

CRLOWAMB027A00
CRLOWAMB028A00
CRTRXKIT001A00

LARGE ROOFTOP UNITS
ACCESSORY MOTORMASTER I
HEAD PRESSURE CONTROL KIT
15 to 25 TON

Installation Instructions

TABLE OF CONTENTS

PACKAGE CONTENTS	1
SAFETY CONSIDERATIONS	1
PRODUCT USAGE	2
GENERAL	2
BEFORE INSTALLING	2
INSTALLATION	2

IMPORTANT: Read these instructions completely before attempting to install the head pressure control accessory.

PACKAGE CONTENTS* †

CRLOWAMB027A00, CRLOWAMB028A00

ITEM	QTY
Motormaster I Control	1
Outdoor Fan Motor†	2
Bracket	1
Wiring Harness	5
Screw, #10 x 1/2"	2
LAR Relay	1
Temperature Switch	1
Plate Washer	2
Screw, #8 x 1/2	2
Capacitor	1
Wiring Diagram	1
Caution Label	1

* This installation instruction is intended for use ONLY ON units with 3 or 4 condenser fans.

† Only used on units with Novation Coil

NOTES:

1. The Motormaster I control is rated at 8 amps.

CRTRXKIT001A00*

ITEM	QTY
Transformer	1
Mounting Bracket	1
#10 x 1/2 Tee Screw	2
Wiring Harness	4
Wiring Diagram	1


* For 575-v only

SAFETY CONSIDERATIONS

Installation, start-up and servicing of this equipment can be hazardous due to system pressures, electrical components and equipment location (roofs, elevated structures, etc.)

Untrained personnel can perform the basic maintenance functions. 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.

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, 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 a hazard 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.

PRODUCT USAGE

UNIT	UNIT VOLTAGE	PART NUMBER	OPERATING TEMPERATURE LIMIT
15–25 Ton Units with Novation Coil	460	CRLOWAMB028A00	–20°F (–29°C)
	208/230	CRLOWAMB027A00	
	575	CRLOWAMB028A00 and CRTRXKIT001A00	

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury and/or death.

Before performing service or maintenance operations on unit, turn off main power switch to unit.

GENERAL

IMPORTANT: This accessory is designed for large rooftop units (15 to 25 tons) equipped with 3 or 4 outdoor-fan motors. The accessory low ambient kit and accessory winter start kit are required for installation.

The accessory Motormaster® I Solid-State Head Pressure Control is a fan speed control device actuated by a temperature sensor. It is specifically designed for use on Carrier equipment and controls the outdoor-fan motor speed in response to the saturated condensing temperature. For outdoor temperatures down to –20°F (–29°C), it maintains condensing temperatures at 100°F ± 10°F (38°C ± 5.5°C).

A low ambient switch must be used in conjunction with the Motormaster I. This device controls outdoor fan motor no. 1 and 4 (if provided), while outdoor-fan motors no. 1 and 3 are controlled by Motormaster.

IMPORTANT: All units must be modified for winter start control. See instructions included with the accessory winter start control for more details.

The Motormaster I control consists of a solid-state circuit on a printed circuit board in an aluminum extrusion (to be fastened to a supplied bracket) and a sensor assembly (to be mounted to a hairpin header of unit outdoor coil). A wire from the sensor is connected to the circuit board control box with wirenuts.

BEFORE INSTALLING

Inspect the contents of this accessory package before installing. File a claim with the shipper if contents are damaged or parts are missing.

Parts necessary for mounting the control and sensor are included in the package. If the sensor assembly is damaged, it can be replaced separately.

INSTALLATION

Step 1 — Install Wind Baffles

Wind baffles must be field fabricated for all units to ensure proper cooling cycle operation at low-ambient temperatures. See Fig. 1–3 for baffle details.

Use 20-gauge (4.1-mm diameter) galvanized sheet metal or similar corrosion-resistant materials for the baffles.

⚠ CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in damage to equipment.

Use extreme care when drilling holes and screwing in fasteners near outdoor coil to avoid damage to tubing.

Use field-supplied screws to attach baffles to the unit. Screws should be 1/4-in. (6-mm) diameter or larger. Drill required screw holes for mounting baffles.

Step 2 — Mount Motormaster I Control

NOTE: On 575V units, an additional accessory kit (CRTRXKIT001A00) MUST BE USED. This kit provides a transformer for dropping the voltage down to 460V for proper operation.

1. Turn off power to unit. Install lock-out tag on unit disconnect.
2. Open control box. Using a voltage meter, check that no power is present at unit terminal block.
3. Install accessory 0°F (–17.8°C) low ambient kit (part no. CRLOWAMB001A01) per instructions supplied with the kit.
4. Remove blower access panel.
5. Mount Motormaster I control on supplied bracket in the location shown in Fig. 4.
6. Mount relay to capacitor plate as shown in Fig. 4.
7. Two of the outdoor motors must be replaced with motors from kit. On 3 fan and 4 fan units, these are the outer fan motors. (See Fig. 6.) Replace motors by unwiring brown, yellow and black wires. Motor closest to capacitor plate can be disconnected at capacitor and terminal block at motor furthest away from capacitor plate. There is a junction which can be accessed by removing panel opposite of blower access panel.
8. Remove screws securing grill.
9. Remove fan assembly from orifice.
10. Loosen setscrew from fan blade. Note position of blade relative to grill.
11. Remove 4 nuts holding motor to grill.
12. Remove motor feeding wires through conduit.
13. Install motors reversing steps.
14. Insure that wires do not interfere with blades.

