INSTALLATION AND OPERATION INSTRUCTIONS FOR FLANGED PIPE HEATERS – TYPE FPH

ELECTRIC SHOCK HAZARD. All electric heating equipment installations must be performed by qualified personnel in accordance with the local electrical codes and standards and must be effectively grounded to eliminate shock hazard.

FIRE/EXPLOSION HAZARD. Do not exceed the ratings of the flange as listed in ANSI B16.5. Do not operate the heater in the presence of combustible gases, vapours, dusts or fibres unless the heater is specifically marked for the hazardous location and heater operating temperature does not exceed the temperature code rating. Corrosion of the sheath could result in a ground fault which, depending upon the fluid being heated, could cause a fire or an explosion.

FIRE HAZARD. If a thermostat is provided, it is designed for temperature control service only. Since the thermostat does not fail safe, it should not be used for temperature limiting duty. Wiring to this device is the user’s responsibility.

Heaters are capable of developing high temperatures, therefore extreme care should be taken to:

a) use explosion-proof terminal enclosures in hazardous locations;
b) maintain distance between heater and combustible materials.

DESCRIPTION

1.0 Type FPH flanged pipe heaters are designed for heating the air in a metal pipe or tube which is, in turn, immersed in a liquid.

2.0 Use the heater only in approved applications. Check factory recommendations if you are unsure of the suitability of the FPH heater to your application.

INSTALLATION

DO NOT insulate over the heater flange and terminal enclosure.

Heaters with over temperature devices require specific installation orientation.

ELECTRIC SHOCK HAZARD. Disconnect all power before installing or servicing the heater. Failure to do so could result in personal injury and/or property damage. All maintenance and installation should be done by qualified personnel in compliance with local codes.

FIRE OR SHOCK HAZARD: Moisture accumulation on the dielectric material of the elements, sheath corrosion or over temperature on the heaters, could cause a fault to ground generating arcing and molten metal. Install proper ground fault protections to prevent personal injury or property damage.

3.0 Note that single phase heaters can be wired in groups for three phase operation.

4.0 Unpack and check heater for any damage that may have been caused during shipping.

Use copper conductors only with sufficient current carrying capacity for the heater circuit load and in accordance with the local electrical code. Check the heater nameplate for minimum conductor temperature rating. Derated temperature factors must be applied for heaters operating above 86°F (30°C).

5.0 Check supply voltage for compliance with heater nameplate voltage. DO NOT connect the heater to a voltage source other than listed on the heater nameplate.

6.0 The heater is suitable for horizontal (tank) installation only. The heater sheath is permitted to touch the pipe wall since a hot spot will not occur due to the low watt density on the heater sheath.

7.0 In immersion heating systems:

a) Standard pipe insert immersion heaters have a 150 mm (6") cold section past the screwplug or mounting flange. Insert pipe nozzle extensions
b) If possible, maintain a separation of 190 mm (7½") minimum between adjacent heaters. For tanks requiring many flanged pipe heaters it may be useful to install a second heater at right angles to the first heater.

c) Flanged pipe heaters should be spaced about 150 mm (6") from the tank bottom and 76 mm (3") below the minimum tank level.

**OPERATION**

*RISK OF EXPLOSION. Do not operate heater at voltages higher than the rating specified on the nameplate. Failure to do this will cause elevated temperatures.*

**CAUTION**

*For metal sheathed heaters, prior to operation an insulation resistance check must be performed. Heater with values less than .5 MΩ should follow a drying process. Please contact factory for details on procedure if heater is under .5 MΩ.*

**WARNING**

*Heaters are designed to operate in an air medium. System design should consider pressure and temperature control if other mediums are used.*

**WARNING**

*Low megohm on heating elements with epoxy or hermetic seals cannot be serviced in the field. Typical resistance values when sealed are 1000 MΩ or greater.*

8.0 A certified line voltage, pilot duty thermostat, or temperature controller should be used to control the heater. The pilot duty thermostat must be used with a contactor and (if required) a transformer. Generally, heaters supplied with built-in thermostats will be factory pre-wired if suitable for line voltage operation. Integral thermostats not factory pre-wired are usually intended for pilot duty.

9.0 High temperature limit controls and/or liquid level controls are recommended for safe operation and heater protection. Limit controls are available with a built-in mechanical type limit or a thermocouple. These controls will sense air temperature inside the pipe which will be much higher than the process temperature. Therefore, if the controls are the mechanical type it should be set at 600°F in most cases; if using a high limit thermocouple control the temperature setting on the remote temperature controller should be 800°F in most cases. Should the liquid level drop below the pipe(s) the temperature within the pipe will tend to rise and will trigger a high limit condition.

