Chromalox®

Installation Instructions

SERVICE REFERENCE	
DIVISION 4	SECTION GEN
SALES REFERENCE (Supersedes P00401-7)	P00401-8
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DATE MAY, 2002	

General Recommendations on the Use of Electric Heating Elements

GENERAL

Safety Guidelines

The safety and performance of this heater is dependent on proper handling, installation, control and maintenance. As a Chromalox can not anticipate all conditions under which this information and heater, or this heater in combination with other manufacturer's products may be used, it is advised that you conduct your own tests to determine the safety and suitability of this heater in combination with other products in your application.

The Safety Alert Symbol: ⚠ is found throughout these installation instructions to identify potential hazards that can result in personal injury. The seriousness of the potential risk is identified by one of these three words:

⚠**DANGER** – will result in serious injury or death.

⚠**WARNING** – could result in serious injury or death.

⚠**CAUTION** – may result in minor or moderate injury.

Read and follow these instructions to minimize risks of electric shock or fire. Save these instructions for future reference.

The electric heating element(s) supplied herein are of rugged construction and if properly installed, operated and maintained, are designed for long life and dependable, trouble-free service.

⚠WARNING

The system designer is responsible for the safety of this equipment and should install adequate back-up controls and safety devices with their electric heating equipment. Where the consequences of failure could result in personal injury or property damage, back-up controls are essential.

INSTALLATION

⚠WARNING

ELECTRIC SHOCK HAZARD. Disconnect all power before installing or servicing heater. Failure to do so could result in personal injury or property damage. Heater must be installed by a qualified person in accordance with the National Electrical Code, NFPA 70.

⚠WARNING

ELECTRIC SHOCK HAZARD. Any installation involving electric heaters must be performed by a qualified person and must be effectively grounded in accordance with the National Electrical Code to eliminate shock hazard.

⚠WARNING

FIRE/EXPLOSION HAZARD. **Since electric heaters are capable of developing high temperatures, extreme care should be taken to:**

A. Avoid mounting heaters in an environment containing combustible liquids, gases or vapors.
B. Avoid contact between heaters and combustible materials.
C. Keep combustible materials far enough away to be free of the effects of high temperatures.

Failure to comply could result in personal injury or property damage.

High heating efficiency, low sheath temperatures, and long heater life result when electric heaters are properly installed.

1. Heater mounting must allow for heater expansion without sacrificing heat transfer efficiency.
2. Electric heaters should not be bent or deformed because heater insulation can be damaged, leading to electrical problems and a short heater life. Refer to Chromalox catalog or check your Local Chromalox Sales office for recommendations.
3. Clamp-on heaters should be securely clamped to clean, smooth, metal surfaces. No insulation should contact sheath.
4. Cartridge heaters, when inserted, should be provided with snug fitting holes. Use Chromalox HTRC as required.

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WIRING

⚠WARNING

HAZARD OF ELECTRIC SHOCK. Any installation involving electric heaters must be effectively grounded in accordance with the National Electrical Code to eliminate shock hazard.

1. Electric wiring to heating elements must be installed by a qualified person in accordance with the National Electrical Code or local electrical codes.
2. Type and temperature rating of wire should be suitable for application. Check Local Chromalox Sales office for recommendations.

OPERATION

⚠WARNING

FIRE HAZARD. Failure to comply with the following could result in personal injury or property damage.

A. Do not operate heaters at voltages in excess of that marked on heater since excess voltage can shorten heater life.

B. Do not operate heaters under conditions that result in sheath temperatures higher than the recommended maximum since excess temperatures can cause premature failure and fire.

Generally, sheath materials are limited to the following maximum temperatures.

Sheath Material	Maximum Sheath Temperatures
Copper	350˚F
Iron or Steel	750˚F
Chrome or Stainless Steel	1200˚F
INCOLOY®	1500˚F
MONEL®	900˚F

The table above applies to ring, tubular and cartridge element as well as most strip elements.

A. Chrome Steel Finned Strips — 950˚F.

Heaters should not be operated in environments with factors that can destroy the integrity of electrical insulation inside the heater. The following contaminants and others can create current leakage (shock) hazards, permanent heater damage, or cause heater failure and therefore, should be avoided.

A. Water or water vapors
B. Grease, oil or oil vapors
C. Corrosive liquids and vapors
D. Noxious or reactive gases

Low Megohm Condition — The refractory material used in electric heaters may absorb moisture during transit, storage or when subject to humid environments that will reduce the cold insulation resistance (low megohm). Low megohm may result in a high leakage current to ground and nuisance trips of ground fault protection equipment. Normally, the megohm value increases after heat-up. Typical insulation values are 5 megohm or greater on complete assemblies or 20 megohm on individual unsealed elements. It is recommended that heaters with 1 megohm or less be dried out before applying full power. If dried properly, low megohm will not effect heater life or efficiency.

To correct a low megohm condition, remove terminal enclosure cover, gaskets, and terminal hardware. Bake heaters in an oven at 300 to 500˚F for several hours or preferably overnight.

An alternate procedure is to cycle the heater in 10 to 15 minute periods at low voltage until megohm values are normal. Sheath temperatures should not exceed 350˚F.

NOTE: Low megohm on heating elements with epoxy or hermetic seals cannot be serviced in the field. Typical resistance values when sealed are 200 megohm or greater. Contact Chromalox service center at number listed.

⚠WARNING

FIRE OR SHOCK HAZARD. Moisture accumulation in the element refractory material, element over-temperature, or sheath corrosion can cause ground fault to the element sheath, generating arcing and molten metal. Install Ground Fault Protection to prevent property damage.

WARRANTY AND LIMITATION OF REMEDY AND LIABILITY

Chromalox warrants only that the Products and parts manufactured by Chromalox, when shipped, and the work performed by Chromalox when performed, will meet all applicable specification and other specific product and work requirements (including those of performance), if any, and will be free from defects in material and workmanship under normal conditions of use. All claims for defective or nonconforming (both hereinafter called defective) Products, parts or work under this warranty must be made in writing immediately upon discovery, and in any event, within one (1) year from delivery, provided, however all claims for defective Products and parts must be made in writing no later than eighteen (18) months after shipment by Chromalox. Defective and nonconforming items must be held for Chromalox's inspections and returned to the original f.o.b. point upon request. THE FOREGOING IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES WHATSOEVER, EXPRESS, IMPLIED AND STATUTORY, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

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Chromalox®
PRECISION HEAT AND CONTROL
2150 N. RULON WHITE BLVD., OGDEN, UT 84404
Phone: 1-800-368-2493 www.chromalox.com

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Litho in U.S.A.