

OMNI X TDR-ZP

General Description

The OMNI X TDR-ZP is a fully integrated cleaning, rinsing, and drying system consisting of an ultrasonic cleaning tank, a two-stage cascade rinse tank, a recirculated hot air dryer, and TDR-ZP material handling system. It's specifically designed to provide superior, precision cleaning of small and medium items in a variety of applications. When integrated with the optional TDR-ZP two-dimensional transport system, the OMNI X becomes an automatic high-throughput cleaning system with precise PLC control.

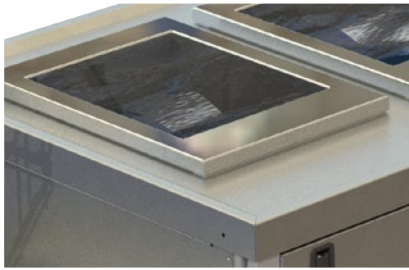


Advanced-technology Cavitation Cleaning

OMNI X 1012 systems use ultrasonic cavitation to both clean and rinse the parts. Cavitation is produced when high-frequency, high-intensity sound is applied to a liquid. The sound creates waves of high pressure and low pressure that pass through the liquid. The low-pressure

waves create microscopic vacuum bubbles, and when the next high-pressure wave hits them, they implode suddenly to create shock waves that blast the soil and contaminants from even the tiniest holes and crevices.

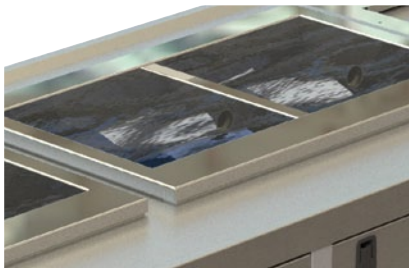
The turbulence created by cavitation enhances the action of cleaning chemistries by constantly exposing surfaces to fresh chemistry. In the same way it improves cleaning, ultrasonic cavitation also enhances rinsing.



Tank 1

Ultrasonic Cleaning Tank

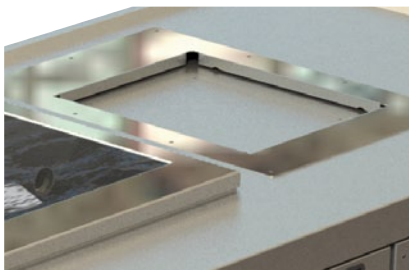
The basic wash tank is suitable for use with emulsifying chemistries. It's constructed of 316 stainless steel, with stainless steel fill and drain connections and recirculating pump and filter to ensure continuous removal of particulate matter. The cleaning tank is equipped with Branson S8340 industrial 40 kHz ultrasonics as standard equipment, with other frequencies optional. Cleaning tanks are heated and capable of maintaining 160°F.



Tanks 2 & 3

Heated Rinsing Tanks

The OMNI X employs two rinsing tanks in a counter-flow cascade arrangement from tank #3 into tank #2 that provides excellent rinsing while substantially reducing water consumption. A variety of cavitation technologies are also available on rinsing tank #2 to ensure that all soils and cleaning chemistries are driven from blind holes and crevices before the drying cycle. Rinsing tanks are heated to maintain the incoming water temperature. Options include resistivity-controlled water make-up, pump and filter, a variety of ultrasonic filters, and rust-inhibitor configuration for tank #3.



Tank 4

Recirculating Hot Air Dryer

The hot air dryer utilizes both elevated temperature (up to 250°F) and rapid air movement (up to 200 scfm) to thoroughly dry parts. The hot air is recirculated to provide the high velocity required for rapid drying. Recirculation also reduces the amount of energy required to maintain air temperature. A percentage of the air is continuously vented to maintain low humidity in the dryer. Units are equipped with analog over-temperature safety control and an air-flow safety switch to protect heaters. An optional power cover is available on automated systems.

Digital Controls

All functions on the OMNI X, including temperatures and times, are controlled by a PLC and a 6-inch diagonal, 3-color, touchscreen operator interface. The touchscreen is angled for improved visibility, and a lockable power disconnect switch and emergency stop switch are on the stainless steel control box.

Optional Automation with Load and Unload Shelves

Adding a TDR-ZP two-dimensional robot to the OMNI X provides precise process control and maximizes throughput. The robot is fully integrated with the OMNI X at the factory and requires no additional set-up. It consists of a stepper-motor-powered horizontal drive and pneumatic vertical lift for precise positioning. All drive components are located below the OMNI X countertop to minimize the potential for contamination. Flex-sequence programming allows the user to process baskets through the tanks in any sequence. Ten recipes of up to 16 steps each may be programmed by the user. All OMNI X functions may be controlled automatically as recipe configurations. Optional load and unload platforms that include basket sensors may be mounted to the OMNI X frame. Accumulating zero-pressure-load and -unload conveyors are also available.

