

### **Application Hints**



- Never clean *novelty or inexpensive jewelry* in the cleaner. The combination of heat and vibration may loosen a cement-held setting.
- **Never clean gemstones** such as emerald, amethyst, pearl, opal, coral, turquoise, peridot or lapis lazuli in the cleaner.

**First time cleaning** - first experiment with one piece, then proceed with the remainder.

**Solution level** - Be sure to maintain solution level within 3/8 inch of the tank's "operating level" line. Surface activity can vary with liquid level.

**Load size** - It is faster and more efficient to run several small loads rather than a few big loads.

**Placing items** - **Never allow items to sit on the bottom of the tank.** Always place them in a tray or beaker or suspend in the solution.

**Rinsing items** - After cleaning, use a clean water bath to rinse away chemicals adhering to items.

**Lubricating items** - When necessary, re-lubricate items immediately after cleaning.

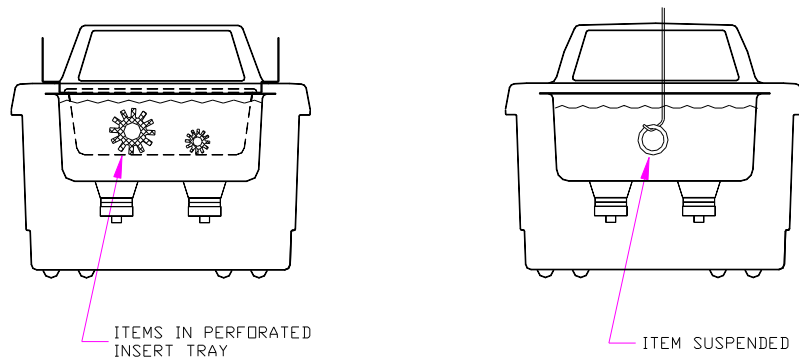
**Drying items** - Air drying at room temperature works for some items. Place parts requiring faster drying time under hot air blowers or in ovens.

Please call Qsonica, LLC. Technical Support if you have application questions.

## **Cleaning Methods**

There are two methods of cleaning - direct and indirect. Each has advantages and disadvantages. When in doubt, run test samples using both methods to decide which one produces the best results for you.

### **Direct Method**

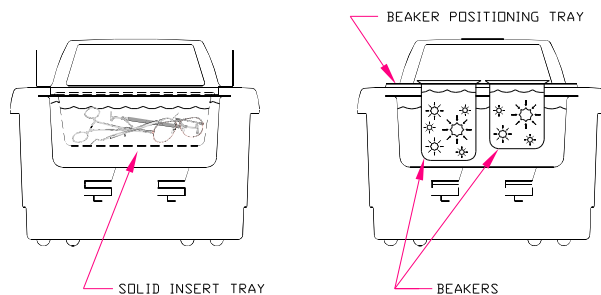


### **How it works:**

- Fill the tank with warm water and a cleaning solution.
- Place the items to be cleaned in a perforated tray and lower them into the tank. You can also suspend items on a wire and then immerse them in the solution.

The advantages of this method are the simplicity of operation and cleaning effectiveness.

### ***Indirect Method***



#### ***How it works:***

- Fill the tank with warm water and a cleaning solution.
- Pour your solution medium into one or more beakers or into a solid insert tray.
- Place the beakers in a beaker positioning cover or a solid insert tray to fit your cleaner. Beakers should not touch the tank's bottom.

#### ***The advantages of this method are:***

- Removed soil stays in the beaker or tray so you can easily examine, filter or discard it.
- You can use one or more solutions at the same time.
  - two completely different cleaning solutions.
  - one beaker or tray with a cleaning solution and one with a rinse solution.
- Cleaning solution in your tank needs to be changed less often.

## Cleaning Solutions



Do not use alcohol, gasoline, bleach, mineral acids, solutions with a flash point, semi-aqueous or combustible liquids in ultrasonic tanks, or you will void the warranty. Only use non-flammable solutions and water-based solutions.

### Solution Types

Water-based solutions are either slightly acidic or alkaline. They include detergents, soaps and industrial cleaners designed to remove specific soils.

