

bryant

Day &
Night

PAYNE

installation instructions

ACCESSORY HEAD PRESSURE CONTROLLER -20° F LOW-AMBIENT KIT P/N 309274-777 AND 309274-778

558E,F
576B
580E

Cancels: IIK 558B-240-2

 IIK 558E-240-3
 1/15/95

Accessory head pressure controller -20° F low-ambient kit part nos. 309274-777 and 309274-778 are available for 558E, 558F, 580E sizes 240-324 and 576B sizes 300, 360.

IMPORTANT — READ BEFORE INSTALLING

1. Read and become familiar with installation instructions before installing accessory head pressure controller -20° F low-ambient kit.
2. Be sure installation conforms to all local and national codes.
3. Open, lock, and tag unit electrical disconnect switch before installing head pressure controller -20° F low-ambient kit.

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.

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, on the other hand, could result in personal injury. Caution is used to identify unsafe practices which would result in minor personal injury or product and property damage.

⚠ WARNING: Before performing service or maintenance operations on unit, turn off main power switch to unit. Electrical shock could cause personal injury.

INTRODUCTION

Refer to Table 1 for appropriate head pressure controller package number. Table 2 shows contents of each package.

Table 1 — Package Identification

PACKAGE NO.	UNIT V-PH-HZ	MOTOR V-PH-HZ
309274-777	208/230-3-60 575-3-60*	200/230-1-60
309274-778	460-3-60	460-1-60

*For head pressure control operation, 575-v unit requires installation of transformer (Part No. HT01AH954) not included in package.

INSTALLATION — 558E,F AND 580E UNITS

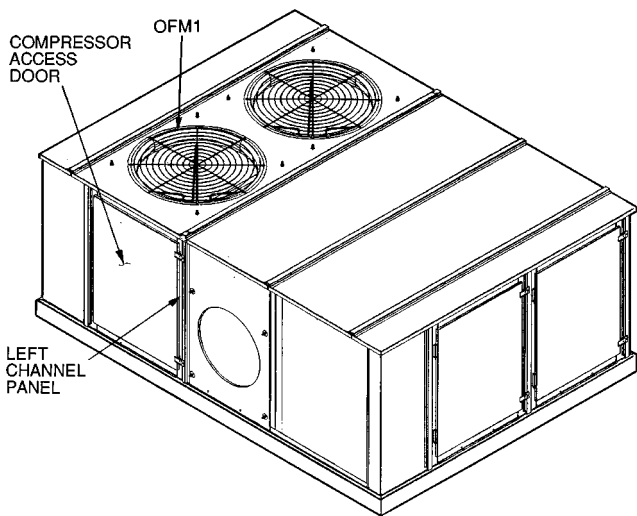
1. Disconnect power to the unit.
2. Refer to Fig. 1. Disconnect outdoor (condenser) fan motor (OFM) wiring at the motor junction box.
3. Remove OFM1 fan guard and remove OFM1 from unit. Save all wires for later use.
4. Remove propeller from OMF1 and keep for reinstallation on the speed control motor (Step 13).
5. Install speed control motor in place of the OFM1 removed in Step 3.
6. Because the standard OFM1 is a 3-phase motor and the speed control motor is a single-phase motor, a capacitor is required. There is not enough space in the main control box to easily mount a capacitor, so it must be mounted external to the control box. The best location for the capacitor is on the partition between the indoor and outdoor sections of the unit in the compressor section of the unit (under the liquid lines).

Drill holes and mount the capacitor upside down (terminals pointing down) using field-supplied capacitor strap and screws. To prevent capacitor from slipping down, install an additional screw through the partition so that the capacitor rests on this screw. See Fig. 2.

Table 2 — Package Contents

V-PH-HZ			
208/230,575-3-60		460-3-60	
Item	Replacement Part No.	Item	Replacement Part No.
Speed Control Motor	HC52AE235	Speed Control Motor	HC52AE465
30 MFD, 440 V Capacitor	HC91CA050	30 MFD, 370 V Capacitor	HC91DA012
Capacitor Boot	HC97ZZ075	Capacitor Boot	HC97ZZ075
Head Pressure Controller	32LT900301	Head Pressure Controller	32LT900611
Freeze Protection Thermostat*	HK18JA004	Freeze Protection Thermostat*	HK18JA004
Washers, Screws, and Nuts	—	Washer, Screws, and Nuts	—
Rainshield	09DC507173	Rainshield	09DC507173

*Not used in 576B units.



OFM — Outdoor (Condenser) Fan Motor

Fig. 1 — Location of OFM1 — 558E,558F,580E

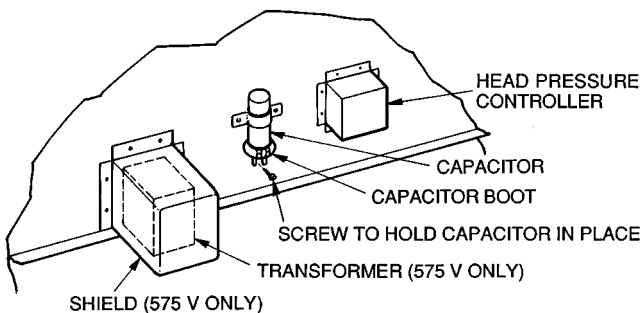


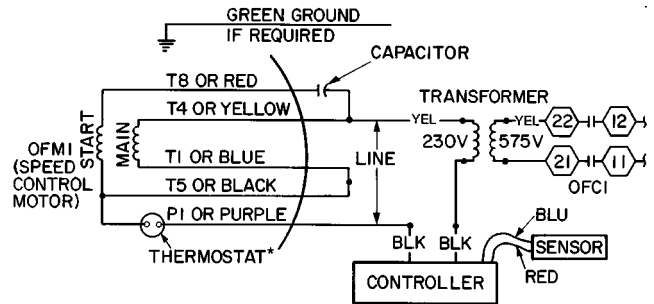
Fig. 2 — Mounting of Head Pressure Controller, Capacitor, and 575-V Transformer — 558E,558F,580E

7. *575-v units only* — Transformer (part no. HT01AH954) must be ordered separately and installed as described below.

