SUPPLEMENTAL INSTRUCTIONS

CMH-33 Modulating Low Ambient Control

The CMH-33 is a field-installable modulating low ambient control (LAC) kit. **This modulating low ambient control is only for use on R-410A refrigerant systems.** The low ambient control pressure sensor is attached to the liquid line of the system, and monitors high side system pressure. Operation of the LAC occurs as outdoor temperatures drop below the 65°F to 50°F range. Modulating LAC operation is factory adjusted and slows the condenser fan speed RPM based on outdoor temperature.

The CMH-33 kit is for use with the Bard W18HB wall-mount heat pump.

The CMH-33 kit consists of:

- 7960-859D Supplemental Instructions
- 910-2058 Outdoor Temperature Switch Assembly
- 8408-048 Freeze Protect Thermostat
- 910-2011 Relay Assembly
- 8612-071 230V Head Pressure Control
- 1804-0613 Extension Tube Assembly
- 3000-1734 Plug for Head Pressure Control
- 113-353 Mounting Bracket
- 1012-065 Torx Head Screws (2)
- 1012-085 Hex Head Screw (4)
- 7961-312-0516 CMH-33 Unit I.D. Label

Field-supplied tools needed:

- Personal protection equipment, including gloves and safety glasses
- 5/16" nut driver
- 1/2" wrench (service port), 11/16" wrench (LAC control) and 3/4" wrench (LAC assembly)
- T20 Torx screwdriver

⚠ WARNING

Electrical shock hazard.

Disconnect the remote electric power supply or supplies before servicing.

Failure to do so can result in serious injury or death.

⚠ WARNING

Exposed moving parts.

Disconnect all electrical power before servicing.

Failure to do so can result in severe injury or amputation.

⚠ CAUTION

Sharp metallic edges.

Take care and wear appropriate protective devices to avoid accidental contact with sharp edges.

Failure to do so can result in personal injury.

Bard® SINCE 1914
Climate Control Solutions

Bard Manufacturing Company, Inc.
Bryan, Ohio 43506

www.bardhvac.com

Manual: 7960-859D
Supersedes: 7960-859C
Date: 10-3-23

Installation

Disconnect all power to wall-mount unit. Remove outer and inner control panel covers, upper front panel and right side condenser inlet grille.

1. Mount 910-2011 relay assembly to unit control panel with two (2) 1012-065 Torx head screws as shown in Figure 2 on page 4.

NOTE: *The unit wiring diagram (included with unit literature assembly and also located on inner control panel cover) can be used to wire this kit. However, the following instructions listed here provide the necessary connections point-to-point.*

NOTE: *If this kit is being installed together with the outdoor thermostat kit, use the relay assembly supplied with the thermostat kit. Only the solid black wire and the multiplier will need used from the relay assembly in this kit.*

2. Locate black wire from the relay assembly and route through cable duct to defrost control logic board (see Figure 2). Before connecting this black wire to the NC fan relay contact on the defrost logic control board, remove wire that is currently connected there and connect that wire to terminal 3 on the installed relay.
3. Locate black/white wire from relay assembly and route through cable duct to defrost control logic board. Connect black/white wire to C terminal. If the heat pump is a dehum unit, remove the black/white wire already connected to the C terminal and stack it back onto the black/white wire from the relay assembly.
4. Locate blue wire from relay assembly and route through cable duct to defrost control logic board. Connect blue wire to B terminal. Remove blue wire already connected to B terminal and stack it back onto the blue wire from the relay assembly.
5. Install the pressure switch mounting bracket to the fan shroud using two (2) 1012-085 hex head screws as shown in Figure 3 on page 5.
6. Remove the upper service port cap from the liquid line. Install the extension tube assembly on the liquid line by screwing it onto the service port as shown in Figure 3 on page 5. Use wrenches to make the connection snug and check for leaks.
7. Install the head pressure control and the plug and wire assembly on the extension tube as shown in Figure 3 on page 5. Use wrenches to make the connection snug and check for leaks.
8. Install outdoor temperature switch assembly to the fan shroud as shown in Figure 4 on page 6. This switch defeats Balanced Climate airflow when the temperature falls below 50°F to help prevent evaporator freeze up. Refer to the unit installation manual for more information on Balanced Climate operation.
9. Install freeze protect thermostat to the evaporator coil as shown in Figure 5 on page 7. Route the wires down through the copper bushing and into the control panel with the blower motor wires.
10. Route low ambient control and outdoor temperature switch wires up through the bushing in the bottom of the control panel as shown in Figure 1. Replace sealing compound after routing wires through the bushing. Route the wires through the cable duct in the control panel to the required components as shown in the wiring diagram in Figure 6 on page 8.
11. Connect the low ambient control wires to the terminals 1 and 3 as shown in Figure 6.
12. Find the purple and yellow/white wires not connected to anything that are tucked in the cable duct. Pull them out and connect them to each end of the outdoor temp switch wires. Refer to Figure 6 or the unit wiring diagram.
13. Locate the wire that is on the Y terminal of the defrost logic control board. This wire will either be yellow/white or yellow/black depending on the unit model. Remove from its original position and connect it to the freeze protect thermostat. Connect the other end of freeze protect thermostat to the Y terminal on the defrost logic control board.
14. Recheck wiring by referring to the unit wiring diagram.
15. Apply “This unit is equipped with CMH-33 control module” label to the inside of the inner control panel cover above the unit wiring diagram.
16. Replace the right side condenser inlet grille, upper front panel and inner and outer control panel covers. This completes the installation.
17. Turn on power to unit. Check for proper operation of the unit by referring to **Sequence of Operation**.