**Acidic water-based solutions:** remove rust, tarnish or scale. They range from mild solutions that remove tarnish, to concentrated, inhibited acidic solutions that remove investment plaster, milk-stone, zinc oxide and rust from steel and cast iron as well as smut and heat-treat scale from hardened steel.

**Alkaline water-based solutions:** include carbonates, silicates and caustics. These cause emulsifying action, which keeps soil from redepositing on the cleaned surface, and improves cleaning action in hard water.

Alkaline strength	Removes:
Mild	Light oils and greases, cutting oils and coolant compounds.
Mild to strong	Heavy grease and oil, waxes, vegetable oils, inks, wax or fat-base buffing and polishing compounds, milk residues and carbohydrates.
Heavy-duty	Mill scale, heat-treat scale, corrosion or oxides.

Change the cleaning solution periodically. Cleaning solutions can become contaminated with suspended soil particles which coat the tank bottom. This coating dampens the ultrasonic action and reduces cleaning efficiency. Certain solutions will cavitate better than others. Contact Qsonica, LLC. Technical Support for further information.

**Heat and cavitation:** increase the chemical activity of cleaning solutions. Some materials may be damaged by this stronger chemical action. When in doubt, test run samples of items to be cleaned.

**Caustic solutions:** used to remove rust from steels, metal alloy corrosion and a variety of tenacious soils.

### ***Solution Amounts***

Solution amounts may vary. The amount you use depends on the detergent and the type of soil to be removed. Follow instructions on the solution container and refer to the table below for the effects of solutions on metals.

### ***Chemicals Harmful to Your Tank***


The following chemicals will harm your ultrasonic tank and the action of ultrasonics and higher operating temperatures will increase their chemical activity. Do not use these or similar chemicals directly or in dilution in your ultrasonic tank or you will void your warranty.

Acetophenone	Chloroacetic Acid	Hydrocyanic Acid
Aluminum Chloride	Chloric Acid	Hydrofluoric Acid
Aluminum Fluoride	Chlorine, Anhydrous	Hydrofluosilicic Acid
Aluminum Sulphate	Chromic Acid	Iodoform
Ammonium Bifluoride	Copper Chloride	Mercuric Chloride
Ammonium Chloride	Copper Fluoborate	Muriatic Acid
Ammonium Hydroxide	Ethyl Chloride	Phosphoric (crude)
Amyl Chloride	Ferric Chloride	Sodium Hypochlorite
Antimony Trichloride	Ferrous Chloride	Potassium Chloride
Aqua Regia	Ferris Sulfate	Stannic Chloride
Bromine	Fluoboric Acid	Stannous Chloride
Calcium Bisulfate	Fluorine	Sulfur chloride
Calcium Bisulfite	Hydrobromic Acid	Sulfuric Acid
Calcium Hypochloride	Hydrochloric Acid	Zinc Chloride

**Solution Effects on Metals**

Cleaning Agent	Steel	Brass	Aluminum	Magnesium	Zinc	S. Steel Copper	Tin
Optical (1)	none	none	none	none**	none**	none	none**
Jewelry (1)	none	none	none	none	none	none	none
Buffing (1) compound	none	slight stain	none	none	attacks	none	none
Oxide (2) remover	slight etch	none	slight attack	attacks	attacks	none	none
Electronic cleaner (1)	none	none	slight attack	none	none	none	none
General(1) purpose	none	none	slight attack	none	none	none	none
Industrial strength(1)	none	none	slight attack	none	none	none	none
Metal (1) cleaner 1	none	none	none	none	none	none	none
Metal (1) cleaner 2	none	none	slight attack	none	none	none	none
Metal (1) cleaner 3	none	none	none	none	none	none	none
Rust (3) stripper	none	none	attacks	attacks	attacks	none	slight attack

(1) = Alkaline; (2) = Acidic; and (3) = Caustic.

 <b>WARNING</b> 
<p><b>*Free hydrogen may be released if solution comes in contact with reactive metals.</b></p>

\*\* No effect if solution temperature is less than 140°F.