

# Basic Knowledge of Ultrasonic Cleaners

<https://www.bjultrasonic.com/basic-knowledge-of-ultrasonic-cleaners/>

**Ultrasonic cleaners** ([Wikipedia](#)) make use of ultrasonic waves to clean many different types of objects. With the help of the ultrasonic waves, the items are cleaned thoroughly in a short amount of time. Some items require delicate handling and careful cleaning and ultrasonic cleaners are perfect for this job. These cleaners function by agitating water or cleaning solvents using ultrasonic waves with frequency of 20 to 4000 kilohertz. They have found widespread usage in cleaning of jewelry, watches and sensitive items like surgery of dental instruments.

## Working Principles behind Ultrasonic Cleaners

The working principle of ultrasonic cleaners is **cavitation bubbles** ([Wikipedia](#)) that are formed when high frequency sound waves hit water or solution. The contaminants on the surfaces of the materials are affected by these bubbles. It is specially helpful in cleaning contaminants in cracks, recesses and holes, making it a great cleaning tool. Using this, parts need not be dismantled for cleaning which makes it very advantageous. Waves are generated by an [ultrasound transducer](#) which is located in a chamber or lowered into the chamber that contains the solution. Electric signals oscillating at ultrasonic frequency produces compression waves causing the liquid in the chamber to form partial vacuum bubbles. When these bubbles collapse, high temperatures and pressures are released which cleans by breaking down the contaminants. Plain water can also be effective in ultrasonic cleaners, but using other chemicals is more common in the industry as they reduce the surface tension. As surface tension reduces, cavitation increases, making the cleaning process more effective. When parts are covered by grease, solvent solutions are more effective, while certain solvents and solutions have higher temperatures that help. Ultrasonic cleaners also recycles the cleaning fluids, and keeps cost of usage low. <https://www.youtube.com/watch?v=YTCghUcjfyU> The recycling is done by evaporating the dirty solvent. How effective the use of any ultrasonic sound cleaning system is dependent on what parameters are included in the chemistry of the solvent, how long the affected part is immersed in the sonic chamber, the temperature at which the cleaning process is done and the amount of mechanical energy produced by the transducer. All these parameters vary and can be decided after finalizing the extent of the cleaning process required and the quality and fineness of the items being cleaned.

## Different Types of Ultrasonic Cleaners

- [Digital Ultrasonic Cleaner](#)
- [Mechanical Ultrasonic Cleaner](#)
- [Power Adjustable Ultrasonic Cleaner](#)
- [Submersible Ultrasonic Cleaners](#)

### Beijing Ultrasonic

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