INSTALLATION INSTRUCTIONS

PACKAGE AIR CONDITIONERS FEATURING NEW INDUSTRY STANDARD R410A REFRIGERANT R-410A
RLNL-G SERIES 7.5 & 10 TON [26.4 & 35.2 kW]
60 HZ MODELS



c UL us LISTED

AHRI CERTIFIED™ www.ahridirectory.org
Unitary Large AC
AHRI Standard 340/360
Certification applies only when the complete system is listed with AHRI.

Accredited by the RvA
ABS Quality Evaluations, Inc. Management System Certification
ANAB ACCREDITED
ISO 9001:2008
Certificate Number: 30164

⚠ 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.

[ ] Designates Metric Conversions

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II. INTRODUCTION

⚠ WARNING

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

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

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

III. CHECKING PRODUCT RECEIVED

Upon receiving the unit, inspect it for any damage from shipment. Claims for damage, either shipping or concealed, should be filed immediately with the shipping company. Check the unit model number, 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 Air Conditioner is available without heat or with 10, 15, 20, 30, 40 or 50 kW electric heat. Cooling capacities of 7½ and 10 nominal tons of cooling 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 with thermal expansion valve, microchannel reheat coil, solenoid valves), a circulation air blower, condenser fans, variable frequency drive (VFD), outdoor fan motor controller (OFMC), 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. Evaporator Coil / TXV

The thermostatic expansion valve is specifically designed to operate with R-410A. **DO NOT use an R-22 TXV. The existing evaporator must be replaced with the factory specified TXV evaporator specifically designed for R-410A.**

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

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

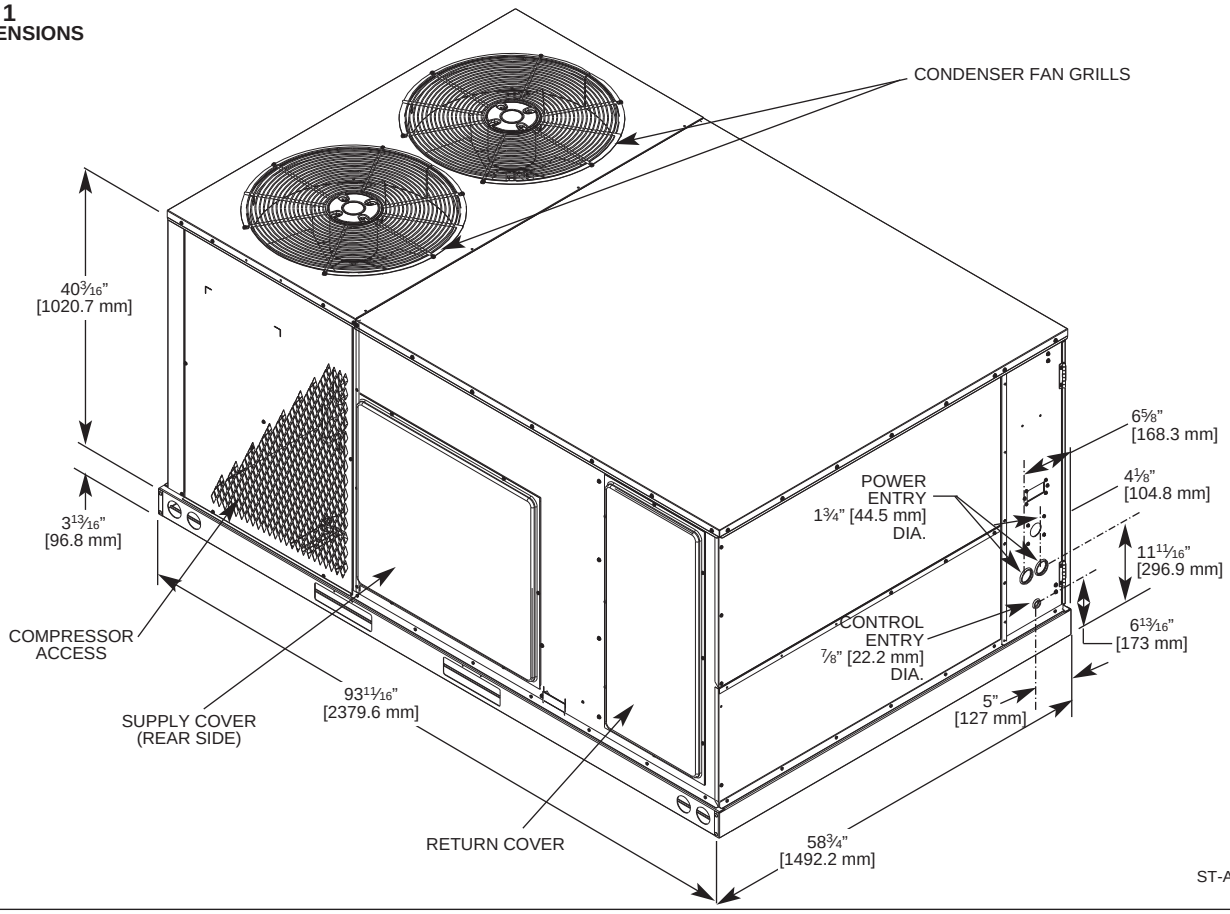
Manifold Hoses:
-Service Pressure Rating of 800 PSIG

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

⚠ CAUTION

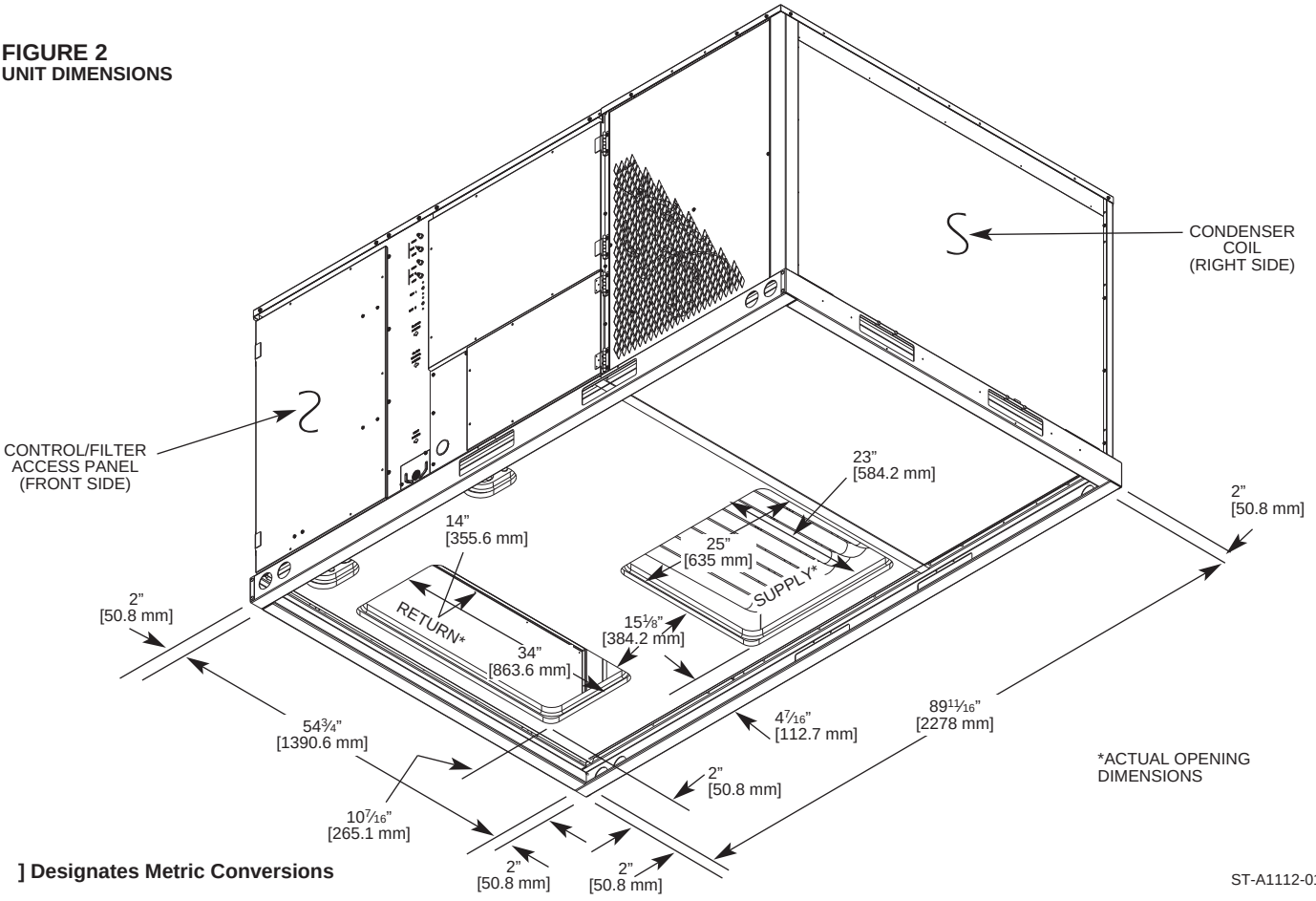
R-410A systems operate at higher pressures than R-22 systems. Do not use R-22 service equipment or components on R-410A equipment.

