Excessive water pressure can bend the fins and tubing of the coil and lead to inadequate unit performance. Be careful not to splash water excessively into unit.
4. Inspect the drain pan and condensate drain at the same time the condenser coil is checked. Clean the drain pan by flushing with water and removing any matters of obstructions which may be present.
5. Flush the drain tube with water. If the drain tube is blocked, it can usually be cleared with high pressure water.
6. The venturi should also be inspected for items of obstruction such as collections of grass, dirt or spider webs. Remove any that are present.
7. Inspect the circulating air blower wheel and motor for accumulation of lint, dirt or other obstruction and clean if necessary. Inspect the blower motor mounts and the blower housing for loose mounts or other damage. Repair or replace if necessary.

Re-assembly

1. Place the condenser coil protective grille back on unit and replace all screws.
2. Place top pane back on unit and replace all screws.
3. Set condenser fan grille assembly on top of the unit with the fan on top and the motor wires on the venturi side. Run the fan motor wires through the bulkhead and pull wires through the hole on the bottom of the control box on the left side and into the control box. Reconnect fan motor wires per the wiring diagram attached to the back of the control box cover.
4. Replace wire strain relief in bulkhead after the slack is pulled out of the wires on the fan side. This will assure wires will not be damaged by the fan during unit operation.
5. Turn the condenser fan grille assembly over and into the recess in the unit top. Secure the grille to the unit with the four long #8 screws removed earlier.
6. Replace the circulating air blower, making sure that all wires are properly reconnected per the unit wiring diagram.
7. Replace the filter and blower/evaporator coil access panels.
8. Replace the control box cover and controls access panel.
9. Restore electrical power to the unit and check for proper operation, especially the condenser fan motor.

REPLACEMENT PARTS

Contact your local distributor for a complete parts list.

TROUBLESHOOTING

Refer to Troubleshooting Chart included in this manual.

WIRING DIAGRAMS

Refer to the appropriate wiring diagram included in this manual.

CHARGING

Refer to the appropriate charge chart included in this manual.

BLOWER MOTOR SPEED TAPS

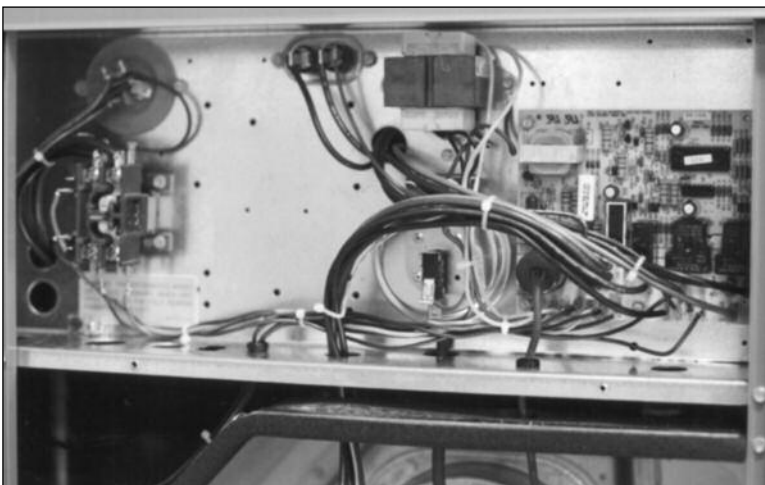
⚠ WARNING

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.

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

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

FIGURE 21
INTEGRATED FURNACE CONTROL BOARD



Units with PSC Blower Motors:

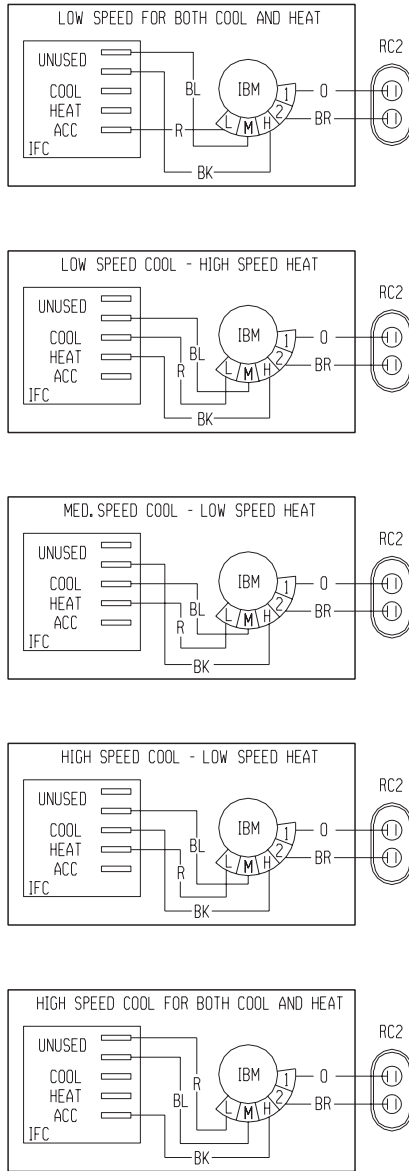
1. Remove the furnace/control access panel.
2. Remove the control box cover. See Figure 21 for location of the furnace control board.
3. Reference Figure 22 for the proper location of the wires on the speed tap block and on the furnace control board to obtain the speed tap you have chosen.
Note: 460V units have dedicated heating and cooling speeds and should not be adjusted.
4. After adjusting the wires accordingly, attach the control box cover, furnace control access panel and the blower access panel to the unit.

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 speeds can be adjusted as noted in Figure 22 by moving appropriate wire between taps at the blower (Do not connect wires to unspecified speed taps).
Note: Heat speed is dedicated and should not be changed.
4. Replace blower access panel.

FIGURE 22

208/230 Volt PSC



460 Volt PSC

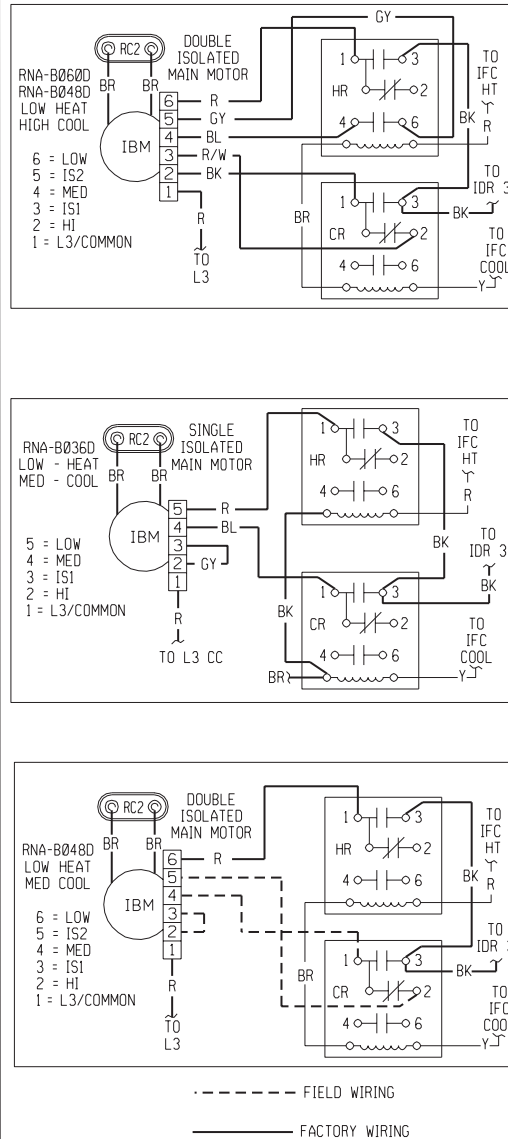


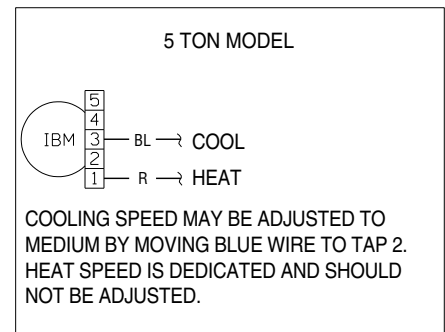
FIGURE 23

FACTORY SET BLOWER SPEEDS

MODEL	FACTORY SET BLOWER SPEED	
	COOL	HEAT
2.0 TON W/40K HEAT	HIGH	LOW
2.0 TON W/60K HEAT	HIGH	HIGH
2.0 TON W/80K HEAT	HIGH	HIGH
2.5 TON/ALL HEATS	LOW	LOW
3.0 TON/ALL HEATS	MED.	LOW *
3.5 TON/ALL HEATS	HIGH	LOW
4.0 TON/ALL HEATS	HIGH	LOW △
5.0 TON/ALL HEATS	HIGH	LOW *

* 460 volt units: Do not adjust from factory speed.
 △ 460 volt units: Low speed heat only; field conversion diagram for medium speed cool provided on Figure 22.

208/230 Volt X-13 Motor



XII. GENERAL DATA - RRNA MODELS

NOMINAL SIZES 2-5 TONS [7-15.8 kW]

Model RRNA Series	B024JK04(E/X)	B024JK06(E/X)	B024JK08(E/X)	B030JK04(E/X)
Cooling Performance¹				Continued ->
Gross Cooling Capacity Btu [kW]	24,800 [7.27]	24,800 [7.27]	24,800 [7.27]	31,200 [9.14]
EER, SEER ²	11.8/13	11.8/13	11.8/13	11.1/13
Nominal CFM/ARI Rated CFM [L/s]	800/800 [378/378]	800/800 [378/378]	800/800 [378/378]	1000/1000 [472/472]
ARI Net Cooling Capacity Btu [kW]	24,000 [7.03]	24,000 [7.03]	24,000 [7.03]	30,000 [8.79]
Net Sensible Capacity Btu [kW]	17,170 [5.03]	17,170 [5.03]	17,170 [5.03]	20,980 [6.15]
Net Latent Capacity Btu [kW]	6,830 [2]	6,830 [2]	6,830 [2]	9,020 [2.64]
Net System Power kW	2.04	2.04	2.04	2.7
Heating Performance (Gas)⁴				
Heating Input Btu [kW]	40,000 [11.72]	60,000 [17.58]	80,000 [23.44]	40,000 [11.72]
Heating Output Btu [kW]	31,000 [9.08]	47,000 [13.77]	62,000 [18.17]	31,000 [9.08]
Temperature Rise Range °F [°C]	30-60 [16.7/33.3]	40-70 [22.2/38.9]	55-85 [30.6/47.2]	20-50 [11.1/27.8]
AFUE %	80	80	80	80
Steady State Efficiency (%)	81	81	81	81
No. Burners	2	3	4	2
No. Stages	1	1	1	1
Gas Connection Pipe Size in. [mm]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]
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	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]	10.56 [0.98]	10.56 [0.98]	10.56 [0.98]	10.56 [0.98]
Rows / FPI [FPcm]	1 / 18 [7]	1 / 18 [7]	1 / 18 [7]	1 / 18 [7]
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]	5.54 [0.51]	5.54 [0.51]	5.54 [0.51]
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]	1/0.75 [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]	2500 [1180]	2500 [1180]
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]	1/9x7 [229x178]	1/9x7 [229x178]	1/10x9 [254x229]
Drive Type/No. Speeds	Direct/2	Direct/2	Direct/2	Direct/3
No. Motors	1	1	1	1
Motor HP	1/4	1/4	1/4	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)1x20x20 [25x508x508]	(1)1x20x20 [25x508x508]	(1)1x24x24 [25x610x610]
Refrigerant Charge Oz. [g]	69.6 [1973]	69.6 [1973]	69.6 [1973]	72 [2041]
Weights				
Net Weight lbs. [kg]	381 [173]	385 [175]	390 [177]	399 [181]
Ship Weight lbs. [kg]	421 [191]	425 [193]	430 [195]	439 [199]

GENERAL DATA - RRNA MODELS

NOMINAL SIZES 2-5 TONS [7-15.8 kW]

Model RRNA Series	B030JK06(E/X)	B030JK08(E/X)	B030JK10(E/X)	B036CK04
Cooling Performance¹				Continued ->
Gross Cooling Capacity Btu [kW]	31,200 [9.14]	31,200 [9.14]	31,200 [9.14]	37,400 [10.96]
EER, SEER ²	11.1/13	11.1/13	11.1/13	11.7/13
Nominal CFM/ARI Rated CFM [L/s]	1000/1000 [472/472]	1000/1000 [472/472]	1000/1000 [472/472]	1200/1200 [566/566]
ARI Net Cooling Capacity Btu [kW]	30,000 [8.79]	30,000 [8.79]	30,000 [8.79]	36,000 [10.55]
Net Sensible Capacity Btu [kW]	20,980 [6.15]	20,980 [6.15]	20,980 [6.15]	25,740 [7.54]
Net Latent Capacity Btu [kW]	9,020 [2.64]	9,020 [2.64]	9,020 [2.64]	10,260 [3.01]
Net System Power kW	2.7	2.7	2.7	3.07
Heating Performance (Gas)⁴				
Heating Input Btu [kW]	60,000 [17.58]	80,000 [23.44]	100,000 [29.3]	40,000 [11.72]
Heating Output Btu [kW]	47,000 [13.77]	62,000 [18.17]	77,000 [22.56]	32,400 [9.49]
Temperature Rise Range °F [°C]	30-60 [16.7/33.3]	40-70 [22.2/38.9]	45-85 [25/47.2]	20-50 [11.1/27.8]
AFUE %	80	80	80	80
Steady State Efficiency (%)	81	81	81	81
No. Burners	3	4	5	2
No. Stages	1	1	1	1
Gas Connection Pipe Size in. [mm]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]
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	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]	10.56 [0.98]	10.56 [0.98]	10.56 [0.98]	14.8 [1.37]
Rows / FPI [FPcm]	1 / 18 [7]	1 / 18 [7]	1 / 18 [7]	1 / 22 [9]
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]	5.54 [0.51]	5.54 [0.51]	5.54 [0.51]
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]	1/0.75 [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]	2500 [1180]	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]	1/10x9 [254x229]	1/10x9 [254x229]
Drive Type/No. Speeds	Direct/3	Direct/3	Direct/3	Direct/3
No. Motors	1	1	1	1
Motor HP	1/2	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)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]
Refrigerant Charge Oz. [g]	72 [2041]	72 [2041]	72 [2041]	83.2 [2359]
Weights				
Net Weight lbs. [kg]	404 [183]	409 [186]	414 [188]	412 [187]
Ship Weight lbs. [kg]	444 [201]	449 [204]	454 [206]	452 [205]

GENERAL DATA - RRNA MODELS

NOMINAL SIZES 2-5 TONS [7-15.8 kW]

