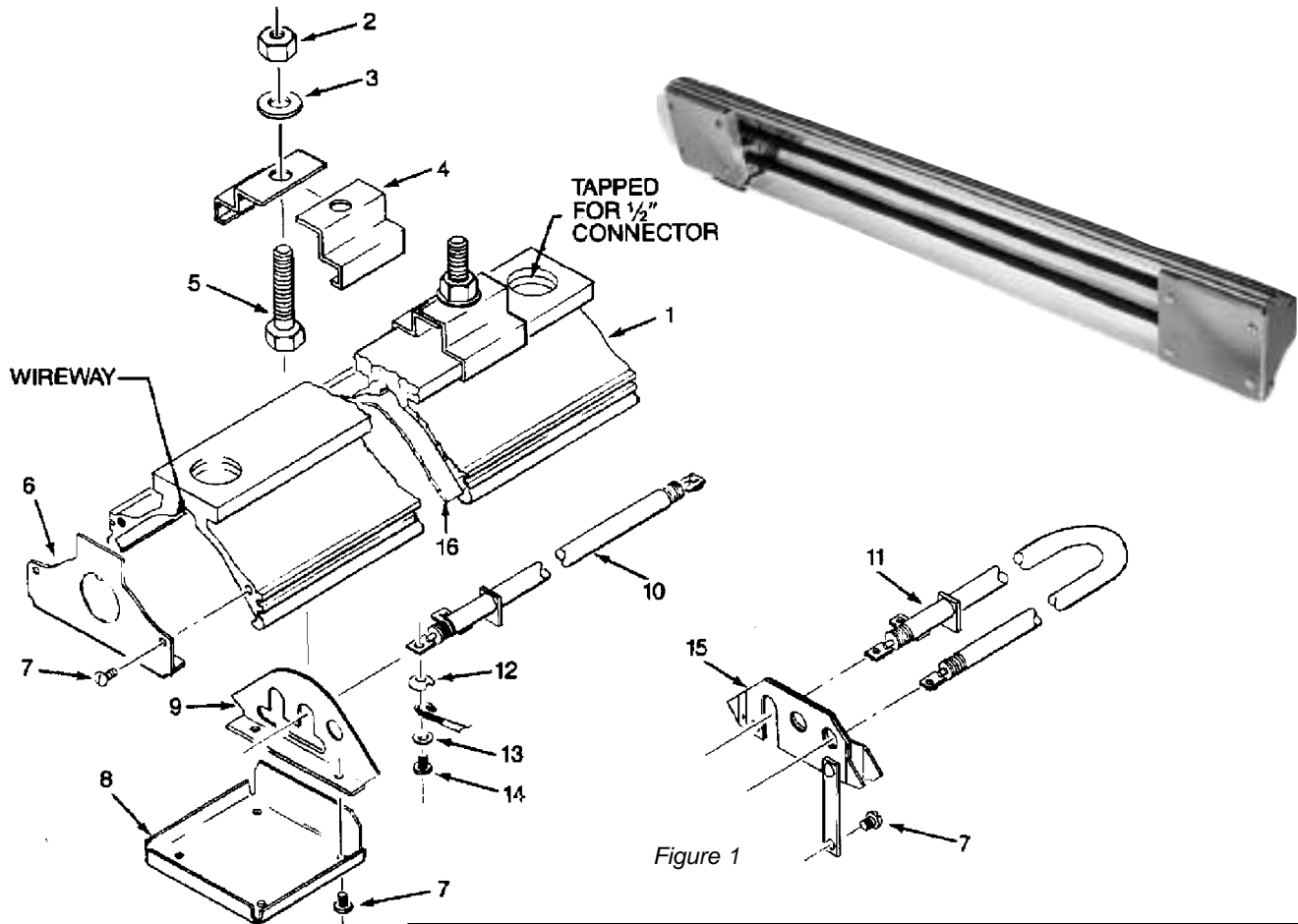




INSTALLATION AND OPERATION INSTRUCTIONS FOR OGDEN HR RADIANT HEATERS



* Index numbers are for part identification only. When ordering replacement parts, refer to catalog number stamped on the heater nameplate.

