

## Installation Instructions

# U-RAD-LT Electric Radiant Heaters



PG421-2  
161-058006-001  
May 2016



## U-RAD-LT Electric Radiant Heaters

**The Safety Alert Symbol  is used to indicate a risk of personal injury.**

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

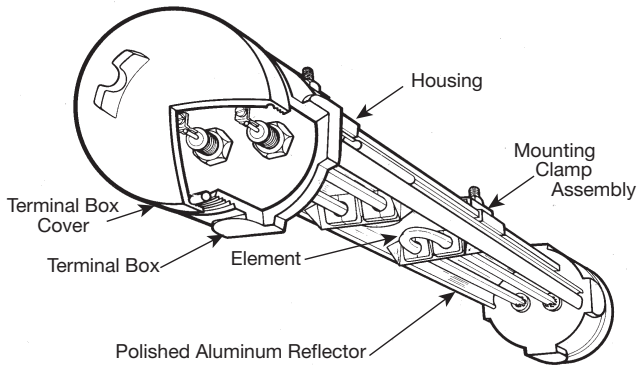
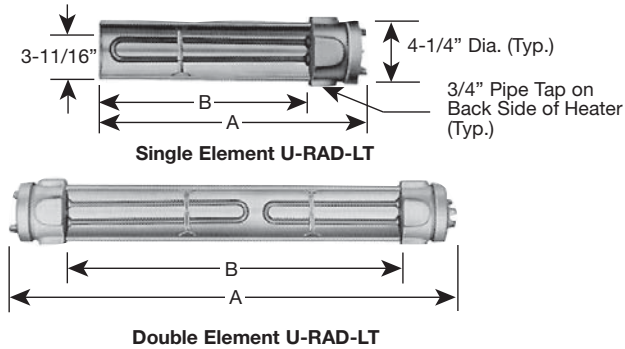


Figure 1 – Heater Parts and Dimensions

### Before Installing

1. Open carton and remove heater at the place of installation. Mounting clamps are in parts bag in carton.
2. 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.

### **⚠ WARNING**

**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**

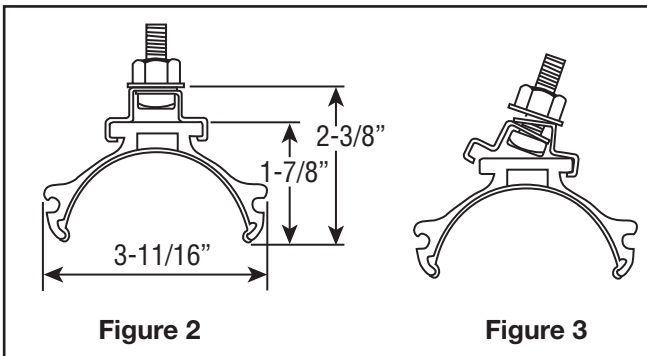
Model	Volts	Watts	A Overall Length (In.)	B Heated Length( In.)
<b>Single U-Shaped Element</b>				
U-RAD-2LT	120 or 240	800	13-5/16	8-7/16
U-RAD-2VLT	208 or 275			
U-RAD-3LT	120 or 240	1100	16-7/16	1-15/16
U-RAD-3VLT	208 or 275			
U-RAD-4VLT	208 or 275	1800	24-3/8	19-3/8
U-RAD-4LT	240 or 480			
U-RAD-5VLT	208 or 275	2500	31-13/16	261-3/16
U-RAD-5LT	240 or 480			
U-RAD-6VLT	208 or 275	3000	37-13/16	32-13/16
U-RAD-6LT	240 or 480			
U-RAD-7VLT	208 or 275	3600	43-15/16	38-15/16
U-RAD-7LT	240 or 480			
<b>Two U-Shaped Elements</b>				
U-RAD-22LT	120 or 240	1600	26-1/8	16-5/8
U-RAD-22VLT	208 or 275			
U-RAD-32LT	120 or 240	1900	29-1/4	19-3/4
U-RAD-32VLT	208 or 275			
U-RAD-33LT	120 or 240	2200	32-3/8	22-7/8
U-RAD-33VLT	208 or 275			
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	240			
U-RAD-54VLT	208 or 275	4300	55-5/8	46-3/16
U-RAD-54LT	240 or 480			
U-RAD-55VLT	208 or 275	5000	63-1/8	53-5/8
U-RAD-55LT	240 or 480			
U-RAD-62VLT	208 or 275	3800	50-9/16	41-1/8
U-RAD-62LT	240			
U-RAD-63VLT	208 or 275	4100	53-11/16	44-1/4
U-RAD-63LT	240			
U-RAD-64VLT	208 or 275	4800	6-19/16	52-3/16
U-RAD-64LT	240 or 480			
U-RAD-65VLT	208 or 275	5500	69-1/16	59-5/8
U-RAD-65LT	240 or 480			
U-RAD-66VLT	208 or 275	6000	75	65-5/8
U-RAD-66LT	240 or 480			
U-RAD-72VLT	208 or 275	4400	56-11/16	47-1/4
U-RAD-72LT	240			
U-RAD-73VLT	208 or 275	4700	59-13/16	50-3/8
U-RAD-73LT	240			
U-RAD-74VLT	208 or 275	5400	67-11/16	58-5/16
U-RAD-74LT	240 or 480			
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

