ACCESSORY KIT INSTALLATION INSTRUCTIONS

Generation 2 Electric Heat Accessory
10, 16, 20, 26, 32, 36, 50 & 52kW
For Split-System R-410A Air Handling Units Both Air Conditioners and Heat Pumps
7-1/2, 10, 15 & 20 Tons

Electric Heater Model	Unit Model
2HJ0470 (10/16/26/36) 25	NC/ND/NL/NM 090 thru 120
2HJ0470 (10/16//26/36) 46	NH/NJ/NS/NW -07 thru -10
2HJ0470 (10/16/26/36) 58	NH/NJ/NS/NW T07 thru T10 J07 thru 10 NC/ND/NL/NM
2HN0460 (10/16/26/36/50) 25	NC/ND/NL/NM 180
2HN0460 (10/16/26/36/50) 46	NH/NJ/NS/NW -15
2HN0460 (10/16/26/36/50) 58	NH/NJ/NS/NW T15 J15NC/ND/NL/NM
2HN0460 (20/32/52) 25	NC/ND/NL/NM 240
2HN0460 (20/32/52) 46	NH/NJ/NS/NW -20
2HN0460 (20/32/52) 58	NH/NJ/NS/NW T20 J20NC/ND/NL/NM

GENERAL

This instruction covers the installation and operation of these electric heat accessories.

Every electric heat accessory is shipped completely assembled and pre-wired with all of the power and control wiring that will be required to interconnect this accessory with the basic unit. Refer to Table 1 for accessory model numbers and for capacity ratings based on the voltage of the power supply and the mode of operation.

All wiring connections should be made in accordance with the N.E.C. and C.E.C.

These electric heaters can be installed on either vertical or horizontal units, on units with ductwork, or on free standing units.

NOTE: Electric Heat is not CSA approved with the Supply Air Plenum Accessory.

Split-system units equipped with an electric heat accessory will require only one power supply for both the heater elements and the supply air blower motor. Refer to Figure 1 for the locations of both the power and the control wire access openings and to the following instructions for routing and connecting the wires.

All heat pump systems and all air conditioning systems with one of these electric heat accessories will require an electric heat compatible thermostat.

NOTE: Heat pump systems with or without electric heat use the same thermostats. Air conditioning systems with one of these electric heat accessories will require a thermostat that can cycle the supply air blower motor with a call for heating as well as a call for cooling.

When an indoor unit is equipped with an electric heater, provide at least 1-inch clearance to combustible material around heater cabinet, and supply air ducts up to 3 feet from the unit.

REFERENCE

Refer to one of the appropriate air handling unit instructions for additional information on the installation of the basic unit, for the application limitations of the total system and for the minimum clearance requirements of the air handling unit.

TABLE 1: HEATING CAPACITY

Air Handler Tonnage	Heater Model	Heating Capacity[1]				
		Nominal Ratings	With A/C		With Heat Pump	
			Stage 1	Stage 2	Supplemental	Standby and Emergency
		kW	kW	kW	kW	kW
7.5, 10 Ton	2HJ04701025,46	10	10	-	10	10
	2HJ04701625,46	16	8	8	8	16
	2HJ04702625,46	26	13	13	13	26
	2HJ04703625,46	36	12	24	12	36
	2HJ04701058	10	10	-	10	10
	2HJ04701658	16	8	8	8	16
	2HJ04702658	26	13	13	13	26
	2HJ04703658	36	12	24	12	36
15 Ton	2HN04601025,46	10	10	-	10	10
	2HN04601625,46	16	8	8	8	16
	2HN04602625,46	26	13	13	13	26
	2HN04603625,46	36	12	24	12	36
	2HN04605025,46	48	24	24	24	48
	2HN04601058	10	10	-	10	10
	2HN04601658	16	8	8	8	16
	2HN04602658	26	13	13	13	26
	2HN04603658	36	12	24	12	36
	2HN04605058	48	24	24	24	48
20 Ton	2HN04602025,46	20	20	-	20	20
	2HN04603225,46	32	16	16	16	32
	2HN04605225,46	52	26	26	26	52
	2HN04602058	20	20	-	20	20
	2HN04603258	32	16	16	16	32
	2HN04605258	52	26	26	26	52

1. Capacity ratings do not include the heat generated by the supply blower motor.

This instruction is valid for the installation of Gen. 2 Heater on Gen. 2 and 3 air handling units.

INSTALLATION

FOR 7-1/2, 10 AND 15 TONS SPLIT SYSTEM AIR CONDITIONERS AND SPLIT SYSTEM HEAT PUMPS (SINGLE DISCHARGE HEAT BOX)

Install these electric heat accessories per the following step-by-step procedures and the illustrations shown in Figures 1 through 5.

Always lockout and tag out the unit(s) power supplies before opening control box panels.

1. Remove control box access panel from heater cabinet.
2. Remove conduit, wiring, and bag of components.
3. Remove electric heat cabinet from shipping container.
4. Install ¾" strain relief fitting in the center hole of the heater cabinet (See Figure 3).
5. Install foam gasket provided in the kit around the bottom of the heater cabinet (See Figure 4).
6. Remove air handler control box access panel, for access to the control box and low voltage terminal block TB2.
7. Remove the knockouts from the top of the air handling unit. Refer to Figure 1 for locations.
8. Set the heater cabinet on top of the unit as shown in Figure 1.
9. Position the heater over the blower opening so that:
   a. The ¾" strain relief on the bottom of the heater control box fits into the 1 23/32" knockout in the center of the roof panel.
   b. Ensure that the holes in the electric heater flanges align with the dimples on the top of the air handling unit.

10. Using 1¼” diameter conduit assembly, 17” long for 7.5 and 10 ton, 21” for 15 ton, insert threaded end of 90º ell conduit fitting through 1 23/32" knockout in roof panel and 1 23/32" opening in control box of the heater. Thread nut on fitting loosely to retain fitting in place until heater assembly can be fastened to air handler roof.

11. Secure the heater to the unit at the holes aligned in the previous step using 12 drill screws provided with the accessory.

12. Tighten locknut on 90º ell conduit fitting.

13. Insert the 1¼" straight conduit fitting into side of air handler control box. Secure fitting in control box by tightening the locknut.

14. Mount the GND3 (#10 Terminal) ground block with green ground screw into extruded hole. See Figure 6.

15. Install power terminal block TB1 into the air handling unit control box at location noted in Figure 5. Note that units with optional "VFD no Manual Bypass" will already have a TB1 factory installed, as those units do not have a M1 blower contactor for landing the service entry wiring. The OD heat pump units already have the SE unit control board "S3" heater plug factory installed, so the kit supplied "S3" harness can be discarded for a heat pump.

16. Install the kit supplied "S3" (4 pin/2 wire plug connector) into the "P3" plug-in socket on the **OUTDOOR** split unit SE control board, in the **OUTDOOR** unit control box, then connect its two heater pilot wires' ¼" push-on female ends to the terminal block TB2 terminals #66(W1), [and #60(W2) if 2 stage heat].

    ALL 'COOLING ONLY' OUTDOOR UNITS REQUIRE INSTALLATION OF THE KIT SUPPLIED "S3" SSE BOARD HARNESS PLUG FIRST! The OD heat pump units already have the SSE S3 heater plug factory installed

17. Pull (field supplied) heater pilot wire(s) for above' s #66 [and #60 if 2 stage] calls, along with the other standard split unit interconnecting control wires (i.e. G1, C, RY1, RY2, etc.), between the ID and OD units' terminal blocks TB2. See the wire Table 7 for suggested minimum wire sizes versus the two unit's separation distances below.

    These heater pilots will enable the SE UCB unit control board to fully control the heating outputs H1 and H2, via SE board's thermostat inputs W1 and W2. Never wire the thermostat directly into the indoor unit's terminal block TB2, as any future field installed smoke detector shutdown circuits would be bypassed.

    Steps made above will enable the SSE control board to fully control the heating outputs H1 and H2 via board inputs W1 and W2. Never wire the thermostat directly into the indoor unit's terminal block.

NOTE: There are 3 different control versions depending on the type of airflow option chosen. See Figures 9 through 18 for specific electric heat wiring details.

Airflow Option #1) For **constant volume** (CV) no VFD units **(has a M1 blower contactor)**, mount and route the current sensing board CSR1's wires # 834 red to CB1 # 835 Y to pilot A on the M1 contactor 836 BR brown to ground GND3. See Figure 5 for CSR1 mounting location. Leave existing pilot wire #208/Y on the M1 contactor A pilot.

Mount and route the SPST relay(s) EHR1, [and EHR2 if 2 stage] pilot wires #832/BK black to TB2 terminal #66 [and #833/BL blue [and to TB2 #60 if 2 stage], and then brown ground wire(s) #830/BR [and jumper #831/BR if 2 stage] to ground lug GND3. EHR1 and EHR2 relays are both single pole. EHR3 relay, A2 pole relay also supplied in the kit, is **NOT USED for Option 1** and can be discarded.

18. Route the EHR1 (and EHR2 if 2 stage heat) control contact wire 825/R to EHR1 terminal 7 (and #826/R jumper if 2 stage heat) from EHR1 and EHR2 terminal 7.

    Route the CT1 and CT1/2 [and CT3/4 if 2 stage] contactors' pilot ground wires #810/BR [and #815/BR if 2 stage] to box ground GND3.

    Route the CT1 and CT1/2 [and CT3/4 if 2 stage] contactors' pilot wires #811/BK [and #812/BL if 2 stage] from EHR1 terminal 5 [and EHR2 if 2 stage] to CT1/2 [and CT3/4 if 2 stage] pilot(s) per the diagram.

19. Note that E/H kit supplied DPDT relay EHR3 is not required on this non-VFD application. This will now allow the IDBM (indoor blower motor) to run at full 60 Hz line speed during E/H operation, **independent of the "G1" call. Go to step 32**

    Airflow Option #2) For VFD equipped units w/o the Bypass option (no M1 contactor), install DPDT EHR3 relay in the lowest relay position of control box. The six possible relay positions are identified "from top to bottom" as BR1, RY1, RY2, EHR1, EHR2, and EHR3. See Figure 5.

20. Remove the two existing wires found on the VFD, #841/PR Purple and #842/BL Blue from the BR1's normally open (N.O.) relay contact terminals 7 and 5. Remove stripped ends from VFD terminals MI-2 and DCM, releasing them by pushing on the miniature orange button (use a small screwdriver or paper clip) on the block, then pulling the wire out. Discard these two wires.

21. Install kit supplied harness wires #848/R-#849/R and #850/BL-#851/BL ¼" push-on female spade ends to BR1's contact terminals 5 and 7, then connect the

stripped wire ends to VFD terminals "MI-2" and "DCM", respectively. Push on the miniature orange button (use a small screwdriver or paper clip) on the block, then fully insert the wire. Leave the remaining harness' wires loose, temporarily.

22. Mount and route the kit supplied current sensing board CSR1's 834/R from post #2 to CB1, wire # 835/Y from post # 3 to the M1-A and wire # 836/BR from post # 1 to GND3. See Figure 5 for CSR1 board mounting location.

23. Mount and route the E/H SPST relay(s) EHR1 [EHR2 if 2 stage] pilot wires #832/BK [and #833/BL if 2 stage] to TB2's 66 [and 60] and wires #830/BR [and jumper #831/BR if 2 stage] to box ground GND3. See Figure 5 for EHR relay mount locations.

    Route the EHR1 [and EHR2 if 2 stage] control wires #825/R [and #826/R] to transformer T1's circuit breaker CB1's 24VAC power supply. Land the heater contactor pilot wires CT1 #811/BK and #813/BL and CT1/2 [and CT3/4 #812/BL and #814/BL if 2 stage] on terminal 5 of the EHR1 [and EHR2 if 2 stage] respectively. Route the CT1 and CT1/2 [and CT3/4 if 2 stage] contactors' pilot ground wires #810/BR [and #815/BR if 2 stage] to box ground GND3.

24. Note that the factory installed SPST BR1 relay on VFD no Manual Bypass units has no 24VAC power on the N.O. control contact pair (terminals 7 to 5), as it is a "dry contact" only input (DCM to MI-2) at the VFD.

25. Complete the DPST EHR3 relay wiring by routing the remaining harnessed wires between relay EHR3 and the VFD. Connect wire #851/B-852/BL from EHR3 terminal 9, #852/BL EHR3 terminal 7 to EHR3 terminal 9, then #843/PR EHR3 terminal 4 to VFD terminal MI-3, #849/R EHR3 terminal 6 to BR1 terminal 5, and the fifth final EHR3 "B" pilot ground wire #853/BR to GND3 box ground. Ensure that the wire #851/BL DCM jumper is installed between terminals 7 and 9 at the EHR3 relay. EHR3s "A" pilot wire #835/Y was already installed in step 22 above.

    It is recommend that all air boxes in the distributed VAV ductwork are driven fully open during heating operation. Go to step 32

    Airflow Option #3) All VFD equipped units with the optional Manual Bypass MUST first be phased for correct blower rotation with the Rocker switch placed in the bypass position!

    For VFD equipped units with the Manual Bypass option (has M1 main contactor and M6 Bypass Contactor & Bypass Rocker switch), install kit supplied DPST EHR3 relay in the lowest relay position control box per Figure 5. The six relay positions are identified "from top to bottom" as BR1, RY1, RY2, EHR1, EHR2 and EHR3.

26. Remove the two existing wires found on the VFD, #904/PR white and #906/BL black from the BR1's normally open (N.O.) relay contact terminals 7 and 5. Remove stripped ends from VFD terminals MI-2 and DCM, releasing them by pushing on the miniature orange button (use a small screwdriver or paper clip) on the block, then pulling the wire out. Discard these two wires.

27. Mount and route the current sensing board CSR1;s wires 834/R red from post # 2 to transformer T1's24 VAC power supply on CB1,#835/Y yellow from post #3 on the CSR1 to the M1 contactor pilot A and #836/BR brown from post # 1 to GND 3. Leave the existing #208/Y blower relay wire on the M1 contactor pilot "A".

28. Mount and route the electric heat SPST relay(s) EHR1 [and EHR2 if 2 stage] pilot wires #832/BK and #833/BL to TB2's #66 [and #60 if 2 stage] and harnessed pilot ground wires #830/BR [and jumper #831/BR if 2 stage] to box ground GND3.

    Route the EHR1 [and EHR2 if 2 stage] 24V input control harnessed wires #825/R [and #826/R if 2 stage] from terminal 7 to T1's circuit breaker CB1 24VAC power supply. Then connect wires #811/BK, #813/BK [and #812/BL, #814/BL if 2 stage] to EHR1 [and EHR2 if 2 stage] terminal(s) 5, respectively. The wires originate from the heater contactors pilots on CT1 and CT1/2 contactors [and CT3/4 if 2 stage].

29. Route the CT1 and CT1/2 [and CB3/4 if 2 stage] contactors' pilot ground wires #810/BR [and #815/BR if 2 stage] to box ground GND3.

30. Complete the DPST EHR3 relay control wiring by routing its remaining wires between EHR3 and VFD-CB1-M1. Connect single wire #844/Y to the M1 contactor pilot "A" (with existing wire #208/Y) then to EHR3 relay terminal 6.

    Connect wire #845/R to the 24V supply at circuit breaker CB1 then to EHR3 relay terminal 9. Connect wire #843/PR stripped end to the MI-3 terminal on the VFD, then the ¼" push-on ends to EHR3 relay terminal 4. Depress the VFD's miniature orange button (use a small screwdriver or paper clip) on the terminal block to fully insert the stripped wire.

31. Connect the 2 stripped wire harness ends #846/R and #847/R to the MI-2 and DCM terminals on the VFD, then land the center harness #846-#847/R ¼" push terminal on relay EHR3 terminal 7.

    It is recommended that all air boxes in the distributed VAV ductwork are driven fully open during heating operation. Go to next step 32

32. Connect stripped end Red, Brown, and Orange power wires from power conduit attached at the air handler control box to power terminal block TB1 per heater wiring

diagram. **Up to 12 power feeds are included for 2 stage high kW heater models, 4 wires per phase, so two of the #12 gauge feed wires require doubling up into one TB1 small lug hole for those models only.** All red L1 heater power supply wires must be routed through the current sensing relay loop on the CSR1 relay board, as shown in Figure 6, to provide proper indoor blower control.

33. Connect the line voltage power supply wires (from field installed disconnect) to large lug terminals L1, L2 and L3 of terminal block TB1 per heater wiring diagram. Connect Red, Brown, and Orange power wires from conduit(s), attached at heater control box, to fuse or breaker per heater wiring diagram. See Figures 9 through 18 for the specific heater wiring diagrams.

34. Route the control voltage wires of the heater accessory through the ¾" strain relief in bottom of the electric heater box, then through the ¾" strain relief on the upper left side of the air handler control box.

35. Secure wires to power conduit with tie wraps provided in kit. Install kit supplied heater wiring label on inside of control box access panel, and permanently mark the unit nameplate with the heater model number installed.

36. Replace the control box access panels removed from the heater cabinet.

37. Replace control box access panel removed from air handling unit.

    Remove lockout/tag out equipment, then restore power to test heater(s) function.

38. Replace indoor blower section access panels.

39. Install properly sized duct work.

⚠ CAUTION

Fan motor will run for a few seconds when disconnect is first closed, due to an inrush of current being sensed by the relay.

FOR 20 TON SPLIT SYSTEM AIR CONDITIONERS AND SPLIT-SYSTEM HEAT PUMPS (DUAL SUPPLY HEAT BOXES)

Install these electric heat accessories per the following step by step procedures and the illustrations shown in Figures 2, 3, 4 and 5.

Always lockout and tag out the unit(s) power supplies before opening control box panels.