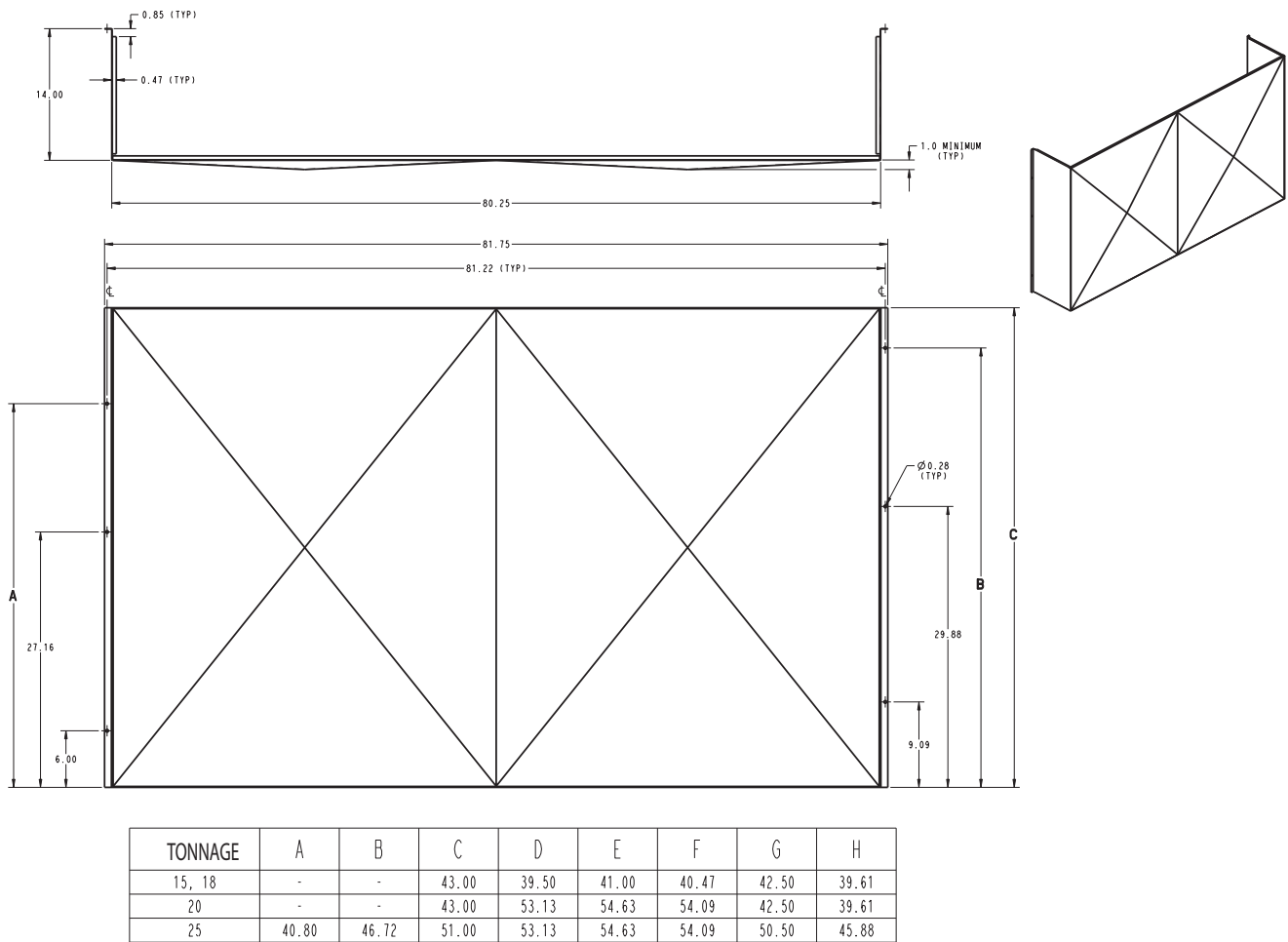


Fig. 1 - End Wind Baffle

C09596

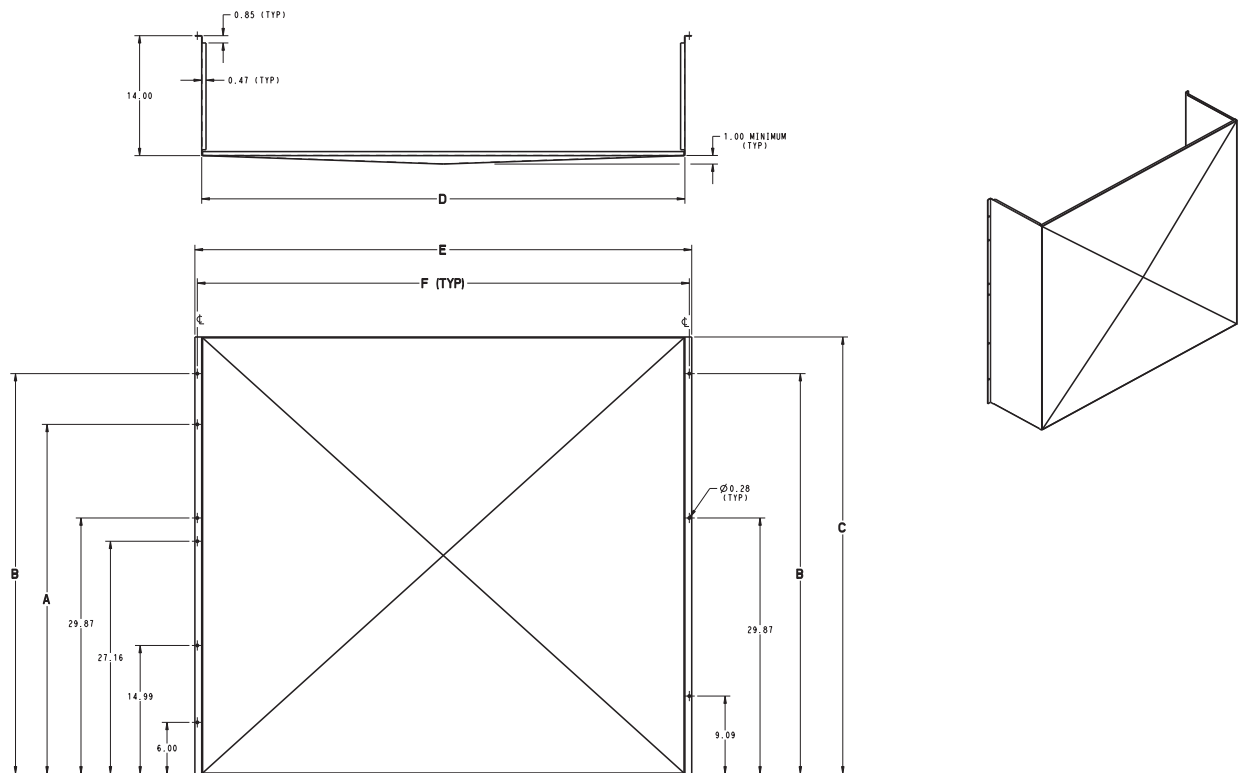


Fig. 2 - Side Wind Baffle

C09597

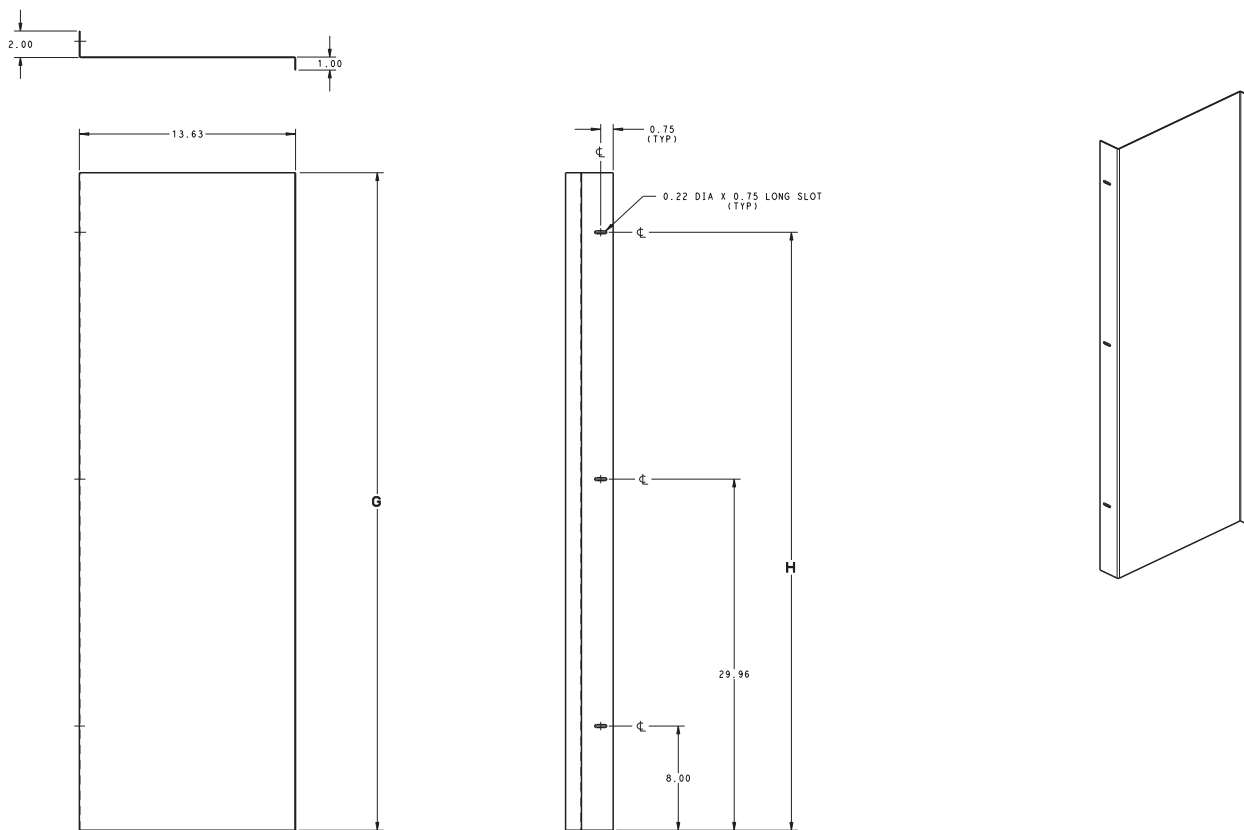


Fig. 3 - End Wind Baffle Support

C09598

Rewire Unit 230/460

1. Locate low ambient switch LAS in compressor section of circuit A and allow wires through wiring grommet to hang in blower section. (See Fig. 4.)
2. Run brown and violet wire provided with kit from control side of outdoor contactor (OFC) to the LAR relay previously installed on the capacitor plate.
3. On contactor side, wire female end of violet wire to the terminal with the violet wire. Remove brown wire on contactor coil and replace it with the piggy back terminal on brown wire provided with kit and then reconnect brown wire removed to that terminal.