10.0 Heaters for use in hazardous locations require special terminal housings (check factory).

11.0 Check that all connections are tight.

12.0 If a thermostat is provided, verify that it is operating properly by cycling it and verifying cutout.

13.0 Perform an IR test prior to energization and verify that levels are acceptable 500,000 ohms.

14.0 Energize the heater and check for signs of hot spots in the electrical connections or vessel.

15.0 Retorque all bolted fitting connections and all electrical connections after 10 cycles.

16.0 Always maintain a minimum of 76 mm (3") of liquid above the pipe wells or element failure may result.

**MAINTENANCE**

*Disconnect all power before installing or servicing the heater. Failure to do so could result in personal injury and/or property damage. All maintenance and installation should be done by qualified personnel in compliance with local codes.*

17.0 Heaters stored for prolonged periods may absorb moisture. Using a 500VDC megger (insulation resistance tester) check the value of the insulation resistance to ground for each circuit. Initial readings of over 500,000 ohms to ground are normally acceptable. Should lower readings be observed, check factory for instructions.

18.0 Periodically check electrical connections for tightness and check wire insulation for any damage and replace if necessary.

19.0 Inspect the immersion heater periodically for corrosion, sludge build-up and for scale removal. Do not continue to use a heater showing visible signs of damage.
PLEASE ADHERE TO INSTRUCTIONS PUBLISHED IN THIS MANUAL. Failure to do so may be dangerous and may void certain provisions of your warranty. For further assistance, please call:

Oakville: 1-800-410-3131 (U.S.A. and Canada)

WARRANTY: Under normal use the Company warrants to the purchaser that defects in material or workmanship will be repaired or replaced without charge for a period of 18 months from date of shipment, or 12 months from the start date of operation, whichever expires first. Any claim for warranty must be reported to the sales office where the product was purchased for authorized repair or replacement within the terms of this warranty.

Subject to State or Provincial law to the contrary, the Company will not be responsible for any expense for installation, removal from service, transportation, or damages of any type whatsoever, including damages arising from lack of use, business interruptions, or incidental or consequential damages.

The Company cannot anticipate or control the conditions of product usage and therefore accepts no responsibility for the safe application and suitability of its products when used alone or in combination with other products. Tests for the safe application and suitability of the products are the sole responsibility of the user.

This warranty will be void if, in the judgment of the Company, the damage, failure or defect is the result of:

- vibration, radiation, erosion, corrosion, process contamination, abnormal process conditions, temperature and pressures, unusual surges or pulsation, fouling, ordinary wear and tear, lack of maintenance, incorrectly applied utilities such as voltage, air, gas, water, and others or any combination of the aforementioned causes not specifically allowed for in the design conditions or
- any act or omission by the Purchaser, its agents, servants or independent contractors which for greater certainty, but not so as to limit the generality of the foregoing, includes physical, chemical or mechanical abuse, accident, improper installation of the product, improper storage and handling of the product, improper application or the misalignment of parts.

No warranty applies to paint finishes except for manufacturing defects apparent within 30 days from the date of installation.

The Company neither assumes nor authorizes any person to assume for it any other obligation or liability in connection with the product(s).

The Purchaser agrees that all warranty work required after the initial commissioning of the product will be provided only if the Company has been paid by the Purchaser in full accordance with the terms and conditions of the contract.

The Purchaser agrees that the Company makes no warranty or guarantee, express, implied or statutory, (INCLUDING ANY WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE) written or oral, of the Article or incidental labour, except as is expressed or contained in the agreement herein.

LIABILITY: Technical data contained in the catalog or on the website is subject to change without notice. The Company reserves the right to make dimensional and other design changes as required. The Purchaser acknowledges the Company shall not be obligated to modify those articles manufactured before the formulation of the changes in design or improvements of the products by the Company.

The Company shall not be liable to compensate or indemnify the Purchaser, end user or any other party against any actions, claims, liabilities, injury, loss, loss of use, loss of business, damages, indirect or consequential damages, demands, penalties, fines, expenses (including legal expenses), costs, obligations and causes of action of any kind arising wholly or partly from negligence or omission of the user or the misuse, incorrect application, unsafe application, incorrect storage and handling, incorrect installation, lack of maintenance, improper maintenance or improper operation of products furnished by the Company.