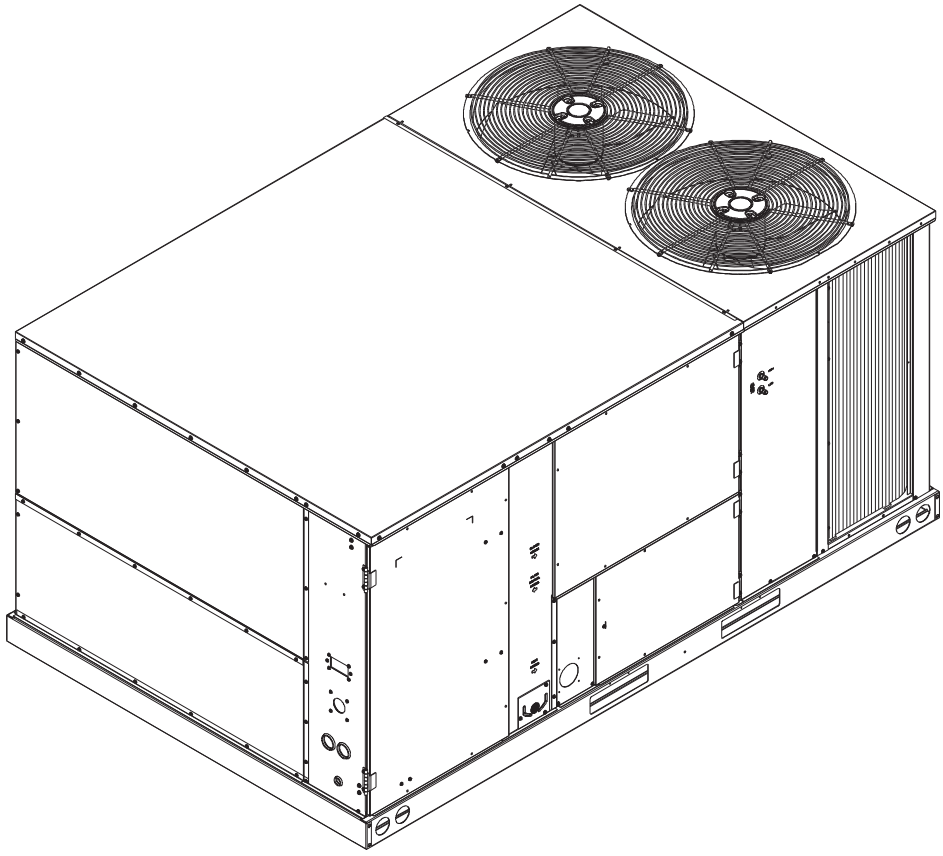
INSTALLATION INSTRUCTIONS

PACKAGE HEAT PUMPS FEATURING EARTH-FRIENDLY R410 REFRIGERANT

(-)JNL SERIES 7.5 & 10 TON
60 Hz MODELS



Recognize this symbol as an indication of Important Safety Information!

DO NOT DESTROY

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

⚠WARNING

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

c UL us LISTED

Accredited by the RvA

ABS Quality Evaluations, Inc. Management System Certification

ANAB ACCREDITED

ISO 9001:2000

Certificate Number: 30164

AHRI CERTIFIED™

www.ahridirectory.org

Unitary Small HP
AHRI Standard 210/240

Certification applies only when the complete system is listed with AHRI.

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

II. INTRODUCTION

⚠ WARNING

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

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

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

III. CHECKING PRODUCT RECEIVED

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

IV. EQUIPMENT PROTECTION FROM THE ENVIRONMENT

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

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

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

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

⚠ WARNING

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

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

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

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

V. SPECIFICATIONS

A. GENERAL

The Packaged Heat Pump is available without auxiliary heat or with 15, 20, 30 or 40 kW electric heat. Cooling and heating capacities of 7½, and 10 nominal tons are available. Units are convertible from horizontal supply and return to bottom supply and return by relocation of supply and return air access panels. See cover installation detail.

The units are weatherized for mounting outside of the building.

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

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

B. MAJOR COMPONENTS

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

C. R-410A REFRIGERANT

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

1. Specification of R-410A:

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

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

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

2. Quick Reference Guide For R-410A

- R-410A refrigerant operates at approximately 60% higher pressure (1.6 times) than R-22. Ensure that servicing equipment is designed to operate with R-410A.
- R-410A refrigerant cylinders are pink.
- R-410A, as with other HFC's is only compatible with POE oils.
- Vacuum pumps will not remove moisture from POE oil.
- R-410A systems are to be charged with liquid refrigerants. Prior to March 1999, R-410A refrigerant cylinders had a dip tube. These cylinders should be kept upright for equipment charging. Post March 1999 cylinders do not have a dip tube and should be inverted to ensure liquid charging of the equipment.
- Do not install a suction line filter drier in the liquid line.
- A liquid line filter drier is standard on every unit.
- Desiccant (drying agent) must be compatible for POE oils and R-410A.

3. Thermostatic Expansion Valve (TXV)

The Bi-Flow TXV is specifically designed to operate with R-410A heat pumps. **Replacement of the TXV should only be made with the factory specified bi-flow R-410A valve. Do not use an R-22 TXV.**

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

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

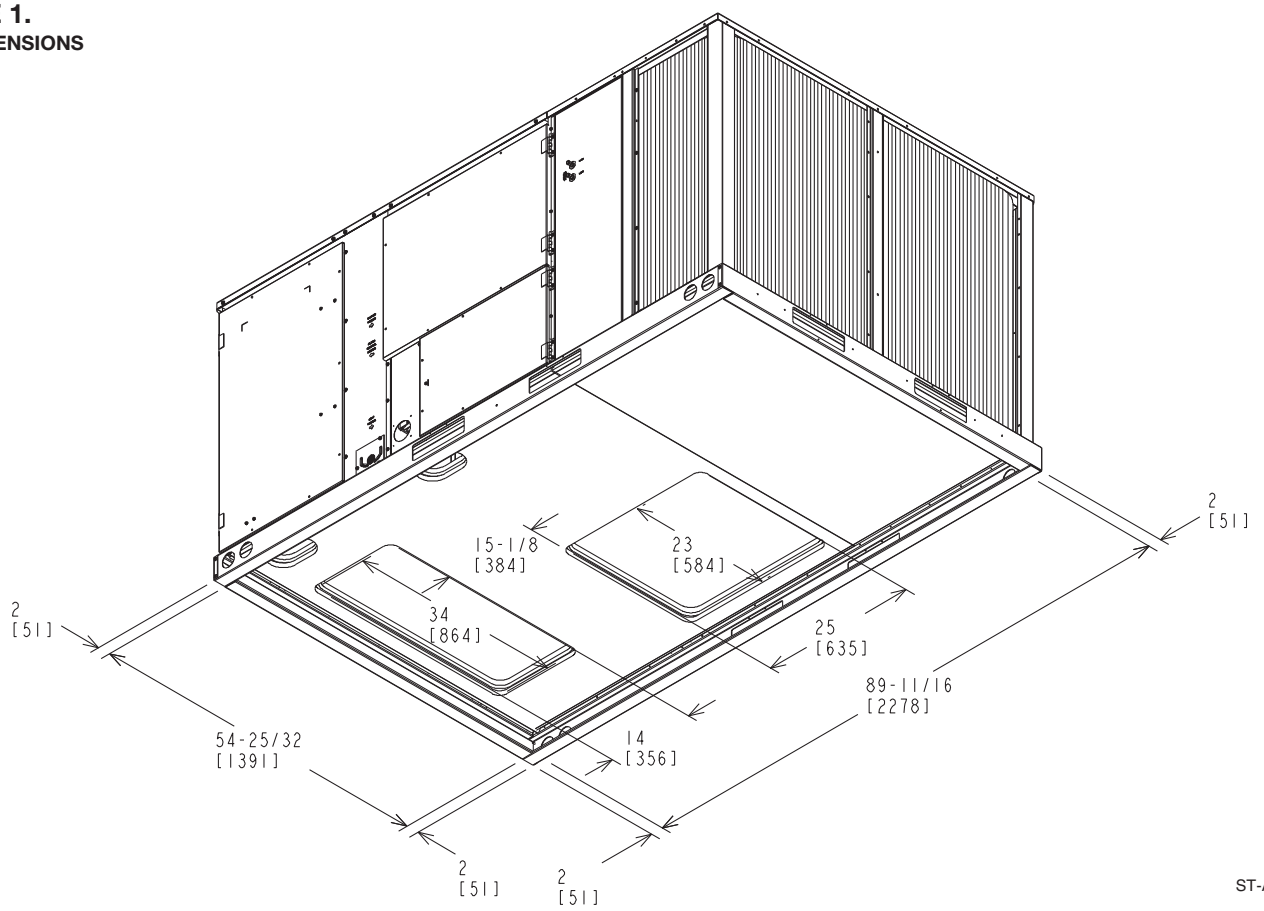
Manifold Hoses:
-Service Pressure Rating of 800 PSIG

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

⚠ CAUTION

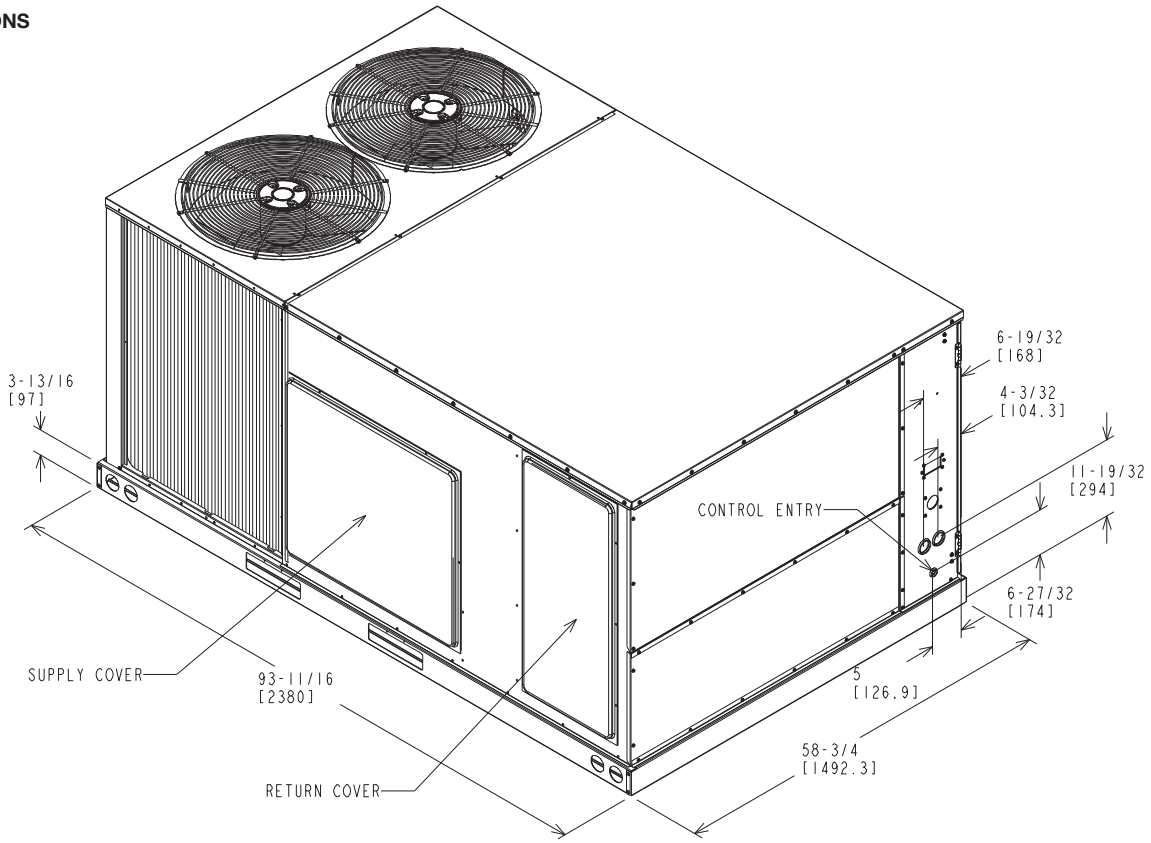
R-410A systems operate at higher pressures than R-22 systems. Do not use R-22 service equipment or components on R-410A equipment.

FIGURE 1.
UNIT DIMENSIONS



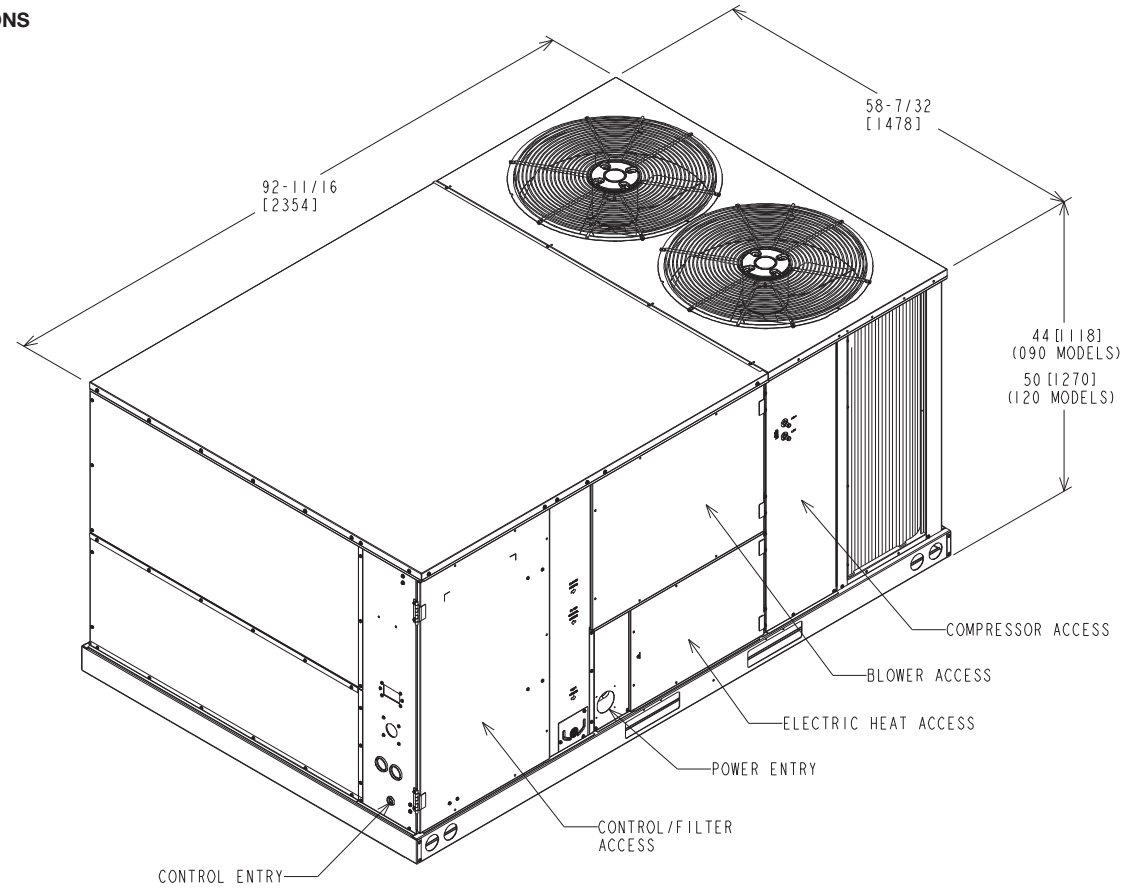
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FIGURE 2.
UNIT DIMENSIONS



