

INSTALLATION AND MAINTENANCE INSTRUCTIONS

RHP and RCE 3 Phase Series

Self-Contained Heat Pump and Air Conditioner

Save these instructions for future reference

WARNING

Improper installation, adjustment, alteration, service, or maintenance can cause injury or property damage. Refer to this manual. For assistance or additional information, consult a qualified installer or service agency.

WARNING

Installation and servicing of air conditioning equipment can be hazardous due to internal refrigerant pressure and live electrical components. Only trained and qualified service personnel should install or service this equipment. Installation and service performed by unqualified persons can result in property damage, personal injury, or death.

WARNING

If this unit is to be installed in a mobile or manufactured home application, the ductwork must be sized to achieve static pressures within the manufacturer's guidelines. All other installation guidelines must also be followed. Failure to do so may result in equipment damage, personal injury, and improper performance of the unit.

WARNING

For your safety, do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance. Such actions could result in property damage, personal injury, or death.

CAUTION

The installation of this appliance must conform to the requirements of the National Fire Protection Association; the National Electrical Code, ANSI/NFPA No. 70 (latest edition) in the United States; the Canadian Electrical Code Part 1, CSA 22.1 (latest edition) in Canada; and any state or provincial laws or local ordinances. Local authorities having jurisdiction should be consulted before installation is made. Such applicable regulations or requirements take precedence over the general instructions in this manual.

TABLE OF CONTENTS

INSTALLATION	2
OPERATION.....	9
MAINTENANCE	11
WIRING DIAGRAMS.....	12
WARRANTY	16

Manufactured By
Allied Air Enterprises, Inc.
A Lennox International Company
215 Metropolitan Drive
West Columbia, SC 29170



(P) 506863-02

INSTALLATION

These instructions explain the recommended method of installation of the heat pump and air conditioner units and associated electrical wiring.

This unit is designed and approved for use as a self-contained air-to-air outdoor heat pump and air conditioner system.

The units are factory equipped with a transformer and blower control for applications without auxiliary heat. Electric heat accessory kits (AHSA-) can be ordered for field installation of additional heat where required.

These instructions, and any instructions packaged with mating components and/or accessories, should be carefully read prior to beginning installation. Note particularly any **CAUTIONS** or **WARNINGS** in these instructions and all labels on the units.

These instructions are intended as a general guide only, for use by qualified personnel and do not supersede any national or local codes in any way. Compliance with all local, state, provincial, or national codes pertaining to this type of equipment should be determined prior to installation.

Inspection of Shipment

Upon receipt of equipment, carefully inspect it for possible shipping damage. If damage is found, it should be noted on the carrier's freight bill. Take special care to examine the unit inside the carton if the carton is damaged. File a claim with the transportation company.

If any damages are discovered and reported to the carrier **DO NOT INSTALL THE UNIT, as claim may be denied.**

Check the unit rating plate to confirm specifications are as ordered.

Limitations

The unit should be installed in accordance with all national and local safety codes.

Limitations of the unit and appropriate accessories must also be observed.

The unit must not be installed with any ductwork in the outdoor air stream. The outdoor fan is not designed to operate against any additional static pressure.

Minimum and maximum operation conditions must be observed to assure maximum system performance with minimum service required. Refer to Table 1 for the application limitations of the unit.

Location

The unit is designed to be located outdoors with sufficient clearance for free entrance to the air inlet and discharge air openings. The location must also allow for adequate service access. Figure 1 shows a typical installation.

The unit must be installed on a solid foundation that will not settle or shift. Adequate structural support must be provided. Maintain minimum clearances as shown in Figure 1 and Table 1 and install the unit in level position. Isolate the base from the building structure to avoid possible transmission of sound or vibration into the conditioned space.

The heat pump unit foundation should be raised to a minimum of 3" above finish grade. In areas which have prolonged periods of temperature below freezing and snowfall, the heat pump unit should be elevated above the average snow line. Extra precaution should be taken to allow free drainage of condensate from defrost cycles to prevent ice accumulation. The unit should not be located near walkways to prevent possible icing of surface from defrost condensate.

Avoid placing the unit near quiet areas such as sleeping quarters or study rooms. Normal operating sound levels may be objectionable if the unit is placed near certain rooms.

Do not permit overhanging structures or shrubs to obstruct condenser air discharge inlet or outlet.

For improved start-up performance, the indoor coil should be washed with suitable detergent to remove any residue from manufacturing processes.

Roof Curb Installation

If a roof curb is used, follow the manufacturer's Installation Instructions and be sure that all required clearances are observed (see **Clearances** on page 3).

These units are shipped with four corner brackets in place on the underside of the unit (see Figure 2). **For heat pumps the two rear corner brackets must be removed before unit is installed onto roof curb assembly. For air conditioner units remove all four corner brackets before installing on roof curb.**

