

<p>Electric Heater Model</p> <p>WFM series</p> <p>208/240-1-60</p> <p>208/240-3-60</p>	<p>INSTALLATION INSTRUCTIONS</p> <p>Date: 03/07/208</p>	<p>Air Handlers</p> <p>CARRIER FFMANP 018-037</p> <p>ICP FMA4P(X) 1800-3600</p> <p>TRANE TMM5 24-36</p>
--	--	---

GENERAL

This electric heater series is engineered, designed, and approved to be installed in the Carrier FFMANP, ICP FMA4P(X), and Trane TMM5 series air handlers. Before proceeding, check the heater label for the correct voltage and KW requirements.

Installation and servicing of this equipment should only be performed by trained and qualified personnel. Before proceeding with the heater installation, inspect thoroughly for shipping damage. Notify the shipper immediately if any damage is found. Check all porcelain insulators for breakage and inspect heater element wire to see that none have been deformed. Clean all dirt, dust and moisture from equipment. **Check for proper clearances of live parts, between phases, and to ground.** Make sure that all required barriers are in place. Check conductors run in multiple to insure that they are properly wired. Refer to base installation instructions for complete unit installation details. **Verify that all elements are properly secure in their ceramic holders.**

WARNING

Before performing service or maintenance operations on system, turn off all main power switches. There may be more than one disconnect. Turn off accessory heater power switch if applicable. Electrical shock can cause personal injury. **TAG DISCONNECT SWITCH(ES) WITH A SUITABLE WARNING LABEL.** When installed in a garage, heater elements should have a clearance of 18" from the floor, insure that the area is ventilated.

HEATER INSTALLATION

1. Refer to the base unit installation instructions as required. Affix Warren Heater installer label to the equipment access panel.
2. Remove blower access panel of the air handler unit.
3. Remove cover plate from back panel of air handler control and wiring compartment.
4. Before inserting the heater into the blower section, bend the heater alignment tabs 90 degrees out. These tabs are located on the endcap section of the heater and will slide into the upper alignment holes in the back of the air handler box (see fig. 1).
5. Position and slide heater assembly into blower section through the access opening (mounting position is important, check the labels "TOP THIS SIDE UP" & "AIRFLOW" on the heater for correct position. Secure heater into place with screws removed from cover plate.
6. Secure the bracket to the cabinet mounting rail with screws provided. Use wire ties to fasten loose wires around the bracket area. All excess wire needs to be routed away from sharp edges (see fig. 4).
7. Remove the conduit knockout in unit cabinet for electrical

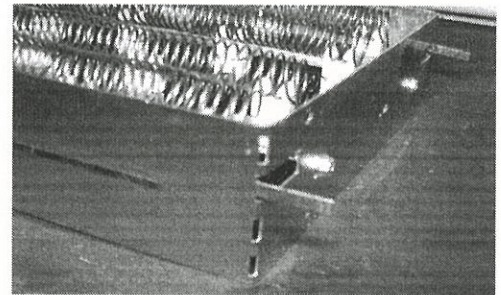


Fig. 1 - Alignment tabs.

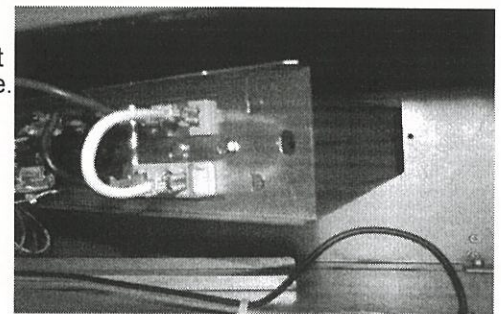


Fig. 2 - Heater insertion.

- connections. Install the appropriate size conduit connector.
8. Remove circuit breaker knockout(s) in unit access panel as required and cut insulation from the breaker knockout area.
9. Install breaker filler plate provided by aligning the filler plate cut-out with upper section of the breaker (see fig. 3).
9. Apply wiring diagram to the cabinet for future reference.
10. **Breaker Cover:** Install cover by peeling the protective film on the back of the breaker cover and by pressing this cover firmly onto the access door. Verify, that the breaker cover completely seals.

FILLER PLATE INSTALLATION INSTRUCTIONS (see fig. 3):

- A. Align breaker filler plate cut-out with the upper edge section of the breaker.
- B. Press the filler plate firmly around the upper edge of the breaker. Apply even pressure to all sides of the filler plate.