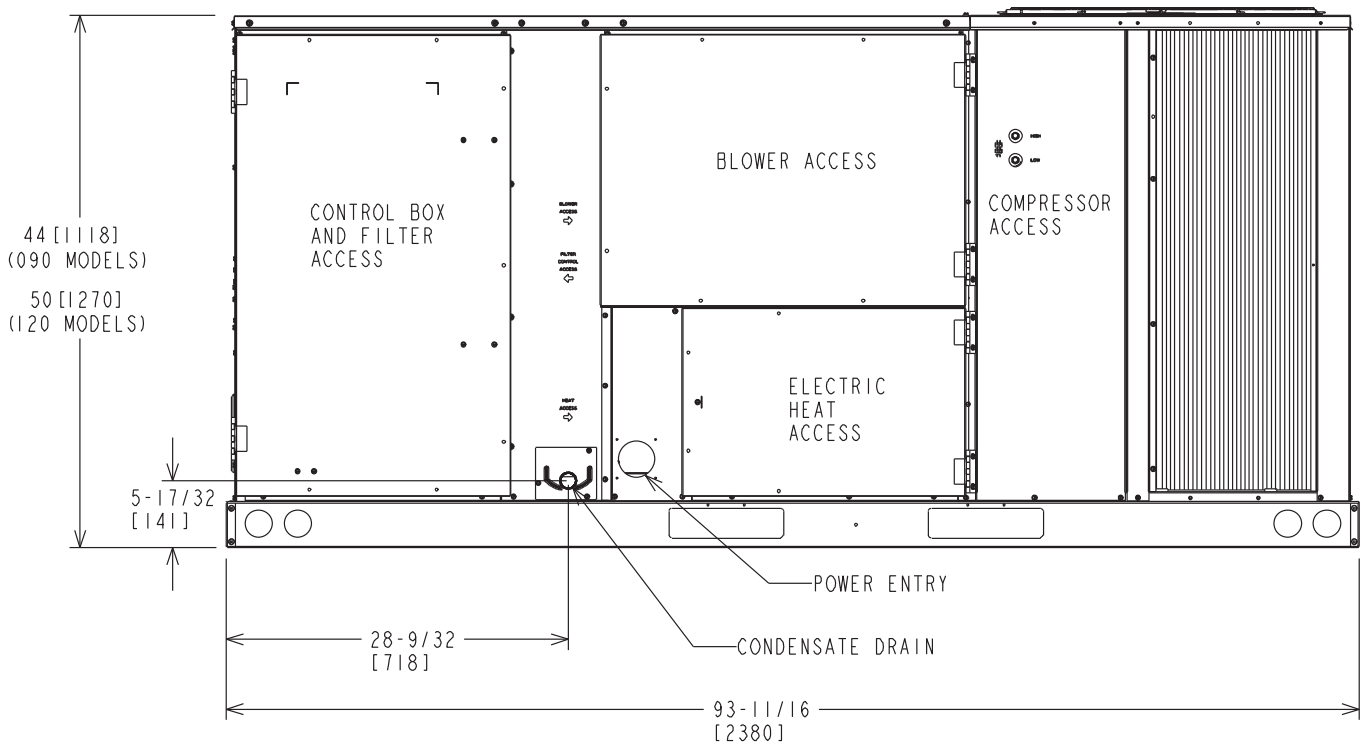
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FIGURE 3.
UNIT DIMENSIONS



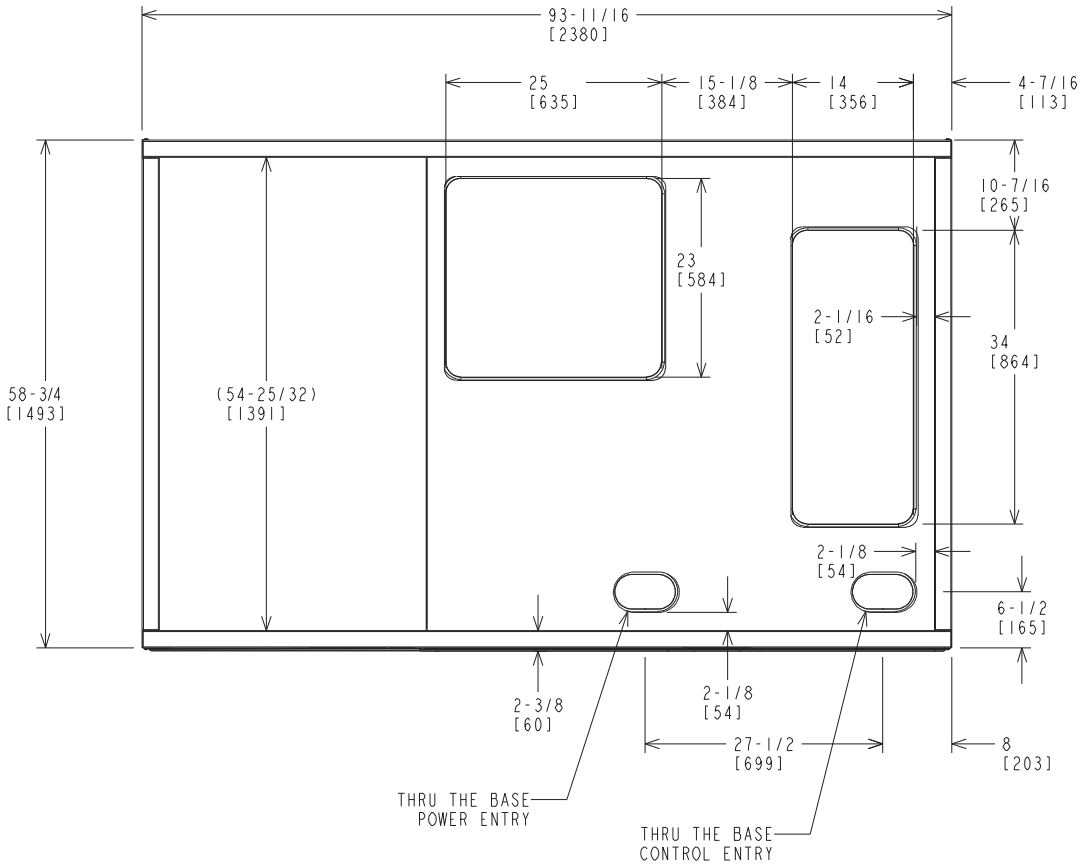
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FIGURE 4.
UNIT DIMENSIONS



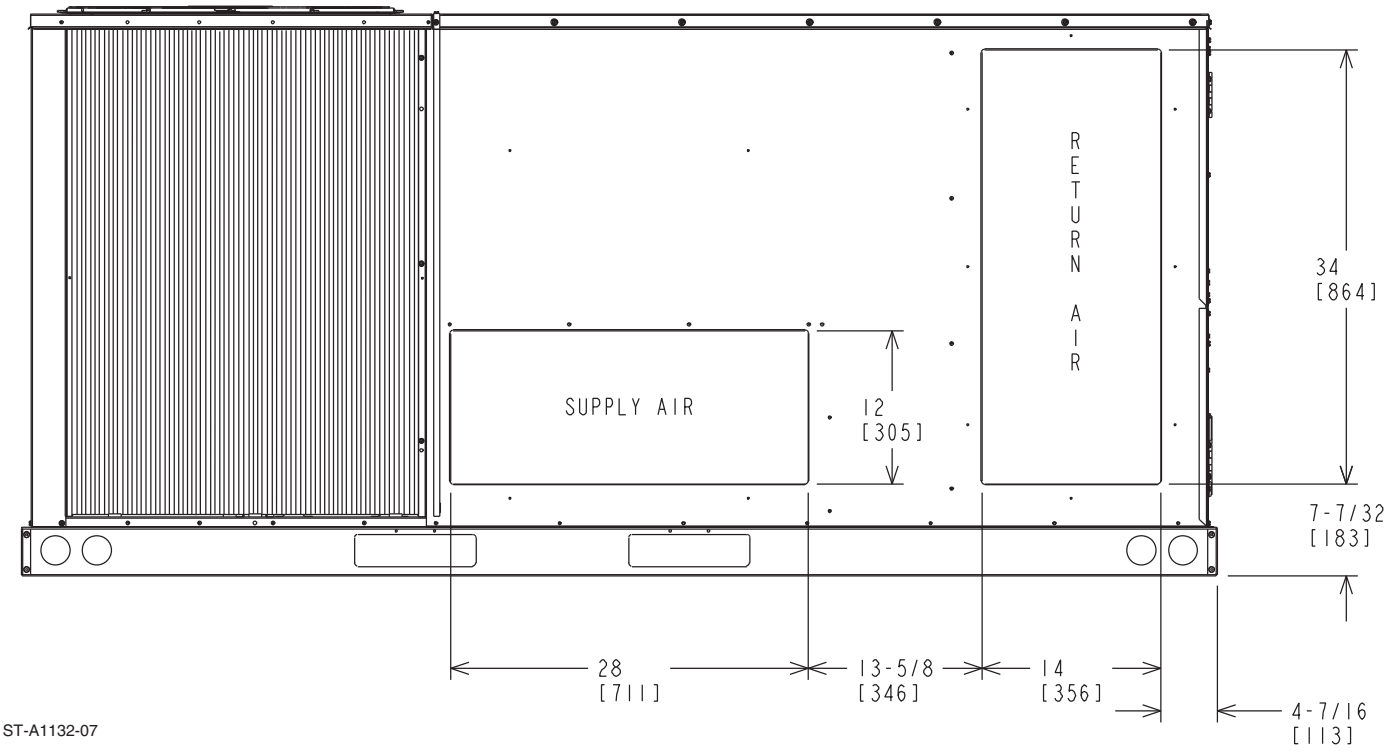
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FIGURE 5.
BOTTOM VIEW



ST-A1132-06

FIGURE 6.
REAR VIEW



ST-A1132-07

GENERAL DATA

Model RJNL- Series	B090CL	B090CM	B090CN	B090DL
Cooling Performance[1]				Continued ->
Gross Cooling Capacity Btu [kW]	98,000 [28.71]	98,000 [28.71]	98,000 [28.71]	98,000 [28.71]
EER/SEER[2]	11/NA	11/NA	11/NA	11/NA
Nominal CFM/ARI Rated CFM [L/s]	3000/2925 [1416/1380]	3000/2925 [1416/1380]	3000/2925 [1416/1380]	3000/2925 [1416/1380]
ARI Net Cooling Capacity Btu [kW]	94,000 [27.54]	94,000 [27.54]	94,000 [27.54]	94,000 [27.54]
Net Sensible Capacity Btu [kW]	70,800 [20.74]	70,800 [20.74]	70,800 [20.74]	70,800 [20.74]
Net Latent Capacity Btu [kW]	23,200 [6.8]	23,200 [6.8]	23,200 [6.8]	23,200 [6.8]
Integrated Part Load Value[3]	N/A	N/A	N/A	N/A
Net System Power kW	8.54	8.54	8.54	8.54
Heating Performance (Heat Pumps)				
High Temp. Btuh [kW] Rating	87,000 [25.49]	87,000 [25.49]	87,000 [25.49]	87,000 [25.49]
System Power KW / COP	7.5/3.4	7.5/3.4	7.5/3.4	7.5/3.4
Low Temp. Btuh [kW] Rating	52,000 [15.24]	52,000 [15.24]	52,000 [15.24]	52,000 [15.24]
System Power KW / COP	6.62/2.3	6.62/2.3	6.62/2.3	6.62/2.3
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[5]	88	88	88	88
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]	24.88 [2.31]	24.88 [2.31]	24.88 [2.31]	24.88 [2.31]
Rows / FPI [FPcm]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Indoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	13.5 [1.25]	13.5 [1.25]	13.5 [1.25]	13.5 [1.25]
Rows / FPI [FPcm]	3 / 18 [7]	3 / 18 [7]	3 / 18 [7]	3 / 18 [7]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]
Outdoor Fan - Type	Propeller	Propeller	Propeller	Propeller
No. Used/Diameter in. [mm]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	8000 [3775]	8000 [3775]	8000 [3775]	8000 [3775]
No. Motors/HP	2 at 1/3 HP	2 at 1/3 HP	2 at 1/3 HP	2 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]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]
Drive Type/No. Speeds	Belt/Variable	Belt/Variable	Belt/Variable	Belt/Variable
No. Motors	1	1	1	1
Motor HP	2	2	3	2
Motor RPM	1725	1725	1725	1725
Motor Frame Size	56	56	56	56
Filter - Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes	Yes
(NO.) Size Recommended in. [mm x mm x mm]	(6)2x18x18 [51x457x457]	(6)2x18x18 [51x457x457]	(6)2x18x18 [51x457x457]	(6)2x18x18 [51x457x457]
Refrigerant Charge Oz. [g]	350 [9922]	350 [9922]	350 [9922]	350 [9922]
Weights				
Net Weight lbs. [kg]	1009 [458]	1009 [458]	1017 [461]	1009 [458]
Ship Weight lbs. [kg]	1089 [494]	1089 [494]	1097 [498]	1089 [494]