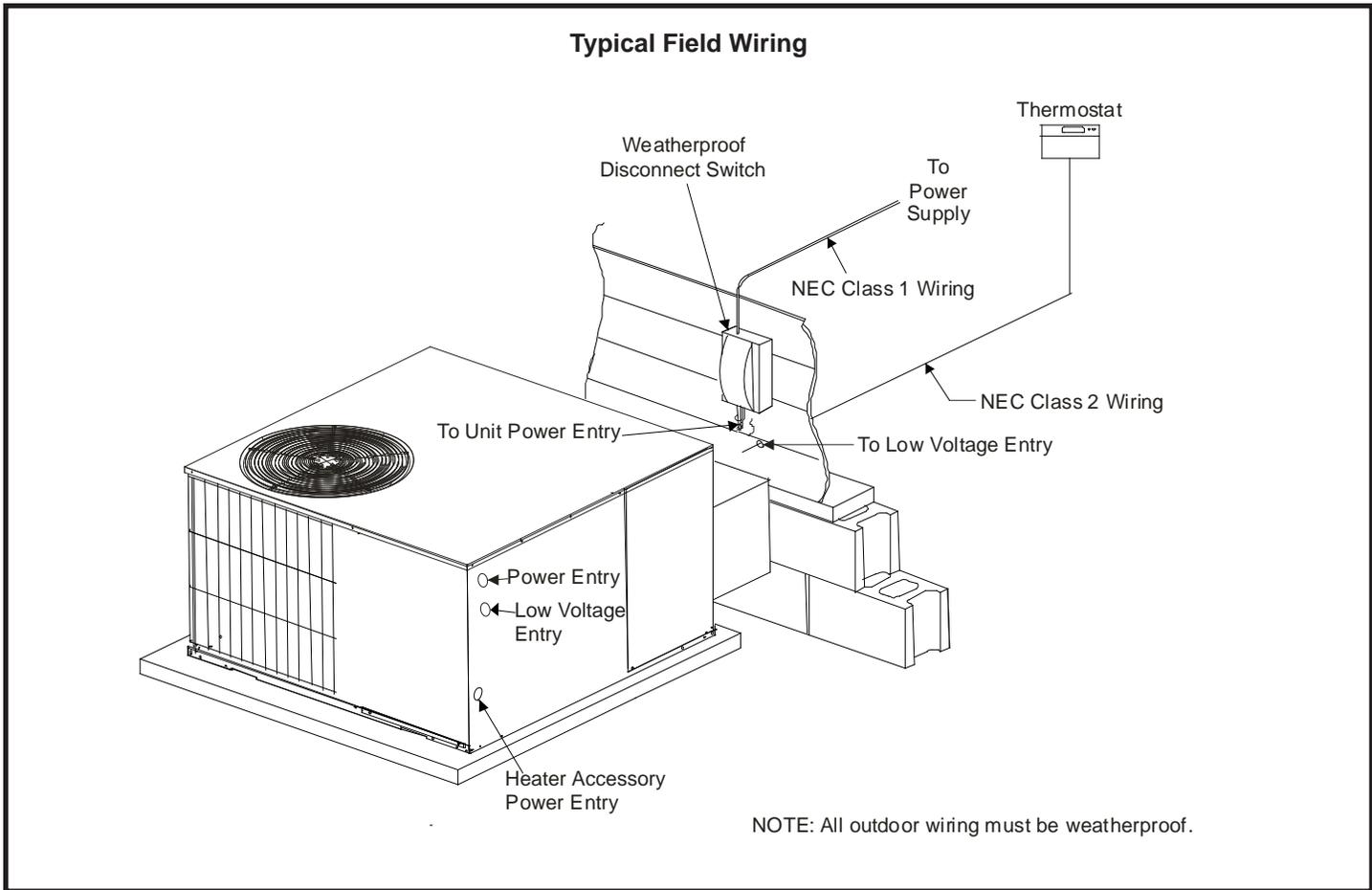


Figure 1

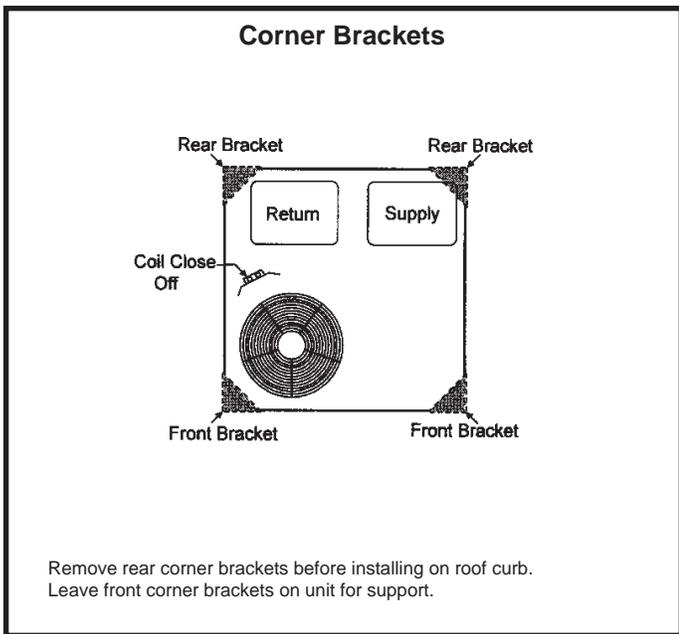


Figure 2

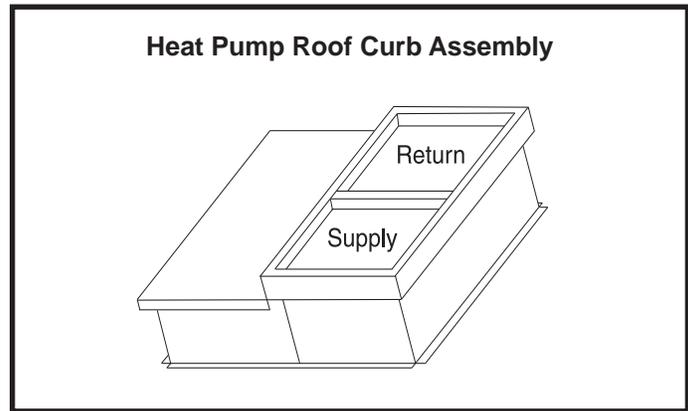


Figure 3

Clearances

All units require certain clearances for proper operation and service. Refer to Table 1 on page 4 for the minimum clearances to combustibles required for construction, servicing, and proper unit operation.

In the U.S., units may be installed on combustible floors made from wood or class A, B, or C roof covering material.

In Canada, units may be installed on combustible floors. Units must be installed outdoors.

Minimum Clearances

	Combustibles	Installation/ Service
Front of Unit	0	24"
Back of Unit	0	0
Left Side	0	24"
Right Side (Condenser Coil)	0	24"
Below Unit	0	0
Above Unit	0	48"

Table 1

Rigging and Handling



Before lifting a unit, make sure that the weight is distributed equally on the cables so that it will lift evenly.

Exercise care when moving the unit. Do not remove any packaging until the unit is near the place of installation. Spreaders whose length exceeds the largest dimension across the unit **must be used across the top of the unit.**

Units may also be moved or lifted with a forklift while still in the factory-supplied packaging. **The lengths of the forks of the forklift must be a minimum of 42".**

Compressor

Units are shipped with compressor mountings factory adjusted and ready for operation. **Do not loosen compressor mounting bolts.**

Electrical Wiring

All field wiring must be done in accordance with National Electrical Code recommendations, local codes, and applicable requirements of UL, or in accordance with Canadian Electrical Code recommendations, local codes, or CSA Standards. Power wiring, disconnect means, and over-current protection are to be supplied by the installer. Refer to the unit rating plate for maximum over-current protection and minimum circuit ampacity, as well as operating voltage. The power supply must be sized and protected according to specifications supplied.

The unit must be grounded with a separate ground conductor. See Figure 4 for typical field wiring connection. The wiring diagram can be found on the unit inside the access panel. Low voltage control wiring are pigtail leads located on the main control box and are color-coded to match the connection called out on the wiring schematic.



When connecting electrical power and control wiring to the unit, waterproof-type connectors must be used so that water or moisture cannot be drawn into the unit during normal operation.

Three Phase 230V (-T models) are factory wired for a 230-volt power supply. If power supply is 208 volts, it will be necessary to change a wire connection on the unit transformer from 240V terminal to 208V terminal as shown on the wiring diagram.

Use only copper conductors.

If any of the original unit wiring is replaced, the same size and type wire must be used.

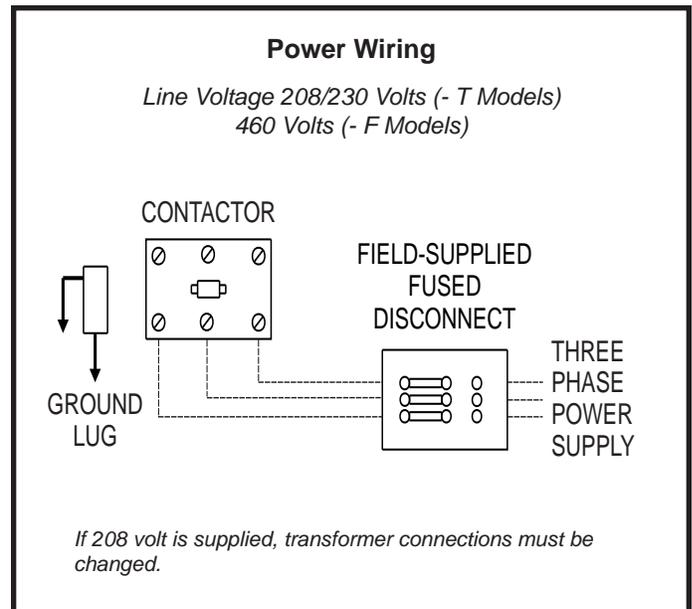


Figure 4

Thermostat

The room thermostat should be located on an inside wall where it will not be subject to drafts, sun exposure, or heat from electrical fixtures or appliances. Follow the manufacturer’s instructions enclosed with the thermostat for general installation procedure. Color-coded insulated wires (#18 AWG) should be used to connect the thermostat to the unit. A minimum of five wires are required for proper installation depending on thermostat used. For thermostat wire runs up to 60 feet(18 m), use 18 gauge wire. For 60 to 90 foot (18 to 27 m) runs, use 16 gauge wire. (Depending on thermostat used.)

Ductwork

Ductwork should be designed and sized according to the methods in Manual Q of the Air Conditioning Contractors of America (ACCA).

A closed return duct system shall be used. This shall not preclude use of economizers or outdoor fresh air intake. It is recommended that supply and return duct connections at the unit be made with flexible joints.

The supply and return air duct systems should be designed for the CFM and static requirements of the job. **They should not be sized to match the dimensions of the duct connections on the unit.**

⚠ CAUTION

When fastening ductwork to side duct flanges on unit, insert screws through duct flanges only. Do not insert screws through casing. Outdoor ductwork must be insulated and waterproofed.

Filters

Filters are not supplied with the unit. Filters must always be installed on the upstream side of the evaporator coil and must be kept clean or replaced. Dirty filters will reduce the airflow of the unit. Filters should be sized in accordance with Table 2 on page 6.

This unit is equipped with an internal filter clip which is located in the indoor coil compartment attached to the side of the unit drain pan.

