

# INSTALLATION INSTRUCTION

## 0°F LOW AMBIENT ACCESSORY MODELS 2LA04704225, 4346 & 4458 FOR 208/230, 460 & 575 VOLT APPLICATIONS

Supersedes: 035-16035-001 (0501)

035-16035-002-A-0504

### FOR 15 & 20 TON SPLIT-SYSTEM CONDENSING UNITS MODELS H3CE180, 240 & HCHB180, 240 H4CE180, 240 & HDHB180, 240

#### GENERAL

Standard split-system condensing units are designed to operate at ambient temperatures down to 35°F. To operate safely at ambient temperatures down to 0°F, a low ambient accessory will be required.

This instruction provides all the necessary information to properly field-install a low ambient accessory on the condensing units listed above. Components that are supplied in the respective accessory are listed in Table 2.

**CAUTION:** Before starting the installation, check the voltage of the respective kit to be sure it matches the voltage of the unit.

Refer to Table 1 for application data.

WIRE IN ACCORDANCE WITH ALL LOCAL AND N.E.C. CLASS 1 WIRING REQUIREMENTS.

**TABLE 1 - APPLICATION DATA**

ACCESSORY MODEL NO.	UNIT SIZE (TONS)	LINE VOLTAGE (30-60 HZ)
2LA04704225	15-20	208/230
2LA04704346	15-20	460
2LA4704458	15-20	575

**TABLE 2 - PARTS SUPPLIED WITH ACCESSORY**

MODEL	QTY	DESCRIPTION
2LA04704225	2	Motor, 1 hp 208-230 V
	2	Johnson Controls P66
	1	Mounting Bracket
	1	Installer's Guide
	1	Wiring Label 15 Ton 230/460
	1	Wiring Label 20 Ton 230
<b>Bagged for Field Installation</b>		
2LA04704225	3	Bushing, 1-3/8"
	6	Wire Tie
	9	Screw, #10
	1	Schrader Tee
	1	Seal Cap

*Summary: Kit has two motors, two control assemblies, mounting bracket, Installer's Guide, wiring labels, and bag of parts listed above.*

MODEL	QTY	DESCRIPTION
2LA04704346	2	Motor, 1 hp 460 V
	2	Johnson Controls P66
	1	Mounting Bracket
	1	Installer's Guide
	1	Wiring Label 15 Ton 230/460
	1	Wiring Label 20 Ton 460

#### Bagged for Field Installation

2LA04704346	3	Bushing, 1-3/8"
	6	Wire Tie
	9	Screw, #10
	1	Schrader Tee
	1	Seal Cap

*Summary: Kit has two motors, two control assemblies, mounting bracket, Installer's Guide, wiring labels, and bag of parts listed above.*

MODEL	QTY	DESCRIPTION
2LA04704458	2	Motor, 1 hp 460 V
	1	Transformer 575/460
	1	Wiring Label 15 Ton 575
	1	Wiring Label 20 Ton 575
	2	Johnson Controls P66
	1	Mounting Bracket
	1	Installer's Guide

#### Bagged for Field Installation

2LA04704458	4	Bushing, 1-3/8"
	6	Wire Tie
	9	Screw, #10
	1	Wire Nut (c063)
	1	Schrader Tee
	1	Seal Cap

*Summary: Kit has two motors, two control assemblies, one transformer, mounting bracket, Installer's Guide, wiring labels, and bag of parts listed above.*

#### INSTALLATION

A separate control is required for each outdoor fan motor. On 575V accessories, one buck/boost transformer powers both outdoor fan motors to allow the use of 460V motors in a 575V unit.

1. Disconnect the electrical power to the unit.
2. Remove all access panels and fan grilles.

## OUTDOOR FAN MOTORS

1. Disconnect all outdoor fan motor leads and remove both motors through the top of the unit.
2. Install the motor provided in this accessory. The projections on the sides of the motors should rest on top of the motor mount band. The top of the fan blade should be about an inch below the top of the unit top cover.
3. Use wire ties to route the motor leads along the motor mount arm. Allow a drip loop in the motor leads at the motor so that the leads enter the motor upward. The drip loop prevents water from traveling along the wire into the motor.