Model RJNL- Series	B090DM	B090DN	B090YL	B090YM
Cooling Performance[1]				Continued ->
Gross Cooling Capacity Btu [kW]	98,000 [28.71]	98,000 [28.71]	98,000 [28.71]	98,000 [28.71]
EER/SEER[2]	11/NA	11/NA	11/NA	11/NA
Nominal CFM/ARI Rated CFM [L/s]	3000/2925 [1416/1380]	3000/2925 [1416/1380]	3000/2925 [1416/1380]	3000/2925 [1416/1380]
ARI Net Cooling Capacity Btu [kW]	94,000 [27.54]	94,000 [27.54]	94,000 [27.54]	94,000 [27.54]
Net Sensible Capacity Btu [kW]	70,800 [20.74]	70,800 [20.74]	70,800 [20.74]	70,800 [20.74]
Net Latent Capacity Btu [kW]	23,200 [6.8]	23,200 [6.8]	23,200 [6.8]	23,200 [6.8]
Integrated Part Load Value[3]	N/A	N/A	N/A	N/A
Net System Power kW	8.54	8.54	8.54	8.54
Heating Performance (Heat Pumps)				
High Temp. Btuh [kW] Rating	87,000 [25.49]	87,000 [25.49]	87,000 [25.49]	87,000 [25.49]
System Power KW / COP	7.5/3.4	7.5/3.4	7.5/3.4	7.5/3.4
Low Temp. Btuh [kW] Rating	52,000 [15.24]	52,000 [15.24]	52,000 [15.24]	52,000 [15.24]
System Power KW / COP	6.62/2.3	6.62/2.3	6.62/2.3	6.62/2.3
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[5]	88	88	88	88
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]	24.88 [2.31]	24.88 [2.31]	24.88 [2.31]	24.88 [2.31]
Rows / FPI [FPcm]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Indoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	13.5 [1.25]	13.5 [1.25]	13.5 [1.25]	13.5 [1.25]
Rows / FPI [FPcm]	3 / 18 [7]	3 / 18 [7]	3 / 18 [7]	3 / 18 [7]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]
Outdoor Fan - Type	Propeller	Propeller	Propeller	Propeller
No. Used/Diameter in. [mm]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	8000 [3775]	8000 [3775]	8000 [3775]	8000 [3775]
No. Motors/HP	2 at 1/3 HP	2 at 1/3 HP	2 at 1/3 HP	2 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]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]
Drive Type/No. Speeds	Belt/Variable	Belt/Variable	Belt/Variable	Belt/Variable
No. Motors	1	1	1	1
Motor HP	2	3	2	2
Motor RPM	1725	1725	1725	1725
Motor Frame Size	56	56	56	56
Filter - Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes	Yes
(NO.) Size Recommended in. [mm x mm x mm]	(6)2x18x18 [51x457x457]	(6)2x18x18 [51x457x457]	(6)2x18x18 [51x457x457]	(6)2x18x18 [51x457x457]
Refrigerant Charge Oz. [g]	350 [9922]	350 [9922]	350 [9922]	350 [9922]
Weights				
Net Weight lbs. [kg]	1009 [458]	1017 [461]	1009 [458]	1009 [458]
Ship Weight lbs. [kg]	1089 [494]	1097 [498]	1089 [494]	1089 [494]

Model RJNL- Series	B090YN	B120CL	B120CM	B120DL
Cooling Performance[1]				Continued ->
Gross Cooling Capacity Btu [kW]	98,000 [28.71]	125,000 [36.62]	125,000 [36.62]	125,000 [36.62]
EER/SEER[2]	11/NA	11/NA	11/NA	11/NA
Nominal CFM/ARI Rated CFM [L/s]	3000/2925 [1416/1380]	4000/4000 [1888/1888]	4000/4000 [1888/1888]	4000/4000 [1888/1888]
ARI Net Cooling Capacity Btu [kW]	94,000 [27.54]	120,000 [35.16]	120,000 [35.16]	120,000 [35.16]
Net Sensible Capacity Btu [kW]	70,800 [20.74]	91,600 [26.84]	91,600 [26.84]	91,600 [26.84]
Net Latent Capacity Btu [kW]	23,200 [6.8]	28,400 [8.32]	28,400 [8.32]	28,400 [8.32]
Integrated Part Load Value[3]	N/A	N/A	N/A	N/A
Net System Power kW	8.54	10.91	10.91	10.91
Heating Performance (Heat Pumps)				
High Temp. Btuh [kW] Rating	87,000 [25.49]	109,000 [31.94]	109,000 [31.94]	109,000 [31.94]
System Power KW / COP	7.5/3.4	9.39/3.4	9.39/3.4	9.39/3.4
Low Temp. Btuh [kW] Rating	52,000 [15.24]	69,000 [20.22]	69,000 [20.22]	69,000 [20.22]
System Power KW / COP	6.62/2.3	8.79/2.3	8.79/2.3	8.79/2.3
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[5]	88	88	88	88
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]	24.88 [2.31]	28.8 [2.68]	28.8 [2.68]	28.8 [2.68]
Rows / FPI [FPcm]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Indoor Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	13.5 [1.25]	15.75 [1.46]	15.75 [1.46]	15.75 [1.46]
Rows / FPI [FPcm]	3 / 18 [7]	4 / 15 [6]	4 / 15 [6]	4 / 15 [6]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]
Outdoor Fan - Type	Propeller	Propeller	Propeller	Propeller
No. Used/Diameter in. [mm]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	8000 [3775]	8000 [3775]	8000 [3775]	8000 [3775]
No. Motors/HP	2 at 1/3 HP	2 at 1/2 HP	2 at 1/2 HP	2 at 1/2 HP
Motor RPM	1075	1075	1075	1075
Indoor Fan - Type	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]
Drive Type/No. Speeds	Belt/Variable	Belt/Variable	Belt/Variable	Belt/Variable
No. Motors	1	1	1	1
Motor HP	3	2	3	2
Motor RPM	1725	1725	1725	1725
Motor Frame Size	56	56	56	56
Filter - Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes	Yes
(NO.) Size Recommended in. [mm x mm x mm]	(6)2x18x18 [51x457x457]	(3)2x18x18 [51x457x457] (3)2x18x24 [51x457x610]	(3)2x18x18 [51x457x457] (3)2x18x24 [51x457x610]	(3)2x18x18 [51x457x457] (3)2x18x24 [51x457x610]
Refrigerant Charge Oz. [g]	350 [9922]	496 [14062]	496 [14062]	496 [14062]
Weights				
Net Weight lbs. [kg]	1017 [461]	1185 [538]	1193 [541]	1185 [538]
Ship Weight lbs. [kg]	1097 [498]	1265 [574]	1273 [577]	1265 [574]

Model RJNL- Series	B120DM	B120YL	B120YM
Cooling Performance[1]			
Gross Cooling Capacity Btu [kW]	125,000 [36.62]	125,000 [36.62]	125,000 [36.62]
EER/SEER[2]	11/NA	11/NA	11/NA
Nominal CFM/ARI Rated CFM [L/s]	4000/4000 [1888/1888]	4000/4000 [1888/1888]	4000/4000 [1888/1888]
ARI Net Cooling Capacity Btu [kW]	120,000 [35.16]	120,000 [35.16]	120,000 [35.16]
Net Sensible Capacity Btu [kW]	91,600 [26.84]	91,600 [26.84]	91,600 [26.84]
Net Latent Capacity Btu [kW]	28,400 [8.32]	28,400 [8.32]	28,400 [8.32]
Integrated Part Load Value[3]	N/A	N/A	N/A
Net System Power kW	10.91	10.91	10.91
Heating Performance (Heat Pumps)			
High Temp. Btuh [kW] Rating	109,000 [31.94]	109,000 [31.94]	109,000 [31.94]
System Power KW / COP	9.39/3.4	9.39/3.4	9.39/3.4
Low Temp. Btuh [kW] Rating	69,000 [20.22]	69,000 [20.22]	69,000 [20.22]
System Power KW / COP	8.79/2.3	8.79/2.3	8.79/2.3
Compressor			
No./Type	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB)[5]	88	88	88
Outdoor Coil - Fin Type	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled
Tube Size in. [mm] OD	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	28.8 [2.68]	28.8 [2.68]	28.8 [2.68]
Rows / FPI [FPcm]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Refrigerant Control	TX Valves	TX Valves	TX Valves
Indoor Coil - Fin Type	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	15.75 [1.46]	15.75 [1.46]	15.75 [1.46]
Rows / FPI [FPcm]	4 / 15 [6]	4 / 15 [6]	4 / 15 [6]
Refrigerant Control	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]
Outdoor Fan - Type	Propeller	Propeller	Propeller
No. Used/Diameter in. [mm]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1
CFM [L/s]	8000 [3775]	8000 [3775]	8000 [3775]
No. Motors/HP	2 at 1/2 HP	2 at 1/2 HP	2 at 1/2 HP
Motor RPM	1075	1075	1075
Indoor Fan - Type	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]
Drive Type/No. Speeds	Belt/Variable	Belt/Variable	Belt/Variable
No. Motors	1	1	1
Motor HP	3	2	3
Motor RPM	1725	1725	1725
Motor Frame Size	56	56	56
Filter - Type	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes
(NO.) Size Recommended in. [mm x mm x mm]	(3)2x18x18 [51x457x457] (3)2x18x24 [51x457x610]	(3)2x18x18 [51x457x457] (3)2x18x24 [51x457x610]	(3)2x18x18 [51x457x457] (3)2x18x24 [51x457x610]
Refrigerant Charge Oz. [g]	496 [14062]	496 [14062]	496 [14062]
Weights			
Net Weight lbs. [kg]	1193 [541]	1185 [538]	1193 [541]
Ship Weight lbs. [kg]	1273 [577]	1265 [574]	1273 [577]

ELECTRICAL DATA – RJNL- SERIES

		B090CL	B090CM	B090CN	B090DL	B090DM	B090DN	B090YL	B090YM	B090YN
Unit Information	Unit Operating Voltage Range	187-253	187-253	187-253	414-506	414-506	414-506	517-632	517-632	517-632
	Volts	208/230	208/230	208/230	460	460	460	575	575	575
	Minimum Circuit Ampacity	43/43	43/43	45/45	21	21	22	16	16	17
	Minimum Overcurrent Protection Device Size	50/50	50/50	60/60	25	25	25	20	20	20
	Maximum Overcurrent Protection Device Size	60/60	60/60	60/60	30	30	30	20	20	25
Compressor Motor	No.	1	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	460	460	460	575	575	575
	Phase	3	3	3	3	3	3	3	3	3
	RPM	3450	3450	3450	3450	3450	3450	3450	3450	3450
	HP, Compressor 1	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4
	Amps (RLA), Comp. 1	25/25	25/25	25/25	12.2	12.2	12.2	9	9	9
	Amps (LRA), Comp. 1	164/164	164/164	164/164	100	100	100	78	78	78
	HP, Compressor 2									
	Amps (RLA), Comp. 2									
	Amps (LRA), Comp. 2									
Condenser Motor	No.	2	2	2	2	2	2	2	2	2
	Volts	208/230	208/230	208/230	460	460	460	575	575	575
	Phase	1	1	1	1	1	1	1	1	1
	HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3
	Amps (FLA, each)	2.4/2.4	2.4/2.4	2.4/2.4	1.4	1.4	1.4	1	1	1
	Amps (LRA, each)	3.9/3.9	3.9/3.9	3.9/3.9	1.8	1.8	1.8	1.5	1.5	1.5
Evaporator Fan	No.	1	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	460	460	460	575	575	575
	Phase	3	3	3	3	3	3	3	3	3
	HP	2	2	3	2	2	3	2	2	3
	Amps (FLA, each)	8/8	8/8	13/13	4	4	7	4	4	8
	Amps (LRA, each)	56/56	56/56	74.5/74.5	28	28	38.1	19	19	20

ELECTRICAL DATA – RJNL- SERIES

		B120CL	B120CM	B120DL	B120DM	B120YL	B120YM
Unit Information	Unit Operating Voltage Range	187-253	187-253	414-506	414-506	517-632	517-632
	Volts	208/230	208/230	460	460	575	575
	Minimum Circuit Ampacity	50/50	52/52	28	29	20	21
	Minimum Overcurrent Protection Device Size	60/60	60/60	35	35	25	25
	Maximum Overcurrent Protection Device Size	70/70	80/80	40	45	30	30
Compressor Motor	No.	1	1	1	1	1	1
	Volts	200/230	200/230	460	460	575	575
	Phase	3	3	3	3	3	3
	RPM	3450	3450	3450	3450	3450	3450
	HP, Compressor 1	12 3/4	12 3/4	12 3/4	12 3/4	12 3/4	12 3/4
	Amps (RLA), Comp. 1	30.1/30.1	30.1/30.1	16.7	16.7	12.2	12.2
	Amps (LRA), Comp. 1	225/225	225/225	114	114	80	80
	HP, Compressor 2						
	Amps (RLA), Comp. 2						
	Amps (LRA), Comp. 2						
Condenser Motor	No.	2	2	2	2	2	2
	Volts	208/230	208/230	460	460	460	460
	Phase	1	1	1	1	1	1
	HP	1/2	1/2	1/2	1/2	1/2	1/2
	Amps (FLA, each)	2.3/2.3	2.3/2.3	1.5	1.5	1	1
	Amps (LRA, each)	5.6/5.6	5.6/5.6	3.1	3.1	2.2	2.2
Evaporator Fan	No.	1	1	1	1	1	1
	Volts	208/230	208/230	460	460	575	575
	Phase	3	3	3	3	3	3
	HP	2	3	2	3	2	3
	Amps (FLA, each)	8/8	13/13	4	7	4	8
	Amps (LRA, each)	56/56	74.5/74.5	28	38.1	19	20

VI. INSTALLATION

A. GENERAL

1. PRE-INSTALLATION CHECK-POINTS

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

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

2. LOCATION

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

B. OUTSIDE SLAB INSTALLATION (Typical outdoor slab installations are shown in Figures 7 and 8.)

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

C. CLEARANCES

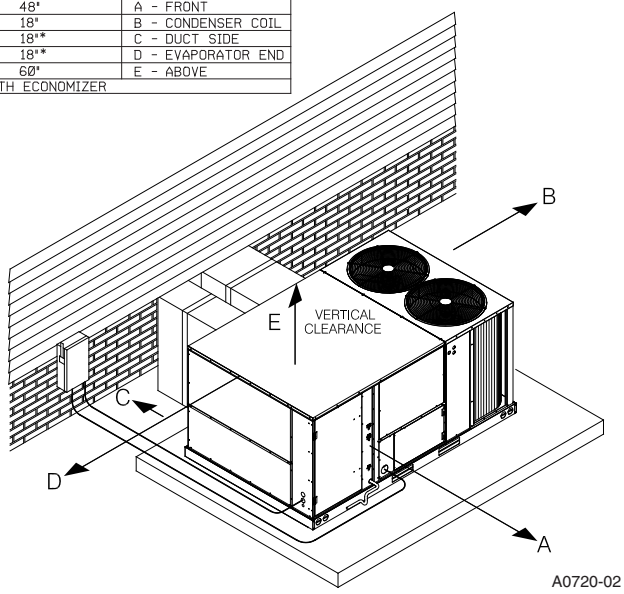
The following minimum clearances must be observed for proper unit performance and serviceability.

1. Provide 48" minimum clearance at the front of the unit. Provide 18" minimum clearance at all other sides of the unit.
2. Provide 60" minimum clearance between top of unit and maximum 3 foot overhang.
3. Unit is design certified for application on combustible flooring with 0" minimum clearance.
4. See Figure 7 for illustration of minimum installation-service clearances.

