Installation Instructions

U-RAD-LT Electric Radiant Heaters





PG421-3 161-058006-001 October 2020

U-RAD-LT Electric Radiant Heaters

The Safety Alert Symbol $oldsymbol{A}$ is used to indicate a risk of personal injury.

Please familiarize yourself with these instructions before attempting to install or operate this Radiant Heater.

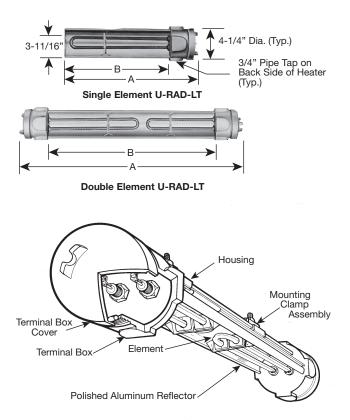


Figure 1 – Heater Parts and Dimensions

AWARNING

FIRE HAZARD. Radiant heaters are capable of developing high temperatures, care should be taken to:

A. Mount heater with the proper clearance from adjacent surfaces.

B. Do not mount heater over combustible surfaces.

C. Do not stack or store combustible materials directly below the heater or in the space a distance of 5 feet from any projected edge of the heater.

D. Do not operate the heater without Ground Fault Equipment Protection.

Failure to follow these instructions can result in personal injury and fire.

Before Installing

- 1. Open carton and remove heater at the place of installation. Mounting clamps are in parts bag in carton.
- Check nameplate volt and watt rating against your power supply voltage and heating requirements of your installation. This nameplate is located on one end of the heater.

AWARNING

The system designer is responsible for proper installation and safety of this equipment. Heaters should never be installed where direct or indirect splashing, spraying, misting or dripping of water occurs while the heater is energized. Adequate back-up controls and safety devices should be installed with all electric heating equipment. Where the consequences of failure could result in personal injury or property damage, back-up controls are essential.

Specifications Table

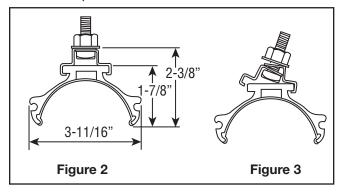
Specifications lable					
Model	Volts	Watts	A Overall Length (In.)	B Heated Length(In.)	
Single U-Shaped Element				<u> </u>	
U-RAD-2LT	120 or 240				
U-RAD-2VLT	208 or 275	800	13-5/16	8-7/16	
U-RAD-3LT	120 or 240				
U-RAD-3VLT	208 or 275	1100	16-7/16	1-15/16	
U-RAD-4VLT	208 or 275				
U-RAD-4LT	240 or 480	1800	24-3/8	19-3/8	
U-RAD-5VLT	208 or 275	0500	04.40/40	001 0/10	
U-RAD-5LT	240 or 480	2500	31-13/16	261-3/16	
U-RAD-6VLT	208 or 275	0000	07 10/10	00 10/10	
U-RAD-6LT	240 or 480	3000	37-13/16	32-13/16	
U-RAD-7VLT	208 or 275	3600	43-15/16	20 15/16	
U-RAD-7LT	240 or 480	3000	43-15/10	38-15/16	
Two U-Shaped Elements					
U-RAD-22LT	120 or 240	1600	26-1/8	16-5/8	
U-RAD-22VLT	208 or 275	1000	20-1/0	10-5/6	
U-RAD-32LT	120 or 240	1900	29-1/4	19-3/4	
U-RAD-32VLT	208 or 275	1000	20 174	10 0/4	
U-RAD-33LT	120 or 240	2200	32-3/8	22-7/8	
U-RAD-33VLT	208 or 275		02 0,0		
U-RAD-42VLT	208 or 275	2600	37-1/8	27-11/16	
U-RAD-42LT	240				
U-RAD-43VLT	208 or 275	2900	40-1/4	30-13/16	
U-RAD-43LT	480				
U-RAD-44VLT	208 or 275	3600	48-1/8	38-3/4	
U-RAD-44LT	240 or 480				
U-RAD-52VLT	208 or 275	3300	44-5/8	35-1/8	
U-RAD-52LT	240				
U-RAD-53VLT	208 or 275	3600	47-3/4	38-1/4	
U-RAD-53LT U-RAD-54VLT	240 208 or 275				
U-RAD-54LT	208 of 275 240 or 480	4300	55-5/8	46-3/16	
U-RAD-55VLT	208 or 275				
U-RAD-55LT	240 or 480	5000	63-1/8	53-5/8	
U-RAD-62VLT	208 or 275				
U-RAD-62LT	240	3800	50-9/16	41-1/8	
U-RAD-63VLT	208 or 275				
U-RAD-63LT	240	4100	53-11/16	44-1/4	
U-RAD-64VLT	208 or 275	1000	a /a//a	50.0//0	
U-RAD-64LT	240 or 480	4800	6-19/16	52-3/16	
U-RAD-65VLT	208 or 275	5500	CO 1/1C		
U-RAD-65LT	240 or 480	5500	69-1/16	59-5/8	
U-RAD-66VLT	208 or 275	6000	75	65-5/8	
U-RAD-66LT	240 or 480	6000	75	00-0/0	
U-RAD-72VLT	208 or 275	4400	56-11/16	47-1/4	
U-RAD-72LT	240	4400	50-11/10	47-1/4	
U-RAD-73VLT	208 or 275	4700	59-13/16	50-3/8	
U-RAD-73LT	240	4100	00 10/10	00 0/0	
U-RAD-74VLT	208 or 275	5400	67-11/16	58-5/16	
U-RAD-74LT	240 or 480	0.00	51 11/10	00 0, 10	
U-RAD-75VLT	208 or 275	6100	75-3/16	65-11/16	
U-RAD-75LT	240 or 480				
U-RAD-76VLT	208 or 275	6600	81-7/16	72-1/16	
U-RAD-76LT	240 or 480				
U-RAD-77VLT	208 or 275	7200	87-1/4	77-7/8	
U-RAD-77LT	240 or 480				

Installation

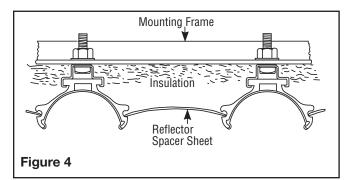
AWARNING

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 or serviced by a qualified person in accordance with the National Electrical Code, NFPA 70.