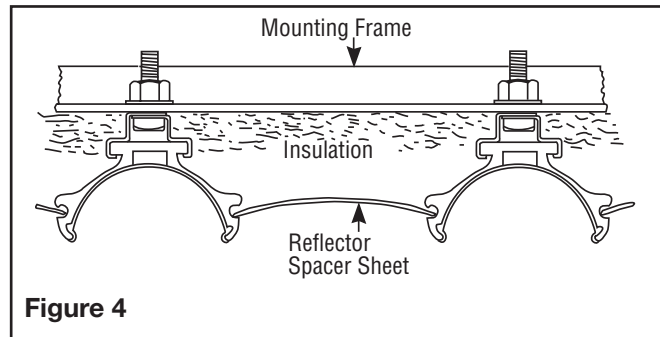
### **⚠ WARNING**

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

1. 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.



2. 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".
3. 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.

### **⚠ WARNING**

**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 from 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

### **⚠ 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 or serviced 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.**

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.
4. 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.**
5. 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.

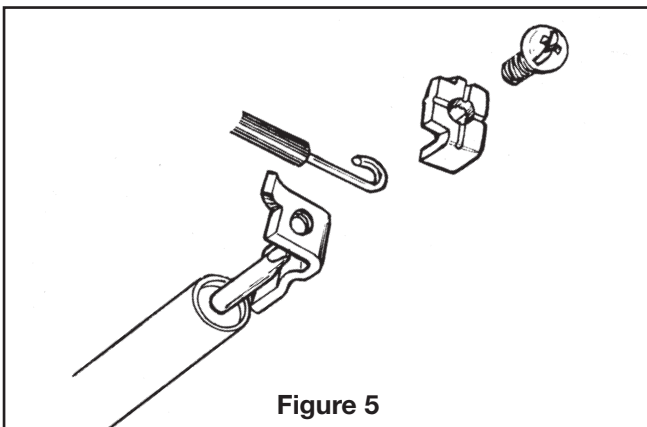


Figure 5

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.

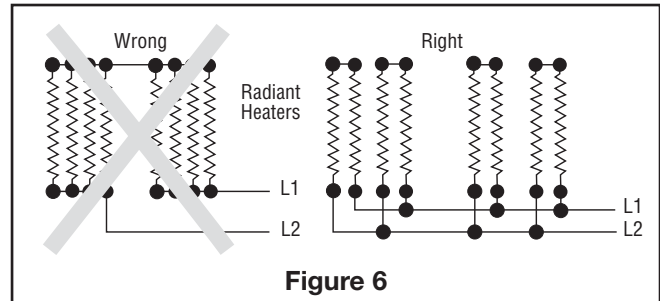


Figure 6

9. DELTA CONNECTIONS — When heaters occur in multiples of three, they may be connected to, and balanced across, three-phase 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.