CAUTION: Transformer is heavy. Use care when lifting.

- a. Mount transformer to the partition (see Fig. 2) using field-drilled holes.
 - b. Connect yellow wire from terminal 22 on OFC1 (outdoor [condenser] fan contactor) to the primary side of the transformer (see Fig. 3). Connect the black wire from terminal 21 on the OFC1 to the other primary of the transformer.
 - c. Run field-supplied wire from the secondary of the transformer to the capacitor. Run second field-supplied wire to one of the black wires on the controller (see Fig. 3).
 - d. Install field-fabricated sheet metal weathershield over the transformer (see Fig. 2).
8. *For counterclockwise rotation* — Connect yellow wire from terminal 22 on OFC1 (208/230,460-v units) or from transformer (575-v units) to the capacitor (see Fig. 3, 4 or 5, depending on unit voltage). Run second wire (field supplied) from the same terminal on capacitor to the yellow (T4) wire in the speed control motor junction box; connect using wirenut. On the 460-v motor, tie the yellow (T4) and brown (P2) wires in the motor junction box together using a wirenut (see Fig. 5). On the

200/230-v or 575-v motor, tie the blue (T1) and black (T5) wires in the motor junction box together (see Fig. 3 or 4).

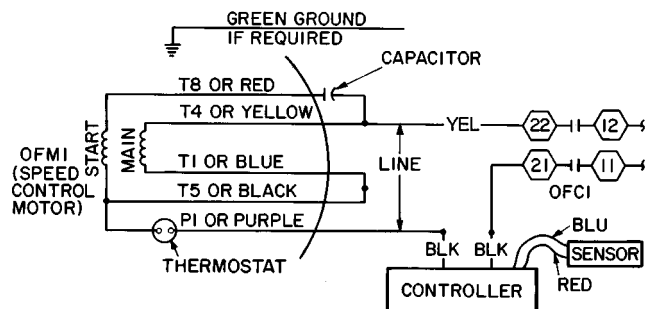


OFC — Outdoor (Condenser) Fan Contactor

*Freeze Protection Thermostat.

NOTE: Wiring shown is for counterclockwise rotation. To reverse rotation, interchange T1 (blue) and T4 (yellow) leads.

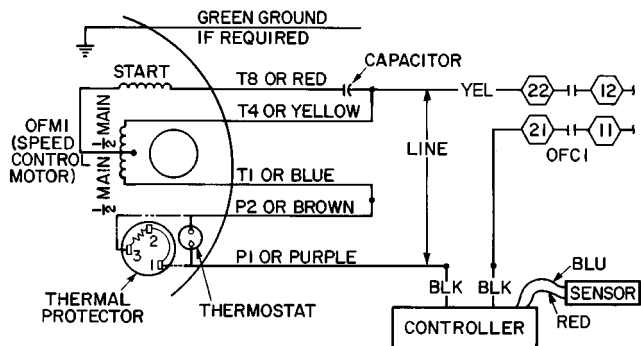
Fig. 3 — Wiring Details — 575-V 558E,558F,580E Units



OFC — Outdoor (Condenser) Fan Contactor

NOTE: Wiring shown is for counterclockwise rotation. To reverse rotation, interchange T1 (blue) and T4 (yellow) leads.

Fig. 4 — Wiring Details — 208/230-V 558E,558F,580E Units



OFC — Outdoor (Condenser) Fan Contactor

NOTE: Wiring shown is for counterclockwise rotation. To reverse rotation, interchange T1 (blue) and T4 (yellow) leads.

Fig. 5 — Wiring Details — 460-V 558E,558F,580E Units

For clockwise rotation — Connect yellow wire (from terminal 22 on OFC1) to the capacitor. Run second wire (field supplied) from the same terminal on capacitor to the blue (T1) wire in the speed control motor junction box; connect using wirenut. On the 460-v motor, tie the yellow (T4) and brown (P2) wires in the motor junction box together using a wirenut. On the 200/230-v or 575-v motor, tie the yellow (T4) and black (T5) wires in the motor junction box together using a wirenut.

9. Run field-supplied wire from the other side of the capacitor to the red (T8) wire in the speed control motor junction box; connect with wirenut.

- Remove the blue wire that had connected the standard OFM to terminal 23 on OFC1. If this wire is not physically removed from the unit, be sure that it is disconnected from terminal 23 of OFC1 and that the red wire is placed in a wirenut and secured. The motor end of this wire must be securely wire-tied to the motor mount to prevent it from becoming entangled in the fan propeller when the unit is running.

⚠ DANGER: If this wire is not disconnected from terminal 23 of OFC1, it will become energized when OFC1 is energized. This could result in serious injury or death.

- Mount the head pressure controller on the partition next to the capacitor. The controller must be mounted vertically with the leads coming out the bottom. Four holes must be field drilled using mounting template (located in the back of this book). Remove foil-backed insulation where control is to be mounted. Attach controller using four no. 10 sheet metal screws (supplied with accessory). To ensure electrical ground, insert star washers (supplied with accessory) under the heads of the screws.
- Connect the black wire from terminal 21 on OFC1 (208/230,460-v units) or from transformer (575-v units) to one of the black wires on the controller using wirenut for connection (see Fig. 3, 4, or 5). Run field-supplied wire from the other black wire in the controller (connect using wirenut) to the purple wire (P1) in the speed control motor junction box. Use wirenut to connect black and purple wires. Replace motor junction box cover.