 Clamps — Heaters are mounted by means of the mounting clamp and 3/8" bolt assembly which is used as shown in Fig. 2. Clamp assembly may be attached to heater by sliding over end or by snapping over top of extruded frame section at any point along its length (see Fig. 3). For proper heater support, the maximum distance between clamps must not exceed 48". On extra-long heaters, more than two clamps are furnished.



- Mounting Holes When heaters are mounted adjacent to each other in the same plane, note that distance between mounting holes on framing to support heaters will be 4-1/4" minimum. When heaters are not in the same plane, i.e., set at an angle to one another, distance between mounting holes in framing will be either greater or less than 4-1/4".
- Framing Where an extensive installation is being made, the use of continuous slot metal framing manufactured by several concerns will be of assistance in saving time and money. The framing is reusable.
- 4. Reflector Spacer Sheets Where heaters are not mounted side by side (see Fig. 4), reflector spacer sheets can be used between heaters. These reflector spacer sheets and companion reflectors consisting of an extruded aluminum housing with reflector sheet and mounting clamps are available. Check factory.



- 5. Insulation Where unusually high work temperatures are encountered, it may be desirable to insulate behind heaters with high-temperature fibrous insulation. A suggested method of accomplishing this is indicated in Fig. 4.
- 6. Ventilation Where solvents, water, etc. are being evaporated from work in process, it is necessary to provide substantial quantities of ventilation air to carry away the resulting vapors.
- 7. Installation in Wet or Wash-down Locations Although U-RAD-LT heaters are designed for wet, humid environments, the heating elements and reflectors should never come into direct or indirect contact with splashing, spraying, misting or dripping water while or immediately after being energized. While energized, contact with water can cause the hot element to distort or buckle, leading to failure. Do not wash-down areas where heaters are installed unless elements are fully de-energized and both element and reflector have cooled down to room temperature.

AWARNING

FIRE HAZARD. Since Radiant heaters are capable of developing high temperatures, extreme care should be taken to:

A. Keep combustible materials at least 6" away form sides and back of heater housing and its supporting brackets and spaced far enough in front of heater (heating element side) so thermal radiation from the elements will not ignite combustible materials.

B. If combustible materials are being processed, stoppage of process should initiate immediate heater shutdown and interception of residual heat from radiant heaters (use radiation baffles or move heaters away from work).

C. In the case of solvents of an explosive nature, ventilation air must be in sufficient volume to dilute the solvent vapor so that explosive mixtures cannot occur, refer to NFPA 86, Standard for Ovens and Furnaces.

Wiring

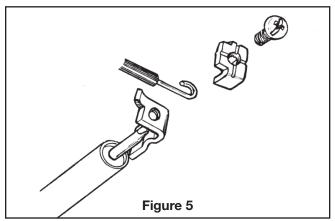
AWARNING

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 or serviced by a qualified person in accordance with the National Electrical Code, NFPA 70.

AWARNING

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.

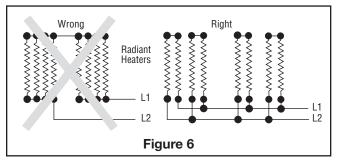
- 1. Electrical connection to the Radiant Heater is made through the 3/4" diameter conduit opening in the terminal box.
- 2. Access to Radiant Heater terminals is obtained by removing the terminal box cover.
- 3. Wiring should be run in flexible or rigid metal conduit and must be installed in accordance with the requirements of the National Electrical Code and such other local requirements as may be applicable. **Note:** High temperatures will oxidize copper. Do not use copper wire in connecting this heater. Stranded, insulated, nickel-plated copper wire is recommended.
- Wires supplying power to heating element terminals shall have insulation rated for 150°C minimum.
 High Temperatures will oxidize copper. Use only nickelplated copper wire for supplying power to heater. Do not use aluminum conductors.
- A sufficient length of this wire (not less than 12") should be used to extend from each heater terminal into a connection box location where the temperature does not exceed 300°F.
- 6. Assemble terminal, screw and wire as shown in Figure 5.



7. Hold terminal with pliers and tighten the terminal screw securely with a screwdriver.

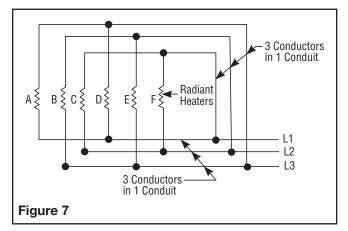
Note: Where circuit wiring is installed in locations of high ambient temperature, conductors should be insulated in accordance with requirements for temperature and voltage.

8. SERIES CONNECTION of Radiant Heaters of equal volt and watt rating is permitted in all line voltages up to 600 volts. In making such series connections it is necessary to observe the "right" (series-parallel) connection rather than the "wrong" (parallel-series) connection both shown in Figure 6. If heaters are connected according to the "wrong" illustration, failure of any heater will cause progressive failure of other heaters still operating.



 DELTA CONNECTIONS — When heaters occur in multiples of three, they may be connected to, and balanced across, threephase lines. The most commonly used connection is the delta connection illustrated in Figure 7.

Three phase Delta connections to minimize inductive effect in conduits are made per this diagram. The rule: run all 3 three-phase conductors in the same conduit as far as possible. For single-phase, run only two conductors and follow the same rule.



Operation

AWARNING

FIRE/EXPLOSION HAZARD. 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 personal injury or property damage.

Before energizing this heater:

- 1. Be sure all electrical connections are tightly made. Hold terminal with pliers when tightening screw.
- 2. Be sure that all conductors are properly insulated.
- 3. Be sure that terminal box cover has been properly replaced, and that secondary insulation bushings have not been omitted.

Standard Radiant Heaters are built to operate at 40 watts per sq. inch on the element sheath. When it is desired to reduce radiant intensity, one or more of the following methods may be used.

 INPUT CONTROLLERS. These motor-driven cycling devices can be used to vary heater output capacity from 4 to 100%. They are usually connected in holding coil circuit of magnetic contactors. See Chromalox Radiant Heater Manual for further information regarding Input Controllers and Contactors.

2. SOLID STATE THYRISTOR POWER CONTROL-

LERS. For best non-contact control of radiant heat, a Series #6 Chromalox Thyristor Power Controller with manual potentiometer setting is recommended. Truly proportional output of from 0 - 100% can be easily dialed-in to suit the particular product or process requirements. The Series #6 panels are pre-engineered, pre-packaged assemblies in an enclosure with circuit disconnect provided and ready for installation.

Maximum Ambient Temperatures —

Chromalox Radiant Heaters are not recommended for applications in ambient temperatures exceeding 450°F. Higher ambient temperatures mean shorter heater life.

