

# SERVICE BULLETIN

Carrier Corporation



**Number:** SMB 04-0007A

**Date:** 11/11/2004 **Supercedes:** SMB04-0007

**Title:** 30GTN T051-T055 Alerts

**Author:** Lewis Clark

**Dept:** NAC Service  
Engineering

**Category:** General

**Dealer Bulletin Number:** DSB 04-0007A

## **MODEL CATEGORY:**

Chillers (30 Series)

## **MODELS AFFECTED:**

Carrier: 30GTN, GTR, 30GUN, GUR040-070  
Serial Number: 1499Fnnnnn through 0104Fnnnnn

30GTN, GTR, GUN, GUR130-210  
Serial Number: 1499Fnnnnn through 1604Fnnnnn

## **SITUATION:**

There have been many reports regarding nuisance T051 & T055 alerts on chillers with ComfortLink controls. The alerts are not attributable to an open safety. The root cause has been determined to be the contacts used in the control relay (CR), HN61KK025, which provide the 5 vdc feedback signal to the main base board (MBB). The current through this circuit is approximately 2 mA. This is not sufficient to allow the contacts to make reliably and the MBB misinterprets this as a failure and generates the alert.

30GTN, GTR, GUN, GUR040-070 with accessory Compressor Protection Control System (CPCS) board and 30GTN, GTR, GUN, GUR080-110 have not exhibited this problem.

## **SOLUTION:**

Two kits have been developed which utilize the HK50AA035 current sensing board (CSB) in place of the control relay (CR) to provide the feedback signal to the MBB. This eliminates the contact problems associated with the control relay by using a digital signal generated by the CSB.

Part Number	Description
30GT-911---084	30GTN, GTR, GUN, GUR040-070 CSB Conversion Kit
30GT-911---086	30GTN, GTR, GUN, GUR130-210 CSB Conversion Kit

The kits consist of CSB modules, wiring harnesses, wiring labels and instructions. New software has been developed to allow the MBB to correctly interpret the signal provided by the CSB. Copies of the installation instructions are included with this bulletin for reference.

The MBB must be downloaded with software version 4.1, CESR131170-04-01, using Smartloader prior to installation of the kit. Unit sizes 130-210 also require the extra unloader board (CXB) to be downloaded with version 1.2 software.

The software can be downloaded from Post-Sale Support @ <http://www.hvacpartners.com>. The CXB version 1.2 software is included with version 4.1 MBB software.

**Note:** The chiller may fail to operate if it is not configured properly after installation of the retrofit kit. Refer to the installation instructions regarding configuration of the compressors and current sensing boards.

Factory Action: The CSB has been implemented in production on the 30GTN060 & 070 starting serial number 0204Fnnnnn and on the 30GTN130-210 starting serial number 1704Fnnnnn.

Distributor Action: None

Field Action: Install retrofit kit and upgrade software to resolve customer complaints.

Parts/Kits: 30GT-911---084 and 30GT-911---086 are available as finished goods accessories on ODS. The kits are not available from RCD.

**POLICY:** There is no policy associated with this bulletin.

# INSTRUCTIONS



**Carrier**

A United Technologies Company

Page: 1 of 5

Instruction Sheet Number: 30GT515874

Revision: 3.0

PCA: 303144CA

**Description: Service Parts Kit For CSB Installation (30GT/GU 040-070)**

**Part Number: 30GT-911---084  
2003**

**Date: December 2,**



**WARNING**

**HAZARDS: ELECTRIC SHOCK / PRESSURE**

**ELECTRIC SHOCK**

- **Bodily injury or death may result from electrocution. Shut off all power during servicing. Note: There may be more than one disconnect switch.**
- **Turn off all power to unit before servicing. Use field disconnect. Follow lock-out and tag-out procedures.**

**Safety Instructions:**

Service or maintenance must be performed only by trained certified technicians and according to service instructions.

- Follow recognized safety practices and wear protective goggles.**
- Disconnect and Lockout all electrical power. Electrical measurements during operation must be taken outside the compressor terminal box.**

30GT-911---084

This kit contains the parts necessary to convert units utilizing the HN61KK025 control relay for compressor feedback status to the HK50AA035 current sensor board (CSB). Only a qualified technician familiar with electrical controls and schematic diagrams should install this kit.

**Parts list:**

<b>QTY</b>	<b>Part No</b>	<b>Description</b>
1	30GT415872	Harness Assembly
1	30GT515873	Power Label
1	30GT515869	Control Label
2	HK50AA035	Current Sensor Board (CSB)
8	AL56AU128	6B-20 x ¾ in. long Screw
20	HY76TB125	Wire Tie
1	30GT515874	Instruction Packet
1	99MH4243AC401404	Wire Assembly, Black, 14 in. long
1	99MH4243AC401804	Wire Assembly, Black, 18 in. long
2	HY76TB123	Wire Tie

Note: The installer may not need all of the parts supplied in this kit.

**Tools required:**

Needle nose pliers  
3/8 in. socket or open-end wrench  
Knife  
Power drill and size 3/32 in. drill bit  
Phillip head screw driver

**Procedure:**

1. Disconnect power to unit and follow local lockout/tagout procedures.
2. Open control box doors and remove inner cover.
3. Install labels provided in label kit. Note that each label diagram in the control box has a part number on it.
4. Install label 30GT515869 over existing label 30GT515856. This label will cover the area 24V Control Schematic. Refer to Appendix A1 for location.
5. Install label 30GT515873. This label is showing compressors wiring through the CSB's. Refer to Appendix A1 for location.
6. Determine locations for two (2) HK50AA035 (Current Sensor Board) on the control box. Refer to Appendix A2 for location.