Sequence of Operation

Energize in cooling mode (first or second stage). The compressor should start—except when equipped with economizer and enthalpy control is energizing "free cooling" mode. Energizing Y2 with an economizer will override the enthalpy control allowing the mechanical cooling to operate. Run the unit for at least 5 minutes. The condenser fan motor should not run at full speed until the liquid pressure exceeds the pressure setting of the low ambient control which is factory set at 325 psi.

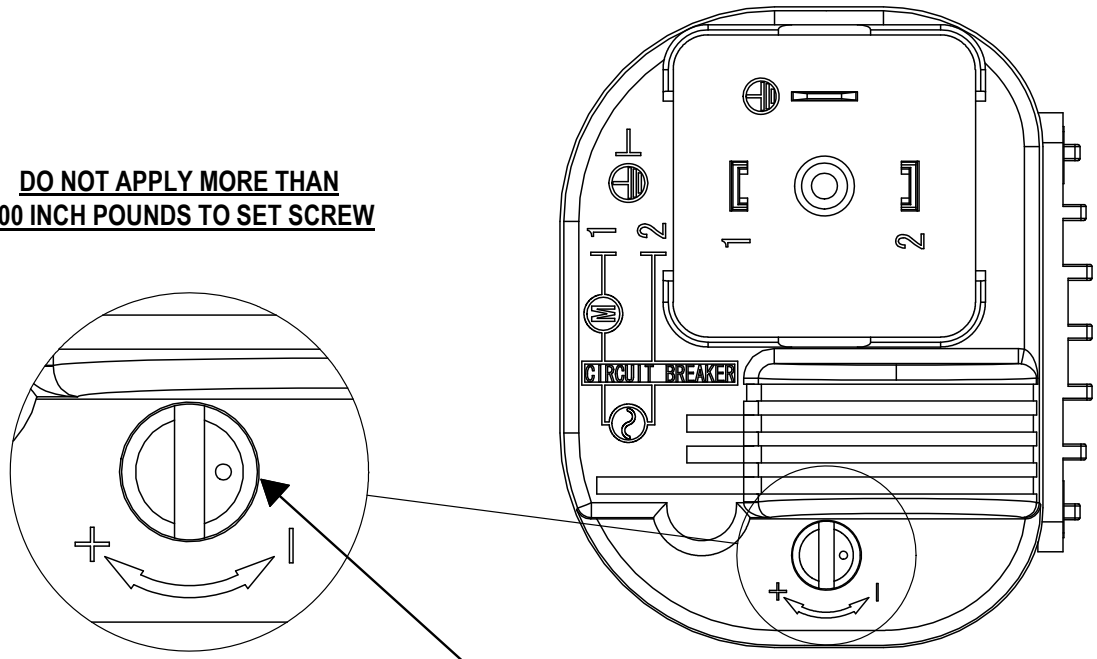
Adjusting the setting is not recommended. However, if adjustment is necessary to match the correct pressure setting, follow these steps:

To adjust the pressure setting, use a flat-head screwdriver to turn the setting screw. The set screw is a brass screw with a dimple located on the side of the LAC switch (see Figure 1). The dimple is on the set screw to help track turns.

