

Q500 Sonicator

The Q500 is a powerful ultrasonic processor featuring programmable operation and a digital display of operating parameters. Popular applications include nanoparticle dispersion, creating emulsions, cell lysis and homogenization.

Adjustable pulse On and Off times can be programmed from 1 second to 1 minute. Total programming has a maximum setting of 10 hours. A wide variety of probes and accessories are available to handle virtually any application.



Stand sold separately.



FEATURES:

Programmable operation

Set time and amplitude for hands free operation

Pulse mode

Prevent heat buildup in temperature sensitive samples

Digital amplitude / intensity control

Output intensity can be set from 20-100%

Elapsed time indicator

Displays duration of sonication

Display of wattage and joules

Real-time energy monitoring

Overload protection

Prevents damage to circuitry if a fault occurs

RoHS compliant

Uses lead free components

PART NO. Q500 INCLUDES:

- Generator
- Converter
- 1/2" (13mm) diameter probe
- Power cable
- Converter cable
- Wrench set

TECHNICAL SPECIFICATIONS:

Power Rating:	500 watts
Frequency:	20kHz
Programmable Timer:	10 hours
Adjustable Pulse On/Off:	1 second to 1 minute
Dimensions (W x L x H):	8 x 5.25 x 8.5 in. (203 x 387 x 216 mm)
Voltage:	110V, 50/60Hz

Specify desired voltage for export.

Horns (also known as probes) are made from titanium and machined to specific sizes and shapes. When driven at their resonant frequency, they expand and contract longitudinally. This mechanical vibration is amplified and transmitted down the length of the probe. In liquid, the probe causes cavitation which constitutes the main mechanism for sample processing.

Choosing the appropriate horn is extremely important. The sample volume to be processed is directly related to the tip diameter. Smaller tip diameters (Microtip probes) deliver high intensity sonication, but the energy is focused within a small, concentrated area. Larger tip diameters can process larger volumes, but offer lower intensity. Probes are offered with replaceable or solid tips.

Probe tips will pit or erode over time and require replacement. Replaceable tip probes are used with aqueous samples only. In addition to aqueous samples, Solid probes can be used with organic solvents, alcohols and low surface tension liquids. Contact Qsonica with questions regarding proper tip selection.



Standard Probes



Replaceable

Solid

Part #	Type of Tip	Processing Volume	Tip Diameter	Amplitude (microns)
4220	Replaceable Tip	20-250ml	1/2" (13mm)	120µm
4219	Solid Tip	20-250ml	1/2" (13mm)	120µm
4207	Replaceable Tip	50-500ml	3/4" (19mm)	60µm
4208	Solid Tip	50-500ml	3/4" (19mm)	60µm
4210	Replaceable Tip	100-1,000ml	1" (25mm)	30µm
4209	Solid Tip	100-1,000ml	1" (25mm)	30µm

Note: All amplitude values are measured at 100% output.

Replacement Tips for Standard Probes

Standard 1/2", 3/4" and 1" horns have replaceable tips. During normal use, tips erode and become less effective over time. These worn tips can be easily removed and replaced.



Part #	Tip Diameter	For Use With
4406	1/2" (13mm)	#4220
4407	3/4" (19mm)	#4207
4408	1" (25mm)	#4210



New Tip



Worn Tip

Microtip Probes

Microtips are thin, high intensity probes which are designed for processing small sample volumes. Microtips screw into the threaded end of the standard 1/2" probe (#4220).



Part #	Processing Volume*	Tip Diameter	Amplitude (microns)
4417	0.2-5ml	1/16" (2mm)	320µm
4418	1-15ml	1/8" (3mm)	380µm
4420	10-50ml	1/4" (6mm)	200µm

* The recommended processing volume range is application specific. For example, samples containing surfactants foam easily and may require larger volumes for effective sonication. Contact Qsonica for application assistance.

