ULTRASONIC PROCESSOR FOR LARGE VOLUME APPLICATIONS

VCX 1500

- Same functions as VCX 750
- Up to 20 liters on a batch basis

SPECIFICATIONS

POWER SUPPLY	Net power output: 1500 Watts. Frequency: 20 kHz Dimensions (H x W x D): 11" x 15" x 18¼" (279.4 x 380 x 463.5 mm) Weight: 21 lbs. (9.5 kg)
AIR COOLED CONVERTER	Model CV 294. Piezoelectric lead zirconate titanate crystals (PZT) Diameter: 3" (76.2 mm) Length: 6¼" (158.7 mm) Weight: 2 lbs. (900 g) Cable length: 10' (3 m)
BOOSTER	BHNVC31 – Increases amplitude by 150%
STANDARD PROBE	Part No. 630-0597 Tip diameter: 1" (25 mm). Solid Length: 10" (254 mm) Weight: 1.5 lbs. (680 g) Titanium alloy: Ti-6Al-4V. Autoclavable Processing capabilities: 4 liter*
ELECTRICAL REQUIREMENTS	220 volts, 50/60 Hz.

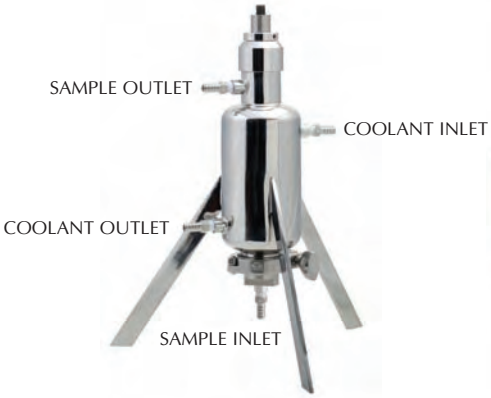
ORDERING INFORMATION

	Part No.
1500 Watt ultrasonic processor	VCX 1500
Sound abating enclosure with solid door for VCX 1500 (H x W x D) 36" x 16" x 16" (914 x 406 x 406 mm)	630-0474**
Support stand	830-00109
Converter clamp for VCX 1500	830-00120

* Up to 20 liters when used with a 1" (25 mm) solid 20" (508 mm) long probe Part No. 630-0580, and a customer-supplied mechanical mixer or stirrer.
** The sound abating enclosure will accommodate the VCX 1500 converter, booster and 1" (25 mm) probe Part No. 630-0209, 630-0210 and 630-0310. It will not accommodate the 1" (25 mm) solid 20" (508 mm) long probe Part No. 630-0580 because of its length.

ULTRASONIC EQUIPMENT FOR LARGE VOLUME APPLICATIONS

VC 750 HV



HIGH VOLUME CONTINUOUS FLOW CELL

VCX 1500 HV

When used in conjunction with the VC 750 ultrasonic processor and booster Part No. BHNVC21, the flow cell throughput rate is typically 50 liters/hour. When used in conjunction with the VCX 1500 ultrasonic processor and booster Part No. BHNVC31, the flow cell throughput rate is typically 100 liters/hour – variables being viscosity and desired degree of processing. The flow cell is recommended for the treatment of low viscosity samples which do not require extended exposure to ultrasonics. Designed primarily for dispersing and homogenizing. For optimum performance, when working on a flow through basis, premixing the sample with a mechanical mixer or stirrer is recommended. The flow cell is easily disassembled for inspection and cleaning, and is water jacketed to enable cooling/heating the sample while it is being processed. All wetted parts are autoclavable.

SPECIFICATIONS

POWER SUPPLY	VC 750 or VCX 1500
CONVERTER	For VC 750 – CV336 For VCX 1500 HV – CV 294
BOOSTER	For VC 750 HV – BHNVC21. Increases amplitude by 100% For VCX 1500 HV – BHNVC31. Increases amplitude by 150%
HIGH VOLUME CONTINUOUS FLOW CELL	Weight: 11 lbs. (5 kg) Height: 17" (425 mm) Width: 16" (400 mm) Housing: 316 stainless steel. Quick opening clamp Probe – Solid – 630-0597: Titanium alloy Ti-6Al-4V Operating pressure: Up to 50 psi (345 kPa/3.45 bar) Volume of liquid in chamber with probe in place: 400 ml. Tubing required: ¼" (6 mm) inside diameter Part No. 630-0583

