

**Warren Electric
Heaters Model
WKF Series**

**INSTALLATION
INSTRUCTIONS**

Date: 06-13-2018

Air Handler Model

EBP 1800A-6000A; EBP 1800B-6000B
EBX2400A-6000A; EBV2400A-6000A
FEM, FSM, FSU, FVM(2,4) 1800A-6000A
FXM4X 1800A-6000A; WAHM, WHAT 18-60A
WAXL(M,T), WAP(M,T), WAHL 18-60

GENERAL

This Warren Technology Electric heater is engineered, designed, and approved to be installed in the ICP EBP, EBX, EBV, FEM, FSM, FSU, FVM, FXM4X, WAHM, WHAT; Grandaire WAXL, WAXM, WAXT, WAPL, WAPM, WAPT, AND WAHL series air handlers. Before proceeding, check the heater label for correct voltage and KW requirements.

Installation and servicing should be performed by trained service personnel. Before installing the heater, inspect thoroughly for shipping damage. *Notify the shipper immediately if any damage is found.* Check all porcelain insulators and element wire to see that none have been deformed or broken. Clean all dirt, dust, and moisture from equipment. **Check for proper clearance of live parts, between phases and to ground. Make sure** that all required barriers are in place. Check that conductors run in multiple to insure that they are properly phased.

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

HEATER INSTALLATION

A. INSTALL ELECTRIC HEATER ASSEMBLY

Refer to base unit instructions as required. Affix Warren installer label to equipment access door.

Make sure power to unit is off.

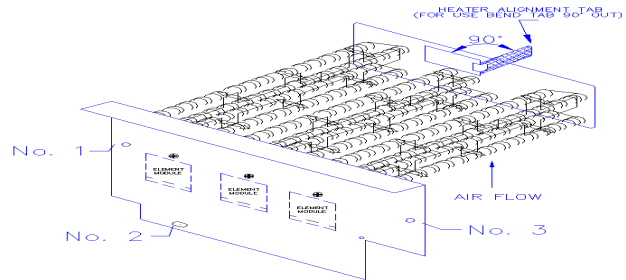
Remove access panel of air handler.

Disconnect two power wires (*black and yellow pigtail leads*) from terminals L1 and L2 on printed circuit board. Remove cooling control cover plate from fan coil. Save the sheet metal screws.

*For additional heater support, remove the screw on the AH heat shield that matches the screw hole on the bottom left side of the heater plate (No. 2) **NOTE:** On larger size heater, full adapter plate must be removed.

Heaters are equipped with an alignment tab (located on the endcap). For use bend the tab 90 degrees out (see Fig. 1) and slide the heater assembly into the blower access opening. The alignment tab should slide into the alignment hole in the back of the airhandler box. Once the mounting plate of the heater is flush with the base unit (see drawing) secure the plate with the sheet metal screws, including the bottom left hand screw (No. 2).

Fig. 1



B. ATTACH FUSE BOX OR CIRCUIT BREAKER BOX

For 15 and 20KW fuse models, a separate fuse box is provided. Attach fuse box to side of fan coil unit by inserting fuse box tab between insulation and left side of unit and fan deck. Mount front of assembly to side flange with two screws provided.

For heaters with circuit breaker option, mount circuit breaker assembly to unit with screws provided. Circuit breaker models require the installation of a separate cover plate in the unit door. Mount this cover plate on the inside of door opening with screws provided.

C. FOR DOWNFLOW INSTALLATIONS WITH CIRCUIT BREAKERS

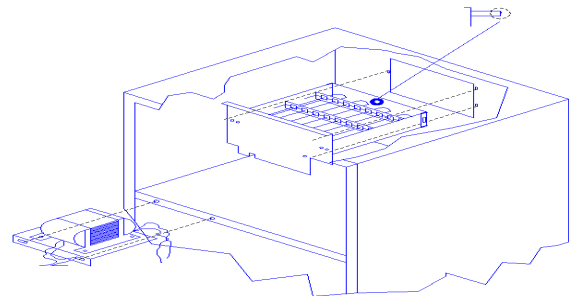
Downflow installations require that the circuit breaker(s) be rotated 180° so that the "on" position is up. Remove the circuit breaker(s) from the housing by loosening the screws on the breaker support plate, rotate the breaker 180° and reinstall the support plate.