7. Install and secure the Current Sensor Boards (CSB) with the 6B-20 x ¾ in. long screws provided.
8. Route black compressor power wire assemblies through the CSB current loop for both circuit A1 and B1. Refer to Power Label 30GT515873, see Appendix A3. Secure black power wires to the current loop of CSB-A1 and CSB-B1 with wire tie (HY76TB123).

**Note:** On 30GT070 208/230V units, route black wire assemblies provided (99MH4243AC401404 and 99MH4243AC401804) and existing black compressor power wire assemblies per chart below.

TB1-21/L1	Thru CSB-B1 Loop	To CB-B1-11	(Existing wire asy)
TB1-21/L1	Thru CSB-A1 Loop	To CB-A1-11	(Existing wire asy)
TB1-21/L1		To CB-B1-11	(99MH4243AC401404)
TB1-21/L1		To CB-A1-11	(99MH4243AC401404)

Secure black power wires that route thru CSB-A1 and CSB-B1 current loop with wire tie (HY76TB123).

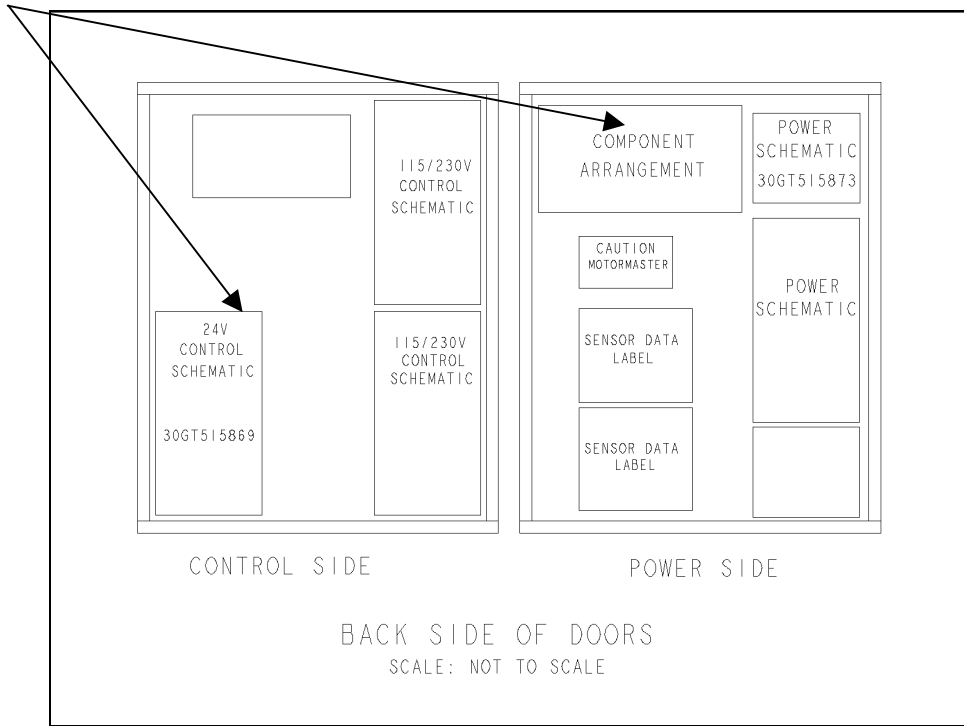
9. Install harness assembly provided (30GT415872) from MBB-J9 to CSB's. Route harness along side existing harness assembly and use wire ties provided in the kit. Refer to 24V Control Label 30GT515869, see Appendix A3.
10. Reinstall control box inner covers.
11. Re-apply power to unit.
12. In order for the Main Base Board (MBB) to recognize the inputs from the CSB new software is required. Using the Carrier SmartLoader program download Version 4.1 software to the MBB, p/n CESR131170-04-01. Use the **Manual** file selection method to select the proper software version.

After downloading set the following configurations:

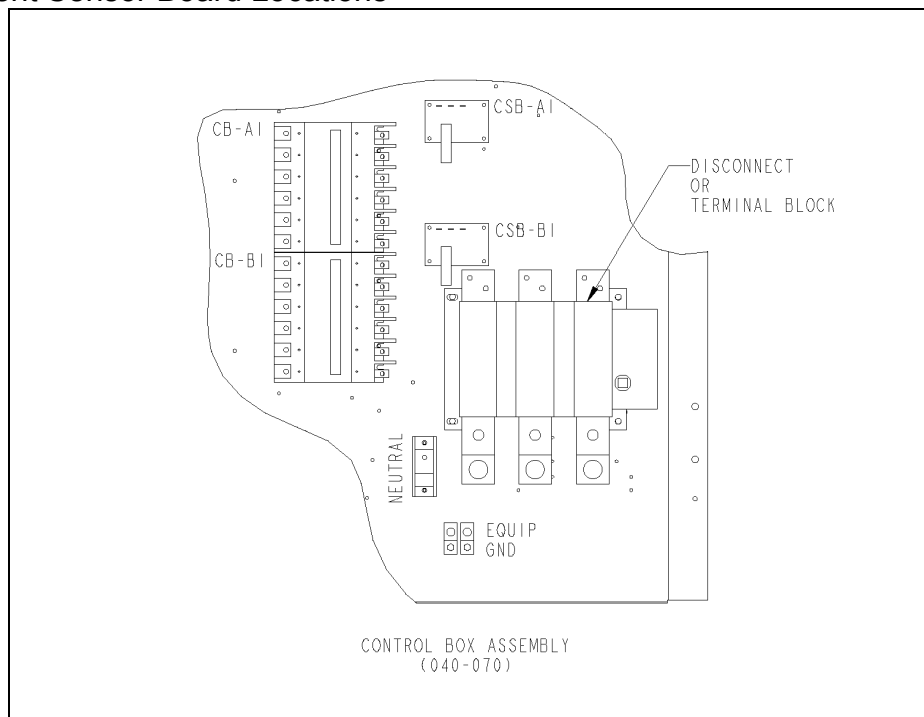
- Using the Scrolling Marquee Display or Navigator, under **MODE** select **Configuration/Comp**. Configure **A1.EN** and **B1.EN** to **ENBL** and **A2.EN, A3.EN, A4.EN, B2.EN, B3.EN, B4.EN** to **DSBL** to allow proper compressor operation. Also configure **A1.C.E** and **B1.C.E** to **ENBL** to enable operation of the CSB's. Configure **A2.C.E, A3.C.E, A4.C.E** and **B2.C.E, B3.C.E, B4.C.E** to **DSBL**.

