# Installation Instructions

Part Numbers: 00EFN900000400A, 00EFN900000500A, 00EFN900000600A, 00EFN900000700A, 00EFN900001800A, 00EFN900001900A

NOTE: These instructions apply to 30RB060-390 units with starting serial number 3107Q. To install this accessory on 30RB060-390 units with serial numbers prior to 3107Q refer to Installation Instructions form number 30-8SI. This accessory is not applicable to 30XA variable speed chillers with Greenspeed® intelligence or 30RB units with Greenspeed intelligence. Units with Greenspeed intelligence operate all condenser fans with a Variable Frequency Drive.

## CONTENTS



## SAFETY CONSIDERATIONS

Installation and servicing of air-conditioning equipment can be hazardous due to system pressure and electrical components. Only trained and qualified service personnel should install, repair, or service air-conditioning equipment.

Untrained personnel can perform basic maintenance functions of cleaning coils and filters and replacing filters. All other operations should be performed by trained service personnel. When working on air-conditioning equipment, observe precautions in the literature, tags and labels attached to the unit, and other safety precautions that may apply.

Follow all safety codes. Wear safety glasses and work gloves. Use quenching cloth for unbrazing operations. Have fire extinguisher available for all brazing operations.

It is important to recognize safety information. This is the safety-alert symbol ⚠. When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, CAUTION, and NOTE. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices, which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

**⚠ WARNING**

Electrical shock can cause personal injury and death. Shut off all power to this equipment during installation. There may be more than one disconnect switch. Tag all disconnect locations to alert others not to restore power until work is completed.

## GENERAL

This book contains instructions for the installation of the low ambient temperature head pressure control accessory kit for 30RB060-390 and 30XA080-501 units.

NOTE: Unit sizes 30RB315-390 are modular units that are shipped in separate sections as modules A or B as noted in position 8 of the unit model nameplate. The nameplate for modular units contains only the first two digits of the unit size. For example, 30RB size 315 nameplates read 30RB*31A.... and 30RB*31B, where * is a wild card indicating the design series. See Table 1 for a listing of unit sizes and modular combinations.

**Table 1 — Modular Combinations**

| MODULE UNITS | MODULE A | MODULE B |
|---|---|---|
| **30RB*315** | 30RB*160 | 30RB*160 |
| **30RB*330** | 30RB*170 | 30RB*160 |
| **30RB*345** | 30RB*170 | 30RB*170 |
| **30RB*360** | 30RB*190 | 30RB*170 |
| **30RB*390** | 30RB*190 | 30RB*190 |

NOTE: An "*" in the 5th position of the model number indicates the design series.

The low ambient temperature control utilizes a variable frequency drive (VFD) to control condenser fan speed based on saturated condensing temperature. The control can only be used with motors rated for use with VFDs. Each circuit's discharge pressure is used by the *Comfort*Link™ controls to determine the output to the VFD. The fan board(s) provide a 0 to 10 vdc output to each drive for fan speed control.

All VFDs are microprocessor-controlled and use insulated gate bipolar transistor (IGBT) technology. The pulse width modulation scheme used by the control allows for quiet motor operation. The control will vary the motor speed signal to the VFD to maintain the saturated condensing temperature (SCT) at the calculated head pressure set point. If the SCT is greater than the set point, the fan signal will increase to increase fan speed. If SCT is less than the set point, the fan signal will decrease to slow the fan speed. At higher SCTs, the fan will go to full speed and remain there since it cannot go fast enough to bring the pressure down to the set point.

When the saturated condensing temperature drops, a fan running at full speed may draw too much air across the condenser coil to maintain a minimum saturated condensing temperature. During these conditions, the VFD will begin to slow down and begin to maintain a saturated condensing temperature set point.

NOTE: The VFD is phase insensitive in regard to incoming line voltage, which means that the VFD will operate with any phase sequence of the incoming three-phase power.

The standard outdoor air temperature limitation of 30RB and 30XA chillers is 32°F (0°C). The low ambient temperature controller operation kit can be used to extend unit operation down to –20°F (–29°C).

NOTE: Wind baffles are required if wind velocity is anticipated to be greater than 5 mph (8 km/h).

## INSPECT SHIPMENT

Inspect the contents of the accessory package before installing. File a claim with the shipping company if there is shipping damage. Contact your local Carrier representative if any parts are missing. See Table 2 for accessory content usage. See Table 3 for accessory package contents.

**Table 2 — Low Ambient Temperature Head Pressure Control Package Usage**

| UNIT | SIZE* | VOLTAGE† (3 ph, 60 Hz) | NUMBER OF CIRCUITS | PACKAGE NO. | NUMBER OF ACCESSORY KITS REQUIRED |
|---|---|---|---|---|---|
| 30RB | 060, 070, 080 | 208/230 | 2 | 00EFN900000600A | 1 |
| | | 380 | 2 | 00EFN900000400A | 1 |
| | | 460 | 2 | 00EFN900000400A | 1 |
| | | 575 | 2 | 00EFN900001800A | 1 |
| | 090,100,110,120, 130,150,160,170,190 | 208/230 | 2 | 00EFN900000700A | 2 |
| | | 380 | 2 | 00EFN900000500A | 2 |
| | | 460 | 2 | 00EFN900000500A | 2 |
| | | 575 | 2 | 00EFN900001900A | 2 |
| | 210,225,250,275,300 | 208/230 | 3 | 00EFN900000700A | 3 |
| | | 380 | 3 | 00EFN900000500A | 3 |
| | | 460 | 3 | 00EFN900000500A | 3 |
| | | 575 | 3 | 00EFN900001900A | 3 |
| | 315,330,345,360,390 | 208/230 | 4 | 00EFN900000700A | 4 |
| | | 380 | 4 | 00EFN900000500A | 4 |
| | | 460 | 4 | 00EFN900000500A | 4 |
| | | 575 | 4 | 00EFN900001900A | 4 |
| 30XA | 080,082,090,092,100,102,110,112,120, 122,140,142,160,162,180,182,200,202, 220,222,240,242,260,262,280,282,300, 302,325,327,350,352,401,451,476,501 | 200 | 2 | 00EFN900000700A | 2 |
| | | 230 | 2 | 00EFN900000700A | 2 |
| | | 380 | 2 | 00EFN900000500A | 2 |
| | | 460 | 2 | 00EFN900000500A | 2 |
| | | 575 | 2 | 00EFN900001900A | 2 |
| | 400,450,500 | 380 | 3 | 00EFN900000500A | 3 |
| | | 460 | 3 | 00EFN900000500A | 3 |
| | | 575 | 3 | 00EFN900001900A | 3 |

* Not applicable for 30RB with Greenspeed intelligence or 30XA with Greenspeed intelligence.
† Refer to unit nameplate for voltage designation.

## Table 3 — Low Ambient Temperature Head Pressure Control Package Contents

| ITEM | LOW AMBIENT TEMPERATURE HEAD PRESSURE CONTROL PACKAGE NUMBER | | | | | |
|---|---|---|---|---|---|---|
| | 00EFN900000400A (380 V, 460 V UNITS) | 00EFN900000500A (380 V, 460 V UNITS) | 00EFN900000600A (200, 208/230 V UNITS) | 00EFN900000700A (200, 208, 230 V UNITS) | 00EFN900001800A (575 V UNITS) | 00EFN900001900A (575 V UNITS) |
| | Item Description (Qty) | | | | | |
| DUAL VFD PANEL ACCESSORY (INCLUDES 2 VFDS) | SF700091* (1) | — | SF700081* (1) | — | SF700101* (1) | — |
| SINGLE VFD PANEL ACCESSORY | — | SF700401* (1) | — | SF700400* (1) | — | SF700402* (1) |
| FAN MOTOR POWER CABLES (ATTACHED TO VFD) | (2) | (1) | (2) | (1) | (2) | (1) |
| FUSE BLOCK | CHCC3 (2) | CHCC3 (1) | CHCC3 (2) | CHCC3 (1) | CHCC3 (2) | CHCC3 (1) |
| FUSES, 30 AMP | ATMR-30 (6) | ATMR-30 (3) | ATMR-30 (6) | ATMR-30 (3) | ATMR-30 (6) | ATMR-30 (3) |
| VARIABLE FREQUENCY DRIVE† | HR46TN008 (2) | HR46TN008 (1) | HR46TN007 (2) | HR46TN007 (1) | 6SE64402UE240CA1 (2) | 6SE64402UE240CA1 (1) |
| VFD OPERATOR DISPLAY PANEL | NA | NA | NA | NA | 6SE64000BP000AAO (2) | 6SE64000BP000AAO (1) |
| MOUNTING PLATE | 00PSN500037100A (1) | 00PSN500037100A (1) | 00PSN500037100A (1) | 00PSN500037100A (1) | 00PSN500037100A (1) | 00PSN500037100A (1) |
| SUPPORT PLATE | 00PSN500034400A (1) | 00PSN500034400A (1) | 00PSN500034400A (1) | 00PSN500034400A (1) | 00PSN500034400A (1) | 00PSN500034400A (1) |
| WIRING COVER | 00PSN500036500A (1) | 00PSN500036500A (1) | 00PSN500036500A (1) | 00PSN500036500A (1) | 00PSN500036500A (1) | 00PSN500036500A (1) |
| WIRING BUSHING | HY93NH091 (1) | HY93NH091 (1) | HY93NH091 (2) | HY93NH091 (1) | HY93NH091 (2) | HY93NH091 (1) |
| 6MM SCREWS | 00PPN500000302A (9) | 00PPN500000302A (9) | 00PPN500000302A (9) | 00PPN500000302A (9) | 00PPN500000302A (10) | 00PPN500000302A (9) |
| 8MM SCREWS | 00PPN500000201A (10) | 00PPN500000201A (9) | 00PPN500000201A (10) | 00PPN500000201A (9) | 00PPN500000201A (9) | 00PPN500000201A (9) |
| FAN BOARD 1 | 32GB500442E** | | | | | |
| WIRE TIES | Wire Ties (20) | | | | | |

LEGEND

**AWG** — American Wire Gage
**VFD** — Variable Frequency Drive

* Includes the panel, drives, fuse block, fuses, drive filters, drive wire kit and operator display panel.

† When ordering the Siemens VFD for 575-v unit *replacement*, note that the replacement drive does not include the VFD operator panel. The VFD operator panel must be ordered separately.

** Fan board shipped in accessory kit is supplied to replace fan board 1 shipped with the unit (part number 32GB500432E). See page 11, item 10 for more information.

## INSTALLATION

### Step 1 — Install Field-Fabricated Wind Baffles

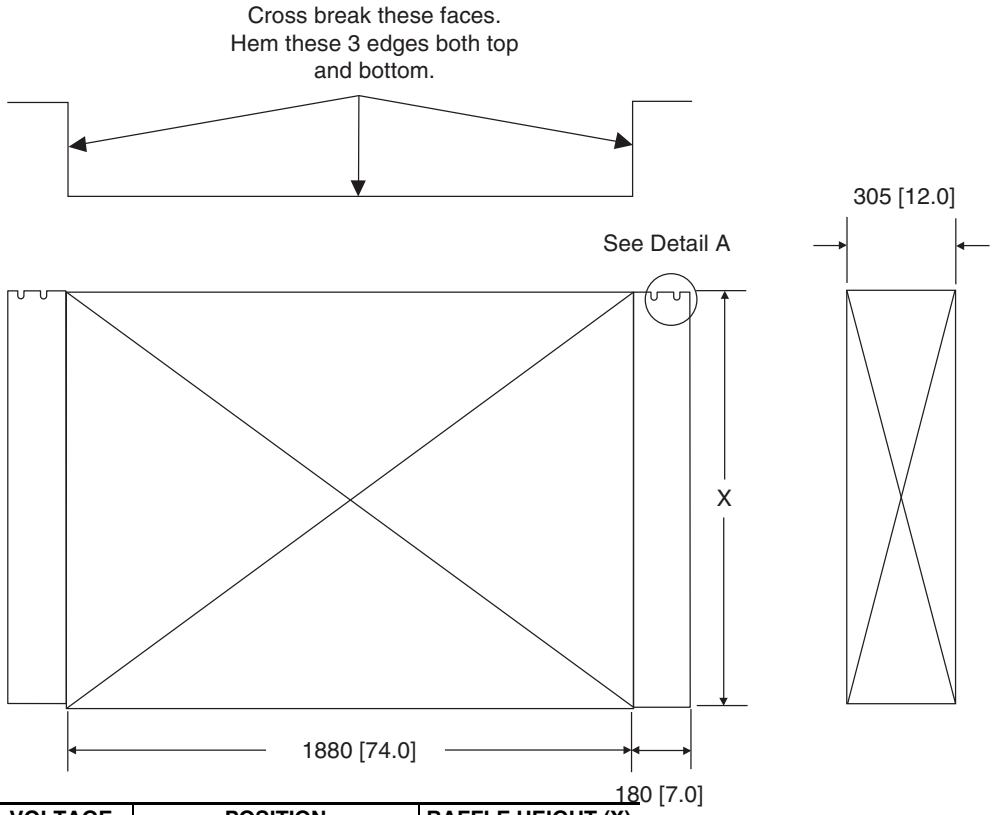
**⚠ WARNING**

To avoid the possibility of electrical shock, open all disconnects before installing or servicing this accessory.

