**Installation Instructions**

**NOTE:** Read the entire instruction manual before starting the installation.

**SAFETY CONSIDERATIONS**

Installation and servicing of this equipment can be hazardous due to mechanical and electrical components. Only trained and qualified personnel should install, repair, or service this equipment.

Untrained personnel can perform basic maintenance functions such as cleaning and replacing air filters. All other operations must be performed by trained service personnel. When working on this equipment, observe precautions in the literature, on tags, and on labels attached to or shipped with the unit and other safety precautions that may apply.

Follow all safety codes. Installation must be in compliance with local and national building codes. Wear safety glasses, protective clothing, and work gloves. Have fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit. In Canada, refer to current editions of the Canadian electrical code CSA 22.1 and current editions of the National Electrical Code (NEC) NFPA 70.

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 these signal words: DANGER, WARNING, and CAUTION. 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.

Follow all safety codes. Wear safety glasses and work gloves. Have a fire extinguisher available.

**WARNING**

**ELECTRICAL SHOCK HAZARD**

Failure to follow this warning could cause personal injury or death.

Before performing service or maintenance operations on unit, turn off main power switch to unit and install lockout tag. Ensure electrical service to rooftop unit agrees with voltage and amperage listed on the unit rating plate.

**INTRODUCTION**

These instructions cover the installation of the Motormaster II Controller head pressure control device. Refer to the Installation section for directions. Louvered panels are required for this installation; see Item 9 in the Installation section of this document and Tables 1 and 2 for more information.

**Table 1 – Add Louvered Panels to These Units if available. If Louvered Panel kit is not available for a specific model, Field Fabricated Wind Baffles are recommended.**

<table>
<thead>
<tr>
<th>Model</th>
<th>Louvered Panel Kit</th>
<th>Wind Baffles</th>
</tr>
</thead>
<tbody>
<tr>
<td>48ES–A</td>
<td>574D–A</td>
<td>PGD3</td>
</tr>
<tr>
<td>50ES–A</td>
<td>704D–A</td>
<td>PAD3</td>
</tr>
<tr>
<td>48EZ–A</td>
<td>674D–A</td>
<td>PDD3</td>
</tr>
<tr>
<td>50EZ–A</td>
<td>604D–A</td>
<td>PHD3</td>
</tr>
<tr>
<td>48VL–B</td>
<td>577C–B</td>
<td>PY4G–A</td>
</tr>
<tr>
<td>50VL–B</td>
<td>707C–B</td>
<td>PA4G–A</td>
</tr>
<tr>
<td>48VT–B</td>
<td>677C–B</td>
<td>PDD4–E</td>
</tr>
<tr>
<td>50VT–B</td>
<td>607C–B</td>
<td>PHD4–F</td>
</tr>
</tbody>
</table>

**Table 2 – Do NOT Add Louvered Panels to These Units**

<table>
<thead>
<tr>
<th>Model</th>
<th>Louvered Panel Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>50ZH–C</td>
<td>PH4Z</td>
</tr>
<tr>
<td>50ZC–C</td>
<td>PA4Z</td>
</tr>
<tr>
<td>48G–C</td>
<td>577E</td>
</tr>
<tr>
<td>50G–C</td>
<td>707E</td>
</tr>
<tr>
<td>48R–C</td>
<td>677E</td>
</tr>
<tr>
<td>50R–C</td>
<td>607E</td>
</tr>
</tbody>
</table>

Motormaster® II Controller Interior
The Motormaster II head pressure controller is a cycle control device activated by a temperature sensor mounted on a header tube of the outdoor coil (see Fig. 1). It is designed to cycle the outdoor-fan motors to maintain the saturated condensing temperature within normal operating limits of approximately 130 to 110°F (54°C to 43°C), 70 to 50°F (21 to 10°C). The controller maintains working head pressure at low ambient temperatures down to -20°F (-29°C) when properly installed.
9. To prevent wind cross-currents from causing abnormally low condensing temperatures, louvered panels are required on some models. See Table 1 and 2 for models requiring/not requiring louvered panels.

10. Screw back all access panels

11. Reconnect power to the unit.

The Motormaster II head pressure controller is equipped with an alternate operating mode. When this mode is selected, the controller shifts the fan cycle sequence to effectively raise the average condensing temperature approximately 20°F (6.7°C) higher than the standard operating mode. In this alternate mode, the outdoor fan begins cycling at higher outdoor ambient temperatures. This mode should only be used if the evaporator coil shows signs of frosting at low outdoor ambient temperatures.

To select the alternate operating mode, move the jumper wire on the Motormaster II control board from reset T1 to T2. Refer to Fig. 6 for thermistor resistance vs. temperature.

See Step 4 to make hole in access panel.

50ZHC, 50ZPC, PAJ4, PHJ4, PA4Z, PH4Z, WJA4, WJH4

**Fig. 4 - Mounting Locations**

48ES-A, 48EZ-A, 48VG, 48VR, 48VL-B, 48VT-B
50ES-A, 50EZ-A, 50VG, 50VR, 50VL-B, 50VT-B
PAR5, PGR5, PHR5, PGD3, PDD3, PAD3, PHD3, PAD4, PGD4, PHD4
PA3G, PY3G, PH3G, WPA3, WPG3, WPH3