FIGURE 7
PACKAGED HEAT PUMP
OUTSIDE SLAB INSTALLATION, BASEMENT OR CRAWL SPACE DISTRIBUTION SYSTEM

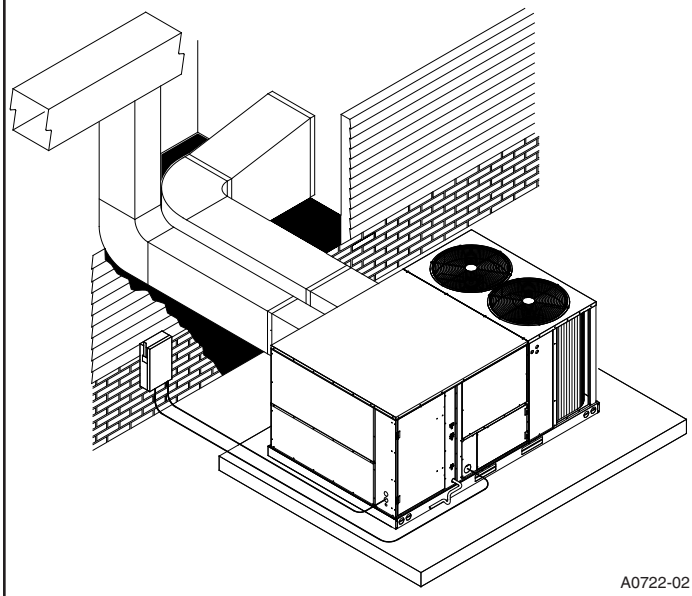
RECOMMENDED CLEARANCE	LOCATION
48"	A - FRONT
18"	B - CONDENSER COIL
18"*	C - DUCT SIDE
18"*	D - EVAPORATOR END
60"	E - ABOVE

*48" WITH ECONOMIZER



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FIGURE 8
PACKAGED HEAT PUMP
OUTSIDE SLAB INSTALLATION, CLOSET DISTRIBUTION SYSTEM. SLAB FLOOR CONSTRUCTION



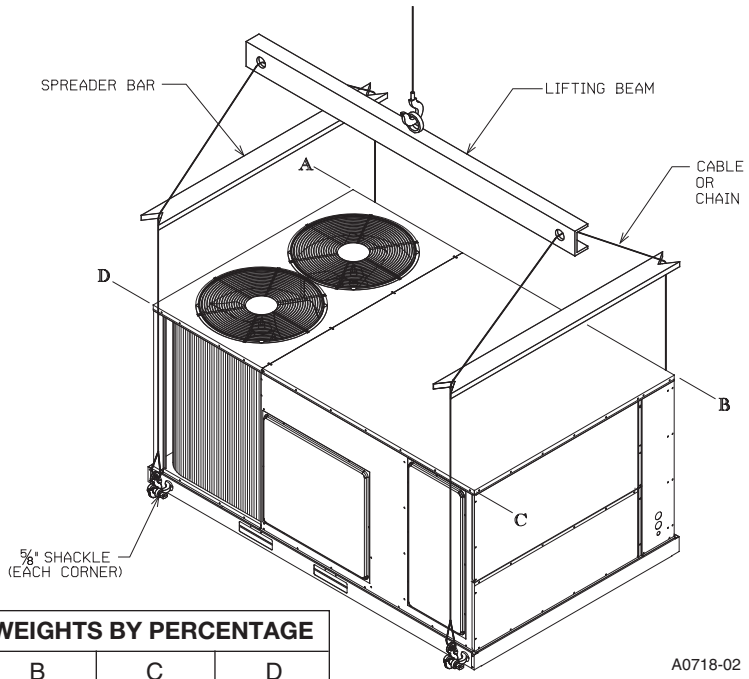
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D. ROOFTOP INSTALLATION

1. Before locating the unit on the roof, make sure that the strength of the roof and beams is adequate at that point to support the weight involved. This is very important and user's responsibility.
2. For rigging and roofcurb details, see Figures 9 and 10. Use field-furnished spreaders.
3. For roofcurb assembly, see Roofcurb Installation Instructions.
4. If the roofcurb is not used, provisions for disposing of condensate water runoff during defrosting must be provided.
5. The unit should be placed on a solid and level roofcurb or platform of adequate strength. See Figure 11.
6. The location of the unit on the roof should be such as to provide proper access for inspection and servicing.

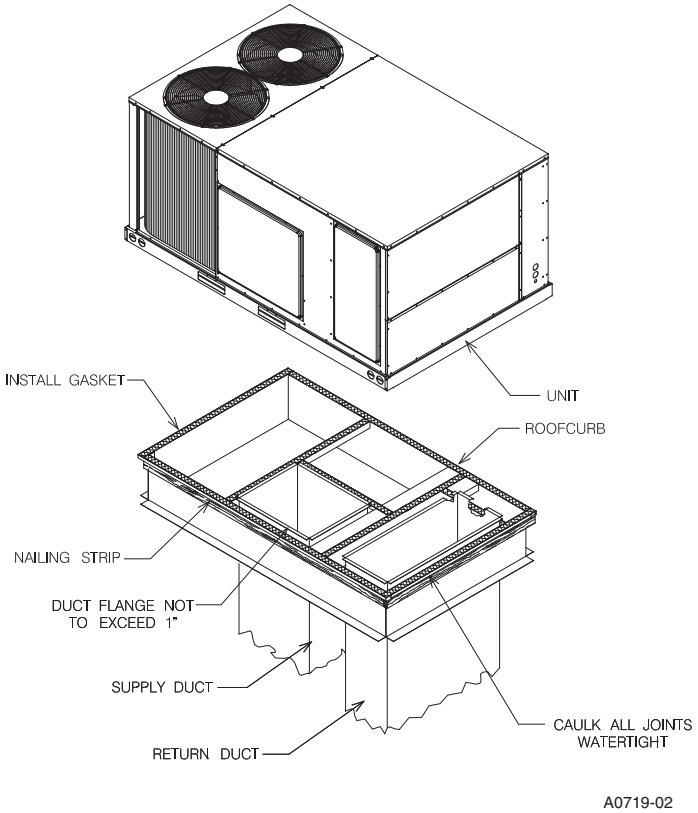
IMPORTANT: *If unit will not be put into service immediately, cover supply and return openings to prevent excessive condensation.*

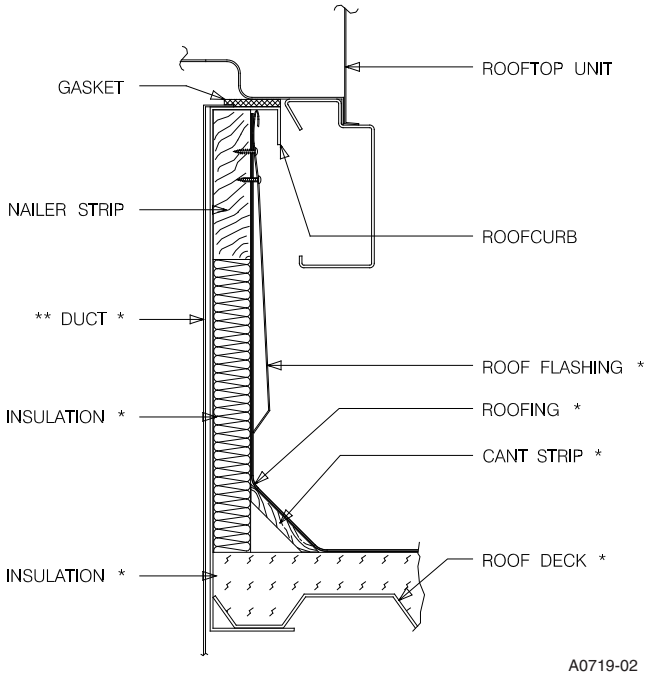
FIGURE 9
PACKAGED HEAT PUMP
RIGGING FOR LIFTING



CORNER WEIGHTS BY PERCENTAGE			
A	B	C	D
32%	26%	20%	22%

FIGURE 10
PACKAGED HEAT PUMP
ROOFCURB INSTALLATION

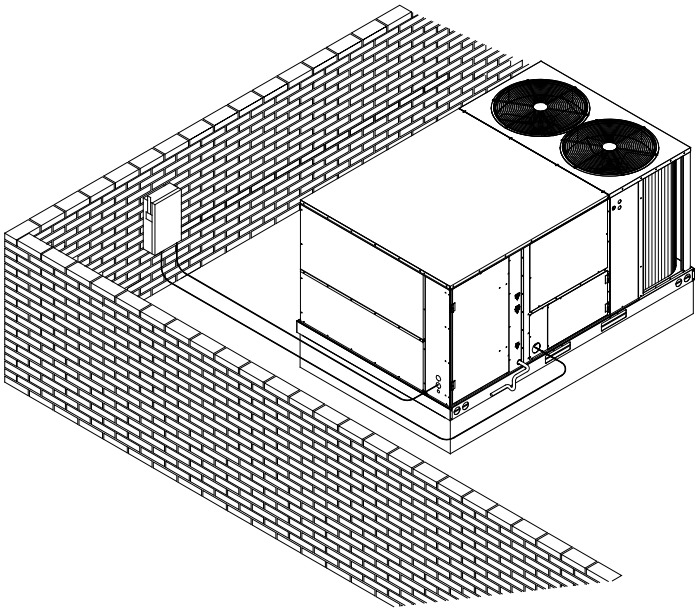




* BY CONTRACTOR

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

FIGURE 11
PACKAGED HEAT PUMP
FLAT ROOFTOP INSTALLATION, ATTIC OR DROP CEILING DISTRIBUTION SYSTEM. MOUNTED ON ROOFCURB. CURB MUST BE LEVEL



A0724-02

VII. DUCTWORK

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

⚠WARNING

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

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

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

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

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

When installing ductwork, consider the following items:

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

VIII. FILTERS

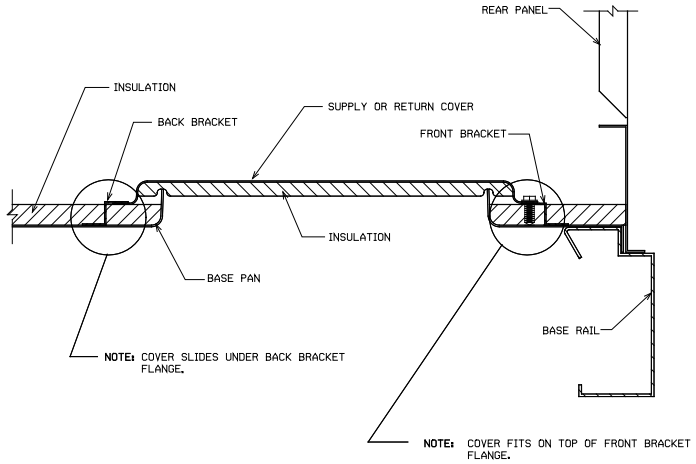
This unit is provided with disposable filters. (See Physical Data Section for size and quantity.) When replacing filters, ensure they are inserted fully to the back to prevent bypass. Remove filters by sliding out the metal trays.

IX. CONVERSION PROCEDURE

DOWNFLOW TO HORIZONTAL

1. Remove the screws and covers from the outside of the supply and return sections.
2. Install the covers over the bottom supply and return openings, painted side up inserting the leading flange under the bracket provided. Place the back flange to the top of the front bracket provided. See Figure 12.
3. Secure the return and supply cover to the front bracket with one (1) screw.

FIGURE 12.
COVER GASKET DETAIL



A0725-01

X. CONDENSATE DRAIN

The condensate drain connection of the evaporator is 1" nominal female pipe thread. **IMPORTANT:** Install a condensate trap to ensure proper condensate drainage. See Figure 13.

FIGURE 13.
CONDENSATE DRAIN

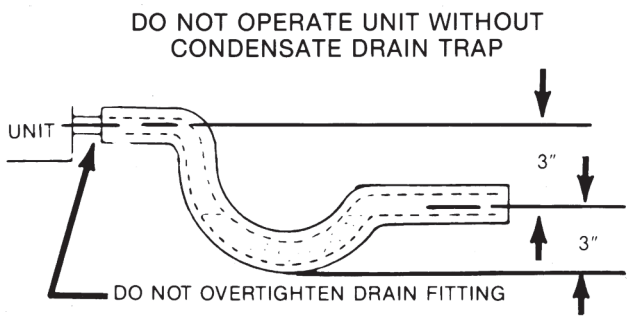
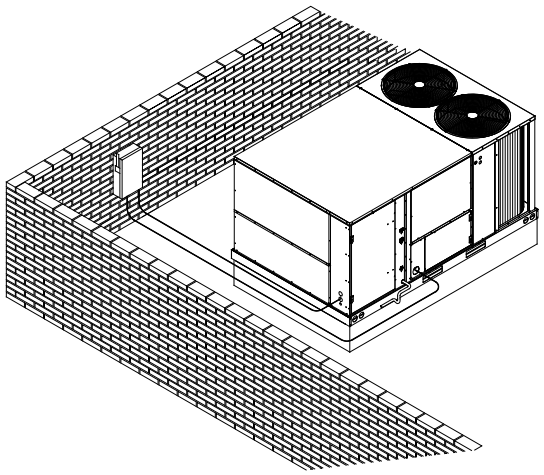


FIGURE 14.
BRANCH CIRCUIT DISCONNECT LOCATION



XI. CONDENSATE DRAIN, OUTDOOR COIL

The outdoor coil during heating operation will sweat or run water off. The outdoor coil will also run water off during the defrost cycle. See Section V, Installation, Page 5 for mounting precautions.

XII. ELECTRICAL WIRING

Field wiring must comply with the National Electrical Code (C.E.C. in Canada) and local ordinances that may apply.

A. POWER WIRING

1. This unit incorporates single-point electrical connections for the unit and electric heat accessory.
2. It is important that proper electrical power is available to the unit. Voltage should not vary more than 10% from the values marked on the unit rating plate. Phase voltages must be balanced within 3%.
3. Install a branch circuit disconnect within sight of the unit. Use the unit rating plate or heater kit tables to determine the required size.
4. The branch circuit wire must be sized in accordance with the National Electrical Code (C.E.C. in Canada) and local ordinances that may apply using the minimum circuit ampacity found on the unit rating plate.
5. Field-installed power wiring must be run through grounded rain-tight conduit attached to the unit power entry panel and connected as follows:

   UNITS WITHOUT ELECTRIC HEAT - Connect power wiring to the power terminal block located on the left side of the electric heat compartment. Connect the ground wire to the adjacent ground lug (see Figure 15).