4. On the other end, wire brown wire to one side of the low voltage coil. Wire violet to one leg of the low ambient switch.
5. Locate 16 inch violet wire in kit and connect one end to the LAS and the other to the other side of the relay.
6. Locate two short black wires provided with kit and connect each to the terminal board (TB2). Connect the other end to the LAR relay on terminal 1 and 4. Remove black wires from the one or two fan(s) that were NOT replaced earlier. Reconnect these leads to relay terminal(s) 3 and 6 (if needed).
7. Locate 16 inch black wire with a quick connect on one end and a stripped end on the other. Connect the quick connect to the terminal block (TB2) and wire nut the other end to one lead of the Motormaster. Wire nut the other lead of the Motormaster to the two motors previously replaced.
8. Replace capacitor of the motors that were replaced and reconnect the capacitor. Insure that the correct motor leads are going to the correct capacitor.
9. Route the sensor of the Motormaster through the grommet in partition that the LAS had been previously ran through. If the sensor is wired into the controller it may be easier to unwire the sensor and feed the wires from the outdoor section to the indoor. Route the sensor through the hole in the coil support. (See Fig. 6.)
10. Remove panel between hairpin end of coil and locate sensor on the header of the coil using wire tie provided. Locate sensor as shown in diagram. (See Fig. 6.)
11. Check to make sure that the sensor wire does not interfere with fan. Re-install panel.