1. Remove control box access panel from heater cabinet.

2. Remove conduit, wiring, and bag of components.

3. Remove electric heat cabinet from shipping container.

4. Install ¾" strain relief fittings in the center holes of both heater cabinets (See Figure 3).

5. Install foam gaskets, provided in the kit (See Figure 4) on bottom of both heater cabinets.

6. Remove air handler control box access panel, for access to the control box and low voltage terminal block TB2.

7. Remove blower section front access panels, filter side, to allow for installation of the second electric heater.

8. Remove the four (x4) 1 23/32" knockouts from the top of the air handling unit. Refer to Figure 2 for locations.

9. Remove two (x2) knockouts from the back of the air handler control box.

10. Set the heater cabinets on top of the unit as shown in Figure 2.

11. Position heater #1 (Heater closest to air handler control box) over the blower opening so that:

    a. The ¾" strain relief on the bottom of the heater control box fits into the 1 23/32" knockout in the center of the air handler roof panel.

    b. Ensure that the holes in the electric heater flanges align with the dimples on the top of the air handling unit.

12. Using the 21" long, 1-1/4" dia. conduit assembly, insert threaded end of 90º ell conduit fitting through 1 23/32" knockout in roof panel and 1 23/32" opening in control box of the heater. Thread nut loosely on the fitting to retain fitting in place until heater assemblies can be fastened to air handler roof.

13. Secure the heater #1 to the unit at the holes aligned in the previous step using (x12) drill screws provided with the kit.

14. Tighten locknut on 90º ell conduit fitting.

15. Insert the straight 1 ¼" flex conduit fitting into back of air handler control box. Secure fitting in control box by tightening the locknut.

16. Position heater #2 (Heater farthest from the air handler control box) over the blower opening so that:

    a. The ¾" strain relief on the bottom of the heater control box fits into the 1 23/32" knockout in the center of the air handler roof panel.

b. Ensure that the holes in the electric heater flanges align with the dimples on the top of the air handling unit.

17. Using the 79" long, 1-1/4" dia. conduit assembly, insert threaded end of 90º ell conduit fitting through 1 23/32" knockout in roof panel and 1 23/32" opening in control box of heater #2. Thread nut loosely onto fitting to retain fitting in place until heater assemblies can be fastened to air handler roof.

18. Secure the heater #2 to the unit top at the holes aligned in the previous step using twelve (x12) drill screws provided with the accessory.

19. Tighten locknut on 90º ell conduit fitting.

20. Route the 79" long, 1-1/4" dia. conduit assembly behind blower housing as shown in Figure 7.

21. Insert the straight 1¼" flex conduit fitting into back of air handler control box. Secure fitting in control box by tightening the locknut.

22. Secure conduit(s), as shown in Figure 7, with tie wraps provided in heater kit.

23. Mount the GND3 (10 terminal ground block) with green ground screw into the extruded hole per Figure 5.

24. Install power terminal block TB1. Note that units with optional "VFD no Manual Bypass" will already have a TB1 factory installed, as those units do not have a M1 blower contactor for landing the service entry wiring.

    ALL MATED COOLING ONLY **OUTDOOR** CONDENSING UNITS WILL REQUIRE THE INSTALLATION OF KIT SUPPLIED HEATER HARNESS PLUG "S3" ONTO THE SE UCB UNIT CONTROL BOARD FIRST! The OD heat pump units already have the SE UCB UNIT CONTROL BOARD "S3" heater plug factory installed, so the kit supplied "S3" harness can be discarded for a heat pump.

    Install the electric heat (E/H) kit supplied "S3" (4 pin/2 wire) plug connector into the "P3" plug-in socket on the **OUTDOOR** split unit UCB board, then connect its two heater pilot wires' ¼" female spade ends to the terminal block TB2 terminals #66(W1), and [#60(W2) if a 2 stage heat], in the **OUTDOOR** unit control box.

25. Pull (field supplied) heater pilot wire(s) #66 [and #60 if 2 stage], along with the other required split unit control wires (i.e. G1, C, RY1, RY2, etc.), between the ID and OD units. See the wire Table 7 for suggested minimum wire sizes versus the two unit's separation distances below.

    This will enable the SE UCB unit control board to fully control the SE board's heating outputs H1 and H2, via board's thermostat inputs W1 and W2. Never wire the thermostat directly into the indoor unit's terminal block, as any future field installed smoke detector shutdown circuits would be bypassed.

NOTE: THERE ARE 3 DIFFERENT CONTROL WIRING VERSIONS, DEPENDING ON THE TWO VFD OPTIONS, OR THE CONSTANT VOLUME AIR FLOW See Figures 9 through 18 for the specific heater wiring diagrams.

Airflow Option #1)

For **constant volume (CV)** units **(has a M1 blower contactor)**. Mount and route the current sensing board CSR1's wires 834/R red from post # 2 to transformer T1's 24 VAC power supply on circuit breaker CB1 , #835/Y yellow from post # 3 to the M1 contactor pilot A and 836/B brown post #1 to GND 3. See Figure 5 for CSR1 board mounting location. Leave the existing wire #208/Y on the M1 contactor pilot.

26. Mount and route the SPST relay(s) EHR1 [and EHR2 required if 2 stages of E/H] pilot wires #832 BK to TB2 66 and #833 BL to TB2 60, respectively, and ground wires #830/BR [and jumper #831/BR if 2 stage] to box ground block GND3. Kit supplied EHR1 and EHR2 relays are both single pole, and the EHR3 relay in the kit is a double pole design, but **EHR3 is NOT REQUIRED for Option 1**.

27. Route the EHR1 [and EHR2 if 2 stages of E/H] control 24VAC power wires #825/R [and jumper #826/R if 2 stage] from EHR1 terminal 7 [and EHR2 terminal 7 if 2 stage] to transformer T1- circuit breaker CB1's 24VAC power. Connect control wires #811/BK and 813/BK [and wires #812/BL and #814/BL if 2 stage] to EHR1 terminal 5 [and EHR2 terminal 5 if 2 stage] to heater contactors CT1 and CT1/2 (and CT3/4 if 2 stage). Route the CT1 and CT1/2 [and CT3/4 if 2 stage] contactors' pilot ground wires #810/BR [and #815/BR] to ground GND3.

28. Note that kit supplied DPST relay EHR3 is not required on this non-VFD application. The indoor blower motor IDMTR will operate at full speed during E/H operation, independent of the "G1" call. Go to step 42.

    Airflow Option #2) For **VFD equipped** indoor units and no Manual Bypass option **(has no M1 contactor),** install kit supplied DPST EHR3 relay in the lowest relay position of control box. The six relay positions are identified "from top to bottom" as BR1, RY1, RY2, EHR1, EHR2 and EHR3. See Figure 5 for EHR3 and CSR1 board mounting location.

NOTE: Quick reference wiring guide for airflow option #2 can be used to wire electric heat kit.Please refer to Page 11 for the quick reference wiring guide. If details are needed please refer to steps 29 through 51.

29. Mount and route the kit supplied current sensing board CSR1's wires 834/R red from post # 2 to transformer T1's 24 VAC power supply on circuit breaker CB1 , #835/

Y yellow from post # 3 to the M1 contactor pilot A and 836/B brown post #1 to GND 3.

30. Remove the two wires #841/PR and #842/BL from the BR1 normally open (N.O.) relay contact terminals 7 and 5.

31. Remove their stripped ends from VFD terminals SFR and SD, releasing them by **pushing on the miniature orange button (use a small screwdriver or paper clip) on the block, then pulling the wire out.** Discard these two wires.

32. Note that the VFD unit's factory installed SPST BR1 relay contact has no 24VAC power on the control contact terminal pair 7 to 5, as it is a "dry contact" input (DCM to MI-2) at the VFD.

33. Install E/H kit supplied two harnesses' wires #848/R and #850/BL ¼" push-on female spade ends to BR1 contact terminals 5 and 7, respectively. Then connect the stripped wire ends to VFD block terminals MI-2 and DCM, respectively. **Push on the miniature orange button on the block (use a small screwdriver or paper clip), then fully insert the wire.** Leave the remaining harnesses' wires loose, temporarily.

34. Mount and route the SPST relay(s) EHR1 [and EHR2 if 2 stages of E/H] pilot wires #832 BK to TB2 66 and #833 BL to TB2 60, and then connect #830/BR wire to ground GND3. Connect wires #811/BK-#813/BK [and #812/BL-#814/BL if 2 stage] onto CT1 and CT1/2 [and CT3/4 if 2 stage) contactors. Route the CT1 and CT1/2 [and CT3/4 if 2 stage] contactors' pilot ground wires #810/BR [and #815/BR if 2 stage] to ground lug GND3.

35. Route the EHR1 [and EHR2 if 2 stages of E/H] control 24VAC power wires #825/R [and jumper #826/R if 2 stage] from EHR1 terminal 7 [and EHR2 terminal 7 if 2 stage] to transformer T1- circuit breaker CB1's 24VAC power.

    Connect wires #811/BK and 813/BK [and wires #812/BL and #814/BL if 2 stage] to EHR1 terminal 5 [and EHR2 terminal 5 if 2 stage] from heater contactor pilots CT1 and CT1/2 [and CT3/4 if 2 stage]. Route the CT1 and CT1/2 [and CT3/4 if 2 stage] contactors' pilot ground wires #810/BR [and #815/BR if 2 stage] to ground GND3.

36. Complete the DPST EHR3 relay wiring by routing the remaining wires between EHR3 and VFD's RH, SFR, and SD. Connect single wire #843/PR from EHR3 terminal 4 to the VFD "RH" terminal. Connect harness dual wire #851/BL-852/BL from EHR3 terminal 9 to 7 (wire #852/BL) and then to BR1 relay terminal 7 (wire #852/BL). Ensure that harness jumper #851/BL is installed between terminals 7 and 9 on the EHR3 relay. Route ground wire #853/BR from EHR3 pilot "B" to box ground GRD3.

    It is suggested that all air boxes in the distributed VAV ductwork are driven fully open during heating operation. Go to step 42.

    Airflow Option #3) All VFD equipped units with the optional Manual Bypass MUST first be phased for correct blower rotation with the Rocker switch placed in the bypass position!

    For VFD equipped units with the Manual Bypass option (has M1 main contactor and M6 Bypass Contactor & bypass rocker switch), Install the kit supplied DPST EHR3 relay in the lowest relay position in control box. The six relay positions are identified "from top to bottom" as BR1, RY1, RY2, EHR1, EHR2, and EHR3. See Figure 5 for EHR3 mounting position.

37. Mount and route the current sensing board CSR1's wires 834/R red from post # 2 to transformer T1's 24 VAC power supply on circuit breaker CB1, #835/Y yellow from post # 3 to the M1 contactor pilot A and 836/B brown post #1 to GND 3. and box ground GND3 respectively. See Figure 5 for CSR1 board mounting location.

38. Mount and route the SPST relay(s) EHR1 [and EHR2 if 2 stages of E/H] pilot wires #832 BK to TB2 66 and #833 BL to TB2 60, and then connect #830/BR wire to ground GND3. Route the EHR1 [and EHR2 if 2 stage] control wires #825/R [and jumper #826/R if 2 stage] from terminals 7 to T1's CB1 24VAC power supply. Connect wires #811/BK-#813/BK [and #812/BL-#814/BL if 2 stage] from EHR1 [and EHR2 if 2 stage] terminals 5 to CT1 and CT1/2 [and CT3/4 if 2 stage) contactor pilots per wiring diagram. Route the CT1 and CT1/2 [and CT3/4 if 2 stage] contactors' pilot ground wires #810/BR [and #815/BR if 2 stage] to ground lug GND3.

39. Remove the two existing wires found on the VFD, #904/PR white and #906/BL black from the BR1's normally open (N.O.) relay contact terminals 7 and 5. Remove stripped ends from VFD terminals Mi-2 and DCM, releasing them by pushing on the miniature orange button (use a small screwdriver or paper clip) on the block, then pulling the wire out. Discard these two wires.

40. Complete the DPST EHR3 relay control wiring by routing its remaining wires between EHR3 and VFD-CB1-M1. Connect wire #844/Y to the M1 contactor pilot "A" then to EHR3 relay terminal 6. Connect wire #845/R to the 24V supply at circuit breaker CB1 then to EHR3 relay terminal 9.

    Connect single wire #843/PR to the MI-3 terminal on the VFD, then to EHR3 relay terminal 4. **Depress the VFD's miniature orange button (use a small screwdriver or paper clip) on the terminal block to fully insert the stripped wire.**

41. Connect the 2 stripped wire harness ends #846/R and #847/R to the MI-2 AND DCM terminals on the VFD, respectively, then land the center harness #846-#847/R wire's ¼" push terminal on relay EHR3 terminal 7. **Go to next step 42. It is suggested that all air boxes in the distributed VAV ductwork are driven fully open during heating operation.**

42. Connect the stripped end Red, Brown and Orange power wires from conduit(s), attached at heater control box, to fuse or breaker per heater wiring diagram. See Figures 9 through 18 for the specific heater wiring diagrams. Up to 12 power leads are included for 2 stage heaters.

43. Connect stripped end wires from power conduits attached at the air handler control box to terminal block TB1 per heater wiring diagram. **Up to 12 power feeds are required for the 2 stage high kW heater models, (4 wires per phase), so two of the #12 gauge feeds wires require doubling up into one TB1 small lug hole for those models only.** All red L1 heater power supply wires must be routed through the current sensing loop of the CSR1 relay board, as shown in Figure 6, to provide proper indoor blower control.

44. Connect line voltage power supply wires (from field installed disconnect) to **large** terminal lugs L1, L2 and L3 of terminal block TB1 per heater wiring diagram.

45. Route the control voltage wires of the heater accessory through the ¾" strain relief in bottom of the electric heater to and through the ¾" strain relief on the side of the air handler control box. Secure wires to power conduit with tie wraps provided in kit.

46. Install kit supplied heater wiring label on inside of control box access panel, and permanently mark the unit nameplate with the heater model number installed.

47. Replace the control box access panels removed from the heater cabinets.

48. Replace blower motor compartment access panel removed from air handling unit.

49. Replace indoor blower section access panels.

50. Remove lockout/tag out equipment, then restore power to test heater(s) function.

51. Install properly sized duct work.

⚠ CAUTION

Fan motor will run for a few seconds when disconnect is first closed, due to an inrush of current being sensed by the relay.

OPERATION - FIELD INSTALLED ELECTRIC HEATER:

A: Constant Volume, No VFD

Kit supplied SPST relays EHR1 [and EHR2 if 2 stage] are used for this application. The kit supplied 2 pole EHR3 relay (DPST) is **not used** in this application, and can be discarded.

On field installed electric heat unit in **constant volume (CV) configurations (non-VFD),** the indoor blower control wire #835/Y, from Current Sensing Relay Board CSR1 terminal 3, is directly connected to the pilot of the M1 blower contactor, along with existing blower relay BR1 control wire #208/Y.

When current flow in phase L1 EHs element's wires increases past 0.5 amps, measured via the current loop on CSR1, a 24 VAC power supply is sent out of CSR1's terminal 3 wire #835/Y, to the M1 contactors pilot terminal A. **This allows the indoor blower motor IDMTR to run at full speed via the M1 contactor during heating, independent of the thermostat "G1" blower call.**

B: With factory VFD, two different versions B1 and B2

B1 - VFD and no Manual Bypass (Has no M1 blower contactor)

The kit supplied DPST EHR3 relay is used on this application. Relays EHR1 [and EHR2 if 2 stage] are also used.

On field installed **E/H equipped units with VFD and no Manual Bypass option,** whether the VFD is optioned for IntelliSpeed-2 speed or future true static duct pressure controlled, a heating call for either #66 (W1) or #60 (W2) energizes the "A" pilot of SPST relay EHR1 [or EHR2 if 2 stage], which closes N.O. contacts 7 to 5 to energize the 3 phase power contactor(s) CT1 and CT2 and (CT3 and CT4 if 2 stages of E/H), thus supplying high voltage power to the electric heater elements (E/HEs).

When current flow in phase L1 EHs element's wires increases past 0.5 amps, measured via the current loop on Current Sensing Relay Board CSR1, a 24 VAC power supply is sent out of CSR1's terminal 3 wire #835/Y to DPST EHR3 relay coil's pilot terminal A. Relay EHR3 is now energized, closing its "-1" N.O. contact set 7 to 4 and "-2" contact set 9 to 6, thus simultaneously completing two "sink common" dry contact input signals (DCM to MI-3 and MI-2) on the three VFD terminals. The DCM to MI-3 dry contact input commands the VFD to run in High Speed operation during the electric heat cycle, and the DCM to MI-2 enables the VFD to simply start and run.

In heating, the VFD will now start and drive the indoor blower motor (IDMTR) at full speed at 60 HZ frequency during E/H operation, even if a 2-10 VDC analog speed input signal (VFD terminals "2" to "5") is also present. Note that there is no M1 contactor used on a straight VFD no Manual Bypass option.

NOTE: The heating cycle operation of blower input signal parallels the BR1 contact, but is completely independent of the "G1" indoor blower call. The blower relay BR1's N.O. contact set 7 to 5, which operates in cooling mode via the G1 thermostat call, also provides a paralleled "sink common" dry contact input signal (DCM to MI-2) on the two VFD terminals, enabling the VFD to run in 2-speed cooling mode.

B2 - VFD with Manual Bypass option (Has M1 blower contactor)

The kit supplied DPST EHR3 relay is used on this application. Relays EHR1 [and EHR2 for 2 stage] are also used.