To make the adjustment to increase the pressures, start by inserting the screwdriver into the set screw turning it clockwise (+). To decrease the pressure, turn the set screw counterclockwise (-). Be careful not to over-tighten or loosen the screw. The maximum range of the switch is broad, so stick to the common practice of one (1) turn clockwise (+1) or two (2) turns counterclockwise (-2). Going beyond that may damage the device or affect its performance.

In heating mode, the condenser fan motor should run any time the compressor is running regardless of the discharge pressure. Run the unit through a defrost cycle. The condenser fan motor should de-energize during the defrost cycle.

FIGURE 1



NOTE: THE DIMPLE IN THE ADJUSTMENT KNOB WILL HAVE A RANDOM ORIENTATION. PLEASE DO NOT USE AS INDICATION FOR EQUIVALENT ADJUSTMENT.

SETTING READJUSTMENT ONLY WHEN NECESSARY

1. TURN COUNTER-CLOCKWISE UNTIL IT STOPS
2. TURN CLOCKWISE 6.5 FULL TURNS TO SET THE VALUE TO THE FULL VOLTAGE SET POINT OF 325PSI (2.24MPa)

NOTE: FAN WILL TURN AT LOW RPMS IF THE REGRIGERANT PRESSURE IS 224 ± 15PSI

MIS-4482

FIGURE 2

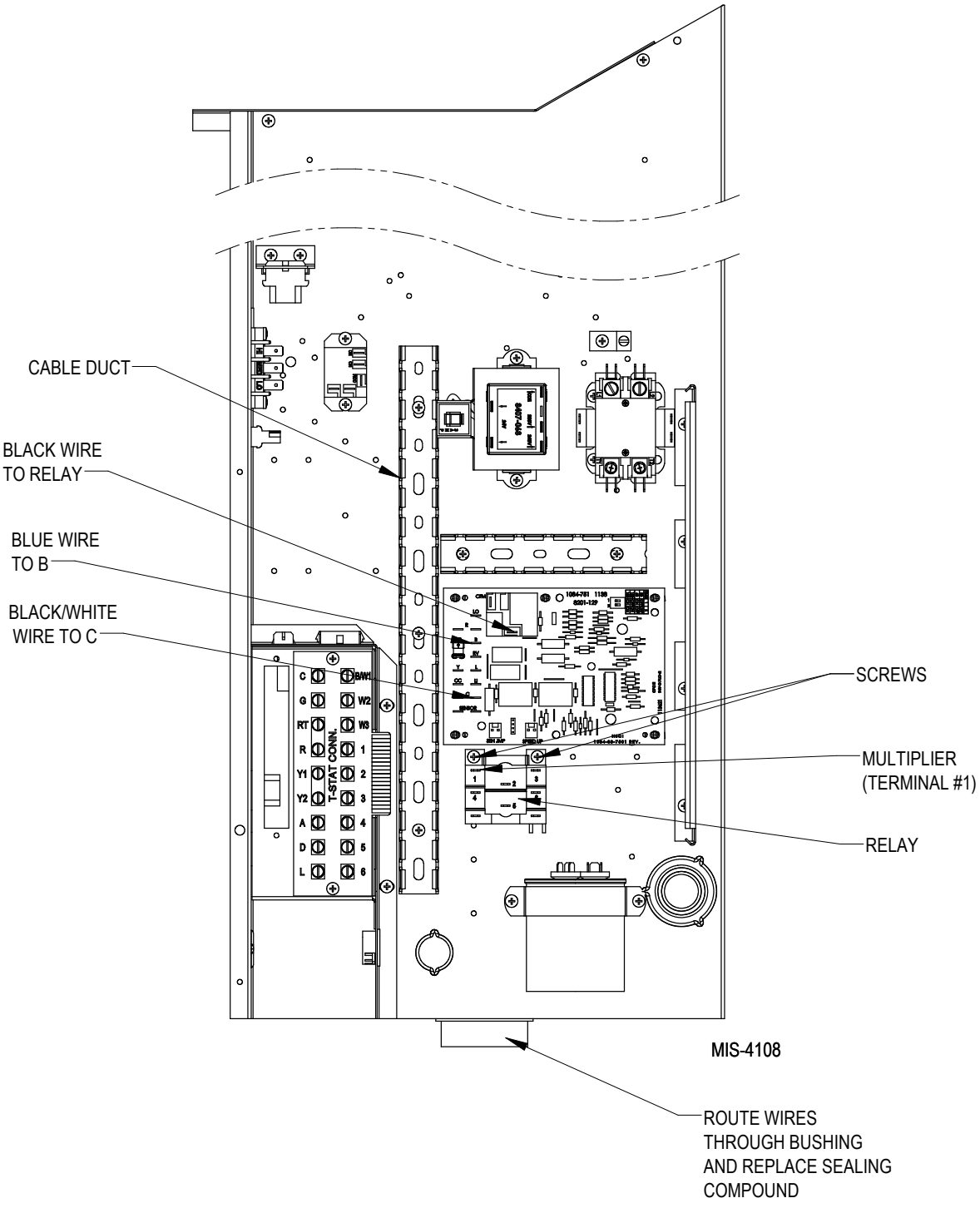

CABLE DUCT
BLACK WIRE
TO RELAY
BLUE WIRE
TO B
BLACK/WHITE
WIRE TO C
SCREWS
MULTIPLIER
(TERMINAL #1)
RELAY
T-STAT CONN.
C
G
RT
R
Y1
Y2
A
D
L
W1
W2
W3
1
2
3
4
5
6
MIS-4108
ROUTE WIRES
THROUGH BUSHING
AND REPLACE SEALING
COMPOUND