⚠ CAUTION: Be sure that the wires running to the speed control motor are wire-tied securely to the motor mount to prevent the wires from becoming entangled in the propeller when the unit is running.

- Install the rainshield (supplied with the accessory kit) over the fan motor. Reinstall the fan propeller, set clearance, and reinstall fan guard. See Fig. 6.

NOTE: Although fan position in orifice is different than with standard OFM, unit performance is not affected.

- Route the sensor wire from the controller above the compressor access door to the header end of the condenser coil. Wire tie sensor wires to prevent damage.

⚠ CAUTION: Sensor assembly is delicate; handle with care.

- See Fig. 7 for sensor location. Secure the sensor to the coil return bend with no. 4-40 screw, 2 plate washers and nut (supplied with accessory) as shown in Fig. 8.
- Coil up excess wire and secure it next to the controller.
- Provide sensor wire with protection from physical damage or wind movement by securing wire with wire ties when necessary.
- For low ambient temperature duty, a wind baffle should be installed in front of the condenser coil to prevent crosscurrents from causing abnormal operation. See Fig. 9 and 10 for suggested design and mounting of baffle.
- Mount freeze protection thermostat on refrigerant circuit no. 1 of indoor coil and wire in series with the low pressure switch for compressor no. 1. (See Fig. 11 and 12.)
- Start unit in cooling. Check rotation of condenser fan with rotation arrow on the condenser fan deck. If rotation is not correct, see Step 8.