On E/H equipped with Manual Bypass optioned VFD units, whether the VFD is optioned for IntelliSpeed-2 speed or future true static duct pressure control, there is a M1 blower contactor present, and therefore one set of EHR3's "-2" N.O. contacts, terminal set 9 to 6, is used for energizing the M1 blower contactor. In addition, when energizing relay EHR3, the other contact set "-1" N.O. terminals 7 to 4 completes a "sink common" dry contact input signal (DCM to MI-3) on the two VFD terminals, driving the IDMTR to full 60 Hz speed during heating operation. This is required in case the unit is manually switched into bypass mode and an electric heat call is made.

NOTE: The heating cycle indoor blower operation input signal from EHR3 parallels the BR1 contact, but is completely independent of the thermostat "G1" blower call.

END OF HEATING CYCLE

When the 66/60 (W1/W2) heating call is satisfied, the drop in L1 heater current flow falls below 2.5 amps and will turn off the 24 VAC output from CSR1 terminal 3 on wire #835/Y, thus dropping out relay EHR3, and thus dropping out the dry contact inputs (DCM to MI-3 and DCM to MI-3 sink inputs) inputs to the VFD, or the M1 contactor. The IDMTR will coast to a stop.

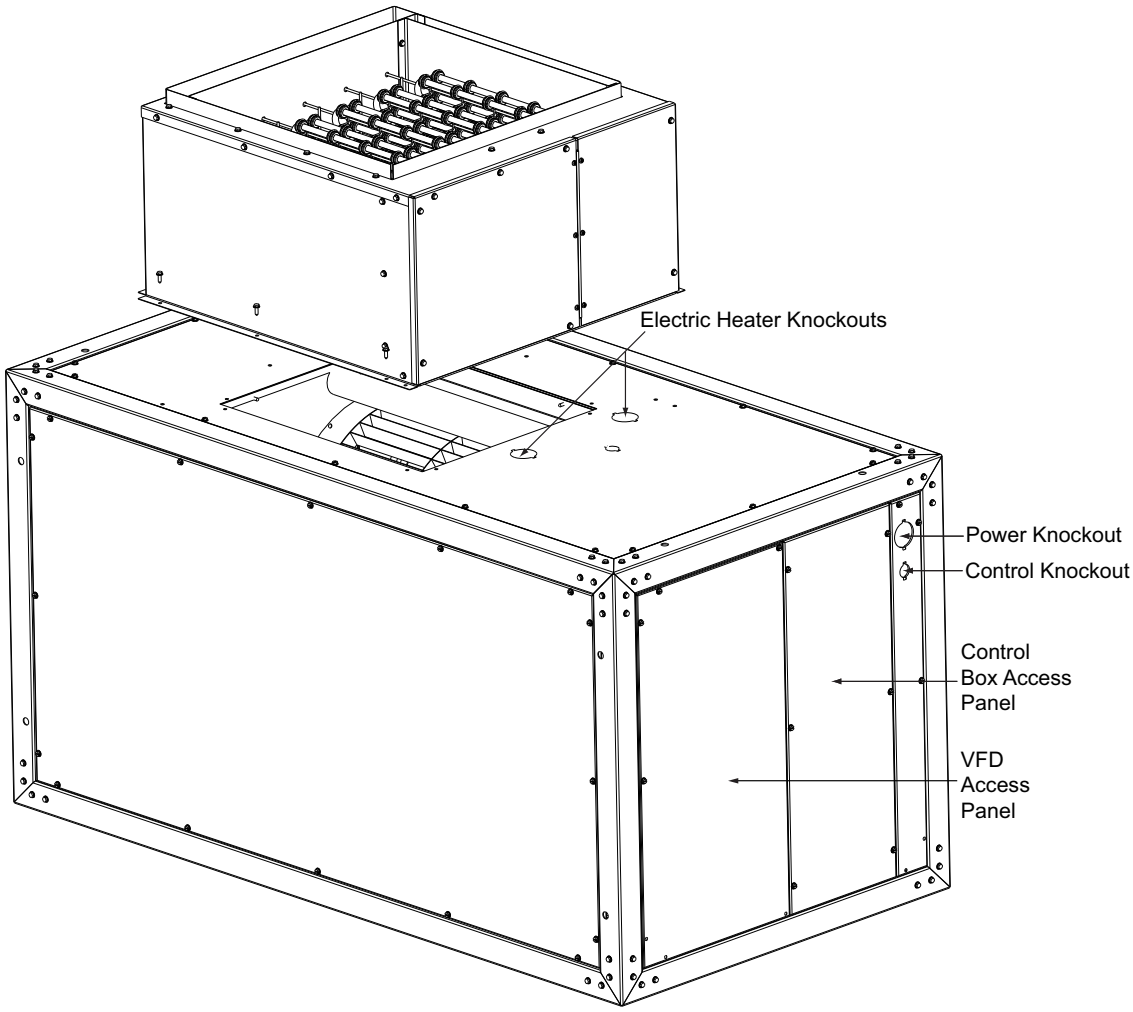


FIGURE 1 - ACCESSORY INSTALLATION (7-1/2, 10, AND 15 TONS)

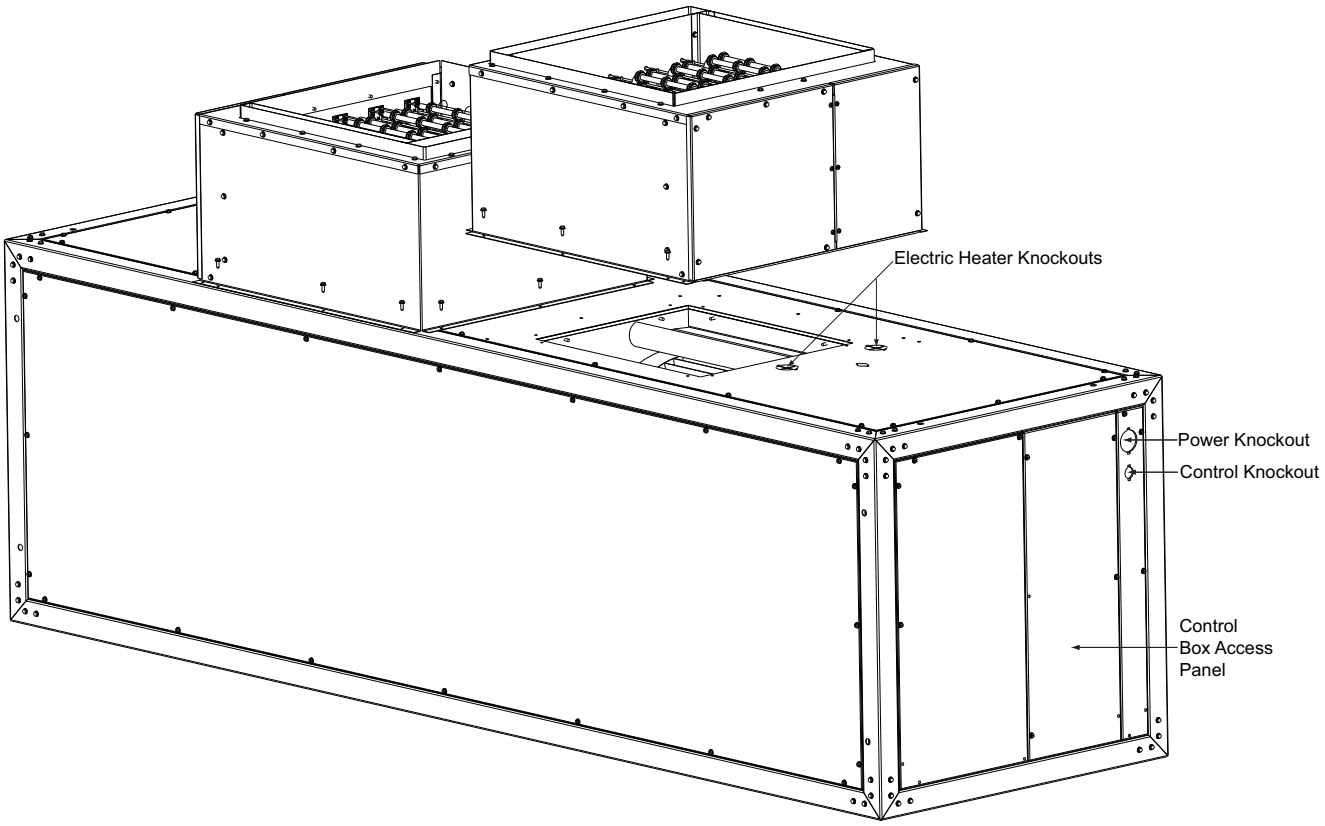


FIGURE 2 - ACCESSORY INSTALLATION (20 TONS)

FIGURE 3 - HEATER WITH CONTROL COVER REMOVED

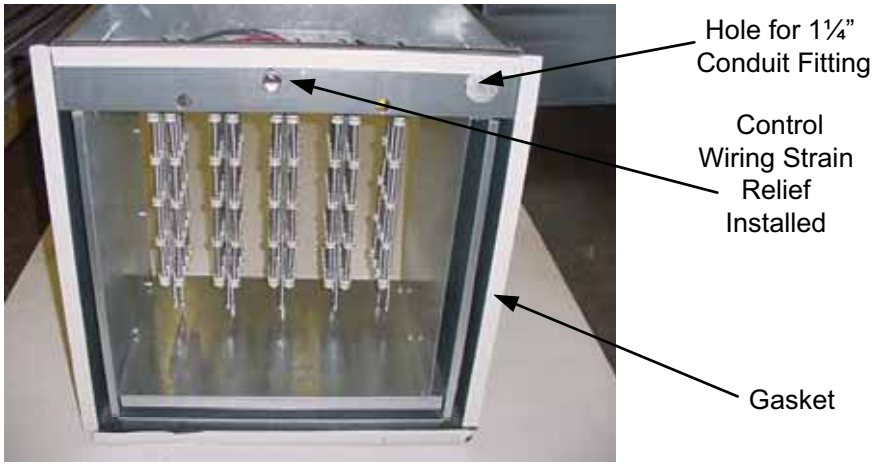


FIGURE 4 - BOTTOM OF HEATER CABINET

Quick Reference Wiring Guide 2HJ/HN Heater Kits Low Voltage Control Connections (Airflow Option #2}

NOTE: The following steps are for 2 stage heaters containing an EHR2 relay. Single stage heaters do not have EHR2. If installing a single stage heater, ignore references to EHR2. Please refer to Figure 5 for component locations and mounting.

- Mount EHR3 in lowest relay position.
- Mount EHR2 above EHR3
- Mount EHRI above EHR2
- Mount CSRI (Current Sensing Relay)

NOTE: Use a small screwdriver or paper clip to depress the orange buttons at the VFD terminals to remove and insert wires to the VFD terminals.

- Remove wire 841/PR from terminal 5 of BR1 relay and VFD terminal MI2
- Remove wire 842/BL from terminal 7 of BR1 relay and VFD terminal DCM.
- Discard wires 841/PR and 842/BL.
- Install new wires 848-849/R on terminal 5 of BR1.
- Insert the bare end of 849/R into the MI2 terminal of the VFD.
- Install new wires 850-851/BL on terminal 7 of BR1.
- Insert the bare end of 850/BL into the DCM terminal of the VFD.
- For BR1 coil wiring refer to wiring diagram on unit.
- Connect 849/R to terminal 6 of EHR3.
- Connect 851-852/BL to terminal 9 of EHR3
- Connect 852/BL to terminal 7 of EHR3
- Connect 843/PR to terminal 4 of EHR3
- Insert bare end of 843/PR into the MI-3 terminal of the VFD.
- Connect 834/R to terminal 2 on CSRI and CBI (Low Voltage Circuit Breaker)
- Connect 835/Y to terminal 3 on CSRI and terminal A of EHR3.
- Connect 853/BR to terminal B of EHR3 and terminal block GND3.
- Connect 836/BR to terminal 1 on CSRI and terminal block GND3 .
- Connect 832/BK to 66 ofTB2 and terminal A of EHRI.
- Connect 833/BL to 60 of TB2 and terminal A of EHR2.
- Connect 831/BR to terminal B of EHR2.
- Connect 830-831/BR to terminal B of EHRI.
- Connect 830/BR to terminal block GND3.
- Connect 825-826/R to terminal 7 of EHRI.
- Connect 826/R to terminal 7 of EHR2.
- Connect 825/R to CBI.
- Connect 811/BK to terminal 5 of EHRI and A2 of en.
- Connect 812/BL to terminal 5 of EHR2 and A2 of CT2.
- Connect 810/BR to terminal block GND3 and terminals AI of CT1 and CT2.

HIGH VOLTAGE CONNECTIONS

NOTE: The steps referenced below are for units with one blower outlet and one heater box. High Voltage

instructions for units with two blower outlets and two heater boxes will have more steps than listed below.

- "Follow Heater Kit instructions Steps 1 through 17 and 32 through 39 for mounting high voltage components and related connections.
- "Route LI heater wire from TBI through the sensing loop of CSRI.

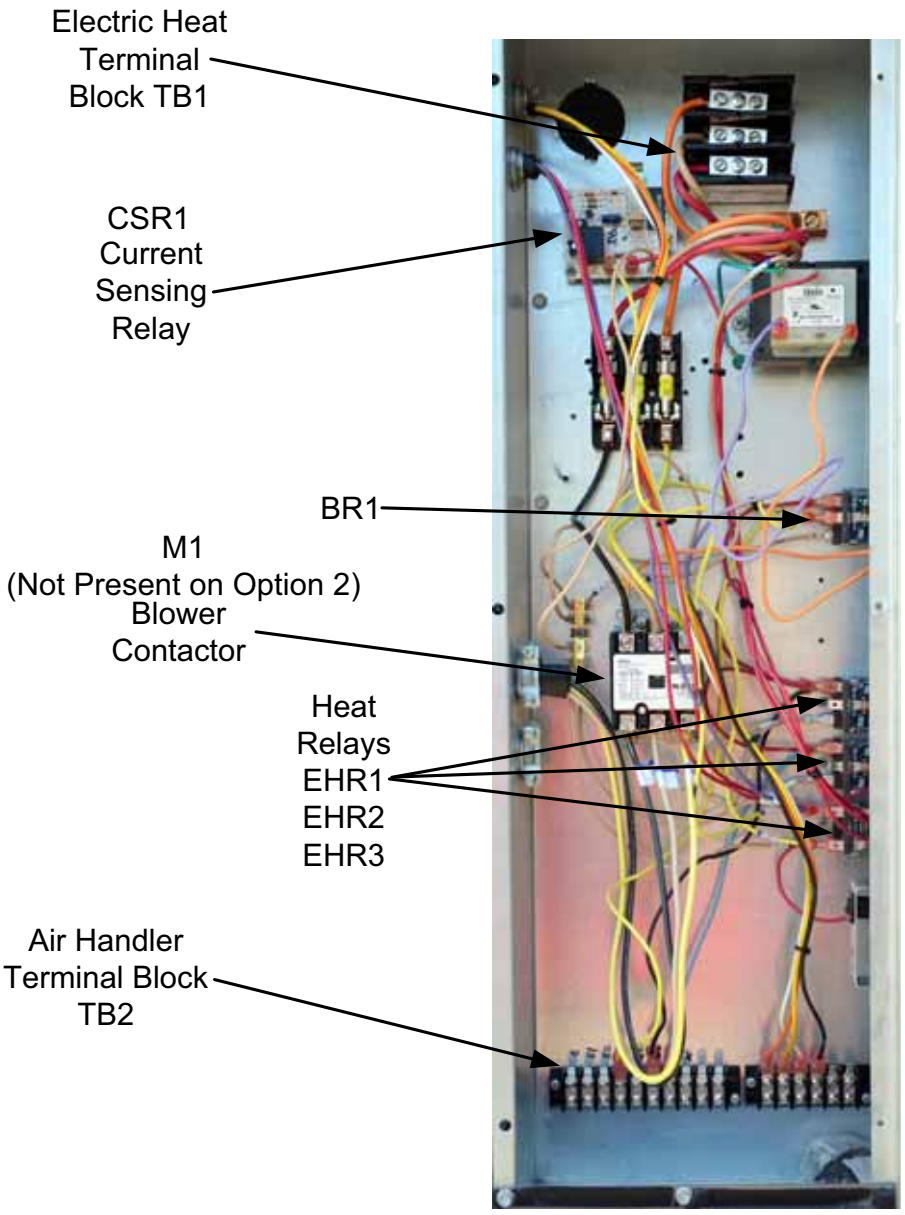


FIGURE 5 - AIR HANDLER CONTROL BOX

NOTE: Depending on the type of airflow option chosen, certain electrical components may or may not be included. Please see Table 2 to determine the components involved based on airflow type.