FIGURE 3

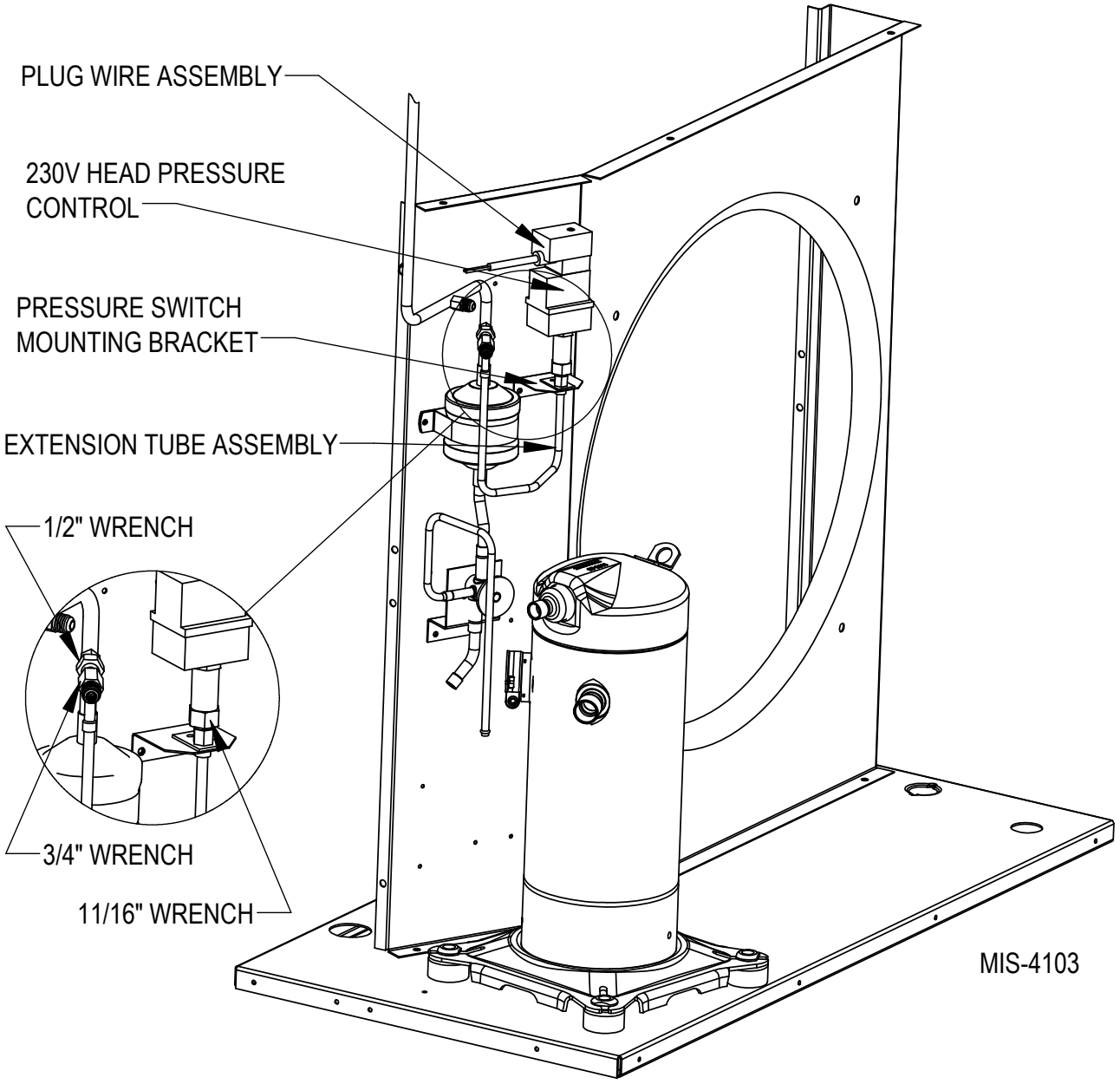