Maximum work temperature in a given time depends on several factors: Reflectivity of work, specific heat of work, mass of work, kW input and losses from oven and time of exposure. As work temperature increases, the work loses heat by radiation and by convection to the surrounding ambient. Although it is a general principle of Radiant Heater application that work temperature conventionally exceeds ambient temperature, in cases where extremely high work temperatures are desired, it is necessary to enclose the heaters in order to increase the ambient. If evaporation of a liquid is desired as a result of increasing work temperature, it is necessary to provide ventilation air in order to carry away the evaporated liquid. Under carefully engineered circumstances, a maximum work temperature of 600°F may be attained.

Maintenance

AWARNING

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 or serviced by a qualified person in accordance with the National Electrical Code, NFPA 70.

To Remove Heating Element —

- 1. Remove terminal box cover 6 .
- 2. Disconnect heating element from electrical leads.
- 3. Remove threaded fitting nuts (9) and washers (8).
- 4. Remove element support clips and secondary insulating bushings.
- 5. Lift out element.

To Install Element —

Observe instructions for removing element and proceed in reverse order. Be sure to replace secondary insulating bushings.

Care of Reflectors —

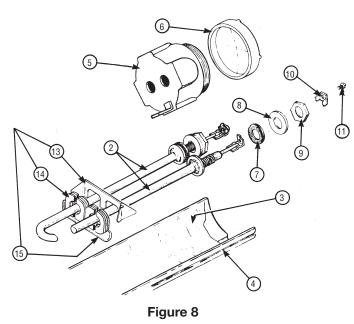
Reflectors should be cleaned periodically. A mild soap and water solution or fine cleaning powder is best although more drastic means may be required if reflectors are badly soiled by chemical or other deposits. The reflector is aluminum. DO NOT use alkali cleaners since alkalies will dull reflector. Mild non-alkaline cleaners, such as used for scouring kitchen sinks, may be used.

Reflectors are replaceable and may be purchased from Chromalox.

Wet, Humid or Washdown Applications -

Heaters installed in wet, humid or wash-down areas should be routinely checked for moisture contamination. This can be accomplished by performing an insulation resistance test. See appendix A for recommendations regarding prevention and correction of low insulation resistance.

Renewal Parts Identification



Element assembly includes all parts shown except items
and
For element assembly part number, and prefix "R" to Element part number
Ex: R UTU-6VLT, 208V, 3000W

