



Warren Technology

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INSTALLATION INSTRUCTIONS

Before installing the heater, inspect thoroughly for shipping damages. Notify carrier immediately if any damage is found. Check all porcelain insulators for breakage and inspect heater element wire to see that none have been deformed.

The minimum air velocity as shown on the heater label is required and must be even across the face of the heater. The temperature of the air entering the heater must not exceed 77° F.

Connect heater as shown on heater schematic wiring diagram. All electrical connections, wire sizes and type and conduit sizes shall meet the National Electric Code.

Main power supply, minimum wire sizes, circuits, fusing, etc. is shown on schematic wiring diagram.

The air duct system should be designed and installed in accordance with the standards of the National Fire Protection Association for the installation of Air-Conditioning and Ventilation Systems. (Pamphlet 90A or 90B)

Heaters should be mounted in the duct far enough away from the blower for any change in the direction of airflow to insure even airflow over the entire face area of the heater. If a heater cannot be mounted at least 48 inches downstream from the blower or a change in direction of airflow baffles must be installed in the duct ahead of the heater to insure even airflow across the face of the heater.

Air filters, humidifiers, or cooling coils must be at least 48 inches from the nearest heating element.

The heater control circuit or relay contacts are interlocked with the air system of either an integral air pressure switch or a blower relay, which must be wired as indicated on the wiring diagram. If a blower relay has been used (see diagram) the fan motor, or motor controller amperage must not exceed that given on the diagram.

All heaters are suitable for zero clearance between duct and combustible material.

Model CB-HOK heaters must be used with a remote panel and must be wired in accordance with the accompanying diagram.

CBK Insert Heater: The heating element is enclosed by a sheet metal wrapper. This wrapper is not to be used as part of the duct. To install, cut a hole in the side of the duct, 1/2" larger than the insert portion. Insert the heating element and fasten control panel to the side of the duct by means of sheet metal screws. If the duct is internally lined, then use a recessed element equal to the thickness of the internal insulation.

CBKF Flange Mount: The flange portion of the heater is matched to the out-turned flanges of the duct. There is no flange on the control side of the duct. Fasten heater flange to duct flange by means of sheet metal screws or bolts. Fasten control panel to side of duct by means of sheet metal screws.

BCB Bottom Mount: a sheet metal wrapper encloses the heating element with the heating element being terminated inside a control panel. This entire portion (element and element termination control panel) is to be inserted into the duct from the bottom. Cut a hole in the bottom of the duct 1/2" larger than the insert portion. Insert the element (and panel) and fasten the control box to the bottom of the duct by means of sheet metal screws.

CHECKOUT

Before energizing this equipment for operation be sure that all electrical terminal connections, clamps, screws, etc. are tight as these may have become loose in shipment. It is advisable to retighten all electrical connections after the equipment has been in operation and the components have reached operating temperature. In addition to the above, the following tests and procedures should be followed.

- A) Clean all dirt, dust and moisture from equipment.
- B) Check for loose terminal connections.
- C) Check for proper clearances of live parts, between phases and to ground and make sure that all required barriers are in place.
- D) Check for missing insulation in equipment and on conductors.
- E) Check for any modifications, alterations, for the use of unapproved parts.
- F) Check that all fuse and circuit breaker short circuit interrupting ratings are adequate.
- G) The equipment room or area should be dried of all dampness and moisture accumulations.
- H) Check conductors run in multiple to insure that they are properly phased.
- I) Conduct a "megger" test of all equipment and wiring.

For maximum safety on fused feeders of 200 amperes and over, it is recommended that a low amperage test fuse (15 amps or less) be used and the circuit energized without load. This will insure the safe interruption of the circuit if a fault exists.

Any modifications or repairs to the equipment without written permission from the factory will be done at the installer's own risk and expense.

Leaving air, thermostats or other devices which may cause short-cycling of the contactors are not recommended for use with this equipment.

WARNING: The use of discharge air sensing devices to control this heating unit is NOT factory recommended, and may void the warranty. IF discharge air sensing devices are used, they should only be used with SCR type control devices, AND should always be located far enough downstream of the heating coil in order to sense an average discharge.



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ELECTRIC DUCT HEATER MAINTENANCE AND SERVICE INSTRUCTIONS

Warren electric duct heaters are constructed in such a manner that requires little or no maintenance, including parts supplied with your heater.

Always make sure all connections are tight before heater is turned on.

Be sure heater elements are free of dirt and foreign matter.

Units greater than 50KW should be controlled by a system with a recycling feature that will not allow all steps to be energized simultaneously. The absence of such a device causes severe damage to the equipment.

WARNING: The use of discharge air sensing devices to control this heating unit is NOT factory recommended, and may void the warranty. IF discharge air sensing devices are used, they should only be used with SCR type control devices, AND should always be located far enough downstream of the heating coil in order to sense an average discharge.

Even though your heater requires no periodic maintenance check, if your heater is not functioning properly, the following are some points to check:

1. Check installation instructions and wiring diagram to make sure heater was wired and installed properly.
2. Check all connections points and make sure they are tight, before initial startup and before each heating season.
3. Fuses.... One of the most common problems. Check to see they are not blown.
4. Automatic hi-limit or manual reset – temperature may be too high because airflow is insufficient.
5. Air filter may be clogged.
6. Is sufficient airflow "even" over coils?
7. Check for transformers and control voltage flow.
8. Make sure that the thermostat is operating properly and current flow is to heater, both control and power voltage.
9. When air pressure switches are used, they must have the proper airflow. Sensing tube should be curved toward the airflow.
10. Internal insulation may be interfering with safety device.

The above are the most common problems. Other problems may be caused by accessories or related items.