Coupler with Stepped Microtip

The stepped microtip and coupler assembly is a low intensity option which can be used to process small volumes that do not require high power. The probe tip remains 1/8" diameter for 48mm. This 2-piece assembly attaches directly to the converter.



Part #	Processing Volume	Tip Diameter	Amplitude (microns)
4422*	0.5-15ml	1/8" (3mm)	200µm
4421	Coupler - *required for use of a Stepped Microtip		

Extenders

Standard probes may not be long enough to fit down into certain long necked vessels. Extender probes attach to standard horns of the same tip diameter and extend the length of the horn assembly. Extenders are available in 5" and 10" lengths with either solid, or replaceable tips.



Part #	Type of Tip	Length	Tip Diameter
406HW	Solid Tip	5"	1/2" (13mm)
406HWT	Replaceable Tip	5"	1/2" (13mm)
407HW	Solid Tip	5"	3/4" (19mm)
407HWT	Replaceable Tip	5"	3/4" (19mm)
408HW	Solid Tip	5"	1" (25mm)
408HWT	Replaceable Tip	5"	1" (25mm)
407FW	Solid Tip	10"	3/4" (19mm)
407FWT	Replaceable Tip	10"	3/4" (19mm)
408FW	Solid Tip	10"	1" (25mm)
408FWT	Replaceable Tip	10"	1" (25mm)

Extenders offer the same processing volume and amplitude of their corresponding standard horn.

Boosters



Booster horns increase the intensity of standard 3/4" and 1" horns. Boosters attach between the converter and horn to increase amplitude by the gain ratio indicated below.

Part #	For Use With	Gain Ratio
4121	3/4" (19mm) and 1" (25mm) Probes	2 to 1

High Gain Horns

High gain horns (also known as high intensity horns) offer double the amplitude of standard 3/4" and 1" horns. High gain horns attach directly to the converter.



Part #	Type of Tip	Processing Volume	Tip Diameter	Amplitude (microns)
4305	Replaceable Tip	50-500ml	3/4" (19mm)	120µm
4306	Solid Tip	50-500ml	3/4" (19mm)	120µm
4310	Solid Tip	100-1,00ml	1" (25mm)	60µm
4311	Replaceable Tip	100-1,000ml	1" (25mm)	60µm

4 Tip Horn



The 4 Tip Horn enables 4 samples to be processed simultaneously. This horn offers high intensity and is effective for cell disruption, mixing, homogenization and many other applications. Tip diameter is 1/8" and the space between each tip is 1.05".

The 4 Tip Horn can process 1-15ml sample volumes and is made to fit into both 1.5ml and 15ml tubes. When processing small volumes with high intensity, samples will heat up quickly. In addition to using the pulse mode, a CoolRack tube cooling module is highly recommended. CoolRack accessories work well with the 4 Tip Horn.

The 4 Tip Horn can be mounted in the #459 stand (as shown) or in the Sound Enclosure (#432B2; see page 13).

Part #	Description
4659	4 Tip Horn
4660	Replacement Tips



24 Tip Horn

The 24 Tip Horn processes each well of a 24 well plate simultaneously. This horn is effective for cell disruption,

mixing, dissolution and many other applications.

The 24 Tip Horn can be mounted inside the Sound Enclosure (page 13) to reduce the noise level generated by sonication. Alternatively, a Heavy Duty Stand is available (page 19) which allows precise adjustment of the horn in and out of the microplate.

Part #	Description
4579	24 Tip Horn
4660	Replacement Tips



Dual Horn

The Dual Horn allows a single Sonicator unit to process two samples simultaneously. The rectangular-shaped horn doubles the unit's output, and enables two probes to vibrate with the same intensity as a single probe.

The distance from center to center of each probe is 4.5". 3/4" solid tip probes are included with the Dual Horn but 1/2" or 1" probes may also be used.

The Dual Horn is capable of withstanding the rigors and harsh chemicals of environmental testing labs. Sonication is used by environmental labs to process soil and sediment samples in lieu of soxhlet extraction methods. The Sonicator and Dual Horn meet the EPA requirements specified in method SW846-3550.