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U-RAD-2LT 240 800 UTU-2LT 234-013411-032 152-016961-001 U-RAD-2VLT 275 UTU-2VLT 152-016961-001 152-016961-002 U-RAD-3LT 240 1100 UTU-3LT 234-013411-033 152-016961-002 U-RAD-3VLT 275 UTU-3VLT 234-013411-033 152-016961-002 U-RAD-4VLT 208 100-4VLT 234-013411-033 152-016961-003 U-RAD-4VLT 275 UTU-4VLT 234-013411-034 152-016961-003 U-RAD-5VLT 275 UTU-4VLT 234-013411-035 152-016961-003 U-RAD-5VLT 276 UTU-5VLT 234-013411-035 152-016961-004 U-RAD-5VLT 276 UTU-5VLT 234-013411-035 152-016961-004 U-RAD-5VLT 276 UTU-6VLT 234-013411-035 152-016961-004 U-RAD-6VLT 276 UTU-6VLT 234-013411-036 152-016961-004 U-RAD-7VLT 276 UTU-7VLT 234-013411-036 152-016961-006 U-RAD-7VLT 276 UTU-7VLT 234-013411-03	U-RAD-2LT	120		UTU-2LT			
U-RAD-2LT 240 UTU-2LT DEFENSION CONTINUE DEFENS	U-RAD-2VLT	208	000	UTU-2VLT	234-013411-032	152-016961-001	
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U-RAD-4LT240 U-RAD-4VLT1800UTU-4LT UTU-4VLT UTU-4VLT UTU-4VLT UTU-4LT234-013411-034 152-016961-003152-016961-003U-RAD-5VLT208 U-RAD-5VLTUTU-5VLT UTU-5VLTUTU-5VLT UTU-5VLT152-016961-004U-RAD-5VLT240 UTU-5VLTUTU-5VLT UTU-5VLT234-013411-035152-016961-004U-RAD-6VLT208 UTU-6VLT UTU-6CTUTU-6VLT UTU-6VLT234-013411-036152-016961-004U-RAD-6VLT208 UTU-6VLTUTU-6VLT UTU-6VLT234-013411-036152-016961-005U-RAD-7VLT208 UTU-6VLTUTU-7VLT UTU-6LT234-013411-037152-016961-006U-RAD-7VLT208 UTU-7VLTUTU-7VLT UTU-7VLT234-013411-037152-016961-006U-RAD-22VLT208 UTU-7VLTUTU-2VLT (2) UTU-2VLT (2)234-013411-032152-016963-001U-RAD-32VLT208 UTU-32TUTU-32T UTU-32T234-013411-032152-016963-002U-RAD-32VLT208 UTU-32TUTU-32T UTU-32T234-013411-032152-016963-002U-RAD-32VLT208 UTU-32TUTU-32T UTU-32T234-013411-032152-016963-002U-RAD-32VLT208 UTU-32TUTU-32T UTU-32T234-013411-032152-016963-002U-RAD-32VLT208 UTU-32TUTU-32T UTU-32T234-013411-032152-016963-002U-RAD-32VLT208 UTU-32TUTU-32T UTU-32T234-013411-032152-016963-002U-RAD-32VLT208 UTU-32TUTU-32T UTU-32TUTU-32T UTU-32T152-016963-002U-RAD	U-RAD-3VLT	275		UTU-3VLT			
$ \begin{array}{ c c c c c } & 1800 & UTU-4VLT & 234-013411-034 & 152-016961-003 \\ \hline UTU-4LT & UTU-5VLT & 234-013411-035 & 152-016961-004 \\ \hline URAD-5VLT & 275 & UTU-5VLT & UTU-5VLT & UTU-5VLT & UTU-6VLT & UTU-6VLT & UTU-6VLT & UTU-6LT & UTU-7VLT & UTU-2VLT (2) & UTU-2VLT & 234-013411-032 & UTU-7VLT & 234-013411-032 & UTU-3VLT & 234-013411-032 & UTU-3VLT & 234-013411-032 & UTU-3VLT & 234-013411-032 & UTU-3VLT & 234-013411-032 & UTU-2VLT & 234-013411-032 & UTU-3VLT & 234-013411-032 & UTU-2VLT & 234-0$	U-RAD-4VLT	208		UTU-4VLT			
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$ \begin{array}{ c c c c c } U-RAD-SVLT & 208 \\ U-RAD-SLT & 240 \\ U-RAD-SVLT & 275 \\ U-RAD-SVLT & 275 \\ U-RAD-6VLT & 208 \\ U-RAD-6VLT & 208 \\ U-RAD-6VLT & 208 \\ U-RAD-6VLT & 208 \\ U-RAD-6VLT & 275 \\ U-RAD-6VLT & 275 \\ U-RAD-6VLT & 275 \\ U-RAD-7VLT & 208 \\ U-RAD-7VLT & 275 \\ U-RAD-22VLT & 275 \\ U-RAD-22VLT & 275 \\ U-RAD-32VLT & $	U-RAD-4VLT	275	1800	UTU-4VLT	234-013411-034		
$ \begin{array}{ c c c c c } U - RAD - S L T & 240 \\ U - RAD - S V T & 240 \\ U - RAD - S V T & 275 \\ U - RAD - S V T & 275 \\ U - RAD - S V T & 208 \\ U - RAD - S V T & 208 \\ U - RAD - S V T & 208 \\ U - RAD - S V T & 240 \\ U - RAD - S V T & 240 \\ U - RAD - S V T & 275 \\ U - RAD - S V T & 275 \\ U - RAD - S V T & 275 \\ U - RAD - S V T & 275 \\ U - RAD - S V T & 208 \\ U - RAD - S V T & 208 \\ U - RAD - S V T & 208 \\ U - RAD - S V T & 208 \\ U - RAD - S V T & 208 \\ U - RAD - S V T & 208 \\ U - RAD - S V T & 208 \\ U - RAD - S V T & 208 \\ U - RAD - S V T & 208 \\ U - RAD - S V T & 275 \\ U - RAD - S V T & 234 - 013411 - 035 \\ U - RAD - S V T & 275 \\ U - RAD - S V T & 234 - 013411 - 035 \\ U - RAD - S V T & 275 \\ U - S V T & 234 - 013411 - 035 \\ U - RAD - S V T & 275 \\ U - R - S V T & 234 - 013411 - 035 \\ U - R - S V T & 234 - 013411 - 035 \\ U - R - S V T & 234 - 013411 - 035 \\ U - R - S V T & 234 - 013411 - 035 \\ U - R - S V T & 234 - 013411 - 035 \\ U - R - S V T & 234 - 013411 - 035 \\ U - R - S V T & 234 - 013411 - 035 \\ U - R - S V T & 234 - 013411 - 035 \\ U - R - S V T & 234 - 013411 - 035 \\ U - R - S V T & 234 - 013411 - 035 \\ U - R - S V T & 234 - 013411 - 035 \\ U - R - S V T & 234 - 013411 - 035 \\ U - R - S V T & 234 - 013411 - 035 \\ U - R - S V T & 234 - 013411 - 035 \\ U - R - S V T & 234 - 013411 - 035 \\ U - R - S V T & 23$	U-RAD-4LT	480		UTU-4LT			
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$ \begin{array}{ c c c c c c } \hline U-RAD-SVLT & 275 \\ U-RAD-5LT & 480 \\ U-RAD-6VLT & 208 \\ U-RAD-6LT & 240 \\ U-RAD-6LT & 275 \\ U-RAD-6LT & 480 \\ U-RAD-6LT & 480 \\ U-RAD-6LT & 480 \\ U-RAD-7VLT & 208 \\ U-RAD-7VLT & 208 \\ U-RAD-7VLT & 240 \\ U-RAD-7VLT & 275 \\ U-RAD-7VLT & 275 \\ U-RAD-7VLT & 275 \\ U-RAD-22VLT & 208 \\ U-RAD-22VLT & 275 \\ U-RAD-22VLT & 275 \\ U-RAD-32VLT & 275 \\ U-RAD-32VLT & 208 \\ U-RAD-32VLT & 208 \\ U-RAD-32VLT & 208 \\ U-RAD-32VLT & 275 \\ U-RA$	U-RAD-5LT	240	0500	UTU-5LT	234-013411-035		
$ \begin{array}{ c c c c c } \hline U-RAD-6VLT & 208 \\ U-RAD-6LT & 240 \\ U-RAD-6VLT & 275 \\ U-RAD-6VLT & 275 \\ U-RAD-6VLT & 275 \\ U-RAD-7VLT & 208 \\ U-RAD-7VLT & 208 \\ U-RAD-7VLT & 240 \\ U-RAD-7VLT & 275 \\ U-RAD-7VLT & 275 \\ U-RAD-7VLT & 275 \\ U-RAD-22VLT & 120 \\ U-RAD-22VLT & 120 \\ U-RAD-22VLT & 208 \\ U-RAD-22VLT & 208 \\ U-RAD-22VLT & 208 \\ U-RAD-22VLT & 208 \\ U-RAD-22VLT & 275 \\ U-RAD-22VLT & 275 \\ U-RAD-32VLT & 275 $	U-RAD-5VLT	275	2500	UTU-5VLT			
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U-RAD-32LT 240 UTU-2VLT 234-013411-032 152-016963-002 U-RAD-32LT 240 UTU-3LT 234-013411-032 152-016963-002 U-RAD-32VLT 275 UTU-3VLT 234-013411-032 152-016963-002				UTU-3VLT	234-013411-033		
U-RAD-32LT 240 U-RAD-32VLT 275 U-RAD-32VLT 275 UTU-3LT 234-013411-032 UTU-3VLT 234-013411-032	U-RAD-32VLI		1000	UTU-2VLT	234-013411-032	150 010000 000	
UTU-2LT 234-013411-032 UTU-3VLT 234-013411-033		017 015	1900	UTU-3LT	234-013411-033	152-016963-002	
U-BAD-32VLT 275	U-RAD-32LI	240		UTU-2LT	234-013411-032		
U-RAD-32VLT 275 UTU-2VLT 234-013411-032		075		UTU-3VLT	234-013411-033		
	U-RAD-32VLI	275		UTU-2VLT	234-013411-032		

