



I SQUARED R ELEMENT CO., INC.



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TROUBLESHOOTING

Starbar SiC heating element life is limited due to several reasons, but the major reason for failure is rarely due to faulty material or workmanship.

The most common reasons for element failure, which we have seen have been due to:

- **Mechanical stress** --Terminal holes should be aligned and straight in the refractory wall. Any binding of the Starbar can cause breakage during heat-up or operation due to expansion or movement of the furnace walls. If the elements are tight in the terminal holes or something bumps or jars the elements, they will break. Please make sure the elements can be moved north and south and east and west about 4-6mm (1/8"-3/8") with a slight force such as can be applied with a thumb and a finger pushing on a pencil. This test should be done both at room temperature and at maximum furnace operating temperature.

Contact straps should be long enough so that no stresses are transferred to the elements.

- **Arcing** --Arcing occurs when the element is powered. If an element is not free to radiate freely in all directions, the section too close to a wall will overheat, arc and fail.
- **Careless handling** -- Handling of element packages by the carriers while in transit. Handling of elements by the customer after being removed from the package.
- **Chemical Attack** -- Silicon carbide heating elements should be operated in a clean environment. Glass deposits, for example, can cause mechanical breaks. The differences in coefficients of thermal expansion causes mechanical stresses in the element structure and breakage to occur.

If possible, keep excessive moisture, methane and hydrocarbon vapors out of the high-temperature zone of the furnace, where the elements are located.

If moisture is unavoidable, and for more aggressive furnace atmospheres, we recommend LMA infusion glazed coated elements. Please contact us if you have any questions.

- **Overheating** -- Center the element in the chamber so no portion of the heating section is in the refractory wall. This can be done by measuring the cold end length sticking out of the furnace shell and make sure they are both equal.