

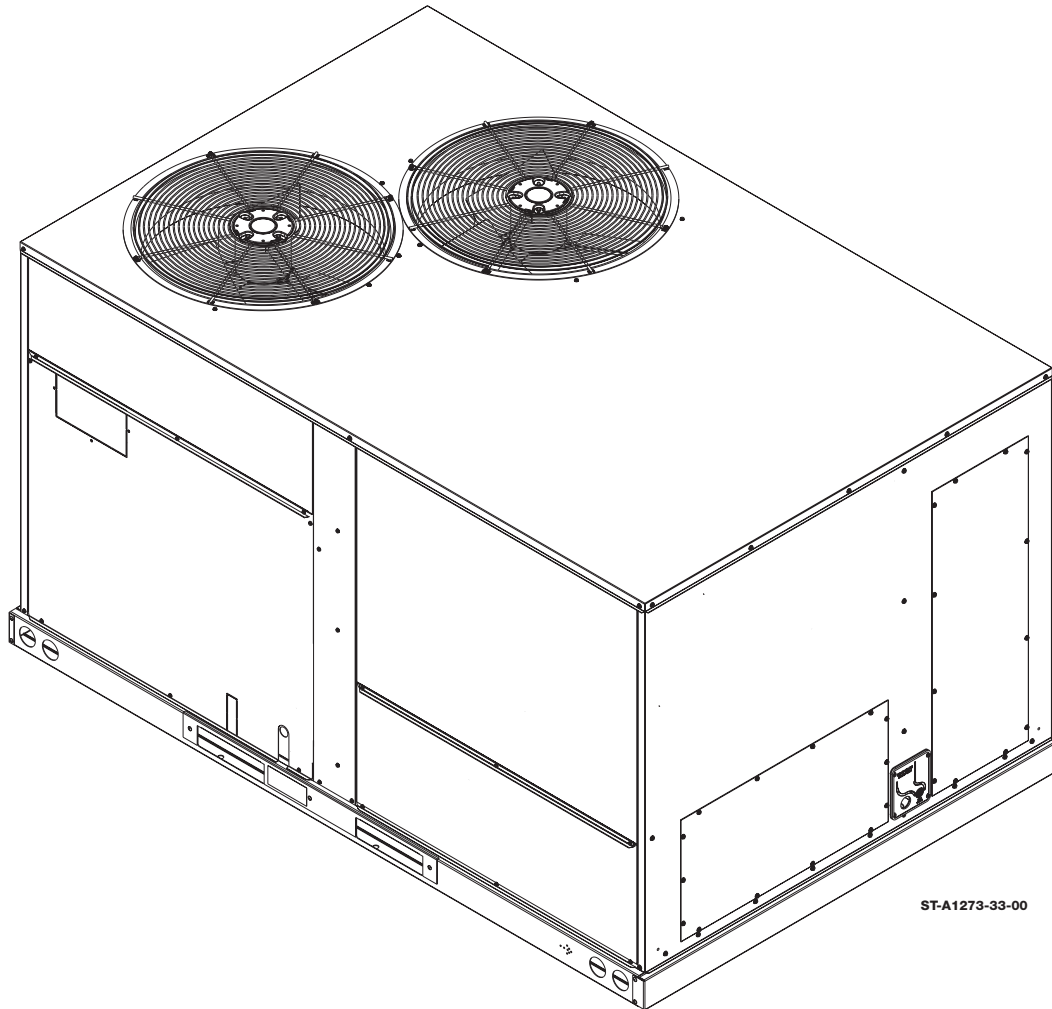
INSTALLATION INSTRUCTIONS

FOR RENAISSANCE™ PACKAGED AIR CONDITIONING UNITS

RACD SERIES 7.5, 8.5, 10.0 & 12.5 TON [26.4, 29.9, 35.2 AND 44.0 kW]

60 HZ MODELS

WITH R-410A REFRIGERANT



CONTENTS

A. IMPORTANT SAFETY AND GENERAL INFORMATION.....	4	N. DIAGNOSTICS	45
B. GENERAL SPECIFICATIONS.....	5	P. APPENDICES.....	57
C. INSTALLATION OF THE UNIT.....	11	Appendix A – General Product Data	57
D. DUCT AND VENTING	20	Appendix B – Electrical Data	59
E. ELECTRICAL	27	Appendix C – Air Flow Performance Data.....	63
F. CONTROL/THERMOSTAT WIRING	31	Appendix D – System Performance Data	71
G. ELECTRICAL HEAT	34	Appendix E – Heater Kit Characteristics	79
H. STARTUP AND OPERATION	35	Appendix F – Refrigerant Charging Charts	84
I. TEST AND BALANCE	41	Appendix G – Wiring Diagrams & Schematics.....	89
J. HUMIDITY CONTROL.....	42	Appendix J – Unit Tie-Down	117
		R. INFORMATION FOR THE OWNER	122
		S. INSTALLATION CHECK LIST AND JOB SITE SHEET	123

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



RECOGNIZE THIS SYMBOL AS AN INDICATION OF IMPORTANT SAFETY INFORMATION!

▲ WARNING

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

▲ WARNING

PROPOSITION 65 WARNING: THIS PRODUCT CONTAINS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

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

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CONTENTS (DETAILED)

A. Important Safety and General Information	4	H. ELECTRIC HEAT	34
A.1 Introduction	4	H.1. Factory Installed Electric Heat.....	34
A.2. Agency Performance Audit and Efficiency Testing Notice	4	H.2. Field Installed Electric Heat.....	34
A.3. Importance of a Quality Installation	4	J. STARTUP AND OPERATION	35
A.4. Importance of Air Flow and Setup	4	J.1. Final Inspection	35
A.5. Checking Product and Inspection	4	J.2. Turning on Power for the First Time	35
B. General Specifications	5	J.3. Checking and Adjusting Airflow	36
B.1. Safety Warnings	5	J.4. Checking Cooling Operation	38
B.2. Major Components	6	J.5. Checking Electric Heat Operation	40
B.3. Product and Data Information	6	K. Test and Balance	41
C. Installation of the Unit	11	K.1. Air Flow Charts and Information	41
C.1. General	11	K.2. Air Flow Adjustments	41
C.2. Tool and Refrigerant	11	M. HUMIDITY CONTROL	42
C.3. Choosing a Location	12	M.1. Dehumidification System Information	42
C.4. Setting the Unit	14	M.2. Humidity Sensor Installation	43
C.5. Installing Condensate Drain	19	M.3. Humidity Control Settings and Configuration	44
C.6. Final Installation Inspection	20	N. DIAGNOSTICS	45
D. Duct and Venting	20	N.1. Diagnostics Chart	45
D.1. Airflow and Static Pressure	20	N.2. Alarm Codes - Full List	46
D.2. Duct Requirements and Best Practices	20	N.3. Common Mistakes	56
D.3. Filters	22	P. APPENDICES	57
D.4. Economizers and Fresh Air Dampers	23	Appendix A - General Product Data	57
D.5. Smoke Detectors	26	Appendix B - Electrical Data	59
E. Electrical	27	Appendix C - Air Flow Performance Data	63
E.1. Electrical Safety Information	27	Appendix D - System Performance Data	71
E.2. Electrical Data	29	Appendix E - Heater Kit Characteristics	79
E.3. Electrical Connections	29	Appendix F - Refrigerant Charging Charts	84
F. Control/Thermostat Wiring	31	Appendix G - Wiring Diagrams & Schematics	89
F.1. T-Stat Field Connections	31	Appendix J - Unit Tie-Down	117
F.2. Routing Control Wiring	33	R. INFORMATION FOR THE OWNER	122
F.3. Measuring Control Voltage Loads	33	S. INSTALLATION CHECK LIST AND JOB SITE SHEET	123

A. IMPORTANT SAFETY AND GENERAL INFORMATION

A.1 Introduction

This booklet contains the installation and operating instructions for your 7.5 ton, 8.5 ton, 10 ton, or 12.5 ton packaged cooling unit. There are some precautions that should be taken to ensure proper operation. 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.

The images contained within this document may not be an exact representation of every unit, accessory, installation, etc. We reserve the right to change the content of this document at any time.

⚠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.

A.2 Agency Performance Audit and Efficiency Testing Notice

NOTICE: BREAK-IN PERIOD

Prior to agency testing, run the compressor for 16 hours at 115°f outdoor ambient temperature and 80° dry bulb / 75° wet bulb indoor ambient temperature.

NOTICE: EFFICIENCY TESTING NOTICE

For purposes of verifying or testing efficiency ratings, the test procedure in Title 10 Appendix M to Subpart B of Part 430 (Uniform Test Method for Measuring the Energy Consumption of Central Air Conditioners and Heat Pumps), and the clarifying provisions provided in the standards listed below that were applicable at the date of manufacture should be used for test set up and performance.

SETUP

- ASHRAE 37 - 2009 (RA 2019)

PERFORMANCE:

- ANSI/ASHRAE 90.1 - 2019
- AHRI Operations for Unitary Large AC Equipment 340/360 (2015)

SAFETY

UL 1995 5th Edition

A.3. Importance of a Quality Installation

Optimal system performance and longevity depend upon a quality and proper installation. Failure to properly setup and commission this unit could result in undesirable operation and subsequent faults and potential failures.

Carefully follow all guidelines listed in the manual and industry best practices. Conform to all local code requirements. Contact your local technical representative with any questions or concerns.

A.4. Importance of Air Flow and Setup

Optimal system performance is also dependent upon having the ideal airflow across the condensing and evaporating coils, and upon matching the charge weight to the manufacturer's spec for the unit. Improper or restricted air flow, and incorrect charge weight, will hinder the performance of the unit. Please refer to the manufacturer's recommended clearances for setting the unit and the included guide for setting air flow. Refer to the rating plate for the charge weight.

A.5. Checking Product and Inspection

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

B. GENERAL SPECIFICATIONS

B.1 Safety Warnings

⚠️WARNING: The manufacturer's warranty does not cover any damage or defect to the air conditioner caused by the attachment or use of any components, accessories or devices (other than those authorized by the manufacturer) into, onto or in conjunction with the air conditioner. You should be aware that the use of unauthorized components, accessories or devices may adversely affect the operation of the air conditioner and may also endanger life and property. The manufacturer disclaims any responsibility for such loss or injury resulting from the use of such unauthorized components, accessories or devices.

⚠️WARNING: Disconnect all power to the unit before starting maintenance. Failure to do so can result in severe electrical shock or death

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

⚠️WARNING: 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.

⚠️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.

⚠️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.

B. GENERAL SPECIFICATIONS

B.2. Major Components

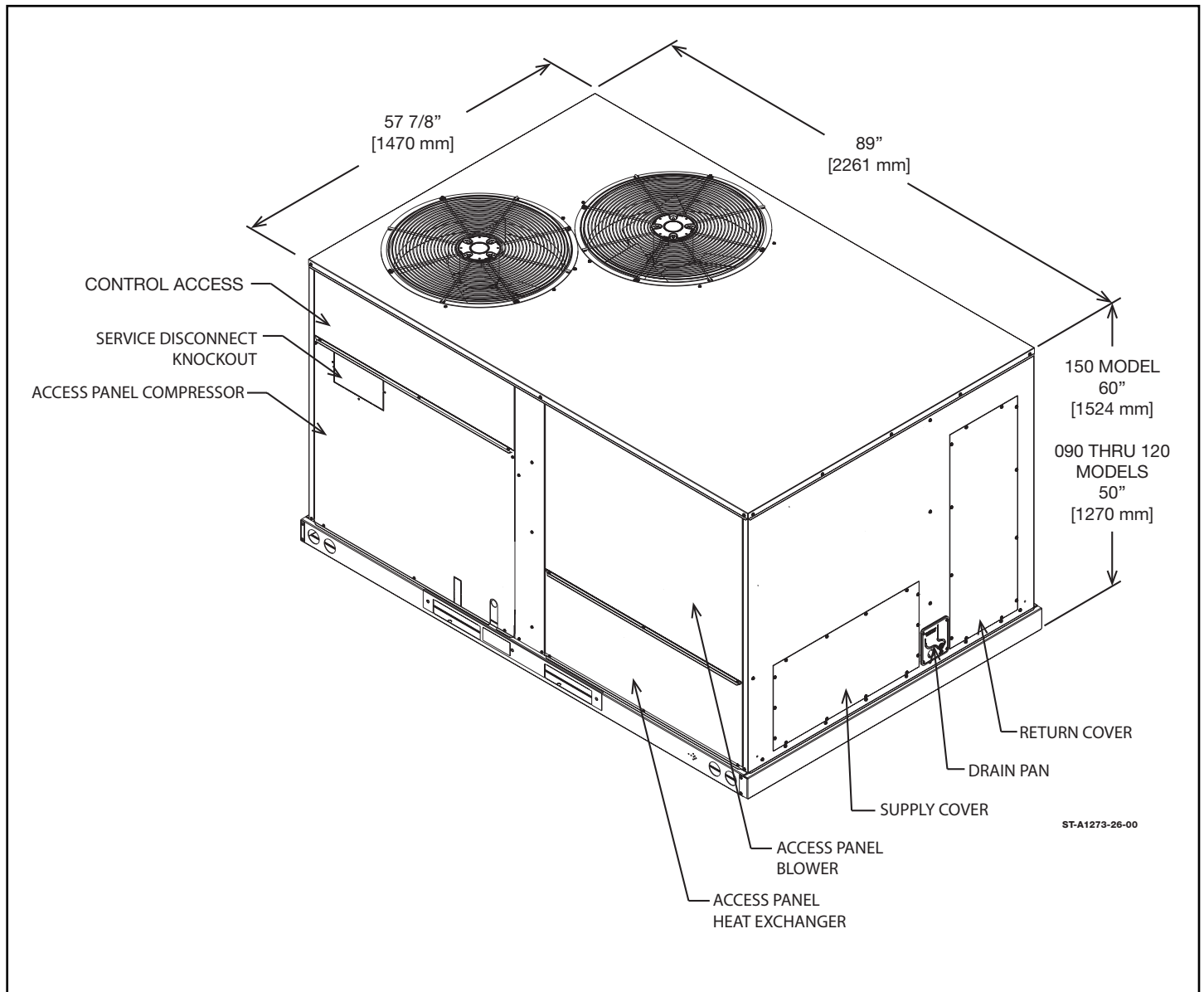
The unit includes a hermetically-sealed refrigerating system consisting of a scroll compressor, condenser coil, evaporator coil with TXV, a circulation air blower, a condenser fan, and all necessary internal electrical wiring.

The cooling system of these units is factory evacuated, charged, and performance tested. Refrigerant amount and type are indicated on rating plate.

B.3. Product Data Information

B.3.1. Dimensional Information

IMPORTANT: This unit must be mounted level in both directions to allow water to drain from the condenser section and condensate pan.

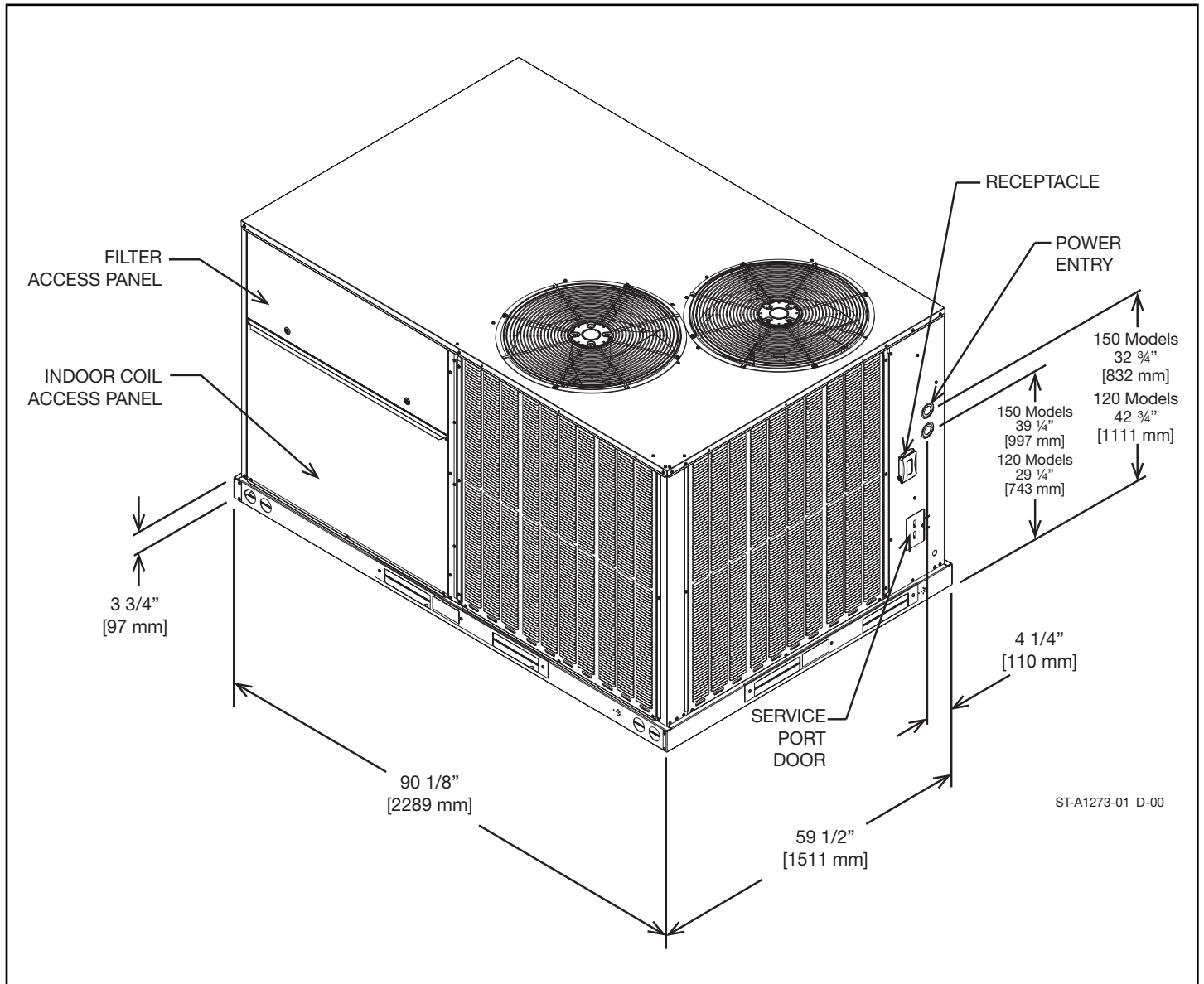


B. GENERAL SPECIFICATIONS

B.3. Product Data Information

B.3.1. Dimensional Information (Cont.)

IMPORTANT: This unit must be mounted level in both directions to allow water to drain from the condenser section and condensate pan.



B.3.2. Product Specifications

The packaged Air Conditioning rooftop unit is available with 10, 15, 20, 30 or 40 KW electric heat input (either factory installed or field installed). Cooling capacity is 7.5, 8.5, 10, and 12.5 nominal tons. Units are convertible from horizontal supply/return to bottom supply/return by relocation of supply/return cover panels. See section **C.3.5. Cover Panel Installation/ Conversion Procedure** for more details.

The units are weatherized for mounting outside of the building.

⚠ WARNING: Units are not design certified to be installed inside the structure. Doing so can cause inadequate unit performance as well as property damage or death.

B. GENERAL SPECIFICATIONS

B.3. Product Data Information

B.3.3. General Data

See **Appendix A** towards the end of this manual for General Data.

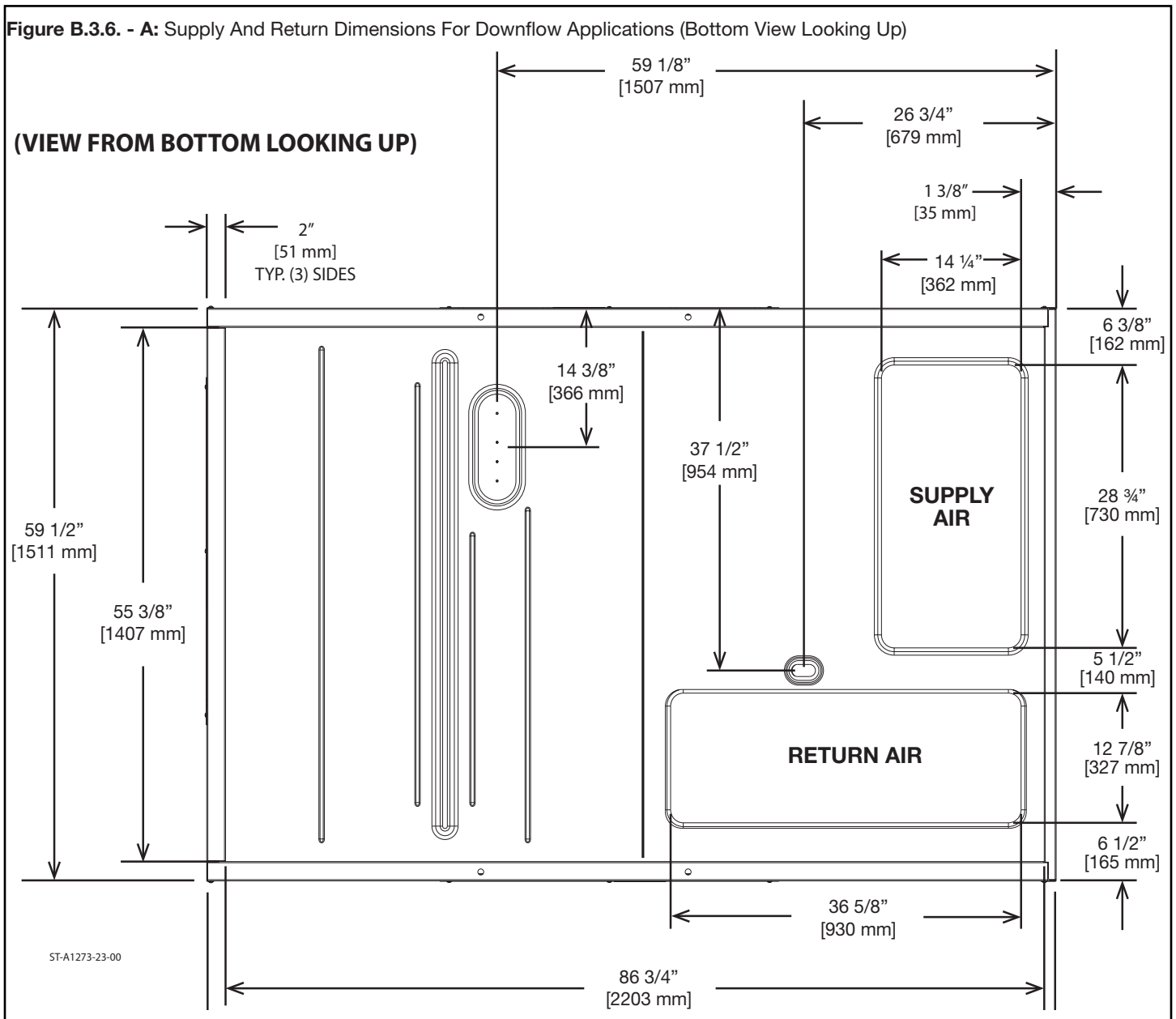
B.3.4. Electrical Data Reference

See **Appendix B** towards the end of this manual for Electrical Data.

B.3.5. Air Flow Performance Data

See **Appendix C** towards the end of this manual for Air Flow Performance Data.

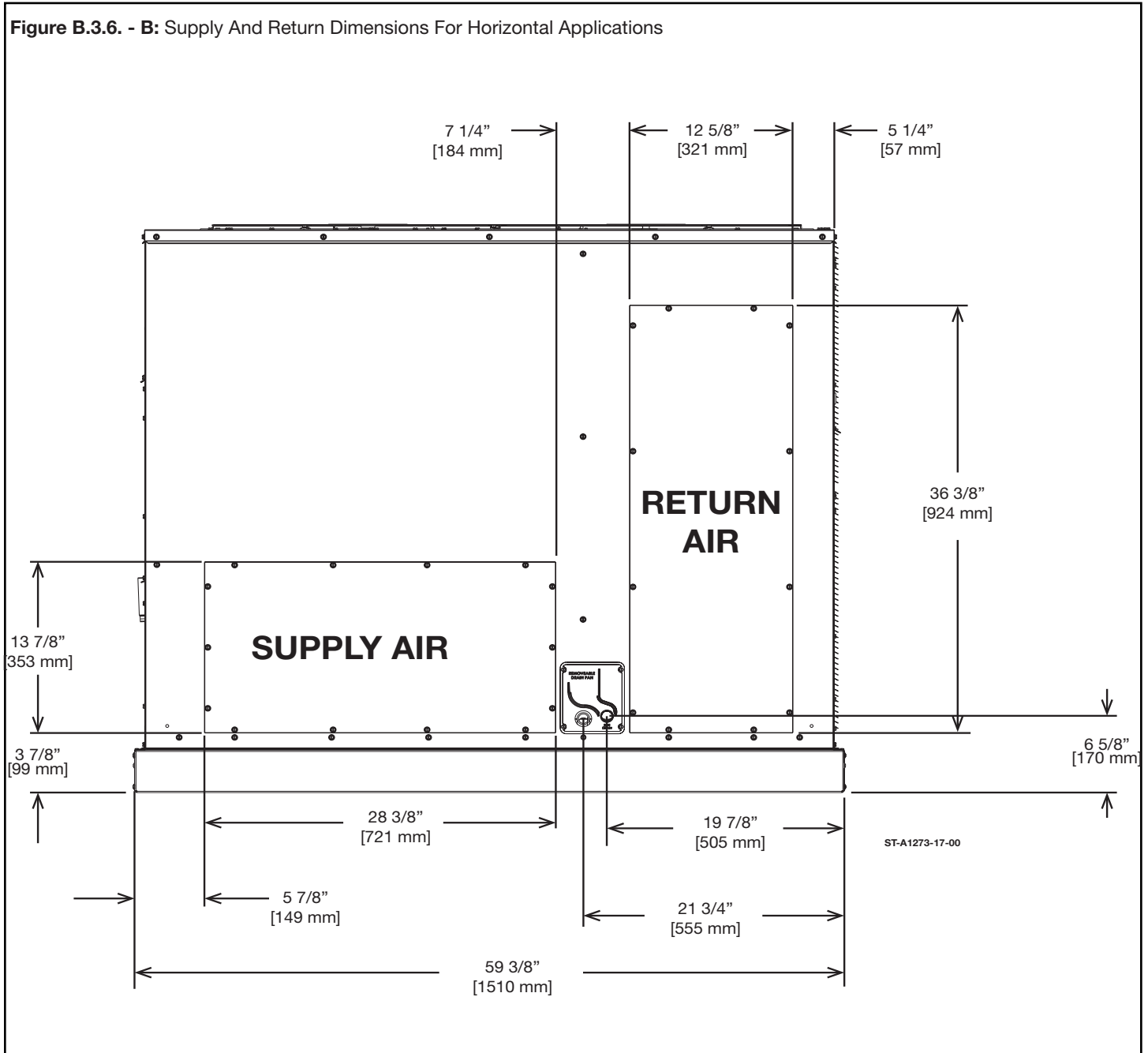
B.3.6. Supply and Return Duct Dimensions



B. GENERAL SPECIFICATIONS

B.3.6. Supply and Return Duct Dimensions

Figure B.3.6. - B: Supply And Return Dimensions For Horizontal Applications



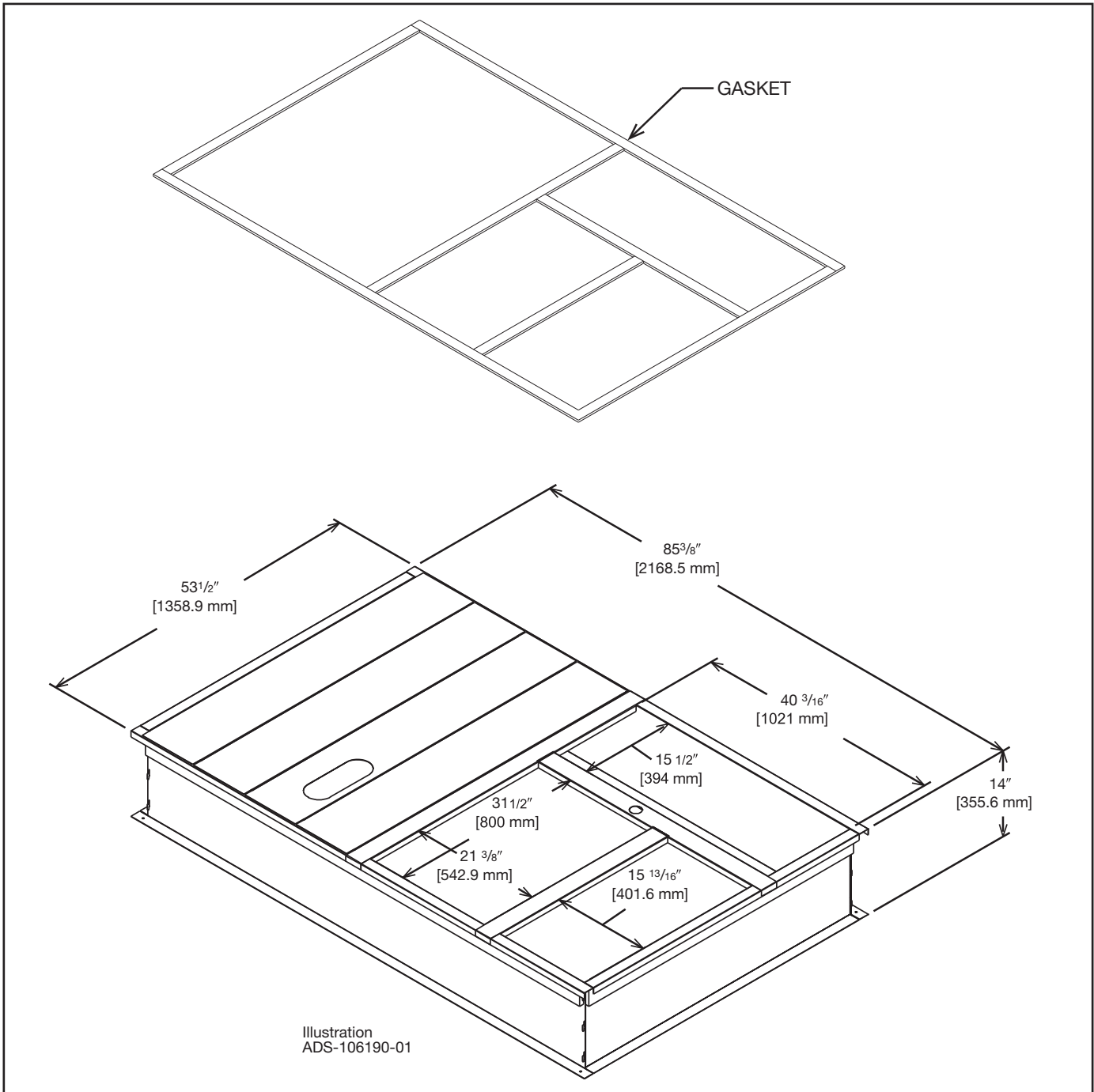
B. GENERAL SPECIFICATIONS

B.3. Product Data Information

B.3.7. Curb Dimensions

NOTE: See section C.3.3. Rooftop Installation for more information for installing the unit on a curb.

Figure B.3.7. – A: Roofcurb Complete Assembly



C. INSTALLATION OF THE UNIT

C.1. General

C.1.1. Installation

Install this unit in accordance with local and national standards. Any and all work must be done by authorized personnel.

C.1.2. Pre-Installation Checkpoints

Before attempting any installation, carefully consider the following points:

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

C.2. Tool and Refrigerant

C.2.1. Tools Required for Installing and 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
- Zero-loss fittings

Recovery Cylinders:

- 400 PSIG Pressure Rating

Dept. of Transportation

- 4BA400 or BW400

C.2.2. Specifications of R-410A

All units are factory charged with R-410a Refrigerant.

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.

C.2.3. Quick Reference Guide for R-410A

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.
- 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.

C.2.4. Evaporator Coil/TXV

The thermostatic expansion valve is specifically designed to operate with R- 410A. **The existing evaporator must be replaced with the factory specified TXV evaporator specifically designed for R-410A.**

⚠ WARNING: Disconnect all power to unit before starting maintenance. Failure to do so can cause electrical shock resulting in personal injury or death. Regular maintenance will reduce the buildup of contaminants and help to protect the unit's finish.

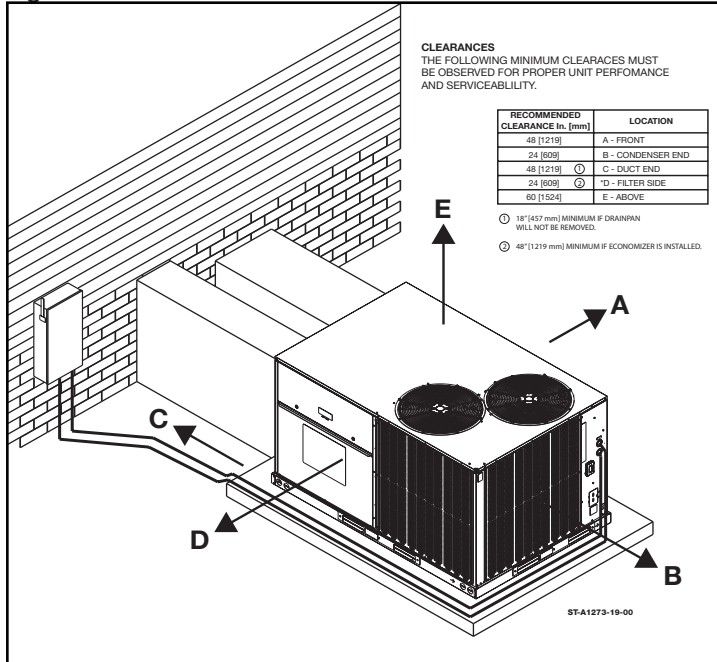
C. INSTALLATION OF THE UNIT

C.3. Choosing a Location

C.3.1. Unit Location: Allowable Clearances and Operational Issues

The unit location must comply with the allowable clearances listed in **Figure C.3.1. - A**. Failure to comply with the recommended clearances may result in operational issues such as decreased capacity, restricted condenser airflow, and condenser motor fatigue.

Figure C.3.1. - A: Allowable Clearances



C.3.2. Outside Installation

⚠ WARNING: These units are designed certified for outdoor installation only. Installation inside any part of a structure can result in inadequate unit performance as well as property damage.

1. Select a location where external water drainage cannot collect around unit.
2. Provide a level slab sufficiently high enough above grade to prevent surface water from entering the unit
3. Locate the unit to provide proper access for inspection and servicing as shown in **Figure C.3.1. - A**.
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. Where snowfall is anticipated, the height of the unit above the ground level must be considered. Mount unit high enough to be above anticipated maximum area snowfall.

7. Select an area which will keep the areas of the vent, air intake, and A/C condenser fins free and clear of obstructions such as weeds, shrubs, vines, snow, etc. Inform the user accordingly.

C.3.3. Rooftop Installation

1. Before locating the unit on the roof, make sure that the roof structure is adequate to support the weight involved. (See Electrical & Physical Tables in this manual.) **THIS IS VERY IMPORTANT AND IS THE INSTALLER'S RESPONSIBILITY.**

2. For rigging and roofcurb details, see section **C.4.3.**

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

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

C.3.4. Corrosive Environments

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, sulfur or chlorine from lawn watering systems, and various chemical contaminants from industries such as paper mills and petroleum refineries are especially corrosive.

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

1. Avoid having lawn sprinkler heads spray directly on the unit cabinet.
2. In coastal areas, install the unit on the side of the building away from the waterfront.
3. In some situations, fencing or shrubs may give some protection against contaminants. Be mindful of the allowable clearances.
4. 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.
5. Regular cleaning and waxing of the cabinet with an automobile polish will provide some protection.
6. 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 coating are offered in some areas. There 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.

C. INSTALLATION OF THE UNIT

C.3.5. Cover Panel Installation / Conversion procedure

Figure C.3.5. – A: Cover Gasket Detail

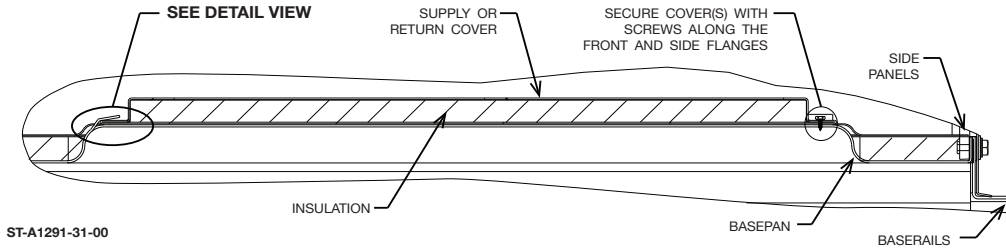
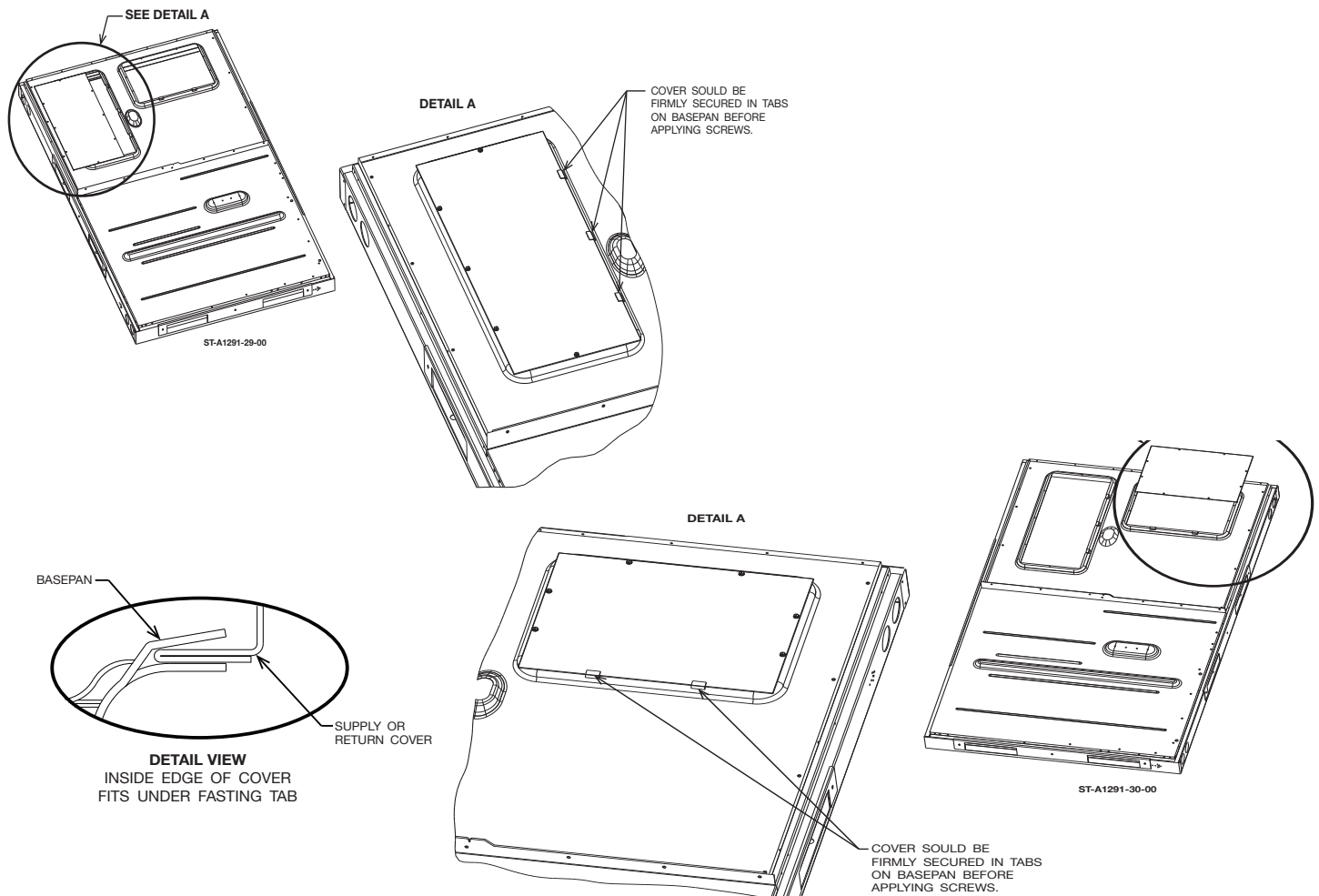


Figure C.3.5. – B: Downflow to Horizontal Conversion



From Downflow to Horizontal

1. Remove the covers from the supply and return openings on the unit. See Figure B.3.6. – A for reference.
2. Install the covers over the supply and return openings in the basepan, painted side up, inserting the leading flange under the bracket provided. Place the back flange to top of the front bracket provided. See Figure C.3.5. –B for reference.
3. Secure the return and supply cover to front bracket with screws.

C. INSTALLATION OF THE UNIT

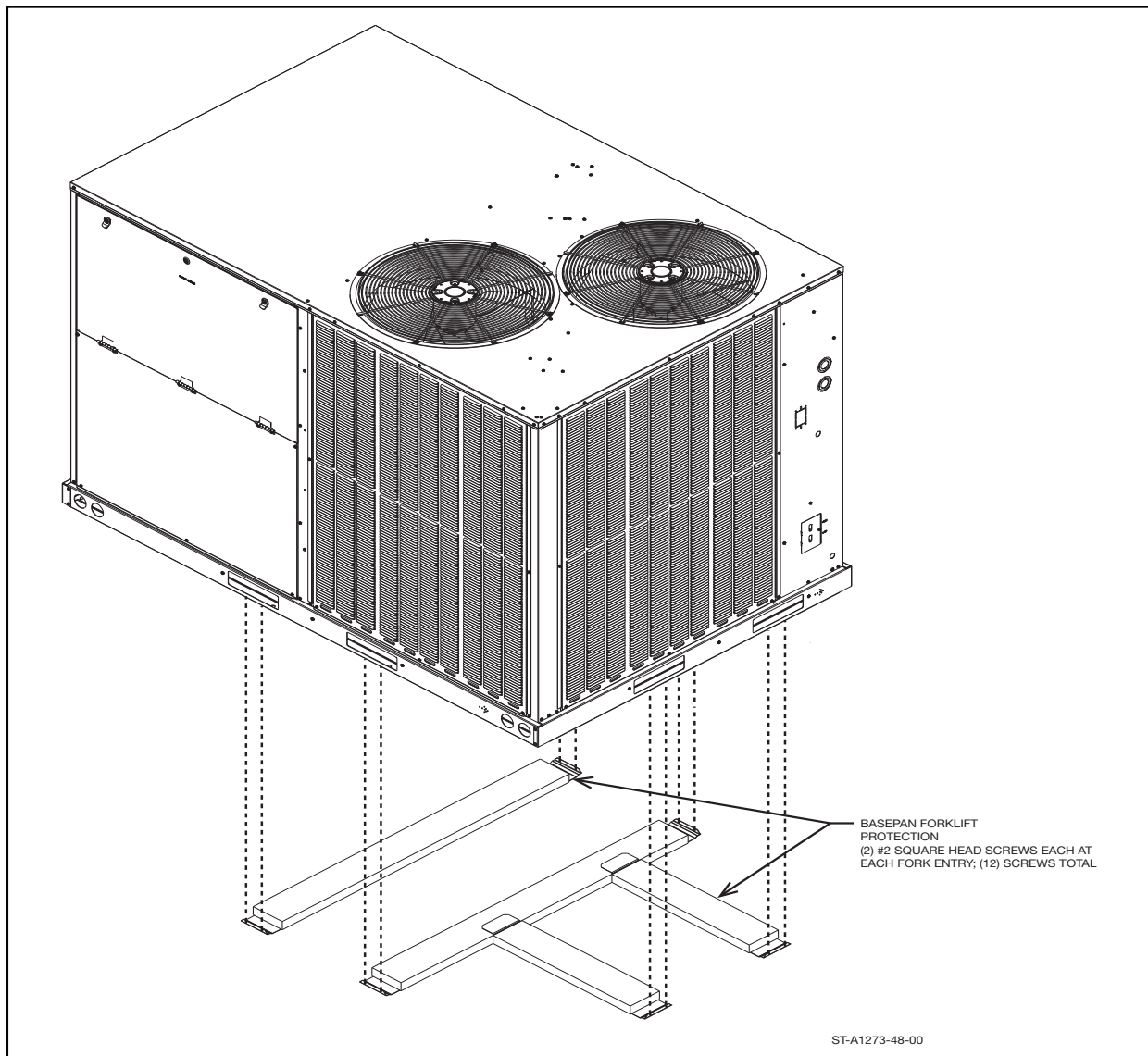
C.4. Setting the Unit

C.4.1. Removing Shipping material

There will be three types of shipping material that will need to be removed: The wood board basepan protection underneath, the wooden skid on the top, and the condenser coil protection (on non-louver panel units).

- **Wood Board Basepan Protection** – Remove the screws that attach the metal brackets for each of the forklift fork-entry points, and remove the brackets. This will release the protection boards from underneath, and it may be removed when the unit is lifted.
- **Shipping Screws** – Shipping screws are type #2 square head screws.

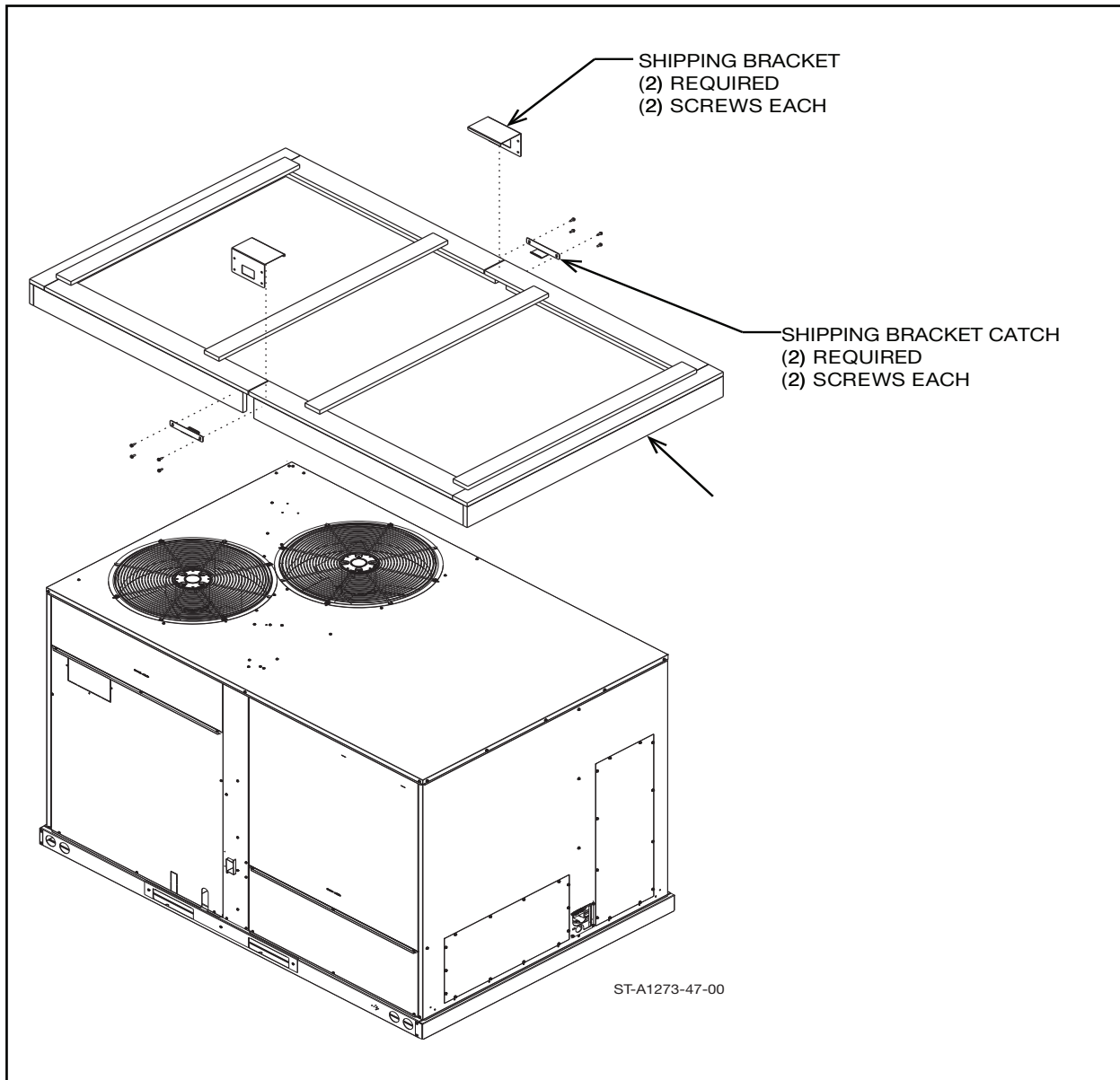
Figure C.4.1. – A: Basepan Protection Assembly



C. INSTALLATION OF THE UNIT

- **Wooden Skid** – Remove the screws from the metal brackets located in the middle along both long sides of the unit. This will detach the two sections of the wooden skid and allow them to be lifted off. If the unit is to be lifted by a crane, it is recommended to leave the top skid on until after the unit is on the roof to provide extra protection if spreader bars are not used.

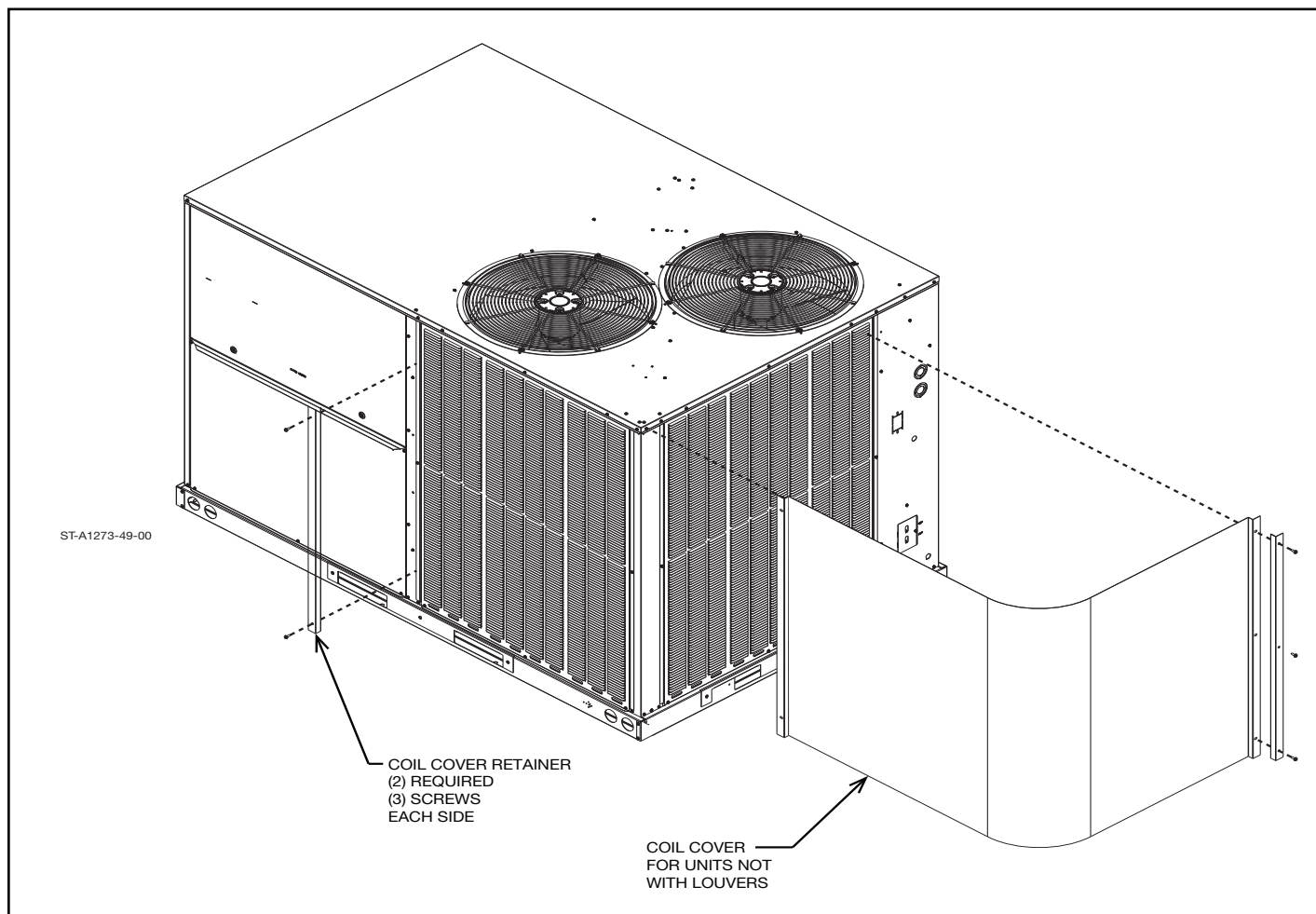
Figure C.4.1. – A: Wooden Skid Assembly



C. INSTALLATION OF THE UNIT

- **Condenser Coil Protection** – Remove the screws along the perimeter of the coil protector. This will allow the protector to be removed. If the unit has louver panels, it will not have the condenser coil protection.

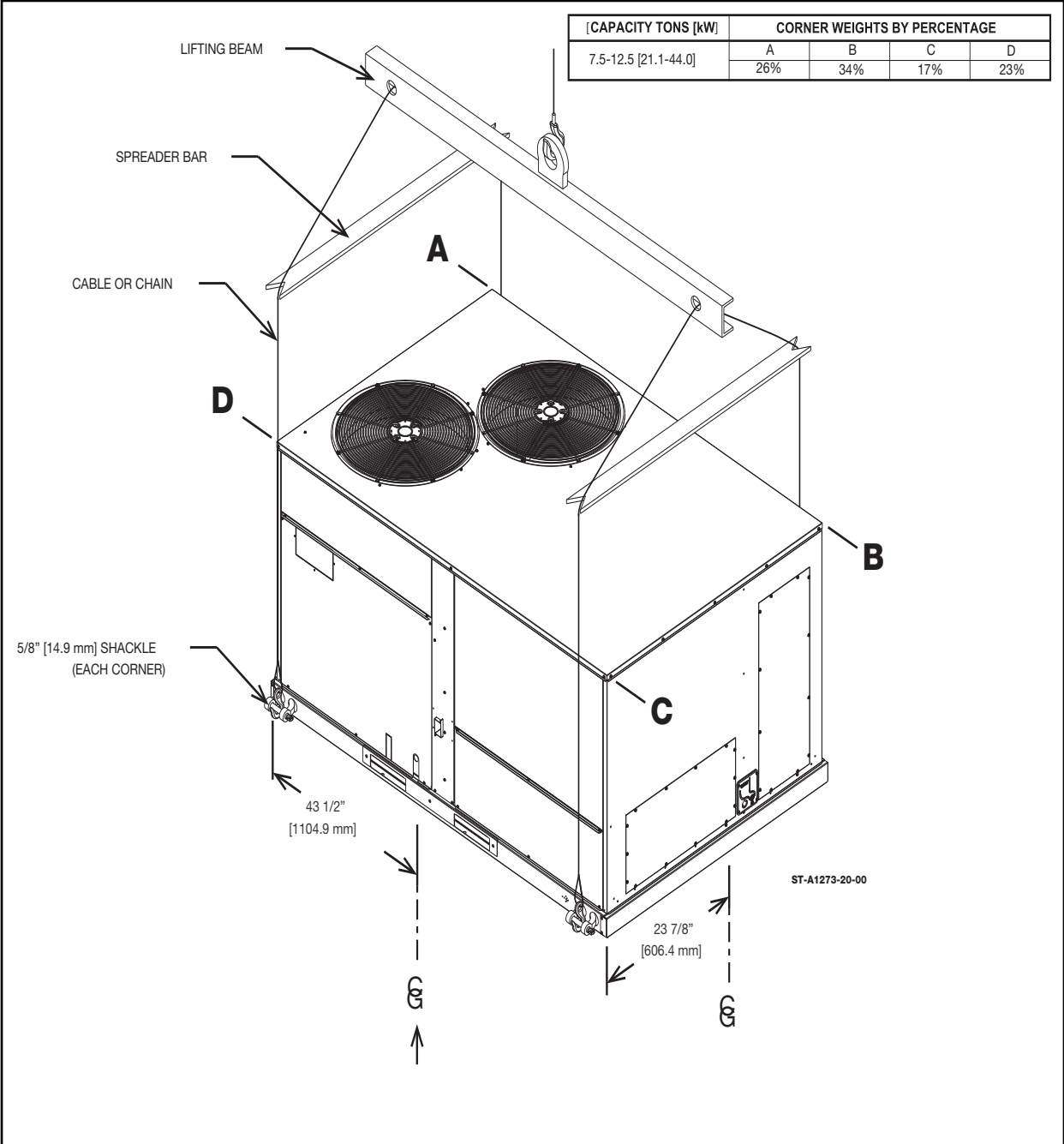
Figure C.4.1. – C: Condenser Coil Protection Assembly



C. INSTALLATION OF THE UNIT

C.4.2. Lifting the Unit

Figure C.4.2. – A : Lifting Detail



C. INSTALLATION OF THE UNIT

C.4.3. On a Roof Curb

Refer to **Figure C.3.1. - A** in section **C.3.1. "Unit Location: Allowable Clearances and Operational Issues"** before installing the unit on a roof curb.

Only use manufacturer-approved roofcurb products for the unit.

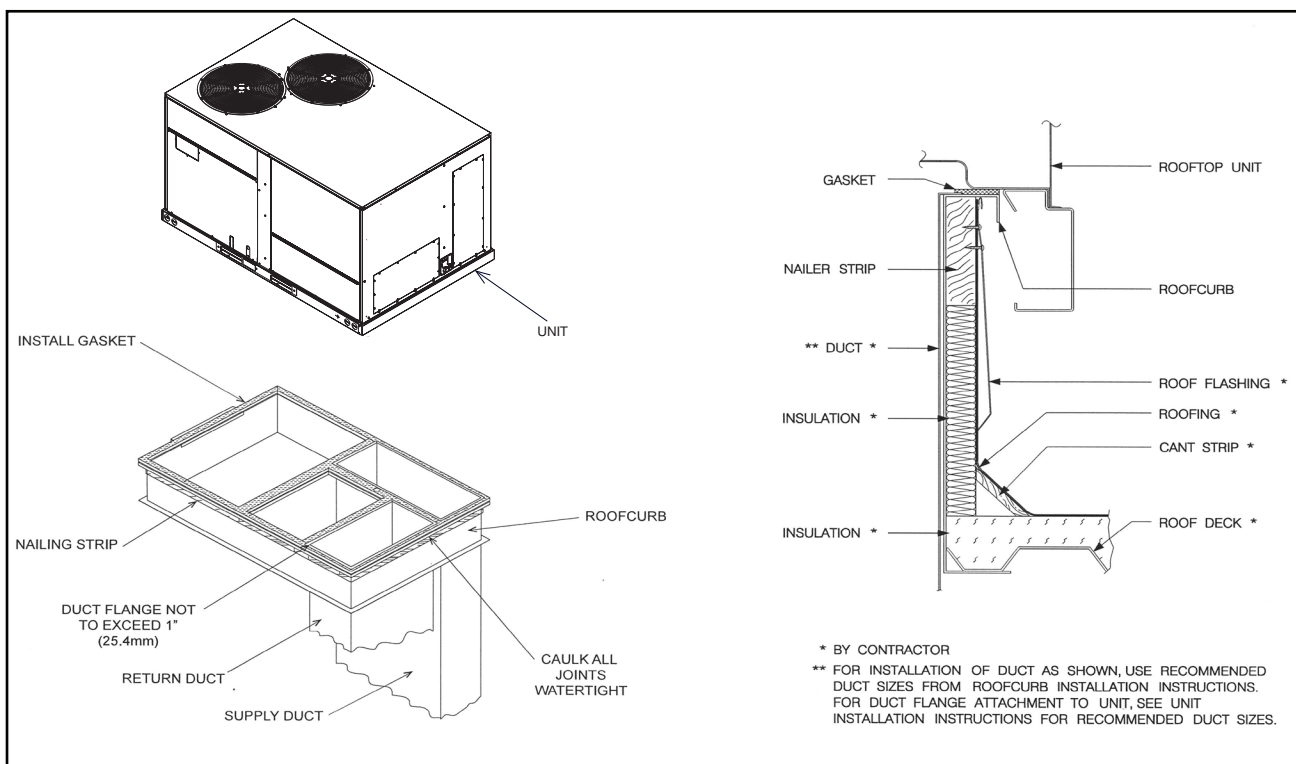
C.4.3.1. Installing the Roof Curb

Refer to the separate Installation Instructions for installing a roof curb.