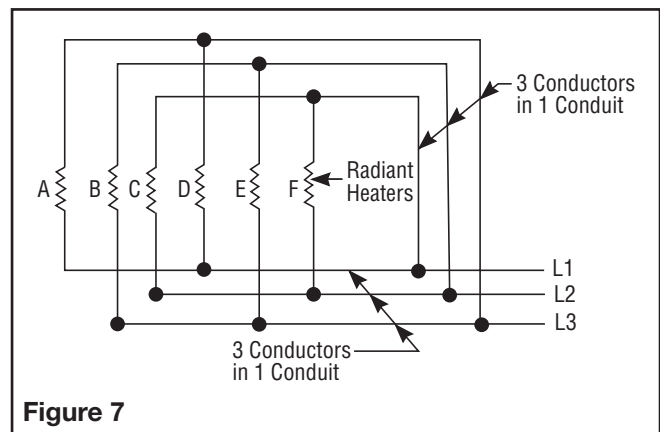


Figure 7

## Operation

### **⚠ WARNING**

**FIRE/EXPOSION 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.

1. **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 CONTROLLERS.** 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 preengineered, 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

### **⚠ 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 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 —**

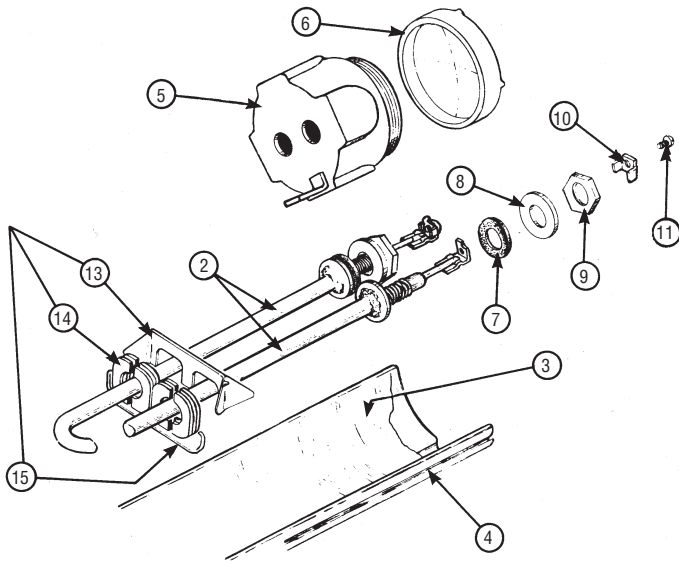
Reflectors should be cleaned periodically. A mild soap and water solution or fine cleaning powder is best although more drastic means may be required if reflectors are badly soiled by chemical or other deposits. The reflector is aluminum. DO NOT use alkali cleaners since alkalies will dull reflector. 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



**Figure 8**

① Element assembly includes all parts shown except items ③ and ④ For element assembly part number, and prefix “R” to Element part number ② Ex: R UTU-6VLT, 208V, 3000W

Model	Volts	Watts	② Element*	③ Reflector	④ Aluminum Housing
U-RAD-2LT	120	800	UTU-2LT	234-013411-032	152-016961-001
U-RAD-2VLT	208		UTU-2VLT		
U-RAD-2LT	240		UTU-2LT		
U-RAD-2VLT	275		UTU-2VLT		
U-RAD-3LT	120	1100	UTU-3LT	234-013411-033	152-016961-002
U-RAD-3VLT	208		UTU-3VLT		
U-RAD-3LT	240		UTU-3LT		
U-RAD-3VLT	275		UTU-3VLT		
U-RAD-4VLT	208	1800	UTU-4VLT	234-013411-034	152-016961-003
U-RAD-4LT	240		UTU-4LT		
U-RAD-4VLT	275		UTU-4VLT		
U-RAD-4LT	480		UTU-4LT		
U-RAD-5VLT	208	2500	UTU-5VLT	234-013411-035	152-016961-004
U-RAD-5LT	240		UTU-5LT		
U-RAD-5VLT	275		UTU-5VLT		
U-RAD-5LT	480		UTU-5LT		
U-RAD-6VLT	208	3000	UTU-6VLT	234-013411-036	152-016961-005
U-RAD-6LT	240		UTU-6LT		
U-RAD-6VLT	275		UTU-6VLT		
U-RAD-6LT	480		UTU-6LT		
U-RAD-7VLT	208	3600	UTU-7VLT	234-013411-037	152-016961-006
U-RAD-7LT	240		UTU-7LT		
U-RAD-7VLT	275		UTU-7VLT		
U-RAD-7LT	480		UTU-7LT		
U-RAD-22LT	120	1600	UTU-2LT (2)	234-013411-032 (2)	152-016963-001
U-RAD-22VLT	208		UTU-2VLT (2)		
U-RAD-22LT	240		UTU-2LT (2)		
U-RAD-22VLT	275		UTU-2VLT (2)		
U-RAD-32LT	120	1900	UTU-3LT	234-013411-033	152-016963-002
U-RAD-32VLT	208		UTU-2LT	234-013411-032	
			UTU-3VLT	234-013411-033	
U-RAD-32LT	240		UTU-2VLT	234-013411-032	
			UTU-3LT	234-013411-033	
U-RAD-32VLT	275		UTU-2LT	234-013411-032	
		UTU-3VLT	234-013411-033		