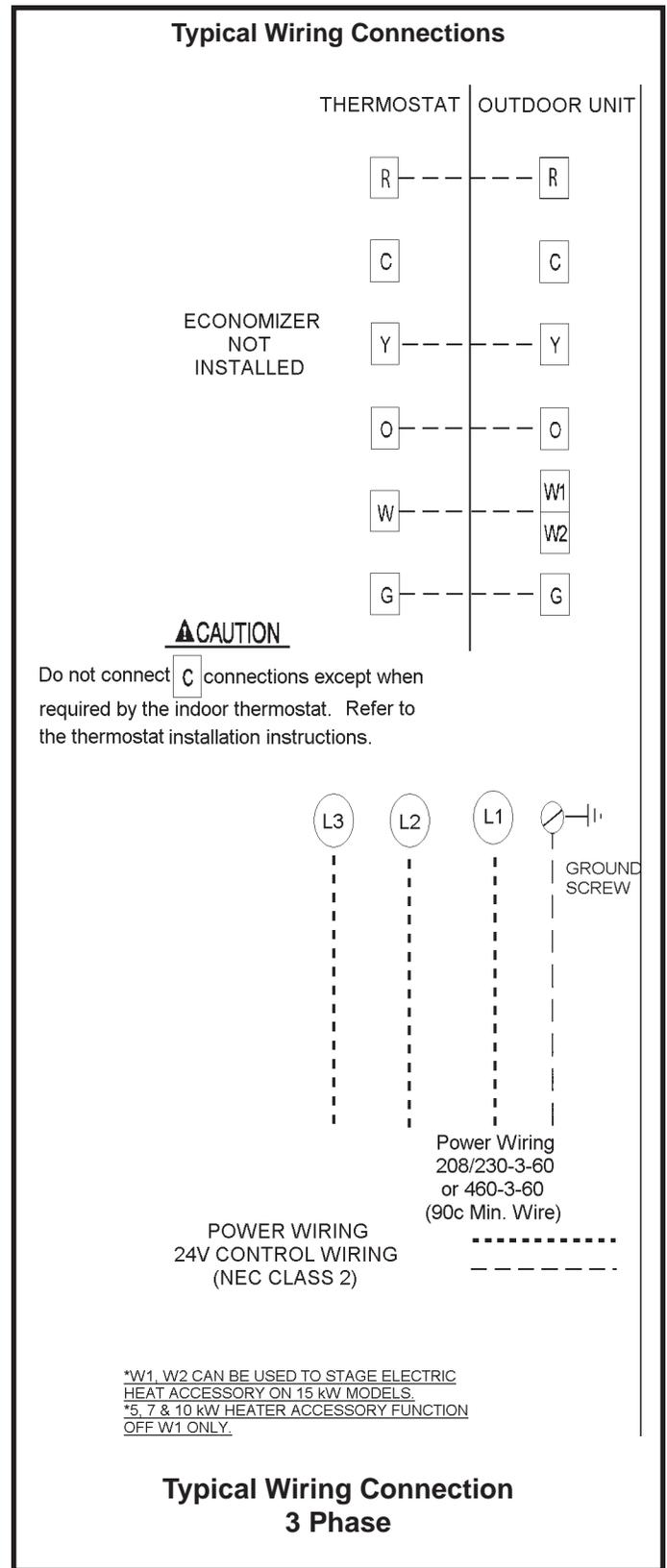


Figure 5

Minimum Required Surface Area for Disposable Filters

Cooling BTU/HR	Filter Area
48,000 (4 Ton)	800 Square Inches
60,000 (5 Ton)	900 Square Inches

Unit Model	Internal Filter Size
RHP/RCE 36	28" X 25"
RHP/RCE 48-60	30" X 30"

Table 2

Condensate Drain

The package unit is equipped with a 3/4" fpt coupling for condensate line connection. Plumbing must conform to local codes. Use a sealing compound on the male adaptor pipe threads.

The condensate drain line must be properly trapped and routed to a suitable drain. See Figure 6 for proper drain arrangement. The drain line must pitch to an open drain or pump to prevent clogging of the line. Seal around the drain connection with suitable material to prevent air leakage into the return air system.

Heater Kit Accessory (if used)

The unit is fully equipped for cooling operation without auxiliary heat. A heater kit accessory may also be used. To install the heater kit accessory (see Figure 7):

1. Disconnect the power and open the main control access.
2. Disconnect the plug separating the high voltage wire harness. Remove the high voltage wire harness plug and discard.

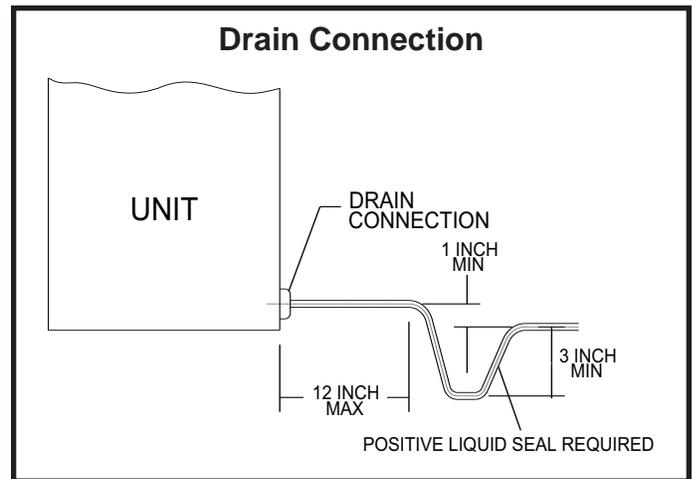


Figure 6

3. Remove the heater blockoff by removing the four screws holding it in place. Cut away the insulation covering the opening, using the hole in the panel as a template.
4. Insert the heater into the control panel and fasten in the same mounting holes.
5. Plug the heater wiring harness into the wire harness on the control assembly. Field wiring of the auxiliary heater is separate from the unit power supply. Wire the power supply wiring for the heater to the appropriate connections on the heater kit.

Crankcase Heater (if used)

Some models may be equipped with insertion crankcase heaters to prevent excessive migration of liquid refrigerant into the compressor. The following steps should be taken on initial start-up to prevent possible compressor damage. The procedure must be followed at initial start-up as well as any time power has been interrupted for 12 hours or longer.

1. Insure that the room thermostat is in OFF position to prevent the compressor from starting.
2. Apply the main power supply to the outdoor unit. This will energize the crankcase heater.
3. Maintain power to the unit for a minimum of 8 hours.
4. After reaching minimum elapsed time, the unit can be safely started.

Except as required for safety while servicing, **do not open the system disconnect switch.**

Removal of Unit from Common Venting System

When an existing furnace is removed from a common venting system serving other appliances, the venting system is likely to be too large to properly vent the remaining attached appliances. The following test should be conducted with each appliance while the other appliances connected to the common venting system are not in operation.

1. Seal any unused openings in the common venting system.
2. Visually inspect the venting system for proper size and horizontal pitch and determine there is no blockage or restriction, leakage, corrosion, or other deficiencies which could cause an unsafe condition.
3. Insofar as is practical, close all building doors and windows between the space in which the appliances remaining connected to the common venting system are located and other spaces in the building. Turn on clothes dryers and any appliance not connected to the common venting system. Turn on exhaust fans, such as range hoods and bathroom exhausts, so they will operate at maximum speed. Do not operate a summer exhaust fan. Close fireplace dampers.
4. Following the lighting instructions, place the unit being inspected in operation. Adjust the thermostat so the appliance will operate continuously.
5. Test for spillage at the draft control relief opening after 5 minutes of main burner operation. Use the flame of a match or candle.
6. Follow the preceding steps for each appliance connected to the common venting system.
7. After it has been determined that each appliance remaining connected to the common venting system properly vents when tested as outlined above, return doors, windows, exhaust fans, fireplace dampers, and any other fuel burning appliance to their previous condition of use.
8. If improper venting is observed during any of the above tests, the common venting system must be corrected. **See National Fuel Gas Code, ANSI Z223.1 (latest edition) or CAN/CGA B149.1 & .2 Canadian Installation Codes to correct improper operation of common venting system.**