D. ATTACH SINGLE POINT AUTOFORMER IF PROVIDED BY WARREN TECHNOLOGY (ONLY ON 480 VOLT HEATERS BEING WIRED INTO 208/240 VOLT, SINGLE PHASE AIR HANDLER).

Attach autoformer plate to shelf of fan coil unit as shown with screws provided.

Refer to schematic provided for wiring information and electrical connection section of these instructions.

Autoformer wiring is color coded. Color coding illustrated on schematic.



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Minimum CFM for Electric He

FAN COIL FA, FB, FC, FE, FH, FK, FV, FX, PF SIZES	HEATER KW							
	3	5	8	9	10	15	18	20
018	525	525	525	-	600	-	-	-
024	700	700	700	700	700	775	-	-
030, 033	-	875	875	875	875	875	-	1060
036, 038	-	1050	970	970	970	920	-	1040
042	-	1225	1225	1225	1225	1225	1225	1225
048, 054	-	1400	1400	1400	1400	1400	1400	1400
060, 070	-	1750	1750	1750	1750	1750	1750	1750

NOTE: A minimum of 20% must be added to the above minimum required CFM amount if there is no lock out device to prevent the electric heater and heat pump from operating simultaneously. All CFM values are with clean filter.

ELECTRICAL CONNECTIONS

All electrical connections, wire sizes, types, and conduit sizes shall meet the National Electrical Code and State and/or Local Codes.

Refer to Air Handler Unit instructions for recommended wiring procedures and applicable fan speed settings.

Connect all power and control leads, including quick-connect plugs as shown in heater schematic diagram. **All connections should be made inside the air handler and comply with the National Electric Code, and/or State/Local Codes.** Heaters with factory installed fuses or circuit breakers may be installed on a branch circuit protected by either a fuse or circuit breaker. For all other heaters, the branch circuit must be protected by a fuse or circuit breaker supplied by others.

Be sure that ALL electrical terminal connections, clamps, screws, etc., are tight before proceeding.
Check operation as described in the Start-up section.

DUCT CONNECTIONS

To assure maximum fan efficiencies and to avoid limit switch cycling, duct connections should conform to ASHRAE and/or SMACNA recommendations.

START-UP AND CHECK-OUT

1. Refer to base unit installation instructions as required.
2. **Check for loose terminal connections.**
3. Check that all fuse and circuit breaker circuit interrupting ratings are adequate.
4. Turn on unit and heater power.
5. Set thermostat to call for heat.
6. **Check operation of heater, comparing rated amperage against actual amperage for conformance.**
7. **Check that air flow across heater is at or above recommended. Adjust as required.**
8. **Verify amp draws of all sequence of controls.**
9. Any modifications or repairs to this equipment without written permission from the factory will be done at the installers own risk and expense.

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.

SERVICE

Fuses/Breakers - malfunction will interrupt power to the unit. *Check for cause of failure, correct and replace fuses or reset circuit breaker.*

Limit Switch/Fusible Link - malfunction prevents heating element(s) from being energized. Check for cause of malfunction, (i.e. air flow, fan failure, ect.) *Correct and replace fusible link if open.*

Limit lock out system - malfunction prevents heating element(s) from being energized. The system can be reset by turning the power OFF and the ON at the thermostat or at the unit circuit breaker. *Refer to note in this section.*

Relay - malfunction will cause heater to not come on or run continuously. *Replace faulty relay.*

Note: The electric heater in this system contains a manually resettable over-temperature safety limit. In the event of a "NO HEAT" limit trip, check for possible issues with dirty filters, blocked outlets, or possible fan failure prior to resetting. To reset the limit circuit, simply turn the system off at the thermostat (or at the unit power circuit breaker) and then immediately turn the system back on. If a limit reset is required more than 2 times in a short period of time, consult a service technician before reenergizing the system.

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