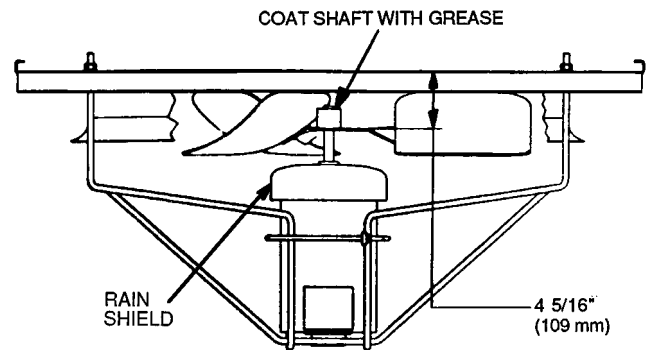


Fig. 6 — Fan Adjustment — 558E,558F,580E

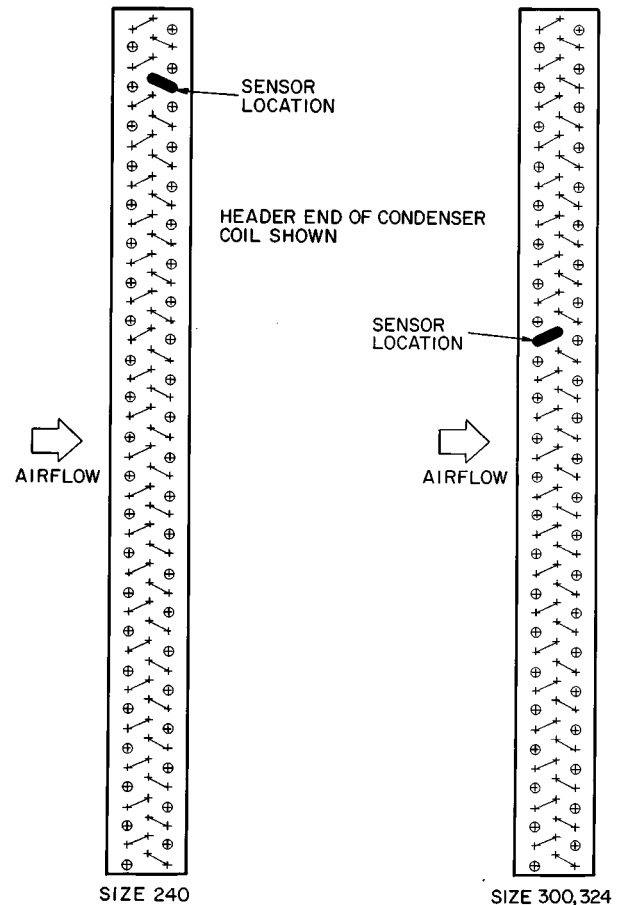


Fig. 7 — Controller Sensor Location — 558E,558F,580E

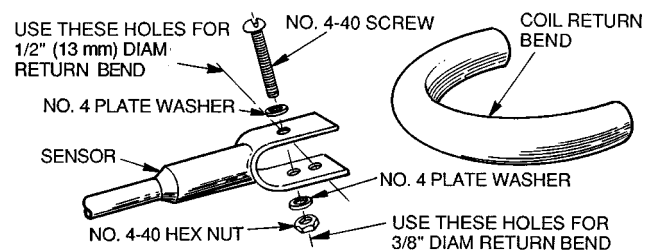
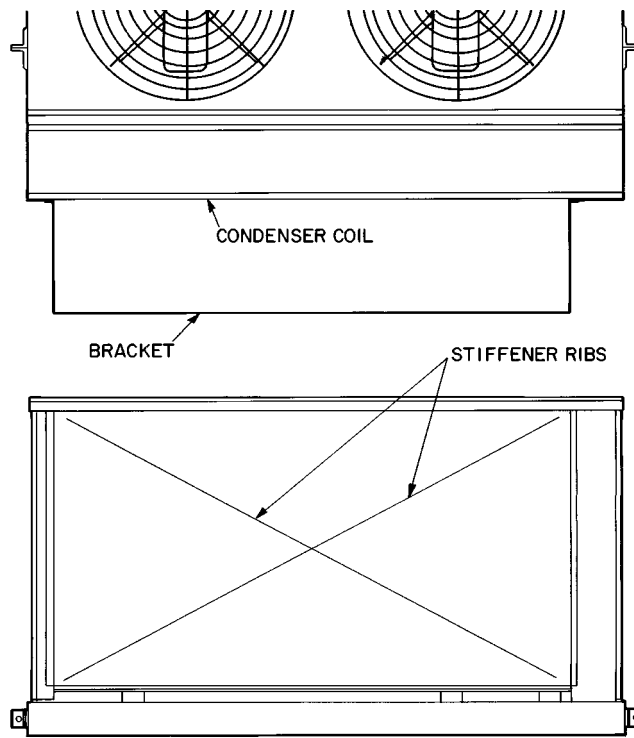
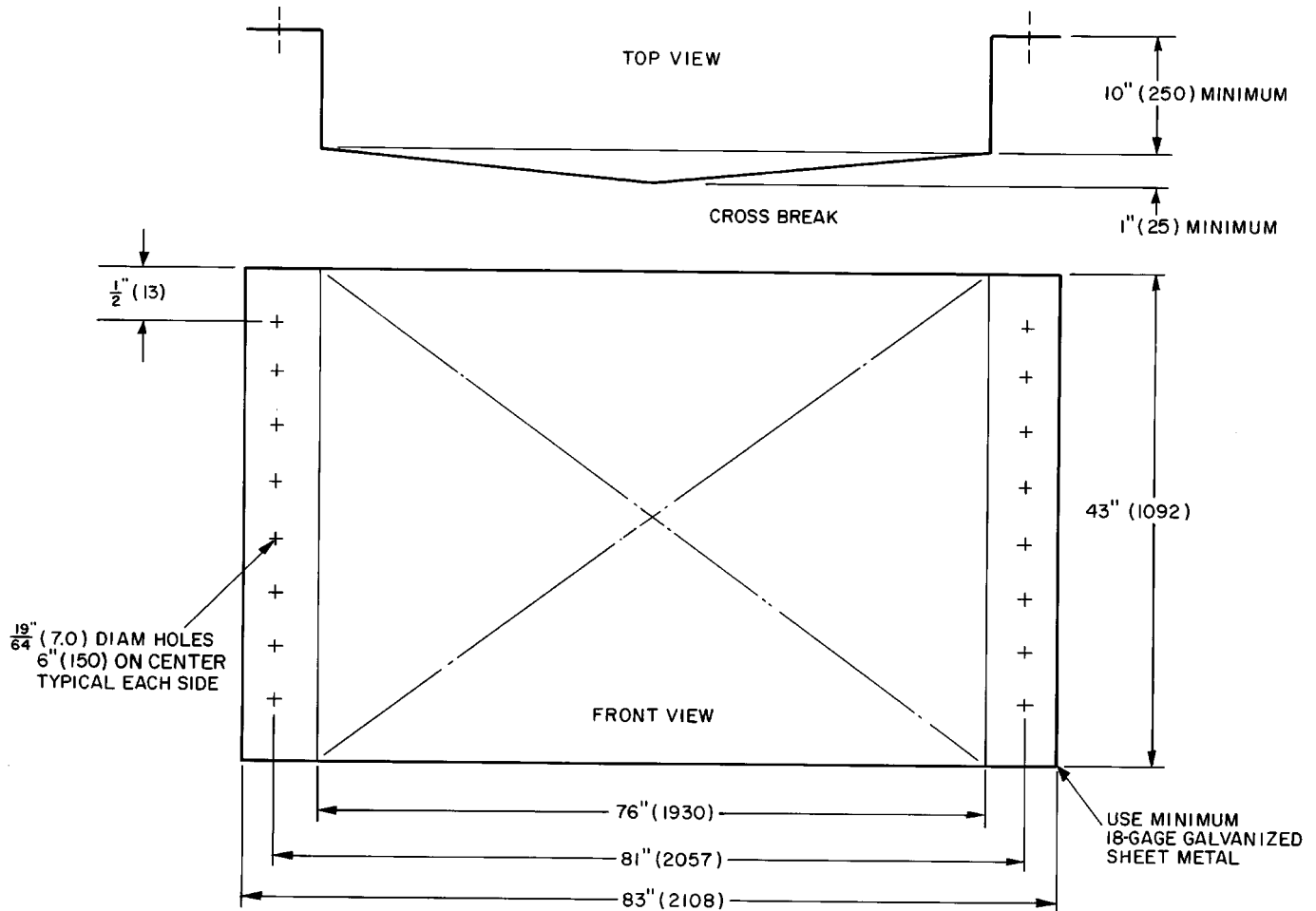


Fig. 8 — Sensor Installation



USE 1/4-20 FASTENERS FOR MOUNTING OF BRACKET

Fig. 9 — Suggested Wind Baffle Design — 558E,558F,580E



NOTE: Dimensions shown in parentheses are millimeters.