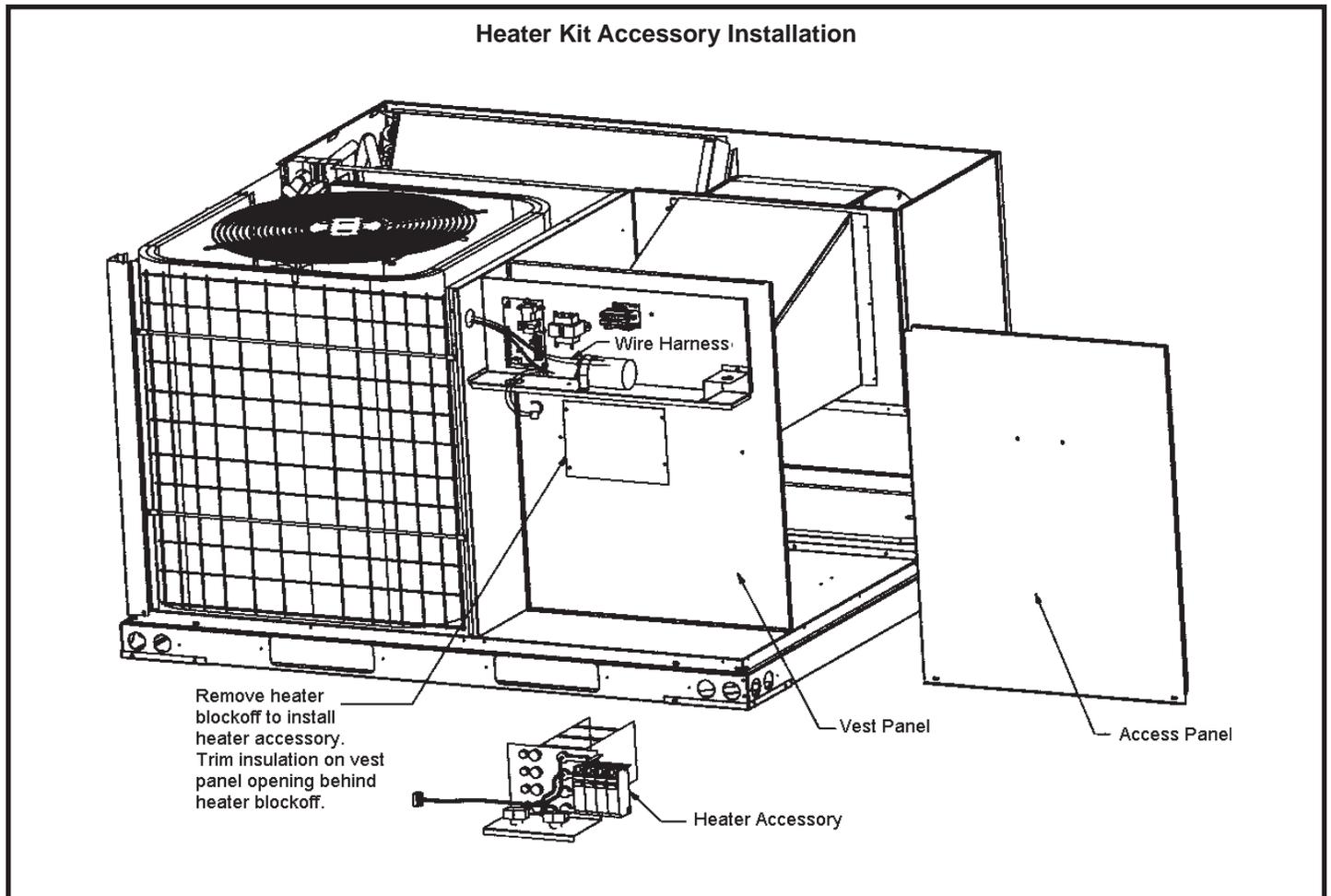


Figure 7

Sequence of Operation

RCE Models

Cooling

When the thermostat calls for cooling, R is closed to G and Y (see wiring diagram). This action completes the low voltage control circuit, energizing the compressor, condenser fan motor and blower motor.

Unit compressors have internal protection. If there is an abnormal rise in the compressor temperature, the protector will open and the compressor will stop.

Blower Delay-Cooling

In cooling mode, the circulating air blower operation is delayed for five (5) seconds after the compressor starts. The blower continues to operate for 60 seconds after the compressor is de-energized. The feature is a function of the blower motor itself and cannot be changed.

NOTE: *There is no blower off delay when there is only a call for G (fan only).*

Electric Heat (If accessory is field installed)

When the thermostat calls for heat, R is closed to W (see wiring diagram). This action energizes the blower motor at the selected heat speed and also energizes the electric heat elements through the sequencer (located on the field installed electric heater panel). Upon satisfying heating demand, the thermostat opens the W circuit, de-energizing the electric heater. The blower motor will continue to operate for an additional 2 minutes before stopping.

RHP Models

Cooling

When the thermostat is in the cooling mode, the O circuit is powered which energizes the reversing valve. Upon cooling demand, the thermostat closes circuit R and Y. Closing R and Y closes the unit contactor, starting the compressor and outdoor fan. Closing R to Y also brings on the indoor blower at the same time. Upon satisfying cooling demand, the thermostat will open the above circuits and open the main contactor, stopping the compressor and outdoor fan. The blower will continue to operate for 60 seconds which improves system efficiency.

NOTE: *There is no blower off delay when there is only a call for G (fan only).*

Heating

Upon first stage heating demand, the thermostat closes circuit R to Y, which closes the unit contactor, starting the compressor and outdoor fan. The reversing valve is not energized in the heating mode. The thermostat automatically brings on the indoor blower at the selected heat pump speed at the same time. Upon satisfying the heating demand, the thermostat opens the above circuits and stops the compressor and outdoor fan. The blower will continue running for an additional 60 seconds.

Units with Electric Heater (If accessory is field installed)

If during a first stage heating demand the thermostat closes the R to W circuit calling for a second stage heating demand, the electric heater is energized. The compressor continues to operate in heating mode. At the same time the indoor blower is energized on the selected heating speed. If the second stage heat demand is satisfied, the electric heat stages off and indoor blower returns to the selected heat pump speed.

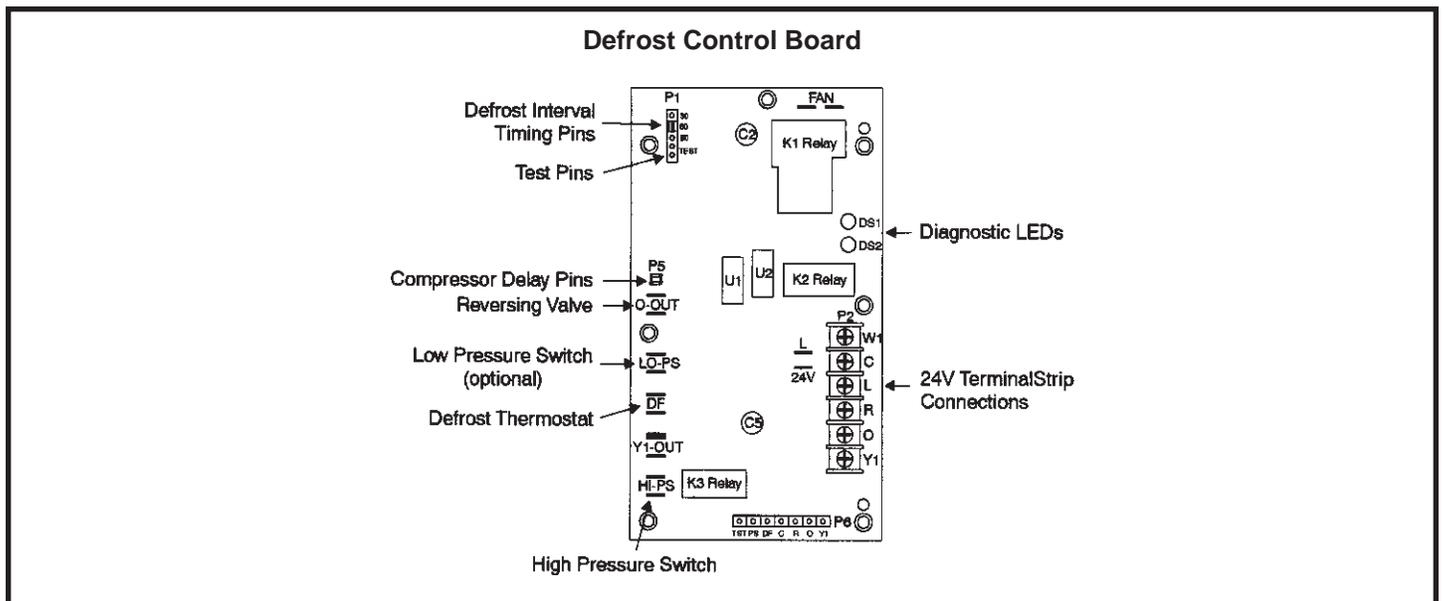


Figure 8

NOTE: If both first and second stage heating demand are satisfied at the same time or if the unit is operating in emergency heat mode and the demand is satisfied, the heat pump and heaters are de-energized while the blower will continue to operate for an additional 2 minutes before stopping.

