

The information and instructions in this manual apply to Nailor DH Series Electric Duct Heaters, Models DHRS (slip-in), DHRF (flanged) and DHRR (Round). These heaters are designed for installation in ducts with zero clearance between the duct and combustibles.

Nailor Electric Duct Heaters are completely prewired when they leave Nailor's modern factory. Voltage ratings can be as high as 600 volts either single or three phase.

Standard models are furnished with integral controls while heaters ordered with DRP option are furnished with a remote control panel. Field wiring will be required for the interconnection of the heater and the remote control panel. Terminal blocks for field connections are supplied as standard.

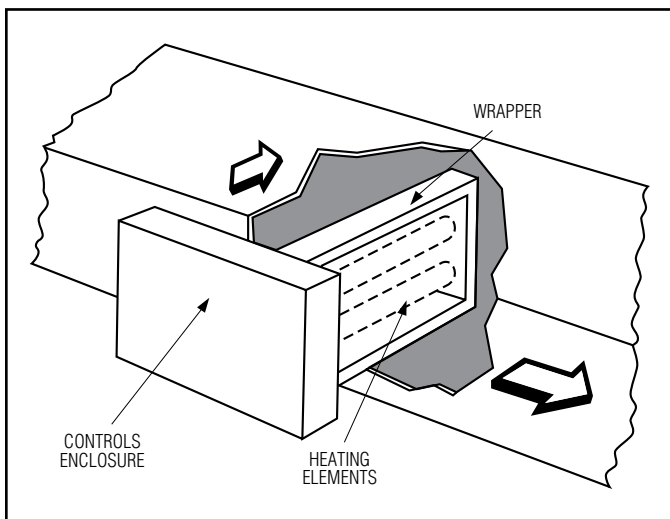


Figure 1: DHRS Slip-In Heater

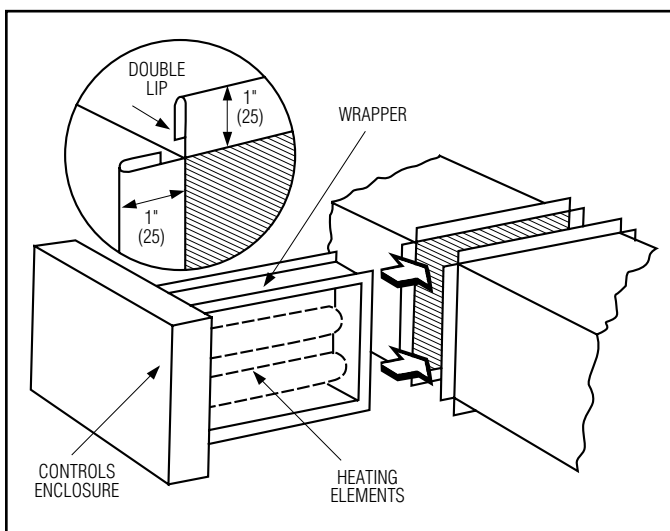


Figure 2: DHRF Flanged Heater

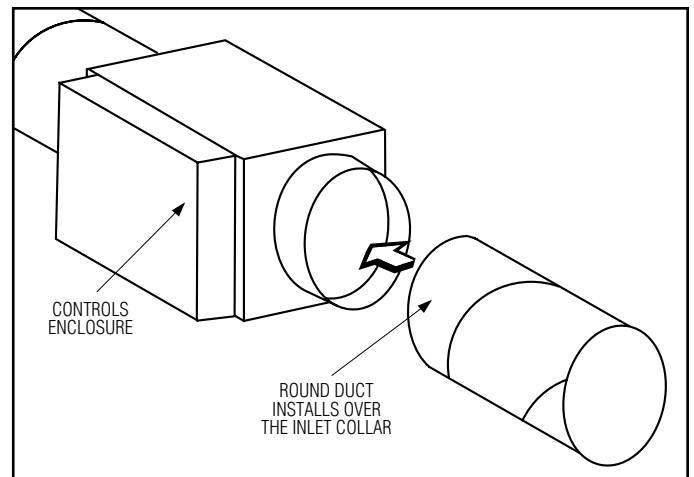


Figure 3: DHRR Round Heater

GENERAL:

Inspect heater for any possible shipping damage. Check all insulators for breakage and inspect heater element wire for any deformation that would cause short circuits or grounding. Make sure all fasteners are tight.

Before installing a slip-in, flanged or round electric duct heater, check the airflow direction in the ductwork. The Airflow Switch Pick-up Probe must be installed facing the airflow (see Figure 4). If these two directions are opposite of each other, remove the two screws securing probe mounting plate, rotate 180 degrees, and reinstall. Then mark the correct airflow arrow on the front of the control panel label (see Figure 5).

