

Electrode Cleaning

All electrodes will require periodic cleaning to remove the build up of material on the conductive metal surfaces. This build up is normal and a byproduct of the EP process.

To minimize the accumulation of material cleaning immediately following electroporation is recommended, as per the Maintenance section of the Instruction Manual, summarized below:

1. Rinse electrode contact area in warm water;
2. Wash with dilute detergent (1% V/V) and rinse with deionized water.
3. Clean with 70% ethanol or isopropanol.
4. Immerse in a plastic tray filled with 1% acetic acid. Place tray in a sonic bath for 1 minute. Rinse with deionized water and dry in the vacuum base.

For extremely stubborn deposits, more aggressive cleaning solutions and disassembly of the electrode may be required. During disassembly ensure that the gold plated electrode contact areas are not damaged.

1. Remove housing retention screws;
 2. Separate electrode assembly from housing by sliding HV wires into housing;
 3. Disconnect HV wiring;
 4. Separate gold plated electrode blocks from white insulator.
- NOTE: Care must be used not to bend HV electrode pins at this step;
5. Inspect both pin and sleeve blocks for damage, arcing, pitting, or other physical damage.
 6. Cleaning is accomplished with a 5% solution of hot oxalic acid, supplemented with agitation from a nylon bristle brush.
 7. Rinse and dry.
 8. To test for pitting of the gold plating, immerse electrode contact area into a strong solution (10%) of hydrogen peroxide (or other suitable oxidizing solution). The presence of black pits in the surface is an indication of plating breakdown (may require the use of optical magnification, up to 3X). Pitted electrodes cannot be easily repaired.
 9. Thoroughly rinse with deionized water, dry and assemble in the reverse order from above.
 10. Inspect after assembly, ensuring that the pin (center electrode) is centered in each sleeve (outer electrode).