

## 1.0 Scope

This instruction covers replacement of an infrared lamp emitter in an IR furnace chamber. Applies to most RTC, GBT and LCI infrared furnaces.

## 2.0 Time Required

For standard furnace systems, allocate approximately 15-30 minutes to replace a single lamp. Add 5 minutes for each additional lamp to be replaced.

For hermetically sealed (HC) furnace systems, allocate approximately 30-45 minutes to replace a single lamp including opening and closing the plenum covers. Add 5-10 minutes for each additional lamp to be replaced within in the same chamber and 15 minutes for each additional plenum that must be accessed.

## 3.0 Tools and Materials Required

Collect the following tools to perform the work:

- Replacement lamp(s)
- Replacement Kaowool packing material
- Lamp Rod Tool (1-/8" x 36" long rod with looped ends as shown in Figure 3-1)
- (2) open ended wrenches (3/8 inch)
- Allen wrench (1/8 inch)
- Flashlight
- Lint free cloth or protective gloves



**Figure 3-1 Lamp Rod Tool**

## 4.0 Procedure

### 4.1 Lamp Removal

- 4.1.1 Make sure the furnace is cool.
- 4.1.2 Remove all power from the furnace.
- 4.1.3 If Plenum covers are supplied, remove the setscrews securing the plenum clamps and carefully remove plenum covers. Care must be taken not to damage the rubber seal between the plenum chamber and the chamber cover.
- 4.1.4 Short one lamp from each zone to the furnace frame to remove any charge residing in the lamps.
- 4.1.5 Taking care not to disturb the ceramic insulating blocks, use one of the 3/8" wrenches to hold the base nut while you loosen the fastening nut.

**Warning:** If the furnace is equipped with the hermetic seal (HC), any cracks to the insulating block will result in furnace chamber leaks and should be replaced if broken.

- 4.1.6 Disconnect the element lead from the insulating terminal block. Repeat this step for the opposite side.
- 4.1.7 Remove lamp and old packing material.

**Warning:** Do not touch the quartz glass surface of the lamp. If a lamp is touched, carefully clean the quartz surface with a clean cotton cloth and isopropol alcohol to remove any oils or impurities from the surface of the glass.

- 4.1.8 Disconnect the element lead from the insulating terminal block. Repeat this step for the opposite side.

## 4.2 Lamp Installation

**4.2.1** Make sure the red sealant securing the ceramic lamp holder is intact. Unsealed ceramic lamp holders may be resealed with Kaowool packing.

**4.2.2** Using a lint free cloth or protective gloves, remove the lamp from its carton being very careful not to touch the glass with bare hands.

**4.2.3** Insert the Lamp Rod Tool through the lamp holder hole to the other side. Have one assistant take an end of the lead on the new lamp push it into the loop of the Lamp Rod Tool, bending the lead back about a half an inch as shown in figure 4-2. Pull the lead through having the assistant hold the lamp straight until it comes out of your side. Carefully pull the end of the lamp all the way through the furnace chamber and center.