Model	Volts	Watts	② Element*	③ Reflector	④ Aluminum Housing
U-RAD-33LT	120		UTU-3LT (2)		
U-RAD-33VLT	208		UTU-3VLT (2)		
U-RAD-33LT	240	2200	UTU-3LT (2)	234-013411-033 (2)	152-016963-003
U-RAD-33VLT	275		UTU-3VLT (2)		
U-RAD-42VLT	208		UTU-4VLT	234-013411-034	
			UTU-2VLT	234-013411-032	
U-RAD-42LT	240	2600	UTU-4LT	234-013411-034	152-016963-004
			UTU-2LT	234-013411-032	
U-RAD-42VLT	275		UTU-4VLT	234-013411-034	
			UTU-2VLT	234-013411-032	
U-RAD-43VLT	208		UTU-4VLT	234-013411-034	
			UTU-3VLT	234-013411-033	
U-RAD-43LT	240	2900	UTU-4LT	234-013411-034	152-016963-005
			UTU-3LT	234-013411-033	
U-RAD-43VLT	275		UTU-4VLT	234-013411-034	
			UTU-3VLT	234-013411-033	
U-RAD-44VLT	208		UTU-4VLT (2)		
U-RAD-44LT	240	3600	UTU-4LT (2)	234-013411-034 (2)	152-016963-006
U-RAD-44VLT	275		UTU-4VLT (2)		
U-RAD-44LT	480		UTU-4LT (2)		
U-RAD-52VLT	208		UTU-5VLT	234-013411-035	
			UTU-2VLT	234-013411-032	
U-RAD-52LT	240	3300	UTU-5LT	234-013411-035	152-016963-007
			UTU-2LT	234-013411-032	
U-RAD-52VLT	275		UTU-5VLT	234-013411-035	
			UTU-2VLT	234-013411-032	
U-RAD-53VLT	208		UTU-5VLT	234-013411-035	
			UTU-3LT	234-013411-033	
U-RAD-53LT	240	3600	UTU-5VLT	234-013411-035	152-016963-008
			UTU-3LT	234-013411-033	
U-RAD-53VLT	275		UTU-5VLT	234-013411-035	
			UTU-3LT	234-013411-033	
U-RAD-54VLT	208		UTU-5VLT	234-013411-035	
			UTU-4VLT	234-013411-034	
U-RAD-54LT	240	4300	UTU-5LT	234-013411-035	152-016963-009
			UTU-4LT	234-013411-034	
U-RAD-54VLT	275		UTU-5VLT	234-013411-035	
			UTU-4VLT	234-013411-034	
U-RAD-54LT	480		UTU-5LT	234-013411-035	
			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	275		UTU-5VLT (2)		
U-RAD-55LT	480		UTU-5LT (2)		
U-RAD-62VLT	208		UTU-6VLT	234-013411-036	
			UTU-2VLT	234-013411-032	
U-RAD-62LT	240	3800	UTU-6LT	234-013411-036	152-016963-011
			UTU-2LT	234-013411-032	
U-RAD-62VLT	275		UTU-6VLT	234-013411-036	
			UTU-2VLT	234-013411-032	
U-RAD-63VLT	208		UTU-6VLT	234-013411-036	
			UTU-3VLT	234-013411-033	
U-RAD-63LT	240	4100	UTU-6LT	234-013411-036	152-016963-012
			UTU-3LT	234-013411-033	
U-RAD-63VLT	275		UTU-6VLT	234-013411-036	
			UTU-3VLT	234-013411-033	
U-RAD-64VLT	208		UTU-6VLT	234-013411-036	
			UTU-4VLT	234-013411-034	
U-RAD-64LT	240	4800	UTU-6LT	234-013411-036	152-016963-013
			UTU-4LT	234-013411-034	
U-RAD-64VLT	275		UTU-6VLT	234-013411-036	
			UTU-4VLT	234-013411-034	
U-RAD-64LT	480		UTU-6LT	234-013411-036	
			UTU-4LT	234-013411-034	
U-RAD-65VLT	208		UTU-6VLT	234-013411-036	
			UTU-5VLT	234-013411-035	
U-RAD-65LT	240	5500	UTU-6LT	234-013411-036	152-016963-014
			UTU-5LT	234-013411-035	
U-RAD-65VLT	275		UTU-6VLT	234-013411-036	
			UTU-5VLT	234-013411-035	
U-RAD-65LT	480		UTU-6LT	234-013411-036	
			UTU-5LT	234-013411-035	