## Appendix A1 Back Side of Doors

Apply Label #30GT515869 over existing Label #30GT515856 and 30GT515873, as shown.

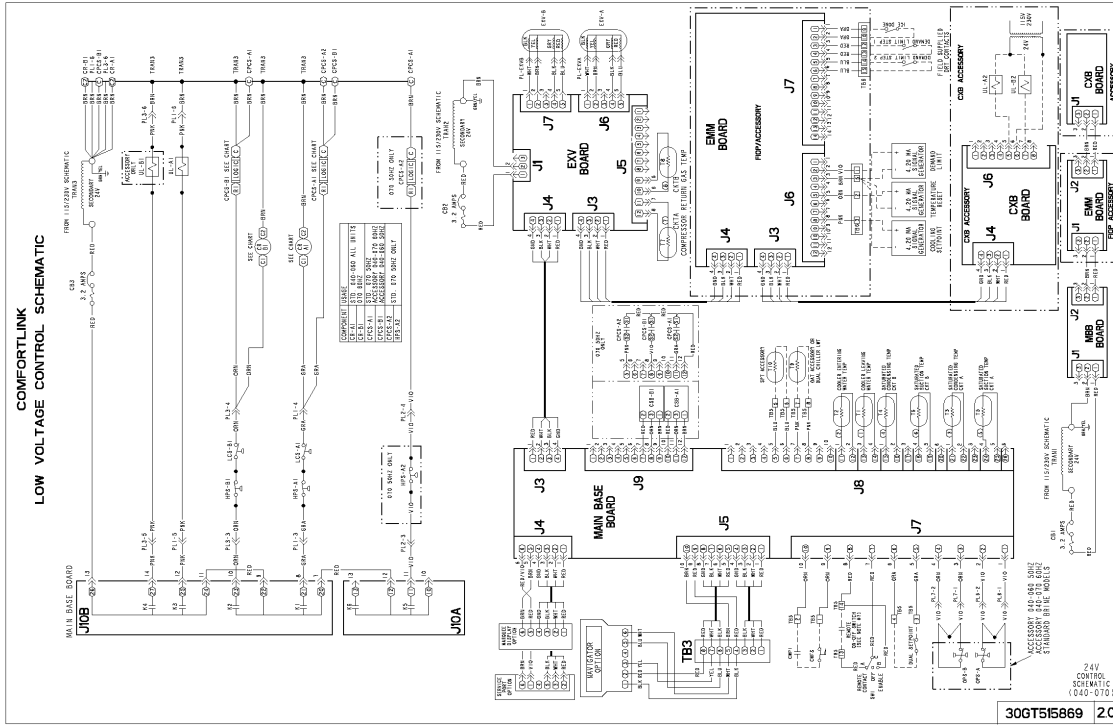


## Appendix A2 Current Sensor Board Locations

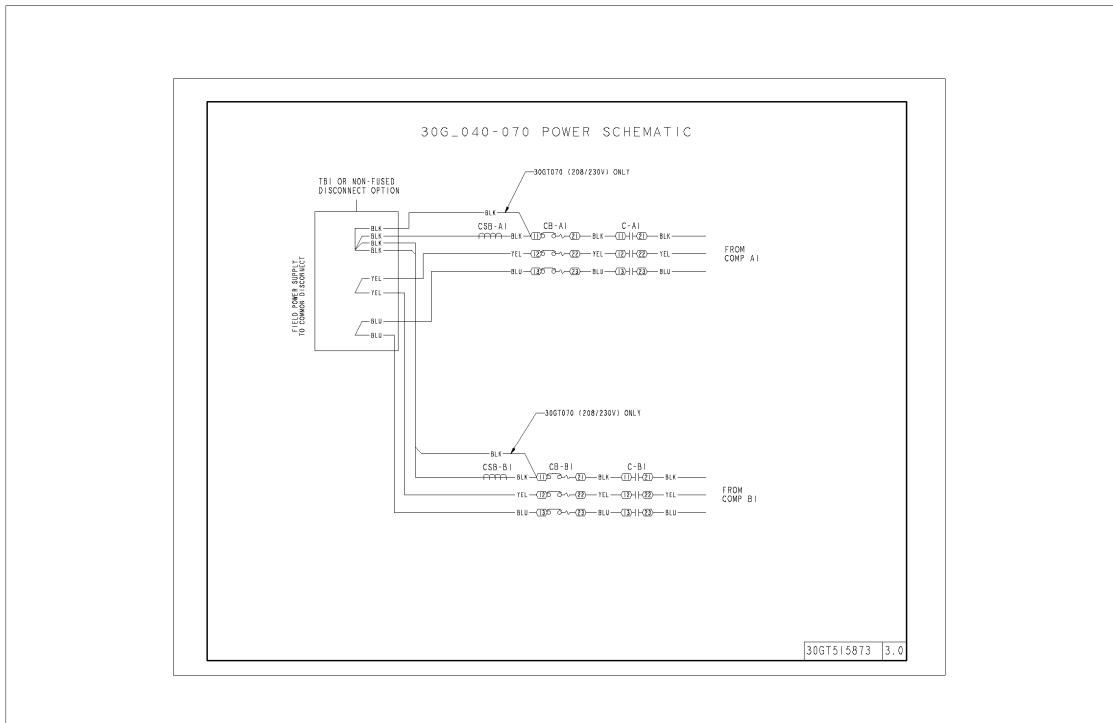


# Appendix A3

## 30GT515869, Control Label



## 30GT515873, Power Label



# INSTRUCTIONS



**Carrier**

A United Technologies Company

Page: 1 of 10

Instruction Sheet Number: 30GT515905

Revision: 2.1

PCA: 303144CB

**Description: Service Parts Kit For CSB Installation (30GT/GU 130-210)**

**Date: August 20, 2004**

**Part Number: 30GT-911---086**



## WARNING

**HAZARDS: ELECTRIC SHOCK / PRESSURE**

### **ELECTRIC SHOCK**

- **Bodily injury or death may result from electrocution. Shut off all power during servicing. Note: There may be more than one disconnect switch.**
- **Turn off all power to unit before servicing. Use field disconnect. Follow lock-out and tag-out procedures.**

### **Safety Instructions:**

Service or maintenance must be performed only by trained certified technicians and according to service instructions.

- A. Follow recognized safety practices and wear protective goggles.**
- B. Disconnect and Lockout all electrical power. Electrical measurements during operation must be taken outside the compressor terminal box.**

30GT-911---086

This kit contains the parts necessary to convert units utilizing the HN61KK025 control relay for compressor feedback status to the HK50AA035 current sensor board (CSB). Only a qualified technician familiar with electrical controls and schematic diagrams should install this kit.

**Parts list:**

<b>QTY</b>	<b>Part No</b>	<b>Description</b>
1	30GT415900	Plug Assembly
1	30GT415902	Harness Assembly
1	30GT415903	Harness Assembly
1	30GT515906	Power/Component Arrangement Label
1	30GT515898	Fan/Component Arrangement Label
1	30GT515879	Control Label
7	HK50AA035	Current Sensor Board (CSB)
28	AL56AU128	6B-20 x ¾ in. long Screw
20	HY76TB125	Wire Tie
1	30GT515905	Instruction Packet
7	HY76TB123	Wire Tie
1	30GT513933	Fan Motor Label (High Static Fan)

Note: The installer may not need all of the parts supplied in this kit.

**Tools required:**

Needle nose pliers  
3/8 in. socket or open-end wrench  
Knife  
Power drill and size 3/32 in. drill bit  
Phillip head screw driver  
1-3/8 in. hole saw

**Procedure:**

1. Disconnect power to unit and follow local lockout/tagout procedures.
2. Remove security grills, (if applicable), for service accessibility at power box end of unit; refer to Figure 2.
3. Open Power Box doors and remove inner cover. Open Control Box door.
