ACTIVATION SCHEDULE
Y-796

The Y-796 is a unique, osmium-coated, dispenser-cathode electron gun system that can be opened to air, sealed, and re-activated. If the gun is stored in a vacuum of 10E-3 Torr or better and exposed to the atmosphere for less than 8 hours, it can be re-activated. With proper handling and activation it can have a lifetime of several thousand hours.

For proper handling and activation the following schedule is recommended:

1. The unit is shipped under a hard vacuum (1E-7 Torr). Let the shipping vessel up to air with the following procedure:

   a) Clean and polish the tubulation at the top of the assembly. The final cleaning should be accomplished with Methyl Ethyl Ketone or similar solvent. Make sure that the tubulation and the area around the tubulation are free of oxidation and dirt. The assembly is made of a very high grade copper and should shine. Make sure there is no particulate matter around the tubulation.

   b) With a pair of diagonal cutters, violate the vacuum integrity of the vessel. Do this by cutting the tubulation approximately perpendicular to the pinched surface. A rushing of air should be heard. At this point the active portion of the gun is up to air.

   c) Disassemble the conflat by carefully removing the bolts on the lower portion of the assembly. Very carefully remove the crush gasket if it remained with the gun portion of the conflat. Discard the crush gasket and copper cover with its conflat.

Please note that now the gun assembly is up to air and is mechanically exposed, the grid structure is extremely delicate and any physical contact with the grid is most likely going to ruin the assembly. Some of the tolerances within the tube are held to 10s of microns.

2. Install a new crush gasket and carefully mount the assembly to the mating conflat flange. Torque the bolts to proper torque values.

3. Pump the vacuum vessel to a minimum of 10E-7 Torr. When the vacuum is in the 1E-6 range, apply heater voltage of 3.0 volts. Allow the system to out gas at 1E-7 for a minimum of 30 minutes. A longer out gas time will not cause any problems.

4. Raise the filament voltage in 0.5 volt increments of five minutes each to 7.0 VAC and hold for 10 minutes at 7.0 VAC. With the filament at a voltage of 7.0 VAC, the surface of the temperature should be at about 1100 degrees Celsius. While not completely necessary, it is very helpful to monitor the performance of the cathode with a curve tracer. Before the cathode is formed, the cathode will not produce any current with any amount of grid drive. As the cathode is being formed, there will be more and more current generated.

5. Lower the filament voltage to 6.5 VAC and allow the cathode to age in for 30 minutes. The gun will then be ready for a filament voltage of 5.5 to 7.0 VAC. With the filament at 5.5 VAC, the cathode temperature of 950 degrees celsius and the 7.0 VAC on the filament, the cathode temperature should be approximately 1100 degrees Celsius. The higher the temperature of the cathode, the more current will be available at the expense of life. The lowest heater temperature should be used to meet the application for the longest life.

6. If the system is to be let up to air, the gun should be allowed to cool for 30 minutes. The system will preferably let to dry nitrogen. For reactivation, follow steps 3 through 5 again. If the assembly is to be stored for an extended length of time, it should be stored in a vacuum of 10E-3 or better.

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