Model	Volts	Watts	⊘ Element*	3 Reflector	4 Aluminum Housing
U-RAD-33LT	120		UTU-3LT (2)		
U-RAD-33VLT U-RAD-33LT	208	2200	UTU-3VLT (2)	024 012411 022 (0)	152 016062 002
U-RAD-33LT	240 275	2200	UTU-3LT (2) UTU-3VLT (2)	234-013411-033 (2)	152-016963-003
			UTU-4VLT	234-013411-034	
U-RAD-42VLT	208		UTU-2VLT	234-013411-032	
U-RAD-42LT	240	2600	UTU-4LT	234-013411-034	152-016963-004
011/10 4221	240	2000	UTU-2LT	234-013411-032	102 010000 004
U-RAD-42VLT	275		UTU-4VLT UTU-2VLT	234-013411-034 234-013411-032	
			UTU-4VLT	234-013411-032	
U-RAD-43VLT	208		UTU-3VLT	234-013411-033	
U-RAD-43LT	240	2900	UTU-4LT	234-013411-034	152-016963-005
O THE TOLL	210	2000	UTU-3LT	234-013411-033	102 010000 000
U-RAD-43VLT	275		UTU-4VLT UTU-3VLT	234-013411-034 234-013411-033	
U-RAD-44VLT	208		UTU-4VLT (2)	234-013411-033	
U-RAD-44LT	240	0000	UTU-4LT (2)	004 010411 004 (0)	150 010000 000
U-RAD-44VLT	275	3600	UTU-4VLT (2)	234-013411-034 (2)	152-016963-006
U-RAD-44LT	480		UTU-4LT (2)		
U-RAD-52VLT	208		UTU-5VLT UTU-2VLT	234-013411-035 234-013411-032	
			UTU-5LT	234-013411-032	
U-RAD-52LT	240	3300	UTU-2LT	234-013411-032	152-016963-007
U-RAD-52VLT	275		UTU-5VLT	234-013411-035	
O TIVE SEVEL	210		UTU-2VLT	234-013411-032	
U-RAD-53VLT	208		UTU-5VLT UTU-3LT	234-013411-035 234-013411-033	
			UTU-5VLT	234-013411-035	
U-RAD-53LT	240	3600	UTU-3LT	234-013411-033	152-016963-008
U-RAD-53VLT	275		UTU-5VLT	234-013411-035	
			UTU-3LT UTU-5VLT	234-013411-033 234-013411-035	
U-RAD-54VLT	208		UTU-4VLT	234-013411-033	
U-RAD-54LT	240		UTU-5LT	234-013411-035	
U-RAD-54LI	240	4300	UTU-4LT	234-013411-034	152-016963-009
U-RAD-54VLT	275	1000	UTU-5VLT	234-013411-035	102 010000 000
			UTU-4VLT UTU-5LT	234-013411-034 234-013411-035	
U-RAD-54LT	480		UTU-4LT	234-013411-034	
U-RAD-55VLT	208		UTU-5VLT (2)		
U-RAD-55LT	240	5000	UTU-5LT (2)	234-013411-035 (2)	152-016963-010
U-RAD-55VLT U-RAD-55LT	275 480		UTU-5VLT (2) UTU-5LT (2)		
			UTU-6VLT	234-013411-036	
U-RAD-62VLT	208		UTU-2VLT	234-013411-032	
U-RAD-62LT	240	3800	UTU-6LT	234-013411-036	152-016963-011
			UTU-2LT UTU-6VLT	234-013411-032 234-013411-036	
U-RAD-62VLT	275		UTU-2VLT	234-013411-032	
U-RAD-63VLT	208		UTU-6VLT	234-013411-036	
0-11-0-03 VLI	200		UTU-3VLT	234-013411-033	
U-RAD-63LT	240	4100	UTU-6LT UTU-3LT	234-013411-036 234-013411-033	152-016963-012
	0		UTU-6VLT	234-013411-035	
U-RAD-63VLT	275		UTU-3VLT	234-013411-033	
U-RAD-64VLT	208		UTU-6VLT	234-013411-036	
	100		UTU-4VLT UTU-6LT	234-013411-034	
U-RAD-64LT	240		UTU-6LI UTU-4LT	234-013411-036 234-013411-034	
	075	4800	UTU-6VLT	234-013411-036	152-016963-013
U-RAD-64VLT	275		UTU-4VLT	234-013411-034	
U-RAD-64LT	480		UTU-6LT	234-013411-036	
			UTU-4LT UTU-6VLT	234-013411-034 234-013411-036	
U-RAD-65VLT	208		UTU-5VLT	234-013411-035	
U-RAD-65LT	240		UTU-6LT	234-013411-036	
2	210	5500	UTU-5LT	234-013411-035	152-016963-014
U-RAD-65VLT	275		UTU-6VLT UTU-5VLT	234-013411-036 234-013411-035	
	400		UTU-6LT	234-013411-036	
U-RAD-65LT	480		UTU-5LT	234-013411-035	

