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PHI X-ray Source Bake-Out Tips

Two potential x-ray source problems may occur after baking-out a PHI XPS system. Their causes are listed below by source type.

04-500/04-548 15kV Dual Anode X-ray Source

When you bake-out the 04-500/04-548 x-ray source you must first remove the Teflon cooling lines and high voltage (HV) connector from the anode and drain the water out of the source. Most 04-500 and 04-548 anodes have a 1 kΩ 15 kV resistor between the HV connector and the anode, others have just a wire. In both cases, it is essential that after the bake-out the HV connection to the anode is tight. If it is not, the source or system electronics can be damaged by source arcing. The picture below shows a 1k ohm resistor that was destroyed because the resistor connections were not tightened properly after system bake-out.

10-550/10-560 Mono X-ray source

When the 10-550/10-560 x-ray source is baked-out, the Teflon block that directs the water into and out of the source needs to be removed. Also remove the Viton O-rings on the anode that are exposed after the Teflon block has been removed. If the O-rings are not removed for bake-out, they will dry out and cooling water will leak past them during normal operation of the x-ray source. The result is that carbon arc lines form inside the Teflon block that eventually cause water leaks and/or high voltage leakage across the anode. This problem is easily prevented by simply removing the O-rings before the system is baked-out. A picture of the O-rings is shown to the right.