Field-fabricated and installed wind baffles are required if the wind velocity is anticipated to be greater than 5 mph (8 km/h) on units equipped with the low ambient temperature head pressure control accessory. If the application requires wind baffles, units require two different wind baffle designs, one for each end of the unit. Wind baffles should be constructed using a minimum 18-gage galvanized sheet metal or other suitable corrosion-resistant material with cross breaks for strength. Use field-supplied screws to attach baffles to the corner posts of the machine. Be sure to hem or turn a flange on all edges to eliminate sharp edges on the baffles. See Fig. 1 for sizes and details of the baffles required. Mount the smaller height baffle on the control box end. It is recommended that the upper notches be used for mounting the baffles. This reduces the risk of damaging the coil while drilling a mounting hole. Loosen the upper corner post bolts and slide the baffle under the bolt and washer. Tighten the bolt. Drill two holes at the bottom of the baffle through the flange and corner post. Mount baffles with field-supplied screws to secure the baffle to the frame. Repeat the process for the opposite end. See Fig. 2 for typical end views of the chillers with baffles installed.

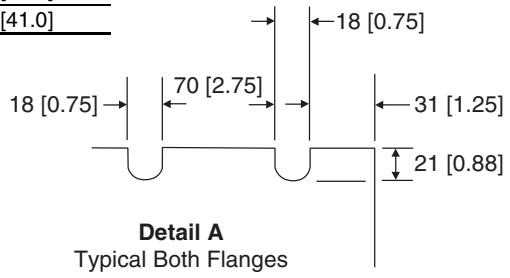
**⚠ CAUTION**

To avoid damage to refrigerant coils and electrical components, use extreme care when drilling screw holes and screwing in fasteners.




| UNIT SIZE | VOLTAGE | POSITION | BAFFLE HEIGHT (X) |
|---|---|---|---|
| 30RB060-390 | All | Control/Power End | 635 [25.0] |
| | | Opposite Control Power End | 1040 [41.0] |
| 30XA080-120 | All | Control/Power End | 635 [25.0] |
| | | Opposite Control Power End | 1040 [41.0] |
| 30XA140-202 | 200,230 | Control/Power End | 635 [25.0] |
| | | Opposite Control Power End | 1040 [41.0] |
| | 380,460,575 | Both Ends | 1040 [41.0] |
| 30XA220-501 | All | Both Ends | 1040 [41.0] |

Material: 18 ga. Corrosion Resistant Sheet Metal.
Dimensions are in mm [inches].




**Detail A**
Typical Both Flanges

**Fig. 1 — Field-Fabricated and Field-Installed Wind Baffles**

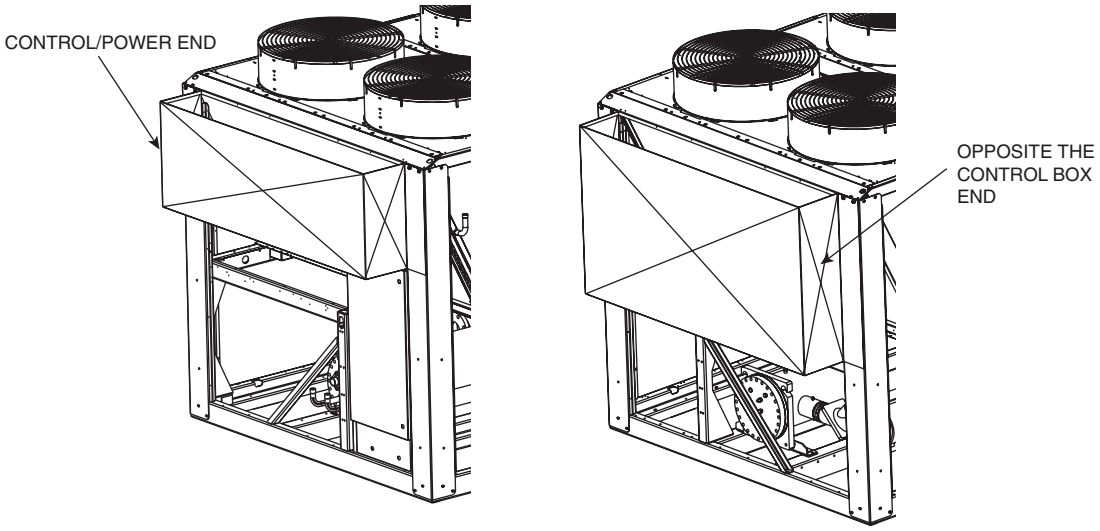



**Fig. 2 — Wind Baffles Installed on Ends of 30RB Units**

## Step 2 — Wire the Control Panel

For the appropriate fan motor, locate the fan contactor in the control panel. See Tables 4 and 5. See Fig. 3 and 4 for fan motor locations.

NOTE: The C circuit fan contactors and fan board for 30RB210-300 units are in the compressor side power box near the C circuit compressors and not in the fan/control box at the end of the unit. Fan wiring crosses the chiller in a conduit from the coil wiring tray to the back of the C circuit power box.

NOTE: The C circuit fan contactors and fan board for 30XA400, 450, and 500 units are in the compressor side power box near the C circuit compressors.

**Table 4 — 30RB060-390 Fan Motors Controlled by the VFD**

**(Units produced starting with serial number 3107Q)**

| 30RB UNIT SIZE | CIRCUIT A MOTOR | CIRCUIT B MOTOR | CIRCUIT C MOTOR |
|---|---|---|---|
| **060,070** | FM1 | FM4 | — |
| **080** | FM1 | FM3 | — |
| **090-100** | FM1 | FM5 | — |
| **110** | FM1 | FM5 | — |
| **120-150** | FM3 | FM7 | — |
| **160-170,315-345,360B** | FM5 | FM9 | — |
| **190,360A,390** | FM5 | FM11 | — |
| **210, 225** | FM3 | FM7 | FM11 |
| **250** | FM3 | FM7 | FM13 |
| **275** | FM5 | FM11 | FM15 |
| **300** | FM5 | FM11 | FM17 |

**Table 5 — 30XA080-501 Fan Motors Controlled by the VFD**

| 30XA UNIT SIZE | CIRCUIT A MOTOR | CIRCUIT B MOTOR | CIRCUIT C MOTOR |
|---|---|---|---|
| **080,082** | FM5 | FM1 | — |
| **090-122** | FM7 | FM1 | — |
| **140-162** | FM9 | FM1 | — |
| **180-202** | FM11 | FM1 | — |
| **220-242** | FM13 | FM1 | — |
| **260-302** | FM15 | FM1 | — |
| **325-352** | FM17 | FM1 | — |
| **400** | FM11 | FM1 | FM19 |
| **401** | FM19 | FM1 | — |
| **450, 500** | FM13 | FM1 | FM21 |
| **451, 476** | FM21 | FM1 | — |
| **501** | FM25 | FM1 | — |

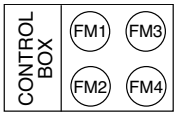
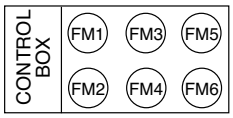
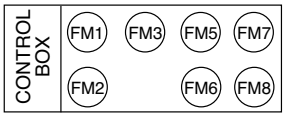
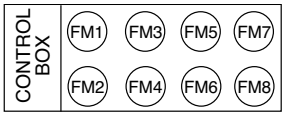
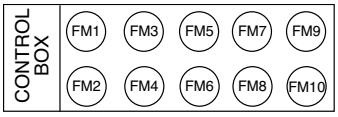
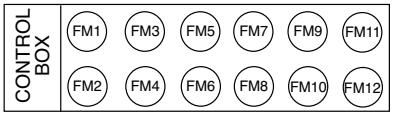
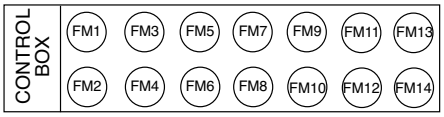
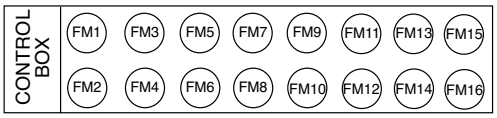
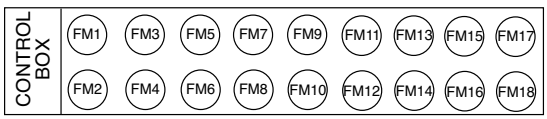
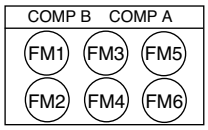
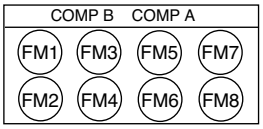
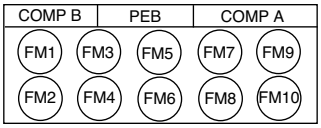
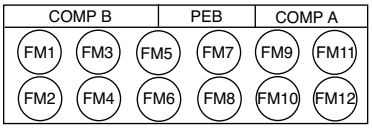
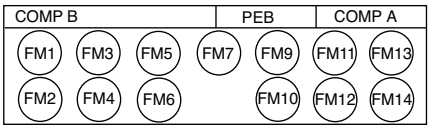
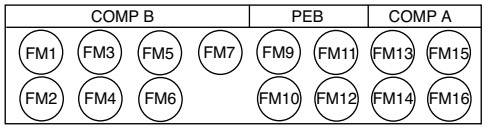
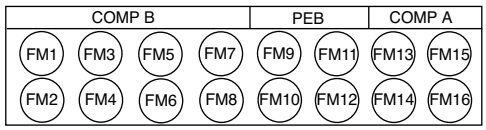
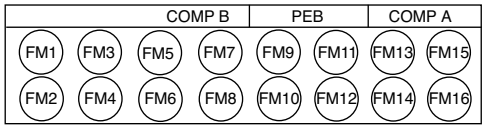
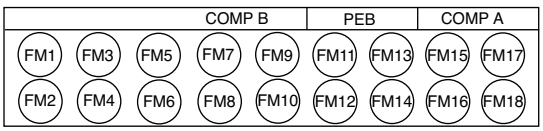
| FAN MOTOR ARRANGEMENT | SIZE | CIRCUIT | LOCATION | FAN STAGE | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 |
|  30RB060,070,080 | 060,070 | A | Fan Number | FM1 | FM2 | FM3 | — | — | — |
| | | | Fan Board/Channel | FB1/CH1 | FB1/CH2 | FB1/CH3 | — | — | — |
| | | B | Fan Number | FM4 | — | — | — | — | — |
| | | | Fan Board/Channel | FB1/CH5 | — | — | — | — | — |
| | 080 | A | Fan Number | FM1 | FM2 | — | — | — | — |
| | | | Fan Board/Channel | FB1/CH1 | FB1/CH2 | — | — | — | — |
| | | B | Fan Number | FM3 | FM4 | — | — | — | — |
| | | | Fan Board/Channel | FB1/CH5 | FB1/CH6 | — | — | — | — |
|  30RB090,100,110 | 090,100, 110 | A | Fan Number | FM1 | FM2 | FM3 | — | — | — |
| | | | Fan Board/Channel | FB1/CH1 | FB1/CH2 | FB1/CH3 | — | — | — |
| | | B | Fan Number | FM5 | FM6 | FM4 | — | — | — |
| | | | Fan Board/Channel | FB1/CH5 | FB1/CH6 | FB1/CH7 | — | — | — |
|  30RB120 | 120 | A | Fan Number | FM3 | FM1 | FM2 | — | — | — |
| | | | Fan Board/Channel | FB1/CH1 | FB1/CH2 | FB1/CH3 | — | — | — |
| | | B | Fan Number | FM7 | FM5 | FM6 | FM8 | — | — |
| | | | Fan Board/Channel | FB1/CH5 | FB1/CH6 | FB1/CH7 | FB1/CH8 | — | — |
|  30RB130,150 | 130,150 | A | Fan Number | FM3 | FM1 | FM2 | FM4 | — | — |
| | | | Fan Board/Channel | FB1/CH1 | FB1/CH2 | FB1/CH3 | FB1/CH4 | — | — |
| | | B | Fan Number | FM7 | FM5 | FM6 | FM8 | — | — |
| | | | Fan Board/Channel | FB1/CH5 | FB1/CH6 | FB1/CH7 | FB1/CH8 | — | — |
|  30RB160,170 | 160,170 | A | Fan Number | FM5 | FM3 | FM1 | FM2 | FM4 | FM6 |
| | | | Fan Board/Channel | FB1/CH1 | FB1/CH2 | FB1/CH3 | FB1/CH4 | FB1/CH5 | FB1/CH6 |
| | | B | Fan Number | FM9 | FM7 | FM8 | FM10 | — | — |
| | | | Fan Board/Channel | FB2/CH1 | FB2/CH2 | FB2/CH3 | FB2/CH4 | — | — |
|  30RB190,210,225 | 190 | A | Fan Number | FM5 | FM3 | FM1 | FM2 | FM4 | FM6 |
| | | | Fan Board/Channel | FB1/CH1 | FB1/CH2 | FB1/CH3 | FB1/CH4 | FB1/CH5 | FB1/CH6 |
| | | B | Fan Number | FM11 | FM9 | FM7 | FM8 | FM10 | FM12 |
| | | | Fan Board/Channel | FB2/CH1 | FB2/CH2 | FB2/CH3 | FB2/CH4 | FB2/CH5 | FB2/CH6 |
| | 210,225 | A | Fan Number | FM3 | FM1 | FM2 | FM4 | — | — |
| | | | Fan Board/Channel | FB1/CH1 | FB1/CH2 | FB1/CH3 | FB1/CH4 | — | — |
| | | B | Fan Number | FM7 | FM5 | FM6 | FM8 | — | — |
| | | | Fan Board/Channel | FB1/CH5 | FB1/CH6 | FB1/CH7 | FB1/CH8 | — | — |
| | | C | Fan Number | FM11 | FM9 | FM10 | FM12 | — | — |
| | | | Fan Board/Channel | FB3/CH1 | FB3/CH2 | FB3/CH3 | FB3/CH4 | — | — |
|  30RB250 | 250 | A | Fan Number | FM3 | FM1 | FM2 | FM4 | — | — |
| | | | Fan Board/Channel | FB1/CH1 | FB1/CH2 | FB1/CH3 | FB1/CH4 | — | — |
| | | B | Fan Number | FM7 | FM5 | FM6 | FM8 | — | — |
| | | | Fan Board/Channel | FB1/CH5 | FB1/CH6 | FB1/CH7 | FB1/CH8 | — | — |
| | | C | Fan Number | FM13 | FM11 | FM9 | FM10 | FM12 | FM14 |
| | | | Fan Board/Channel | FB3/CH1 | FB3/CH2 | FB3/CH3 | FB3/CH4 | FB3/CH5 | FB3/CH6 |
|  30RB275 | 275 | A | Fan Number | FM5 | FM3 | FM1 | FM2 | FM4 | FM6 |
| | | | Fan Board/Channel | FB1/CH1 | FB1/CH2 | FB1/CH3 | FB1/CH4 | FB1/CH5 | FB1/CH6 |
| | | B | Fan Number | FM11 | FM9 | FM7 | FM8 | FM10 | FM12 |
| | | | Fan Board/Channel | FB2/CH1 | FB2/CH2 | FB2/CH3 | FB2/CH4 | FB2/CH5 | FB2/CH6 |
| | | C | Fan Number | FM15 | FM13 | FM14 | FM16 | — | — |
| | | | Fan Board/Channel | FB3/CH1 | FB3/CH2 | FB3/CH3 | FB3/CH4 | — | — |
|  30RB300 | 300 | A | Fan Number | FM5 | FM3 | FM1 | FM2 | FM4 | FM6 |
| | | | Fan Board/Channel | FB1/CH1 | FB1/CH2 | FB1/CH3 | FB1/CH4 | FB1/CH5 | FB1/CH6 |
| | | B | Fan Number | FM11 | FM9 | FM7 | FM8 | FM10 | FM12 |
| | | | Fan Board/Channel | FB2/CH1 | FB2/CH2 | FB2/CH3 | FB2/CH4 | FB2/CH5 | FB2/CH6 |
| | | C | Fan Number | FM17 | FM15 | FM13 | FM14 | FM16 | FM18 |
| | | | Fan Board/Channel | FB3/CH1 | FB3/CH2 | FB3/CH3 | FB3/CH4 | FB3/CH5 | FB3/CH6 |