- 14" and 21" Roofcurb
- Roofcurb Adapter

C.4.3.2. Setting the Unit

Figure C.4.3.2. - A: Setting the unit on Roofcurb Assembly



C.4.3.3. High Wind and Seismic Tie-Down Methods

The units must be secured in compliance with ASCE 7-10 and the Florida Building Code 5th Edition. Please refer to **Appendix J: Unit Tie-Down Methods**.

C.4.4. On a slab

C.4.4.1. Setting the Unit

Set the unit on a stable concrete pad with adequate clearances around the sides of the unit, and make sure the unit is level before securing.

Before setting/securing the unit, use this opportunity to convert the unit from a downflow configuration to a sideflow configuration if necessary. Refer to section **C.3.5. Cover Panel Installation/Conversion Procedure**.

C.4.4.2. High Wind and Seismic Tie-Down Methods

Slab-installed units must also be secured in compliance with ASCE 7-10 and the Florida Building Code 5th Edition. Please refer to **Appendix J: Unit Tie-Down Methods**.

C. INSTALLATION OF THE UNIT

C.5. Installing Condensate Drain

Figure C.5.1 – A: Condensate Drain Tap

IMPORTANT: Install a condensate trap to ensure proper condensate drainage. See **Figure C.5.1 - A** for reference.

The condensate drain pan has a threaded female 3/4 inch NPT (11.5 TPI) connection. Drain line must be no smaller than drain pan outlet and adequately sized to accommodate the condensate discharge from the unit. Drain line must be routed to an acceptable drain or outdoors in accordance with local codes. Consult local codes or ordinances for specific requirements of condensate drain piping and disposal.

DO NOT connect condensate drain line to a closed sewer pipe.

C.5.1. Determine Drain Trap Height Requirement

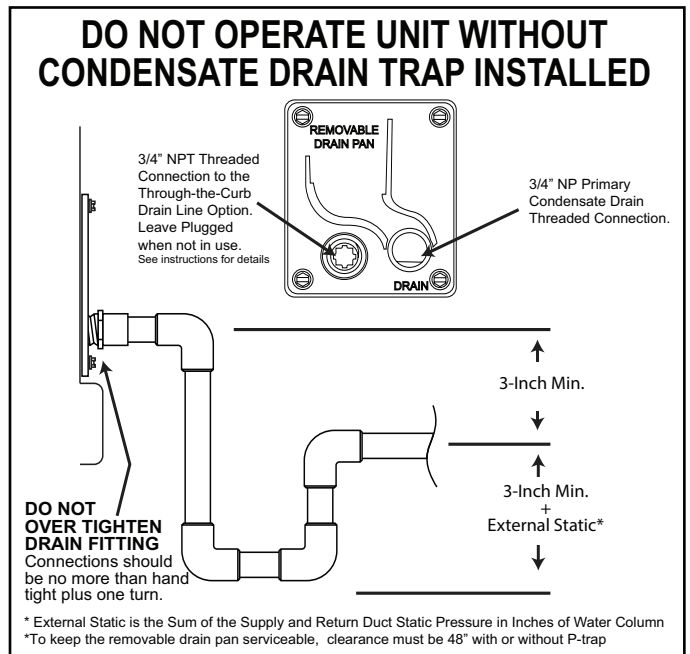
The drain line should be a minimum of 3 inches deep, plus 1 inch for every inch of external static pressure from the blower and duct system. For Example, if the external duct static is 1 inch of water column, the drain trap from the bottom of the trap to the bottom of the drain outlet should be 4 inches, the drain outlet should be 3 inches below the drain connection on the condensate pan. Ensure the outlet of the trap is routed to a suitable drain location as required by local code. See **Figure C.5.1 - A** for reference.

C.5.2. Keeping the condensate drain pan serviceable

To use the removable drain pan feature of this unit, some of the condensate line joints should be assembled for easy removal and cleaning. Drain line **MUST NOT** block service access panels.

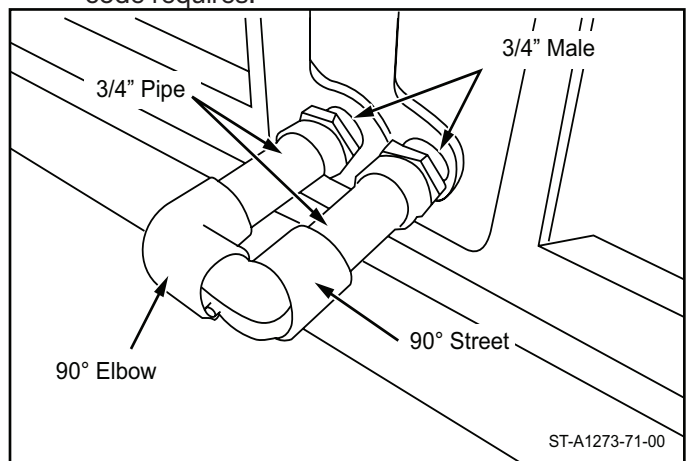
C.5.3. Connecting the Drain trap

- 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 be routed to an acceptable drain or outdoors in accordance with local codes.
- Drain line should slope away from unit a minimum of 1/8" per foot to ensure proper drainage.



C.5.4. Connecting the Drain to the through the curb option

The through the curb drain option is available for installations in freezing conditions or that do not want water draining on the roof. Use adapters and elbows to turn out of the drain opening on the right and into the curb drain opening on the left. Under the unit connect a 3/4" male threaded fitting, use thread sealant, into the opening between the supply and return duct openings under the unit. Install a properly sized drain trap in the conditioned space of the building and route to a suitable drain location as code requires.



C. INSTALLATION OF THE UNIT

C.5.5. Freezing Condition considerations

- Drain line may need insulation or freeze protection in certain applications.
- Drain line should slope away from unit a minimum of 1/8" per foot to ensure proper drainage.

C.6. Final Installation Inspection

C.6.1. Remove Shipping Material

Before the unit is secured to the slab/roofcurb, check that all shipping material has been removed. See section **C.4.1.** for how to remove shipping material.

NOTE: Failure to remove the condenser coil protector on non-louver panel units will negatively impact performance and be harmful to system components. Failure to remove the cardboard basepan protector will block all indoor airflow for downflow configurations.

Open all compartments to ensure there are no tools or other misc parts remaining in the unit from setup. This is most important on the blower section to avoid damage to the blower assembly.

C.6.2. Checking Level and Slope

This unit must be mounted level in both directions to allow water to properly drain from the condenser section and condensate pan.

C.6.3. Condensation and Sweating

In certain regions or climates, portions of the exterior of the unit may condensate or sweat during cooling operation. This is normal and expected.

D. DUCT AND VENTING

D.1. Air Flow and Static Pressure

See **Appendix C** towards the end of this manual for Air Flow Performance Data. For Air Flow adjustment and set up, see section **J.3.** "**Checking and Adjusting Air Flow**".

D.2. Duct Requirements and Best Practices

The installing contractor should fabricate ductwork in accordance with local codes.

Use industry manuals as a guide when sizing and designing the duct system.

Contact Air Conditioning Contractors of America, www.acca.org

⚠ WARNING: DO NOT, under any circumstances, connect return ductwork to any other heat producing device such as fireplace insert, stove, etc. Unauthorized use of such devices may result in fire, carbon monoxide poisoning, explosion, personal injury, property damage or death.

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

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

Provide balancing dampers for each branch duct in the supply system.

Properly support ductwork from the structure.

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

D. DUCT AND VENTING

D.2.1. Supply Duct Systems

A properly designed supply duct system, meeting all local codes and best practices, must be installed to ensure proper air flow and minimize the static pressure on the blower.

The supply duct opening for roof curb installations is 28 3/4" x 14 1/4", the supply duct opening for horizontal ducted installations is 28 3/8" x 13 7/8". See **Figure B.3.6. – A and – B** for reference.

The installer is responsible for verifying all dimensions before unit installation.

D.2.2. Return Duct Systems

A properly designed return duct system, meeting all local codes and best practices, must be installed to ensure proper air flow and minimize the static pressure on the blower.

The return duct opening for roof curb installations is 36 5/8" x 12 7/8", the return duct opening for horizontal ducted installations is 36 3/8" x 12 5/8". See **Figure B.3.6. – A and – B** for reference.

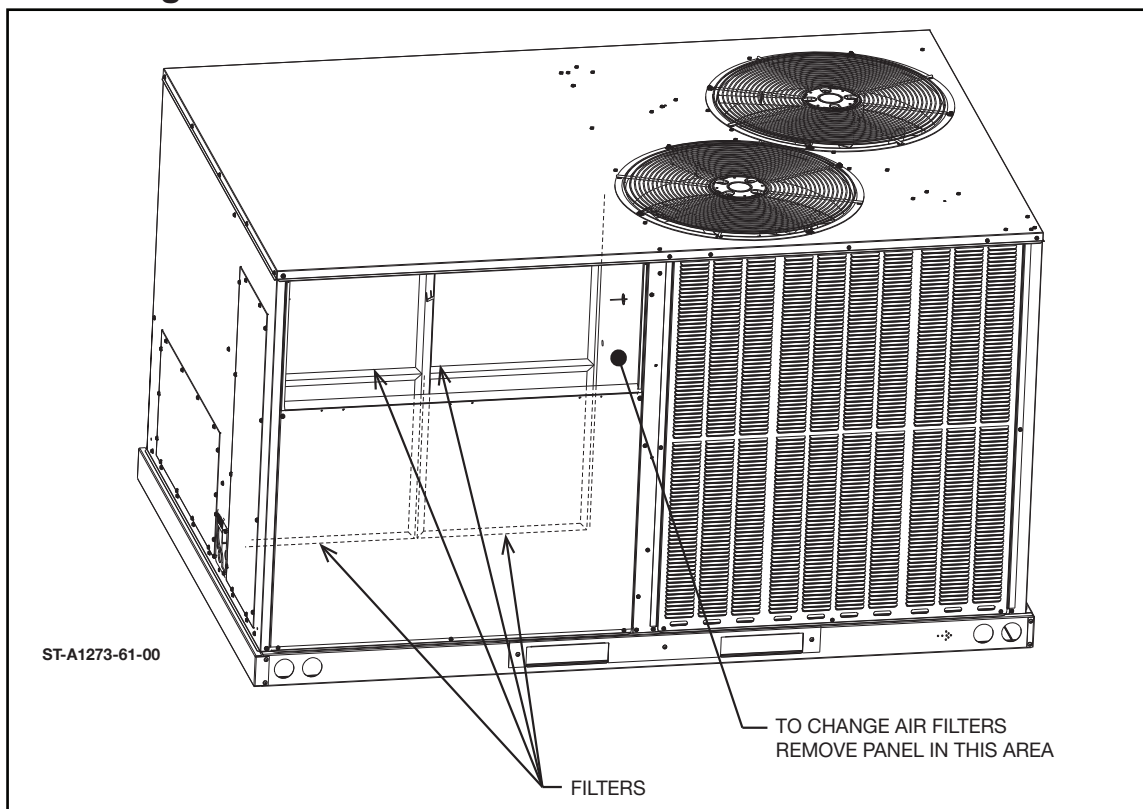
The installer is responsible for verifying all dimensions before unit installation.

D.2.3. Isolation for Noise abatement

Noise from operational vibration can occur with this equipment, the use of flexible duct adapters and vibration damping curb adapters maybe required depending upon the building type and use. Consult with a local mechanical engineer on the duct and building design to determine if any noise abatement solutions need to be considered before installation.

D.3. Filters

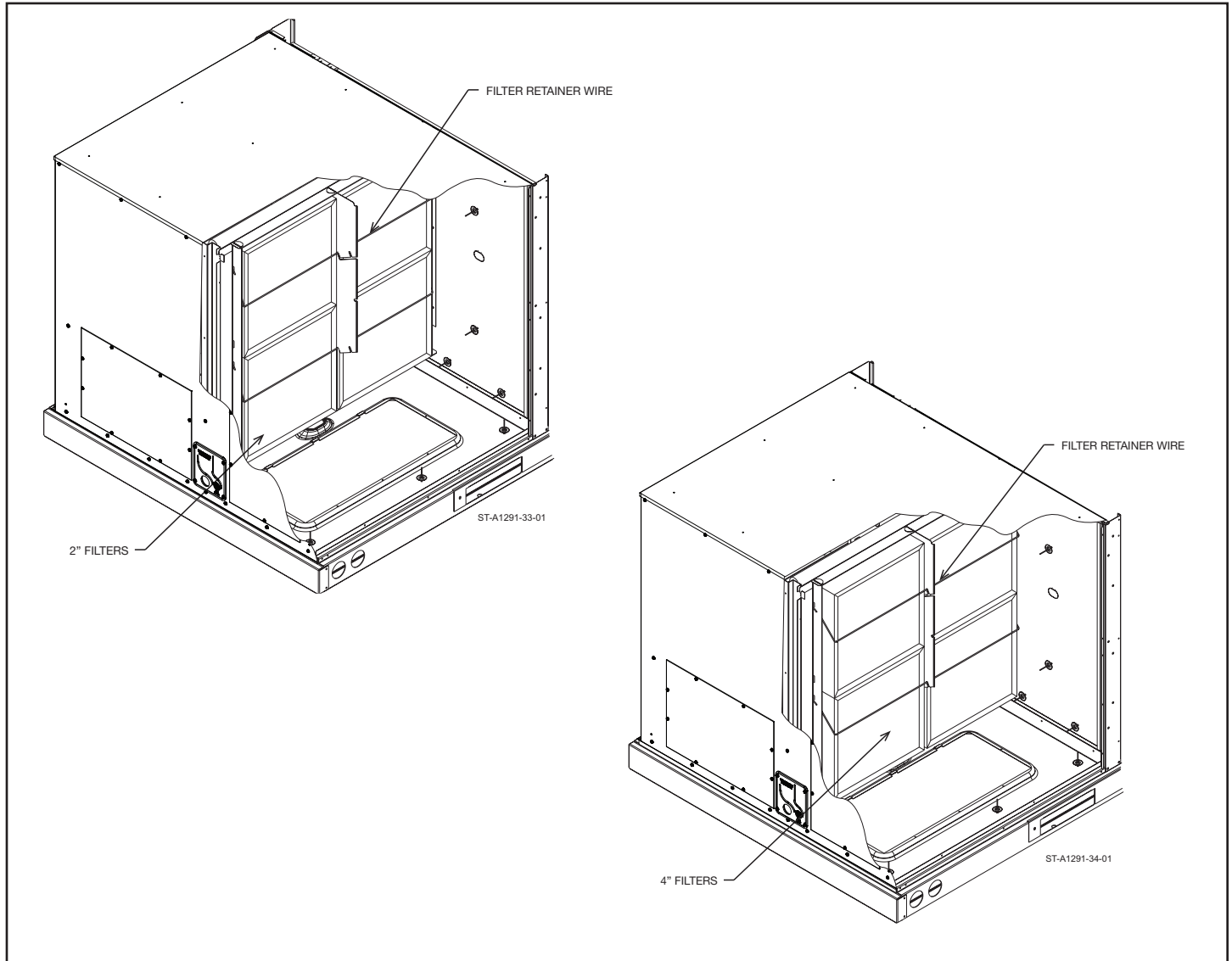
D.3.1. Installing Filters



D. DUCT AND VENTING

D.3. Filters

D.3.1. Installing Filters (Cont.)



This product will accept both 2" and 4" filters. A new unit ships with four 2" x 20" x 20" filters. For units with an economizer, only use 2" filters due to fitment clearances. To replace filters, follow these steps:

1. Remove "Filter Access" panel.
2. Pull downwards on retainer wire and rotate upwards to unlock filters.
3. Secure retainer wire in notch.

4. Remove and discard current filters.
5. Install new filters with airflow arrow pointing towards evaporator coil.
6. Rotate retainer wire downward to original position and secure in notch.
7. Install "Filter Access" panel.

D. DUCT AND VENTING

D.4. Economizers and Fresh Air Dampers

D.4.1. Economizer Information

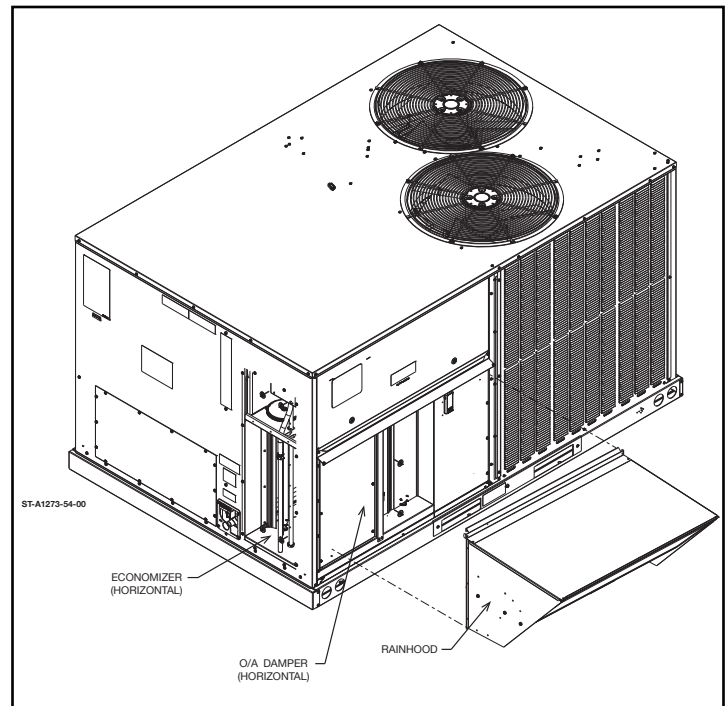
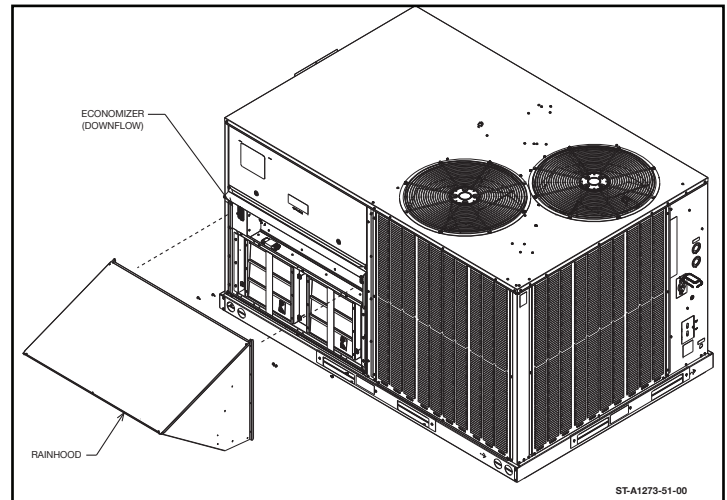
ECONOMIZERS - Mechanical devices used to make the Heating Ventilation and Air Conditioning (HVAC) unit more efficient by regulating the return air and outside air. Economizers for this product come in several configurations.

The Downflow Economizer is designed specifically for units setup in a downflow configuration. The downflow economizer fits inside the package unit and sits over the return-air opening along the bottom of the unit. All economizers are equipped with horizontal gear driven blades and a gravity relief damper (Barometric Relief).

The Horizontal Economizer is designed specifically for units setup in a horizontal flow configuration. The horizontal economizer utilizes independently actuated return-air and fresh air dampers to enable the most efficient handling of air achievable with this platform. The horizontal economizer also includes an externally-mounted (to the duct work) gravity relief damper.

All units with economizers come shipped from the factory with a parts bag and a separate document for Economizer Installation & Operation instructions. Refer to that document for information on how to install the economizer, connect the controls, and adjust the airflow. Accessory economizers purchased separately will also come with the parts bag and instructional document.

Figure D.4.1. – A: Downflow Economizer with Hood



Note: Louver protections are optional

D. DUCT AND VENTING

D.4.2. Fresh Air Dampers

MANUAL DAMPER HOODS – Manual damper hoods are often installed as a low cost substitute for an economizer.

The idea is to manually set the blade located inside the hood to restrict the opening by introducing Static Pressure, thereby balancing the outside air with the return air entering the RTU.

The drawback to a manual damper is that it is open 24 hours a day, 365 days a year. Therefore they introduce outside air during occupied and unoccupied modes increasing the load on the rooftop unit.

MOTORIZED DAMPER HOODS – A motorized damper is economical, and provides more comfort than a manually adjusted hood damper.

The motorized damper is coupled to an actuator, and designed to open when the RTU fan is running,

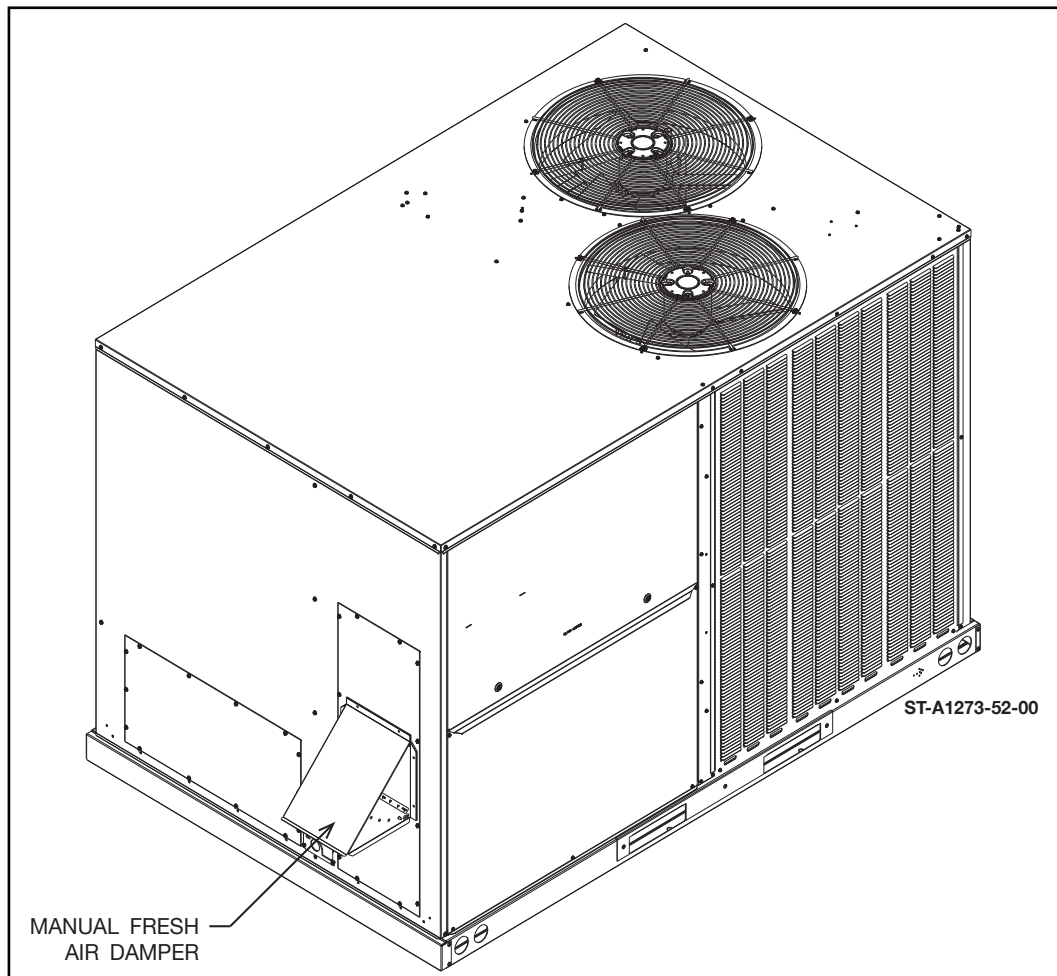
and close when the fan is off. The advantage of the motorized damper is that the outside air is no longer a factor once the RTU fan is cycled off.

By connecting a Timer, CO2 Sensor or Smoke Detector in series between the RTU fan (“G” on the Thermostat) and actuator, the damper can be controlled during “Unoccupied” hours, or allow the damper to only introduce outside air during “On-Demand Occupancy.”

Fresh Air Dampers come shipped with a separate document for Installation & Operation instructions. Refer to that document for information on how to install and adjust the dampers.

For reference, the Installation Instructions for Fresh Air Dampers may be found in the parts bag for the factory installed dampers, in the box for field installed dampers, or on the manufacturer’s website for the product.

Figure D.4.2. – A: Fresh Air Damper

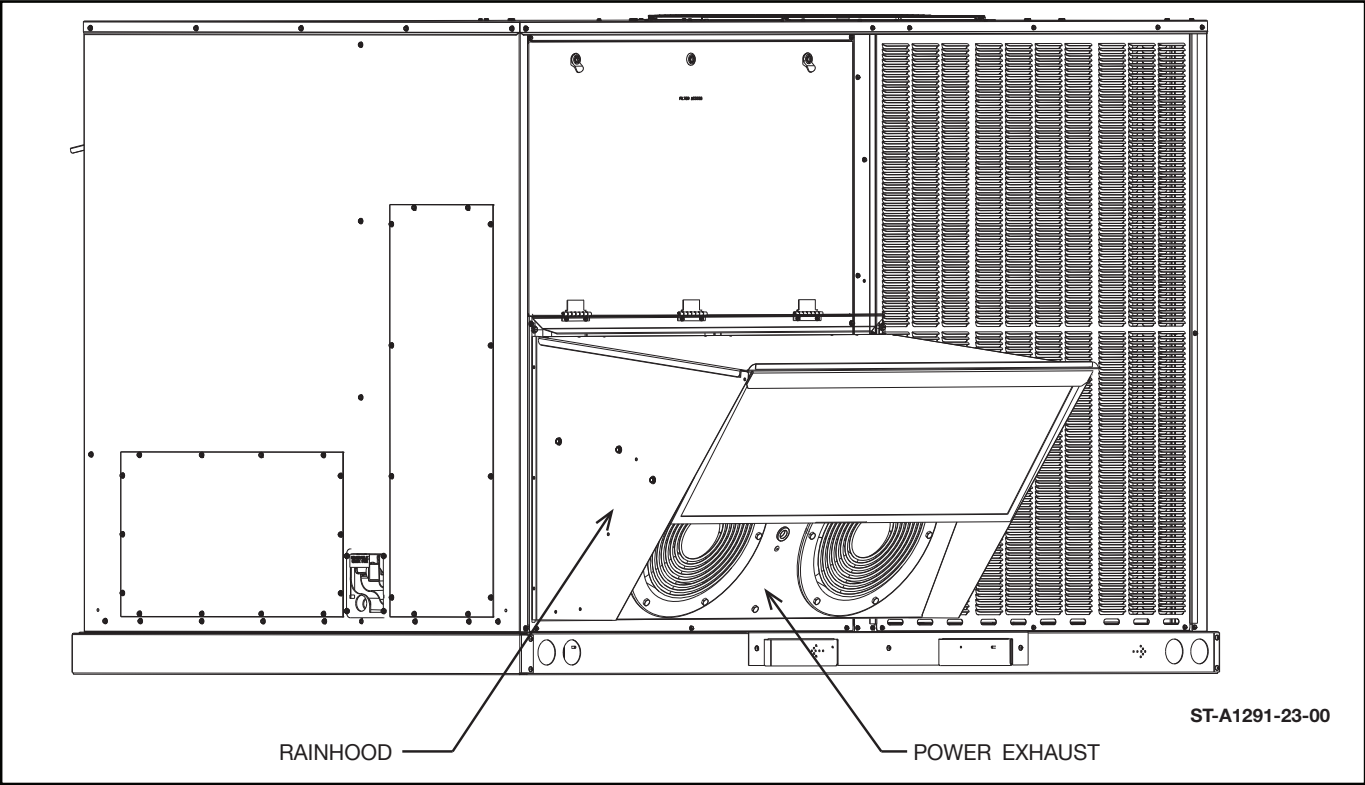


D. DUCT AND VENTING

D.4.3. Powered Exhaust

POWER EXHAUST - This accessory is a motorized fan designed to remove air from the conditioned space efficiently. While this is useful for removing a high positive pressurization, caution must be taken in the setup of the system to avoid creating a negative pressure within the conditioned space. If negative pressure occurs, leaky windows, doors, and electrical fixtures will allow the outside air to creep in causing drafts or hot spots within a room.

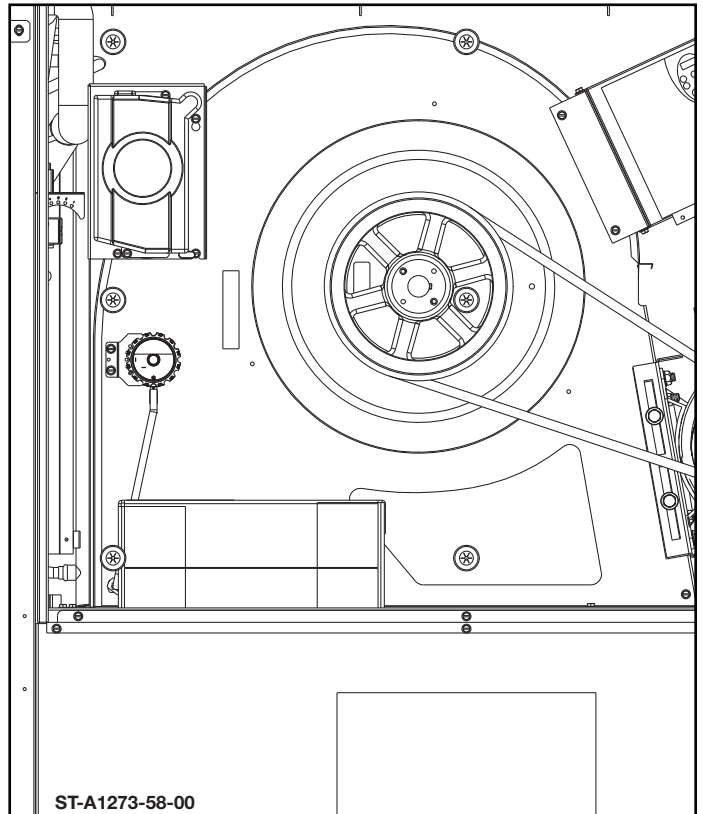
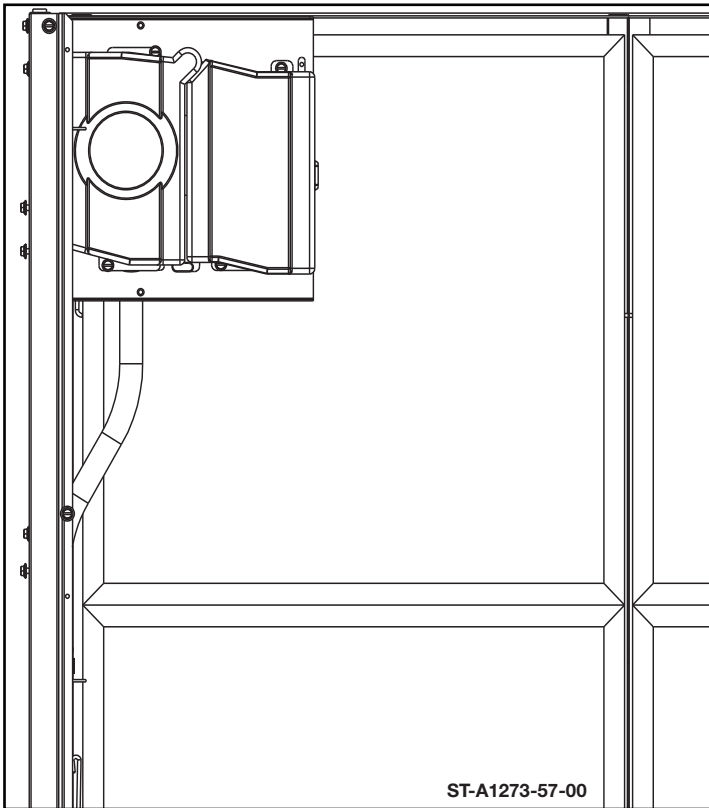
Figure D.4.3. – A: Powered Exhaust



D. DUCT AND VENTING

D.5. Smoke Detectors

Figure D.5. – A: Smoke Detector Assembly



D.5.1. Supply Duct Smoke Detectors

D.5.1.1. Field Installed – Installation, Wiring and setup

Field install Supply and Return Duct Smoke Detectors come shipped with a separate document for Installation & Operation instructions. Refer to the separate Installation Instructions for installing, wiring, and setup of a supply and return smoke detector.

D.5.1.2. Factory Installed – Inspection and setup

Inspect the smoke detector assembly for any damage during shipping. Use **Figure D.5. – A** for reference. Confirm that all wiring connections are still secure. Refer to the separate Installation Instructions for smoke detector for wiring diagrams and additional assembly instructions.

D.5.1.3. Field Installed 3rd Party Smoke Detectors or Fire Control Panels

See **section F.1.2.** for the proper connection points for a remote smoke detector. **DO NOT** break 24vac to the Thermostat: shutdown will not occur. **DO NOT** break 24vac from the transformer: it can overload the smoke detector controls.

E.1. Electrical Safety Information

E.1.1. Information on Power Supply

⚠ WARNING: Turn off the main electrical power at the branch circuit disconnect closest to the unit before attempting any wiring. Failure to do so can cause electrical shock resulting in personal injury or death.

1. All wiring should be made in accordance with the **National Electrical Code**. Consult the local power company to determine the availability of sufficient power to operate the unit. Check the voltage at power supply to make sure it corresponds to the unit's RATED VOLTAGE REQUIREMENT. Install a branch circuit disconnect near the rooftop, in accordance with the N.E.C., C.E.C. or local codes.

2. It is important that proper electrical power is available at the unit. Voltage should not vary more than 10% from that stamped on the unit nameplate. On **three phase units**, phases must be balanced within 3%.

3. For branch circuit wiring (main power supply to unit disconnect), the minimum wire size for the length of run can be determined from the **N.E.C.** using the circuit ampacity found on the unit rating plate. Use the smallest wire size allowable in **Figure F. – A** from the unit disconnect to unit.

4. For through the base wiring entry reference **Figure F.2. – A: Power and Control Routing**. All fittings and conduit are field supplied for this application. Reference the chart with **Figure F.2. – B: Hole Sizing for Conduit** for proper hole and conduit size.

NOTES:

1. For branch circuit wiring (main power supply to unit disconnect), the minimum wire size for the length of run can be determined from **Appendix B “Electrical Data”** or the unit rating plate for circuit ampacity and the National Electrical Code to determine proper wire sizing. From the unit disconnect to unit, the smallest wire size allowable in **Figure F. – A** for the circuit ampacity may be used, as the disconnect must be in sight of the unit.

2. Wire size based on 75°C rated wire insulation for 1% voltage drop.

3. For more than 3 conductors in a raceway or cable, see the National Electrical Code (or C.E.C. in Canada) for derating the ampacity of each conductor.

IMPORTANT: This unit is approved for use with copper conductors only connected to unit contactor.

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

E. ELECTRICAL

Special instructions apply for power wiring with aluminum conductors:

Warranty is void if connections are not made per instructions.

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

Refer to the National Electric Code (NEC) for sizing wire to elec heat / single point. See Appendix E - Heater Kit Characteristics for additional info.

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

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

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

E.1.2. 208/240 Volt Operation and Required Adjustments

E.1.2.1. Low Voltage Transformer Tap Adjustment for 208Volt

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.

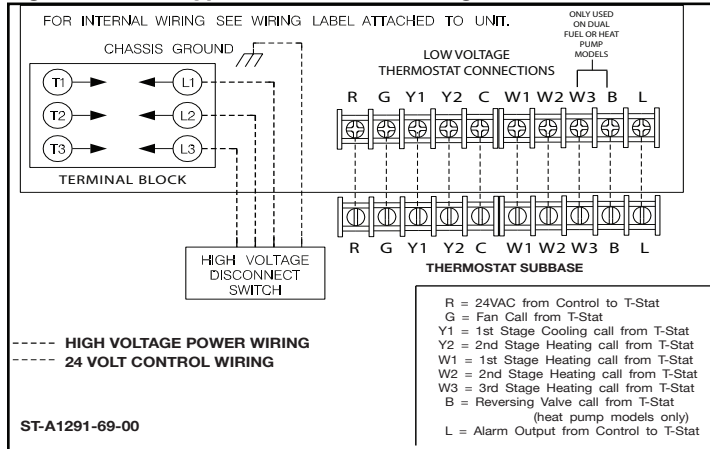
E. ELECTRICAL

E.2. Electrical Data

See [Appendix B](#) towards the end of this manual for Electric Data.

E.3. Electrical Connections

Figure E.3. – A: Typical Thermostat Wiring



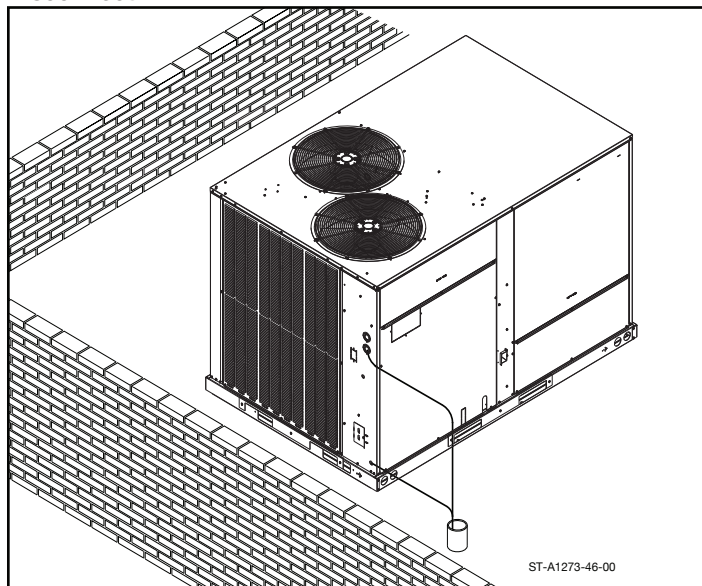
Use to [Appendix B](#) “Electrical Data” and National Electrical Code for circuit ampacity to determine proper wire sizing.

Refer to [Figure F.2. – A: Power and Control Routing](#) for location of wiring entrances, and [Figure F.2. – B: Hole Sizing for Conduit](#).

E.3.1. Field Supplied Disconnect

The field supplied service disconnect will come with a separate Installation Instruction document. Please refer to that document for more information.

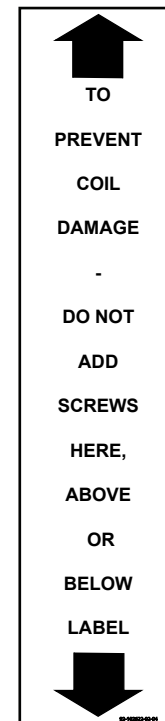
Figure E.3.1.1. – A: Standard Location for Mounting Disconnect



E.3.1.1. Mounting Disconnect on Cabinet

Attach the disconnect to the top of the left hand side of the control box, above the knockouts and refrigerant test ports. Do not use screws above or below the label specifying “TO PREVENT COIL DAMAGE – DO NOT ADD SCREWS HERE, ABOVE, OR BELOW LABEL” as hidden coil and tubing could be damaged. An example of this label is shown below.

Figure E.3.1.1. – B: Label Showing Where to NOT Use Screws



E.3.1.2. Routing Wires into Cabinet

See [Figure F.2. – A: Electrical and Piping Routing](#) for conduit entry points and routing locations for wiring into the control box.

See [Figure E.3. – A: Typical Thermostat Wiring](#) for wiring to the contactor and thermostat in the control box.

E. ELECTRICAL

E.3.1.3. Routing Wires through Curb (Option)

Use liquid tight connectors and tubing to connect the electrical and low voltage control cables between the base of the cabinet at the raised section (See **Figure B.3.6. - A: Supply And Return Dimensions For Downflow Applications** for location of raised section) and bottom of the control panel. Conduit and fittings must meet all applicable codes.

Use Silicon and gaskets to seal the connection at the base pan

E.3.1.4. Connecting to Contactor terminal blocks

The recommended torque for securing wiring to the contactor is **40 in-lb**.

See **Figure E.3. - A: Typical Thermostat Wiring** for wiring to the contactor.

E.3.2. Factory Installed Disconnect

Refer to **Appendix G** for the unit wiring diagrams, and to **Figure F.2. - A** for locations to route wires into the cabinet or through the curb/basepan of the unit.

E.3.2.1. Routing Wires into Cabinet

Refer to section **E.3.1.1.** and/or section **F.2.** for routing wires into the cabinet with a factory installed disconnect.

E.3.2.2. Routing wires through Curb (Option)

Refer to section **E.3.1.3.** for routing wires through the curb with a factory installed disconnect.

E.3.3. Connecting the Convenience Outlet

E.3.3.1. Non-powered

The non-powered convenience outlet, if purchased as an option for the unit, will come shipped in a box within the blower compartment of the unit. It will need to be removed and installed into its proper configuration.

For connecting the non-powered convenience outlet and all other information, refer to the installation instructions for the accessory.

E.3.4. Checking Phase and Motor Rotation

When using 3 phase power the only device that is rotation dependent is the compressor. The outdoor fan and indoor blower do not require any adjustment and will turn backwards if the phase is incorrect. Verify the direction of rotation for the indoor blower motor before starting up the compressors.

E.3.4.1. Checking Phase with VFD Drive

On any belt-drive units with a Variable Frequency Drive (VFD), the motor will always rotate in the correct direction. Correct phase must be checked by the operation of the compressor..

E.3.5. Grounding Requirements

Refer to local codes as required. Must be grounded to a common earth ground.

National Electric Code (NEC) / International Building Code / Canadian Electrical Code

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

The low voltage wiring should be sized as shown in **Figure F. - A: Field Wire Size for 24v Thermostat Circuits.**

F. CONTROL / THERMOSTAT WIRING

Figure F. - A

FIELD WIRE SIZE FOR 24 VOLT THERMOSTAT CIRCUITS							
THERMOSTAT LOAD - AMPS		SOLID COPPER WIRE - AWG.					
		3.0	16	14	12	10	10
2.5	16	14	12	12	12	10	
2.0	16	16	14	12	12	10	
		50	100	150	200	250	300
LENGTH OD RUN - FEET (1)							

ST-A1291-14-00

(1) THE TOTAL WIRE LENGTH IS THE DISTANCE FROM THE FURNACE TO THE THERMOSTAT AND BACK TO THE FURNACE.

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

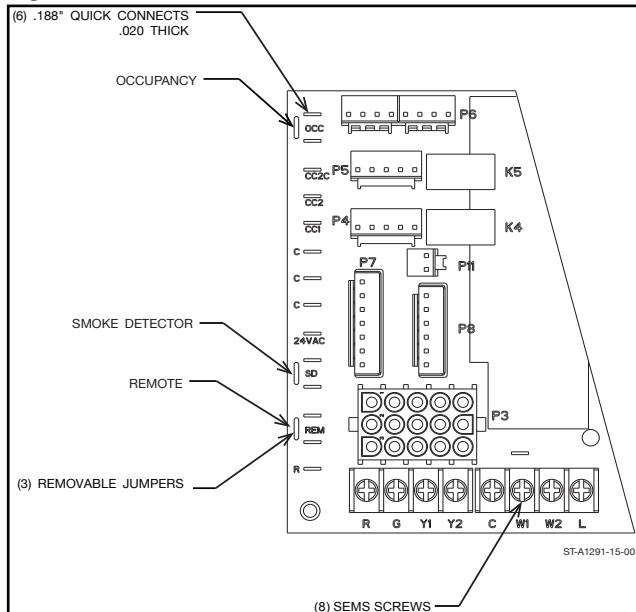
Install the room thermostat in accordance with the instruction sheet packed in the box with the thermostat. Run the thermostat lead wires through the control entry opening (**Figure F.2. - A: Electrical and Piping Routing**) and connect to the low voltage thermostat connections (see **Appendix G** for wiring diagrams and **Section F.1.** for T-Stat field connections). Never install the thermostat on an outside wall or where it will be influenced by drafts, concealed hot or cold water pipes or ducts, lighting fixtures, radiation from fireplace, sun rays, lamps, televisions, radios or air streams from registers. Refer to instructions packed with the thermostat for "heater" selection or adjustment.

F.1. T-Stat field connections

F.1.1. Misc. Connections

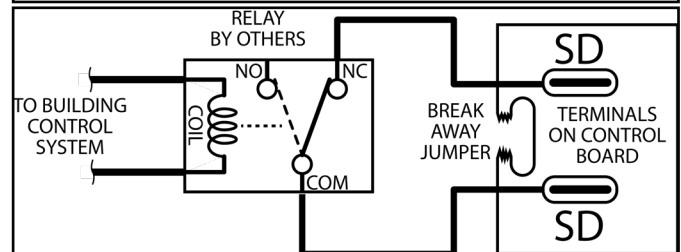
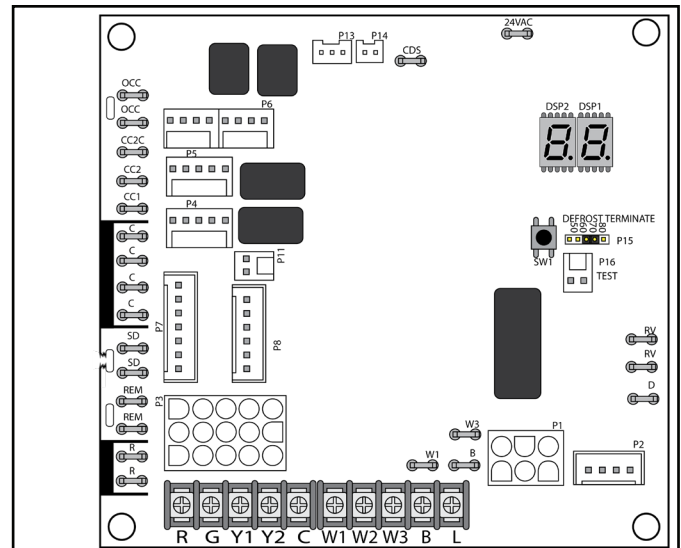
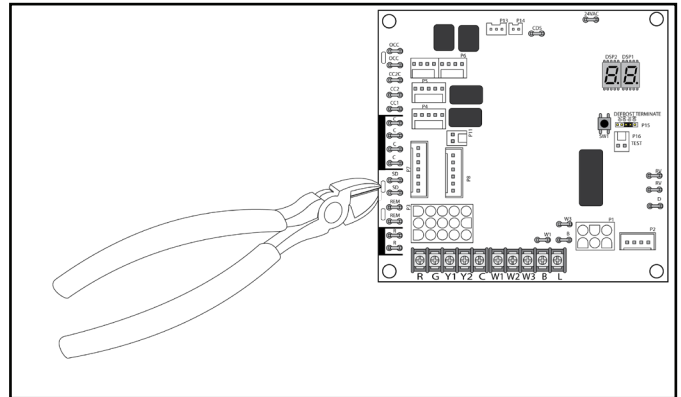
Refer to **Appendix G** for the unit wiring diagrams and to **Figure E.3. - A: Typical Thermostat Wiring**.

Figure F.1.1. - A: Core Command Terminal Locations



F.1.2. Occupancy connections / Remote connections / Etc

Figure F.1.2. - A: Occupancy and Remote Connections



NOTE: This is an example of breaking the jumper for Smoke Detector connections, apply the same process for the Occupancy and/or Remote connections.

These features are only available on the Non-DDC Furnace, Heat pump, or cooling only control boards.

OCC – Occupancy Control. This feature shuts down the dampers on the economizer or motorized damper option when outdoor/fresh air is not required for the building. Locate the terminals at the left side of the board mark "OCC". See **Figure F.1.2. - A: Occupancy and Remote Connections** for reference.

F. CONTROL / THERMOSTAT WIRING

F.1.2. Continued

For connecting Remote Smoke Detectors or Fire Control Panels to this control DO NOT break the 24VAC to the thermostat or from the power supply transformer. Either could cause an undesirable operating condition that would not shut the unit down in the event of an emergency situation. See the instructions for the type of control board this unit is equipped with.

Using cutters or a small screw driver, break the edge of the board between the terminals marked with "OCC". Use 3/16" blade connector, and a minimum of 18AWG wire to connect to a Normally Closed Dry Contact Relay or Switch. Do not connect multiple control boards to the same dry contact relay or switch.

REM – Remote Shutdown Control. This feature allows the unit to be turned off remotely ignoring the thermostat calls for cooling or heat. Locate the terminals at the left side of the board mark "REM". See **Figure F.1.2. – A: Occupancy and Remote Connections** for reference.

Using cutters or a small screw driver, break the edge of the board between the terminals marked with "REM". Use 3/16" blade connector, and a minimum of 18AWG wire to connect to a Normally Closed Dry Contact Relay or Switch. Do not connect multiple control boards to the same dry contact relay or switch.

F.1.3. Connecting a Smoke Detector

F.1.3.1. Core Command Connection

SD – Remote Smoke Detection. This feature allows for the proper shutdown of the controls in the event of an emergency situation. Locate the terminals at the left side of the board mark "SD". See **Figure F.1.2. – A: Occupancy and Remote Connections** for reference.

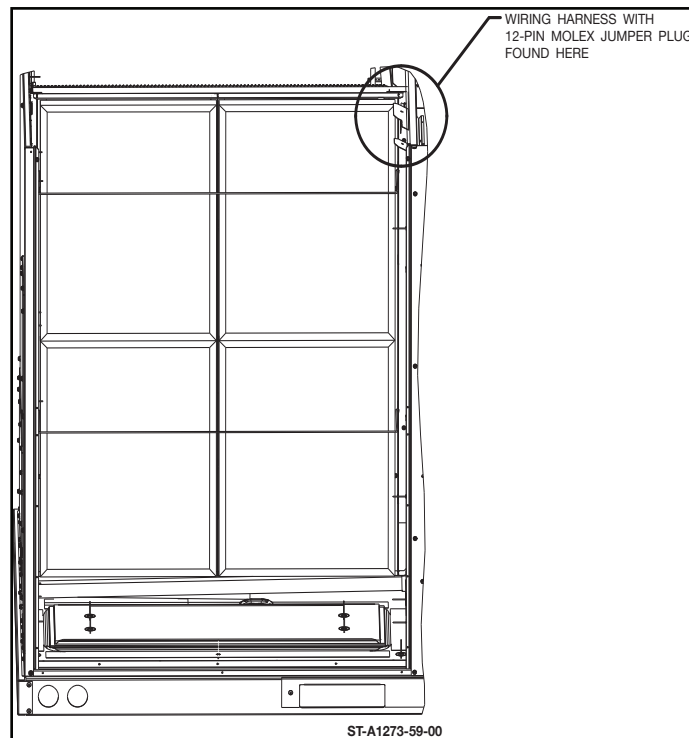
Using cutters or a small screw driver, break the edge of the board between the terminals marked with "SD". Use 3/16" blade connector, and a minimum of 18AWG wire to connect to a Normally Closed Dry Contact Relay, or in common Fire Control Panels and Smoke Detectors, the Auxiliary Connections for C and NC. See the instructions for the remote devices. Do not connect multiple control boards to the same dry contact relay.

F.1.3.2. DDC Control Connection

In the air-filter section or on the side economizer, locate the 12-pin Molex jumper plug with the long Red, short Yellow and

Orange wire loops; see **Figure F.1.3.2. – A** for reference. Cut the Red wire loop and connect these to a minimum of 18AWG wire that will be connected to a Normally Closed Dry Contact Relay, or in common Fire Control Panels and Smoke Detectors, the Auxiliary Connections for C and NC. See the instructions for the remote devices. Do not connect multiple control boards to the same dry contact relay.

Figure F.1.5.3. – A: Wiring Harness location in Air-Filter Section



F.1.4. Building Management / Control Connections using DDC –

In an application where a third party building management / controls are in use or will be incorporated, units with the integral Rooftop Unit Controller (RTU-C) are communication compatible with the system that supports the BACnet Application Specific Controller device profile, LonMark Space Comfort Controller functional profile, or LonMark Discharge Air Controller functional profile. This is accomplished with a field installed BACnet or LonMark communication module. Refer to the Clear Control™/DDC manual for more detail.

F. CONTROL / THERMOSTAT WIRING

F.2. Routing Control wiring

Figure F.2. – A: Electrical and Piping Routing

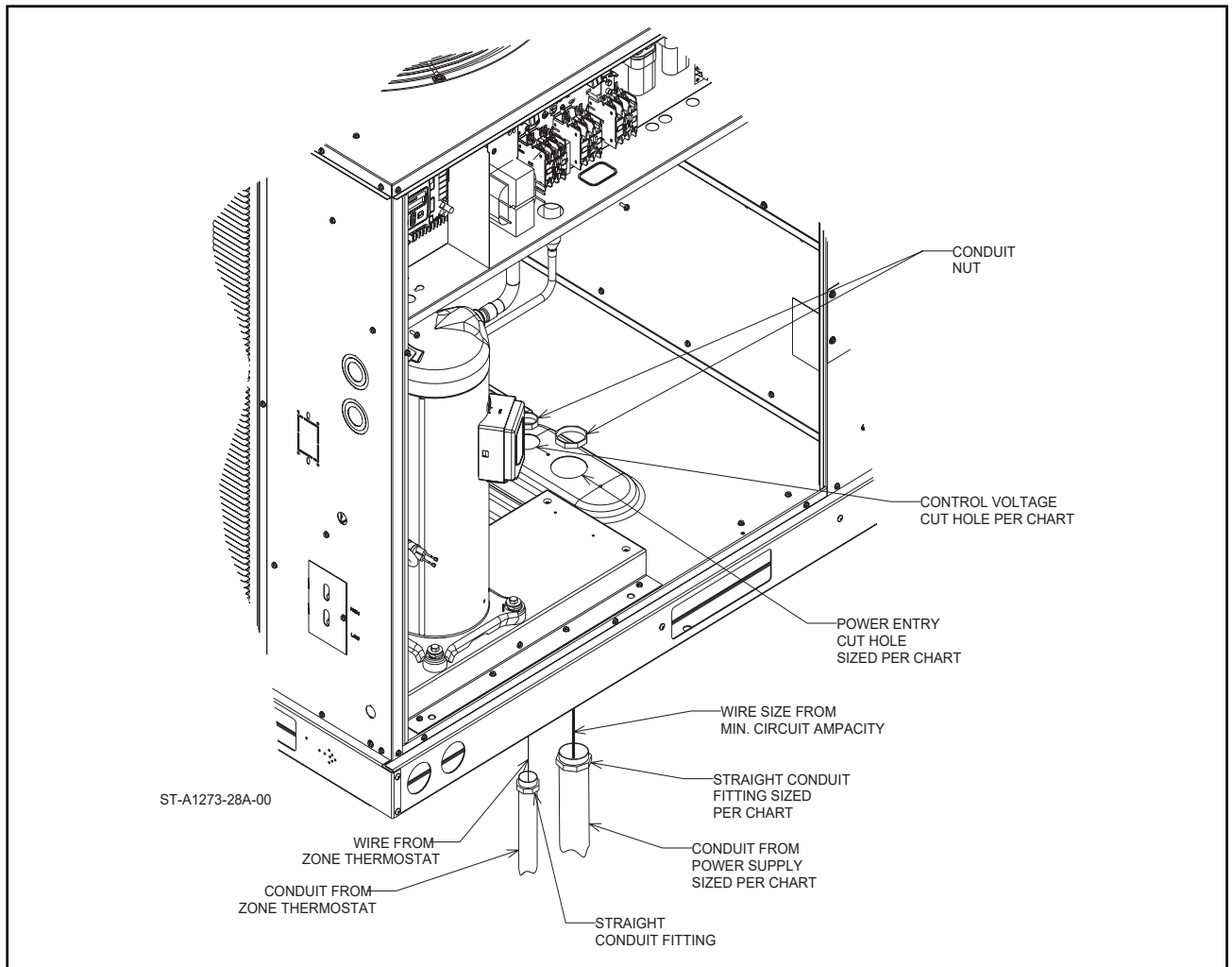


Figure F.2. – B: Hole Sizing for Conduit

	WIRE SIZE, AWG											
	14	12	10	8	6	4	3	2	1	0	00	000
CONDUIT SIZE	1/2"	1/2"	1/2"	3/4"	1"	1"	1-1/4"	1-1/4"	1-1/2"	1-1/2"	2"	2"
HOLE SIZE	7/8"	7/8"	7/8"	1-31/32"	1-23/64"	1-23/64"	1-23/32"	1-23/32"	1-31/32"	1-31/32"	2-15/32"	2-15/32"

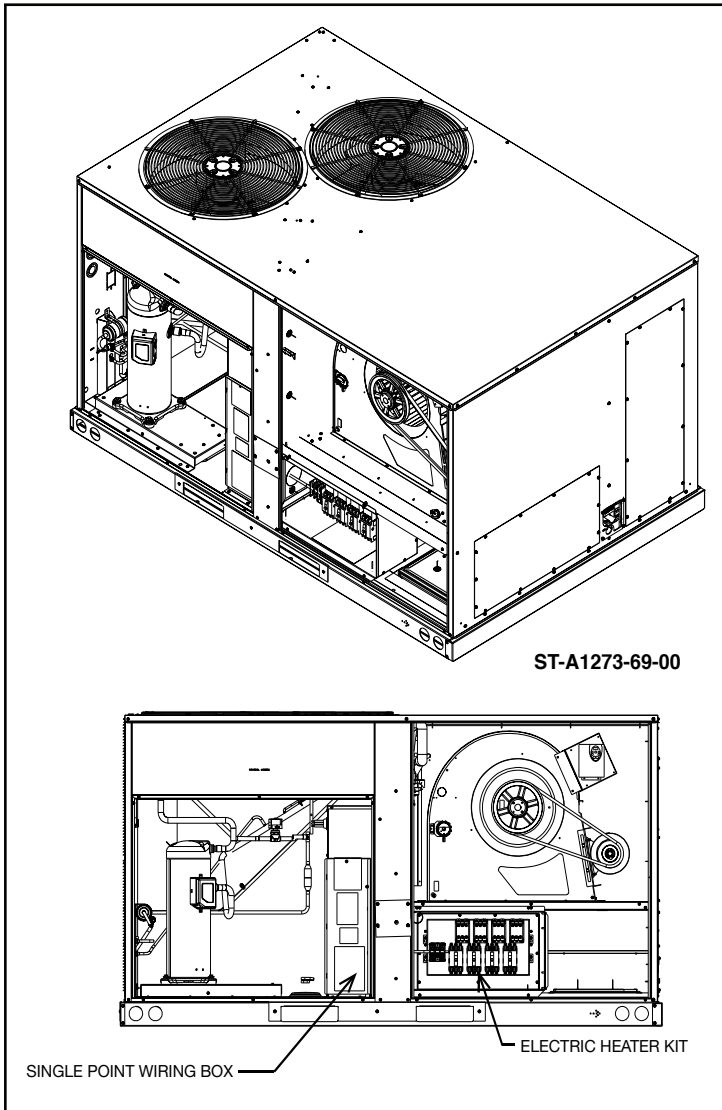
NOTES: 1. DETERMINE REQUIRED WIRE SIZE FROM MINIMUM CIRCUIT AMPACITY SHOWN IN INSTALLATION & OPERATING INSTRUCTION.
 2. BOTTOM POWER ENTRY WILL NOT ACCOMMODATE WIRE LARGER THAN #2 AWG (SHADED AREA).

F.3. Measuring Control Voltage Loads

Use a voltmeter to measure the low voltage and low voltage amp draws during operation. Accessories such as remote smoke detectors and excessive wire length can increase the amp draw on the low voltage wiring. Verify that the total amp draw on the 24Vac side is less than 0.3A in full operation.