FIGURE 1
UNIT DIMENSIONS



ST-A1112-02-00

FIGURE 2
UNIT DIMENSIONS



[ ] Designates Metric Conversions

ST-A1112-01-00

FIGURE 3
UNIT DIMENSIONS

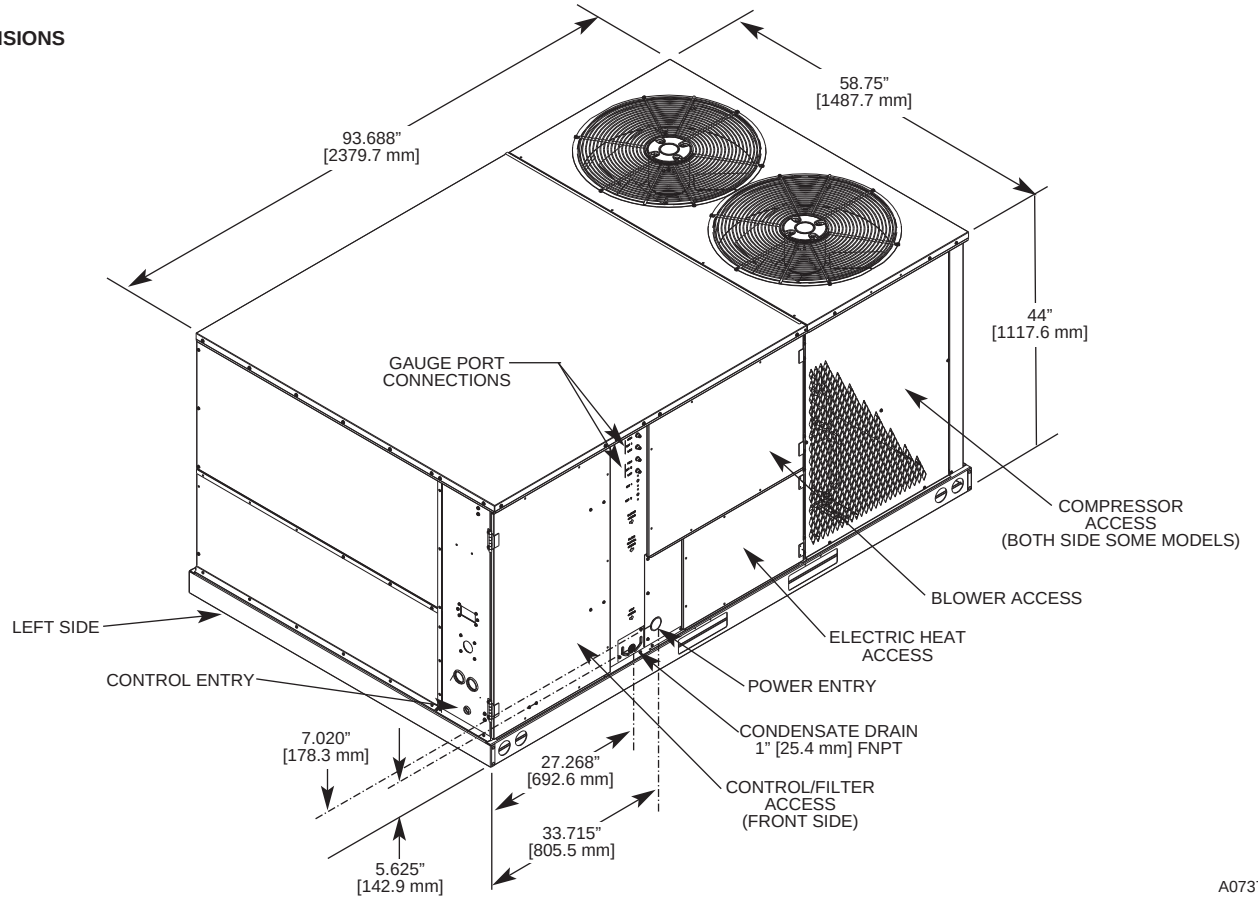


FIGURE 4
BOTTOM VIEW

SUPPLY RETURN DIMENSIONS FOR DOWNFLOW APPLICATIONS

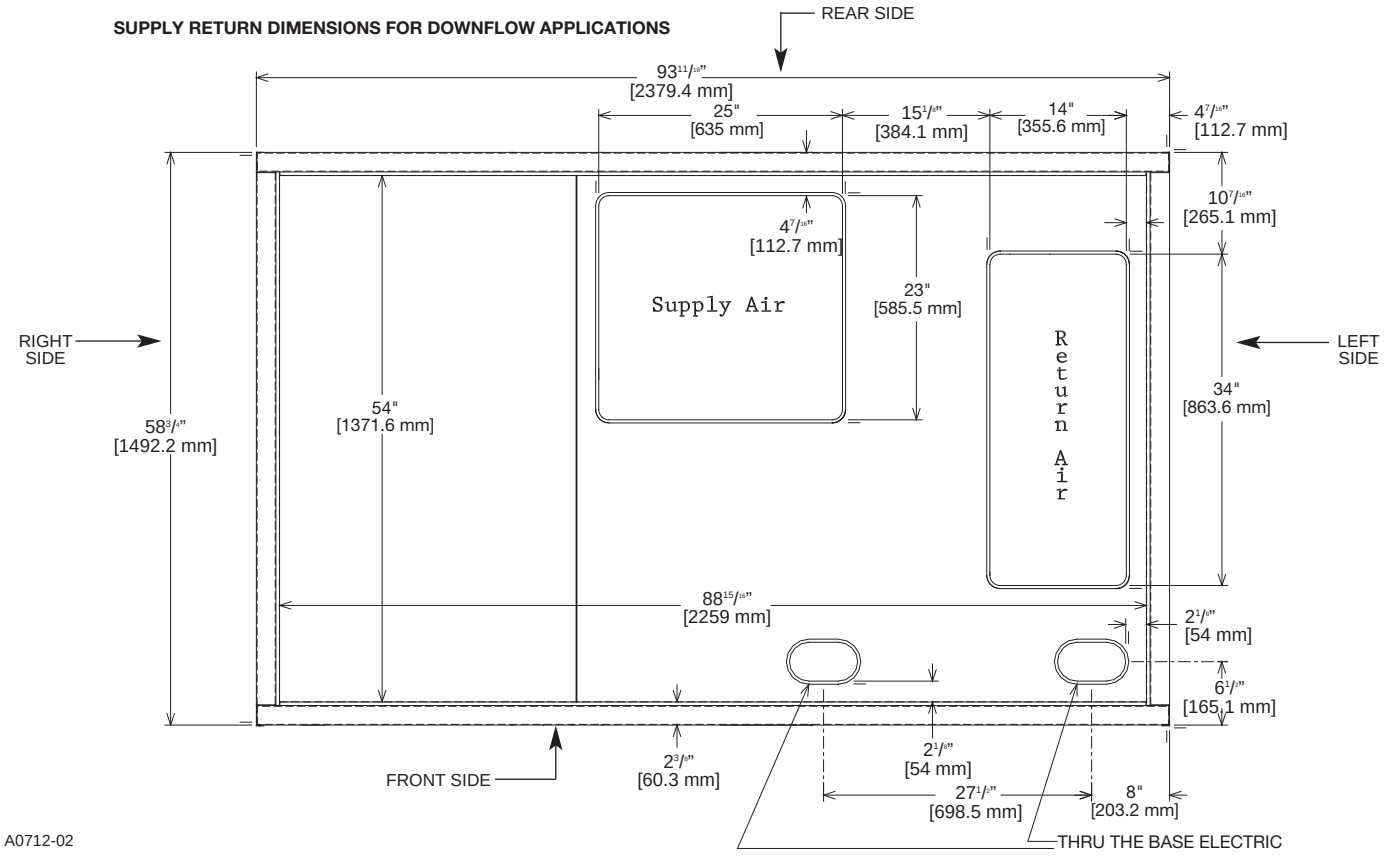
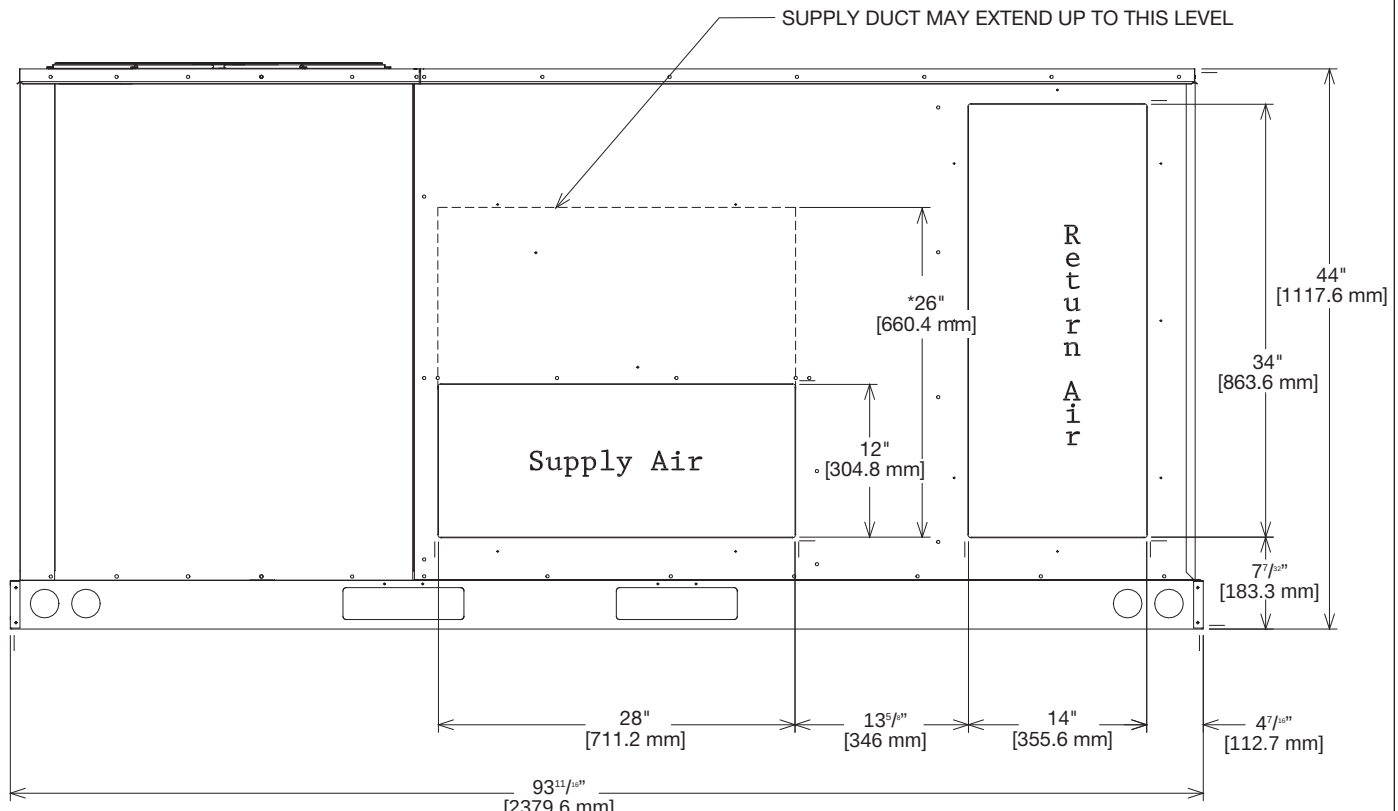


FIGURE 5
REAR VIEW

SUPPLY AND RETURN DIMENSIONS FOR HORIZONTAL APPLICATION



***RECOMMENDED DUCT DIMENSIONS ARE 26"**

A0714-03

GENERAL DATA - RLNL

NOM. SIZES 7½ & 10 TONS [21.1-43.9 kW]

Model RLNL-Series	G090CR	G090CS	G090CT	G090DR
Cooling Performance[1]				CONTINUED →
Gross Cooling Capacity Btu [kW]	93,000 [27.25]	93,000 [27.25]	93,000 [27.25]	93,000 [27.25]
EER/SEER[2]	11.2/NA	11.2/NA	11.2/NA	11.2/NA
Nominal CFM/AHRI Rated CFM [L/s]	3000/2775 [1416/1310]	3000/2775 [1416/1310]	3000/2775 [1416/1310]	3000/2775 [1416/1310]
AHRI Net Cooling Capacity Btu [kW]	90,000 [26.37]	90,000 [26.37]	90,000 [26.37]	90,000 [26.37]
Net Sensible Capacity Btu [kW]	63,100 [18.49]	63,100 [18.49]	63,100 [18.49]	63,100 [18.49]
Net Latent Capacity Btu [kW]	26,900 [7.88]	26,900 [7.88]	26,900 [7.88]	26,900 [7.88]
IEER[3]	14.5	14.5	14.5	14.5
Net System Power kW	7.99	7.99	7.99	7.99
Compressor				
No./Type	2/Scroll	2/Scroll	2/Scroll	2/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]	27 [2.51]	27 [2.51]	27 [2.51]	27 [2.51]
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]	13.5 [1.25]	13.5 [1.25]	13.5 [1.25]	13.5 [1.25]
Rows / FPI [FPcm]	2 / 18 [7]	2 / 18 [7]	2 / 18 [7]	2 / 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]
Re-Heat Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.709 [18]	0.709 [18]	0.709 [18]	0.709 [18]
Face Area sq. ft. [sq. m]	5.9 [0.55]	5.9 [0.55]	5.9 [0.55]	5.9 [0.55]
Rows / FPI [FPcm]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]
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	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)
No. Speeds	Multiple	Multiple	Multiple	Multiple
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. (Sys. 1/Sys. 2) [g]	146/112 [4139/3175]	146/112 [4139/3175]	146/112 [4139/3175]	146/112 [4139/3175]
Weights				
Net Weights lbs. [kg]	1049 [476]	1049 [476]	1057 [479]	1049 [476]
Ship Weights lbs. [kg]	1086 [493]	1086 [493]	1094 [496]	1086 [493]

GENERAL DATA - RLNL

NOM. SIZES 7½ & 10 TONS [21.1-43.9 kW]

Model RLNL-Series	G090DS	G090DT	G120CR	G120CS
Cooling Performance[1]				CONTINUED →
Gross Cooling Capacity Btu [kW]	93,000 [27.25]	93,000 [27.25]	123,000 [36.04]	123,000 [36.04]
EER/SEER[2]	11.2/NA	11.2/NA	11.2/NA	11.2/NA
Nominal CFM/AHRI Rated CFM [L/s]	3000/2775 [1416/1310]	3000/2775 [1416/1310]	4000/3750 [1888/1770]	4000/3750 [1888/1770]
AHRI Net Cooling Capacity Btu [kW]	90,000 [26.37]	90,000 [26.37]	118,000 [34.57]	118,000 [34.57]
Net Sensible Capacity Btu [kW]	63,100 [18.49]	63,100 [18.49]	88,800 [26.02]	88,800 [26.02]
Net Latent Capacity Btu [kW]	26,900 [7.88]	26,900 [7.88]	29,200 [8.56]	29,200 [8.56]
IEER[3]	14.5	14.5	14.6	14.6
Net System Power kW	7.99	7.99	10.49	10.49
Compressor				
No./Type	2/Scroll	2/Scroll	2/Scroll	2/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]	27 [2.51]	27 [2.51]	27 [2.51]	27 [2.51]
Rows / FPI [FPcm]	1 / 22 [9]	1 / 22 [9]	2 / 22 [9]	2 / 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]	13.5 [1.25]	13.5 [1.25]	13.5 [1.25]	13.5 [1.25]
Rows / FPI [FPcm]	2 / 18 [7]	2 / 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]
Re-Heat Coil - Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.709 [18]	0.709 [18]	0.709 [18]	0.709 [18]
Face Area sq. ft. [sq. m]	5.9 [0.55]	5.9 [0.55]	5.9 [0.55]	5.9 [0.55]
Rows / FPI [FPcm]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]
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	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)
No. Speeds	Multiple	Multiple	Multiple	Multiple
No. Motors	1	1	1	1
Motor HP	2	3	2	3
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. (Sys. 1/Sys. 2) [g]	146/112 [4139/3175]	146/112 [4139/3175]	221/176 [6265/4990]	221/176 [6265/4990]
Weights				
Net Weights lbs. [kg]	1049 [476]	1057 [479]	1144 [519]	1152 [523]
Ship Weights lbs. [kg]	1086 [493]	1094 [496]	1181 [536]	1189 [539]

GENERAL DATA - RLNL

NOM. SIZES 7½ & 10 TONS [21.1-43.9 kW]

Model RLNL-Series	G120DR	G120DS
Cooling Performance[1]		
Gross Cooling Capacity Btu [kW]	123,000 [36.04]	123,000 [36.04]
EER/SEER[2]	11.2/NA	11.2/NA
Nominal CFM/AHRI Rated CFM [L/s]	4000/3750 [1888/1770]	4000/3750 [1888/1770]
AHRI Net Cooling Capacity Btu [kW]	118,000 [34.57]	118,000 [34.57]
Net Sensible Capacity Btu [kW]	88,800 [26.02]	88,800 [26.02]
Net Latent Capacity Btu [kW]	29,200 [8.56]	29,200 [8.56]
IEER[3]	14.6	14.6
Net System Power kW	10.49	10.49
Compressor		
No./Type	2/Scroll	2/Scroll
Outdoor Sound Rating (dB)[5]	88	88
Outdoor Coil—Fin Type	Louvered	Louvered
Tube Type	Rifled	Rifled
Tube Size in. [mm] OD	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	27 [2.51]	27 [2.51]
Rows / FPI [FPcm]	2 / 22 [9]	2 / 22 [9]
Indoor Coil—Fin Type	Louvered	Louvered
Tube Type	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	13.5 [1.25]	13.5 [1.25]
Rows / FPI [FPcm]	3 / 18 [7]	3 / 18 [7]
Refrigerant Control	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/1 [25.4]	1/1 [25.4]
Re-Heat Coil - Fin Type	Louvered	Louvered
Tube Type	MicroChannel	MicroChannel
MicroChannel Depth in. [mm]	0.709 [18]	0.709 [18]
Face Area sq. ft. [sq. m]	5.9 [0.55]	5.9 [0.55]
Rows / FPI [FPcm]	1 / 23 [9]	1 / 23 [9]
Outdoor Fan—Type	Propeller	Propeller
No. Used/Diameter in. [mm]	2/24 [609.6]	2/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1
CFM [L/s]	8000 [3775]	8000 [3775]
No. Motors/HP	2 at 1/3 HP	2 at 1/3 HP
Motor RPM	1075	1075
Indoor Fan—Type	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/15x15 [381x381]	1/15x15 [381x381]
Drive Type	Belt (Adjustable)	Belt (Adjustable)
No. Speeds	Multiple	Multiple
No. Motors	1	1
Motor HP	2	3
Motor RPM	1725	1725
Motor Frame Size	56	56
Filter—Type	Disposable	Disposable
Furnished	Yes	Yes
(No.) Size Recommended in. [mm x mm x mm]	(6)2x18x18 [51x457x457]	(6)2x18x18 [51x457x457]
Refrigerant Charge Oz. (Sys. 1/Sys. 2) [g]	221/176 [6265/4990]	221/176 [6265/4990]
Weights		
Net Weights lbs. [kg]	1144 [519]	1152 [523]
Ship Weights lbs. [kg]	1181 [536]	1189 [539]