**Fig. 3 — 30RB Fan Motor Locations**
**(Units produced starting with serial number 3107Q)**

CIRCUIT STAGE

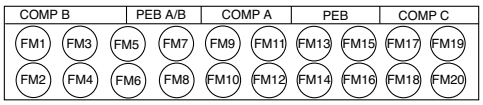
| FAN MOTOR ARRANGEMENT | CIRCUIT | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  <br>30XA080,082 | A | Fan stage A | 1 | 2 | 3 | — | — | — | — | — | — | — |
| | | Contactor No. | FC A1 | FC A2 | FC A3 | — | — | — | — | — | — | — |
| | | Fan position | FM5 | FM3 | FM6 | — | — | — | — | — | — | — |
| | B | Fan stage B | 1 | 2 | 3 | — | — | — | — | — | — | — |
| | | Contactor No. | FC B1 | FC B2 | FC B3 | — | — | — | — | — | — | — |
| | | Fan position | FM1 | FM4 | FM2 | — | — | — | — | — | — | — |
|  <br>30XA090-122 | A | Fan stage A | 1 | 2 | 3 | 4 | — | — | — | — | — | — |
| | | Contactor No. | FC A1 | FC A2 | FC A3 | FC A4 | — | — | — | — | — | — |
| | | Fan position | FM7 | FM5 | FM8 | FM6 | — | — | — | — | — | — |
| | B | Fan stage B | 1 | 2 | 3 | 4 | — | — | — | — | — | — |
| | | Contactor No. | FC B1 | FC B2 | FC B3 | FC B4 | — | — | — | — | — | — |
| | | Fan position | FM1 | FM3 | FM2 | FM4 | — | — | — | — | — | — |
|  <br>30XA140-162 | A | Fan stage A | 1 | 2 | 3 | 4 | 5 | 6 | — | — | — | — |
| | | Contactor No. | FC A1 | FC A2 | FC A3 | FC A4 | FC A5 | FC A6 | — | — | — | — |
| | | Fan position | FM9 | FM7 | FM5 | FM10 | FM8 | FM6 | — | — | — | — |
| | B | Fan stage B | 1 | 2 | 3 | 4 | — | — | — | — | — | — |
| | | Contactor No. | FC B1 | FC B2 | FC B3 | FC B4 | — | — | — | — | — | — |
| | | Fan position | FM1 | FM3 | FM2 | FM4 | — | — | — | — | — | — |
|  <br>30XA180-202 | A | Fan stage A | 1 | 2 | 3 | 4 | 5 | 6 | — | — | — | — |
| | | Contactor No. | FC A1 | FC A2 | FC A3 | FC A4 | FC A5 | FC A6 | — | — | — | — |
| | | Fan position | FM11 | FM9 | FM7 | FM12 | FM10 | FM8 | — | — | — | — |
| | B | Fan stage B | 1 | 2 | 3 | 4 | 5 | 6 | — | — | — | — |
| | | Contactor No. | FC B1 | FC B2 | FC B3 | FC B4 | FC B5 | FC B6 | — | — | — | — |
| | | Fan position | FM1 | FM3 | FM5 | FM2 | FM4 | FM6 | — | — | — | — |
|  <br>30XA220-242 | A | Fan stage A | 1 | 2 | 3 | 4 | 5 | 6 | 7 | — | — | — |
| | | Contactor No. | FC A1 | FC A2 | FC A3 | FC A4 | FC A5 | FC A6 | FC A7 | — | — | — |
| | | Fan position | FM13 | FM11 | FM9 | FM7 | FM14 | FM12 | FM10 | — | — | — |
| | B | Fan stage B | 1 | 2 | 3 | 4 | 5 | 6 | — | — | — | — |
| | | Contactor No. | FC B1 | FC B2 | FC B3 | FC B4 | FC B5 | FC B6 | — | — | — | — |
| | | Fan position | FM1 | FM3 | FM5 | FM2 | FM4 | FM6 | — | — | — | — |
|  <br>30XA260,262 | A | Fan stage A | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | — |
| | | Contactor No. | FC A1 | FC A2 | FC A3 | FC A4 | FC A5 | FC A6 | FC A7 | FC A8 | FC A9 | — |
| | | Fan position | FM15 | FM13 | FM11 | FM9 | FM7 | FM16 | FM14 | FM12 | FM10 | — |
| | B | Fan stage B | 1 | 2 | 3 | 4 | 5 | 6 | — | — | — | — |
| | | Contactor No. | FC B1 | FC B2 | FC B3 | FC B4 | FC B5 | FC B6 | — | — | — | — |
| | | Fan position | FM1 | FM3 | FM5 | FM2 | FM4 | FM6 | — | — | — | — |
|  <br>30XA280,282 | A | Fan stage A | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | — |
| | | Contactor No. | FC A1 | FC A2 | FC A3 | FC A4 | FC A5 | FC A6 | FC A7 | FC A8 | FC A9 | — |
| | | Fan position | FM15 | FM13 | FM11 | FM9 | FM7 | FM16 | FM14 | FM12 | FM10 | — |
| | B | Fan stage B | 1 | 2 | 3 | 4 | 5 | 6 | 7 | — | — | — |
| | | Contactor No. | FC B1 | FC B2 | FC B3 | FC B4 | FC B5 | FC B6 | FC B7 | — | — | — |
| | | Fan position | FM1 | FM3 | FM5 | FM8 | FM2 | FM4 | FM6 | — | — | — |
|  <br>30XA300,302 | A | Fan stage A | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 8 | |
| | | Contactor No. | FC A1 | FC A2 | FC A3 | FC A4 | FC A5 | FC A6 | FC A7 | FC A8 | FC A9 | FC A10 |
| | | Fan position | FM15 | FM13 | FM11 | FM9 | FM7 | FM16 | FM14 | FM12 | FM10 | FM8 |
| | B | Fan stage B | 1 | 2 | 3 | 4 | 5 | 6 | — | — | — | — |
| | | Contactor No. | FC B1 | FC B2 | FC B3 | FC B4 | FC B5 | FC B6 | — | — | — | — |
| | | Fan position | FM1 | FM3 | FM5 | FM2 | FM4 | FM6 | — | — | — | — |
|  <br>30XA325-352 | A | Fan stage A | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | — |
| | | Contactor No. | FC A1 | FC A2 | FC A3 | FC A4 | FC A5 | FC A6 | FC A7 | FC A8 | FC A9 | — |
| | | Fan position | FM17 | FM15 | FM13 | FM11 | FM9 | FM18 | FM16 | FM14 | FM12 | — |
| | B | Fan stage B | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | — |
| | | Contactor No. | FC B1 | FC B2 | FC B3 | FC B4 | FC B5 | FC B6 | FC B7 | FC B8 | FC B9 | — |
| | | Fan position | FM1 | FM3 | FM5 | FM7 | FM10 | FM2 | FM4 | FM6 | FM8 | — |

LEGEND

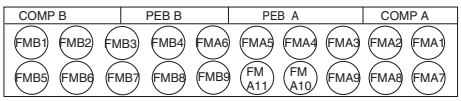
**COMP** — Compressor
**FC** — Fan Contactor
**FM** — Fan Motor
**PEB** — Power Electrical Box

**Fig. 4 — 30XA Fan Motor Locations**

CIRCUIT STAGE




30XA400

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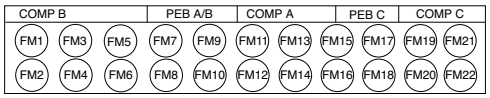
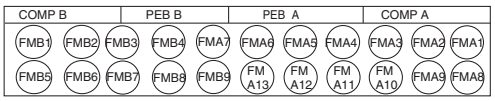
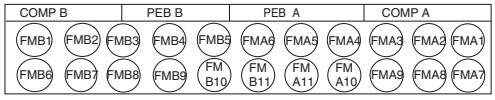


