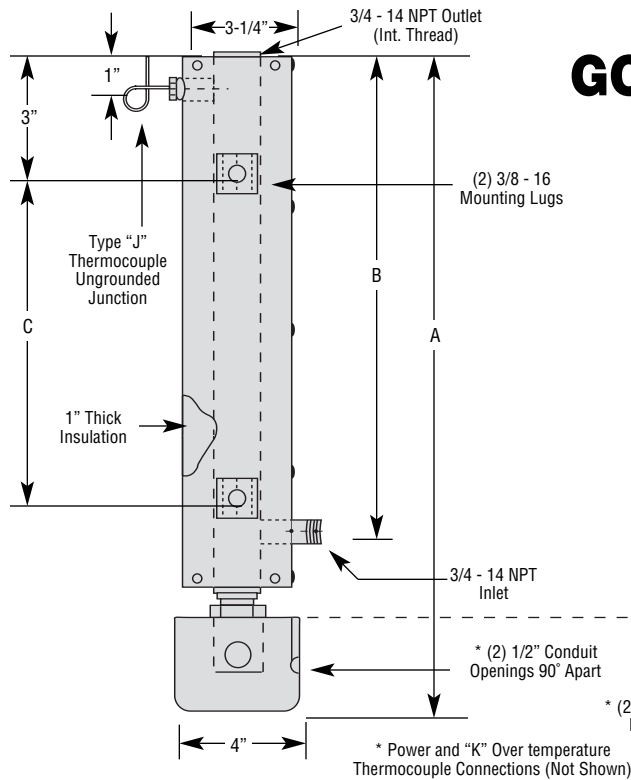


# Chromalox®

## Installation Instructions and

### RENEWAL PARTS IDENTIFICATION



E1 General Purpose Enclosure

E2 Moisture-Resistant/Explosion-Resistant Enclosure

### SERVICE REFERENCE

DIVISION 4	SECTION GCHIS-C
SALES REFERENCE (Supersedes PE433-2)	PE433-3
161-562803-001	
DATE NOVEMBER, 1998	

## GCHIS-C Circulation Heater For Gas Heating

### Specifications — Table A

Model		kW	Volts	CKT	PH	Dimensions (In.)		
E1	E2					A	B	C
GCHIS-C05	GCHIS-C05E2	0.5	120	1	1	14	8	4
GCHIS-C05	GCHIS-C05E2	0.5	240	1	1	14	8	4
GCHIS-C10	GCHIS-C10E2	1.0	120	1	1	20	14	10
GCHIS-C10	GCHIS-C10E2	1.0	240	1	1	20	14	10
GCHIS-C20	GCHIS-C20E2	2.0	120	1	1	32	26	22
GCHIS-C20	GCHIS-C20E2	2.0	240	1	1	32	26	22
GCHIS-C30	GCHIS-C30E2	3.0	240	1	1	44	38	34

### GENERAL

**WARNING: This heater is not intended for use in hazardous atmospheres where flammable vapors, gases, liquids or other combustible atmospheres are present as defined in the National Electrical Code. Failure to comply can result in explosion or fire.**

The GCHIS-C is a gas circulation heater, designed especially for low flow rates and/or high temperature applications.

The INCOLOY® sheathed cartridge style heating element is centered in a 304 stainless steel pipe body. High temperature insulation and jacket envelope the pipe body to reduce heat loss. Its screwplug type mounting provides easy removal when necessary.

A Type K thermocouple is located inside the heating element sheath to provide overtemperature protection. Accurate process control can be achieved by means of the Type J thermocouple installed in the heater outlet. (Process and Hi-limit Controllers ordered separately.)

**WARNING: Users should install adequate back-up controls and safety devices with their electric heating equipment. When heating in closed vessels where the consequences of failure may be severe, controls and back-up controls must be used to prevent buildup of temperature and/or pressure. Although the safety of the installation is the responsibility of the user, Chromalox will be glad to make equipment recommendations.**

### INSTALLATION

**WARNING: Hazard of Electric Shock. Disconnect all power before installing heater.**

- Before installing, check your GCHIS-C circulation heater for any damage that may have occurred during shipment.
- Check to insure that the line voltage is the same as that stamped on the nameplate.
- Vertical mounting (axis of chamber vertical as in figure above) is preferred.
- To avoid excess temperatures at electrical wiring, mount heater with terminal enclosure at bottom, and use lower nozzle as inlet to the circulating steam, air or gas.
- The GCHIS-C series of circulation heaters is provided with

mounting lugs to support the heater chamber. Refer to figure for location of these mounting lugs.

- Mount heaters to permit unrestrained expansion of chamber due to temperature. This can be accomplished by using slotted mounting assembly on either of the lugs.
- Provide adequate space at terminal end to permit withdrawal of the heater from chamber should servicing be required.
- DANGER: Hazard of Fire.** Provide a minimum of 6" spacing from chamber and related piping to nearest combustible material. Do not operate heater near combustible fluids or in combustible vapor or gas laden atmosphere.
- If two or more heaters are required to provide the needed heating capacity, arrange them for series gas or vapor flow.