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U-RAD-66LT 240 U-RAD-66LT 000 UTU-6LT (2) UTU-6VL7 (2) UTU-6UT (2) UTU-6UT (2) 234-013411-036 (2) 234-013411-037 152-016963-015 U-RAD-72VLT 208 U-RAD-72VLT 4400 UTU-7VLT 234-013411-037 172-016963-016 U-RAD-72VLT 275 UTU-7VLT 234-013411-032 172-016963-016 U-RAD-72VLT 275 UTU-7VLT 234-013411-032 172-016963-016 U-RAD-73VLT 208 UTU-7VLT 234-013411-032 172-016963-017 U-RAD-73VLT 208 UTU-7VLT 234-013411-037 172-016963-017 U-RAD-73VLT 208 UTU-7VLT 234-013411-037 172-016963-017 U-RAD-74VLT 208 UTU-7VLT 234-013411-037 172-016963-017 U-RAD-74VLT 208 UTU-7VLT 234-013411-037 172-016963-018 U-RAD-74VLT 240 UTU-7VLT 234-013411-037 172-016963-018 U-RAD-74VLT 240 UTU-7VLT 234-013411-037 152-016963-018 U-RAD-75VLT 275 UTU-7VLT 234-013411-037 152-016963-021	Model	Volts	Watts			Aluminum
U-RAD-66VLT U-RAD-66LT 275 480 6000 UTU-6VLT (2) UTU-6UT (2) 234-013411-036 (2) 234-013411-037 UTU-7VLT 152-016963-015 U-RAD-72VLT U-RAD-72VLT 240 4400 4400 UTU-7VLT UTU-7VLT 234-013411-037 UTU-7VLT 152-016963-016 U-RAD-72VLT U-RAD-73VLT 275 UTU-7VLT 234-013411-037 UTU-7VLT 152-016963-016 U-RAD-73VLT U-RAD-73VLT 276 UTU-7VLT 234-013411-037 UTU-7VLT 152-016963-016 U-RAD-73VLT U-RAD-73VLT 240 4700 UTU-7VLT 234-013411-037 UTU-3VLT 152-016963-017 U-RAD-73VLT U-RAD-73VLT 275 UTU-7VLT 234-013411-037 UTU-3VLT 152-016963-017 U-RAD-74VLT U-RAD-74VLT 208 4700 UTU-7VLT 234-013411-037 U-RAD-74VLT U-RAD-74VLT 240 4700 UTU-7VLT 234-013411-037 U-RAD-74VLT U-RAD-75VLT 275 5400 UTU-7VLT 234-013411-037 U-RAD-75VLT U-RAD-75VLT 276 6400 UTU-7VLT 234-013411-037 U-RAD-75VLT U-RAD-76VLT 276 UTU-7VLT 234-013411-037 152-016963-021 U-RAD-76VLT U-RAD-77VLT <td>U-RAD-66VLT</td> <td>208</td> <td></td> <td>UTU-6VLT (2)</td> <td></td> <td></td>	U-RAD-66VLT	208		UTU-6VLT (2)		
U-RAD-66LT 480 UTU-6LT (2) UTU-7UT 234-013411-037 152-016963-016 U-RAD-72VLT 240 4400 UTU-7VLT 234-013411-037 152-016963-016 U-RAD-72VLT 275 UTU-7VLT 234-013411-037 152-016963-016 U-RAD-73VLT 208 UTU-7VLT 234-013411-037 152-016963-016 U-RAD-73VLT 260 UTU-7VLT 234-013411-037 152-016963-017 U-RAD-73VLT 275 UTU-7VLT 234-013411-037 152-016963-017 U-RAD-73VLT 275 UTU-7VLT 234-013411-037 152-016963-017 U-RAD-74VLT 208 UTU-7VLT 234-013411-037 152-016963-017 U-RAD-74VLT 280 UTU-7VLT 234-013411-037 152-016963-017 U-RAD-74VLT 280 UTU-4VLT 234-013411-037 152-016963-018 U-RAD-74VLT 280 UTU-7VLT 234-013411-037 152-016963-018 U-RAD-75VLT 275 UTU-7VLT 234-013411-037 152-016963-021 U-RAD-75VLT 280 UTU-7VLT	U-RAD-66LT	240		UTU-6LT (2)		
U-RAD-72VLT 208 4400 UTU-7VLT 234-013411-037 152-016963-016 U-RAD-72VLT 275 UTU-7VLT 234-013411-037 152-016963-016 U-RAD-72VLT 275 UTU-7VLT 234-013411-037 152-016963-016 U-RAD-73VLT 208 UTU-7VLT 234-013411-037 152-016963-016 U-RAD-73VLT 208 UTU-7VLT 234-013411-037 152-016963-017 U-RAD-73VLT 208 UTU-7VLT 234-013411-037 152-016963-017 U-RAD-73VLT 208 UTU-7VLT 234-013411-037 152-016963-017 U-RAD-74VLT 208 UTU-7VLT 234-013411-037 152-016963-017 U-RAD-74VLT 208 UTU-7VLT 234-013411-037 152-016963-018 U-RAD-74VLT 208 UTU-7VLT 234-013411-037 152-016963-018 U-RAD-75VLT 275 6101 UTU-7VLT 234-013411-037 152-016963-021 U-RAD-75VLT 275 6101 UTU-7VLT 234-013411-037 152-016963-021 U-RAD-76VLT 275 <td< td=""><td>U-RAD-66VLT</td><td>275</td><td>6000</td><td>UTU-6VLT (2)</td><td>234-013411-036 (2)</td><td>152-016963-015</td></td<>	U-RAD-66VLT	275	6000	UTU-6VLT (2)	234-013411-036 (2)	152-016963-015
U-RAD-72UT 208 UTU-2VLT 234-013411-032 152-016963-016 U-RAD-72VLT 275 UTU-7VLT 234-013411-037 152-016963-016 U-RAD-73VLT 208 UTU-7VLT 234-013411-037 152-016963-016 U-RAD-73VLT 208 UTU-7VLT 234-013411-037 152-016963-016 U-RAD-73VLT 208 UTU-7VLT 234-013411-037 152-016963-017 U-RAD-73VLT 275 UTU-7VLT 234-013411-037 152-016963-017 U-RAD-74VLT 208 UTU-7VLT 234-013411-037 152-016963-018 U-RAD-75VLT 275 UTU-7VLT 234-013411-037 152-016963-018 U-RAD-75VLT 240 UTU-7VLT 234-013411-037 152-016963-021 U-RAD-75VLT 240 UTU-7VLT 234-013411-037 152-0169	U-RAD-66LT	480		UTU-6LT (2)		
U-RAD-72LT 240 4400 UTU-7LT 234-013411-032 152-016963-016 U-RAD-72VLT 275 UTU-7VLT 234-013411-032 152-016963-016 U-RAD-73VLT 208 UTU-7VLT 234-013411-037 152-016963-016 U-RAD-73VLT 208 UTU-7VLT 234-013411-037 152-016963-017 U-RAD-73VLT 275 UTU-7VLT 234-013411-033 152-016963-017 U-RAD-74VLT 208 UTU-7VLT 234-013411-033 152-016963-017 U-RAD-74VLT 208 UTU-7VLT 234-013411-037 152-016963-017 U-RAD-74VLT 208 UTU-7VLT 234-013411-037 152-016963-017 U-RAD-74VLT 208 UTU-7VLT 234-013411-037 152-016963-018 U-RAD-74VLT 208 UTU-7VLT 234-013411-037 152-016963-018 U-RAD-75VLT 208 UTU-7VLT 234-013411-037 152-016963-018 U-RAD-75VLT 208 UTU-7VLT 234-013411-037 152-016963-021 U-RAD-75VLT 208 UTU-7VLT 234-013411-037		200		UTU-7VLT	234-013411-037	
U-RAD-72L1 240 4400 UTU-2LT 234-013411-032 152-016963-016 U-RAD-72VLT 275 UTU-7VLT 234-013411-037 170	U-RAD-72VLI	208		UTU-2VLT	234-013411-032	
U-RAD-72VLT 275 UTU-2VLT 234-013411-032 UTU-302 U-RAD-73VLT 275 UTU-7VLT 234-013411-032 UTU-7VLT 234-013411-032 U-RAD-73VLT 208 UTU-7VLT 234-013411-033 ITU-302 ITU-302 U-RAD-73VLT 240 4700 UTU-7VLT 234-013411-033 ITU-302 U-RAD-73VLT 275 UTU-7VLT 234-013411-033 ITU-302 U-RAD-74VLT 208 UTU-7VLT 234-013411-037 ITU-302 U-RAD-74VLT 208 UTU-7VLT 234-013411-034 ITU-302 U-RAD-74LT 208 UTU-7VLT 234-013411-037 ITU-302 U-RAD-74LT 240 UTU-7VLT 234-013411-034 ITU-302 U-RAD-75VLT 275 UTU-7VLT 234-013411-037 ITU-302 U-RAD-75VLT 208 UTU-7VLT 234-013411-037 ITU-302 U-RAD-75VLT 208 UTU-7VLT 234-013411-037 ITU-302 U-RAD-75VLT 204 UTU-7VLT 234-013411-037 ITU-302		040	4400	UTU-7LT	234-013411-037	150 010000 010
