

Installation:

1. Allow sufficient space for thermal expansion. The amount of space required depends upon the Cast-In Heater size, operating temperature and alloy. Tempco recommends minimum 1/2" space.
2. Surface being heated must be free of any foreign materials and have a smooth finish.
3. Half round Castings are machined as matched pairs and numbers are stamped on the edge. Tempco recommends installing matched pairs on the barrel.
4. Heat transfer paste is not recommended for machined and smooth barrel surfaces.
5. Make sure that the casting is properly seated. The clamping devices used should be tightened down to the correct recommended torque. After initial heat-up, retighten fasteners to the correct recommended torque.
Recommended Torque: 10 ft-lb for 1/4-5/16 bolts, 20 ft-lb for 7/16-5/8 bolts
6. Thermal insulation can be used to reduce heat losses.
7. Avoid mounting heaters in an atmosphere containing combustible gases and vapors unless specifically manufactured for use in such conditions.
8. Liquid Cooled Cast-In Heater fittings must be securely tightened to prevent leaks.
9. To prevent overheating and heater failure, the use of an adequate temperature control is recommended.

Wiring:

1. For connections at the heater terminals, use high temperature nickel conductor or nickel clad copper lead wire or alloy bus bar. Keep all electrical connections properly protected to eliminate electric shock to machine operators.
2. Heater installations must be properly grounded to eliminate electric shock hazard, and wiring must comply with electrical safety codes including O.S.H.A.
3. Always have a qualified electrician perform all wiring and connection of heaters and control components. Terminals must be tightened to the correct torque.
Recommended Torque: 2.5 ft-lb for #6 to #10 connections
4. **CAUTION:**
 - v. Exposed electrical wiring on cast-in heater installation is a violation of Electrical safety codes including O.S.H.A.
 - vi. Castings are not designed to be lifted or carried by the terminations or leads

Operation:

1. It is recommended to slow start the process during first initial use after shutting down system.
2. Do not operate above rated voltage. Excess voltage will result in heater failure.
3. Do not operate Cast-In Heaters above recommended temperatures. Heater temperature must be monitored and controlled. Use of over-temperature T/C is strongly recommended for higher temperature applications. Excess temperatures will result in heater failure and/or melting.
4. Electrical terminals must be kept free of contaminants, as spillage of plastic, water, oils, and their vapors can cause electric shorts, resulting in heater failure.
5. The water used on Liquid Cooled Cast-In Heaters must be properly treated. Hard water contains corrosive media that will contaminate the tubing, producing stress corrosion cracks and resulting in shorter heater life. Presence of minerals in water can cause clogged tubes that can result in poor heat transfer and eventually heater failure.

Maintenance:

1. Never perform any type of service on heaters prior to disconnecting all electrical power.
2. To ensure good surface contact, periodically check clamping. Retighten clamping to the correct torque when required.
3. Repeat cycling of temperature controls can indicate poor surface contact or a burned-out heater.
4. Heater terminals must be kept free of plastics, oil, water, and any other foreign matter. As these materials carbonize, they create electrical shorts.
5. Heater terminal electrical connections must be kept tight. Loose connections can overheat and eventual destroy the connection, terminals, or may short out and result in heater failure.
6. Water lines must be periodically checked for leaks. Water on heater terminals can be detrimental to the entire heating system.
7. Thermocouples must be kept free of contaminants and be checked for good response to temperature changes. Our recommendation is to change them periodically, as a bad thermocouple can be the cause of destroying an entire heating zone.