ELECTRICAL DATA - RLNL-G

ELECTRICAL DATA - RLNL SERIES											
		G090CR	G090CS	G090CT	G090DR	G090DS	G090DT	G120CR	G120CS	G120DR	G120DS
Unit Information	Unit Operating Voltage Range	187-253	187-253	187-253	414-506	414-506	414-506	187-253	187-253	414-506	414-506
	Volts	208/230	208/230	208/230	460	460	460	208/230	208/230	460	460
	Minimum Circuit Ampacity	43/43	43/43	48/48	21	21	24	49/49	54/54	25	28
	Minimum Overcurrent Protection Device Size	45/45	45/45	50/50	25	25	25	50/50	55/55	25	30
	Maximum Overcurrent Protection Device Size	50/50	50/50	60/60	25	25	30	60/60	60/60	30	35
Compressor Motor	No.	2	2	2	2	2	2	2	2	2	2
	Volts	200/240	200/240	200/240	480	480	480	200/240	200/240	480	480
	Phase	3	3	3	3	3	3	3	3	3	3
	RPM	3450	3450	3450	3450	3450	3450	3450	3450	3450	3450
	HP, Compressor 1	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	4 1/4	4 1/4	4 1/4	4 1/4
	Amps (RLA), Comp. 1	13.1/13.1	13.1/13.1	13.1/13.1	6.1	6.1	6.1	16/16	16/16	7.8	7.8
	Amps (LRA), Comp. 1	83.1/83.1	83.1/83.1	83.1/83.1	41	41	41	110/110	110/110	52	52
	HP, Compressor 2	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	4 1/44	4 1/44	4 1/44	4 1/4
	Amps (RLA), Comp. 2	13.1/13.1	13.1/13.1	13.1/13.1	6.1	6.1	6.1	16/16	16/16	7.8	7.8
	Amps (LRA), Comp. 2	83.1/83.1	83.1/83.1	83.1/83.1	41	41	41	110/110	110/110	52	52
Condenser Motor	No.	2	2	2	2	2	2	2	2	2	2
	Volts	208/230	208/230	208/230	460	460	460	208/230	208/230	460	460
	Phase	1	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	1/3
	Amps (FLA, each)	2.4/2.4	2.4/2.4	2.4/2.4	1.4	1.4	1.4	2.4/2.4	2.4/2.4	1.4	1.4
	Amps (LRA, each)	4.7/4.7	4.7/4.7	4.7/4.7	2.4	2.4	2.4	4.7/4.7	4.7/4.7	2.4	2.4
Evaporator Fan	No.	1	1	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	460	460	460	208/230	208/230	460	460
	Phase	3	3	3	3	3	3	3	3	3	3
	HP	2	2	3	2	2	3	2	3	2	3
	Amps (FLA, each)	8/8	8/8	13/13	4	4	7	8/8	13/13	4	7
	Amps (LRA, each)	56/56	56/56	74.5/74.5	28	28	38.1	56/56	74.5/74.5	28	38.1

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 6 and 7.)

1. Select a location where external water drainage cannot collect around the unit.

2. Provide a level concrete slab extending 3" [76.2 mm] beyond all four sides of the unit. The slab should be sufficient above grade to prevent ground water from entering the unit. ***IMPORTANT:*** *To prevent transmission of noise or vibration, slab should not be connected to building structure.*

3. The location of the unit should be such as to provide proper access for inspection and servicing.

4. Locate unit where operating sounds will not disturb owner or neighbors.

5. Locate unit so roof runoff water does not pour directly on the unit. Provide gutter or other shielding at roof level. Do not locate unit in an area where excessive snow drifting may occur or accumulate.

C. CLEARANCES

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

1. Provide 48" [1219.2 mm] minimum clearance at the front of the unit. Provide 18" [457.2 mm] minimum clearance at all other sides of the unit.

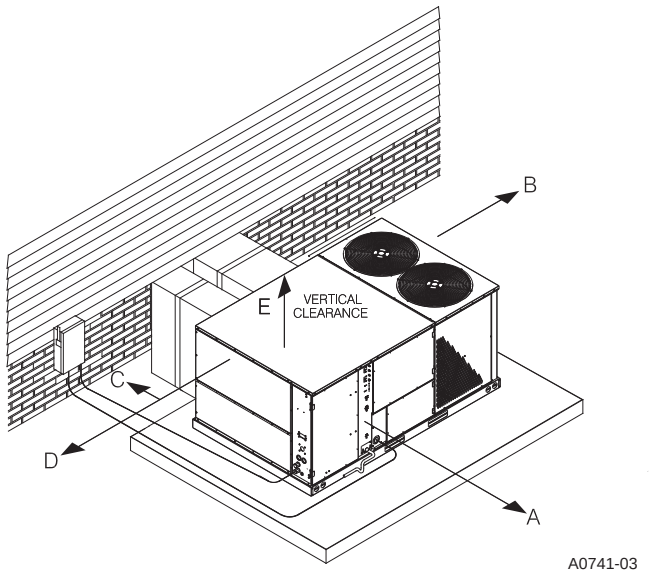
2. Provide 60" [1524 mm] minimum clearance between top of unit and maximum 3 foot [.91 m] overhang.

3. Unit is design certified for application on combustible flooring with 0" [0 mm] minimum clearance.

4. See Figure 6 for illustration of minimum installation-service clearances.

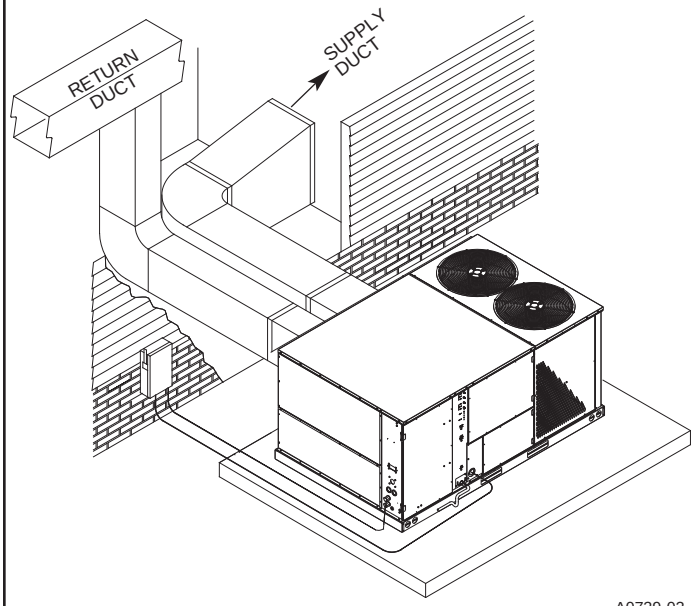
FIGURE 6
OUTSIDE SLAB INSTALLATION, BASEMENT OR CRAWL SPACE DISTRIBUTION SYSTEM

Recommended Clearance	Location
48” [1219.2 mm]	A - Front
18” [457.2 mm]	B - Condenser Coil
18” [457.2 mm]	C - Duct Side
18”* [457.2 mm]	D - Evaporator End
60” [1524 mm]	E - Above
*Without Economizer. 48” [1219.2 mm] With Economizer	



A0741-03

FIGURE 7
OUTSIDE SLAB INSTALLATION, CLOSET DISTRIBUTION SYSTEM. SLAB FLOOR CONSTRUCTION



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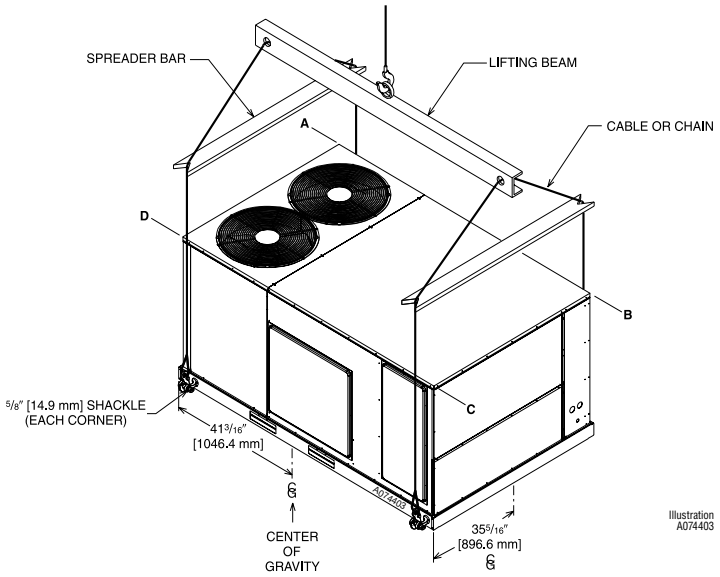
D. ROOFTOP INSTALLATION

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 8 and 9. 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 must be provided.
5. The unit should be placed on a solid and level roofcurb or platform of adequate strength. See Figure 10.
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.*

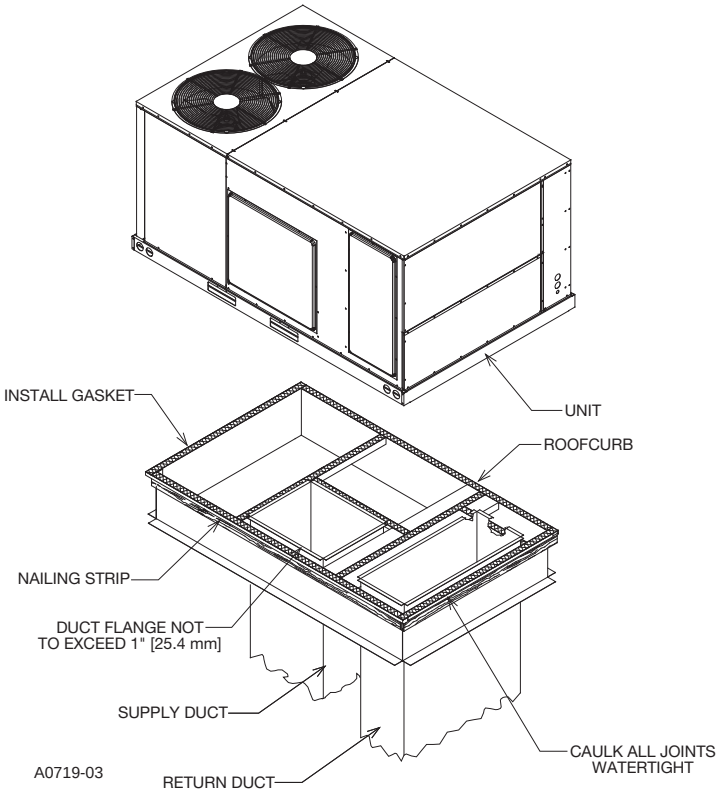
FIGURE 8
RIGGING FOR LIFTING

CORNER WEIGHTS BY PERCENTAGE			
A	B	C	D
33%	27%	17%	23%

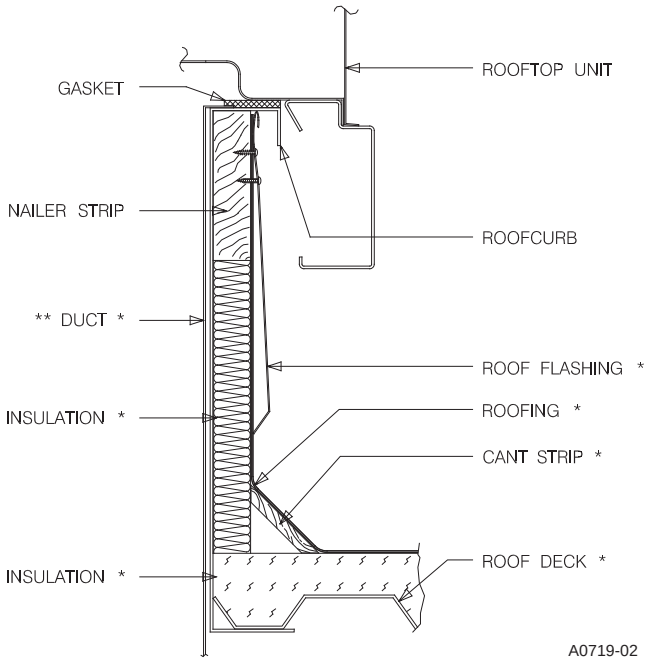


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FIGURE 9
ROOFCURB INSTALLATION



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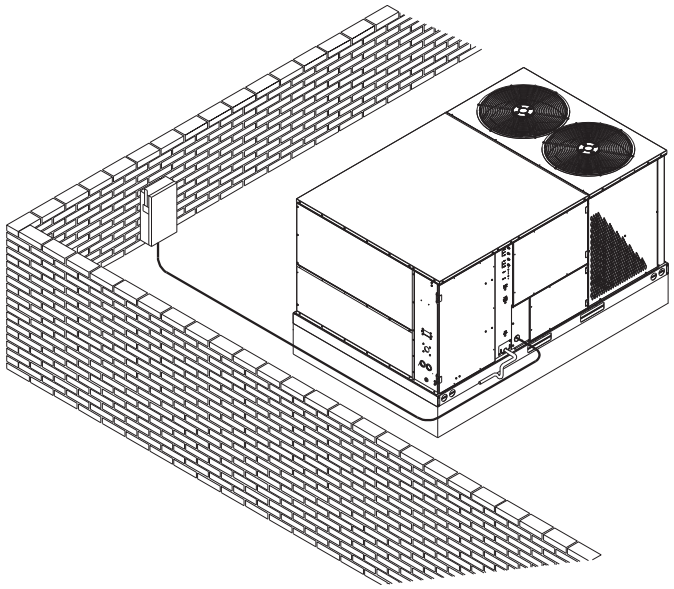


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* BY CONTRACTOR

** 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 10
FLAT ROOFTOP INSTALLATION, ATTIC OR DROP CEILING DISTRIBUTION SYSTEM. MOUNTED ON ROOFCURB. CURB MUST BE LEVEL



A1112-03

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" [50.8 mm] of insulation and a vapor barrier. Distribution system in attic, furred space or crawl space should be insulated with at least 2" [50.8 mm] of insulation with vapor barrier. One-half to 1" [25.4 mm] 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" [0 mm] for the first 3 feet [.91 m] of discharge duct. Clearance to unit top and side is 0" [0 mm].