U-RAD-72VL1 275 UTU-2VLT 234-013411-032 U-RAD-73VL7 208 UTU-7VL7 234-013411-037 100-70000000000000000000000000000000000	U-RAD-72LI	240	4400	UTU-2LT	234-013411-032	152-010903-010
U-RAD-73VLT 208 UTU-2VLT 234-013411-032 152-016963-017 U-RAD-73VLT 240 4700 UTU-7VLT 234-013411-033 152-016963-017 U-RAD-73VLT 275 UTU-7VLT 234-013411-033 152-016963-017 U-RAD-73VLT 275 UTU-7VLT 234-013411-037 152-016963-017 U-RAD-74VLT 208 UTU-7VLT 234-013411-037 152-016963-017 U-RAD-74VLT 208 UTU-7VLT 234-013411-037 152-016963-018 U-RAD-74VLT 240 UTU-7VLT 234-013411-037 152-016963-018 U-RAD-74VLT 240 UTU-7VLT 234-013411-037 152-016963-018 U-RAD-74VLT 240 UTU-7VLT 234-013411-037 152-016963-018 U-RAD-75VLT 275 UTU-7VLT 234-013411-037 152-016963-018 U-RAD-75VLT 208 UTU-7VLT 234-013411-037 152-016963-021 U-RAD-75VLT 275 UTU-7VLT 234-013411-037 152-016963-021 U-RAD-76VLT 275 UTU-7VLT 234-013411-037 <td></td> <td>075</td> <td></td> <td>UTU-7VLT</td> <td>234-013411-037</td> <td></td>		075		UTU-7VLT	234-013411-037	
U-RAD-73VL1 208 UTU-3VLT 234-013411-033 122-016963-017 U-RAD-73VL1 275 UTU-7VLT 234-013411-033 122-016963-017 U-RAD-73VL1 275 UTU-7VLT 234-013411-033 122-016963-017 U-RAD-74VL1 208 UTU-7VLT 234-013411-037 170-7VLT U-RAD-74L1 240 UTU-7VLT 234-013411-037 170-7VLT U-RAD-74L1 240 JUTU-7VLT 234-013411-037 170-7VLT U-RAD-74L1 240 JUTU-7VLT 234-013411-037 170-7VLT U-RAD-74L1 240 JUTU-7VLT 234-013411-037 170-7VLT U-RAD-75VL1 275 UTU-7VLT 234-013411-037 170-7VLT U-RAD-75VL1 240 JUTU-7VLT 234-013411-037 170-7VLT U-RAD-75VL1 240 JUTU-7VLT 234-013411-037 170-7VLT U-RAD-75VL1 240 JUTU-7VLT 234-013411-037 170-7VLT U-RAD-75VL1 275 UTU-7VLT 234-013411-037 170-7VLT U-RAD-76VL1 275 UTU-7VLT 234-013411-037 170-70-70-70-70-70-70-70-70-70-70-70	U-NAD-12VLI	275		UTU-2VLT	234-013411-032	
U-RAD-73LT 240 4700 UTU-3VLT 234-013411-033 152-016963-017 U-RAD-73VLT 275 UTU-7VLT 234-013411-033 152-016963-017 U-RAD-74VLT 208 UTU-7VLT 234-013411-033 152-016963-017 U-RAD-74VLT 208 UTU-7VLT 234-013411-037 170-30411 U-RAD-74VLT 208 UTU-7VLT 234-013411-037 170-30411 U-RAD-74VLT 240 UTU-7VLT 234-013411-037 170-30411 U-RAD-74LT 240 UTU-7VLT 234-013411-037 170-30411 U-RAD-74LT 480 UTU-7VLT 234-013411-037 170-30411 U-RAD-75LT 208 UTU-7VLT 234-013411-037 170-30411 U-RAD-75LT 240 UTU-7VLT 234-013411-037 170-30411 U-RAD-75LT 240 UTU-7VLT 234-013411-037 170-30411 U-RAD-75LT 240 UTU-7VLT 234-013411-037 170-30411 U-RAD-76LT 240 UTU-7VLT 234-013411-037 170-30411 U-RAD-76VLT 240 UTU-7VLT 234-013411-037 170-30411		000		UTU-7VLT	234-013411-037	
U-RAD-73LT 240 4700 UTU-3LT 234-013411-033 152-016963-017 U-RAD-73VLT 275 UTU-7VLT 234-013411-037 172-016963-017 U-RAD-74VLT 208 UTU-7VLT 234-013411-037 172-016963-017 U-RAD-74VLT 208 UTU-7VLT 234-013411-037 172-016963-018 U-RAD-74VLT 240 UTU-7VLT 234-013411-034 172-016963-018 U-RAD-74VLT 275 UTU-4VLT 234-013411-037 172-016963-018 U-RAD-74VLT 275 UTU-7VLT 234-013411-037 172-016963-018 U-RAD-75VLT 208 UTU-7VLT 234-013411-037 172-016963-018 U-RAD-75VLT 208 UTU-7VLT 234-013411-037 172-016963-021 U-RAD-75VLT 216 UTU-7VLT 234-013411-037 172-016963-021 U-RAD-75VLT 275 010 UTU-7VLT 234-013411-037 172-016963-021 U-RAD-76VLT 276 UTU-7VLT 234-013411-037 172-016963-021 172-016963-021 U-RAD-76VLT 208	U-RAD-73VLI	208		UTU-3VLT	234-013411-033	
U-RAD-73VLT 275 UTU-7VLT 234-013411-033 U-RAD-74VLT 208 UTU-7VLT 234-013411-034 U-RAD-74VLT 208 JUTU-7VLT 234-013411-037 U-RAD-74VLT 240 JUTU-7VLT 234-013411-034 U-RAD-74VLT 240 JUTU-7VLT 234-013411-037 U-RAD-74VLT 240 JUTU-7VLT 234-013411-034 U-RAD-74VLT 240 JUTU-7VLT 234-013411-034 U-RAD-74LT 480 UTU-7VLT 234-013411-034 UTU-7VLT 234-013411-037 UTU-7VLT 234-013411-037 U-RAD-75VLT 275 UTU-4VLT 234-013411-037 U-RAD-75VLT 208 UTU-7VLT 234-013411-037 U-RAD-75VLT 208 UTU-7VLT 234-013411-037 U-RAD-75VLT 275 UTU-7VLT 234-013411-037 U-RAD-76VLT 275 UTU-7VLT 234-013411-037 U-RAD-76VLT 275 UTU-7VLT 234-013411-037 U-RAD-76VLT 275 UTU-7VLT 234-013411-037		0.40	4700	UTU-7LT	234-013411-037	150 010000 017
U-RAD-73VLI 275 UTU-3VLT 234-013411-033 U-RAD-74VLT 208 UTU-7VLT 234-013411-037 U-RAD-74VLT 240 UTU-7VLT 234-013411-037 U-RAD-74VLT 240 UTU-7VLT 234-013411-037 U-RAD-74VLT 275 5400 UTU-4VLT 234-013411-037 U-RAD-74VLT 275 UTU-4VLT 234-013411-037 100 U-RAD-74LT 480 UTU-7VLT 234-013411-037 100 U-RAD-75VLT 208 UTU-7VLT 234-013411-037 100 U-RAD-75VLT 208 UTU-7VLT 234-013411-037 100 U-RAD-75VLT 208 UTU-7VLT 234-013411-037 100 U-RAD-75VLT 210 1010-5VLT 234-013411-037 1010-5VLT 234-013411-035 152-016963-021 U-RAD-76VLT 210 1010-5VLT 234-013411-035 152-016963-021 1010-5VLT 234-013411-035 152-016963-021 U-RAD-76VLT 208 UTU-7VLT 234-013411-035 1010-5VLT 234-013411-035	U-RAD-73LI	240	4700	UTU-3LT	234-013411-033	152-016963-017
U-RAD-74VLT 208 UTU-3VLT 234-013411-033 U-RAD-74LT 240 UTU-7VLT 234-013411-037 100 U-RAD-74LT 240 UTU-7VLT 234-013411-034 100 U-RAD-74LT 240 101-7LT 234-013411-037 101 U-RAD-74LT 275 5400 UTU-7VLT 234-013411-037 100 U-RAD-74LT 480 UTU-7VLT 234-013411-037 100 100 U-RAD-75VLT 208 UTU-7VLT 234-013411-037 100 100 U-RAD-75VLT 240 UTU-7VLT 234-013411-037 100 10		075		UTU-7VLT	234-013411-037	
U-RAD-74VL1 208 UTU-4VLT 234-013411-034 1-234-013411-037 1-234-01341	U-RAD-73VLI	275		UTU-3VLT	234-013411-033	
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Parts Common to all Heaters (Per Element)						
5	Terminal Box	304-037344-001				
6	Terminal Box Cover	080-048621-001				
7	Threaded Fitting Gasket	132-010712-007 (2)				
8	Threaded Fitting Washer	328-046907-003 (2)				
9	Threaded Fitting Nut	200-046906-003 (2)				
10	Saddle	238-026539-001 (2)				
11	Terminal Screw	248-046044-002 (2)				
13	Element Support Clip	059-014304-002				
14	Insulating Bushing	032-013454-001				
15	Bushing Retaining Clip	059-017175-001				