4. Use the hole saw and cut (2) 1.375 in. holes to power box and control box, similar to Figure 3, for installation of plug assembly 30GT415900 connectors.
5. Route plug terminals (PL21, 23, 25, 27) through new Power Box hole openings; see Figure 3 – Power Box. Route plug terminals (PL20, 22, 24, 26) through Control Box new hole openings; see Figure 3 – Control Box.

6. Form a drip loop at back of the boxes (connector side) to prevent water from entering both boxes. Route plug assembly 30GT415900 along the current EXV sensor routing; see Figure 1.

**Note:** The purpose of this routing is to separate control wires from power wires.

7. Install labels provided in label kit. Note that each label diagram in the power box and control box has a part number on it.
8. Install label 30GT515879 over existing label 30GT515857 on Control Box door. This label will cover the 24V Control Schematic section of the diagram. Refer to Figure 4 for location.
9. Install label 30GT515898 over existing label 30GT515796 on Control Box door. This label will cover the area Fan/Component Arrangement. Refer to Figure 4 for location.

**Note:** If unit has the High Static Fan option, cover over upper left side of label 30GT515898 with label 30GT513933, shown in Figure 4 – Back Side of Control Box Door.

10. Install label 30GT515906 on Power Box door. This label is showing compressor wiring through the CSB's. Refer to Figure 4 for location.

**Note:** Figure 4 shows recommended and alternative label location for installation of 30GT515906 label.

11. Determine locations for HK50AA035 Current Sensor Boards in the power box. Refer to Figure 3 – Power Box for location.

**Note:** Provided with this kit are seven (7) CSB's. Please refer to 24V Control Schematic 30GT515879 for unit application. Discard unused CSB's.

12. Install and secure the Current Sensor Boards (CSB) with four (4) 6B-20 x ¾ in. long screws provided.

13. Route black compressor power wire assemblies through the CSB current loop for circuit A1, A2, A3, A4 and B1, B2, B3 (as applicable). Secure black power wire to the current loop of CSB with wire tie (HY76TB123).

**Important:** Keep high voltage compressor power wires away from components on CSB's.

14. Install harness assembly 30GT415902 from CSB's to PL21, 23, 25, 27 plug terminals of plug assembly 30GT415900, power box side. Install harness assembly 30GT415903 from MBB-J9 and CXB-J5 to PL20, 22, 24, 26 plug terminals of plug assembly 30GT415900, control box side. Route harnesses along side existing harness assemblies to both boxes and use wire ties (HY76TB125) provided in the kit.