Dual Horn components can be ordered separately. The Dual Horn can be mounted in the Sound Enclosure (#432B2) or on the Heavy Duty Stand (#438).

Part #	Description
4525	Dual Horn with Probes
4208	Replacement 3/4" (19mm) Solid Probe



432B2 shown with probe
(Probe sold separately.)

Sound Enclosure

Sonicators are extremely loud devices and will cause discomfort to the user and anyone nearby. The Sound Enclosure reduces noise by approximately 20 dBa and is made to work with all accessories (excluding the Microplate Horn which has its own dedicated enclosure).

In addition to reducing noise, the Sound Enclosure has an internal support rod and converter mounting system. Any Qsonica probe or horn will be held safely and securely inside the unit.

Two ports are located on either side of the enclosure for coolant tubing or a temperature monitoring probe. The interior walls are lined with acoustical foam and the door has a window so experiments can be visually monitored.



432B2 shown with cup horn
(Cup horn sold separately.)

Part #	Description
432B2	Sound Enclosure with Converter Holder, Exterior Dimensions (W x H x D) 13.5 x 30.5 x 13 in. (343 x 775 x 330 mm)

Low Volume Flocells

The Low Volume Flocell (LVF) is available for use with either the Q500 or Q700 system. The Flocell (#4650) is equipped with ¼" (6mm) hose barb fittings and does not include a probe. A ½" (12mm) replaceable tip probe (#4643) or ½" (13mm) solid probe (#4644) must be ordered separately. These probes feature a flange for proper mounting with the LVF. The replaceable tip probe is for use with aqueous samples only. Solid tip probes can be used with all types of solvents or low surface tension liquids.

Sonication generates heat so a Water Jacket (#4655) is available if the process requires cooling. The water jacket slides over the LVF and is used to recirculate cold water around the exterior of the flocell body. The water jacket includes ¼" (6mm) hose barb fittings.

The LVF is recommended for processing sample volumes above 1L. Routine applications include cell lysis, mixing, solubilizing and deagglomerating/dispersing nanoparticles.



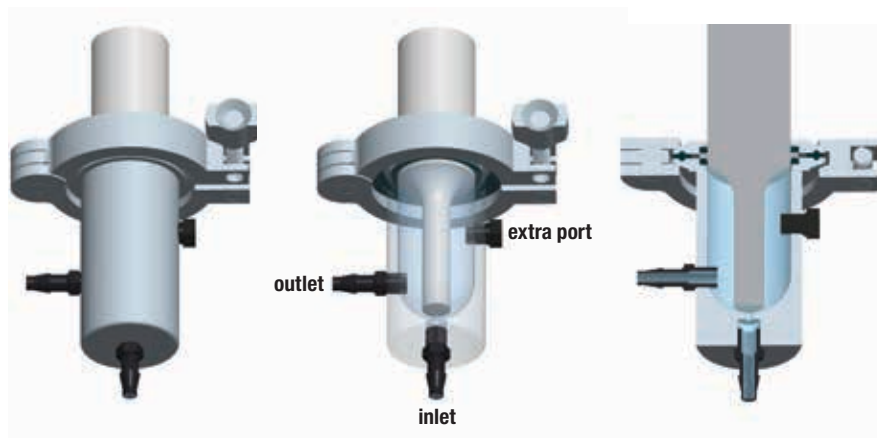
LVF Assembly with Probe



Flocell Assembly with Water Jacket



Probe



Part #	Description
4650	Low Volume Flocell <ul style="list-style-type: none"> • Material: 316L Stainless Steel • Operating pressure: 40-100 psi max. • Internal volume: 65ml • Maximum flow rate: 0.5L/min • Hose barb fittings for ¼" (6mm) ID tubing • Dimensions (H x D): 9.1 x 3.5 in. 228 x 89 mm) — dimensions include probe and clamp
4643	½" (13 mm) Replaceable tip probe with flange for #4650
4644	½" 13 mm) Solid tip probe with flange for #4650
4655	Water Jacket for #4650