H. ELECTRIC HEAT

Figure H. - A: Electric Heat with Single Point Wiring



H.1. FACTORY INSTALLED ELECTRIC HEAT

Units shipped with factory installed electric heat will come with a separate document (included in the parts bag) with details regarding the electric heater kits. Refer to this document for diagrams and additional info. Refer to **Appendix E** for heater kit characteristics such as Minimum Circuit Ampacity and Max Fuse sizes.

H.2. FIELD INSTALLED ELECTRIC HEAT

Electric heater kits will be shipped with their own installation document in the box. Use the instructions supplied with the kit for best practice. Install all electric heat kits in accordance with the National Electric Code. Refer to **Appendix E** for manufacturer-approved heater kit characteristics such as Minimum Circuit Ampacity and Max Fuse sizes.

A single point kit may be required depending on application.

J. STARTUP AND OPERATION

J.1. Final Inspection

J.1.1. Check for Refrigerant Leaks

Inspect the unit for any damage to the coils and tubing that could cause a leak.

J.1.2. Check Level of Unit

Refer to [Section C.6.2.](#) for setting/checking the level of the unit.

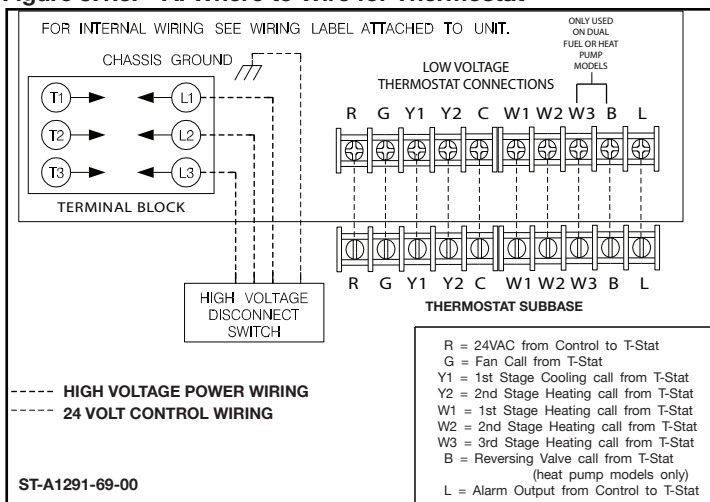
J.1.3. Check Electrical Connections For Proper Torque

Use an Inch Pound rated torque wrench to ensure proper torque. **DO NOT CONFUSE THIS WITH A FOOT POUND RATED WRENCH, Damage will occur.**

Recommended torques for securing wiring:

- To the contactor: 40 in-lb.
- From the T-stat to the control board: 8.0 in-lb.

Figure J.1.3. – A: Where to Wire for Thermostat



J.1.4. Check Control Cables For Proper Connection

Verify all cables are seated and connected in the unit as some might come loose during shipping and transport.

J.1.5. Check Filter Installation

Verify that filters are seated and oriented correctly in the unit as some might come displaced during shipping and transport. Refer to [Section D.3.](#) for more information on filters and filter installation.

J.1.6. Check Condensate Drain installation

Verify the Condensate Drain Trap is a minimum of 3 inches deep, plus the Blower Fan Static Pressure. Verify the Outlet of the drain trap is a minimum of 3 inches below the outlet of the drain pan. Ensure the outlet of the trap is routed to a suitable drain location as required by local code. Refer to [Section C.5](#) and [Figure C.5.1 – A](#) for more information.

J.1.7. Check Blower Compartment for Accessories

Open all compartments to ensure there are no tools or other misc parts remaining in the unit from setup. This is most important on the blower section to avoid damage to the blower assembly.

J.2. Turning on Power for the First time

J.2.1. Checking for Proper 3-Phase Voltage

Verify that proper power has been supplied to the unit. This is critical for correct operation of the compressor.

J.2.2. Check For Proper Phase

Verify that the compressor is running correctly.

J.2.2.1. Standard Blower Rotation

As a reminder, all units with a belt drive motor may run backwards if the unit is wired incorrectly. See [Section E.3.4. Checking Phase and Motor Rotation](#) for more information.

J.2.2.2. VFD Blower Rotation

As a reminder, all units with VFD driven blower motor will have the correct rotation even if the phase to the unit is wired incorrectly. See [Section E.3.4.1. Checking Phase with VFD Drive](#) for more information.

J.2.3. Checking Low (Control) Voltage

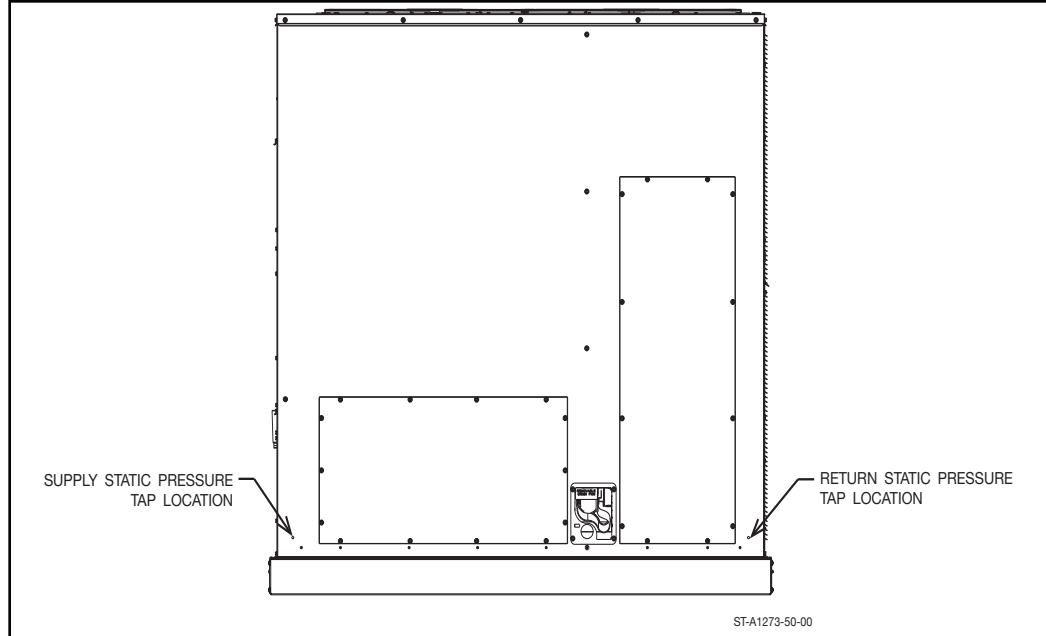
Use a voltmeter to measure the low voltage and low voltage amp draws during operation. Accessories such as remote smoke detectors and excessive wire length can increase the amp draw on the low voltage wiring. Verify that the total amp draw on the 24Vac side is less than 0.3A in full operation. Refer to [figure F. – A](#) for proper low voltage wire lengths.

J. STARTUP AND OPERATION

J.3. Checking and Adjusting Air Flow

For Economizer and Diffuser Pressure Drop Data, please refer to the end of **Appendix C: Airflow Performance Data.**

Figure J.3. – A: Static Pressure and Air Temp Measurement Location



J.3.1. Static Pressures and Measurements

- To measure the static pressure of the system, locate the locating dimples near the supply/return duct openings, and drill a hole to the size necessary for the test probe. The location of these dimples are shown in **Figure J.3. - A.**
- NOTE: After taking airflow measurements, seal these openings per best practice to prevent airflow leakage and water entry into the unit.
- NOTE: Drilling test tap locations in other panels or doors could put the test probe in a turbulent zone providing false readings.

J.3.1.1. Using Tools

Use a calibrated manometer to measure the static pressure of the blower. Insert the meter probe into the tap location. Make sure any economizer or outside air dampers are closed and run the fan at the maximum, full speed setting. Record the reading for the return air and supply air separately.

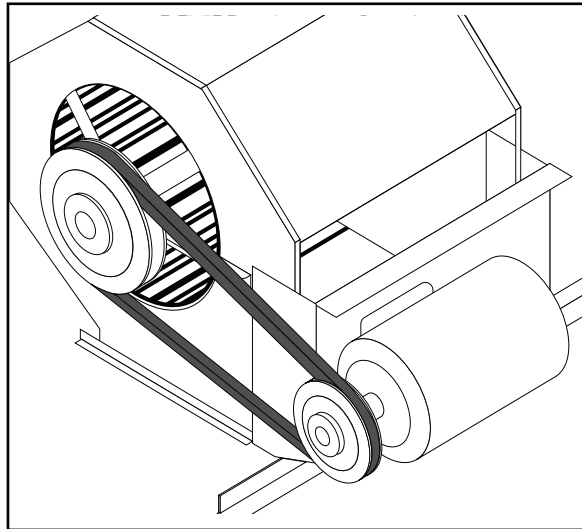
J. STARTUP AND OPERATION

J.3.2. Air Flow Measurements and Adjustments

- Measure the supply/return static to get the unit static pressure by drilling out the dimple locations shown in **Figure J.3.2 - A**.
- Take the measured static pressure and match to the static listed on the airflow table to find your CFM.

Use the charts and guide provided in the Installation and Operation instructions provided with the unit to calculate the air flow, against the measured static pressures and number of turns on the adjustable blower sheave. Verify the measured air flow against the charts.

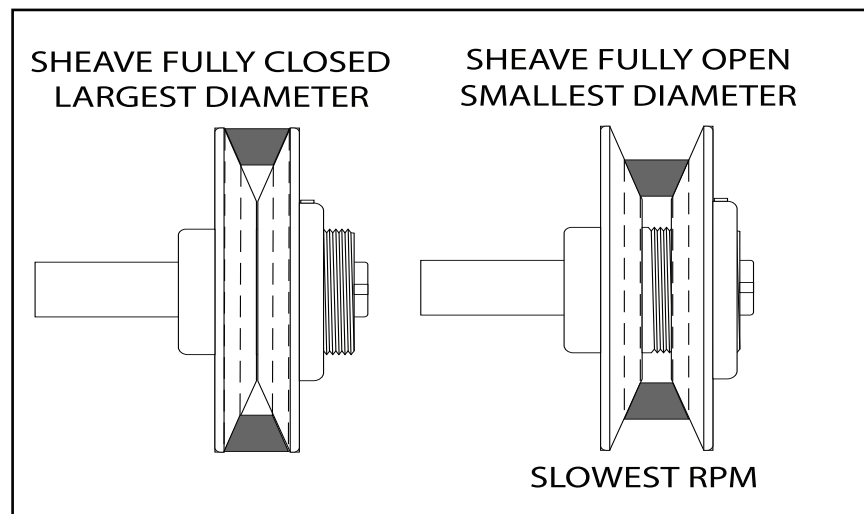
Figure J.3.2. – A: Blower Assembly and Motor



- For DDC units, the unit ships with the orange wire for the indoor fan connected to the CC2 terminal on the board.

o If more airflow is needed, remove the wire from CC2 and connect to the CC1 terminal. Refer to **Figure J.3.2. – B**.

Figure J.3.2. – B: Adjustable Blower Sheave



Using the charts determine the total number of turns needed on the sheave. Make those turns in half turn increments, once set, align the set screw with the Flat section on the sheave threads. Tighten the set screw to secure the sheave.

Reinstall the belt and tension properly and power on the system. Allow the thermostat to call for a fan, make sure the VFD ramps the blower to 100% or 60hz.

Once the fan is at speed, measure the air flow and static pressure, compare against the charts. If additional adjustment is needed repeat the adjustment procedure.

J. STARTUP AND OPERATION

J.3.2.1. Adjusting Fresh Air Flow with Economizer

See the above sections for measuring airflow, and refer to the I&O included with the Economizers for more information on adjusting airflow.

These I&Os can also be found on the manufacturer's website.

J.3.2.2. Adjusting Fresh Air Flow with Damper

All dampers are field install accessories. See the above sections for measuring airflow, and refer to the I&O included with the fresh air dampers for more information on adjusting airflow.

Refer to local building codes for any fresh air requirements.

These I&Os can also be found on the manufacturer's website.

J.4. Checking Cooling Operation

COOLING SEQUENCE OF OPERATION

A. Call for cooling

1. The zone thermostat contacts close, and a call for cooling is initiated.
2. Inputs 'Y1' and 'G' to the control are energized.
3. The control senses input to 'Y1' and 'G'. After a 1sec delay, the control energizes both the indoor blower and first stage compressor.
4. The control enters normal operating loop where all inputs are continuously checked.
5. Zone thermostat is satisfied.
6. The blower will continue to run for a preset period of time after the zone thermostat is satisfied.
7. The control goes into standby mode displaying a "O".

B. Call for second stage cooling. After first stage cooling established; starting from A6.

1. If a call for second stage cooling is initiated after a call for first stage cooling is established, the control energizes 'Y2' and energizes the second stage compressor.
2. Then the control enters the normal operating loop where all inputs are continuously checked.

C. Second stage satisfied and first stage still called for; starting from B2.

1. 'Y2' is de-energized and the second compressor stage is de-energized.

D. First stage and second stage called simultaneously.

1. The zone thermostat contacts close, and a call for first and second stage cooling is initiated.
2. Inputs 'Y1', 'Y2' and 'G' to the control are energized.
3. The control senses 'Y1', 'Y2' and 'G'. After a 1sec delay, the control energizes the indoor blower, and the first and second compressor stages.

E. First stage and second stage removed simultaneously.

1. Upon a loss of 'Y1' and 'Y2', the compressor is de-energized. The control de-energizes the indoor blower relay, and cuts off the blower after an indoor blower delay.
2. The control goes into standby mode displaying a "O".

CONTINUOUS FAN MODE

A 'G' input only indicates a zone thermostat call for continuous indoor blower operation.

TIME DELAY BYPASS for non-DDC units

The Time Delay Bypass resets the ICC (Integrated Compressor Control) from any lockout mode or bypasses compressor anti-short cycle delay timer. To bypass the time delay, press the SW1 button with an insulated probe for 1sec and then release.

FAULT RECALL OPERATION for non-DDC units

To enter FAULT RECALL mode, press the SW1 button with an insulated probe for 2sec and release. Upon entering and exiting the FAULT RECALL mode, the top bottom segments of the 7-segment display will be activated. The ICC will automatically scroll through the stored faults on the 7-segment display. Each fault is displayed one time with the top segment of the 7-segment display activated between faults. Each fault is displayed with the most recent fault displayed first. An "O" will be displayed when no faults are stored. The ICC will automatically exit the FAULT RECALL mode after displaying stored faults.

An example of one LPC fault and one HPC fault scrolled on the display is shown as: `2123`

J. STARTUP AND OPERATION

CLEAR FAULT HISTORY for non-DDC units

To clear FAULT HISTORY, press the SW1 button with an insulated probe for 5sec and release. The top and bottom segments of the 7-segment display will be activated and flash to indicate the history has been cleared.

Example: =====

TEST MODE for DDC Units

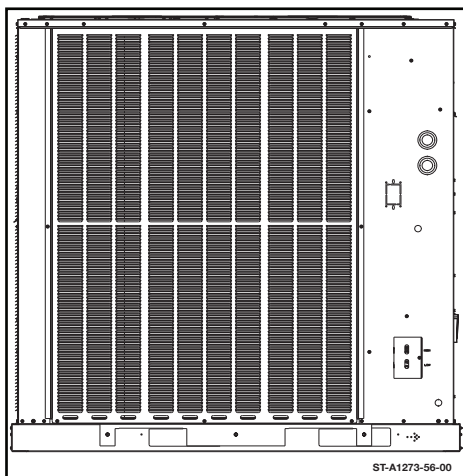
For units with DDC, there is a “Run Test” mode that will aid in diagnostics during installation. Please refer to the CLEAR CONTROL MANUAL for more info; Manufacturer Part Number: 92-103249-01

J.4.1. Checking Refrigerant Pressures

To check refrigerant pressures, attach R410a manifold gauges to the high/lo service ports. The upper port is the high pressure port, and the lower is the low pressure port. **BE SURE TO USE ZERO LOSS FITTINGS WHILE MEASURING PRESSURE; ANY LOSS OF CHARGE MAY IMPACT PERFORMANCE.**

See section C.2.1. Tools Required for Installing and Servicing R-410A Models.

Figure J.4.1. –A: Service Port Location



J.4.1.1. Refrigerant Pressure Charts

See Appendix F towards the end of this manual for Refrigerant Pressure Charts.

J.4.2. Checking Sub Cooling for Adjusting Charge Weight

See Appendix F towards the end of this manual for Refrigerant Charging Charts.

NOTE: This procedure is very important for optimizing this product’s performance.

How to check the unit’s subcooling to fine-tune refrigerant charge:

1. The Indoor ambient temperature must be between 72 °F and 82 °F dry bulb at the indoor coil.

2. Confirm the indoor air supply is at the rated CFM listed in Appendix A.

3. Allow the system to run long enough for temperatures and pressures to stabilize; at least fifteen minutes.

4. Measure liquid pressure and line temperature at the liquid line service port (refer to section J.4.2.1. below for the liquid line temperature measurement location). **USE ZERO LOSS FITTINGS WHILE MEASURING PRESSURE; ANY LOSS OF CHARGE MAY IMPACT PERFORMANCE.**

5. To find the saturation temperature at the measured pressure, subtract the measured liquid line temperature from the saturation pressure to get the sub-cooling.

6. Check if the Sub-Cooling is within +/- 1.5 °F tolerance.

7. If the sub-cooling values are significantly different (> 20 psig) from those listed on the table in Appendix F, there may be an airflow or component issue. Refer to section M. Diagnostics for more information.

J.4.2.1. Measuring Air Temperature and Liquid Line Temperature

Measuring air temperature:

1. Insert a thermometer in the supply air duct as close to the unit as possible.

2. Insert a thermometer in the return air duct as close to the filters as possible.

3. If preferred, use the locations shown in Figure J.3. – A: Static Pressure and Air Temp Measurement Location instead of the supply/return ductwork.

4. Operate the unit for a minimum of 15 minutes in cooling mode.

5. When the thermometer in the supply air duct stops changing (approximately five minutes), subtract the return air temperature from the supply air temperature. This is the cooling mode temperature difference.

J. STARTUP AND OPERATION

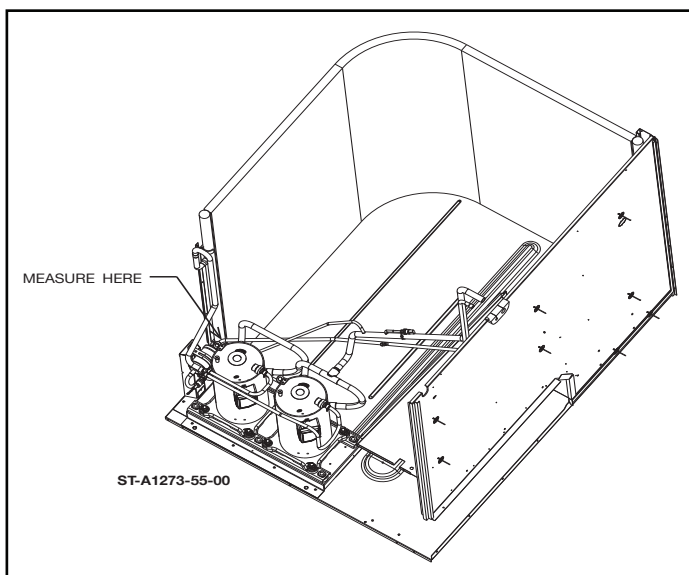
If the measured temperature difference is not reducing, or if the return air is not reaching the thermostat set point, the air flow is too low. Airflow must be increased by either removing the restrictions in the duct system, or by changing the air flow. See **Section J.3.2. Air Flow Measurements and Adjustments** for changing air flow.

IMPORTANT: Some high-efficiency filters have a greater than normal resistance to airflow. This can negatively affect airflow. **BE SURE TO CHECK THE AIRFLOW** if using any filter other than the factory-provided filter.

Measuring line temperature:

1. Attach a thermometer or thermocouple to the liquid refrigerant line right after the filter-dryer. See **Figure J.4.2.1. - A.**
2. Operate the unit for a minimum of 15 minutes in cooling mode.
3. When the measurement of the temperature stops changing (approximately five minutes), record the temperature.

Figure J.4.2.1. - A: Line Temperature Measurement Location



J.4.3. Measuring Compressor Electrical Loads

See **Appendix B** towards the end of this manual for Compressor Electrical Data.

J.5. Checking Electric Heat Operation

Electric heater kits will have their own separate instructional document. For factory installed heater kits the document will be found in the parts bag, and for field installed heater kits the document will be found in the box. Refer to these documents for any info regarding checking electric heat operation.

K. TEST AND BALANCE

K.1. Air Flow Charts and Information

See **Appendix C** towards the end of this manual for Air Flow Performance Data.

K.2. Air Flow Adjustments

K.2.1. Blower Speed for 7.5-12.5 Ton Units

See **Section J.3.2. Air Flow Measurements and Adjustments** on how to increase the blower speed and increase airflow for the 7.5-12.5T units.

K.2.2. Economizer Adjustments

Do not Fix a minimum position on an economizer, set the minimum position through the control board only. See the instructions provided with the economizer for more info. The part numbers for these instructions are listed in section **D.4.1. Economizer Information.**

M. HUMIDITY CONTROL

M.1 Dehumidification System Information

With the factory installed dehumidification option, in addition to a thermostat or space temperature sensor that is normally present, an indoor relative humidity sensor is installed in the occupied space and connected to the Rooftop Unit Controller (RTU-C) which then controls the capacity of the cooling coil to remove moisture from the supply air and maintain space relative humidity below an adjustable limit visible on the RTU-C display. The default value is the ASHRAE recommended limit of 60% RH. With this option, a refrigerant reheat coil is installed downstream from the evaporator coil. When the space humidity is too high and reheat is energized, this coil uses some of the heat that is normally rejected to the outside by the condenser coil to instead reheat the cold air from the evaporator coil just enough to avoid overcooling the space, providing “neutral air” to the occupied space. On a two-stage system, it is possible for both a thermostat and humidistat to register readings above set point. Under this condition, the system runs in the high stage dehumidification cycle, and the motor operates on high speed. This provides dry conditioned air.

Because the demand for dehumidification can be different from the cooling demand, the unit will first satisfy the demand for cooling and then if the space humidity is still too high, dehumidification mode is energized. When in dehumidification mode, the supply air leaving the unit will be near the entering air temperature, but at a much lower humidity. The unit will exit the dehumidification mode when the humidity set point is satisfied; or if the load is increased, it will return to normal cooling mode.

Reheat is not available during the gas-heating mode.

Figure M.1. - A

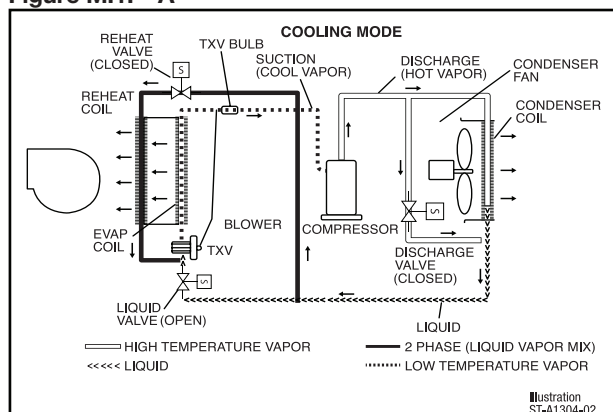


Figure M.1. - A shows the refrigerant path during the normal cooling mode. The liquid refrigerant leaves the TXV with the sudden pressure drop causing the liquid to expand to a vapor and absorbing the heat from the supply air going through the evaporator coil. The refrigerant vapor then travels to the compressor where it is elevated to a higher pressure and temperature.

The superheated refrigerant vapor next carries the heat to the outside coil where the heat is then rejected and the refrigerant condenses into a subcooled liquid where the process repeats itself.

Figure M.1. - B

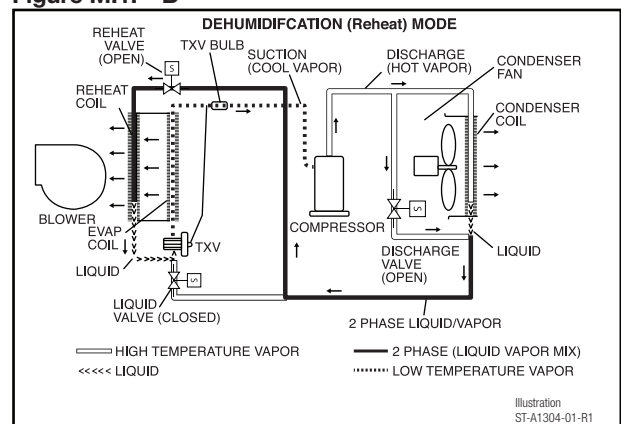


Figure M.1. - B shows the refrigerant path during the reheat mode. When the reheat cycle is energized by the RTU-C, the reheat solenoid valve, upstream of the reheat coil opens. The liquid solenoid valve ahead of the TXV, closes. The discharge solenoid valve, in the compressor discharge line, opens. The liquid refrigerant leaves the TXV with the sudden pressure drop causing the liquid to expand to a vapor and absorbing the heat from the supply air going through the evaporator coil. The refrigerant vapor then travels to the compressor where it is elevated to a higher pressure and temperature. The refrigerant next carries the heat to a parallel path between the outside condenser coil and a bypass circuit. Some of the heat is rejected outdoors. The ratio of heat rejected outdoors versus indoors is controlled by an outdoor fan motor controller (OFMC) that monitors the two phase temperature and varies the fan speed. This 2-phase refrigerant vapor is then sent to the reheat coil. As the refrigerant travels through the reheat coil is condenses into a subcooled liquid where the process repeats itself.

M. HUMIDITY CONTROL

M.2 Humidity Sensor Installation

The Humidity control unit requires the use of a zone mounted humidity sensor. The sensor should be located in the conditioned space, approximately 5ft from the floor, on an interior wall. Take care to locate it away from direct sunlight and away from air flow from vents or drafts from doors. The humidity sensors output is a 0-10VDC signal and will be connected to the DDC Control.

The Rheem ZNS-5 meets the requirement and includes an optional space temperature sensor. The control wiring should be a minimum of 18AWG Solid Copper wire with 5 Conductors and is connected from the DDC Control to the sensor as follows:

RED = R to V+ (+24VAC)

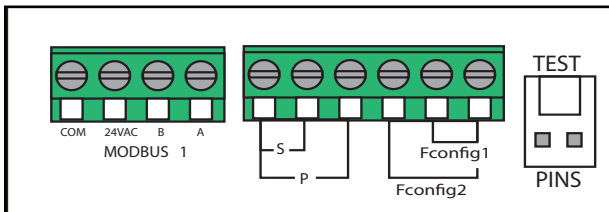
GREEN = Field Config 1 & 2 (Right most terminal) to GROUND

BLUE = Field Config 2 (3rd terminal from right) to VOut

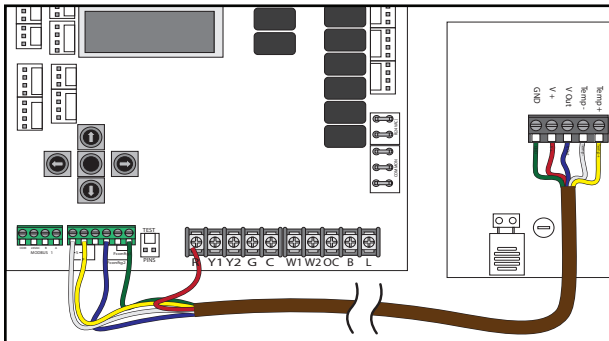
WHITE = S & P (Left most terminal) to Temp -

YELLOW = S (2nd terminal from left) to Temp+

See the installation instructions for additional details.



ZNS-5 HUMIDITY/TEMPERATURE SENSOR



HONEYWELL DUCT MOUNTED HUMIDITY SENSOR

This optional wires the same except the temperature sensor connects directly to a Honeywell Thermostat.

RED = R to V+ (+24VAC)

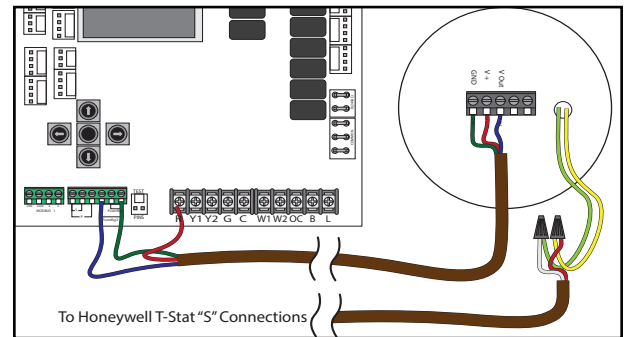
GREEN = Field Config 1 & 2 (Right most terminal) to GROUND

BLUE = Field Config 2 (3rd terminal from right) to VOut

Other = Honeywell S- Terminal to Yellow Wire

Other = Honeywell S+ Terminal to Green Wire

See the installation instructions for additional details.



M. HUMIDITY CONTROL

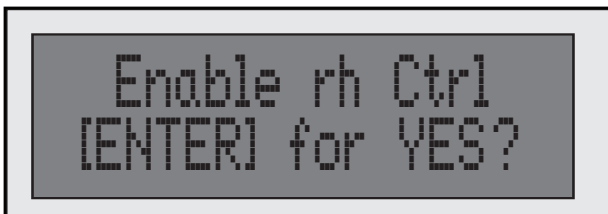
M.3 Humidity Control Settings and Configuration

The Clear Control is designed to operate in conjunction with the zone sensor discussed earlier in the guide. These are the steps to verify the zone sensor and adjust the humidity set-point and operating modes. The system can be programmed to a humidity level as low as 35%, and can be set to run dehumidification as part of the cooling cycle or as a stand alone system regardless of the cooling or fan call status from the thermostat, recommended.



NOTICE: The system will not operate the humidity control when the outdoor ambient temperature is below 60°F, this is because the humidity control uses hot refrigerant bypassed from the outdoor coil,. When the ambient temperature is too low, insufficient heat will be retained in the refrigerant to properly operate the Reheat system for proper dehumidification. The Reheat system in this packaged unit is not designed for industrial or process applications, it is intended for human comfort zones.

Navigate through the Clear Control menu to “Humidity Control” it should say Enabled. If it says “Disabled” press the Enter button twice to Enable rh Control.



Next set the desired Relative Humidity Set-point. This set-point will be where the control will run the associated dehumidification cycles to bring the humidity in the zone down to this percentage.

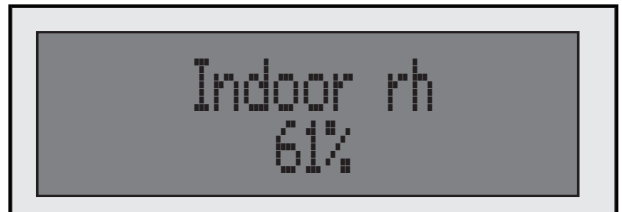


Now set the Reheat Mode, there are three functions to choose from, Reheat in Occupied, will only run dehumidification when there is a Fan or Cooling Call. Reheat in Unoccupied, will on run dehumidification when there is no fan or cooling call; Reheat ALL, (recommended) will run reheat based on the humidity reading regardless of the thermostat operation.

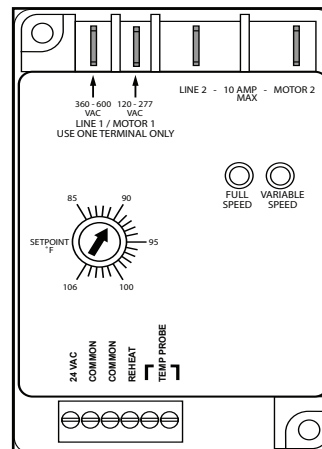


Checking the Humidity Sensor reading, Navigate to Humidity Control then down to Indoor rh, this will display the reading from the humidity zone sensor. If this shows “4%” then it means that the zone sensor is not connected properly or malfunctioning.

Verify a 0-10VDC signal across the Field Cnfg 2 terminals on the control board. 10VDC = 100%, 5VDC - 50%.



The humidity control system is also equipped with an Outdoor Fan Motor Controller, OFMC, this controller changes the speed of the outdoor fans to allow for more or less heat in the bypassed refrigerant used to operate the reheat system. Adjustments to the OFMC are not needed unless undesirable operation occurs. Consult the Installation instructions provided with the system for details on the OFMC operation and adjustments.



OFMC	
Factory Settings	
Unit	Setpoint
90	90°
102	90°
120	94°

N. DIAGNOSTICS

N.1. Diagnostics Chart

N.1.1. Cooling Diagnostics Chart

▲ WARNING

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

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

N. DIAGNOSTICS

N.2. Alarm Codes – Full List

Alarm Codes		
CODE	Description	FAULT LEVEL
0	STANDBY	none
c	COMPRESSOR ON - Low (Flashing if in time delay)	none
C	COMPRESSOR ON - High (Flashing if in time delay)	none
E	Economizer Cooling - No Compressor	none
F	CONTINUOUS FAN	none
h	HEAT ON - Low Stage	none
H	GAS HEAT ON - High Stage	none
4	Comfort Alert Code 4 for Compressor Circuit 1	shutdown
5	Comfort Alert Code 5 for Compressor Circuit 1	shutdown
6	Comfort Alert Code 6 for Compressor Circuit 1	shutdown
7	Comfort Alert Code 7 for Compressor Circuit 1	shutdown
8	Comfort Alert Code 8 for Compressor Circuit 1	shutdown
9	Comfort Alert Code 9 for Compressor Circuit 1	shutdown
11	FAILED IGNITION	problem
12	LO FLAME SENSE	warning
13	FLAME LOST	problem
14	UNEXPECTED FLAME	shutdown
15	2nd Stage Gas valve improper voltage	problem
20	REFRIGERANT LOW PRESSURE SWITCH OPEN - CIRCUIT 1	problem
21	REFRIGERANT LOW PRESSURE SWITCH OPEN - CIRCUIT 2	problem
22	MAIN LIMIT OPEN	problem
29	REFRIGERANT HIGH PRESSURE SWITCH OPEN - CIRCUIT 1	problem
30	REFRIGERANT HIGH PRESSURE SWITCH OPEN - CIRCUIT 2	problem
33	MRLC (Rollout Limit) OPEN	problem
34	Comfort Alert Code 4 for Compressor Circuit 2	shutdown
35	Comfort Alert Code 5 for Compressor Circuit 2	shutdown
36	Comfort Alert Code 6 for Compressor Circuit 2	shutdown
37	Comfort Alert Code 7 for Compressor Circuit 2	shutdown
38	Comfort Alert Code 8 for Compressor Circuit 2	shutdown
39	Comfort Alert Code 9 for Compressor Circuit 2	shutdown
42	Invalid Thermostat Selection	warning
44	1st Stage COMBUSTION PRESS SWITCH CLOSED	problem
46	1st Stage COMBUSTION SWITCH OPEN	problem
49	FREEZE SWITCH OPEN - CIRCUIT 1	problem
50	FREEZE SWITCH OPEN - CIRCUIT 2	problem
55	2nd Stage COMBUSTION PRESS SWITCH CLOSED	problem
57	2nd Stage COMBUSTION PRESS SWITCH OPEN	problem, shutdown
59	Condensate Drain Plugged	shutdown
61	Blower Fault - NO RUN	shutdown
83	Condenser Coil Temp Sensor Fail - OCT	problem
84	Outdoor Air Temperature Sensor Fail - OAT	problem
88	Emergency Stop Fault	shutdown
93	CONTROL Fault	shutdown
97	Smoke Detection	shutdown

N. DIAGNOSTICS

N.2.1. Cooling Alarm Codes and Diagnostics

All Core Command come standard with a 7-segment diagnostic display. During standby mode with no fault codes present, the display will read “0” (zero). During normal thermostat heating, cooling or continuous fan operation, a letter will be displayed to describe the mode of operation as follows:

C = Cooling

F = Continuous Fan Operation

When the control senses a fault present, it will display a code to help in diagnoses. A list of normal operating codes and potential fault codes follows:

Alarm Codes - Cooling Only		
CODE	DESCRIPTION	FAULT LEVEL
0	Standby	None
c	Compressor On – Low (Flashing If In Time Delay)	None
C	Compressor On – High (Flashing If In Time Delay)	None
E	Economizer Cooling – No Compressor	None
F	Continuous Fan	None
4	Comfort Alert Code 4 For Compressor Circuit 1	Shutdown
5	Comfort Alert Code 5 For Compressor Circuit 1	Shutdown
6	Comfort Alert Code 6 For Compressor Circuit 1	Shutdown
7	Comfort Alert Code 7 For Compressor Circuit 1	Shutdown
8	Comfort Alert Code 8 For Compressor Circuit 1	Shutdown
9	Comfort Alert Code 9 For Compressor Circuit 1	Shutdown
20	Refrigerant Low Pressure Switch Open – Circuit 1	Problem
29	Refrigerant High Pressure Switch Open – Circuit 1	Problem
49	Freeze Switch Open – Circuit 1	Problem
59	Condensate Drain Plugged	Shutdown
83	Condenser Coil Temp Sensor Fail-Oct	Problem
84	Outdoor Air Temperature Sensor Fail-Oat	Problem
88	Emergency Stop Fault	Shutdown
93	Control Fault	Shutdown
97	Smoke Detection	Shutdown

The method for displaying a two-digit fault is to display the first digit for one second immediately followed by the second digit – which is also displayed for a duration of one second. A ½ second pause is then displayed. Cycle repeats

until the fault is cleared. Each fault is flashed (displayed) a minimum of two times even if the fault condition has cleared before the fault can be displayed twice.

Normal Operation Mode:

0	Displayed anytime there is no fault present and no thermostat call present
c	COMPRESSOR ON - Low (Flashing if in time delay)
C	COMPRESSOR ON - High (Flashing if in time delay)
E	When the system uses Economizer Cooling with No Compressor
F	Displayed anytime thermostat calls for continuous fan

N. DIAGNOSTICS

Fault Codes with Descriptions and Solutions:

Alarm Codes - Cooling Only		
CODE	DESCRIPTION	FAULT LEVEL
0	STANDBY	None
c	COMPRESSOR ON – Low (Flashing if in time delay)	None
C	COMPRESSOR ON – High (Flashing if in time delay)	None
E	Economizer Cooling – No Compressor	None
F	CONTINUOUS FAN	None
4	Comfort Alert Code 4 for Compressor Circuit 1	Shutdown
	ALARM Designation: Locked Rotor Circuit 1	
	DESCRIPTION:	
	1. Circuit 1 shutdown and retry after Anti-Short Cycle Delay (ASCD) Maximum is 3 attempts.	
	SOLUTION/STATUS/Possible - Troubleshooting Information	
	1. Low line voltage	
	2. Excessive Refrigerant in compressor	
3. Seized bearings in compressor		
5	Comfort Alert Code 5 for Compressor Circuit 1	Shutdown
	ALARM Designation: Open Circuit 1	
	DESCRIPTION:	
	1. Circuit 1 shutdown and retry after ASCD.	
	Note: This alarm is sent by the Comfort Alert Module only after the fault has been sensed for a minimum of 4 hours.	
	SOLUTION/STATUS/Possible - Troubleshooting Information	
	1. Condensing unit power disconnect is open	
	2. Compressor circuit breaker or fuses are open	
3. Compressor contactor has failed open High pressure switch is open and requires manual reset		
4. Broken supply wires or connector is not making contact		
5. Unusually long compressor protector reset time due to extreme ambient temperature		
6. Compressor windings are damaged		
6	Comfort Alert Code 6 for Compressor Circuit 1	Shutdown
	ALARM Designation: Missing Phase Circuit 1	
	DESCRIPTION:	
	1. Circuit 1 shutdown	
	SOLUTION/STATUS/Possible - Troubleshooting Information	
	1. Compressor fuse is open on one phase	
2. Broken wire or connector on one phase		
3. Compressor motor winding is damaged		
4. Utility supply has dropped one phase		

N. DIAGNOSTICS

Fault Codes with Descriptions and Solutions:

Alarm Codes - Cooling Only		
CODE	DESCRIPTION	FAULT LEVEL
7	Comfort Alert Code 7 for Compressor Circuit 1	Shutdown
	ALARM Designation: Reverse Phase Circuit 1	
	DESCRIPTION:	
	1. Run outdoor and indoor fans continuously for circuit 1 and change mode of operation to Unoccupied Auto. This procedure prevents the Space Temperature from reaching extreme values.	
	SOLUTION/STATUS/Possible - Troubleshooting Information	
	1. Compressor running backward due to supply phase reversal	
8	Comfort Alert Code 8 for Compressor Circuit 1	Shutdown
	ALARM Designation: Welded Contactor Circuit 1	
	DESCRIPTION:	
	1. Circuit 1 shutdown	
	SOLUTION/STATUS/Possible - Troubleshooting Information	
	1. Compressor contactor has failed closed	
	2. Thermostat demand signal not connected to module	
9	Comfort Alert Code 9 for Compressor Circuit 1	Shutdown
	ALARM Designation: Low Voltage Circuit 1	
	DESCRIPTION:	
	1. Circuit 1 Shutdown and wait for voltage to return to operational levels.	
	SOLUTION/STATUS/Possible - Troubleshooting Information	
	1. Control circuit transformer is overloaded	
	2. Low line voltage to compressor	
20	DESCRIPTION: REFRIGERANT LOW PRESSURE SWITCH OPEN – CIRCUIT 1	Problem
	CAUSE:	
	1. Low evaporator airflow	
	2. Refrigerant undercharge	
	3. Restriction in liquid line, expansion device or filter drier	
	4. Operating below 65°F outdoors	
	5. Moisture in system	
	SOLUTION: The solution will depend on the cause.	
	1. Increase speed of blower or reduce restriction - replace air filter	
	2. Check for leaks - add refrigerant	
3. Remove or replace defective component		
4. Add Low Ambient Kit		
5. Recover refrigerant - evacuate & recharge - add or replace filter drier		

N. DIAGNOSTICS

Fault Codes with Descriptions and Solutions:

Alarm Codes - Cooling Only		
CODE	DESCRIPTION	FAULT LEVEL
29	DESCRIPTION: REFRIGERANT HIGH PRESSURE SWITCH OPEN – CIRCUIT 1	Problem
	CAUSE:	
	1. Restriction in liquid line, expansion device or filter drier	
	2. Refrigerant overcharge	
	3. Condenser fan not running	
	4. Air or non-condensibles in system	
	SOLUTION: The solution will depend on the cause.	
	1. Recover refrigerant - evacuate & recharge remove or replace defective component	
	2. Remove refrigerant	
49	FREEZE SWITCH OPEN – CIRCUIT 1	Problem
	DESCRIPTION:	
	1. Occurs when sensors are either open or shorted.	
	SOLUTION: The solution will depend on the cause.	
59	Condensate Drain Plugged	Shutdown
	DESCRIPTION:	
	1. Condensate line is blocked water inside of unit	
	SOLUTION: The solution will depend on the cause.	
	1. Remove blockage	
83	Condenser Coil Temp Sensor Fail-OCT	Problem
	DESCRIPTION:	
	1. No defrost operation, but unit continues to operate in either heating or cooling.	
	SOLUTION: The solution will depend on the cause.	
	1. Extreme temperatures	
	2. Replace the sensor	
	3. Check that sensor is installed correctly on control	

N. DIAGNOSTICS

Fault Codes with Descriptions and Solutions:

Alarm Codes - Cooling Only		
CODE	DESCRIPTION	FAULT LEVEL
84	Outdoor Air Temperature Sensor Fail-OAT	Problem
	DESCRIPTION:	
	1. No defrost operation, but unit continues to operate in either heating or cooling.	
	2. The heat source continues to be heat pump, independently of the outdoor air temperature	
	SOLUTION: The solution will depend on the cause.	
	1. Extreme temperatures	
	2. Replace the sensor	
88	Emergency Stop Fault	Shutdown
	DESCRIPTION:	
	1. Complete shutdown	
	SOLUTION: The solution will depend on the cause. 1. Cannot be cleared by the 'Clear All Alarms" command. Must be cleared by changing the Emergency Stop Fault network value.	
93	CONTROL Fault	Shutdown
	DESCRIPTION:	
	1. Internal Control fault.	
	SOLUTION: The solution will depend on the cause. 1. Replace Control	
91	Smoke Detection	Shutdown
	DESCRIPTION:	
	1. RTU-C reads the smoke detection input as open -- complete shutdown.	
	SOLUTION: The solution will depend on the cause.	
	1. If not due to a fire, Replace the sensor, Check sensor is installed correctly on control 2. Check Smoke Detection Circuit, if no Smoke Detector is installed, ensure Economizer Smoke Bypass plug is installed	

N. DIAGNOSTICS

N.2.2. Non-applicable Fault Codes

The controls used in this product are common with a few other product families. Because of this, there are several fault codes that are programmed into the controls but DO NOT APPLY to this product. If one of these fault codes appear, clear the fault and continue

diagnostics. If the code persists, power down the unit and reapply power before continuing diagnostics.

These non-applicable fault codes are listed below:

Alarm Codes - NON-APPLICABLE FAULT CODES		
CODE	Description	FAULT LEVEL
h	GAS HEAT ON - LOW-FIRE	None
H	GAS HEAT ON -HIGH-FIRE	None
11	FAILED IGNITION	Problem
12	LO FLAME SENSE	Warning
13	FLAME LOST	Problem
14	UNEXPECTED FLAME	Shutdown
15	HIGH-FIRE GAS VALVE IMPROPER VOLTAGE	Problem
21	REFRIGERANT LOW PRESSURE SWITCH OPEN - CIRCUIT 2	Problem
22	MAIN LIMIT OPEN	Problem
30	REFRIGERANT HIGH PRESSURE SWITCH OPEN - CIRCUIT 2	Problem
33	MRLC (Rollout Limit) OPEN	Problem
34	Comfort Alert Code 4 for Compressor Circuit 2	Shutdown
35	Comfort Alert Code 5 for Compressor Circuit 2	Shutdown
36	Comfort Alert Code 6 for Compressor Circuit 2	Shutdown
37	Comfort Alert Code 7 for Compressor Circuit 2	Shutdown
38	Comfort Alert Code 8 for Compressor Circuit 2	Shutdown
39	Comfort Alert Code 9 for Compressor Circuit 2	Shutdown
42	Invalid Thermostat Selection	Warning
44	LOW-FIRE NEGATIVE PRESSURE CONTROL CLOSED	Problem
46	LOW-FIRE NEGATIVE PRESSURE CONTROL OPEN	Problem
50	FREEZE SWITCH OPEN - CIRCUIT 2	Problem
55	2nd stage COMBUSTION PRESSURE SWITCH CLOSED	Problem
57	HIGH-FIRE NEGATIVE PRESSURE CONTROL CLOSED	Problem
61	HIGH-FIRE NEGATIVE PRESSURE CONTROL OPEN	Problem, Shutdown

N. DIAGNOSTICS

N.2.5. VFD Codes

N.2.5.1. Yaskawa VFD Codes

Some units come equipped with a Yaskawa V1000 Variable Frequency Drive attached to the blower assembly in the blower motor compartment.

When the drive detects a fault, the ALM indicator LED remains lit without flashing. If the LED flashes, the drive has detected a minor fault or alarm. Conditions such as overvoltage or external faults can trip both faults and minor faults, therefore it is important to note whether the LED remains lit or if the LED flashes.

When the control senses a fault present, it will display a code to help in diagnoses. A list of normal operating codes and potential fault codes can be found below and on the following page.

More fault codes can be found on the manufacturer's website. In the blower compartment, on the right side VFD assembly there is a label that gives the model number of the VFD. Use that model number to find the VFD Installation Manual on the manufacturer's website.

Digital Operator Display	Name	Minor Fault Output (H2 - □□ = 10)
CE	MEMOBUS/Modbus Communication Error	YES
CrST	Can Not Reset	YES
dnE	Drive Disabled	YES
EF1 to EF7	External Fault (input terminal S1 to S7)	YES
HCA	Current Alarm	YES
LT-1	Cooling Fan Maintenance Alarm	No Output <1>
LT-2	Capacitor Maintenance Alarm	No Output <1>
LT-3	Soft Charge Bypass Relay Maintenance Time	No Output <1>
LT-4	IGBT Maintenance Time (50%)	No Output <1>
oH	Heatsink Overheat	YES
oH2	Drive Overheat	YES
oH3	Motor Overheat	YES
oL3	Overtorque 1	YES
oL4	Overtorque 2	YES
oL5	Mechanical Weakening Direction 1	YES
oS	Overspeed (for Simple V/f with PG	YES
oV	Overvoltage	YES
Pgo	PG Disconnect (for Simple V/f with PG)	YES

N. DIAGNOSTICS

N.2.5.1. Yaskawa VFD Codes (Cont.)

Digital Operator Display	Name
bUS	Option Communication Error
CE	MEMOBUS/Mobus Communication Error
CF	Control Fault
CPF02	A/D Conversion Error
CPF07	Terminal Board Communication Fault
CPF08	EEPROM Serial Communications Fault
CPF011	RAM Fault
CPF012	FLASH Memory Fault
CPF013	Watchdog Circuit Exception
CPF014	Control Circuit Fault
CPF016	Clock Fault
CPF017	Timing Fault
CPF018	Control Circuit Fault
CPF019	Control Circuit Fault
CPF020 or CPF21	RAM Fault
	FLASH Memory Fault
	Watchdog Circuit Exception
	Clock Fault
EF0	Option External Fault
EF1 to EF7	External Fault (input terminal S1 to S7)
Err	EEPROM Write Error
GF	Ground Fault
LF	Output Phase Loss
LF2	Current Imbalance
oC	Overcurrent
oH	Heat Sink Overheat
oH1	Heat Sink Overheat
oL1	Motor Overload
oL2	Drive Overload
oL3	Overtorque Detection 1
oL4	Overtorque Detection 2
oL5	Mechanical Weakening Detection 1
oL6	Overvoltage
oL7	Input Phase Loss
oL8	IGBT Short Circuit
oL9	Undervoltage
oL10	Control Power Supply Undervoltage
oL11	Soft Charge Circuit Fault

N. DIAGNOSTICS

N.2.5. VFD Codes (Cont.)

N.2.5.2. Mitsubishi VFD Codes

Some units come equipped with a Mitsubishi FR-E800 Variable Frequency Drive attached to the blower assembly in the blower motor compartment.

When the drive detects a fault, an “E” with a Three Character Fault Code will be displayed on the LED display (Example: E.LUP). The drive may not stop the drive from running unless it is not corrected. The drive will store the last 10 fault codes, a condensed list of fault codes and operating codes can be found below.

More fault codes can be found on the manufacturer’s website. In the blower compartment, on the right side VFD assembly there is a label that gives the model number of the VFD. Use that model number to find the VFD Installation Manual on the manufacturer’s website.

Operation Panel Indication	Code	Name
E.OC1	16 (H10)	Overcurrent trip during acceleration
E.OC2	17 (H11)	Overcurrent trip during constant speed
E.OC3	18 (H12)	Overcurrent trip during deceleration or stop
E.OV1	32 (H20)	Regenerative overvoltage trip during acceleration
E.OV2	33 (H21)	Regenerative overvoltage trip during constant speed
E.OV3	34 (H22)	Regenerative overvoltage trip during deceleration or stop
E.THT	48 (H30)	Inverter overload trip (electronic thermal relay function)
E.THM	49 (H31)	Motor overload trip (electronic thermal relay function)
E.FIN	64 (H40)	Heat sink overheat
E.UVT	81 (H51)	Undervoltage
E.ILF	82 (H52)	Input phase loss
E.OLT	96 (H60)	Stall prevention stop
E.SOT	97 (H61)	Loss of synchronism detection
E.LUP	98 (H62)	Upper limit fault detection
E.LDN	99 (H63)	Lower limit fault detection
E.BE	112 (H70)	Brake transistor alarm detection
E.GF	128 (H80)	Output side earth (ground) fault overcurrent
E.LF	129 (H81)	Output phase loss
E.OHT	144 (H91)	External thermal relay operation
E.PTC	145 (H91)	PTC thermistor operation
E.OPT	160 (HA0)	Option Fault

N. DIAGNOSTICS

N.3. Common Mistakes

- These are a list of common mistakes made during installation.
- Drain Pan Connections, drain trap connected to the wrong outlet side, not connected at all, or insufficient trap depth.
- Connecting a W2 call only to try and get full heat all the time, Connect both W1 and W2 together if the job requirement or thermostat is setup for single stage heating.
- Connecting a Y2 call only to try and get full cooling all the time, Connect both Y1 and Y2 together if the job requirement or thermostat is setup for single stage cooling.
- Economizer connections, not installing the 3-wire jumper plug into the economizer wiring harness, if a factory option smoke detector is not used, this will cause a Smoke Detection Fault.

Appendix A – General Product Data

Model RACDZT Series	ZT090	ZT102	ZT120	ZT150
Cooling Performance^A				
Gross Cooling Capacity Btu [kW]	88,000 [25.78]	99,000 [29.01]	118,000 [34.57]	148,000 [43.36]
EER	11.2	11.2	11.2	11.0
IEER ^B	14.8	14.8	14.8	14.2
Nominal CFM/AHRI Rated CFM [L/s]	3000/3175 [1416/1498]	3400/3225 [1604/1522]	4000/3480 [1888/1642]	5000/4150 [2360/1959]
AHRI Net Cooling Capacity Btu [kW]	85,000 [24.9]	96,000 [28.13]	114,000 [33.4]	142,000 [41.61]
Net Sensible Capacity Btu [kW]	62,700 [18.37]	68,300 [20.01]	79,600 [23.32]	98,600 [28.89]
Net Latent Capacity Btu [kW]	22,300 [6.53]	27,700 [8.12]	34,400 [10.08]	43,400 [12.72]
Net System Power kW	7.59	8.57	10.18	12.91
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	2/Tandem Scroll
No. Stages	2	2	2	2
Outdoor Sound Rating (dB)^C				
	88	88	88	88
Outdoor Coil - Fin Type				
Tube Type	Louvered	Louvered	Louvered	Louvered
MicroChannel Depth in. [mm]	MicroChannel	MicroChannel	MicroChannel	MicroChannel
Face Area sq. ft. [sq. m]	0.71 [18]	0.81 [20.6]	1 [25.4]	1 [25.4]
Rows / FPI [FPcm]	25.4 [2.36]	25.6 [2.38]	25.6 [2.38]	31.5 [2.93]
	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]	1 / 23 [9]
Indoor Coil - Fin Type				
Tube Type	Louvered	Louvered	Louvered	Louvered
MicroChannel Depth in. [mm]	MicroChannel	MicroChannel	MicroChannel	MicroChannel
Face Area sq. ft. [sq. m]	1 [25.4]	1.26 [32]	1.26 [32]	1 [25.4]
Rows / FPI [FPcm]	11 [1.02]	10.9 [1.01]	10.9 [1.01]	13.8 [1.28]
Refrigerant Control	1 / 20 [8]	1 / 20 [8]	1 / 20 [8]	2 / 18 [7]
Drain Connection No./Size in. [mm]	TX Valves	TX Valves	TX Valves	TX Valves
	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]	1/0.75 [19.05]
Outdoor Fan - Type				
No. Used/Diameter in. [mm]	Propeller	Propeller	Propeller	Propeller
Drive Type/No. Speeds	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]
CFM [L/s]	Direct/1	Direct/1	Direct/1	Direct/1
No. Motors/HP	8000 [3775]	8000 [3775]	8500 [4011]	9000 [4247]
Motor RPM	2 at 1/5 HP	2 at 1/5 HP	2 at 1/3 HP	2 at 3/4 HP
	820	820	1075	1100
Indoor Fan - Type				
No. Used/Diameter in. [mm]	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
Drive Type	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]
No. Speeds	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)
No. Motors	2	2	2	2
Motor RPM	1	1	1	1
Motor Frame Size	1725	1725	1725	1725
	56	56	56	184
Filter - Type				
Furnished	Disposable	Disposable	Disposable	Disposable
(NO.) Size Recommended in. [mm x mm x mm]	Yes	Yes	Yes	Yes
	(4)2x20x20 [51x508x508]	(4)2x20x20 [51x508x508]	(4)2x20x20 [51x508x508]	(4)2x20x20 [51x508x508]
Refrigerant Charge Oz. [g]				
	100 [2835]	122 [3458]	136 [3856]	186 [5273]
Weights				
Net Weight lbs. [kg]	736 [334]	762 [346]	791 [359]	993 [450]
Ship Weight lbs. [kg]	775 [352]	801 [363]	830 [376]	1032 [468]

Note: Please look at the rating plates pasted on the side of the unit to understand the model number of your unit.

P. APPENDICES

Appendix A – General Product Data

Notes:

- A. Cooling Performance is rated at 95° F ambient, 80° F entering dry bulb, 67° F entering wet bulb. Gross capacity does not include the effect of fan motor heat. AHRI capacity is net and includes the effect of fan motor heat. Units are suitable for operation to 20% of nominal cfm. Units are certified in accordance with the Unitary Air Conditioner Equipment certification program, which is based on AHRI Standard 340/360.
- B. EER and Integrated Energy Efficiency Ratio (IEER) are rated in accordance with AHRI Standard 340/360 and with DOE test procedures.
- C. Outdoor Sound Rating shown is tested in accordance with AHRI Standard 270.

Appendix B – Electrical Data (Cont.)

See Appendix E for Electrical Data and Fuse Sizing specific to the Manufacturer’s approved Electric Heater Kits.

ELECTRICAL DATA – RACDZT SERIES							
		090ACF	090ACG 090ACH	090ADF	090ADG 090ADH	090AYF	090AYG 090AYH
Unit Information	Unit Operating Voltage Range	187-253	187-253	414-506	414-506	517-633	517-633
	Volts	208/230	208/230	460	460	575	575
	Phase	3	3	3	3	3	3
	Hz	60	60	60	60	60	60
	Minimum Circuit Ampacity	41	44	17	19	15	16
	Minimum Overcurrent Protection Device Size	50	50	20	25	20	20
	Maximum Overcurrent Protection Device Size	60	60	25	25	20	20
Compressor Motor	No.	1	1	1	1	1	1
	Volts	208/230	208/230	460	460	575	575
	Phase	3	3	3	3	3	3
	RPM	3500	3500	3500	3500	3500	3500
	HP, Compressor 1	7	7	7	7	7	7
	Amps (RLA), Comp. 1	25.3	25.3	9.6	9.6	8.4	8.4
	Amps (LRA), Comp. 1	184	184	84	84	60	60
Condenser Motor	No.	2	2	2	2	2	2
	Volts	208/230	208/230	460	460	575	575
	Phase	1	1	1	1	1	1
	HP	1/5	1/5	1/5	1/5	1/5	1/5
	Amps (FLA, each)	1.2	1.2	0.8	0.8	0.6	0.6
	Amps (LRA, each)	2.3	2.3	1.4	1.4	1.0	1.0
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)	6.6	9.1	3.2	4.6	2.5	3.5
	Amps (LRA, each)	47.0	74.5	24.0	38.1	19.0	30.0

P. APPENDICES

Appendix B – Electrical Data (Cont.)

See Appendix E for Electrical Data and Fuse Sizing specific to the Manufacturer’s approved Electric Heater Kits.

ELECTRICAL DATA – RACDZT SERIES									
		102ACF	102ACG	102ACH	102ADF	102ADG	102ADH	102AYF	102AYG 102AYH
Unit Information	Unit Operating Voltage Range	187-253	187-253	187-253	414-506	414-506	414-506	517-633	517-633
	Volts	208/230	208/230	208/230	460	460	460	575	575
	Phase	3	3	3	3	3	3	3	3
	Hz	60	60	60	60	60	60	60	60
	Minimum Circuit Ampacity	46	48	51	21	22	24	16	17
	Minimum Overcurrent Protection Device Size	60	60	60	25	25	30	20	20
	Maximum Overcurrent Protection Device Size	70	70	70	30	30	35	25	25
Compressor Motor	No.	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	460	460	460	575	575
	Phase	3	3	3	3	3	3	3	3
	RPM	3500	3500	3500	3500	3500	3500	3500	3500
	HP, Compressor 1	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2
	Amps (RLA), Comp. 1	28.8	28.8	28.8	12.5	12.5	12.5	9.7	9.7
	Amps (LRA), Comp. 1	223	223	223	100	100	100	70	70
Condenser Motor	No.	2	2	2	2	2	2	2	2
	Volts	208/230	208/230	208/230	460	460	460	575	575
	Phase	1	1	1	1	1	1	1	1
	HP	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/5
	Amps (FLA, each)	1.2	1.2	1.2	0.8	0.8	0.8	0.6	0.6
	Amps (LRA, each)	2.3	2.3	2.3	1.4	1.4	1.4	1.0	1.0
Evaporator Fan	No.	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	460	460	460	575	575
	Phase	3	3	3	3	3	3	3	3
	HP	2	3	3	2	3	3	2	3
	Amps (FLA, each)	7	9.1	12	3.5	4.6	6.0	2.5	3.5
	Amps (LRA, each)	47.0	74.5	74.5	24.0	38.1	38.1	19	30

P. APPENDICES

Appendix B – Electrical Data (Cont.)

