



Tubular Heaters and Tubular Elements

Installation, Operation, and Maintenance Instructions

1.0 Handling

1.1 Unpack and handle with care to avoid damage to heater and components. Elements may come in contact with each other during shipment. Minor adjustments to elements may be required prior to installation to separate them. Extensive bending of elements should be avoided since dielectric strength between coil and sheath may be compromised. NPH heaters are built to comply with CSA (Canadian Standards Association) dielectric requirements, it may be necessary due to atmospheric conditions / humidity, to perform a dielectric test prior to startup. (Refer to low megohm condition and test below). Caution: Do not support or suspend heater from termination, wiring or tubular metal sheathing.

1.2 Make sure heater is protected from contamination during storage. An indoor, dry environment is preferred. **Low Megohm Condition and Megohm Precheck** : During shipping and/or storage, the possibility of moisture absorption by the insulation material within the element is possible. This moisture absorption results in a cold insulation resistance of less than twenty megohms. Normally, this megohm value corrects itself after heatup and does not affect heater efficiency or life. To ensure proper megohm values a minimum 500 VDC megohm meter (Megger) should be used to ensure that the megohm reading between the heater terminal and the heater sheath is more than 10 megohms when the unit is at room temperature.

1.3 Refer to Application Data link below for additional information related to heater system design and use instructions

http://www.nphheaters.com/quote/industrial_process_heaters/determination_guide.pdf

2.0 Safety

2.1 **WARNING:** Make sure power supply is turned off before installation or service of electric heater to prevent electrical shock or damage to equipment.

- 2.2 **WARNING:** Circuit should have separate disconnect means which shall be capable of being locked in the open position and also in sight from the heater.
- 2.3 **WARNING:** Wiring must conform to the National Electric Code and Local Regulations and should be performed by a qualified electrician. Make sure wiring is of a suitable temperature rating, amperage rating, and the location.
- 2.4 **WARNING:** When servicing, handle with caution, the heater surface may be hot.
- 2.5 **WARNING:** Do not install heater into a medium or an environment that could result in an explosion, fire, or hazardous condition. Contact NPH regarding heaters that are specifically designed for hazardous locations.

3.0 Installation and Operation

- 3.1 **Caution:** Make sure the heater supply voltage is the same as the rated heater voltage.
- 3.2 **Caution:** Heater should be properly grounded to prevent electrical shock hazard
- 3.3 **Caution:** Do not support or suspend heater from termination or wiring
- 3.4 A common cause of heater failure is contamination of the the internal heater components through the termination end of the heater. Make sure the heater is protected from contamination in the final application.
- 3.5 Make sure heater termination is not exposed to water or other liquids. Make sure that no dripping from condensation on cold water pipes or other sources can fall on any exposed electrical wiring connections or components.
- 3.6 Termination's should be properly tightened and connected to hook-up wiring. A loose connection will result in over-heating at the connection and could lead to premature failure.
- 3.7 Do not use these heaters with explosive gasses or air mixtures that may result in fire, explosion, or other hazardous conditions.

- 3.8 Component tubular heaters are typically designed and configured for a specific application. Make sure appropriate over temperature, safety devices and other precautions are included in the system, process, or product design.
- 3.9 Do not exceed 110% of rated voltage. Higher voltages result in higher wattage output which could damage the heater, system, or medium heated.

4.0 Maintenance

- 4.1 For most applications, some heater maintenance is required.
- 4.2 Disconnect line switch prior to any testing or work on the heater
- 4.3 Check wiring periodically to ensure wiring has not become damaged, worn, or loose due to vibration or other application related conditions. Tighten, repair, or replace as needed.

5.0 Trouble Shooting

- 5.1 **WARNING:** Disconnect power supply to heater(s) before performing any trouble shooting procedures.
- 5.2 Check supply voltage to heater to ensure there is power.
- 5.3 Check wiring circuit- make sure heater is properly wired and all supporting controls, relays, contractors, and other circuit related switches are also properly wired and functional.
- 5.4 Check heater(s)- No heat due to a heater failure is generally due to an open heater circuit. Check heater resistance across both terminals or leads. A reading of infinity (no continuity) indicates an open circuit within the element and the heater must be replaced.



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