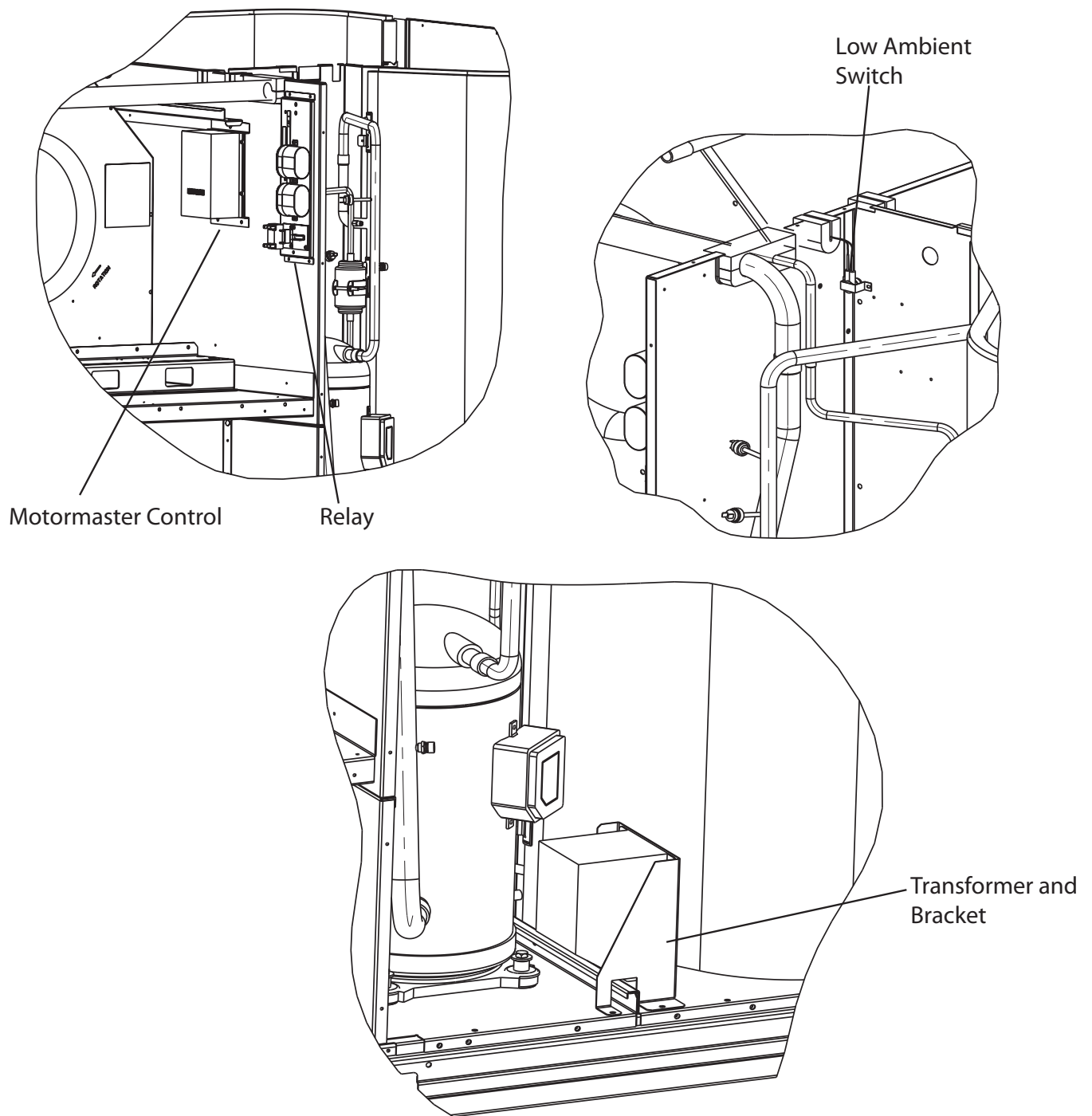


Fig. 4 - Motormaster I Controller Locations

C09595

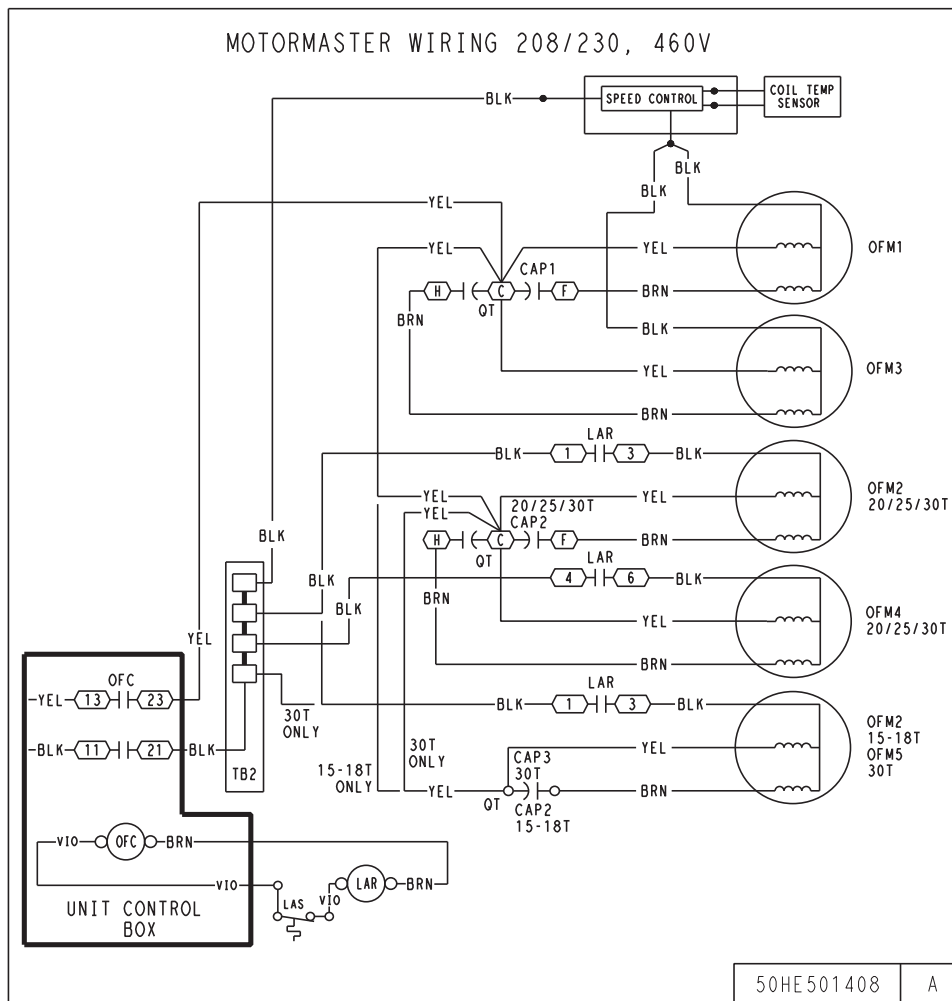


Fig. 5 - Wiring Diagram-208/230, 460V

C09594

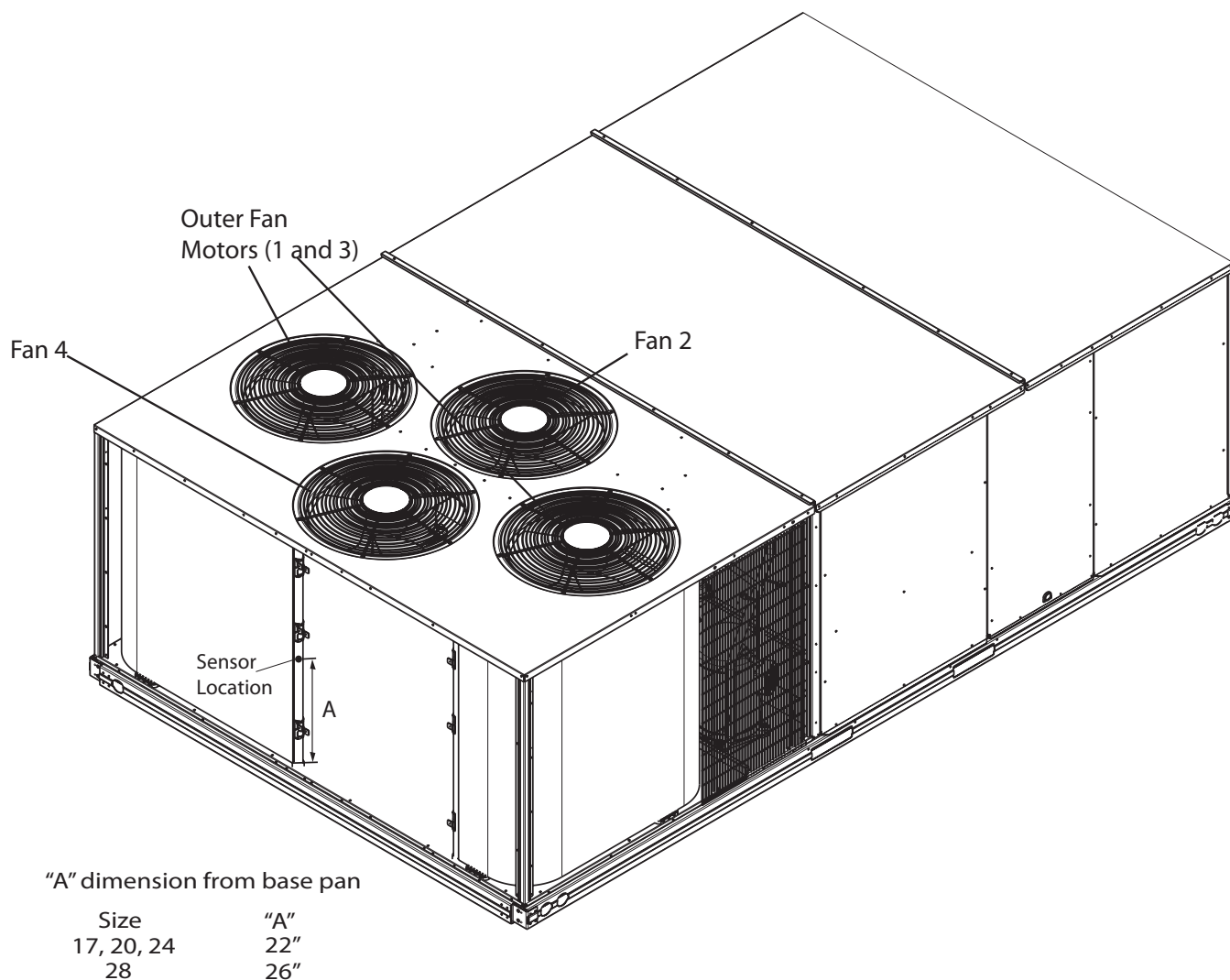


Fig. 6 - Sensor Location

C09599

575 Volt Units

On 575 volt units accessory CRTRXKIT001A00 is required. This kit provides a transformer for transforming voltage from 575 to 460 volts.