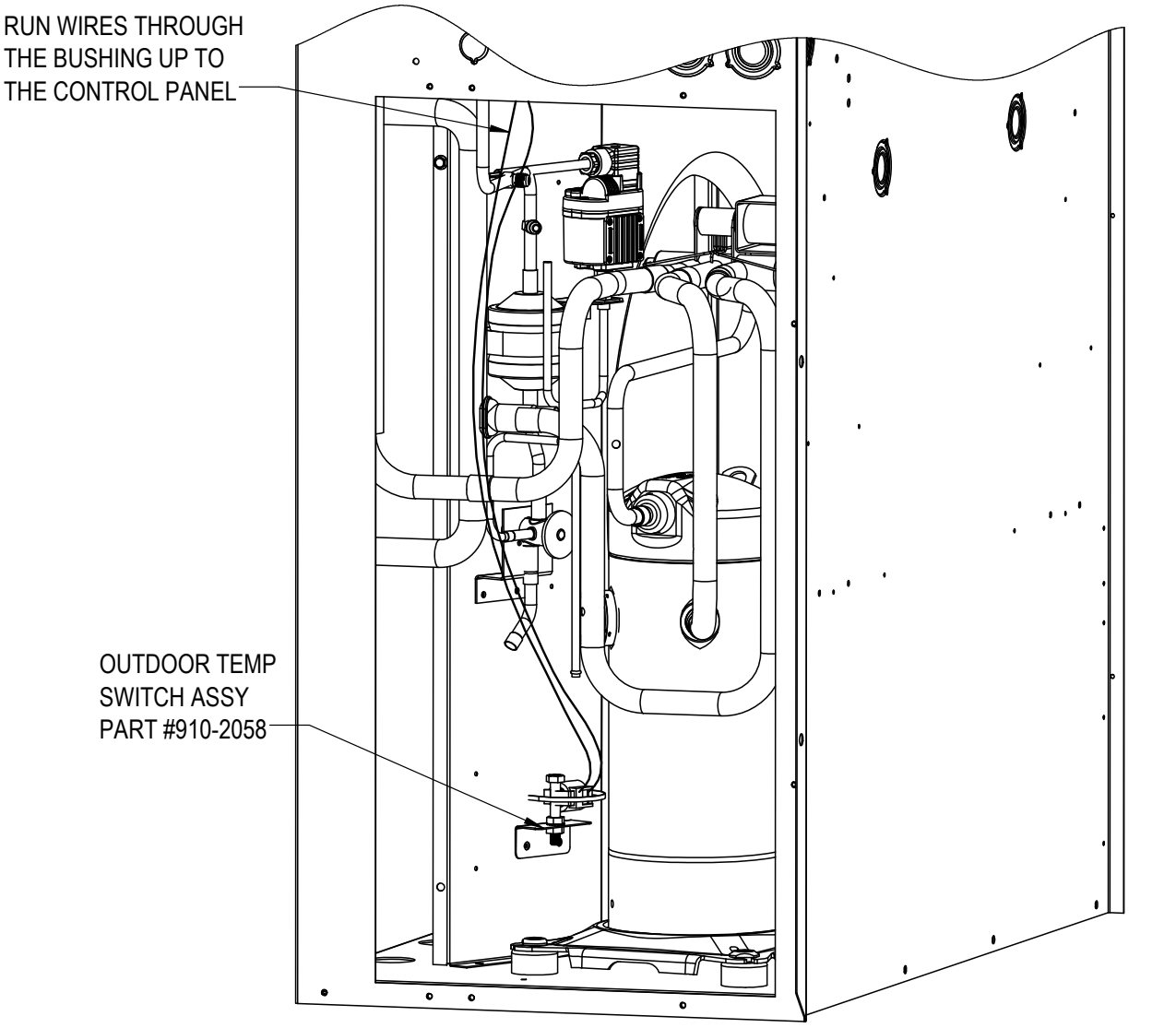