Table 2: Electric Heat Relay Matrix

Air Options	Constant Volume	VFD w/o Bypass	VFD w/Bypass
Controls			
M1	YES	NO	YES

Table 2: Electric Heat Relay Matrix

Air Options	Constant Volume	VFD w/o Bypass	VFD w/Bypass
EHR1	YES	YES	YES
EHR2	YES[1]	YES[1]	YES[1]
EHR3	NO	YES	YES
TB1 Factory Installed	NO	YES[2]	NO

1. If 2 stage electric heat
2. M1 contactor used as TB1

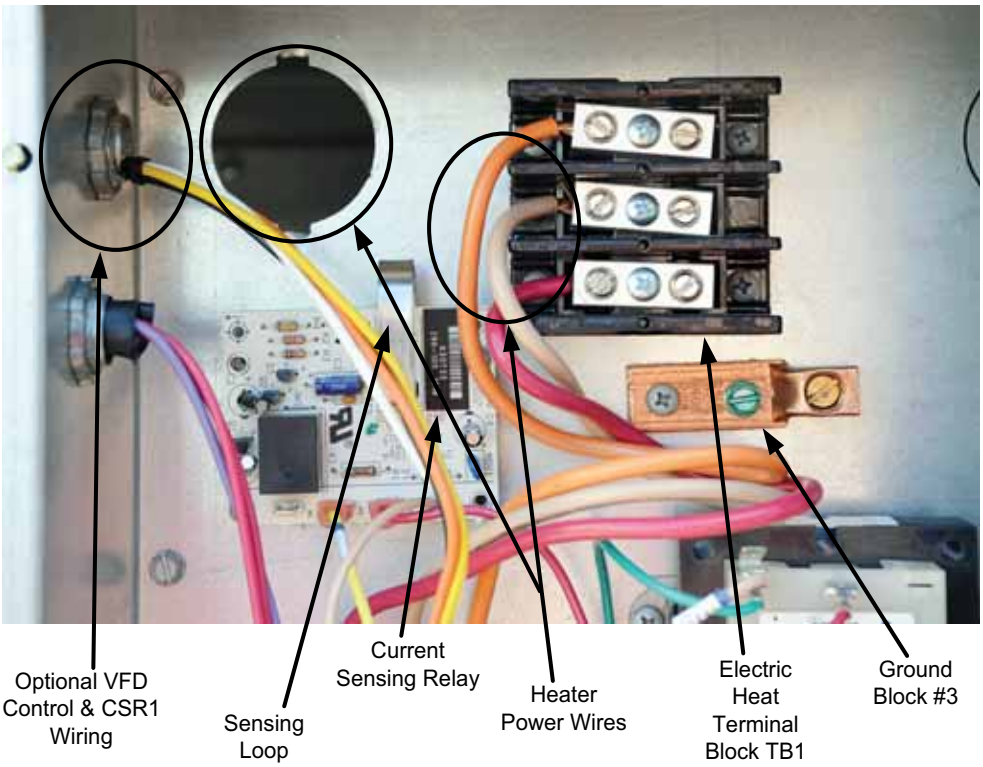


FIGURE 6 - CURRENT SENSING RELAY

FIGURE 7 - CONDUIT BEHIND BLOWER

TABLE 3: ELECTRICAL DATA - EVAPORATOR UNITS

Motor HP	Power Supply	Supply Blower Motor	Electric Heat Option				MCA[1] (Amps)	Max Fuse[2]/ Breaker[3] Size (Amps)
		FLA	Model	KW	Stages	Amps		
NC090\\NH-07\\NHT07\\J07NC C00B (CONSTANT VOLUME)								
1.5	208-3-60	5.0	None	---	---	---	6.3	15
			10 KW	7.5	1	20.8	32.3	35
			16 KW	12	2	33.4	47.9	50
			26 KW	19.5	2	54.2	73.9	80
			36 KW	27	2	75.1	99.9	100
	230-3-60	5.2	None	---	---	---	6.5	15
			10 KW	10	1	24.1	36.6	40
			16 KW	16	2	38.5	54.6	60
			26 KW	26	2	62.5	84.7	90
			36 KW	36	2	86.6	114.8	125
	460-3-60	2.6	None	---	---	---	3.3	15
			10 KW	10	1	12	18.3	20
			16 KW	16	2	19.2	27.3	30
			26 KW	26	2	31.3	42.3	45
			36 KW	36	2	43.3	57.4	60
	575-3-60	2.0	None	---	---	---	2.5	15
			10 KW	10	1	9.6	14.5	15
			16 KW	16	2	15.4	21.7	25
			26 KW	26	2	25	33.8	35
			36 KW	36	2	34.6	45.8	50
NL090\\NS-07\\NST07\\J07NL C00B (INTELLISPEED)								
1.5	208-3-60	4.3	None	---	---	---	5.4	15
			10 KW	7.5	1	20.8	31.4	35
			16 KW	12	2	33.4	47.0	50
			26 KW	19.5	2	54.2	73.0	80
			36 KW	27	2	75.1	99.1	100
	230-3-60	4.2	None	---	---	---	5.3	15
			10 KW	10	1	24.1	35.3	40
			16 KW	16	2	38.5	53.4	60
			26 KW	26	2	62.5	83.4	90
			36 KW	36	2	86.6	113.5	125
	460-3-60	2.1	None	---	---	---	2.6	15
			10 KW	10	1	12.0	17.7	20
			16 KW	16	2	19.2	26.7	30
			26 KW	26	2	31.3	41.7	45
			36 KW	36	2	43.3	56.8	60
	575-3-60	1.8	None	---	---	---	2.3	15
			10 KW	10	1	9.6	14.3	15
			16 KW	16	2	15.4	21.5	25
			26 KW	26	2	25.0	33.5	35
			36 KW	36	2	34.6	45.6	50

TABLE 3: ELECTRICAL DATA - EVAPORATOR UNITS (CONTINUED)

Motor HP	Power Supply	Supply Blower Motor	Electric Heat Option				MCA[1] (Amps)	Max Fuse[2]/ Breaker[3] Size (Amps)
		FLA	Model	KW	Stages	Amps		
NC090\\NH-07\\NHT07\\J07NC\\C00C (CONSTANT VOLUME)								
2.0	208-3-60	6.6	None	---	---	---	8.3	15
			10 KW	7.5	1	20.8	34.3	35
			16 KW	12	2	33.4	49.9	50
			26 KW	19.5	2	54.2	75.9	80
			36 KW	27	2	75.1	101.9	110
	230-3-60	6.8	None	---	---	---	8.5	15
			10 KW	10	1	24.1	38.6	40
			16 KW	16	2	38.5	56.6	60
			26 KW	26	2	62.5	86.7	90
			36 KW	36	2	86.6	116.8	125
	460-3-60	3.4	None	---	---	---	4.3	15
			10 KW	10	1	12	19.3	20
			16 KW	16	2	19.2	28.3	30
			26 KW	26	2	31.3	43.3	45
			36 KW	36	2	43.3	58.4	60
	575-3-60	2.4	None	---	---	---	3	15
			10 KW	10	1	9.6	15	15
			16 KW	16	2	15.4	22.2	25
			26 KW	26	2	25	34.3	35
			36 KW	36	2	34.6	46.3	50
NL090\\NS-07\\NST07 // (NL/NM) 120\\ (NS/NW)-10\\(NS/NW)T10\\ J10(NL/NM) C00C (INTELLISPEED)								
2.0	208-3-60	5.8	None	---	---	---	7.3	15
			10 KW	7.5	1	20.8	33.3	35
			16 KW	12	2	33.4	48.9	50
			26 KW	19.5	2	54.2	74.9	80
			36 KW	27	2	75.1	100.9	110
	230-3-60	5.8	None	---	---	---	7.3	15
			10 KW	10	1	24.1	37.3	40
			16 KW	16	2	38.5	55.4	60
			26 KW	26	2	62.5	85.4	90
			36 KW	36	2	86.6	115.5	125
	460-3-60	2.9	None	---	---	---	3.6	15
			10 KW	10	1	12.0	18.7	20
			16 KW	16	2	19.2	27.7	30
			26 KW	26	2	31.3	42.7	45
			36 KW	36	2	43.3	57.8	60
	575-3-60	2.2	None	---	---	---	2.8	15
			10 KW	10	1	9.6	14.8	15
			16 KW	16	2	15.4	22	25
			26 KW	26	2	25.0	34	35
			36 KW	36	2	34.6	46.1	50

TABLE 3: ELECTRICAL DATA - EVAPORATOR UNITS (CONTINUED)

Motor HP	Power Supply	Supply Blower Motor	Electric Heat Option				MCA[1] (Amps)	Max Fuse[2]/ Breaker[3] Size (Amps)
		FLA	Model	KW	Stages	Amps		
(NC/ND)120\\ (NH/NJ)-10\\(NH/NJ)T10\\ J10 (NC/ND) C00D (CONSTANT VOLUME)								
2.0	208-3-60	6.0	None	---	---	---	7.5	15
			10 KW	7.5	1	20.8	33.5	35
			16 KW	12	2	33.4	49.1	50
			26 KW	19.5	2	54.2	75.2	80
			36 KW	27	2	75.1	101.2	110
	230-3-60	5.8	None	---	---	---	7.3	15
			10 KW	10	1	24.1	37.3	40
			16 KW	16	2	38.5	55.4	60
			26 KW	26	2	62.5	85.4	90
			36 KW	36	2	86.6	155.5	125
	460-3-60	2.9	None	---	---	---	3.6	15
			10 KW	10	1	12	18.7	20
			16 KW	16	2	19.2	27.7	30
			26 KW	26	2	31.3	42.7	45
			36 KW	36	2	43.3	57.8	60
	575-3-60	2.2	None	---	---	---	2.8	15
			10 KW	10	1	9.6	14.8	15
			16 KW	16	2	15.4	22	25
			26 KW	26	2	25	34	35
			36 KW	36	2	34.6	46.1	50
(NC/ND)120\\ (NH/NJ)-10\\(NH/NJ)T10\\ J10 (NC/ND) C00D (CONSTANT VOLUME)								
3.0	208-3-60	8.3	None	---	---	---	10.4	15
			10 KW	7.5	1	20.8	36.4	40
			16 KW	12	2	33.4	52.0	60
			26 KW	19.5	2	54.2	78.0	80
			36 KW	27	2	75.1	104.2	110
	230-3-60	8.2	None	---	---	---	10.3	15
			10 KW	10	1	24.1	40.3	45
			16 KW	16	2	38.5	58.4	60
			26 KW	26	2	62.5	88.4	90
			36 KW	36	2	86.6	118.5	125
	460-3-60	4.1	None	---	---	---	5.1	15
			10 KW	10	1	12	20.2	25
			16 KW	16	2	19.2	29.2	30
			26 KW	26	2	31.3	44.2	45
			36 KW	36	2	43.3	59.3	60
	575-3-60	3.1	None	---	---	---	3.9	15
			10 KW	10	1	9.6	15.9	20
			16 KW	16	2	15.4	23.1	25
			26 KW	26	2	25	35.1	40
			36 KW	36	2	34.6	47.2	50

TABLE 3: ELECTRICAL DATA - EVAPORATOR UNITS (CONTINUED)

Motor HP	Power Supply	Supply Blower Motor	Electric Heat Option				MCA[1] (Amps)	Max Fuse[2]/ Breaker[3] Size (Amps)
		FLA	Model	KW	Stages	Amps		
(NL/NM) 120 \\ (NS/NW)-10\\ (NS/NW)T10\\ J10 (NL/NM), (NL/NM) 180 \\ (NS/NW)-15\\ (NS/NW)T15\\ J15 (NL/NM) C00D (INTELLISPEED)								
3.0	208-3-60	8.3	None	---	---	---	10.4	15
			10 KW	7.5	1	20.8	36.4	40
			16 KW	12	2	33.4	52	60
			26 KW	19.5	2	54.2	78	80
			36 KW	27	2	75.1	104.1	110
			50 KW[4]	37.6	2	104.2	140.8	150
	230-3-60	8.2	None	---	---	---	10.3	15
			10 KW	10	1	24.1	40.3	45
			16 KW	16	2	38.5	58.4	60
			26 KW	26	2	62.5	88.4	90
			36 KW	36	2	86.6	118.5	125
			50 KW[4]	50	2	120.3	130.5	150
	460-3-60	4.1	None	---	---	---	5.1	15
			10 KW	10	1	12	20.2	25
			16 KW	16	2	19.2	29.2	30
			26 KW	26	2	31.3	44.2	45
			36 KW	36	2	43.3	59.3	60
			50 KW[4]	50	2	60.1	65.3	70
	575-3-60	3.2	None	---	---	---	4	15
			10 KW	10	1	9.6	16	20
			16 KW	16	2	15.4	23.2	25
			26 KW	26	2	25	35.3	40
			36 KW	36	2	34.6	47.3	50
			50 KW	50	2	48.1	52.1	60
(NC/ND) 180\\ (NH/NJ)-15\\(NH/NJ)T15\\ J15 (NC/ND) C00D (CONSTANT VOLUME)								
3.0	208-3-60	9.6	None	---	---	---	12	15
			10 KW	7.5	1	20.8	38	40
			16 KW	12	2	33.4	53.6	60
			26 KW	19.5	2	54.2	79.7	80
			36 KW	27	2	75.1	105.7	110
			50 KW4	37.6	2	104.2	142.5	150
	230-3-60	9.4	None	---	---	---	11.8	15
			10 KW	10	1	24.1	41.8	45
			16 KW	16	2	38.5	59.9	60
			26 KW	26	2	62.5	89.9	90
			36 KW	36	2	86.6	120	125
			50 KW4	50	2	120.3	132	150
	460-3-60	4.7	None	---	---	---	5.9	15
			10 KW	10	1	12	20.9	25
			16 KW	16	2	19.2	29.9	30
			26 KW	26	2	31.3	45	45
			36 KW	36	2	43.3	60	60
			50 KW4	50	2	60.1	66	70
	575-3-60	3.6	None	---	---	---	4.5	15
			10 KW	10	1	9.6	16.5	20
			16 KW	16	2	15.4	23.7	25
			26 KW	26	2	25	35.8	40
			36 KW	36	2	34.6	47.8	50
			50 KW4	50	2	48.1	52.6	60

TABLE 3: ELECTRICAL DATA - EVAPORATOR UNITS (CONTINUED)

Motor HP	Power Supply	Supply Blower Motor	Electric Heat Option				MCA[1] (Amps)	Max Fuse[2]/ Breaker[3] Size (Amps)
		FLA	Model	KW	Stages	Amps		
(NC\ND) 180\ (NH\NJ)-15\ (NH\NJ)T15\ J15 (NC\ND) C00E (CONSTANT VOLUME)								
5.0	208-3-60	14.0	None	---	---	---	17.5	20
			10 KW	7.5	1	20.8	43.5	45
			16 KW	12	2	33.3	59.1	60
			26 KW	19.5	2	54.1	85.2	90
			36 KW	27	2	74.9	111.2	125
			50 KW	37.6	2	104.4	148.0	150
	230-3-60	13.2	None	---	---	---	16.5	20
			10 KW	10	1	24.1	46.6	50
			16 KW	16	2	38.5	64.6	70
			26 KW	26	2	62.5	94.7	100
			36 KW	36	2	86.6	124.8	125
			50 KW	50	2	120.3	136.8	150
	460-3-60	6.6	None	---	---	---	8.3	15
			10 KW	10	1	12.0	23.3	25
			16 KW	16	2	19.2	32.3	35
			26 KW	26	2	31.3	47.3	50
			36 KW	36	2	43.3	62.4	70
			50 KW	50	2	60.1	68.4	70
	575-3-60	5.2	None	---	---	---	6.5	15
			10 KW	10	1	9.6	18.5	20
			16 KW	16	2	15.4	25.7	30
			26 KW	26	2	25.0	37.8	40
			36 KW	36	2	34.6	49.8	50
			50 KW	50	2	48.1	54.6	60
(NL/NM) 180 \\ (NS/NW)-15\\ (NS/NW)T15\\ J15 (NL/NM) C00E (INTELLISPEED)								
5.0	208-3-60	13.5	None	---	---	---	16.9	20
			10 KW	7.5	1	20.8	42.9	45
			16 KW	12	2	33.4	58.5	60
			26 KW	19.5	2	54.2	84.5	90
			36 KW	27	2	75.1	110.6	125
			50 KW	37.6	2	104.2	147.3	150
	230-3-60	13.0	None	---	---	---	16.3	20
			10 KW	10	1	24.1	46.3	50
			16 KW	16	2	38.5	64.4	70
			26 KW	26	2	62.5	94.4	100
			36 KW	36	2	86.6	124.5	125
			50 KW	50	2	120.3	136.5	150
	460-3-60	6.5	None	---	---	---	8.1	15
			10 KW	10	1	12.0	23.2	25
			16 KW	16	2	19.2	32.2	35
			26 KW	26	2	31.3	47.2	50
			36 KW	36	2	43.3	62.3	70
			50 KW	50	2	60.1	68.3	70
	575-3-60	5.2	None	---	---	---	6.5	15
			10 KW	10	1	9.6	18.5	20
			16 KW	16	2	15.4	25.7	30
			26 KW	26	2	25.0	37.8	40
			36 KW	36	2	34.6	49.8	50
			50 KW	50	2	48.1	54.6	60

TABLE 3: ELECTRICAL DATA - EVAPORATOR UNITS (CONTINUED)