1. Locate transformer bracket and mount bracket to base pan and rails adjacent to compressor A as shown in diagram. (See Fig. 7.)
2. Pre-wire transformer as shown on wiring label utilizing wires provided in kit.
3. Mount transformer to bracket with screws provided.
4. Locate low ambient switch in compressor section of circuit A and allow wires through wiring grommet to hang in blower section. (See Fig. 7.)
5. Run brown and violet wire provided with kit from control side of outdoor contactor to the LAR relay previously installed on the capacitor plate.
6. On contactor side, wire female end of violet wire to the terminal with the violet wire. Remove brown wire on contactor coil and replace it with the piggy back terminal on brown wire provided with kit and then reconnect brown wire removed to that terminal.
7. On the other end, wire brown wire to one side of the low voltage coil. Wire violet to one leg of the low ambient switch.
8. Locate 16 inch violet wire in kit and connect one end to the LAS and the other to the other side of the relay.
9. Locate two short black wires provided with kit and connect each to the terminal board (TB2). Connect the other end to the relay on terminal 1 and 4. Remove black wires from the one or two fan(s) that were NOT replaced earlier. Reconnect these leads to relay terminal(s) 3 and 6 (if needed).
10. Remove yellow wire from capacitor quad terminal and connect it to yellow wire with male quick connect from X2-X4 connection.
11. Remove yellow jumper wire between quad terminals of the two capacitors and discard.
12. Connect the second yellow wire from X2-X4 connection of transformer to the quad terminal of the capacitor controlling the motors that were NOT replaced.

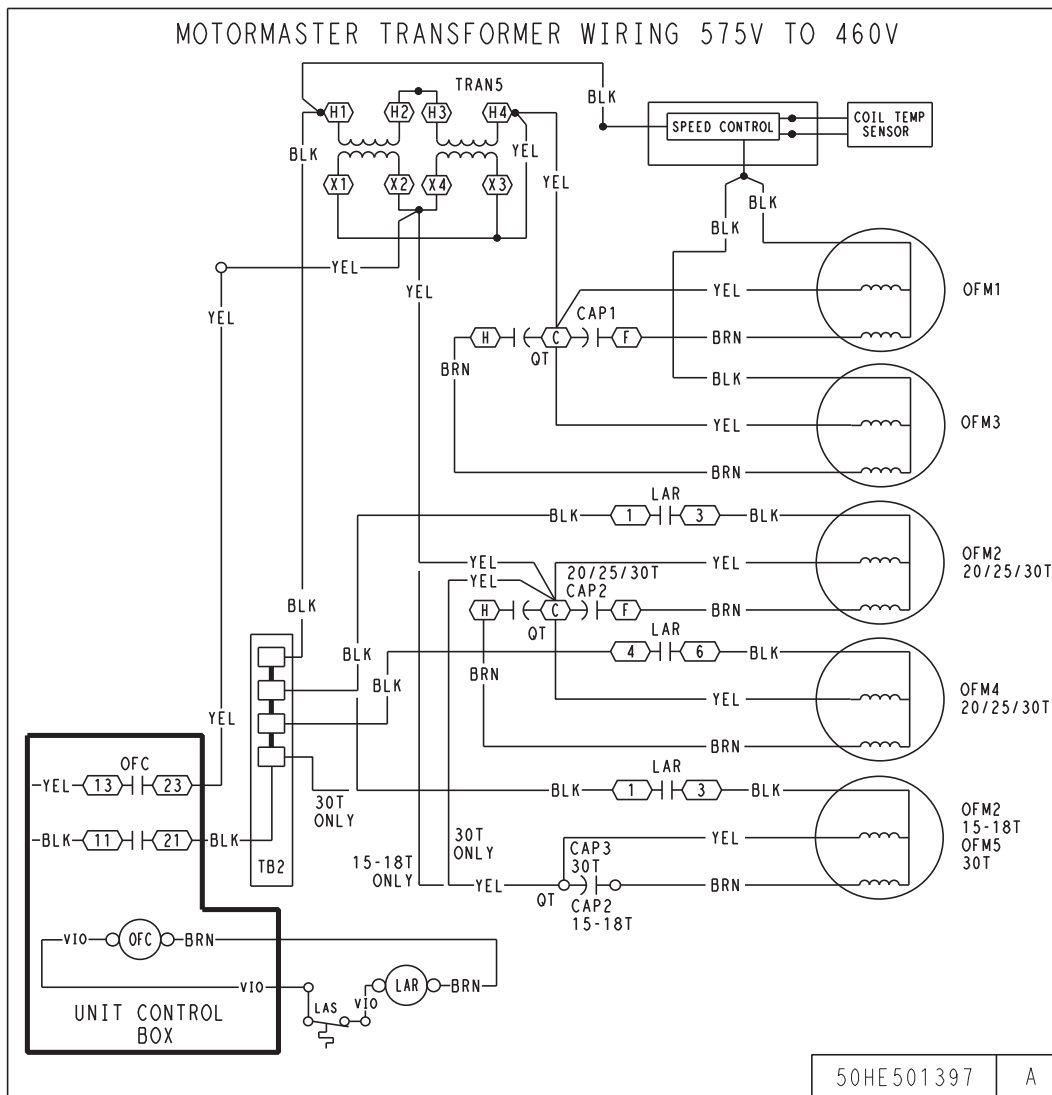


Fig. 7 - Wiring Diagram-575V to 450V

C09593

13. Connect yellow wire from H4 connection of transformer to the QUAD terminal of the capacitor that was replaced.
14. Connect black wire with quick connect from H1 connection of transformer to terminal block (TB2). Connect stripped end of black wire from the same connection to one side of the Motormaster.
15. Replace capacitor of the motors that were replaced and reconnect the capacitor. Insure that the correct motor leads are going to the correct capacitor.
16. Route the sensor of the Motormaster through the grommet in partition that the LAS had been previously ran through. If the sensor is wired into the controller it maybe easier to unwire the sensor and feed the wires from the outdoor section to the indoor. Route the sensor through the hole in the coil support. (See Fig. 6.)