**Fig. 5 - Mounting Locations**
<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>MODEL NUMBER</th>
<th>MODEL NUMBER</th>
<th>MODEL NUMBER</th>
<th>MODEL NUMBER</th>
<th>FIGURE NUMBER</th>
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<td>PY3G</td>
<td>WPG3</td>
</tr>
<tr>
<td>48EZ-A</td>
<td>50EZ-A</td>
<td>674D-A</td>
<td>PDD3</td>
<td>PH3G</td>
<td>WPH3</td>
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<tr>
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<td>577C-B</td>
<td>PGD4</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>48VT-B</td>
<td>50VT-B</td>
<td>677C-B</td>
<td>–</td>
<td>PHD4</td>
<td>–</td>
</tr>
<tr>
<td>48VG</td>
<td>50VG</td>
<td>577E</td>
<td>PG4R</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
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<td>50VL-C</td>
<td>577C-C</td>
<td>PGD4</td>
<td>PY4G</td>
<td>WPG4</td>
</tr>
<tr>
<td>48VT-C</td>
<td>50VT-C</td>
<td>677C-C</td>
<td>PDD4</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>48VR</td>
<td>50VR</td>
<td>677E</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>502HC</td>
<td></td>
<td>PH4Z</td>
<td>PHJ4</td>
<td>PH4Z</td>
<td>WJH4</td>
</tr>
<tr>
<td>502PC</td>
<td></td>
<td>PA4Z</td>
<td>PAJ4</td>
<td>PA4Z</td>
<td>WPA4</td>
</tr>
</tbody>
</table>
Thermistor Resistance vs Temperature

Fig. 6 - Thermistor Resistance vs. Temperature Chart
In low voltage control box, "O" is orange and "C" is Brown (common).

NOTES:
1. Motomaster® II transformer is wired for 460-v supply; it must be rewired for 208/230-v application.
   Be sure to insulate unused tap.
2. Relay, part no. HN61KB324, is field supplied and normally closed.
3. CPLLOWAMB002A00 transformer only contains a 400-v. supply.

Field supplied relay for all Heat pumps should be located in the control box of the unit.

Fig. 7 - Wiring Schematic Heat Pumps

C00106
NOTE:
1. Motormaster® II is wired for 460-v supply; it must be rewired for 208/230-v application. Be sure to insulate unused tap.
2. CPLOWAMB002A00 Transformer only contains a 400V supply.

Fig. 8 - Wiring Schematic, AC and Gas PACs
MOUNTING TEMPLATE

CUT ALONG SOLID BORDER LINES TO REMOVE TEMPLATE

5-3/8-in. REF [136.5]

TOP

DRILL 9/64-in. [3.6] DIAMETER HOLE

2-3/8-in. REF [60.3]

3-1/8-in. REF [28.6]

9-in. REF [228.6]

5-in. [127]

NOTE: Dimensions in [ ] are in millimeters
NOTE: Verify before using. Drawing may not be to scale.

Fig. 9 - Controller Mounting Template
Fig. 10 - Sensor Mounting Location

Fig. 11 - Sensor Mounting Location

Fig. 12 - Sensor Mounting Location

Fig. 13 - Sensor Mounting Location
Fig. 18 - Sensor Mounting Location

Fig. 19 - Sensor Mounting Location

Fig. 20 - Sensor Mounting Location

Fig. 21 - Sensor Mounting Location
Fig. 22 - Sensor Mounting Location

Fig. 23 - Sensor Mounting Location

Fig. 24 - Sensor Mounting Location

Fig. 25 - Sensor Mounting Location
Fig. 26 - Sensor Mounting Location

Fig. 27 - Sensor Mounting Location

Fig. 28 - Sensor Mounting Location

Fig. 29 - Sensor Mounting Location
Fig. 30 - Sensor Mounting Location

Fig. 31 - Sensor Mounting Location

Fig. 32 - Sensor Mounting Location

Fig. 33 - Sensor Mounting Location
Fig. 34 - Sensor Mounting Location

Fig. 35 - Sensor Mounting Location

Fig. 36 - Sensor Mounting Location

Fig. 37 - Sensor Mounting Location
Fig. 38 - Sensor Mounting Location

Fig. 39 - Sensor Mounting Location

Fig. 40 - Sensor Mounting Location

Fig. 41 - Sensor Mounting Location
Fig. 42 - Sensor Mounting Location

Fig. 43 - Sensor Mounting Location

Fig. 44 - Sensor Mounting Location

Fig. 45 - Sensor Mounting Location
Fig. 46 - Sensor Mounting Location

UNIT SIZE 48
48VL-C 577C–C PY4G
PGD4/S4 WPG4
50VL-C 707C–C PA4G
PAD4 WPA4

Fig. 47 - Sensor Mounting Location

UNIT SIZE 48
48VL-C 577C–C PY4G
PGD4/S4 WPG4
50VL-C 707C–C PA4G
PAD4 WPA4

Fig. 48 - Sensor Mounting Location

UNIT SIZE 60
48VL-C 577C–C PY4G
PGD4/S4 WPG4
50VL-C 707C–C PA4G
PAD4 WPA4

Fig. 49 - Sensor Mounting Location

UNIT SIZE 24
48VT-C 677C–C
PDD4/S4
50VT-C 607C–C
PHD4
Fig. 50 - Sensor Mounting Location

Fig. 51 - Sensor Mounting Location

Fig. 52 - Sensor Mounting Location

Fig. 53 - Sensor Mounting Location
Fig. 54 - Sensor Mounting Location

Fig. 55 - Sensor Mounting Location

Fig. 56 - Sensor Mounting Location

Fig. 57 - Sensor Mounting Location
Fig. 58 - Sensor Mounting Location

Fig. 59 - Sensor Mounting Location

Fig. 60 - Sensor Mounting Location

Fig. 61 - Sensor Mounting Location
Fig. 62 - Sensor Mounting Location

UNIT SIZE 42
48VR-B 677E--B PGR5
50VR 607E PHR5

Fig. 63 - Sensor Mounting Location

UNIT SIZE 48
48VR-B 677E--B PGR5
50VR 607E PHR5

Fig. 64 - Sensor Mounting Location

UNIT SIZE 60
48VR-B 677E--B PGR5
50VR 607E PHR5