See Appendix E for Electrical Data and Fuse Sizing specific to the Manufacturer’s approved Electric Heater Kits.

ELECTRICAL DATA – RACDZT SERIES									
		120ACF	120ACG	120ACH	120ADF	120ADG	120ADH	120AYF	120AYG 120AYH
Unit Information	Unit Operating Voltage Range	187-253	187-253	187-253	414-506	414-506	414-506	517-633	517-633
	Volts	208/230	208/230	208/230	460	460	460	575	575
	Phase	3	3	3	3	3	3	3	3
	Hz	60	60	60	60	60	60	60	60
	Minimum Circuit Ampacity	54	56	58	26	27	28	19	20
	Minimum Overcurrent Protection Device Size	70	70	70	30	35	35	25	25
	Maximum Overcurrent Protection Device Size	80	80	90	40	40	40	25	30
Compressor Motor	No.	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	460	460	460	575	575
	Phase	3	3	3	3	3	3	3	3
	RPM	3500	3500	3500	3500	3500	3500	3500	3500
	HP, Compressor 1	10	10	10	10	10	10	10	10
	Amps (RLA), Comp. 1	32.6	32.6	32.6	14.8	14.8	14.8	11.1	11.1
	Amps (LRA), Comp. 1	240	240	240	130	130	130	93.7	93.7
Condenser Motor	No.	2	2	2	2	2	2	2	2
	Volts	208/230	208/230	208/230	460	460	460	575	575
	Phase	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
	Amps (FLA, each)	2.4	2.4	2.4	1.4	1.4	1.4	1.0	1.0
	Amps (LRA, each)	4.7	4.7	4.7	2.4	2.4	2.4	4.7	4.7
Evaporator Fan	No.	1	1	1	1	1	1	1	1
	Volts	208/230	208/230	208/230	460	460	460	575	575
	Phase	3	3	3	3	3	3	3	3
	HP	2	3	3	2	3	3	2	3
	Amps (FLA, each)	7.9	10.1	12	3.9	5.1	6.0	2.5	3.5
	Amps (LRA, each)	47.0	74.5	74.5	24.0	38.1	38.1	19	30

P. APPENDICES

Appendix B – Electrical Data (Cont.)

See Appendix E for Electrical Data and Fuse Sizing specific to the Manufacturer’s approved Electric Heater Kits.

ELECTRICAL DATA – RACDZT SERIES							
		150ACF	150ACG	150ADF	150ADG	150AYF	150AYG
Unit Information	Unit Operating Voltage Range	187-253	187-253	414-506	414-506	517-633	517-633
	Volts	208/230	208/230	460	460	575	575
	Phase	3	3	3	3	3	3
	Hz	60	60	60	60	60	60
	Minimum Circuit Ampacity	70	75	34	37	25	27
	Minimum Overcurrent Protection Device Size	80	90	40	40	30	30
	Maximum Overcurrent Protection Device Size	90	90	40	45	30	30
Compressor Motor	No.	2	2	2	2	1	1
	Volts	208/230	208/230	460	460	575	575
	Phase	3	3	3	3	3	3
	RPM	3500	3500	3500	3500	3500	3500
	HP, Compressor 1	6	6	6	6	6	6
	Amps (RLA), Comp. 1	22.4	22.4	10.6	10.6	7.7	7.7
	Amps (LRA), Comp. 1	149	149	75	75	54	54
	HP, Compressor 2	6	6	6	6	6	6
	Amps (RLA), Comp. 2	22.4	22.4	10.6	10.6	7.7	7.7
Amps (LRA), Comp. 2	149	149	75	75	54	54	
Condenser Motor	No.	2	2	2	2	2	2
	Volts	208/230	208/230	460	460	575	575
	Phase	1	1	1	1	1	1
	HP	3/4	3/4	3/4	3/4	3/4	3/4
	Amps (FLA, each)	4.2	4.2	2.3	2.3	1.6	1.6
	Amps (LRA, each)	10.1	10.1	4.9	4.9	3.4	3.4
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	3	5	3	5	3	5
	Amps (FLA, each)	10.4	16	5.2	8	4.4	5.9
	Amps (LRA, each)	74.5	95	38.1	47.5	30	38

Appendix D – Cooling Data for RACDZT 7.5 Ton

COOLING PERFORMANCE DATA - RACDZT090												
Entering Indoor Air @ 80°F [26.7°C] dbE												
wbE CFM [L/s]	71°F [21.7°C]			67°F [19.4°C]			63°F [17.2°C]			63°F [17.2°C]		
	3450 [1628]	2500 [1180]	3175 [1498]	3450 [1628]	2500 [1180]	3175 [1498]	3450 [1628]	2500 [1180]	3175 [1498]	3450 [1628]	2500 [1180]	3175 [1498]
75°F [23.9°C]	Total BTUH [kW]	108.2 [31.7]	106.5 [31.2]	106.5 [31.2]	103.5 [30.3]	101.9 [29.9]	98.7 [28.9]	97.9 [28.7]	97.2 [28.5]	93.5 [27.4]	93.5 [27.4]	93.5 [27.4]
	Sens BTUH [kW] Power	62.6 [18.3]	60.2 [17.6]	60.2 [17.6]	73.8 [21.6]	71 [20.8]	65	6.4	6.4	6.3	73.6 [21.6]	6.2
80°F [26.7°C]	Total BTUH [kW]	105.7 [31]	104.1 [30.5]	104.1 [30.5]	101 [29.6]	99.5 [29.2]	96.3 [28.2]	95.6 [28]	94.8 [27.8]	91.2 [26.7]	91.2 [26.7]	91.2 [26.7]
	Sens BTUH [kW] Power	61.4 [18]	59 [17.3]	59 [17.3]	72.6 [21.3]	69.8 [20.5]	6.7	6.7	6.6	6.6	72.6 [21.3]	6.5
85°F [29.4°C]	Total BTUH [kW]	103.3 [30.3]	101.7 [29.8]	101.7 [29.8]	98.6 [28.9]	97.1 [28.5]	93.9 [27.5]	93.3 [27.3]	92.4 [27.1]	88.9 [26.1]	88.9 [26.1]	88.9 [26.1]
	Sens BTUH [kW] Power	60.2 [17.6]	57.9 [17]	57.9 [17]	71.5 [21]	68.7 [20.1]	7.2	7	6.9	71.6 [21]	6.8	
90°F [32.2°C]	Total BTUH [kW]	100.9 [29.6]	99.3 [29.1]	99.3 [29.1]	96.2 [28.2]	94.7 [27.8]	91.4 [26.8]	91 [26.7]	90 [26.4]	86.5 [25.4]	86.5 [25.4]	86.5 [25.4]
	Sens BTUH [kW] Power	59.1 [17.3]	56.8 [16.6]	56.8 [16.6]	70.3 [20.6]	67.6 [19.8]	7.3	7.4	7.3	70.6 [20.7]	7.1	
95°F [35.0°C]	Total BTUH [kW]	98.4 [28.8]	96.9 [28.4]	96.9 [28.4]	93.7 [27.5]	92.3 [27.1]	89 [26.1]	88.7 [26]	87.6 [25.7]	84.2 [24.7]	84.2 [24.7]	84.2 [24.7]
	Sens BTUH [kW] Power	57.9 [17]	55.6 [16.3]	55.6 [16.3]	69.1 [20.3]	66.4 [19.5]	7.8	7.7	7.6	69.5 [20.4]	7.4	
100°F [37.8°C]	Total BTUH [kW]	96 [28.1]	94.5 [27.7]	94.5 [27.7]	91.3 [26.8]	89.9 [26.3]	86.6 [25.4]	86.4 [25.3]	85.2 [25]	81.9 [24]	81.9 [24]	81.9 [24]
	Sens BTUH [kW] Power	56.7 [16.6]	54.5 [16]	54.5 [16]	67.9 [19.9]	65.3 [19.1]	8.1	8	7.9	68.5 [20.1]	7.7	
105°F [40.6°C]	Total BTUH [kW]	93.6 [27.4]	92.1 [27]	92.1 [27]	88.9 [26.1]	87.5 [25.6]	84.1 [24.6]	84.1 [24.6]	82.8 [24.3]	79.6 [23.3]	79.6 [23.3]	79.6 [23.3]
	Sens BTUH [kW] Power	55.5 [16.3]	53.4 [15.7]	53.4 [15.7]	66.8 [19.6]	64.2 [18.8]	8.3	8.3	8.2	67.5 [19.8]	8.1	
110°F [43.3°C]	Total BTUH [kW]	91.1 [26.7]	89.7 [26.3]	89.7 [26.3]	86.4 [25.3]	85.1 [24.9]	81.7 [23.9]	81.8 [24]	80.4 [23.6]	77.3 [22.7]	77.3 [22.7]	77.3 [22.7]
	Sens BTUH [kW] Power	54.4 [15.9]	52.2 [15.3]	52.2 [15.3]	65.6 [19.2]	63 [18.5]	8.8	8.6	8.6	66.5 [19.5]	8.4	
115°F [46.1°C]	Total BTUH [kW]	88.7 [26]	87.3 [25.6]	87.3 [25.6]	84 [24.6]	82.7 [24.2]	79.3 [23.2]	79.5 [23.3]	78 [22.9]	75 [22]	75 [22]	75 [22]
	Sens BTUH [kW] Power	53.2 [15.6]	51.1 [15]	51.1 [15]	64.4 [18.9]	61.9 [18.1]	9.1	8.9	8.8	65.5 [19.2]	8.7	
120°F [46.9°C]	Total BTUH [kW]	86.3 [25.3]	84.9 [24.9]	84.9 [24.9]	81.6 [23.9]	80.3 [23.5]	76.8 [22.2]	77.2 [22.6]	75.6 [22.2]	72.7 [21.3]	72.7 [21.3]	72.7 [21.3]
	Sens BTUH [kW] Power	52 [15.2]	50 [14.7]	50 [14.7]	63.2 [18.5]	60.8 [17.8]	9.4	9.2	9.2	64.4 [18.9]	9	
125°F [51.7°C]	Total BTUH [kW]	83.8 [24.6]	82.5 [24.2]	82.5 [24.2]	79.3 [23.2]	77.9 [22.8]	74.4 [21.8]	74.9 [22]	73.3 [21.5]	70.4 [20.6]	70.4 [20.6]	70.4 [20.6]
	Sens BTUH [kW] Power	50.8 [14.9]	48.8 [14.3]	48.8 [14.3]	62 [18.2]	59.6 [17.5]	9.8	9.5	9.5	63.4 [18.6]	9.3	

Outdoor Dry Bulb Temperature

DR — Depression ratio Total — Total capacity x 1000 BTUH NOTES:
 dbE — Entering air dry bulb Sens — Sensible capacity x 1000 BTUH. When the entering air dry bulb is other than 80°F [27°C], adjust the sensible
 wbE — Entering air wet bulb Power — KW input capacity from the table by adding [1.10 x CFM x (1 – DR) x (dbE – 80)].

P. APPENDICES

Appendix D – Cooling Data for RACDZT 8.5 Ton

COOLING PERFORMANCE DATA - RACDZT102											
Entering Indoor Air @ 80°F [26.7°C] dbE											
w/E	71°F [21.7°C]			67°F [19.4°C]			63°F [17.2°C]				
	CFM [L/s]	DR	Power	CFM [L/s]	DR	Power	CFM [L/s]	DR	Power	CFM [L/s]	DR
75°F [23.9°C]	Total BTUH [kW]	3900 [1841]	2825 [1333]	3900 [1841]	3225 [1522]	2825 [1333]	3900 [1841]	3225 [1522]	2825 [1333]	3900 [1841]	3225 [1522]
	Sens BTUH [kW] Power	126.8 [37.2] 73.2 [21.5] 7.6	119.4 [35] 62.8 [18.4] 7.3	120 [35.2] 86.3 [25.3] 7.5	115.6 [33.9] 78.1 [23.1] 7.4	113 [33.1] 74.1 [21.7] 7.3	114.1 [33.4] 98.2 [28.8] 7.4	109.9 [32.2] 89.5 [26.2] 7.2	107.4 [31.5] 84.3 [24.7] 7.2	104.8 [30.7] 83.1 [24.4] 7.5	107.4 [31.5] 84.3 [24.7] 7.2
80°F [26.7°C]	Total BTUH [kW]	1239 [363]	119.4 [35]	117.1 [34.3]	112.9 [33.1]	110.3 [32.3]	111.3 [32.6]	107.2 [31.4]	104.8 [30.7]	111.3 [32.6]	107.2 [31.4]
	Sens BTUH [kW] Power	71.8 [21] 7.9	65.4 [19.2] 7.7	85 [24.9] 7.8	77.4 [22.7] 7.7	72.9 [21.4] 7.6	96.8 [28.4] 7.7	88.2 [25.8] 7.6	83.1 [24.4] 7.5	83.1 [24.4] 7.5	88.2 [25.8] 7.6
85°F [29.4°C]	Total BTUH [kW]	1209 [354]	116.5 [34.1]	114.2 [33.5]	110 [32.2]	107.5 [31.5]	108.3 [31.7]	104.3 [30.6]	102 [29.9]	108.3 [31.7]	104.3 [30.6]
	Sens BTUH [kW] Power	70.3 [20.6] 8.2	64.1 [18.8] 8.1	83.5 [24.5] 8.2	76.1 [22.3] 8	71.7 [21] 7.9	95.3 [27.9] 8	86.9 [25.5] 7.9	81.8 [24] 7.8	81.8 [24] 7.8	86.9 [25.5] 7.9
90°F [32.2°C]	Total BTUH [kW]	1178 [345]	113.5 [33.3]	111.1 [32.6]	107 [31.4]	104.6 [30.7]	105.2 [30.8]	101.3 [29.7]	99 [29]	105.2 [30.8]	101.3 [29.7]
	Sens BTUH [kW] Power	68.7 [20.1] 8.5	62.6 [18.3] 8.4	81.9 [24] 8.5	74.6 [21.9] 8.3	70.3 [20.6] 8.2	93.7 [27.5] 8.3	85.4 [25] 8.2	80.5 [23.6] 8.1	80.5 [23.6] 8.1	85.4 [25] 8.2
95°F [35.0°C]	Total BTUH [kW]	1146 [336]	110.4 [32.4]	107.9 [31.6]	103.9 [30.5]	101.5 [29.7]	101.9 [29.9]	98.2 [28.8]	96 [28.1]	101.9 [29.9]	98.2 [28.8]
	Sens BTUH [kW] Power	67 [19.6] 8.8	61.1 [17.9] 8.7	80.2 [23.5] 8.8	73.1 [21.4] 8.6	68.8 [20.2] 8.5	92 [27] 8.7	83.8 [24.6] 8.5	79 [23.2] 8.4	79 [23.2] 8.4	83.8 [24.6] 8.5
100°F [37.8°C]	Total BTUH [kW]	1112 [326]	107.1 [31.4]	104.4 [30.6]	100.6 [29.5]	98.3 [28.8]	98.5 [28.9]	94.9 [27.8]	92.8 [27.2]	98.5 [28.9]	94.9 [27.8]
	Sens BTUH [kW] Power	65.2 [19.1] 9.2	59.4 [17.4] 9	78.4 [23] 9.1	71.4 [20.9] 9	67.3 [19.7] 8.9	90.2 [26.4] 9	82.2 [24.1] 8.8	77.4 [22.7] 8.7	77.4 [22.7] 8.7	82.2 [24.1] 8.8
105°F [40.6°C]	Total BTUH [kW]	1077 [316]	103.7 [30.4]	101.4 [29.7]	97.2 [28.5]	95 [27.8]	95 [27.8]	91.5 [26.8]	89.5 [26.2]	95 [27.8]	91.5 [26.8]
	Sens BTUH [kW] Power	63.3 [18.6] 9.5	57.6 [16.9] 9.3	76.4 [22.4] 9.4	69.6 [20.4] 9.3	65.6 [19.2] 9.2	88.3 [25.9] 9.3	80.4 [23.6] 9.1	75.8 [22.2] 9	75.8 [22.2] 9	80.4 [23.6] 9.1
110°F [43.3°C]	Total BTUH [kW]	104 [30.5]	100.2 [29.4]	97.3 [28.5]	93.7 [27.5]	91.6 [26.8]	91.4 [26.8]	88 [25.8]	86 [25.2]	91.4 [26.8]	88 [25.8]
	Sens BTUH [kW] Power	61.2 [17.9] 9.8	55.8 [16.4] 9.6	74.4 [21.8] 9.8	67.6 [19.9] 9.6	63.9 [18.7] 9.5	86.2 [25.3] 9.6	78.6 [23] 9.5	74 [21.7] 9.3	74 [21.7] 9.3	78.6 [23] 9.5
115°F [46.1°C]	Total BTUH [kW]	100.2 [29.4]	96.6 [28.3]	94.4 [27.7]	90.1 [26.4]	88 [25.8]	87.6 [25.7]	84.4 [24.7]	82.5 [24.2]	87.6 [25.7]	84.4 [24.7]
	Sens BTUH [kW] Power	59.1 [17.3] 10.1	53.8 [15.8] 9.9	72.2 [21.2] 10.1	65.8 [19.3] 9.9	62 [18.2] 9.8	84.1 [24.6] 9.9	76.6 [22.5] 9.8	72.2 [21.2] 9.7	72.2 [21.2] 9.7	76.6 [22.5] 9.8
120°F [48.9°C]	Total BTUH [kW]	96.3 [28.2]	92.8 [27.2]	90.7 [26.6]	86.3 [25.3]	84.3 [24.7]	83.7 [24.5]	80.6 [23.6]	78.8 [23.1]	83.7 [24.5]	80.6 [23.6]
	Sens BTUH [kW] Power	56.8 [16.6] 10.5	51.7 [15.2] 10.3	48.7 [14.3] 10.1	63.7 [18.7] 10.2	60 [17.6] 10.1	81.8 [24] 10.3	74.5 [21.8] 10.1	70.2 [20.6] 10	70.2 [20.6] 10	74.5 [21.8] 10.3
125°F [51.7°C]	Total BTUH [kW]	92.3 [27.1]	88.9 [26.1]	86.9 [25.5]	82.4 [24.2]	80.5 [23.6]	79.6 [23.3]	76.7 [22.5]	75 [22]	79.6 [23.3]	76.7 [22.5]
	Sens BTUH [kW] Power	54.4 [15.9] 10.8	49.5 [14.5] 10.6	46.7 [13.7] 10.5	61.6 [18.1] 10.5	58 [17] 10.4	79.4 [23.3] 10.6	72.3 [21.2] 10.4	68.2 [20] 10.3	68.2 [20] 10.3	72.3 [21.2] 10.4

Outdoor Dry Bulb Temperature

DR — Depression ratio Total — Total capacity x 1000 BTUH NOTES:
 dbE — Entering air dry bulb Sens — Sensible capacity x 1000 BTUH. When the entering air dry bulb is other than 80°F [27°C], adjust the sensible
 w/E — Entering air wet bulb Power — kW input capacity from the table by adding [1.10 x CFM x (1 - DR) x (dbE - 80)].

Appendix D – Cooling Data for RACDZT 10 Ton

COOLING PERFORMANCE DATA - RACDZT120													
Entering Indoor Air @ 80°F [26.7°C] dbE													
wbE CFM [L/s]	71°F [21.7°C]			67°F [19.4°C]			63°F [17.2°C]			63°F [17.2°C]			
	4450 [2100]	3475 [1640]	3200 [1510]	4450 [2100]	3475 [1640]	3200 [1510]	4450 [2100]	3475 [1640]	3200 [1510]	4450 [2100]	3475 [1640]	3200 [1510]	
DR	.05	.09	.12	.05	.09	.12	.05	.09	.12	.05	.09	.12	
Total BTUH [kW] Sens BTUH [kW] Power	145.7 [42.7] 85.3 [25] 9	138.7 [40.7] 75.4 [22.1] 8.8	136.7 [40.1] 72.7 [21.3] 8.7	137.7 [40.4] 99 [29] 8.9	131 [38.4] 87.6 [25.7] 8.7	129.2 [37.9] 84.3 [24.7] 8.6	129.2 [37.9] 84.3 [24.7] 8.6	129.2 [37.9] 84.3 [24.7] 8.6	129.2 [37.9] 84.3 [24.7] 8.6	129.2 [37.9] 84.3 [24.7] 8.6	123.4 [36.2] 99.7 [29.2] 8.5	123.4 [36.2] 99.7 [29.2] 8.5	121.6 [35.6] 96 [28.1] 8.5
Total BTUH [kW] Sens BTUH [kW] Power	142.5 [41.8] 83.6 [24.5] 9.4	135.5 [39.7] 73.9 [21.7] 9.2	133.6 [39.2] 71.2 [20.9] 9.1	134.4 [39.4] 97.3 [28.5] 9.3	127.9 [37.5] 86 [25.2] 9.1	126.1 [37] 82.8 [24.3] 9	126.1 [37] 82.8 [24.3] 9	126.1 [37] 82.8 [24.3] 9	126.1 [37] 82.8 [24.3] 9	126.1 [37] 82.8 [24.3] 9	120.3 [35.3] 98.1 [28.8] 8.9	120.3 [35.3] 98.1 [28.8] 8.9	118.6 [34.8] 94.5 [27.7] 8.8
Total BTUH [kW] Sens BTUH [kW] Power	139.2 [40.8] 81.8 [24] 9.8	132.4 [38.8] 72.3 [21.2] 9.5	130.5 [38.2] 69.6 [20.4] 9.5	131.2 [38.5] 95.5 [28] 9.7	124.8 [36.6] 84.4 [24.7] 9.5	123 [36] 81.3 [23.8] 9.4	123 [36] 81.3 [23.8] 9.4	123 [36] 81.3 [23.8] 9.4	123 [36] 81.3 [23.8] 9.4	123 [36] 81.3 [23.8] 9.4	117.2 [34.3] 96.5 [28.3] 9.3	117.2 [34.3] 96.5 [28.3] 9.3	115.5 [33.9] 93 [27.3] 9.2
Total BTUH [kW] Sens BTUH [kW] Power	135.9 [39.8] 80 [23.4] 10.2	129.3 [37.9] 70.8 [20.8] 9.9	127.4 [37.3] 68.1 [20] 9.9	127.9 [37.5] 93.7 [27.5] 10.1	121.7 [35.7] 82.9 [24.3] 9.9	119.9 [35.1] 79.8 [23.4] 9.8	119.9 [35.1] 79.8 [23.4] 9.8	119.9 [35.1] 79.8 [23.4] 9.8	119.9 [35.1] 79.8 [23.4] 9.8	119.9 [35.1] 79.8 [23.4] 9.8	114 [33.4] 95 [27.8] 9.7	114 [33.4] 95 [27.8] 9.7	112.4 [32.9] 91.5 [26.8] 9.6
Total BTUH [kW] Sens BTUH [kW] Power	132.6 [38.9] 78.3 [22.9] 10.6	126.2 [37] 69.2 [20.3] 10.3	124.4 [36.5] 66.6 [19.5] 10.3	124.6 [36.5] 91.9 [26.9] 10.5	118.5 [34.7] 81.3 [23.8] 10.3	116.8 [34.2] 78.3 [22.9] 10.2	116.8 [34.2] 78.3 [22.9] 10.2	116.8 [34.2] 78.3 [22.9] 10.2	116.8 [34.2] 78.3 [22.9] 10.2	116.8 [34.2] 78.3 [22.9] 10.2	110.9 [32.5] 93.4 [27.4] 10.1	110.9 [32.5] 93.4 [27.4] 10.1	109.3 [32] 90 [26.4] 10
Total BTUH [kW] Sens BTUH [kW] Power	129.3 [37.9] 76.5 [22.4] 11	123 [36] 67.6 [19.8] 10.7	121.3 [35.6] 65.1 [19.1] 10.7	121.3 [35.6] 90.2 [26.4] 10.9	115.4 [33.8] 79.7 [23.4] 10.7	113.8 [33.4] 76.8 [22.5] 10.6	113.8 [33.4] 76.8 [22.5] 10.6	113.8 [33.4] 76.8 [22.5] 10.6	113.8 [33.4] 76.8 [22.5] 10.6	113.8 [33.4] 76.8 [22.5] 10.6	107.8 [31.6] 91.8 [26.9] 10.5	107.8 [31.6] 91.8 [26.9] 10.5	106.2 [31.1] 88.5 [25.9] 10.4
Total BTUH [kW] Sens BTUH [kW] Power	126 [36.9] 74.7 [21.9] 11.4	119.9 [35.1] 66.1 [19.4] 11.1	118.2 [34.6] 63.6 [18.6] 11	118 [34.6] 88.4 [25.9] 11.3	112.3 [32.9] 78.2 [22.9] 11.1	110.7 [32.4] 75.3 [22.1] 11	110.7 [32.4] 75.3 [22.1] 11	110.7 [32.4] 75.3 [22.1] 11	110.7 [32.4] 75.3 [22.1] 11	110.7 [32.4] 75.3 [22.1] 11	104.7 [30.7] 90.3 [26.5] 10.9	104.7 [30.7] 90.3 [26.5] 10.9	103.2 [30.2] 86.9 [25.5] 10.8
Total BTUH [kW] Sens BTUH [kW] Power	122.8 [36] 72.9 [21.4] 11.8	116.8 [34.2] 64.5 [18.9] 11.5	115.1 [33.7] 62.1 [18.2] 11.4	114.7 [33.6] 86.6 [25.4] 11.7	109.2 [32] 76.6 [22.5] 11.4	107.6 [31.5] 73.8 [21.6] 11.4	107.6 [31.5] 73.8 [21.6] 11.4	107.6 [31.5] 73.8 [21.6] 11.4	107.6 [31.5] 73.8 [21.6] 11.4	107.6 [31.5] 73.8 [21.6] 11.4	101.5 [29.7] 88.7 [26] 11.3	101.5 [29.7] 88.7 [26] 11.3	100.1 [29.3] 85.4 [25] 11.2
Total BTUH [kW] Sens BTUH [kW] Power	119.5 [35] 71.2 [20.9] 12.2	113.7 [33.3] 62.9 [18.4] 11.9	112 [32.8] 60.6 [17.8] 11.8	111.4 [32.6] 84.9 [24.9] 12.1	106 [31.1] 75 [22] 11.8	104.5 [30.6] 72.3 [21.2] 11.8	104.5 [30.6] 72.3 [21.2] 11.8	104.5 [30.6] 72.3 [21.2] 11.8	104.5 [30.6] 72.3 [21.2] 11.8	104.5 [30.6] 72.3 [21.2] 11.8	98.4 [28.8] 87.1 [25.5] 11.7	98.4 [28.8] 87.1 [25.5] 11.7	97 [28.4] 83.9 [24.6] 11.6
Total BTUH [kW] Sens BTUH [kW] Power	116.2 [34.1] 69.4 [20.3] 12.6	110.5 [32.4] 61.4 [18] 12.3	109 [31.9] 59.1 [17.3] 12.2	108.2 [31.7] 83.1 [24.4] 12.5	102.9 [30.2] 73.5 [21.5] 12.2	101.4 [29.7] 70.8 [20.8] 12.1	101.4 [29.7] 70.8 [20.8] 12.1	101.4 [29.7] 70.8 [20.8] 12.1	101.4 [29.7] 70.8 [20.8] 12.1	101.4 [29.7] 70.8 [20.8] 12.1	95.3 [27.9] 85.6 [25.1] 12.1	95.3 [27.9] 85.6 [25.1] 12.1	93.9 [27.5] 82.4 [24.2] 12
Total BTUH [kW] Sens BTUH [kW] Power	112.9 [33.1] 67.6 [19.8] 13	107.4 [31.5] 59.8 [17.5] 12.7	105.9 [31] 57.6 [16.9] 12.6	104.9 [30.7] 81.3 [23.8] 12.9	98.8 [29.2] 71.9 [21.1] 12.6	98.4 [28.8] 69.3 [20.3] 12.5	98.4 [28.8] 69.3 [20.3] 12.5	98.4 [28.8] 69.3 [20.3] 12.5	98.4 [28.8] 69.3 [20.3] 12.5	98.4 [28.8] 69.3 [20.3] 12.5	92.2 [27] 84 [24.6] 12.4	92.2 [27] 84 [24.6] 12.4	90.8 [26.6] 80.9 [23.7] 12.4

Outdoor Dry Bulb Temperature

DR — Depression ratio Total — Total capacity x 1000 BTUH NOTES:
 dbE — Entering air dry bulb Sens — Sensible capacity x 1000 BTUH. When the entering air dry bulb is other than 80°F [27°C], adjust the sensible
 wbE — Entering air wet bulb Power — KW input capacity from the table by adding [1.10 x CFM x (1 - DR) x (dbE - 80)].

P. APPENDICES

Appendix D – Cooling Data for RACDZT 12.5 Ton

COOLING PERFORMANCE DATA - RACDZT1150												
Entering Indoor Air @ 80°F [26.7°C] dbE												
wB	71°F [21.7°C]			67°F [19.4°C]			63°F [17.2°C]			63°F [17.2°C]		
	CFM [L/s]	DR		5400 [2549]	3900 [1841]	4150 [1959]	5400 [2549]	3900 [1841]	4150 [1959]	5400 [2549]	3900 [1841]	4150 [1959]
75°F [23.9°C]	Total BTUH [kW]			186.3 [54.3]	173.7 [50.9]	163.5 [47.9]	172.5 [50.6]	161.8 [47.4]	151.4 [44.4]	159.7 [46.8]	149.8 [43.9]	148.5 [43.7]
	Sens BTUH [kW] Power			116.9 [34.3] 12.1	99.6 [29.2] 11.7	110.4 [32.4] 11.7	125.9 [36.9] 12	107.2 [31.4] 11.6	139.1 [40.8] 11.8	121.9 [35.7] 11.4	118.5 [34.7] 11.4	111.2 [32.6] 11.2
80°F [26.7°C]	Total BTUH [kW]			180.2 [52.8]	169 [49.5]	158.7 [46.5]	167.4 [49.1]	157 [46]	146.6 [43]	154.6 [45.3]	145 [42.5]	144.2 [42.3]
	Sens BTUH [kW] Power			114.2 [33.5] 12.6	97.3 [28.5] 12.2	107.9 [31.6] 12.2	123.1 [36.1] 12.6	104.9 [30.7] 12.2	136.3 [39.9] 12.3	119.5 [35] 12	116.1 [34] 11.9	111.2 [32.6] 11.2
85°F [29.4°C]	Total BTUH [kW]			175.1 [51.3]	164.2 [48.1]	153.9 [45.1]	162.4 [47.6]	152.2 [44.6]	141.8 [41.6]	149.6 [43.8]	140.3 [41.1]	139.2 [40.2]
	Sens BTUH [kW] Power			111.3 [32.6] 13.2	94.8 [27.8] 12.8	105.4 [30.9] 12.8	120.2 [35.2] 13.1	102.4 [30] 12.7	133.4 [39.1] 12.8	117 [34.3] 12.5	113.7 [33.3] 12.4	111.2 [32.6] 11.2
90°F [32.2°C]	Total BTUH [kW]			170.1 [49.9]	159.5 [46.7]	149.1 [43.7]	157.3 [46.1]	147.5 [43.2]	137 [40.2]	144.5 [42.4]	135.5 [39.7]	134.2 [39.4]
	Sens BTUH [kW] Power			108.3 [31.7] 13.7	92.3 [27.1] 13.3	102.8 [30.1] 13.3	117.3 [34.4] 13.6	99.9 [29.3] 13.2	130.5 [38.2] 13.4	114.4 [33.5] 13	111.2 [32.6] 13	111.2 [32.6] 11.2
95°F [35.0°C]	Total BTUH [kW]			165 [48.4]	154.7 [45.3]	144.3 [42.3]	152.2 [44.6]	142.7 [41.8]	132.2 [38.7]	139.4 [40.9]	130.7 [38.3]	129.2 [38.2]
	Sens BTUH [kW] Power			105.3 [30.9] 14.3	89.8 [26.3] 13.8	100.2 [29.4] 13.8	114.3 [33.5] 14.2	97.4 [28.5] 13.8	127.4 [37.3] 13.9	108.6 [31.8] 13.5	106.6 [31.8] 13.5	106.6 [31.8] 10.6
100°F [37.8°C]	Total BTUH [kW]			159.5 [46.9]	149.9 [43.9]	139.5 [40.9]	147.1 [43.1]	138 [40.4]	128.4 [37.6]	134.3 [39.4]	126 [36.9]	124.3 [36.4]
	Sens BTUH [kW] Power			102.2 [30] 14.8	87.1 [25.5] 14.3	97.5 [28.6] 14.4	111.2 [32.6] 14.7	94.7 [27.8] 14.3	124.3 [36.4] 14.5	106 [31.1] 14	106 [31.1] 10.6	106 [31.1] 10.6
105°F [40.6°C]	Total BTUH [kW]			154.8 [45.4]	145.2 [42.6]	134.7 [39.5]	142.1 [41.6]	133.2 [39]	122.6 [35.9]	129.3 [37.9]	121.2 [35.5]	120.2 [35.5]
	Sens BTUH [kW] Power			99.1 [29] 15.3	84.4 [24.7] 14.9	94.7 [27.8] 14.9	108 [31.7] 15.3	92 [27] 14.8	121.2 [35.5] 15	103.3 [30.3] 14.5	103.3 [30.3] 10.3	103.3 [30.3] 10.3
110°F [43.3°C]	Total BTUH [kW]			149.8 [43.9]	140.4 [41.1]	129.9 [38.1]	137 [40.2]	128.4 [37.6]	117.8 [34.5]	124.2 [36.4]	116.5 [34.1]	115.5 [34.1]
	Sens BTUH [kW] Power			95.8 [28.1] 15.9	81.7 [23.9] 15.4	91.8 [26.9] 15.4	104.7 [30.7] 15.8	89.3 [26.2] 15.3	117.9 [34.6] 15.6	103.4 [30.3] 15.2	100.5 [29.5] 15.1	100.5 [29.5] 10.0
115°F [46.1°C]	Total BTUH [kW]			144.7 [42.4]	135.7 [39.8]	125.1 [36.7]	131.9 [38.7]	123.7 [36.3]	112.9 [33.1]	119.1 [34.9]	111.7 [32.7]	111.7 [32.7]
	Sens BTUH [kW] Power			92.5 [27.1] 16.4	78.8 [23.1] 15.9	88.9 [26.1] 15.9	101.4 [29.7] 16.4	86.4 [25.3] 15.9	114.6 [33.6] 16.1	100.5 [29.5] 15.7	97.7 [28.6] 15.6	97.7 [28.6] 9.7
120°F [48.9°C]	Total BTUH [kW]			139.6 [40.9]	130.9 [38.4]	120.2 [35.2]	126.8 [37.2]	118.9 [34.8]	108.1 [31.7]	114 [33.4]	106.9 [31.3]	106.9 [31.3]
	Sens BTUH [kW] Power			89.1 [26.1] 17	75.9 [22.2] 16.4	86 [25.2] 16.5	98 [28.7] 16.9	83.5 [24.5] 16.4	111.2 [32.6] 16.6	97.5 [28.6] 16.2	94.8 [27.8] 16.1	94.8 [27.8] 9.4
125°F [51.7°C]	Total BTUH [kW]			134.5 [39.4]	126.2 [37]	115.4 [33.8]	121.8 [35.7]	114.2 [33.5]	103.3 [30.3]	109 [31.9]	102.2 [30]	102.2 [30]
	Sens BTUH [kW] Power			85.6 [25.1] 17.5	73 [21.4] 17	82.9 [24.3] 17	94.6 [27.7] 17.5	80.6 [23.6] 16.9	107.8 [31.6] 17.2	94.5 [27.7] 16.7	91.8 [26.9] 16.7	91.8 [26.9] 9.1

Outdoor Dry Bulb Temperature

DR — Depression ratio Total — Total capacity x 1000 BTUH NOTES:
 dbE — Entering air dry bulb Sens — Sensible capacity x 1000 BTUH. When the entering air dry bulb is other than 80°F [27°C], adjust the sensible
 wB — Entering air wet bulb Power — KW input capacity from the table by adding [1.10 x CFM x (1 – DR) x (dbE – 80)].

Appendix D - Reheat Data for RACDZT 7.5 Ton

GROSS SYSTEMS PERFORMANCE DATA (LOW REHEAT MODE) - RACDZT090											
Entering Indoor Air @ 75°F [23.9°C] dbE 1											
wbE		65.3°F [18.5°C]			64°F [17.8°C]			62.5°F [16.9°C]			
CFM [L/s]		1800 [850]	1700 [802]	1200 [566]	1800 [850]	1700 [802]	1200 [566]	1800 [850]	1700 [802]	1200 [566]	
Outdoor Dry Bulb Temperature	60°F [15.6°C]	Total BTUH [kW]	29.7 [8.7]	29.4 [8.6]	27.9 [8.2]	27.0 [7.9]	26.7 [7.8]	25.3 [7.4]	26.6 [7.8]	26.4 [7.7]	24.9 [7.3]
		Sens BTUH [kW]	6.5 [1.9]	6.3 [1.8]	5.4 [1.6]	9.0 [2.6]	8.7 [2.6]	7.5 [2.2]	11.4 [3.4]	11.2 [3.3]	9.6 [2.8]
		Power	3.2	3.1	3.1	3.2	3.2	3.1	3.2	3.2	3.1
	65°F [18.3°C]	Total BTUH [kW]	29.5 [8.6]	29.2 [8.5]	27.6 [8.1]	26.7 [7.8]	26.4 [7.7]	25.0 [7.3]	26.4 [7.7]	26.1 [7.6]	24.7 [7.2]
		Sens BTUH [kW]	5.0 [1.5]	4.9 [1.4]	4.2 [1.2]	7.6 [2.2]	7.4 [2.2]	6.3 [1.9]	10.0 [2.9]	9.7 [2.9]	8.4 [2.5]
		Power	3.2	3.2	3.1	3.3	3.2	3.2	3.2	3.2	3.1
	70°F [21.1°C]	Total BTUH [kW]	28.8 [8.4]	28.5 [8.4]	27.0 [7.9]	26.0 [7.6]	25.8 [7.6]	24.4 [7.1]	25.7 [7.5]	25.4 [7.5]	24.1 [7.1]
Sens BTUH [kW]		3.7 [1.1]	3.6 [1.0]	3.1 [0.9]	6.2 [1.8]	6.0 [1.8]	5.2 [1.5]	8.6 [2.5]	8.4 [2.5]	7.2 [2.1]	
Power		3.2	3.2	3.1	3.3	3.3	3.2	3.3	3.3	3.2	
75°F [23.9°C]	Total BTUH [kW]	27.8 [8.1]	27.5 [8.1]	26.0 [7.6]	25.0 [7.3]	24.7 [7.2]	23.4 [6.9]	24.7 [7.2]	24.4 [7.2]	23.1 [6.8]	
	Sens BTUH [kW]	2.3 [0.7]	2.3 [0.7]	2.0 [0.6]	4.9 [1.4]	4.7 [1.4]	4.1 [1.2]	7.3 [2.1]	7.1 [2.1]	6.1 [1.8]	
	Power	3.3	3.3	3.2	3.4	3.4	3.3	3.4	3.4	3.3	
80°F [26.7°C]	Total BTUH [kW]	26.3 [7.7]	26.0 [7.6]	24.6 [7.2]	23.5 [6.9]	23.3 [6.8]	22.1 [6.5]	23.2 [6.8]	23.0 [6.7]	21.7 [6.4]	
	Sens BTUH [kW]	1.1 [0.3]	1.0 [0.3]	0.9 [0.3]	3.6 [1.0]	3.5 [1.0]	3.0 [0.9]	6.0 [1.8]	5.9 [1.7]	5.1 [1.5]	
	Power	3.4	3.4	3.3	3.5	3.5	3.4	3.5	3.5	3.4	
85°F [29.4°C]	Total BTUH [kW]	24.5 [7.2]	24.2 [7.1]	22.9 [6.7]	21.7 [6.4]	21.5 [6.3]	20.3 [6.0]	21.4 [6.3]	21.1 [6.2]	20.0 [5.9]	
	Sens BTUH [kW]	-0.2 [-0.1]	-0.2 [0.0]	-0.1 [0.0]	2.4 [0.7]	2.3 [0.7]	2.0 [0.6]	4.8 [1.4]	4.7 [1.4]	4.0 [1.2]	
	Power	3.6	3.6	3.5	3.7	3.6	3.6	3.6	3.6	3.5	
90°F [32.2°C]	Total BTUH [kW]	22.2 [6.5]	22.0 [6.4]	20.8 [6.1]	19.5 [5.7]	19.3 [5.6]	18.2 [5.3]	19.1 [5.6]	18.9 [5.5]	17.9 [5.3]	
	Sens BTUH [kW]	-1.3 [-0.4]	-1.3 [-0.4]	-1.1 [-0.3]	1.2 [0.3]	1.1 [0.3]	1.0 [0.3]	3.6 [1.1]	3.5 [1.0]	3.0 [0.9]	
	Power	3.8	3.7	3.6	3.8	3.8	3.7	3.8	3.8	3.7	

GROSS SYSTEMS PERFORMANCE DATA (HIGH REHEAT MODE) - RACDZT090											
Entering Indoor Air @ 75°F [23.9°C] dbE 1											
wbE		65.3°F [18.5°C]			64°F [17.8°C]			62.5°F [16.9°C]			
CFM [L/s]		3600 [1699]	2900 [1369]	2400 [1133]	3600 [1699]	2900 [1369]	2400 [1133]	3600 [1699]	2900 [1369]	2400 [1133]	
Outdoor Dry Bulb Temperature	60°F [15.6°C]	Total BTUH [kW]	41.7 [12.2]	39.9 [11.7]	38.7 [11.3]	40.1 [11.8]	38.4 [11.3]	37.2 [10.9]	40.0 [11.7]	38.3 [11.2]	37.1 [10.9]
		Sens BTUH [kW]	8.9 [2.6]	8.0 [2.4]	7.4 [2.2]	12.8 [3.7]	11.5 [3.4]	10.5 [3.1]	18.5 [5.4]	16.7 [4.9]	15.3 [4.5]
		Power	5.0	4.9	4.8	4.9	4.8	4.8	4.9	4.8	4.8
	70°F [21.1°C]	Total BTUH [kW]	39.8 [11.7]	38.1 [11.2]	36.9 [10.8]	38.3 [11.2]	36.7 [10.7]	35.5 [10.4]	38.2 [11.2]	36.5 [10.7]	35.4 [10.4]
		Sens BTUH [kW]	5.9 [1.7]	5.3 [1.6]	4.9 [1.4]	9.8 [2.9]	8.8 [2.6]	8.1 [2.4]	15.5 [4.6]	14.0 [4.1]	12.8 [3.8]
		Power	5.1	5.0	4.9	5.1	5.0	4.9	5.0	4.9	4.9
	80°F [26.7°C]	Total BTUH [kW]	36.7 [10.7]	35.1 [10.3]	34.0 [10.0]	35.1 [10.3]	33.7 [9.9]	32.6 [9.6]	35.0 [10.3]	33.5 [9.8]	32.5 [9.5]
Sens BTUH [kW]		2.1 [0.6]	1.9 [0.5]	1.7 [0.5]	5.9 [1.7]	5.3 [1.6]	4.9 [1.4]	11.7 [3.4]	10.5 [3.1]	9.6 [2.8]	
Power		5.4	5.3	5.2	5.3	5.2	5.1	5.3	5.2	5.1	
90°F [32.2°C]	Total BTUH [kW]	32.3 [9.5]	30.9 [9.1]	30.0 [8.8]	30.8 [9.0]	29.5 [8.6]	28.5 [8.4]	30.6 [9.0]	29.3 [8.6]	28.4 [8.3]	
	Sens BTUH [kW]	-2.7 [-0.8]	-2.4 [-0.7]	-2.2 [-0.6]	1.2 [0.3]	1.0 [0.3]	1.0 [0.3]	6.9 [2.0]	6.2 [1.8]	5.7 [1.7]	
	Power	5.8	5.6	5.6	5.7	5.6	5.5	5.7	5.6	5.5	
100°F [37.8°C]	Total BTUH [kW]	26.7 [7.8]	25.5 [7.5]	24.7 [7.3]	25.1 [7.4]	24.1 [7.1]	23.3 [6.8]	25.0 [7.3]	23.9 [7.0]	23.3 [6.8]	
	Sens BTUH [kW]	-8.3 [-2.4]	-7.4 [-2.2]	-6.8 [-2.0]	-4.4 [-1.3]	-4.0 [-1.2]	-3.7 [-1.1]	1.3 [0.4]	1.2 [0.4]	1.1 [0.3]	
	Power	6.3	6.2	6.1	6.2	6.1	6.0	6.2	6.1	6.0	
110°F [43.3°C]	Total BTUH [kW]	19.8 [5.8]	19.0 [5.6]	18.4 [5.4]	18.3 [5.4]	17.5 [5.1]	17.0 [5.0]	18.1 [5.3]	17.4 [5.1]	16.8 [4.9]	
	Sens BTUH [kW]	-14.7 [-4.3]	-13.2 [-3.9]	-12.2 [-3.6]	-10.9 [-3.2]	-9.8 [-2.9]	-9.0 [-2.6]	-5.1 [-1.5]	-4.6 [-1.4]	-4.2 [-1.2]	
	Power	6.9	6.8	6.7	6.9	6.7	6.6	6.9	6.7	6.6	
120°F [48.9°C]	Total BTUH [kW]	11.7 [3.4]	11.2 [3.3]	10.8 [3.2]	10.1 [3.0]	9.7 [2.8]	9.4 [2.8]	10.0 [2.9]	9.6 [2.8]	9.3 [2.7]	
	Sens BTUH [kW]	-22.2 [-6.5]	-19.8 [-5.8]	-18.2 [-5.3]	-18.2 [-5.3]	-16.4 [-4.8]	-15.1 [-4.4]	-12.5 [-3.7]	-11.2 [-3.3]	-10.3 [-3.0]	
	Power	7.8	7.6	7.5	7.7	7.5	7.4	7.7	7.5	7.4	

P. APPENDICES

Appendix D - Reheat Data for RACDZT 8.5 Ton

GROSS SYSTEMS PERFORMANCE DATA (LOW REHEAT MODE) - RACDZT102											
Entering Indoor Air @ 75°F [23.9°C] dbE 1											
wbE		65.3°F [18.5°C]			64°F [17.8°C]			62.5°F [16.9°C]			
CFM [L/s]		2100 [991]	1700 [802]	1400 [661]	2100 [991]	1700 [802]	1400 [661]	2100 [991]	1700 [802]	1400 [661]	
Outdoor Dry Bulb Temperature	60°F [15.6°C]	Total BTUH [kW]	36.6 [10.7]	35.1 [10.3]	33.9 [10.3]	34.5 [10.1]	33.1 [9.7]	32.1 [9.4]	31.9 [9.3]	30.6 [9.0]	29.6 [8.7]
		Sens BTUH [kW]	7.1 [2.1]	6.4 [1.9]	5.9 [1.7]	9.0 [2.6]	8.1 [2.4]	7.4 [2.2]	10.7 [3.1]	9.7 [2.8]	8.9 [2.6]
		Power	3.9	3.8	3.7	3.8	3.8	3.7	3.8	3.8	3.7
	65°F [18.3°C]	Total BTUH [kW]	35.5 [10.4]	34.0 [10.0]	32.9 [9.6]	33.4 [9.8]	32.1 [9.4]	31.0 [9.1]	30.8 [9.0]	29.5 [8.6]	28.6 [8.4]
		Sens BTUH [kW]	6.1 [1.8]	5.5 [1.6]	5.0 [1.5]	8.0 [2.3]	7.2 [2.1]	6.6 [1.9]	9.7 [2.8]	8.7 [2.6]	8.0 [2.4]
		Power	3.9	3.8	3.8	3.9	3.8	3.8	3.9	3.8	3.8
	70°F [21.1°C]	Total BTUH [kW]	34.1 [10.0]	32.7 [9.6]	31.7 [9.3]	32.1 [9.4]	30.8 [9.0]	29.8 [8.7]	29.5 [8.6]	28.3 [8.3]	27.4 [8.0]
	Sens BTUH [kW]	4.8 [1.4]	4.3 [1.3]	4.0 [1.2]	6.7 [2.0]	6.0 [1.8]	5.5 [1.6]	8.5 [2.5]	7.6 [2.2]	7.0 [2.0]	
	Power	4.0	3.9	3.9	4.0	3.9	3.9	4.0	3.9	3.9	
75°F [23.9°C]	Total BTUH [kW]	32.7 [9.6]	31.3 [9.2]	30.3 [8.9]	30.6 [9.0]	29.4 [8.6]	28.4 [8.3]	28.0 [8.2]	26.8 [7.9]	26.0 [7.6]	
	Sens BTUH [kW]	3.3 [1.0]	3.0 [0.9]	2.8 [0.8]	5.2 [1.5]	4.7 [1.4]	4.3 [1.3]	7.0 [2.0]	6.3 [1.8]	5.8 [1.7]	
	Power	4.1	4.0	4.0	4.1	4.0	4.0	4.1	4.0	4.0	
80°F [26.7°C]	Total BTUH [kW]	31.0 [9.1]	29.7 [8.7]	28.8 [8.4]	29.0 [8.5]	27.8 [8.1]	26.9 [7.9]	26.3 [7.7]	25.2 [7.4]	24.4 [7.2]	
	Sens BTUH [kW]	1.7 [0.5]	1.5 [0.4]	1.4 [0.4]	3.6 [1.0]	3.2 [0.9]	2.9 [0.9]	5.3 [1.6]	4.8 [1.4]	4.4 [1.3]	
	Power	4.3	4.2	4.1	4.3	4.2	4.1	4.3	4.2	4.1	
85°F [29.4°C]	Total BTUH [kW]	29.1 [8.5]	27.9 [8.2]	27.0 [7.9]	27.1 [7.9]	26.0 [7.6]	25.1 [7.4]	24.4 [7.2]	23.4 [6.9]	22.7 [6.6]	
	Sens BTUH [kW]	-0.2 [-0.1]	-0.2 [-0.1]	-0.2 [-0.1]	1.7 [0.5]	1.5 [0.4]	1.4 [0.4]	3.4 [1.0]	3.1 [0.9]	2.8 [0.8]	
	Power	4.4	4.3	4.3	4.4	4.3	4.3	4.4	4.3	4.3	
90°F [32.2°C]	Total BTUH [kW]	27.1 [7.9]	26.0 [7.6]	25.2 [7.4]	25.0 [7.3]	24.0 [7.0]	23.2 [6.8]	22.4 [6.6]	21.5 [6.3]	20.8 [6.1]	
	Sens BTUH [kW]	-2.3 [-0.7]	-2.1 [-0.6]	-1.9 [-0.6]	-0.4 [-0.1]	-0.4 [-0.1]	-0.4 [-0.1]	1.3 [0.4]	1.2 [0.3]	1.1 [0.3]	
	Power	4.6	4.5	4.4	4.6	4.5	4.4	4.6	4.5	4.4	

GROSS SYSTEMS PERFORMANCE DATA (HIGH REHEAT MODE) - RACDZT102											
Entering Indoor Air @ 75°F [23.9°C] dbE 1											
wbE		65.3°F [18.5°C]			64°F [17.8°C]			62.5°F [16.9°C]			
CFM [L/s]		4100 [1935]	2900 [1369]	2700 [1274]	4100 [1935]	2900 [1369]	2700 [1274]	4100 [1935]	2900 [1369]	2700 [1274]	
Outdoor Dry Bulb Temperature	60°F [15.6°C]	Total BTUH [kW]	57.6 [16.9]	53.6 [15.7]	52.9 [15.5]	45.7 [13.4]	42.5 [12.5]	42.0 [12.5]	51.3 [15.0]	47.7 [14.0]	47.1 [13.8]
		Sens BTUH [kW]	12.7 [3.7]	10.7 [3.1]	10.3 [3.0]	14.6 [4.3]	12.2 [3.6]	11.8 [3.5]	20.5 [6.0]	17.2 [5.0]	16.6 [4.9]
		Power	6.6	6.4	6.3	5.2	5.0	5.0	6.3	6.1	6.0
	70°F [21.1°C]	Total BTUH [kW]	52.7 [15.5]	49.1 [14.4]	48.4 [14.2]	40.9 [12.0]	38.0 [11.1]	37.5 [11.0]	46.4 [13.6]	43.2 [12.7]	42.6 [12.5]
		Sens BTUH [kW]	10.1 [3.0]	8.5 [2.5]	8.2 [2.4]	11.9 [3.5]	10.0 [2.9]	9.7 [2.8]	17.9 [5.2]	15.0 [4.4]	14.5 [4.2]
		Power	6.4	6.1	6.1	5.0	4.8	4.8	6.0	5.8	5.8
	80°F [26.7°C]	Total BTUH [kW]	46.3 [13.6]	43.1 [12.6]	42.6 [12.5]	34.5 [10.1]	32.1 [9.4]	31.6 [9.3]	40.0 [11.7]	37.2 [10.9]	36.7 [10.8]
	Sens BTUH [kW]	5.6 [1.9]	4.7 [1.4]	4.5 [1.3]	7.4 [2.2]	6.2 [1.8]	6.0 [1.8]	13.3 [3.9]	11.2 [3.3]	10.8 [3.1]	
	Power	6.4	6.1	6.1	5.0	4.8	4.8	6.1	5.8	5.8	
90°F [32.2°C]	Total BTUH [kW]	38.4 [11.2]	35.7 [10.5]	35.2 [10.3]	26.5 [7.8]	24.7 [7.2]	24.3 [7.1]	32.1 [9.4]	29.8 [8.7]	29.4 [8.6]	
	Sens BTUH [kW]	-0.9 [-0.3]	-0.7 [-0.2]	-0.7 [-0.2]	0.9 [0.3]	0.8 [0.2]	0.8 [0.2]	6.9 [2.0]	5.8 [1.7]	5.6 [1.6]	
	Power	6.6	6.4	6.4	5.2	5.1	5.0	6.3	6.1	6.1	
100°F [37.8°C]	Total BTUH [kW]	28.9 [8.5]	26.9 [7.9]	26.5 [7.8]	17.0 [5.0]	15.8 [4.6]	15.6 [4.6]	22.6 [6.6]	21.0 [6.1]	20.7 [6.1]	
	Sens BTUH [kW]	-9.2 [-2.7]	-7.7 [-2.3]	-7.5 [-2.2]	-7.4 [-2.2]	-6.2 [-1.8]	-6.0 [-1.8]	-1.5 [-0.4]	-1.2 [-0.4]	-1.2 [-0.4]	
	Power	7.2	6.9	6.9	5.8	5.6	5.5	6.8	6.6	6.6	
110°F [43.3°C]	Total BTUH [kW]	17.9 [5.2]	16.6 [4.9]	16.4 [4.8]	6.0 [1.8]	5.6 [1.6]	5.5 [1.6]	11.5 [3.4]	10.7 [3.1]	10.6 [3.1]	
	Sens BTUH [kW]	-19.5 [-5.7]	-16.3 [-4.8]	-15.8 [-4.6]	-17.7 [-5.2]	-14.8 [-4.3]	-14.3 [-4.2]	-11.7 [-3.4]	-9.8 [-2.9]	-9.5 [-2.8]	
	Power	7.9	7.7	7.6	6.5	6.3	6.3	7.6	7.4	7.3	
120°F [48.9°C]	Total BTUH [kW]	5.3 [1.5]	4.9 [1.4]	4.9 [1.4]	-6.6 [-1.9]	-6.1 [-1.8]	-6.0 [-1.8]	-1.0 [-0.3]	-1.0 [-0.3]	-1.0 [-0.3]	
	Sens BTUH [kW]	-31.6 [-9.3]	-26.5 [-7.8]	-25.7 [-7.5]	-29.8 [-8.7]	-25.0 [-7.3]	-24.2 [-7.1]	-23.9 [-7.0]	-20.0 [-5.9]	-19.4 [-5.7]	
	Power	9	8.7	8.6	7.6	7.3	7.3	8.7	8.4	8.3	

Appendix D - Reheat Data for RACDZT 10 Ton

GROSS SYSTEMS PERFORMANCE DATA (LOW REHEAT MODE) - RACDZT120											
Entering Indoor Air @ 75°F [23.9°C] dbE 1											
wbE		65.3°F [18.5°C]			64°F [17.8°C]			62.5°F [16.9°C]			
CFM [L/s]		3000 [1416]	2400 [1133]	2000 [944]	3000 [1416]	2400 [1133]	2000 [944]	3000 [1416]	2400 [1133]	2000 [944]	
Outdoor Dry Bulb Temperature	60°F [15.6°C]	Total BTUH [kW] Sens BTUH [kW] Power	46.5 [13.6] 12.9 [3.8] 4.6	44.4 [13.0] 11.6 [3.4] 4.5	43.1 [12.6] 10.7 [3.1] 4.4	43.1 [12.6] 13.8 [4.0] 4.5	41.2 [12.1] 12.3 [3.6] 4.4	40.0 [11.7] 11.4 [3.3] 4.3	40.3 [11.8] 18.5 [5.4] 4.5	38.6 [11.3] 16.5 [4.8] 4.4	37.4 [11.0] 15.3 [4.5] 4.3
	65°F [18.3°C]	Total BTUH [kW] Sens BTUH [kW] Power	45.7 [13.4] 10.5 [3.1] 4.6	43.7 [12.8] 9.4 [2.8] 4.5	42.4 [12.4] 8.7 [2.5] 4.5	42.4 [12.4] 11.4 [3.3] 4.6	40.5 [11.9] 10.2 [3.0] 4.5	39.3 [11.3] 9.4 [2.8] 4.4	39.6 [11.6] 16.1 [4.7] 4.5	37.8 [11.1] 14.4 [4.2] 4.4	36.7 [10.8] 13.3 [3.9] 4.4
	70°F [21.1°C]	Total BTUH [kW] Sens BTUH [kW] Power	44.7 [13.1] 8.3 [2.4] 4.7	42.7 [12.5] 7.4 [2.2] 4.6	41.4 [12.1] 6.9 [2.0] 4.6	41.3 [12.1] 9.2 [2.7] 4.7	39.3 [11.6] 8.2 [2.4] 4.6	38.3 [11.2] 7.6 [2.2] 4.5	38.5 [11.3] 13.9 [4.1] 4.8	36.9 [10.8] 12.4 [3.6] 4.5	35.7 [10.5] 11.4 [3.4] 4.5
	75°F [23.9°C]	Total BTUH [kW] Sens BTUH [kW] Power	43.4 [12.7] 6.3 [1.8] 4.9	41.5 [12.2] 5.6 [1.7] 4.8	40.2 [11.8] 5.2 [1.5] 4.7	40.0 [11.7] 7.2 [2.1] 4.8	38.3 [11.2] 6.4 [1.9] 4.7	37.1 [10.9] 5.9 [1.7] 4.7	37.2 [10.9] 11.9 [3.5] 4.8	35.6 [10.4] 10.6 [3.1] 4.7	34.5 [10.1] 9.8 [2.9] 4.6
	80°F [26.7°C]	Total BTUH [kW] Sens BTUH [kW] Power	41.8 [12.2] 4.5 [1.3] 5.1	40.0 [11.7] 4.0 [1.2] 5.0	38.8 [11.4] 3.7 [1.1] 4.9	38.4 [11.3] 5.4 [1.6] 5.0	36.8 [10.8] 4.8 [1.4] 4.9	35.6 [10.4] 4.4 [1.3] 4.9	35.7 [10.5] 10.1 [2.9] 5.0	34.1 [10.0] 9.0 [2.6] 4.9	33.1 [9.7] 8.3 [2.4] 4.8
	85°F [29.4°C]	Total BTUH [kW] Sens BTUH [kW] Power	40.0 [11.7] 2.9 [0.8] 5.4	38.2 [11.2] 2.6 [0.8] 5.3	37.1 [10.9] 2.4 [0.7] 5.2	36.6 [10.7] 3.8 [1.1] 5.3	35.0 [10.3] 3.4 [1.0] 5.2	33.9 [9.9] 3.1 [0.9] 5.1	33.8 [9.9] 8.5 [2.5] 5.3	32.4 [9.5] 7.6 [2.2] 5.2	31.4 [9.2] 7.0 [2.0] 5.1
	90°F [32.2°C]	Total BTUH [kW] Sens BTUH [kW] Power	37.9 [11.1] 1.5 [0.4] 5.7	36.2 [10.6] 1.3 [0.4] 5.6	35.1 [10.3] 1.2 [0.4] 5.5	34.5 [10.1] 2.4 [0.7] 5.6	33.0 [9.7] 2.1 [0.6] 5.5	32.0 [9.4] 2.0 [0.6] 5.4	31.7 [9.3] 7.1 [2.1] 5.6	30.4 [8.9] 6.3 [1.9] 5.5	29.4 [8.6] 5.8 [1.7] 5.4