Defrost System

The defrost system includes two components: the defrost thermostat and the defrost control.

Defrost Thermostat

The defrost thermostat is located on the liquid line between the check/expansion valve and the distributor. When the defrost thermostat senses 42°F or cooler, the thermostat contacts close and send a signal to the defrost control board to start the defrost timing. It also terminates defrost when the liquid line warms up to 70°F.

Defrost Control

The defrost control board includes the combined functions of time/temperature defrost control, defrost relay, diagnostic LEDs and terminal strip for field wiring connections (see Figure 8).

The control provides automatic switching from normal heating operation to defrost mode and back. During the compressor cycle (call for defrost), the control accumulates compressor run time at 30, 60, 90 minute field-adjustable intervals. If the defrost thermostat is closed when the selected compressor run time interval ends, the defrost relay is energized and the defrost begins.

Defrost Control Timing Pins

Each timing pin selection provides a different accumulated compressor run time period during one thermostat run cycle. This time period must occur before a defrost cycle is initiated. The defrost interval can be adjusted to 30 (T1), 90 (T2), or 90 (T3) minutes. The defrost timing jumper is factory installed to provide a 90-minute defrost interval. If the timing selector jumper is not in place, the control defaults to a 90-minute defrost interval. The maximum defrost period is 14 minutes and cannot be adjusted. For optimal system performance, move the jumper to the 60 minute defrost interval.

A test option is provided for troubleshooting. The test mode may be started any time the unit is in the heating mode and the defrost thermostat is closed or jumpered. If the jumper is in the TEST position at power up, the control will ignore the test pins. When the jumper is placed across the TEST pins for 2 seconds, the control will enter the defrost mode. If the jumper is removed before an additional 5-second period has elapsed (7 seconds total), the unit will remain in defrost mode until the defrost thermostat opens or 14 minutes have passed. If the jumper is not removed until after the additional 5-second period has elapsed, the defrost will terminate and the test option will not function again until the jumper is removed and reapplied.

Defrost Control Board Diagnostic LEDs		
Mode	Green LED (DS2)	Red LED (DS1)
No Power to Board	Off	Off
Normal Operation/ Power to Board	Simultaneous Slow Flash	
Anti-Short Cycle Lockout	Alternating Slow Flash	
Low Pressure Switch Fault	Off	Slow Flash
Low Pressure Switch Lockout	Off	On
High Pressure Switch Fault	Slow Flash	Off
High Pressure Switch Lockout	On	Off

Table 3

Compressor Delay

The defrost board has a field-selectable function to reduce occasional sounds that may occur while the unit is cycling in and out of the defrost mode. The compressor will be cycled off for 30 seconds going in and out of the defrost mode when the compressor delay jumper is installed. For optimal energy performance, remove the delay jumper.

NOTE: The 30-second “off” cycle is not functional when jumpering the TEST pins.

Time Delay

The timed-off delay is 5 minutes long. The delay helps to protect the compressor from short cycling in case the power to the unit is interrupted or a pressure switch opens. The delay is bypassed by placing the timer select jumper across the TEST pins for 0.5 seconds.

Pressure Switch Circuit

High and low pressure switches are connected to the defrost control board on heat pump models (see Figure 8 on page 8). Air conditioning models have a high pressure switch installed in line with compressor contactor coil.

During a single demand cycle, the defrost control will lock out the unit after the fifth time that the circuit is interrupted by any pressure switch wired to the control board. In addition, the diagnostic LEDs will indicate a locked-out pressure switch after the fifth occurrence of an open pressure switch (see Table 3).

The unit will remain locked out until power to the board is interrupted, then re-established, or until the jumper is applied to the TEST pins for 0.5 seconds.

NOTE: The defrost control board ignores input from the low pressure switch terminals as follows:

- During the TEST mode
- During the defrost cycle
- During the 90-second start-up period
- For the first 90 seconds each time the reversing valve switches heat/cool modes

If the TEST pins are jumpered and the 5-minute delay is being bypassed, the LO PS terminal signal is not ignored during the 90-second start-up period.

Diagnostic LEDs

The defrost board uses two LEDs for diagnostics. The LEDs flash a specific sequence according to the condition as shown in Table 3.

System Performance (RCE, RHP Models)

This equipment is a self contained, factory optimized refrigerant system, and should require no adjustments when properly installed. If however unit performance is questioned, perform the following checks.

Insure unit is installed per manufacturer's instructions and that line voltage and air flows are correct. Refer to Table 4 for proper superheat values. Check super heat settings by measuring pressure at the suction line service port. For TXV systems, measure pressure at the liquid service port. Take line temperature within 2 inches of service port connection to its main tube. If unit superheat/subcooling varies by more than table allowance, check internal seals, service panels and duct work for air leaks, as well as restrictions and blower speed settings. If unit performance remains questionable, remove charge, evacuate to 500 Microns, and weigh in refrigerant to name plate charge. It is critical that the exact charge is re-installed. Failure to comply will compromise system performance. If unit performance is still questionable, check for refrigerant related problems such as, blocked coil or circuits, malfunctioning metering devices or other system components.

Suction Superheat	
Outdoor Unit Model	Suction Superheat +/- 3° @ AHRI Conditions 82° OD 80° IDDB/67° IDWB
RHP13(*)36	16
RHP13(*)48	19
RHP13(*)60	16
RCE13(*)36	17
RCE13(*)48	15
RCE13(*)60	15

* These letters will vary according to unit series.

Table 4

MAINTENANCE

WARNING

Before performing maintenance operations on the system, shut off all electrical power to the unit. Turn off accessory heater power switch if applicable. Electrical shock could cause personal injury or death.

Periodic inspection and maintenance normally consists of changing or cleaning the filters and cleaning the outdoor coil. On occasion, other components may also require cleaning.

Filters

Filters are not supplied with the unit. Inspect once a month. Replace disposable or clean permanent type as necessary.

Do not replace permanent type with disposable.

Motors

Indoor and outdoor fan and vent motors are permanently lubricated and require no maintenance.

Some models may be equipped with a permanent magnet, constant torque indoor blower motor. These motors remain energized and are controlled by 24V signals. For high static applications, use tap 3 for cooling speed and tap 5 for heating speed. Refer to the heater install label for limitations to blower tap selection on heating speeds.

Outdoor Coil

Dirt and debris should not be allowed to accumulate on the outdoor coil surface or other parts in the air circuit. Cleaning should be as often as necessary to keep the coil clean. Use a brush, vacuum cleaner attachment, or other suitable means. If water is used to clean the coil, be sure the power to unit is shut off prior to cleaning. **Care should be used when cleaning the coil so that the coil fins are not damaged.**