VIII. FILTERS

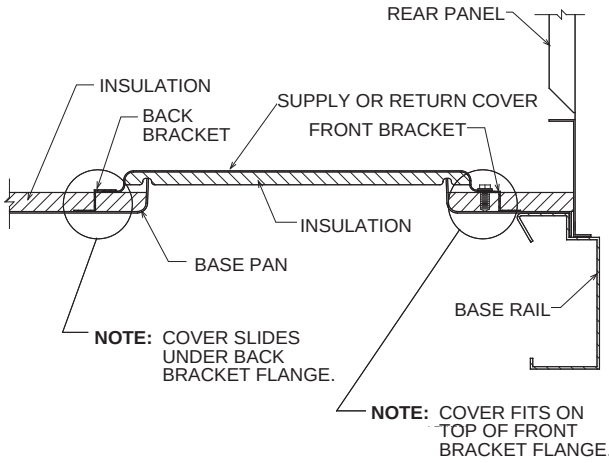
This unit is provided with 6 - 2" x 18" x 18" [51mm x 457 mm x 457 mm] disposable filters. When replacing filters, ensure they are inserted fully to the back to prevent bypass.

VIX. 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 11.
3. Secure the return and supply cover to the front bracket with one (1) screw.

FIGURE 11
COVER GASKET DETAIL



A0725-01

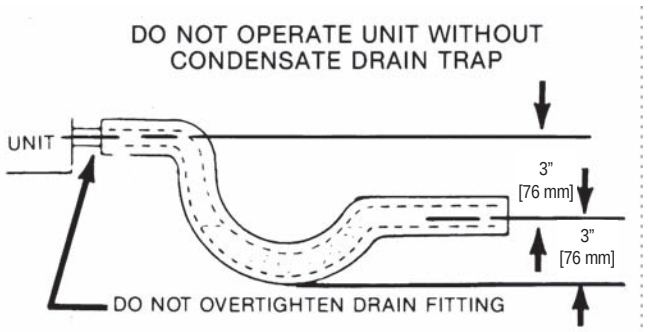
X. CONDENSATE DRAIN

IMPORTANT: Install a condensate trap to ensure proper condensate drainage. See Figure 12.

The condensate drain pan has a threaded female 1 inch NPT (11.5 TPI) connection. Consult local codes or ordinances for specific requirements of condensate drain piping and disposal.

- To use the removable drain pan feature of this unit, some of the condensate line joints should assembled for easy removal and cleaning.
- Use a thin layer of Teflon tape or paste on drain pan connections and install only hand tight.
- Do not over tighten drain pan connections as damage to the drain pan may occur.
- Drain line MUST NOT block service access panels.
- Drain line must be no smaller than drain pan outlet and adequately sized to accommodate the condensate discharge from the unit.
- Drain line should slope away from unit a minimum of 1/8" per foot to ensure proper drainage.
- Drain line must be routed to an acceptable drain or outdoors in accordance with local codes.
- Do not connect condensate drain line to a closed sewer pipe.
- Drain line may need insulation or freeze protection in certain applications.

FIGURE 12
CONDENSATE DRAIN



XI. ELECTRICAL WIRING

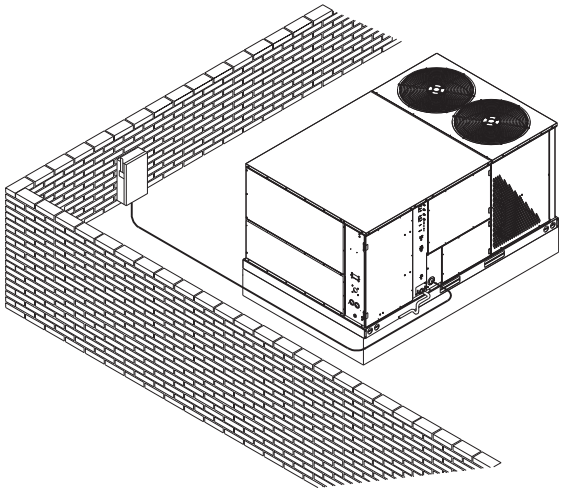
Field wiring must comply with the National Electrical Code (CEC in Canada) and local ordinances that may apply.

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 RLNL-B Electrical Data 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.

FIGURE 13
BRANCH CIRCUIT DISCONNECT LOCATION



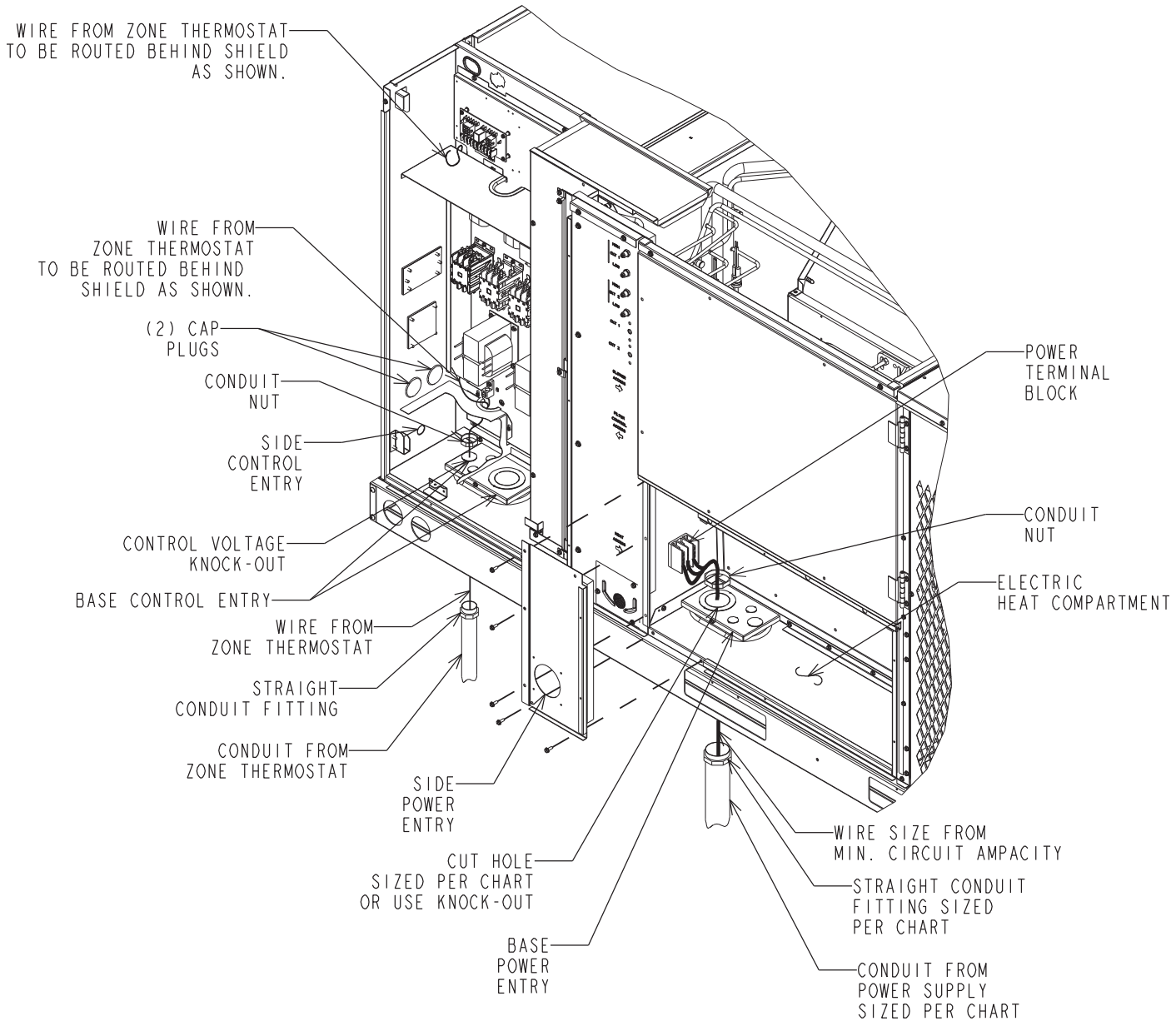
   UNITS WITH FACTORY INSTALLED ELECTRIC HEAT - Connect power wiring to the power terminal block located on the electric heater kit. Connect the ground wire to the adjacent ground lug. DO NOT connect aluminum wiring directly to the electric heater terminal block. Wiring to the unit contactors is factory-connected.

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" [22 mm] hole in the unit side panel. See Figure 14. Use a minimum #18 AWG thermostat wire. For wire lengths exceeding 50' [15.24 m] use #16 AWG thermostat wire. Connect the control wiring to the low voltage terminal block located on the unit integrated control. Route wires under the control voltage shield. See Figure 14.
3. It is necessary that only approved thermostats be used. Please contact your distributor for part number information. See thermostat specification catalog for recommended thermostat.

FIGURE 14



4. Figure 15 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 wiring 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.

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.

E. **THERMOSTAT/HUMIDITY SENSOR**

The HumidiDry™ system requires both a thermostat (or temperature sensor) and a humidity sensor. Both devices 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 air conditioner thermostat package CAREFULLY because each has some different wiring requirements. See Section XVII for humidity sensor information.

XII. INDOOR AIR FLOW DATA

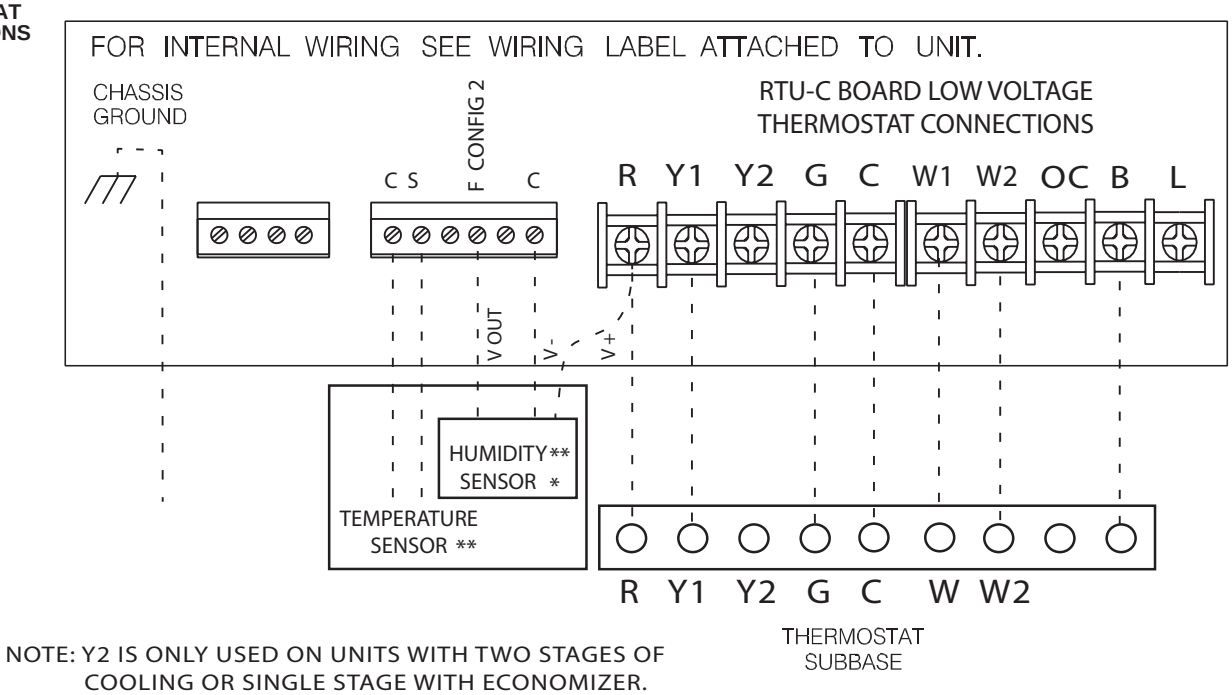
Belt-drive blower models have motor sheaves set for proper CFM at a typical external static. See Tables C through G for blower performance.

XIII. CRANKCASE HEAT (OPTIONAL)

Crankcase heaters are standard on 6 ton and single stage 7½.

Crankcase heat is not required on other models, but may be desirable under certain conditions.

FIGURE 15
THERMOSTAT CONNECTIONS DIAGRAM



NOTE: Y2 IS ONLY USED ON UNITS WITH TWO STAGES OF COOLING OR SINGLE STAGE WITH ECONOMIZER.

W2 ONY USED ON UNITS WITH TWO STAGES OF GAS HEAT
* REPRESENTS HUMIDITY SENSOR RHC-ZNS4
** REPRESENTS HUMIDITY AND TEMPERATURE SENSOR RHC-ZNS5
- - - - 24 VOLT CONTROL WIRING.

ST-A1141-16-X1

XIV. PRE-START CHECK

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

XV. STARTUP

1. Turn thermostat to “OFF,” turn “on” power supply at disconnect switch.
2. Turn temperature setting as high as it will go.
3. Turn fan switch to “ON.”
4. Indoor blower should run. Be sure it is running in the right direction.
5. Turn fan switch to “AUTO.” Turn system switch to “COOL” and turn temperature setting below room temperature. Unit should run in cooling mode.
6. Is outdoor fan operating correctly in the right direction?
7. Is compressor running correctly.
   Record the following after the unit has run some time.