Model RRNA Series	B036CK06	B036CK08	B036CK10	B036DK06
Cooling Performance¹				Continued ->
Gross Cooling Capacity Btu [kW]	37,400 [10.96]	37,400 [10.96]	37,400 [10.96]	37,400 [10.96]
EER, SEER ²	11.7/13	11.7/13	11.7/13	11.7/13
Nominal CFM/ARI Rated CFM [L/s]	1200/1200 [566/566]	1200/1200 [566/566]	1200/1200 [566/566]	1200/1200 [566/566]
ARI Net Cooling Capacity Btu [kW]	36,000 [10.55]	36,000 [10.55]	36,000 [10.55]	36,000 [10.55]
Net Sensible Capacity Btu [kW]	25,740 [7.54]	25,740 [7.54]	25,740 [7.54]	25,740 [7.54]
Net Latent Capacity Btu [kW]	10,260 [3.01]	10,260 [3.01]	10,260 [3.01]	10,260 [3.01]
Net System Power kW	3.07	3.07	3.07	3.07
Heating Performance (Gas)⁴				
Heating Input Btu [kW]	60,000 [17.58]	80,000 [23.44]	100,000 [29.3]	60,000 [17.58]
Heating Output Btu [kW]	48,600 [14.24]	64,800 [18.99]	81,000 [23.73]	48,600 [14.24]
Temperature Rise Range °F [°C]	30-60 [16.7/33.3]	40-70 [22.2/38.9]	45-85 [25/47.2]	30-60 [16.7/33.3]
AFUE %	80	80	80	80
Steady State Efficiency (%)	81	81	81	81
No. Burners	3	4	5	3
No. Stages	1	1	1	1
Gas Connection Pipe Size in. [mm]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]
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	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]	14.8 [1.37]	14.8 [1.37]	14.8 [1.37]	14.8 [1.37]
Rows / FPI [FPcm]	1 / 22 [9]	1 / 22 [9]	1 / 22 [9]	1 / 22 [9]
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]	5.54 [0.51]	5.54 [0.51]	5.54 [0.51]
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]	1/0.75 [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]	2700 [1274]	2700 [1274]	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]	1/10x9 [254x229]	1/10x9 [254x229]
Drive Type/No. Speeds	Direct/3	Direct/3	Direct/3	Direct/2
No. Motors	1	1	1	1
Motor HP	1/2	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)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]
Refrigerant Charge Oz. [g]	83.2 [2359]	83.2 [2359]	83.2 [2359]	83.2 [2359]
Weights				
Net Weight lbs. [kg]	417 [189]	422 [191]	426 [193]	417 [189]
Ship Weight lbs. [kg]	457 [207]	462 [210]	466 [211]	457 [207]

GENERAL DATA - RRNA MODELS

NOMINAL SIZES 2-5 TONS [7-15.8 kW]

Model RRNA Series	B036DK08	B036DK10	B036JK04(E/X)	B036JK06(E/X)
Cooling Performance¹				Continued ->
Gross Cooling Capacity Btu [kW]	37,400 [10.96]	37,400 [10.96]	37,400 [10.96]	37,400 [10.96]
EER, SEER ²	11.7/13	11.7/13	11.7/13	11.7/13
Nominal CFM/ARI Rated CFM [L/s]	1200/1200 [566/566]	1200/1200 [566/566]	1200/1200 [566/566]	1200/1200 [566/566]
ARI Net Cooling Capacity Btu [kW]	36,000 [10.55]	36,000 [10.55]	36,000 [10.55]	36,000 [10.55]
Net Sensible Capacity Btu [kW]	25,740 [7.54]	25,740 [7.54]	25,740 [7.54]	25,740 [7.54]
Net Latent Capacity Btu [kW]	10,260 [3.01]	10,260 [3.01]	10,260 [3.01]	10,260 [3.01]
Net System Power kW	3.07	3.07	3.07	3.07
Heating Performance (Gas)⁴				
Heating Input Btu [kW]	80,000 [23.44]	100,000 [29.3]	40,000 [11.72]	60,000 [17.58]
Heating Output Btu [kW]	64,800 [18.99]	81,000 [23.73]	31,000 [9.08]	47,000 [13.77]
Temperature Rise Range °F [°C]	40-70 [22.2/38.9]	45-85 [25/47.2]	20-50 [11.1/27.8]	30-60 [16.7/33.3]
AFUE %	80	80	80	80
Steady State Efficiency (%)	81	81	81	81
No. Burners	4	5	2	3
No. Stages	1	1	1	1
Gas Connection Pipe Size in. [mm]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]
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	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]	14.8 [1.37]	14.8 [1.37]	14.8 [1.37]	14.8 [1.37]
Rows / FPI [FPcm]	1 / 22 [9]	1 / 22 [9]	1 / 22 [9]	1 / 22 [9]
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]	5.54 [0.51]	5.54 [0.51]	5.54 [0.51]
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]	1/0.75 [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]	2700 [1274]	2700 [1274]	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]	1/10x9 [254x229]	1/10x9 [254x229]
Drive Type/No. Speeds	Direct/2	Direct/2	Direct/3	Direct/3
No. Motors	1	1	1	1
Motor HP	1/2	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)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]
Refrigerant Charge Oz. [g]	83.2 [2359]	83.2 [2359]	83.2 [2359]	83.2 [2359]
Weights				
Net Weight lbs. [kg]	422 [191]	426 [193]	412 [187]	417 [189]
Ship Weight lbs. [kg]	462 [210]	466 [211]	452 [205]	457 [207]

GENERAL DATA - RRNA MODELS

NOMINAL SIZES 2-5 TONS [7-15.8 kW]

Model RRNA Series	B036JK08(E/X)	B036JK10(E/X)	B042CK04	B042CK06
Cooling Performance¹				Continued ->
Gross Cooling Capacity Btu [kW]	37,400 [10.96]	37,400 [10.96]	42,500 [12.45]	42,500 [12.45]
EER, SEER ²	11.7/13	11.7/13	11.5/13	11.5/13
Nominal CFM/ARI Rated CFM [L/s]	1200/1200 [566/566]	1200/1200 [566/566]	1400/1350 [661/637]	1400/1350 [661/637]
ARI Net Cooling Capacity Btu [kW]	36,000 [10.55]	36,000 [10.55]	41,000 [12.01]	41,000 [12.01]
Net Sensible Capacity Btu [kW]	25,740 [7.54]	25,740 [7.54]	28,510 [8.35]	28,510 [8.35]
Net Latent Capacity Btu [kW]	10,260 [3.01]	10,260 [3.01]	12,490 [3.66]	12,490 [3.66]
Net System Power kW	3.07	3.07	3.57	3.57
Heating Performance (Gas)⁴				
Heating Input Btu [kW]	80,000 [23.44]	100,000 [29.3]	40,000 [11.72]	60,000 [17.58]
Heating Output Btu [kW]	62,000 [18.17]	77,000 [22.56]	32,400 [9.49]	48,600 [14.24]
Temperature Rise Range °F [°C]	40-70 [22.2/38.9]	45-85 [25/47.2]	20-50 [11.1/27.8]	30-60 [16.7/33.3]
AFUE %	80	80	80	80
Steady State Efficiency (%)	81	81	81	81
No. Burners	4	5	2	3
No. Stages	1	1	1	1
Gas Connection Pipe Size in. [mm]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]
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	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]	14.8 [1.37]	14.8 [1.37]	16.65 [1.55]	16.65 [1.55]
Rows / FPI [FPcm]	1 / 22 [9]	1 / 22 [9]	1 / 22 [9]	1 / 22 [9]
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]	5.54 [0.51]	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]	1/0.75 [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]	2700 [1274]	2700 [1274]	3500 [1652]	3500 [1652]
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]	1/10x9 [254x229]	1/10x9 [254x229]
Drive Type/No. Speeds	Direct/3	Direct/3	Direct/3	Direct/3
No. Motors	1	1	1	1
Motor HP	1/2	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)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]
Refrigerant Charge Oz. [g]	83.2 [2359]	83.2 [2359]	104 [2948]	104 [2948]
Weights				
Net Weight lbs. [kg]	422 [191]	426 [193]	422 [191]	427 [194]
Ship Weight lbs. [kg]	462 [210]	466 [211]	462 [210]	467 [212]

GENERAL DATA - RRNA MODELS

NOMINAL SIZES 2-5 TONS [7-15.8 kW]

Model RRNA Series	B042CK08	B042CK10	B042JK04(E/X)	B042JK06(E/X)
Cooling Performance¹				
Gross Cooling Capacity Btu [kW]	42,500 [12.45]	42,500 [12.45]	42,500 [12.45]	42,500 [12.45]
EER, SEER ²	11.5/13	11.5/13	11.5/13	11.5/13
Nominal CFM/ARI Rated CFM [L/s]	1400/1350 [661/637]	1400/1350 [661/637]	1400/1350 [661/637]	1400/1350 [661/637]
ARI Net Cooling Capacity Btu [kW]	41,000 [12.01]	41,000 [12.01]	41,000 [12.01]	41,000 [12.01]
Net Sensible Capacity Btu [kW]	28,510 [8.35]	28,510 [8.35]	28,510 [8.35]	28,510 [8.35]
Net Latent Capacity Btu [kW]	12,490 [3.66]	12,490 [3.66]	12,490 [3.66]	12,490 [3.66]
Net System Power kW	3.57	3.57	3.57	3.57
Heating Performance (Gas)⁴				
Heating Input Btu [kW]	80,000 [23.44]	100,000 [29.3]	40,000 [11.72]	60,000 [17.58]
Heating Output Btu [kW]	64,800 [18.99]	81,000 [23.73]	31,000 [9.08]	47,000 [13.77]
Temperature Rise Range °F [°C]	40-70 [22.2/38.9]	45-85 [25/47.2]	20-50 [11.1/27.8]	30-60 [16.7/33.3]
AFUE %	80	80	80	80
Steady State Efficiency (%)	81	81	81	81
No. Burners	4	5	2	3
No. Stages	1	1	1	1
Gas Connection Pipe Size in. [mm]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)⁵				
	76	76	76	76
Outdoor Coil - Fin Type				
Tube Type	Louvered	Louvered	Louvered	Louvered
Tube Size in. [mm] OD	Rifled	Rifled	Rifled	Rifled
Face Area sq. ft. [sq. m]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Rows / FPI [FPcm]	16.65 [1.55]	16.65 [1.55]	16.65 [1.55]	16.65 [1.55]
	1 / 22 [9]	1 / 22 [9]	1 / 22 [9]	1 / 22 [9]
Indoor Coil - Fin Type				
Tube Type	Louvered	Louvered	Louvered	Louvered
Tube Size in. [mm]	Rifled	Rifled	Rifled	Rifled
Face Area sq. ft. [sq. m]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Rows / FPI [FPcm]	7.39 [0.69]	7.39 [0.69]	7.39 [0.69]	7.39 [0.69]
Refrigerant Control	2 / 15 [6]	2 / 15 [6]	2 / 15 [6]	2 / 15 [6]
Drain Connection No./Size in. [mm]	TX Valves	TX Valves	TX Valves	TX Valves
	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]
Outdoor Fan - Type				
No. Used/Diameter in. [mm]	Propeller	Propeller	Propeller	Propeller
Drive Type/No. Speeds	1/22 [558.8]	1/22 [558.8]	1/22 [558.8]	1/22 [558.8]
CFM [L/s]	Direct/1	Direct/1	Direct/1	Direct/1
No. Motors/HP	3500 [1652]	3500 [1652]	3500 [1652]	3500 [1652]
Motor RPM	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP
	1075	1075	1075	1075
Indoor Fan - Type				
No. Used/Diameter in. [mm]	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
Drive Type/No. Speeds	1/10x9 [254x229]	1/10x9 [254x229]	1/10x9 [254x229]	1/10x9 [254x229]
No. Motors	Direct/3	Direct/3	Direct/3	Direct/3
Motor HP	1	1	1	1
Motor RPM	1/2	1/2	1/2	1/2
Motor Frame Size	1075	1075	1075	1075
	48	48	48	48
Filter - Type				
Furnished	Field Supplied	Field Supplied	Field Supplied	Field Supplied
(NO.) Size Recommended in. [mm x mm x mm]	No	No	No	No
	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]
Refrigerant Charge Oz. [g]				
	104 [2948]	104 [2948]	104 [2948]	104 [2948]
Weights				
Net Weight lbs. [kg]	432 [196]	437 [198]	422 [191]	427 [194]
Ship Weight lbs. [kg]	472 [214]	477 [216]	462 [210]	467 [212]

GENERAL DATA - RRNA MODELS

NOMINAL SIZES 2-5 TONS [7-15.8 kW]

Model RRNA Series	B042JK08(E/X)	B042JK10(E/X)	B048DK10	C048JK06
Cooling Performance¹				Continued ->
Gross Cooling Capacity Btu [kW]	42,500 [12.45]	42,500 [12.45]	50,500 [14.8]	50,000 [14.65]
EER, SEER ²	11.5/13	11.5/13	11.6/13	11.4/13
Nominal CFM/ARI Rated CFM [L/s]	1400/1350 [661/637]	1400/1350 [661/637]	1600/1600 [755/755]	1600/1550 [755/731]
ARI Net Cooling Capacity Btu [kW]	41,000 [12.01]	41,000 [12.01]	48,500 [14.21]	48,000 [14.06]
Net Sensible Capacity Btu [kW]	28,510 [8.35]	28,510 [8.35]	34,520 [10.11]	34,020 [9.97]
Net Latent Capacity Btu [kW]	12,490 [3.66]	12,490 [3.66]	13,980 [4.1]	13,980 [4.1]
Net System Power kW	3.57	3.57	4.18	4.18
Heating Performance (Gas)⁴				
Heating Input Btu [kW]	80,000 [23.44]	100,000 [29.3]	100,000 [29.3]	60,000 [17.58]
Heating Output Btu [kW]	62,000 [18.17]	77,000 [22.56]	81,000 [23.73]	48,600 [14.24]
Temperature Rise Range °F [°C]	40-70 [22.2/38.9]	45-85 [25/47.2]	45-85 [25/47.2]	30-60 [16.7/33.3]
AFUE %	80	80	80	80
Steady State Efficiency (%)	81	81	81	81
No. Burners	4	5	5	3
No. Stages	1	1	1	1
Gas Connection Pipe Size in. [mm]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)⁵	76	76	78	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]	16.65 [1.55]	16.65 [1.55]	16.23 [1.51]	16.23 [1.51]
Rows / FPI [FPcm]	1 / 22 [9]	1 / 22 [9]	2 / 22 [9]	1 / 22 [9]
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]	1/0.75 [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]	1/10x9 [254x229]	1/10x9 [254x229]	1/10x9 [254x229]	1/10x9 [254x229]
Drive Type/No. Speeds	Direct/3	Direct/3	Direct/3	Direct/3
No. Motors	1	1	1	1
Motor HP	1/2	1/2	3/4	3/4
Motor RPM	1075	1075	1075	1050
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]	104 [2948]	104 [2948]	153.6 [4355]	97.6 [2767]
Weights				
Net Weight lbs. [kg]	432 [196]	437 [198]	491 [223]	481 [218]
Ship Weight lbs. [kg]	472 [214]	477 [216]	502 [228]	492 [223]

GENERAL DATA - RRNA MODELS

NOMINAL SIZES 2-5 TONS [7-15.8 kW]

