

ULTRASONIC JEWELRY CLEANER



Ultrasonic Jewelry Cleaner - ToronUC™ J Series

ToronUC™ J Series Ultrasonic Jewelry Cleaner is a large-format, industrial-grade ultrasonic cleaning system engineered specifically for high-volume jewelry manufacturing, precious metals processing, electroplating production lines, gemstone setting workshops, and professional jewelry service centers requiring production-scale ultrasonic cleaner jewelry processing capacity with precision cavitation control.

Although the J Series name reflects its jewelry production heritage, the platform’s capabilities extend far beyond the professional ultrasonic jewelry cleaner role. With tank volumes from 40 to 206 liters, ultrasonic power from 720 to 2520 watts, and an industrial-grade integrated circuit control system offering 16 discrete power levels, the J Series is equally well-suited as a heavy-duty industrial ultrasonic cleaner for automotive components, an ultrasonic carburetor cleaner for fuel system service, an industrial ultrasonic parts cleaner for manufacturing production lines, and a high-capacity dental ultrasonic cleaner or ultrasonic dental cleaner for central sterilization department instrument processing.

The J Series is distinguished by its sweep function — an advanced ultrasonic drive mode that continuously modulates the driving frequency around the nominal 28 kHz or 40 kHz center frequency. This frequency sweeping eliminates standing wave nodes (dead zones) within the tank and distributes cavitation activity uniformly across the entire bath volume, ensuring every point of a complex part receives equivalent cleaning energy and eliminating the localized high-stress zones that can cause surface damage to delicate items in fixed-frequency systems.

Heating capability extends up to 110°C (230°F), with the control system able to display temperature in either Celsius or Fahrenheit — making the J Series straightforwardly compatible with both North American and international operating environments. The 2mm SUS304 acid-proof and alkali-proof tank, combined with caster-mounted mobility, heavy-duty stainless steel basket, and industrial-grade circuit board, delivers a complete turnkey ultrasonic cleaning solution for demanding production and service environments across North America.

28/40 kHz DUAL FREQUENCY	40-206 L VOLUME RANGE	2520 W MAX US POWER	16 Levels POWER STEPS	Sweep FUNCTION
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APPLICATIONS

Ultrasonic Jewelry Cleaner - ToronUC™ J Series Applications

The ToronUC™ J Series Ultrasonic Jewelry Cleaner delivers production-scale ultrasonic cleaning capability across a wide range of high-value and high-throughput applications:

- **Jewelry Manufacturing & Production:** The primary ultrasonic cleaner jewelry and ultrasonic jewelry cleaner platform for high-volume precious metals manufacturing. Batch-cleans rings, necklaces, bracelets, earrings, pendants, and cast metal components removing investment casting residues, buffing compounds, polishing media, plating pre-treatment soils, and handling contamination uniformly across large production loads. The sweep function ensures every item in the full basket receives equal cleaning exposure.
- **Electroplating Pre-Treatment:** Provides the high-purity surface preparation required before electroplating operations — removing all traces of oils, buffing compounds, oxidation, and particulate contamination from metal substrates that would otherwise cause plating adhesion failures, pinholes, or finish defects.
- **Automotive & Carburetor Cleaning:** In larger industrial applications, the J Series functions as a powerful ultrasonic carburetor cleaner and industrial ultrasonic parts cleaner for automotive workshops and engine rebuilding operations, cleaning carburetors, fuel injectors, throttle bodies, valve bodies, and complete engine assemblies.
- **Dental Central Sterilization:** With its large tank volumes and validated ultrasonic dental cleaner performance, the J Series handles high-throughput dental instrument pre-sterilization cleaning for dental school clinics, hospital dental departments, and dental instrument reprocessing facilities.
- **Optical Lens & Glasses Production:** Functions as a production-scale ultrasonic glasses cleaner for optical lens coating facilities and eyeglass frame manufacturing, removing polishing compounds, anti-reflection coating preparation residues, and assembly lubricants from large batches of optical components.
- **Industrial Manufacturing Parts:** Operates as a high-capacity industrial ultrasonic cleaner for production-line degreasing, cleaning, and surface preparation of machined parts, precision stampings, hydraulic components, and electromechanical assemblies prior to coating, inspection, or final assembly.