Fig. 10 — Wind Baffle Mounting Details — 558E,558F,580E

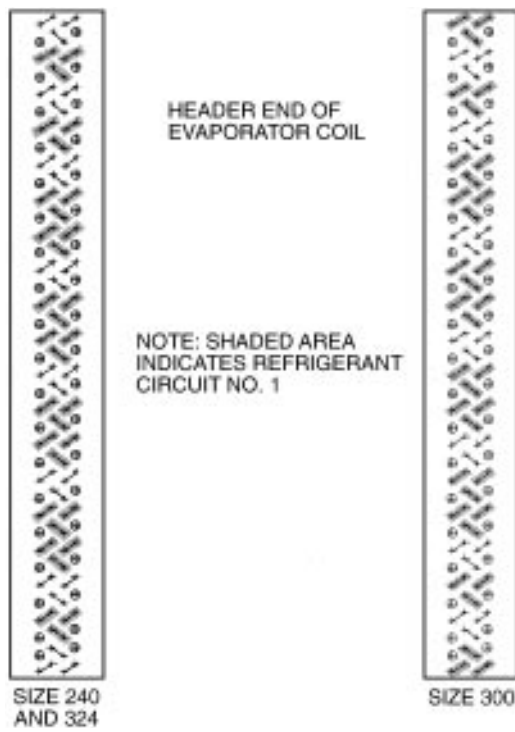
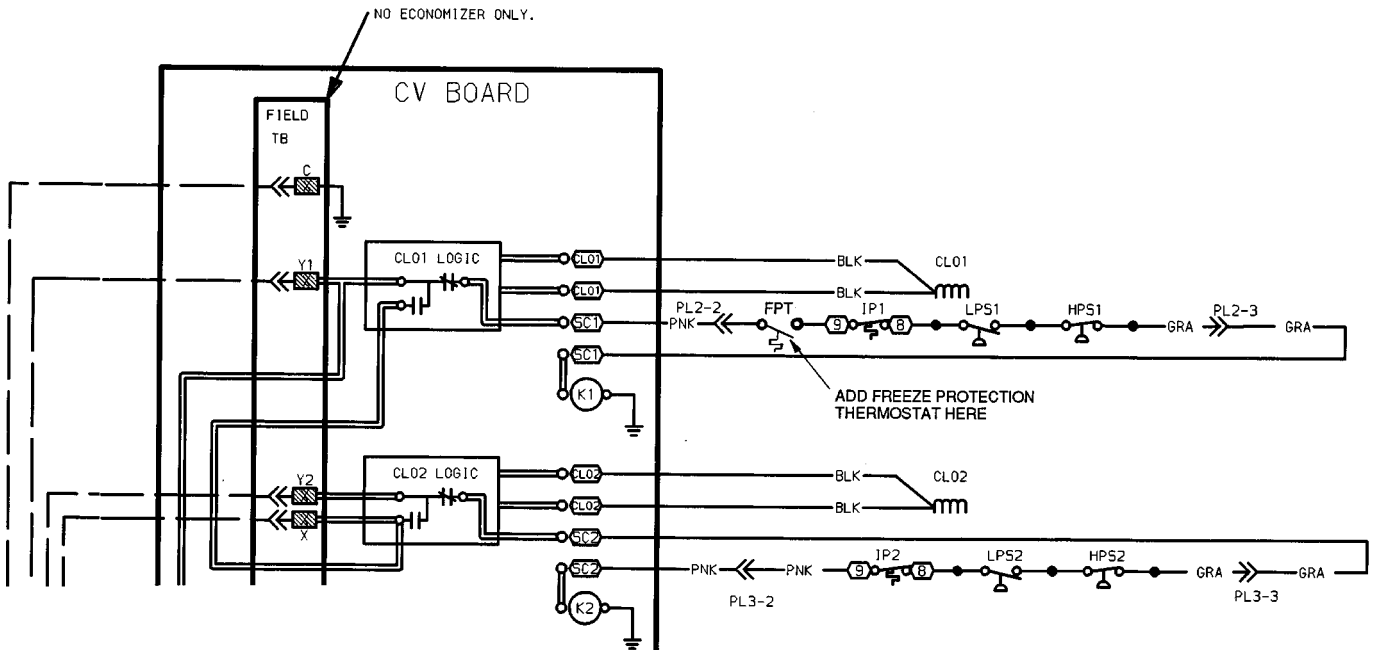


Fig. 11 — Location of Refrigerant Circuit No. 1 for Mounting of Freeze Protection Thermostat — 558E,558F,580E



LEGEND

- CLO — Cooling Lockout
- CV — Constant Volume
- FPT — Freeze Protection Thermostat
- HPS — High-Pressure Switch
- IP — Internal Protector
- LPS — Low-Pressure Switch
- PL — Plug
- SC — Safety Circuit
- TB — Terminal Block

Fig. 12 — Freeze Protection Defrost Thermostat Wiring — 558E,558F,580E

INSTALLATION — 576B UNITS

1. Disconnect all power to the unit.

⚠ WARNING: To avoid possible electrical shock and personal injury, all power to unit must be disconnected before working on unit. Tag all disconnects to alert others unit is being worked on.

2. Remove FM1 (fan motor no. 1) fan guard (see Fig. 13) located next to compressor compartment.
3. Disconnect FM1 wiring in the motor junction box and remove FM1 from unit.
4. Remove propeller fan from FM1 and save. Fan propeller is reinstalled on the speed control motor in Step 14.
5. Install speed control motor in place of FM1 removed in Step 3.
6. Because the standard FM1 is 3-phase, and the speed control motor is single-phase, it is necessary to add a capacitor. Install the capacitor inside the compressor compartment on the divider panel above the condenser coil.
7. Mount the capacitor upside down (terminals pointing down) using capacitor strap and screws (holes must be field drilled). See Fig. 14. To prevent capacitor from slipping down, insert an additional screw through the panel for the capacitor to rest on. See Fig. 14.