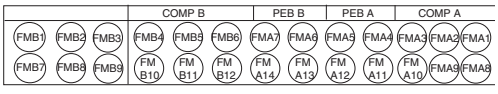

30XA450, 500




30XA451




30XA476




30XA501

| | CIRCUIT | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | Fan stage A | 1 | 2 | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | |
| | | Contactor # | FC A1 | FC A2 | FC A3 | | FC A4 | | FC A5 | | FC A6 | | | | | |
| | | Fan position | FM11 | FM9 | FM7 | | FM12 | | FM10 | | FM8 | | | | | |
| | B | Fan stage B | 1 | 2 | 3 | | 4 | | 5 | | 6 | | | | | |
| | | Contactor # | FC B1 | FC B2 | FC B3 | | FC B4 | | FC B5 | | FC B6 | | | | | |
| | | Fan position | FM1 | FM3 | FM5 | | FM2 | | FM4 | | FM6 | | | | | |
| | C | Fan stage C | 1 | 2 | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | |
| | | Contactor # | FC C1 | FC C2 | FC C3 | | FC C4 | | FC C5 | | FC C6 | | FC C7 | | FC C8 | |
| | | Fan position | FM19 | FM17 | FM15 | | FM13 | | FM20 | | FM18 | | FM16 | | FM14 | |
| | A | Fan stage A | 1 | 2 | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | |
| | | Contactor # | FC A1 | FCA2 | FC A3 | | FC A4 | | FC 5 | | FC A6 | FC A7 | FC A8 | FC A9 | FC A10 | FC A11 |
| | | Fan position | FM19 | FM17 | FM15 | | FM13 | | FM11 | | FM9 | FM20 | FM18 | FM16 | FM14 | FM12 |
| | B | Fan stage B | 1 | 2 | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | |
| | | Contactor # | FC B1 | FC B2 | FC B3 | | FC B4 | | FC B5 | | FC B6 | | FC B7 | | FC B8 | FC B9 |
| | | Fan position | FM1 | FM3 | FM5 | | FM7 | | FM2 | | FM4 | | FM6 | | FM8 | FM10 |
| | A | Fan stage A | 1 | 2 | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | |
| | | Contactor # | FC A1 | FC A2 | FC A3 | | FC A4 | | FC A5 | | FC A6 | | FC A7 | | FC A8 | |
| | | Fan position | FM13 | FM11 | FM9 | | FM7 | | FM14 | | FM12 | | FM10 | | FM8 | |
| | B | Fan stage B | 1 | 2 | 3 | | 4 | | 5 | | 6 | | | | | |
| | | Contactor # | FC B1 | FC B2 | FC B3 | | FC B4 | | FC B5 | | FC B6 | | | | | |
| | | Fan position | FM1 | FM3 | FM5 | | FM2 | | FM4 | | FM6 | | | | | |
| | C | Fan stage C | 1 | 2 | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | |
| | | Contactor # | FC C1 | FC C2 | FC C3 | | FC C4 | | FC C5 | | FC C6 | | FC C7 | | FC C8 | |
| | | Fan position | FM21 | FM19 | FM17 | | FM15 | | FM22 | | FM20 | | FM18 | | FM16 | |
| | A | Fan stage A | 1 | 2 | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | |
| | | Contactor # | FC A1 | FCA2 | FC A3 | | FC A4 | FC A5 | FC A6 | FC A7 | FC A8 | FC A9 | FC A10 | FC A11 | FC A12 | FC A13 |
| | | Fan position | FM21 | FM19 | FM17 | | FM15 | FM13 | FM11 | FM9 | FM22 | FM20 | FM18 | FM16 | FM14 | FM12 |
| | B | Fan stage B | 1 | 2 | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | |
| | | Contactor # | FC B1 | FC B2 | FC B3 | | FC B4 | | FC B5 | | FC B6 | | FC B7 | | FC B8 | FC B9 |
| | | Fan position | FM1 | FM3 | FM5 | | FM7 | | FM2 | | FM4 | | FM6 | | FM8 | FM10 |
| | A | Fan stage A | 1 | 2 | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | |
| | | Contactor # | FC A1 | FCA2 | FC A3 | | FC A4 | | FC A5 | | FC A6 | FC A7 | FC A8 | FC A9 | FC A10 | FC A11 |
| | | Fan position | FM21 | FM19 | FM17 | | FM15 | | FM13 | | FM11 | FM22 | FM20 | FM18 | FM16 | FM14 |
| | B | Fan stage B | 1 | 2 | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | |
| | | Contactor # | FC B1 | FC B2 | FC B3 | | FC B4 | | FC B5 | | FC B6 | FC B7 | FC B8 | FC B9 | FC B10 | FC B11 |
| | | Fan position | FM1 | FM3 | FM5 | | FM7 | | FM9 | | FM2 | FM4 | FM6 | FM8 | FM10 | FM12 |
| | A | Fan stage A | 1 | 2 | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | |
| | | Contactor # | FC A1 | FCA2 | FC A3 | FC A4 | FC A5 | FC A6 | FC A7 | FC A8 | FC A9 | FC A10 | FC A11 | FC A12 | FC A13 | FC A14 |
| | | Fan position | FM25 | FM23 | FM21 | FM19 | FM17 | FM15 | FM13 | FM26 | FM24 | FM22 | FM20 | FM18 | FM16 | FM14 |
| | B | Fan stage B | 1 | 2 | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | |
| | | Contactor # | FC B1 | FC B2 | FC B3 | | FC B4 | | FC B5 | FC B6 | FC B7 | FC B8 | FC B9 | FC B10 | FC B11 | FC B12 |
| | | Fan position | FM1 | FM3 | FM5 | | FM7 | | FM9 | FM11 | FM2 | FM4 | FM6 | FM8 | FM10 | FM12 |

LEGEND

**COMP** — Compressor
**FC** — Fan Contactor
**FM** — Fan Motor
**PEB** — Power Electrical Box

**Fig. 4 — 30XA Fan Motor Locations (cont)**

Follow the steps below for each circuit:

1. Remove fan contactor coil wiring to terminals A1 and A2. Using field-supplied wire nuts, cap these wires off individually.
2. Remove the line side wiring from terminals L1, L2 and L3. Do not cap these.
3. Remove the load side wiring from terminals T1, T2, T3 and the fan motor ground wire. The fan motor cable must be pulled out of the control panel and back into the appropriate VFD panel.
4. Remove the contactor from the DIN rail and install a fuse block in its place.
5. Connect the line side wiring removed in step 2 to the line side of the fuse block.
6. Install 3 fuses in the fuse block and close the fuse block cover.
7. Repeat steps 1 through 6 for the appropriate motor on each circuit. See Fig. 5 for an example of a 30RB210 chiller with the three fuse blocks installed. See Fig. 6 for a view of typical wiring schematics.

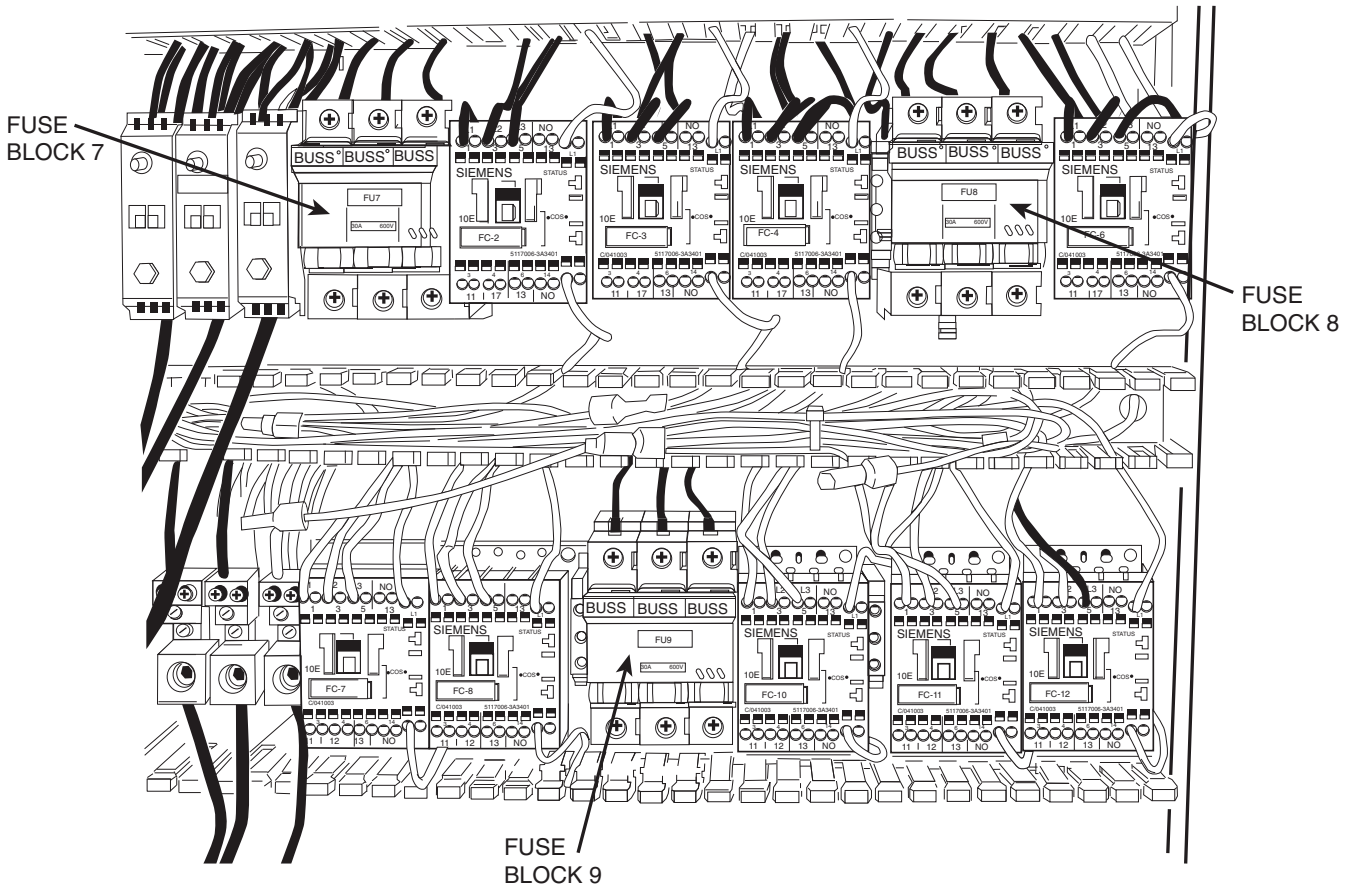



**Fig. 5 — Fuse Blocks Installed in Control Panel (30RB210 Unit Shown)**

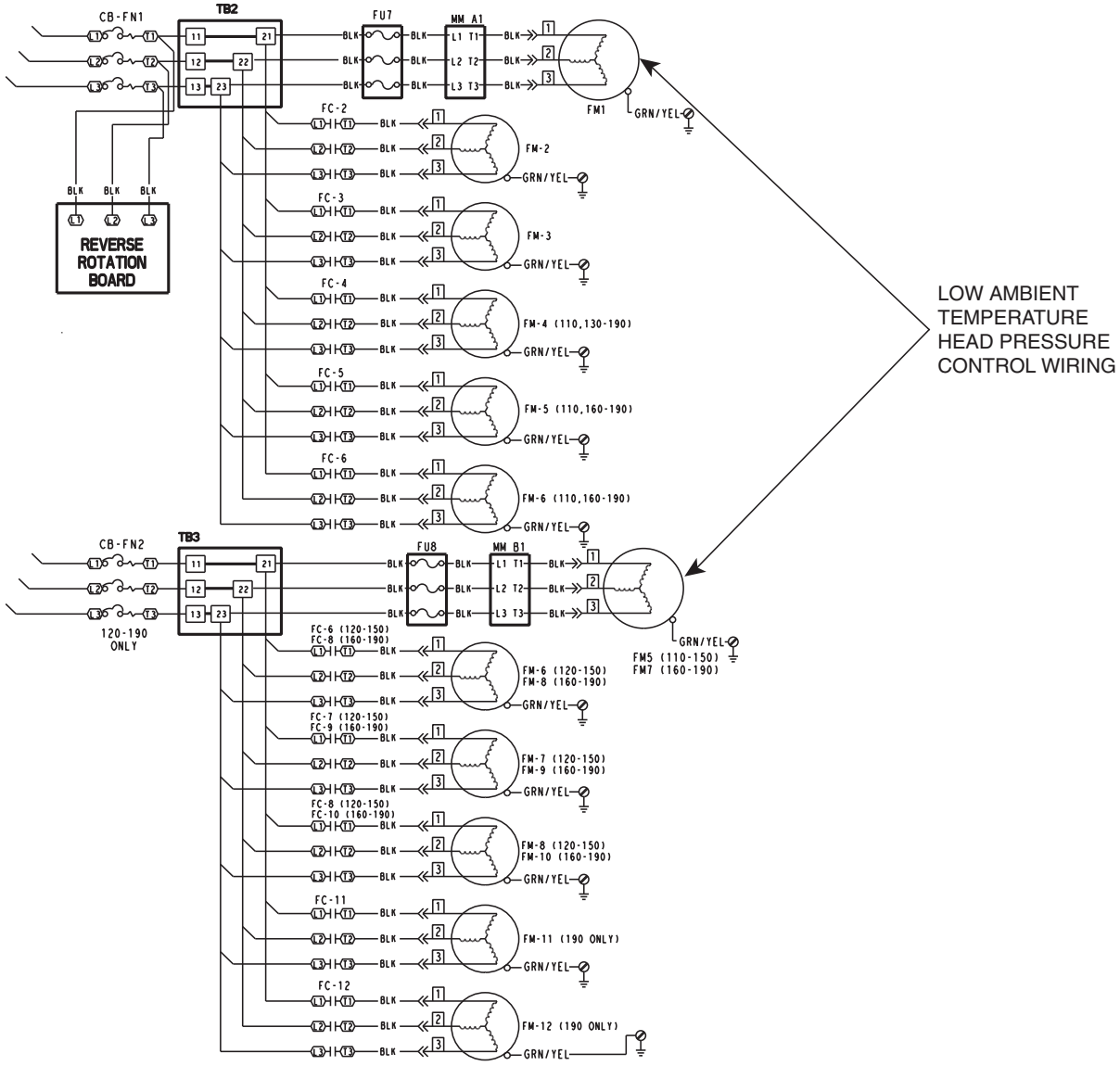



**Fig. 6 — Typical Wiring, 30RB060-390 and 30XA080-501 After Low Ambient Temperature Head Pressure Control Installed (30RB110-190 Shown)**

## Step 3 — Mount the Low Ambient Temperature Head Pressure Control

**⚠ WARNING**

Electrical shock can cause personal injury and death. Shut off all power to this equipment during installation. There may be more than one disconnect switch. Tag all disconnect locations to alert others not to restore power until work is completed.

**⚠ DANGER**

Hazard of electric shock! Wait three minutes after disconnecting incoming power before servicing drive. Capacitors retain charge after power is removed.