Model RRNA Series	C048CK08	C048CK10	C048JK06(E/X)	C048JK08(E/X)
Cooling Performance¹				
Gross Cooling Capacity Btu [kW]	50,000 [14.65]	50,000 [14.65]	50,000 [14.65]	50,000 [14.65]
EER, SEER ²	11.4/13	11.4/13	11.4/13	11.4/13
Nominal CFM/ARI Rated CFM [L/s]	1600/1550 [755/731]	1600/1550 [755/731]	1600/1550 [755/731]	1600/1550 [755/731]
ARI Net Cooling Capacity Btu [kW]	48,000 [14.06]	48,000 [14.06]	48,000 [14.06]	48,000 [14.06]
Net Sensible Capacity Btu [kW]	34,020 [9.97]	34,020 [9.97]	34,020 [9.97]	34,020 [9.97]
Net Latent Capacity Btu [kW]	13,980 [4.1]	13,980 [4.1]	13,980 [4.1]	13,980 [4.1]
Net System Power kW	4.18	4.18	4.18	4.18
Heating Performance (Gas)⁴				
Heating Input Btu [kW]	80,000 [23.44]	100,000 [29.3]	60,000 [17.58]	80,000 [23.44]
Heating Output Btu [kW]	64,800 [18.99]	81,000 [23.73]	47,000 [13.77]	62,000 [18.17]
Temperature Rise Range °F [°C]	40-70 [22.2/38.9]	45-85 [25/47.2]	30-60 [16.7/33.3]	40-70 [22.2/38.9]
AFUE %	80	80	80	80
Steady State Efficiency (%)	81	81	81	81
No. Burners	4	5	3	4
No. Stages	1	1	1	1
Gas Connection Pipe Size in. [mm]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)⁵				
	76	76	78	78
Outdoor Coil - Fin Type				
Tube Type	Louvered	Louvered	Louvered	Louvered
Tube Size in. [mm] OD	Rifled	Rifled	Rifled	Rifled
Face Area sq. ft. [sq. m]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Rows / FPI [FPcm]	16.23 [1.51]	16.23 [1.51]	16.23 [1.51]	16.23 [1.51]
	1 / 22 [9]	1 / 22 [9]	1 / 22 [9]	1 / 22 [9]
Indoor Coil - Fin Type				
Tube Type	Louvered	Louvered	Louvered	Louvered
Tube Size in. [mm]	Rifled	Rifled	Rifled	Rifled
Face Area sq. ft. [sq. m]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Rows / FPI [FPcm]	7.39 [0.69]	7.39 [0.69]	7.39 [0.69]	7.39 [0.69]
Refrigerant Control	2 / 15 [6]	2 / 15 [6]	2 / 15 [6]	2 / 15 [6]
Drain Connection No./Size in. [mm]	TX Valves	TX Valves	TX Valves	TX Valves
	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]
Outdoor Fan - Type				
No. Used/Diameter in. [mm]	Propeller	Propeller	Propeller	Propeller
Drive Type/No. Speeds	1/22 [558.8]	1/22 [558.8]	1/22 [558.8]	1/22 [558.8]
CFM [L/s]	Direct/1	Direct/1	Direct/1	Direct/1
No. Motors/HP	3300 [1557]	3300 [1557]	3300 [1557]	3300 [1557]
Motor RPM	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP
	1075	1075	1075	1075
Indoor Fan - Type				
No. Used/Diameter in. [mm]	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
Drive Type/No. Speeds	1/10x9 [254x229]	1/10x9 [254x229]	1/10x9 [254x229]	1/10x9 [254x229]
No. Motors	Direct/3	Direct/3	Direct/3	Direct/3
Motor HP	1	1	1	1
Motor RPM	3/4	3/4	3/4	3/4
Motor Frame Size	1050	1050	1050	1050
	48	48	48	48
Filter - Type				
Furnished	Field Supplied	Field Supplied	Field Supplied	Field Supplied
(NO.) Size Recommended in. [mm x mm x mm]	No	No	No	No
	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]	(1)1x24x24 [25x610x610]
Refrigerant Charge Oz. [g]				
	97.6 [2767]	97.6 [2767]	97.6 [2767]	97.6 [2767]
Weights				
Net Weight lbs. [kg]	486 [220]	491 [223]	490 [222]	495 [225]
Ship Weight lbs. [kg]	497 [225]	502 [228]	501 [227]	506 [230]

GENERAL DATA - RRNA MODELS

NOMINAL SIZES 2-5 TONS [7-15.8 kW]

Model RRNA Series	C048JK10(E/X)	C060CK10	B060DK10	C060JK10(E/X)
Cooling Performance¹				
Gross Cooling Capacity Btu [kW]	50,000 [14.65]	60,000 [17.58]	60,000 [17.58]	60,000 [17.58]
EER, SEER ²	11.4/13	11.1/13	10.8/12.1	11.1/13
Nominal CFM/ARI Rated CFM [L/s]	1600/1550 [755/731]	2000/1850 [944/873]	2000/1850 [944/873]	2000/1850 [944/873]
ARI Net Cooling Capacity Btu [kW]	48,000 [14.06]	58,000 [16.99]	57,500 [16.85]	58,000 [16.99]
Net Sensible Capacity Btu [kW]	34,020 [9.97]	40,560 [11.88]	40,170 [11.77]	40,560 [11.88]
Net Latent Capacity Btu [kW]	13,980 [4.1]	17,440 [5.11]	17,330 [5.08]	17,440 [5.11]
Net System Power kW	4.18	4.18	5.31	5.2
Heating Performance (Gas)⁴				
Heating Input Btu [kW]	100,000 [29.3]	100,000 [29.3]	100,000 [29.3]	100,000 [29.3]
Heating Output Btu [kW]	77,000 [22.56]	81,000 [23.73]	81,000 [23.73]	77,000 [22.56]
Temperature Rise Range °F [°C]	45-85 [25/47.2]	45-85 [25/47.2]	45-85 [25/47.2]	45-85 [25/47.2]
AFUE %	80	80	80	80
Steady State Efficiency (%)	81	81	81	81
No. Burners	5	5	5	5
No. Stages	1	1	1	1
Gas Connection Pipe Size in. [mm]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]	0.5 [12.7]
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)⁵				
	78	78	78	78
Outdoor Coil - Fin Type				
Tube Type	Louvered	Louvered	Louvered	Louvered
Tube Size in. [mm] OD	Rifled	Rifled	Rifled	Rifled
Face Area sq. ft. [sq. m]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Rows / FPI [FPcm]	16.23 [1.51]	16.23 [1.51]	16.23 [1.51]	16.23 [1.51]
	1 / 22 [9]	1 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Indoor Coil - Fin Type				
Tube Type	Louvered	Louvered	Louvered	Louvered
Tube Size in. [mm]	Rifled	Rifled	Rifled	Rifled
Face Area sq. ft. [sq. m]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Rows / FPI [FPcm]	7.39 [0.69]	7.39 [0.69]	7.39 [0.69]	7.39 [0.69]
Refrigerant Control	2 / 15 [6]	2 / 15 [6]	2 / 15 [6]	2 / 15 [6]
Drain Connection No./Size in. [mm]	TX Valves	TX Valves	TX Valves	TX Valves
	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]
Outdoor Fan - Type				
No. Used/Diameter in. [mm]	Propeller	Propeller	Propeller	Propeller
Drive Type/No. Speeds	1/22 [558.8]	1/22 [558.8]	1/22 [558.8]	1/22 [558.8]
CFM [L/s]	Direct/1	Direct/1	Direct/1	Direct/1
No. Motors/HP	3300 [1557]	3300 [1557]	3300 [1557]	3300 [1557]
Motor RPM	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP
	1075	1075	1075	1075
Indoor Fan - Type				
No. Used/Diameter in. [mm]	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
Drive Type/No. Speeds	1/10x9 [254x229]	1/10x9 [254x229]	1/10x9 [254x229]	1/12x9 [305x229]
No. Motors	Direct/3	Direct/3	Direct/3	Direct/3
Motor HP	1	1	1	1
Motor RPM	3/4	3/4	3/4	1
Motor Frame Size	1050	1050	1075	1075
	48	48	48	48
Filter - Type				
Furnished	Field Supplied	Field Supplied	Field Supplied	Field Supplied
(NO.) Size Recommended in. [mm x mm x mm]	No	No	No	No
	(1)1x24x24 [25x610x610]	(1)1x24x30 [25x610x762]	(1)1x24x30 [25x610x762]	(1)1x24x30 [25x610x762]
Refrigerant Charge Oz. [g]				
	97.6 [2767]	145.6 [4128]	145.6 [4128]	145.6 [4128]
Weights				
Net Weight lbs. [kg]	500 [227]	540 [245]	532 [241]	540 [245]
Ship Weight lbs. [kg]	511 [232]	585 [265]	577 [262]	585 [265]

XII. MISCELLANEOUS

ELECTRICAL DATA – RRNA SERIES										
		-B024JK	-B030JK	-B036CK	-B036DK	-B036JK	-B042CK	-B042JK	-C048CK	-B048DK
Unit Information	Unit Operating Voltage Range	187-253	187-253	187-253	414-506	187-253	187-253	187-253	187-253	414-506
	Minimum Circuit Ampacity	16/16	22/22	16/16	10	22/22	18/18	26/26	20/20	11
	Minimum Overcurrent Protection Device Size	20/20	25/25	20/20	15	30/30	20/20	30/30	25/25	15
	Maximum Overcurrent Protection Device Size	25/25	35/35	25/25	15	35/35	25/25	40/40	30/30	15
Compressor Motor	No.	1	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	460	208/230	208/230	208/230	208/230	460
	Phase	1	1	3	3	1	3	1	3	3
	HP	2 1/6	2 2/3	3 1/3	3 1/3	3 1/3	3 1/2	3 1/2	4	4
	RPM	3450	3450	3450	3450	3450	3450	3450	3450	3450
	Amps (FLA)	10.4/10.4	14.1/14.1	9.6/9.6	5.8	14.4/14.4	10.3/10.3	16.5/16.5	12.2/12.2	6.1
	Amps (LRA)	54/54	68/68	73/73	35	77/77	77/77	95/95	80.8/80.8	41
Condenser Motor	No.	1	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	460	208/230	208/230	208/230	208/230	460
	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)	1.3	1.3	1.3	0.6	1.3	2	2	2	1
	Amps (LRA)	2.3	2.3	2.3	1.1	2.3	3.9	3.9	3.9	2.2
Evaporator Fan	No.	1	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	460	208/230	208/230	208/230	208/230	460
	Phase	1	1	1	1	1	1	1	1	1
	HP	1/4	1/2	1/2	1/2	1/2	1/2	1/2	3/4	3/4
	Amps (FLA)	1.3	2.4	2.4	1.2	2.4	2.4	2.4	2.7	2.3
	Amps (LRA)	2.3	5.1	5.1	2.2	5.1	5.1	5.1	0	5

ELECTRICAL DATA – RRNA SERIES					
		-C048JK	-C060CK	-B060DK	-C060JK
Unit Information	Unit Operating Voltage Range	187-253	187-253	414-506	187-253
	Minimum Circuit Ampacity	30/30	27/27	12	37/37
	Minimum Overcurrent Protection Device Size	35/35	35/35	15	45/45
	Maximum Overcurrent Protection Device Size	50/50	40/40	15	60/60
Compressor Motor	No.	1	1	1	1
	Volts	208/230	208/230	460	208/230
	Phase	1	3	3	1
	HP	4	5	5	5
	RPM	3450	3450	3450	3450
	Amps (FLA)	20.2/20.2	17.3/17.3	6.7	25/25
	Amps (LRA)	137/137	123/123	49.5	148/148
Condenser Motor	No.	1	1	1	1
	Volts	208/230	208/230	460	208/230
	Phase	1	1	1	1
	HP	1/3	1/3	1/3	1/3
	Amps (FLA)	2	2	1	2
	Amps (LRA)	3.9	3.9	2.2	3.9
Evaporator Fan	No.	1	1	1	1
	Volts	208/230	208/230	460	208/230
	Phase	1	1	1	1
	HP	3/4	1	3/4	1
	Amps (FLA)	2.7	2.8	2.3	2.8
	Amps (LRA)	0	0	5	0

INDOOR AIRFLOW PERFORMANCE FOR 2-5 TON PACKAGE GAS ELECTRIC UNITS – 208V DIRECT DRIVE

INDOOR AIRFLOW PERFORMANCE — 208 VOLTS

Nominal Cooling Capacity Tons [kW]	Motor Speed From Factory		Heating Input BTU/HR [kW]	Blower Size/ Motor HP [W] & # of Speeds	Motor Speed	CFM [L/s] Air Delivery/RPM/Watts — 208 VOLTS Side Discharge — Wet Coil									
	Cool	Heat				External Static Pressure — Inches W.C. [kPa]									
						0.1 [0.02]	0.2 [0.05]	0.3 [0.07]	0.4 [0.10]	0.5 [0.12]	0.6 [0.15]	0.7 [0.17]			
2.0 [7.03]	High	Low	40,000 [11.72]	9 x 7 1/4 HP [186] 2 Speed PSC Motor	Low	CFM [L/s]	675 [319]	657 [310]	634 [299]	602 [284]	560 [264]	505 [238]	435 [205]		
		Watts	695			785	870	905	940	980	1020				
	High	High	60,000 [17.58] 80,000 [23.45]			CFM [L/s]	898 [424]	861 [406]	822 [388]	777 [367]	721 [340]	651 [307]	562 [265]		
2.5 [8.79]	Low	Low	All Inputs	10 x 9 1/2 HP [373] 3 Speed PSC Motor	Low	CFM [L/s]	1076 [508]	1059 [500]	1032 [490]	996 [470]	950 [448]	896 [423]	832 [393]		
		Watts				730	775	820	865	905	940	975			
	High	High				60,000 [17.58] 80,000 [23.45] 100,000 [29.31]	CFM [L/s]	1222 [577]	1197 [565]	1179 [556]	1162 [548]	1137 [537]	1097 [518]	1033 [488]	
3.0 [10.55]	Med	Low	All Inputs	10 x 9 1/2 HP [373] 3 Speed PSC Motor	Med	CFM [L/s]	765	810	855	890	920	960	995		
		Watts				423	415	407	397	386	370	351			
	High	High				60,000 [17.58] 80,000 [23.45] 100,000 [29.31]	CFM [L/s]	1514 [715]	1461 [670]	1415 [668]	1370 [647]	1322 [624]	1266 [597]	1197 [565]	
3.5 [12.31]	High	Low	All Inputs	10 x 9 Blower 3/4 HP [559 W] 3 Speed (X13 Motor)	High	CFM [L/s]	895	930	965	985	1005	1025	1045		
		Watts				538	514	493	473	454	434	412			
	High	High				60,000 [17.58] 80,000 [23.45] 100,000 [29.31]	CFM [L/s]	1454 [686]	1433 [676]	1392 [657]	1354 [639]	1322 [624]	1283 [606]	1238 [584]	
4.0 [14.07]	High	Heat	All Inputs	10 x 9 Blower 3/4 HP [559 W] 3 Speed (X13 Motor)	Heat Dedicated (Tap 1)	CFM [L/s]	923	946	976	1015	1044	1085	1126		
		Watts				301	309	316	327	337	348	356			
	High	High				60,000 [17.58] 80,000 [23.45] 100,000 [29.31]	CFM [L/s]	1642 [775]	1621 [765]	1584 [748]	1542 [728]	1496 [706]	1451 [685]	1396 [659]	
5.0 [17.59]	High	Heat	All Inputs	12 x 9 1 HP [746] 3 Speed X13 Motor	Low Cool (Tap 2)	CFM [L/s]	1006	1022	1064	1090	1114	1151	1160		
		Watts				405	412	422	435	442	449	440			
	High	High				60,000 [17.58] 80,000 [23.45] 100,000 [29.31]	CFM [L/s]	1896 [895]	1863 [879]	1776 [838]	1694 [799]	1603 [757]	1528 [721]	1424 [672]	
5.0 [17.59]	High	Heat	All Inputs	12 x 9 1 HP [746] 3 Speed X13 Motor	High Cool (Tap 3)	CFM [L/s]	1146	1147	1159	1171	1173	1180	1188		
		Watts				624	614	583	554	522	497	467			
	High	High				60,000 [17.58] 80,000 [23.45] 100,000 [29.31]	CFM [L/s]	1418 [669]	1386 [654]	1352 [638]	1307 [617]	1270 [599]	1221 [576]	1180 [557]	
5.0 [17.59]	High	Heat	All Inputs	12 x 9 1 HP [746] 3 Speed X13 Motor	Dedicated (Tap 1)	CFM [L/s]	774	794	829	860	892	922	955		
		Watts				267	273	287	295	308	316	328			
	High	High				60,000 [17.58] 80,000 [23.45] 100,000 [29.31]	CFM [L/s]	1858 [877]	1821 [859]	1782 [841]	1752 [827]	1714 [809]	1678 [792]	1640 [774]	
5.0 [17.59]	High	Heat	All Inputs	12 x 9 1 HP [746] 3 Speed X13 Motor	Low Cool (Tap 2)	CFM [L/s]	944	968	994	1019	1041	1072	1089		
		Watts				541	555	564	578	586	598	611			
	High	High				60,000 [17.58] 80,000 [23.45] 100,000 [29.31]	CFM [L/s]	2017 [952]	1985 [937]	1949 [920]	1909 [901]	1879 [887]	1843 [870]	1792 [846]	
5.0 [17.59]	High	Heat	All Inputs	12 x 9 1 HP [746] 3 Speed X13 Motor	High Cool (Tap 3)	CFM [L/s]	1018	1033	1070	1076	1112	1124	1147		
		Watts				690	701	711	723	735	741	742			