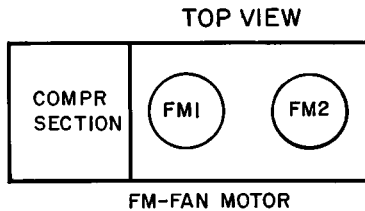
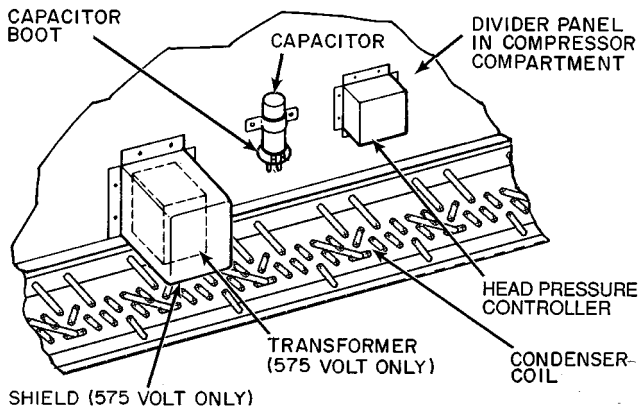


Fig. 13 — Fan Motor Locations, 576B



NOTES:

1. Transformer and transformer shield are field supplied (transformer part no. HT01AH954).
2. Exact mounting locations on divider panel for capacitor, controller, and transformer are at discretion of installer. There are no wires or obstructions on reverse side of divider panel to interfere with mounting screws.

Fig. 14 — Mounting Head Pressure Controller, Capacitor, and 575-V Transformer — 576B Units

8. 575-Volt Units — Transformer (part no. HT01AH954) must be ordered separately and installed as follows:
 - a. Mount transformer to the divider panel. See Fig. 14. Drill required mounting holes.
 - b. Connect yellow wire from terminal 23 on FC1 to the primary side of the transformer. See Fig. 15. Connect the black wire from terminal 21 on FC1 to the other primary of the transformer. See Fig. 15.
 - c. Run field-supplied wire from the secondary of the transformer to the capacitor. Run second field-supplied wire to one of the black wires on the controller. See Fig. 15.
 - d. Install field-fabricated sheet metal weather shield over the transformer. See Fig. 14.
9. Connect yellow wire from terminal 23 on FC1 to the capacitor. See Fig. 16 and 17. Run second wire (field supplied) from the same terminal on the capacitor to the yellow wire (T4) in the speed control motor junction box. Connect using wirenut. On the 460-v motor, tie the blue (T1) and brown (P2) wires in the motor junction box together, using a wirenut. See Fig. 17. On the 230-v or 575-v motor, tie the blue (T1) and black (T5) wires in the motor junction box together. See Fig. 16.
10. Run field-supplied wire from the other side of the capacitor to the red (T8) wire in the speed control motor junction box. Connect with wirenut.
11. Remove the blue wire running from the standard FM1 to terminal 23 on FCB. If the wire is not physically removed from the unit, be sure it is disconnected from terminal 23 of FCB, with the end wirenuted and the wire secured to the wire harness in the control box. The motor end of this wire should be securely tied to the motor mount to prevent it from becoming entangled in the propeller fan when the unit is running.

⚠ DANGER: It is important that the wire be disconnected from terminal 23 of FCB, otherwise the wire will be energized. This could result in serious injury or death.

12. Using the template supplied in the back of this book, mount the head pressure controller vertically on the divider panel next to the capacitor. It must be mounted vertically with the leads coming out the bottom. Drill the required 4 mounting holes. Use four no. 10 sheet metal screws (supplied) to attach the controller. To ensure electrical ground, insert the star washers provided beneath the screw heads.
13. On 208/230-v and 460-v units, connect the black wire from terminal 21 on FC1 to one of the black wires in the head pressure controller. Use wirenut to connect. See Fig. 16 and 17. On all units, run field-supplied wire from the other black wire in the controller (connect with wirenut) to the purple wire (P1) in the speed control motor junction box. Use wirenut to connect. See Fig. 15-17. Replace junction box cover.

⚠ CAUTION: Be sure the wires running to the speed control motor are wire-tied securely to the motor mount, to prevent the wires from becoming entangled in the propeller fan when unit is running.

