# Everything You Always Wanted To Know About L&R Ultrasonics But Were Afraid To Ask . . .

## What is ultrasonics?

High frequency sound waves are used to produce more than 40,000 alternating high and low pressure waves per second. As these waves travel through our specially-formulated cleaning solution, millions of microscopic vacuum bubbles form and violently implode. This process, known as cavitation, creates a scrubbing action capable of cleaning up to 16 times more efficiently than hand-cleaning. In minutes, all dirt and foreign particles are removed from even the tiniest grooves, cracks and interior areas of the object being cleaned.

## Do large machines clean better than small ones?

All L&R Ultrasonic Cleaning Systems have similar cleaning abilities regardless of the tank size. This is due to the fact that the amount of ultrasonic power generated is proportional to the tank dimensions. You will notice a difference in cleaning ability with a larger Ultrasonic Cleaning System when the size of the object(s) being cleaned becomes disproportionately smaller than the tank size. The dimensions of the tank ultimately chosen should be proportional to the size and mass of the object(s) to be cleaned. Avoid overloading the machine, which reduces cleaning efficiency and may increase cleaning time.
L&R manufactures certain machines with the same dimensions that have different frequencies.

## Can I use water alone in my machine?

Water should never be used alone in an Ultrasonic Cleaning System.

A cleaning solution such as our General Purpose Cleaner Non-ammoniated (or any one of our aqueous-based cleaners), when properly diluted, effectively reduces the surface tension of the solution and increases ultrasonic cavitation. This increase in cavitation enhances the overall cleaning ability of the process.

## Is heat required?

The use of a heater is generally recommended for jewelry, industrial, gun cleaning and dental laboratories. The application of heat helps soften materials such as waxes and similar compounds for a quicker cleaning cycle. These materials would ultimately be cleaned at a slower rate without using heat. It is generally not necessary to use heat in the medical fields such as dental and dermatological, as there is no measurable improvement in the cleaning ability or time when heat is applied. Remember, heat is a separate function and cannot be added to an existing machine. Therefore, if there is a possibility that the need for a heated unit may arise later, it would be wise to invest in a heated machine now.

## How often does solution have to be changed?

The frequency with which you change your solutions depends on the use of your machine. For the medical field (including dental, surgical and dermatological), it is recommended to discard your solution at least once a day for instrument cleaning and after every use when performing a specialized cleaning task. This is to further reduce the chance of cross-contamination in the office or laboratory. For other industries such as jewelry, industrial and optical fields, you should change your solution when the cleaning cycle time increases and/or when the objects are no longer meeting your cleaning requirements.



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In some cases, when cleaning an object, residue builds up on the bottom of the tank forming an acoustic barrier, which reduces the output of the ultrasonic waves. You may filter the solution to remove these particles and reuse the solution until it no longer gives you satisfactory cleaning. Properly stored L&R Ultrasonic Cleaning Solutions have a shelf-life of one year.

**What is the EMI Filter?**
The EMI Filter is an electronic noise suppressor required by the Federal Communication Commission (See Part 18 of FCC Rules & Regulations). This filter acts as a barrier to radio frequency interference which can cause disruption of other electronic devices within your work area, including computer and phone systems.

All L&R Ultrasonic Cleaning Systems contain this EMI Filter as a standard feature.

**Why doesn't my machine perform as well as it used to?**

Ultrasonic Cleaning Systems are similar to a car in the fact that after a period of years they need to be tuned up. This is a simple procedure that can be done by an experienced L&R technician or can be performed by an authorized L&R Service Center. These centers are located throughout the world. Please contact L&R for the name of the center nearest you. This procedure entails inspecting the entire circuitry and making necessary adjustments to give your machine the proper cavitation action specified for your tank size.

Three other performance factors also have to be examined. First, make sure that the tank is at least 2/3 full of the proper cleaning solution at all times. Also make sure that your solution is clean. An overly-contaminated solution will impede the cleaning process. Prior to cleaning, freshly mixed solution should be degassed by running the machine for 10 minutes.

**What is your Quality Assurance Program?**
We put every machine through a series of rigorous tests, to ensure that it meets or exceeds our rigid standards, which are the most stringent in the industry. Every new L&R machine is accompanied by the Quality Assurance Program seal, assuring you that it is worthy of the L&R name. Our research and development team continuously seeks new and innovative ways to maximize the effectiveness of our machines, solutions and accessories, so we may provide you with the best product possible. Our goal is to remain in the forefront of the industry, by further advancing ultrasonic technology. The L&R Quality Assurance Program and Research and Development effort are ways in which L&R works harder to remain your choice for reliable, quality Ultrasonic Cleaning Systems.

**What is the foil test and how do I perform it?**
The aluminum foil test is a simple way to evaluate the general cleaning intensity and soundwave coverage throughout the tank. You may perform this non-standardized test as follows:
**A.** Obtain any standard aluminum foil sold in a supermarket or equivalent. Cut a piece of the foil large enough to cover ½ to ¾ of the tank bottom.
**B**. Fill tank as usual with L&R General Purpose Cleaner Concentrate – properly dilulted.
**C.** Run machine for ten minutes to properly degas the solution.
**D.** Lower foil into the tank vertically to avoid air getting trapped under the foil. Foil should end up almost perpendicular and centered to bottom.
**E**. Let machine run 3 minutes. Turn off machine and remove foil.
**F.** Examine your piece of foil. You should notice a peening effect and/or perforations* on the foil. The location and size of these peening and/or perforation patterns indicate the cleaning intensity and uniformity of the ultrasonic soundwaves throughout the tank. If the foil appears unchanged, your unit may need a tune-up.