   A. Operating Mode _____

   B. Discharge Pressures (High) _____PSIG [kPa]

   C. Vapor Pressure at Compressors (Low) _____PSIG [kPa]

   D. Vapor Line Temperature at Compressors _____°F [C°].

   E. Indoor Dry Bulb _____°F [C°].

   F. Indoor Wet Bulb_____°F [C°].

   G. Outdoor Dry Bulb_____°F [C°].

   H. Outdoor Wet Bulb _____°F [C°].

   I. Voltage at Contactor _____Volts

   J. Current at Contactors _____ Amps

   K. Model Number_____

   L. Serial Number _____

   M. Location_____

   N. Owner _____

   O. Date_____
8. Turn thermostat system switch to “HEAT.” Unit compressors should stop. Raise temperature setting to above room temperature. Unit should run in heating mode and auxiliary heaters, if installed, should come on.
9. Check the refrigerant charge using the instructions located on unit charging chart. Replace service port caps. Service port cores are for system access only and will leak if not tightly capped.
10. Adjust discharge air grilles and balance system.
11. Check ducts for condensation and air leaks.
12. Check unit for tubing and sheet metal rattles.
13. Instruct the owner on operation and maintenance.
14. Leave “INSTALLATION” and ”USE AND CARE“ instructions with owner

XVI. OPERATION

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 contactors are energized through thermostat contacts (Y1) & (Y2) and high pressure controls.

C. 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.

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

HEATING MODE

With the thermostat in heat mode, fan on auto, and the room temperature lower than the thermostat setting, the Indoor blower contactor is energized through thermostat contact (G).

⚠ WARNING

ONLY ELECTRIC HEATER KITS SUPPLIED BY THIS MANUFACTURER AS DESCRIBED IN THIS PUBLICATION HAVE BEEN DESIGNED, TESTED, AND EVALUATED 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.

In the heating mode, the thermostat will energize one or more supplementary heaters.

XVII. HUMIDIDRY™ SYSTEM

The HumidiDry™ system controls both cooling and humidity loads. In addition to two stages of cooling, the unit includes two stages of reheat. A temperature sensor or thermostat relates a low cooling demand (Y1) or high cooling demand (Y2) to the RTU-C. A separate humidity sensor sends the actual indoor relative humidity to the RTU-C via a 0-10 VDC signal. The RTU-C considers a relative humidity level 2%-5% above the humidity setpoint as a “low humidity demand” (H1). The RTU-C considers a relative humidity level greater than 5% above the humidity setpoint as a “high humidity demand” (H2). The RTU-C determines the unit mode of operation based on the Y1, Y2, H1 and H2 (Table 1). Low reheat is only initiated when there is a humidity call (H1 or H2) and no cooling call (Y1 or Y2). In this mode the unit provides essentially “neutral air” (supply air is within +1°F and -5°F of return air temperature). High reheat is only used when there is a high humidity demand (H2) with a low cooling demand (Y1).

See RTU-C I&O manual for reheat unit setup and for thermostat/sensor combinations.

HUMIDITY SENSOR

An indoor relative humidity sensor (not included with the unit) is required for reheat operation. Available accessory Humidity sensor models are: RHC-ZNS4 (Room Relative Humidity Sensor – for use with a standard thermostat) and RHC-ZNS5 (Room Temperature and Relative Humidity Sensor – for use with a BAS system). Mount sensor per thermostat/humidity sensor section requirements. See wiring diagram (Figure 15).

REFRIGERANT SOLENOID VALVES

The reheat refrigerant system is part of System 1 only. Three refrigerant solenoid valves (discharge, liquid and reheat) are used to change operation from Cooling Mode to Reheat Mode. The Discharge Solenoid Valve (DSV) is located in the outdoor section (front side of unit) and is a Normally Closed (N.C.) valve. The Liquid Solenoid Valve (LSV) is located in the liquid line in the blower section and is a Normally Open (N.O.) valve. The Reheat Solenoid Valve (RSV) is near the bottom of the reheat coil (between the evaporator coil and the blower) and is normally open.

OPERATION

During the Cooling mode the RSV is the only valve energized (closed position), LSV is open, DSV is closed. The refrigeration cycle is standard cooling, reheat coil is bypassed.

System 2 operates during High Cooling or High Reheat modes but is not part of the reheat circuit (always operates in standard cooling).

During Low Reheat or High Reheat modes the LSV is energized (closed position), DSV is energized (open position), RHV is open. Some hot gas bypasses the condenser coil and creates a warm two phase mix that enters the reheat coil. See Table A for Modes of Operation including compressor operation, fan speed, thermostat / humidistat calls for each mode. See Blower VFD section (above) for VFD operation.

XVIII. VARIABLE FREQUENCY DRIVE (VFD)

No adjustments of the VFD are required for installation or operation of this unit.

Location: Control Section (front left) of the unit.

TABLE 1

Two Stage HumidiDry – Modes of Operation				
Mode	**Compressor 1**	**Compressor 2**	**Fan**	**Notes**
High Cool	Cool	Cool	High	Operates with (Y2) call, ignores (H1/H2)
High Reheat	Reheat	Cool	High	Operates with (Y1 & Y2)
Low Reheat	Reheat	Off	Low	Operates with (H1 only) or (H2 only)
Low Cool	Cool	Off	Low	Operates with (Y1) or (Y1 & H1), Factory set point
Notes Definitions:				
Y1	Single stage cooling operation			
Y2	Two stage cooling operation			
H1	Space is above humidity set point by more than 2% and less than or equal to 5%.			
H2	Space is above humidity set point by more than 5%.			

VFD MODEL
Schneider Altivar 212 (factory programmed).

REPLACEMENT
The VFD is horsepower and voltage specific therefore; replacement must be the same model as the existing. A pre-programmed VFD is recommended and available from ProStock. A non-programmed Schneider Altivar 212 may be used but must be programmed exactly per the included VFD programming guide for safe and proper function.

OPERATION
The purpose of the VFD is to allow low airflow in Fan Only (G), Low Reheat and First Stage Cooling (Y1) operation of a two stage unit. Unit air balancing should be performed at High Airflow (100% at RTU-C, 60Hz at VFD) by adjusting the blower motor sheave. High Airflow always occurs during a W1, W2, or Y2 call. For air balancing, without heating or cooling, the fan only speed can be temporarily increased to 100% by adjustment through the RTU-C keypad. To meet ASHRAE 90.1-2010 and for best performance, First Stage Cool and Fan Only speeds are factory set at 50% airflow (30 Hz at VFD). Both of these speeds are independently adjustable at the RTU-C. The VFD display will indicate an equivalent value in Hz (i.e. Low Cool adjusted to 60% at RTU-C will display as 36Hz at the VFD). A 20 second (adjustable at the VFD) ramp-up or ramp-down is used whenever the blower speed is increased or decreased. Low speed blower operation first ramps to 75%, to close fan proving switch, before ramping to the desired speed. Since the VFD operates on 24VDC control voltage, a blower relay (with 24VAC across the coil) is used to turn the VFD on. Blower speeds are changed via Modbus communication from the RTU-C.

XIX. OUTDOOR FAN MOTOR CONTROLLER (OFMC)

Location: Control Section (front left) of the unit.

During Low Reheat Mode the OFMC slows the outdoor fans to increase the discharge pressure/temperature to maintain an optimized amount of reheat required to provide neutral air to the occupied space. The OFMC is located in the control box section. On 15-25 ton units the OFMC slows fans during both Low and High Reheat Modes (circuit 1 fans only). The factory setting for the outdoor fan motor controller is unit specific (Table 2). The setpoint temperature will provide neutral air +1 to-5°F from the entering air temperature (example if the entering or return air temperature is 75° F the leaving or supply air temperature will be 76° to 70°F during the reheat mode. If field adjustment is required to raise or lower the leaving air temperature, this may be accomplish by turning the temperature control dial on the OFMC (Figure 16). Turning the dial to a higher temperature setting will increase the leaving or supply air temperature and turning the dial to a lower setting will reduce the leaving or supply temperature. During cooling modes the OFMC will operate at full speed (green light –Figure 16). During reheat modes the OFMC will typically operate at variable speed (amber light – Figure 16) but can change to full speed or off (no lights) depending on the reheat capacity required. During high reheat, the 7½ and 10 ton models must operate the OFMC at full speed to prevent excessive head pressure on system 2.

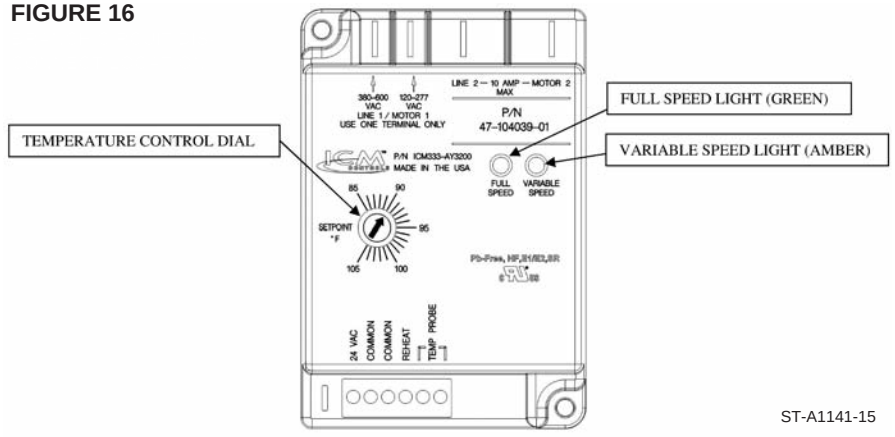
XX. MISCELLANEOUS

REPLACEMENT PARTS
Contact your local distributor for a complete parts list.

TABLE 2

OFMC	
Factory Settings	
Unit	Setpoint
090	95°F
120	90°F
180	100°F
240	95°F
300	90°F

FIGURE 16



ST-A1141-15

XXI. AIRFLOW DATA TABLES
AIR-FLOW PERFORMANCE – 7.5 TON RLNL-B090/C090 MODELS

Air Flow CFM [L/s]	Capacity 7.5 tons [26.4kW]																																			
	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]	—	—	—	—	574	520	612	592	650	665	687	739	723	815	757	893	791	971	824	1051	857	1133	888	1216	918	1300	948	1386	976	1473	1004	1561	1031	1651	1057	1742	1082	1834	1106	1928
2500 [1180]	—	—	545	490	584	560	622	632	659	705	695	780	730	856	765	933	798	1012	831	1092	863	1174	894	1257	924	1341	953	1427	981	1514	1008	1603	1035	1693	1060	1784	1085	1877	1108	1971
2600 [1227]	—	—	555	537	594	608	632	680	668	753	704	828	739	904	773	982	806	1061	838	1141	870	1223	900	1306	930	1390	958	1476	986	1563	1013	1652	1039	1742	1064	1833	1088	1926	1111	2020
2700 [1274]	—	—	567	593	605	663	642	735	678	809	714	884	748	960	782	1038	814	1117	846	1197	877	1279	907	1362	936	1447	964	1533	992	1620	1018	1709	1043	1799	1068	1891	1092	1983	1115	2078
2800 [1321]	—	—	578	655	616	726	653	799	689	872	724	947	758	1024	791	1101	823	1181	854	1261	885	1343	914	1426	943	1511	971	1597	998	1685	1024	1773	1049	1864	1073	1955	1096	2048	1119	2143
2900 [1368]	552	656	591	726	628	797	664	869	700	943	734	1018	768	1095	800	1173	832	1252	863	1332	893	1415	922	1498	951	1583	978	1669	1004	1757	1030	1846	1055	1936	1078	2028	1101	2121	1123	2215
3000 [1416]	566	734	603	804	640	875	676	947	711	1021	745	1097	778	1173	811	1251	842	1331	872	1411	902	1494	931	1577	959	1662	985	1748	1012	1836	1037	1925	1061	2016	1084	2108	1107	2201	1128	2295
3100 [1463]	579	820	617	890	653	961	688	1033	723	1107	757	1183	789	1259	821	1338	852	1417	882	1498	912	1580	940	1664	967	1749	994	1835	1019	1923	1044	2012	1068	2103	1091	2195	1113	2288	1134	2383
3200 [1510]	594	913	631	983	666	1054	701	1127	736	1201	769	1276	801	1353	833	1432	863	1511	893	1592	921	1675	949	1758	976	1844	1002	1930	1027	2018	1052	2107	1075	2198	1098	2290	1119	2384	1140	2478
3300 [1557]	608	1014	645	1084	680	1155	715	1228	749	1302	781	1378	813	1455	844	1533	874	1613	904	1694	932	1776	959	1860	986	1946	1012	2032	1036	2120	1060	2210	1083	2301	1105	2393	1126	2486	1146	2581
3400 [1604]	624	1122	660	1192	695	1264	729	1337	762	1411	795	1487	826	1564	857	1642	886	1722	915	1803	943	1886	970	1970	996	2055	1021	2142	1046	2230	1069	2320	1091	2411	1113	2503	1134	2597	1154	2692
3500 [1652]	640	1238	675	1308	710	1380	744	1453	776	1527	808	1603	839	1680	870	1759	899	1839	927	1920	955	2003	981	2087	1007	2173	1032	2259	1055	2348	1078	2437	1100	2528	1122	2621	1142	2715	1161	2810
3600 [1699]	656	1361	691	1432	725	1503	759	1577	791	1651	823	1727	853	1804	883	1883	912	1963	940	2045	967	2128	993	2212	1018	2297	1042	2384	1066	2473	1088	2563	1110	2654	1131	2746	1151	2840	1169	2936

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

Drive Package	R						S						T					
Motor H.P. [W]	2 [1491.4]						2 [1491.4]						3 [2237.1]					
Blower Sheave	BK110						BK90						BK65					
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	705	674	**640**	608	576	544	865	830	**789**	750	711	673	1179	1143	1092	1040	987	**933**

NOTES: 1. Factory sheave settings are shown in bold print.
2. Re-adjustment of sheave required to achieve rated airflow at ARI minimum E.S.P.
3. Do not operate above blower RPM shown as motor overloading will occur.
4. Do not set motor sheave below one turn open.