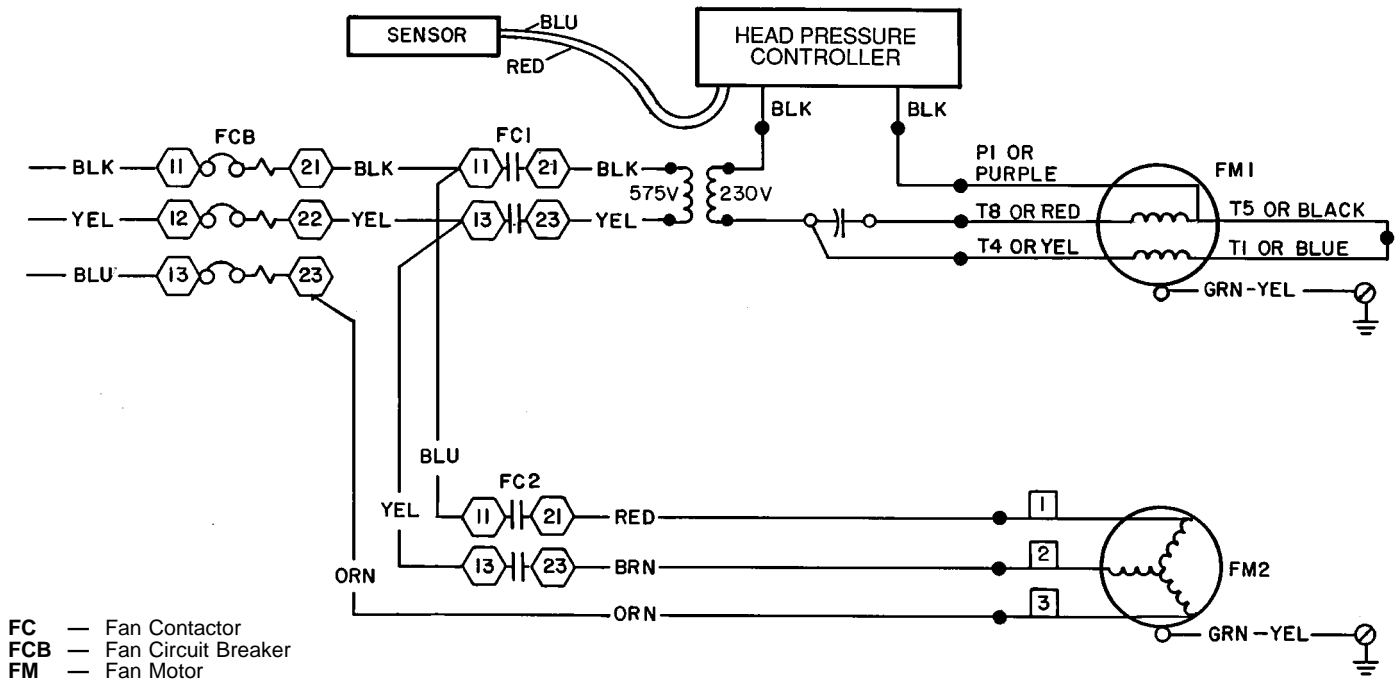


Fig. 15 — Head Pressure Controller Wiring, 575 V 576B Units

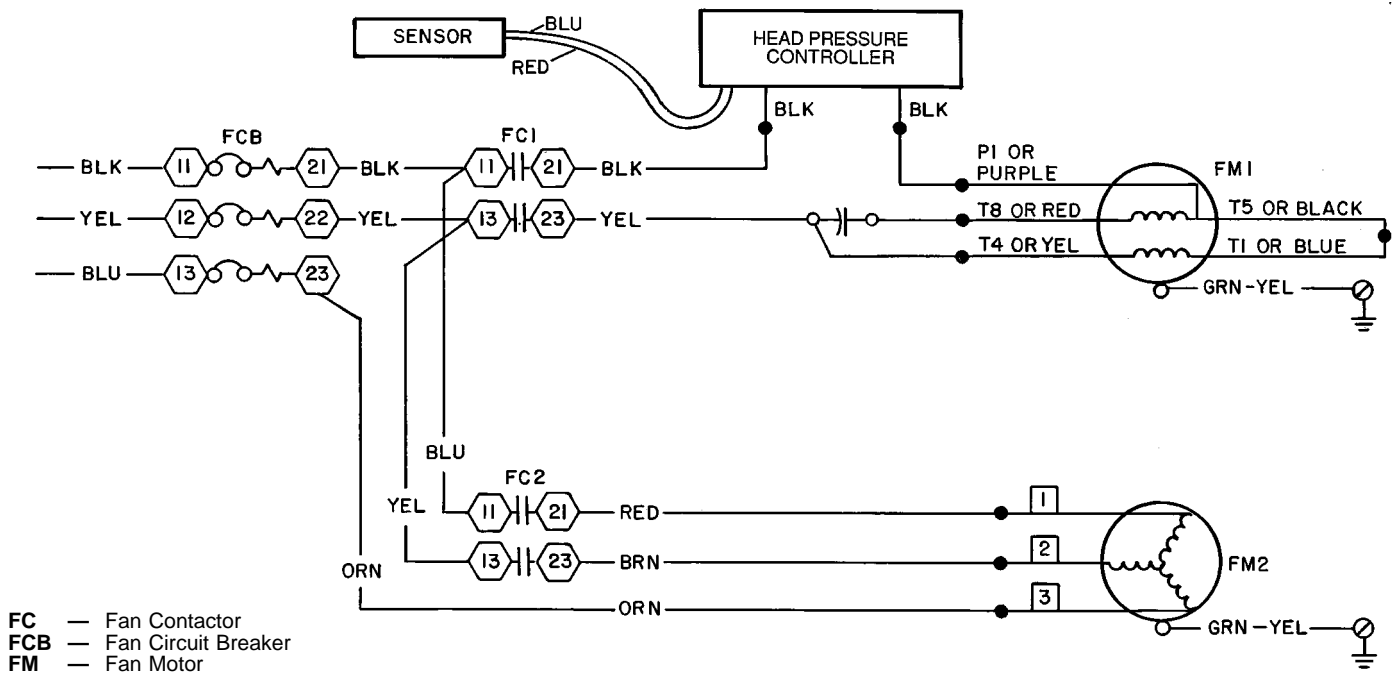


Fig. 16 — Head Pressure Controller Wiring, 208/230 V 576B Units

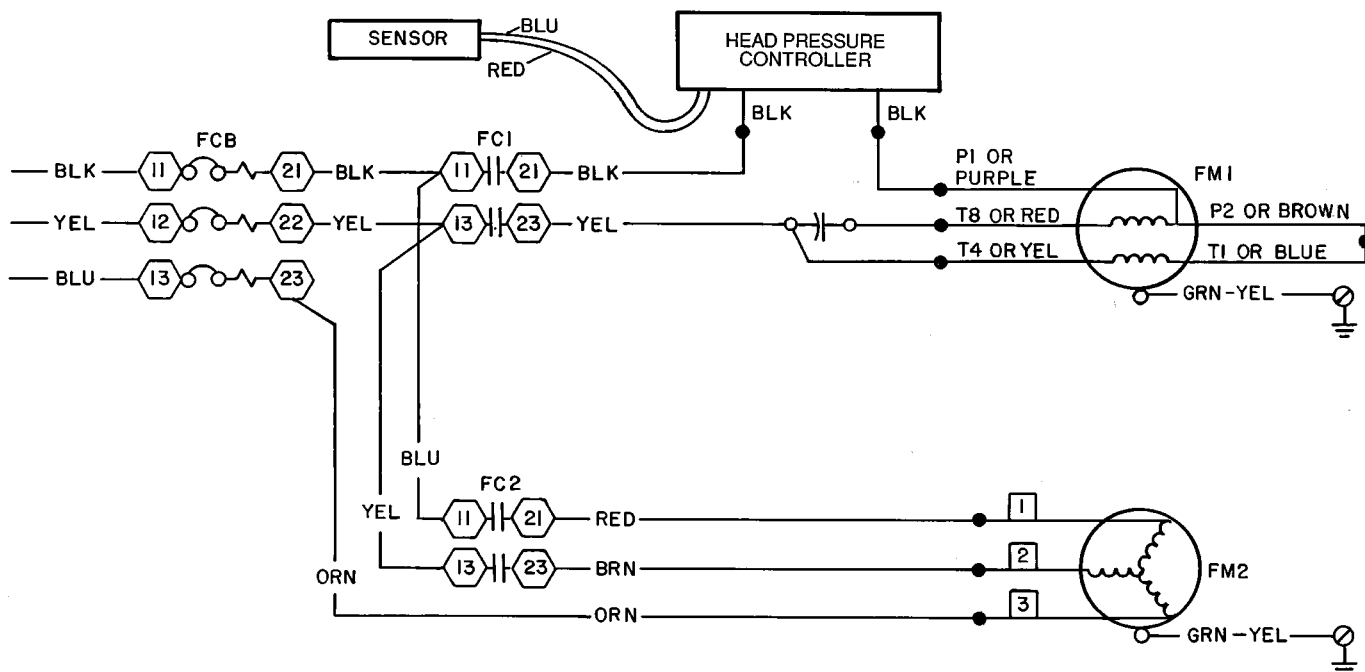


Fig. 17 — Head Pressure Controller Wiring, 460 V 576B Units

14. Install the rainshield (supplied with the accessory kit) over the fan motor. Reinstall the fan propeller, set clearance, and reinstall fan guard. See Fig. 18.
15. Route the sensor wire from the controller to the sensor location. Secure sensor wire to avoid contact with condenser coil.

⚠ CAUTION: The sensor assembly is delicate. Handle with care.

