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O & M MANUAL

INSTALLATION INSTRUCTIONS

These duct heaters may be used with heat pumps, cooling units, or with any forced air systems. They are suitable for zero clearance installation in vertical or horizontal duct systems.

Model Number Systems

The series "F" meant that the fusible thermal links are back-up protection. The series "M" means that the manual resettable thermal switches are used for back-up protection.

MH1: Manual heater requiring a (**MR**) remote panel.

MHF1: Manual heater, flanged mount, requiring a **MR** remote panel.

MR1: Remote panel for any heater using Model Number **MH**.

Each **MH1** or **MHF1** will carry a model and a serial number. The **MR1** remote panel must be built for that particular **MH1** or **MHF1** heater and carry the same information and serial number as the heater.

MF1: Manual heater, flanged mount; no **MR** panel required.

M1: Manual heater, slip-in, custom built; no **MR** panel required.

When Ordering "M1" Model

1. Select KW. Maximum 1740KW.
2. Select line voltage.
3. Select control voltage.
4. Dimensions: Height x Width (maximum 10' wide). Example: MH1-1820-10-240-3 (10KW, 240-Volt, Three Phase); the control box would be built on the 18" dimension and the 20" dimensions would be the insertion into the duct.
5. Stages required.
6. Accessories: The "M" Model can be built using circuit fusing, transformer, air pressure switch, fan relay, P.E. switches, time delays, pilot relays, pilot lights, modulating sequencers, disconnect switches (fused and unfused), mercury contactors, fan-off delay, circuit breakers and back-up contactors. All accessories are U.L. listed components.

Installation

For best performance, the duct heaters should be installed 4 feet downstream of the air handler and heat pump. Heatrix heaters are designed for left-hand or right-hand mount, except when mercury contactors are used. However, all heaters carry an air flow label and must be installed per this label. Any remote control or heater control panel using mercury contactors must be mounted per the labels on the heater showing "THIS SIDE UP."

Control Panel

**** DO NOT INSULATE OR ENCLOSE HEATER CONTROL BOX ****

Installation of the slip-in heater consists of cutting an opening in the duct that will clear the heater frame enclosure. Insert heater and fasten to the duct through the mounting holes in the control box.

For installation of the flange mount heater, the heater will have a flange turned out on the duct. This arrangement makes the heater actually become a part of the duct. Air flow and patterns of air flow are very important to the heater working correctly. This is to insure the life of the heating elements, and to prevent nuisance tripping. Heatrix heaters carry a label showing minimum air flow that can be used to operate heaters correctly by showing entering air at two different temperatures. These minimum air velocities or C.F.M. must be in a pattern that covers the entire surface of the heater.

Field wire the supply and control circuit in accordance with national and local electrical codes. Each heater carries a wiring diagram designed for that particular heater showing the manner in which each duct heater must be connected externally to be properly interlocked with the blower motor (if the blower motor control is not actually a part of the duct heater assembly), unless the duct heater is provided with an integral air pressure switch. **INSTALLER MUST TIGHTEN ALL ELECTRICAL CONNECTION IN CONTROL PANEL.**

Control Panel (continued)

The air duct should be installed in accordance with standards of the National Fire Protection Association for the installation of air conditioning and ventilating systems of other than residence-type NFPA #90A, and residence-type warm air heating and air conditioning systems NFPA #90B.

Insulated Duct

When duct is lined with insulation inside or outside, please specify. Heatrix heaters can be built with a recessed control panel, the thickness of the insulation. This recess of the limit control part of the heater will insure the limits being in position to receive the air pattern across the entire surface of the heater.

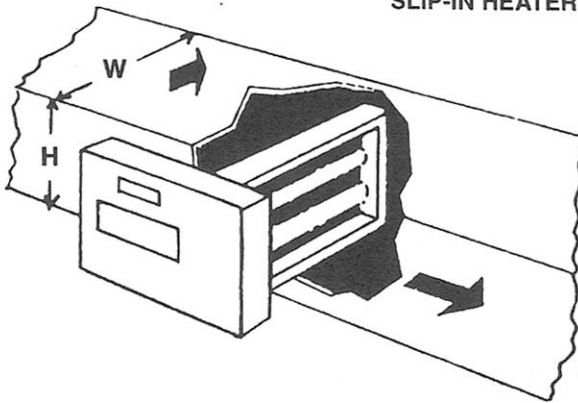
To install this type of heater, cut an opening in the duct and insulation, the required size to receive the wrapper, slip heater in, and mount the control box with screws. If fiber duct is used, the same steps must be followed. The heater must be braced with straps or other means of support to prevent the duct from sagging.