All units require mounting one mounting plate (Fig. 7), one support plate (Fig. 8), and one wiring cover (Fig. 9) per VFD panel assembly. See Fig. 10 and 11 for drive mounting locations and the fan number for each circuit.

1. Remove the existing wiring tray cover (four 6-mm screws). Retain all screws for later use.
2. The fan motor cables removed from the contactors in the control panel must be routed into the appropriate drive. Locate these cables and pull them back to the drive location. A tag indicating "Motormaster Option" is secured to the odd-numbered fan from each condenser section and should be visible with the tray cover removed.
3. Install the support plate first to the bottom side of the coil rail using 4 of the 8-mm screws supplied (Fig. 8 and Fig. 12).
4. Position the drive in place on this rail and let the front edge rest on the outer coil rail. Secure the back of the drive in place to the rail with one (single VFD panel) or two 8-mm screws (dual VFD panel). Note that the screws come from below and should engage into threaded inserts in the drive panel. See Fig. 12.

NOTE: The 30RB060-080 units contain a *dual VFD panel*, which are two VFDs, one for each circuit, located in one large enclosure. The 30RB090-300 and 30XA080-501 units contain a *single VFD panel*, which is one VFD inside one enclosure, one for each circuit.

5. Snap the plastic wiring bushing into the hole in the front support rail. See Fig. 13.
6. Pull the existing motor wiring back through this bushing and up into the drive panel. Connect terminals 1, 2 and 3 of the cable to drive terminals U, V and W.

   For the Siemens Micromaster VFD, the drive should already have existing line wiring, signal wiring (red to 3, black to 4) and two jumpers (2-4 and 5-8 for 200, 208/230, 380 and 460 v; for 575 v, 2-4 and 5-9) in place. Ground wires connect to marked terminals at the bottom front of drive. See Fig. 14.

   For the Schneider Altivar 212 and 312 VFD, the drive should have signal wiring (red to VIA, black to CC) and a jumper (P24 to F) in place.
7. Route the line side power L1, L2, L3 (Siemens) R/L1, S/L2, T/L3 (Schneider) and signal cables from the drive through the bushing in the opposite direction. These cables go to the main control panel. Connect the line power cable to the appropriate fuse block (FU7 for Circuit A, FU8 for Circuit B or FU9 for Circuit C). See Fig. 15-18.
8. Install the mounting plate to the bottom side of the coil rail using 4 of the 8-mm screws supplied. Secure the cover portion of the rail in place using 4 of the 6-mm screws supplied. Secure the front of the drive to the front support rail (screws install from below) with the 6-mm screws supplied. See Fig. 14 for a view of the inside of the drive panel once installed.
9. Using three 6-mm screws supplied, install a wiring cover underneath each panel (part of mounting plate).
10. For sizes 30RB060-150, replace the existing fan board 1 in the chiller control panel with the one supplied with the kit. Set the new board address to match the old board. Similarly, for sizes 30RB160-190 and modular unit sizes 30RB315-390, replace both fan boards 1 and 2; for sizes 30RB210-250 replace fan board 1; for sizes 30RB275 and 300 replace both fan boards 1 and 2. For sizes 30RB210-300, it is not necessary to replace fan board 3.
11. The installation kit contains a two-wire assembly with a two-pin connector on one end and quick connects on the other. Connect the signal wiring from each drive to the quick connects (red from cable to violet, black from cable to brown). Plug the two-pin connector into the appropriate fan board according to Tables 6 and 7. See Fig. 19 and 20 for typical fan board wiring.

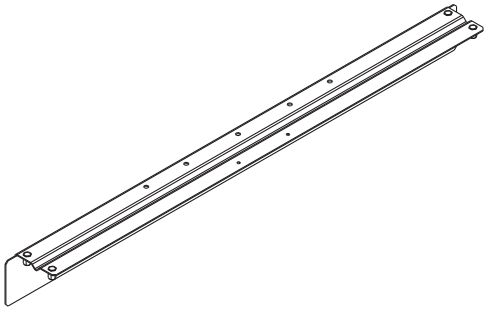


**Fig. 7 — Mounting Plate (Front Support/Coil Tray Cover) (P/N 00PSN500037100A)**

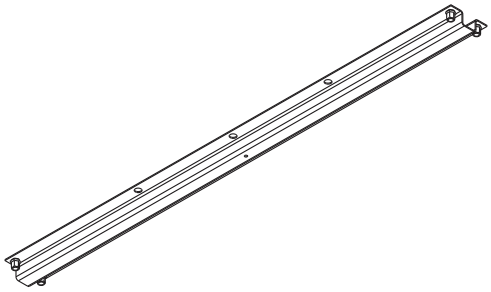


**Fig. 8 — Support Plate (Back Support Rail) (P/N 00PSN500034400A)**

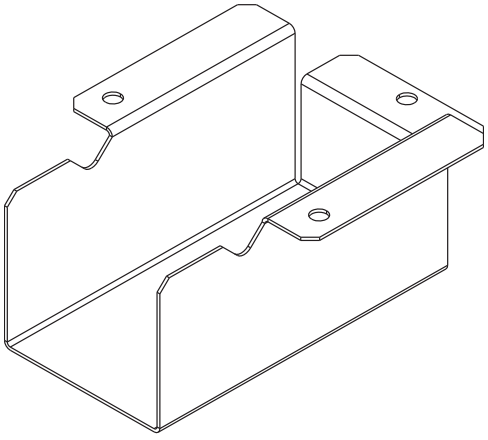
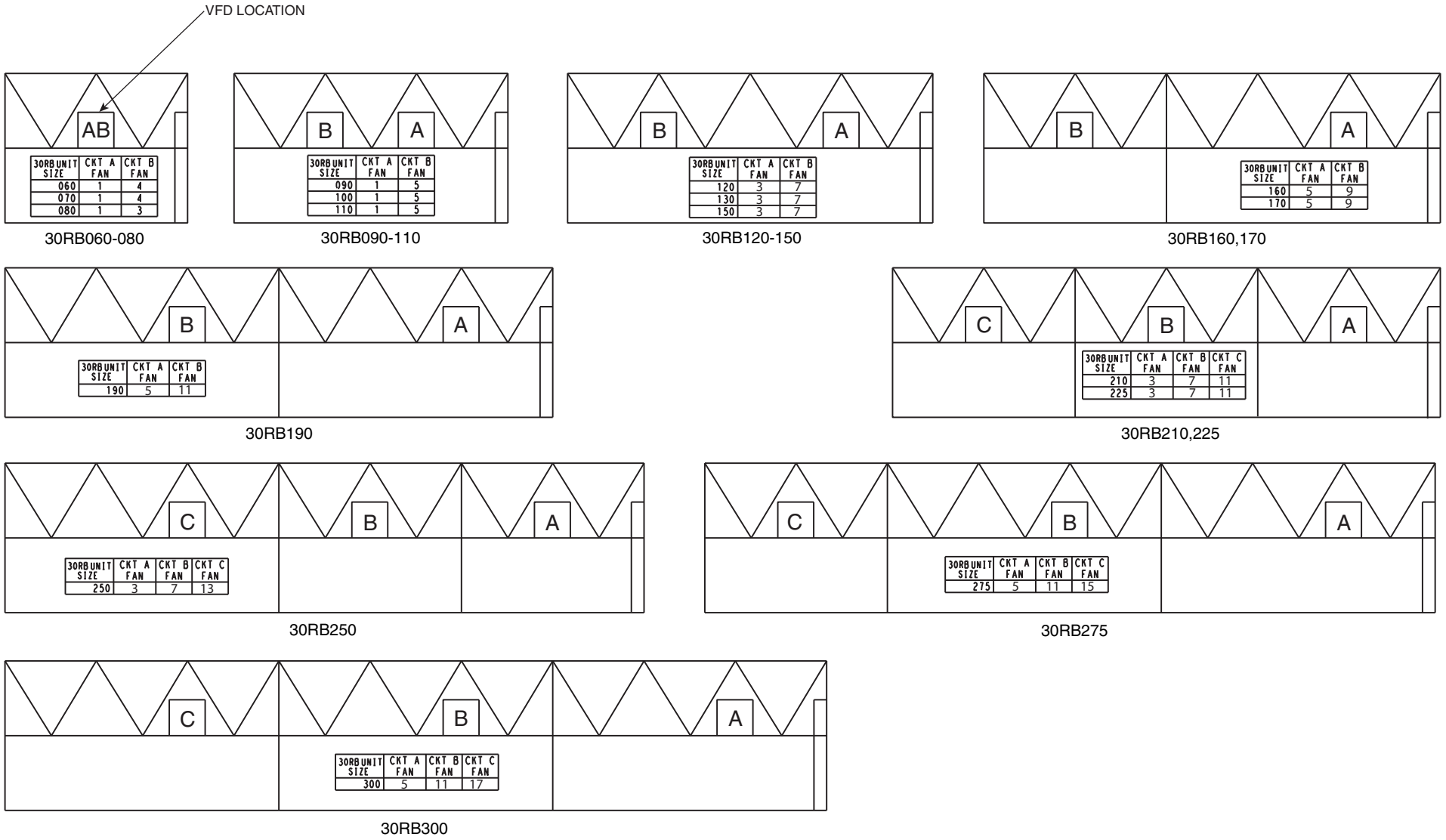


**Fig. 9 — Wiring Cover (P/N 00PSN500036500A)**




LEGEND

**CKT** — Circuit

VFD

**Fig. 10 — 30RB VFD Panel and Fan Location**

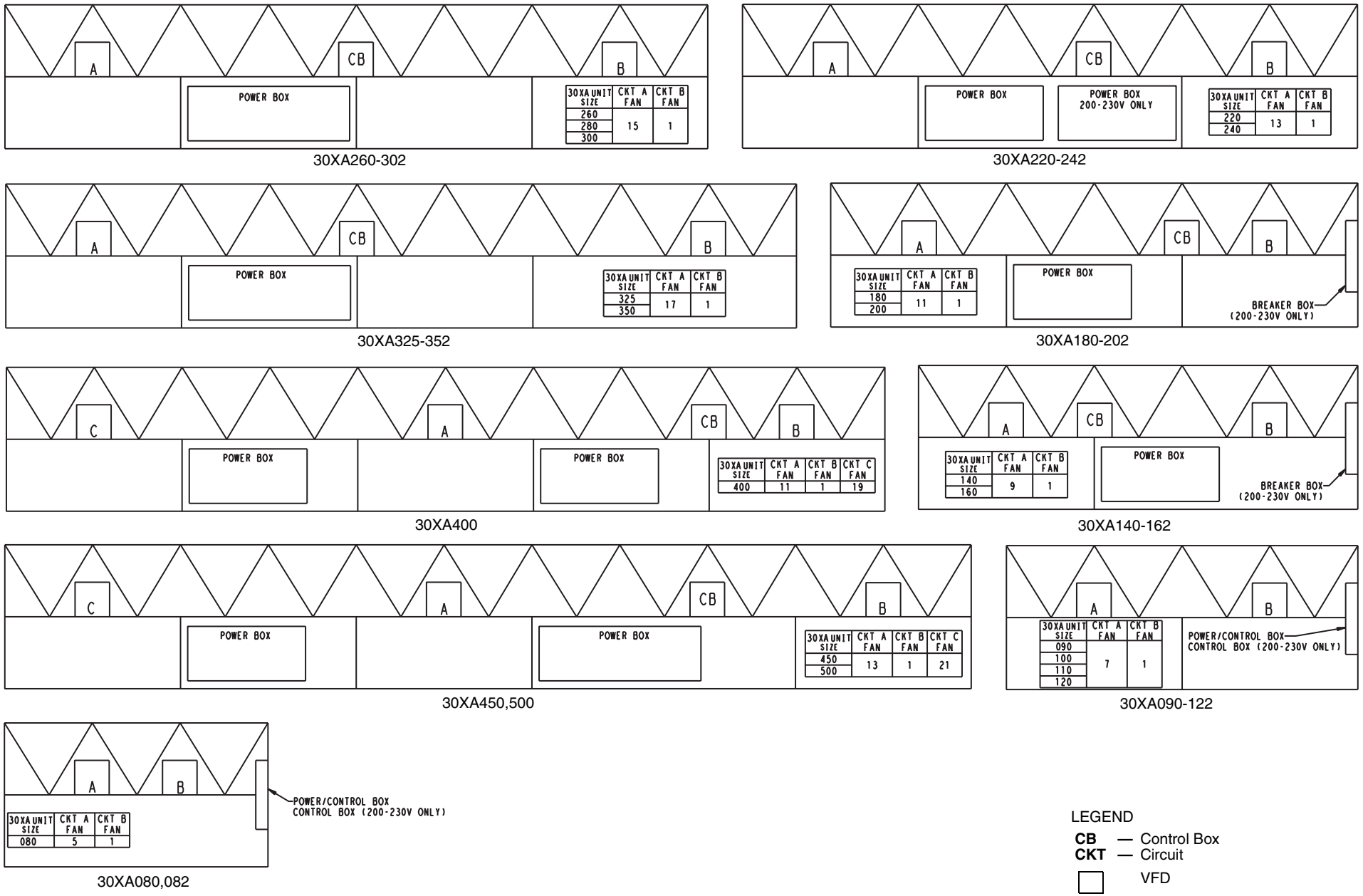
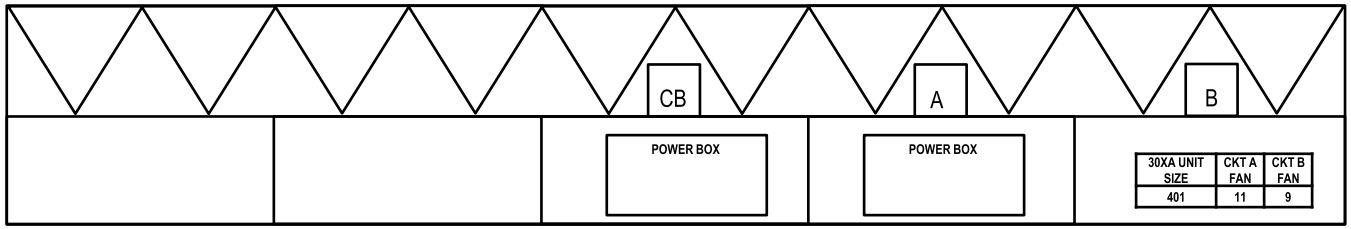
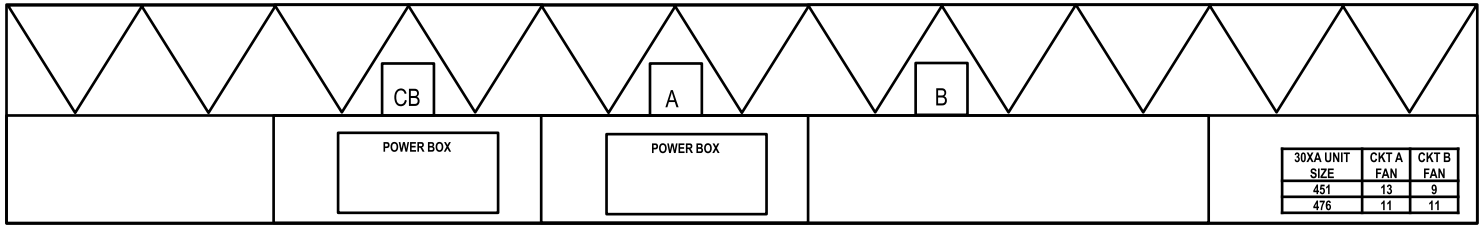