16. Secure the sensor to the coil return bend. See Fig. 19 for proper return bend for each unit. Use no. 4-40 screw, two plate washers, and nut provided. See Fig. 8 for sensor connection.
17. Coil excess wire and secure it next to controller.
18. Protect sensor wire from physical damage by installing field-supplied protective material.

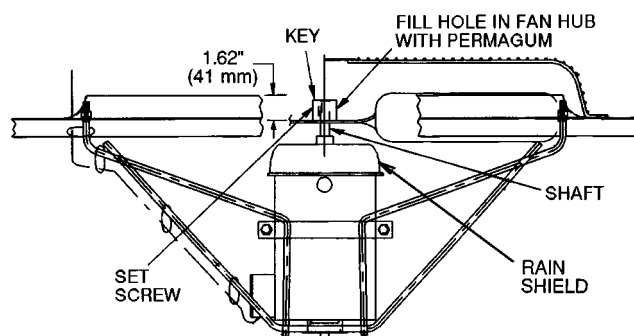


Fig. 18 — Location of Propeller on Motor Shaft from Outside of Orifice Ring, 576B

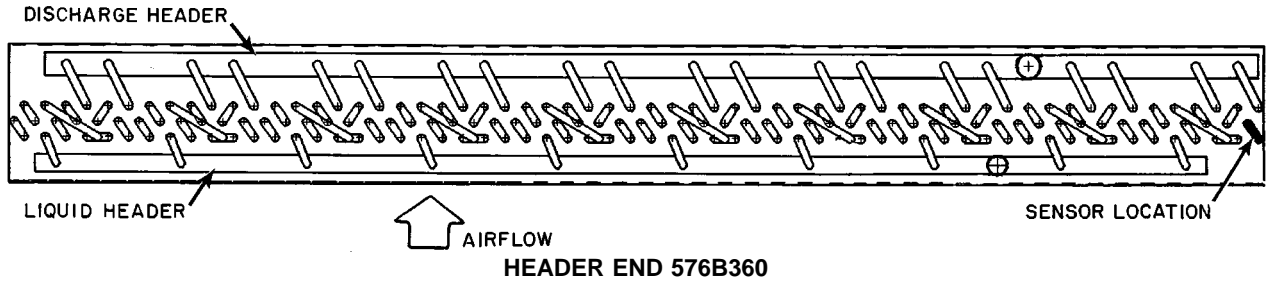
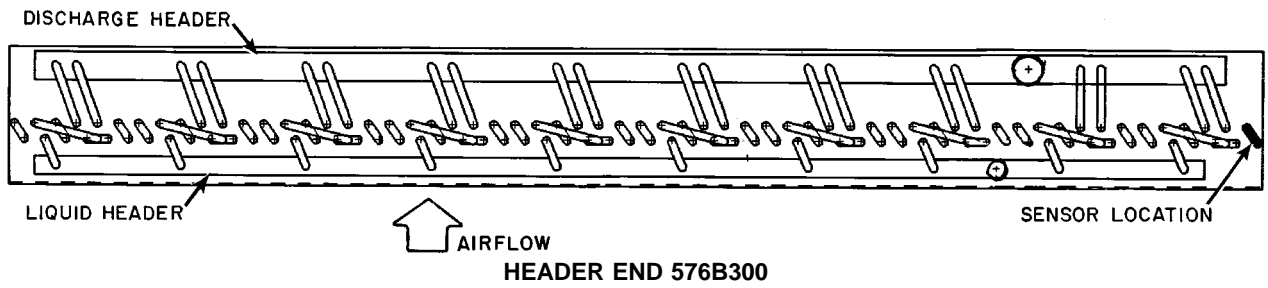


Fig. 19 — Controller Sensor Locations on Condenser Coil Header Ends, 576B

CONTROLLER MOUNTING TEMPLATE