   UNITS WITH FACTORY INSTALLED ELECTRIC HEAT - Connect power wiring to the power terminal block located on the electric heater kit (see Figure 16). Connect the ground wire to the adjacent ground lug. DO NOT connect aluminum wiring directly to the electric heater terminal block. Wiring to the unit contactors is factory-connected.
6. For field installation of an electric heater kit, follow the instructions below. Refer to the information supplied with the kit.
   a. Removing screws as required, open heater access door and detach adjacent power entry panel.
   b. Remove wires to unit contactor (1L1, 1L2, 1L3) from unit terminal block on the left side of the electric heat compartment. Remove and discard the terminal block and the adjacent ground lug.
   c. Remove the heater kit block-off panel and install the heater kit in its place using 9 of the 12 screws previously removed.
   d. Connect the unit contactor wires (1L1, 1L2, 1L3) to the compressor fuse block on the heater kit.
   e. Re-install the power entry panel & run conduit and the proper size field wiring through the opening in the panel.
   f. Connect field wiring to the power terminal block located on the electric heater kit. Connect ground wire to the adjacent ground lug.
   g. Connect heater kit control plug to the receptacle on the control wiring harness.
   h. Close heater access door and secure with screws previously removed.

B. CONTROL WIRING (Class II)

1. Low voltage wiring should not be run in conduit with power wiring.
2. Control wiring is routed through the 7/8" hole in the unit side panel. See Figure 2. Use a minimum #18 AWG thermostat wire. For wire lengths exceeding 50', use #16 AWG thermostat wire. Connect the control wiring to the low voltage terminal block located below the unit control box.
3. It is necessary that only approved heat pump thermostats be used. Please contact your distributor for part number information. See thermostat specification catalog for recommended thermostats.
4. Figure 17 shows representative low voltage connection diagrams. Read your thermostat installation instructions for any special requirements for your specific thermostat.

C. INTERNAL WIRING

1. A diagram of the internal wiring of this unit is located on the inside of the control access panel and in this manual. If any of the original wire must be replaced, the wire gauge and insulation must be the 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.

FIGURE 15

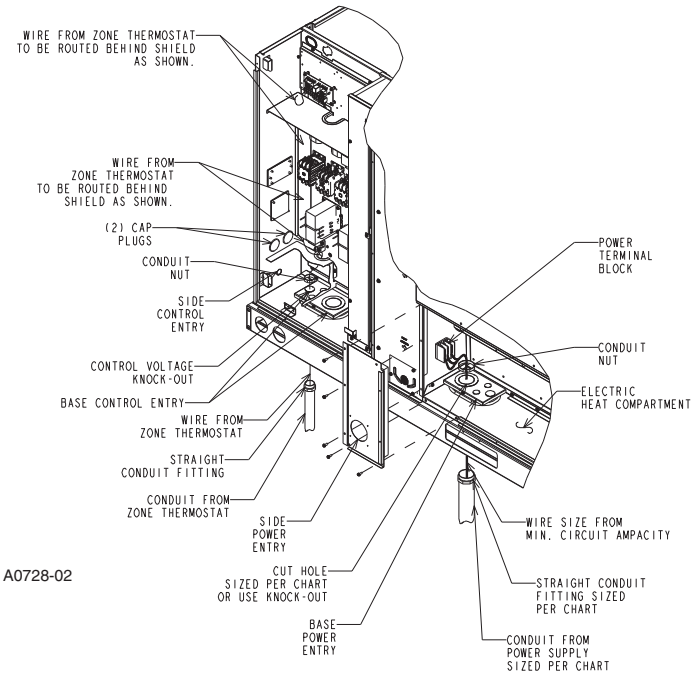
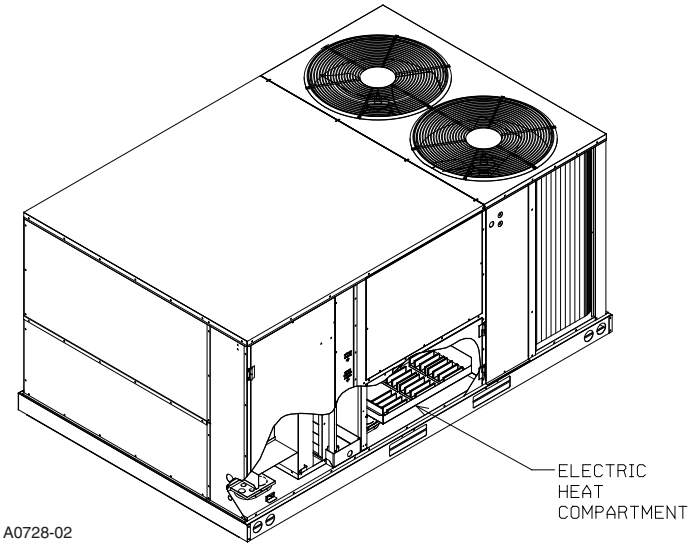


FIGURE 16



D. GROUNDING

⚠ WARNING

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

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

E. THERMOSTAT

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

XIII. INDOOR AIR FLOW DATA

Belt-drive blower models have motor sheaves set for proper CFM at a typical external static. See Airflow Data Tables to determine if adjustments are necessary.

XIV. CRANKCASE HEAT

Crankcase heat is standard on 7½ & 10 ton models. The auxiliary switch on the compressor contactor turns off the heater when the compressor is running.

XV. PRE-START CHECK

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

XVI. STARTUP

1. Turn thermostat to “OFF,” turn “on” power supply at disconnect switch.
2. Turn temperature setting as high as it will go.
3. Turn fan switch to “ON.”
4. Indoor blower should run. Be sure it is running in the right direction.
5. Turn fan switch to “AUTO.” Turn system switch to “COOL” and turn temperature setting below room temperature. Unit should run in cooling mode after 5 minute compressor on-delay has expired.
6. Are outdoor fans operating correctly in the right direction?
7. Is compressor running correctly.
8. Turn thermostat system switch to “HEAT.” Unit should stop. Raise temperature setting to above room temperature. Unit should run in heating mode after 5 minute delay. Auxiliary heaters, if installed, will energize 30 to 50 seconds after the initiation of a “W3” call.
9. Check the refrigerant charge using the instructions located on compressor access panel cover. Replace service port caps. Service port cores are for system access only and will leak if not tightly capped.
10. Turn thermostat system switch to proper mode “HEAT” or “COOL” and set thermostat to proper temperature setting. Record the following after the unit has run some time.

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

AIRFLOW PERFORMANCE — 7.5 TON [26.4kW] — SIDEFLOW

Air Flow CFM [L/s]	Model RJNL-B090 Voltage 208/230, 460, 575 — 3 phase External Static Pressure — Inches of Water [kPa]																																			
	0.1 [.02]		0.2 [.05]		0.3 [.07]		0.4 [.10]		0.5 [.12]		0.6 [.15]		0.7 [.17]		0.8 [.20]		0.9 [.22]		1.0 [.25]		1.1 [.27]		1.2 [.30]		1.3 [.32]		1.4 [.35]		1.5 [.37]		1.6 [.40]		1.7 [.42]		1.8 [.45]		1.9 [.47]		2.0 [.50]	
	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W
2400 [1133]	—		550	810	582	845	614	883	645	924	677	968	708	1015	740	1066	771	1119	802	1175	833	1234	864	1296	895	1361	924	1435	955	1508	985	1584	1016	1663	1046	1744	1077	1829	1107	1916
2500 [1180]	—		559	839	590	876	622	916	653	959	684	1004	715	1053	745	1105	776	1160	807	1218	837	1279	867	1343	897	1410	927	1490	957	1564	987	1641	1017	1721	1047	1804	1077	1890	1107	1979
2600 [1227]	—		569	872	600	910	630	952	661	997	691	1044	722	1095	752	1149	782	1205	812	1265	842	1328	871	1394	901	1462	931	1546	961	1622	990	1701	1019	1782	1049	1866	1078	1954	1107	2044
2700 [1274]	549	870	579	908	610	948	640	992	670	1038	699	1088	729	1140	759	1196	788	1255	818	1316	847	1381	876	1448	905	1519	935	1606	964	1683	993	1763	1022	1846	1050	1931	1079	2020	1107	2111
2800 [1321]	561	909	591	948	620	990	650	1036	679	1084	708	1135	737	1190	766	1247	795	1308	824	1371	853	1437	881	1507	910	1579	940	1667	968	1746	996	1827	1025	1911	1052	1998	1080	2088	1108	2181
2900 [1368]	573	951	602	992	631	1036	660	1083	689	1134	718	1187	746	1243	775	1302	803	1365	831	1430	860	1498	888	1569	915	1644	945	1732	973	1811	1000	1894	1028	1980	1055	2068	1082	2159	1109	2253
3000 [1416]	586	997	615	1040	643	1086	672	1135	700	1187	728	1242	756	1300	784	1361	812	1425	839	1492	867	1563	894	1636	923	1720	950	1798	977	1879	1004	1963	1031	2050	1058	2140	1084	2233	1111	2328
3100 [1463]	600	1047	628	1092	656	1140	684	1190	711	1244	739	1301	766	1361	794	1424	821	1490	848	1559	875	1631	902	1706	929	1787	956	1867	982	1950	1009	2035	1035	2123	1061	2215	1087	2309	1113	2405
3200 [1510]	615	1101	642	1147	669	1197	697	1250	724	1305	751	1364	777	1426	804	1491	831	1558	857	1629	884	1703	910	1780	936	1857	962	1939	988	2022	1013	2109	1039	2199	1064	2291	1090	2387	1115	2485
3300 [1557]	630	1158	657	1207	683	1258	710	1313	736	1370	763	1431	789	1495	815	1561	841	1631	867	1703	893	1779	919	1858	943	1930	968	2012	993	2098	1018	2186	1043	2277	1068	2371	1093	2468	1117	2567
3400 [1604]	646	1220	672	1270	698	1324	724	1380	750	1439	776	1502	801	1567	827	1636	852	1707	878	1781	903	1859	925	1924	950	2005	975	2089	999	2175	1024	2265	1048	2357	1072	2453	1096	2551	1120	2652
3500 [1652]	662	1285	688	1337	713	1393	739	1451	764	1512	789	1576	814	1644	839	1714	864	1787	889	1863	914	1943	933	2000	958	2082	982	2167	1006	2255	1029	2346	1053	2440	1077	2537	1100	2636	1124	2739
3600 [1699]	679	1355	704	1409	729	1466	754	1526	779	1589	804	1655	828	1724	853	1796	877	1871	901	1949	918	1998	942	2078	966	2162	989	2249	1012	2338	1035	2430	1058	2525	1081	2623	1104	2724	1127	2828

NOTE: L-Drive left section, M-Drive center section, N-Drive right section.

Drive Package	L						M						N					
Motor H.P. [W]	2 [1491.4]						2 [1491.4]						3 [2237.1]					
Blower Sheave	BK110H						BK90H						BK65H					
Motor Sheave	1VP-44						1VP-44						1VP-44					
Turns Open	1	2	**3**	4	5	6	1	2	**3**	4	5	6	1	2	3	4	**5**	6
RPM	708	676	**646**	612	580	548	868	830	**794**	752	713	673	1192	1134	1085	1031	**979**	919

NOTES: 1. Factory sheave settings are shown in bold type.
2. Do not set motor sheave below minimum or maximum turns open shown.
3. Re-adjustment of sheave required to achieve rated airflow at ARI minimum External Static Pressure
4. Drive data shown is for horizontal airflow with dry coil. Add component resistance (below) to duct resistance to determine t otal External Static Pressure.

COMPONENT AIRFLOW RESISTANCE — 7.5 TON [26.4kW]

CFM [L/s]	2400 [1133]	2500 [1180]	2600 [1227]	2700 [1274]	2800 [1321]	2900 [1368]	3000 [1416]	3100 [1463]	3200 [1510]	3300 [1557]	3400 [1604]	3500 [1652]	3600 [1699]
	Resistance — Inches of Water [kPa]												
Wet Coil	0.09 [.02]	0.10 [.02]	0.10 [.02]	0.11 [.03]	0.11 [.03]	0.12 [.03]	0.12 [.03]	0.13 [.03]	0.13 [.03]	0.13 [.03]	0.13 [.03]	0.14 [.03]	0.14 [.03]
Downflow	0.08 [.02]	0.08 [.02]	0.09 [.02]	0.09 [.02]	0.10 [.02]	0.10 [.02]	0.11 [.03]	0.11 [.03]	0.11 [.03]	0.11 [.03]	0.11 [.03]	0.11 [.03]	0.11 [.03]
Downflow Economizer RA Damper Open	0.10 [.02]	0.10 [.02]	0.11 [.03]	0.11 [.03]	0.12 [.03]	0.12 [.03]	0.13 [.03]	0.13 [.03]	0.14 [.03]	0.14 [.03]	0.15 [.04]	0.15 [.04]	0.15 [.04]
Horizontal Economizer RA Damper Open	0.10 [.02]	0.10 [.02]	0.11 [.03]	0.11 [.03]	0.12 [.03]	0.12 [.03]	0.13 [.03]	0.13 [.03]	0.14 [.03]	0.14 [.03]	0.15 [.04]	0.15 [.04]	0.15 [.04]
Concentric Grill RXRN-FA65 or RXRN-FA75 & Transition RXMC-CC04	0.13 [.03]	0.15 [.04]	0.17 [.04]	0.19 [.05]	0.21 [.05]	0.23 [.06]	0.25 [.06]	0.28 [.07]	0.31 [.08]	0.34 [.08]	0.37 [.09]	0.40 [.10]	0.44 [.11]

AIRFLOW CORRECTION FACTORS — 7.5 TON [26.4kW]

	CFM [L/s]	2400 [1133]	2500 [1180]	2600 [1227]	2700 [1274]	2800 [1321]	2900 [1368]	3000 [1416]	3100 [1463]	3200 [1510]	3300 [1557]	3400 [1604]	3500 [1652]	3600 [1699]
	Total MBH	0.97	0.97	0.98	0.98	0.99	1.00	1.00	1.01	1.02	1.02	1.02	1.02	1.02
	Sensible MBH	0.87	0.90	0.92	0.94	0.97	0.99	1.02	1.04	1.06	1.06	1.06	1.06	1.06
	Power kW	0.98	0.98	0.99	0.99	0.99	1.00	1.00	1.00	1.01	1.01	1.01	1.01	1.01

NOTE: Multiply correction factor times gross performance data — resulting sensible capacity cannot exceed total capacity.