**Fig. 11 — 30XA VFD Panel and Fan Location**

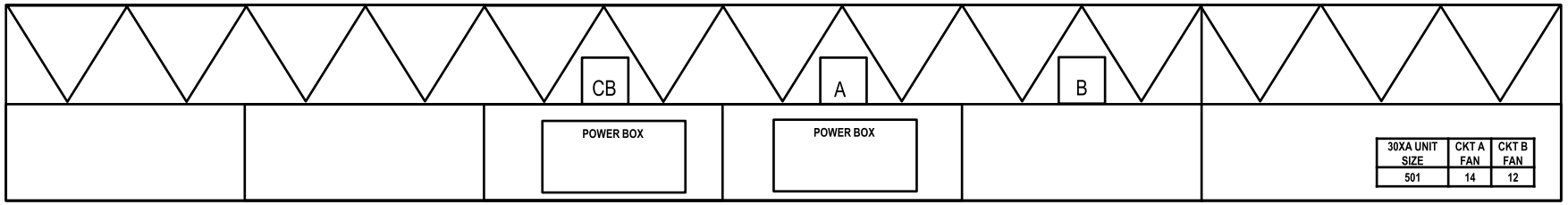



30XA401




30XA451,476






30XA501

LEGEND

**CB** — Control Box
**CKT** — Circuit

VFD

**Fig. 11 — 30XA VFD Panel and Fan Location (cont)**

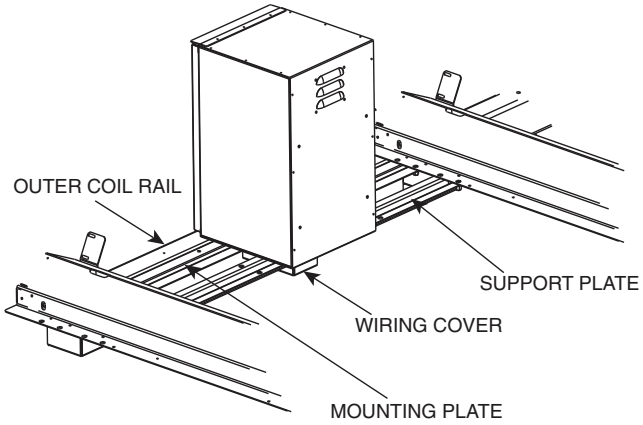



**Fig. 12 — Low Ambient Temperature Head Pressure Control Mounting**

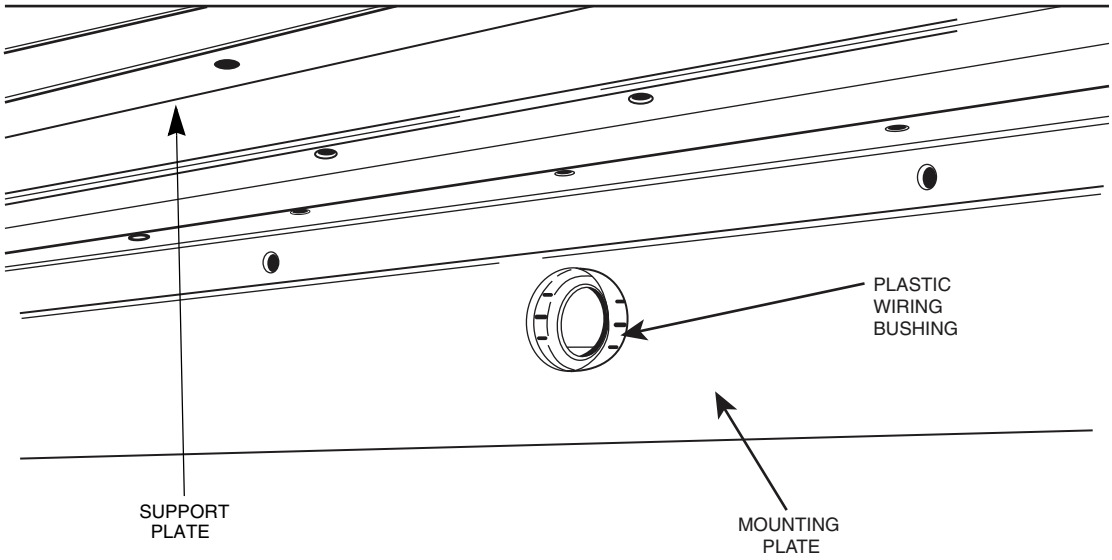



**Fig. 13 — Plastic Bushing into Hole Mounting Plate**

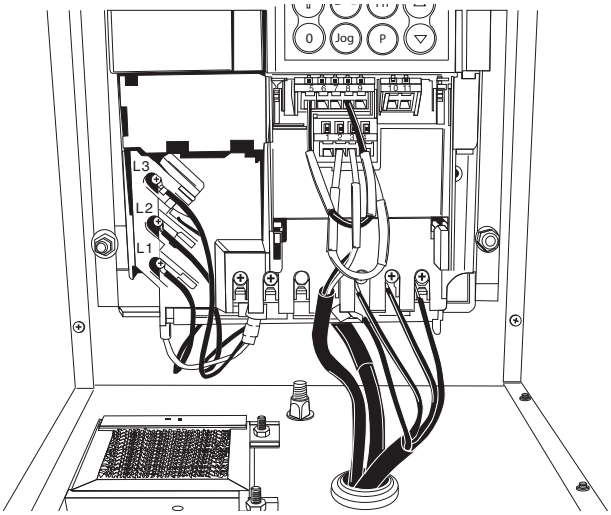



**Fig. 14 — Low Ambient Temperature Head Pressure Control Wiring (Siemens Drive Shown)**

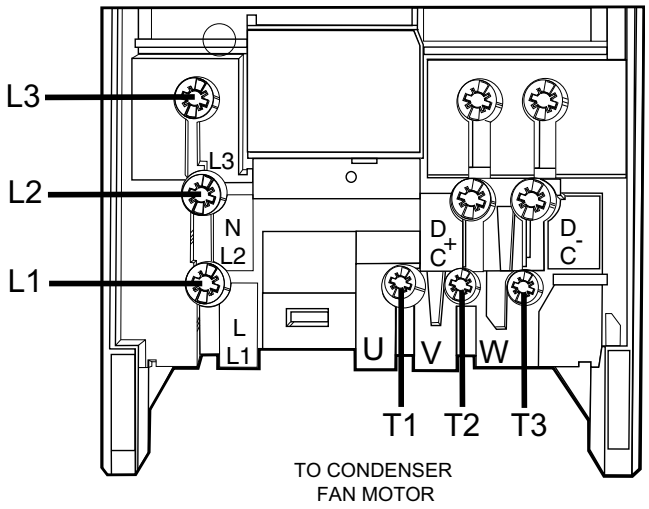
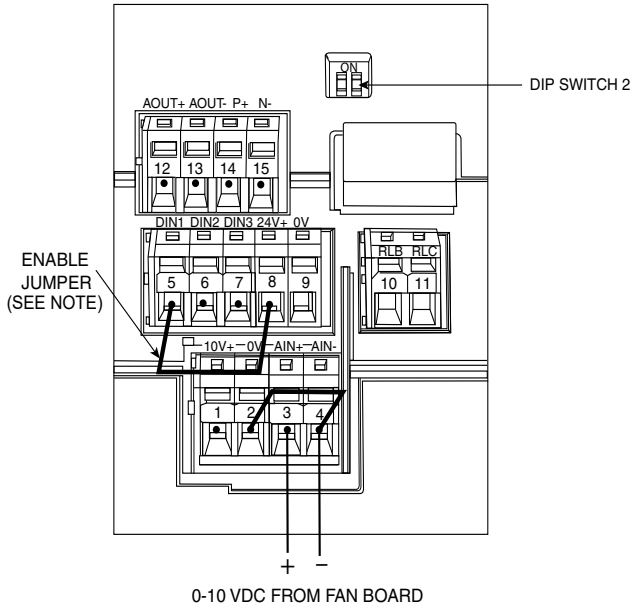



**Fig. 15 — Low Ambient Temperature Control Power Wiring (Siemens)**




NOTE: For 575-v units, jumper terminals are 5 and 9.

**Fig. 16 — Low Ambient Temperature Control Signal Wiring (Siemens)**

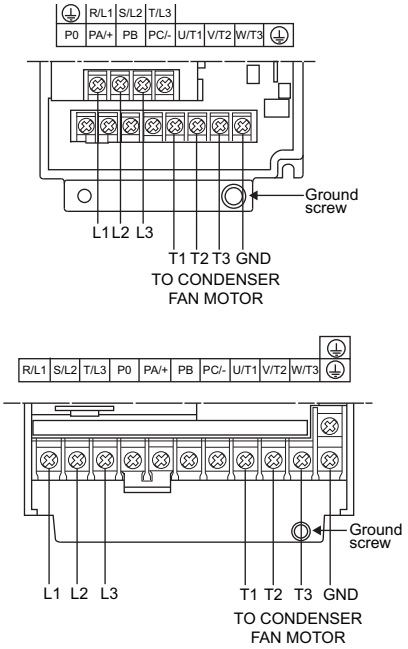



**Fig. 17 — Low Ambient Temperature Control Power Wiring (Schneider)**

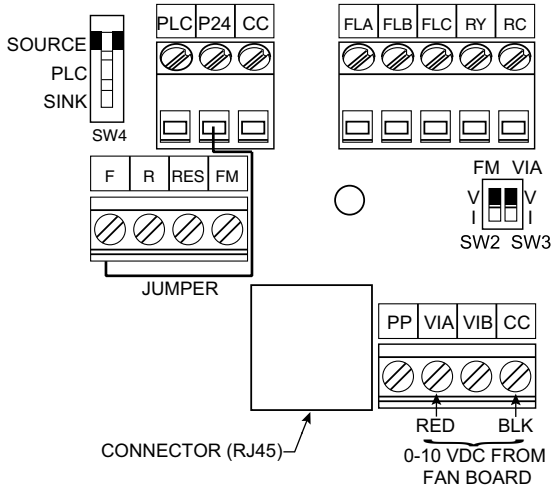



**Fig. 18 — Low Ambient Temperature Control Wiring (Schneider)**

**Table 6 — 30RB060-390 Controller Signal Wiring Location**

| 30RB UNIT SIZE | CIRCUIT A | CIRCUIT B | CIRCUIT C |
|---|---|---|---|
| 060-150 | Fan Board 1, Channel 9 | Fan Board 1, Channel 10 | — |
| 160-190, 315-390 | Fan Board 1, Channel 9 | Fan Board 2, Channel 9 | — |
| 210-225 | Fan Board 1, Channel 9 | Fan Board 1, Channel 10 | Fan Board 3, Channel 9 |
| 275-300 | Fan Board 1, Channel 9 | Fan Board 2, Channel 9 | Fan Board 3, Channel 9 |

**Table 7 — 30XA080-501 Controller Signal Wiring Location**

| 30XA UNIT SIZE | CIRCUIT A | CIRCUIT B | CIRCUIT C |
|---|---|---|---|
| 080-122 | Fan Board A, Channel 9 | Fan Board A, Channel 10 | — |
| 140-352, 401,451,476,501 | Fan Board A, Channel 9 | Fan Board B, Channel 9 | — |
| 400,450,500 | Fan Board A, Channel 9 | Fan Board B, Channel 9 | Fan Board C, Channel 9 |

## Step 4 — Configure for Low Ambient Temperature Head Pressure Control Operation

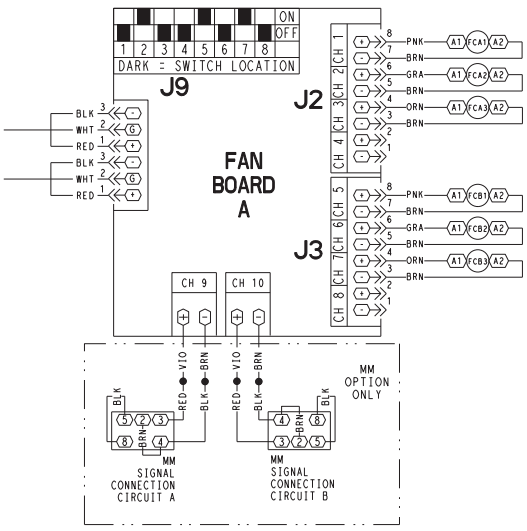
The unit must be configured for operation. For 30RB units, use the scrolling marquee display or the Navigator™ module to configure the system. For 30XA units, use the Touch Pilot™ display or the Navigator module to configure the system.