FEATURES

Ultrasonic Jewelry Cleaner - ToronUC™ J Series Key Features

- **Industrial-Grade Integrated Circuit:** The control system is built on an industrial-grade IC platform rated for sustained continuous operation in high-temperature, high-humidity industrial environments, providing reliable long-term performance in production-scale jewelry manufacturing and industrial ultrasonic cleaning operations.
- **16-Level Ultrasonic Power Adjustment:** Power output is adjustable in 16 discrete steps from 0% to 100% of rated wattage, providing fine-grained cavitation control for different substrate types and cleaning requirements — from delicate ultrasonic jewelry cleaner settings through maximum-power industrial ultrasonic parts cleaner output.
- **Sweep Function for Uniform Cavitation:** Continuously modulates the ultrasonic drive frequency around the nominal center frequency (28 or 40 kHz), eliminating standing-wave dead zones and distributing cavitation uniformly throughout the entire tank. Ensures consistent cleaning results across full batch loads of complex parts in any position.
- **Dual Frequency: 28 kHz & 40 kHz:** Available in both 28 kHz (maximum cavitation intensity for heavy industrial cleaning) and 40 kHz (finer cavitation for precision and sensitive parts). Selection is matched to the primary application — industrial parts, dental instruments, jewelry, or optical components.
- **30–110°C / 86–230°F Heating:** Extended temperature range up to 110°C (230°F) supports aggressive hot-cleaning protocols. Temperature can be displayed in either Celsius or Fahrenheit — convenient for North American operators accustomed to Fahrenheit temperature references.
- **2mm SUS304 Acid & Alkali-Proof Tank:** The 2mm-thick SUS304 stainless steel tank is resistant to both acidic and alkaline industrial cleaning chemistries, providing long-term compatibility with the full range of ultrasonic cleaning solutions used in jewelry, dental, automotive, and industrial applications.
- **0–60 Min Timer + Continuous Working:** Programmable timer from 0 to 60 minutes, plus unlimited continuous operation mode for extended production runs, overnight cleaning cycles, or process integration with automated timed workflows.
- **Lid and SUS304 Basket Included:** Ships standard with a stainless steel lid for minimizing evaporative losses and aerosol during hot cleaning cycles, and a heavy-duty SUS304 stainless steel cleaning basket for safe and efficient part loading and unloading.

- **Caster Mobility:** All J Series models are mounted on heavy-duty swivel casters, enabling safe repositioning of the fully loaded unit within production facilities, jewelry manufacturing floors, and automotive workshops without mechanical lifting.

THEORY & METHOD

Theory & Ultrasonic Cleaning Method

Ultrasonic cleaning operates on the principle of acoustic cavitation the formation and violent implosion of microscopic vacuum bubbles generated by high-frequency sound waves transmitted through a liquid cleaning medium. Operating at 28 kHz or 40 kHz, the ToronUC™ ultrasonic generator drives bonded transducers that convert electrical energy into mechanical vibration, propagating pressure waves through the cleaning bath at rates of 28,000 or 40,000 cycles per second.

Each pressure wave cycle creates regions of alternating compression and rarefaction in the liquid. During rarefaction phases, dissolved gas is extracted and vacuum micro-bubbles are nucleated. These cavitation bubbles grow over successive cycles until they reach a critical size, then collapse violently releasing localized energy in the form of shockwaves, micro-jets, and temperatures estimated at thousands of degrees Celsius (contained entirely within the microscopic bubble). The resulting implosion jets reach velocities of hundreds of meters per second and pressures exceeding 500 atmospheres, all at a scale far below the damage threshold of the parts being cleaned.

