GAUMER PROCESS
HEATERS
SYSTEMS
CONTROLS

IMMERSION HEATERS
INSTALLATION, OPERATIONS, AND MAINTENANCE MANUAL

INSTALLATION

This heater must be used only in the process for which it was designed. Contact the Customer Care Department at Gaumer Process Heaters before placing the heater in any other service.

Care must be taken to ensure that the heated length of the heater is completely immersed in the process fluid or gas at all times. Gaumer is not responsible for any heater which is not completely immersed in process fluid or gas at all times Unless the heater is specifically designed for the service, care must be taken that the heater elements are not in contact with sludge.

The gasket surface must be clean and dry before installing the heater. Use a new gasket suitable for the service and pressure rating. Use a proper tightening sequence and torque on the bolts to ensure even gasket seating.

The heater housing must remain sealed until the wiring is ready for installation. It is extremely important that the terminals are protected from moisture or vapor at all times. It is the responsibility of the user to ensure that the heater housing is properly rated for the area electrical classification.

Low Megohm Condition- Prior to connecting the power wiring to the heater, a resistance reading should be made between each leg of each heater circuit and ground. The refractory material used in electric heaters may absorb some moisture during transit, storage, or when subjected to high humidity. A low megohm condition can be corrected by removing the terminal hardware and baking the heater in an oven at 250° to 350° F for several hours. If an oven is not readily available, an alternate procedure is to energize the heater at low voltage until the megohm reading returns to normal. When energizing heaters in air, the sheath temperatures should not exceed 750° F for steel or Incoloy elements. Specially designed heaters with long non-heated lengths and/or low watt densities must be bake dried. For assistance, contact the Gaumer Process Heaters Customer Care Department.

ELECTRICAL CONNECTIONS

a. Please refer to the enclosed wiring diagram for proper installation of wiring for the heater.
b. Each heater must be protected by a suitably rated over current device.
c. Conduit connections have been provided in heater housing for power wiring and temperature sensor wiring. It is **NOT** recommended to run temperature sensor wiring in the same conduit or cable as the power wiring.
d. Wire sizing for power wiring and temperature sensing wiring is the responsibility of the end user recognizing the current load of the heater, the distance from the power source, and the system over-current protection. The requirements of the National Electrical Code (NEC)/(Canadian Electric Code (CEC) in Canada) must be followed. Wire must be rated per NEC (CEC) considering system ambient temperature in the housing and the current carrying capacity.
e. If temperatures in the heater housing are anticipated to rise above standard wire rating, high temperature wiring may be required for installation to the heater. Please contact Gaumer Process Heaters for assistance with high temperature wire requirements.

NEMA 7 CONSIDERATIONS

Gaumer provides flying leads rated at 1000°f (537°C) as a standard. If connecting to these leads outside of the terminal housing, an external junction box certified for the area classification with a seal (EYS) must be used. Refer to local code requirements for maximum distance of the seal from the heater housing. The overall hazardous location designation of the heater is governed by the device with the lowest hazardous location rating (E.G. Terminal box/cover ratings).

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OVER-TEMPERATURE PROTECTION

A high temperature limit device is required to protect the heater and provide a safety limit when heating hazardous liquids or gases. **DO NOT** make any modifications to high limit devices provided without consulting with factory. If a high temperature limit device is not provided, the end user is responsible for providing high temperature limit control. Gaumer Process Heaters assumes no responsibility for operating the heater without a high temperature limit control.

If an over temperature controller (OTC) or high temperature switch (TSH/TSHH) has been provided in the control panel, it must be set to the appropriate temperature setting before the system is put into service. **WARNING – WHEN HEATING FLAMMABLE OR COMBUSTIBLE GASES OR LIQUIDS, DO NOT SET THE OTC HIGHER THAN 80% OF THE AUTO-IGNITION POINT OF THE GAS OR LIQUID!** Typical analog OTC's will be mounted on the back pan of the control panel and will have an adjustable dial. This dial should be set to the proper temperature before energizing the system. If a digital indicating OTC has been provided, it must be energized before a temperature setting can be set.

GENERAL INFORMATION

Immersion Heaters with 120 volt or 240 volt elements can be connected in series for high voltage operation except when uneven wattage is supplies on the respective elements. Bending the heating elements is not recommended. If bending is necessary, contact the Customer Care Department at Gaumer for assistance.

CORROSION

The sheath is believed to be satisfactory for the stated purpose. The rate of corrosion is affected by temperature, concentration, erosion, inhibitors, flux, impurities in the heated medium, etc. GAUMER COMPANY, INC., therefore, cannot guarantee this unit against damage resulting from corrosion, electrolysis or other operating conditions beyond our control.

MAINTENANCE

In order to extend the life of your heater, the following maintenance functions should be performed. Gaumer Process Heaters can assist and/or provide this maintenance work for you. Contact the Gaumer Customer Care Department for details.

When performing any maintenance on the heater, all site safety regulations must be followed. Approved safety lockout procedures must be followed before opening the heater or heater electrical housing.

Semi-Annually

1. Open terminal housing and ensure it is dry and clean.
2. Check the resistance between each circuit leg and ground. If the reading is less than one megohm, contact the Customer Care Department at Gaumer Process Heaters for assistance.
3. Check all terminals for damage and to ensure that all terminals are tight and secure. Care should be taken not to over-tighten terminals.
4. If any problems are found with the items above, contact the Customer Care Department at Gaumer Process Heaters for assistance.
5. Check enclosure gasket and replace if damaged.

Annually

1. Open the terminal housing. Mark and disconnect all incoming wiring. Disconnect conduit. Check the housing to ensure it is clean and dry.
2. Note the position of the over-temp thermocouple. This is marked on the heater flange. Remove bolts from heater and pull heater bundle. Care must be taken in removing the bundle not to damage the elements.
3. Check heater bundle for any sign of buildup of foreign materials. If buildup is noted, clean the elements. Check over-temp thermocouple to ensure it is properly secured to element. If the thermocouple is removed for any reason, it must be re-attached to the same element in the same location.
4. Perform items 2 through 5 of Semi-Annual maintenance shown above.
5. Re-install heater bundle using new gasket and taking care not to damage the elements. Note position of over-temp thermocouple. Heater bundle MUST be re-installed in the same orientation as when it was removed.
6. When bolting the heater into place, proper tightening procedures and torque must be used to ensure proper seating of the gasket.
7. Reconnect conduit and wires using care to reconnect to the proper terminals.
8. Close housing cover using new gasket if necessary.
9. When re-starting the heater, monitor for leaks.