230V 3 PHASE HEAT PUMP

CONNECTION DIAGRAM, HEAT PUMP - PACKAGED 230V, 3 PHASE

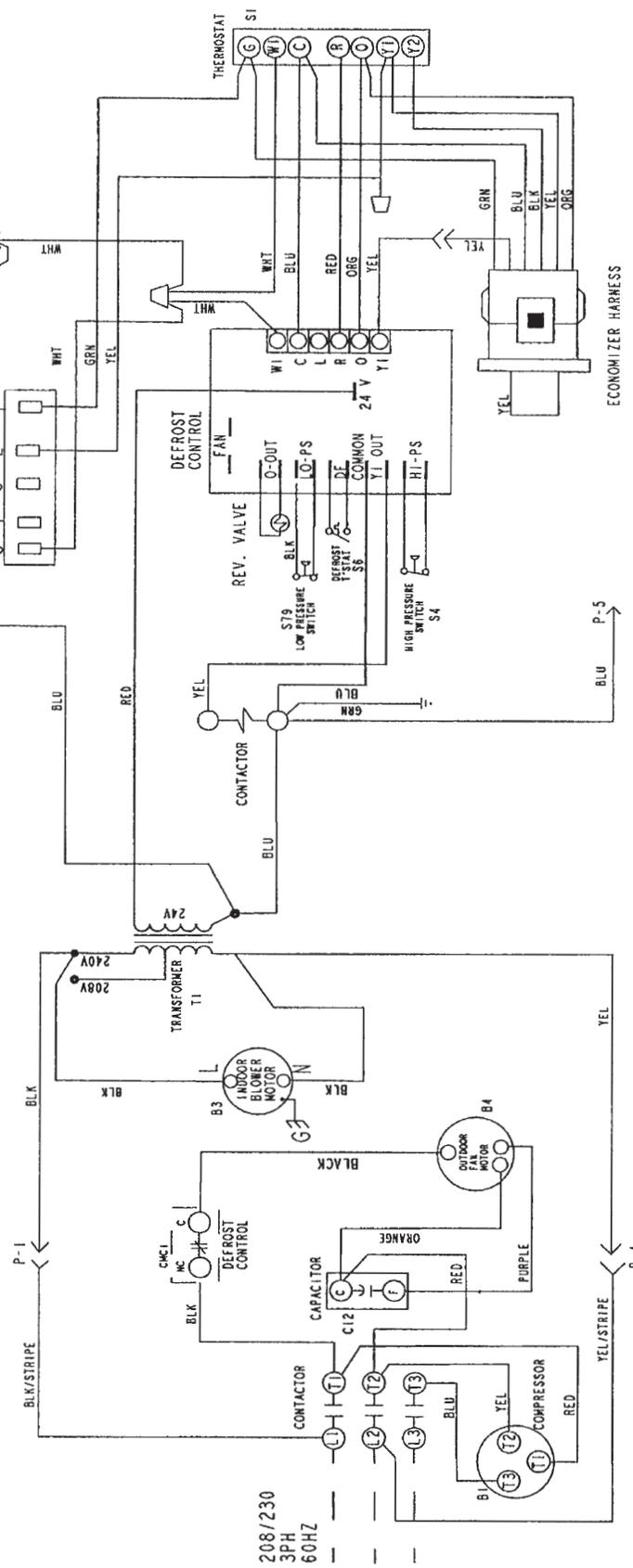
DIAGNOSTIC DISPLAY

Description	DS1 (GREEN)	DS2 (RED)
No Power to Control	OFF	OFF
Normal Operation / Power to Control	Simultaneous Slow Flash	
Anti-Short Cycle Lockout	Alternate Slow Flash	
Low Pressure Switch Fault	OFF	Slow Flash
Low Pressure Switch Lockout	OFF	ON
High Pressure Switch Fault	Slow Flash	OFF
High Pressure Switch Lockout	ON	OFF

WARNING-
IF ANY OF THE ORIGINAL
ELECTRIC SHOCK HAZARD UNIT
WIRE IS REPLACED, THE
SAME SIZE AND TYPE WIRE
MUST BE USED.
USE COPPER CONDUCTOR
ONLY, MIN 15 C WIRE

NOTE: TAP 1 FOR FAN ONLY
TAP 2 FOR COOLING
TAP 3 FOR HIGH STATIC COOLING
TAP 4 AND TAPS FOR ELECTRIC HEAT- REFER TO HEATING LABEL
Note: Because the Pressure Switches are monitored only when "Y1" (input) is active, the code for pressure switch open will not be seen when "Y1" is off. Instead, the "Normal Operation" or "Anti-Short Cycle" code will be seen.
Also: when a pressure switch opens and causes a short cycle lockout, the pressure switch-open code will be seen until it closes. Then the short cycle lockout code will flash unless it has already expired.

LINE VOLTAGE FIELD INSTALLED
WIRING CAN BE USED TO STAGE
15 & 20KW MODELS
5, 7, 5 & LOWW HEATER ACCESSORIES
FUNCTION OFF W/ ONLY.
P-6 P-3



ECONOMIZER HARNESS

537362-01

Figure 9

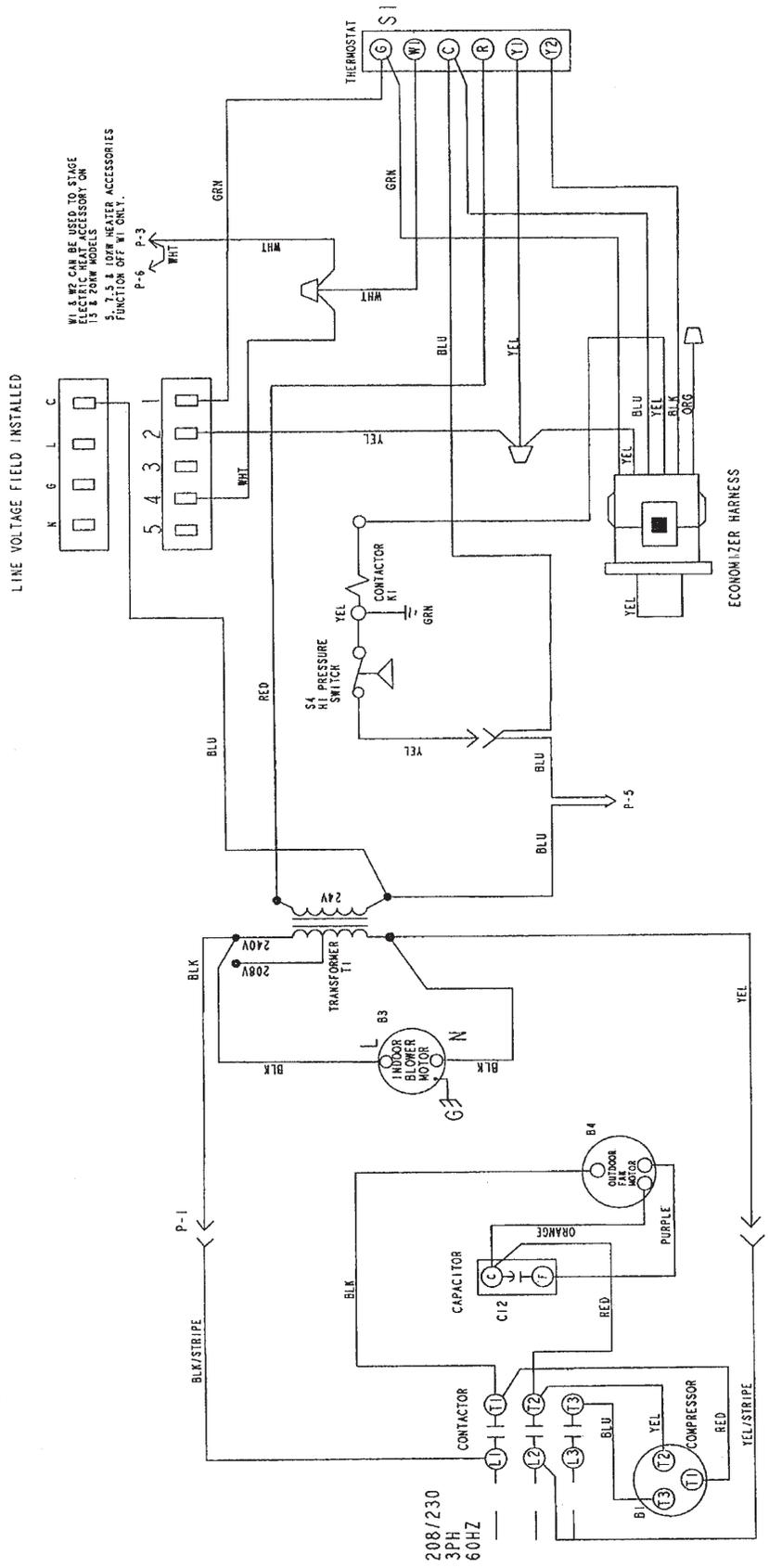
230V 3 PHASE ELECTRIC/ELECTRIC

NOTE: IF ANY OF THE ORIGINAL WIRE IS REPLACED THE SAME SIZE AND TYPE WIRE MUST BE USED. USE COPPER CONDUCTOR ONLY, MIN 15°C WIRE

WARNING - ELECTRIC SHOCK HAZARD. UNIT MUST BE GROUNDED IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.

