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## Heatrix Electric Duct Heater HXOB Installation Instructions

**General:** *Heatrix HXOB Style Electric Duct Heater* has been tested and listed for close-coupled application with a forced air system (straight cool, heat pump or fan coil). To insure proper operation of the heater, installation instructions must be carefully followed. Failure to do so will result in an unsafe condition and nuisance tripping of the automatic reset and manual backup switches.

These instructions cover the installation of the *HXOB Style Electric Duct Heater*. Heaters will vary from KW, voltage, phase and physical opening (see heater label for information and specific applications).

**Installation Procedures:** The *Heatrix HXOB Style Electric Duct Heater* is designed for zero clearance to combustible material. However, we recommend a minimum clearance of one inch be maintained on all sides of the supply duct for three feet. For extra protection, where a discharge plenum forms part of the duct work, it too, should have a one inch clearance on all sides.

Before starting electric heater installation, be assured that available power supply (voltage, phase and frequency) corresponds to that specified on electric heater rating plate. In addition, check power supply available to make certain that the service capacity is sufficient to handle the load imposed by the equipment.

**Mounting the unit:** The *Heatrix HXOB Style Electric Duct Heater* is designed for close-coupled application to the unit for either vertical or horizontal airflow. The control box should be positioned for easy access when servicing. On units where the air handler is located in a closet, the heater control box should be accessible from the front of the unit. Check heater element section for the baffled side of discharge. The baffled side must correspond to the blanked-off section of unit fan discharge. Incorrect alignment of the baffled section of the heater and the fan discharge blanked-off section will cause incorrect operation of unit and heater (see Figure #1 for heater installation).

After determining alignment of heater to unit fasten heater to air handler with at least six (6) #8 sheet metal screws, being careful not to drill any important components in the unit.

The heater cover should open freely for maintenance or service. If electric heater is equipped with circuit fusing, a hinged door for easy access is provided. There is a locking latch that holds the door onto the control box and/or locking disconnect switch handle. For locking latch, use a screwdriver to open door. For disconnect handle, simply turn to "off" position. For ease of installation, the door should be locked closed when installing the unit package. Connect duct work down over 1 " of heater lip, or down over heater plenum. Do not insulate heater control box.

### **Wiring Procedures:**

A. **Line Voltage Wiring:** Adhere to all local building codes, ordinances, and/or the National Electric Code pertaining to installation of equipment. Disconnect all power to the unit before servicing.

The electric heater has a 7/8" diameter pilot hole for enlarging to proper size opening for line voltage entrance. Run power lines from disconnect through entrance hole to the labeled disconnect or line voltage block.

Copper wire must be used from the disconnect switch to the unit. Always use a good grade of wire, such as 75 degrees C material for electric heater. See attached diagrams.

B. **Ground:** The heater cabinet must have an uninterrupted or unbroken electrical ground to minimize the chance of injury should an electrical fault occur. This may consist of an electrical wire or approved conduit when installed in accordance with existing electrical codes.

C. **Disconnect switch:** A separate branch electrical circuit containing a field supplied disconnect switch mounted at, or within sight of, the unit must be run from the heater section. (For single line feed of heater, the power size for both heater and fan motor must be supplied). See Diagram #3.

D. **Control Voltage Wiring:** In some cases, the electric heat package is equipped with a low voltage control transformer. Standard control voltage is 24V (120V-277V is available upon special request). If unit is equipped with a transformer, isolation must be maintained from the external Class II output of any transformer in the unit equipment. Use a thermostat with isolating contacts to prevent interconnecting of class II output. The heater is equipped with a low voltage control terminal strip. A 7/8" or 1/2" round hole with a bushing is used for the entrance of the control wire. The terminal strip is marked with the proper control connection for the thermostat.

E. **Thermostat Setting:** The indoor thermostat heat anticipator setting should agree with the current draw of the heating controls of the control circuit. Lowering the thermostat at night can save some power. However, it is not recommended to lower it more than 5 or 10 degrees because the recovery time in the morning may offset any savings accomplished during the setback period.