Motor HP	Power Supply	Supply Blower Motor	Electric Heat Option				MCA[1] (Amps)	Max Fuse[2]/ Breaker[3] Size (Amps)
		FLA	Model	KW	Stages	Amps		
(NC\ND) 240\ (NH\NJ)-20\ (NH\NJ)T20\ J20 (NC\ND) C00E (CONSTANT VOLUME)								
5.0	208-3-60	14.0	None	---	---	---	17.5	20
			20 KW	15	1	41.6	69.5	70
			32 KW	24	2	66.6	100.8	110
			52 KW	39.1	2	108.5	153.2	175
	230-3-60	13.2	None	--	---	---	16.5	20
			20 KW	20	1	48.1	76.6	80
			32 KW	32	2	77.0	112.7	125
			52 KW	52	2	125.1	141.6	150
	460-3-60	6.6	None	---	---	---	8.3	15
			20 KW	20	1	24.1	38.3	40
			32 KW	32	2	38.5	56.4	60
			52 KW	52	2	62.5	70.8	80
	575-3-60	5.2	None	---	---	---	6.5	15
			20 KW	20	1	19.2	30.6	35
			32 KW	32	2	30.8	45.0	45
			52 KW	52	2	50.0	56.5	60
(NL/NM) 240 \\ (NS/NW)-20\\ (NS/NW)T20\\ J20 (NL/NM) C00E (INTELLISPEED)								
5.0	208-3-60	13.5	None	---	---	---	16.9	20
			20 KW	15	1	41.6	68.9	70
			32 KW	24	2	66.6	100.1	110
			52 KW	39.1	2	108.5	152.5	175
	230-3-60	13.0	None	--	---	---	16.3	20
			20 KW	20	1	48.1	76.4	80
			32 KW	32	2	77.0	112.5	125
			52 KW	52	2	125.1	141.3	150
	460-3-60	6.5	None	---	---	---	8.1	15
			20 KW	20	1	24.1	38.2	40
			32 KW	32	2	38.5	56.2	60
			52 KW	52	2	62.5	70.7	80
	575-3-60	5.2	None	---	---	---	6.5	15
			20 KW	20	1	19.2	30.6	35
			32 KW	32	2	30.8	45.0	45
			52 KW	52	2	50.0	56.5	60
(NC/NL/ND/NM) 240\\ (NH/NS/NJ/NW)-20\\ (NH/NS/NJ/NW)T20\\ J20 (NC/NL/ND/NM) C00F (CONSTANT VOLUME and (INTELLISPEED)								
7.5[5]	208-3-60	20.0	None	---	---	---	25.0	25
			20 KW	15	1	41.6	77.0	80
			32 KW	24	2	66.6	108.3	110
			52 KW	39.1	2	108.5	160.7	175
	230-3-60	19.4	None	--	---	---	24.3	25
			20 KW	20	1	48.1	84.4	90
			32 KW	32	2	77.0	120.52	125
			52 KW	52	2	125.1	149.3	150
	460-3-60	9.7	None	---	---	---	12.1	15
			20 KW	20	1	24.1	42.2	45
			32 KW	32	2	38.5	60.2	70
			52 KW	52	2	62.5	74.7	80
	575-3-60	7.8	None	---	---	---	9.8	15
			20 KW	20	1	19.2	33.8	35
			32 KW	32	2	30.8	48.2	50
			52 KW	52	2	50.0	59.8	60

1. Minimum Circuit Ampacity.
2. Dual Element, Time Delay Type.
3. HACR type per NEC.
4. (NC/ND)180C00D Models Only
5. NC/ND240C00F Motors Require Overload Relay

TABLE 4: HEATER STATIC RESISTANCE

Heater Accessory (Nom. Rating)	Basic Unit Capacity									
	7.5 Ton					10.0 Ton				
	CFM					CFM				
	2,400	2,700	3,000	3,300	3,600	3,200	3,600	4,000	4,400	4,800
10KW	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03	0.04
16KW	0.01	0.02	0.02	0.03	0.04	0.03	0.04	0.05	0.06	0.07
26KW	0.03	0.04	0.05	0.06	0.07	0.06	0.07	0.09	0.11	0.13
36KW	0.05	0.07	0.08	0.10	0.11	0.09	0.11	0.14	0.17	0.20

Heater Accessory (Nom. Rating)	Basic Unit Capacity				
	15.0 Ton				
	CFM				
	4,800	5,400	6,000	6,600	7,200
10KW	0.04	0.05	0.06	0.08	0.09
16KW	0.08	0.10	0.13	0.16	0.18
26KW	0.13	0.16	0.20	0.24	0.29
36KW	0.20	0.24	0.29	0.35	0.42
50KW	0.23	0.28	0.35	0.37	0.52

Heater Accessory (Nom. Rating)	Basic Unit Capacity				
	20.0 Ton				
	CFM				
	6,400	7,200	8,000	8,800	9,600
20KW	0.05	0.06	0.08	0.09	0.10
32KW	0.08	0.10	0.11	0.12	0.15
52KW	0.14	0.15	0.18	0.22	0.28

TABLE 5: HEATER PHYSICAL DATA

Description			Heater Capacity				
			10kW[1]	16kW[2]	26kW[3]	36kW	48kW
Number of Heating Elements			3	6	6	9	12
Shipping Weight			47	50	50	53	55
Breaker[4]	208/230 Volts	Quantity	1	2	2	3	4
		Size-Amps	30	25	40	40	40
Fuses[5]	460 Volts	Quantity	3	6	6	9	6
		Size-Amps	15	15	20	20	40
Fuses[5]	575 Volts	Quantity	3	6	6	9	6
		Size-Amps	15	15	20	20	40

1. 20kW requires two of these heaters.
2. 32kW requires two of these heaters.
3. 52kW requires two of these heaters.
4. HACR type per NEC.
5. Dual element, time delay type.

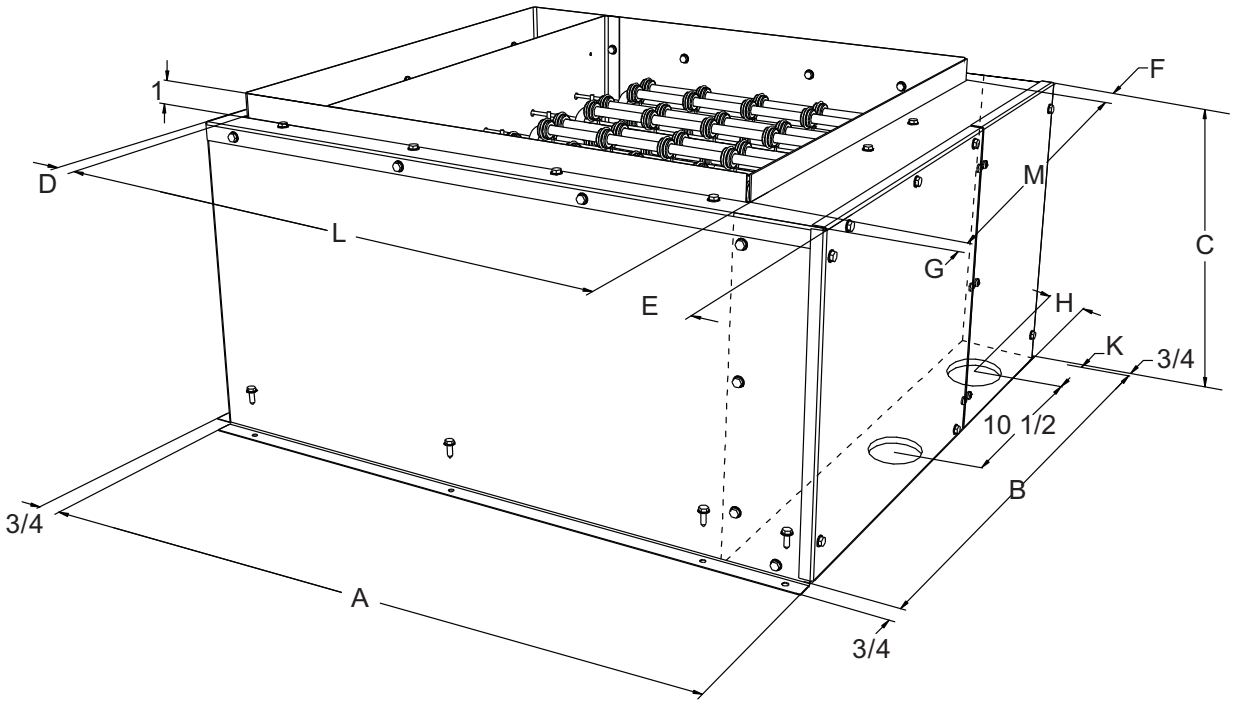


FIGURE 8 - HEATER DIMENSIONS

TABLE 6: HEATER DIMENSIONS

Air Handler Tonnage	Heater Model	Dimension (In.)										
		A	B	C	D	E	F	G	H	K	L	M
7.5, 10 and 20 Ton	2HJ04701025,46,58	25.07	23.59	13.14	0.84	3.42	1.33	1.36	1.73	3.38	20.93	20.91
	2HJ04701625,46,58											
	2HJ04702625,46,58											
	2HJ04703625,46,58											
	2HN04602025,46,58											
	2HN04603225,46,58											
	2HN04605225,46,58											
15 Ton	2HN04601025,46,58	26.7	23.59	13.14	0.84	3.42	1.33	1.36	1.73	2.03	22.5	20.91
	2HN04601625,46,58											
	2HN04602625,46,58											
	2HN04603625,46,58											
	2HN04605025,46,58											

NOTE: Please refer to Table 7 to determine minimum low voltage wire gauge between indoor and outdoor units. The table indicates distance between indoor and outdoor units, versus wire gauge. Never under size low voltage thermostat wiring.

TABLE 7: STANDARD (NON VFD) AND INTELLISPEED (ISP) LOW VOLTAGE WIRING

Distance from OD to ID unit (one way), feet	Gauge
50	#20
75	#20
100	#20
150	#18
200	#18
250	#16