Key Standard Features

- 40 kHz ultrasonic wash tank with S8340 series power supply
- Recirculating pump and filter on the wash tank
- 40 kHz ultrasonics on the first rinse stage (tank #2)
- Non-ultrasonic 2nd rinse stage cascading into the first rinse tank
- Recirculating hot air dryer
- Manual sliding cover on the dryer
- PLC controls with 3-color touchscreen operator interface
- PLC-controlled dwell timers for each tank
- Brush-finished 304 stainless steel skirts, doors, and control enclosure — no paint
- Aluminum extrusion frame
- 316 bright annealed stainless steel process tanks
- Drop-in tanks for easy replacement
- Maintenance items such as valves and filters accessible from the front of unit
- Small footprint to minimize floor space

A Variety of Options

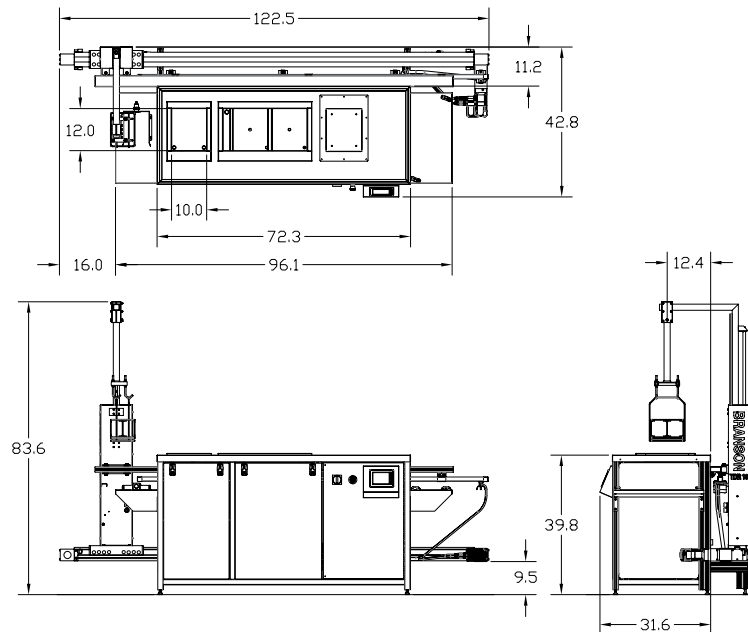
- Sparged overflow wash tank for optional floating oil or particulate removal
- 25 kHz, 80 kHz, 120 kHz or 170 kHz ultrasonics in wash tank
- 25 kHz, 80 kHz, 120 kHz or 170 kHz ultrasonics in first rinse tank #2
- Recirculating pump and filter on the rinse tank #2 or #3
- 25 kHz, 40 kHz, 80 kHz, 120 kHz or 170 kHz ultrasonics in final rinse tank #3
- HEPA filtration for the dryer
- Resistivity-controlled DI rinse water make-up
- Rust inhibit for the final rinse tank
- Low-liquid-level safety switches for all wet tanks

Automation Options

- TDR-ZP PLC-controlled, two-dimensional robot with stepper motor horizontal drive and pneumatic vertical actuator; 10-recipe capability with up to 16 steps per recipe; user-programmable sequencing; power dryer cover
- Load and unload shelves with proximity switches

Specifications

OMNI X TDR-ZP Dimensions



Standard System Specifications

Cleaning Tank

Constructed of 316 stainless steel bright annealed interior surfaces

Internal working dimensions: 10" L x 12" W x 10" liquid depth

Stainless steel fill and drain connections (1/2" NPT)

- Ultrasonics
 - Piezoelectric transducer elements bonded to tank bottom
 - Standard operating frequency: 40 kHz
- Heat
 - 1,600 Watts
 - PLC-controlled, externally mounted heaters
- Shielded by stainless steel covers
- Recirculating pump and filter
- Ryton magnetic-drive, seal-less pump
- Stainless steel plumbing
- 10", 10-micron retention filter
- 1-3 GPM recirculation rate

Cascade Rinsing Tanks

• Constructed of 316 stainless steel, bright annealed interior surfaces

• Internal working dimensions: 10" L x 12" W x 10" liquid depth

• Counter-flow feature provides rinse water to cascade from tank #3 to tank #2, minimizing the use of water

• Stainless steel fill and drain connections (1/2" NPT)

- Heat
 - 800 Watts per stage
 - Digitally-controlled, externally mounted heaters

Note: Heat provided to maintain operating temperature at specified flow rate. Rinse water should be pre-heated prior to entering system
- Ultrasonics standard in first rinse stage (tank #2)
 - Piezoelectric transducer elements bonded to tank bottom
 - Standard operating frequency: 40 kHz

Recirculating Hot Air Dryer

• Constructed of 316 stainless steel

• Internal working dimensions: 10" L x 12" W x 12.7" maximum depth

• 2000 Watts of heat

• Operator interface displays set-point and actual dryer temperature

• Heating up to 250°F

• Manual sliding cover

• Approximate air flow: 200 scfm

• Duct connection to facilitate moist air removal

• Stainless steel drain connection

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