F. **Fan interlock:** Per U.L. and N.E.C., the heater has a fan interlock circuit built into it. The interlocking relay circuit insures that the fan is operating whenever the heater is energized/

G. **Optional Air Pressure Switch:** Circuit only allows the heater to operate under air moving condition.

**Operation – General:** In *HXOB Style Electric Duct Heaters*, the heating elements and primary fan interlock are switched “on” and “off” through one or more controls that operate through a low voltage thermostat circuit. These controls consist of a number of switches and a low voltage (24V) resistance bimetal heater (sequencer) or contactor. In the case of the sequencer, when the thermostat contactor closes, the control heater is energized and the heat in the bimetal causes it to move, closing the switches in a timed sequence. There is an initial time delay while the bimetal is heating. With a contactor, the switch closes immediately.

The timed sequence will operate at 30-45 second intervals. On the initial startup of the heater, there will be a 45 second delay of operation. The fan will energize with the first heating element. Fan interlock wire must be used to insure proper operation of the heater. Failure to do so may result in over-temperature of heater element area.

**Air Velocity:** Since electric heaters have constant BTU outputs as long as the heater is energized, minimum airflow through the heater must be maintained to:

- 1) Achieve good heat transfer
- 2) Prevent over-heating and nuisance tripping of the protection devices
- 3) Maintain life expectancy.

Air velocity is important for the electric heater to operate efficiently. Loss or impedance of airflow may result in nuisance tripping or short element life. Excessive level of airflow will result in low air temperature rise. We recommend at least 50 CFM per KW for proper operation of the heater.

**Heater Limit Switches and Relay Components:** Temperature limit switches are special combination recycling, and single operation limit controls. When an over-temperature condition exists, the primary SPST device will open the circuit to the heater elements. This will occur without opening the fan circuit the facilitating quick cooling of the automatic reset limit.

When sufficiently cooled, the heater elements will be re-energized. The heater is also equipped with secondary limits that must be manually reset in the event of an over-temperature condition.

**Service:** Only licensed, qualified installers and service mechanics should install, start up or service this equipment. When working on this heater, observe precautions in the literature, tags or labels that are attached to the heater.

Service access to the various components of the *HXOB Style Electric Duct Heater* assembly may be obtained as follows:

- 1) Disconnect all electrical power to the unit before performing any maintenance or service to the unit. Unit may have more than one disconnect switch.
- 2) Open hinged cover with screwdriver.
- 3) All components are available in the control box.
- 4) Components may be checked and serviced in the control box. Replace defective parts with identical parts only. Check wiring diagrams for proper wiring before turning power back on.
- 5) Don't jump out secondary of transformer. This may result in a short occurring in the secondary of the transformer.
- 6) Heater may employ time sequence. Please give unit the proper amount of time for heater to energize and de-energize.
- 7) **Installer must tighten all electrical connections.**