15. Reinstall power box inner covers. Closed doors to power and control boxes and reinstall security grills (if applicable).

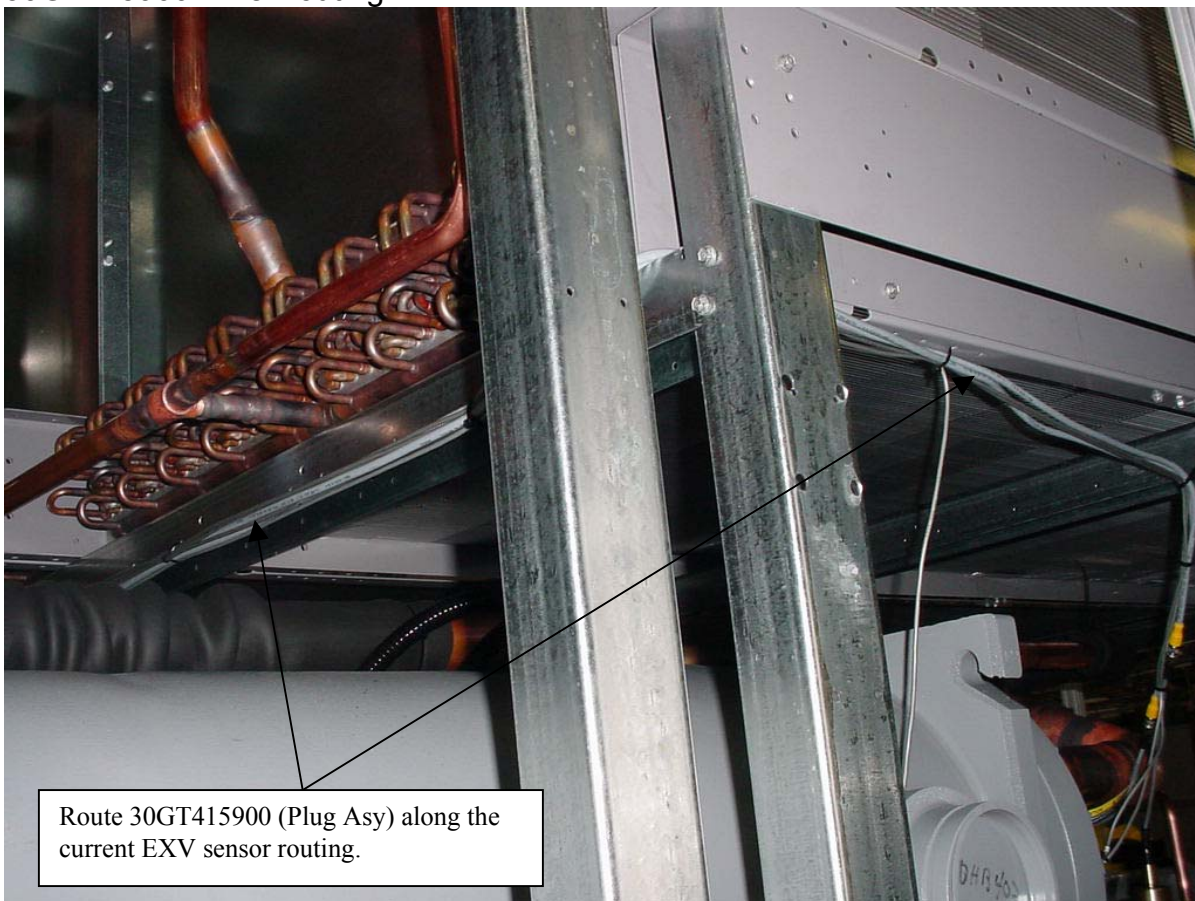
16. Re-apply power to unit.

17. In order for the Main Base Board (MBB) and Extra Unloader Board (CXB) to recognize the inputs from the CSB new software is required. Using the Carrier SmartLoader program download new software to the MBB, p/n CESR131170-04-01, (Version 4.1), and CXB, p/n CESR131173-01-02, (Version 1.2). Use the **Manual** file selection method to select the proper software version.