[ ] Designates Metric Conversions

AIRFLOW PERFORMANCE — 10 TON [35.1kW] — SIDEFLOW

Air Flow CFM [L/s]	Model RJNL-B120 Voltage 208/230, 460, 575 — 3 phase																																					
	External Static Pressure — Inches of Water [kPa]																																					
	0.1 [.02]		0.2 [.05]		0.3 [.07]		0.4 [.10]		0.5 [.12]		0.6 [.15]		0.7 [.17]		0.8 [.20]		0.9 [.22]		1.0 [.25]		1.1 [.27]		1.2 [.30]		1.3 [.32]		1.4 [.35]		1.5 [.37]		1.6 [.40]		1.7 [.42]		1.8 [.45]		1.9 [.47]		2.0 [.50]	
	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W
3200 [1510]	—		—		—		679	1177	707	1235	736	1294	764	1354	791	1414	818	1476	844	1538	870	1601	896	1666	921	1731	946	1797	970	1864	994	1931	1017	2000	1040	2069	1063	2140	1085	2211
3300 [1557]	—		—		662	1171	691	1230	719	1291	747	1352	775	1415	802	1478	828	1542	854	1607	880	1673	905	1740	930	1807	955	1876	979	1945	1002	2016	1025	2087	1048	2159	1070	2232	1091	2306
3400 [1604]	—		—		674	1226	703	1288	731	1352	758	1416	786	1481	812	1546	839	1613	865	1681	890	1749	915	1819	940	1889	964	1960	987	2032	1010	2105	1033	2179	1055	2254	1077	2329	1098	2406
3500 [1652]	—		—		687	1287	715	1351	743	1417	770	1484	797	1551	823	1620	849	1689	875	1759	900	1830	925	1902	949	1975	973	2049	996	2124	1019	2199	1041	2276	1063	2353	1084	2431	1106	2510
3600 [1699]	—		671	1285	699	1352	727	1419	755	1488	782	1557	808	1627	834	1698	860	1770	885	1843	910	1916	934	1991	958	2066	982	2143	1005	2220	1027	2298	1049	2377	1071	2457	1092	2538	1113	2620
3700 [1746]	—		684	1353	712	1422	740	1492	767	1563	793	1635	820	1707	846	1781	871	1855	896	1931	920	2007	944	2084	968	2162	991	2241	1014	2321	1036	2402	1057	2484	1079	2566	1100	2650	1120	2734
3800 [1793]	669	1354	697	1425	725	1496	752	1569	779	1643	805	1717	831	1792	857	1869	882	1946	906	2024	931	2103	954	2183	977	2263	1000	2345	1023	2427	1044	2511	1066	2595	1087	2680	1107	2766	1127	2853
3900 [1840]	682	1428	710	1502	738	1576	765	1651	791	1728	817	1805	843	1883	868	1961	893	2041	917	2122	941	2203	964	2286	987	2369	1010	2453	1032	2538	1053	2624	1074	2711	1095	2799	1115	2887	—	
4000 [1888]	696	1507	724	1584	751	1661	777	1738	804	1817	829	1897	855	1977	880	2059	904	2141	928	2224	951	2308	974	2393	997	2479	1019	2566	1041	2654	1062	2742	1083	2832	1103	2922	1123	3013	—	
4100 [1935]	710	1592	737	1670	764	1750	790	1830	816	1912	842	1994	867	2077	891	2161	915	2246	939	2332	962	2418	985	2506	1007	2595	1029	2684	1050	2774	1071	2865	1092	2957	1112	3050	1131	3144	—	
4200 [1982]	724	1680	751	1762	777	1844	803	1927	829	2011	854	2096	879	2181	903	2268	927	2356	950	2444	973	2533	995	2624	1017	2715	1039	2807	1060	2900	1080	2993	1100	3088	1120	3184	—		—	
4300 [2029]	738	1774	764	1858	791	1943	816	2028	842	2115	866	2202	891	2291	915	2380	938	2470	961	2561	984	2653	1006	2746	1027	2840	1048	2934	1069	3030	1089	3126	1109	3223	1129	3321	—		—	
4400 [2076]	752	1873	778	1959	804	2046	829	2135	854	2224	879	2314	903	2405	926	2497	950	2589	972	2683	995	2778	1016	2873	1038	2969	1058	3066	1079	3165	1099	3264	1118	3363	—		—		—	
4500 [2123]	766	1976	792	2065	818	2155	843	2246	867	2338	892	2430	915	2524	939	2618	961	2714	984	2810	1006	2907	1027	3005	1048	3104	1069	3204	1089	3304	1108	3406	1127	3508	—		—		—	
4600 [2171]	781	2084	806	2176	831	2268	856	2362	880	2456	904	2551	928	2648	951	2745	973	2842	995	2941	1017	3041	1038	3142	1059	3243	1079	3346	1099	3449	1118	3553	—		—		—		—	
4700 [2218]	795	2197	820	2291	845	2386	870	2483	894	2579	917	2677	940	2776	963	2876	985	2976	1007	3078	1028	3180	1049	3283	1069	3387	1089	3492	1109	3598	1128	3705	—		—		—		—	
4800 [2265]	810	2315	835	2412	859	2509	883	2608	907	2708	930	2808	953	2909	975	3012	997	3115	1018	3219	1039	3324	1060	3430	1080	3536	1099	3644	1119	3752	—		—		—		—		—	

NOTE: L-Drive left of bold line, M-Drive right of bold line.

Drive Package	L							M						
Motor H.P. [W]	2 [1491.4]							3 [2237.1]						
Blower Sheave	BK90H							BK65H						
Motor Sheave	1VP-44							1VP-44						
Turns Open	0	1	**2**	3	4	5	6	0	1	2	3	4	**5**	6
RPM	|	853	**816**	779	739	700	661	|	1179	1127	1074	1018	**968**	915

NOTES: 1. Factory sheave settings are shown in bold type.
2. Do not set motor sheave below minimum or maximum turns open shown.
3. Re-adjustment of sheave required to achieve rated airflow at ARI minimum External Static Pressure
4. Drive data shown is for horizontal airflow with dry coil. Add component resistance (below) to duct resistance to determine t otal External Static Pressure.

COMPONENT AIRFLOW RESISTANCE — 10 TON [35.1kW]

CFM [L/s]	3200 [1510]	3300 [1557]	3400 [1604]	3500 [1652]	3600 [1699]	3700 [1746]	3800 [1793]	3900 [1840]	4000 [1888]	4100 [1935]	4200 [1982]	4300 [2029]	4400 [2076]	4500 [2123]	4600 [2171]	4700 [2218]	4800 [2265]
	Resistance — Inches of Water [kPa]																
Wet Coil	0.07 [.02]	0.07 [.02]	0.07 [.02]	0.07 [.02]	0.08 [.02]	0.08 [.02]	0.08 [.02]	0.09 [.02]	0.09 [.02]	0.09 [.02]	0.09 [.02]	0.10 [.02]	0.10 [.02]	0.10 [.03]	0.10 [.03]	0.11 [.03]	0.11 [.03]
Downflow Economizer RA Damper Open	0.09 [.02]	0.10 [.02]	0.10 [.02]	0.11 [.03]	0.11 [.03]	0.12 [.03]	0.12 [.03]	0.13 [.03]	0.13 [.03]	0.14 [.03]	0.14 [.03]	0.15 [.04]	0.15 [.04]	0.16 [.04]	0.16 [.04]	0.17 [.04]	0.17 [.04]
Horizontal Economizer RA Damper Open	0.05 [.01]	0.05 [.01]	0.06 [.01]	0.06 [.01]	0.06 [.02]	0.06 [.02]	0.07 [.02]	0.07 [.02]	0.07 [.02]	0.07 [.02]	0.08 [.02]	0.08 [.02]	0.08 [.02]	0.09 [.02]	0.09 [.02]	0.09 [.02]	0.10 [.02]
Horizontal Economizer OA Damper Open	0.11 [.03]	0.12 [.03]	0.12 [.03]	0.13 [.03]	0.13 [.03]	0.14 [.03]	0.14 [.04]	0.15 [.04]	0.15 [.04]	0.16 [.04]	0.16 [.04]	0.17 [.04]	0.17 [.04]	0.18 [.04]	0.19 [.05]	0.19 [.05]	0.20 [.05]
Concentric Grill RXRN-FA65 or RXRN-FA75 & Transition RXMC-CD04	0.31 [.08]	0.34 [.08]	0.37 [.09]	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
Concentric Grill RXRN-AA61 or RXRN-AA71 & Transition RXMC-CE05	DNA	DNA	DNA	DNA	0.17 [.04]	0.18 [.04]	0.18 [.04]	0.20 [.05]	0.21 [.05]	0.23 [.06]	0.24 [.06]	0.25 [.06]	0.27 [.07]	DNA	DNA	DNA	DNA
Concentric Grill RXRN-AA66 or RXRN-AA76 & Transition RXMC-CF06	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	0.31 [.08]	0.31 [.08]	0.32 [.08]

AIRFLOW CORRECTION FACTORS — 10 TON [35.1kW]

	CFM [L/s]	3200 [1510]	3300 [1557]	3400 [1604]	3500 [1652]	3600 [1699]	3700 [1746]	3800 [1793]	3900 [1840]	4000 [1888]	4100 [1935]	4200 [1982]	4300 [2029]	4400 [2076]	4500 [2123]	4600 [2171]	4700 [2218]	4800 [2265]
	Total MBH	0.97	0.97	0.98	0.98	0.99	1.00	1.00	1.01	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
	Sensible MBH	0.87	0.90	0.92	0.94	0.97	0.99	1.02	1.04	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
	Power kW	0.98	0.98	0.99	0.99	0.99	1.00	1.00	1.00	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01

NOTE: Multiply correction factor times gross performance data — resulting sensible capacity cannot exceed total capacity. [ ] Designates Metric Conversions

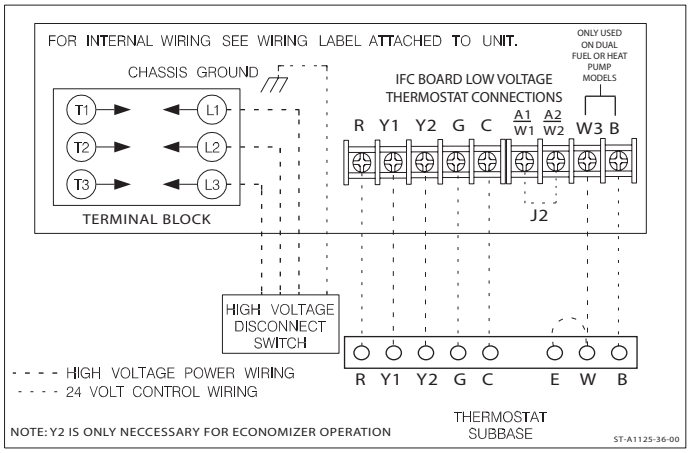
TABLE 1. COPPER WIRE SIZE — AWG (1% VOLTAGE DROP)

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

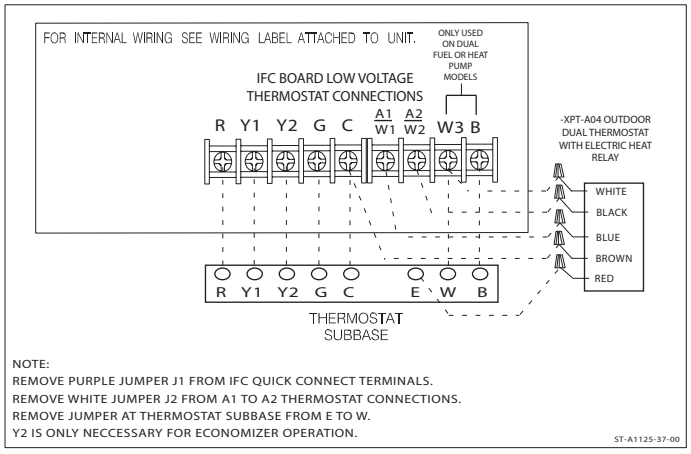
NOTE:
1. Wire size based on 60ºC type copper conductors below 100 ampacity. 2. Wire size based on 75ºC type copper conductors for 100 ampacity and above.

FIGURE 17.
THERMOSTAT CONNECTIONS DIAGRAMS

STANDARD WIRING



ALTERNATE LOW VOLTAGE WIRING WITH OUTDOOR THERMOSTAT



11. Adjust discharge air grilles and balance system.
12. Check ducts for condensation and air leaks.
13. Check unit for tubing and sheet metal rattles.
14. Instruct the owner on operation and maintenance.
15. Leave “INSTALLATION” and ”USE AND CARE“ instructions with owner.

XVII. OPERATION

COOLING MODE

With thermostat in the cool mode, fan auto and the room temperature higher than the thermostat setting:

A. Indoor blower contactor is energized through thermostat contact (G).

B. Compressor contactor is energized through thermostat contact (Y1). A 5 minute short cycle delay is standard on this unit. Compressor will start immediately if test pins on the defrost board are shorted and released.

C. Reversing valve is de-energized in the cooling mode through thermostat contact (B).

D. Economizer enthalpy control (if installed) controls operation of first-stage cooling and positions fresh air damper to maintain mixed air temperature. Second-stage cooling operates normally as required by second stage of thermostats.

E. The system will continue in cooling operation as long as all safety controls are closed, until the thermostat is satisfied.

HEATING MODE

With thermostat in the heat mode, fan auto and the room temperature lower than the thermostat setting:

A. Indoor blower contactor is energized through thermostat contact (G).

B. Compressor contactor is energized through thermostat contact (Y1). A 5 minute short cycle delay is standard on this unit. Compressor will start immediately if test pins on the defrost board are shorted and released.

C. Reversing valve is energized in the heating mode through thermostat contact (B).

D. Economizer enthalpy control (if installed) is electrically bypassed with the heat pump control relay during heating operation.

E. Should the heat requirement be more than the heat pump can supply, a portion of the electric heat accessory (if supplied) is energized through thermostat contact (W3).

F. The system will continue in heating operation as long as all safety controls are closed, until the thermostat is satisfied.

G. The unit will function in a defrost mode, reversing the refrigerant cycle to cooling and energizing the electric heat (if supplied) as required through the defrost relay.

H. If the refrigerant system becomes inoperable during a need for heating, the thermostat may be set to emergency heat which will energize the electric heat (if supplied).

At initial start-up or after extended shutdown periods make sure the crankcase heater is energized for at least 12 hours before the compressor is started.

XVIII. AUXILIARY HEAT

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

⚠ WARNING

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

XIX. DEMAND DEFROST CONTROL

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

Enhanced Feature Demand Defrost Control: Defrost control has high and low pressure control inputs with unique pressure switch logic built into the microprocessor to provide compressor and system protection without nuisance lock-outs. Cycles the compressor off for 5 seconds at the beginning and end of the defrost cycle to eliminate the increased compressor noise caused by rapidly changing system pressures when the reversing valve switches. See High/Low Pressure Control Monitoring Section below for diagnostic flash codes for the two diagnostic LED's provided on the control.

DEFROST INITIATION

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

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

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

DEFROST TERMINATION

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

TEMPERATURE SENSORS

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

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

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

TEST MODE

Unit must be in a normal heat cycle (compressor running) to perform a defrost test. A quick short and release of the test pins will cause a normal defrost cycle. A second short and release more than 5 seconds after initial short and release will end the defrost cycle. Test pins shorted without release will cause a 14 minute defrost that ignores outdoor ambient temperature and outdoor coil temperature.