## MOUNTING CONTROLS

1. Mount the head pressure control with the PURPLE wire labeled 700 on the outside of the unit on the front center post. Use the mounting bracket to keep the control out of the way of the access panels. Mount the control with the PURPLE with labeled 702 on the right front corner post.
2. Remove both knock outs below each control.
3. Insert a plastic bushing in the center partition separating the two fans to route the capillary tubes from the controls to the compressors.
4. Insert the plastic bushing in the hole closest to the control. Insert the capillary tube through the plastic bushing and tighten the flare nut onto the compressor discharge line flare fitting near the compressor head. install the left capillary tube on the left compressor and the right capillary tube on the right compressor.
5. Insert the wiring through the second hole below the control and secure the conduit.
6. on 575V units, remove the knock out in the lower portion of the right front corner post and install a plastic bushing. Install the buck/boost transformer on the right front corner post, inserting the wires through the bushing.

## WIRING

**H3CE180A25, H3CE180A46 & H3CE240A46  
H4CE180A25, H4CE180A46 & H4CE240A46  
HDHB-T180A, HDHB-W180A, HDHB-W240A**

1. Attach the BLACK outdoor fan motor 1 wire to 3M contactor terminal T1. Attach the BROWN outdoor fan motor 1 wire to one side of capacitor RC1. Attach the PURPLE outdoor fan motor 1 wire to the other side of capacitor RC1.
2. Attach the BLACK outdoor fan motor 2 wire to 3M contactor terminal T1. Attach the BROWN outdoor fan motor 2 wire to one side of capacitor RC2. Attach the PURPLE outdoor fan motor 2 wire to the other side of capacitor RC2.

3. Remove and discard wire 132 YELLOW. Replace it with 132 BLACK from terminal board TB1 terminal L1 to 3M contactor terminal L2. *This will keep the outdoor fan motor on the same two legs of the three phase power supply as transformer 2T, which supplies each P66 with control power.*

*CAUTION: The outdoor fan motor and the 24 volt transformer supplying the P66 must both be wired to the same two legs of the three phase power supply to the unit.*

4. Connect wires 701 BLUE and 703 BLUE to contactor 3M terminal T2.
5. Attach wire 700 PURPLE from the left P66 to the RC1 capacitor terminal now being used by wire 129 BLUE. Remove and discard wire 129 BLUE.
6. Attach wire 702 PURPLE to the RC2 capacitor terminal now being used by wire 130 YELLOW. Remove wire and discard wire 130 YELLOW.
7. Attach the 704 ORANGE and 706 ORANGE wires to terminal R2 of relay 3TR, which is shared by wire 219 BLACK.
8. Attach both P66 BROWN wires to the common terminal board TB2.
9. Screw the ring terminals of both P66 GREEN ground wires under the screws in the control box used to ground the outdoor fan motors.
10. Remove the condenser fan cycling switch (PSC) and wiring. Install jumper wire 708 ORANGE from 1M to 3M.
11. Compare the completed wiring with the label supplied with the kit. Confirm all terminals are tight. Close all covers and restore power to the unit.

## WIRING

**H3CE240A25, H4CE240A25, HDHB-T240A**

1. Attach the BLACK outdoor fan motor 1 wire to 1FU fuse. Remove wire 136 BLACK from the 1M contactor and attach it from fuse 1FU to 3M contactor terminal T1. Attach the BROWN outdoor fan motor 1 wire to one side of capacitor RC1. Attach the PURPLE outdoor fan motor 1 wire to the other side of capacitor RC1.
2. Attach the BLACK outdoor fan motor 2 wire to 3FU fuse. Attach the BROWN outdoor fan motor 2 wire to one side of capacitor RC2. Attach the PURPLE outdoor fan motor 2 wire to the other side of capacitor RC2.