This cavitation mechanism enables ultrasonic cleaning to penetrate into surface features that no mechanical or spray cleaning method can access: threaded bores, blind holes, undercuts, mesh structures, hinged mechanisms, and complex casting geometries. Contaminants including oils, greases, lapping compounds, flux residues, scale, rust, biological debris, and carbon deposits are dislodged from the substrate and dispersed into the cleaning solution.

The choice of 28 kHz versus 40 kHz directly affects cleaning performance: 28 kHz generates larger, more energetic cavitation bubbles appropriate for heavy-duty industrial cleaning of robust metal parts, while 40 kHz produces smaller,

denser bubbles with finer cleaning action better suited to precision parts with delicate surface finishes. Many ToronUC™ industrial models offer both frequencies, giving operators the flexibility to optimize cleaning for their specific application.

The sweep function of the ToronUC™ J Series is the critical differentiator from standard fixed-frequency industrial ultrasonic cleaners. In a conventional fixed-frequency system, standing acoustic waves create regions of alternating high and low cavitation intensity — known as nodes and antinodes. Items positioned at a node receive minimal cleaning energy; items at an antinode may receive excessive energy causing surface damage to delicate coatings or soft metals. The J Series sweep function continuously shifts the ultrasonic frequency around the 28 kHz or 40 kHz center, breaking up standing waves and redistributing cavitation activity uniformly throughout the entire tank volume. This produces more consistent cleaning across all surfaces of complex parts and enables safe, effective ultrasonic cleaner jewelry processing of mixed loads containing items of different geometries and material types.

Ultrasonic Cleaning Process Steps

- 1. Solution Preparation** — Fill the tank with an appropriate aqueous cleaning chemistry (alkaline degreaser, neutral detergent, or acidic descaler) at the recommended dilution. For industrial applications, match the chemistry to the contamination type — alkaline for oils and greases, acid for scale and rust.
- 2. Pre-Heat to Target Temperature** — Activate heating and allow the bath to reach the programmed temperature before loading parts. Elevated temperature reduces contamination viscosity, improves chemical reactivity, and enhances cavitation intensity.
- 3. Degas the Bath** — For fresh or replacement cleaning solution, run a short degas cycle to purge dissolved gases that would otherwise suppress cavitation formation and reduce cleaning effectiveness.
- 4. Load Parts & Run** — Suspend parts in the stainless steel cleaning basket, ensuring adequate spacing for ultrasonic energy to reach all surfaces. Set the timer and power level; initiate the cleaning cycle.
- 5. Inspect & Rinse** — On cycle completion, remove parts and inspect cleanliness. Rinse with clean water to remove loosened contamination and cleaning chemistry residues. Dry with compressed air, clean cloth, or drying oven as appropriate.

6. Drain & Refresh Solution — Use the integrated drain valve (where fitted) to change the bath solution at the recommended interval, maintaining cleaning chemistry effectiveness and preventing re-deposition of dissolved contaminants.

TECHNICAL SPECIFICATIONS

Ultrasonic Jewelry Cleaner - ToronUC™ J Series Technical Specifications

Model	Tank Size L×W×H (mm)	Unit Size L×W×H (mm)	Vol. (L)	US Power (W)	Freq. (kHz)	Heating Power (W)	Timer (min)	Temp. (°C)
ToronUC™ 40J	400×300×330	530×430×600	40	720	28/40	2000	0-60	30-110
ToronUC™ 65J	500×350×360	630×480×650	65	1080	28/40	3000	0-60	30-110
ToronUC™ 96J	600×400×400	730×530×700	96	1440	28/40	4000	0-60	30-110
ToronUC™ 117J	650×450×400	790×590×700	117	1800	28/40	4000	0-60	30-110
ToronUC™ 157J	700×500×450	840×640×750	157	2160	28/40	5000	0-60	30-110
ToronUC™ 206J	750×550×500	890×690×800	206	2520	28/40	6000	0-60	30-110



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