## INSTALLATION

**10. DANGER: Possible Explosion.** A pressure relief valve should be provided by customer at outlet of vessel. There should be no other valving between vessel and relief valve.

**11.** In a forced circulation system, use pump on the inlet side.

## WIRING

**WARNING: Hazard of Electrical Shock. Any installation involving electric heaters must be effectively grounded in accordance with the National Electrical Code to eliminate shock hazard.**

1. All wiring should be done in accordance with local codes and the National Electrical Code by a qualified person.
2. Because of the high operating temperature expected, aluminum wiring should not be used.
3. When heater element wattages are not equal, heaters must not be connected electrically in series.

4. Electrical wiring to heater should be contained in rigid conduit or in sealed flexible hose when corrosive vapors or liquids are present. If high humidity is encountered, the conduit should slope down and away from the heater.
5. If flexible cord is employed, a watertight connector should be used for entry of the cord into the terminal box. Outdoor applications require liquid-tight conduit and connectors.
6. Wire separately ordered Hi-Limit and Process Controllers to thermocouples on heaters.

## OPERATION

**WARNING: Do not heat materials that are corrosive to the heating element sheath or chamber.**

It is the responsibility of the user to know the chemical composition of the corrosive solution and the characteristics of the materials entering the solution as well as the corrosive effect of the solution upon the heating elements and chamber. Chromalox cannot warrant any electric circulation heater against failure by sheath corrosion.

1. Do not allow heater to operate when steam, air or gas flow is interrupted, as dry operation of the heater can cause failure. An air flow switch should be provided by customer and placed upstream of the heater inlet.
2. Terminal ends of heater must be protected from drippings, condensation, spray or direct spill-over of material whose presence at the terminals may damage heater electrical insulation. Liquid-resistant terminal enclosures are available to protect heater. Consult your Local Chromalox Sales office.

3. If foreign material is carried by the gaseous flow, install suitable filters in the inlet pipe line to the heater.
4. **Low Megohm Condition** — The refractory material used in electric heaters may absorb moisture during transit or when subject to a humid environment. This moisture absorption may result in a cold insulation resistance of less than twenty megohms. Normally, this megohm value increases after heatup and does not affect heater efficiency or life.

A low megohm condition can easily be corrected by removing the immersion heater from the pipe body, removing the terminal hardware and terminal enclosure and baking the heater in an oven at 350°-700°F for several hours, preferably overnight.

**Note:** The lid from an E2 enclosure may also need removed.

An alternate procedure is to energize the heaters at low voltage until the megohm reading returns to normal. When energizing heater without flow, the sheath temperatures should not be allowed to exceed 750°F for INCOLOY® elements.

## MAINTENANCE

1. **WARNING: Hazard of Electric Shock. Disconnect all power before servicing heater.**
2. Remove heating element assembly periodically to check heater sheath for corrosion or excessive oxidation. Correct operating conditions to minimize sheath deterioration.
3. Periodically check temperature control and pressure-temperature safety limit control operation to insure accurate and safe process operation.

4. Check all electrical connections periodically and retighten connections which may have loosened in service. Replace wire and wire terminals that show signs of oxidation which would interfere with establishment of reliable electrical connections.
5. Clean any filters in the inlet pipeline to avoid reduced flow, which can cause element overheating and premature failure.

## RENEWAL PARTS IDENTIFICATION

Model	Volts	kW	Heater Assembly for E1 Model
GCHIS-C05	120	0.5	042-073644-012
GCHIS-C05	240	0.5	042-073644-040
GCHIS-C10	120	1.0	042-073644-017
GCHIS-C10	240	1.0	042-073644-021
GCHIS-C20	120	2.0	042-073644-028
GCHIS-C20	240	2.0	042-073644-020
GCHIS-C30	240	3.0	042-073644-016

Model	Volts	kW	Heater Assembly for E2 Model
GCHIS-C05E2	120	0.5	042-073644-025
GCHIS-C05E2	240	0.5	042-073644-041
GCHIS-C10E2	120	1.0	042-073644-026
GCHIS-C10E2	240	1.0	042-073644-013
GCHIS-C20E2	120	2.0	042-073644-034
GCHIS-C20E2	240	2.0	042-073644-030
GCHIS-C30E2	240	3.0	042-073644-018

**Note:** When ordering parts for Model Numbers suffixed "XX" or any other letter or letters not specifically identified on this instruction sheet, order Renewal Parts on special order basis, giving name of part, part number, model number and description.

### Limited Warranty:

Please refer to the Chromalox limited warranty applicable to this product at <http://www.chromalox.com/customer-service/policies/termsofsale.aspx>.

**Chromalox**<sup>®</sup>  
PRECISION HEAT AND CONTROL

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