PLUG WIRE ASSEMBLY
230V HEAD PRESSURE CONTROL
PRESSURE SWITCH MOUNTING BRACKET
EXTENSION TUBE ASSEMBLY
1/2" WRENCH
3/4" WRENCH
11/16" WRENCH
MIS-4103

FIGURE 4



MIS-4104 A

FIGURE 5

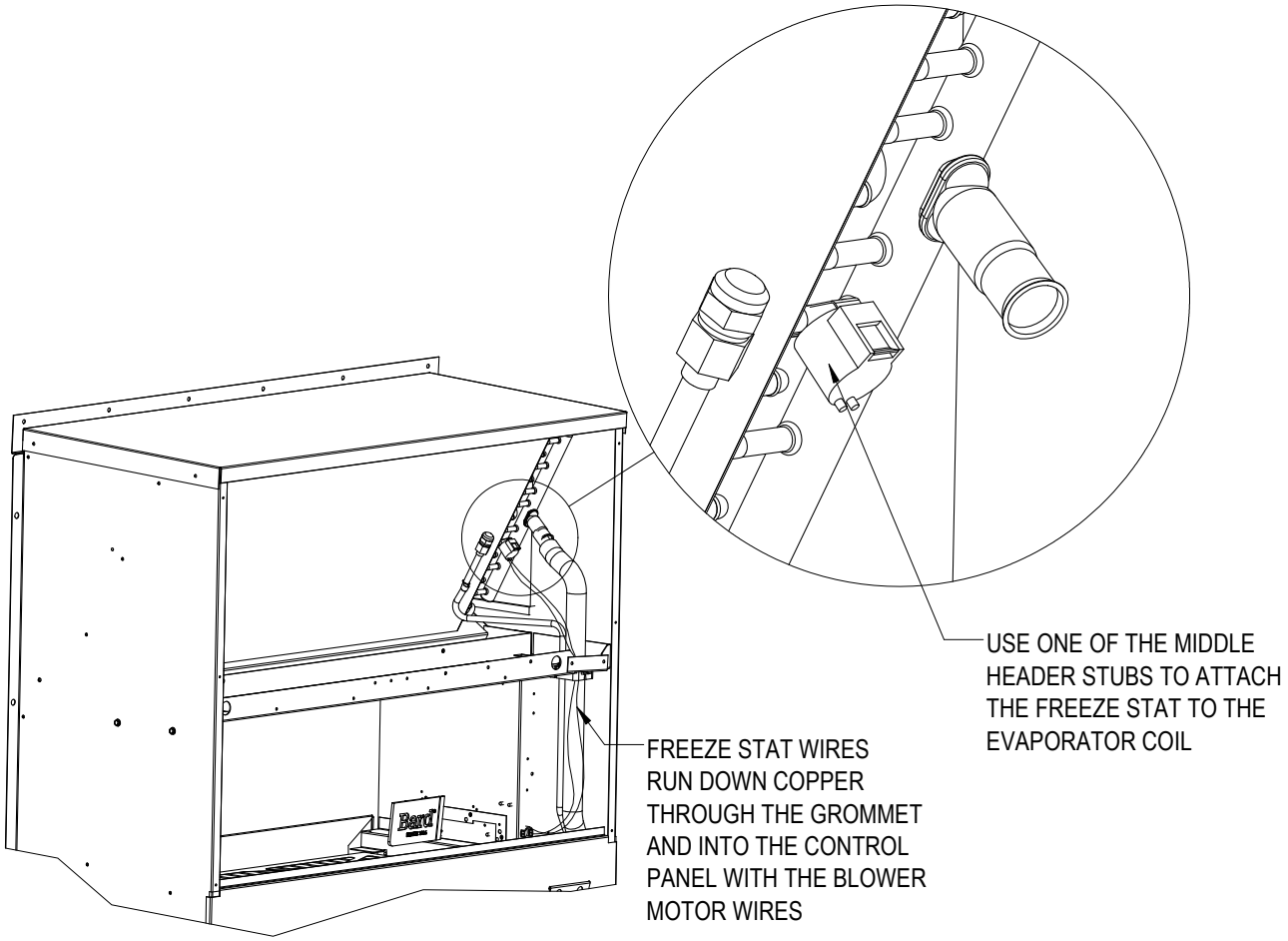