Remove and discard wire 132 YELLOW. Replace it with 132 BLACK from terminal board TB1 terminal L1 to 3M contactor terminal L2. *This will keep the outdoor fan motor on the same two legs of the three phase power supply as transformer 2T, which supplies each P66 with control power.*

*CAUTION: The outdoor fan motor and the 24 volt transformer supplying the P66 must both be wired to the same two legs of the three phase power supply to the unit.*

4. Remove and discard wire 135 BLUE. Connect wire 701 BLUE to fuse 2FU. Remove and discard wire 133 YELLOW. Connect wire 703 BLUE to fuse 4FU.
5. Attach wire 700 PURPLE to the capacitor RC1 terminal shared by the purple motor wire. Remove wire 129 BLUE from contactor 1M and connect it to contactor 3M-2 terminal T2.
6. Attach wire 702 PURPLE to the capacitor RC2 terminal shared by the purple motor wire.
7. Attach the 704 ORANGE and 706 ORANGE wires to terminal R2 of relay 3TR, which is shared by wire 219 BLACK.
8. Attach the both P66 BROWN wires to the common terminal board TB2.
9. Screw the ring terminals of both P66 GREEN ground wires under the screws in the control box used to ground the outdoor fan motors.
10. Remove the condenser fan cycling switch (PSC) and wiring. Install jumper wire 708 ORANGE from 1M to 3M.
11. Compare the completed wiring with the label supplied with the kit. Confirm all terminals are tight. Close all covers and restore power to the unit.

#### **WIRING**

##### **H3CE180A58 and H3CE240A58**

##### **H4CE180A58 and H4CE240A58**

1. Attach the BLACK outdoor fan motor 1 wire to 3M contactor terminal T1. Attach the BROWN outdoor fan motor 1 wire to one side of capacitor RC1. Attach the PURPLE outdoor fan motor 1 wire to the other side of capacitor RC1.
2. Attach the BLACK outdoor fan motor 2 wire to 3M contactor terminal T1. Attach the BROWN outdoor fan motor 2 wire to one side of capacitor RC2. Attach the PURPLE outdoor fan motor 2 wire to the other side of capacitor RC2.
3. Attach wire 709 of the buck/boost transformer to 3M contactor terminal T2.

Remove and discard wire 132 YELLOW. Replace it with 132 BLACK from terminal board TB1 terminal L1 to 3M contactor terminal L2. *This will keep the outdoor fan motor on the same two legs of the three phase power supply as transformer 2T, which supplies each P66 with control power.*

*CAUTION: The outdoor fan motor and the 24 volt transformer supplying the P66 must both be wired to the same two legs of the three phase power supply to the unit.*

5. Attach wire 710 of the buck/boost transformer to 3M contactor terminal T1.
6. Use a wire nut to join wires 701 BLUE and 703 BLUE from the P66's to 711 of the transformer. Keep all electrical joints inside the transformer enclosure.
7. Attach wire 700 PURPLE from the left P66 to the RC1 capacitor terminal now being used by wire 129 BLUE. Remove and discard wire 129 BLUE.
8. Attach wire 702 PURPLE to the RC2 capacitor terminal now being used by wire 130 YELLOW. Remove wire and discard wire 130 YELLOW.
9. Attach the 704 ORANGE and 706 ORANGE wires to terminal R2 of relay 3TR, which is shared by wire 219 BLACK.
10. Attach the both P66 BROWN wires to the common terminal board TB2.
11. Screw the ring terminals of all accessory GREEN ground wires under the screws in the control box used to ground the outdoor fan motors.
12. Remove the condenser fan cycling switch (PSC) and wiring. Install jumper wire 708 ORANGE from 1M to 3M.

#### **OPERATION**

The P66 varies the outdoor fan motor speed to maintain higher head pressure in low ambient temperatures. It has a 170-230 psig operating range. If the head pressure is below the operating range, the motors remain off. As the pressure rises through the operating range, the output voltage to the motors varies from a start voltage of 40% to 90% of line voltage at the top of the range.

As the pressure rises above the operating range, the output voltage increases at a lesser rate to a maximum of 97% of line voltage at 260 psig.

# NOTES