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MATCHING SILICON CARBIDE HEATING ELEMENTS

We are very particular in the matching of the amps supplied in a given shipment to help give you the best matching that we can. The reason for matching is to improve the heating element life and to improve the temperature uniformity in the furnace chamber. Your primary concern is for improving heating element life.

The reason for having elements that are matched in resistance in a set is to keep the surface temperature of the elements as nearly the same value as possible. If there is a large variation in resistance, there will be a large difference in surface temperature. Normally a 10% difference in resistance is acceptable.

An all parallel electrical heating element arrangement is preferable to a series arrangement for the higher resistance element will operate at a lower surface temperature for the higher resistance element will be providing less power. This also has a self-balancing characteristic. Conversely in an all series arrangement, the highest resistant element will be the highest in temperature. Therefore, matching of elements when connected in series is more important than when connected in parallel.

Before shipping, we always select the closest matched elements from those we have available. We have a chart that we work from. The smaller diameter elements are normally in larger sets than the larger diameter elements. This coincides with normal furnace design in that large diameter elements are usually installed in smaller sets. We always try to match to a customer's specifications and will contact the customer should we have trouble meeting his matching specifications.

The size of a set is determined by the number of elements connected to a transformer tap switch. If you could control the voltage to each element you need not be concerned about matching.

Matching of the Starbars is done by current rather than by resistance, for it is a more convenient value for us to use.

The ampere values used for matching are written in black marker on the end of the element carton and also in white crayon on the cold end of the heating element.