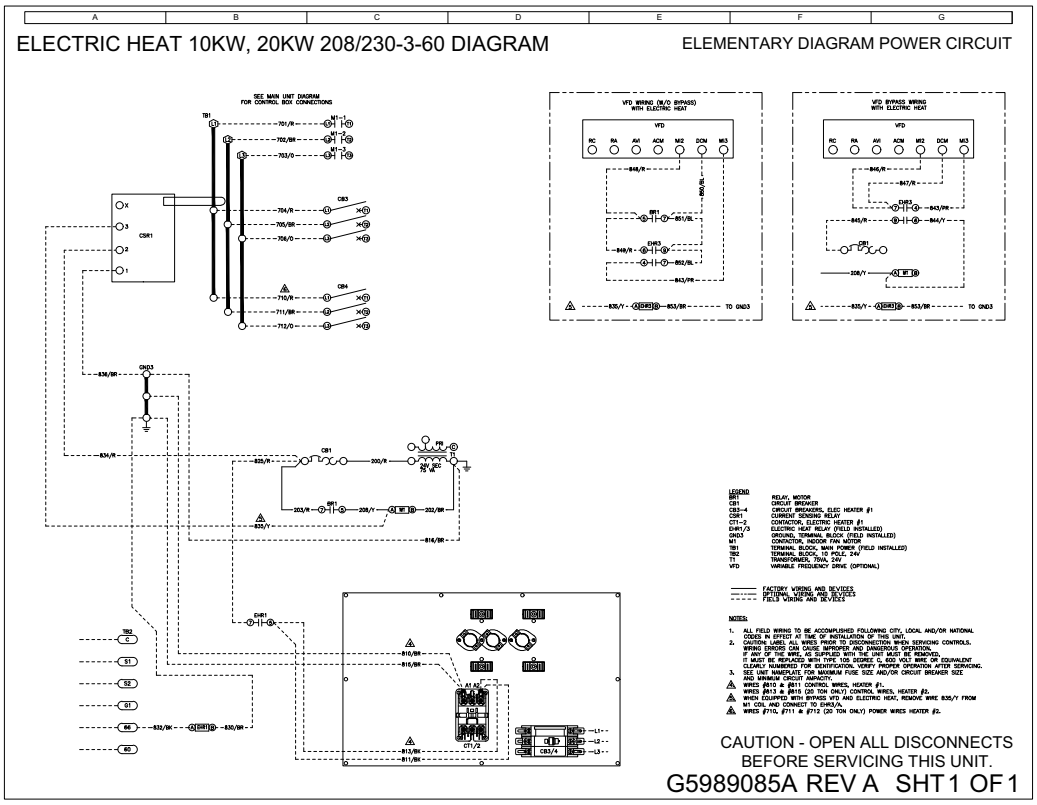


FIGURE 9 - ELECTRIC HEAT 10KW, 20KW 208/230-3-60 WIRING DIAGRAM

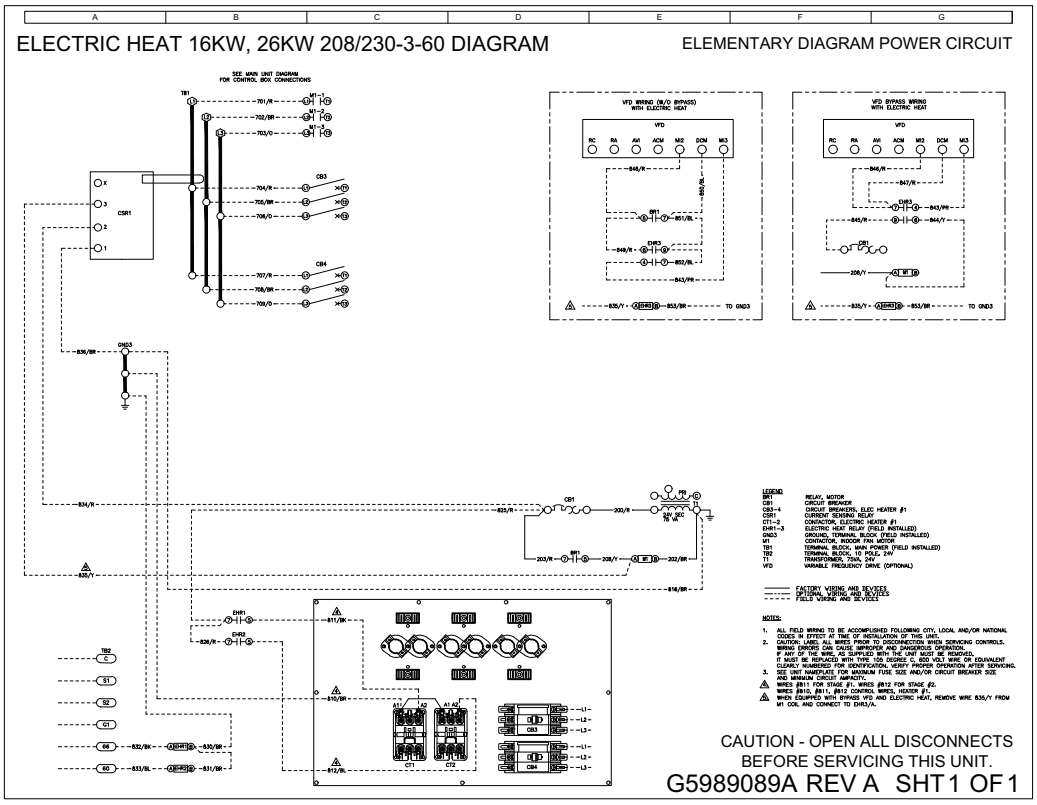


FIGURE 10 - ELECTRIC HEAT 16KW, 26KW 208/230-3-60 WIRING DIAGRAM

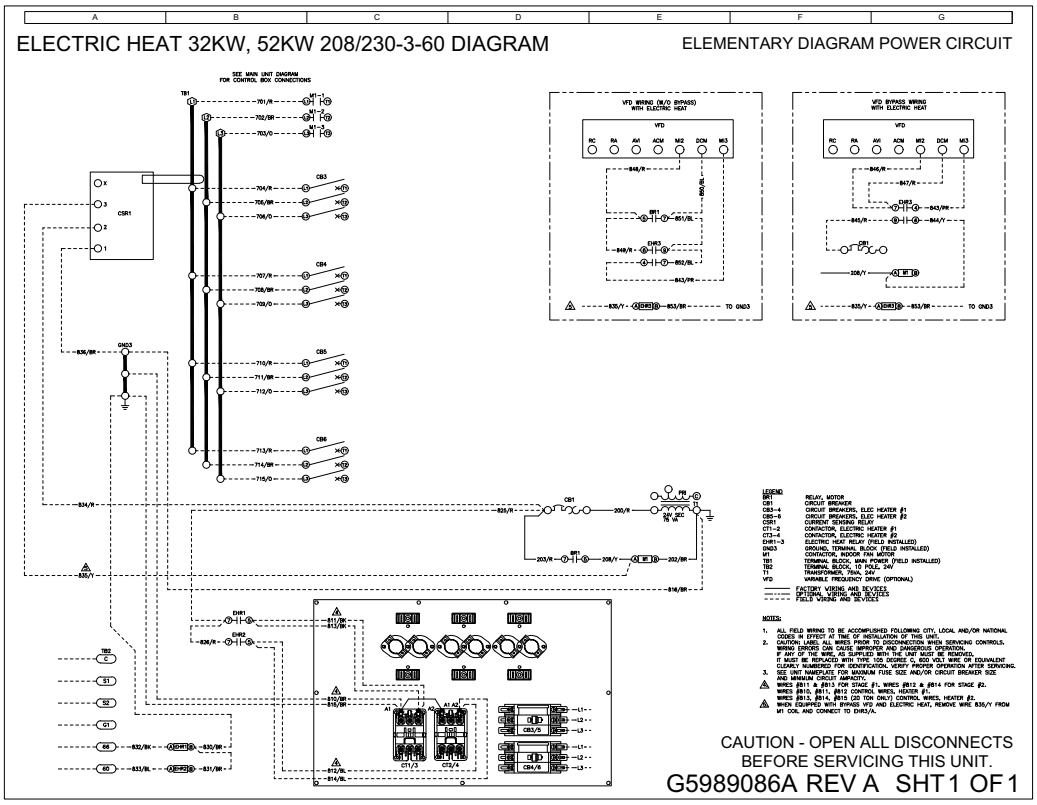


FIGURE 11 - ELECTRIC HEAT 32KW, 52KW 208/230-3-60 WIRING DIAGRAM

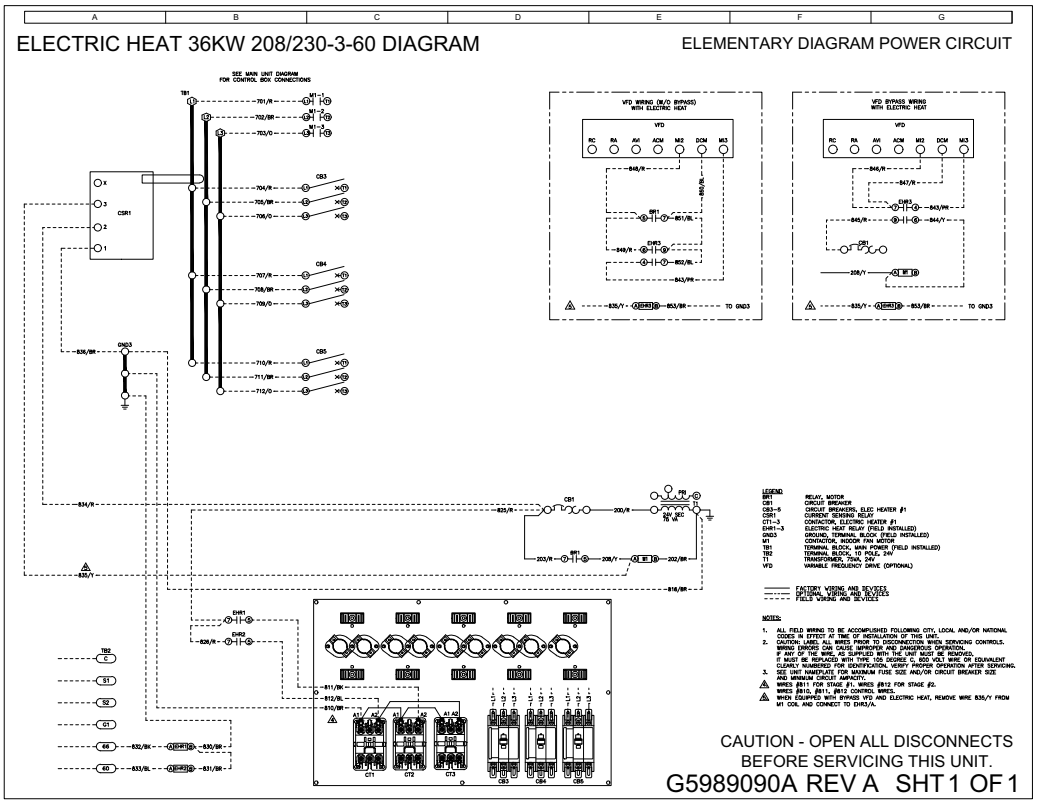


FIGURE 12 - ELECTRIC HEAT 36KW 208/230-3-60 WIRING DIAGRAM

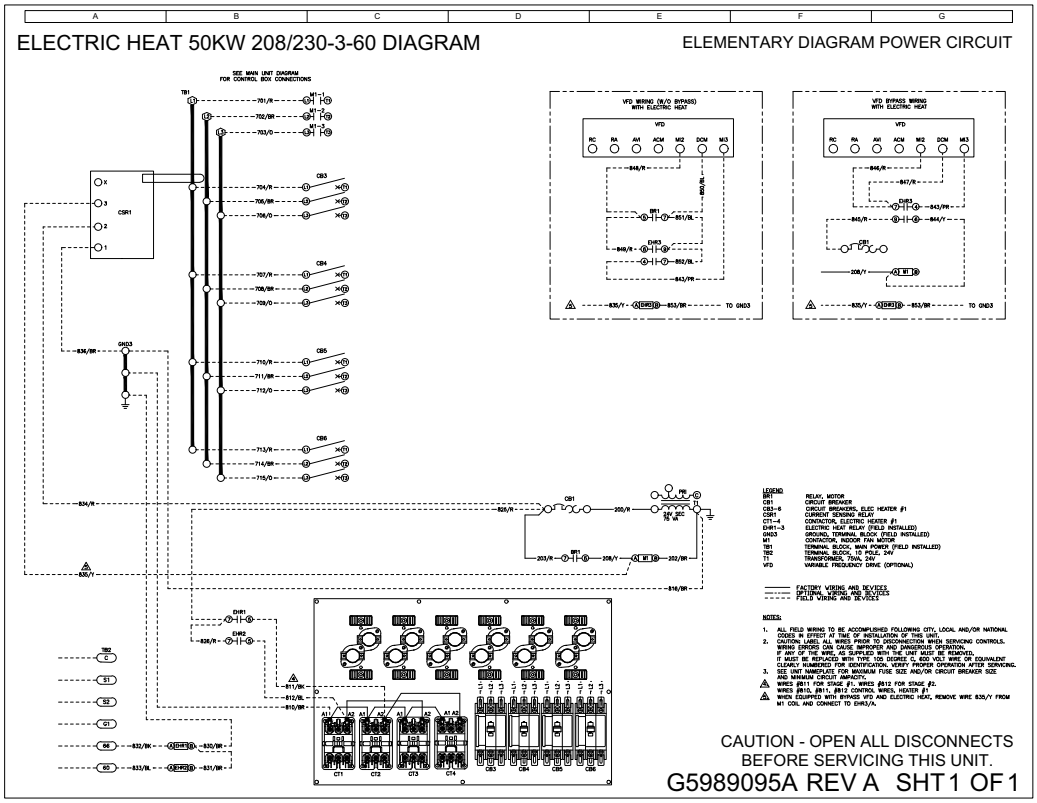


FIGURE 13 - ELECTRIC HEAT 50KW 208/230-3-60 WIRING DIAGRAM

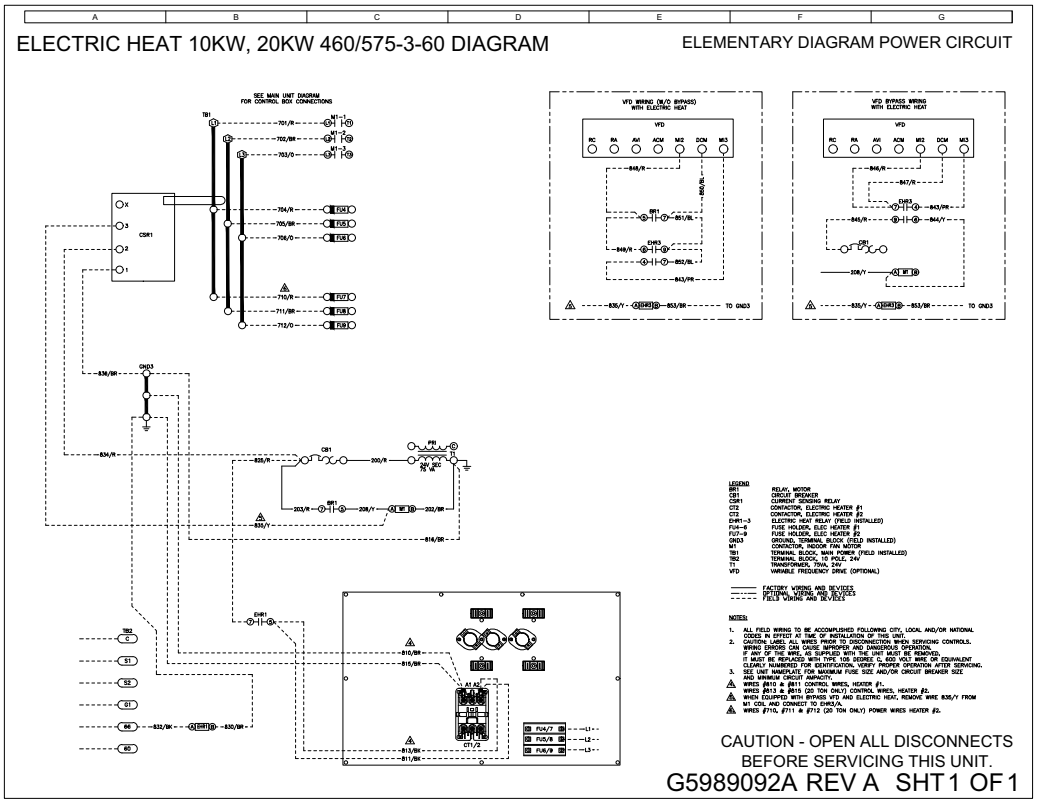


FIGURE 14 - ELECTRIC HEAT 10KW, 20KW 460/575-3-60 WIRING DIAGRAM

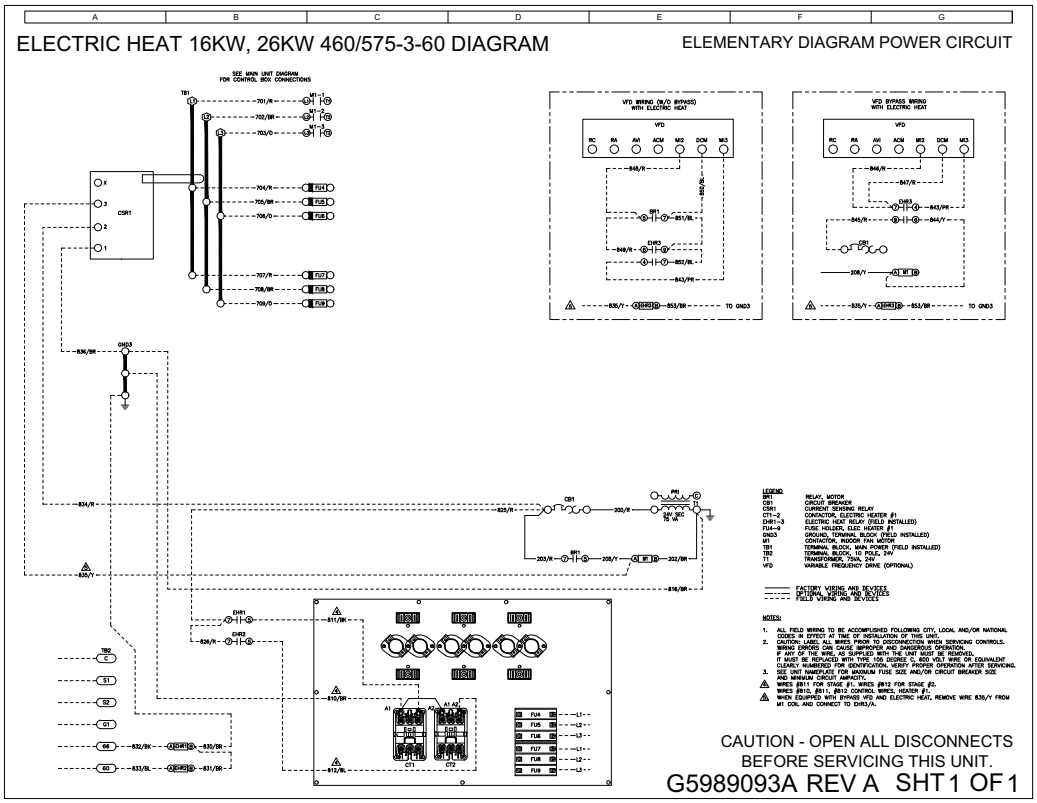


FIGURE 15 - ELECTRIC HEAT 16KW, 26KW 460/575-3-60 WIRING DIAGRAM

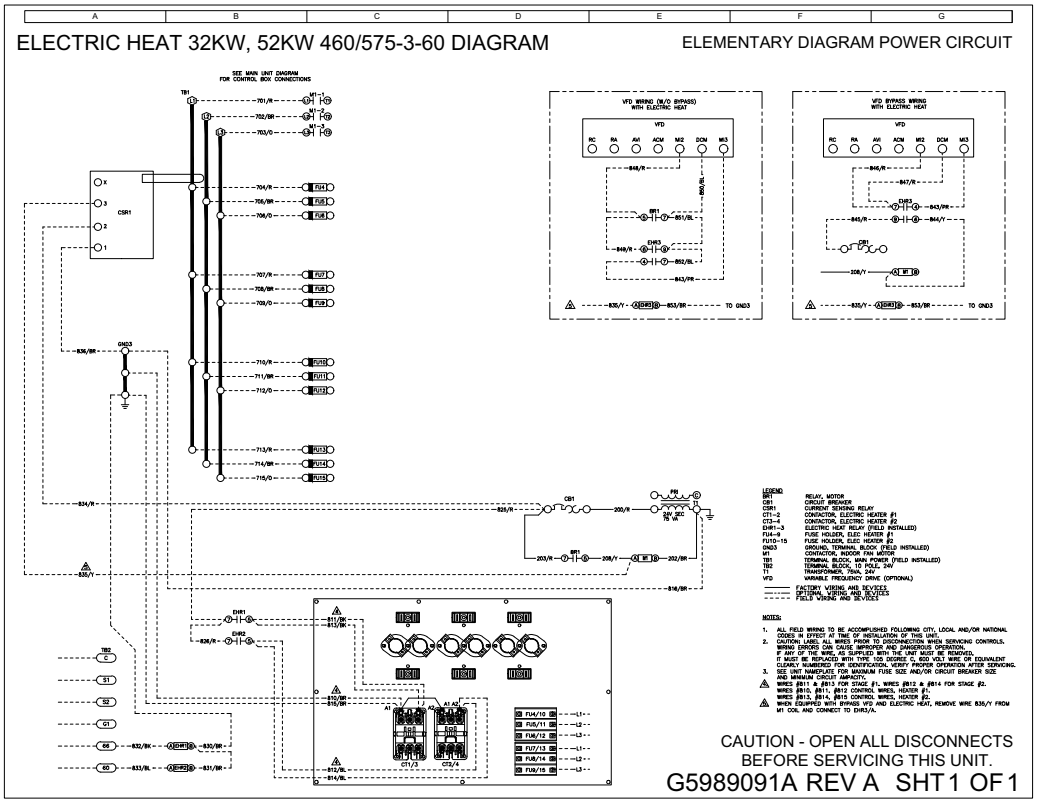


FIGURE 16 - ELECTRIC HEAT 32KW, 52KW 460/575-3-60 WIRING DIAGRAM

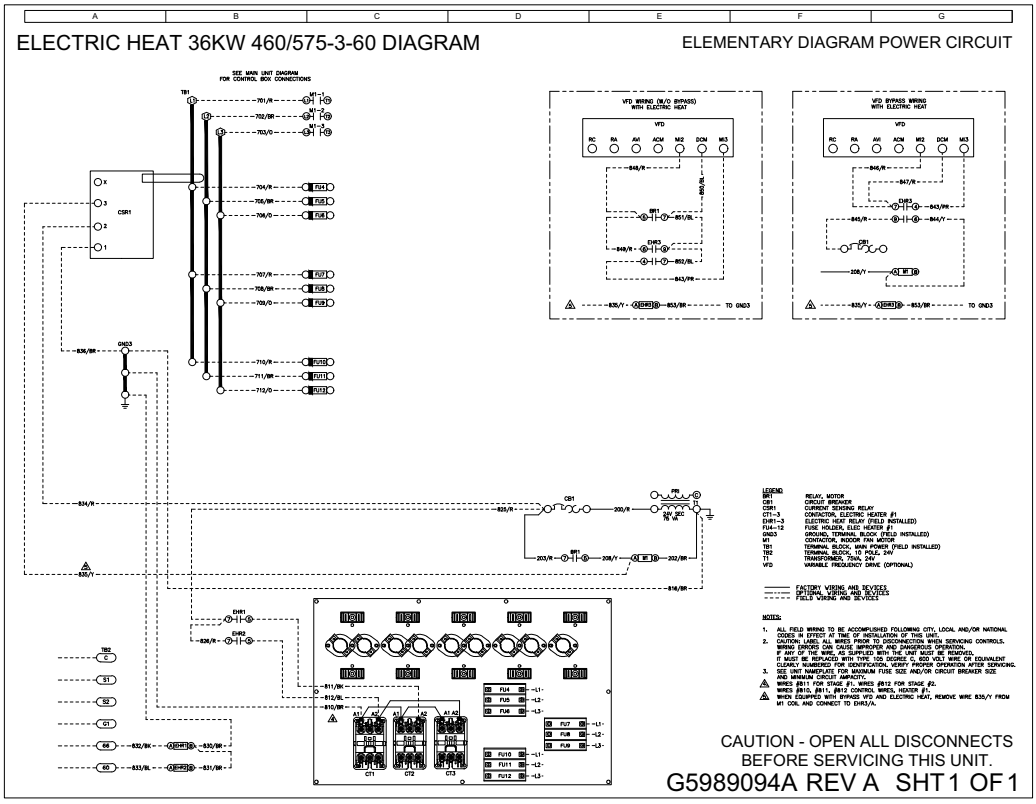


FIGURE 17 - ELECTRIC HEAT 36KW 460/575-3-60 WIRING DIAGRAM