NOTE: On 4 and 5 ton models, cooling speed must be changed to low cool to achieve ARI performance.

DOWN DISCHARGE PRESSURE DROP (ADD TO EXTERNAL STATIC PRESSURE)										
CFM [L/s]	600 [283]	800 [378]	1000 [472]	1200 [566]	1440 [661]	1600 [755]	1800 [850]	2000 [944]		
Pressure Drop—Inches W.C. [kPa]	.00	.02 [0.005]	.05 [0.012]	.07 [0.017]	.1 [0.025]	.12 [0.030]	.15 [0.037]	.17 [0.042]		
MINIMUM RECOMMENDED FILTER SIZES										
Nominal Cooling Capacity Tons [kW]	2.0 [7.03]									
Minimum Filter Size—Inches [mm]	20 x 20 x 1 [508 x 508 x 25]									
	2.5 [8.79] – 4.0 [14.07]									
	24 x 24 x 1 [610 x 610 x 25]									
	5.0 [17.59]									
	24 x 30 x 1 [610 x 762 x 1]									

INDOOR AIRFLOW PERFORMANCE FOR 2-5 TON PACKAGE GAS ELECTRIC UNITS – 230V DIRECT DRIVE

INDOOR AIRFLOW PERFORMANCE — 230 VOLTS

Nominal Cooling Capacity Tons [kW]	Motor Speed from Factory		Heating Input BTU/Hr [kW]	Blower Size/ Motor HP [W] & # of Speeds	Motor Speed	CFM [L/s] Air Delivery/RPM/Watts — 230/460 VOLTS Side Discharge — Wet Coil									
	Cool	Heat				External Static Pressure — Inches W.C. [kPa]									
						0.1 [0.02]	0.2 [0.05]	0.3 [0.07]	0.4 [0.10]	0.5 [0.12]	0.6 [0.15]	0.7 [0.17]			
2.0 [7.03]	High	Low	40,000 [11.72]	9 x 7 Blower 1/3 HP [249 W] 3 Speed PSC Motor	Low	CFM [L/s]	771 [364]	751 [354]	725 [342]	691 [326]	645 [304]	584 [276]	546 [258]		
						RPM	825	870	910	950	985	1010	1030		
2.5 [8.79]	High	High	60,000 [17.58] 80,000 [23.45]	10 x 9 Blower 1/2 HP [373W] 3 Speed PSC Motor	High	CFM [L/s]	946 [446]	922 [435]	882 [416]	830 [392]	769 [363]	701 [331]	630 [297]		
						RPM	990	1015	1035	1055	1070	1085	1100		
3.0 [10.55]	Low	Low	All Inputs	10 x 9 Blower 1/2 HP [373W] 3 Speed PSC Motor	Low	CFM [L/s]	1206 [569]	1182 [558]	1157 [546]	1128 [532]	1091 [515]	1044 [493]	983 [464]		
						RPM	760	815	870	910	950	975	1000		
3.5 [12.31]	Med	Med	40,000 [11.72] 60,000 [17.58] 80,000 [23.45] 100,000 [29.31]	10 x 9 Blower 1/2 HP [373W] 3 Speed PSC Motor	Med	CFM [L/s]	1411 [666]	1368 [646]	1327 [626]	1285 [606]	1238 [584]	1183 [558]	1116 [527]		
						RPM	865	900	935	970	1000	1020	1035		
4.0 [14.07]	High	High	60,000 [17.58] 80,000 [23.45] 100,000 [29.31]	10 x 9 Blower 3/4 HP [559W] 3 Speed X13 Motor	High	CFM [L/s]	1641 [774]	1577 [744]	1515 [715]	1455 [687]	1393 [657]	1329 [627]	1262 [596]		
						RPM	980	1000	1020	1035	1050	1065	1080		
5.0 [17.59]	High	High	100,000 [29.31]	12 x 9 Blower 1 HP [746W] 3 Speed X13 Motor	High	CFM [L/s]	1459 [689]	1438 [679]	1409 [665]	1371 [647]	1337 [631]	1296 [612]	1258 [594]		
						RPM	931	958	993	1031	1058	1097	1133		
5.0 [17.59]	Cool (Tap 3)	Heat (Tap 1)	100,000 [29.31]	12 x 9 Blower 1 HP [746W] 3 Speed X13 Motor	Heat (Tap 1)	CFM [L/s]	1662 [784]	1648 [778]	1607 [758]	1579 [745]	1538 [726]	1477 [697]	1392 [657]		
						RPM	1016	1037	1072	1098	1129	1156	1169		
5.0 [17.59]	High Cool (Tap 3)	Heat (Tap 1)	100,000 [29.31]	12 x 9 Blower 1 HP [746W] 3 Speed X13 Motor	High Cool (Tap 3)	CFM [L/s]	1910 [901]	1873 [884]	1798 [849]	1715 [809]	1621 [765]	1536 [725]	1422 [671]		
						RPM	1149	1160	1163	1169	1175	1187	1184		
5.0 [17.59]	High Cool (Tap 3)	Heat (Tap 1)	100,000 [29.31]	12 x 9 Blower 1 HP [746W] 3 Speed X13 Motor	Heat (Tap 1)	CFM [L/s]	1423 [672]	1390 [656]	1357 [640]	1311 [619]	1277 [603]	1233 [582]	1192 [583]		
						RPM	776	796	830	861	895	927	958		
5.0 [17.59]	High Cool (Tap 3)	Heat (Tap 1)	100,000 [29.31]	12 x 9 Blower 1 HP [746W] 3 Speed X13 Motor	High Cool (Tap 3)	CFM [L/s]	1872 [883]	1847 [872]	1808 [853]	1772 [836]	1743 [823]	1703 [804]	1670 [788]		
						RPM	956	973	1010	1023	1057	1085	1110		
5.0 [17.59]	High Cool (Tap 3)	Heat (Tap 1)	100,000 [29.31]	12 x 9 Blower 1 HP [746W] 3 Speed X13 Motor	High Cool (Tap 3)	CFM [L/s]	2046 [966]	2010 [949]	1980 [934]	1942 [917]	1904 [899]	1867 [881]	1822 [860]		
						RPM	1035	1046	1079	1086	1114	1141	1171		
5.0 [17.59]	High Cool (Tap 3)	Heat (Tap 1)	100,000 [29.31]	12 x 9 Blower 1 HP [746W] 3 Speed X13 Motor	High Cool (Tap 3)	CFM [L/s]	721	731	743	754	770	777	770		
						RPM	721	731	743	754	770	777	770		

NOTE: On 4 and 5 ton models, cooling speed must be changed to Low Cool to achieve ARI performance.

[] Designates Metric Conversions

INDOOR AIRFLOW PERFORMANCE FOR 2-5 TON PACKAGE GAS ELECTRIC UNITS – 460V DIRECT DRIVE

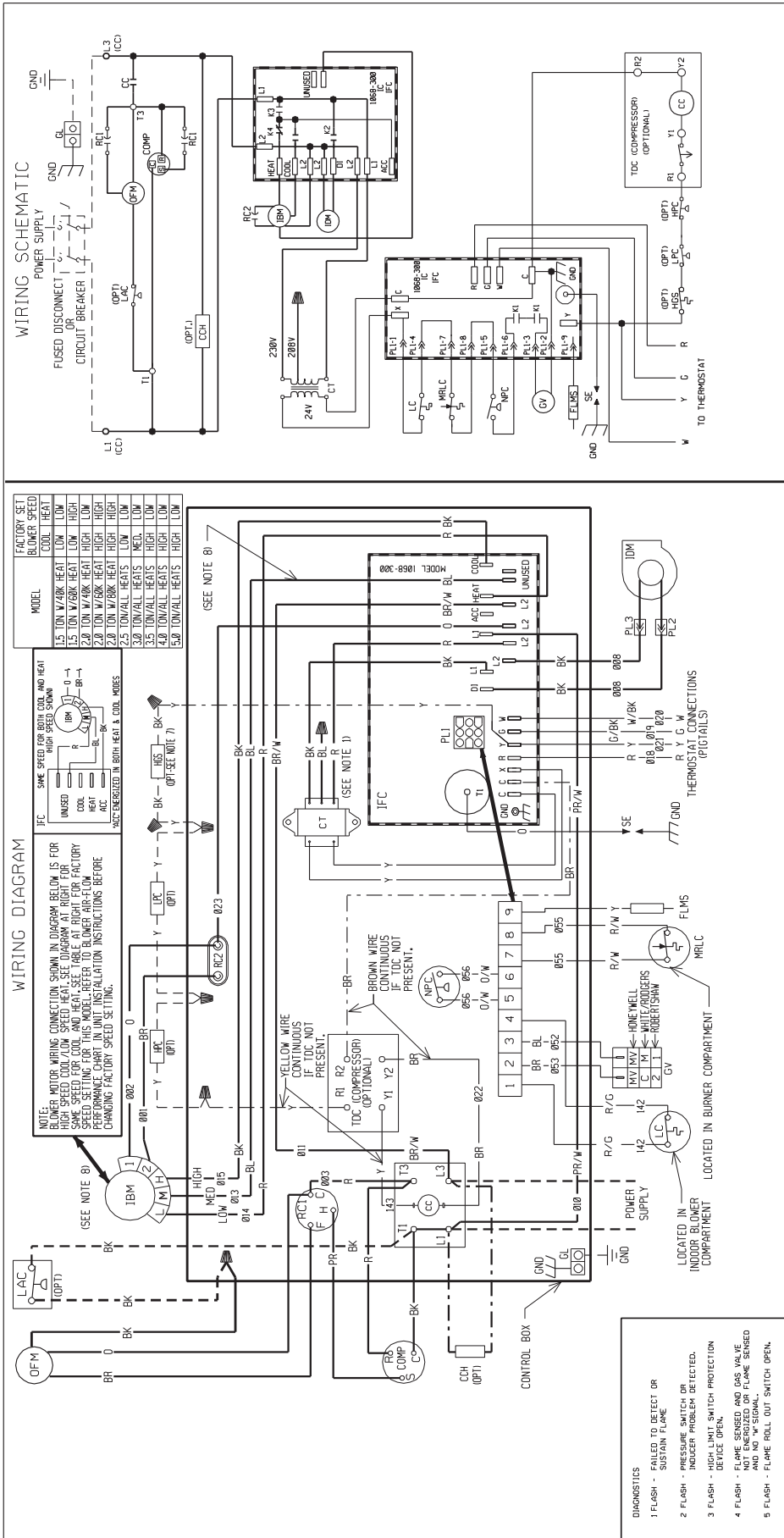
INDOOR AIRFLOW PERFORMANCE — 460 VOLTS

Nominal Cooling Capacity Tons [kW]	Motor Speed from Factory		Heating Input BTU/Hr [kW]	Blower Size/ Motor HP [W] & # of Speeds	Motor Speed	External Static Pressure - Inches W.C. [kPa] (Side Discharge-Wet Coil)										
	Cool	Heat				0.1 [0.2]	0.2 [0.05]	0.3 [0.07]	0.4 [0.10]	0.5 [0.12]	0.6 [0.15]	0.7 [0.17]				
3.0 [10.55]	Med	Low	60,000 [17.58] 80,000 [23.45] 100,000 [29.31]	10 x 9 Blower 1/2 HP [373W] 3 Speed PSC Motor	Low	CFM[l/s]	1206 [569]	1182 [558]	1157 [546]	1128 [532]	1091 [515]	1044 [493]	983 [464]			
						RPM	760	815	870	910	950	975	1000			
						Watts	419	406	394	381	368	353	334			
	High	Med	Low	60,000 [17.58] 80,000 [23.45] 100,000 [29.31]	10 x 9 Blower 1/2 HP [373W] 3 Speed PSC Motor	Med	CFM[l/s]	1411 [666]	1368 [646]	1327 [626]	1285 [606]	1238 [584]	1183 [558]	1116 [527]		
							RPM	865	900	935	970	1000	1020	1035		
							Watts	498	498	481	464	447	431	391		
4.0 [14.07]	High	Low	80,000 [23.45] 100,000 [29.31]	10 x 9 Blower 3/4 HP [559W] 3 Speed PSC Motor	Low	CFM[l/s]	1641 [774]	1577 [744]	1515 [715]	1455 [687]	1393 [657]	1329 [627]	1262 [596]			
						RPM	980	1000	1020	1035	1050	1065	1080			
						Watts	589	565	543	523	503	481	456			
	Med	High	Low	80,000 [23.45] 100,000 [29.31]	10 x 9 Blower 3/4 HP [559W] 3 Speed PSC Motor	Med	CFM[l/s]	1412 [666]	1395 [658]	1371 [647]	1339 [632]	1296 [612]	1242 [586]	1176 [555]		
							RPM	859	905	951	981	1011	1034	1057		
							Watts	557	530	506	483	461	437	409		
5.0 [17.59]	High	Low	100,000 [29.31]	10 x 9 Blower 3/4 HP [559W] 3 Speed PSC Motor	Med	CFM[l/s]	1793 [846]	1731 [817]	1665 [786]	1594 [752]	1519 [717]	1440 [680]	1356 [640]			
						RPM	1053	1067	1080	1091	1101	1110	1119			
						Watts	667	637	606	574	543	512	483			
	Low	High	Low	100,000 [29.31]	10 x 9 Blower 3/4 HP [559W] 3 Speed PSC Motor	High	CFM[l/s]	1889 [892]	1826 [862]	1753 [827]	1672 [789]	1586 [749]	1499 [707]	1413 [667]		
							RPM	1110	1117	1124	1129	1133	1139	1144		
							Watts	736	715	683	646	608	574	551		
5.0 [17.59]	High	Low	100,000 [29.31]	10 x 9 Blower 3/4 HP [559W] 3 Speed PSC Motor	Low	CFM[l/s]	1388 [655]	1380 [651]	1371 [647]	1351 [638]	1325 [625]	1294 [611]	1225 [578]			
						RPM	741	794	858	904	947	985	1021			
						Watts	595	583	564	539	510	484	453			
	Med	High	Low	100,000 [29.31]	10 x 9 Blower 3/4 HP [559W] 3 Speed PSC Motor	Med	CFM[l/s]	1943 [917]	1895 [894]	1840 [868]	1774 [837]	1700 [802]	1618 [764]	1525 [720]		
							RPM	995	1024	1040	1057	1041	1087	1100		
							Watts	785	751	717	674	643	599	561		
High	High	Low	100,000 [29.31]	10 x 9 Blower 3/4 HP [559W] 3 Speed PSC Motor	High	CFM[l/s]	2150 [1015]	2072 [978]	1991 [940]	1917 [905]	1820 [859]	1722 [813]	1627 [768]			
						RPM	1080	1093	1100	1106	1115	1123	1130			
						Watts	889	884	796	768	725	687	651			

NOTE: Cooling speed must be changed to medium to achieve ARI performance (4 & 5 Ton).