Cup Horn

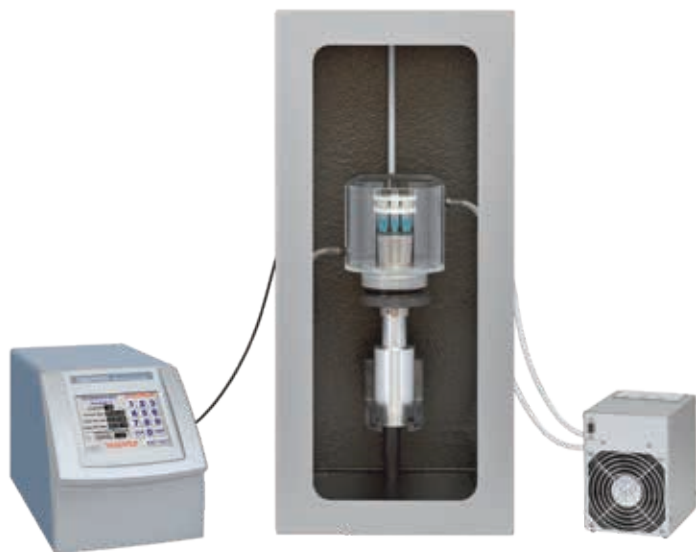
A Cup Horn offers indirect sonication and functions as a high intensity ultrasonic water bath. Multiple samples can be processed in sealed tubes eliminating cross contamination or aerosol issues.

The horn is mounted within an acrylic cup and the cup is filled with water. Sample tubes are placed in a rack at a fixed distance above the ultrasonic horn. Cavitation is produced in the water, processing the samples within the tubes. The #440 tube rack is included with the Cup Horn. This rack is made for 1.5ml polystyrene tubes which are proven to process samples more efficiently than 1.5ml polypropylene tubes.

Sonication generates heat so ports for cooling are located on each side of the cup. The #4900 Chiller is recommended for maintaining both the water temperature and water level within the Cup Horn. Maintaining a fixed water level is extremely important and only the Qsonica chiller can accurately control this variable.

The Sound Enclosure is highly recommended for all Cup Horn users. In addition to reducing sonication noise to safe levels, it securely holds the Cup Horn in place. The Sound Enclosure features ports on either side to allow coolant tubing to pass from the Cup Horn to the Chiller.

Note: Selecting the appropriate size and type of sample tube will greatly improve results. Contact Qsonica for application assistance.



Part # 431C2
Inner Diameter of Cup: 5.5"
Diameter of Horn: 2.5"
Tube Rack #440 (8 tubes) is Included

Optional Tube Racks



Part #440



Part #451



Part #445



Part #449

Part #	Description
Tube Holder # 440	8 Tube Holder (1.5ml Polystyrene tubes)
Tube Holder # 451	8 Tube Holder (1.5ml Polypropylene tubes)
Tube Holder # 449	12 Tube Holder (600ul PCR tubes)
Tube Holder # 445	24 Tube Holder (300ul PCR tubes)

Recirculating Chillers

Sonication generates heat which may be detrimental to some applications. Attempting to control temperature with ice and/or repeatedly changing out water is tedious and no longer necessary. Qsonica now offers 2 chiller options for automating the sample cooling process.

