

# Electric Heat Accessory

AMFH10AHB1 AMFH15AHB1 AMFH20AHB1 AMFH25AHB1

AMFH30AHB1

Three Phase

For Use With

FCP/FCX Fan Coil Units and EF Electric Furnaces

## WARNING

**Electrical shock hazard.**

Installation or repairs made by unqualified persons can result in hazards to you and others. Installation must conform with local building codes or, in the absence of local codes, with National Electrical Code ANSI/NFPA 70-1996 or current edition.

The information contained in this manual is intended for use by a qualified service technician familiar with safety procedures and equipped with the proper tools and test instruments.

Shut OFF electric power at unit disconnect and/or service panel before beginning the following procedures.

Failure to carefully read and follow all instructions in this manual can result in malfunction, property damage, personal injury, and/or death.

**NOTE:** Supply voltage, amperage, fuse and disconnect switch sizes **MUST** conform with all technical specifications in this manual and on the unit rating plate.

Adapter and filler plates are shipped with the indoor units to be used with electric heat as needed depending on unit size and heater size.

1. Shut **OFF** electric power at unit disconnect switch or service panel.
2. Remove the front panel from unit and locate adapter and filler plates, with screws inside package.
3. Attach adapter plate and filler plate to heater if required to match cabinet. Refer to Figure 1 and table to determine if needed.

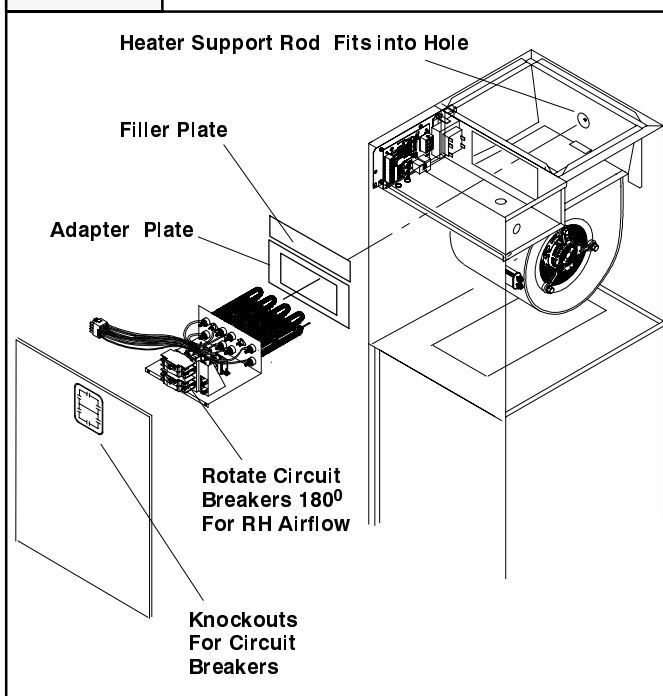
| Heater Model<br>AMFH | FCP36,42 FCX36<br>EF12 | FCP48,60 FCX48,60<br>EF16,20 |
|----------------------|------------------------|------------------------------|
| 10                   | None                   | Filler Plate                 |
| 15                   | None                   | Filler Plate                 |
| 20                   | N/A                    | None                         |
| 25, 30               | N/A                    | None                         |

4. **Right Hand Airflow Application Only/Heaters with CB.** If indoor section is going to be used for right hand airflow, the circuit breakers will have to be removed and rotated 180°, so the OFF position will be **DOWN** when the cabinet is positioned on the right side. This is an NEC requirement. **DO ONE SET OF BREAKERS AT A TIME to make sure wires are reconnected properly.** Loosen terminal screws on the wires and gently pull wires back from breaker. Remove screws securing breaker and rotate 180°, then re-

connect wires to breaker. Proper torque for terminal screws is 35 inch pounds.

5. Insert the heater into the cabinet opening as shown in **Figure 1**, so the heater support rod goes into the hole in back of the cabinet. **Exercise caution to prevent tearing of insulation or damage to heater element.**
6. Secure the electric heat accessory with four screws.
7. Connect the plug on the heater wiring into the receptacle on the control board on the side of the cabinet.
8. Apply wiring diagram label over the existing label on the blower housing. Existing label is for single phase heaters.
9. Install front door panel. **NOTE:** If the heater has circuit breakers, remove the appropriate knockout(s) in the door panel to match circuit breaker location. If heater only has one circuit breaker install breaker cover clip over unused hole in door panel.
10. Mark an "X" in the appropriate box for the heater on the indoor unit rating plate.

**Figure 1 Installing The Electric Heat Accessory**



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Wiring

All line voltage connections and ground connections **MUST** be made with copper wire.

The power supply wiring **MUST** have overcurrent protection. This can be either fuses or circuit breakers. The maximum size for the overcurrent protection is shown in the column labeled "Max. Fuse or NEC HACR Breaker (Amps)" in the Electrical Data Table or on the unit rating plate.