[] Designates Metric Conversions

FIGURE 24
WIRING DIAGRAM



WIRING SCHEMATIC

POWER SUPPLY
FUSED DISCONNECT
CIRCUIT BREAKER

WIRE COLOR CODE

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

ELECTRICAL WIRING DIAGRAM

1.5 - 5.0 TON GAS/ELECTRIC W/INTEGRATED FURNACE CONTROL W/PSC BLOWER MOTOR 208/230V, 1 - PHASE

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 (1005 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.

NOTES:

- MAIN UNIT TRANSFORMER PRIMARY LEADS: 60 HZ. RED-COMMON BLUE-208 V. BLACK-230 V. INTERCHANGE BLACK & BLUE LEADS FOR 230V/208V. TRANSFORMER IS PERMANENTLY PROTECTED, CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
- CONNECT FIELD WIRING IN GROUNDED RAINLIGHT CONDUIT TO 60 HZ. FUSED DISCONNECT.
- LOW VOLTAGE CIRCUITS ARE I.E.C. CLASS 2, HERTZ SUPPLIED. WIRE MUST BE SAME TYPE & SIZE AS ORIGINAL.
- HGS LOCATED IN TOP OF COPELAND ZR**KI COMPRESSORS ONLY.
- INDICATOR BLOWER SPEED AND BLUE MOTOR LEAD ON 2.5 - 4.0 TON MODELS ONLY.

COMPONENT CODE

LPC	LOW PRESSURE CONTROL
MRLC	MAN. RESET LIMIT CONTROL
NPC	NEG. PRESSURE CONTROL
OFM	OUTDOOR FAN MOTOR
OPT	OPTIONAL
PLUG	PLUG
RC	RUN CAPACITOR
SE	SPARK ELECTRODE
TDC	TIME DELAY CONTROL
WIRE NUT	WIRE NUT
CC	COMPRESSOR CONTACTOR
CCH	CRANKCASE HEATER
COMP	CONTROL TRANSFORMER
CT	CONTROL TRANSFORMER
FLMS	FLAME SENSOR
GRND LUG	GROUND LUG
GND	GROUND
GV	GAS VALVE
HPC	HIGH PRESSURE CONTROL
IBM	INDOOR BLOWER MOTOR
IDM	INDUCED DRAFT MOTOR
IFCS	INTEGRATED FURNACE CONTROL
HGS	HOT GAS SENSOR
LAC	LOW AMBIENT COOLING CONTROL
LC	LIMIT CONTROL

DWG. NO. **90-23626-04** REV **08**

**FIGURE 25
WIRING DIAGRAM**

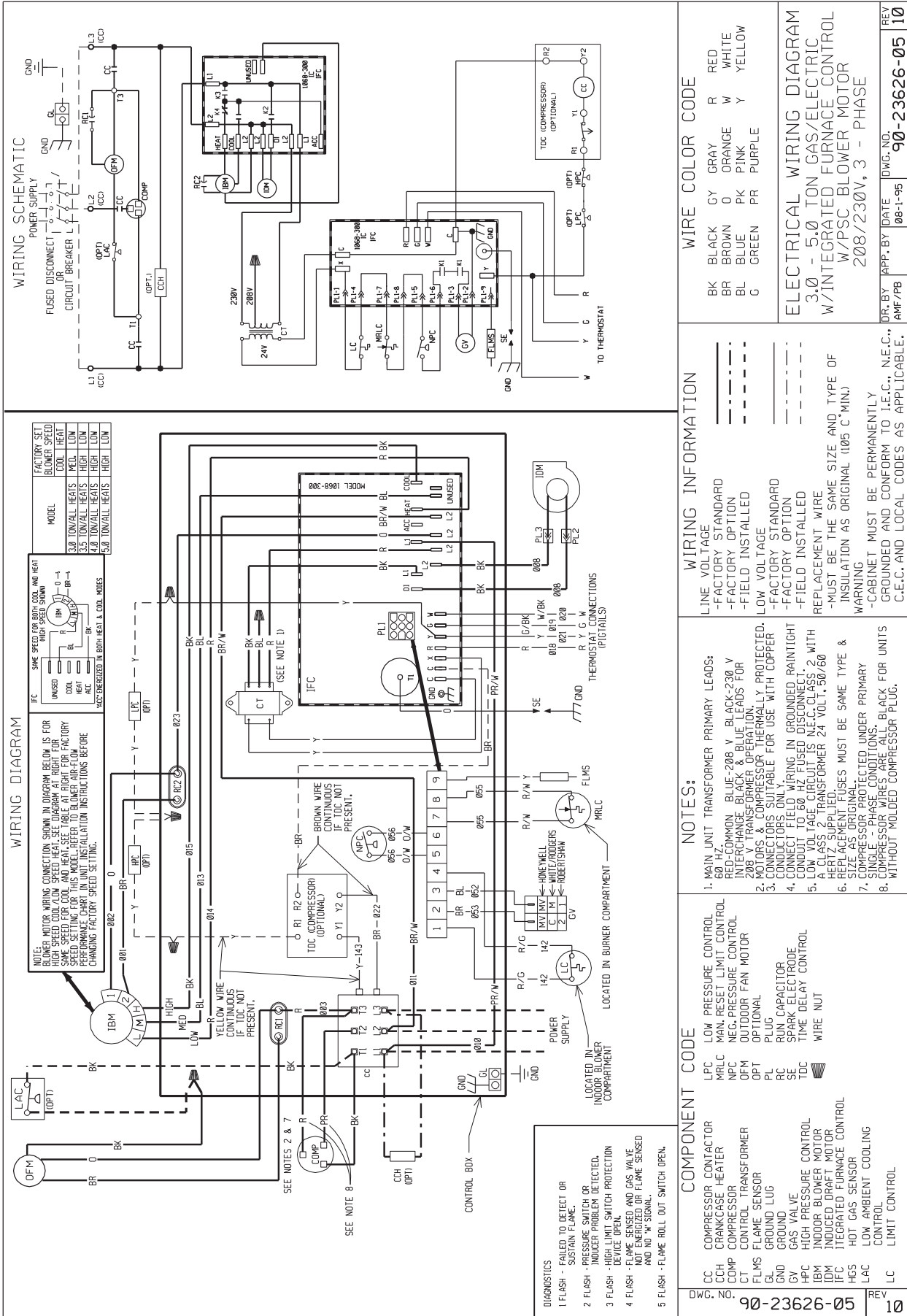
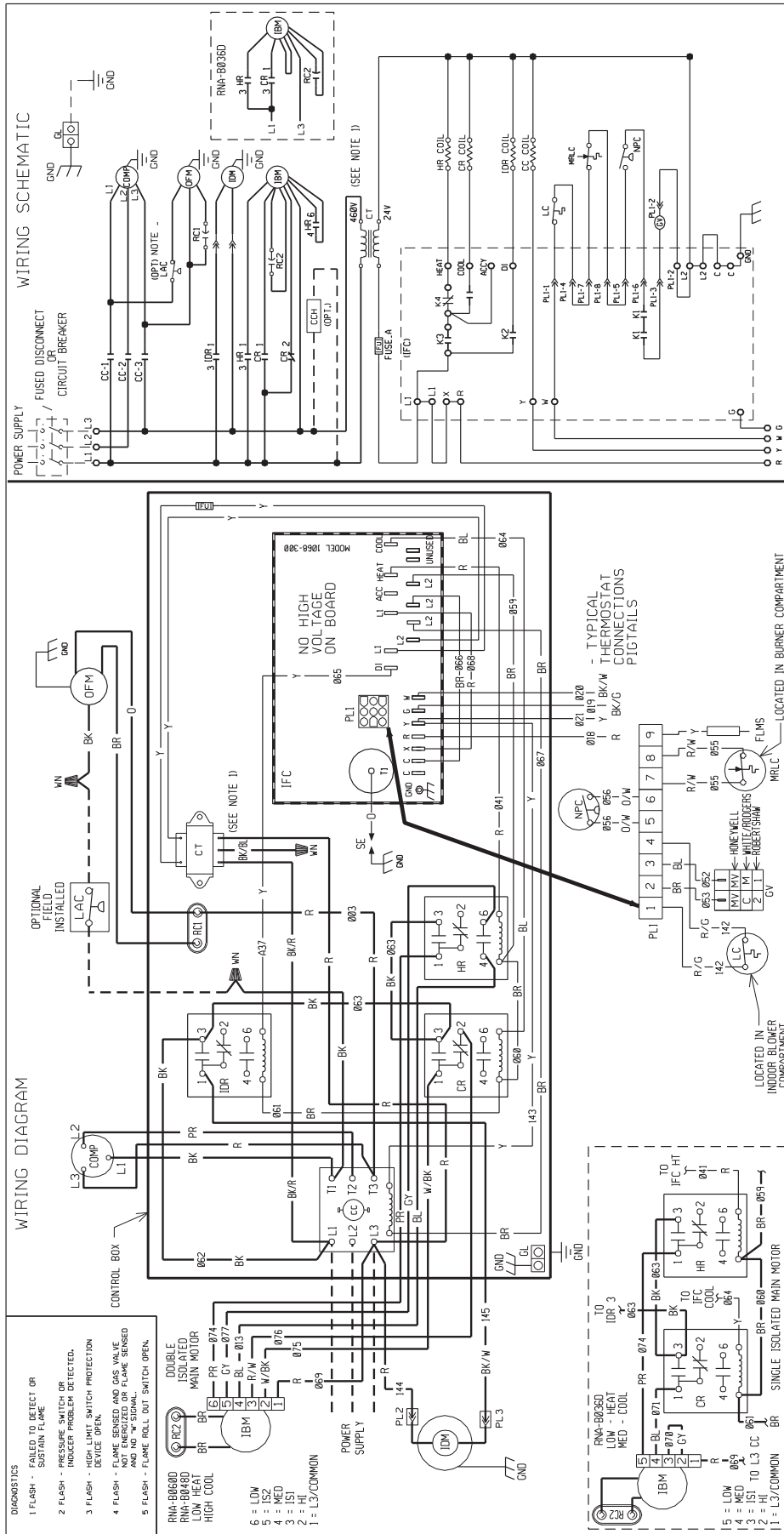


FIGURE 26
WIRING DIAGRAM



DR. BY	APP. BY	DATE	DWG. NO.	REV
JR/J		3-28-05	90-23626-10	03

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.)
- 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.

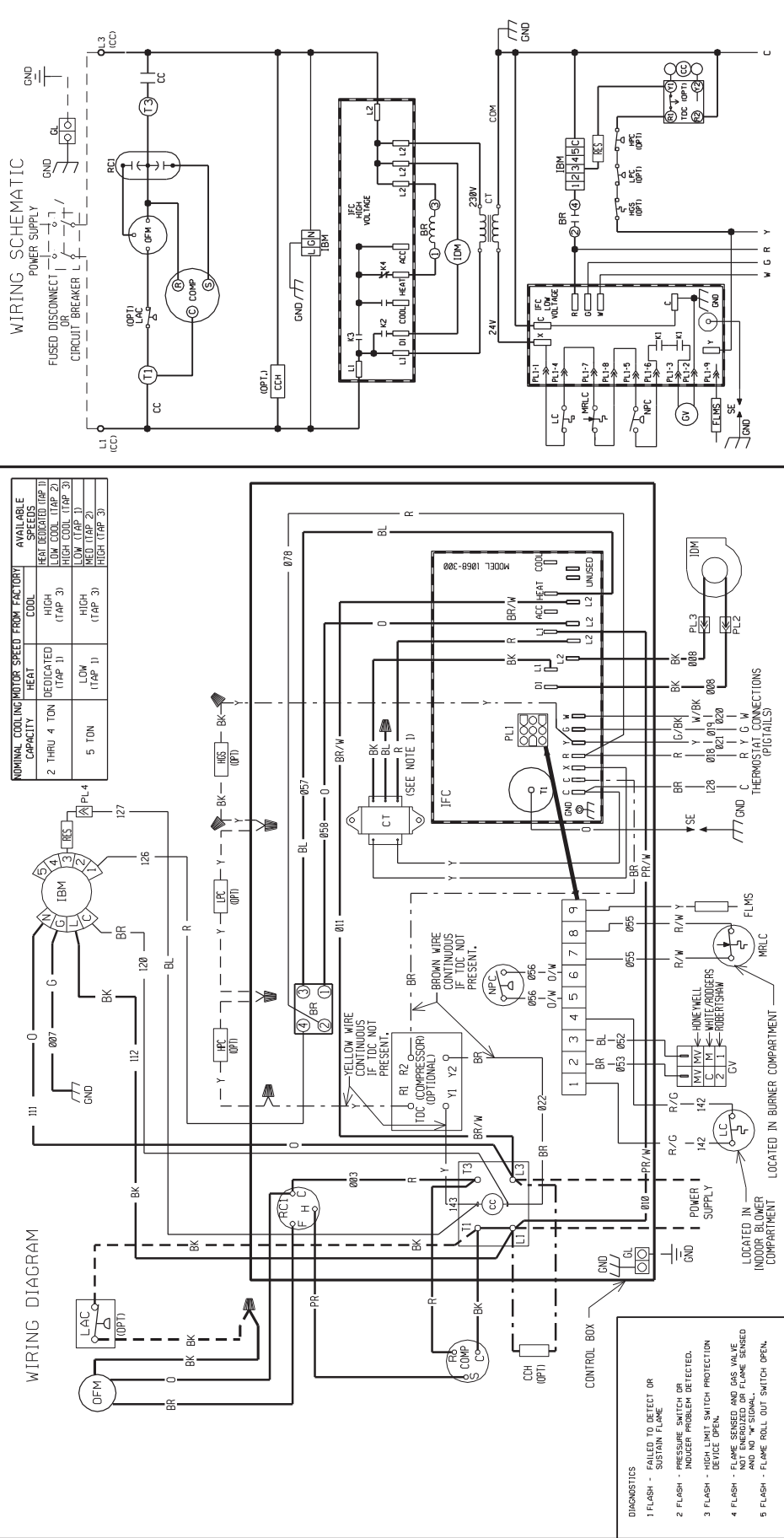
NOTES:

- MAIN UNIT TRANSFORMER PRIMARY LEADS: RED-COMMON BK/R 450V BK/BL 575 (NOT USED) MOTORS & COMPRESSOR THERMALLY PROTECTED. CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY. WIRING IN GROUNDED RAIN-TIGHT CONDUIT TO 60 HZ FUSED DISCONNECT.
- LOW VOLTAGE CIRCUIT IS N.E.C. CLASS 2 WITH HERTZ SUPPLIED.
- TRANSFORMER 24 VOLT, 50/60 HZ SUPPLIED. FUSES MUST BE SAME TYPE & SIZE AS ORIGINAL.