ORDERING INFORMATION

	Part No.
750 Watt high volume ultrasonic liquid processing system	VC 750 HV
Replacement solid probe for high volume continuous flow cell	630-0597
Sound abating enclosure for high volume continuous flow cell (H x W x D) 36" x 16" x 16" (914 x 406 x 406 mm)	630-0474
1500 Watt high volume ultrasonic liquid processing system	VCX 1500 HV
Replacement solid probe for high volume continuous flow cell	630-0597
Sound abating enclosure for high volume continuous flow cell (H x W x D) 36" x 16" x 16" (914 x 406 x 406 mm)	630-0474

ULTRASONIC EQUIPMENT FOR SONOCHEMISTRY

The chemical effects of ultrasound are diverse and include dramatic improvements in both stoichiometric and catalytic reactions. In some cases, ultrasonic irradiation can increase reactivities by nearly a million-fold. It does so through the process of acoustic cavitation; the formation, growth and implosive collapse of bubbles in a liquid.

During cavitational collapse, intense heating of the bubbles occurs. The localized hot spots have temperatures in the range of 5000°C, pressures approaching 500 atmospheres, lifetimes of a few microseconds, and heating and cooling rates greater than 109 K/s.*

Applications for chemical reactions exist in both homogeneous liquids and in liquid-solid systems. Of special synthetic use is the ability of ultrasound to create clean, highly reactive surfaces on metals. Ultrasound has also been found to be beneficial for the initiation or enhancement of catalytic reactions, in both homogeneous and heterogeneous cases.

RECOMMENDED ULTRASONIC PROCESSOR

VC 505, VC 750, VCX 500, or VCX 750. Please see pages 7 and 9 for detailed description.

SONOCHEMICAL REACTION VESSELS

The Suslick reaction vessel consists of a glass chamber and a stainless steel fitting. Three side ports accept septum for syringe charging or retrieval. The fitting screws onto a standard solid ½" (13 mm) probe Part No. 630-0219, or threaded end ½" (13 mm) probe** Part No. 630-0220 at the nodal point. The glass chamber slides into the adapter and is held in place by an internal O-ring. With the other reaction vessels, the adapter Part No. 830-00014 screws onto special probe Part No. 630-0217 or 630-0218** at the nodal point. The glass chamber slides up and down on the adapter as required, and is held in place by the action of a threaded nylon bushing compressing an O-ring. Moving the glass chamber up or down on the adapter allows the portion of the probe protruding out of the adapter to be immersed at the optimum depth into the sample.

4-10 ml Suslick reaction vessel. Glass chamber height: 3¼" (82 mm). Part No. 830-00007.

4-10 ml reaction vessel.*** Two 14/20 side necks. Supplied with bushing and O-ring. Glass chamber height: 4⅞" (123 mm). Part No. 830-00011.

10-50 ml reaction vessel.*** Bottom well capacity: 10 ml. Main body capacity: 50 ml. Two 14/20 side necks. Supplied with bushing and O-ring. Glass chamber height: 4¾" (120 mm). Part No. 830-00012.

40-250 ml reaction vessel.*** Three 14/20 side necks. Supplied with bushing and O-ring. Glass chamber height: 6⅜" (162 mm). Part No. 830-00013.

SPECIAL PROBES

½" (13 mm) special 10" (254 mm) long full wave solid probe. Recommended when processing samples containing organic solvents or low surface tension liquids. Used with the adapter below. Titanium alloy Ti-Al-4V. Autoclavable
Part No. 630-0217.

½" (13 mm) special 10" (254 mm) long full wave probe with threaded end, and replaceable tip.** Used with the adapter below. Titanium alloy Ti-6Al-4V. Autoclavable Part No. 630-0218.

ADAPTER

5" (127 mm long). Stainless steel. Internally threaded. Screws onto a full wave 10" (254 mm) long ½" (13 mm) probe at the nodal point. Part No. 830-00014.

* From an article by Dr. Kenneth Suslick, Professor of Chemistry and Beckman Institute Professor, University of Illinois Urbana/Champaign

** Do not use a probe with replaceable tip when processing samples containing organic solvents or low surface tension liquids. See caution on page 8.

*** Must be used with the adapter Part No. 830-00014 and special probes listed above.

Suslick Vessel
830-00007

3-10 ml Vessel
830-00011

10-50 ml Vessel
830-00012

40-250 ml Vessel
830-00013

Adapter
830-00014