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CH-INS08

Circulation Heaters for Liquids and Gases

All Bucan **circulation heaters** incorporate a conservative design approach, use premium quality raw materials and are made by a highly skilled staff. You can expect top performance and by following these instructions you will benefit from many years of trouble free service.

Installation:

1. Only qualified personnel are to install **industrial electric heating equipment** and must meet all national and local codes.
2. Ensure the power connections match the **voltage, phase and wattage** data on the nameplate.
3. **Circulation heaters** are designed to meet specific requirements for flow, temperature, and pressure.
 - a. The flow rate should not be altered or stopped while the heater is energized.
4. Adequate clearance is required to remove and replace the **immersion heater**.
5. Temperature controls, high limit controls and/or flow switch controls are highly recommended.
6. Liquid heaters must have the vessel completely full when the **circulation heater** is energized.
7. Gas heaters must have a positive and adequate gas flow through the vessel when the **circulation heater** is energized.
8. Installation in wet or outdoor locations, or subject to drips and spillage, require a Class 4 (CSA designation), NEMA 4 (UL designation) terminal box. The heater nameplate will have the suffix "R".
9. For installations in **Hazardous Locations**, the **immersion heater** inserted into the pipe body (vessel) must be Hazardous Location (Hazloc - CSA designation), NEMA 7 (UL designation) approved to the requirements for the hazardous material present in your application. The heater nameplate will have the suffix "X". Hazloc approved terminal boxes also meet Class 4 (CSA designation), NEMA 4 (UL designation).
10. Vertical mounting
 - a. For liquid systems the terminal box can be either at the top or bottom
 - b. For gas systems it is recommended to have terminal box at the bottom
 - c. It is recommended to have the inlet at the bottom, outlet at the top
11. Horizontal mounting
 - a. The inlet can be on any plain; however, the outlet must be vertical with the flow at the top to prevent air pockets being trapped inside the heater vessel.

Operation:

1. Before heater energization, ensure liquid heaters are completely full and gas heaters have the required flow rate.
2. Heater sheath material has maximum recommended operating temperatures; do not exceed the temperature shown in Table 1.
3. Sheath material selection depends on the application; check Table 1 for sheath material recommendations.

Maintenance:

1. All maintenance must be performed with the heater de-energized and the vessel at atmospheric pressure.
2. Solutions may create scale and/or sludge build-up on the sheath; periodically remove the **immersion heater**, inspect and clean as required. Also inspect for sludge build-up at the bottom of the vessel.
3. Inspect and tighten the electrical connections as required.
4. Look for contamination inside terminal enclosure and seal properly to prevent potential leakage.

Table 1

Heater Sheath	Maximum Sheath Temp.	Used to heat
steel	750°F (400°C)	oil, hydraulic oil
copper	360°F (180°C)	water, tap/municipal only
Incoloy 800®	1500°F (815°C)	water, alkaline solutions, air, gases, radiant
Incoloy 840®	1400°F (760°C)	air, radiant
Inconel 600®	1600°F (870°C)	strong alkaline solutions, high temperature gases
stainless steel	1200°F (650°C)	De-ionized, de-mineralized, process water, some mild acids