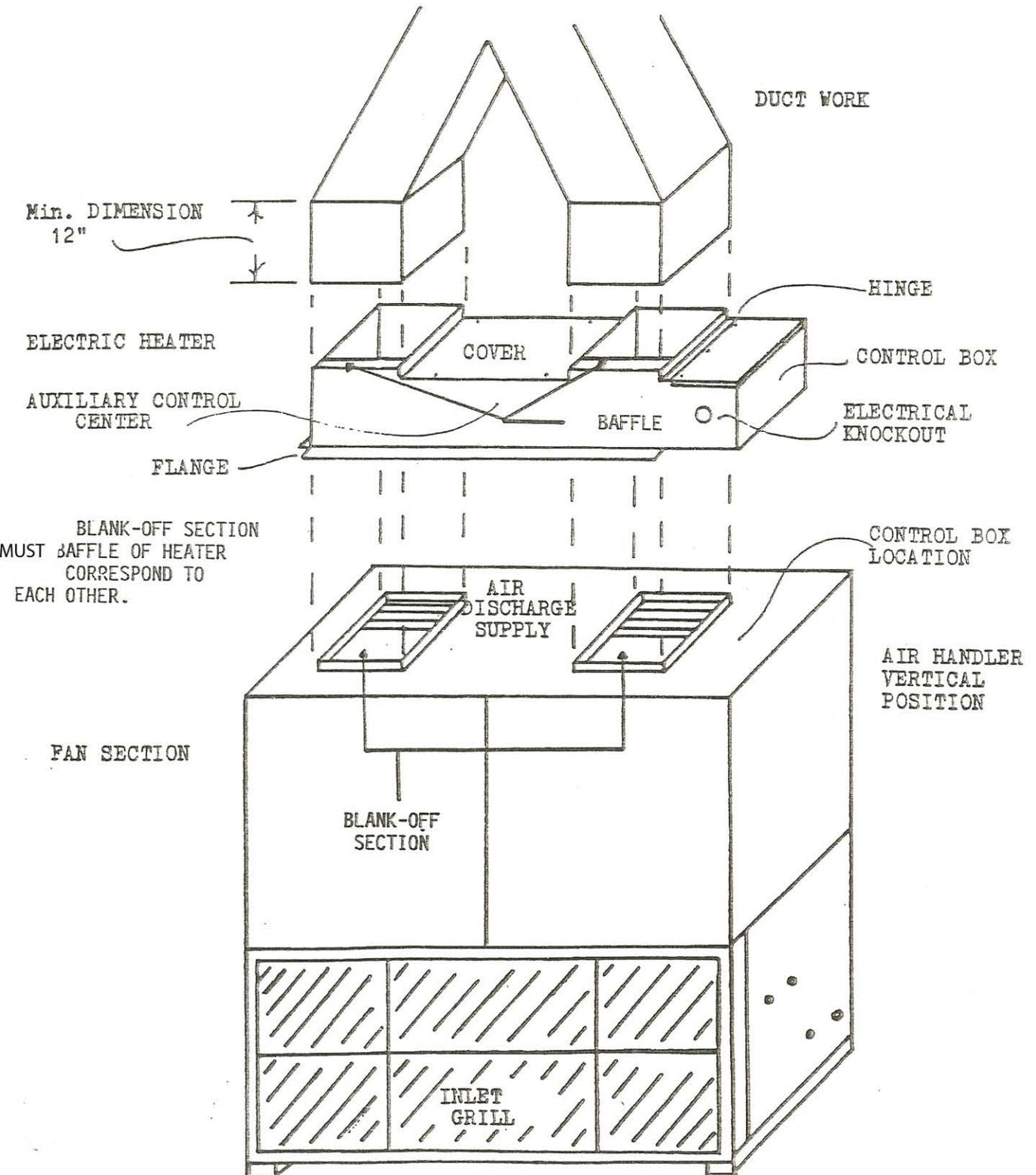


FIGURE #1

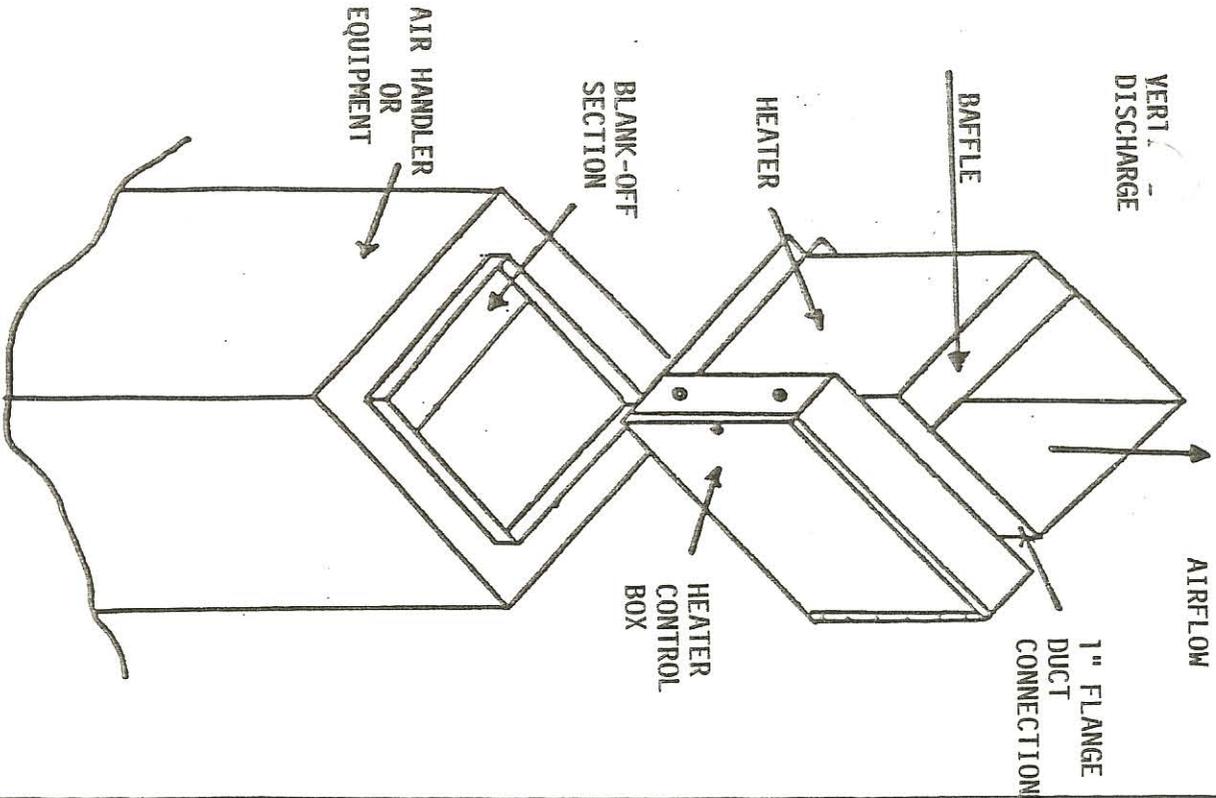
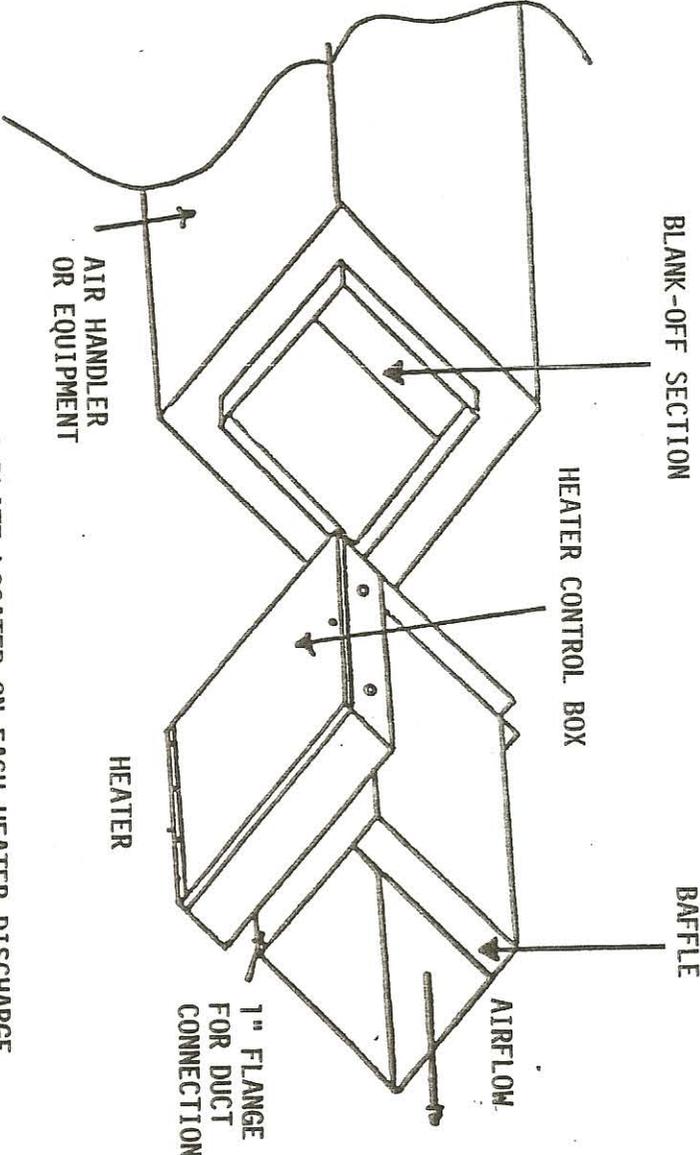


FIGURE #1

HXOB HEATERS  
HORI. DISCHARGE



NOTE: BLANK-OFF SECTION AND BAFFLE OF HEATER  
MUST CORRESPOND TO EACH OTHER.

NOTE: BAFFLE PLATE LOCATED ON EACH HEATER DISCHARGE  
MUST MATCH UP TO UNIT FAN BLOWER BAFFLE.  
HEATING ELEMENT MUST BE IN AIR STREAM.