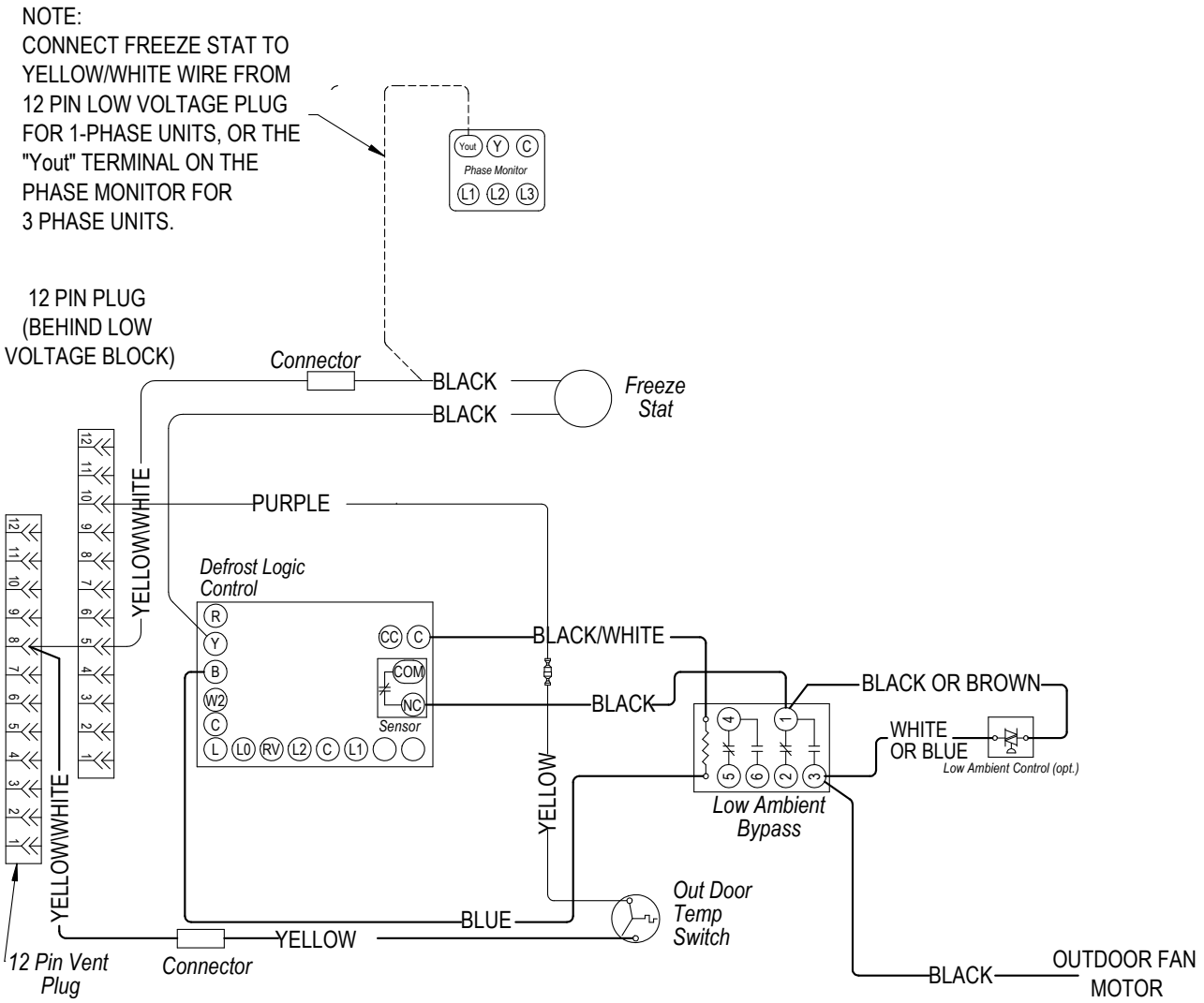

USE ONE OF THE MIDDLE HEADER STUBS TO ATTACH THE FREEZE STAT TO THE EVAPORATOR COIL
FREEZE STAT WIRES RUN DOWN COPPER THROUGH THE GROMMET AND INTO THE CONTROL PANEL WITH THE BLOWER MOTOR WIRES
MIS-4054

FIGURE 6



MIS-4105 D