CONNECTION DIAGRAM, ELECTRIC/ELECTRIC - PACKAGED 230V, 3 PHASE

NOTE: TAP 1 FOR FAN ONLY
TAP 2 FOR COOLING
TAP 3 FOR HIGH STATIC COOLING
TAP 4 AND TAPS FOR ELECTRIC HEAT- REFER TO HEATING LABEL



537363-01

Figure 10

460V 3 PHASE HEAT PUMP

CONNECTION DIAGRAM, HEAT PUMP - PACKAGED 460V, 3 PHASE

DIAGNOSTIC CODES FOR DEFROST CONTROL LEDS

(See instructions or markings on System Diagnostic Module for codes of System Diagnostic Module)

Description	DS1 (GREEN)	DS2 (RED)
No Power to Control	OFF	OFF
Normal Operation / Power to Control	ON	OFF
Anti-Short Cycle Lockout	Simultaneous Slow Flash	Simultaneous Slow Flash
Low Pressure Switch Fault	Alternate Slow Flash	Alternate Slow Flash
High Pressure Switch Fault	OFF	ON
Low Pressure Switch Lockout	OFF	ON
High Pressure Switch Lockout	ON	OFF

WARNING-
ELECTRIC SHOCK HAZARD. UNIT MUST BE GROUNDED IN ACCORDANCE
WITH NATIONAL AND LOCAL CODES.

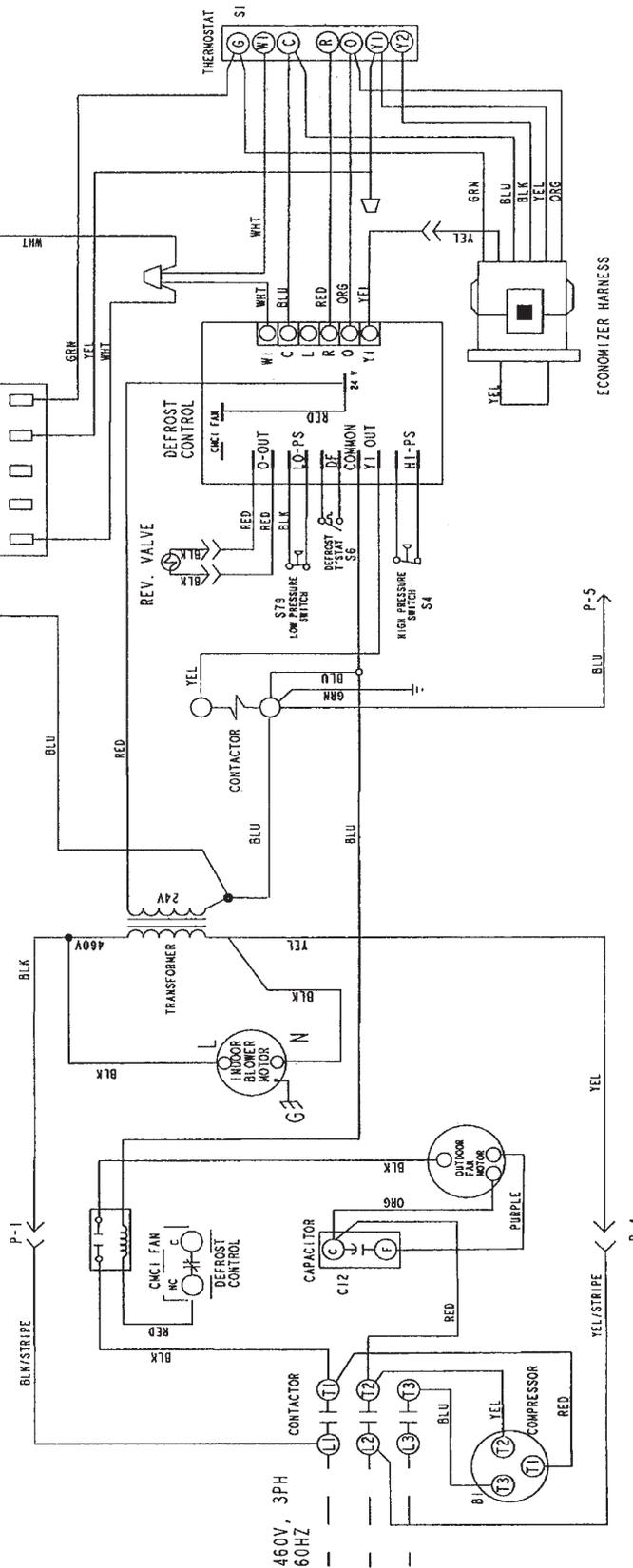
LINE VOLTAGE FIELD INSTALLED

W1 & W2 CAN BE USED TO STAGE
ELECTRIC HEATER ACCESSORIES
ON
15 & 20kW MODELS
5, 7.5 & 10kW HEATER ACCESSORIES
FUNCTION OFF W1 ONLY.

NOTES: TAP 1 FOR FAN ONLY
TAP 2 FOR COOLING
TAP 3 FOR HIGH STATIC COOLING
TAP 4 AND TAPS FOR ELECTRIC HEAT- REFER TO HEATING LABEL
Because the Pressure Switches are monitored only when "Y1" (Input) is active, the code
for pressure switch open will not be seen when "Y1" is off. Instead, the "Normal Operation" or
"Anti Short Cycle" code will be seen.

Also, when a pressure switch opens and causes a short cycle lockout, the pressure switch-open
code will be seen until it closes, then the short cycle lockout code will flash unless it has already
expired.

IF ANY OF THE ORIGINAL WIRE IS REPLACED THE
SAME SIZE AND TYPE WIRE MUST BE USED.
USE COPPER CONDUCTOR ONLY. MIN 15°C WIRE



537374-01

Figure 11

460V 3 PHASE ELECTRIC/ELECTRIC

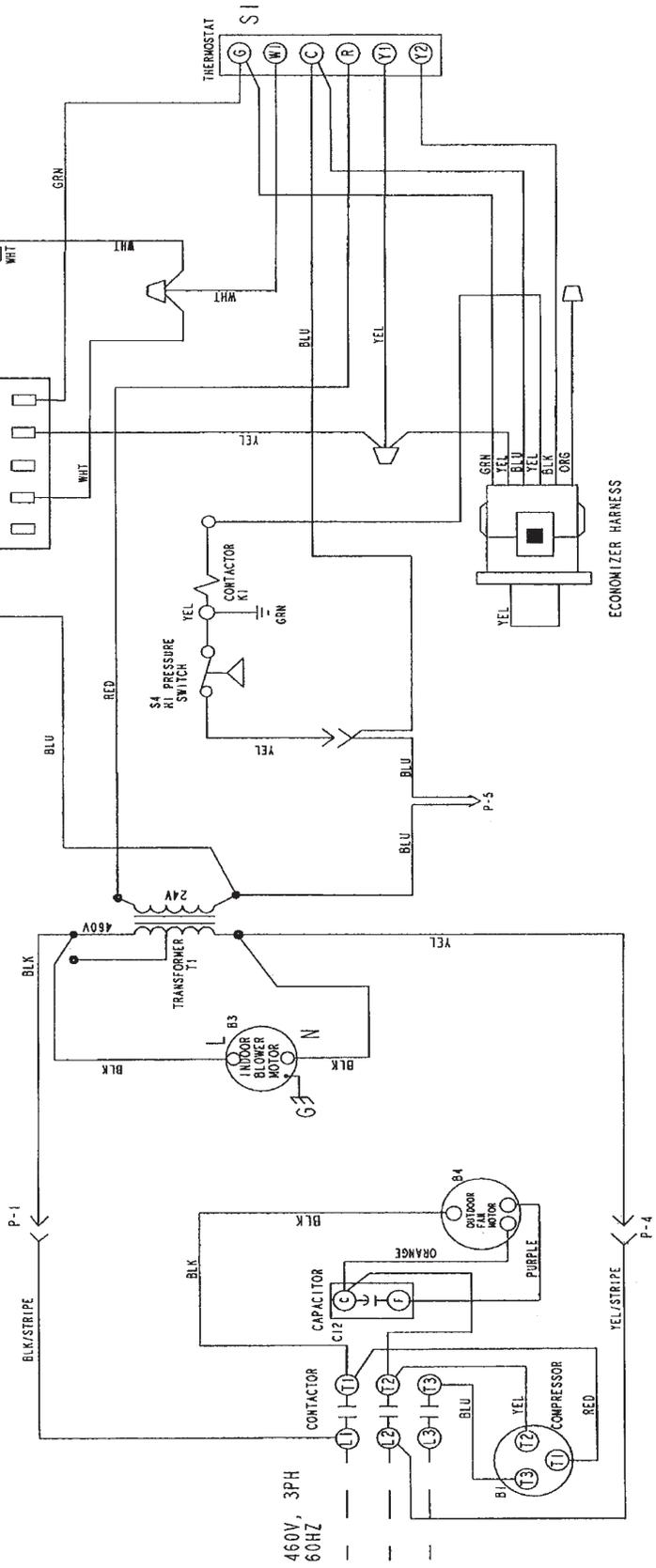
CONNECTION DIAGRAM, ELECTRIC/ELECTRIC - PACKAGED 460V, 3 PH
 NOTES: TAP 1 FOR FAN ONLY
 TAP 2 FOR COOLING
 TAP 3 FOR HIGH STATIC COOLING
 TAP 4 AND TAP 5 FOR ELECTRIC HEAT- REFER TO HEATING LABEL

WARNING: ELECTRIC SHOCK HAZARD.
 UNIT MUST BE GROUNDED IN ACCORDANCE
 WITH NATIONAL AND LOCAL CODES.