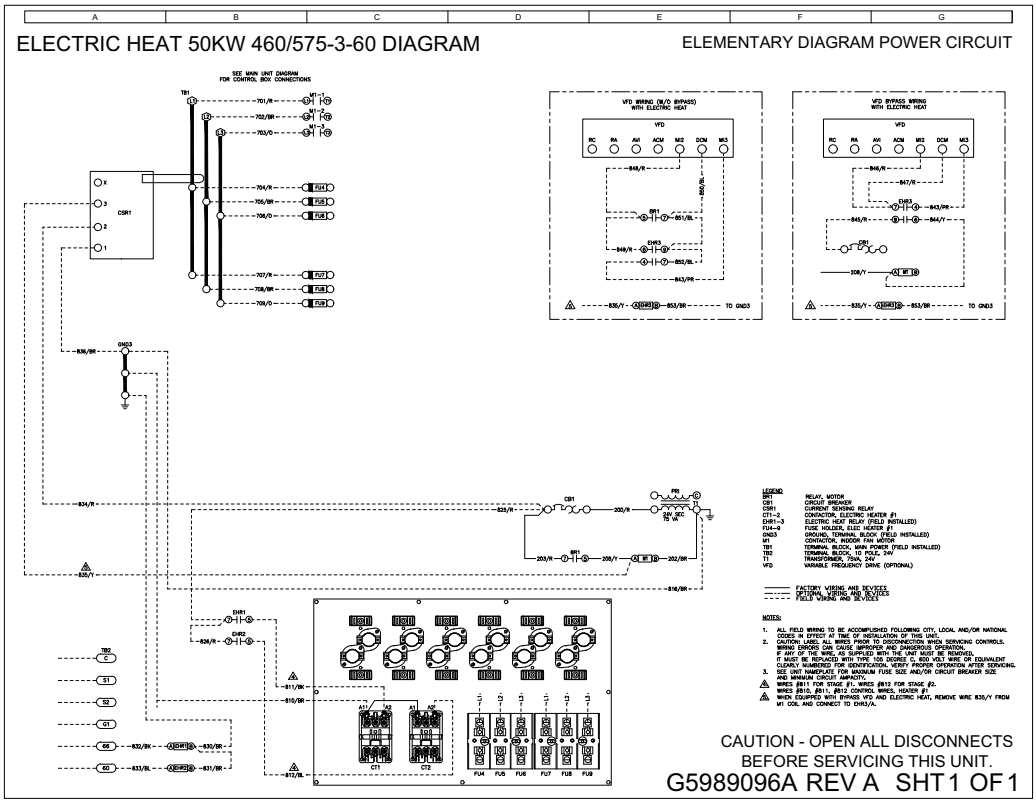
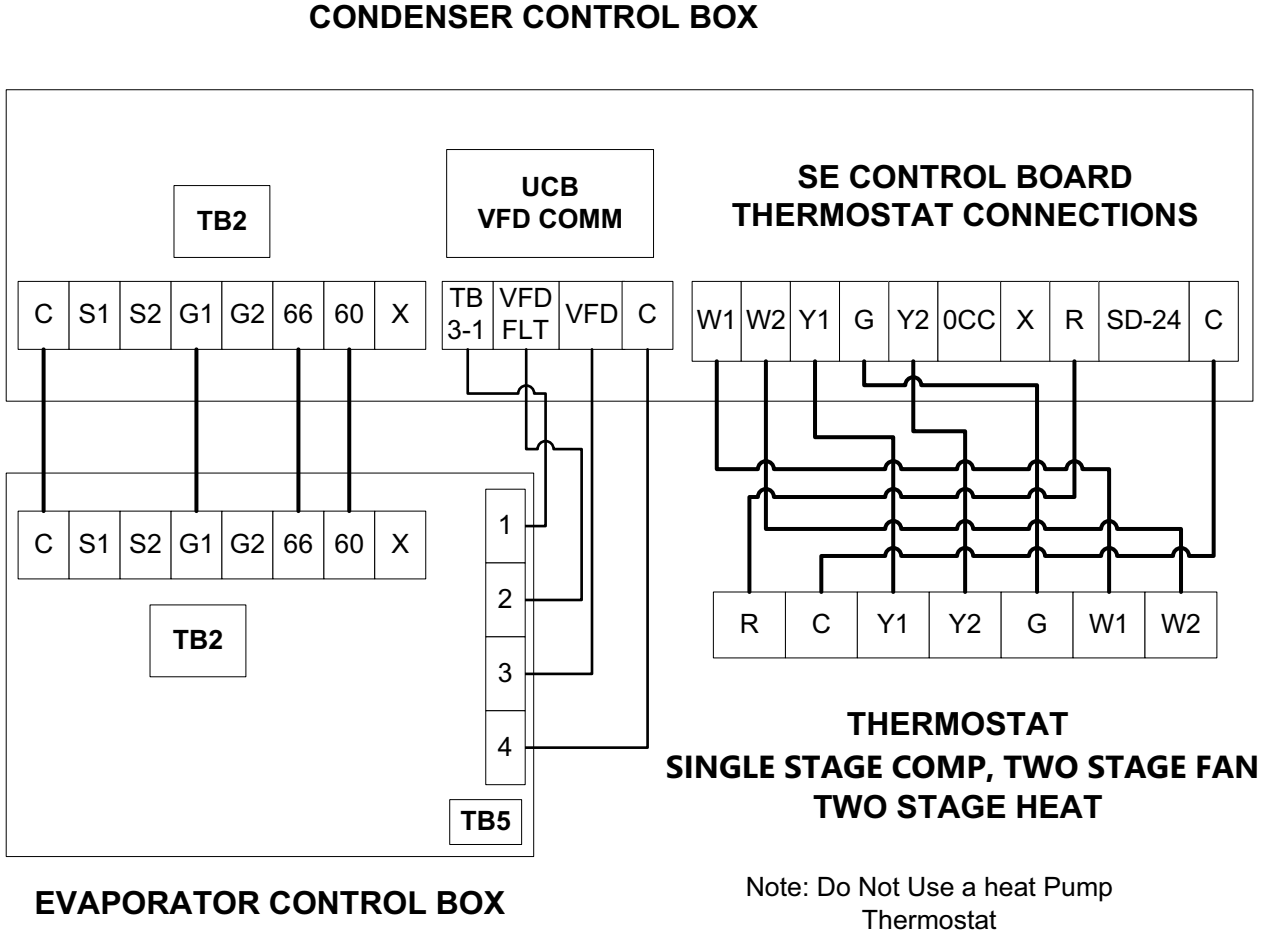
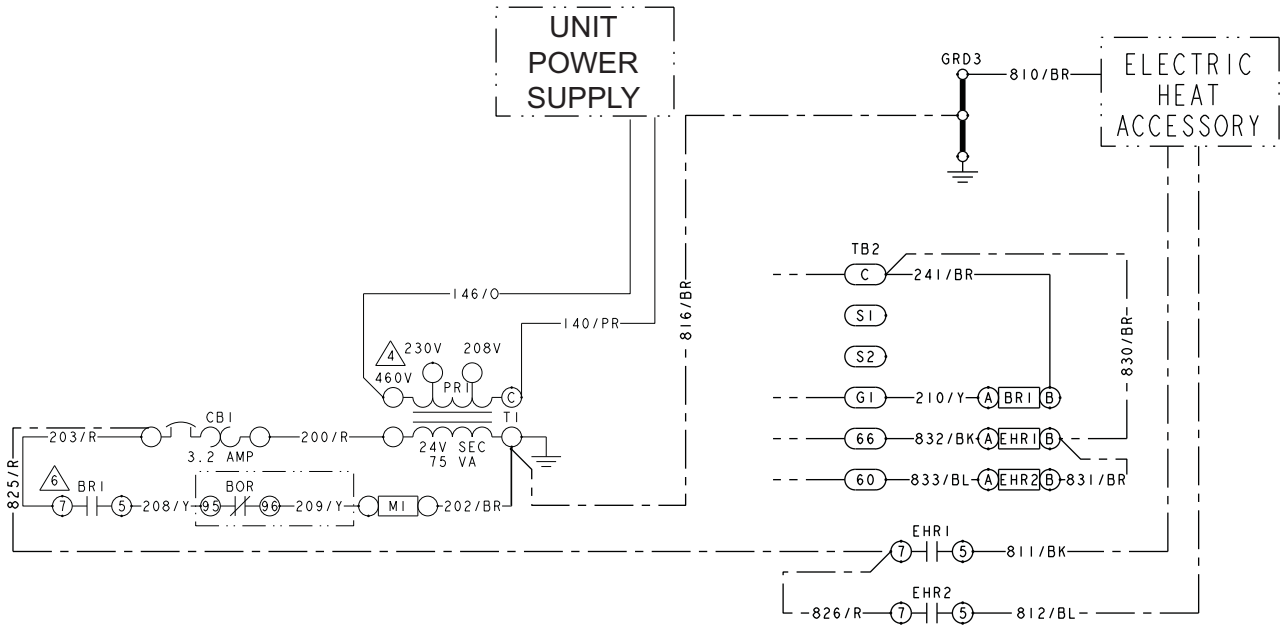


FIGURE 18 - ELECTRIC HEAT 50KW 460/575-3-60 WIRING DIAGRAM

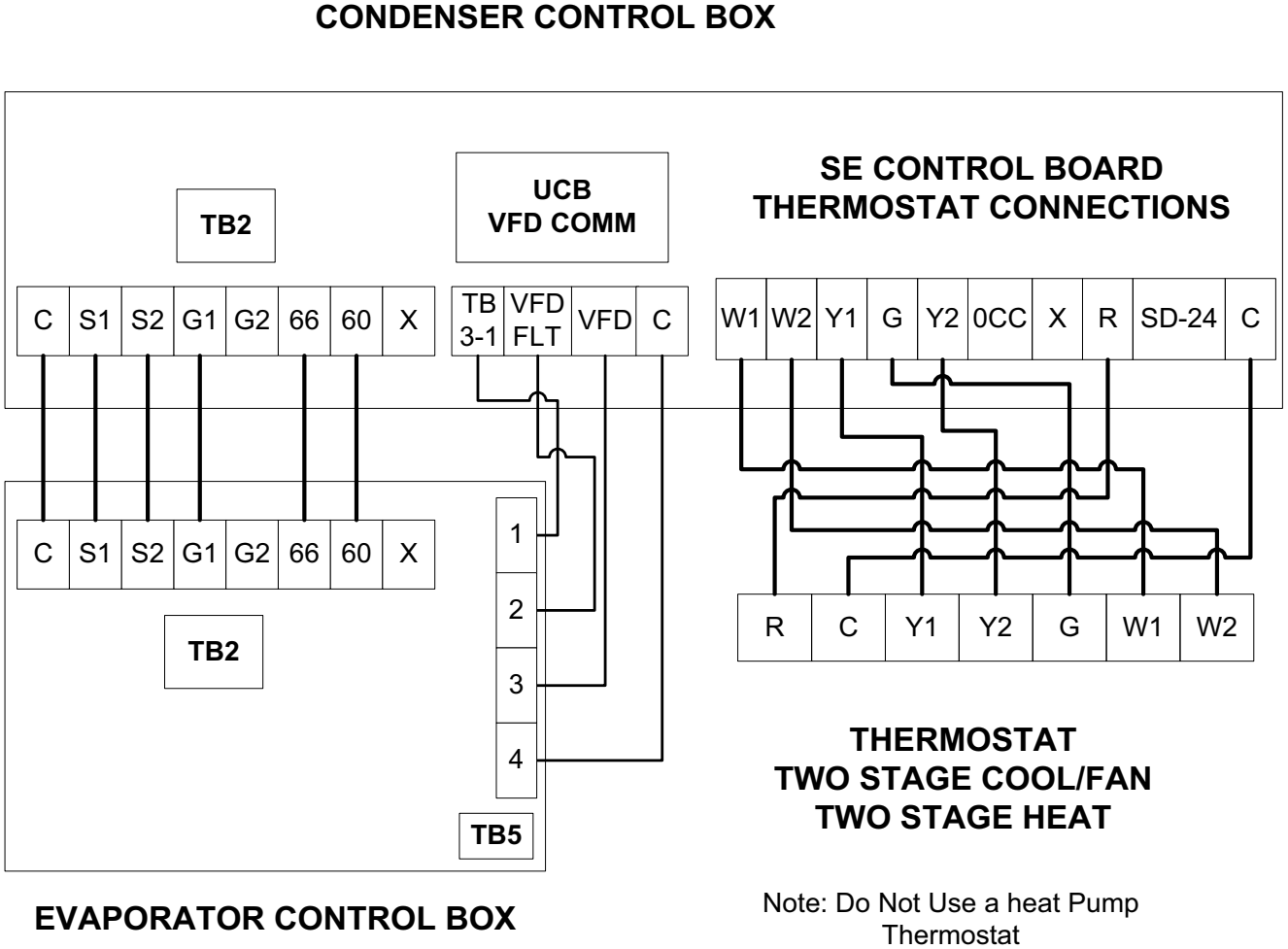


Typical Simplified Field Wiring Diagram – Evaporator with Heat Pump Condenser

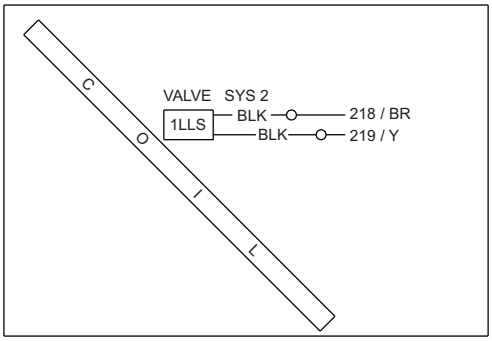


Typical Simplified Field Wiring Diagram – Evaporator

FIGURE 19 - TYPICAL FIELD WIRING DIAGRAM - NC/NL090, NH(T)/NS(T)-07, J07NC/NL AIR HANDLING UNIT WITH PC090/PH-07/J07PC HEAT PUMP (VFD VERSION SHOWN)

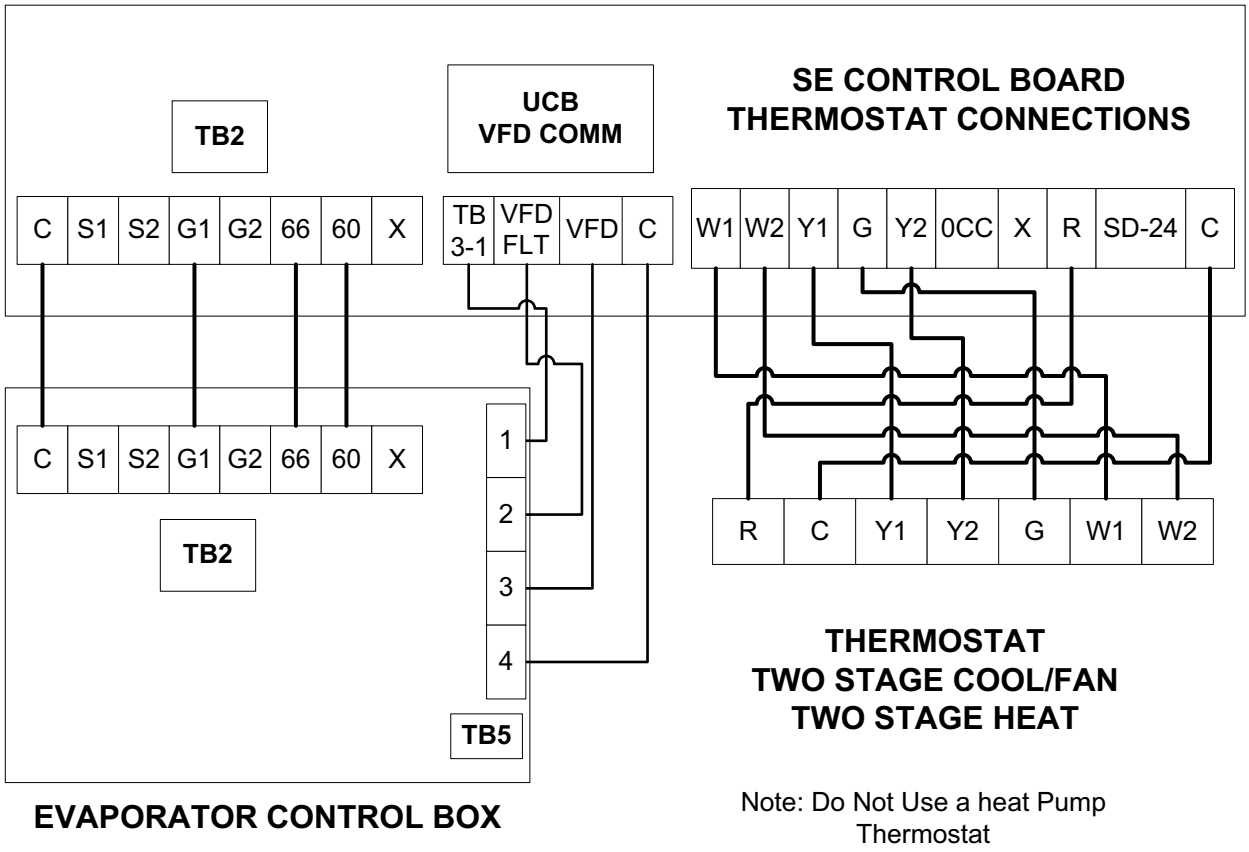


Typical Simplified Field Wiring Diagram – Evaporator with Heat Pump Condenser

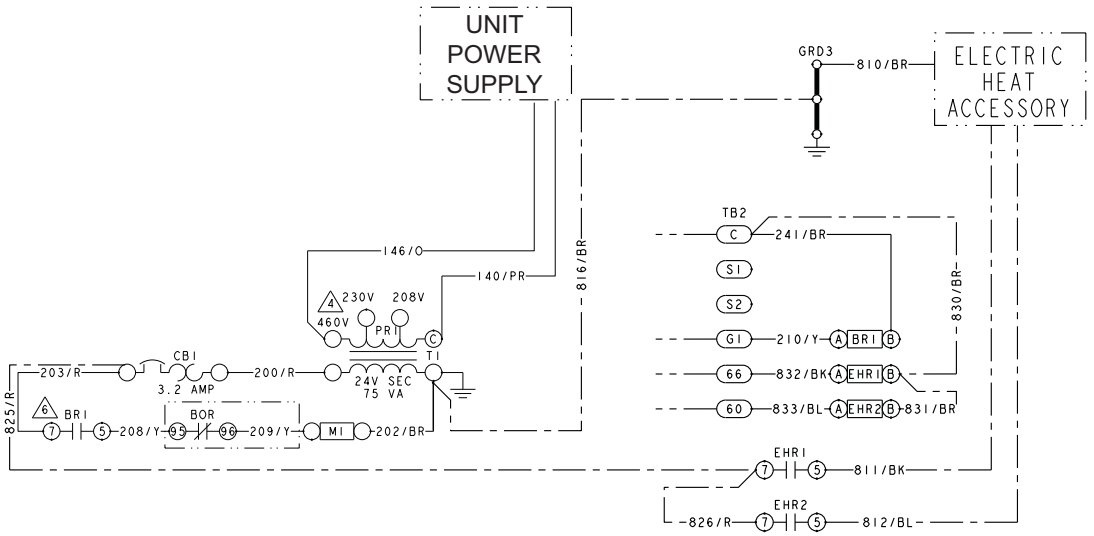


Typical NC120 - 240 Liquid Line Solenoid Wiring

FIGURE 20 - TYPICAL FIELD WIRING DIAGRAM - NC/NL120 THRU 240, NH(T)/NS(T)-10 THRU -20, J10 THRU 20NC/NL AIR HANDLING UNIT WITH PC120 THRU 240/PH-10 THRU -20/J10 THRU 20PC HEAT PUMP (VFD VERSION SHOWN)