COMPONENT CODE

DWG. NO. 90-23626-10 REV 03

FIGURE 27
WIRING DIAGRAM



WIRING SCHEMATIC

POWER SUPPLY
FUZZY DISCONNECT
CIRCUIT BREAKER

WIRING DIAGRAM

2.0-5.0 TON SINGLE STAGE GAS/ELECTRIC W/X-13 BLOWER MOTOR AND INTEGRATED FURNACE CONTROL 208/230V, 1 - PHASE

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		

WIRING INFORMATION

LINE VOLTAGE
-FACTORY STANDARD
-FIELD INSTALLED
-FIELD INSTALLED

LOW VOLTAGE
-FACTORY STANDARD
-FIELD INSTALLED

REPLACEMENT WIRE
-MUST BE THE SAME SIZE AND TYPE OF INSULATION AS ORIGINAL (105 C° MIN.)
-CABINET MUST BE PERMANENTLY GROUNDED AND CONFORM TO I.E.C., N.E.C., C.E.C. AND LOCAL CODES AS APPLICABLE.

NOTES:

- MAIN UNIT TRANSFORMER PRIMARY LEADS:
RED-COMMON BLUE-208 V BLACK-230 V
WHITE-NEUTRAL
208 TRANSFORMER: 24 VOLT LEADS FOR MOTORS & COMPRESSOR THERMALLY PROTECTED. CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
4. CONNECT FIELD WIRING IN GROUNDED RAIN TIGHT CONDUIT TO 80 Hz USED DISCONNECT 2 WITH CLASS 2 TRANSFORMER 24 VOLTS 30/60 HERTZ SUPPLIED.
6. REPLACEMENT FUSES MUST BE SAME TYPE & SIZE AS ORIGINAL.

COMPONENT CODE

BR	BLOWER RELAY
LC	LIMIT CONTROL
LPC	LOW PRESSURE CONTROL
MRLC	MAN-RESET LIMIT CONTROL
NFC	NEG-PRESSURE CONTROL
OPTM	OPTIONAL MOTOR
PL	PLUG
PLUG	OPTIONAL
PC	GROUND LUG
RC	RUN CAPACITOR
RES	RESISTOR
GV	GAS VALVE
HPC	HIGH PRESSURE CONTROL
IDM	INDOOR BLOWER MOTOR
IDM	INDUCED DRAFT MOTOR
IFC	INTEGRATED FURNACE CONTROL
HGS	HOT GAS SENSOR
LAC	LOW AMBIENT COOLING CONTROL

DIAGNOSTICS

- FLASH - FAILED TO DETECT OR SUSTAIN FLAME
- FLASH - PRESSURE SWITCH OR INDUCER PROBLEM DETECTED
- FLASH - PRESSURE SWITCH PROTECTION DEVICE OPEN
- FLASH - FLAME SENSOR AND GAS VALVE NOT ENERGIZED OR FLAME SENSED AND NO "X" SIGNAL
- FLASH - FLAME ROLL OUT SWITCH OPEN

WIRING INFORMATION

LINE VOLTAGE
-FACTORY STANDARD
-FIELD INSTALLED
-FIELD INSTALLED

LOW VOLTAGE
-FACTORY STANDARD
-FIELD INSTALLED

REPLACEMENT WIRE
-MUST BE THE SAME SIZE AND TYPE OF INSULATION AS ORIGINAL (105 C° MIN.)
-CABINET MUST BE PERMANENTLY GROUNDED AND CONFORM TO I.E.C., N.E.C., C.E.C. AND LOCAL CODES AS APPLICABLE.

COMPONENT CODE

BR	BLOWER RELAY
LC	LIMIT CONTROL
LPC	LOW PRESSURE CONTROL
MRLC	MAN-RESET LIMIT CONTROL
NFC	NEG-PRESSURE CONTROL
OPTM	OPTIONAL MOTOR
PL	PLUG
PLUG	OPTIONAL
PC	GROUND LUG
RC	RUN CAPACITOR
RES	RESISTOR
GV	GAS VALVE
HPC	HIGH PRESSURE CONTROL
IDM	INDOOR BLOWER MOTOR
IDM	INDUCED DRAFT MOTOR
IFC	INTEGRATED FURNACE CONTROL
HGS	HOT GAS SENSOR
LAC	LOW AMBIENT COOLING CONTROL

DIAGNOSTICS

- FLASH - FAILED TO DETECT OR SUSTAIN FLAME
- FLASH - PRESSURE SWITCH OR INDUCER PROBLEM DETECTED
- FLASH - PRESSURE SWITCH PROTECTION DEVICE OPEN
- FLASH - FLAME SENSOR AND GAS VALVE NOT ENERGIZED OR FLAME SENSED AND NO "X" SIGNAL
- FLASH - FLAME ROLL OUT SWITCH OPEN

WIRE COLOR CODE

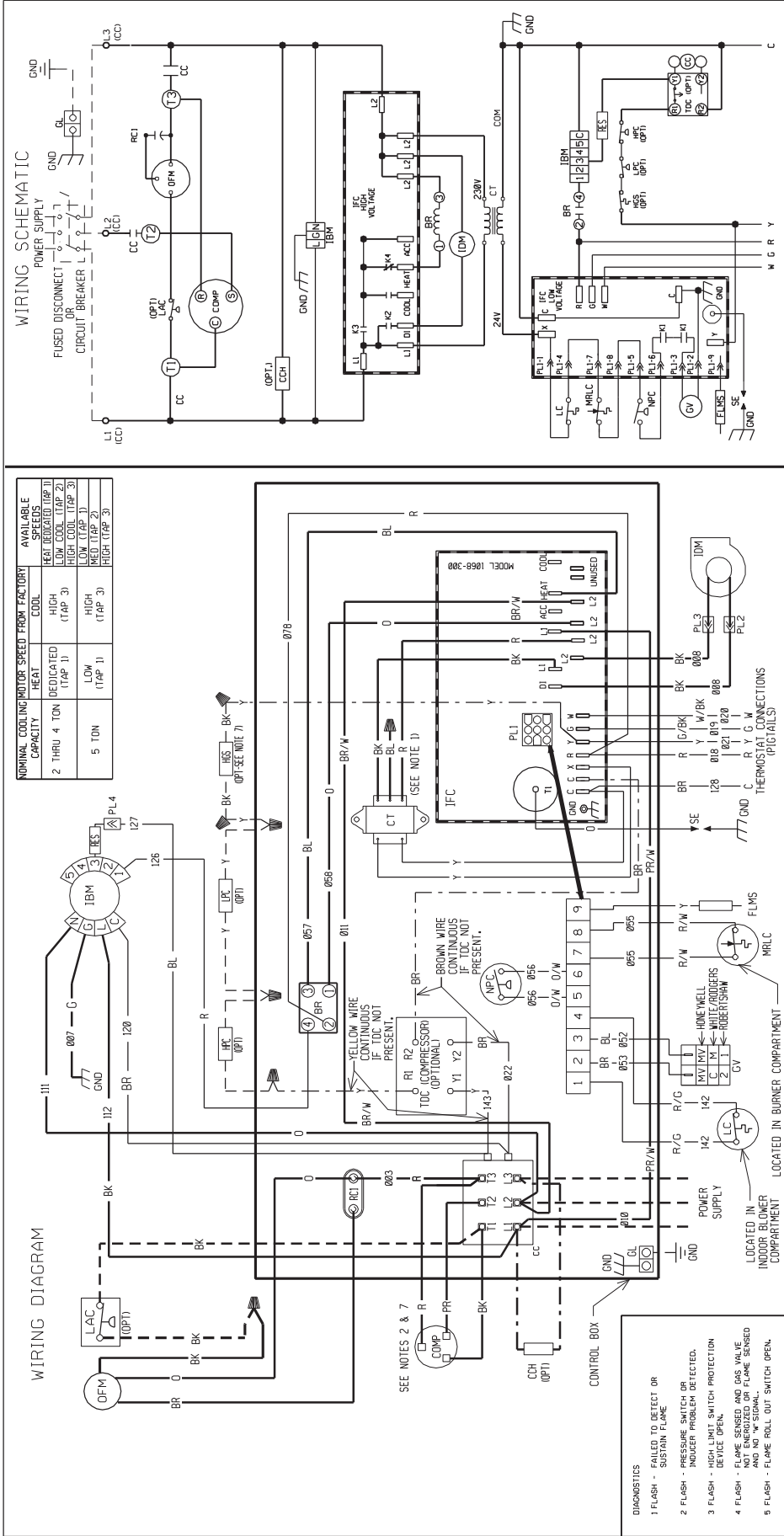
BK	BLACK	GY	GRAY	R	RED
BR	BROWN	O	ORANGE	W	WHITE
BL	BLUE	PK	PINK	Y	YELLOW
G	GREEN	PR	PURPLE		

ELECTRICAL WIRING DIAGRAM

2.0-5.0 TON SINGLE STAGE GAS/ELECTRIC W/X-13 BLOWER MOTOR AND INTEGRATED FURNACE CONTROL 208/230V, 1 - PHASE

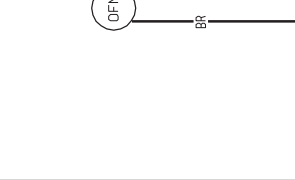
DR. BY: APP. BY: DATE: 8-16-05
JRU
DWG. NO.: 90-23626-11
REV: 06

FIGURE 28
WIRING DIAGRAM



NOMINAL COOLING MOTOR SPEED FROM FACTORY CAPACITY		AVAILABLE SPEEDS	
HEAT	COOL	HEAT	COOL
THRU 4 TON DEDICATED (TAP 1)	HIGH (TAP 3)	HIGH (TAP 1)	HIGH (TAP 3)
5 TON	LOW (TAP 1)	LOW (TAP 1)	HIGH (TAP 3)

WIRING SCHEMATIC



WIRE COLOR CODE

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

ELECTRICAL WIRING DIAGRAM

3.0-5.0 TON SINGLE STAGE GAS/ELECTRIC W/X-13 BLOWER MOTOR AND INTEGRATED FURNACE CONTROL 208/230V, 3 - PHASE

DR. BY APP. BY DATE DWG. NO. REV

JRJ 9-26-05 90-23626-12 05

WIRING INFORMATION

LINE VOLTAGE
 -FACTORY STANDARD
 -FACTORY OPTION
 -FIELD INSTALLED

LOW VOLTAGE
 -FACTORY STANDARD
 -FIELD INSTALLED

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

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

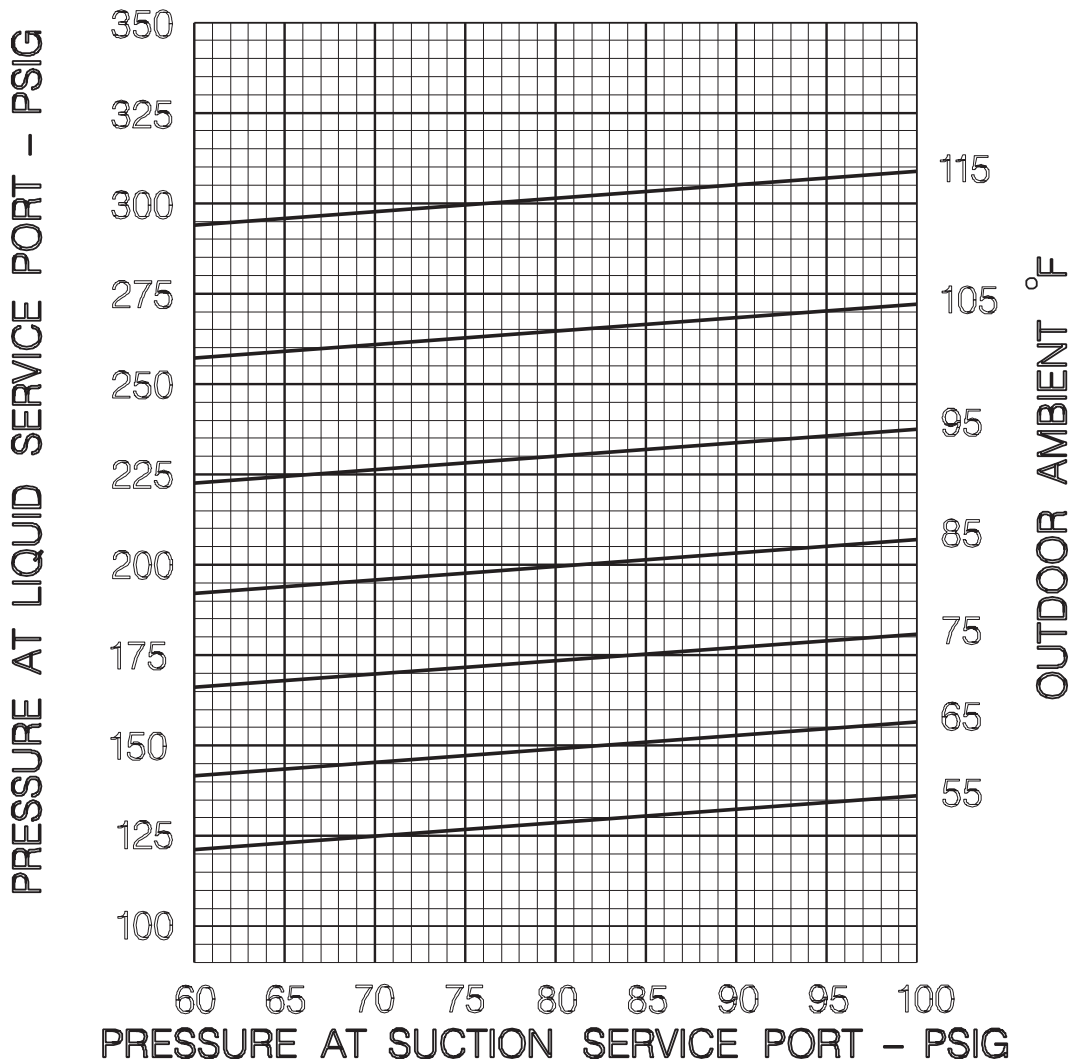
- NOTES:**
1. MAIN UNIT TRANSFORMER PRIMARY LEADS: 60 HZ. RED-COMMON BLUE-208 V. BLACK-230 V. INTERCHANGE BLACK & BLUE LEADS FOR 208 VAC TRANSFORMER OPERATION. 2. CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY. 3. CONNECT FIELD WIRING IN GROUNDED RAIN-TIGHT CONDUIT TO 60 HZ FUSED DISCONNECT. 4. LOW VOLTAGE CIRCUIT IS N.E.C. CLASS 2 WITH 400 VOLT TRANSFORMER 24 VOLT, 50/60 HZ. REPLACEMENT FUSES MUST BE SAME TYPE & SIZE AS ORIGINAL. 5. COMPRESSOR PROTECTED UNDER PRIMARY SINGLE PHASE CONDITIONS.