Connect supply voltage wires to the Circuit Breakers on the heater or to the pigtails on the heater. Power for the blower motor is supplied through the connector from the heater to the control board.

Grounding

Permanently ground the electric heat accessory in accordance with local codes and ordinances and in the United States with National Electrical Code ANSI/NFPA70-1996 or current edition. Use a copper conductor of the appropriate size from the electric heat accessory ground lug, to a grounding lug on the circuit breaker panel. On models with more than one circuit, a separate copper ground wire **MUST** be connected for *each* circuit.

Adjusting Thermostat Anticipator

Set the heat anticipator of the thermostat to the proper value. See instructions provided with the thermostat before making this adjustment.

| Heater Model | Anticipator Setting |
|--------------|---------------------|
| 10           | .32                 |
| 15           | .40                 |
| 20           | .46                 |
| 25           | .53                 |
| 30           | .57                 |

Staging

The heater elements are turned on in increments. Refer to Staging Table. In addition all heaters can be staged (1st & 2nd) either through an indoor thermostat or by using an outdoor thermostat.

A control signal (24V) from W1 on the Indoor T'stat to W1 on the control board energizes the 1st stage of heat. A control signal (24V) to W2 on the control board energizes the second stage of electric heat. To turn ON both stages at the same time, using one control signal, W1 and W2 are jumpered together.

If the indoor thermostat does not have staging capabilities, accessory electronic outdoor thermostats are available that will control two stages of electric heat.

Temperature Rise Check

Temperature rise is the difference between the supply and return air temperatures.

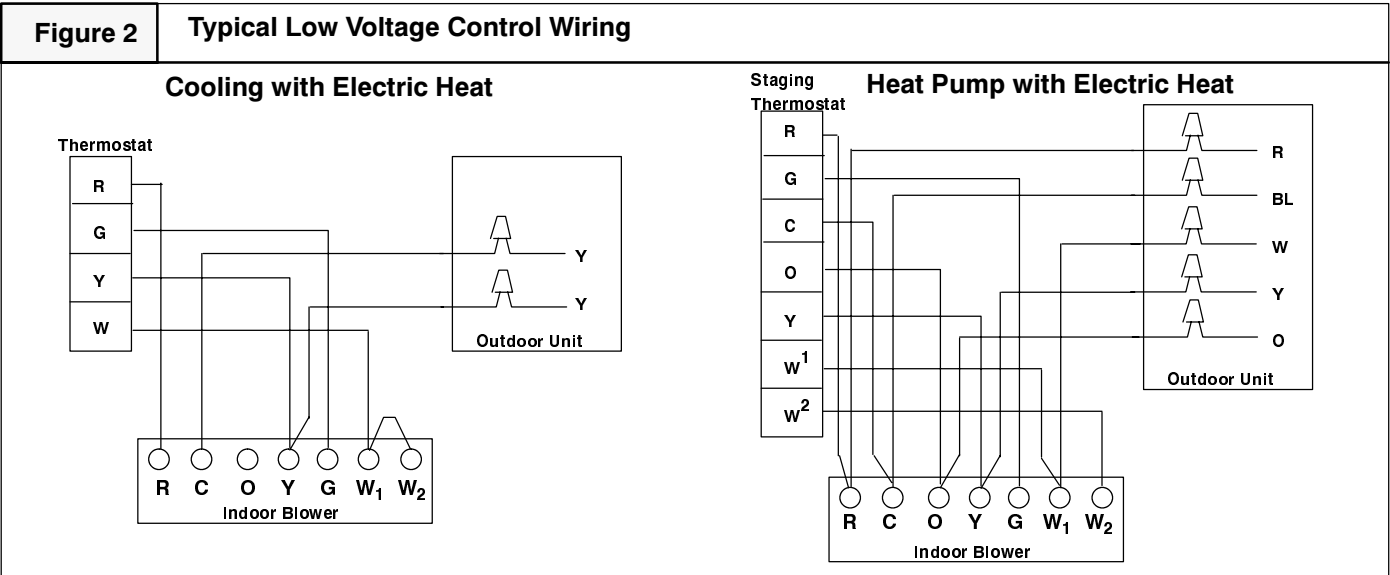
**NOTE:** The temperature rise can be adjusted by changing the heating speed tap at the unit's blower terminal block. Refer to the unit's *Installation Instructions* for airflow information.

**A temperature rise greater than 60°F (33.3°C) is not recommended.**

- 1. To check the temperature rise through the unit, place thermometers in the supply and return air ducts as close to the unit as possible.
- 2. Open **ALL** registers and duct dampers.
- 3. Set thermostat Heat-Cool selector to **HEAT**.
- 4. Set the thermostat temperature setting as high as it will go.
- 5. Turn electric power **ON**.
- 6. Operate unit **AT LEAST** 5 minutes, then check temperature rise.

