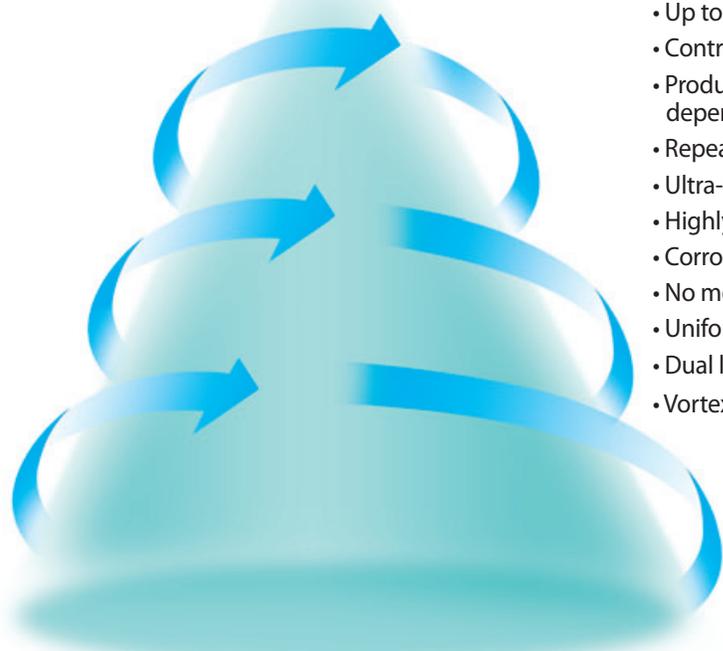


# VORTEX<sup>2</sup>

## ULTRASONIC NOZZLE

VERSATILE, RELIABLE, CONSISTENT



Sono-Tek ultrasonic nozzles, with their characteristic soft atomized spray, dramatically reduce over-spray, offering significant immediate savings in material consumption and drastically reducing atmospheric contamination. They also open up a broad range of application possibilities. They are ideal, for example, when extremely low flow rates are required. Since they will not clog or wear out, they reduce downtime in critical manufacturing processes.

The Vortex ultrasonic nozzle's unique design uses low-velocity, rotational air to produce a wide, uniform stable spray pattern.



### VORTEX ULTRASONIC NOZZLES FEATURE:

- Up to 80% reduction in material consumption
- Controllable, rotational air movement
- Produces a conical spray pattern that is 2"- 8" in diameter, depending on frequency and distance to substrate
- Repeatable spray patterns that are easily shaped
- Ultra-low flow rate capabilities, intermittent or continuous
- Highly controllable spray produces reliable, consistent results
- Corrosion-resistant titanium and stainless steel construction
- No moving parts to wear out
- Uniform deposition across entire diameter of spray pattern
- Dual liquid configurations available
- Vortexing velocity can be varied depending on application

Capable of spraying in any orientation over a range of ultrasonic frequencies\*:

25 kHz	55 μ drop
48 kHz	38 μ drop
60 kHz	31 μ drop
120 kHz	18 μ drop

\*All drop sizes based on atomizing water



*Vortex nozzles can spray in any orientation*

**SONO-TEK Corporation**

## Operating Principle

**The Vortex** ultrasonic nozzle combines Sono-Tek's unique Microspray ultrasonic atomizing nozzle with low pressure, rotational air to produce a conical-shaped spray pattern.

Compressed air, typically at 1-10 psi, is introduced into the diffusion chamber of the air shroud, which produces a uniformly distributed flow of air around the nozzle stem.

The velocity of the air stream is controllable, allowing low or high-impact of the atomized spray onto the product or substrate.

The diameter of the spray pattern is controlled by the nozzle size (frequency) and distance to the substrate. The uniformity of the spray pattern is +/- 1% if using a reciprocator or robotic platform such as the ExactaCoat 3-axis coating system.

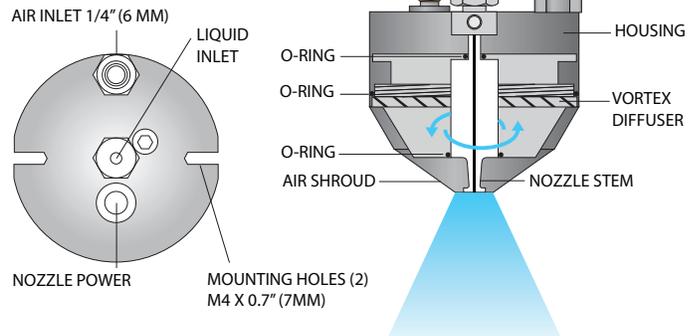


Sizes differ considerably from one operating frequency to the next. See specifications below for physical dimensions.



3-axis programmable coating systems available in standalone and tabletop configurations.

120 kHz depicted. Illustration may differ for other kHz nozzles.



### VORTEX ULTRASONIC NOZZLE SPECIFICATIONS

#### Nozzle Materials

Nozzle Body*	Titanium alloy 6Al-4V
Nozzle Housing	316 stainless steel
O-rings	Kalrez®
Air Shroud	Delrin®/316 stainless steel
Liquid Inlet*	316 stainless steel (1/8" or 1/16" tubing)
Air Inlet (1/4" tubing)	316 stainless steel

\*Wetted materials

**Mounting** (2) M4 x 0.28 [7mm] threaded screw holes

**Air Pressure** 1-10 psi

Teflon®, Kalrez® and Delrin® are registered trademarks of E.I. DuPont de Nemours & Company. Specifications may change without notice.

## Sono-Tek Laboratory Services

Sono-Tek's in-house laboratory services offer the expertise of our engineering and technical staff in resolving process issues and tailoring our technology to meet the needs of our customers.



Vortex ultrasonic nozzles are available in four (4) operating frequencies, each of which has unique specifications and capabilities:

Nozzle Type (Frequency)	25 kHz	48 kHz	60 kHz	120 kHz
Median drop diameter (based on water):	55 microns	38 microns	31 microns	18 microns
Spray Pattern Diameter	5 - 8" (127 - 203 mm)	4 - 6" (107 - 152 mm)	3.5" - 5" (89 - 127 mm)	2 - 3.5" (51 - 89 mm)
Dimensions	2.6" (66.5 mm) diameter 4.73" (120 mm) length	2.2" (55.6 mm) diameter 2.22" (56.3 mm) length	2.2" (55.6 mm) diameter 2.1" (51.9 mm) length	2.2" (55.6 mm) diameter 1.9" (49.1 mm) length

## *Global Solutions in Ultrasonic Spray Technology*

*Sono-Tek's corporate headquarters are located in Milton, NY USA, with additional offices in Hong Kong. Our extensive global support and distribution network provides factory trained personnel with local language support in dozens of countries worldwide.*



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**Comprehensive Solutions in Process Automation and Technology**