GROSS SYSTEMS PERFORMANCE DATA (HIGH REHEAT MODE) - RACDZT120											
Entering Indoor Air @ 75°F [23.9°C] dbE 1											
wbE		65.3°F [18.5°C]			64°F [17.8°C]			62.5°F [16.9°C]			
CFM [L/s]		4800 [2265]	3800 [1793]	3200 [1510]	4800 [2265]	3800 [1793]	3200 [1510]	4800 [2265]	3800 [1793]	3200 [1510]	
Outdoor Dry Bulb Temperature	60°F [15.6°C]	Total BTUH [kW] Sens BTUH [kW] Power	58.1 [17.0] 10.5 [3.1] 7.0	55.4 [16.2] 9.3 [2.7] 6.9	53.9 [15.8] 8.6 [2.5] 6.8	55.5 [16.3] 15.6 [4.6] 6.9	53.0 [15.5] 13.9 [4.1] 6.8	51.4 [15.1] 12.9 [3.8] 6.7	53.1 [15.6] 19.9 [5.8] 6.9	50.7 [14.9] 17.7 [5.2] 6.8	49.2 [14.4] 16.4 [4.8] 6.7
	70°F [21.1°C]	Total BTUH [kW] Sens BTUH [kW] Power	53.4 [15.7] 8.3 [2.4] 7.1	51.0 [14.9] 7.4 [2.2] 7.0	49.5 [14.5] 6.8 [2.0] 6.9	50.8 [14.9] 13.4 [3.9] 7.0	48.5 [14.2] 12.0 [3.5] 6.9	47.1 [13.8] 11.1 [3.2] 6.8	48.4 [14.2] 17.7 [5.2] 7.0	46.2 [13.5] 15.8 [4.6] 6.9	44.9 [13.2] 14.9 [4.3] 6.8
	80°F [26.7°C]	Total BTUH [kW] Sens BTUH [kW] Power	48.4 [14.2] 4.5 [1.3] 7.4	46.2 [13.5] 4.0 [1.2] 7.3	44.9 [13.2] 3.7 [1.1] 7.2	45.8 [13.4] 9.7 [2.8] 7.3	43.7 [12.8] 8.6 [2.5] 7.2	42.5 [12.4] 8.0 [2.3] 7.1	43.4 [12.7] 14.0 [4.1] 7.3	41.5 [12.1] 12.5 [3.6] 7.2	40.3 [11.8] 11.5 [3.4] 7.1
	90°F [32.2°C]	Total BTUH [kW] Sens BTUH [kW] Power	43.1 [12.6] -0.8 [-0.2] 7.9	41.1 [12.0] -0.7 [-0.2] 7.7	39.9 [11.7] -0.6 [-0.2] 7.6	40.5 [11.9] 4.4 [1.3] 7.8	38.6 [11.3] 3.9 [1.1] 7.7	37.5 [11.0] 3.6 [1.1] 7.5	38.1 [11.2] 8.7 [2.5] 7.8	36.3 [10.6] 7.7 [2.3] 7.6	35.3 [10.3] 7.2 [2.1] 7.5
	100°F [43.3°C]	Total BTUH [kW] Sens BTUH [kW] Power	37.4 [11.0] -7.6 [-2.2] 8.6	35.7 [10.5] -6.8 [-2.0] 8.4	34.6 [10.2] -6.3 [-1.8] 8.3	34.8 [10.2] -2.5 [-0.7] 8.5	33.2 [9.7] -2.2 [-0.6] 8.3	32.2 [9.4] -2.0 [-0.6] 8.2	32.4 [9.4] 1.8 [0.5] 8.5	30.9 [9.1] 1.6 [0.5] 8.3	30.0 [8.8] 1.5 [0.4] 8.2
	110°F [43.3°C]	Total BTUH [kW] Sens BTUH [kW] Power	31.3 [9.2] -16.0 [-4.7] 9.5	29.9 [8.8] -14.3 [-4.2] 9.3	29.0 [8.5] -13.2 [-3.9] 9.2	28.7 [8.4] -10.9 [-3.2] 9.4	27.4 [8.0] -9.7 [-2.8] 9.2	26.6 [7.8] -9.0 [-2.6] 9.1	26.3 [7.7] -6.6 [-1.9] 9.4	25.1 [7.4] -5.9 [-1.7] 9.2	24.4 [7.1] -5.5 [-1.6] 9.0
	120°F [48.9°C]	Total BTUH [kW] Sens BTUH [kW] Power	24.9 [7.3] -26.0 [-7.6] 10.6	23.8 [7.0] -23.2 [-6.8] 10.3	23.1 [6.8] -21.5 [-6.3] 10.2	22.3 [6.5] -20.9 [-6.1] 10.5	21.3 [6.2] -18.6 [-5.5] 10.2	20.7 [6.1] -17.2 [-5.0] 10.1	19.9 [5.8] -16.6 [-4.9] 10.5	19.0 [5.6] -14.8 [-4.3] 10.2	18.5 [5.4] -13.7 [-4.0] 10.1

P. APPENDICES

Appendix D - Reheat Data for RACDZT 12.5 Ton

GROSS SYSTEMS PERFORMANCE DATA (LOW REHEAT MODE) - RACDZT150											
Entering Indoor Air @ 75°F [23.9°C] dbE 1											
wbE		65.3°F [18.5°C]			64°F [17.8°C]			62.5°F [16.9°C]			
CFM [L/s]		3000 [1416]	2400 [1133]	2000 [944]	3000 [1416]	2400 [1133]	2000 [944]	3000 [1416]	2400 [1133]	2000 [944]	
Outdoor Dry Bulb Temperature	60°F [15.6°C]	Total BTUH [kW]	46.5 [13.6]	44.4 [13.0]	43.1 [12.6]	43.1 [12.6]	41.2 [12.1]	40.0 [11.7]	40.3 [11.8]	38.6 [11.3]	37.4 [11.0]
		Sens BTUH [kW]	12.9 [3.8]	11.6 [3.4]	10.7 [3.1]	13.8 [4.0]	12.3 [3.6]	11.4 [3.3]	18.5 [5.4]	16.5 [4.8]	15.3 [4.5]
		Power	4.6	4.5	4.4	4.5	4.4	4.3	4.5	4.4	4.3
	65°F [18.3°C]	Total BTUH [kW]	45.7 [13.4]	43.7 [12.8]	42.4 [12.4]	42.3 [12.4]	40.5 [11.9]	39.3 [11.5]	39.6 [11.6]	37.8 [11.1]	36.7 [10.8]
		Sens BTUH [kW]	10.5 [3.1]	9.4 [2.8]	8.7 [2.5]	11.4 [3.3]	10.2 [3.0]	9.4 [2.8]	16.1 [4.7]	14.4 [4.2]	13.3 [3.9]
		Power	4.6	4.5	4.5	4.6	4.5	4.4	4.5	4.4	4.4
	70°F [21.1°C]	Total BTUH [kW]	44.7 [13.1]	42.7 [12.5]	41.4 [12.1]	41.3 [12.1]	39.5 [11.6]	38.3 [11.2]	38.5 [11.3]	36.9 [10.8]	35.7 [10.5]
Sens BTUH [kW]		8.3 [2.4]	7.4 [2.2]	6.9 [2.0]	9.2 [2.7]	8.2 [2.4]	7.6 [2.2]	13.9 [4.1]	12.4 [3.6]	11.4 [3.4]	
Power		4.7	4.6	4.6	4.7	4.6	4.5	4.6	4.5	4.5	
75°F [23.9°C]	Total BTUH [kW]	43.4 [12.7]	41.5 [12.2]	40.2 [11.8]	40.0 [11.7]	38.3 [11.2]	37.1 [10.9]	37.2 [10.9]	35.6 [10.4]	34.5 [10.1]	
	Sens BTUH [kW]	6.3 [1.8]	5.6 [1.7]	5.2 [1.5]	7.2 [2.1]	6.4 [1.9]	5.9 [1.7]	11.9 [3.5]	10.6 [3.1]	9.8 [2.9]	
	Power	4.9	4.8	4.7	4.8	4.7	4.7	4.8	4.7	4.6	
80°F [26.7°C]	Total BTUH [kW]	41.8 [12.2]	40.0 [11.7]	38.8 [11.4]	38.4 [11.3]	36.8 [10.8]	35.6 [10.4]	35.7 [10.5]	34.1 [10.0]	33.1 [9.7]	
	Sens BTUH [kW]	4.5 [1.3]	4.0 [1.2]	3.7 [1.1]	5.4 [1.6]	4.8 [1.4]	4.4 [1.3]	10.1 [2.9]	9.0 [2.6]	8.3 [2.4]	
	Power	5.1	5.0	4.9	5.0	4.9	4.9	5.0	4.9	4.8	
85°F [29.4°C]	Total BTUH [kW]	40.0 [11.7]	38.2 [11.2]	37.1 [10.9]	36.6 [10.7]	35.0 [10.3]	33.9 [9.9]	33.8 [9.9]	32.4 [9.5]	31.4 [9.2]	
	Sens BTUH [kW]	2.9 [0.8]	2.6 [0.8]	2.4 [0.7]	3.8 [1.1]	3.4 [1.0]	3.1 [0.9]	8.5 [2.5]	7.6 [2.2]	7.0 [2.0]	
	Power	5.4	5.3	5.2	5.3	5.3	5.1	5.3	5.2	5.1	
90°F [32.2°C]	Total BTUH [kW]	37.9 [11.1]	36.2 [10.6]	35.1 [10.3]	34.5 [10.1]	33.0 [9.7]	32.0 [9.4]	31.7 [9.3]	30.4 [8.9]	29.4 [8.6]	
	Sens BTUH [kW]	1.5 [0.4]	1.3 [0.4]	1.2 [0.4]	2.4 [0.7]	2.1 [0.6]	2.0 [0.6]	7.1 [2.1]	6.3 [1.9]	5.8 [1.7]	
	Power	5.7	5.6	5.5	5.6	5.5	5.4	5.6	5.5	5.4	

GROSS SYSTEMS PERFORMANCE DATA (HIGH REHEAT MODE) - RACDZT150											
Entering Indoor Air @ 75°F [23.9°C] dbE 1											
wbE		65.3°F [18.5°C]			64°F [17.8°C]			62.5°F [16.9°C]			
CFM [L/s]		6000 [2832]	4100 [1935]	4000 [1888]	6000 [2832]	4100 [1935]	4000 [1888]	6000 [2832]	4100 [1935]	4000 [1888]	
Outdoor Dry Bulb Temperature	60°F [15.6°C]	Total BTUH [kW]	99.3	91.5 [26.8]	91.1 [26.7]	101.6 [29.8]	93.7 [27.4]	93.2 [27.3]	92.7 [27.2]	85.5 [25.2]	85.2 [25.0]
		Sens BTUH [kW]	33.3 [9.7]	27.4 [8.0]	27.0 [7.9]	40.1 [11.8]	33.0 [9.7]	32.6 [9.6]	46.4 [13.6]	38.1 [11.2]	37.7 [11.0]
		Power	9.5	9.1	9.1	9.3	8.9	8.9	9.3	8.9	8.9
	70°F [21.1°C]	Total BTUH [kW]	94.4 [27.7]	87.1 [25.5]	86.7 [25.4]	96.7 [28.3]	89.2 [26.1]	88.8 [26.0]	87.9 [25.8]	81.1 [23.8]	80.7 [23.7]
		Sens BTUH [kW]	27.0 [7.9]	22.2 [6.5]	21.9 [6.4]	33.9 [9.9]	27.9 [8.2]	27.5 [8.1]	40.1 [11.7]	33.0 [9.7]	32.6 [9.5]
		Power	9.7	9.3	9.3	9.5	9.2	9.2	9.5	9.2	9.1
	80°F [26.7°C]	Total BTUH [kW]	87.6 [25.7]	80.8 [23.7]	80.4 [23.6]	89.9 [26.3]	82.9 [24.3]	82.5 [24.5]	33.2 [9.7]	27.3 [8.0]	27.0 [7.9]
Sens BTUH [kW]		20.1 [5.9]	16.5 [4.8]	16.3 [4.8]	27.0 [7.9]	22.2 [6.5]	21.9 [6.4]	33.2 [9.7]	27.3 [8.0]	27.0 [7.9]	
Power		10.2	9.8	9.8	10.0	9.6	9.6	10.0	9.6	9.6	
90°F [32.9°C]	Total BTUH [kW]	78.7 [23.1]	72.6 [21.3]	72.3 [21.2]	81.0 [23.7]	74.7 [21.9]	74.4 [21.8]	72.2 [21.2]	66.6 [19.5]	66.3 [19.4]	
	Sens BTUH [kW]	12.5 [3.7]	10.3 [3.0]	10.2 [3.0]	19.4 [5.7]	15.9 [4.7]	15.8 [4.6]	25.6 [7.5]	21.0 [6.2]	20.8 [6.1]	
	Power	11.0	10.5	10.5	10.8	10.4	10.3	10.8	10.3	10.3	
100°F [37.8°C]	Total BTUH [kW]	67.8 [19.9]	62.5 [18.3]	62.3 [18.2]	70.1 [20.5]	64.7 [18.9]	64.4 [18.9]	61.3 [18.0]	56.5 [16.6]	56.3 [16.5]	
	Sens BTUH [kW]	4.3 [1.3]	3.5 [1.0]	3.5 [1.0]	11.2 [3.3]	9.2 [2.7]	9.1 [2.7]	17.4 [5.1]	14.3 [4.2]	14.1 [4.1]	
	Power	11.9	11.5	11.4	11.8	11.3	11.3	11.8	11.3	11.3	
110°F [43.3°C]	Total BTUH [kW]	54.9 [16.1]	50.6 [14.8]	50.4 [14.8]	57.2 [16.8]	52.7 [15.5]	52.5 [15.4]	48.4 [14.2]	44.6 [13.1]	44.4 [13.0]	
	Sens BTUH [kW]	-4.6 [-1.3]	-3.8 [-1.1]	-3.7 [-1.1]	2.3 [0.7]	1.9 [0.5]	1.9 [0.5]	8.5 [2.5]	7.0 [2.0]	6.9 [2.0]	
	Power	13.2	12.6	12.6	13.0	12.5	12.4	13.0	12.5	12.4	
120°F [48.9°C]	Total BTUH [kW]	40.0 [11.7]	36.8 [10.8]	36.7 [10.8]	42.3 [12.4]	39.0 [11.4]	38.8 [11.4]	33.4 [9.8]	30.8 [9.0]	30.7 [9.0]	
	Sens BTUH [kW]	-14.1 [-4.1]	-11.6 [-3.4]	-11.5 [-3.4]	-7.2 [-2.1]	-6.0 [-1.7]	-5.9 [-1.7]	-1.0 [-0.3]	-0.9 [-0.2]	-0.8 [-0.2]	
	Power	14.6	14.1	14.0	14.5	13.9	13.9	14.4	13.9	13.8	

Appendix E – Heater Kit Characteristics

208/240V, THREE PHASE, 60 Hz, AUXILIARY ELECTRIC HEATER KIT CHARACTERISTICS AND APPLICATION													
Single Power Supply for Both Unit and Heater Kit							Separate Power Supply for Both Unit and Heater Kit						
UNIT MODEL NUMBER	Heater Kit					Air Conditioner			Heater Kit		Air Conditioner		
	MODEL NO. RXJJ-	No. of Sequence Steps	Rated Heater kW @208/240V	Heater KBTU/hr @208/240V	Heater Amp @208/240V	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
RACDZT090ACF	No Heat	-----	-----	-----	-----	41/41	50/60	50/60	-----	-----	41/41	50/60	50/60
	DD10CP	1	7.4/9.9	25.25/33.77	20.6/23.8	41/41	50/60	50/50	26/30	30/30	41/41	50/60	50/60
	DD15CP	1	10.8/14.4	36.84/49.13	30.0/34.6	46/52	50/60	60/60	38/44	40/45	41/41	50/60	50/60
	DD20CP	2	14.9/19.8	50.83/67.55	41.3/47.6	60/68	60/60	70/70	52/60	60/60	41/41	50/60	50/60
	DD30CP	2	21.6/28.8	73.69/98.25	60.0/69.3	84/95	90/90	100/100	75/87	80/90	41/41	50/60	50/60
	DD40CP	2	29.7/39.6	101.32/135.10	82.5/95.2	112/128	125/125	150/150	104/119	110/125	41/41	50/60	50/60
RACDZT090ACG RACDZT090ACH	No Heat	-----	-----	-----	-----	44/44	50/60	50/60	-----	-----	44/44	50/60	50/60
	DD10CP	1	7.4/9.9	25.25/33.77	20.6/23.8	44/44	50/60	50/50	26/30	30/30	44/44	50/60	50/60
	DD15CP	1	10.8/14.4	36.84/49.13	30.0/34.6	49/55	50/60	60/60	38/44	40/45	44/44	50/60	50/60
	DD20CP	2	14.9/19.8	50.83/67.55	41.3/47.6	63/71	70/70	80/80	52/60	60/60	44/44	50/60	50/60
	DD30CP	2	21.6/28.8	73.69/98.25	60.0/69.3	87/98	90/90	100/100	75/87	80/90	44/44	50/60	50/60
	DD40CP	2	29.7/39.6	101.32/135.10	82.5/95.2	115/131	125/125	150/150	104/119	110/125	44/44	50/60	50/60
RACDZT102ACF	No Heat	-----	-----	-----	-----	46/46	60/70	60/70	-----	-----	46/46	60/70	60/70
	DD10CP	1	7.4/9.9	25.25/33.77	20.6/23.8	46/46	60/70	60/70	26/30	30/30	46/46	60/70	60/70
	DD15CP	1	10.8/14.4	36.84/49.13	30.0/34.6	47/52	60/70	60/70	38/44	40/45	46/46	60/70	60/70
	DD20CP	2	14.9/19.8	50.83/67.55	41.3/47.6	61/69	70/70	70/70	52/60	60/60	46/46	60/70	60/70
	DD30CP	2	21.6/28.8	73.69/98.25	60.0/69.3	84/96	90/90	100/100	75/87	80/90	46/46	60/70	60/70
	DD40CP	2	29.7/39.6	101.32/135.10	82.5/95.2	112/128	125/125	150/150	104/119	110/125	46/46	60/70	60/70
RACDZT102ACG	No Heat	-----	-----	-----	-----	48/48	60/70	60/70	-----	-----	48/48	60/70	60/70
	DD10CP	1	7.4/9.9	25.25/33.77	20.6/23.8	48/48	60/70	60/70	26/30	30/30	48/48	60/70	60/70
	DD15CP	1	10.8/14.4	36.84/49.13	30.0/34.6	49/55	60/70	60/70	38/44	40/45	48/48	60/70	60/70
	DD20CP	2	14.9/19.8	50.83/67.55	41.3/47.6	63/71	70/70	80/80	52/60	60/60	48/48	60/70	60/70
	DD30CP	2	21.6/28.8	73.69/98.25	60.0/69.3	87/98	90/90	100/100	75/87	80/90	48/48	60/70	60/70
	DD40CP	2	29.7/39.6	101.32/135.10	82.5/95.2	115/131	125/125	150/150	104/119	110/125	48/48	60/70	60/70
RACDZT102ACH	No Heat	-----	-----	-----	-----	51/51	60/70	60/70	-----	-----	51/51	60/70	60/70
	DD10CP	1	7.4/9.9	25.25/33.77	20.6/23.8	51/51	60/70	60/70	26/30	30/30	51/51	60/70	60/70
	DD15CP	1	10.8/14.4	36.84/49.13	30.0/34.6	53/59	60/70	60/70	38/44	40/45	51/51	60/70	60/70
	DD20CP	2	14.9/19.8	50.83/67.55	41.3/47.6	67/75	70/70	80/80	52/60	60/60	51/51	60/70	60/70
	DD30CP	2	21.6/28.8	73.69/98.25	60.0/69.3	90/102	90/90	110/110	75/87	80/90	51/51	60/70	60/70
	DD40CP	2	29.7/39.6	101.32/135.10	82.5/95.2	119/134	125/125	150/150	104/119	110/125	51/51	60/70	60/70

P. APPENDICES

Appendix E – Heater Kit Characteristics

208/240V, THREE PHASE, 60 Hz, AUXILIARY ELECTRIC HEATER KIT CHARACTERISTICS AND APPLICATION													
Single Power Supply for Both Unit and Heater Kit									Separate Power Supply for Both Unit and Heater Kit				
UNIT MODEL NUMBER	Heater Kit					Air Conditioner			Heater Kit		Air Conditioner		
	MODEL NO. RXJJ-	No. of Sequence Steps	Rated Heater kW @208/240V	Heater KBTU/hr @208/240V	Heater Amp @208/240V	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
RACDZT120ACF	No Heat	-----	-----	-----	-----	54/54	70/80	70/80	-----	-----	54/54	70/80	70/80
	DD10CP	1	7.4/9.9	25.25/33.77	20.6/23.8	54/54	70/80	70/80	26/30	30/30	54/54	70/80	70/80
	DD15CP	1	10.8/14.4	36.84/49.13	30.0/34.6	54/54	70/80	70/80	38/44	40/45	54/54	70/80	70/80
	DD20CP	2	14.9/19.8	50.83/67.55	41.3/47.6	62/70	70/80	70/80	52/60	60/60	54/54	70/80	70/80
	DD30CP	2	21.6/28.8	73.69/98.25	60.0/69.3	85/97	90/90	100/100	75/87	80/90	54/54	70/80	70/80
	DD40CP	2	29.7/39.6	101.32/135.10	82.5/95.2	113/129	125/125	150/150	104/119	110/125	54/54	70/80	70/80
RACDZT120ACG	No Heat	-----	-----	-----	-----	56/56	70/80	70/80	-----	-----	56/56	70/80	70/80
	DD10CP	1	7.4/9.9	25.25/33.77	20.6/23.8	56/56	70/80	70/80	26/30	30/30	56/56	70/80	70/80
	DD15CP	1	10.8/14.4	36.84/49.13	30.0/34.6	56/56	70/80	70/80	38/44	40/45	56/56	70/80	70/80
	DD20CP	1	14.9/19.8	50.83/67.55	41.3/47.6	65/73	70/80	80/80	52/60	60/60	56/56	70/80	70/80
	DD30CP	1	21.6/28.8	73.69/98.25	60.0/69.3	88/100	90/90	100/100	75/87	80/90	56/56	70/80	70/80
	DD40CP	1	29.7/39.6	101.32/135.10	82.5/95.2	116/132	125/125	150/150	104/119	110/125	56/56	70/80	70/80
RACDZT120ACH	No Heat	-----	-----	-----	-----	58/58	70/90	70/90	-----	-----	58/58	70/90	70/90
	DD10CP	1	7.4/9.9	25.25/33.77	20.6/23.8	58/58	70/90	70/90	26/30	30/30	58/58	70/90	70/90
	DD15CP	1	10.8/14.4	36.84/49.13	30.0/34.6	58/59	70/90	70/90	38/44	40/45	58/58	70/90	70/90
	DD20CP	1	14.9/19.8	50.83/67.55	41.3/47.6	67/75	70/90	80/90	52/60	60/60	58/58	70/90	70/90
	DD30CP	1	21.6/28.8	73.69/98.25	60.0/69.3	90/102	90/90	110/110	75/87	80/90	58/58	70/90	70/90
	DD40CP	1	29.7/39.6	101.32/135.10	82.5/95.2	119/134	125/125	150/150	104/119	110/125	58/58	70/90	70/90
RACDZT150ACF	No Heat	-----	-----	-----	-----	70/70	80/90	80/90	-----	-----	70/70	80/90	80/90
	DD10CP	1	7.4/9.9	25.25/33.77	20.6/23.8	70/70	80/90	80/90	26/30	30/30	70/70	80/90	80/90
	DD15CP	1	10.8/14.4	36.84/49.13	30.0/34.6	70/70	80/90	80/90	38/44	40/45	70/70	80/90	80/90
	DD20CP	1	14.9/19.8	50.83/67.55	41.3/47.6	70/73	80/90	80/90	52/60	60/60	70/70	80/90	80/90
	DD30CP	1	21.6/28.8	73.69/98.25	60.0/69.3	88/100	90/90	100/100	75/87	80/90	70/70	80/90	80/90
	DD40CP	1	29.7/39.6	101.32/135.10	82.5/95.2	117/132	125/125	150/150	104/119	110/125	70/70	80/90	80/90
RACDZT150ACG	No Heat	-----	-----	-----	-----	75/75	90/90	90/90	-----	-----	75/75	90/90	90/90
	DD10CP	1	7.4/9.9	25.25/33.77	20.6/23.8	75/75	90/90	90/90	26/30	30/30	75/75	90/90	90/90
	DD15CP	1	10.8/14.4	36.84/49.13	30.0/34.6	75/75	90/90	90/90	38/44	40/45	75/75	90/90	90/90
	DD20CP	1	14.9/19.8	50.83/67.55	41.3/47.6	75/80	90/90	90/90	52/60	60/60	75/75	90/90	90/90
	DD30CP	1	21.6/28.8	73.69/98.25	60.0/69.3	95/107	100/100	110/110	75/87	80/90	75/75	90/90	90/90
	DD40CP	1	29.7/39.6	101.32/135.10	82.5/95.2	124/139	125/125	150/150	104/119	110/125	75/75	90/90	90/90

Appendix E – Heater Kit Characteristics

480V, THREE PHASE, 60 Hz, AUXILIARY ELECTRIC HEATER KIT CHARACTERISTICS AND APPLICATION													
UNIT MODEL NUMBER	Single Power Supply for Both Unit and Heater Kit								Separate Power Supply for Both Unit and Heater Kit				
	Heater Kit					Air Conditioner			Heater Kit		Air Conditioner		
	MODEL NO. RXJJ-	No. of Sequence Steps	Rated Heater kW @480V	Heater KBTU/hr @480V	Heater Amp @480V	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. @480V	-----				MIN./MAX. @480V	-----
RACDZT090ADF	No Heat	-----	-----	-----	-----	17	20/25	-----	-----	-----	17	20/25	----
	DD10DNV	1	9.9	33.77	11.9	19	20/25	-----	15	15	17	20/25	----
	DD15DNV	1	14.4	49.13	17.3	26	30/30	-----	22	25	17	20/25	----
	DD20DNV	2	19.8	67.55	23.8	34	35/35	-----	30	30	17	20/25	----
	DD30DNV	2	28.8	98.25	34.6	48	50/50	-----	44	45	17	20/25	----
	DD40DNV	2	39.6	135.10	47.6	64	70/70	-----	60	60	17	20/25	----
RACDZT090ADG	No Heat	-----	-----	-----	-----	19	25/25	----	----	----	19	25/25	----
	DD10DNV	1	9.9	33.77	11.9	21	25/25	----	15	15	19	25/25	----
	DD15DNV	1	14.4	49.13	17.3	28	30/30	----	22	25	19	25/25	----
	DD20DNV	2	19.8	67.55	23.8	36	40/40	----	30	30	19	25/25	----
	DD30DNV	2	28.8	98.25	34.6	49	50/50	----	44	45	19	25/25	----
	DD40DNV	2	39.6	135.10	47.6	66	70/70	----	60	60	19	25/25	----
RACDZT102ADF	No Heat	-----	-----	-----	-----	21	25/30	----	----	----	21	25/30	----
	DD10DNV	1	9.9	33.77	11.9	21	25/25	-----	15	15	21	25/30	----
	DD15DNV	1	14.4	49.13	17.3	26	30/30	----	22	25	21	25/30	----
	DD20DNV	2	19.8	67.55	23.8	35	35/35	----	30	30	21	25/30	----
	DD30DNV	2	28.8	98.25	34.6	48	50/50	----	44	45	21	25/30	----
	DD40DNV	2	39.6	135.10	47.6	64	70/70	----	60	60	21	25/30	----
RACDZT102ADG	No Heat	-----	-----	-----	-----	22	25/30	----	----	----	22	25/30	----
	DD10DNV	1	9.9	33.77	11.9	22	25/30	-----	15	15	22	25/30	----
	DD15DNV	1	14.4	49.13	17.3	28	30/30	----	22	25	22	25/30	----
	DD20DNV	2	19.8	67.55	23.8	36	40/40	-----	30	30	22	25/30	----
	DD30DNV	2	28.8	98.25	34.6	49	50/50	----	44	45	22	25/30	----
	DD40DNV	2	39.6	135.10	47.6	66	70/70	-----	60	60	22	25/30	----
RACDZT102ADH	No Heat	-----	-----	-----	-----	24	30/35	----	----	----	24	30/35	----
	DD10DNV	1	9.9	33.77	11.9	24	30/35	----	15	15	24	30/35	----
	DD15DNV	1	14.4	49.13	17.3	30	30/35	----	22	25	24	30/35	----
	DD20DNV	2	19.8	67.55	23.8	38	40/40	-----	30	30	24	30/35	----
	DD30DNV	2	28.8	98.25	34.6	51	60/60	----	44	45	24	30/35	----
	DD40DNV	2	39.6	135.10	47.6	67	70/70	-----	60	60	24	30/35	----

P. APPENDICES

Appendix E – Heater Kit Characteristics

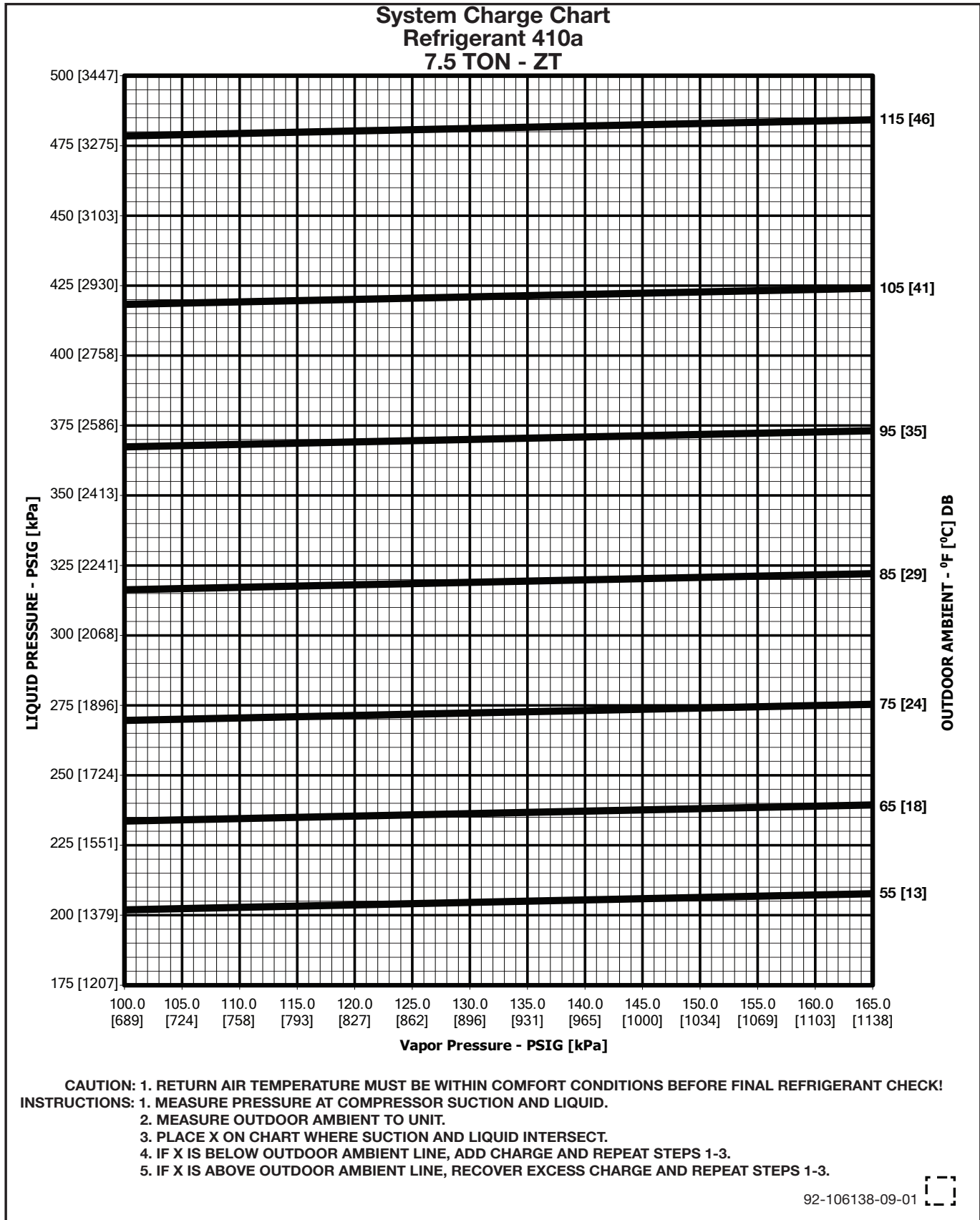
480V, THREE PHASE, 60 Hz, AUXILIARY ELECTRIC HEATER KIT CHARACTERISTICS AND APPLICATION													
Single Power Supply for Both Unit and Heater Kit							Separate Power Supply for Both Unit and Heater Kit						
UNIT MODEL NUMBER	Heater Kit					Air Conditioner			Heater Kit		Air Conditioner		
	MODEL NO. RXJJ-	No. of Sequence Steps	Rated Heater kW @480V	Heater KBTU/hr @480V	Heater Amp @480V	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. @480V	-----				MIN./MAX. @480V	-----
RACDZT120ADF	No Heat	-----	-----	-----	-----	26	30/35	----	----	----	26	30/35	----
	DD10DNV	1	9.9	33.77	11.9	26	30/35	----	15	15	26	30/35	----
	DD15DNV	1	14.4	49.13	17.3	27	30/35	----	22	25	26	30/35	----
	DD20DNV	2	19.8	67.55	23.8	35	35/35	----	30	30	26	30/35	----
	DD30DNV	2	28.8	98.25	34.6	49	50/50	----	44	45	26	30/35	----
	DD40DNV	2	39.6	135.10	47.6	65	70/70	----	60	60	26	30/35	----
RACDZT120ADG	No Heat	-----	-----	-----	-----	27	35/40	----	----	----	27	35/40	----
	DD10DNV	1	9.9	33.77	11.9	27	35/40	----	15	15	27	35/40	----
	DD15DNV	1	14.4	49.13	17.3	28	35/40	----	22	25	27	35/40	----
	DD20DNV	2	19.8	67.55	23.8	37	40/40	----	30	30	27	35/40	----
	DD30DNV	2	28.8	98.25	34.6	50	50/50	----	44	45	27	35/40	----
	DD40DNV	2	39.6	135.10	47.6	66	70/70	----	60	60	27	35/40	----
RACDZT120ADH	No Heat	-----	-----	-----	-----	28	35/40	----	----	----	28	35/40	----
	DD10DNV	1	9.9	33.77	11.9	28	35/40	----	15	15	28	35/40	----
	DD15DNV	1	14.4	49.13	17.3	30	35/40	----	22	25	28	35/40	----
	DD20DNV	2	19.8	67.55	23.8	38	40/40	----	30	30	28	35/40	----
	DD30DNV	2	28.8	98.25	34.6	51	60/60	----	44	45	28	35/40	----
	DD40DNV	2	39.6	135.10	47.6	67	70/70	----	60	60	28	35/40	----
RACDZT150ADF	No Heat	-----	-----	-----	-----	34	40/40	----	----	----	34	40/40	----
	DD10DNV	1	9.9	33.77	11.9	34	40/40	----	15	15	34	40/40	----
	DD15DNV	1	14.4	49.13	17.3	34	40/40	----	22	25	34	40/40	----
	DD20DNV	2	19.8	67.55	23.8	37	40/40	----	30	30	34	40/40	----
	DD30DNV	2	28.8	98.25	34.6	50	50/50	----	44	45	34	40/40	----
	DD40DNV	2	39.6	135.10	47.6	66	70/70	----	60	60	34	40/40	----
RACDZT150ADG	No Heat	-----	-----	-----	-----	37	40/45	----	----	----	37	40/45	----
	DD10DNV	1	9.9	33.77	11.9	37	40/45	----	15	15	37	40/45	----
	DD15DNV	1	14.4	49.13	17.3	37	40/45	----	22	25	37	40/45	----
	DD20DNV	2	19.8	67.55	23.8	40	40/45	----	30	30	37	40/45	----
	DD30DNV	2	28.8	98.25	34.6	54	60/60	----	44	45	37	40/45	----
	DD40DNV	2	39.6	135.10	47.6	70	70/70	----	60	60	37	40/45	----

Appendix E – Heater Kit Characteristics

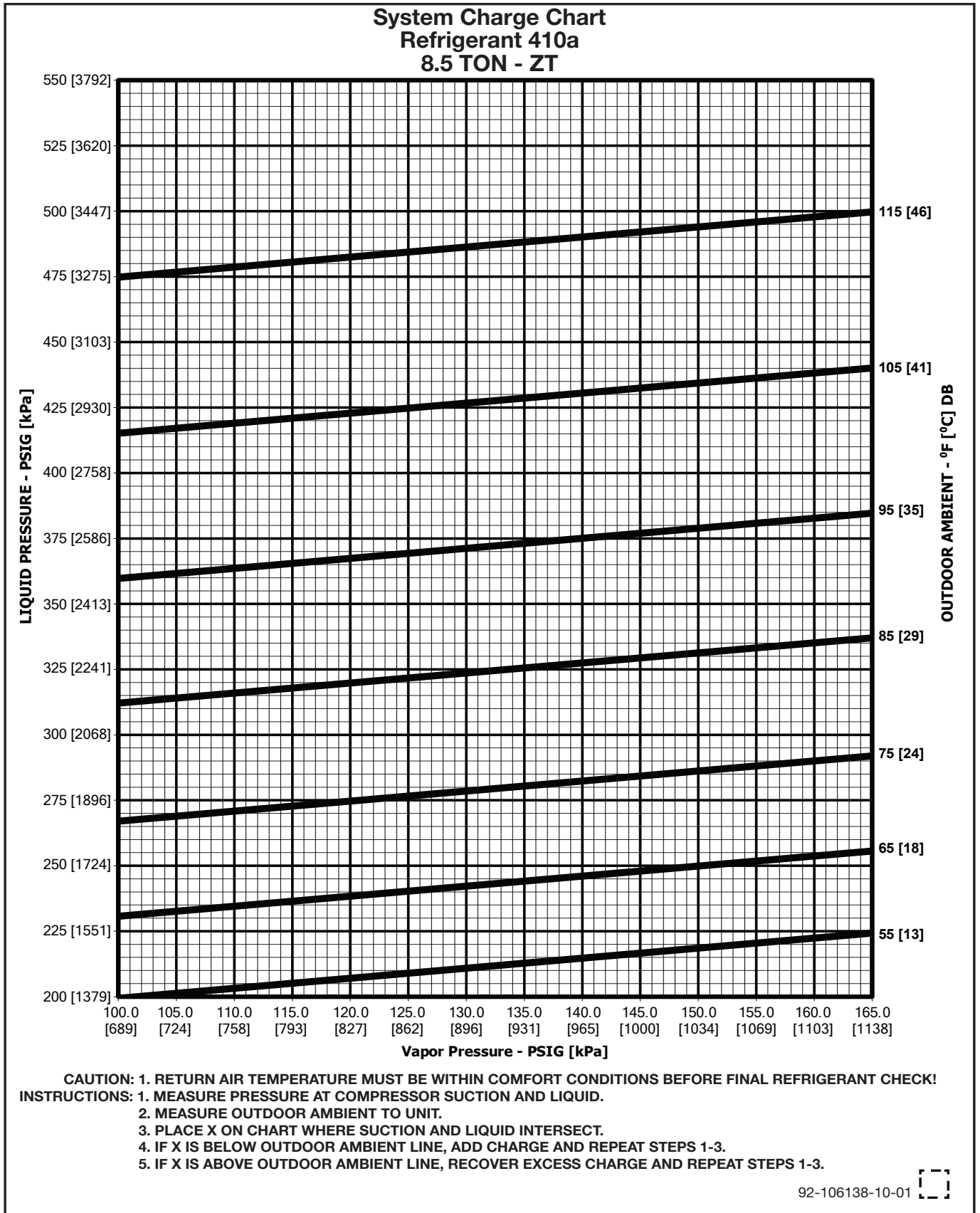
600V, THREE PHASE, 60 Hz, AUXILIARY ELECTRIC HEATER KIT CHARACTERISTICS AND APPLICATION													
UNIT MODEL NUMBER	Single Power Supply for Both Unit and Heater Kit								Separate Power Supply for Both Unit and Heater Kit				
	Heater Kit					Air Conditioner			Heater Kit		Air Conditioner		
	MODEL NO. RXJJ-	No. of Sequence Steps	Rated Heater kW @600V	Heater KBTU/hr @600V	Heater Amp @600V	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. @600V	-----				MIN./MAX. @600V	-----
RACDZT102AYH	No Heat	-----	-----	-----	-----	17	20/25	-----	-	-	17	20/25	-----
	DD10Y	1	10.0	34.12	9.6	17	20/25	-----	12	15	17	20/25	-----
	DD15Y	1	15.0	51.17	14.4	23	25/25	-----	18	20	17	20/25	-----
	DD20Y	2	20.0	68.23	19.2	29	30/30	-----	24	25	17	20/25	-----
	DD30Y	2	30.0	102.35	28.9	41	45/45	-----	37	40	17	20/25	-----
	DD40Y	2	40.0	136.46	38.5	53	60/60	-----	49	50	17	20/25	-----
RACDZT120AYF	No Heat	-----	-----	-----	-----	19	25/25	-----	-	-	19	25/25	-----
	DD10Y	1	10.0	34.12	9.6	19	25/25	-----	12	15	19	25/25	-----
	DD15Y	1	15.0	51.17	14.4	22	25/25	-----	18	20	19	25/25	-----
	DD20Y	2	20.0	68.23	19.2	28	30/30	-----	24	25	19	25/25	-----
	DD30Y	2	30.0	102.35	28.9	40	40/40	-----	37	40	19	25/25	-----
	DD40Y	2	40.0	136.46	38.5	52	60/60	-----	49	50	19	25/25	-----
RACDZT120AYG	No Heat	-----	-----	-----	-----	20	25/30	-----	-	-	20	25/30	-----
	DD10Y	1	10.0	34.12	9.6	20	25/30	-----	12	15	20	25/30	-----
	DD15Y	1	15.0	51.17	14.4	23	25/30	-----	18	20	20	25/30	-----
	DD20Y	2	20.0	68.23	19.2	29	30/30	-----	24	25	20	25/30	-----
	DD30Y	2	30.0	102.35	28.9	41	45/45	-----	37	40	20	25/30	-----
	DD40Y	2	40.0	136.46	38.5	53	60/60	-----	49	50	20	25/30	-----
RACDZT120AYH	No Heat	-----	-----	-----	-----	20	25/30	-----	-	-	20	25/30	-----
	DD10Y	1	10.0	34.12	9.6	20	25/30	-----	12	15	20	25/30	-----
	DD15Y	1	15.0	51.17	14.4	23	25/30	-----	18	20	20	25/30	-----
	DD20Y	2	20.0	68.23	19.2	29	30/30	-----	24	25	20	25/30	-----
	DD30Y	2	30.0	102.35	28.9	41	45/45	-----	37	40	20	25/30	-----
	DD40Y	2	40.0	136.46	38.5	53	60/60	-----	49	50	20	25/30	-----
RACDZT150AYF	No Heat	-----	-----	-----	-----	25	30/30	-----	-	-	25	30/30	-----
	DD10Y	1	10.0	34.12	9.6	25	30/30	-----	12	15	25	30/30	-----
	DD15Y	1	15.0	51.17	14.4	25	30/30	-----	18	20	25	30/30	-----
	DD20Y	2	20.0	68.23	19.2	30	30/30	-----	24	25	25	30/30	-----
	DD30Y	2	30.0	102.35	28.9	42	45/45	-----	37	40	25	30/30	-----
	DD40Y	2	40.0	136.46	38.5	54	60/60	-----	49	50	25	30/30	-----
RACDZT150AYG	No Heat	-----	-----	-----	-----	27	30/30	-----	-----	-----	27	30/30	-----
	DD10Y	1	10.0	34.12	9.6	27	30/30	-----	12	15	27	30/30	-----
	DD15Y	1	15.0	51.17	14.4	27	30/30	-----	18	20	27	30/30	-----
	DD20Y	2	20.0	68.23	19.2	32	35/35	-----	24	25	27	30/30	-----
	DD30Y	2	30.0	102.35	28.9	44	45/45	-----	37	40	27	30/30	-----
	DD40Y	2	40.0	136.46	38.5	56	60/60	-----	49	50	27	30/30	-----

P. APPENDICES

Appendix F – Refrigerant Charging Charts (Cont.)

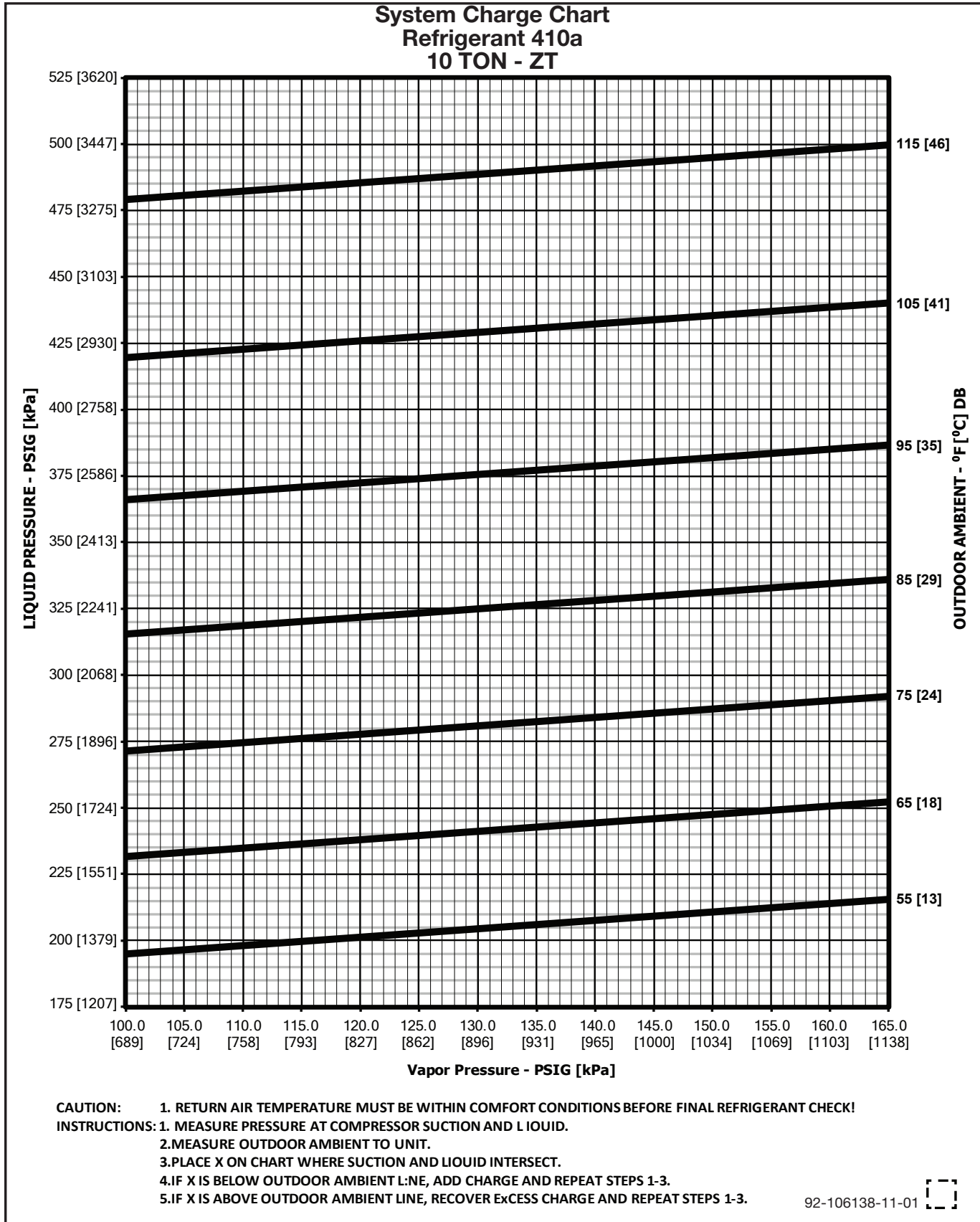


Appendix F – Refrigerant Charging Charts (Cont.)

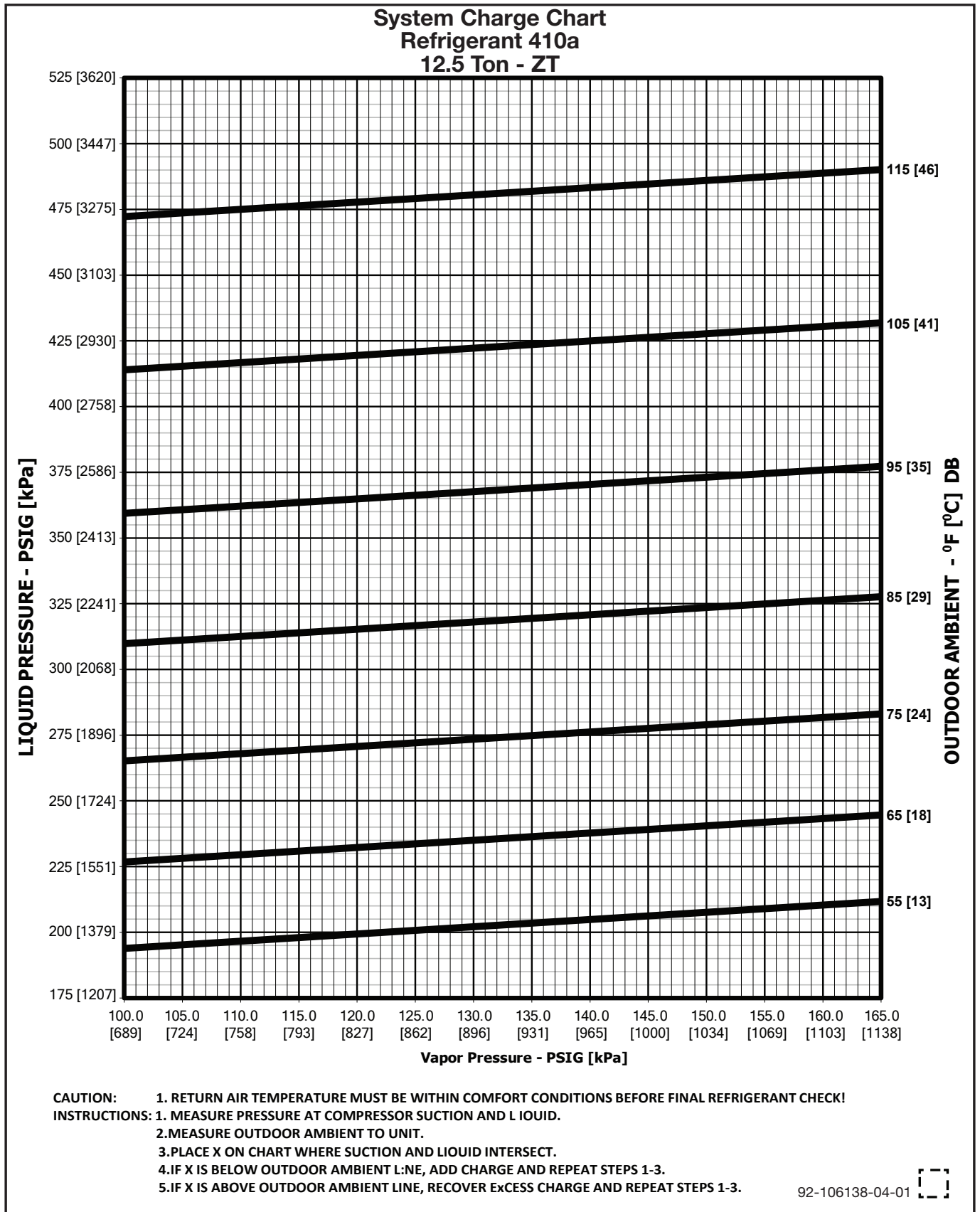


P. APPENDICES

Appendix F – Refrigerant Charging Charts (Cont.)



Appendix F – Refrigerant Charging Charts (Cont.)



P. APPENDICES

Appendix F – Refrigerant Charging Charts (Cont.)

SYSTEM CHARGE CHART – REFRIGERANT 410 A

PRESSURE REQUIREMENTS – GROSS CHARGE CHECK (REFER CHARGE CHART)

OUTDOOR DRY BULB (°F)	7.5 -TON	8.5 -TON	10 -TON	12.5 -TON
	LIQUID /VAPOR PRESSURE (PSIG)			
115	510.2/147.22	504.13/141.62	500.9/138.5	497.1/138.6
105	450.64/144.8	443.53/139.2	436.5/143.9	438.5/136.5
95	398.19/144	393.38/136.06	389.3/134.1	384.6/134.9
85	354.59/140.06	341.45/135.13	337.5/132.1	336.1/133.5
75	311.67/136.7	297.72/133.41	294.2/130.4	293.1/132.1
65	272.9/132.96	261.32/130.57	255.3/128.6	255.2/130
55	243.58/131.27	230.36/127.47	218.1/125.8	219.8/125.8

SUB COOLING REQUIREMENTS – FINAL CHARGE VERIFICATION

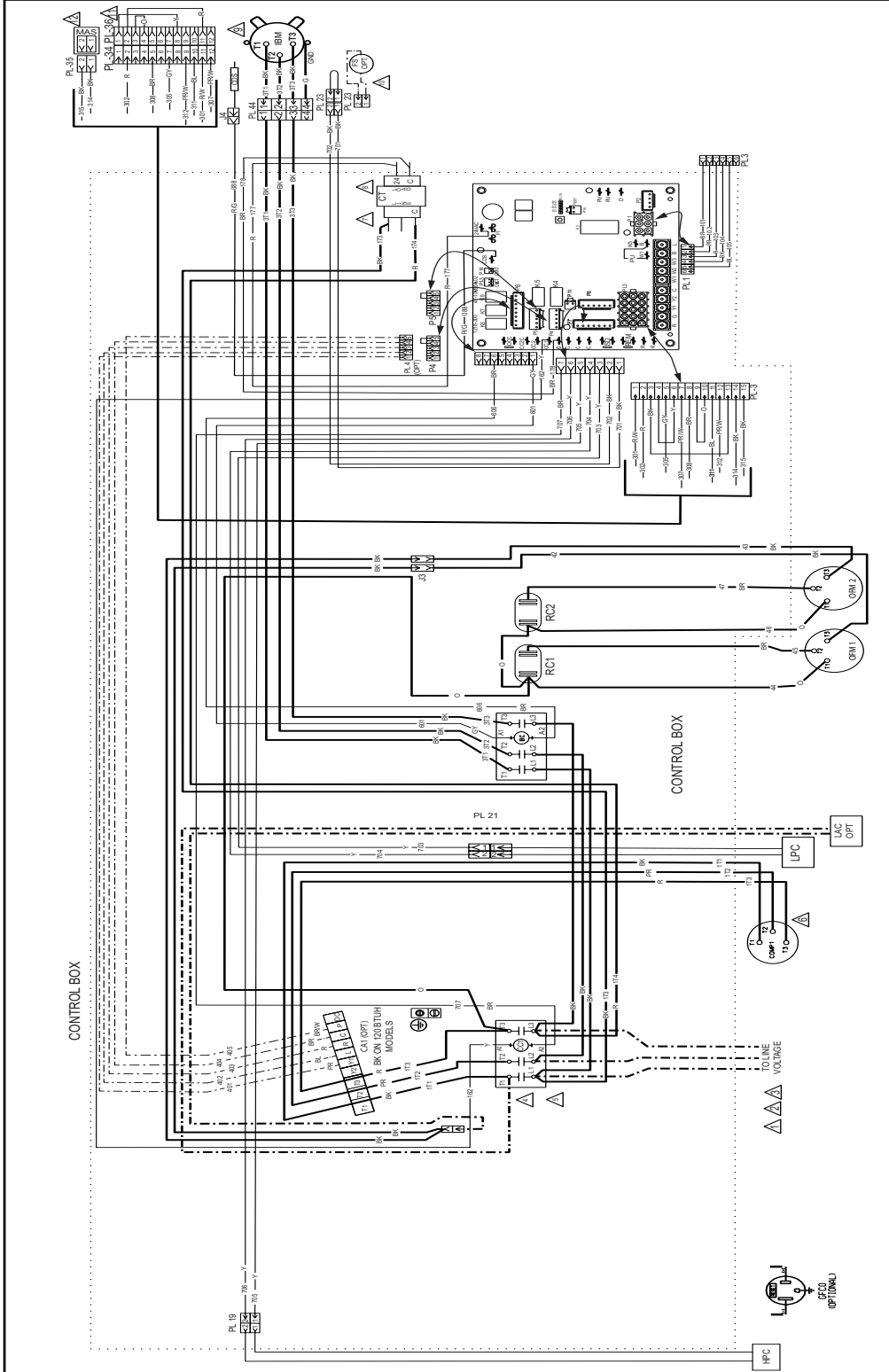
OUTDOOR DRY BULB (°F)	7.5 -TON	8.5 -TON	10 -TON	12.5 -TON
	SUBCOOLING (°F)			
115	12.1	15.6	15.8	13.3
105	10.8	14.9	14.2	13
95	9.8	14.2	15.5	12.4
85	9.8	13	13.8	10.8
75	8.1	11.7	13	9.7
65	11.7	11.2	12	9.3
55	11.8	12.2	10.7	10.6

1. This is required to fine-tune unit charge.
2. The Indoor ambient temperature must be between 72 °F and 82 °F dry bulb at the indoor coil.
3. Confirm the indoor air supply is at the rated CFM listed in **Appendix A**.
4. Allow the system to run long enough for temperatures and pressures to stabilize; at least fifteen minutes.
5. Measure liquid pressure and line temperature at the liquid line service port (refer to section J.4.2.1. for the liquid line temperature measurement location). BE SURE TO USE ZERO LOSS FITTINGS WHILE MEASURING

PRESSURE; ANY LOSS OF CHARGE MAY IMPACT PERFORMANCE.

6. To find the saturation temperature at the measured pressure, subtract the measured liquid line temperature from the saturation pressure to get the sub-cooling.
7. Check if the Sub-Cooling is within +/- 2.0 °F tolerance.
8. If the sub-cooling values are significantly different (> 20 psig) from those listed on the table in **Appendix F**, there may be an airflow or component issue. Refer to section M. Diagnostics for more information.

