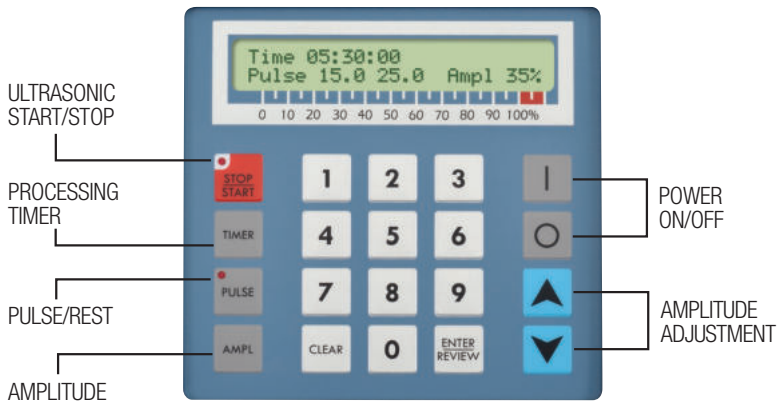


The Q500 is a powerful ultrasonic processor featuring programmable operation and a digital display of operating parameters. Popular applications include nanoparticle dispersion, creating emulsions, cell lysis and homogenization.

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" diameter probe
- Power cable
- Converter cable
- Wrench set

TECHNICAL SPECIFICATIONS:

Power Rating:	500 watts
Frequency:	20 kHz
Programmable Timer:	10 hours
Adjustable Pulse On/Off:	1 second to 1 minute
Dimensions:	8" W x 15.25" L x 8.5" H
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



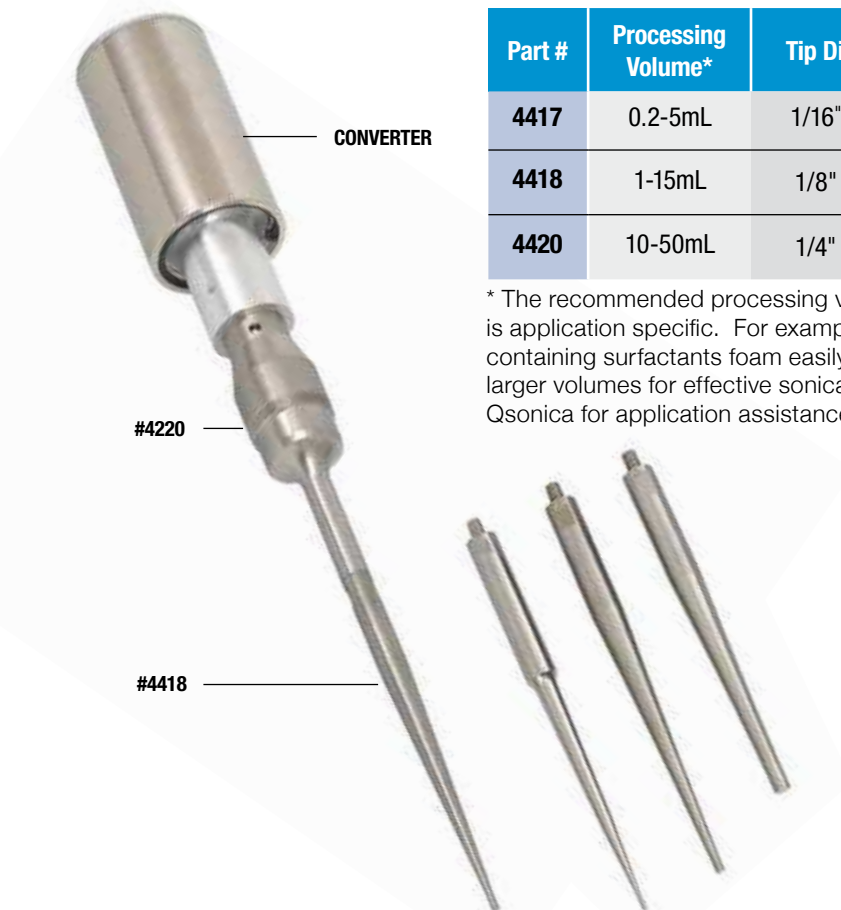
New Tip



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		



High Intensity Probe

The high intensity probe offers a combination of increased amplitude and larger diameter when compared to standard probes. It is only compatible with the Q700.