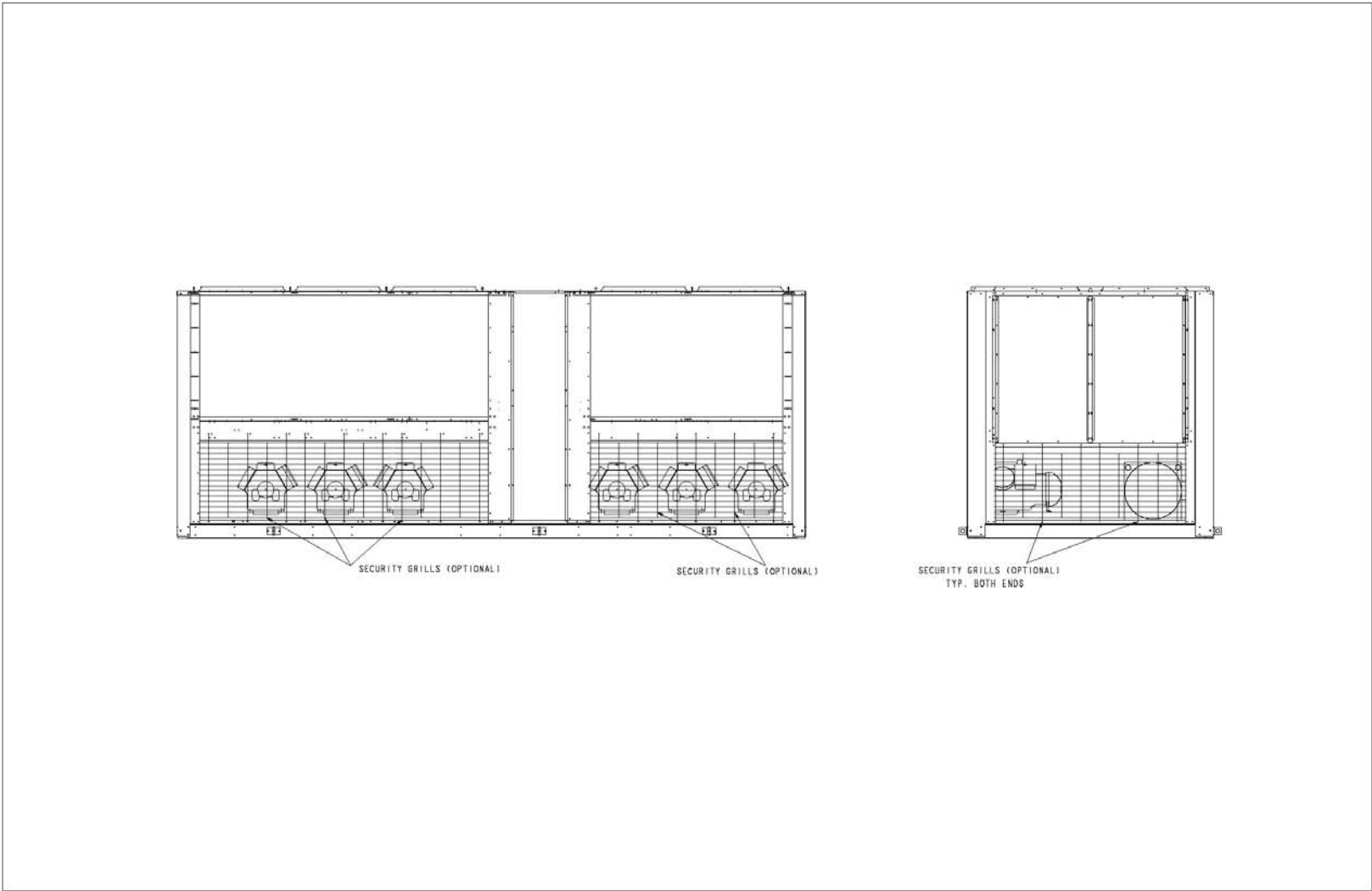
After downloading the software set the following configurations:

- Using the Scrolling Marquee Display or Navigator, under **MODE** select **Configuration/Comp**. Configure **A1.EN, A2.EN, A3.EN, A4.EN** and **B1.EN, B2.EN, B3.EN** to **ENBL** as applicable to enable compressors. Also configure **A1.C.E, A2.C.E, A3.C.E, A4.C.E** and **B1.C.E, B2.C.E, B3.C.E, B4.C.E** to **ENBL** as applicable to enable the CSB's.