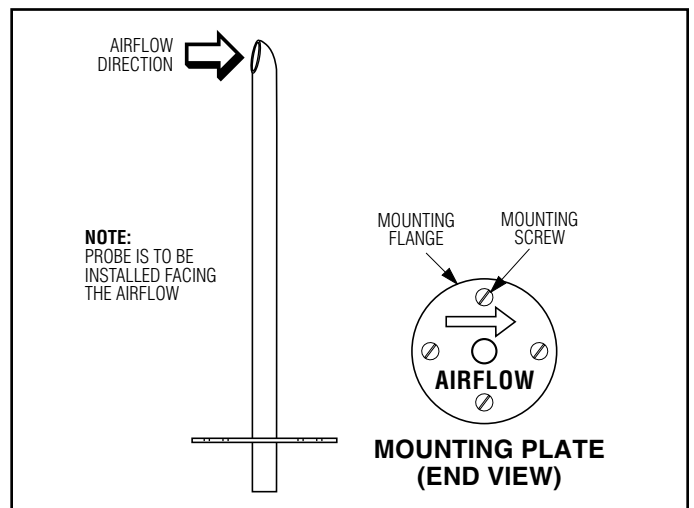


Figure 4: Airflow Switch Pick-up Probe.

Important Note: Even though heaters can be rotated in either direction, those ordered with the mercury contactor option are position sensitive. As a result, before installing heaters with mercury contactors, inspect the position of the mercury contactors in the control enclosure. Mercury contactors must be heading up 90 degrees vertically. If they are not, unscrew the mercury contactors, orient properly and reinstall them.



Figure 5: Example of check marked label showing the Correct Direction of Airflow (From Left to Right in this case).

INSTALLATION, LIMITATIONS AND RECOMMENDATIONS:

To install a slip in heater, cut an opening in the side of the duct. The opening should be 1/2" (13) wider and 1/2" (13) higher than the heating section of the heater. Slide the heater into the duct. Use the holes in the controls box as a template for locating the mounting holes in the duct. Remove the heater and drill mounting holes. Replace the heater and mount into the duct with sheet metal screws. Connect the high and low voltage wiring as shown on the attached wiring diagram. Attach the fan interlock if no airflow switch is required. Larger heaters may require hanger straps for support.

To install a flanged type heater, insert the heater between the two flanged sections of duct and bolt the heater in place. For additional strength, the duct flange should be double thickness. Larger heaters may require hanger straps for additional support. Connect the high and low voltage wiring as shown on the attached wiring diagram. Attach the fan interlock if no airflow switch is required.

To install a round type heater, attach the round duct to inlet and outlet collars and secure in place with s.m. screws. Seal both connections.

INLET AIR TEMPERATURE	MINIMUM AIRFLOW IN CFM PER kW (FOR DUCT AREA kW DENSITIES SHOWN)		
	°F (°C)	≤17 kW/sq. ft.	≤20 kW/sq. ft.
85 (29)	90	110	150
75 (24)	70	82	103
55 (13)	50	55	62
40 (4)	40	44	48
25 (-4)	33	36	39
0 (-18)	27	28	30

Dimensions are in inches (mm)

Heaters may be inserted into the sides of horizontal or vertical ducts.

Install heaters a minimum of 48" (1219) away from air conditioners, heat pumps, elbows, dampers or other central air handlers.

The air duct should be installed in accordance with the following standards: NFPA 90A, Standard for the Installation of Air Conditioning and Ventilating Systems, and NFPA 90B, Standard for Warm Air Heating and Air Conditioning Systems.

Heaters can be banked end to end or one above the other. They cannot be installed in series in the duct. Smaller heaters can be designed into branch run outs if greater capacity is required.

Heater control boxes must be completely accessible and located to provide ventilation at all times.

ELECTRICAL REQUIREMENTS:

Refer to the attached wiring diagram or the one on the front cover of the heater control panel. Make sure the line and control voltage supply matches the heater requirements.

Wire in compliance with NEC/CSA and any existing local codes. Tighten all electrical connections. Wire the fan interlock if there is no airflow switch. Use 194 °F (90 °C) wire. Control must be wired for NEC Class 1 unless otherwise specified. When the heater has an integral transformer for control voltage to the thermostat, use a thermostat with isolating contacts to prevent interconnection of Class 2 outputs.

Disconnect all electrical power before servicing. When servicing the heater, make sure that all components are repositioned in the proper location and reconnected per the wiring diagram. Replacement parts must have the same voltage, current and temperature ratings as the original parts.

Observe at least one complete heating cycle before leaving the installation.

MINIMUM AIR VOLUMES:

To avoid possible nuisance tripping of the thermal cutouts due to insufficient airflow, a minimum airflow of 70 cfm (33L/s) per kilowatt must be maintained.

Minimum acceptable uniform airflow across an electric duct heater is directly related to the temperature of the inlet air. The table below shows the minimum volume of air per kW for different inlet air temperatures.

STATIC PRESSURE:

A minimum of .1" w.g. (25 Pa) of downstream static pressure is required to ensure proper operation of the heater.



Houston, Texas
Tel: 281-590-1172
Fax: 281-590-3086

Las Vegas, Nevada
Tel: 702-648-5400
Fax: 702-638-0400

Toronto, Canada
Tel: 416-744-3300
Fax: 416-744-3360

Calgary, Canada
Tel: 403-279-8619
Fax: 403-279-5035