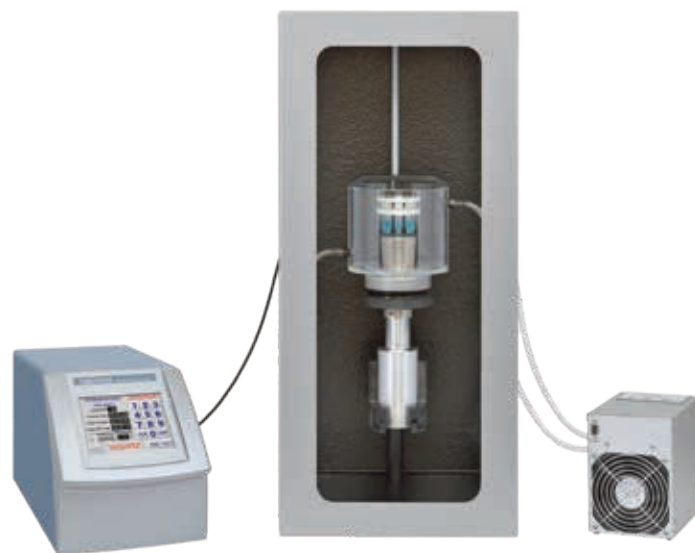
Quick-connect tubing and fittings (ordered separately) attach the chiller to the ports on the cup horn or microplate horn. When used in conjunction with the pulsed sonication mode, your desired water temperature will be maintained. Older model cup horns may require special fittings so please contact us for ordering assistance.



#4900

#4905

Part #	Description
4900	Compact Recirculating Chiller
4910	Tubing and Connector Set for Cup Horn for #4900
4915	Tubing and Connector Set for Microplate Horn for #4900
4905	High-Capacity Recirculating Chiller
4911	Tubing/Connector Set for Cup Horn for #4905
4916	Tubing/Connector Set for Microplate Horn for #4905



Chiller shown with Sonicator, tubing set, cup horn and sound enclosure (sold separately).

TECHNICAL SPECIFICATIONS:	Part No. 4900	Part No. 4905
Cooling Capacity:	200 watts	400 watts
Temperature Range:	2-45° C	2-45° C
Dimensions:	7.5 x 5 x 7 in. (19 x 13 x 18 cm)	13 x 11 x 13 in. (32 x 28 x 32 cm)
Weight:	8 lbs. (3.6kg.)	28 lbs. (12.7kg.)
Voltage:	115-230 VAC, 50/60 Hz	115-230 VAC, 50/60 Hz

Replacement Converter



Part #	Description
CL334	Replacement Converter

Replacement Wrenches



Part #	Description
4015	Heavy Duty Pin Spanner

Part #	Description
404	Wrench Set

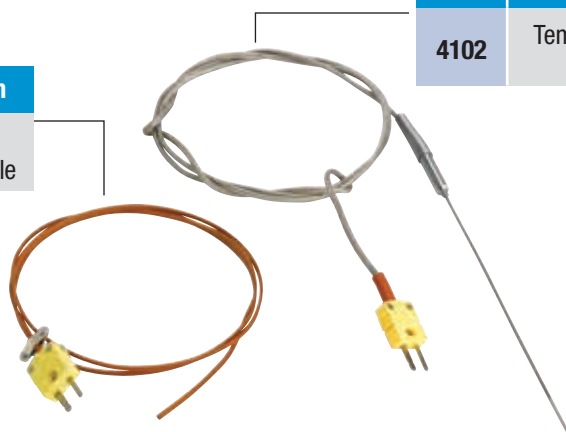


Temperature Monitoring Options

(Q700 only)

Part #	Description
4103	Flexible Thermocouple

2 types of temperature probes are available for use with the Q700 Sonicator



Part #	Description
4102	Temperature Probe

Replacement Converter Cable



Part #	Description
K4	6 ft. Long
K4-10	10 ft. Long

Footswitch



Enables hands free operation

Part #	Description
FS-3	For Use with Q700
4004	For Use with Q500

Heavy Duty Stand

Part #	Description
4130	Heavy Duty Stand

The stand securely holds horns in place and ensures all tips are level. An adjustable jack stand to raise and lower samples is included



Large Clamp Stand

Part #	Description
459	Stand with 1/2" Diameter Support Rod and Converter Clamp



Jack Stand



Raises and lowers sample vessels to a stationary probe as needed.

Part #	Description
357	Jack Stand



WolfLabs

Pricing on any accessories shown can be found by keying the part number into the search box on our website.

The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct. If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.

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