AIRFLOW CORRECTION FACTORS-B090/C090
7.5 TON [26.4 kW]

ACTUAL—CFM [L/s]	2600 [1227]	2800 [1321]	3000 [1416]	3200 [1510]	3400 [1605]	3600 [1699]	3800 [1793]
TOTAL MBH	0.97	0.98	0.99	1.00	1.01	1.02	1.03
SENSIBLE MBH	0.91	0.94	0.97	1.00	1.02	1.05	1.08
POWER kW	0.99	0.99	0.99	1.00	1.00	1.01	1.02

NOTES: 1. Multiply correction factor times gross performance data.
2. Resulting sensible capacity cannot exceed total capacity.

[ ] Designates Metric Conversions

COMPONENT AIR RESISTANCE, IWC-B090/C090
7.5 TON [26.4 kW]

Component	Standard Indoor Airflow—CFM [L/s]						
	2400 [1133]	2600 [1227]	2800 [1321]	3000 [1416]	3200 [1510]	3400 [1604]	3600 [1699]
	Resistance—Inches Water [kPa]						
Wet Coil	0.047 [0.012]	0.051 [0.013]	0.055 [0.014]	0.060 [0.015]	0.065 [0.016]	0.071 [0.018]	0.076 [0.019]
Concentric Diffuser RXRN-FA65 or FA75 & Transition RXMC-CD04	DNA	.017 [0.042]	.020 [0.050]	.025 [0.062]	.031 [0.077]	.037 [0.092]	DNA
Concentric Diffuser RXRN-AA61 or AA71 & Transition RXMC-CE05	DNA	DNA	DNA	DNA	DNA	DNA	.017 [0.042]
Economizer 100% R.A. Damper Open	0.05 [0.012]	0.06 [0.015]	0.07 [0.017]	0.08 [0.020]	0.09 [0.022]	0.10 [0.025]	0.11 [0.027]
Horizontal Economizer 100% R.A. Damper Open	0.03 [0.007]	0.04 [0.009]	0.04 [0.010]	0.05 [0.011]	0.05 [0.012]	0.06 [0.014]	0.06 [0.015]
Horizontal Economizer 100% O.A. Damper Open	0.08 [0.020]	0.08 [0.020]	0.08 [0.020]	0.10 [0.024]	0.11 [0.027]	0.12 [0.030]	0.13 [0.032]

NOTE: Add component resistance to duct resistance to determine total external static pressure.
DNA = Data not Available.

AIR-FLOW PERFORMANCE – 10 TON RLNL B120/C120 MODELS

Air Flow CFM [L/s]	Capacity 10 tons [35.1 kW]																																			
	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]	
	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]	—	—	676	1090	709	1153	741	1219	772	1288	804	1360	834	1436	865	1514	895	1596	924	1681	953	1769	981	1861	1009	1955	1037	2053	1064	2154	1091	2258	1117	2365	1143	2476	1168	2590
3300 [1557]	—	—	689	1144	721	1210	753	1280	784	1353	815	1429	845	1508	875	1590	905	1675	934	1764	962	1856	991	1951	1018	2049	1046	2151	1072	2255	1099	2363	1125	2474	1150	2588	1175	2705
3400 [1604]	670	1137	702	1204	734	1274	765	1347	796	1423	827	1503	857	1585	886	1671	915	1760	944	1853	972	1948	1000	2047	1027	2149	1054	2254	1081	2362	1107	2473	1132	2588	1157	2706	—	—
3500 [1652]	683	1198	715	1268	747	1342	778	1419	808	1499	838	1582	868	1668	897	1758	926	1851	954	1947	982	2046	1010	2148	1037	2253	1063	2362	1089	2474	1115	2589	1140	2707	1165	2829	—	—
3600 [1699]	697	1265	729	1339	760	1416	790	1496	821	1580	850	1667	880	1757	908	1850	937	1946	965	2046	992	2149	1019	2255	1046	2364	1072	2476	1098	2592	1123	2710	1148	2832	1172	2957	—	—
3700 [1746]	711	1337	742	1415	773	1495	803	1580	833	1667	862	1757	891	1851	920	1948	948	2048	975	2151	1003	2257	1029	2367	1055	2480	1081	2596	1107	2715	1131	2837	1156	2962	1180	3091	—	—
3800 [1793]	725	1415	756	1496	786	1580	816	1668	846	1759	875	1853	903	1950	931	2051	959	2154	986	2261	1013	2371	1039	2484	1065	2601	1090	2720	1115	2843	1140	2969	1164	3098	—	—	—	—
3900 [1840]	740	1498	770	1583	800	1671	829	1762	858	1857	887	1954	915	2055	943	2159	970	2267	997	2377	1023	2491	1049	2608	1075	2728	1100	2851	1125	2977	1149	3107	1172	3240	—	—	—	—
4000 [1888]	754	1586	784	1675	814	1767	843	1862	871	1960	900	2061	927	2166	955	2273	982	2384	1008	2498	1034	2616	1060	2736	1085	2860	1110	2987	1134	3117	1158	3250	1181	3386	—	—	—	—
4100 [1935]	768	1680	798	1772	827	1868	856	1966	884	2068	912	2173	940	2281	967	2393	993	2507	1019	2625	1045	2746	1070	2870	1095	2997	1119	3128	1143	3261	1167	3398	—	—	—	—	—	—
4200 [1982]	783	1780	813	1875	841	1975	870	2077	898	2182	925	2291	952	2403	979	2518	1005	2636	1031	2757	1056	2882	1081	3009	1105	3140	1129	3275	1153	3412	1176	3552	—	—	—	—	—	—
4300 [2029]	798	1884	827	1984	856	2087	884	2193	911	2302	938	2414	965	2529	991	2648	1017	2770	1042	2895	1067	3023	1092	3154	1116	3289	1139	3427	1162	3568	—	—	—	—	—	—	—	—
4400 [2076]	813	1995	842	2098	870	2204	897	2314	925	2427	951	2542	978	2662	1004	2784	1029	2909	1054	3038	1079	3170	1103	3305	1126	3443	1150	3584	1172	3729	—	—	—	—	—	—	—	—
4500 [2123]	828	2111	857	2217	884	2327	912	2441	938	2557	965	2676	991	2799	1016	2925	1041	3054	1066	3186	1090	3322	1114	3461	1137	3602	1160	3747	—	—	—	—	—	—	—	—	—	—
4600 [2171]	844	2232	872	2342	899	2456	926	2573	952	2693	978	2816	1004	2942	1029	3072	1054	3204	1078	3340	1102	3479	1125	3622	1148	3767	1170	3916	—	—	—	—	—	—	—	—	—	—
4700 [2218]	859	2359	887	2473	914	2590	940	2710	966	2834	992	2961	1017	3091	1042	3224	1066	3360	1090	3500	1114	3643	1137	3789	1159	3938	—	—	—	—	—	—	—	—	—	—	—	—
4800 [2265]	875	2491	902	2609	929	2729	955	2853	981	2981	1006	3111	1031	3245	1055	3382	1079	3522	1103	3665	1126	3811	1148	3961	1170	4113	—	—	—	—	—	—	—	—	—	—	—	—

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

Drive Package	R						S					
Motor H.P. [W]	2 [1491.4]						3 [2237.1]					
Blower Sheave	BK90						BK65					
Motor Sheave	1VP-44						1VP-44					
Turns Open	1	2	**3**	4	5	6	1	2	**3**	4	5	6
RPM	860	825	**785**	747	709	670	1169	1114	**1063**	1015	956	909

NOTES: 1. Factory sheave settings are shown in bold print.
2. Re-adjustment of sheave required to achieve rated airflow at ARI minimum E.S.P.
3. Do not operate above blower RPM shown as motor overloading will occur.
4. Do not set motor sheave below one turn open.

AIRFLOW CORRECTION FACTORS-B120/C120 10 TON [35.2 kW]

ACTUAL—CFM [L/s]	3200 [1510]	3400 [1605]	3600 [1699]	3800 [1793]	4000 [1888]	4200 [1982]	4400 [2077]	4600 [2171]	4800 [2265]
TOTAL MBH	0.96	0.97	0.98	0.99	1.00	1.01	1.02	1.03	1.04
SENSIBLE MBH	0.91	0.93	0.95	0.97	1.00	1.02	1.05	1.07	1.09
POWER kW	0.98	0.98	0.99	0.99	1.00	1.00	1.01	1.01	1.01

NOTES: 1. Multiply correction factor times gross performance data.
2. Resulting sensible capacity cannot exceed total capacity.

[ ] Designates Metric Conversions

COMPONENT AIR RESISTANCE, IWC-B120/C120 10 TON [35.2 kW]

Component	Standard Indoor Airflow—CFM [L/s]								
	3200 [1510]	**3400 [1604]**	**3600 [1699]**	**3800 [1793]**	**4000 [1888]**	**4200 [1982]**	**4400 [2076]**	**4600 [2171]**	**4800 [2265]**
	Resistance—Inches Water [kPa]								
Wet Coil	0.065 [0.016]	0.071 [0.018]	0.076 [0.019]	0.082 [0.020]	0.087 [0.022]	0.093 [0.023]	0.099 [0.025]	0.105 [0.026]	0.110 [0.027]
Concentric Diffuser RXRN-FA65 or FA75 & Transition RXMC-CD04	0.31 [0.077]	0.37 [0.092]	DNA	DNA	DNA	DNA	DNA	DNA	DNA
Concentric Diffuser RXRN-AA61 or AA71 & Transition RXMC-CE05	DNA	DNA	0.17 [0.042]	0.18 [0.045]	0.21 [0.052]	0.24 [0.060]	0.27 [0.067]	DNA	DNA
Concentric Diffuser RXRN-AA66 or AA76 & Transition RXMC-CF06	DNA	DNA	DNA	DNA	DNA	DNA	DNA	0.31 [0.077]	0.32 [0.080]
Economizer 100% R.A. Damper Open	0.09 [0.022]	0.10 [0.025]	0.11 [0.027]	0.12 [0.030]	0.13 [0.032]	0.14 [0.035]	0.15 [0.037]	0.16 [0.040]	0.17 [0.042]
Horizontal Economizer 100% R.A. Damper Open	0.05 [0.012]	0.06 [0.014]	0.06 [0.015]	0.07 [0.017]	0.08 [0.020]	0.09 [0.021]	0.09 [0.022]	0.10 [0.024]	0.10 [0.025]
Horizontal Economizer 100% O.A. Damper Open	0.11 [0.027]	0.12 [0.030]	0.13 [0.032]	0.15 [0.0.36]	0.16 [0.040]	0.18 [0.044]	0.19 [0.047]	0.20 [0.50]	0.21 [0.052]

NOTE: Add component resistance to duct resistance to determine total external static pressure.
DNA = Data not Available.

XXII. HEATER KIT CHARACTERISTICS

TABLE A

AUXILIARY HEATER KITS CHARACTERISTICS AND APPLICATION (RLNL MODELS)

208/240V – 3 PHASE

208/240 VOLT, THREE PHASE, 60 HZ, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION													
Single Power Supply for Both Unit and Heater Kit						Separate Power Supply for Both Unit and Heater Kit							
RHEEM Model Number	Heater Kit					Air Conditioner			Heater Kit		Air Conditioner		
	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. @ 208 V	Min./Max. @ 240 V				Min./Max. @ 208 V	Min./Max. @ 240 V
RLNL-G090CR	No Heat	—	—	—	—	43/43	45/50	45/50	—	—	43/43	45/50	45/50
	CC10C	1	7.2/9.6	24.56/32.75	20/23.1	43/43	45/50	45/50	25/29	25/30	43/43	45/50	45/50
	CC15C	1	10.8/14.4	36.84/49.13	30/34.6	48/54	50/50	60/60	38/44	40/45	43/43	45/50	45/50
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	60/68	60/60	70/70	50/58	50/60	43/43	45/50	45/50
	CC30C	1	21.6/28.8	73.69/98.25	60/69.3	85/97	90/90	100/100	75/87	80/90	43/43	45/50	45/50
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	111/126	125/125	150/150	101/116	110/125	43/43	45/50	45/50
RLNL-G120CR	No Heat	—	—	—	—	49/49	50/60	50/60	—	—	49/49	50/60	50/60
	CC10C	1	7.2/9.6	24.56/32.75	20/23.1	49/49	60/60	60/60	25/29	25/30	49/49	50/60	50/60
	CC15C	1	10.8/14.4	36.84/49.13	30/34.6	49/54	60/60	60/60	38/44	40/45	49/49	50/60	50/60
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	60/68	60/60	70/70	50/58	50/60	49/49	50/60	50/60
	CC30C	1	21.6/28.8	73.69/98.25	60/69.3	85/97	90/90	100/100	75/87	80/90	49/49	50/60	50/60
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	111/126	125/125	150/150	101/116	110/125	49/49	50/60	50/60
	CC50C	1	36.1/48	123.16/163.75	100.1/115.5	136/155	150/150	175/175	126/145	150/150	49/49	50/60	50/60
RLNL-G090CS	No Heat	—	—	—	—	43/43	45/50	45/50	—	—	43/43	45/50	45/50
	CC10C	1	7.2/9.6	24.56/32.75	20/23.1	43/43	50/50	50/50	25/29	25/30	43/43	45/50	45/50
	CC15C	1	10.8/14.4	36.84/49.13	30/34.6	48/54	50/50	60/60	38/44	40/45	43/43	45/50	45/50
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	60/68	60/60	70/70	50/58	50/60	43/43	45/50	45/50
	CC30C	1	21.6/28.8	73.69/98.25	60/69.3	85/97	90/90	100/100	75/87	80/90	43/43	45/50	45/50
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	111/126	125/125	150/150	101/116	110/125	43/43	45/50	45/50
RLNL-G120CS	No Heat	—	—	—	—	54/54	55/60	55/60	—	—	54/54	55/60	55/60
	CC10C	1	7.2/9.6	24.56/32.75	20/23.1	54/54	60/60	60/60	25/29	25/30	54/54	55/60	55/60
	CC15C	1	10.8/14.4	36.84/49.13	30/34.6	54/60	60/60	60/60	38/44	40/45	54/54	55/60	55/60
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	67/75	70/70	80/80	50/58	50/60	54/54	55/60	55/60
	CC30C	1	21.6/28.8	73.69/98.25	60/69.3	92/103	100/100	110/110	75/87	80/90	54/54	55/60	55/60
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	117/132	125/125	150/150	101/116	110/125	54/54	55/60	55/60
	CC50C	1	36.1/48	123.16/163.75	100.1/115.5	142/161	150/150	175/175	126/145	150/150	54/54	55/60	55/60
RLNL-G090CT	No Heat	—	—	—	—	48/48	50/60	50/60	—	—	48/48	50/60	50/60
	CC10C	1	7.2/9.6	24.56/32.75	20/23.1	48/48	60/60	60/60	25/29	25/30	48/48	50/60	50/60
	CC15C	1	10.8/14.4	36.84/49.13	30/34.6	54/60	60/60	60/60	38/44	40/45	48/48	50/60	50/60
	CC20C	1	14.4/19.2	49.13/65.5	40/46.2	67/75	70/70	80/80	50/58	50/60	48/48	50/60	50/60
	CC30C	1	21.6/28.8	73.69/98.25	60/69.3	92/103	100/100	110/110	75/87	80/90	48/48	50/60	50/60
	CC40C	1	28.8/38.4	98.25/131	80.1/92.4	117/132	125/125	150/150	101/116	110/125	48/48	50/60	50/60