Part #	Processing Volume	Tip Diameter	Amplitude (microns)
4205	1-5L	1" (25mm)	100µm

Extenders

Extenders attach to standard probes of the same tip diameter and extend the length of the probe assembly to reach down into tall vessels



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)

High Gain Probes

High gain probes offer double the amplitude of standard 3/4" and 1" probes. These probes attach directly to the converter and are available with solid or replaceable tips.



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	100-1,000mL	1" (25mm)	60µm
4311	Replaceable Tip	100-1,000mL	1" (25mm)	60µm

Booster



A booster (**#4121TI**) attaches between the converter and a standard 3/4" or 1" probe. The booster will double the amplitude of the probe.

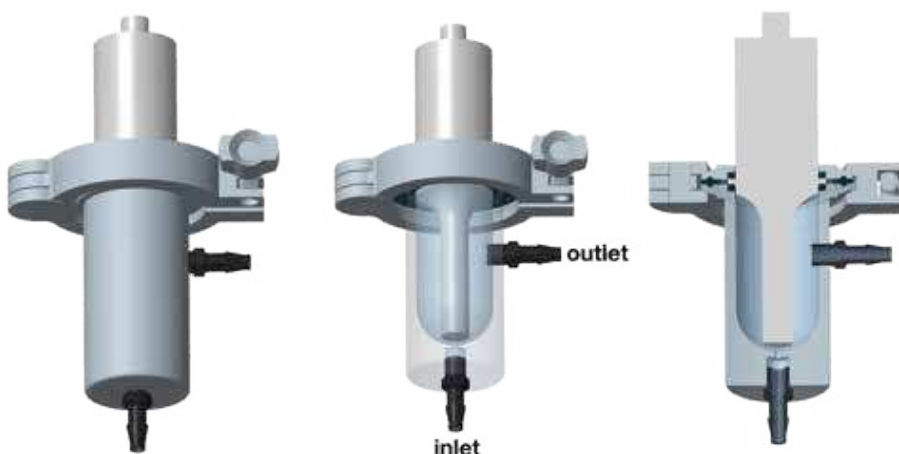
Low Volume Flocells

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" (13mm) replaceable tip probe (#4643) or ½" (13mm) solid probe (#4644) must be ordered separately. 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. Each probe features a flange for proper mounting into the LVF.

Sonication generates heat so cooling the system is important. The LVF can be ordered with a water jacket preassembled (#4653) to assist in cooling both the sample and the probe. The removable water jacket fits securely over the Flocell body and recirculates cold water around the exterior. The water jacket includes ¼" (6mm) hose barb fittings. An optional water jacket attachment (#4655) can be added to an older model LVF if needed.

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

A peristaltic pump and associated tubing are not included. A variable speed pump is recommended and the customer must make a selection based on their particular product requirements.



Part #	Description
4650	Low Volume Flocell <ul style="list-style-type: none"> • Material: 316L Stainless Steel • Operating pressure: 40 psi max. • Internal volume: 65mL • Maximum flow rate: 0.5L/min • Hose barb fittings for ¼" (6mm) ID tubing • Dimensions (L x W): 9.1 x 3.5 in. 228 x 89 mm — dimensions include probe and clamp
4653	4650 LVF with Water Jacket
4643	½" (13mm) Replaceable tip probe with flange for #4650
4644	½" (13mm) Solid tip probe with flange for #4650
4655	Water Jacket for #4650