Appendix G. Wiring Diagrams & Schematics



<p>WIRE COLOR CODE</p> <p>BK.....BLACK G.....GREEN PR.....PURPLE BR.....BROWN GV.....GRAY R.....RED BL.....BLUE O.....ORANGE W.....WHITE Y.....YELLOW</p>		<p>ELECTRICAL WIRING DIAGRAM</p> <p>AC NON DDC 1-STG, 090, 102 & 120 208/230/380/460/575V, 3PH 60 Hz. AC NON DDC 1-STG 072/090/102 380-415V 3PH 50Hz.</p>	
<p>APPROVED: _____</p>	<p>CHECKED: _____</p>	<p>ORIGINAL RELEASE NO: _____</p>	<p>REV: 03</p>
<p>MODELED BY: JHB</p>	<p>DATE: 8/21/17</p>	<p>R-10715089</p>	<p>PART NO: 90-106177-21</p>

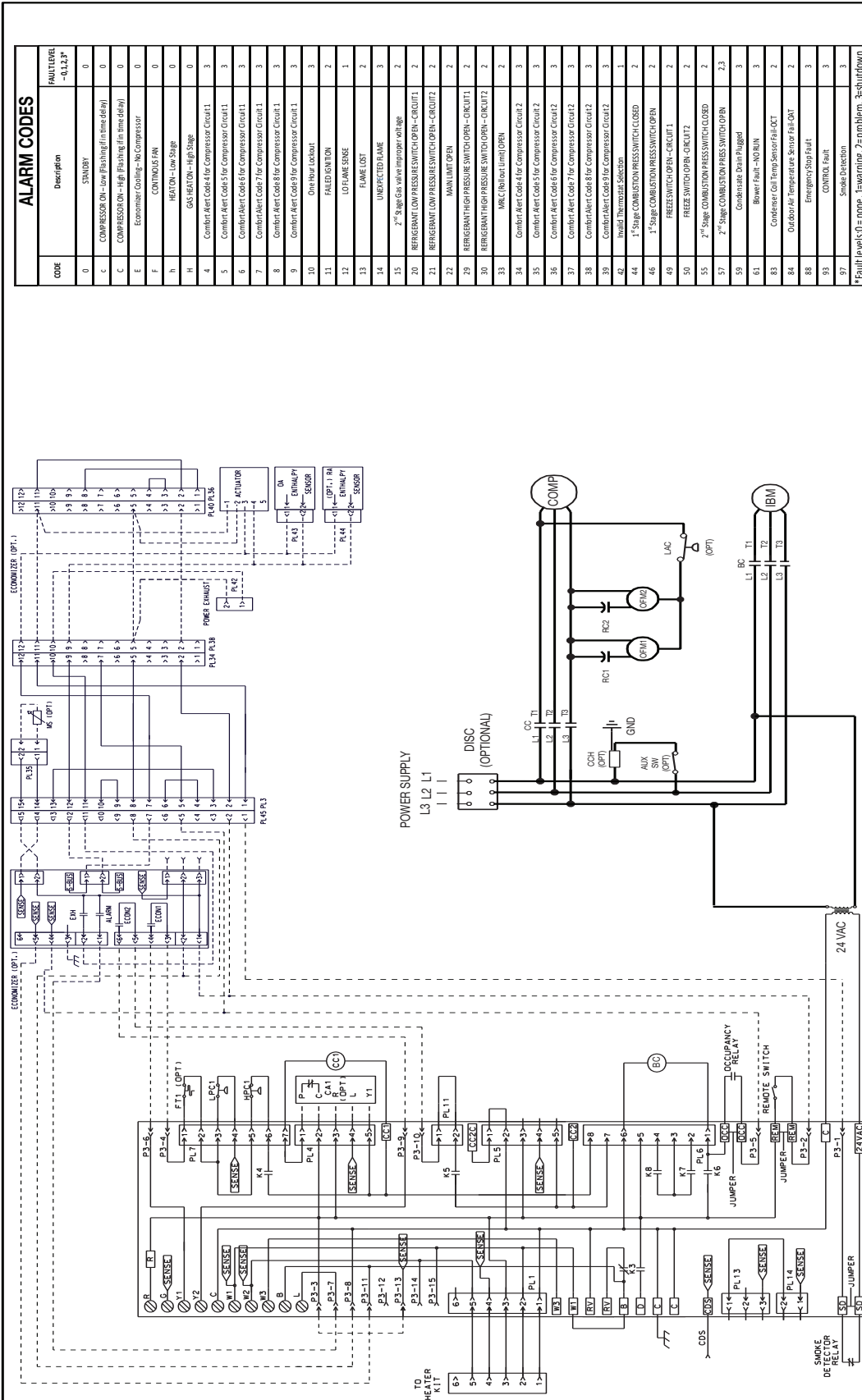
<p>COMPONENT CODES</p> <p>BC BLOWER CONTACTOR CA COMPART ALERT MODULE CCN COMPRESSOR CONTACTOR CCS CLOSED DISCONNECT CFS CLOSED FILTER SWITCH COMP COMPRESSOR CT CONTROL TRANSFORMER DAT DISCONNECT SWITCH FMS FLAME SENSOR FRS FRESH AIR SWITCH GL GROUND LUG GND GROUND HPC HIGH-PRESSURE CONTROL BMD MOTOR/BLOWER MOTOR BELT DRIVE DM INDUCED DRAFT MOTOR J JUMPER</p>	<p>LAC LOW AMBIENT CONTROL LPC LOW PRESSURE CONTROL MRLC MANUAL RESET LIMIT CONTROL NWC NEGATIVE PRESSURE SWITCH OVI OUTDOOR FAN MOTOR P PLUG PT POWER TRANSFORMER RAT RETURN AIR SENSOR RC RELAY CONTACTOR RC1 ROOF UNIT CONTROL RC2 SPARE ELECTRODE # WIRE TIES</p>
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<p>NOTES</p> <p>1. CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY. 2. CONNECT FIELD WIRING TO GROUND RANT DONT CONDUIT TO BE USED DISCONNECT. 3. CONNECT FIELD WIRE TO COMPRESSOR CONTACTOR (CT). 4. REMOVE JUMP (CT) TO INSTALL LOW AMBIENT ACCESSORY. 5. IF REQUIRED, ATTACH CRANKCASE HEATER ACCESSORY TO (C1) AND (C2) (L2). 6. COMPRESSOR WINDINGS MUST BE USED. ALL PHASE MODELS ARE PARALLEL WINDING SINGLE PHASE COOLERS. 7. TRANSFORMER FACTORY WIRING AS SHOWN BELOW. CHANGE PRIMARY VOLTAGE CONNECTIONS FOR OTHER VOLTAGES IF REQUIRED.</p> <p>UNIT VOLTAGES-HZ TRANSFORMER TERN 208-230-60 200 230-60 230 380-415-50 400 380-415-50 460 480-60 575</p>	<p>8. LOW VOLTAGE CIRCUIT IS I.E.C. CLASS 5 WITH CLASS 2 TRANSFORMER. JAMC 5/09 IS APPLIED. 9. MOTOR FACTORY WIRING FOR CORRECT VOLTAGE. 10. REMOVE P.L.B. JUMPER FOR OPTIONAL F.T. LOCATED IN BLOWER COMPARTMENT SECTION. 11. REMOVE P.L.B. FOR COMPRESSOR ACCESSORY P.L.B. LOCATED IN RETURN AIR COMPARTMENT. 12. THIS WIRING PROVIDED WITH COMPRESSOR P.L.B. LOCATED IN BLOWER COMPARTMENT.</p>
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<p>WIRING INFORMATION</p> <p>LINE VOLTAGE -FACTORY STANDARD _____ -FACTORY OPTION _____ -FIELD INSTALLED _____ -FIELD INSTALLED _____ LOW VOLTAGE -FACTORY STANDARD _____ -FACTORY OPTION _____ -FIELD INSTALLED _____ REPLACEMENT WIRE -MUST BE THE SAME SIZE AND TYPE OF INSULATION AS ORIGINAL (100% MIN.) WARNING -CABINET MUST BE PERMANENTLY GROUNDED AND CONFORM TO I.E.C., N.E.C., C.E.C., NATIONAL WIRING REGULATIONS, AND LOCAL CODES AS APPLICABLE.</p>

P. APPENDICES

Appendix G. Wiring Diagrams & Schematics (Cont.)



COMPONENT CODES

BC BLOWER CONTACTOR
 CA COMB. ALERT MODULE
 CC COMPRESSOR CONTACTOR
 CD CONDENSATE DRAIN
 CS CLOSURE SENSOR
 CFS CLOSURE FILTER SWITCH
 COMP COMPRESSOR
 DAI DISCHARGE AIR SENSOR
 DISC DISCHARGE SWITCH
 EIM ECONOMIZER LOGIC MODULE
 EIM2 ECONOMIZER LOGIC MODULE
 FAN FAN RUNNING
 FS FREEZE SENSOR
 FT FREEZE SWITCH
 G CONVENIENCE OUTLET
 GND GROUND
 HPG HIGH PRESSURE CONTROL
 HPS HIGH PRESSURE SWITCH
 ILM INDOOR AIR QUALITY MONITOR
 IFC INTEGRATED FURNACE CONTROL

WIRE COLOR CODE

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

ELECTRICAL WIRING SCHEMATIC

AC NON DDC 1-STG. 0901/02/1/20
 208/230/300/460/575V, 3PH 60 HZ
 AC NON DDC 1-STG 072/090/102
 380-415V, 3PH 50HZ.

NOTES

- CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
- CONNECT FELD WIRING IN GROUND RAIN TIGHT CONDUIT TO FUSED DISCONNECT.
- REMOVE FACTORY WIRE TO INSTALL LOW AMBIENT ACCESSORY.
- REMOVE J3 AT CC1 TO INSTALL LOW AMBIENT ACCESSORY.
- IF REQUIRED, ATTACH GRANKASE HEATER ACCESSORY TO CC1 (L1) AND CC1 (L2).
- COMPRESSOR MOTOR THERMALLY PROTECTED ALL 3-PHASE MODELS ARE PROTECTED UNDER PRIMARY SINGLE-PHASE CONDITIONS.
- TRANSFORMER FACTORY WIRE AS SHOWN BELOW. CHANGE PRIMARY VOLTAGE CONNECTIONS FOR ALTERNATE VOLTAGES, IF REQUIRED.

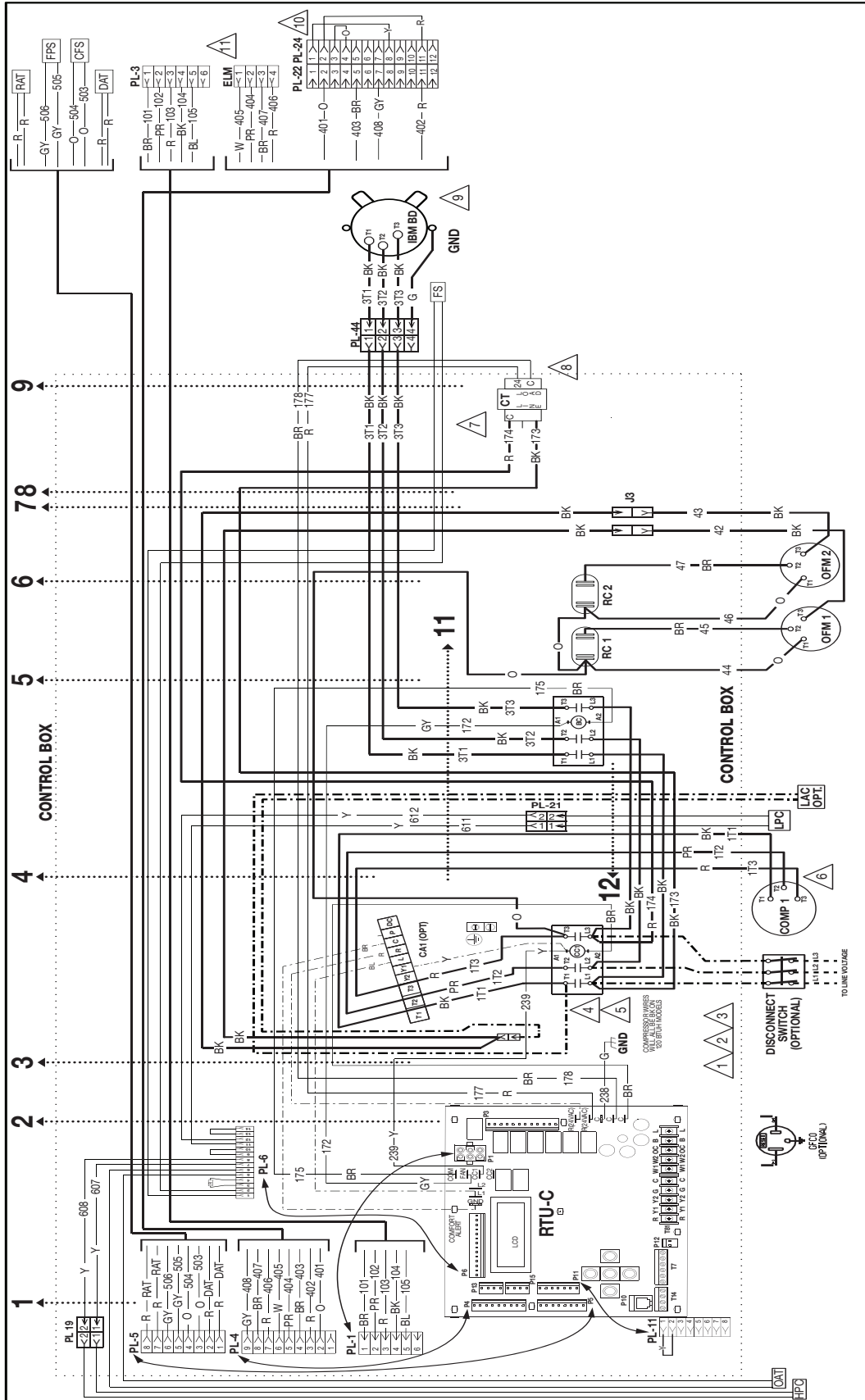
WIRING INFORMATION

LINE VOLTAGE
 -FACTORY STANDARD
 -FACTORY OPTION
 -FIELD INSTALLED
 LOW VOLTAGE
 -FACTORY STANDARD
 -FACTORY OPTION
 -FIELD INSTALLED
 REPLACEMENT WIRE
 -FACTORY STANDARD
 -FIELD INSTALLED
 MUST BE THE SAME SIZE AND TYPE
 OF INSULATION AS ORIGINAL (105°C MIN.)
 WARNING
 ALL WIRING MUST BE PERMANENTLY GROUNDING
 ALL CONDUCTORS TO I.E.C. N.E.C. C.E.C.
 NATIONAL WIRING REGULATIONS, AND LOCAL
 CODES & S. APPL. I.C.B.A.E.

UNIT VOLTAGES - HZ

TRANSFORMER TERM.	UNIT VOLTAGES - HZ
200/230-300VZ	200
230-300VZ	230
230-300VZ	230
380-415VZ	380
380-415VZ	400
380-415VZ	460
575-600VZ	575
575-600VZ	575

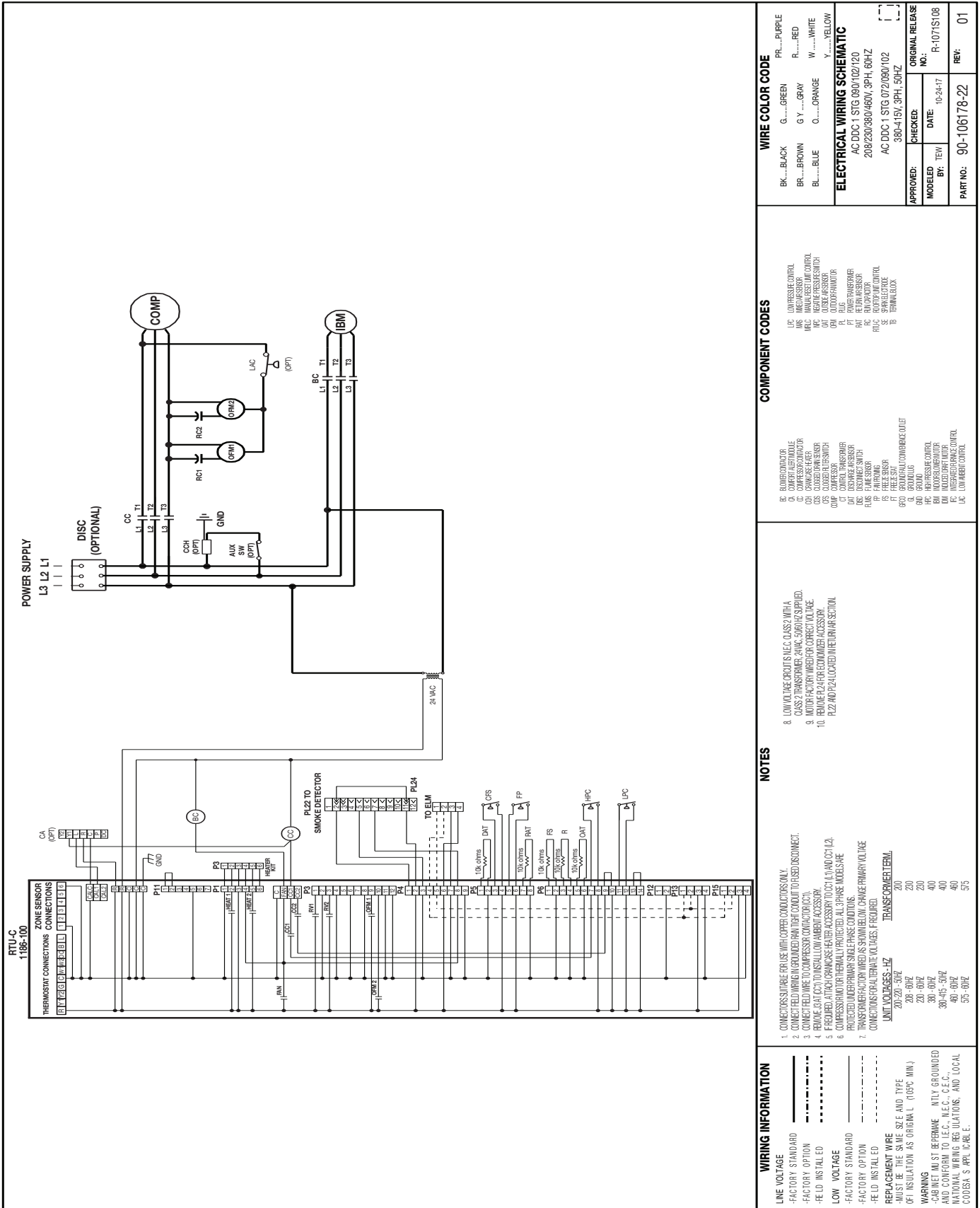
Appendix G. Wiring Diagrams & Schematics (Cont.)



<p>WIRE COLOR CODE</p> <p>BK...BLACK G...GREEN PR...PURPLE BR...BROWN GY...GRAY R...RED BL...BLUE O...ORANGE W...WHITE Y...YELLOW</p>		<p>ELECTRICAL WIRING DIAGRAM</p> <p>AC DDC 1 STG 090/102/120 208/230/380/460/575V, 3PH, 60HZ AC DDC 1 STG 072/090/102 380-415V, 3PH, 50HZ</p>	
<p>COMPONENT CODES</p> <p>BC BLIND MOTOR CC COMPRESSOR CS COMPRESSOR SWITCH DC DISCONNECT SWITCH EC EMERGENCY STOP FC FORCE FEED CONTROL GC GROUND HC HIGH CURRENT IC INTERLOCK LC LOW CURRENT MC MOTOR CONTROL MS MOTOR START NC NORMAL CLOSURE OC OVERCURRENT PC POWER CONTROL RC RELAY SC START CONTROL TC TEMPERATURE CONTROL UC UNDERCURRENT</p>		<p>NOTES</p> <p>8. LOW VOLTAGE CIRCUIT IS I.E.C. CLASS 2 WITH A CLASS 2 TRANSFORMER, 24VAC, 50VA/250VA SUPPLIED. 9. MOTOR FACTORY WIND FOR CORRECT VOLTAGE. 10. REMOVE ELECTRICAL WIRING ACCESSORY PLUG AND PLUG LOCATED IN RETURN SECTION.</p>	
<p>WIRING INFORMATION</p> <p>LINE VOLTAGE FACTORY STANDARD FIELD INSTALLED LOW VOLTAGE FACTORY STANDARD FIELD INSTALLED REPLACEMENT WIRE MUST BE THE SAME SIZE AND TYPE OF INSULATION AS ORIGINAL (105% MIN.) WARNING CABINET MUST BE PERMANENTLY GROUNDED AND CONFORM TO I.E.C., N.E.C., C.E.C. NATIONAL WIRING REGULATIONS, AND LOCAL CODES AS APPLICABLE.</p>		<p>APPROVED: _____ MODELED BY: TEV DATE: 10-25-17 ORIGINAL RELEASE NO.: R-1071S108 PART NO.: 90-106177-22 REV.: 02</p>	

P. APPENDICES

Appendix G. Wiring Diagrams & Schematics (Cont.)



WIRE COLOR CODE	
BK.....BLACK	G.....GREEN
FR.....PURPLE	FR.....RED
BR.....BROWN	GY.....GRAY
BL.....BLUE	O.....ORANGE
W.....WHITE	Y.....YELLOW

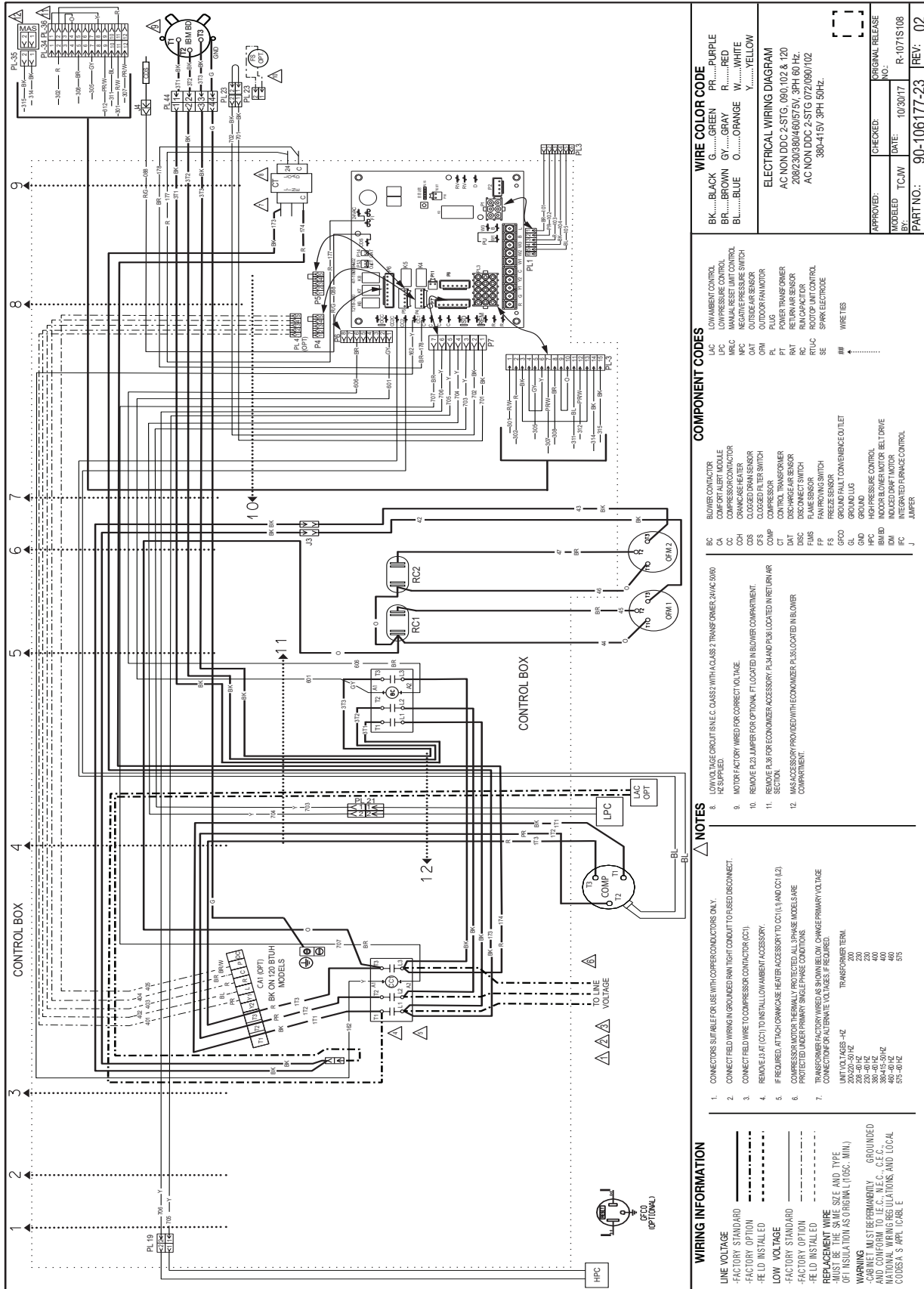
ELECTRICAL WIRING SCHEMATIC	
AC DDC 1 STG. 090/02/120	
208/230/380/480V, 3PH, 50HZ	
AC DDC 1 STG. 072/090/102	
380-415V, 3PH, 50HZ	
APPROVED:	CHECKER:
MODELED BY: TEW	DATE: 10-24-17
PART NO: 90-106178-22	REV: 01

COMPONENT CODES	
BE BLU/RED MOTOR	LC LOW AMBI CONTROL
C COMPRESSOR	MC MANUAL RESET LIMIT CONTROL
CO COIL	MS MOTOR SPEED SWITCH
CS CLASS 2 TRANSFORMER	OH OUT OF RANGE MOTOR
CT CONTROL TRANSFORMER	PL PLUG
DA DRY VAPOR SENSOR	PT FAN MOTOR
DC DRY VAPOR SENSOR	RC RELAY CONTACT
DE DRY VAPOR SENSOR	RD RELAY CONTACT
FE FIELD SENSOR	SE SPARKLE GROUND
FS FUSE SWITCH	TE TERMINAL BLOCK
FP FAN MOTOR	
GA GROUND	
GC GROUND	
HE HIGH PRESSURE CONTROL	
HM HIGH MOUNT MOTOR	
IM INDOOR MOTOR	
LC LOW AMBI CONTROL	

- NOTES**
1. CONNECTORS STABLE FOR USE WITH COPPER CONDUCTORS ONLY.
 2. CONNECT FELD WIRE IN GROUNDED RAIN TIGHT CONDUIT TO ELSED DISCONNECT.
 3. CONNECT FELD WIRE TO COMPRESSOR CONTACTOR (CCT).
 4. REMOVE GAT (CCT) INSULATION ALLOW AMBIENT ACCESS ONLY.
 5. IF REQUIRED, ATTACH CRANKCASE HEATER ACCESSORY TO CCT L1 AND CCT L2A.
 6. COMPRESSOR MOTOR THERMALLY PROTECTED. ALL 3-PHASE MODELS SAFE PROTECTED UNDER PRIMARY SINGLE PHASE CONDITIONS.
 7. TRANSFORMER FACTORY WIRE AS SHOWN BELOW. CHANGE PRIMARY VOLTAGE CONNECTIONS FOR ALTERNATE VOLTAGES. IF REQUIRED.
- | UNIT VOLTAGES - HZ | TRANSFORMER TERNAL |
|--------------------|--------------------|
| 200-230-50HZ | 200 |
| 208-60HZ | 220 |
| 230-60HZ | 230 |
| 380-60HZ | 400 |
| 380-415-50HZ | 400 |
| 460-60HZ | 460 |
| 575-60HZ | 575 |

WIRING INFORMATION	
LINE VOLTAGE	
-FACTORY STANDARD	-----
-FACTORY OPTION	-----
-FELD INSTALLED	-----
LOW VOLTAGE	
-FACTORY STANDARD	-----
-FACTORY OPTION	-----
-FELD INSTALLED	-----
REPLACEMENT WIRE	
-MUST BE THE SAME SIZE AND TYPE	-----
-INSULATION AS ORIGINAL (105°C MIN.)	-----
WARNING	
-CABINET MUST BE PERMANENTLY GROUNDED	-----
-AND CONFORM TO I.E.C., N.E.C., C.E.C., NATIONAL WIRING REGULATIONS, AND LOCAL CODES. S. APPL. IC.R.E.	-----

Appendix G. Wiring Diagrams & Schematics (Cont.)



P. APPENDICES

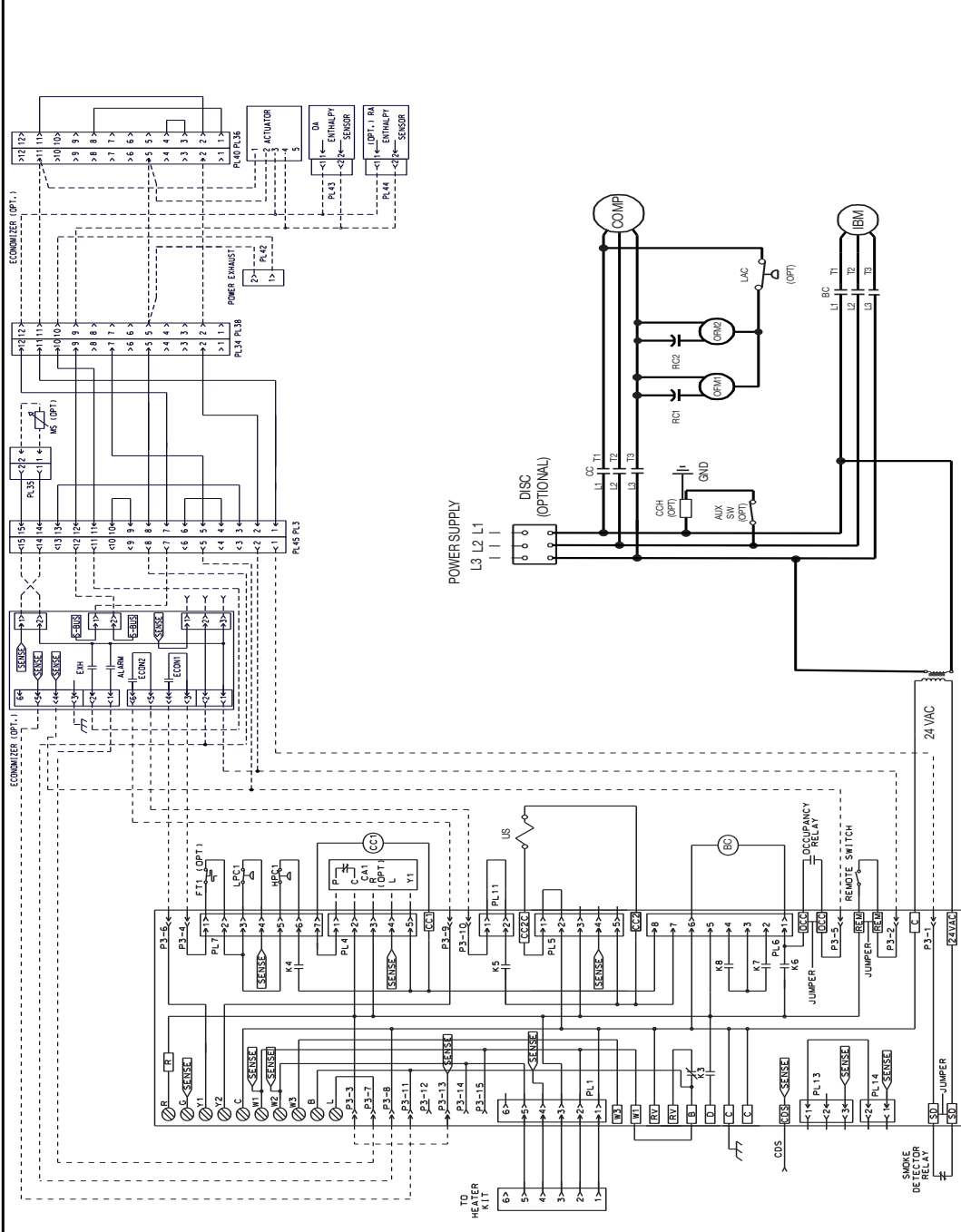
Appendix G. Wiring Diagrams & Schematics (Cont.)

ALARM CODES		
CODE	Description	FAULT LEVEL -0,1,2,3*
0	STANDBY	0
C	COMPRESSOR ON - Low (Backlog in time delay)	0
C	COMPRESSOR ON - High (Starting in time delay)	0
E	Economizer Cooling - No Compressor	0
F	CONTINUOUS FAN	0
H	HEAT ON - Low Stage	0
H	HEAT ON - High Stage	0
4	Combiner Alert Code 4 for Compressor Circuit 1	3
5	Combiner Alert Code 5 for Compressor Circuit 1	3
6	Combiner Alert Code 6 for Compressor Circuit 1	3
7	Combiner Alert Code 7 for Compressor Circuit 1	3
8	Combiner Alert Code 8 for Compressor Circuit 1	3
9	Combiner Alert Code 9 for Compressor Circuit 1	3
10	One Hour Lockout	3
11	HALED (OPTION)	2
12	LOW FLAME ERROR	1
13	FLAME LOST	2
14	UNDRY/CTED-FLAME	3
15	2 nd Stage Gas Valve Impedance Voltage	2
20	REFRIGERANT LOW PRESSURE SWITCH OPEN - CIRCUIT 1	2
21	REFRIGERANT LOW PRESSURE SWITCH OPEN - CIRCUIT 2	2
22	MANUAL OPEN	2
29	REFRIGERANT HIGH PRESSURE SWITCH OPEN - CIRCUIT 1	2
30	REFRIGERANT HIGH PRESSURE SWITCH OPEN - CIRCUIT 2	2
33	MALC (Refrigerant Limit) OPEN	2
34	Combiner Alert Code 4 for Compressor Circuit 2	3
35	Combiner Alert Code 5 for Compressor Circuit 2	3
36	Combiner Alert Code 6 for Compressor Circuit 2	3
37	Combiner Alert Code 7 for Compressor Circuit 2	3
38	Combiner Alert Code 8 for Compressor Circuit 2	3
39	Combiner Alert Code 9 for Compressor Circuit 2	3
42	Internal Thermostat Lockout	1
44	1 st Stage COMBUSTION PRESS SWITCH CLOSED	2
46	1 st Stage COMBUSTION PRESS SWITCH OPEN	2
49	FREEZE SWITCH OPEN - CIRCUIT 1	2
50	FREEZE SWITCH OPEN - CIRCUIT 2	2
55	2 nd Stage COMBUSTION PRESS SWITCH CLOSED	2
57	2 nd Stage COMBUSTION PRESS SWITCH OPEN	2,3
59	Condensate Drain Plugged	3
61	Blower Fault - NO RUN	3
63	Condensate Coil Temp Sensor Fail/OC	2
84	Outdoor Air Temperature Sensor Fail/OC	2
88	Emergency Stop Fault	3
93	CONTROL Fault	3
97	Smoke Detection	3

*Fault levels: 0 = none, 1 = warning, 2 = problem, 3 = shutdown

WIRE COLOR CODE			
Color	Code	Color	
Black	BK.....	Purple	PR.....
Brown	BR.....	Red	R.....
Blue	BL.....	White	W.....
		Yellow	Y.....

ELECTRICAL WIRING SCHEMATIC		
AC NON DDC 2-STG. 090/102/120	ORIGINAL RELEASE NO.:	R-1071S108
208/230/380V/60/57/5V, 3PH 60 Hz	CHECKED:	DATE: 10-30-17
AC NON DDC 2-STG 072/090/102	BY: TCW	
380-415V 3PH 50Hz.	APPROVED:	
	MOBEEB:	
	REV:	03



COMPONENT CODES	
LAC	LOW AMBIENT CONTROL
LFP	LOW PRESSURE CONTROL
MA	MANUAL RESET LIMIT CONTROL
CC	COMPRESSOR CONTACTOR
CS	CLOSURE SENSOR
OS	OUTSIDE AIR SENSOR
OP	OUTDOOR FAN MOTOR
PL	PLUS
TR	TRANSFORMER
RA	RETURN AIR SENSOR
RC	RETURN AIR SENSOR
RU	RUN CAPACITOR
RUU	RUPT UNIT CONTROL
TS	TERMINAL BLOCK
US	UNLOADER SOLENOID

NOTES	
8.	LOW VOLTAGE CIRCUIT (S.A.E.C. CLASS 2) WITH CLASS 2 TRANSFORMER, 2W/VA FOR VOLT SUPPLY.
9.	MOTOR FACTORY WIRE FOR CORRECT VOLTAGE.
10.	REMOVE P.38 FOR ECONOMIZER ACCESSORY. P.38 AND P.39 LOCATED IN RETURN AIR SECTION.

UNIT VOLTAGES - HZ	
208/230/380V	TRANSFORMER TERM.
230	200
230	230
230	230
380	400
380	400
380/415/575/5V	380/415/575/5V
575	575
575	575

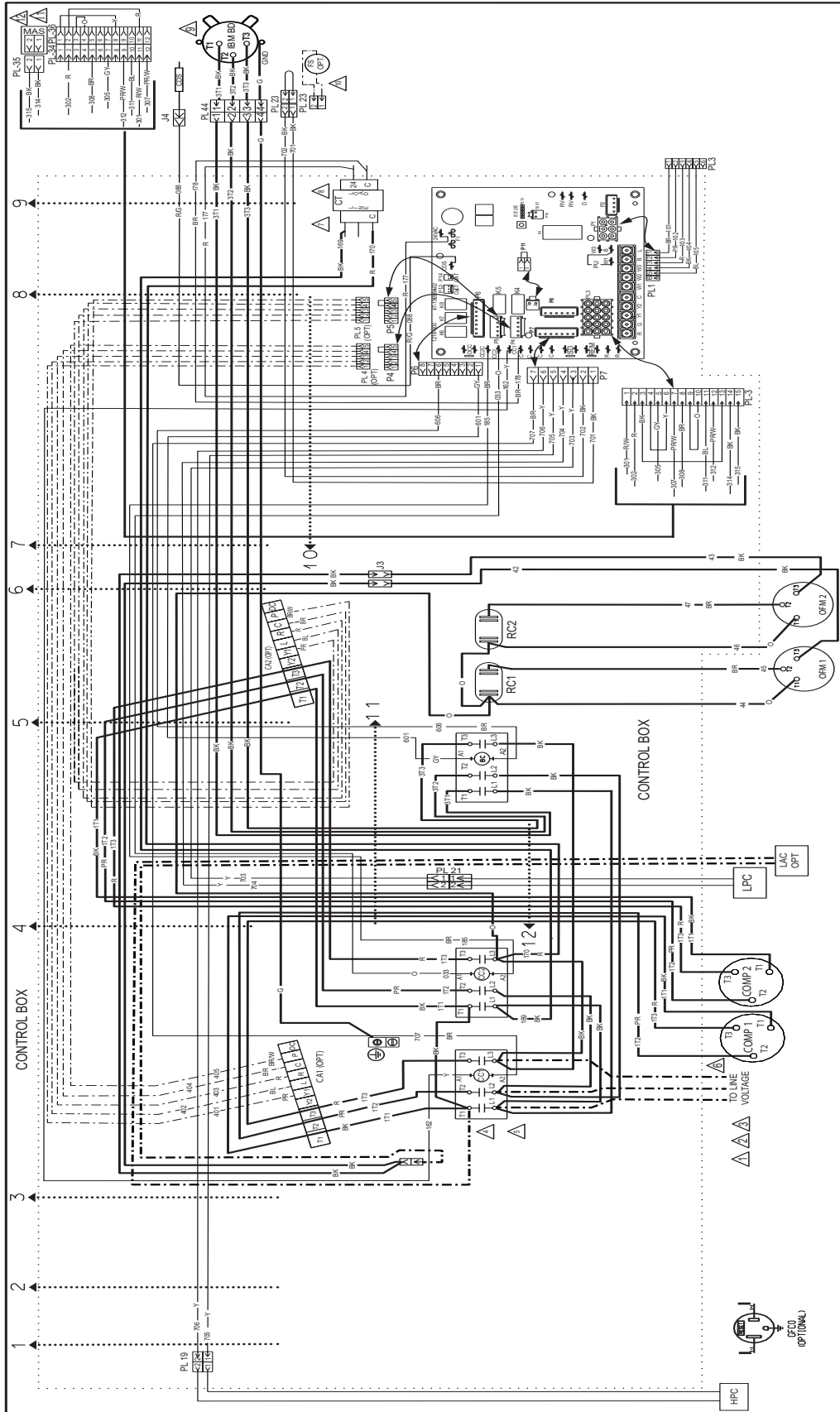
- NOTES**
- CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
 - CONNECT FELD WIRING IN GROUNDING RAIN TIGHT CONDUIT TO FUSED DISCONNECT.
 - CONNECT FELD WIRE TO COMPRESSOR CONTACTOR (CC).
 - REMOVE J3 AT CC1 TO INSTALL LOW AMBIENT ACCESSORY.
 - IF REQUIRED, ATTACH CRANKCASE HEATER ACCESSORY TO CC1 (L1) AND CC1 (L2).
 - COMPRESSOR MOTOR THERMALLY PROTECTED. ALL 3-PHASE MODELS ARE PROTECTED UNDER PRIMARY SINGLE PHASE CONDITIONS.
 - TRANSFORMER FACTORY WIRE AS SHOWN BELOW. CHANGE PRIMARY VOLTAGE CONNECTIONS FOR ALTERNATE VOLTAGES, IF REQUIRED.

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: WIRING MUST BE PERFORMED IN ACCORDANCE WITH ALL NATIONAL ELECTRICAL CODES AND LOCAL NATIONAL WIRING REGULATIONS, AND LOCAL CODES AS APPLICABLE.

Appendix G. Wiring Diagrams & Schematics (Cont.)



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
 -MUST BE OF INSULATION AS ORIGINAL (105C, MIN.)

WARNING
 -CABINET MUST BE PERMANENTLY GROUNDED
 AND CONFORM TO I.E.C., N.E.C., C.E.C.,
 NATIONAL WIRING REGULATIONS, AND LOCAL
 CODES AS APPL. (CABLE)

NOTES

- CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
- CONNECT FIELD WIRING IN GROUNDED RAIN TIGHT CONDUIT TO PREVENT DISCONNECT.
- CONNECT FIELD WIRE TO COMPRESSOR CONDUCTOR (CCT).
- REMOVE J3 AT (CCT) TO INSTALL LOW AMBIENT CONTROL.
- IF REQUIRED, ATTACH COMPRESSOR HEATER ACCESSORY TO CCT (L1 AND CCT L2).
- COMPRESSOR MOTOR THERMALLY PROTECTED ALL PHASE MODELS ARE PROTECTED UNDER PRIMARY SINGLE PHASE CONDITIONS.
- TRANSFORMER FACTORY WIRING AS SHOWN IS OK, CHANGE PRIMARY VOLTAGE CONNECTION FOR ALTERNATE VOLTAGES IF REQUIRED.

UNIT VOLTAGES - HZ

200-208	230
208-230	230
230-208	400
230-208	400
400-208	460
460-208	575

TRANSFORMER TERNAL

COMPONENT CODES

BC	BLOWER CONDUCTOR	CA	COMPRESSOR CONDUCTOR
CC	COMPRESSOR CONTACTOR	CH	COMPRESSOR HEATER
CS	CLOGGED DRAIN SENSOR	CF	CLOGGED FILTER SWITCH
COMP	COMPRESSOR	CONTROL	CONTROL TRANSFORMER
DAT	DISCONNECT SWITCH	FANS	FAN WIRING
FP	FAN PROWING	FS	FREEZE SENSOR
GF	GROUND FAULT INTERRUPTER	GL	GROUND LUG
HPC	HIGH PRESSURE CONTROL	IM	INDOOR BLOWER MOTOR
IM	INDOOR BLOWER MOTOR	FC	INTEGRATED RANGE CONTROL
J	JUMPER		

WIRE COLOR CODE

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

ELECTRICAL WIRING DIAGRAM

AC NON DDC 2-5TG, 150
 208/230/304/60/575V, 3PH, 60 Hz.
 AC NON DDC 2-5TG, 120
 380-415V, 3PH, 50HZ.

APPROVED: _____

MODELED BY: _____

TC:W

CHECKED: _____

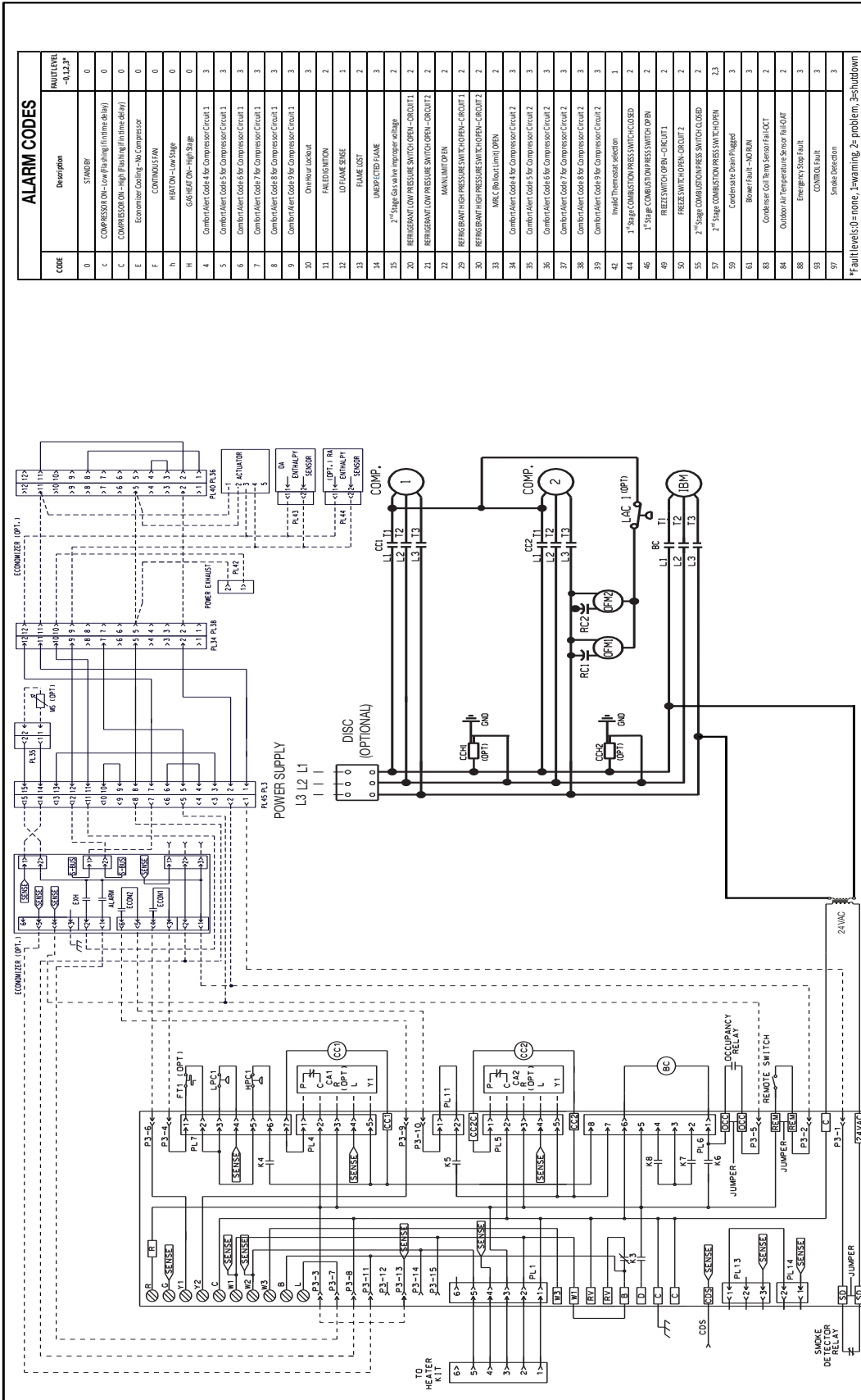
DATE: 12-12-17

ORIGINAL RELEASE NO: R-10718139

PART NO: 90-106177-24 REV: 01

P. APPENDICES

Appendix G. Wiring Diagrams & Schematics (Cont.)



ALARM CODES		FAULT LEVEL
CODE	Description	-L1,2,3
0	STANDBY	0
1	COMPRESSOR ON - Low Pressure (In time delay)	0
2	COMPRESSOR ON - High Pressure (In time delay)	0
3	COMPRESSOR ON - High Pressure (In time delay)	0
4	Economizer Cooling - No Compressor	0
5	CONTINUOUS FAN	0
6	HAYON - Low Stage	0
7	G/SH HEAT ON - High Stage	0
8	Combiner Alert Code 4 for Compressor Circuit 1	3
9	Combiner Alert Code 5 for Compressor Circuit 1	3
10	Combiner Alert Code 6 for Compressor Circuit 1	3
11	Combiner Alert Code 7 for Compressor Circuit 1	3
12	Combiner Alert Code 8 for Compressor Circuit 1	3
13	Combiner Alert Code 9 for Compressor Circuit 1	3
14	On-Hour Lockout	3
15	FALED DOWN	2
16	LO FLAME SENSE	1
17	FLAME LOST	2
18	UNBYPASSED FLAME	3
19	2" Stage Gas Valve Improper Voltage	2
20	REFRIGERANT HIGH PRESSURE SWITCH OPEN - CIRCUIT 1	2
21	REFRIGERANT LOW PRESSURE SWITCH OPEN - CIRCUIT 2	2
22	MANUAL OPEN	2
23	REFRIGERANT HIGH PRESSURE SWITCH OPEN - CIRCUIT 1	2
24	REFRIGERANT HIGH PRESSURE SWITCH OPEN - CIRCUIT 2	2
25	MANC (Manifold Limit) OPEN	2
26	Combiner Alert Code 4 for Compressor Circuit 2	3
27	Combiner Alert Code 5 for Compressor Circuit 2	3
28	Combiner Alert Code 6 for Compressor Circuit 2	3
29	Combiner Alert Code 7 for Compressor Circuit 2	3
30	Combiner Alert Code 8 for Compressor Circuit 2	3
31	Combiner Alert Code 9 for Compressor Circuit 2	3
32	Invalid Thermostat selection	1
33	1" Stage COMBUSTION PRESS SWITCH CLOSED	2
34	1" Stage COMBUSTION PRESS SWITCH OPEN	2
35	FREEZE SWITCH OPEN - CIRCUIT 1	2
36	FREEZE SWITCH OPEN - CIRCUIT 2	2
37	FREEZE SWITCH OPEN - CIRCUIT 2	2
38	1" Stage COMBUSTION PRESS SWITCH CLOSED	2
39	1" Stage COMBUSTION PRESS SWITCH OPEN	2
40	Condensate Drain Plogged	3
41	Blower Fault - No Run	3
42	Condensate Coil Temp Sensor Fail-CT	2
43	Outdoor Air Temperature Sensor Fail-OUT	2
44	Emergency Stop Fault	3
45	Control Fault	3
46	Smoke Detection	3

WIRE COLOR CODE	
BK...BLACK	G.....GREEN
BR...BROWN	GY...GRAY
BL...BLUE	O.....ORANGE
	W.....WHITE
	Y.....YELLOW

ELECTRICAL WIRING SCHEMATIC	
AC NON DDC 2-STG - 150	
208/230/3/60/60/575V, 3PH 60 HZ	
AC NON DDC 2-STG 120	
380/415V, 3PH 50 HZ	

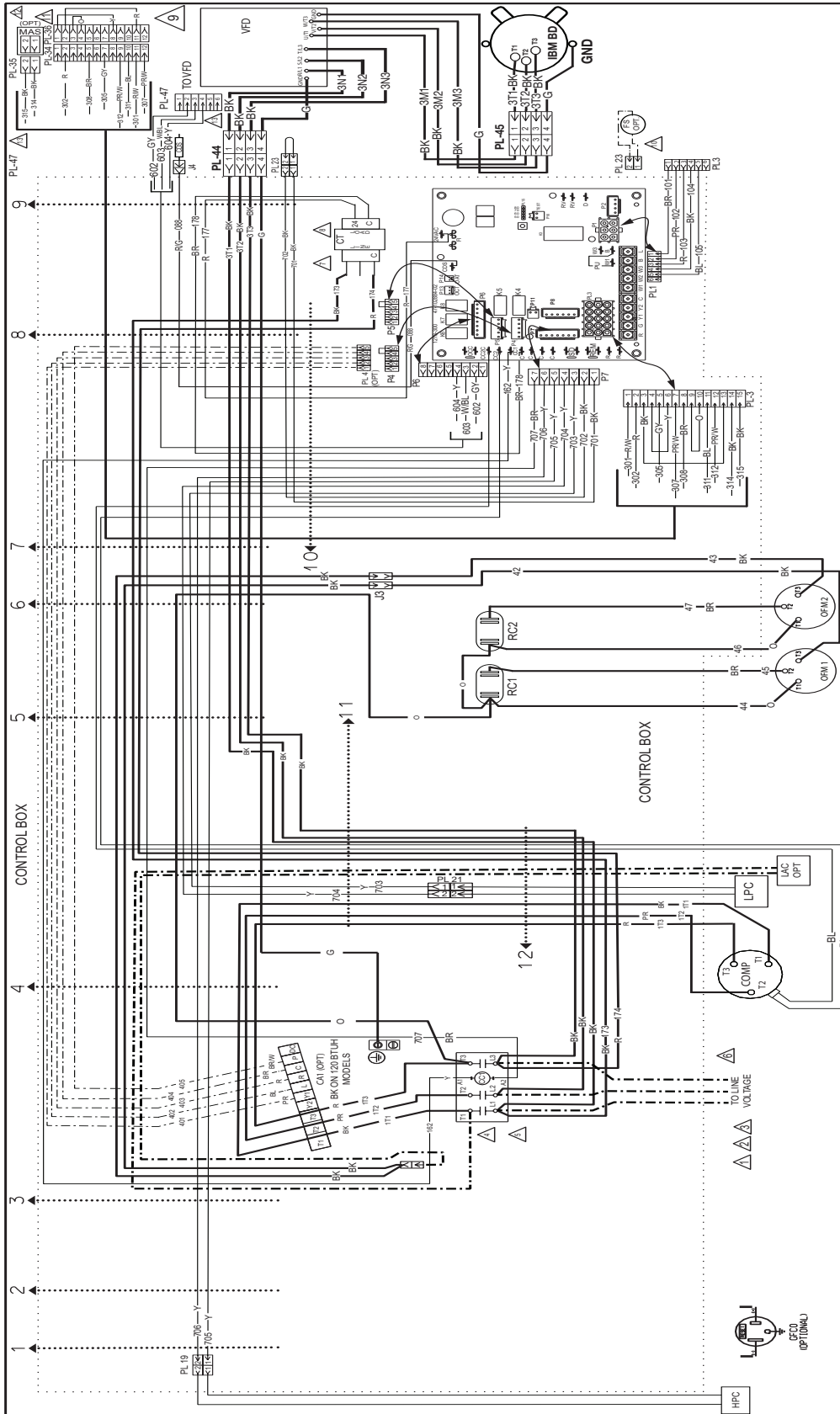
APPROVED:	CHECKED:	ORIGINAL RELEASE NO.:
MOB/ED	TC/W	R-1071S139
DATE: 12-18-17		
PART NO: 90-106178-24		REV: 03

COMPONENT CODES	
LAC	LOW AMBIENT CONTROL
LPC	LOW PRESSURE CONTROL
MLC	MANUAL RESET LIMIT CONTROL
MS	MANUAL START SWITCH
OS	OUTSIDE AIR SENSOR
OP	OUTDOOR FAN MOTOR
PL	PLUG TRANSFORMER
PLS	PLUG TRANSFORMER
RA	RETURN AIR SENSOR
RAA	RETURN AIR SENSOR
RAU	RETURN AIR SENSOR
RAV	RETURN AIR SENSOR
RAW	RETURN AIR SENSOR
RAZ	RETURN AIR SENSOR
RA1	RETURN AIR SENSOR
RA2	RETURN AIR SENSOR
RA3	RETURN AIR SENSOR
RA4	RETURN AIR SENSOR
RA5	RETURN AIR SENSOR
RA6	RETURN AIR SENSOR
RA7	RETURN AIR SENSOR
RA8	RETURN AIR SENSOR
RA9	RETURN AIR SENSOR
RA10	RETURN AIR SENSOR
RA11	RETURN AIR SENSOR
RA12	RETURN AIR SENSOR
RA13	RETURN AIR SENSOR
RA14	RETURN AIR SENSOR
RA15	RETURN AIR SENSOR
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RA20	RETURN AIR SENSOR
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RA56	RETURN AIR SENSOR
RA57	RETURN AIR SENSOR
RA58	RETURN AIR SENSOR
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RA60	RETURN AIR SENSOR
RA61	RETURN AIR SENSOR
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RA64	RETURN AIR SENSOR
RA65	RETURN AIR SENSOR
RA66	RETURN AIR SENSOR
RA67	RETURN AIR SENSOR
RA68	RETURN AIR SENSOR
RA69	RETURN AIR SENSOR
RA70	RETURN AIR SENSOR
RA71	RETURN AIR SENSOR
RA72	RETURN AIR SENSOR
RA73	RETURN AIR SENSOR
RA74	RETURN AIR SENSOR
RA75	RETURN AIR SENSOR
RA76	RETURN AIR SENSOR
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RA78	RETURN AIR SENSOR
RA79	RETURN AIR SENSOR
RA80	RETURN AIR SENSOR
RA81	RETURN AIR SENSOR
RA82	RETURN AIR SENSOR
RA83	RETURN AIR SENSOR
RA84	RETURN AIR SENSOR
RA85	RETURN AIR SENSOR
RA86	RETURN AIR SENSOR
RA87	RETURN AIR SENSOR
RA88	RETURN AIR SENSOR
RA89	RETURN AIR SENSOR
RA90	RETURN AIR SENSOR
RA91	RETURN AIR SENSOR
RA92	RETURN AIR SENSOR
RA93	RETURN AIR SENSOR
RA94	RETURN AIR SENSOR
RA95	RETURN AIR SENSOR
RA96	RETURN AIR SENSOR
RA97	RETURN AIR SENSOR
RA98	RETURN AIR SENSOR
RA99	RETURN AIR SENSOR
RA100	RETURN AIR SENSOR

- NOTES**
- CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
 - CONNECT FELD WIRING IN GROUND RAIN TIGHT CONDUIT TO FUSED DISCONNECT.
 - CONNECT FELD WIRE TO COMPRESSOR CONTACTOR (CC).
 - REMOVE J3 AT (CC1) TO INSTALL LOW AMBIENT ACCESSORY.
 - IF REQUIRED, ATTACH GRANK CASE HEATER ACCESSORY TO CC1 (L1) AND CC1 (L2).
 - COMPRESSOR MOTOR THERMALLY PROTECTED. ALL 3-PHASE MODELS ARE PROTECTED UNDER PRIMARY SINGLE-PHASE CONDITIONS.
 - TRANSFORMER FACTORY WIRING AS SHOWN BELOW. CHANGE PRIMARY VOLTAGE CONNECTIONS FOR ALTERNATE VOLTAGES, IF REQUIRED.

UNIT VOLTAGES - HZ		TRANSFORMER TERM.
208/230-3PHZ	200	
230-3PHZ	230	
230-60 HZ	230	
380-60 HZ	400	
380-415-3PHZ	400	
380-415-3PHZ	400	
575-60 HZ	575	
575-60 HZ	575	

Appendix G. Wiring Diagrams & Schematics (Cont.)



WIRING INFORMATION

- FACTORY STANDARD
- FACTORY OPTION
- FIELD INSTALLED
- LOW VOLTAGE
- FACTORY STANDARD
- FIELD INSTALLED
- REPLACEMENT WIRE
- MUST BE THE SAME SIZE AND TYPE
- OF INSULATION AS ORIGINAL (100C, MIN.)

WARNING
 -CABINET MUST BE PERMANENTLY GROUNDING AND CONFORM TO I.E.C., N.E.C., C.E.C., NATIONAL WIRING REGULATIONS AND LOCAL CODES AS APPLICABLE

NOTES

1. CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY
2. CONNECT FELD WIRING IN GROUNDING RAN TIGHT CONTACT TO PUSED DISCONNECT
3. CONNECT FELD WIRE TO COMPRESSOR CONTACTOR (C1)
4. REMOVE JAR (C1) TO INSTALL LOW AMBIENT ACCESSORY
5. IF REQUIRED, ATTACH CRANKCASE HEATER ACCESSORY TO C1 (U) AND C1 (L)
6. COMPRESSOR MOTOR TERMINALLY PROTECTED ALL 3 PHASE MODELS ARE PROTECTED UNDER PRIMARY SINGLE PHASE CONDITIONS
7. TRANSFORMER FACTORY WIRING AS SHOWN BELOW CHANGE PRIMARY VOLTAGE CONNECTOR FOR ALTERNATE VOLTAGES IF REQUIRED.