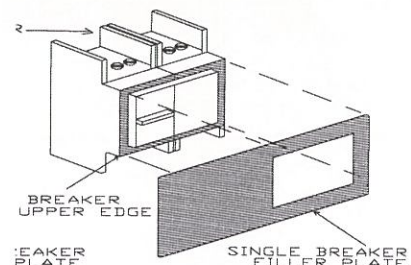


Fig. 3 - Filler plate installation

WARNING

Before performing service or maintenance operations on system, turn off all main power switches. There may be more than one disconnect. Turn off accessory heater power switch if applicable. Electrical shock can cause personal injury. **TAG DISCONNECT SWITCH(ES) WITH A SUITABLE WARNING LABEL.** When installed in a garage, heater elements should have a clearance of 18" from the floor, insure that the area is ventilated.

ELECTRICAL CONNECTIONS

1. All electrical connections, wire sizes and type and conduit sizes shall meet the National Electric Code, State and Local Codes. Main power supply, minimum wire sizes, circuits, fusing, etc. is shown on schematic wiring diagrams. Use copper wire only.
2. Power may be brought into the unit through the top when unit is vertical position or through the left or right side panel.
3. Refer to base unit instructions for recommended wiring procedures.
4. For electric heat installations connect the supply power to the terminal block or circuit breaker supplied with the heater (see fig. 4).
5. Connect the 6-pin plug to the corresponding connector in the air handler (see fig. 4)
6. Separate all wires from incoming power leads.
7. **Be sure that all electrical terminal connections, clamps, screws, etc. are tight before proceeding. Verify that there are no possible shorts to ground.**
8. Check wiring diagram supplied with heater for specific connections and information.
9. Check operation as described in start-up section.

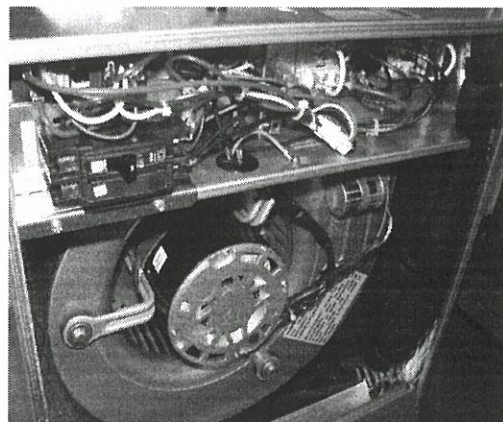


Fig. 4 - Electrical connections.

START-UP AND CHECK-OUT

CAUTION: Before proceeding, verify that all wiring is correct per factory approved schematic. Notify factory immediately of any discrepancies.

1. Refer to base unit installation instructions as required.
2. **Check for loose terminal connections.**
3. Check that all fuse and circuit breaker short circuit interrupting ratings are adequate.
4. Turn on unit and heater power.
5. Set thermostat to call for heat.
6. Check operation of heater.
7. **Check that air flow across heater is at or above minimum recommended fan speed (see fig. 4 or 5). Refer to base instructions for Air Flow Data Tables and adjustment of Fan motor speed.**

TMM5 MINIMUM AIRFLOW CFM CHART				
SIZE	30 Kw	5.0 Kw	8.0 Kw	10.0 Kw
24	tap 4/tap 5	tap 4/tap 5	tap 4/tap 5	tap 4/tap 5
30	tap 2/tap 3	tap 2/tap 3	tap 2/tap 3	tap 2/tap 3
36	tap 4/tap 3	tap 4/tap 3	tap 4/tap 3	tap 4/tap 3

FAN SPEED CHART				
SIZE	3.0 Kw	5.0 Kw	8.0 Kw	10.0 Kw
18	M	M	M	M
24	M	M	M	M
30	M	M	M	M
36	M	M	M	M

NOTE: Factory default Fan motor speed is MEDIUM.
H = HIGH fan speed (Black wire)
M = MEDIUM fan speed (Red wire)
L = LOW fan speed (Blue wire)

Fig. 5 - Fan speed chart.

CAUTION: When commissioning any AHU with electric heat, **ALWAYS** check to see if the heater is cycling on its automatic reset high temperature limit when the system is producing the highest temperature leaving the AHU coil. **If the heater is cycling** increase the air flow by increasing the fan speed or lowering the ductwork static pressure until cycling stops.

HEATER KIT CONTENTS

1. Heater assembly
2. Installation Instructions
3. Installer label
4. Wiring diagram
5. (1) small wire tie
6. Breaker cover (breaker models only)
7. Breaker filler plate (breaker models only)

USER CAUTION: The use of improperly selected air filters/ and or operation with dirty filters may result in insufficient airflow which may result in abnormal operation of electric heaters and tripping of temperature safety limits. Also, insufficient airflow will degrade the efficiency of the system (SEER rating) and excessive wear and premature failure of the system compressor may result. Other conditions, such as undersized or obstructed ductwork, may also cause insufficient airflow. It is recommended that a qualified technician be consulted to ensure proper airflow and air filtration selection and application. See (www.lowairflow.com) for more information.