**NOTE:** The maximum outlet air temperature for all models is 200°F (93.3°C).

- 7. Set thermostat to normal temperature setting.
- 8. Turn electric power **OFF**.
- 9. Be sure to seal all holes in ducts if any were created during this process.



# Technical Data

| Heater Model | Supply Voltage | Nomial Heating BTUH | Heat KW | KW Per Element | Supply Circuit No. | Heater KW Per Circuit | Heater AMPS. | Max. Motor AMPS. | Total AMP | Branch Circuit Ampacity | Maximum Overcurrent Protective Device (AMPS.) | Recommended                |      |                 |             |     |
|--------------|----------------|---------------------|---------|----------------|--------------------|-----------------------|--------------|------------------|-----------|-------------------------|---|----------------------------|------|-----------------|-------------|-----|
|              |                |                     |         |                |                    |                       |              |                  |           |                         |   | Supply Wire 75 ° C. Copper |      |                 | Ground Wire |     |
|              |                |                     |         |                |                    |                       |              |                  |           |                         |   | No.                        | Size | Max. Ft. Length | No.         | Siz |
| AMFH10AH     | 240            | 32,765              | 9.6     | 3.2            | Single             | 9.6                   | 23.1         | 6.0              | 29.1      | 36.4                    | 40  | 3                          | 8    | 100             | 1           | 10  |
|              | 208            | 24,574              | 7.2     | 2.4            | Single             | 7.2                   | 20.0         | 6.0              | 26.0      | 32.5                    | 35  | 3                          | 10   | 61              | 1           | 10  |
| AMFH15AH     | 240            | 49,147              | 14.4    | 4.8            | Single             | 14.4                  | 34.6         | 6.0              | 40.6      | 50.8                    | 60  | 3                          | 6    | 111             | 1           | 10  |
|              | 208            | 36,860              | 10.8    | 3.6            | Single             | 10.8                  | 30.0         | 6.0              | 36.0      | 45.0                    | 50  | 3                          | 8    | 70              | 1           | 10  |
| AMFH20AH     | 240            | 65,530              | 19.2    | 3.2            | Single             | 19.2                  | 46.2         | 6.0              | 52.2      | 65.2                    | 70  | 3                          | 4    | 138             | 1           | 8   |
|              |                |                     |         |                | Mult. 1            | 9.6                   | 23.1         | 6.0              | 29.1      | 36.4                    | 40  | 3                          | 8    | 79              | 1           | 10  |
|              |                |                     |         |                | Mult. 2            | 9.6                   | 23.1         | 0.0              | 23.1      | 28.9                    | 30  | 3                          | 10   |                 | 1           | 10  |
|              | 208            | 49,147              | 14.4    | 2.4            | Single             | 14.4                  | 40.0         | 6.0              | 46.0      | 57.5                    | 60  | 3                          | 6    | 85              | 1           | 10  |
|              |                |                     |         |                | Mult. 1            | 7.2                   | 17.3         | 6.0              | 23.3      | 29.2                    | 30  | 3                          | 10   | 57              | 1           | 10  |
|              |                |                     |         |                | Mult. 2            | 7.2                   | 17.3         | 0.0              | 17.3      | 21.7                    | 25  | 3                          | 12   |                 | 1           | 10  |
| AMFH25AH     | 240            | 81912               | 24.0    | 4.0            | Single             | 24.0                  | 57.7         | 6.0              | 63.7      | 79.7                    | 80  | 3                          | 4    | 113             | 1           | 8   |
|              |                |                     |         |                | Mult. 1            | 12.0                  | 28.9         | 6.0              | 34.9      | 43.6                    | 45  | 3                          | 8    | 83              | 1           | 10  |
|              |                |                     |         |                | Mult. 2            | 12.0                  | 28.9         | 0.0              | 28.9      | 36.1                    | 40  | 3                          | 8    |                 | 1           | 10  |
|              | 208            | 61,434              | 18.0    | 3.0            | Single             | 18.0                  | 50.0         | 6.0              | 56.0      | 70.0                    | 80  | 3                          | 4    | 111             | 1           | 8   |
|              |                |                     |         |                | Mult. 1            | 9.0                   | 21.7         | 6.0              | 27.7      | 34.6                    | 35  | 3                          | 10   | 57              | 1           | 10  |
|              |                |                     |         |                | Mult. 2            | 9.0                   | 21.7         | 0.0              | 21.7      | 27.1                    | 30  | 3                          | 10   |                 | 1           | 10  |
| AMFH30AH     | 240            | 98,294              | 28.8    | 4.8            | Single             | 28.8                  | 69.3         | 6.0              | 75.3      | 94.1                    | 100   | 3                          | 3    | 120             | 1           | 8   |
|              |                |                     |         |                | Mult. 1            | 14.4                  | 34.6         | 6.0              | 40.6      | 50.8                    | 60  | 3                          | 6    | 84              | 1           | 10  |
|              |                |                     |         |                | Mult. 2            | 14.4                  | 34.6         | 0.0              | 34.6      | 43.3                    | 45  | 3                          | 8    |                 | 1           | 10  |
|              | 208            | 73,721              | 21.6    | 3.6            | Single             | 21.6                  | 60.0         | 6.0              | 66.0      | 82.6                    | 90  | 3                          | 4    | 94              | 1           | 8   |
|              |                |                     |         |                | Mult. 1            | 10.8                  | 26.0         | 6.0              | 32.0      | 40.0                    | 45  | 3                          | 8    | 61              | 1           | 10  |
|              |                |                     |         |                | Mult. 2            | 10.8                  | 26.0         | 0.0              | 26.0      | 32.5                    | 35  | 3                          | 10   |                 | 1           | 10  |