To configure the system with the scrolling marquee or Navigator module, perform the following:

1. Set the Enable/Off/Remote Contact switch to the Off position.
2. Press the ESCAPE key to the top level of the menus and use the arrow key to select the Configuration mode LED.
3. Press ENTER key, then use the Down arrow key to select sub-mode "UNIT", then press ENTER key.
4. Press the Down arrow key until "VAR.A" is displayed.
5. Press ENTER key twice. The words "PASS" and "WORD" will flash.
6. Press the Up or Down arrows to display 0 1 1 1 then ENTER key so that "0" flashes.
7. Use arrow keys to change to "1" and press ENTER.
8. Press the Down arrow key until "VAR.B" is displayed.
9. Press ENTER twice so that "0" flashes.
10. Use arrow keys to change to "1" and press ENTER.
11. For sizes 30RB210-300 and 30XA080-501 only, press the Down arrow key until "VAR.C" is displayed.
12. Press ENTER twice so that "0" flashes.
13. Use arrow keys to change to "1" and press ENTER.
14. Press ESCAPE key until display reads "UNIT".
15. Cycle control power to chiller.
16. The chiller is now configured for low ambient temperature control.

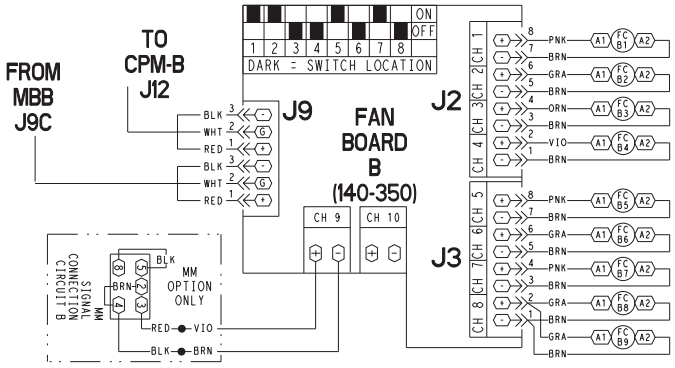
To enable low ambient control with the Touch Pilot display:

1. Push the Main Menu button on the bottom line of the display, and then select Service→Factory to navigate to the factory table.
2. Scroll down the screen by pushing the Scroll Down button or Page Down button until the NB Fans on Varifan Circuit A is displayed on the screen.
3. Push the Modify button . If the login menu is displayed, log in with the password. The default password is 3333. Press the OK button to confirm the input.
4. The value of varifan_a will display. Change 0 to 1 and press the OK button to confirm the input.
5. Configure NB Fans on Varifan Circuit B and NB Fans on Varifan Circuit C if required for unit size.
6. Push the Home button on the bottom line. A save confirmation menu will display. Push the OK button to confirm the action.
7. The chiller is now configured for low ambient temperature control.

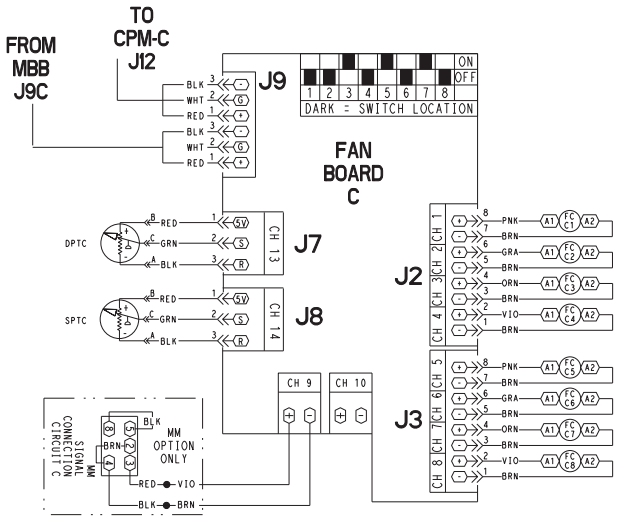



30XA080,082 ALL VOLTAGES

NOTE: For Schneider Altivar 212 and 312 connection, attach red to VIA, black to CC, and a jumper from P24 to F. This applies to all circuits.

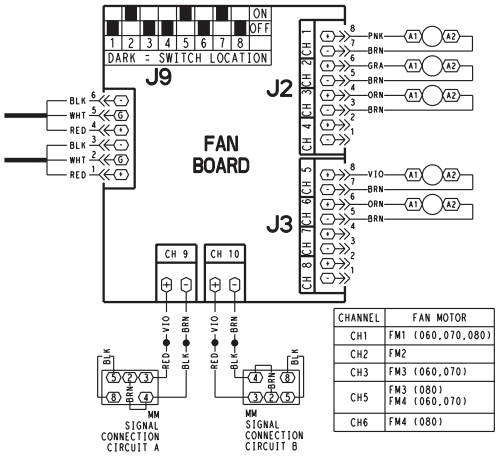



30XA090-352,401,451,476,501 ALL VOLTAGES




30XA400,450,500, ALL VOLTAGES

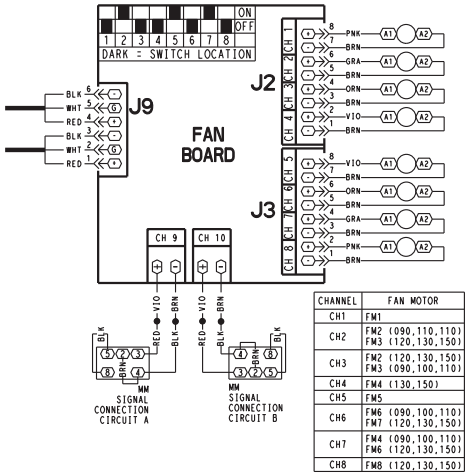
**Fig. 19 — Typical 30XA Fan Board Wiring**




| CHANNEL | FAN MOTOR |
|---|---|
| CH1 | FM1 (060,070,080) |
| CH2 | FM2 |
| CH3 | FM3 (060,070) |
| CH5 | FM3 (080)<br>FM4 (060,070) |
| CH6 | FM4 (080) |

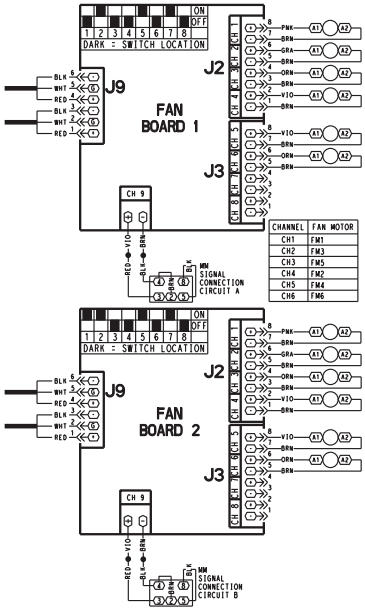
30RB060-080, ALL VOLTAGES

NOTE: For Schneider Altivar 212 and 312 connection, attach red to VIA, black to CC, and a jumper from P24 to F. This applies to all circuits.



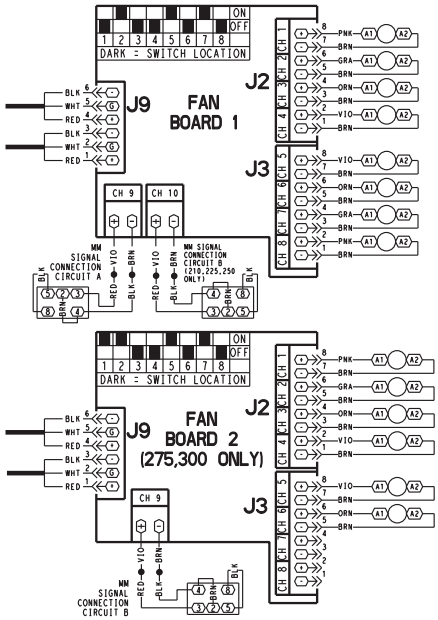

| CHANNEL | FAN MOTOR |
|---|---|
| CH1 | FM1 |
| CH2 | FM2 (090,110,110)<br>FM3 (120,130,150) |
| CH3 | FM2 (120,130,150)<br>FM3 (090,100,110) |
| CH4 | FM4 (130,150) |
| CH5 | FM5 |
| CH6 | FM6 (090,100,110)<br>FM7 (120,130,150) |
| CH7 | FM4 (090,100,110)<br>FM6 (120,130,150) |
| CH8 | FM8 (120,130,150) |

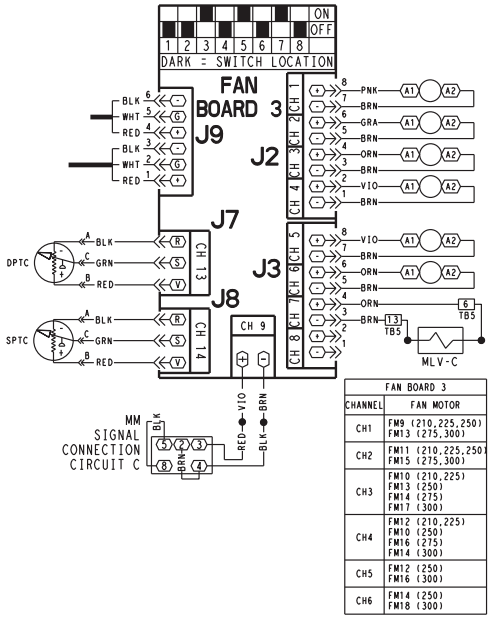
30RB090-150, ALL VOLTAGES




| CHANNEL | FAN MOTOR |
|---|---|
| CH1 | FM1 |
| CH2 | FM3 |
| CH3 | FM5 |
| CH4 | FM2 |
| CH5 | FM4 |
| CH6 | FM6 |

30RB160-190, ALL VOLTAGES




| FAN BOARD 3 | |
|---|---|
| CHANNEL | FAN MOTOR |
| CH1 | FM9 (210,225,250)<br>FM13 (275,300) |
| CH2 | FM11 (210,225,250)<br>FM15 (275,300) |
| CH3 | FM10 (210,225)<br>FM13 (250)<br>FM14 (275)<br>FM17 (300) |
| CH4 | FM12 (210,225)<br>FM10 (250)<br>FM16 (275)<br>FM14 (300) |
| CH5 | FM12 (250)<br>FM16 (300) |
| CH6 | FM14 (250)<br>FM18 (300) |

30RB210-300, ALL VOLTAGES

**Fig. 20 — Typical 30RB Fan Board Wiring**

## Step 5 — Configure Low Ambient Temperature Head Pressure Control

The VFDs should be shipped correctly configured. It is recommended that the configuration of the VFD is verified prior to proceeding. To check each drive configuration, complete the following:

FOR SIEMENS MICROMASTER VFD:

1. Open the fuse block to disconnect power to the VFD.
2. Remove the cover below the display by pushing down slightly and pulling out from the top. Remove the lower cover (tabs on each side). Refer to Fig. 21.
3. Remove keypad (press release button and pull out from top) and verify DIP switch 1 is off and 2 is on. Replace keypad.
4. Jumpers must be in place from terminals 2-4 and 5-8 for 200, 208/230, 380 and 460 v; for 575 v, jumper is connected to 5-9.
5. Power up drive. Press parameter P key. See Fig. 22.
6. Press Up arrow to view parameter P0311. Press P to display the value, which is 1140 for 30RB060-300 units. For 30XA080-501 units with the high ambient temperature option the P0311 value is also 1140. The P0311 value is 850 for 30XA080-501 units with the standard ambient temperature option. Refer to Table 8 for unit nameplate fan motor type. Press P again and Up arrow to parameter P1210. Press P to display the value, which should be 6. If either of these values is incorrect, the drive is not correctly configured and Steps 7 through 17 must be followed. If these two parameters are correct, then the drive is properly configured; proceed to Step 18, then to the Test the Low Ambient Temperature Head Pressure Control section.