Heater Mounting Clamp Assembly					
For heaters less than 74-1/2" overall length (Includes two complete assemblies)	168-013071-001				
For heaters 74-1/2" and greater overall length (Includes three complete assemblies)	168-013071-002				

Appendix A - Low Megohm Condition

This document should be utilized in conjunction with and does not supersede, Chromalox Service Bulletin, Problem: Electric Heaters with Low Insulation Resistance (Megohms), in order to facilitate needed dry out of heaters. Insulation resistance is usually measured using a 500 VDC potential between live circuits (heater terminals) and the chassis (ground). At time of shipment from the factory, typical insulation resistance values range from 5 Megohms or greater for unsealed multiple assemblies to 20 Megohms or greater for individual elements. Elements installed in wet, humid environments are particularly susceptible to moisture contamination, which can lead to low insulation resistance. While low insulation resistance usually does not affect heater efficiency or life, it can cause serious electrical problems during initial start-up. Therefore, as a general rule, it is recommended that any heating element and/ or heater assembly with less than 1 Megohm insulation resistance per circuit be reviewed with factory before applying full power.

Recommended Procedure

The recommended procedure for correcting low insulation resistance is to dry the heater out with externally applied uniform heat (oven) at 300 to 350°F for several hours. This dry out or baking procedure is best performed under the supervision of service personnel at the factory. If a heater or heater assembly has a low or questionable insulation resistance (Megohms) the recommended procedure is to contact the Chromalox Service Department for further instructions. If it is determined that the heater has an unacceptably low insulation resistance and cannot be easily repaired in the field, the Service Department will issue a material return authorization (MRA) for rework and dry out at the factory.

Drying Out an Installed Heater

Energize the heater at approximately 1/2 the rated voltage (1/4 Wattage) for 10 to 15 minutes. Continue the process until the heater circuits read 1.0 Megohm or higher. Operating the heater under these conditions produces enough heat in the elements to drive the moisture out while reducing the risk of overheating the equipment. Even at 1/4 of the wattage it is possible to overheat and damage the equipment or the heated media. Failure to limit sheath temperatures could permanently damage the elements and void the equipment warranty. If the heater has an over temperature control or sensor, use this device to limit the operating temperature (sheath temperature) to safe limits during the dry out process. Continue the process until the heater circuits read 1.0 Megohm or higher.

Maintaining Insulation Resistance

Normally a heater with an acceptable insulation resistance will continue to maintain its optimum insulation resistance if operated on a frequent or daily basis. When elements are operated in high humidity environments, heater assemblies may be kept dry during down time by installing a desiccant inside the terminal enclosure.

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

> Chromalox, Inc. 1347 Heil Quaker Boulevard Lavergne, TN 37086 (615) 793-3900 www.chromalox.com