## HEATER STAGING

| ELECTRIC HEATER | VOLTAGE      | TOTAL HEAT |      | 1st STAGE (W1) |      | 2nd STAGE (W2) |      |
|-----------------|--------------|------------|------|----------------|------|----------------|------|
|                 |              | 208V       | 240V | 208V           | 240V | 208V           | 240V |
| AMFH10AH        | 208-240/3/60 | 7.2        | 9.6  | 4.8            | 6.4  | 2.4            | 3.2  |
| AMFH15AH        | 208-240/3/60 | 10.8       | 14.4 | 7.2            | 9.6  | 3.6            | 4.8  |
| AMFH20AH        | 208-240/3/60 | 14.4       | 19.2 | 4.8            | 6.4  | 9.6            | 12.8 |
| AMFH25AH        | 208-240/3/60 | 18.0       | 24.0 | 6.0            | 8.0  | 12.0           | 16.0 |
| AMFH30AH        | 208-240/3/60 | 21.6       | 28.8 | 7.2            | 9.6  | 14.4           | 19.2 |

## ELECTRIC HEATER STATIC PRESSURE DROP - IN. WG.

| CFM  | NAMFH10AH | NAMFH15AH | NAMFH20AH | NAMFH25AH | NAMFH30AH |
|------|-----------|-----------|-----------|-----------|-----------|
| 600  | 0.01      | --        | --        | --        | --        |
| 700  | 0.01      | --        | --        | --        | --        |
| 800  | 0.01      | 0.01      | --        | --        | --        |
| 900  | 0.01      | 0.01      | --        | --        | --        |
| 1000 | 0.01      | 0.01      | 0.02      | --        | --        |
| 1100 | 0.01      | 0.02      | 0.02      | --        | --        |
| 1200 | 0.01      | 0.02      | 0.02      | --        | --        |
| 1300 | 0.02      | 0.02      | 0.02      | --        | --        |
| 1400 | 0.02      | 0.02      | 0.03      | 0.03      | --        |
| 1500 | 0.02      | 0.02      | 0.03      | 0.04      | --        |
| 1600 | 0.02      | 0.03      | 0.03      | 0.04      | 0.04      |
| 1700 | 0.02      | 0.03      | 0.03      | 0.04      | 0.05      |
| 1800 | 0.02      | 0.03      | 0.04      | 0.04      | 0.05      |
| 1900 | 0.02      | 0.03      | 0.04      | 0.05      | 0.06      |
| 2000 | 0.02      | 0.03      | 0.04      | 0.05      | 0.06      |

Replacement Parts

| KEY NO. | DESCRIPTION                     | PART NUMBER | AMFH    |         |         |         |         |
|---------|---------------------------------|-------------|---------|---------|---------|---------|---------|
|         |                                 |             | 10 AHB1 | 15 AHB1 | 20 AHB1 | 25 AHB1 | 30 AHB1 |
| 1       | Circuit Breaker                 | 30 Amp      | 1083190 | -       | -       | 1       | -       |
|         |                                 | 45 Amp      | 1084793 | -       | -       | 1       | 1       |
|         |                                 | 40 Amp      | 1084792 | 1       | -       | 1       | -       |
|         |                                 | 60 Amp      | 1080913 | -       | 1       | -       | 1       |
| 2       | Ground Lug                      | 91590       | 1       | 1       | 2       | 2       | 2       |
| 3       | Relay                           | 1084529     | 3       | 3       | 6       | 6       | 6       |
| 4       | Limit Switch                    | 1084735     | 2       | 2       | 2       | -       | -       |
|         |                                 | 1084749     | -       | -       | -       | 2       | 2       |
| )(      | Clip, Breaker Cover (Not Shown) | 1082049     | 1       | 1       | -       | -       | -       |