17. Remove panel between hairpin end of coil and locate sensor on the header of the coil using wire tie provided. Locate sensor as shown in diagram. (See Fig. 6.)

18. Check to make sure that the sensor wire does not interfere with fan. Re-install panel.

Wind Baffles

Fabricate wind baffles needed based on application. Refer to diagrams of wind baffles for application. (See Fig. 1-3.)

Required baffles:

Description	Quantity
End Wind Baffle	1
Side Wind Baffle	1
End Wind Baffle Support	1

Secure wind baffles to unit as shown in diagram. (See Fig. 8.)

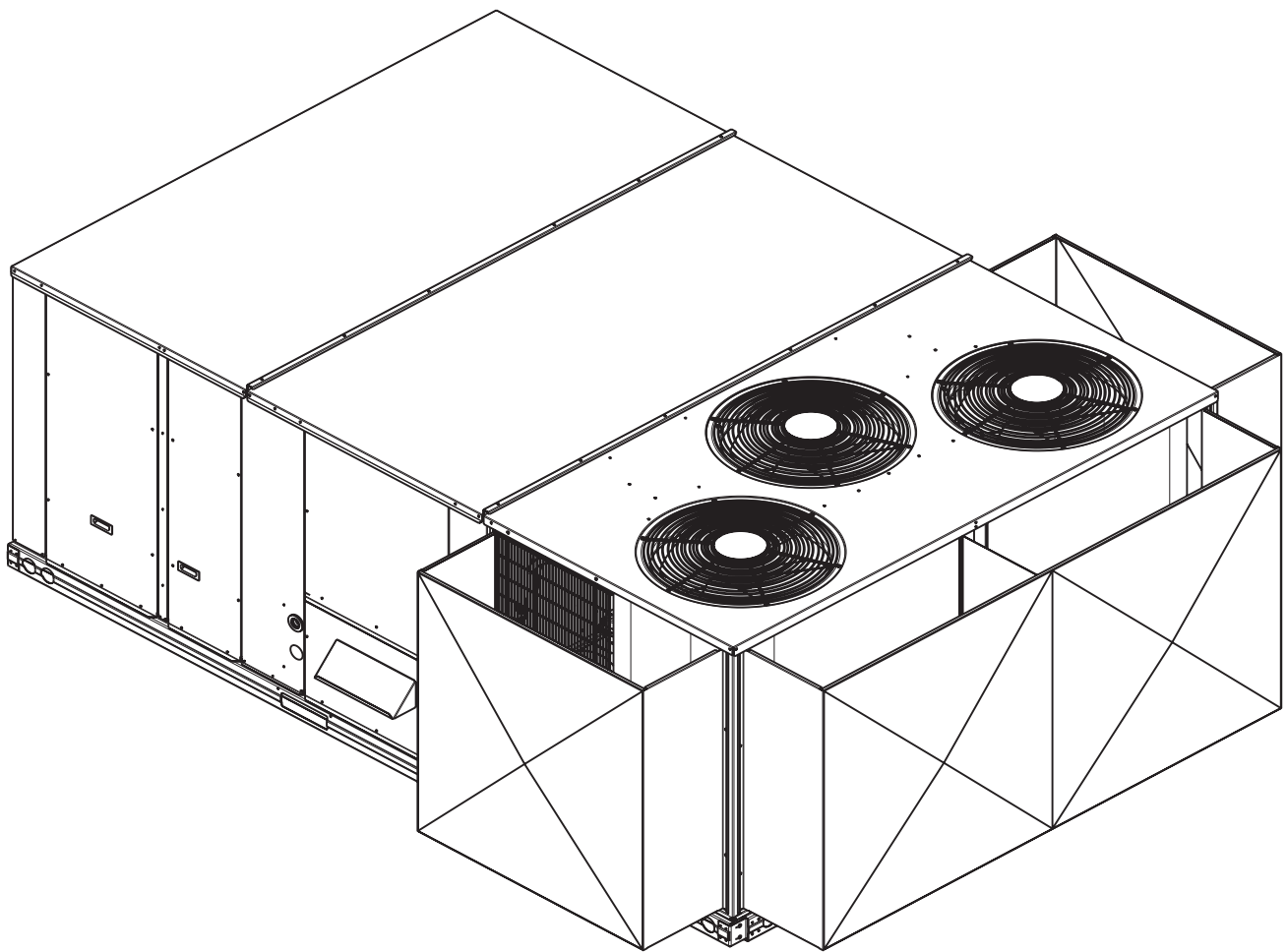


Fig. 8 - Wind Baffles Secured to Unit

C09600