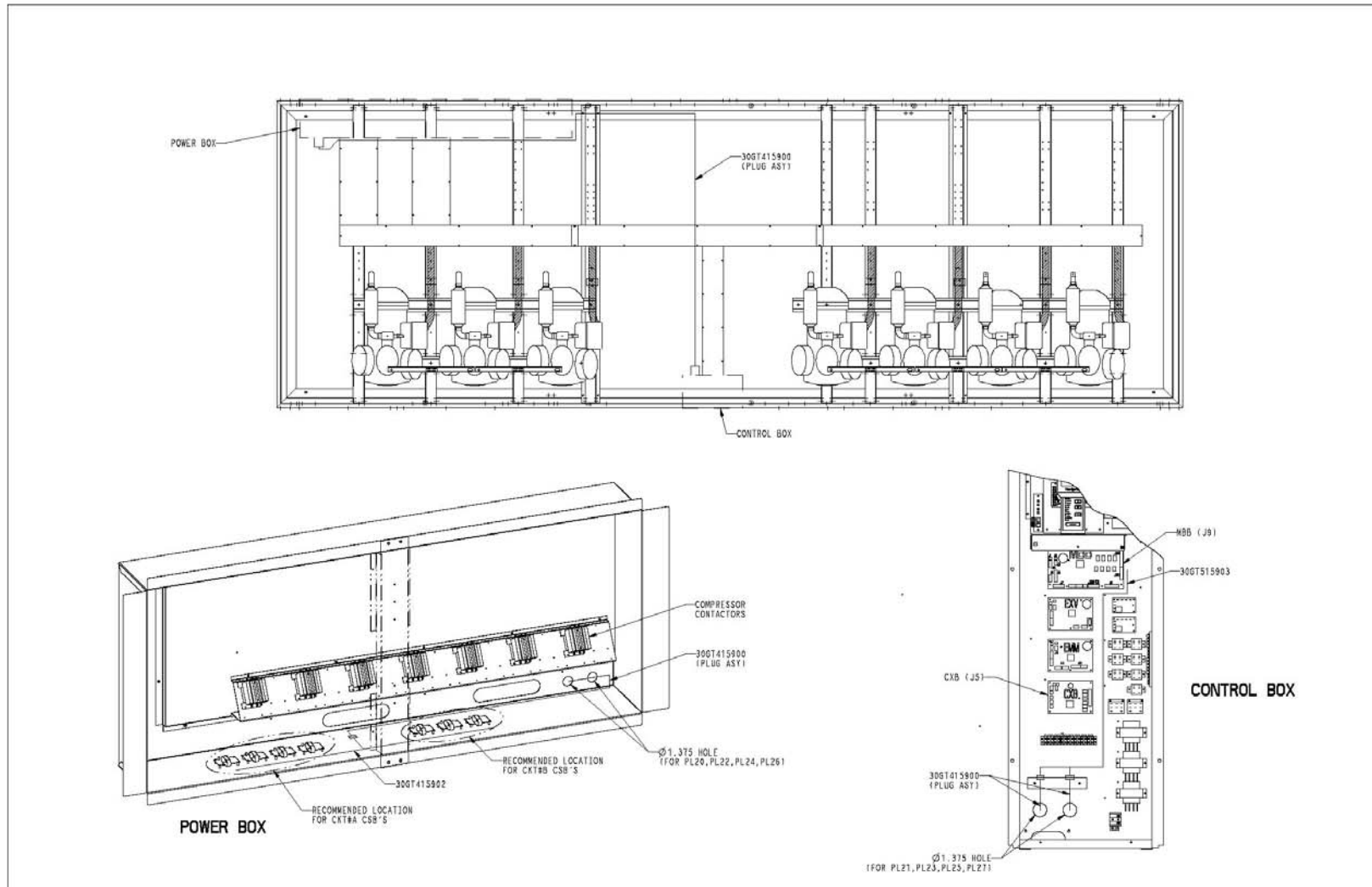
**Figure 1**  
30GT415900 Wire Routing



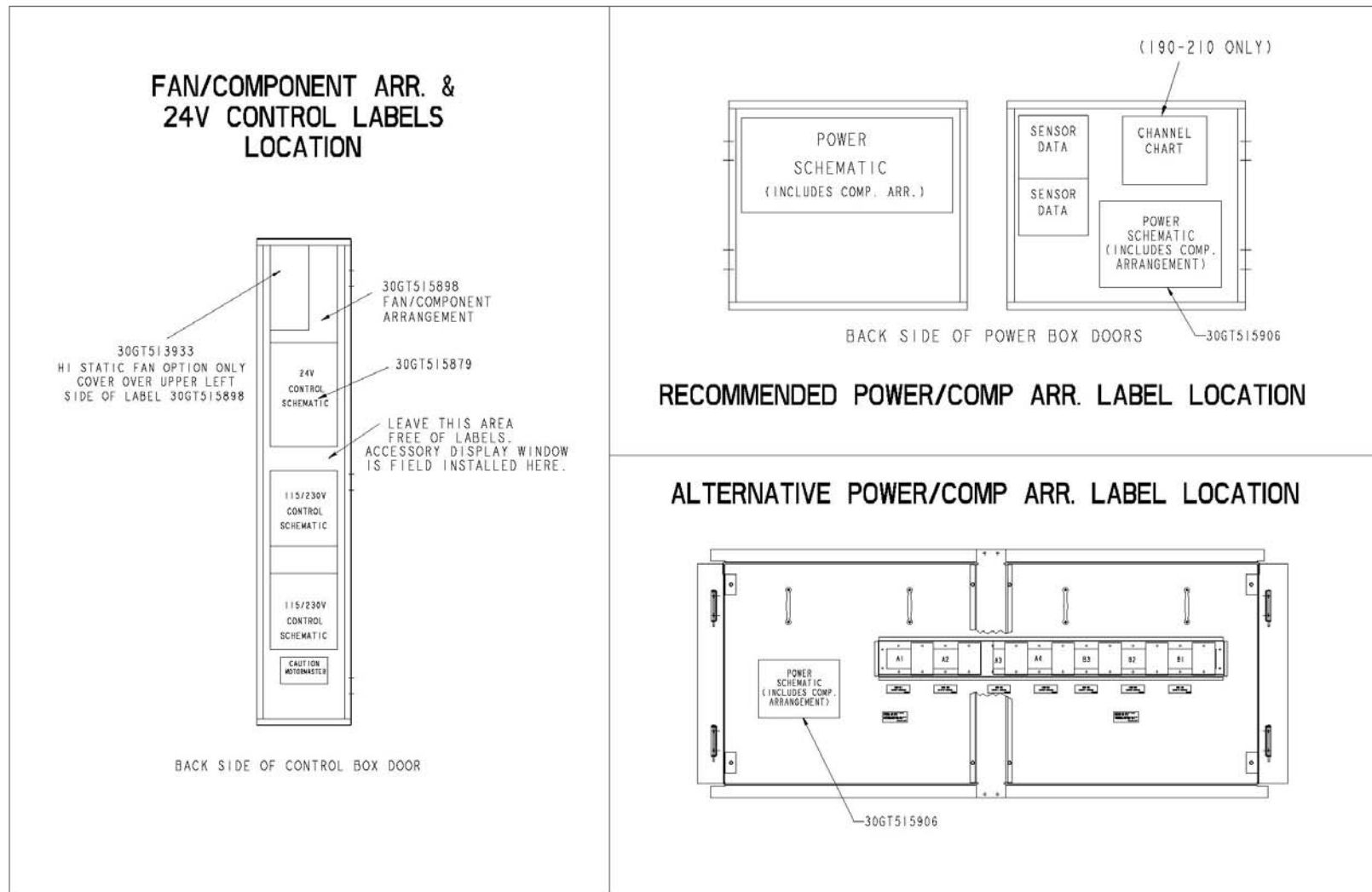
**Figure 2**  
Security Grills (optional)