HEATER KIT CHARACTERISTICS

TABLE A

AUXILIARY HEATER KITS CHARACTERISTICS AND APPLICATION (RLNL MODELS)

480V – 3 PHASE

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							
RHEEM Model Number	Heater Kit					Air Conditioner			Heater Kit		Air Conditioner		
	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
RLNL-G090DR	No Heat	—	—	—	—	21	25/25	—	—	—	21	25/25	—
	CC10D	1	9.6	32.75	11.5	21	25/25	—	15	15	21/0	25/25	0/0
	CC15D	1	14.4	49.13	17.3	27	30/30	—	22	25	21/0	25/25	0/0
	CC20D	1	19.2	65.5	23.1	34	35/35	—	29	30	21/0	25/25	0/0
	CC30D	1	28.8	98.25	34.6	49	50/50	—	44	45	21/0	25/25	0/0
	CC40D	1	38.4	131	46.2	63	70/70	—	58	60	21/0	25/25	0/0
RLNL-G120DR	No Heat	—	—	—	—	25	25/30	—	—	—	25	25/30	—
	CC10D	1	9.6	32.75	11.5	25	25/25	—	15	15	21/0	25/30	0/0
	CC15D	1	14.4	49.13	17.3	27	30/30	—	22	25	21/0	25/30	0/0
	CC20D	1	19.2	65.5	23.1	34	35/35	—	29	30	25/0	25/30	0/0
	CC30D	1	28.8	98.25	34.6	49	50/50	—	44	45	25/0	25/30	0/0
	CC40D	1	38.4	131	46.2	63	70/70	—	58	60	25/0	25/30	0/0
	CC50D	1	48	163.75	57.7	78	80/80	—	73	80	25/0	25/30	0/0
RLNL-090DS	No Heat	—	—	—	—	21	25/25	—	—	—	21	25/25	—
	CC10D	1	9.6	32.75	11.5	21	25/25	—	15	15	21/0	25/25	0/0
	CC15D	1	14.4	49.13	17.3	27	30/30	—	22	25	21/0	25/25	0/0
	CC20D	1	19.2	65.5	23.1	34	35/35	—	29	30	21/0	25/25	0/0
	CC30D	1	28.8	98.25	34.6	49	50/50	—	44	45	21/0	25/25	0/0
	CC40D	1	38.4	131	46.2	63	70/70	—	58	60	21/0	25/25	0/0
RLNL-G120DS	No Heat	—	—	—	—	28	30/35	—	—	—	28	30/35	—
	CC10D	1	9.6	32.75	11.5	28	30/35	—	15	15	28/0	30/35	0/0
	CC15D	1	14.4	49.13	17.3	31	35/35	—	22	25	28/0	30/35	0/0
	CC20D	1	19.2	65.5	23.1	38	40/40	—	29	30	28/0	30/35	0/0
	CC30D	1	28.8	98.25	34.6	52	60/60	—	44	45	28/0	30/35	0/0
	CC40D	1	38.4	131	46.2	67	70/70	—	58	60	28/0	30/35	0/0
	CC50D	1	48	163.75	57.7	81	90/90	—	73	80	28/0	30/35	0/0
RLNL-G090DT	No Heat	—	—	—	—	24	25/30	—	—	—	24	25/30	—
	CC10D	1	9.6	32.75	11.5	24	30/30	—	15	15	24/0	25/30	0/0
	CC15D	1	14.4	49.13	17.3	31	35/35	—	22	25	24/0	25/30	0/0
	CC20D	1	19.2	65.5	23.1	38	40/40	—	29	30	24/0	25/30	0/0
	CC30D	1	28.8	98.25	34.6	52	60/60	—	44	45	24/0	25/30	0/0
	CC40D	1	38.4	131	46.2	67	70/70	—	58	60	24/0	25/30	0/0

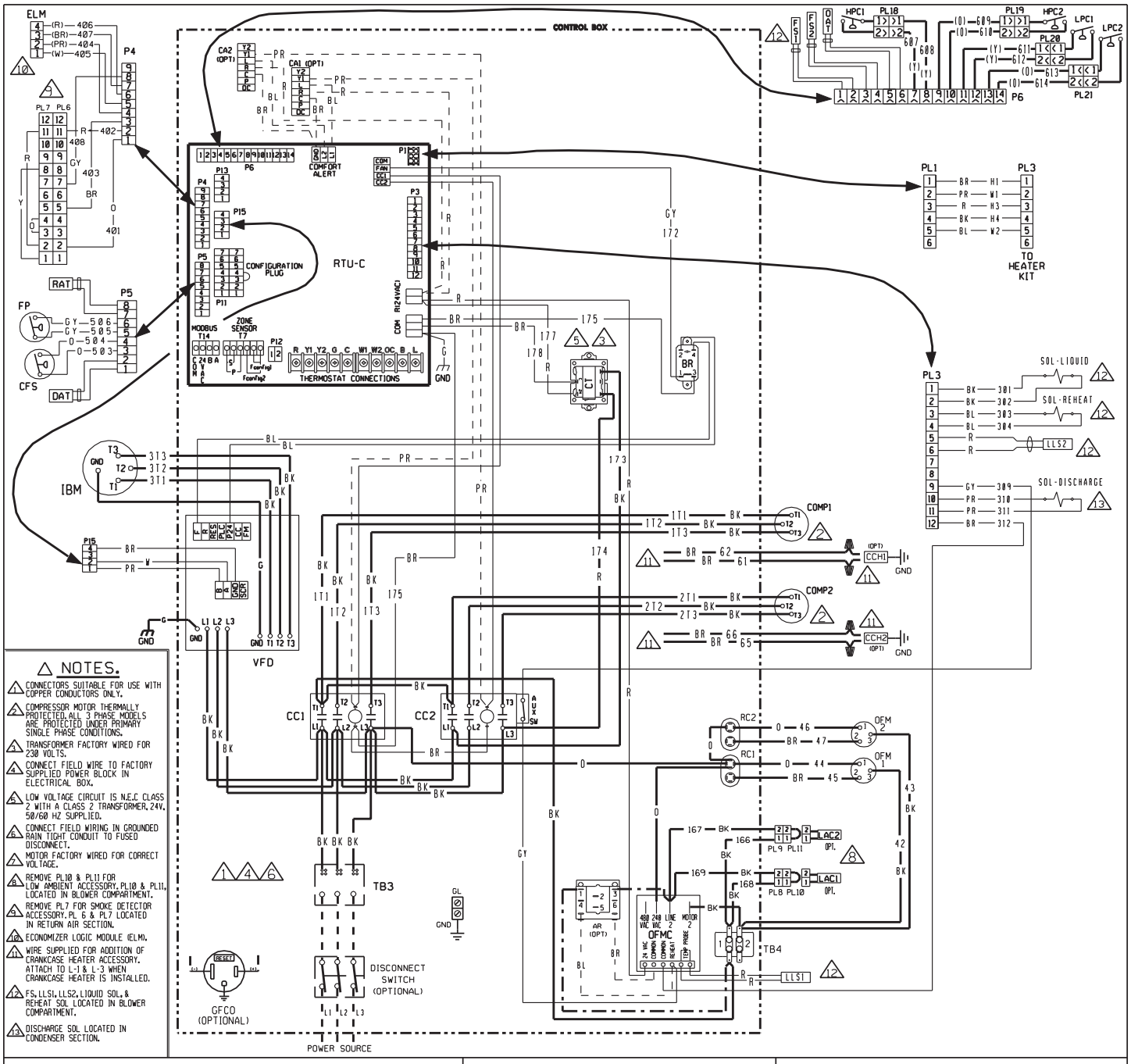
XXIII. TROUBLE SHOOTING CHART

⚠ 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 [188.78 L/s] per ton. • Charge per procedure attached to unit service panel. • Recover refrigerant, evacuate & recharge, add filter drier • At compressor terminals, voltage must be within 10% of rating plate volts when unit is operating.
Compressor short cycles	• Incorrect voltage • Defective overload protector • Refrigerant undercharge	• At compressor terminals, voltage must be ± 10% of nameplate marking when unit is operating. • Replace - check for correct voltage • Add refrigerant
Registers sweat	• Low evaporator airflow	• Increase speed of blower or reduce restriction - replace air filter
High head-low vapor pressures	• Restriction in liquid line, expansion device or filter drier • Flow check piston size too small • Incorrect capillary tubes • TXV does not open	• Remove or replace defective component • Change to correct size piston • Change coil assembly • Replace TXV
High head-high or normal vapor pressure - Cooling mode	• Dirty condenser coil • Refrigerant overcharge • Condenser fan not running • Air or non-condensibles in system	• Clean coil • Correct system charge • Repair or replace • Recover refrigerant, evacuate & recharge
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	• Replace compressor
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

XIV. WIRING DIAGRAMS



△ 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.
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 PL10 & PL11 FOR LOW AMBIENT ACCESSORY. PL10 & PL11, LOCATED IN BLOWER COMPARTMENT.
9. REMOVE PL7 FOR SMOKE DETECTOR ACCESSORY. PL 6 & PL7 LOCATED IN RETURN AIR SECTION.
10. ECONOMIZER LOGIC MODULE (ELM).
11. WIRE SUPPLIED FOR ADDITION OF CRANKCASE HEATER ACCESSORY. ATTACH TO L-1 & L-3 WHEN CRANKCASE HEATER IS INSTALLED.
12. FS, LLS1, LLS2, LIQUID SOL, & REHEAT SOL LOCATED IN BLOWER COMPARTMENT.
13. DISCHARGE SOL LOCATED IN CONDENSER SECTION.

COMPONENT CODE

BR	BLOWER RELAY
CA	COMFORT ALERT MODULE
CC	COMPRESSOR CONTACTOR
CCH	CRANKCASE HEATER
CFS	CLOGGED FILTER SWITCH
COMP	COMPRESSOR
CT	CONTROL TRANSFORMER
DAT	DISCHARGE AIR SENSOR
DSR	DISCHARGE SOLENOID RELAY
DISC	DISCONNECT SWITCH
FP	FAN PROVING
FS	FREEZE SENSOR
GFCO	GROUND FAULT CONVENIENCE OUTLET
GL	GROUND LUG
GND	GROUND
HPC	HIGH PRESSURE CONTROL
IBM	INDOOR BLOWER MOTOR BELT DRIVE
LAC	LOW AMBIENT COOLING CONTROL
LC	LIMIT CONTROL
LPC	LOW PRESSURE CONTROL
OAT	OUTSIDE AIR SENSOR
OFM	OUTDOOR FAN MOTOR
OFMC	OUTDOOR FAN MOTOR CONTROLLER
PL	PLUG
RAT	RETURN AIR SENSOR
RC	RUN CAPACITOR
RTU-C	ROOFTOP UNIT CONTROL
TB	TERMINAL BLOCK
VFD	VARIABLE FREQUENCY DRIVE
⚠	WIRE NUT

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.)

