

1 YEAR
WARRANTY

Ω OMEGA™

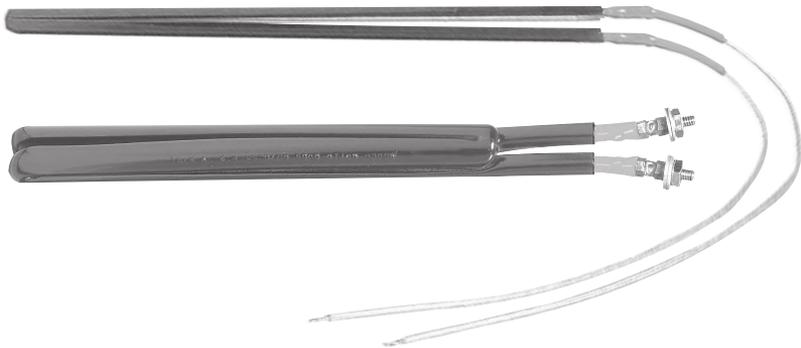
User's Guide

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SST & QST
Split Sheath Insertion Heaters

SST Split Sheath Insertion Heater



QST Quad Sheath Insertion Heater



Unenergized SST



Energized SST



Unenergized QST



Energized QST

NOTICE: Carefully remove heater(s) from shipping containers and check for shipping damage. Any damage claims should be entered immediately with the carrier.

GENERAL

The Chromalox electric cartridge heaters are ruggedly constructed and if properly installed, operated and maintained, will provide long life and dependable, trouble-free service.

Since excess temperatures may permanently damage the heaters, temperature regulating and limiting controls are recommended.

WARNING: Users should install adequate back-up controls and safety devices with their electric heating equipment. Where the consequences of failure may be severe, back-up controls are essential. Although the safety of the installation is the responsibility of the user, Chromalox will assist in identifying equipment options.

INSTALLATION

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

WARNING: The suitability of these heaters for any particular application is solely the responsibility of the user. Please check Chromalox factory or representative for guidance if needed.

WARNING: Never hammer the heater ends when installing.

- If cartridge heater is to be used in platen, dies, mold, etc. the hole should be drilled and reamed to allow as close a fit as is possible. This is especially important when installing high watt density heaters. Good surface contact between the heater surface and the heated metal is essential to good heat transfer and for longer heater life. A loose fit, resulting in poor contact will cause the heater to "run hot" and could cause premature heater failure. Table A gives the difference between nominal and actual diameters. If further information regarding fit or watt density is required, contact your Chromalox representative or ask for a copy of Curve G-235 from Chromalox Cartridge
- Leadwires must not enter the hole containing the heater. The lead end of the heater should be flush with the surface of the part being heated. Make sure that the leads are in an ambient temperature which does not exceed the maximum temperature rating of the lead insulation and end seal material.
- DANGER: Hazard of Fire.** Since cartridge heaters are capable of developing high temperatures, extreme care should be taken to:
 - Avoid mounting heaters in an atmosphere containing combustible gases and vapors.
 - Avoid contact between heaters and combustible materials.
 - Keep combustible materials far enough away to be free of the effects of high temperatures.

- Graphite and other lubricants to help insert the cartridge heater into the hole are not recommended. They are electrically conductive and can contaminate the heater and shorten heater life.
- Do not twist or braid wire leads. Where leads are subject to flexing, support the leadwires to prevent them from twisting or breaking off at the terminal end.
- Avoid the use of tape on leads where they emerge from the cartridge heater. The adhesive on some tapes can contaminate the heater and shorten heater life.

Nominal Dia.	Actual Dia. +.000 -.005	Nominal Dia.	Actual Dia. +.000 -.005
3/8"	.373"	5/16"	.933
1/2"	.498"	1"	.996
5/8"	.622"	3/8"	.373"
3/4"	.747"		

WIRING

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

- Electric wiring to heating elements must be installed in accordance with National Electrical Codes and Local Electrical Codes by a qualified person as defined in the NEC.
- Use high-temperature manganese nickel leadwire or alloy busbar for electrical connections at the heater itself. Insulated copper leadwire may be used up to 350°F.

- Cartridge heaters of 5/8" diameter and larger and of equal wattage and voltage can be series-connected across 480 volts maximum power supply. Smaller diameter units of equal rating can be series-connected across 250 volts maximum. An extra layer of high temperature Fiberglass sleeving is recommended for the leadwire to increase electrical insulation.
- Protection with properly sized fuses/breakers is required to minimize hazards.

WARRANTY

OPERATION

- Do not operate heaters at voltages in excess of that stamped on the heater since excess voltage will shorten heater life.
- Do not operate heaters under conditions that result in temperatures higher than the recommended maximum since excess temperatures can cause premature heater failure.
The maximum recommended temperature on sheath materials normally supplied is:

Stainless Steel — 1200°F
Alloy — 1600°F

- Electrical terminals should be protected from spillage of plastics, water, oil, and their vapors which can create electrical hazards and/or heater failure.

MAINTENANCE

WARNING: Hazard of Shock. Disconnect all power to heaters before servicing or replacing heaters.

- Make certain that the terminals or leads and heater sheath are free from contact with oil, liquids or other foreign matter.

Note: Chromalox cannot be responsible for failures or damage caused by organic contamination in cartridge heaters. Make certain that the heaters are not exposed to organic contaminants.

- Check electrical connections and tighten if necessary. This will help avoid hot terminals that may destroy wire insulation or heater terminals.
- Check overheat operation to insure heater protection.
- REPAIR** — For In-Warranty repair please follow instructions

Tolerances and Limitations

Nominal Sheath Diameter	3/8"	1/2"	5/8"	11/16"	3/4"	1"
Actual Sheath Diameter (±.003)	.370"	.495"	.620"	.682"	.745"	.995"
Minimum Sheath Length	5"	5"	5"	5"	5"	5"
Maximum Sheath Length – SST	60"	60"	60"	60"	60"	60"
Maximum Sheath Length – QST	N/A	36"	36"	36"	36"	N/A
Minimum Ohms/inch of EHL*	SST	.278	.308	.296	.296	.350
	QST	-	.593	.593	.593	.593
Maximum Ohms/inch of EHL*	SST	11	21	21	21	26
	QST	-	38	38	38	38
Maximum Standard Voltage	240	240	240	480	480	480
Maximum Amperage	SST	15	30	40	40	40
	QST	-	30	30	30	30
Wattage	+5% – 10%					
Resistance	+10% – 5%					
Sheath Length	±3% up to 20"; ±2% over 20"					

Fig. 04C



Fig. 13C

Fig. 15C

Fig. 10C



Fig. 17C

SST or QST* Diameter	Figures 04C, 15C, 13C & 17C	Cable O.D.*
3/8"	5/8" x 1-1/2"	15/32
1/2"	5/8" x 1-1/2"	
5/8"	3/4" x 1-1/2"	
11/16"	3/4" x 1-1/2"	
3/4"	7/8" x 1-1/2"	
1"	1-1/8" x 1-1/2"	

* QST (QUAD) N/A in 3/8" Diameter

** Not applicable to Fig. 13C or Fig. 17C

WARRANTY /DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of 13 months from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal one (1) year product warranty to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY /DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR WARRANTY RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR NON-WARRANTY REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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