LINE VOLTAGE FIELD INSTALLED

IF ANY OF THE ORIGINAL WIRE IS REPLACED THE
 SAME SIZE AND TYPE WIRE MUST BE USED.
 USE COPPER CONDUCTOR ONLY, MIN 75°C WIRE

W1 & W2 CAN BE USED TO STAGE
 ELECTRIC HEAT ACCESSORY ON
 15 & 20kW MODELS
 5, 7.5 & 10kW HEATER ACCESSORIES
 FUNCTION OFF W1 ONLY.



537375-01

Figure 12

EQUIPMENT LIMITED WARRANTY

APPLIES IN U.S.A. AND CANADA ONLY

FAILURE TO MAINTAIN YOUR EQUIPMENT WILL VOID THIS WARRANTY.

COVERED EQUIPMENT

The following heating and cooling equipment is covered by the Limited Warranty:

Oil Furnaces: LG14.

Unit/Duct Heaters: LD24 (all units), LF24 and TUA (100,000 to 400,000 btuh units).

Evaporator Coils: C17.

Air Handlers: ACBX32, CB17, CBH17, TAA.

Condensing Units: 4SCU13LC, TSA.

Heat Pumps: 4SHP13LC, TPA.

Packaged Equipment: KGA, KGA, KHA, TCA, TGA, THA, RGE13, RHP13, RCE13.

Electric Heat Sections: AECB29, ECH16, EH17, ECH24.

ONE (1) YEAR COVERAGE -- ALL APPLICATIONS

The covered equipment and covered components are warranted by the manufacturer for a period of one (1) year from the date of the original unit installation, when installed and operated in accordance with the manufacturer's recommendations. If, during this period, a covered component fails because of a manufacturing defect, the manufacturer will provide a free replacement part to the owner. The owner must pay shipping charges and all other costs of warranty service.

EXTENDED COVERAGE

This limited warranty provides extended coverage on the components outlined below. The extended warranty coverage begins with the date of the original unit installation and represents the total warranty period for the specific component.

Heat Exchangers:

KGA and TGA (Aluminized -- All applications) -- Ten (10) years.

KGA and TGA (Stainless -- All applications) -- Fifteen (15) years.

RGE13, RHP13 and RCE13 -- Ten (10) years.

LF24 and TUA (Aluminized -- All applications) -- Ten (10) years.

LF24 and TUA (Stainless -- All applications) -- Fifteen (15) years.

LD24 (Aluminized -- All applications) -- Two (2) years.

LD24 (Stainless -- All applications) -- Five (5) years.

LG14 (All applications) -- Five (5) years.

Burners: LG14 -- Three (3) years.

Compressors: 4SCU13LC, 4SHP13LC -- Five (5) years.

TSA, TPA -- Five (5) years.

KCA, KGA, KHA, TCA, TGA, THA -- Five (5) years.

RGE13, RHP13, RCE13 -- Five (5) years.

NOTE - If the date of original installation cannot be verified, the warranty period will be deemed to begin six (6) months after the date of manufacture.

COMPONENT AVAILABILITY

In the event that a component covered by this warranty is no longer available, the manufacturer will, at its option, provide a free suitable substitute component or allow the owner to purchase an equivalent new unit at a reduced price of 20 percent of the list price in effect on the date of the failure. The owner must pay shipping charges and all other costs of warranty service.

EXCLUDED COMPONENTS

The following components are not protected by this warranty: cabinets, cabinet pieces, air filters, driers, refrigerant, belts, wiring, fuses and unit accessories.

REPAIRS

All repairs of covered components must be made with authorized service parts by a licensed professional service contractor (or equivalent).

CARE OF EQUIPMENT

This new unit must be properly installed, operated and maintained by a licensed professional installer (or equivalent) or service agency in accordance with the unit installation, operation and maintenance instructions provided with each unit. Failure to provide maintenance per the manufacturer's instructions will void this warranty. The owner may be asked to provide written documentation of annual and other periodic preventive maintenance.

WARRANTY PROCEDURE

When warranty parts are required:

- 1 - Be prepared to furnish the following information:
 - a - Complete model and serial number.
 - b - Proof of required periodic maintenance, installation date and location if warranty claim.
 - c - An accurate description of the problem.
- 2 - Call your local installing contractor.
- 3 - If the installing contractor is unable to provide warranty parts, check the yellow pages for another contractor in your area. If you are unable to secure assistance from a contractor, contact the appropriate manufacturer listed below:

Lennox Industries Inc. Allied Air Enterprises
P.O. Box 799900 215 Metropolitan Drive
Dallas, TX 75379-9900 West Columbia, SC 29170
1-800-9LENNOX 1-800-448-5872

WARRANTY LIMITATIONS

- 1 - The manufacturer will not pay labor involved in diagnostic calls, or in removing, repairing, servicing, or replacing parts. Such costs may be covered by a separate warranty provided by the installing contractor.
- 2 - This warranty is void if the covered equipment is removed from the original installation site.
- 3 - This warranty does not cover damage or defect resulting from:
 - a - Flood, wind, fire, lightning, mold, or installation and operation in a corrosive atmosphere, or otherwise in contact with corrosive materials (chlorine, fluorine, salt, recycled waste water, urine, fertilizers, or other damaging substances or chemicals).
 - b - Accident, neglect, or unreasonable use or operation of the equipment, including operation of electrical equipment at voltages other than the range specified on the unit nameplate (includes damages caused by brownouts), or reverse rotation of compressors or motors due to improper phasing.
 - c - Modification, change or alteration of the equipment, except as directed in writing by the manufacturer.
 - d - Operation with system components (indoor unit, outdoor unit and refrigerant control devices) which do not match or meet the specifications recommended by the manufacturer.

- e - Operation of packaged gas/electric units (equipped with aluminumized heat exchanger) with mixed air temperatures of less than 45°F (7°C).
- f - Operation of furnaces with return air temperatures of less than 60°F (16°C) or operation of a furnace field-installed downstream from a cooling coil.
- g - Use of contaminated or alternate refrigerant.

The installation of replacement parts under terms of this warranty will not extend the original warranty period.

The manufacturer makes no express warranties other than the warranty specified above. All implied warranties, including the implied warranty of merchantability and fitness for a particular purpose, are excluded to the extent legally permissible. Should such exclusion or limitation of the warranty be unenforceable, such implied warranties are in any event limited to a period of one (1) year. Liability for incidental and consequential damages is excluded. Some states do not allow limitations on the duration of an implied warranty or the exclusion or limitation of incidental or consequential damages, so the limitations or exclusions may not apply to you.

The manufacturer will not pay electricity or fuel costs, or increases in electricity or fuel costs, for any reason whatsoever, including additional or unusual use of supplemental electric heat. This warranty does not cover lodging expenses.

The manufacturer shall not be liable for any default or delay in performance under this warranty caused by any contingency beyond its control.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

NOTE TO CUSTOMER

Please complete information below and retain this warranty for your records and future reference.

Unit Model Number: _____ Date: _____
Serial Number: _____ Phone: _____
Installing Contractor: _____

©2011

Litho U.S.A.

FORM W-024-L3 -- 9/1/2011
Supersedes 6/1/2009