UNIT VOLTAGES-42	TRANSFORMER TERN.
20/220-50/12	200
208-48/12	220
230-48/12	200
330-48/12	400
380-115-50/12	400
480-48/12	400
575-48/12	575

COMPONENT CODES

BC	BLOWER CONTACTOR	CA	COMPACT ALERT MODULE	CC	COMPRESSOR CONTACTOR	CC	CRANKCASE HEATER	CCS	CLOSED DRAIN SENSOR	CPS	CLOSED FILTER SWITCH	COMP	COMPRESSOR	CT	CONTROL TRANSFORMER	DAT	DISCONNECT SWITCH	DISC	DISCONNECT SWITCH	DIS	DISCONNECT SWITCH	ES	FAULT SENSOR	FS	FREEZE SENSOR	GL	GROUND LUG	GND	GROUND	HFC	HIGH PRESSURE CONTROL	IM BD	INVERTER MOTOR BELT DRIVE	IM	INDUCED DRAFT MOTOR	J	INTEGRATED BRANCE CONTROL
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WIRE COLOR CODE

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

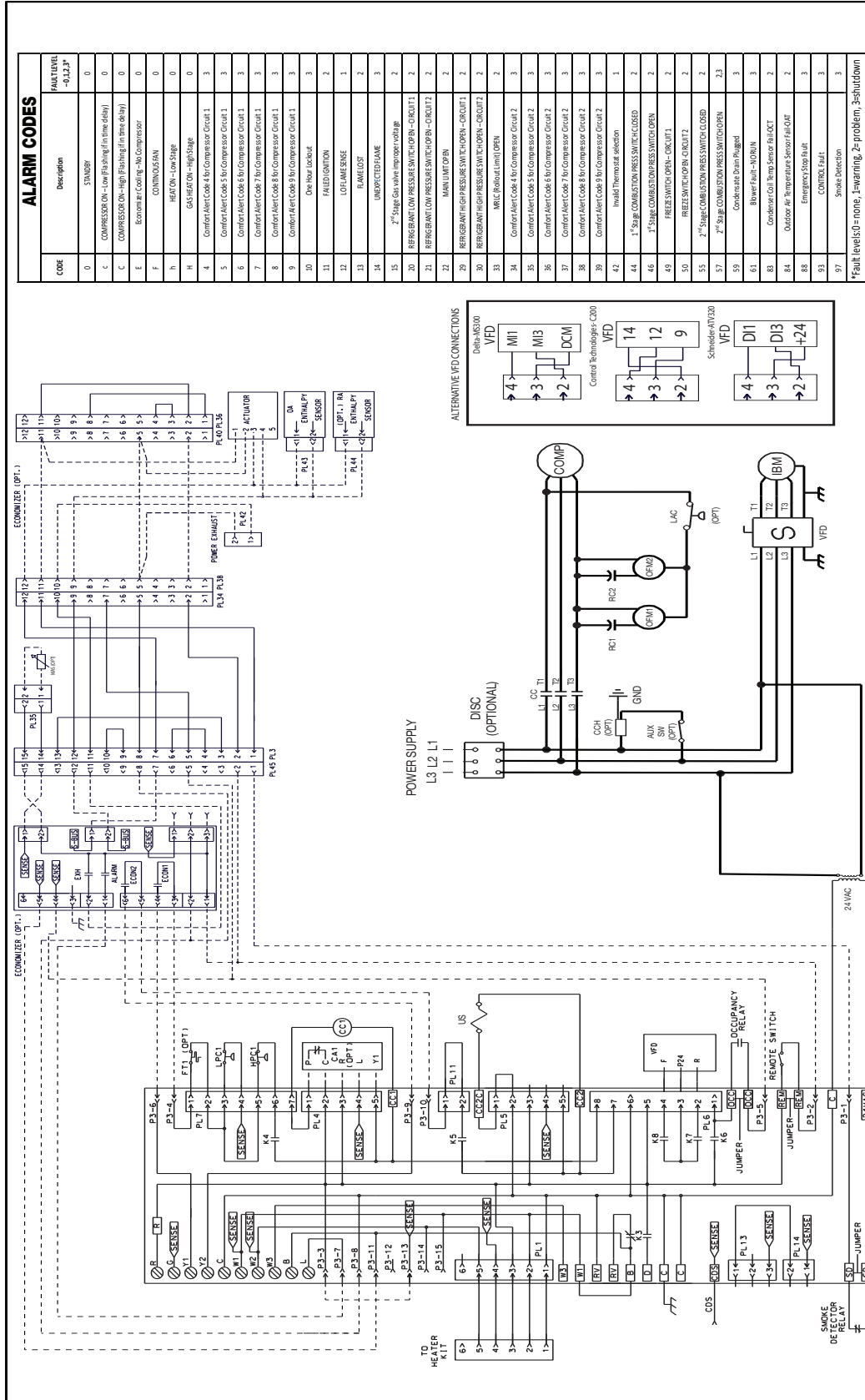
ELECTRICAL WIRING DIAGRAM

AC NON DDC 2-5TG VFD 050.102 & 120
 208/230/380/460/575V, 3PH 60 HZ
 AC NON DDC 2-5TG VFD 072/080/102
 380-415V, 3PH 50HZ

APPROVED:	CHECKED:	ORIGINAL RELEASE NO.:
MODELED:	TC/JW	DATE: 12/06/17
BY:		
PART NO.:	90-106177-25	REV: 03

P. APPENDICES

Appendix G. Wiring Diagrams & Schematics (Cont.)



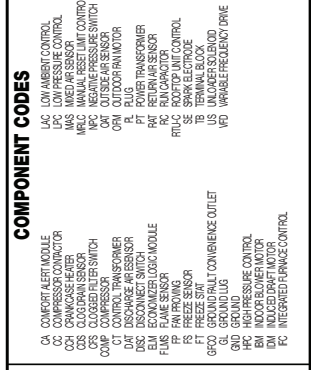
WIRE COLOR CODE	WIRE COLOR CODE
BK...BLACK	G...GREEN
BR...BROWN	GY...GRAY
BL...BLUE	O...ORANGE
	R...RED
	W...WHITE
	Y...YELLOW

ELECTRICAL WIRING SCHEMATIC	
AC NON DDC 2-STG VFD, 0.60/1.02/1.20	
208/230/380/480/575V, 3PH 60 HZ.	
AC NON DDC 2-STG VFD 0.70/0.90/1.02	
380-415V 3PH 50HZ.	

APPROVED:	CHECKED:	ORIGINAL RELEASE NO.:
TEW	12/6/2017	R-1071S126

MODELED BY:	DATE:
TEW	12/6/2017

PART NO.:	REV.:
90-106178-25	04



- COMPONENT CODES**
- CA COMPRESSOR ALERT MODULE
 - CC CONTROL TRANSFORMER
 - CD CONDENSER COIL TEMP SENSOR
 - CO CONDENSER COIL TEMP SENSOR ACCESSORY
 - CS CONDENSER COIL TEMP SENSOR ACCESSORY
 - CT CONTROL TRANSFORMER
 - DA DISCHARGE AIR SENSOR
 - DB DISCHARGE AIR SENSOR ACCESSORY
 - DM INDOOR BLOWER MOTOR
 - DM INDOOR BLOWER MOTOR ACCESSORY
 - EA ECONOMIZER AIR FLOW SENSOR
 - EA ECONOMIZER AIR FLOW SENSOR ACCESSORY
 - FT FREEZE SWITCH
 - GA GAS VALVE
 - GC GROUND FAULT CONVENTANCE OUTLET
 - GL GROUND LUG
 - HA HEAT SENSITIVE CONTROL
 - HC HIGH PRESSURE CONTROL
 - HM HIGH PRESSURE CONTROL ACCESSORY
 - IM INDOOR MOTOR
 - IM INDOOR MOTOR ACCESSORY
 - PC INTRINSICALLY SAFE CONTROL

- NOTES**
- CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
 - CONNECT FIELD WIRING TO GROUND THROUGH LIGHT CONDUIT TO PUSHDISCONNECT.
 - REMOVE JUMPERS FROM OCCUPANCY RELAY AND REMOTE SWITCH.
 - REMOVE JUMPERS FROM REMOTE SWITCH AND REMOTE SWITCH.
 - IF REQUIRED, ATACH CRANKCASE HEATER ACCESSORY TO CC (L1) AND CC (L2).
 - COMPRESSOR MOTOR THERMALLY PROTECTED. ALL 3 PHASE MODELS ARE PROTECTED UNDER PRIMARY SINGLE PHASE CONDITIONS.
 - TRANSFORMER FACTORY WIRED AS SHOWN BELOW. CHANGE PRIMARY VOLTAGE CONNECTIONS FOR ALTERNATE VOLTAGES, IF REQUIRED.

UNIT VOLTAGES - HZ TRANSFORMER TERM.

200-220-240V	200
208-240V	230
230-240V	400
380-415-50V	400
480-500V	480
575-600V	575

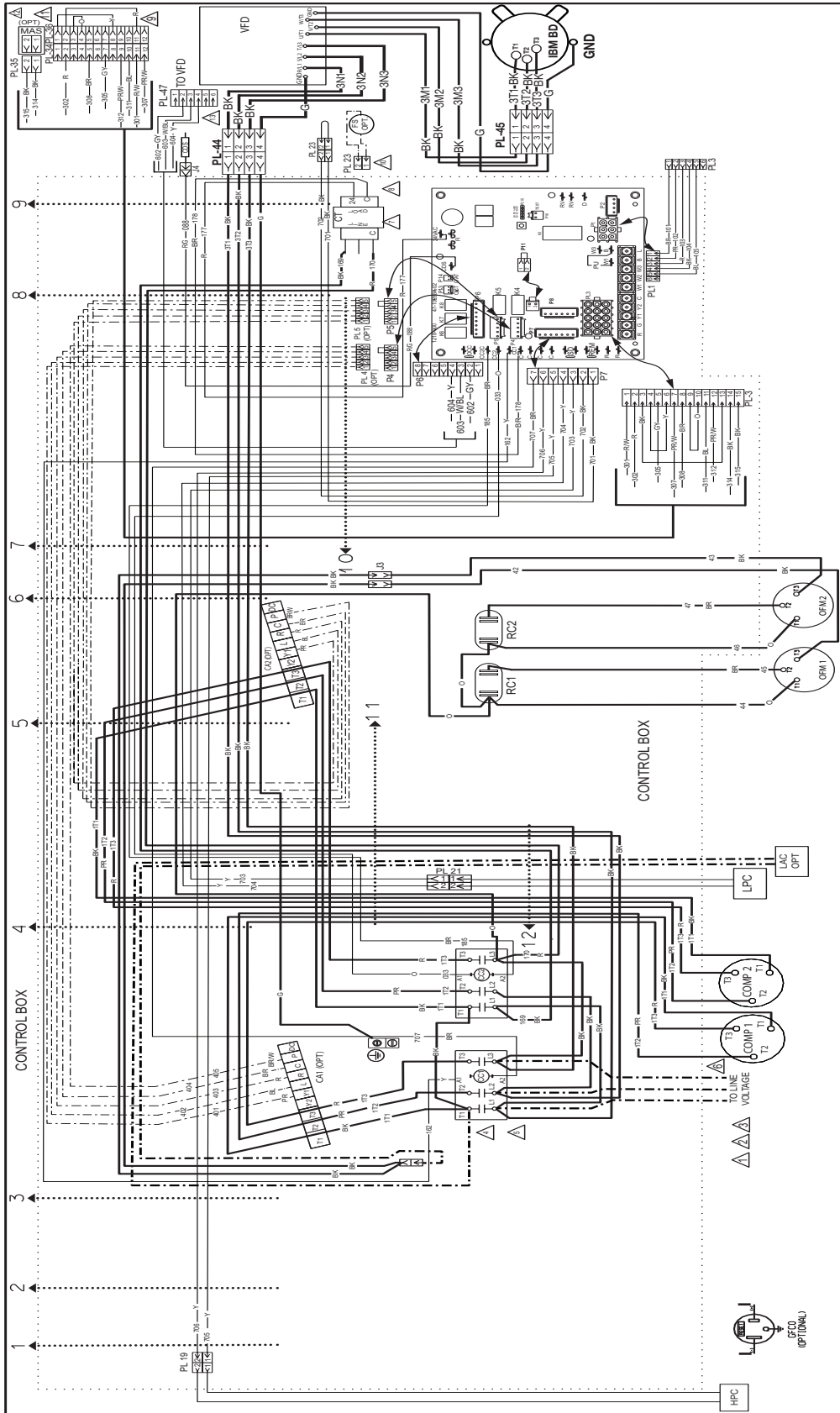
WIRING INFORMATION

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

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

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

Appendix G. Wiring Diagrams & Schematics (Cont.)



WIRING INFORMATION

- FACTORY STANDARD
- FACTORY OPTION
- FIELD INSTALLED
- FIELD INSTALLED
- FACTORY STANDARD
- FACTORY OPTION
- FIELD INSTALLED
- FIELD INSTALLED
- MUST BE THE SAME SIZE AND TYPE OF INSULATION AS ORIGINAL (160C, MIN)

WARNING
 MUST BE PERMANENTLY GROUNDED AND CONFORM TO I.E.C., N.E.C., C.E.C., NATIONAL WIRING REGULATIONS AND LOCAL CODES AS APPLICABLE

NOTES

1. CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
2. CONNECT FELD WIRING IN GROUNDED RAN TIGHT CONDUIT TO PUSED DISCONNECT.
3. CONNECT FELD WIRE TO COMPRESSOR CONTACTOR (CC).
4. REMOVE JAT (CC) TO INSTALL LOW AMBIENT ACCESSORY.
5. IF REQUIRED, ATTACH CRANKCASE HEATER ACCESSORY TO (C1) AND (C2).
6. COMPRESSOR MOTOR TERMINALLY PROTECTED ALL 3 PHASE MODELS ARE PROTECTED UNDER PRIMARY SINGLE PHASE CONDITIONS.
7. TRANSFORMER FACTORY WIRE AS SHOWN BELOW. CHANGE PRIMARY VOLTAGE CONNECTION FOR ALTERNATE VOLTAGES, IF REQUIRED.

UNIT VOLTAGE-HZ	TRANSFORMER TERNAL
208-230-50/60	200
230-240-50/60	230
380-415-50/60	400
480-480-50/60	480
575-575-50/60	575

COMPONENT CODES

BC	BLOWER CONTACTOR	CA	COMPART ALERT MODULE	CC	COMPRESSOR CONTACTOR	CC1	COMPRESSOR CONTACTOR	CC2	COMPRESSOR CONTACTOR	CH	CRANKCASE HEATER	CS	CLOCKED DRAIN SENSOR	CS1	CLOCKED FILTER SWITCH	CS2	CLOCKED FILTER SWITCH	CS3	CLOCKED FILTER SWITCH	CS4	CLOCKED FILTER SWITCH	CS5	CLOCKED FILTER SWITCH	CS6	CLOCKED FILTER SWITCH	CS7	CLOCKED FILTER SWITCH	CS8	CLOCKED FILTER SWITCH	CS9	CLOCKED FILTER SWITCH	CS10	CLOCKED FILTER SWITCH	CS11	CLOCKED FILTER SWITCH	CS12	CLOCKED FILTER SWITCH	CS13	CLOCKED FILTER SWITCH	CS14	CLOCKED FILTER SWITCH	CS15	CLOCKED FILTER SWITCH	CS16	CLOCKED FILTER SWITCH	CS17	CLOCKED FILTER SWITCH	CS18	CLOCKED FILTER SWITCH	CS19	CLOCKED FILTER SWITCH	CS20	CLOCKED FILTER SWITCH	CS21	CLOCKED FILTER SWITCH	CS22	CLOCKED FILTER SWITCH	CS23	CLOCKED FILTER SWITCH	CS24	CLOCKED FILTER SWITCH	CS25	CLOCKED FILTER SWITCH	CS26	CLOCKED FILTER SWITCH	CS27	CLOCKED FILTER SWITCH	CS28	CLOCKED FILTER SWITCH	CS29	CLOCKED FILTER SWITCH	CS30	CLOCKED FILTER SWITCH	CS31	CLOCKED FILTER SWITCH	CS32	CLOCKED FILTER SWITCH	CS33	CLOCKED FILTER SWITCH	CS34	CLOCKED FILTER SWITCH	CS35	CLOCKED FILTER SWITCH	CS36	CLOCKED FILTER SWITCH	CS37	CLOCKED FILTER SWITCH	CS38	CLOCKED FILTER SWITCH	CS39	CLOCKED FILTER SWITCH	CS40	CLOCKED FILTER SWITCH	CS41	CLOCKED FILTER SWITCH	CS42	CLOCKED FILTER SWITCH	CS43	CLOCKED FILTER SWITCH	CS44	CLOCKED FILTER SWITCH	CS45	CLOCKED FILTER SWITCH	CS46	CLOCKED FILTER SWITCH	CS47	CLOCKED FILTER SWITCH	CS48	CLOCKED FILTER SWITCH	CS49	CLOCKED FILTER SWITCH	CS50	CLOCKED FILTER SWITCH	CS51	CLOCKED FILTER SWITCH	CS52	CLOCKED FILTER SWITCH	CS53	CLOCKED FILTER SWITCH	CS54	CLOCKED FILTER SWITCH	CS55	CLOCKED FILTER SWITCH	CS56	CLOCKED FILTER SWITCH	CS57	CLOCKED FILTER SWITCH	CS58	CLOCKED FILTER SWITCH	CS59	CLOCKED FILTER SWITCH	CS60	CLOCKED FILTER SWITCH	CS61	CLOCKED FILTER SWITCH	CS62	CLOCKED FILTER SWITCH	CS63	CLOCKED FILTER SWITCH	CS64	CLOCKED FILTER SWITCH	CS65	CLOCKED FILTER SWITCH	CS66	CLOCKED FILTER SWITCH	CS67	CLOCKED FILTER SWITCH	CS68	CLOCKED FILTER SWITCH	CS69	CLOCKED FILTER SWITCH	CS70	CLOCKED FILTER SWITCH	CS71	CLOCKED FILTER SWITCH	CS72	CLOCKED FILTER SWITCH	CS73	CLOCKED FILTER SWITCH	CS74	CLOCKED FILTER SWITCH	CS75	CLOCKED FILTER SWITCH	CS76	CLOCKED FILTER SWITCH	CS77	CLOCKED FILTER SWITCH	CS78	CLOCKED FILTER SWITCH	CS79	CLOCKED FILTER SWITCH	CS80	CLOCKED FILTER SWITCH	CS81	CLOCKED FILTER SWITCH	CS82	CLOCKED FILTER SWITCH	CS83	CLOCKED FILTER SWITCH	CS84	CLOCKED FILTER SWITCH	CS85	CLOCKED FILTER SWITCH	CS86	CLOCKED FILTER SWITCH	CS87	CLOCKED FILTER SWITCH	CS88	CLOCKED FILTER SWITCH	CS89	CLOCKED FILTER SWITCH	CS90	CLOCKED FILTER SWITCH	CS91	CLOCKED FILTER SWITCH	CS92	CLOCKED FILTER SWITCH	CS93	CLOCKED FILTER SWITCH	CS94	CLOCKED FILTER SWITCH	CS95	CLOCKED FILTER SWITCH	CS96	CLOCKED FILTER SWITCH	CS97	CLOCKED FILTER SWITCH	CS98	CLOCKED FILTER SWITCH	CS99	CLOCKED FILTER SWITCH	CS100	CLOCKED FILTER SWITCH
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WIRE COLOR CODE

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

ELECTRICAL WIRING DIAGRAM
 AC NOM DDC 2 STG VFD 150
 208/230/30/460/575V, 3PH 60 Hz
 AC NOM DDC 2 STG VFD 120
 380-415V 3PH 50/60Hz

APPROVED:

DATE: 12/15/2017
 BY: TC/JW

CHECKED:

DATE: 12/15/2017
 BY: R-1071S139

ORIGINAL RELEASE

DATE: 12/15/2017
 BY: R-1071S139

PART NO:

90-106177-26

REV:

03

P. APPENDICES

Appendix G. Wiring Diagrams & Schematics (Cont.)

The main wiring diagram shows a power supply (L3, L2, L1) connected to a control panel with various relays (K1-K8), sensors (P1-P14, S1-S14), and a compressor (COMP. 1, 2). It includes components like a smoke detector relay, defector relay, and a control board with terminals P1-P14 and S1-S14. The diagram also shows connections for a 24VAC source and ground connections.

ALARM CODES

CODE	Description	FUNCTIONALITY
0	STANDBY	0
C	COMPRESSOR ON - Low (flashing in time delay)	0
C	COMPRESSOR ON - High (flashing in time delay)	0
E	Economizer Cooling - No Compressor	0
F	CONTINGENT SW	0
h	HEATON - Low Stage	0
H	HEATON - High Stage	0
4	Combi-Alert Code 4 for Compressor Circuit 1	3
5	Combi-Alert Code 5 for Compressor Circuit 1	3
6	Combi-Alert Code 6 for Compressor Circuit 1	3
7	Combi-Alert Code 7 for Compressor Circuit 1	3
8	Combi-Alert Code 8 for Compressor Circuit 1	3
9	Combi-Alert Code 9 for Compressor Circuit 1	3
10	One Hour Lockout	3
11	FAILED IGNITION	2
12	IGNITION	1
13	FLAME LOST	2
14	UNBURNED FRAME	3
15	2 nd Stage Gas Valve Improper Voltage	2
20	REFRIGERANT LOW PRESSURE SWITCH OPEN - CIRCUIT 1	2
21	REFRIGERANT LOW PRESSURE SWITCH OPEN - CIRCUIT 2	2
22	MANUAL OPEN	2
29	REFRIGERANT HIGH PRESSURE SWITCH OPEN - CIRCUIT 1	2
30	REFRIGERANT HIGH PRESSURE SWITCH OPEN - CIRCUIT 2	2
33	MFC (Refrigerant Limit) OPEN	2
34	Combi-Alert Code 4 for Compressor Circuit 2	3
35	Combi-Alert Code 5 for Compressor Circuit 2	3
36	Combi-Alert Code 6 for Compressor Circuit 2	3
37	Combi-Alert Code 7 for Compressor Circuit 2	3
38	Combi-Alert Code 8 for Compressor Circuit 2	3
39	Combi-Alert Code 9 for Compressor Circuit 2	3
42	Initial thermostat selection	1
44	1 st Stage COMBUSTION PRESS SWITCH CLOSED	2
46	1 st Stage COMBUSTION PRESS SWITCH OPEN	2
49	FREEZE SWITCH OPEN - CIRCUIT 1	2
50	FREEZE SWITCH OPEN - CIRCUIT 2	2
55	2 nd Stage COMBUSTION PRESS SWITCH CLOSED	2
57	2 nd Stage COMBUSTION PRESS SWITCH OPEN	2,3
59	Condensate drain plugged	3
61	Blower Fault - NO RUN	3
68	Condensate Coil Temp Sensor Fault	2
84	Outdoor Air Temperature Sensor Fault	2
88	Emergency Stop Fault	3
93	CONTROL Fault	3
97	Smoke detection	3

*Fault levels 0 = none, 1 = warning, 2 = problem, 3 = shutdown

ALTERNATIVE VFD CONNECTIONS

The VFD connection diagrams show terminal configurations for Danfoss 300 (MI1, MI3, DCM) and Comair Technologies C200 (14, 12, 9) inverters. A third diagram shows a Schlegel VFD (D11, D13, +24) connection.

COMPONENT CODES

SC: BLOWER CONTACTOR
 CA: COMPACT ALERT MODULE
 CC: COMPRESSOR CONTACTOR
 CO: COMPRESSOR MOTOR
 ME: MECHANICAL PRESSURE CONTROL
 MO: MOTOR
 OF: OUTDOOR FAN SWITCH
 OR: OUTDOOR FAN MOTOR
 PT: POWER TRANSFORMER
 RA: RETURN AIR SENSOR
 RC: RUN CONTACTOR
 RT: RETURN AIR TRANSFER
 S: SPACE HEATER
 TB: TERMINAL BLOCK
 US: UNDERLOOR OUTLET
 VFD: VARIABLE FREQUENCY DRIVE

WIRE COLOR CODE

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

ELECTRICAL WIRING SCHEMATIC

AC NON DDC 2-STG VFD 150
 208/230/380/460/575V, 3PH 60 HZ.
 AC NON DDC 2-STG VFD 120
 380-415V 3PH 50HZ.

APPROVED: _____ CHECKED: _____ ORIGINAL RELEASE NO.: _____
 MODELED BY: TC/JW DATE: 12/19/2017
 PART NO.: 90-106178-26 REV: 04

NOTES

- CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
- CONNECT WIRING IN GROUNDING RAIN TIGHT CONDUIT TO FIELD DISCONNECT.
- CONNECT FIELD WIRE TO COMPRESSOR CONTACTOR (CO).
- REMOVE JAR (CC1) TO INSTALL LOW AMBIENT ACCESSORY.
- IF REQUIRED, ATTACH CRANKCASE HEATER ACCESSORY TO CC1 (L1) AND CC1 (L2).
- COMPRESSOR MOTOR THERMALLY PROTECTED. ALL 3-PHASE MODELS ARE PROTECTED UNDER PRIMARY SINGLE PHASE CONDITIONS.
- TRANSFORMER FACTORY WIRED AS SHOWN BELOW. CHANGE PRIMARY VOLTAGE CONNECTIONS FOR ALTERNATE VOLTAGES, IF REQUIRED.

UNIT VOLTAGES - HZ

200-220-50/52
 220-50/52
 230-60/50
 380-60/50
 400-50/52
 380-60/50
 460-50/52
 575-60/50

TRANSFORMER TERM.

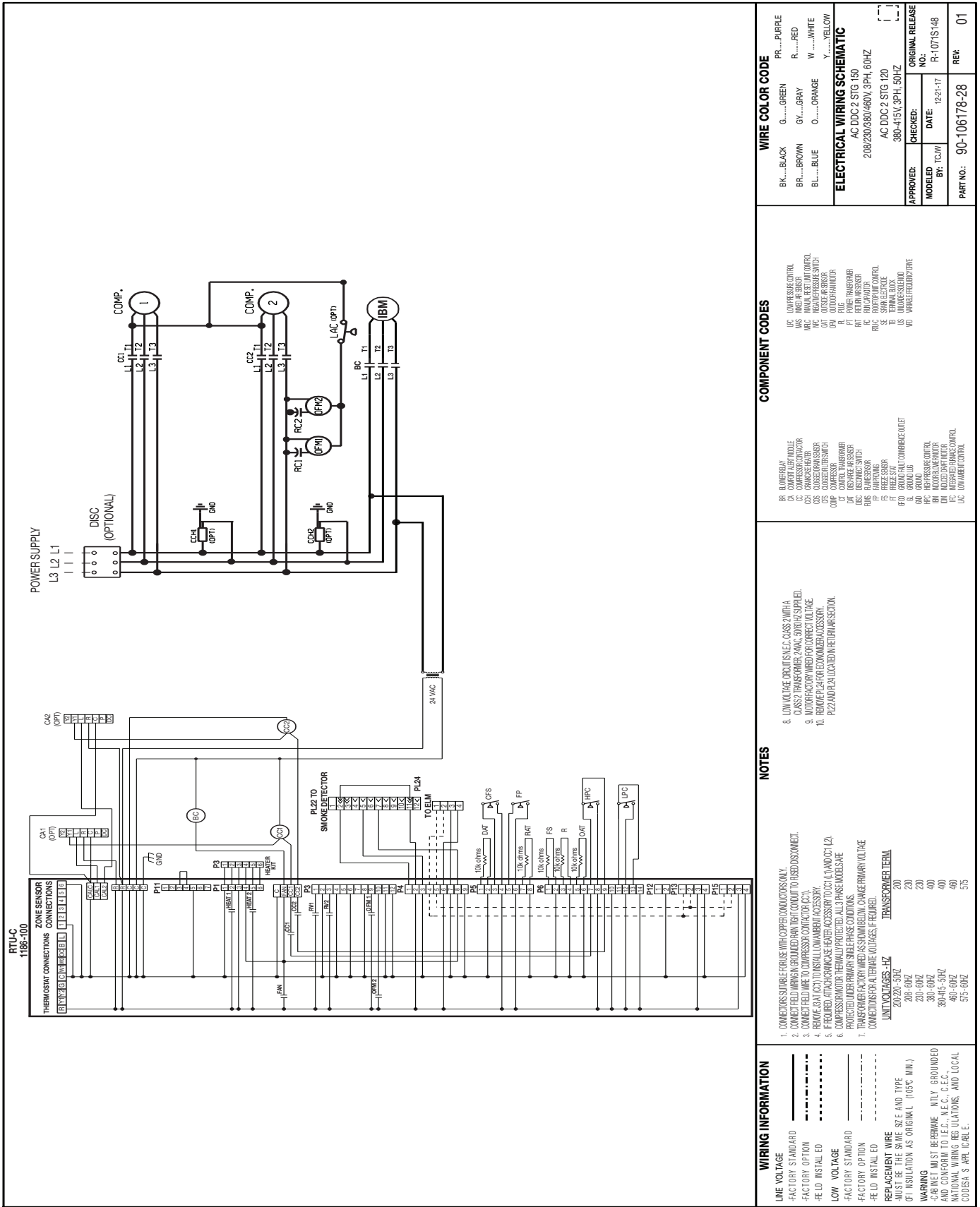
200
 220
 230
 380
 400
 460
 575

WIRING INFORMATION

LINE VOLTAGE
 -FACTORY STANDARD
 -FACTORY OPTION
 -FIELD INSTALLED
 LOW VOLTAGE
 -FACTORY STANDARD
 -FACTORY OPTION
 -FIELD INSTALLED
 REBAR/ACBUT WIRE
 -FACTORY STANDARD
 -FACTORY OPTION
 -FIELD INSTALLED
 OF INSULATION AS ORIGINAL (105°C MIN.)
 WARNING
 CHANGES MUST BE PERMANENTLY GROUNDED AND IDENTIFIED TO IEC, N.E.C., C.E.C., AND NATIONAL WIRING REGULATIONS, AND LOCAL CODES AS APPLICABLE.

P. APPENDICES

Appendix G. Wiring Diagrams & Schematics (Cont.)



WIRE COLOR CODE

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

ELECTRICAL WIRING SCHEMATIC

AC DDC 2 STG 150
208/230/380V/480V/3PH, 60HZ

AC DDC 2 STG 120
380-415V, 3PH, 50HZ

APPROVED: []
MODELLED BY: TCM/IV

CHECKED: []
DATE: 02-21-17

ORIGINAL RELEASE NO.: R-1071S148

PART NO.: 90-106178-28

REV.: 01

COMPONENT CODES

8: LOW VOLTAGE CIRCUIT (SINEC, CLASS 2 WITH-A)
9: CLASS 2 TRANSFORMER 24VAC, 50/60 HZ SUPPLIED.
10: MOTOR FACTOR W/LED FOR CORRECT VOLTAGE.
P122 AND P124 LOCATED W/LED ON AIR SECTION

BR	BLURBY	CC	COMPRESSOR
C	CONTROL	CO	COMPRESSOR
CO	COMPRESSOR	CO2	COMPRESSOR
CO3	COMPRESSOR	CO4	COMPRESSOR
CO5	COMPRESSOR	CO6	COMPRESSOR
CO7	COMPRESSOR	CO8	COMPRESSOR
CO9	COMPRESSOR	CO10	COMPRESSOR
CO11	COMPRESSOR	CO12	COMPRESSOR
CO13	COMPRESSOR	CO14	COMPRESSOR
CO15	COMPRESSOR	CO16	COMPRESSOR
CO17	COMPRESSOR	CO18	COMPRESSOR
CO19	COMPRESSOR	CO20	COMPRESSOR
CO21	COMPRESSOR	CO22	COMPRESSOR
CO23	COMPRESSOR	CO24	COMPRESSOR
CO25	COMPRESSOR	CO26	COMPRESSOR
CO27	COMPRESSOR	CO28	COMPRESSOR
CO29	COMPRESSOR	CO30	COMPRESSOR
CO31	COMPRESSOR	CO32	COMPRESSOR
CO33	COMPRESSOR	CO34	COMPRESSOR
CO35	COMPRESSOR	CO36	COMPRESSOR
CO37	COMPRESSOR	CO38	COMPRESSOR
CO39	COMPRESSOR	CO40	COMPRESSOR
CO41	COMPRESSOR	CO42	COMPRESSOR
CO43	COMPRESSOR	CO44	COMPRESSOR
CO45	COMPRESSOR	CO46	COMPRESSOR
CO47	COMPRESSOR	CO48	COMPRESSOR
CO49	COMPRESSOR	CO50	COMPRESSOR
CO51	COMPRESSOR	CO52	COMPRESSOR
CO53	COMPRESSOR	CO54	COMPRESSOR
CO55	COMPRESSOR	CO56	COMPRESSOR
CO57	COMPRESSOR	CO58	COMPRESSOR
CO59	COMPRESSOR	CO60	COMPRESSOR

- NOTES**
1. CONNECT WIRE TO CORRELATION ONLY.
 2. CONNECT WIRE IN GROUNDED RAY/TIGHT CONDUIT TO USED DISCONNECT.
 3. CONNECT WIRE TO COMPRESSOR (CCT).
 4. REMOVE GATE (CT) TO INSTALL LOW AMBIENT ACCESSORY.
 5. IF REQUIRED, ATTACH COMPRESSOR HEATER ACCESSORY TO C01, L1 AND C01, L2.
 6. COMPRESSOR/ANTHER THERMALLY PROTECTED. ALL 3 PHASE MODELS ARE PROTECTED UNDER FACTORY WIRE AS SHOWN BELOW. CHANGE PRIMARY VOLTAGE COMMENT FOR ALTERNATE VOLTAGES, IF REQUIRED.
 7. TRANSFORMER FACTORY WIRE AS SHOWN BELOW. CHANGE PRIMARY VOLTAGE COMMENT FOR ALTERNATE VOLTAGES, IF REQUIRED.
- | UNIT VOLTAGE-VOLTS | TRANSFORMER TAP |
|--------------------|-----------------|
| 200-230-50HZ | 230 |
| 230-50HZ | 230 |
| 380-50HZ | 230 |
| 380-50HZ | 400 |
| 380-45-50HZ | 480 |
| 460-50HZ | 480 |
| 575-50HZ | 575 |

WIRING INFORMATION

LINE VOLTAGE _____
 FACTORY STANDARD _____
 FACTORY OPTION _____
 FIELD INSTALL ED _____

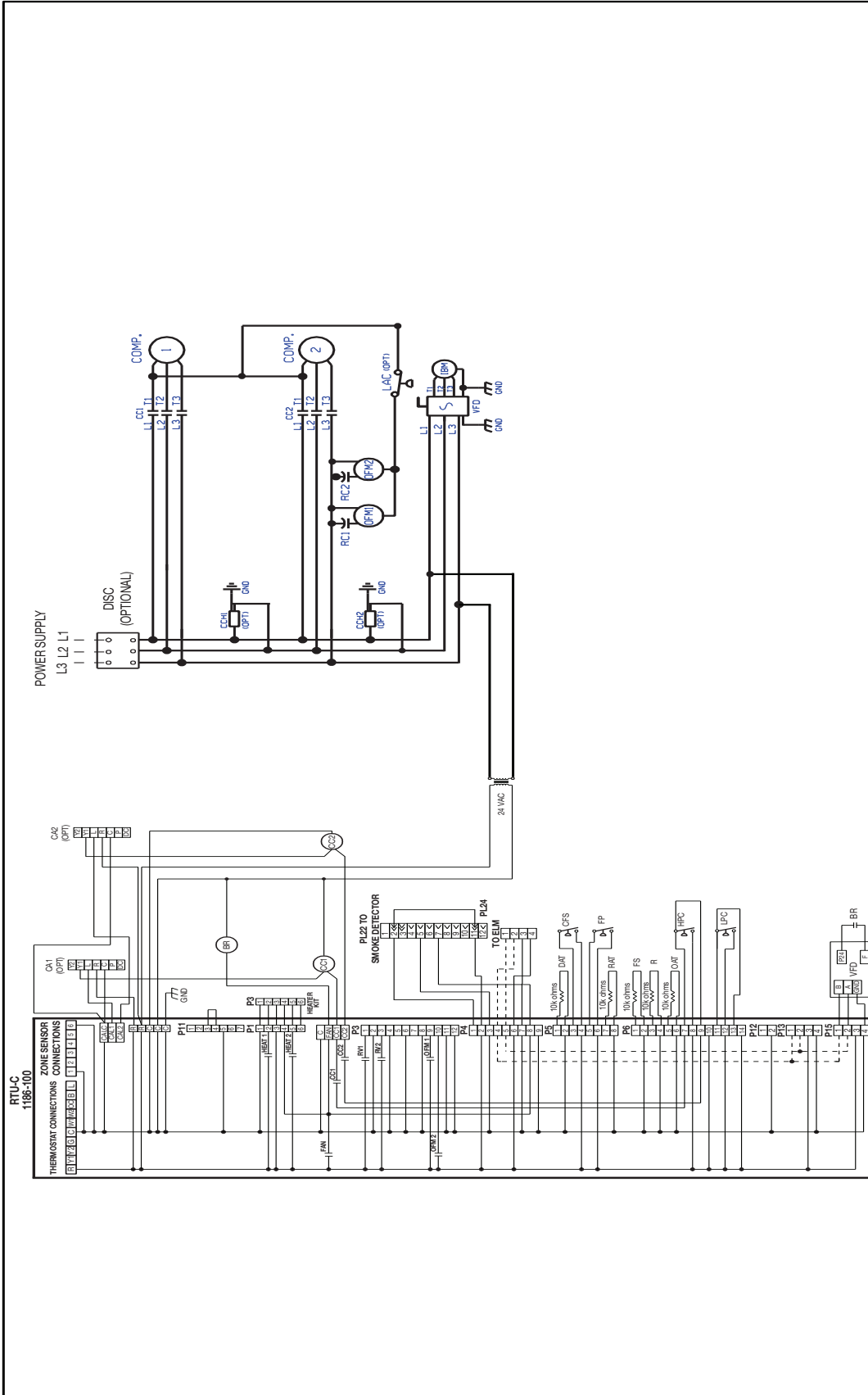
LOW VOLTAGE _____
 FACTORY STANDARD _____
 FACTORY OPTION _____
 FIELD INSTALL ED _____

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

WARNING _____
 CARPET MUST BE REMOVED W/ITLY GROUNDED _____
 AND CONFORM TO I.E.C., N.E.C., C.E.C., _____
 NATIONAL WIRING REGULATIONS, AND LOCAL _____
 CODES & APPL. I.C. R.E.

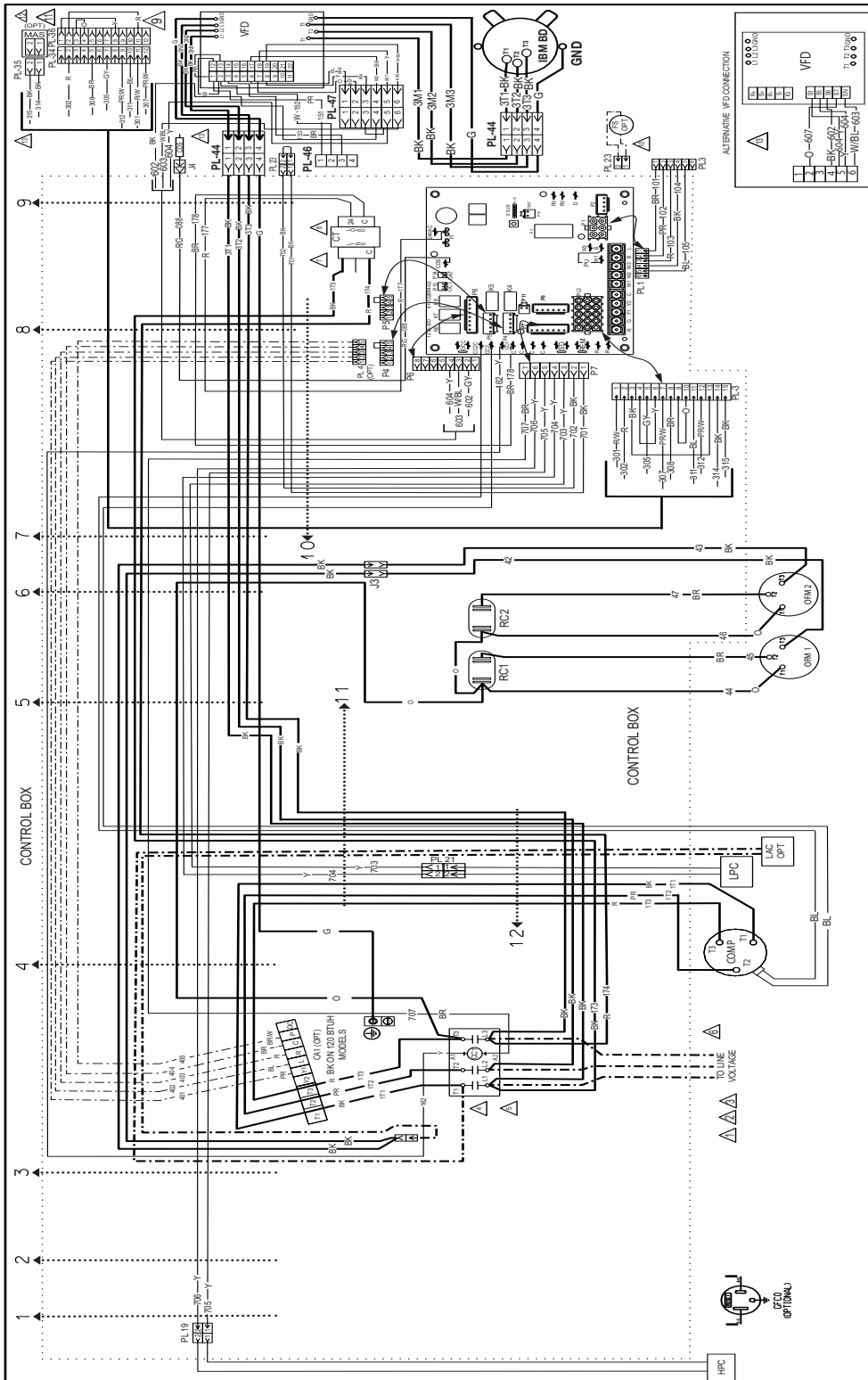
P. APPENDICES

Appendix G. Wiring Diagrams & Schematics (Cont.)



WIRING INFORMATION	NOTES	COMPONENT CODES	WIRE COLOR CODE																
<p>LINE VOLTAGE</p> <p>FACTORY STANDARD FACTORY OPTION FIELD INSTALLED</p> <p>LOW VOLTAGE</p> <p>FACTORY STANDARD FACTORY OPTION FIELD INSTALLED</p> <p>REPLACEMENT WIRE</p> <p>MUST BE THE SAME SIZE AND TYPE MUST BE THE SAME SIZE AND TYPE (PI INSULATION AS ORIGINAL (105°C MIN.))</p> <p>WARNING:</p> <p>CABLE MUST BE PERMANENTLY GROUNDED AND CONFORM TO I.E.C., N.E.C., C.E.C., NATIONAL WIRING REGULATIONS, AND LOCAL CODES AS APPLICABLE.</p>	<ol style="list-style-type: none"> CONNECTOR STRIP FAILURE WITH COPPER CONDUCTORS ONLY. CONNECT FIELD WIRING TO GROUND (RAMP) THAT COULD BE USED TO DISCONNECT. CONNECT FIELD WIRE TO COMPRESSOR CONTACTOR (C1). REMOVE (GAT) TO INSTALL LOW AMBIENT ACCESSORY. IF REQUIRED, ATTACH CHROME CASE HEATER ACCESSORY TO C1 (AND C1 L2). COMPRESSOR MOTOR TERMINALLY PROTECTED - ALL 3 PHASE MODELS ARE PROTECTED UNDER PRIMARY SINGLE PHASE CONDITIONS. TRANSFORMER FACTORY WIRE IS SHOWN BELOW CHANGE PRIMARY VOLTAGE CONNECTIONS FOR ALTERNATE VOLTAGES, IF REQUIRED. <p>UNIT VOLTAGES - HZ</p> <table border="1"> <tr><th>TRANSFORMER TAP</th><th>UNIT VOLTAGES - HZ</th></tr> <tr><td>200</td><td>200-220-50HZ</td></tr> <tr><td>230</td><td>208-60HZ</td></tr> <tr><td>230</td><td>208-60HZ</td></tr> <tr><td>400</td><td>380-60HZ</td></tr> <tr><td>400</td><td>380-60HZ</td></tr> <tr><td>460</td><td>480-60HZ</td></tr> <tr><td>575</td><td>575-60HZ</td></tr> </table>	TRANSFORMER TAP	UNIT VOLTAGES - HZ	200	200-220-50HZ	230	208-60HZ	230	208-60HZ	400	380-60HZ	400	380-60HZ	460	480-60HZ	575	575-60HZ	<p>AR ACCESSORY RELAY CA1 ZONE SENSOR CA2 ZONE SENSOR C1 COMPRESSOR CONTACTOR C2 COMPRESSOR CONTACTOR CH1 CHROME CASE HEATER CH2 CHROME CASE HEATER CO1 COIL OVERHEAT PROTECT CO2 COIL OVERHEAT PROTECT CDP COMPRESSOR CT CONTROL TRANSFORMER DC DISCONNECT SWITCH DDC DDC2 2 STG VFD 150 DDC2 2 STG VFD 120 F FAN MOTOR FUS FUSION FUSE G GROUND GND GROUND IFC INFLUENCE CONTROL IFC2 INFLUENCE CONTROL IFC3 INFLUENCE CONTROL IFC4 INFLUENCE CONTROL IFC5 INFLUENCE CONTROL IFC6 INFLUENCE CONTROL IFC7 INFLUENCE CONTROL IFC8 INFLUENCE CONTROL IFC9 INFLUENCE CONTROL IFC10 INFLUENCE CONTROL IFC11 INFLUENCE CONTROL IFC12 INFLUENCE CONTROL IFC13 INFLUENCE CONTROL IFC14 INFLUENCE CONTROL IFC15 INFLUENCE CONTROL IFC16 INFLUENCE CONTROL IFC17 INFLUENCE CONTROL IFC18 INFLUENCE CONTROL IFC19 INFLUENCE CONTROL IFC20 INFLUENCE CONTROL IFC21 INFLUENCE CONTROL IFC22 INFLUENCE CONTROL IFC23 INFLUENCE CONTROL IFC24 INFLUENCE CONTROL IFC25 INFLUENCE CONTROL IFC26 INFLUENCE CONTROL IFC27 INFLUENCE CONTROL IFC28 INFLUENCE CONTROL IFC29 INFLUENCE CONTROL IFC30 INFLUENCE CONTROL IFC31 INFLUENCE CONTROL IFC32 INFLUENCE CONTROL IFC33 INFLUENCE CONTROL IFC34 INFLUENCE CONTROL IFC35 INFLUENCE CONTROL IFC36 INFLUENCE CONTROL IFC37 INFLUENCE CONTROL IFC38 INFLUENCE CONTROL IFC39 INFLUENCE CONTROL IFC40 INFLUENCE CONTROL IFC41 INFLUENCE CONTROL IFC42 INFLUENCE CONTROL IFC43 INFLUENCE CONTROL IFC44 INFLUENCE CONTROL IFC45 INFLUENCE CONTROL IFC46 INFLUENCE CONTROL IFC47 INFLUENCE CONTROL IFC48 INFLUENCE CONTROL IFC49 INFLUENCE CONTROL IFC50 INFLUENCE CONTROL IFC51 INFLUENCE CONTROL IFC52 INFLUENCE CONTROL IFC53 INFLUENCE CONTROL IFC54 INFLUENCE CONTROL IFC55 INFLUENCE CONTROL IFC56 INFLUENCE CONTROL IFC57 INFLUENCE CONTROL IFC58 INFLUENCE CONTROL IFC59 INFLUENCE CONTROL IFC60 INFLUENCE CONTROL IFC61 INFLUENCE CONTROL IFC62 INFLUENCE CONTROL IFC63 INFLUENCE CONTROL IFC64 INFLUENCE CONTROL IFC65 INFLUENCE CONTROL IFC66 INFLUENCE CONTROL IFC67 INFLUENCE CONTROL IFC68 INFLUENCE CONTROL IFC69 INFLUENCE CONTROL IFC70 INFLUENCE CONTROL IFC71 INFLUENCE CONTROL IFC72 INFLUENCE CONTROL IFC73 INFLUENCE CONTROL IFC74 INFLUENCE CONTROL IFC75 INFLUENCE CONTROL IFC76 INFLUENCE CONTROL IFC77 INFLUENCE CONTROL IFC78 INFLUENCE CONTROL IFC79 INFLUENCE CONTROL IFC80 INFLUENCE CONTROL IFC81 INFLUENCE CONTROL IFC82 INFLUENCE CONTROL IFC83 INFLUENCE CONTROL IFC84 INFLUENCE CONTROL IFC85 INFLUENCE CONTROL IFC86 INFLUENCE CONTROL IFC87 INFLUENCE CONTROL IFC88 INFLUENCE CONTROL IFC89 INFLUENCE CONTROL IFC90 INFLUENCE CONTROL IFC91 INFLUENCE CONTROL IFC92 INFLUENCE CONTROL IFC93 INFLUENCE CONTROL IFC94 INFLUENCE CONTROL IFC95 INFLUENCE CONTROL IFC96 INFLUENCE CONTROL IFC97 INFLUENCE CONTROL IFC98 INFLUENCE CONTROL IFC99 INFLUENCE CONTROL IFC100 INFLUENCE CONTROL IFC101 INFLUENCE CONTROL IFC102 INFLUENCE CONTROL IFC103 INFLUENCE CONTROL IFC104 INFLUENCE CONTROL IFC105 INFLUENCE CONTROL IFC106 INFLUENCE CONTROL IFC107 INFLUENCE CONTROL IFC108 INFLUENCE CONTROL IFC109 INFLUENCE CONTROL IFC110 INFLUENCE CONTROL IFC111 INFLUENCE CONTROL IFC112 INFLUENCE CONTROL IFC113 INFLUENCE CONTROL IFC114 INFLUENCE CONTROL IFC115 INFLUENCE CONTROL IFC116 INFLUENCE CONTROL IFC117 INFLUENCE CONTROL IFC118 INFLUENCE CONTROL IFC119 INFLUENCE CONTROL IFC120 INFLUENCE CONTROL IFC121 INFLUENCE CONTROL IFC122 INFLUENCE CONTROL IFC123 INFLUENCE CONTROL IFC124 INFLUENCE CONTROL IFC125 INFLUENCE 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_____ DATE: 12-2-17 MODELED BY: TCJW PART NO.: 90-106178-30 ORIGINAL RELEASE NO.: R-1071S148 REV: 01</p>
TRANSFORMER TAP	UNIT VOLTAGES - HZ																		
200	200-220-50HZ																		
230	208-60HZ																		
230	208-60HZ																		
400	380-60HZ																		
400	380-60HZ																		
460	480-60HZ																		
575	575-60HZ																		

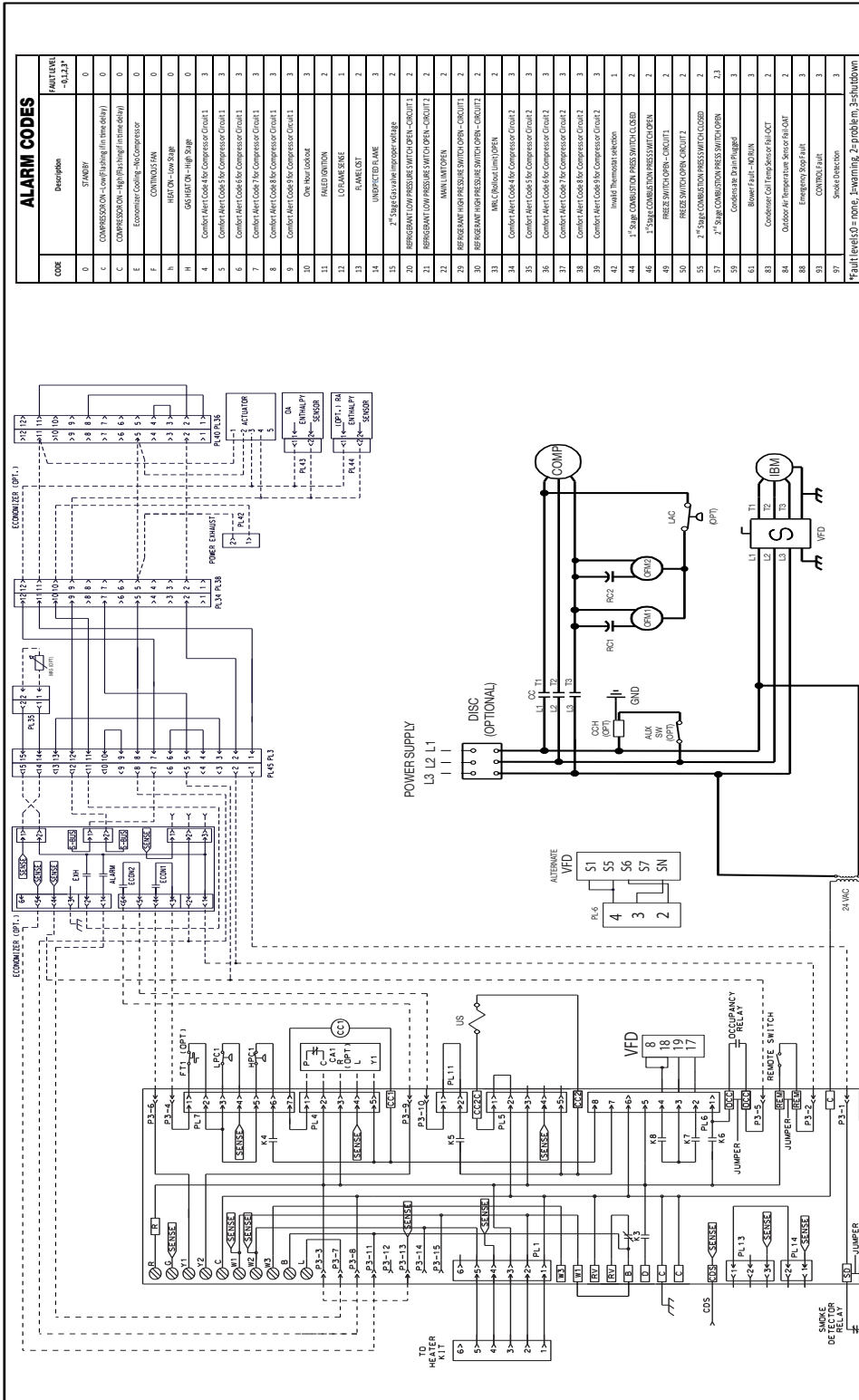
Appendix G. Wiring Diagrams & Schematics (Cont.)



LINE VOLTAGE	WIRING INFORMATION	NOTES	COMPONENT CODES	WIRE COLOR CODE	ELECTRICAL WIRING DIAGRAM	APPROVED:	CHECKED:	ORIGINAL RELEASE NO.:
-FACTORY STANDARD -FACTORY OPTION -FIELD INSTALLED	CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY. CONNECT FIELD WIRING IN GROUNDING RHYTHM CONDUIT TO FIELD DISCONNECT. CONNECT FIELD WIRE TO COMPRESSOR CONTRACTOR (CC). REMOVE BATTERY TO INSTALL LOW AMBIENT ACCESSORY. IF REQUIRED, ATTACH CHARGES HEATER ACCESSORY TO CCL (L) AND CCL (L2). COMPRESSOR MOTOR THERMAL CUT-OFF (TCO) ALL PHASE MODELS ARE FACTORY WIRING. REMOVE TCO FROM BELOW CHANGE PRIMARY VOLTAGE CONNECTIONS FOR ALTERNATE VOLTAGES. FIELD WIRE LIMIT VOLTAGES - HZ TRANSFORMER TERN. 200-220-50HZ 200 208-60HZ 200 230-60HZ 200 300-60HZ 400 380-415-50HZ 400 460-60HZ 400 575-60HZ 575	8. LOW VOLTAGE CIRCUIT IS N.E.C. CLASS 2 WITH A CLASS 2 TRANSFORMER 24VAC 500VA (S.P.E.D.) 9. MOTOR FACTORY WIRE FOR CORRECT VOLTAGE. 10. REMOVE PL2 JUMPER FOR OPTIONAL FT LOCATED IN BLOWER COMPARTMENT. 11. REMOVE PL8 FOR ECONOMIZER ACCESSORY PL 24 AND PL8 LOCATED IN RETURN AIR SECTION. 12. WASH ACCESSORY PROVIDED WITH RECOMMENDED PULSED ORT IN BLOWER COMPARTMENT. 13. ALTERNATE WFD CONNECTION	AR ACCESSORY RELAY BR BLOWER RELAY CC COMPRESSOR CONTRACTOR CH CHARGES HEATER CIS CLOSED CIRCUIT SWITCH COMP COMPRESSOR DSC DISCONNECT SWITCH FMS FUSE FS FREEZE SENSOR GRIT GRIT GND GROUND IDM INDOOR DRIFT MOTOR LAC LOW AMBIENT CONTROL LPC LOW PRESSURE CONTROL MAG MAGNETIC MFC MANUAL RESET TIME CONTROL OAS OUTSIDE AIR SENSOR OM OUTDOOR MOTOR OFC OUTDOOR FAN PF POWER TRANSFORMER PT POWER TRANSFORMER RA RETURN AIR SENSOR RAC RETURN AIR CONTROL SE SPRING ELECTRODE US UNIDIRECTIONAL VFD VARIABLE FREQUENCY DRIVE	BK.....BLACK BR.....BROWN BL.....BLUE G.....GREEN GY.....GRAY O.....ORANGE PR.....PURPLE R.....RED W.....WHITE Y.....YELLOW	AC NON DDC 2-STG VFD, 090/102/120 575V, 3PH 60 HZ.	<div style="display: flex; justify-content: space-between;"> <div> <p>APPROVED:</p> <p>MODELED BY: ALB</p> <p>PART NO.: 90-106177-71</p> </div> <div> <p>CHECKED:</p> <p>DATE 7/6/2023</p> <p>REV: 00</p> </div> </div>		

P. APPENDICES

Appendix G. Wiring Diagrams & Schematics (Cont.)



WIRE COLOR CODE	
BK.....BLACK	G.....GREEN
BR.....BROWN	GY.....GRAY
BL.....BLUE	O.....ORANGE
	W.....WHITE
	Y.....YELLOW
ELECTRICAL WIRING DIAGRAM	
AC NON DDC 2-STG VFD, 090/102/120 575V, 3PH 60 HZ.	
APPROVED:	CHECKED:
MODELED BY: ALB	DATE: 7/6/2023
PART NO.: 90-106178-71	ORIGINAL RELEASE NO.: 112285
	REV: 00

COMPONENT CODES	COMPONENT CODES
CA COMFORT LEFT MODULE	LAC LOW AMBIENT CONTROL
CC COMFORT RIGHT MODULE	MAS MISC AIR SENSOR
COX CHAMBER KEEPER	MELC MANUAL RESET LINE CONTROL
CS2 CS2 OIL PRESS SENSOR	MW MISC WIRE MISC WIRE
COMP COMPRESSOR	QAT QAT AIR SENSOR
CPA COMPRESSOR ACCESSORY	OPM OUTDOOR FAN MOTOR
CT CONTROL TRANSFORMER	PF POWER TRANSFORMER
DCS DISCONNECT SWITCH	RF RETURN AIR SENSOR
ELM ECONOMIZER LOG/MODULE	RAC RETURN AIR CONTROL
FUP FUP FAN MOTOR	RTUC RETURN AIR CONTROL
FR FAN MOTOR	SE SEAR ELECTRODE
GS GAS VALVE	TS TEMPERATURE SENSOR
GTGT GTGT GAS VALVE	US UNDER SINK
GL GROUND LUG	VFD VARIABLE FREQUENCY DRIVE
GR GROUND	
IBM INDOOR BURNER MOTOR	
IPC INDOOR PLUMBING CONTROL	

- NOTES**
- CONNECTORS SUBSTITUTED USE WITH CORRESPONDING CONDUCTORS ONLY.
 - CONNECT FIELD WIRING TO GROUND AND TEST CONDUIT TO GROUND DISCONNECT.
 - CONNECT FIELD WIRE TO COMPRESSOR CONDUCTOR (CC).
 - REMOVE JUMP (CC) TO INSTALL LOW AMBIENT ACCESSORY.
 - FREQUENTLY ATCH CHAMBER HEATER ACCESSORY TO CC (L1) AND CC (L2).
 - COMPRESSOR MOTOR THERMALLY PROTECTED. ALL 3-PHASE MODELS ARE PROTECTED UNDER SINGLE PHASE CONDITIONS.
 - CONNECTIONS FOR ALTERNATE VOLTAGES, IF FREQUENT.
8. LOW VOLTAGE CIRCUIT (N.E.C. CLASS) WITH A CLASS TRANSFORMER. JAC SUBSTITUTED WITH A MOTOR FACTORY WIRE FOR CORRECT VOLTAGE.