Model	Volts	Watts	② Element*	③ Reflector	④ Aluminum Housing
U-RAD-66VLT	208		UTU-6VLT (2)		
U-RAD-66LT	240		UTU-6LT (2)		
U-RAD-66VLT	275	6000	UTU-6VLT (2)	234-013411-036 (2)	152-016963-015
U-RAD-66LT	480		UTU-6LT (2)		
U-RAD-72VLT	208		UTU-7VLT	234-013411-037	
			UTU-2VLT	234-013411-032	
U-RAD-72LT	240	4400	UTU-7LT	234-013411-037	152-016963-016
			UTU-2LT	234-013411-032	
U-RAD-72VLT	275		UTU-7VLT	234-013411-037	
			UTU-2VLT	234-013411-032	
U-RAD-73VLT	208		UTU-7VLT	234-013411-037	
			UTU-3VLT	234-013411-033	
U-RAD-73LT	240	4700	UTU-7LT	234-013411-037	152-016963-017
			UTU-3LT	234-013411-033	
U-RAD-73VLT	275		UTU-7VLT	234-013411-037	
			UTU-3VLT	234-013411-033	
U-RAD-74VLT	208		UTU-7VLT	234-013411-037	
			UTU-4VLT	234-013411-034	
U-RAD-74LT	240	5400	UTU-7LT	234-013411-037	152-016963-018
			UTU-4LT	234-013411-034	
U-RAD-74VLT	275		UTU-7VLT	234-013411-037	
			UTU-4VLT	234-013411-034	
U-RAD-74LT	480		UTU-7LT	234-013411-037	
			UTU-4LT	234-013411-034	
U-RAD-75VLT	208		UTU-7VLT	234-013411-037	
			UTU-5VLT	234-013411-035	
U-RAD-75LT	240	6100	UTU-7LT	234-013411-037	152-016963-021
			UTU-5LT	234-013411-035	
U-RAD-75VLT	275		UTU-7VLT	234-013411-037	
			UTU-5VLT	234-013411-035	
U-RAD-75LT	480		UTU-7LT	234-013411-037	
			UTU-5LT	234-013411-035	
U-RAD-76VLT	208		UTU-7VLT	234-013411-037	
			UTU-6VLT	234-013411-036	
U-RAD-76LT	240	6600	UTU-7LT	234-013411-037	152-016963-019
			UTU-6LT	234-013411-036	
U-RAD-76VLT	275		UTU-7VLT	234-013411-037	
			UTU-6VLT	234-013411-036	
U-RAD-76LT	480		UTU-7LT	234-013411-037	
			UTU-6LT	234-013411-036	
U-RAD-77VLT	208		UTU-7VLT (2)		
U-RAD-77LT	240	7200	UTU-7LT (2)	234-013411-037 (2)	152-016963-020
U-RAD-77VLT	275		UTU-7VLT (2)		
U-RAD-77LT	480		UTU-7LT (2)		

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>.

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