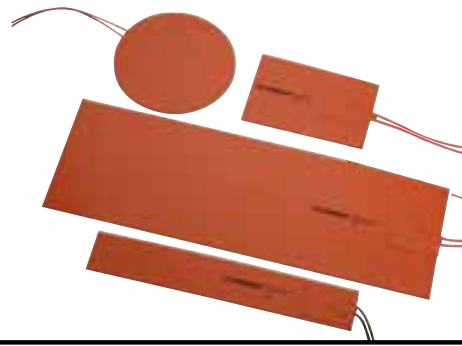


**DESCRIPTION**

Silicone Rubber Fiberglass Insulated Heaters can improve heat transfer and speed warm-ups where controlled heating is required in confined areas. Two circuit designs are available: etched foil or wire wound. Heaters with etched foil designed elements are available where the length or width dimension is less than 254 mm (10"). All other heaters where both the length and the width dimensions exceed 254 mm (10") use the wire-wound element design.

Effect of wattage density (at 115V): gentle warming is best done with 2.5 W/in². A good all-purpose unit is the 5 W/in². Rapid warm-up and high temperature are achieved with the 10 W/in²; however, temperature must be controlled as the safe maximum operating temperature limit of 232°C (450°F).

Two general styles are covered in this manual. Round silicone rubber heaters and rectangular silicone rubber heaters. All part numbers and total wattage for each heater are listed in specification sheet of SRFRA/SRFGA Series.

ROUND SILICONE RUBBER HEATERS

Styles are available from 3 to 12" diameters. The part number scheme is as follows:

- SRFRA-[]/* for those heaters without the pressure sensitive adhesive.
 - SRFRA-[]/*-P for those heaters with the pressure sensitive adhesive.
- Where [] is the diameter of the heater and * is the watt density.

NOTES: Heaters with pressure sensitive adhesive are not available at 10 W/in². Maximum operating temperature is 149°C (300° F).

Examples:

6" round heater with 2.5 W/in² wattage density, without pressure sensitive adhesive has the part

8" round heater with 5 W/in² wattage density, with pressure sensitive adhesive has the part number SRFRA-8/5-P.

RECTANGULAR SILICONE RUBBER HEATERS

Styles are available from 1" width by 1" length to 12" width by 48" length. More specifically, the length varies from the smallest width dimension increasing by 1 inch to 12", and jumps to 18", 24", 30", 36", 42", and 48".

NOTES: Some sizes of heaters do not come in all lengths listed above. For details, refer to The Specification sheet of SRFRA/SRFGA Series lists the total wattage for each heater. The part number scheme is as follows:

- SRFRA-[X] []/* for those heaters without the pressure sensitive adhesive.
 - SRFRA-[X] []/*-P for those heaters with the pressure sensitive adhesive.
- where [X] is the width of the heater, [] is the length of the heater, and * is the watt density.

NOTES: Heaters with pressure sensitive adhesive are not available at 10 W/in². The maximum operating temperature is 149°C (300°F).

Examples:

Smallest heater 1" wide x 5" long with a wattage density of 10 W/in² and no pressure sensitive adhesive (not available in 2.5 W/in² or 5 W/in²) has the part number of SRFGA-105/10.

1" W x 48" L heater with 5 W/in² wattage density with pressure sensitive adhesive has the part number of SRFG-148/5-P.

2" W x 8" L heater with 10 W/in² wattage density without pressure sensitive adhesive has the part

6" W x 42" L heater with 2.5 W/in² wattage density with pressure sensitive adhesive has the part number of SRFGA-642/2-P.

INSTALLATION AND OPERATION CAUTION!

Use a method of temperature control (e.g., thermostat, thermocouple and temperature controller, or variable voltage transformer) to prevent heaters from exceeding maximum operating temperature ratings. Place temperature sensor close enough to the heater to sense heater temperature.

1. DO NOT immerse heaters in liquids.
2. DO NOT operate heaters at a voltage higher than the specified or rated voltage.

Heaters CAN be operated at the rated voltage of 115 VAC or lower. In order to determine the actual wattage developed at applied voltages lower than the rated voltage, use the following formula:

$$P_A = P_R \times \frac{V_A^2}{V_R^2}$$

where: PR = rated wattage; PA = actual wattage; VR = rated voltage and VA = actual voltage

3. DO NOT cut, punch holes in or otherwise mishandle heaters.
4. AVOID exposing heaters to chemicals, acids, alkalies, oils, fluids or other substances that could ignite or cause damage to the heater.
5. DO NOT insulate heaters unless adequate measures are taken to control heater temperature.
6. DO NOT leave heater operating unattended unless adequate controls are installed to insure safety.
7. Heaters can be bent around curved surfaces; however, DO NOT exceed minimum bending radius.

8. Exercise care in attaching heaters to flat or curved surfaces. Heaters can be attached by mechanical clamping, by using factory applied pressure sensitive adhesive (PSA), or with a thin layer of RTV. Make sure that the entire heater is in contact with the surface with no air pockets trapped underneath. This is especially important for high watt density heaters, i.e., heaters with a watt density of 10 watts/square inch, to prevent heater failure. DO NOT overlap heaters.

9. Heaters must be attached to an appropriate heat sink and should NOT be mounted free standing in air.

10. Make sure heaters are installed and used by qualified personnel. DO NOT attempt to repair damaged heaters.

SPECIFICATIONS

HEATING ELEMENT DESIGN:

etched foil designed elements are available where the length or width dimension is less than 254 mm (10"). All other heaters are wire wound.

MAXIMUM OPERATING

TEMPERATURE: Heaters without Pressure Sensitive Adhesive (PSA), 232°C (450°F). Heaters with Pressure Sensitive Adhesive (PSA), 120°C (250°F).

VOLTAGE: 115 Volts

WATT DENSITY: 2.5, 5 or 10 watts/in²

WATTAGE: 5 to 1440 watts

PRESSURE SENSITIVE

ADHESIVE (PSA): optional, not available at 10 watts/square inch watt density

LEAD WIRE: 305 mm (12")

UL1180 PTFE Insulated

DIELECTRIC STRENGTH:

1250 VAC

MINIMUM BENDING RADIUS:

2.00" typical

HEATER THICKNESS:

0.040", except at lead wire exit (thickness varies with heater)

DIMENSIONS:

Refer to the other.

The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

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. OMEGA is a trademark of OMEGA ENGINEERING, INC.

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