9. REMOVE JUMP FOR ECONOMIZER ACCESSORY.

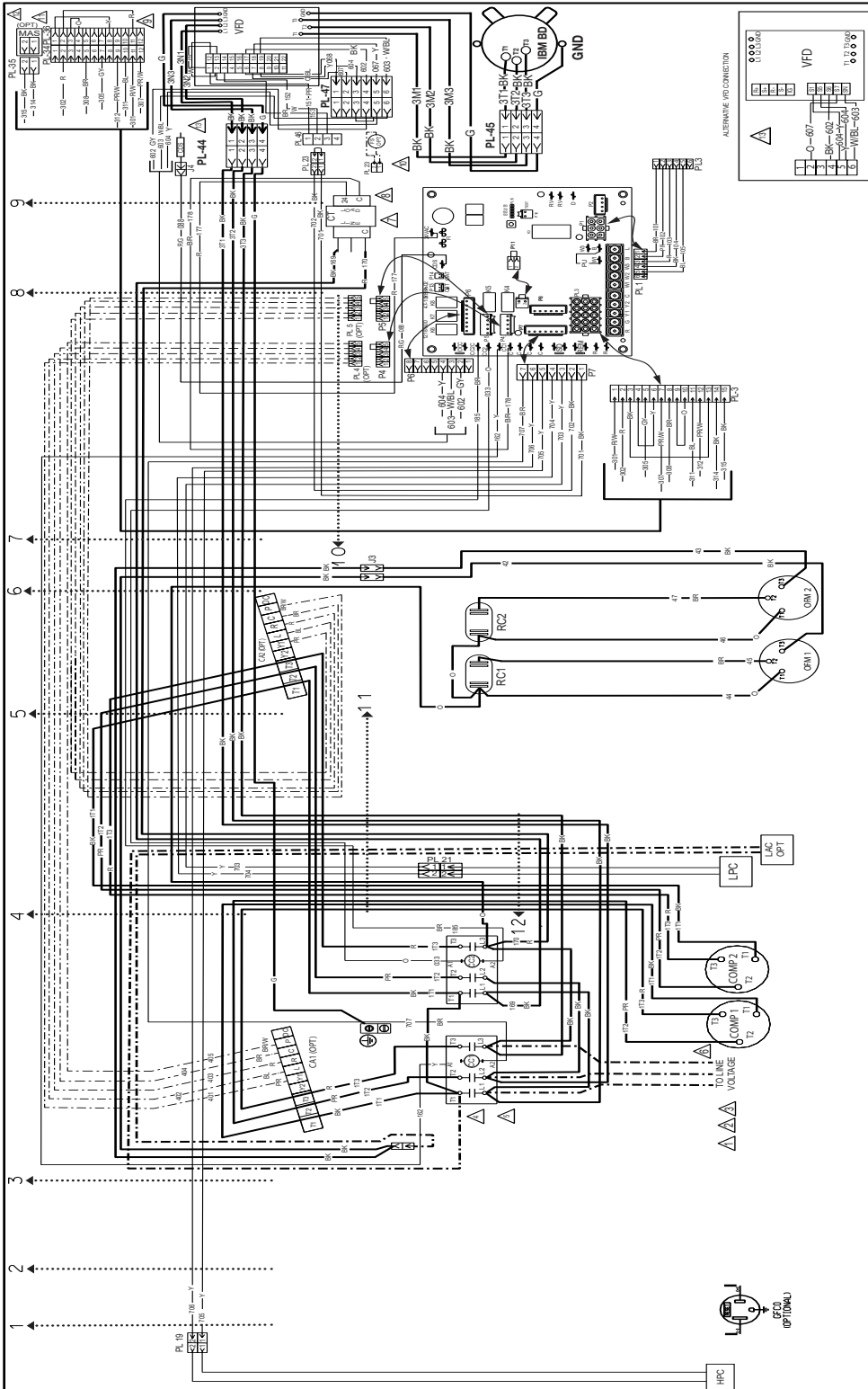
10. PLS3 AND PLS8 LOCATED IN RETURN AIR SECTION.

UNIT VOLTAGES - HZ	TRANSFORMER TAP
200-220-50/60	200
230-240-50/60	230
240-250-50/60	250
380-415-50/60	400
480-500-50/60	480
575-600-50/60	500

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 (105C, MIN.)	
WARNING	
-CABINET MUST BE PERMANENTLY GROUNDED AND CONFORM TO I.E.C., N.E.C., C.E.C., NATIONAL WIRING REGULATIONS, AND LOCAL CODE AS APPLICABLE.	

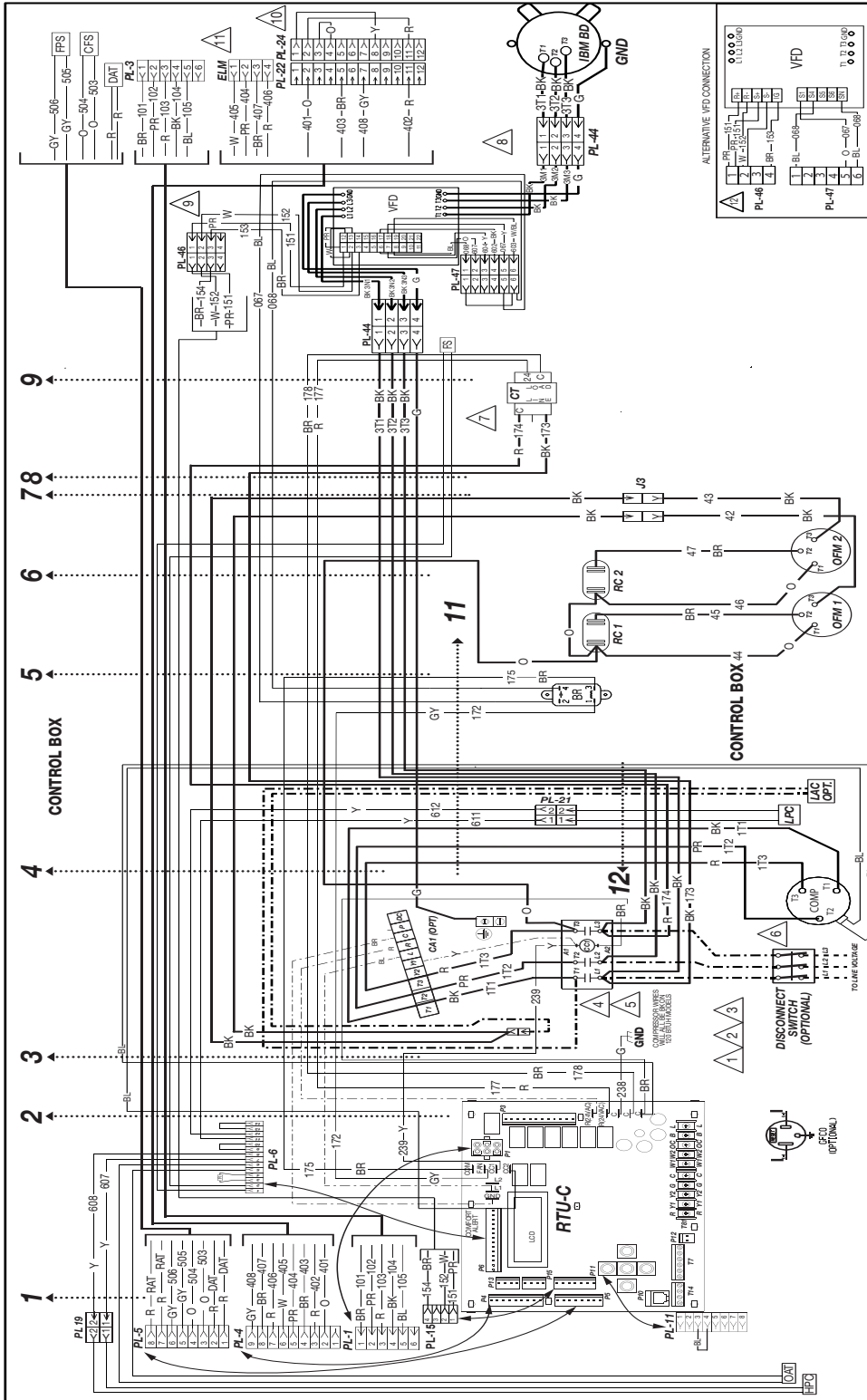
P. APPENDICES

Appendix G. Wiring Diagrams & Schematics (Cont.)



<p>COMPONENT CODES</p> <p>8C BLOWER CONTACTOR 9A COMPACT ALERT MOUNT 9C COMPRESSOR CONTACTOR 9CH CRANKCASE HEATER 9DS CLOSED DRAIN SWITCH 9DZ CONTROL TRANSFORMER 9DAT DISCONNECT SWITCH 9FMS FAN MOTOR 9PP FAN PROTECT 9RS REVERSE SENSOR 9S CONVENIENCE COUPLER 9G GROUND LUG 9HFC HIGH PRESSURE CONTROL 9HIBD INDOOR BLOWMOTOR BELT DRIVE 9DM INDOOR DRAFF MOTOR 9PC INTEGRATED PURNICE CONTROL JUMPER</p>		<p>NOTES</p> <p>1. CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY. 2. CONNECTED WIRING IS GROUNDED IN THE FIELD TO BE DISCONNECTED. 3. CONNECTED WIRE TO COMPRESSOR CONTACTOR (C1). 4. REMOVE J1 AT C1 TO INSTALL LOW AMBERT ACCESSORY. 5. IF REQUIRED, ATTACH CRANKCASE HEATER ACCESSORY TO C1 (L) AND C1 (R). 6. COMPRESSOR MOTOR IS HERMETICALLY PROTECTED. ALL PHASE MOTORS ARE PROTECTED UNDER NORMAL SINGLE PHASE CONDITIONS. 7. TRANSFORMER FACTOR WIRE IS SHOWN BELOW CHANGE PRIMARY VOLTAGE CONNECTION FOR ALTERNATE VOLTAGES. IF REQUIRED: UNIT VOLTAGES-HZ 200 200 230-240 230 230-480 230 330-480 480 480-480 480 575-480 480</p>
<p>WIRING INFORMATION</p> <p>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 (100°C. MIN.) _____ WARNING _____ -CABINET MUST BE PERMANENTLY GROUNDED _____ AND CONFORM TO I.E.C., N.E.C., C.E.C., _____ NATIONAL WIRING REGULATIONS, AND LOCAL _____ CODE AS APPLICABLE.</p>		<p>NOTES</p> <p>8. LOW VOLTAGE CIRCUIT IS N.E.C. CLASS 2 WITH A CLASS 2 TRANSFORMER. 240V, 3PH SUPPLIED. 9. MOTOR FACTORY WIRE FOR CORRECT VOLTAGE. 10. REMOVE POLARIZED WIRE FOR OPTIONAL FT LOCATED IN BLOWER COMPARTMENT. 11. REMOVE PHASER FOR CONVENIENCE ACCESSORY. 12. PLS AND PLS-B LOCATED IN REFRIGERATION SECTION. 13. PLS LOCATED IN BLOWER COMPARTMENT. 13. ALTERNATE WIRING CONNECTION.</p>
<p>WIRE COLOR CODE</p> <p>BK.....BLACK G.....GREEN PR.....PURPLE BR.....BROWN GY.....GRAY R.....RED BL.....BLUE O.....ORANGE W.....WHITE Y.....YELLOW</p> <p>ELECTRICAL WIRING DIAGRAM</p> <p>AC NON DDC 2-STG VFD, 150 575V, 3PH 60 HZ.</p>		<p>WIRING INFORMATION</p> <p>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 (100°C. MIN.) _____ WARNING _____ -CABINET MUST BE PERMANENTLY GROUNDED _____ AND CONFORM TO I.E.C., N.E.C., C.E.C., _____ NATIONAL WIRING REGULATIONS, AND LOCAL _____ CODE AS APPLICABLE.</p>
<p>APPROVED: _____</p> <p>CHECKED: _____</p> <p>MODELED BY: ALB</p> <p>DATE: 7/6/2023</p> <p>PART NO.: 90-106177-72</p> <p>REV: 00</p>	<p>ORIGINAL RELEASE NO.: 112285</p>	

Appendix G. Wiring Diagrams & Schematics (Cont.)



WIRE COLOR CODE	
BK.....BLACK	G.....GREEN
BR.....BROWN	GY.....GRAY
BL.....BLUE	O.....ORANGE
	R.....RED
	W.....WHITE
	Y.....YELLOW

ELECTRICAL WIRING DIAGRAM	
AC DDC 2 STG VFD 090/102/120 575V, 3PH, 60HZ	
APPROVED:	CHECKED:
MOBILED BY: ALB	DATE: 7/6/2023
PART NO.:	90-106177-73
REV.:	00
	ORIGINAL RELEASE NO.:
	112285

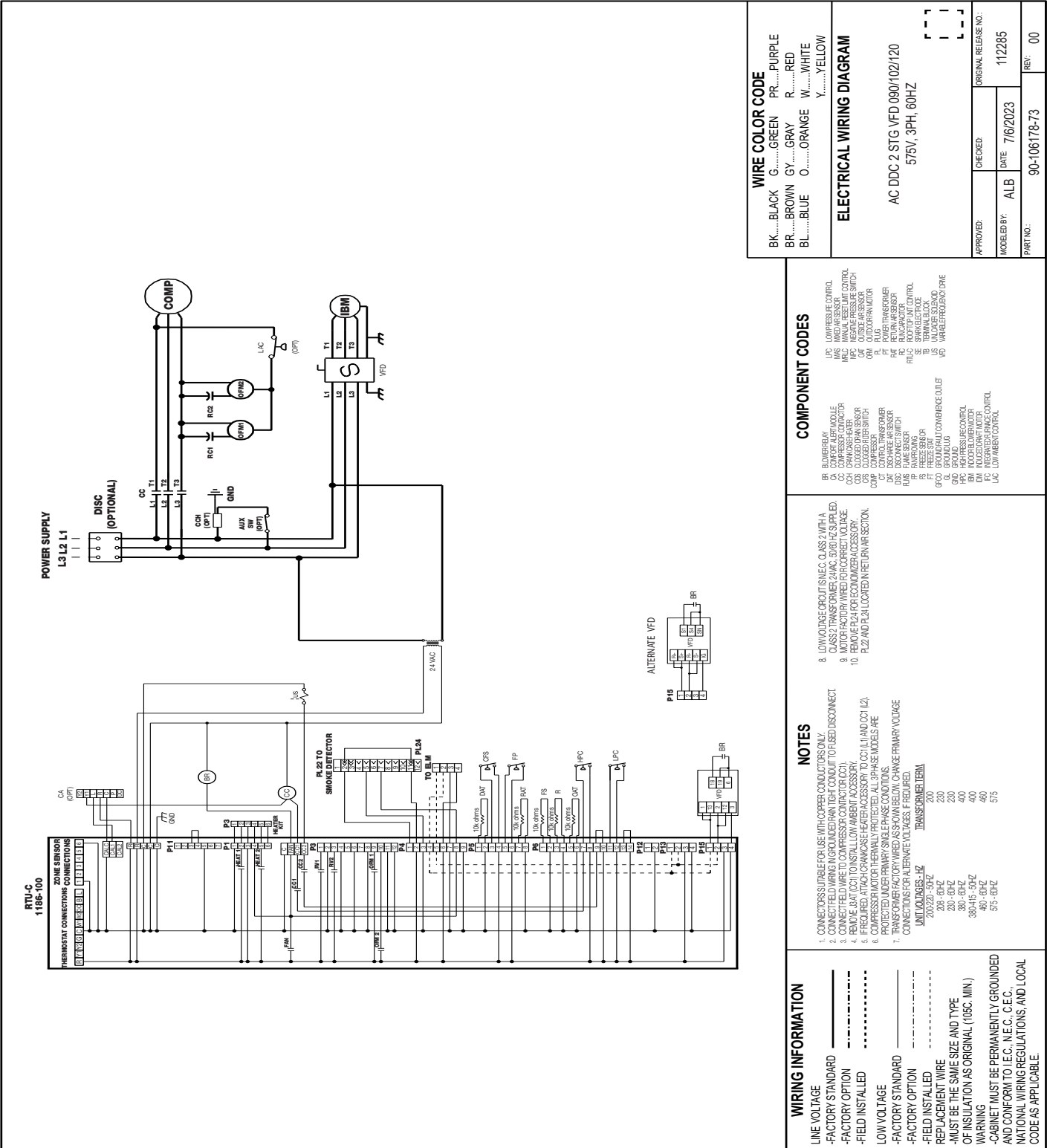
COMPONENT CODES	
BS	BLUETOOTH CONTROL
CA	CONTROL ALARM
CC	COMPRESSOR CONTACTOR
CD	CONTACTOR
CS	CONTACTOR
CR	CLOSED CIRCUIT SWITCH
CO	CONTACTOR
CP	CONTROL PANEL
CT	CONTACTOR
DA	DIAGNOSTIC ALARM
DC	DIAGNOSTIC CONTROL
DE	DIAGNOSTIC
DS	DIAGNOSTIC SWITCH
EA	EMERGENCY STOP
EP	EMERGENCY STOP
FR	FREEZE SENSOR
GC	GROUND/GROUNDING
GL	GROUND/GROUNDING
HP	HIGH PRESSURE CONTROL
IM	INDUCTIVE MOTOR
IR	INVERTER
LAC	LOW AMBIENT CONTROL

NOTES	
1.	CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
2.	CONNECT FELD WIRING GROUNDED RAINIGHT CONDUIT TO FUSED DISCONNECT.
3.	CONNECT FELD WIRE TO COMPRESSOR CONTACTOR (CC).
4.	REMOVE GROUND TO INSTALL LOW AMBIENT CONTROL.
5.	REMOVE GROUND TO INSTALL LOW AMBIENT CONTROL.
6.	COMPRESSOR MOTOR THEMALLY PROTECTED. ALL 3 PHASE MOTORS ARE PROTECTED UNDER PRIMARY SINGLE PHASE CONDITIONS.
7.	TRANSFORMER FACTORY WIRING AS SHOWN BELOW. CHANGE PRIMARY VOLTAGE CONNECTIONS FOR ALTERNATE VOLTAGES IF REQUIRED.
8.	LOW VOLTAGE CIRCUIT IS I.E.C. CLASS 2 WITH A CLASS 2 TRANSFORMER 2WAC, 50/60-HZ SUPPLIED.
9.	MOTOR FACTORY WIRED FOR CORRECT VOLTAGE.
10.	REMOVE FELD FOR RECOMPRESSOR ACCESSORY.
11.	FELD AND FALCATED IN FIELD ON WIRING SECTION.
12.	CONNECT TO COMPRESSOR LOGIC MODULE.

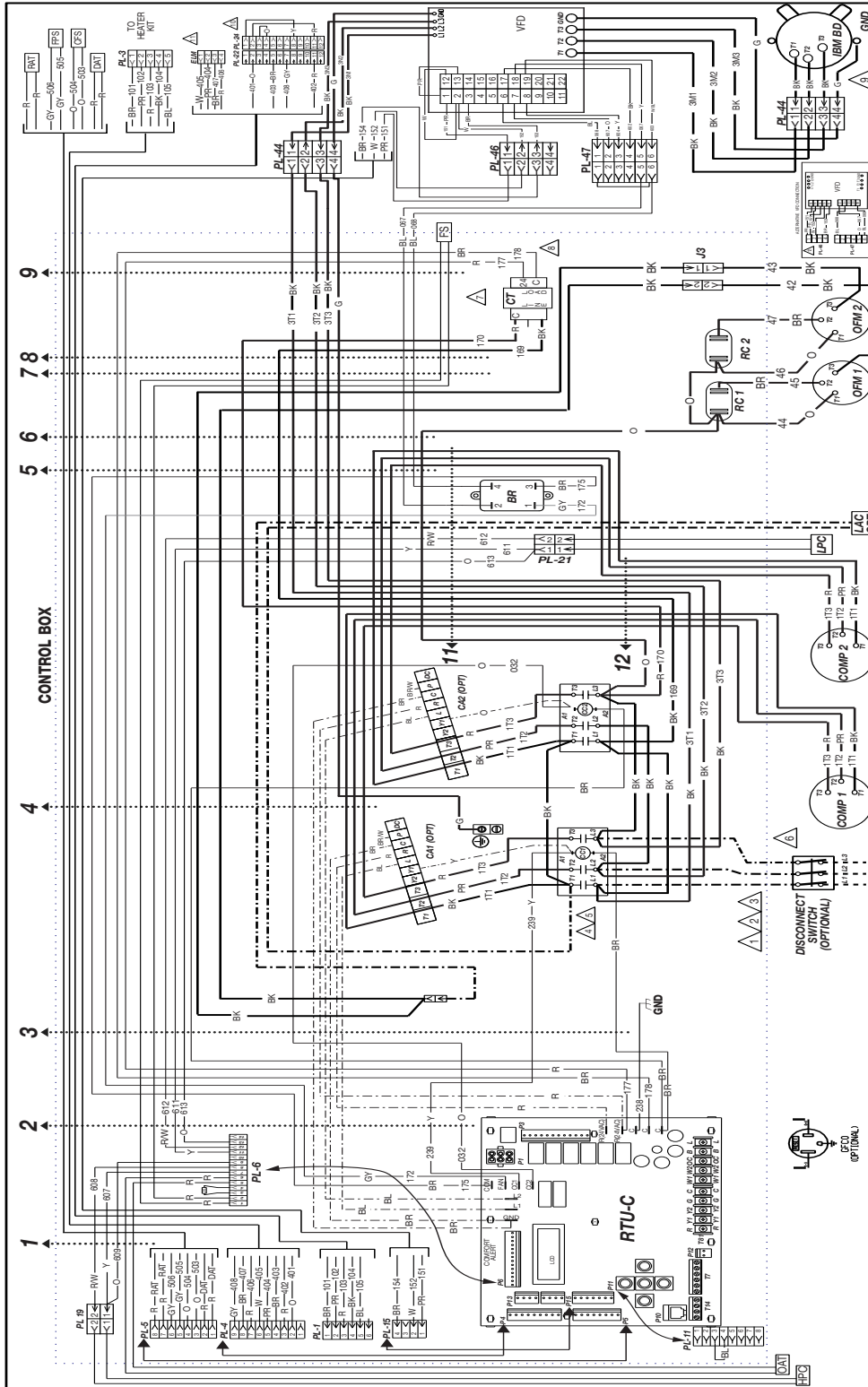
WIRING INFORMATION	
LINE VOLTAGE	200-220-50/2
-FACTORY STANDARD	208-240
-FACTORY OPTION	230-240
-FIELD INSTALLED	380-50/2
LOW VOLTAGE	380-415-50/2
-FACTORY STANDARD	
-FACTORY OPTION	
-FIELD INSTALLED	
REPLACEMENT WIRE	
-MUST BE THE SAME SIZE AND TYPE	
-OF INSULATION AS ORIGINAL (105C MIN.)	
WARNING	
-CABINET MUST BE PERMANENTLY GROUNDED	
AND CONFORM TO I.E.C., N.E.C., C.E.C.,	
NATIONAL WIRING REGULATIONS, AND LOCAL	
CODE AS APPLICABLE.	

P. APPENDICES

Appendix G. Wiring Diagrams & Schematics (Cont.)



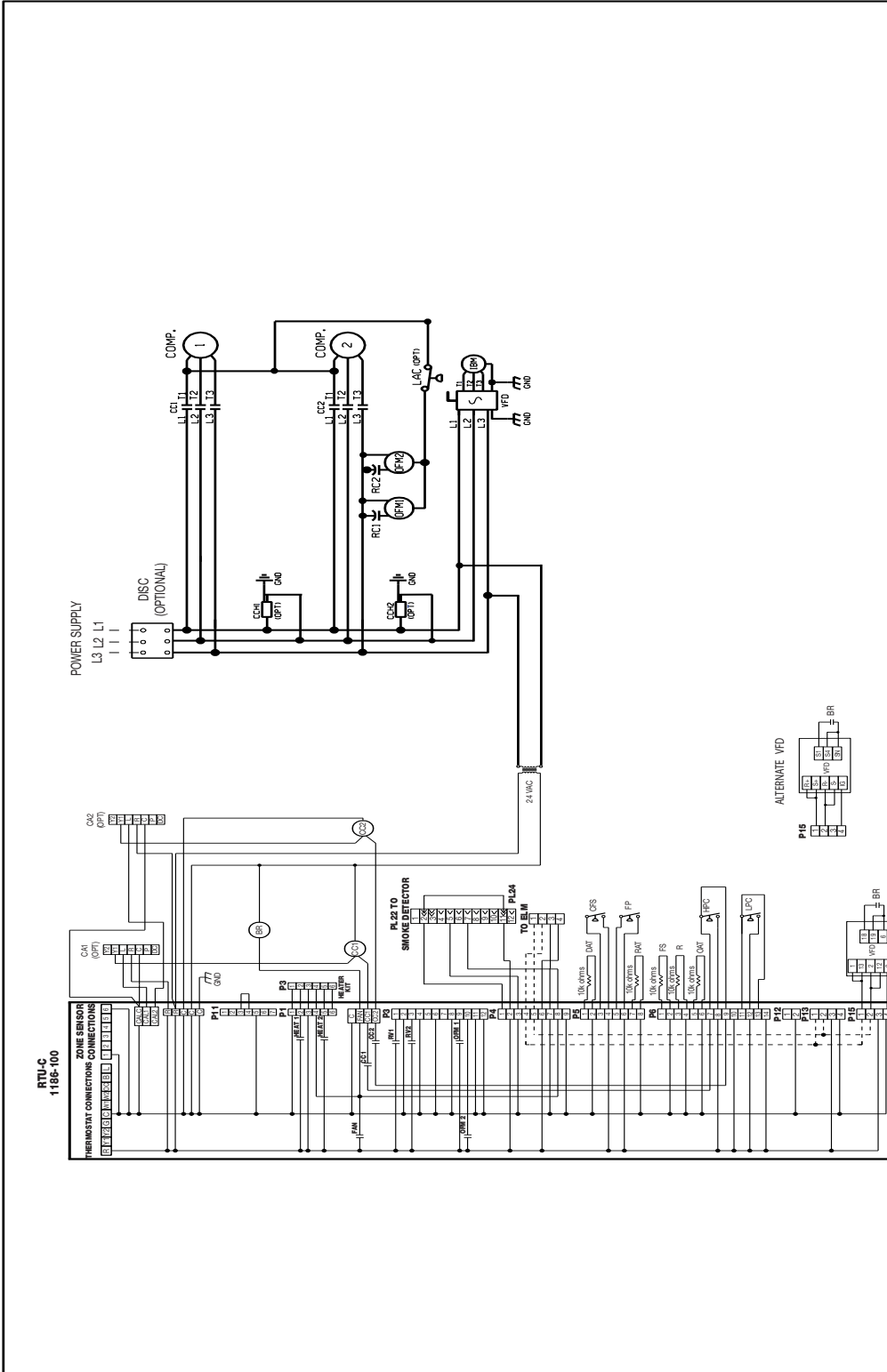
Appendix G. Wiring Diagrams & Schematics (Cont.)



WIRE COLOR CODE BK.....BLACK G.....GREEN PR.....PURPLE BR.....BROWN GY.....GRAY R.....RED BL.....BLUE O.....ORANGE W.....WHITE Y.....YELLOW		ELECTRICAL WIRING DIAGRAM AC DDC 2 STG VFD 150 575V, 3PH, 60HZ	
COMPONENT CODES B1.....BUZZER/CONTROLLER CA.....COMPACT LED MODULE CC.....COMPRESSOR CONTACTOR AR.....ALARM RESET/CONTROL NP.....NEGATIVE PRESSURE SWITCH CS.....CLOSED SWITCH OPM.....OUTDOOR FAN MOTOR FL.....FLAME TRANSFORMER ROT.....ROTARY TRANSFORMER DAT.....DATA/ANALOG SENSOR RUS.....RUSH HOUR SENSOR P.....PRESSURE FT.....FREEZE STAT GFCO.....GROUND FAULT CURRENT OUTLET GND.....GROUND HPC.....HIGH PRESSURE CONTROL BM.....BURNER MOTOR FC.....INTEGRATED FLAME CONTROL LAC.....LOW AMBIENT CONTROL	NOTES 1. CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY. 2. CONNECT FIELD WIRING IN GROUNDING RAIL TO LIGHT CONDUIT TO FIELD DISCONNECT. 3. REMOVE LIFT COIL TO INSTALL LOW AMBIENT ACCESSORY. 4. COMPRESSOR MOTOR THERMAL PROTECTION (COT) IS AN OCO (L2). 5. PROTECTED UNDER PRIMARY SINGLE PHASE CONDITIONS. ALL PHASE ACCESS ARE CONNECTED TO CONSUMER LOGIC MODULE. 6. TRANSFORMER FACTORY WIRE AS SHOWN BELOW. CHANGE PRIMARY VOLTAGE CONNECTIONS FOR ALTERNATE VOLTAGES IF REQUIRED. UNIT VOLTAGES - HZ 200-230-50/60 200 230-60/42 200 230-60/42 380-60/42 400 380-415-50/42 400-60/42 575-50/60	WIRING INFORMATION LINE VOLTAGE -FACTORY STANDARD -FACTORY OPTION -FIELD INSTALLED -FIELD INSTALLED LOW VOLTAGE -FACTORY STANDARD -FACTORY OPTION -FIELD INSTALLED REPLACEMENT WIRE MUST BE THE SAME SIZE AND TYPE OF INSULATION AS ORIGINAL (100% MIN.) WARNING -CABINET MUST BE PERMANENTLY GROUNDED AND CONFORM TO I.E.C., N.E.C., C.E.C., NATIONAL WIRING REGULATIONS, AND LOCAL CODE AS APPLICABLE.	APPROVED: ALB CHECKED: DATE: 7/6/2023 ORIGINAL RELEASE NO.: 112285 PART NO.: 90-106177-74 REV.: 00

P. APPENDICES

Appendix G. Wiring Diagrams & Schematics (Cont.)



<p>WIRE COLOR CODE</p> <p>BK.....BLACK G.....GREEN PR.....PURPLE BR.....BROWN GR.....GRAY R.....RED BL.....BLUE O.....ORANGE W.....WHITE Y.....YELLOW</p>	<p>ELECTRICAL WIRING DIAGRAM</p> <p>AC DDC 2 STG VFD 150 575V, 3PH, 60HZ</p>	<p>APPROVED: [Signature] ORIGINAL RELEASE NO.: 112285 CHECKED: [Signature] DATE: 7/6/2023 MODELED BY: ALB PART NO.: 90-106178-74 REV: 00</p>														
COMPONENT CODES																
<p>AR ACCESSORY RELAY CAZ CONTACT MODULE CC CONTACT RELAY CC2 COMPRESSOR CONTACTOR CCR COMPRESSOR RELAY CR COMPRESSOR RELAY CS CLOSED CIRCUIT SWITCH COMP COMPRESSOR DSC DISCHARGE SWITCH DS DISCHARGE SWITCH F5 FUSE FS FREEZE SENSOR GND GROUND G3 GROUNDING HPC HIGH PRESSURE CONTROL IM MOTOR OVERLOAD IP INVERTER PHASE CONTROL LAC LOW AMBIENT CONTROL</p>	<p>LPC LOW PRESSURE CONTROL MRG MAIN RESET LIMIT CONTROL NCC NEGATIVE PRESSURE SWITCH OAT OUTLET AIR TEMPERATURE OAT OUTLET AIR TEMPERATURE PL FUSE PFC FETTER IN STRAINER PFC FETTER IN STRAINER PFC ROOF FAN OUT CONTROL RB REVERSE BLOWER TB TERMINAL BLOCK US ULTIMATE FROST CONTROL VD VAPOR DETECTOR</p>	<p>8. LOW VOLTAGE CIRCUIT IS NEC. CLASS 2 WITH A CLASS 2 TRANSFORMER 24VAC 500VA SUPPLIED. 9. MOTOR FACTORY WIND FOR CORRECT VOLTAGE. 10. P24 AND P24A LOCATED IN FURNACE SECTION.</p>														
NOTES																
<p>1. CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY. 2. CONNECT FIELD WIRING IN GROUNDING RING TO CORRECT DISCONNECT. 3. CONNECT FIELD WIRE TO COMPRESSOR CONTACTOR. 4. FIELD WIRE TO COMPRESSOR CONTACTOR. 5. FIELD WIRE TO COMPRESSOR CONTACTOR. 6. COMPRESSOR THERMALLY PROTECTED. ALL PHASES MUST BE PROTECTED AND PRIMARY SWAGE PHASE CONDITIONS. 7. TRANSFORMER FACTORY WIND AS SHOWN BELOW. CHANGE PRIMARY VOLTAGE CONNECTIONS FOR ALTERNATE VOLTAGES IF REQUIRED.</p>	<p>TRANSFORMER TAP</p> <table border="1"> <tr><td>200-220-50HZ</td><td>200</td></tr> <tr><td>230-230-50HZ</td><td>230</td></tr> <tr><td>230-230-60HZ</td><td>230</td></tr> <tr><td>380-380-50HZ</td><td>400</td></tr> <tr><td>380-380-60HZ</td><td>400</td></tr> <tr><td>575-575-50HZ</td><td>575</td></tr> <tr><td>575-575-60HZ</td><td>575</td></tr> </table>	200-220-50HZ	200	230-230-50HZ	230	230-230-60HZ	230	380-380-50HZ	400	380-380-60HZ	400	575-575-50HZ	575	575-575-60HZ	575	<p>11. FIELD INSTALLED 12. FIELD INSTALLED 13. FIELD INSTALLED</p> <p>REPLACEMENT WIRE -MUST BE THE SAME SIZE AND TYPE OF INSULATION AS ORIGINAL (105C. MIN.)</p> <p>WARNING -CABINET MUST BE PERMANENTLY GROUNDED AND CONFORM TO I.E.C. N.E.C. C.E.C., NATIONAL WIRING REGULATIONS, AND LOCAL CODE AS APPLICABLE.</p>
200-220-50HZ	200															
230-230-50HZ	230															
230-230-60HZ	230															
380-380-50HZ	400															
380-380-60HZ	400															
575-575-50HZ	575															
575-575-60HZ	575															
WIRING INFORMATION																
<p>LINE VOLTAGE -FACTORY STANDARD -FACTORY OPTION -FIELD INSTALLED</p> <p>LOW VOLTAGE -FACTORY STANDARD -FACTORY OPTION -FIELD INSTALLED</p> <p>REPLACEMENT WIRE -MUST BE THE SAME SIZE AND TYPE OF INSULATION AS ORIGINAL (105C. MIN.)</p> <p>WARNING -CABINET MUST BE PERMANENTLY GROUNDED AND CONFORM TO I.E.C. N.E.C. C.E.C., NATIONAL WIRING REGULATIONS, AND LOCAL CODE AS APPLICABLE.</p>																

J. Unit Tie-Down



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Technical Evaluation Report

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FL 26981.1
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EVALUATION SUBJECT: RHEEM PACKAGED UNITS

TER-20-28788

REPORT HOLDER:

RHEEM MANUFACTURING COMPANY, INC.
1100 ABERNATHY ROAD SUITE 1400
ATLANTA, GA, USA
770-351-3000 | RHEEM.COM



SCOPE OF EVALUATION (compliance with the following codes):

THIS IS A STRUCTURAL (WIND) PERFORMANCE EVALUATION ONLY. NO ELECTRICAL OR COOLING PERFORMANCE RATINGS OR CERTIFICATIONS ARE OFFERED OR IMPLIED HEREIN.

This Product Evaluation Report is being issued in accordance with the requirements of the 7th Edition Florida Building Code (2020) per FBC Section 104.11, FMC 301.15, FBC Building Ch. 16, ASCE-7-16, FBC Building 1522.2, FBC Residential M1202.1, M1301.1, & FS 471.025. The product noted on this report has been tested and evaluated as summarized herein.

SUBSTANTIATING DATA:

• Product Evaluation Documents Test Reports

Substantiating documentation has been submitted to provide this TER and is summarized in the sections below.

Test Report: 0320.01-18 (American Test Lab of South FL)

• Structural Engineering Calculations

Structural engineering calculations have been prepared which evaluate the product based on comparative and/or rational analysis to qualify the following design criteria:

Maximum allowable uplift, sliding, & overturning moment for ground and roof applications

Maximum unit anchorage to steel curb

NOTE: No 33% increase in allowable stress has been used in the design of this product.

INSTALLATION:

The product(s) listed above shall be installed in strict compliance with this product evaluation & manufacturer-provided model specifications.

The product components shall be of the material specified in the manufacturer-provided product specifications. All screws must be installed in accordance with the applicable provisions & anchor manufacturer's published installation instructions.

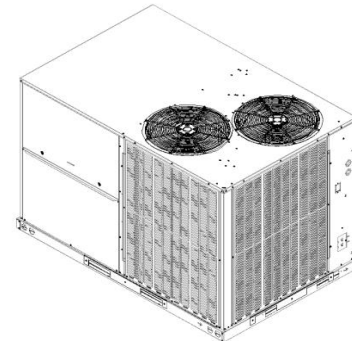
LIMITATIONS & CONDITIONS OF USE:

Use of this product shall be in strict accordance with this product evaluation as noted herein. The supporting host structure shall be designed to resist all superimposed loads as determined by others on a site-specific basis as may be required by the Authority Having Jurisdiction. Host structure conditions which are not accounted for in this product's respective anchor schedule shall be designed for on a site-specific basis by a registered professional engineer. No evaluation is offered for the host supporting structure by use of this document; Adjustment factors noted herein and the applicable codes must be considered, where applicable.

All supporting components which are permanently installed shall be protected against corrosion, contamination, and other such damage at all times.

Fasteners must penetrate the supporting members such that the full length of the threaded portion is embedded within the main member.

This evaluation does not offer any evaluation to meet large missile impact debris requirements which typically are not required for this type of product.



NOTE: GRAPHICAL DEPICTIONS IN THIS REPORT ARE FOR ILLUSTRATIVE PURPOSES ONLY AND MAY DIFFER IN APPEARANCE

UNIT CASING MATERIAL:

20ga galv. sheet steel ASTM A653 Type B.

Removable Top & side covers secured with #10 Sheet metal Hex Head Screws

Knockouts provided for utility & control connections.

FINISH:

Baked Enamel

INSTALLATION:

Shall follow manufacturer specifications as well as information provided herein

OPTIONS:

This evaluation is valid for models shown in the last page

STRUCTURAL PERFORMANCE:

Models referenced herein are subject to the following design limitations:

Maximum Rated Wind Pressure:

200psf Lateral 133psf Uplift

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FOR SITE SPECIFIC DEVIATIONS
& MORE INFORMATION ABOUT THIS DOCUMENT
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VISIT [ENGINEERINGEXPRESS.COM/STORE](https://www.EngineeringExpress.com/Store) FOR
ADDITIONAL PLANS, REPORTS & RESOURCES



ENGINEER SIGNATURE AND SEAL :

Frank Bennardo, P.E.

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FL PE #0046549 FLCA #9885

P. APPENDICES

J. Unit Tie-Down

RHEEM PACKAGED UNITS

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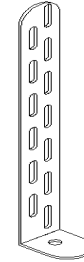
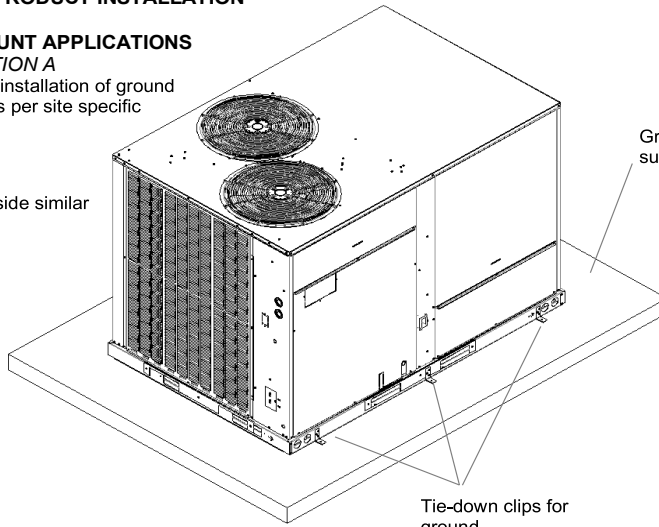
SECTION 2 PRODUCT INSTALLATION

GROUND MOUNT APPLICATIONS

CONFIGURATION A

Note: Design & installation of ground host is by others per site specific conditions

Opposite side similar



TIE-DOWN CLIP
(GROUND APPLICATION)

Miami Tech CUTD 1" wide ASTM A653 galvanized steel 0.07" thick of varying length (FL19731.2) or equivalent for all cabinets tied down to a ground structure; fasten clip to structure using anchor from Anchor Schedule A to Host Structure Table and (3) #12 SAE Gr 2 self-drilling screw to fasten clip to unit base rail. Install in unit with quantities shown ((3) per side). Locate clips at 8.5" min away from the appropriate corner using three clips per side and three clips opposite side in the same configuration.

ANCHOR SCHEDULE TO HOST STRUCTURE

Pressure Lateral (Uplift) (psf)	Concrete	Steel Curb With Clip	Steel Curb Screw
Ground	A	-	-
Up to 81 (64)	-	-	C
Up to 200 (133)	-	B	-

A. – 5/16" DEWALT ULTRACON Anchor embedded 2" in 3,515 psi concrete. 3 1/8" from edge minimum & 5" spacing minimum. NOA No. 17-1227.22

B. – #12 TEK Screws, (14) screws per clip, (5) top front side, (4) top back side and (5) bottom front side.

C. – 3/8" SAE Grade 5 Self-Drilling Screw at 6" O.C, (15) per long side and (10) per short side.

STEEL CURB (ROOF APPLICATION)

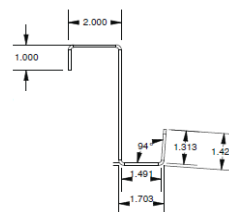
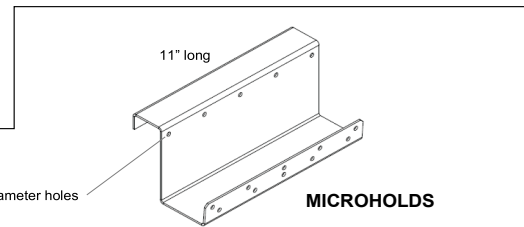
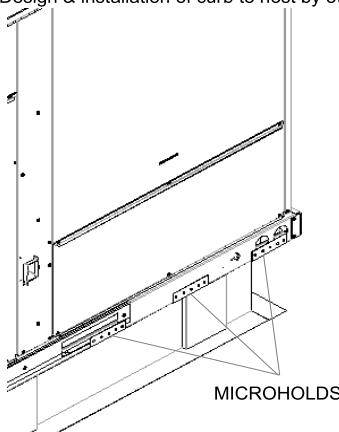
Steel curb to be a minimum of 16ga ASTM A653 steel

Curb Clip to be 14ga ASTM A653 steel min (Microhold)

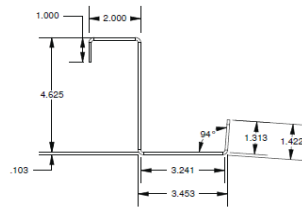
CURB MOUNT APPLICATIONS

CONFIGURATION B

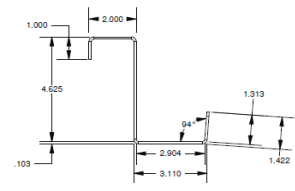
Note: Design & installation of curb to host by others per site specific conditions



Curb Clip A



Curb Clip C



Curb Clip B

IN ALL CONDITIONS IT IS THE RESPONSIBILITY OF THE PERMIT HOLDER TO ENSURE THE HOST STRUCTURE IS CAPABLE OF WITHSTANDING FORCES BY SITE-SPECIFIC DESIGN. NO WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, IS OFFERED BY RHEEM MANUFACTURING COMPANY, OR ENGINEERING EXPRESS AS TO THE INTEGRITY OF THE HOST STRUCTURE TO CARRY LOADS INCURRED BY THIS UNIT.

CORP OFC: 160 SW 12TH AVENUE SUITE 106, DEERFIELD BEACH, FLORIDA 33442
(954) 354-0660 | (866) 396-9999 | ENGINEERINGEXPRESS.COM | TEAM@ENGINEERINGEXPRESS.COM

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CURB CLIP LOCATION

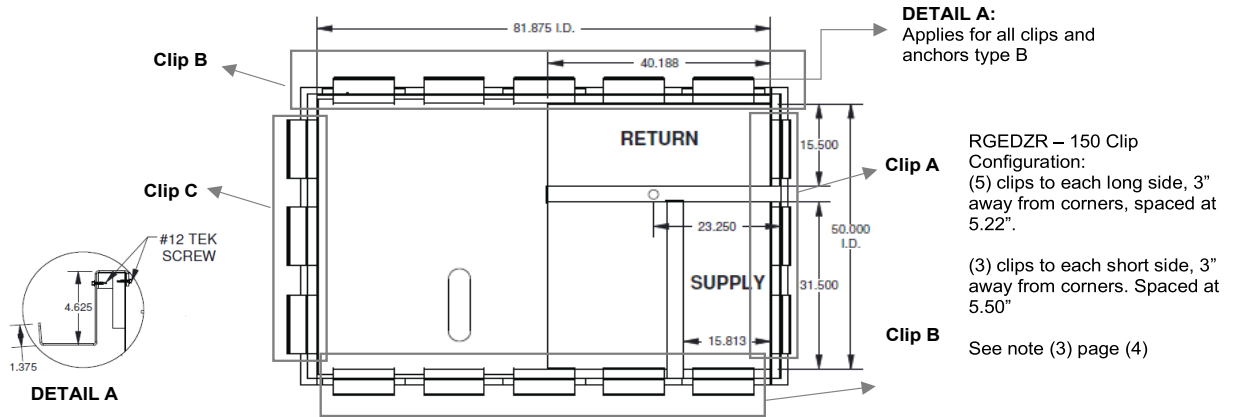


Table 1: Clip Curb Schedule

Unit Model			Number of Clips (Pcs)
(-)GEC - 036	(-)ACC - 036	(-)HPC - 036	4 LS - 2 SS
(-)GEC - 048	(-)ACC - 048	(-)HPC - 048	4 LS - 2 SS
(-)GEC - 060	(-)ACC - 060	(-)HPC - 060	4 LS - 2 SS
(-)GEC - 072	(-)ACC - 072	(-)HPC - 072	4 LS - 2 SS
(-)GED - 090	(-)ACD - 090	(-)HPD - 090	5 LS - 3 SS
(-)GED - 102	(-)ACD - 102	(-)HPD - 102	5 LS - 3 SS
(-)GED - 120	(-)ACD - 120	(-)HPD - 120	5 LS - 3 SS
(-)GED - 150	(-)ACD - 150		5 LS - 3 SS

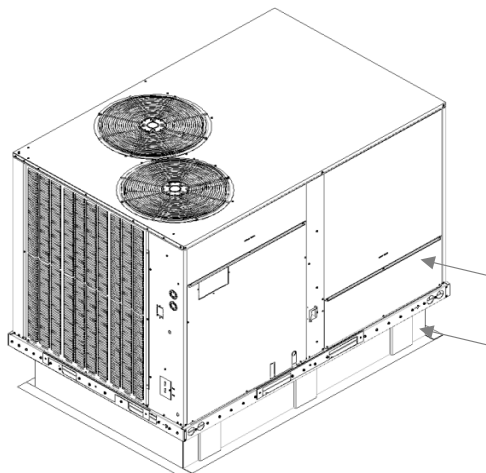
#Clip Designation (5 LS= 5 clips each Long Side;
3 SS= 3 clips each Short Side) equally spaced

Unit Model Note: ‘(-)’ designates equivalent trade brands with similar cabinetry and may vary depending on brand

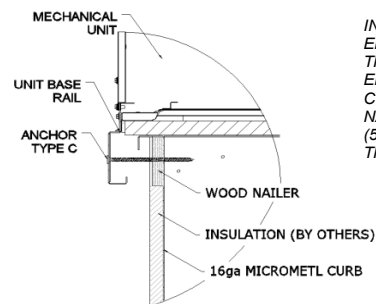
See pressures on page (2) for alternative anchor limitations

ALTERNATIVE ANCHORAGE TO CURB

STEEL CURB WITH SCREW CONFIGURATION C



Mechanical Unit Curb Mounted



DETAIL B

INSTALLER TO ENSURE THAT THREADED PORTION ENGAGES STEEL CURB BEYOND WOOD NAILER WITH MINIMUM (5) PITCHES PAST THE THREAD PLANE

P. APPENDICES

J. Unit Tie-Down RHEEM PACKAGED UNITS

SECTION 3 MODELS SUMMARY, DIMENSION & NOTES

Unit Model	Operating Dimensions w/ screw heads			Operating Weight (lbs)
	Width (in)	Length (in)	Height (in)	
RGEDZR - 150	59 1/2	90 1/10	59 7/10	1070

TESTED UNIT LIMITATIONS

- The unit model listed above was tested and designed as worst-case configurations of model units listed in *Evaluation Model Series Matrix*, remaining unit models are certified by this approval as long as they have identical construction as those listed above and are of equal or lesser dimensions (length, width, height).
- Dimensions shown are measured from outermost points of unit, including screw heads.
- Curb clips shall be as close as possible from the shown locations; installers shall verify any interference between clip attachment and internal components of the unit and move clip within the tolerance allowed.

REQUIRED WIND PRESSURES

Design pressures calculated for use with these units shall be determined by others on a job-specific basis in accordance with the governing code. Site specific load requirements for wind load shall be determined in accordance with ASCE 7 and the codes referenced herein by separate engineering certification and shall be less or equal to design pressures capacity values listed herein for any assembly as shown.

TEST REPORTS UTILIZED

Design and certification of the unit cabinetry is approved through American Test Lab of South Florida Report #: 0320.01-18
Tested according ASTM E330-05 and TAS 202-94.

Unit Model	Operating Dimensions w/ screw heads			Operating Weight (lbs)
	Width (in)	Length (in)	Height (in)	
(-)ACC - 036	46 3/4	78 3/8	41 3/8	453
(-)ACC - 048	46 3/4	78 3/8	41 3/8	477
(-)ACC - 060	46 3/4	78 3/8	41 3/8	482
(-)ACC - 072	46 3/4	78 3/8	41 3/8	689
(-)ACD - 090	59 15/32	89 5/16	49 1/4	722
(-)ACD - 102	59 15/32	89 5/16	49 1/4	748
(-)ACD - 120	59 15/32	89 5/16	49 1/4	777
(-)ACD - 150	59 1/2	90 1/10	59 7/10	946

Unit Model	Operating Dimensions w/ screw heads			Operating Weight (lbs)
	Width (in)	Length (in)	Height (in)	
(-)GEC - 036	46 3/4	78 3/8	41 3/8	453
(-)GEC - 048	46 3/4	78 3/8	41 3/8	477
(-)GEC - 060	46 3/4	78 3/8	41 3/8	482
(-)GEC - 072	46 3/4	78 3/8	41 3/8	689
(-)GED - 090	59 15/32	89 5/16	49 1/4	846
(-)GED - 102	59 15/32	89 5/16	49 1/4	872
(-)GED - 120	59 15/32	89 5/16	49 1/4	901

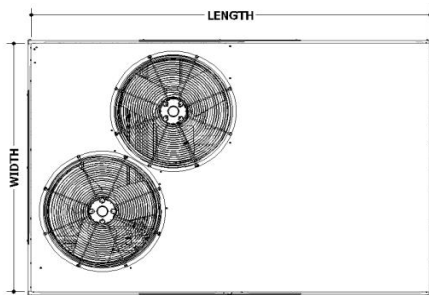
Unit Model	Operating Dimensions w/ screw heads			Operating Weight (lbs)
	Width (in)	Length (in)	Height (in)	
(-)HPC - 036	78 3/8	46 3/4	41 3/8	528
(-)HPC - 048	78 3/8	46 3/4	41 3/8	551
(-)HPC - 060	78 3/8	46 3/4	41 3/8	553
(-)HPC - 072	78 3/8	46 3/4	41 3/8	553
(-)HPD - 090	89 5/16	59 1/2	49 1/4	786
(-)HPD - 102	89 5/16	59 1/2	49 1/4	822
(-)HPD - 120	89 5/16	59 1/2	59 7/10	874

Unit Model Note: ‘(-)’ designates equivalent trade brands with similar cabinetry and may vary depending on brand

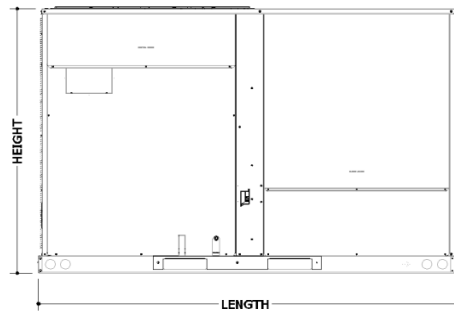
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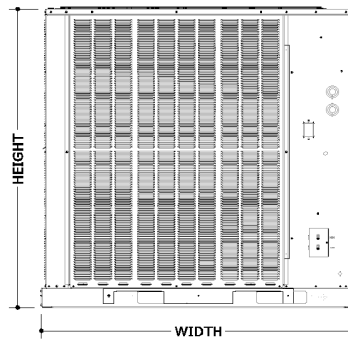
UNIT VIEWS & ELEVATIONS



TOP VIEW



ELEVATION VIEW



SIDE VIEW

Note: RGEDZR-150 illustration selected for dimensional purposes

R. INFORMATION FOR THE OWNER

R.1. Information for the Owner: Maintenance and service

For routine maintenance, general diagnostics for cooling and heating, and other generalized information regarding filter changing, cleaning the condensate pan, cleaning the coils, and general inspections, refer to the included User's Information Manual for the owner.

R.2. Product Model and Serial Number

The product model and serial number are both located on the rating plate found on the supply/return panel of the unit.

S. INSTALLATION CHECK LIST AND JOB SITE SHEET

Commercial Job Site Information

Site Information and Application Details:

Business Name : _____ Model Number : _____
 Address : _____ (Please include all letters and digits of the model number)
 City : _____ State : _____ Zip : _____
 Site Contact : _____ Serial Number : _____
 Phone : _____ Mobile : _____ (Please include all letters and digits of the serial number)
 Email : _____ Date of Install : _____
 (When was the unit installed, month, day, and year)

Business Name : _____ Technician Name : _____
 Address : _____ Visit Date: _____
 City : _____ State : _____ Zip : _____ Technician Name : _____
 Site Contact : _____ Visit Date: _____
 Phone : _____ Mobile : _____ Technician Name : _____
 Email : _____ Visit Date: _____

Distributor and Support Details:

Distributor Name : _____ Rep Name : _____
 City : _____ State : _____ Visit Date: _____

Unit Setup and Operational Information

Voltage and Amperage Information :

Line Voltage Measurements :

Base Voltage : 208 240 460 Phase : 1 3
(Circle one) (Circle one)
 Measured Line Voltage : _____
 Phase A to B : _____ Phase A to Ground : _____
 Phase B to C : _____ Phase B to Ground : _____
 Phase C to A : _____ Phase C to Ground : _____
 Breaker Size : _____ Conductor Size: _____

24VAC Low Voltage Measurements :

Transformer Tap : 208 240 460
(Circle one)
 24VAC Measured Voltage : R to C : _____
 24VAC Measured Amp Load : _____
 Transformer Load: _____
 T-stat Load: _____

Amperage and Power Measurements :

Full Running Load	Blower	Compressor 1	Compressor 2	Outdoor Fans
Phase A : _____	_____	_____	_____	_____
Phase B : _____	_____	_____	_____	_____
Phase C : _____	_____	_____	_____	_____

Circuit 1 :

Suction Line Liquid Line

Pressure (PSI) : _____ Pressure (PSI) : _____
 Temperature (°F) : _____ Temperature (°F) : _____
 Superheat (°F) : _____ Sub-cooling (°F) : _____

Circuit 2 :

Suction Line Liquid Line

Pressure (PSI) : _____ Pressure (PSI) : _____
 Temperature (°F) : _____ Temperature (°F) : _____
 Sub-cooling (°F) : _____ Sub-cooling (°F) : _____

Outdoor Air Temperature (°F) : _____ Return Air Temperature (°F) : _____ Supply Air Temperature (°F) : _____
 Outdoor Air Wet Bulb (°F) : _____ Return Air Wet Bulb (°F) : _____ Supply Air Wet Bulb (°F) : _____

S. INSTALLATION CHECK LIST AND JOB SITE SHEET

Commercial Job Site Information

Air Flow CFM :

Building Design CFM : _____
 Operating System CFM : _____

Blower Speed :

Motor RPM : _____
 Blower RPM : _____
 Blower Sheave Turns : _____
(Turns are measured from a fully closed position)

Static Pressure :

Return Static Pressure : _____
 Supply Static Pressure : _____
 Total Static Pressure : _____

Variable Frequency Drive (VFD) : (low fan speed settings are located in DDC Control)

Factory Equipped: Yes No
(Circle one) Power Setting (uLu) : _____ Low Fan Speed % : _____
 Active VFD Display (Hz) : _____ Runs to 45hz on Start?: Yes No
(Circle one) 1stg Cooling Speed % : _____
 LOC/REM Light On?: Yes No
(Circle one) Runs to 60hz 2nd Stage?: Yes No
(Circle one) Low Economizer % : _____

Economizer Setup and Information :

Outdoor Air:

Design CFM : _____
 Design % : _____
 Measured CFM : _____
 Measured % : _____

Blade Position and Settings:

Minimum Position - Low : _____
 Minimum Position - High : _____
 Min Position Shaft Angle : _____
 Measured % : _____

Program Settings:

Enthalpy Zone Setting : A B C D E
(Circle one)
 Mixed Air Temperature : _____
 Min Position Shaft Angle : _____
 Measured % : _____

Heat or Furnace Information :

Gas Heat :

Fuel Type : Natural LP <small>(Circle one)</small>	Voltage: _____	Amperage: _____	Pressure Switches <small>(measured in inches w.c.)</small>
Input BTU : _____	Line 1 Line 2	Line 1 Line 2	RPM Low High Close Open
Measured BTU : _____	Inducer 1: _____	_____	_____
Line Gas Pressure : _____	Inducer 2: _____	_____	_____
Manifold Pressure - Low : _____	Inducer 3: _____	_____	_____
Manifold Pressure - High : _____	Inducer 4: _____	_____	_____
Number of Orifices : _____	Main Limit Closed: Yes No <small>(Circle one)</small>	Over Temp Limit Closed: Yes No <small>(Circle one)</small>	
Orifice Size : _____	Spark Visible at Igniter : Yes No <small>(Circle one)</small>	Burner Flames Blue : Yes No <small>(Circle one)</small>	
Flame Signal - microamp (s) : _____			

Electric Heat :

System Voltage : 208 240 460
(Circle one) Stage 1 Amps: _____ Stage 2 Amps: _____ Stage 1 Watts: _____ Stage 2 Watts: _____
 Total Kw input Rating : _____
 Phase A : _____
 Phase B : _____
 Phase C : _____

Notes and Comments :