COMPONENT CODE

BR	BLOWER RELAY
CC	COMPRESSOR CONTACTOR
CH	CRANKCASE HEATER
CCM	COMPRESSOR CONTROL TRANSFORMER
CT	CONTROL TRANSFORMER
FLMS	FILMS FLAME SENSOR
GL	GROUND LUG
GND	GROUND
GV	GAS VALVE
HPC	HIGH PRESSURE CONTROL
IBM	INDOOR BLOWER MOTOR
IDM	INDUCED DRAFT MOTOR
IFC	INTEGRATED FURNACE CONTROL
HGS	HOT GAS SENSOR
LAC	LOW AMBIENT COOLING CONTROL

FIGURE 29
SYSTEM CHARGE CHARTS

2 TON COOLING - HIGH EFFICIENCY - 13 SEER
SYSTEM CHARGE CHART - REFRIGERANT 22



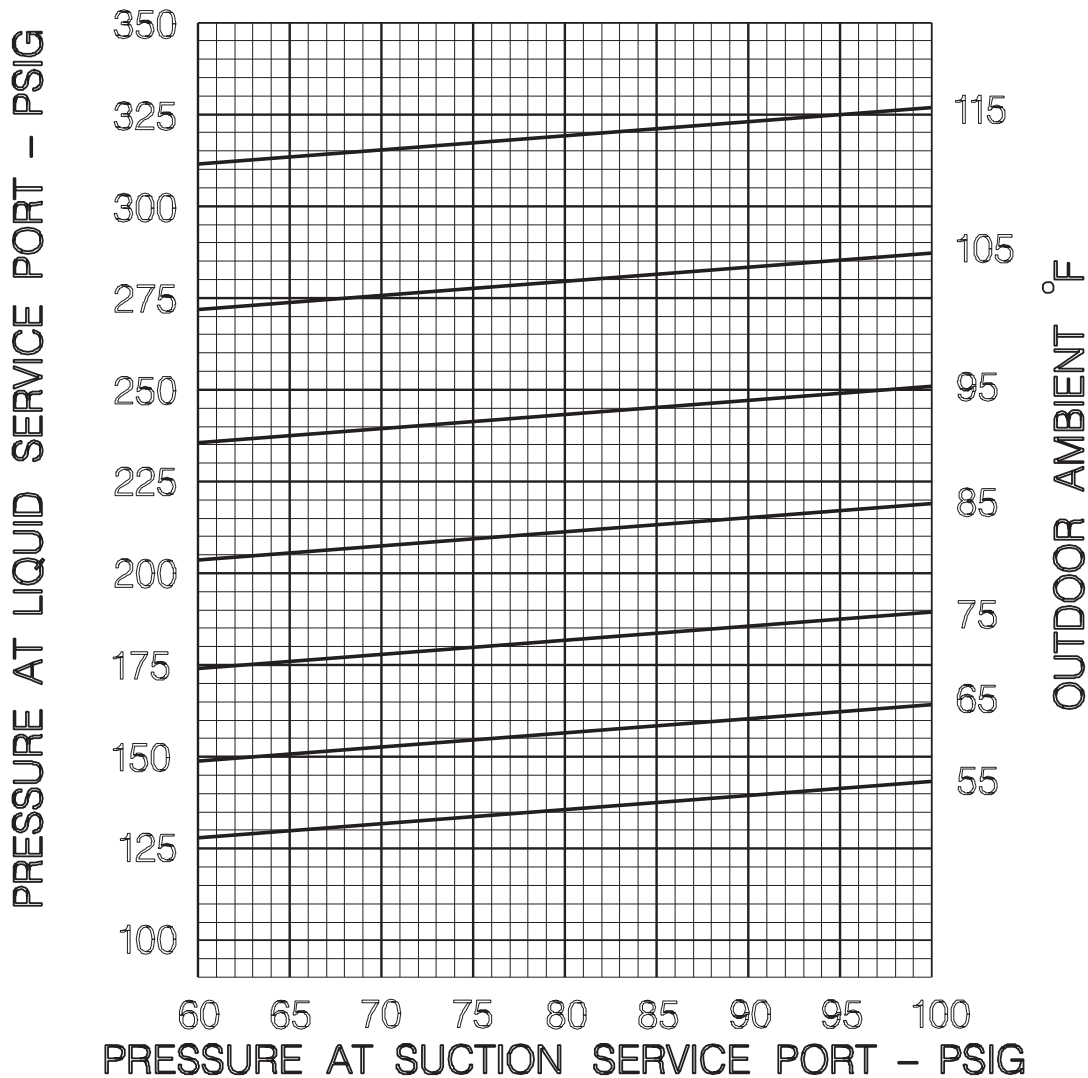
INSTRUCTIONS:

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

92-22904-37-00

FIGURE 30
SYSTEM CHARGE CHARTS

**2.5 TON COOLING - HIGH EFFICIENCY - 13 SEER
 SYSTEM CHARGE CHART - REFRIGERANT 22**



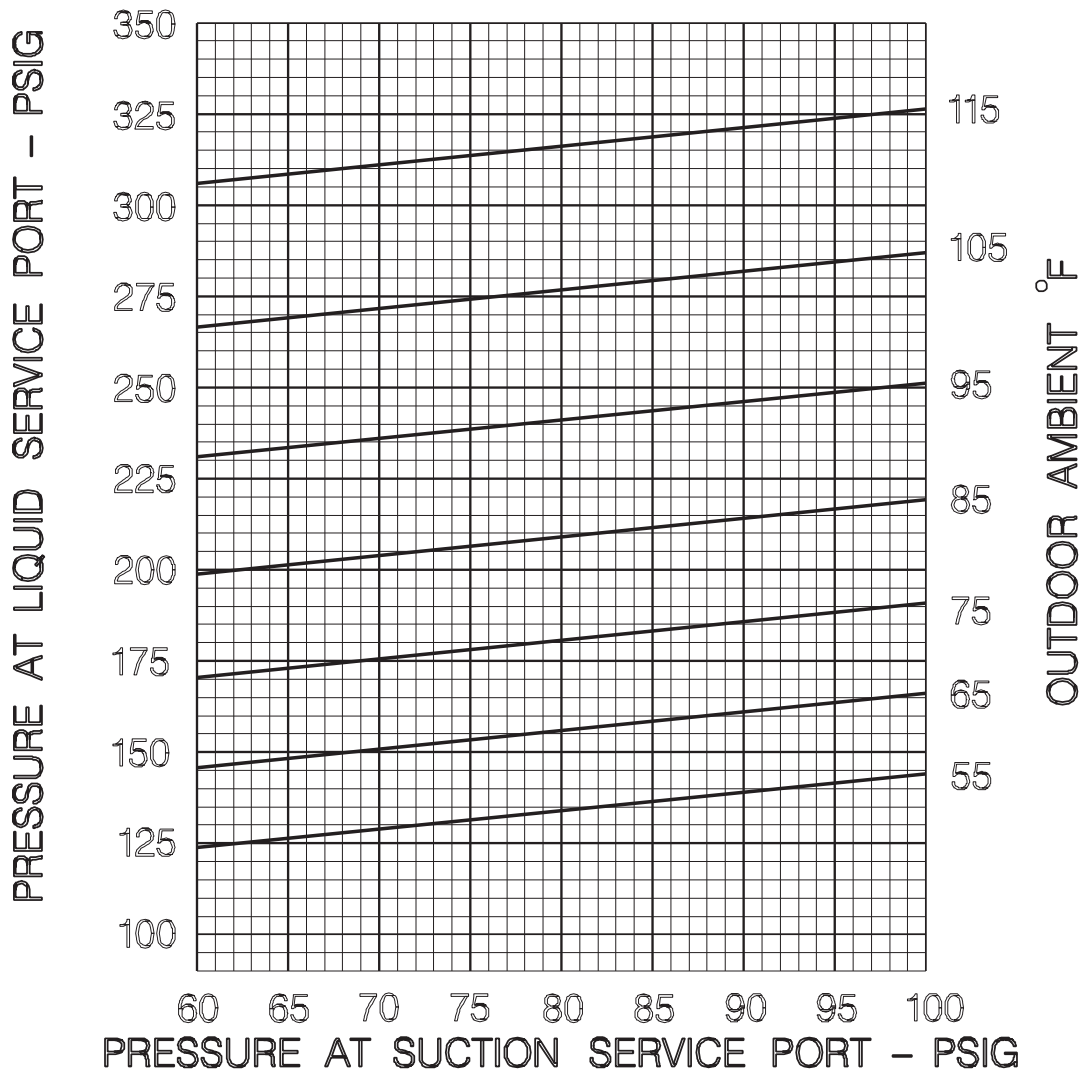
INSTRUCTIONS:

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

92-22904-38-00

FIGURE 31
SYSTEM CHARGE CHARTS

**3 TON COOLING – HIGH EFFICIENCY – 13 SEER
 SYSTEM CHARGE CHART – REFRIGERANT 22**



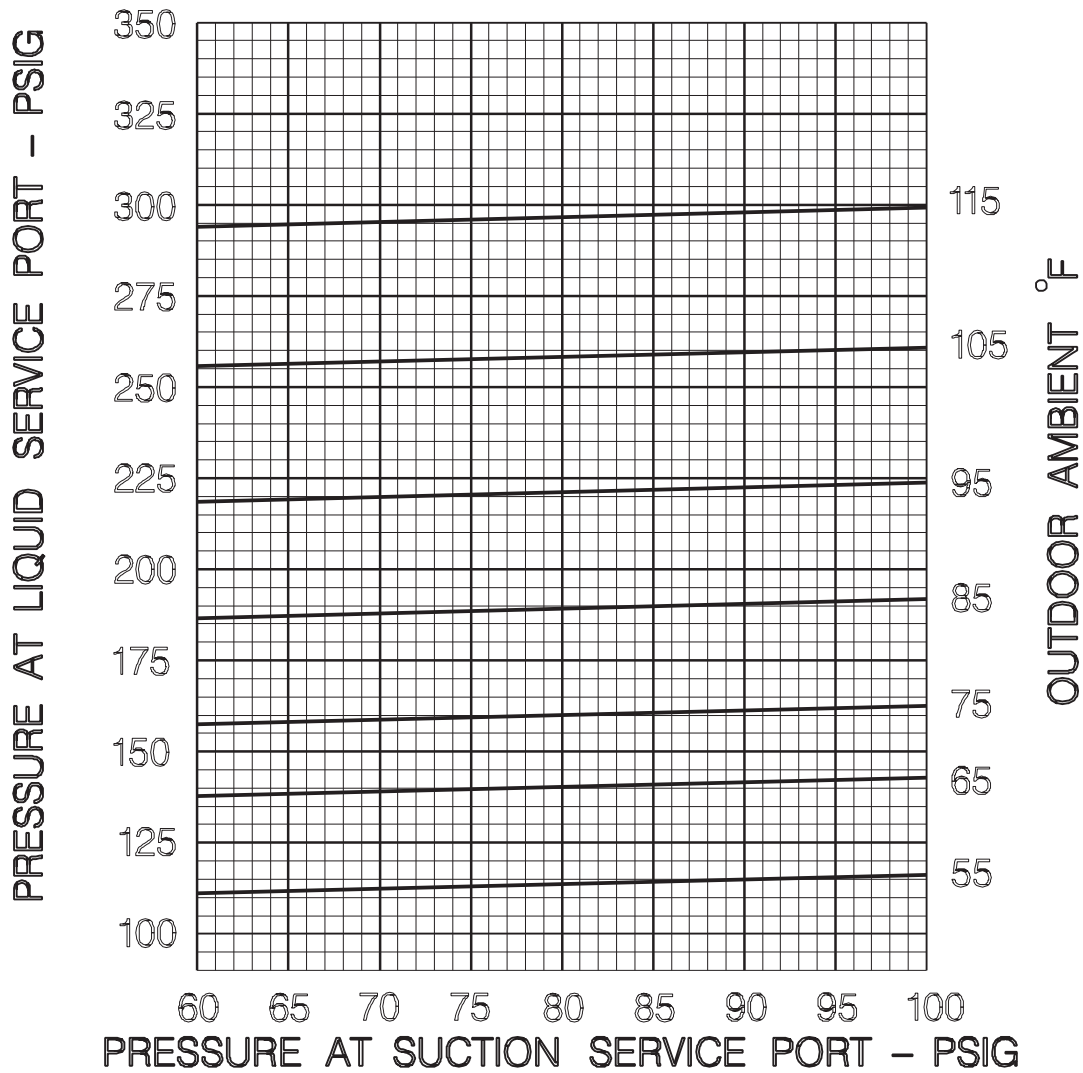
INSTRUCTIONS:

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

92-22904-39-00

FIGURE 32
SYSTEM CHARGE CHARTS

**3.5 TON COOLING – HIGH EFFICIENCY – 13 SEER
 SYSTEM CHARGE CHART – REFRIGERANT 22**



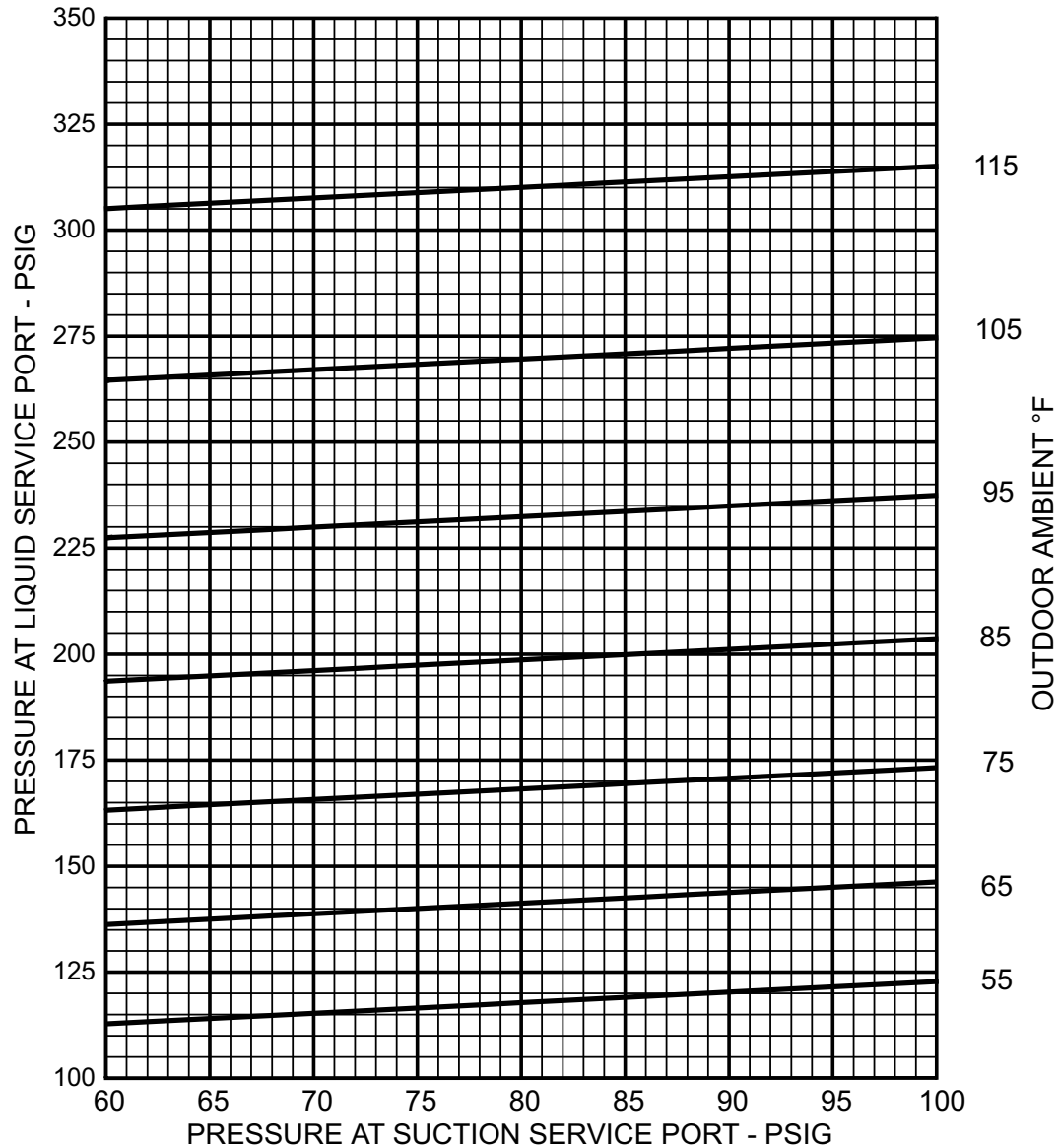
INSTRUCTIONS:

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

92-22904-36-00

FIGURE 33
SYSTEM CHARGE CHARTS

**4 TON COOLING - HIGH EFFICIENCY - 13 SEER
 SYSTEM CHARGE CHART - REFRIGERANT 22**



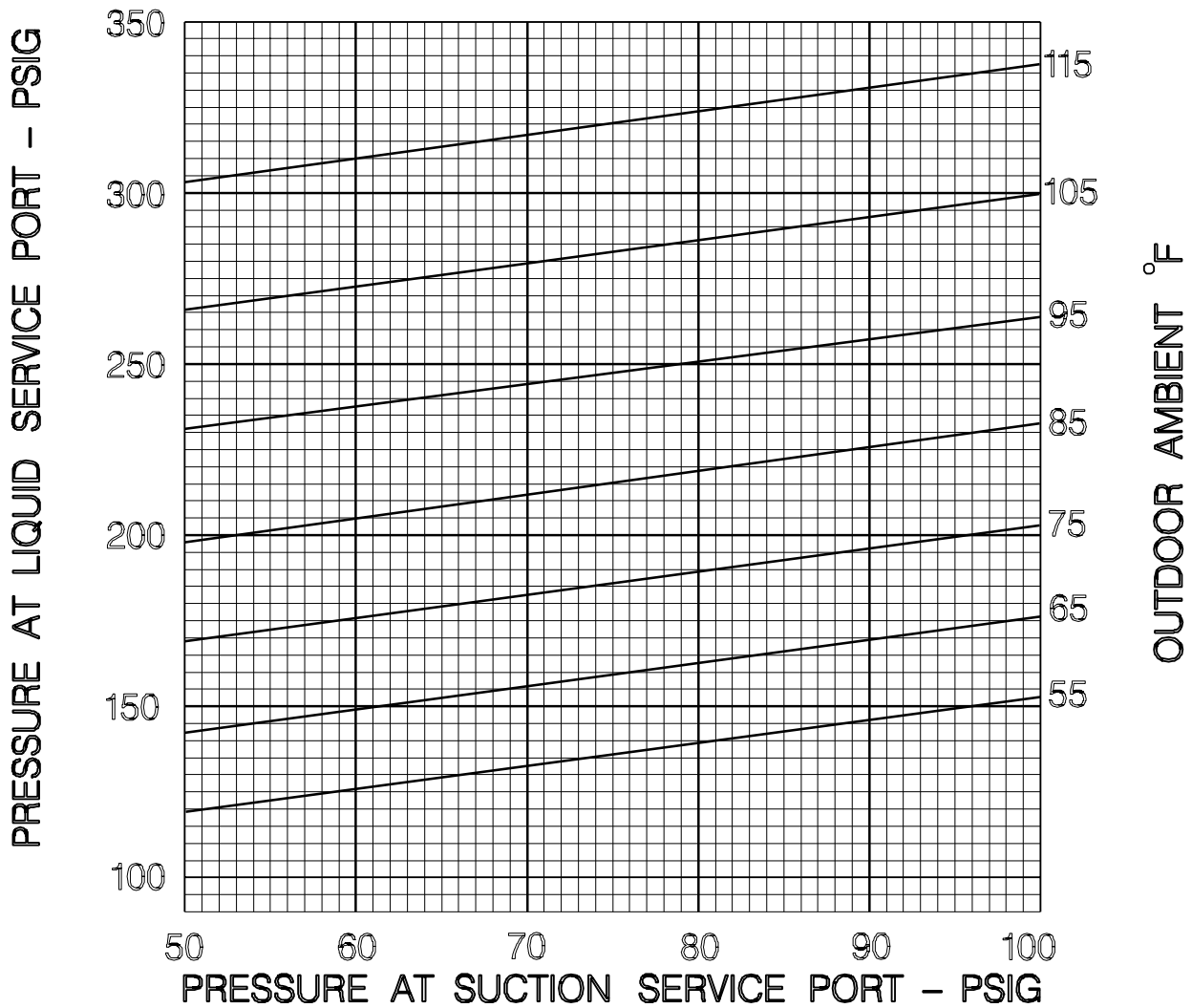
INSTRUCTIONS:

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

92-22904-56-00

FIGURE 34
SYSTEM CHARGE CHARTS

5.0 TON COOLING - HIGH EFFICIENCY SYSTEM CHARGE CHART - REFRIGERANT 22



INSTRUCTIONS:

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

92-22904-47-00

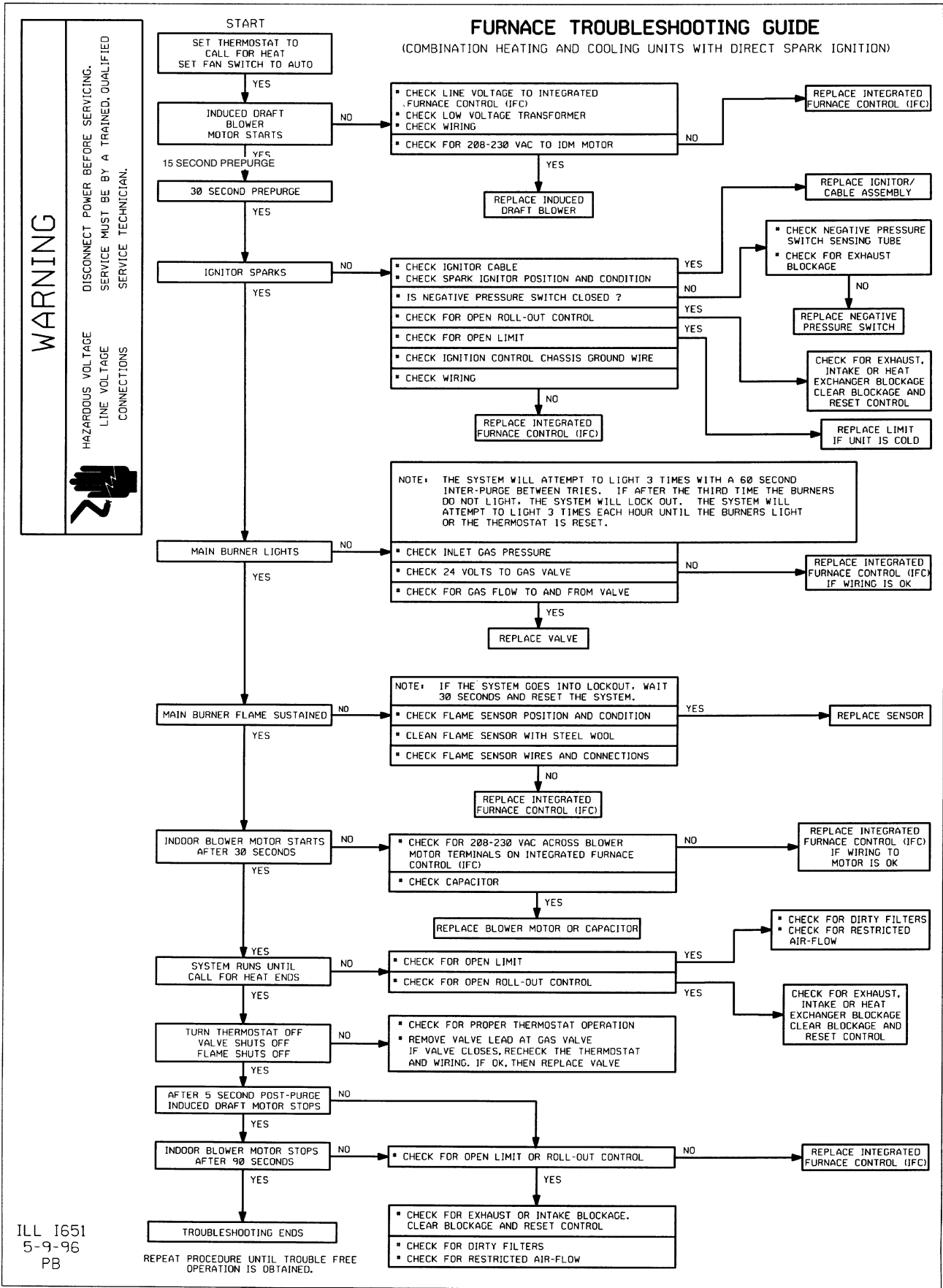
FIGURE 35 COOLING TROUBLE SHOOTING CHART

▲ 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	<ul style="list-style-type: none"> • Power off or loose electrical connection • Thermostat out of calibration-set too high • Failed contactor • Blown fuses • Transformer defective • High pressure control open (if provided) • Interconnecting low voltage wiring damaged 	<ul style="list-style-type: none"> • Check for correct voltage at compressor contactor in control box • Reset • Check for 24 volts at contactor coil - replace if contacts are open • Replace fuses • Check wiring-replace transformer • Reset-also see high head pressure remedy-The high pressure control opens at 450 PSIG • Replace thermostat wiring
Condenser fan runs, compressor doesn't	<ul style="list-style-type: none"> • Run or start capacitor failed (single phase only) • Start relay defective (single phase only) • Loose connection • Compressor stuck, grounded or open motor winding open internal overload. • Low voltage condition • Low voltage condition 	<ul style="list-style-type: none"> • Replace • Replace • Check for correct voltage at compressor - check & tighten all connections • Wait at least 2 hours for overload to reset. If still open, replace the compressor. At compressor terminals, voltage must be within 10% of rating plate volts when unit is operating. • Add start kit components
Insufficient cooling	<ul style="list-style-type: none"> • Improperly sized unit • Improper airflow • Incorrect refrigerant charge • Air, non-condensibles or moisture in system • Incorrect voltage 	<ul style="list-style-type: none"> • Recalculate load • Check - should be approximately 400 CFM per ton. • Charge per procedure attached to unit service panel. • Recover refrigerant, evacuate & recharge, add filter drier • At compressor terminals, voltage must be within 10% of rating plate volts when unit is operating.
Compressor short cycles	<ul style="list-style-type: none"> • Incorrect voltage • Defective overload protector • Refrigerant undercharge 	<ul style="list-style-type: none"> • At compressor terminals, voltage must be \pm 10% of nameplate marking when unit is operating. • Replace - check for correct voltage • Add refrigerant
Registers sweat	<ul style="list-style-type: none"> • Low evaporator airflow 	<ul style="list-style-type: none"> • Increase speed of blower or reduce restriction - replace air filter
High head-low vapor pressures	<ul style="list-style-type: none"> • Restriction in liquid line, expansion device or filter drier • Flow check piston size too small • Incorrect capillary tubes • TXV does not open 	<ul style="list-style-type: none"> • Remove or replace defective component • Change to correct size piston • Change coil assembly • Replace TXV
High head-high or normal vapor pressure - Cooling mode	<ul style="list-style-type: none"> • Dirty condenser coil • Refrigerant overcharge • Condenser fan not running • Air or non-condensibles in system 	<ul style="list-style-type: none"> • Clean coil • Correct system charge • Repair or replace • Recover refrigerant, evacuate & recharge
Low head-high vapor pressures	<ul style="list-style-type: none"> • Defective Compressor valves • Incorrect capillary tubes 	<ul style="list-style-type: none"> • Replace compressor • Replace coil assembly
Low vapor - cool compressor - iced evaporator coil	<ul style="list-style-type: none"> • Low evaporator airflow • Operating below 65°F outdoors • Moisture in system 	<ul style="list-style-type: none"> • Increase speed of blower or reduce restriction - replace air filter • Add Low Ambient Kit • Recover refrigerant - evacuate & recharge - add filter drier
High vapor pressure	<ul style="list-style-type: none"> • Excessive load • Defective compressor 	<ul style="list-style-type: none"> • Recheck load calculation • Replace
Fluctuating head & vapor pressures	<ul style="list-style-type: none"> • TXV hunting • Air or non-condensibles in system 	<ul style="list-style-type: none"> • Check TXV bulb clamp - check air distribution on coil - replace TXV • Recover refrigerant, evacuate & recharge
Gurgle or pulsing noise at expansion device or liquid line	<ul style="list-style-type: none"> • Air or non-condensibles in system 	<ul style="list-style-type: none"> • Recover refrigerant, evacuate & recharge
Circulating air blower & inducer run continuously, compressor will not start	<ul style="list-style-type: none"> • Manual reset overtemperature control • tripped • Wire loose in limit circuit 	<ul style="list-style-type: none"> • Reset or replace • Check wiring

FIGURE 36



ILL 1651
5-9-96
PB