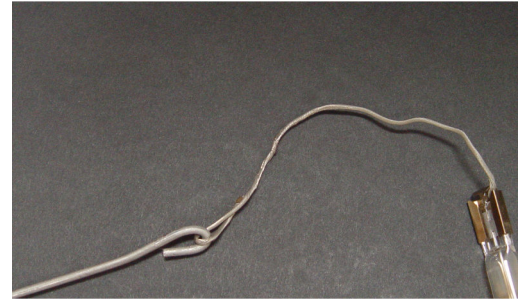
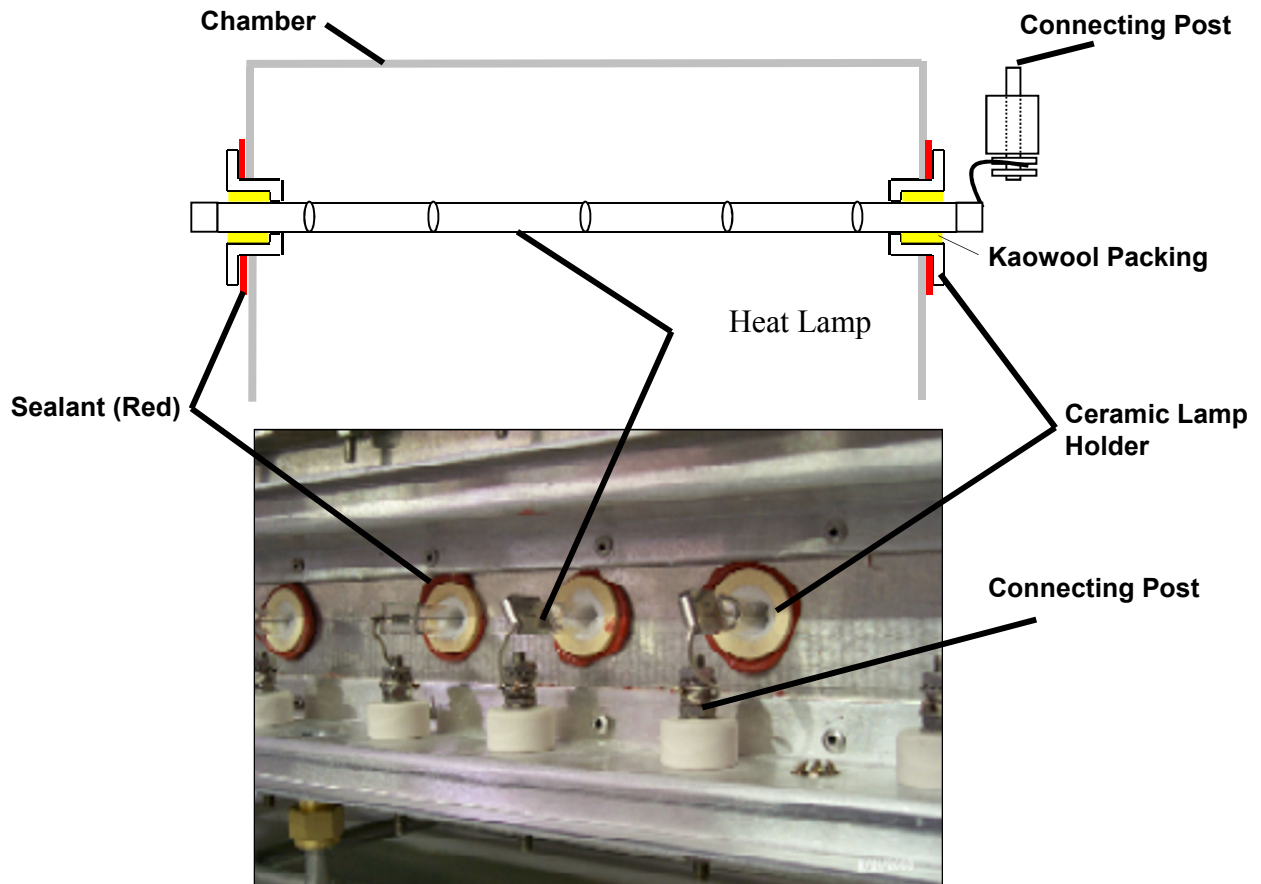


Figure 4-2: Lamp lead wire looped through Lamp Rod



**Figure 4-3: Lamp Replacement**  
Cross-section Across-the-Belt (diagram at top), End View (photo at bottom)

**4.2.4** Pack the ceramic holders on both sides with the Kaowool packing material.

**4.2.5** Re-center the lamp to  $\pm 1/32$ -in. ( $\pm 0.8$ -mm) and recheck the packing.

**4.2.6** Wrap the connection leads around the connection terminals in the same direction as the nut will be tightened. Use two wrenches, as you did when removing the connection, to ensure the connection post is not disturbed.

**4.2.7** Cut off excess connection wire.

**4.2.8** Replace plenum covers being careful not to damage the rubber seal.