PARTS LIST*

- | | |
|-----------------------------------|-------------------------------------------|
| 1. Aluminum Housing | 10. Straight Element |
| 2. 3/8"-16 Hex Nut | 11. Hairpin Element |
| 3. 3/8" Flat Washer | 12. Cup Washer |
| 4. Mounting Clamp | 13. #10 Flat Washer |
| 5. 3/8"-16 x 1 1/2" Hex Hd. Screw | 14. #10-32 x 1/4" Binder Hd. Screw |
| 6. Housing End Plate | 15. Element Support Bracket |
| 7. #6-32 x 1/4" Binder Hd. Screw | 16. Polished Aluminum Reflector |
| 8. Terminal Box Cover | 17. Protective Grill—Optional (Not shown) |
| 9. Element Mounting Plate | |

READ AND FOLLOW ALL INSTRUCTIONS

BEFORE INSTALLING:

1. Unpackage the heater at the place of installation. Inspect the heater for shipping damages and report any claims to the carrier. **Do not operate damaged equipment.** Consult OGDEN for instructions.
2. Check the nameplate watt and volt rating against your supply voltage and capacity and the requirements of your installation.

INSTALLATION INSTRUCTIONS

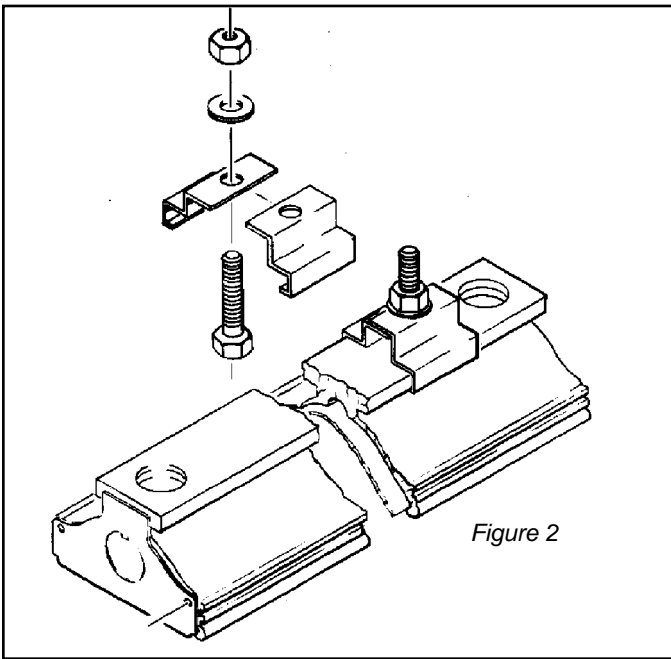


Figure 2

How to Use the Mounting Clamps: Radiant heaters are mounted by using the mounting clamp assembly as shown in Figure 2.

The clamp assembly is attached to the heater by sliding it over the end of the extrusion or snapping it over the top as shown in Figure 3. The clamps must not be located more than 48" apart. Three clamps are provided with heaters that are 72" or longer.

The minimum distance between mounting holes in framework to support adjacent heaters is 3 $\frac{1}{16}$ ". A $\frac{1}{16}$ " thick steel or aluminum strip inserted in the slot between adjacent heaters will help stabilize multiple heater assemblies. Examples of several mounting methods are shown in Figure 4.

Insulation: Where unusually high work temperatures are involved, it may be desirable to insulate the backs of the heaters with high temperature ceramic fiber insulation. A suggested method of doing this is shown in Figure 5.