HIGH/LOW PRESSURE CONTROL MONITORING - ENHANCED DEFROST CONTROL ONLY

Status of high and low pressure controls is monitored by the enhanced feature demand defrost control and the following actions are taken.

High Pressure Control – Provides active protection in both cooling and heating modes at all outdoor ambient temperatures. The high pressure control is an automatic reset type and opens at approximately 610 psig and closes at approximately 420 psig. The compressor and fan motor will stop when the high pressure control opens and will start again if the high side pressure drops to approximately 420 psig when the automatic reset high pressure control resets. If the high pressure control opens 3 times within a particular call for heating or cooling operation, the defrost control will lock out compressor and outdoor fan operation.

Low Pressure Control – Provides active protection in both heating and cooling modes at all outdoor ambient temperatures. The low pressure control is an automatic reset type and opens at approximately 15 psig and closes at approximately 40 psig. Operation is slightly different between cooling and heating modes.

Cooling Mode: The compressor and fan motor will stop when the low pressure control opens and will start again when the low side pressure rises to approximately 40 psig when the low pressure control automatically resets. If the low pressure switch opens 3 times within a particular call for cooling operation, the defrost control will lock out compressor and outdoor fan operation.

Heating Mode: The compressor and fan motor will stop when the low pressure control opens and will start again when the low side pressure rises to approximately 40 psig when the low pressure control automatically resets. If the low pressure switch trips 3 times within 120 minutes of operation during a particular call for heating operation, the defrost control will lock out compressor and outdoor fan operation. If the lock-out due to low pressure occurs at an outdoor ambient temperature below 5°F, the defrost control will automatically exit the lock-out mode when the outdoor ambient temperature rises to 5°F. This feature is necessary since the low pressure control could possibly have opened due to the outdoor ambient being very low rather than an actual system fault.

Exiting Lock-Out Mode: To exit the lock-out mode, remove 24 volts to the defrost control by removing power to the unit or by shorting the two defrost control test pins together.

ENHANCED FEATURE DEFROST CONTROL DIAGNOSTIC CODES

LED 1	LED 2	Control Board Status
OFF	OFF	No Power
ON	ON	Coil Sensor Failure
OFF	ON	Ambient Sensor Failure
FLASH	FLASH	Normal
OFF	FLASH	Low Pressure Lockout (short test pins to reset)
FLASH	OFF	High Pressure Lockout (short test pins to reset)
ON	FLASH	Low Pressure Control Open
FLASH	ON	High Pressure Control Open
Alternate Flashing		5 Minute Time Delay

REPLACEMENT PARTS

Contact your local distributor for a complete parts list.

CHARGE INFORMATION

Refer to the appropriate charge chart on the unit, or in this booklet.

TROUBLESHOOTING

Refer to the troubleshooting chart included in this manual.

WIRING DIAGRAMS

Refer to the appropriate wiring diagram included in this manual.

XX. HEATER KIT CHARACTERISTICS FOR RJNL MODELS
TABLE 2. AUXILIARY HEATER KITS CHARACTERISTICS AND APPLICATION

208/240 VOLT, THREE PHASE, 60 HZ, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION													
Single Power Supply for Both Unit and Heater Kit										Separate Power Supply for Both Unit and Heater Kit			
Unit Model Number RJNL-	Heater Kit					Heat Pump			Heater Kit		Heat Pump		
	RXJJ- Heater Kit Nominal kW	No. of Sequence Steps	Rated Heater kW @ 208/240 V	Heater KBTU/Hr @ 208/240 V	Heater Amp. @ 208/240 V	Unit Min. Ckt. Ampacity @ 208/240V	Over Current Protective Device Size		Min. Ckt. Ampacity 208/240V	Max. Fuse Size 208/240V	Min. Circuit Ampacity 208/240V	Over Current Protective Device Size	
							Min./Max. @ 208V	Min./Max. @ 240V				Min./Max. @ 208V	Min./Max. @ 240V
B090CL	No Heat	—	—	—	—	43/43	50/60	50/60	—	—	43/43	50/60	50/60
	CC15C	1	10.8/14.4	36.84/49.13	30.1/34.7	81/87	90/90	100/100	38/44	40/45	—	—	—
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	93/101	100/100	110/110	50/58	50/60	—	—	—
	CC30C	1	21.6/28.8	73.69/98.25	60.2/69.4	119/130	125/125	150/150	76/87	80/90	—	—	—
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	144/159	150/150	175/175	101/116	110/125	—	—	—
B090CM	No Heat	—	—	—	—	43/43	50/60	50/60	—	—	43/43	50/60	50/60
	CC15C	1	10.8/14.4	36.84/49.13	30.1/34.7	81/87	90/90	100/100	38/44	40/45	—	—	—
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	93/101	100/100	110/110	50/58	50/60	—	—	—
	CC30C	1	21.6/28.8	73.69/98.25	60.2/69.4	119/130	125/125	150/150	76/87	80/90	—	—	—
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	144/159	150/150	175/175	101/116	110/125	—	—	—
B090CN	No Heat	—	—	—	—	45/45	60/60	60/60	—	—	45/45	60/60	60/60
	CC15C	1	10.8/14.4	36.84/49.13	30.1/34.7	83/89	100/100	100/100	38/44	40/45	—	—	—
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	95/103	110/110	125/125	50/58	50/60	—	—	—
	CC30C	1	21.6/28.8	73.69/98.25	60.2/69.4	121/132	150/150	150/150	76/87	80/90	—	—	—
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	146/161	175/175	175/175	101/116	110/125	—	—	—
B120CL	No Heat	—	—	—	—	50/50	60/70	60/70	—	—	50/50	60/70	60/70
	CC15C	1	10.8/14.4	36.84/49.13	30.1/34.7	88/94	100/110	100/110	38/44	40/45	—	—	—
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	100/108	110/110	125/125	50/58	50/60	—	—	—
	CC30C	1	21.6/28.8	73.69/98.25	60.2/69.4	126/137	150/150	150/150	76/87	80/90	—	—	—
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	151/166	175/175	175/175	101/116	101/125	—	—	—
B120CM	No Heat	—	—	—	—	52/52	60/80	60/80	—	—	52/52	60/80	60/80
	CC15C	1	10.8/14.4	36.84/49.13	30.1/34.7	90/96	100/110	110/110	38/44	40/45	—	—	—
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	102/110	110/125	125/125	50/58	50/60	—	—	—
	CC30C	1	21.6/28.8	73.69/98.25	60.2/69.4	128/139	150/150	150/150	76/87	80/90	—	—	—
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	153/168	175/175	200/200	101/116	110/125	—	—	—

480 VOLT, THREE PHASE, 60 HZ, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION												
Single Power Supply for Both Unit and Heater Kit								Separate Power Supply for Both Unit and Heater Kit				
Unit Model Number RJNL-	Heater Kit					Heat Pump			Heater Kit		Heat Pump		
	RXJJ- Heater Kit Nominal kW	No. of Sequence Steps	Rated Heater kW @ 480 V	Heater KBTU/Hr @ 480 V	Heater Amp. @ 480 V	Unit Min. Ckt. Ampacity @ 480V	Over Current Protective Device Size		Min. Ckt. Ampacity 480V	Max. Fuse Size 480V	Min. Circuit Ampacity 480V	Over Current Protective Device Size	
							Min./Max. @ 480 V	Min./Max. @ 480 V				Min./Max. @ 480 V	Min./Max. @ 480 V
B090DL	No Heat	—	—	—	—	21	25/30	—	—	—	21	25/30	—
	CC15D	1	14.4	49.13	17.4	43	50/50	—	22	25	—	—	—
	CC20D	1	19.2	65.5	23.1	50	60/60	—	29	30	—	—	—
	CC30D	1	28.8	98.25	34.7	65	70/70	—	44	45	—	—	—
	CC40D	1	38.4	131	46.2	79	90/90	—	58	60	—	—	—
B090DM	No Heat	—	—	—	—	21	25/30	—	—	—	21	25/30	—
	CC15D	1	14.4	49.13	17.4	43	50/50	—	22	25	—		
	CC20D	1	19.2	65.5	23.1	50	60/60	—	29	30	—	—	—
	CC30D	1	28.8	98.25	34.7	65	70/70	—	44	45	—	—	—
	CC40D	1	38.4	131	46.2	79	90/90	—	58	60	—	—	—
B090DN	No Heat	—	—	—	—	22	25/30	—	—	—	22	25/30	—
	CC15D	1	14.4	49.13	17.4	44	50/50	—	22	25	—	—	—
	CC20D	1	19.2	65.5	23.1	51	60/60	—	29	30	—	—	—
	CC30D	1	28.8	98.25	34.7	66	80/80	—	44	45	—	—	—
	CC40D	1	38.4	131	46.2	80	90/90	—	58	60	—	—	—
B120DL	No Heat	—	—	—	—	28	35/40	—	—	—	28	35/40	—
	CC15D	1	14.4	49.13	17.4	50	60/60	—	22	25	—	—	—
	CC20D	1	19.2	65.5	23.1	57	60/60	—	29	30	—	—	—
	CC30D	1	28.8	98.25	34.7	72	80/80	—	44	45	—	—	—
	CC40D	1	38.4	131	46.2	86	90/90	—	58	60	—	—	—
B120DM	No Heat	—	—	—	—	29	35/45	—	—	—	29	35/45	—
	CC15D	1	14.4	49.13	17.4	51	60/60	—	22	25	—	—	—
	CC20D	1	19.2	65.5	23.1	58	70/70	—	29	30	—	—	—
	CC30D	1	28.8	98.25	34.7	73	80/80	—	44	45	—	—	—
	CC40D	1	38.4	131	46.2	87	100/100	—	58	60	—	—	—

600 VOLT, THREE PHASE, 60 HZ, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION													
Single Power Supply for Both Unit and Heater Kit									Separate Power Supply for Both Unit and Heater Kit				
Unit Model Number RJNL-	Heater Kit					Heat Pump			Heater Kit		Heat Pump		
	RXJJ- Heater Kit Nominal kW	No. of Sequence Steps	Rated Heater kW @ 600 V	Heater KBTU/Hr @ 600 V	Heater Amp. @ 600 V	Unit Min. Ckt. Ampacity @ 600V	Over Current Protective Device Size		Min. Ckt. Ampacity 600V	Max. Fuse Size 600V	Min. Circuit Ampacity 600V	Over Current Protective Device Size	
							Min./Max. @ 600 V	Min./Max. @ 600 V				Min./Max. @ 600 V	Min./Max. @ 600 V
B090YL	No Heat	—	—	—	—	16	20/20	—	—	—	16	20/20	—
	CC15Y	1	14.4	49.13	13.9	34	40/40	—	18	20	—	—	—
	CC20Y	1	19.2	65.5	18.5	40	45/45	—	24	25	—	—	—
	CC30Y	1	28.8	98.25	28.9	53	60/60	—	37	40	—	—	—
	CC40Y	1	38.4	131	38.5	65	70/70	—	49	50	—	—	—
B090YM	No Heat	—	—	—	—	16	20/20	—	—	—	16	20/20	—
	CC15Y	1	14.4	49.13	13.9	34	40/40	—	18	20	—		
	CC20Y	1	19.2	65.5	18.5	40	45/45	—	24	25	—	—	—
	CC30Y	1	28.8	98.25	28.9	53	60/60	—	37	40	—	—	—
	CC40Y	1	38.4	131	38.5	65	70/70	—	49	50	—	—	—
B090YN	No Heat	—	—	—	—	17	20/25	—	—	—	17	20/25	—
	CC15Y	1	14.4	49.13	13.9	35	45/45	—	18	20	—	—	—
	CC20Y	1	19.2	65.5	18.5	41	50/50	—	24	25	—	—	—
	CC30Y	1	28.8	98.25	28.9	54	60/60	—	37	40	—	—	—
	CC40Y	1	38.4	131	38.5	66	80/80	—	49	50	—	—	—
B120YL	No Heat	—	—	—	—	20	25/30	—	—	—	20	25/30	—
	CC15Y	1	14.4	49.13	13.9	38	45/45	—	18	20	—	—	—
	CC20Y	1	19.2	65.5	18.5	44	50/50	—	24	25	—	—	—
	CC30Y	1	28.8	98.25	28.9	57	60/60	—	37	40	—	—	—
	CC40Y	1	38.4	131	38.5	69	80/80	—	49	50	—	—	—
B120YM	No Heat	—	—	—	—	21	25/30	—	—	—	21	25/30	—
	CC15Y	1	14.4	49.13	13.9	39	50/50	—	18	20	—	—	—
	CC20Y	1	19.2	65.5	18.5	45	60/60	—	24	25	—	—	—
	CC30Y	1	28.8	98.25	28.9	58	70/70	—	37	40	—	—	—
	CC40Y	1	38.4	131	38.5	70	80/80	—	49	50	—	—	—

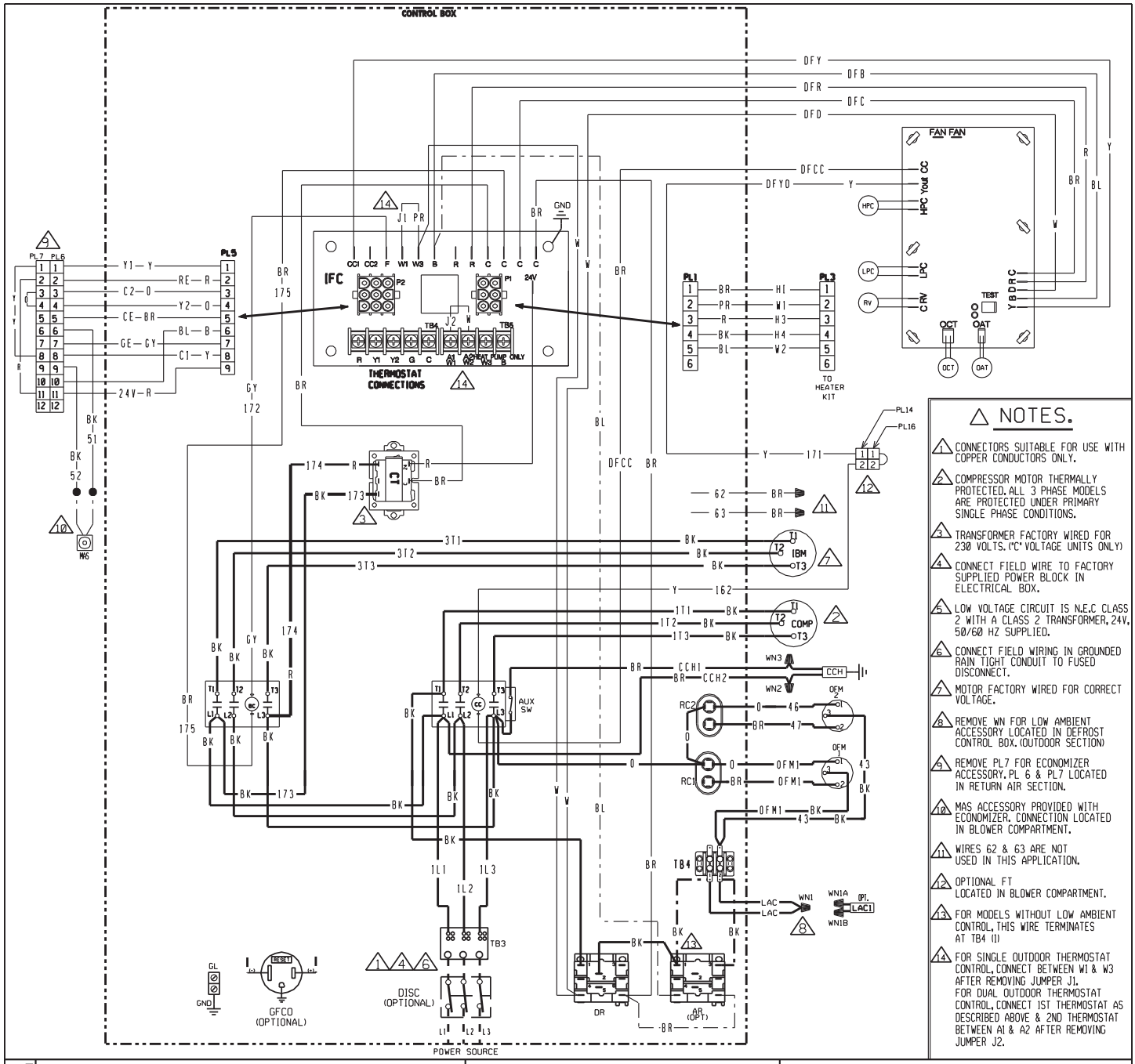
TROUBLE SHOOTING CHART

⚠ WARNING

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

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

FIGURE 18.
JNL SERIES 7.5 & 10 TON



NOTES.

1. CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
2. COMPRESSOR MOTOR THERMALLY PROTECTED. ALL 3 PHASE MODELS ARE PROTECTED UNDER PRIMARY SINGLE PHASE CONDITIONS.
3. TRANSFORMER FACTORY WIRED FOR 230 VOLTS. ("C" VOLTAGE UNITS ONLY)
4. CONNECT FIELD WIRE TO FACTORY SUPPLIED POWER BLOCK IN ELECTRICAL BOX.
5. LOW VOLTAGE CIRCUIT IS N.E.C CLASS 2 WITH A CLASS 2 TRANSFORMER, 24V, 50/60 HZ SUPPLIED.
6. CONNECT FIELD WIRING IN GROUNDED RAIN TIGHT CONDUIT TO FUSED DISCONNECT.
7. MOTOR FACTORY WIRED FOR CORRECT VOLTAGE.
8. REMOVE WN FOR LOW AMBIENT ACCESSORY LOCATED IN DEFROST CONTROL BOX. (OUTDOOR SECTION)
9. REMOVE PL7 FOR ECONOMIZER ACCESSORY. PL 6 & PL7 LOCATED IN RETURN AIR SECTION.
10. MAS ACCESSORY PROVIDED WITH ECONOMIZER. CONNECTION LOCATED IN BLOWER COMPARTMENT.
11. WIRES 62 & 63 ARE NOT USED IN THIS APPLICATION.
12. OPTIONAL FT LOCATED IN BLOWER COMPARTMENT.
13. FOR MODELS WITHOUT LOW AMBIENT CONTROL, THIS WIRE TERMINATES AT TB4 (1)
14. FOR SINGLE OUTDOOR THERMOSTAT CONTROL, CONNECT BETWEEN W1 & W3 AFTER REMOVING JUMPER J1. FOR DUAL OUTDOOR THERMOSTAT CONTROL, CONNECT 1ST THERMOSTAT AS DESCRIBED ABOVE & 2ND THERMOSTAT BETWEEN A1 & A2 AFTER REMOVING JUMPER J2.

DWG. NO. 90-23595-16 REV 02

COMPONENT CODE

AR	AUXILLIARY RELAY	LAC	LOW AMBIENT COOLING CONTROL
BC	BLOWER CONTACTOR	LPC	LOW PRESSURE CONTROL
CC	COMPRESSOR CONTACTOR	MAS	MIX AIR SENSOR
CCH	CRANKCASE HEATER	OFM	OUTDOOR FAN MOTOR
COMP	COMPRESSOR	PL	PLUG
CT	CONTROL TRANSFORMER	RC	RUN CAPACITOR
DISC	DISCONNECT SWITCH	TB	TERMINAL BLOCK
DR	DEFROST RELAY		WIRE NUT
EHR	ELECTRIC HEAT RELAY		
FT	FREEZE STAT		
GFCO	GROUND FAULT CONVENIENCE OUTLET		
GL	GROUND LUG		
GND	GROUND		
HPC	HIGH PRESSURE CONTROL		
IBM	INDOOR BLOWER MOTOR BELT DRIVE		
IFC	INTEGRATED FURNACE CONTROL		

WIRING INFORMATION

LINE VOLTAGE
- FACTORY STANDARD
- FACTORY OPTION
- FIELD INSTALLED

LOW VOLTAGE
- FACTORY STANDARD
- FACTORY OPTION
- FIELD INSTALLED

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

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

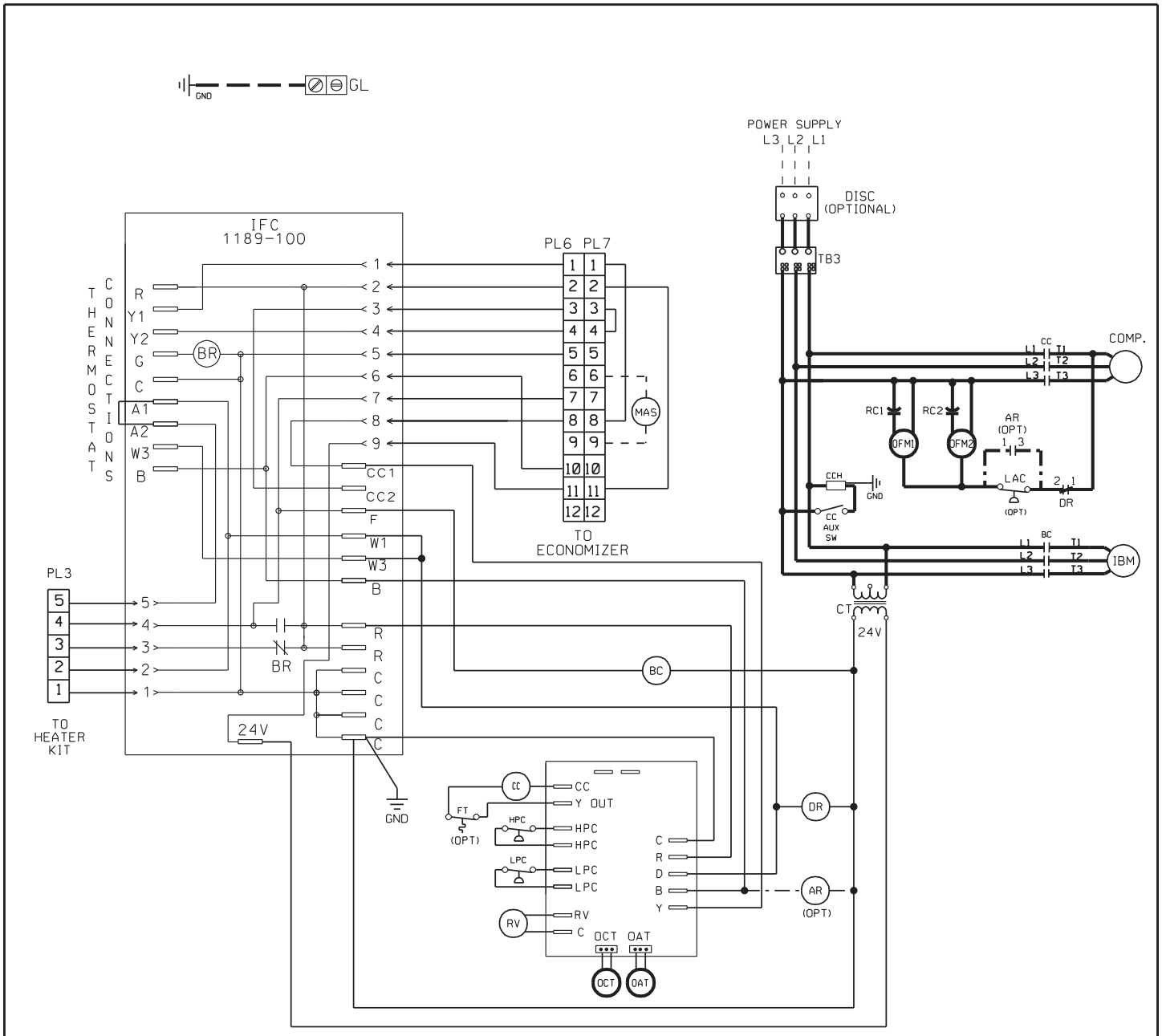
WIRE COLOR CODE

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

WIRING DIAGRAM
RJNL-B090/120
208-230/460/575V 3 PH, 60 HZ.
HEAT PUMP

DR. BY	APP. BY	DATE	DWG. NO.	REV
JRJ		1-15-09	90-23595-16	02

FIGURE 19.
JNL SERIES 7.5 & 10 TON



DWG. NO. 90-23595-17
REV. 02

COMPONENT CODE

AUX SW	AUXILLIARY SWITCH	MAS	MIXED AIR SENSOR
BC	BLOWER MOTOR CONTACTOR	OFM	OUTDOOR FAN MOTOR
BR	BLOWER RELAY	OPT	OPTIONAL
CC	COMPRESSOR CONTACTOR	PL	PLUG
CCH	CRANKCASE HEATER	RC	RUN CAPACITOR
COMP	COMPRESSOR	TB	TERMINAL BLOCK
CT	CONTROL TRANSFORMER		
FT	FREEZE STAT		
GL	GROUND LUG		
GND	GROUND		
HPC	HIGH PRESSURE CONTROL		
IBM	INDOOR BLOWER MOTOR		
IFC	INTEGRATED FURNACE CONTROL		
LAC	LOW AMBIENT CONTROL		
LPC	LOW PRESSURE CONTROL		

WIRING INFORMATION

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

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

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

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

WIRE COLOR CODE

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

WIRING SCHEMATIC

RJNL-B090/120
PACKAGED HEAT PUMP
208-230, 3PH, 60HZ./460, 3PH, 60HZ.
575V, 3PH, 60HZ.

DR. BY	APP. BY	DATE	DWG. NO.	REV
JRJ		02-10-09	90-23595-17	02

FIGURE 22.
JNL SERIES 7.5 TON CHARGING CHART

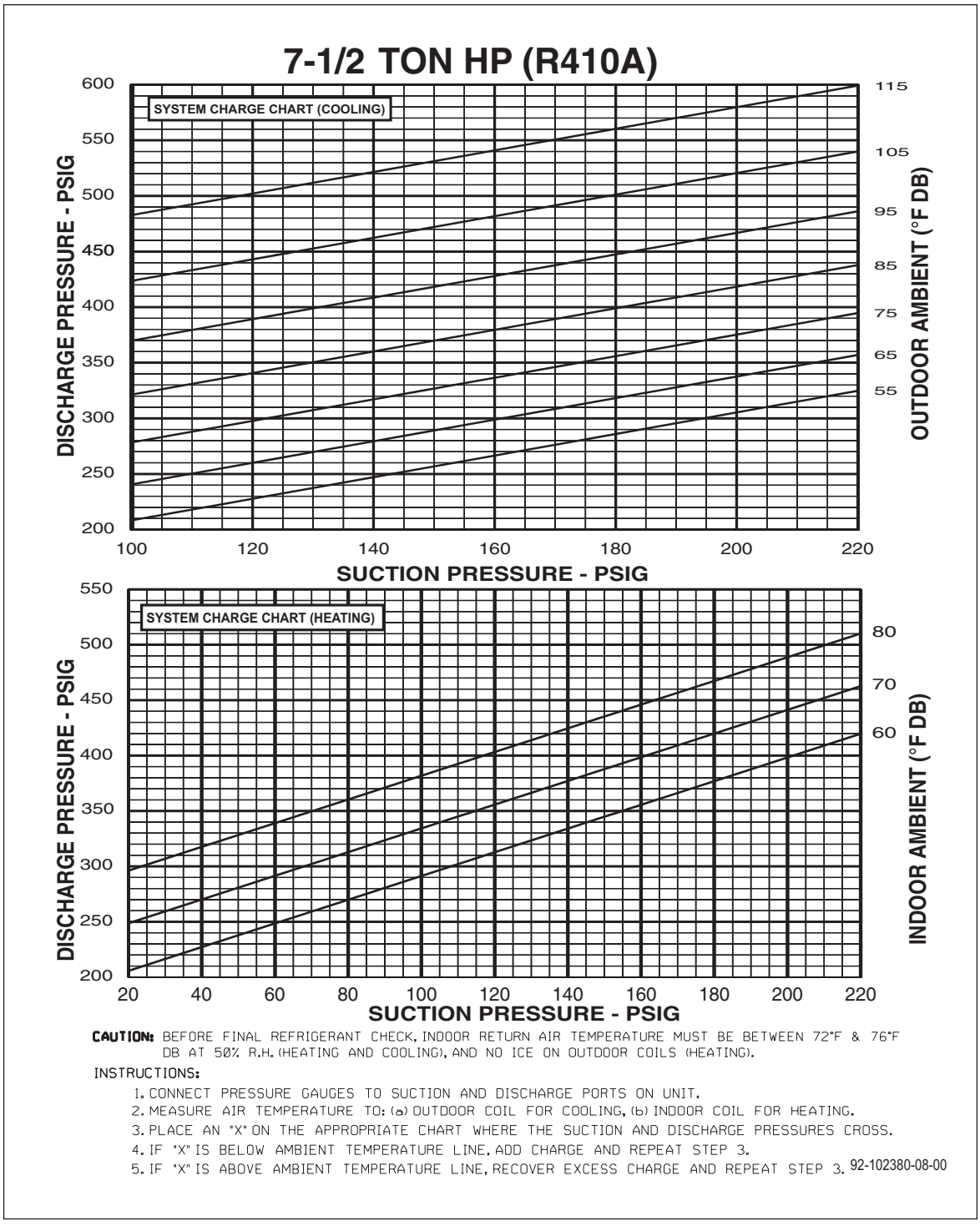


FIGURE 23.
JNL SERIES 10 TON CHARGING CHART