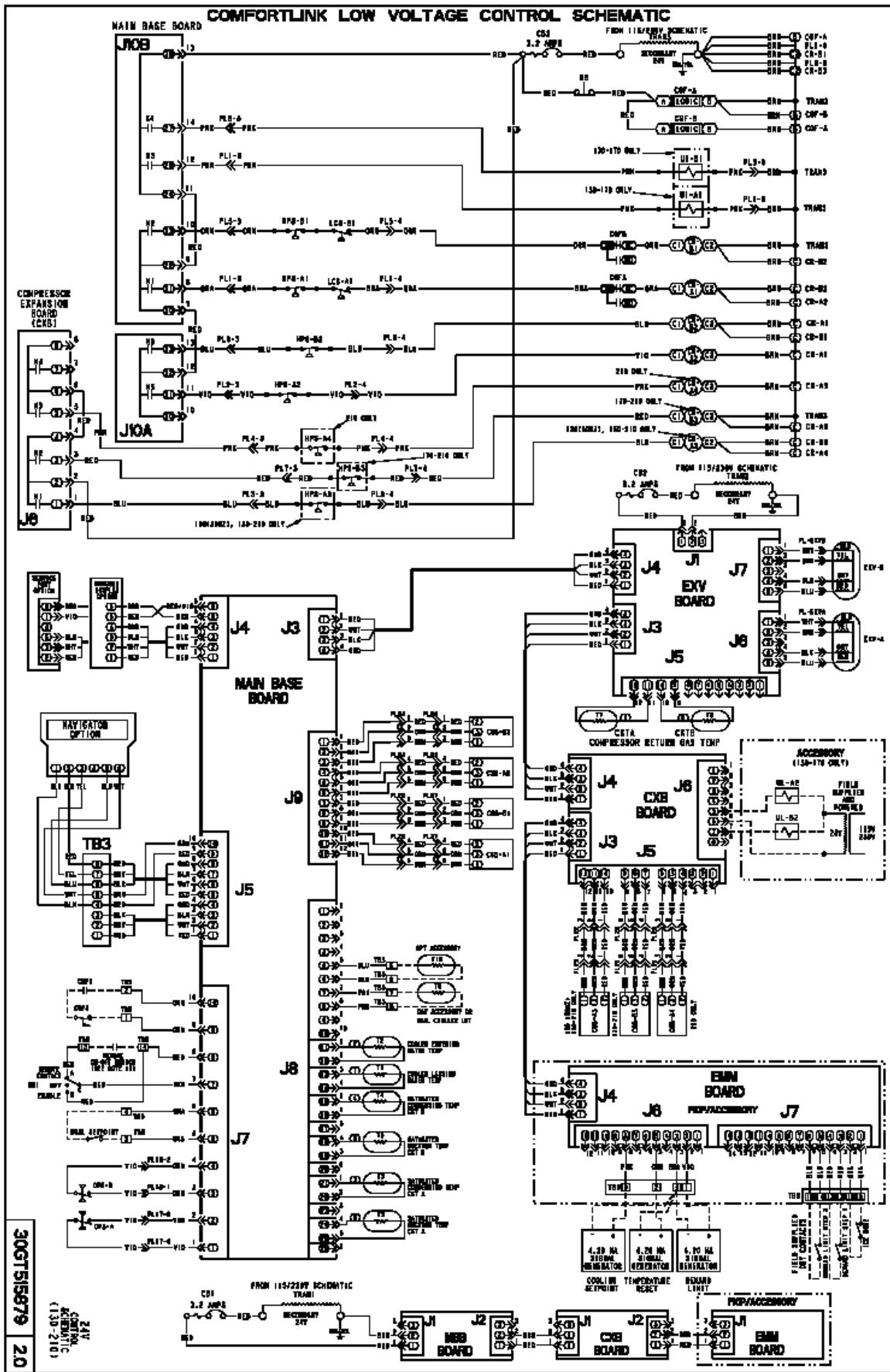


**Figure 3**  
Raceway and Power/Control Boxes



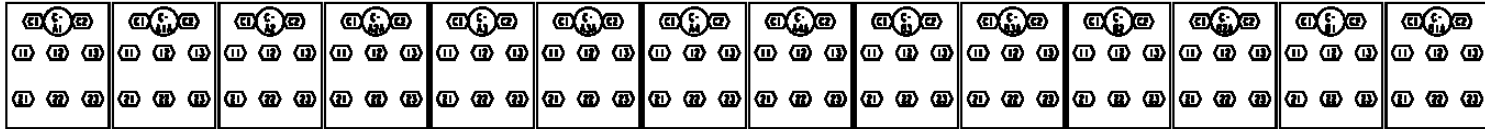
**Figure 4**  
Power Box and Control Box Doors







SERVICE KIT 30GT-911--086 HAS BEEN INSTALLED. BELOW SHOWS TYPICAL LOCATION OF CSB



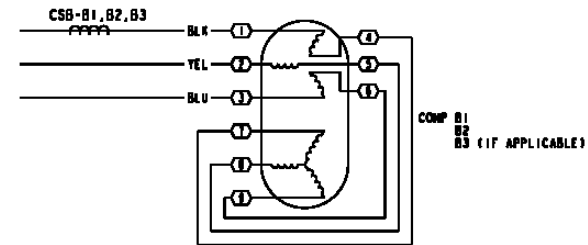
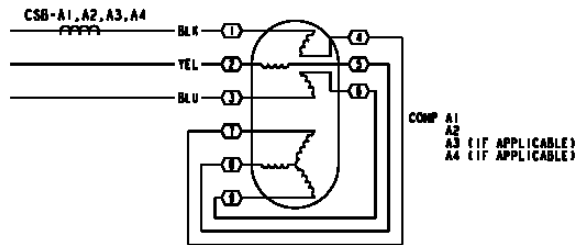
(IF APPLICABLE)



(IF APPLICABLE)



(IF APPLICABLE)



LEGEND

- C CONTACTOR
- COMP COMPRESSOR
- CSB CURRENT SENSOR BOARD

NOTES:

1. FOR CSB CONTROL WIRING SEE LABEL 30GT515879