Ventilation: When radiant heaters are being used to

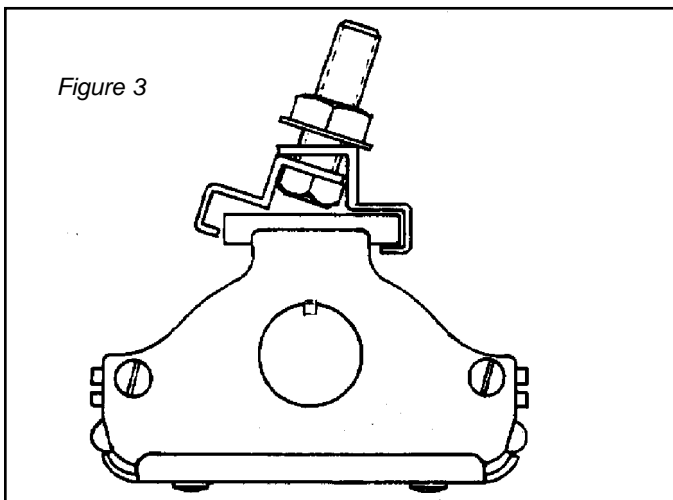


Figure 3

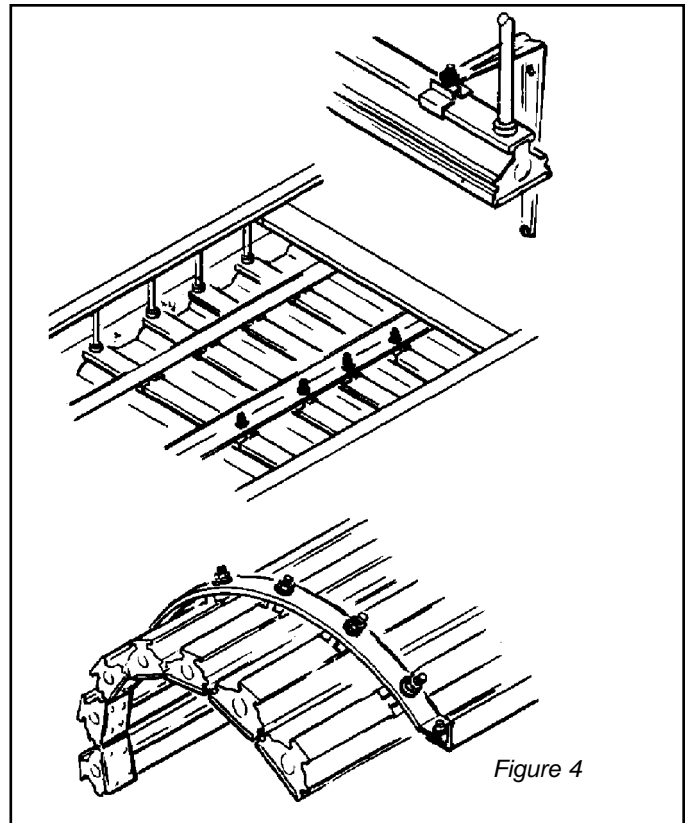


Figure 4

evaporate water or solvents from work in process, ventilation air must be provided to carry away the resulting vapors. Care must be taken, when potentially explosive solvents are involved, to provide a sufficient volume of ventilation air to dilute the vapor so that ignition cannot occur.

ELECTRICAL INSTALLATION

Electrical connection to the heater are made either through the two holes in the top of the extruded housing (tapped for $\frac{1}{2}$ " connector) or through the housing end plates (knockout for $\frac{1}{2}$ " connector).

Remove the terminal box covers at each end to gain access to the heater terminals.

CAUTION: Do not use copper wire in connecting this heater. High temperature applications require the use of wiring with high-temperature insulation and/or nickel plated copper or nickel alloy conductors.

A length of wire not less than 12" should be used to extend from each heater terminal into a connection box location where the temperature does not exceed 300°F. Leave a generous loop in the wire when connecting to allow for expansion of the heating element. Assemble the terminal screw, wire and washers as shown in

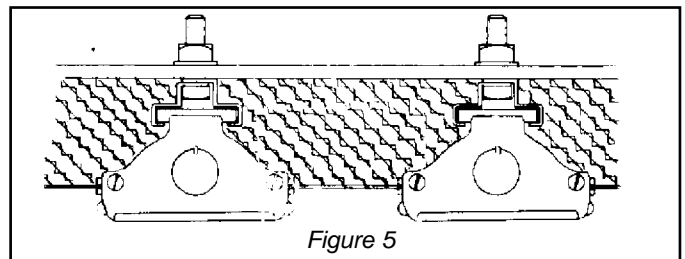


Figure 5

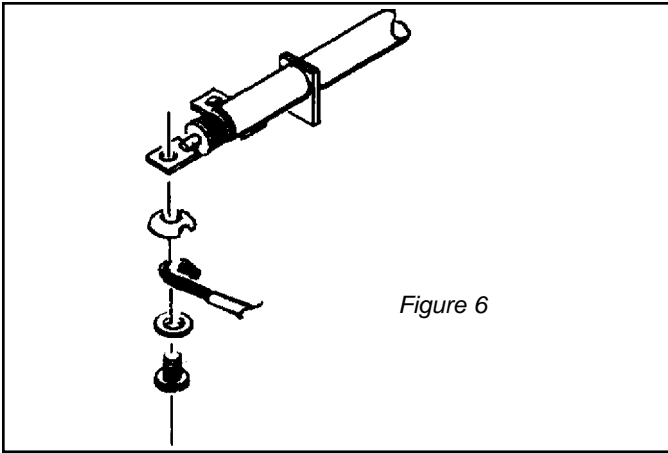


Figure 6

Figure 6 or use ring tongue connectors on the wire ends. Tighten the terminal screw securely with a screwdriver while holding the terminals with pliers. Wiring should be run in solid or flexible conduit and must be installed in accordance with the requirements of the National Electrical Code and any applicable local codes. Conductors should be derated and insulated in accordance with the National Electric Code when wiring is installed in locations with a high ambient temperature.