How Flocells Work

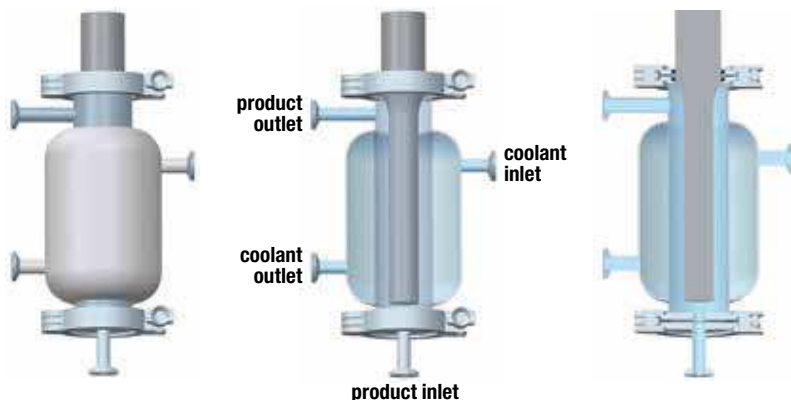
Flocells offer inline or continuous, large volume, batch sample processing. Flocells are ideal for mixing and dispersing applications. Batch volumes can be recirculated through the system multiple times if increased sonication time is needed. Multiple units can be used in series to reduce processing time and/or maintain an even higher flow rate.

The liquid sample is pumped into the Flocell through the inlet at the bottom of the unit. As the sample passes through the cavitation field, it is processed. The processed liquid exits the unit through an outlet port. The degree of processing can be controlled by adjusting the intensity of sonication as well as flow rate.

High Volume Flocells

The High Volume Flocell (HVF) is available for use with either the Q700 or Q1375 System. The Flocell (#4549) is equipped with 1/2" (13mm) sanitary connections, a water jacket and 1" (25mm) Diameter probe (#4625). The water jacket can be used to recirculate cold water around the exterior of the Flocell body. This helps reduce the heat generated during ultrasonic processing.

The HVF is recommended for processing batch volumes of 5L or more. Routine applications include cell lysis, mixing, solubilizing and deagglomerating/dispersing nanoparticles.



Part #	Description
4549	High Volume Flocell <ul style="list-style-type: none"> • Dimensions (H x D): 17 x 16 in. (431 x 406 mm) • Includes #4625 Probe • Material: 316L Stainless Steel • Operating pressure: up to 100psi • 1/2" (13mm) Sanitary connections • Internal volume: 400mL • Maximum flow rate: 20L/min • Water jacketed for cooling
4625	1" (25mm) Diameter Flocell Probe

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 #4905 Chiller is recommended for maintaining both the water temperature and water level within the Cup Horn.

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. Custom tube racks are available. Contact Qsonica for application assistance.



#431C2

Optional Tube Racks



#440



#451



#449



#445



#455



#454



Part #	Tube Holder Description
440	8 x 1.5mL Polystyrene tubes
451	8 x 1.5mL Polypropylene tubes
449	12 x 500µl PCR tubes
445	24 x 200µl PCR tubes
455	1 x 50mL tube
454	1 x 15mL tube



#432B2
(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
(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)

Replacement Converter



Part #	Description
CL334	Replacement Converter

Replacement Wrenches



Part #	Description
4015	Heavy Duty Pin Spanner

Part #	Description
404	Wrench Set

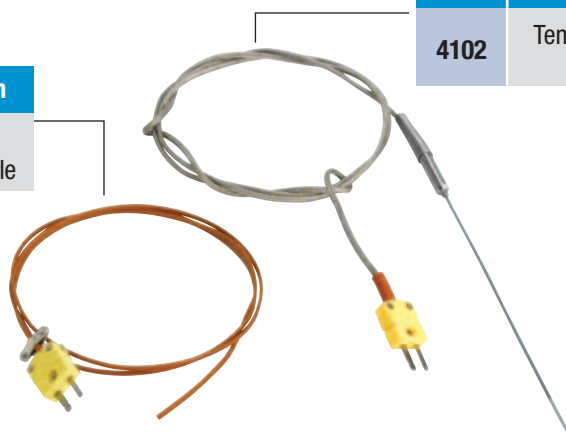


Temperature Monitoring Options

(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