**DO NOT
INSTALL MR
(REMOTE PANEL)
ON DUCT OR
WHERE TEMP.
ABOVE 75°**

**DO NOT
INSULATE
OR
ENCLOSE
CONTROL BOX
OR PANEL**

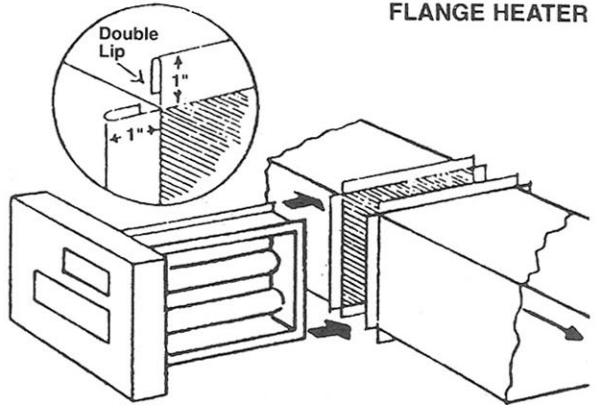
HEATER INSTALLATION

SLIP-IN HEATER

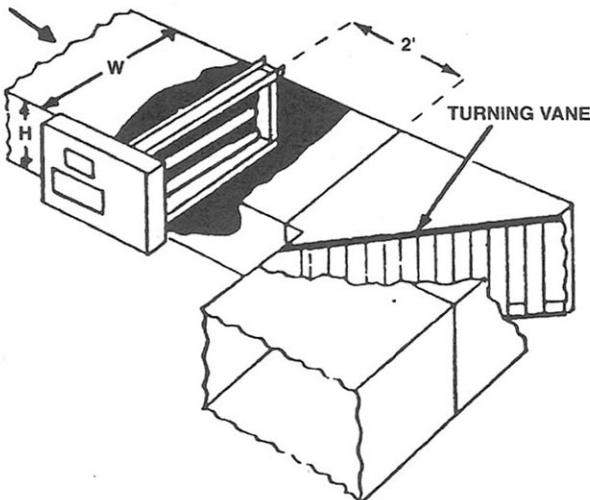


To install slip-in heater: cut an opening in the side of the duct. Slide heater in the duct; used control compartments as template to drill mounting screw holes. Attach heater to duct with sheet metal screws. Connect high and low voltage and fan interlock lead wires. Larger heaters may require hanger straps or other suitable reinforcement. Seal joints with duct tape, if required. Concentric power supply knockouts are $\frac{7}{8}$ ", $1\frac{1}{8}$ ", $1\frac{3}{8}$ ", $1\frac{1}{2}$ ". Control knockout is $\frac{7}{8}$ ".

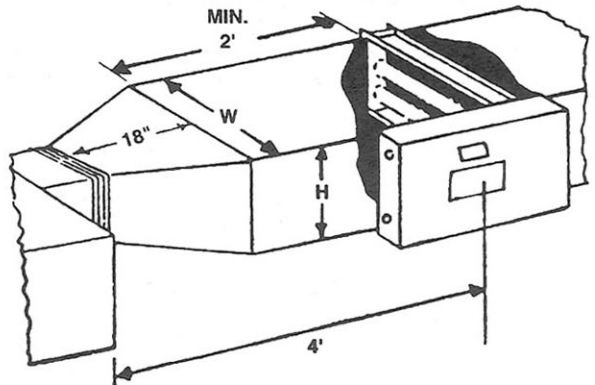
FLANGE HEATER



To install flange type heater: at heater location, layout ductwork to match heater frame dimensions (W and H). Form mounting flanges on edges of duct. For additional strength, the duct flange should be doubled as shown in the drawing. Position heater in duct and attach duct flanges to heater flanges with sheet metal screws. For large heaters, the additional weight may require hanger straps or other suitable reinforcement. When required, the joint between the duct and heater flanges may be sealed with duct tape. Concentric power supply knockouts are $\frac{7}{8}$ ", $1\frac{1}{8}$ ", $1\frac{3}{8}$ ", $1\frac{1}{2}$ ". Control knockout is $\frac{7}{8}$ ".



Duct heaters should be installed at least 2' on either side of an elbow. Turning vanes installed in the elbow will reduce pressure losses and insure that the air velocity is uniformly distributed over the cross section of the duct.



Duct heaters should be installed at least 4' downstream or upstream from any air handler, air conditioner, or heat pump, or any forced air system. They should be installed at least 2' upstream or downstream from any filter, humidifier or change in duct size, or directional change of duct. When flexible duct connector is used to dampen equipment vibrations the duct heater should be installed at least 18" away upstream or downstream. Any and all connections should be installed per local codes and national codes meeting NFPA90A or NFPA90B standards.