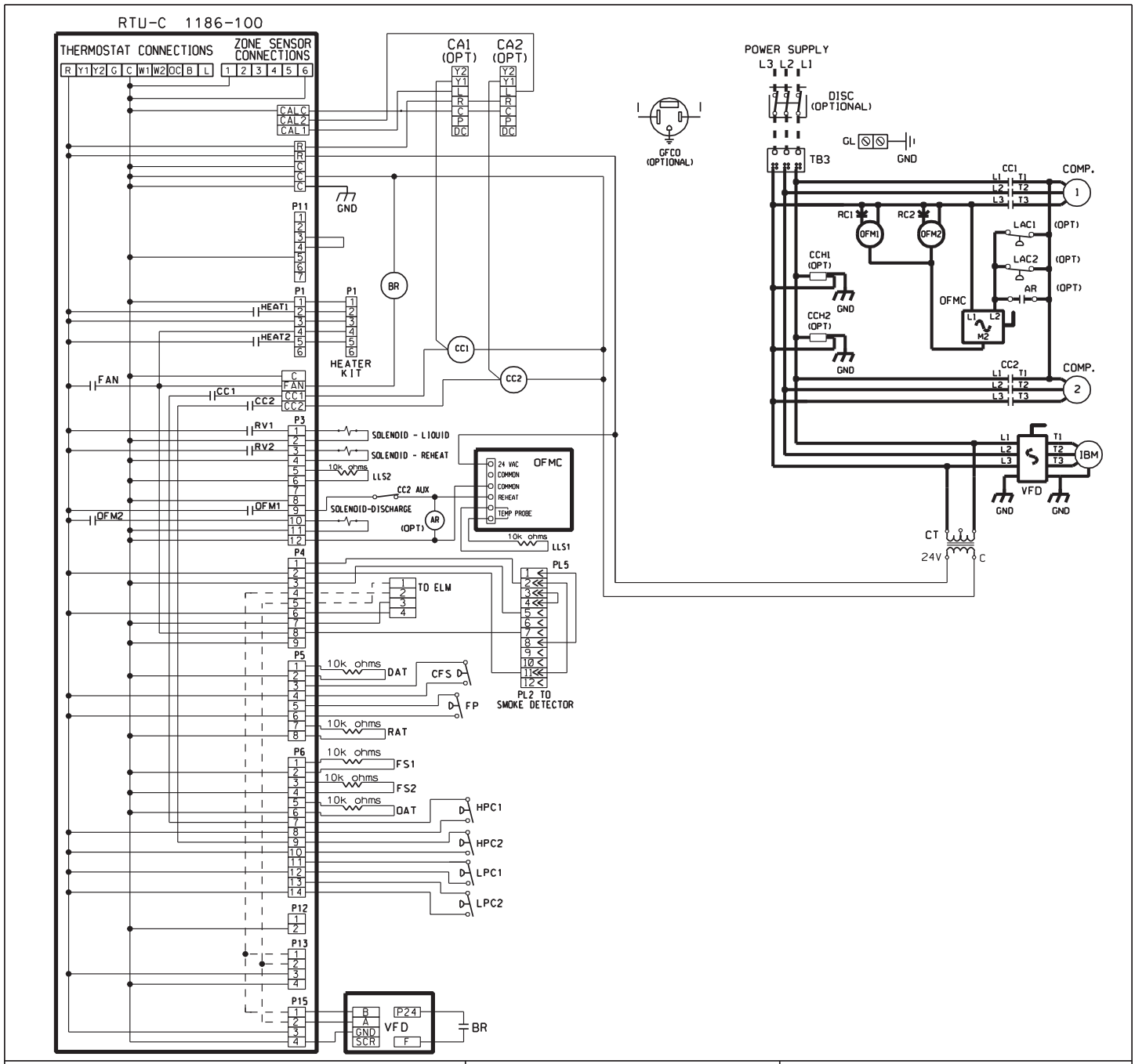
WARNING
- -CABINET MUST BE PERMANENTLY GROUNDED AND CONFORM TO I.E.C., N.E.C., C.E.C., AND LOCAL CODES AS APPLICABLE.

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
REHEAT 090/120
208-230/460V 3 PH, 60 HZ.
PACKAGED A/C W/RTU-C

DR. BY	APP. BY	DATE	DWG. NO.	REV
JRJ		10-24-11	90-103089-22	02



COMPONENT CODE

AR	ACCESSORY RELAY
BR	BLOWER RELAY
CA	COMFORT ALERT MODULE
CC	COMPRESSOR CONTACTOR
CCH	CRANKCASE HEATER
CFS	CLOGGED FILTER SWITCH
COMP	COMPRESSOR
CT	CONTROL TRANSFORMER
DAT	DISCHARGE AIR SENSOR
DSR	DISCHARGE SOLENOID RELAY
DISC	DISCONNECT SWITCH
FP	FAN PROVING
FS	FREEZE SENSOR
GFCO	GROUND FAULT CONVENIENCE OUTLET
GL	GROUND LUG
GND	GROUND
HPC	HIGH PRESSURE CONTROL
IBM	INDOOR BLOWER MOTOR BELT DRIVE
LAC	LOW AMBIENT COOLING CONTROL
LC	LIMIT CONTROL
LLS	LIQUID LINE SENSOR
LPC	LOW PRESSURE CONTROL
OAT	OUTSIDE AIR SENSOR
OFM	OUTDOOR FAN MOTOR
OFMC	OUTDOOR FAN MOTOR CONTROLLER
PL	PLUG
RAT	RETURN AIR SENSOR
RC	RUN CAPACITOR
RTU-C	ROOFTOP UNIT CONTROL
TB	TERMINAL BLOCK
VFD	VARIABLE FREQUENCY DRIVE
	WIRE NUT

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
REHEAT 090/120
208-230/460V 3 PH, 60 HZ.
PACKAGED A/C

DR. BY	APP. BY	DATE	DWG. NO.	REV
JRJ		10-24-11	90-103246-19	02

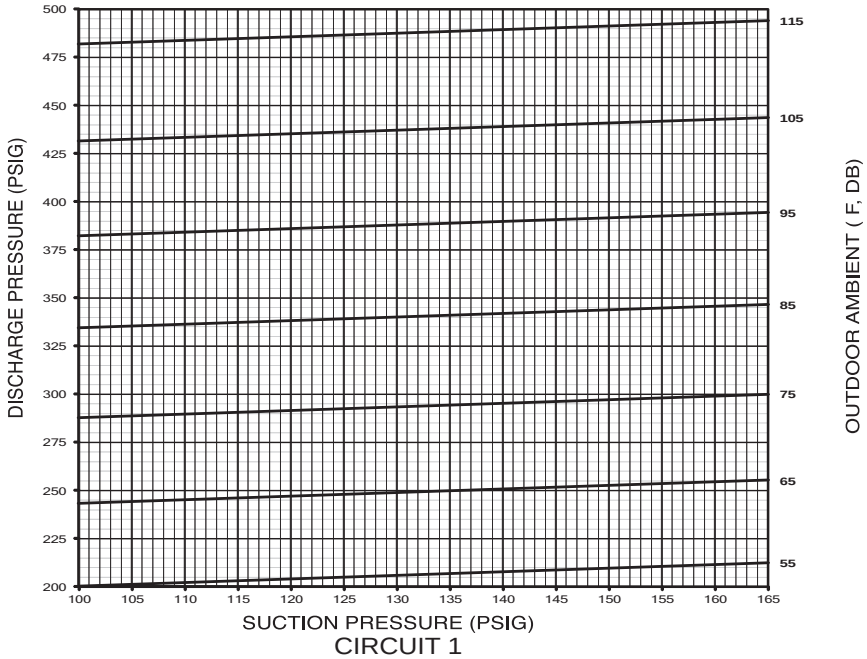
RLNL SYSTEM CHARGE CHARTS

FIGURE 17

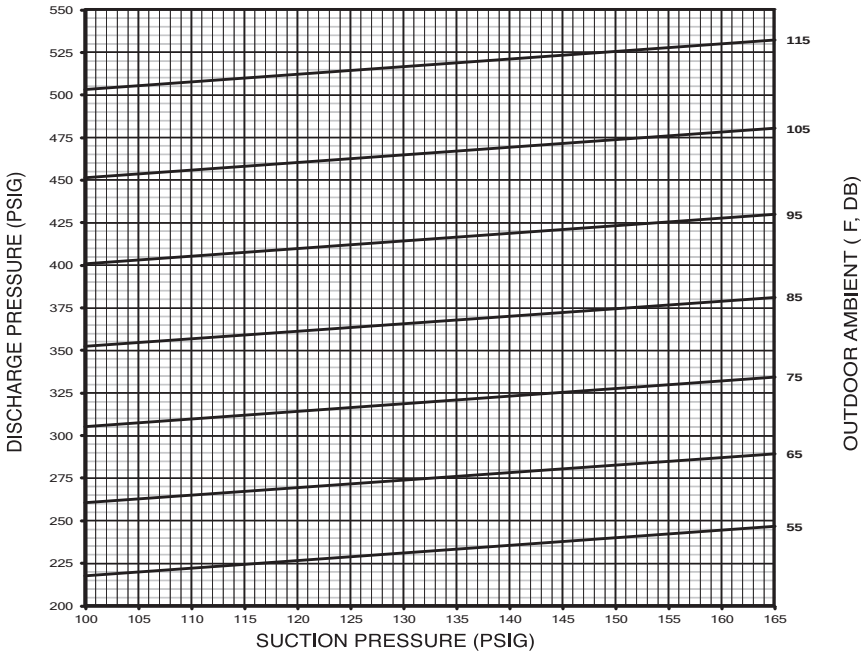
SYSTEM CHARGE CHART - REFRIGERANT 410A
7.5 TON, CIRCUITS 1 & 2

CAUTION:
1. BOTH COMPRESSORS MUST BE OPERATING BEFORE CHECKING REFRIGERANT CHARGE.
2. RETURN AIR TEMPERATURE MUST BE WITHIN COMFORT CONDITIONS BEFORE FINAL REFRIGERANT CHECK!

INSTRUCTIONS:
1. MEASURE PRESSURE AT COMPRESSOR SUCTION AND DISCHARGE.
2. MEASURE OUTDOOR AMBIENT TO UNIT.
3. PLACE (X) ON CHART WHERE SUCTION AND DISCHARGE INTERSECT.
4. IF (X) IS BELOW OUTDOOR AMBIENT LINE, ADD CHARGE AND REPEAT STEPS 1-3.
5. IF (X) IS ABOVE OUTDOOR AMBIENT LINE, RECOVER EXCESS CHARGE AND REPEAT STEPS 1-3.



CIRCUIT 1



CIRCUIT 2

92-102778-08-00

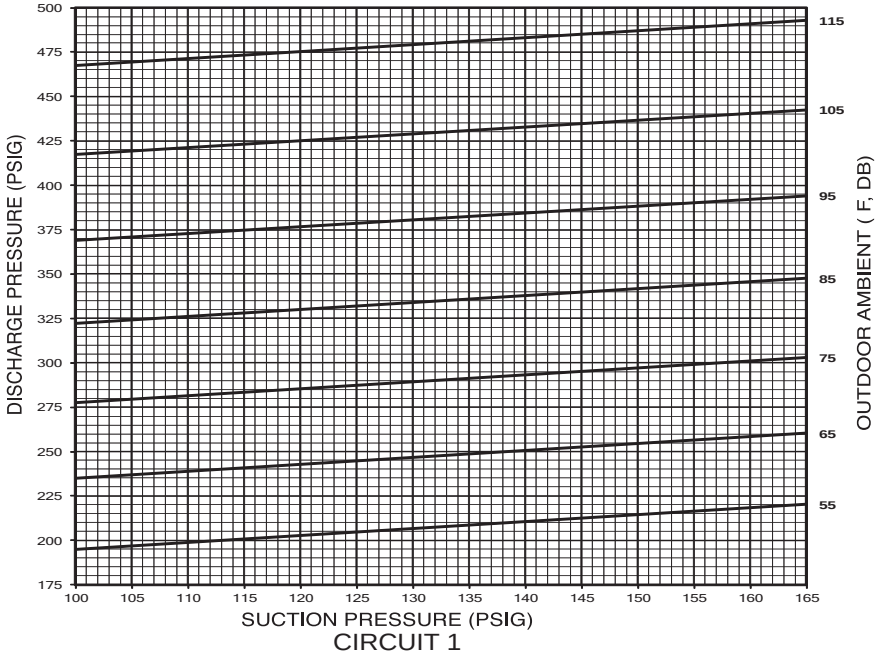
RLNL SYSTEM CHARGE CHARTS

FIGURE 18

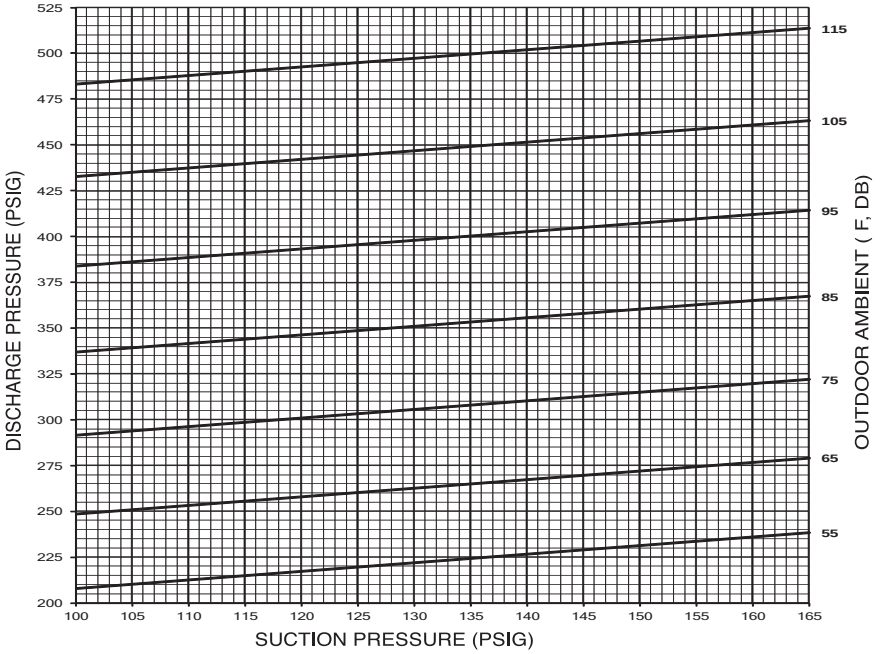
SYSTEM CHARGE CHART - REFRIGERANT 410A
10 TON, CIRCUITS 1 & 2

CAUTION:
1. BOTH COMPRESSORS MUST BE OPERATING BEFORE CHECKING REFRIGERANT CHARGE.
2. RETURN AIR TEMPERATURE MUST BE WITHIN COMFORT CONDITIONS BEFORE FINAL REFRIGERANT CHECK!

INSTRUCTIONS:
1. MEASURE PRESSURE AT COMPRESSOR SUCTION AND DISCHARGE.
2. MEASURE OUTDOOR AMBIENT TO UNIT.
3. PLACE (X) ON CHART WHERE SUCTION AND DISCHARGE INTERSECT.
4. IF (X) IS BELOW OUTDOOR AMBIENT LINE, ADD CHARGE AND REPEAT STEPS 1-3.
5. IF (X) IS ABOVE OUTDOOR AMBIENT LINE, RECOVER EXCESS CHARGE AND REPEAT STEPS 1-3.



CIRCUIT 1



CIRCUIT 2

92-102778-09-00