Single end wiring may be made through one of the wiring entries by bringing the lead from the opposite end of the heating element through the wire-way at the top of the housing. Stranded, insulated nickel alloy or nickel plated copper wire should be used in making this connection. The wire must be able to operate at a high ambient temperature and have a sufficiently high voltage rating for the specific application. The maximum wire diameter is limited by the wire-way and must not exceed .312" over the insulation.

BEFORE ENERGIZING THE HEATER

1. Be sure that all electrical connections are tightly made.
2. Be sure that all conductors are properly insulated and that they will not chafe at the heater wire entrance due to expansion and contraction of the element.
3. Be sure that the terminal box covers have been replaced and that the element is grounded.

Radiant heaters of equal watt and volt rating may be connected in series for all line voltages up to 600 volts. When connecting heaters in series, it is necessary to observe the "right" principle as shown in Figure 7.

This is a *series-parallel* connection and should be used rather than the "wrong" *parallel-series* connection also shown in Figure 7. If heaters are connected "wrong", in parallel-series, failure of any one heater will cause progressive failure of the other heaters which are still operating.

When heaters occur in multiples of three, they may be connected to and balanced across three-phase lines. The most commonly used connection is the "Delta" connection (Figure 8), although others may be used.

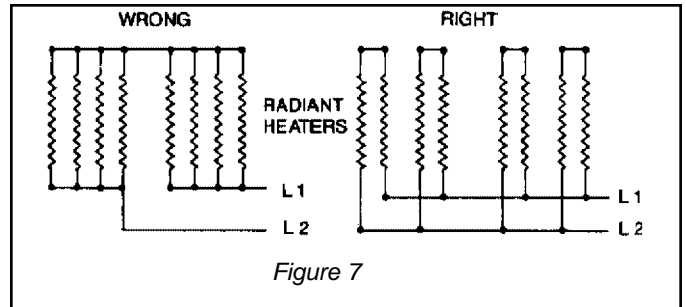


Figure 7

MAINTENANCE

Care of Reflectors: Reflectors should be cleaned periodically. A mild soap and water solution or fine cleaning powder is recommended. Reflectors that are heavily soiled by chemical or other deposits may require stronger methods. The reflector is aluminum, **DO NOT** use alkali cleaners. Reflectors can be replaced if necessary, and may be purchased from Ogden Manufacturing Company.

Maximum Ambient Temperature: Ogden radiant heaters are not recommended for applications in ambient temperatures exceeding 450°F. However, such applications have been engineered and operated, but at risk of the user.

Maximum Work Temperature: The maximum work temperature that can be attained with radiant heaters depends on a number of factors: the reflectivity of the work; the specific heat of the work; the mass of the work; kw input and losses from the oven; and the time of exposure. As work temperature increases, the work loses heat by radiation and by convection to the surrounding ambient. Although it is a general principle of Radiant Heater application that work temperature conventionally exceeds ambient temperature, in cases where extremely high work temperatures are desired, it is necessary to enclose the heaters in order to increase the ambient. If evaporation of a liquid is desired as a result of increasing work temperature, it is necessary to provide ventilation air in order to carry away the evaporated liquid. Under carefully engineered circumstances, a maximum work temperature of 600°F may be attained.

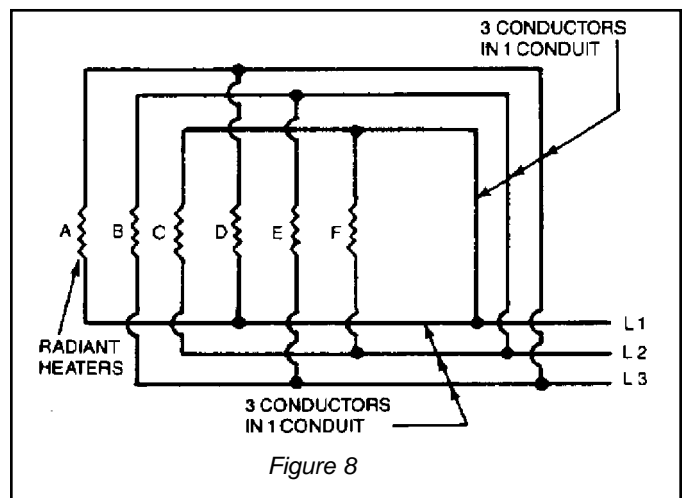


Figure 8