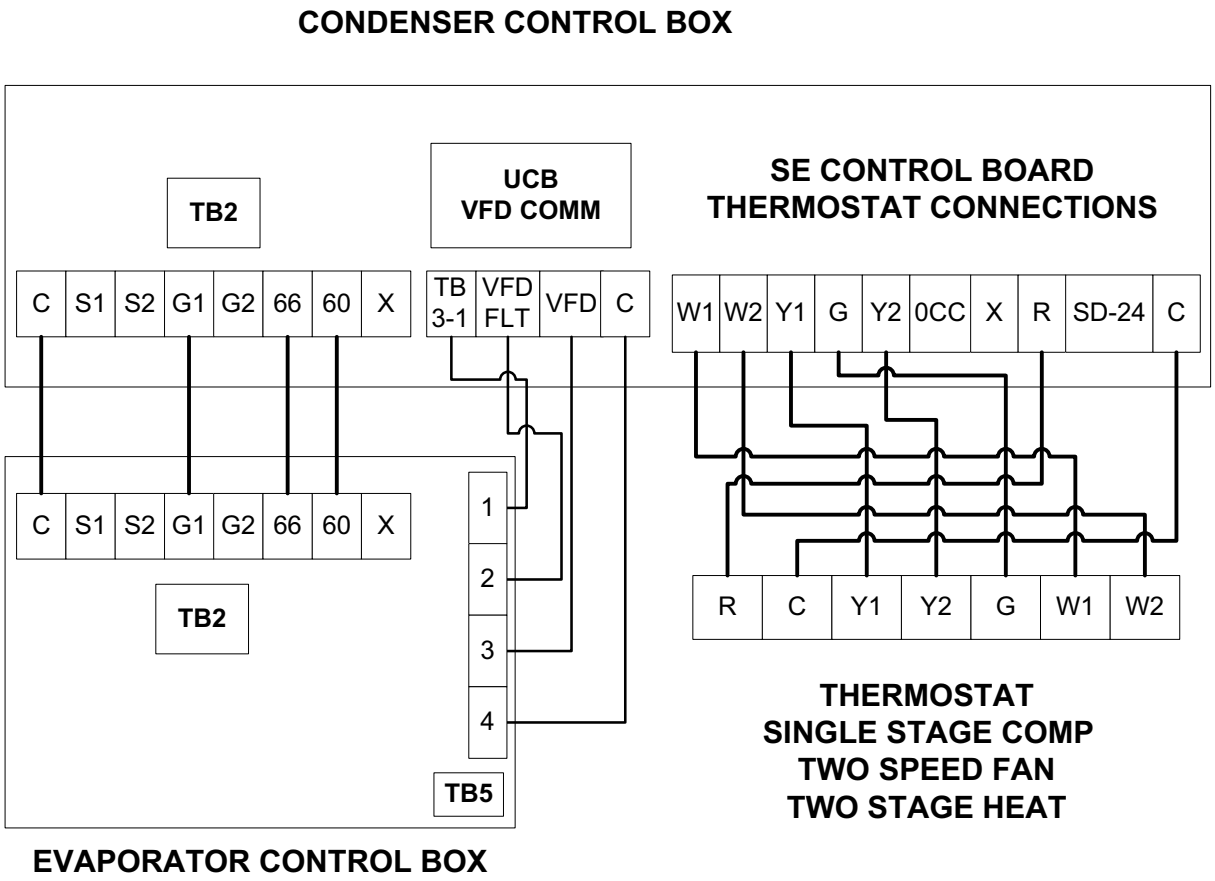


Typical Simplified Field Wiring Diagram – Evaporator with Heat Pump Condenser

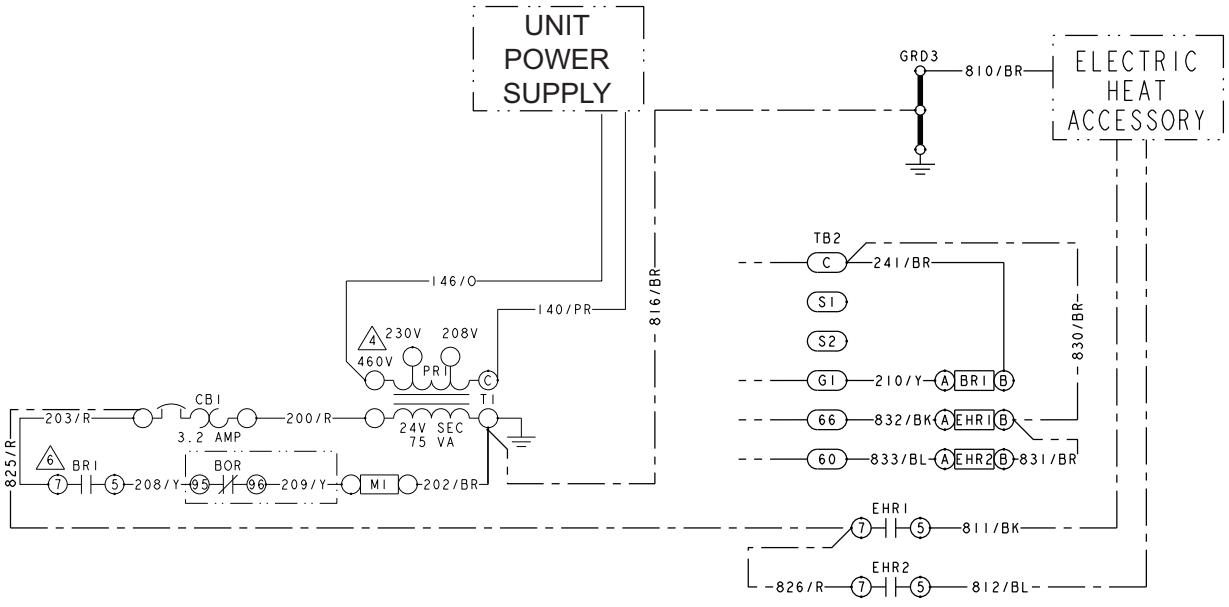


Typical Simplified Field Wiring Diagram – Evaporator

FIGURE 21 - TYPICAL FIELD WIRING DIAGRAM - ND/NM180 THRU 240, NJ(T)/NW(T)-15 THRU -20, J15 THRU 20ND/NM AIR HANDLING UNIT WITH PD180 THRU 240/PJ-15 THRU -20/J15 THRU 20PD HEAT PUMP (VFD VERSION SHOWN)

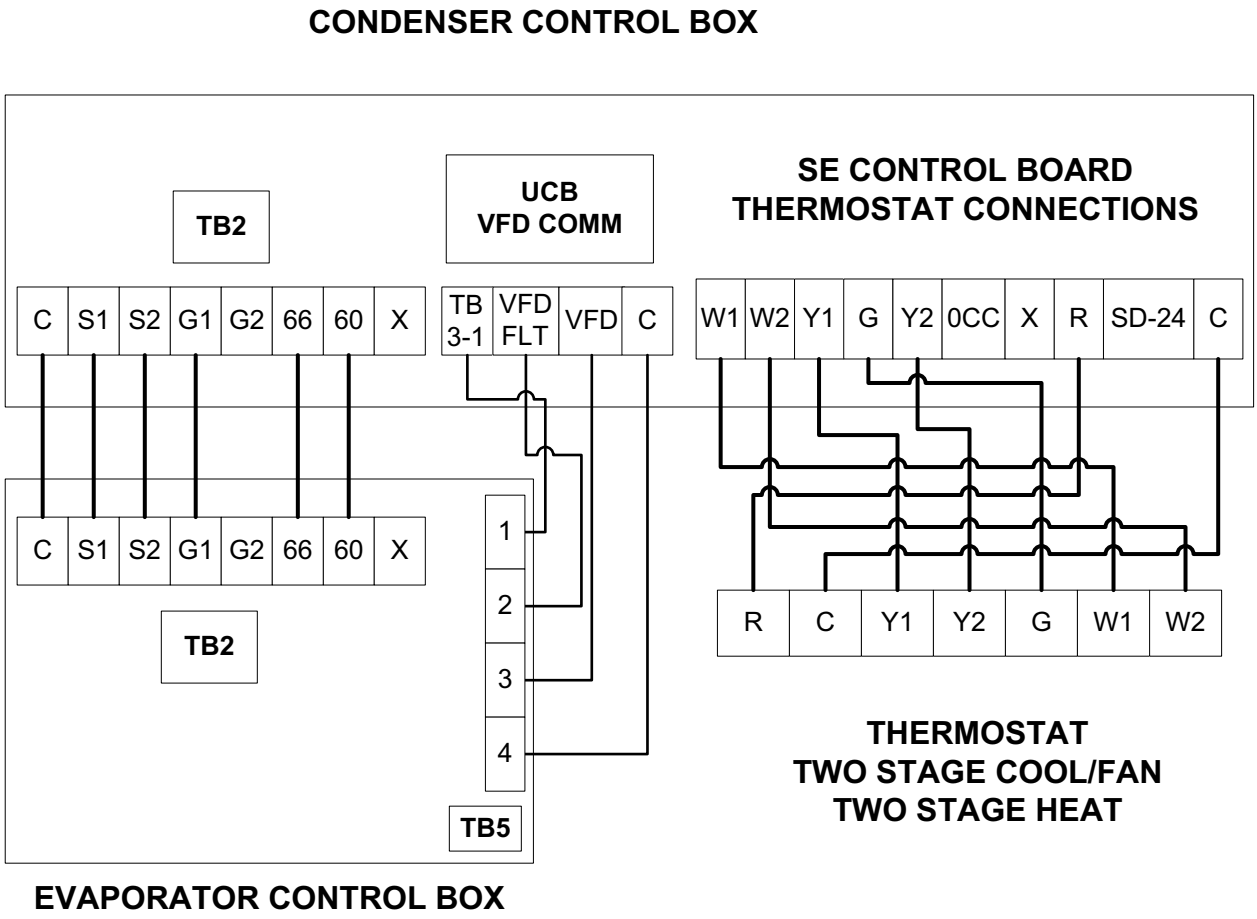


Typical Simplified Field Wiring Diagram – Evaporator with Condenser



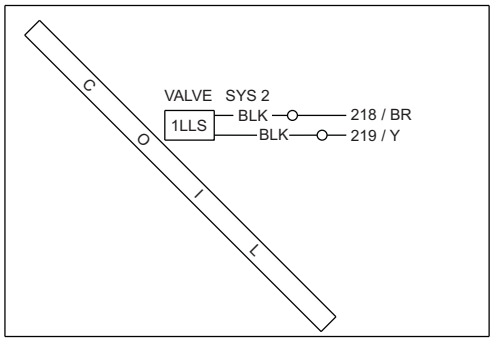
Typical Simplified Field Wiring Diagram – Evaporator

FIGURE 22 - TYPICAL FIELD WIRING DIAGRAM - NC/NL090, NH(T)/NS(T)-07, J07NC/NL AIR HANDLING UNIT WITH YC090/YH-07/J07YC CONDENSING UNIT (VFD VERSION SHOWN)



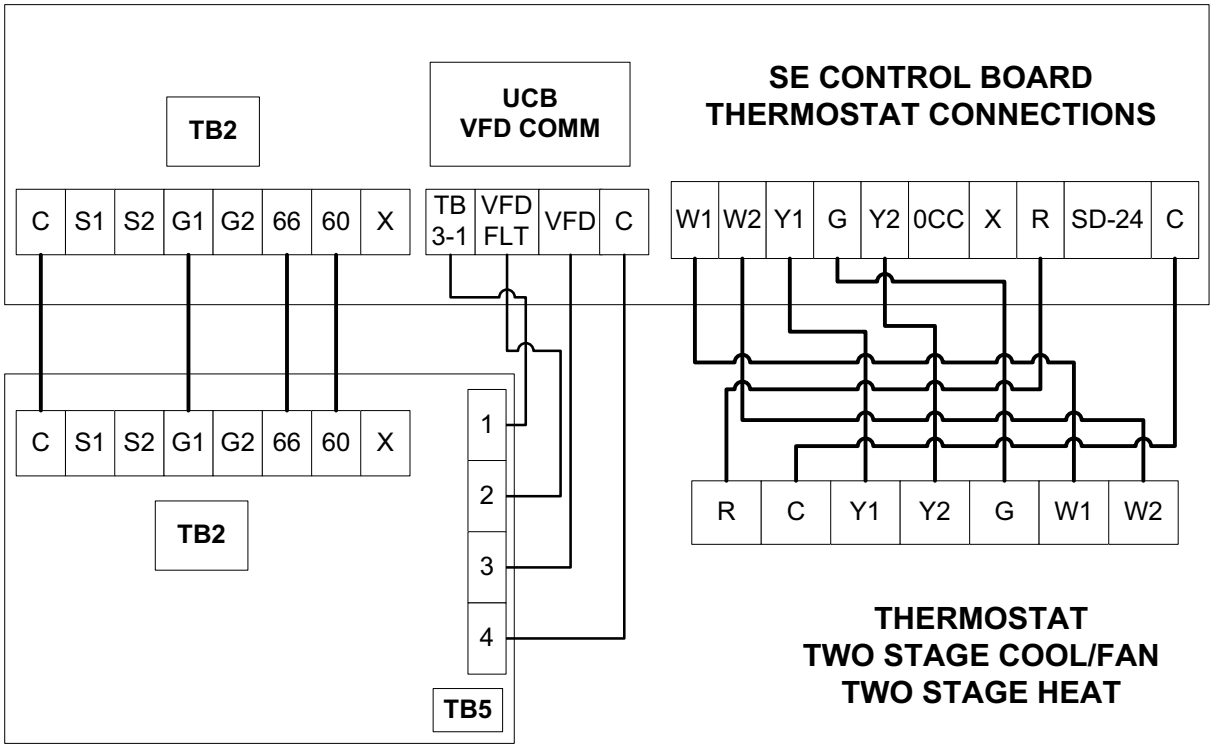
Typical Simplified Field Wiring Diagram – Evaporator with Condenser

NOTE: On non NC/ND Evaporator models, isolation relays must be installed to avoid overloading on 75 VA transformers on the condensing unit.



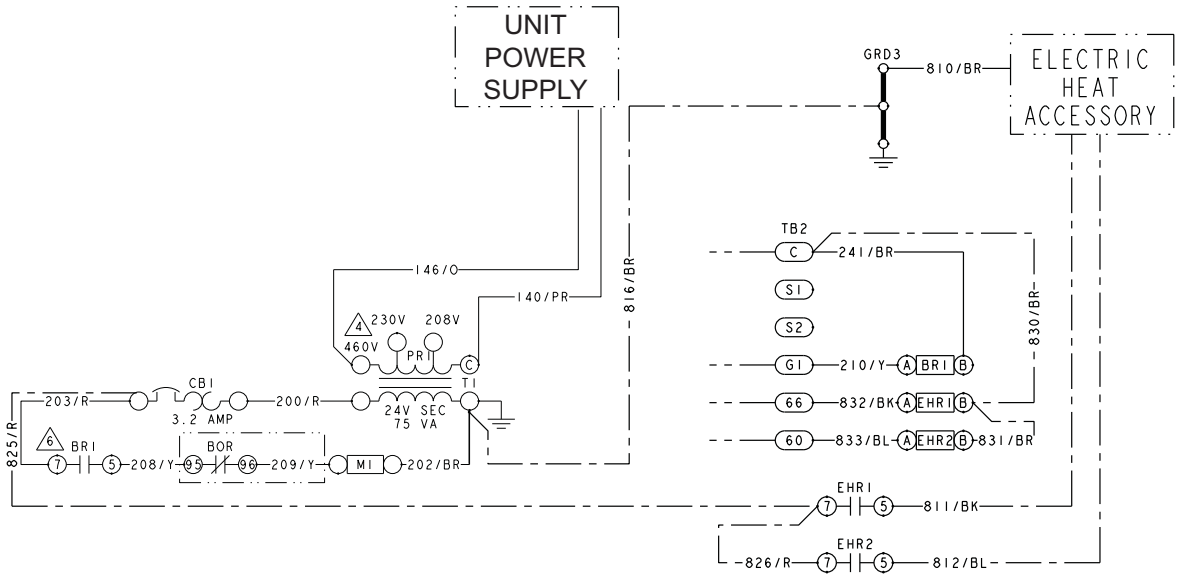
Typical Liquid Line Solenoid Wiring

FIGURE 23 - TYPICAL FIELD WIRING DIAGRAM - NC/NL120 THRU 240, NH(T)/NS(T)-10 THRU -20, J10 THRU 20NC/NL AIR HANDLING UNIT WITH YC120 THRU 240 CONDENSING UNIT (VFD VERSION SHOWN)



Typical Simplified Field Wiring Diagram – Condenser

NOTE: On third party Evaporator models, isolation relays must be installed to avoid overloading on 75 VA transformers on the condensing unit.



Typical Simplified Field Wiring Diagram – Evaporator

FIGURE 24 - TYPICAL FIELD WIRING DIAGRAM - ND/NM120 THRU 240, NJ(T)/NW(T)-10 THRU -20, J10 THRU 20ND/NM AIR HANDLING UNIT WITH YD120 THRU 240/YJ-10 THRU -20/J10 THRU 20YD CONDENSING UNIT (VFD VERSION SHOWN)

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