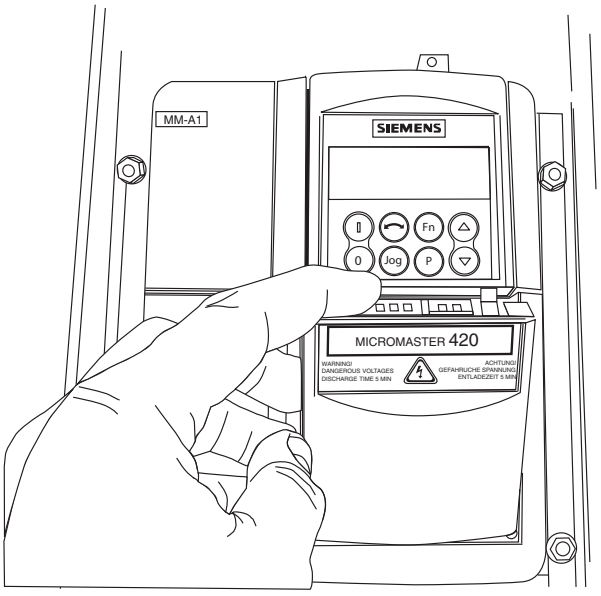



**Fig. 21 — Removing Lower Cover (Siemens)**


**Fig. 22 — Low Ambient Temperature Head Pressure Controller (Siemens)**

7. Remove jumper wire from terminal position 8.
8. Press Up arrow to parameter P0010.
9. Press P, then Up arrow to change 0 to 1. Press P again to accept change.
10. Press Up arrow to parameter P0311. Press P and use Down arrow to change this value to 1140. Press P to accept.
11. Press Up arrow to parameter P3900. Press P and use Up arrow to change this value to 1. Press P to accept.
12. Drive will finish standard programming.
13. Press P again and go to parameter P0003. Press P and use Up arrow to change this value to 3. Press P to accept.
14. Press Up arrow to parameter P1210. Press P and use Up arrow to change this value to 6. Press P to accept.
15. Press Up arrow to parameter P1310. Press the P and use Down arrow to change this value to a 10. Press P to accept.
16. Press function (Fn) key and then parameter (P) key. Display should now show 0.00 Hz.
17. Replace wire jumper in terminal position 8.
18. The drive is now active. Check fan rotation before testing. If fan is spinning forward, further adjustment is needed. Fan should sit still when commanded speed is 0%. If spinning forward slightly, press parameter P key and Up arrow to parameter P0761. Press P and use Up arrow to change this value to 0.1. Press P to accept. Check fan. If rotation has stopped no further adjustment is required. If fan is still rotating forward, press P and use Up arrow to change this value to 0.2. Press P to accept. Repeat as needed until fan is holding still or is just barely moving in either direction. A value greater than 0.5 would not normally be required and may indicate excess electrical noise on the signal cable. The signal cable drain wire is grounded at both ends. Some applications may require that the drain wire be lifted at the drive end.

Refer to Table 9 for a list of control buttons and functions.

**Table 8 — 30XA Condenser Coil/High Ambient Option Nameplate Value**

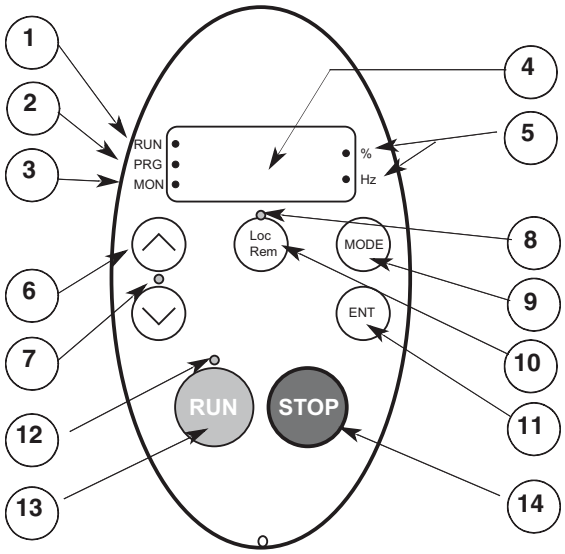
| VALUE ON NAMEPLATE, POSITION 10 | CONDENSER COIL/HIGH AMBIENT OPTION |
|---|---|
| — | Aluminum Fin/Copper Tube, High Ambient Temperature |
| 0 | Copper Fin/Copper Tube, High Ambient Temperature |
| 1 | Copper Pre-coat Fin/Aluminum Tube, High Ambient Temperature |
| 2 | Copper E-coat Fin/Aluminum Tube, High Ambient Temperature |
| 3 | Copper E-coat Fin/Copper Tube, High Ambient Temperature |
| 4 | Microchannel Heat Exchanger, High Ambient Temperature |
| 6 | Aluminum Fin/Copper Tube, High Ambient Temperature, Compressor Enclosures |
| 8 | Aluminum Pre-Coat Fin/Copper Tube, High Ambient Temperature, Compressor Enclosures |
| 9 | Aluminum E-Coat Fin/Copper Tube, High Ambient Temperature, Compressor Enclosures |
| F | Aluminum Fin/Copper Tube, Standard Ambient Temperature, Compressor Enclosures |
| H | Aluminum Pre-Coat Fin/Copper Tube, Standard Ambient Temperature, Compressor Enclosures |
| J | Aluminum E-Coated Fin/Copper Tube, Standard Ambient Temperature, Compressor Enclosures |

**Table 9 — Low Ambient Temperature Head Pressure Control Operator Panel for Siemens MicroMaster VFD**

| PANEL/BUTTON | FUNCTION | DESCRIPTION |
|---|---|---|
| r0000 | Indicates Status | The LCD displays the settings currently used by the converter. |
| I | Start Converter | The Start Converter button is disabled by default. To enable this button set P0700 = 1. |
| 0 | Stop Converter | Press the Stop Converter button to cause the motor to come to a standstill at the selected ramp down rate. The button is disabled by default; to enable set P0700 = 1.<br>Press the Stop Converter button twice (or hold) to cause the motor to coast to a standstill. This function is always enabled. |
| | Change Direction | Press the Change Direction button to change the direction of rotation of the motor. Reverse is indicated by a minus (–) sign or a flashing decimal point. The button is disabled by default; to enable set P0700 = 1. |
| jog | Jog Motor | Press the Jog Motor button while the inverter has no output to cause the motor to start and run at the preset jog frequency. The motor stops when the button is released. The Jog Motor button is not enabled when the motor is running. |
| Fn | Functions | The Functions button can be used to view additional information. Press and hold the button to display the following information starting from any parameter during operation:<br>1. DC link voltage (indicated by d – units V).<br>2. Output current. (A)<br>3. Output frequency (Hz)<br>4. Output voltage (indicated by o – units V).<br>5. The value selected in P0005. If P0005 is set to show any of the above (3, 4, or 5) then this will not be shown when toggling through the menu.<br>Press the Functions button repeatedly to toggle through displayed values.<br>**Jump Function**<br>Press the Fn button from any parameter (rXXXX or PXXXX) to immediately jump to R0000, when another parameter can be changed, if required. Return to R0000 and press the Functions button again to return. |
| P | Access Parameters | Allows access to the parameters. |
| | Increase Value | Press the Increase Value button to increase the displayed value. To change the Frequency Setpoint using the operator panel set P1000 = 1. |
| | Decrease Value | Press the Decrease Value button to decrease the displayed value. To change the Frequency Setpoint using the operator panel set P1000 = 1. |

## SCHNEIDER ALTIVAR VFD OPERATION

The low ambient temperature head pressure controller is preconfigured to operate from a 0 to 10 vdc analog input signal present on terminals VIA and CC. A jumper between terminals P24 and F is required for proper operation. The drive is enabled based on an increase in the analog input signal above 0 vdc. Output is varied from 0 Hz to 60 Hz as the analog signal increases from 0 vdc to 10 vdc. When the signal is at 0 vdc the drive holds the fan at 0 rpm. The head pressure control set point is not adjustable. The MBB determines the control set point as required. The operating panel is shown in Fig. 23. Refer to the Quick Start Guide for how to access the programming mode, or the documentation available on the manufacturer's web site (http://www.schneider-electric.com) for a complete set of VFD parameters, fault codes and troubleshooting information. See Table 10 for operating and control parameters.




| CALL OUT | LED/KEY | DESCRIPTION |
|---|---|---|
| 1 | Display RUN LED | Illuminates when a run command is applied to the drive controller. Flashes when a speed reference is present with the run command. |
| 2 | Display PRG LED | Illuminates when Programming mode is active. Flashes when -GrU menus are active. |
| 3 | Display MON LED | Illuminates when Monitoring mode is active. Flashes in fault record display mode. |
| 4 | Display Unit | 4 digits, 7 segments |
| 5 | Display Unit LED | The % LED illuminates when a displayed numeric value is a percentage. The Hz LED illuminates when a displayed numeric value is in hertz. |
| 6 | Up/Down arrows | Depending on the mode, use the arrows to: navigate between the menus, change a value, or change the speed reference when Up/Down LED (7) is lit. |
| 7 | Up/Down LED | Illuminates when the Up/Down arrows are controlling the speed reference. |
| 8 | Loc/Rem LED | Illuminates when Local mode is selected. |

| CALL OUT | LED/KEY | DESCRIPTION |
|---|---|---|
| 9 | MODE | Press to select the Keypad mode. Modes are: Run mode (default on power-up), Programming mode, and Monitoring mode. Can also be used to go back to the previous menu. |
| 10 | Loc/Rem | Switches between Local and Remote modes. |
| 11 | ENT | Press to display a parameter's value or to save a changed value. |
| 12 | RUN LED | Illuminates when the Run key is enabled. |
| 13 | RUN | Pressing this key when the RUN LED is illuminated starts the drive controller. |
| 14 | STOP | Stop/reset key. In Local mode, pressing the STOP key causes the drive controller to stop based on the setting of parameter F721. In Remote mode, pressing the STOP key causes the drive controller to stop based on the setting of parameter F603. The display will indicate a flashing "E". If F735 is set to 0 (default setting), pressing the stop key twice will reset all resettable faults if the fault condition has been resolved. |

**Fig. 23 — Schneider Altivar 212 and 312 VFD Display Panel**

**Table 10 — Schneider Altivar 212 and 312 VFD Operating and Control Parameters**

| PARAMETER | NAME | VALUE |
|---|---|---|
| **ULU** | Rated Motor Voltage | Nominal motor voltage (V) from rating plate |
| **F201** | VIA Speed Reference Level 1 | 5 |
| **F202** | VIA Output Frequency Level 1 | 0 |
| **F203** | VIA Speed Reference Level 2 | 100 |
| **F204** | VIA Output Frequency Level 2 | 60 |
| **F401** | Slip compensation | 60% |
| **F415** | Rated Motor Current | Nominal motor current( A) from rating plate |
| **F417** | Rated Motor Speed | Nominal motor speed (RPM) from rating plate |
| **F701** | Keypad display: % or A/V | 1 |
| **THR** | Motor Rated Current Overload Setting | Nominal motor current (A) from rating plate |
| **UL** | Rated Motor Frequency | 60 Hz |
| **FH** | Maximum Frequency | 60 Hz |
| **LL** | Low Speed | 0 Hz |
| **UL** | High Speed | 60 Hz |
| **AU1** | Auto Ramp Adaption | 0 |
| **ACC** | Ramp-up Time | 10 Sec |
| **DEC** | Ramp-down Time | 10 Sec |
| **CNOD** | Remote Mode Start/Stop Control | 0 (Control terminal logic inputs) |
| **FNOD** | Remote Mode Primary Speed reference Source | 1 (VIA) |

LEGEND

**VIA** — Voltage/Current Input Channel A

## Step 6 — Test the Low Ambient Temperature Head Pressure Control

Refer to the Controls, Start-Up, Operation, Service and Troubleshooting guide to verify proper operation of the controllers and outdoor-fan motors. Fan speed output is tested using the Quick Test sub-mode under the Service Test mode. Parameters “SPD.A,” “SPD.B” and “SPD.C” can be set to any value from 0 to 100% where 0% output is 0.0 Hz and 100% output is 60.0 Hz.

The VFDs are always powered whenever the main power to the chiller is on. When the system calls for a compressor on any circuit, the VFD for that circuit will be used as the first fan stage. The fan board output signal will command the VFD to operate between 0.0 and 60.0 Hz. This can be seen from the display on each VFD.

TROUBLESHOOTING

A partial list of VFD parameters, fault codes and troubleshooting information can be found in the instructions given in the Controls, Start-Up, Operation, Service and Troubleshooting Guide.

Refer to the manufacturers’ documentation for more information.

**Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.**

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