

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, solid or sapphire 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



Replacable

Solid

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

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" (13 mm)	#4220
4407	3/4" (19 mm)	#4207
4408	1" (25 mm)	#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).



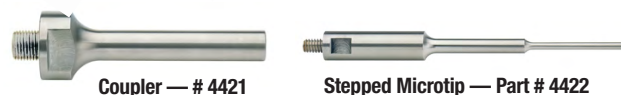
Part #	Processing Volume*	Tip Diameter	Amplitude (microns)
4417	0.2-5 ml	1/16" (2 mm)	320 µm
4418	1-15 ml	1/8" (3 mm)	380 µm
4420	5-50 ml	1/4" (6 mm)	200 µm

* 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" in diameter for 48mm. This 2-piece assembly attaches directly to the converter.



Coupler — # 4421

Stepped Microtip — Part # 4422

Part #	Processing Volume	Tip Diameter	Amplitude (microns)
4422*	0.5-15 ml	1/8" (3 mm)	200 µm
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" (13 mm)
406HWT	Replaceable Tip	5"	1/2" (13 mm)
407HW	Solid Tip	5"	3/4" (19 mm)
407HWT	Replaceable Tip	5"	3/4" (19 mm)
408HW	Solid Tip	5"	1" (25 mm)
408HWT	Replaceable Tip	5"	1" (25 mm)
407FW	Solid Tip	10"	3/4" (19 mm)
407FWT	Replaceable Tip	10"	3/4" (19 mm)
408FW	Solid Tip	10"	1" (25 mm)
408FWT	Replaceable Tip	10"	1" (25 mm)

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" (19 mm) and 1" (25 mm) 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	50-500 ml	3/4" (19 mm)	120 µm
4306	Solid Tip	50-500 ml	3/4" (19 mm)	120 µm
4310	Solid Tip	100-1,000 ml	1" (25 mm)	60 µm
4311	Replaceable Tip	100-1,000 ml	1" (25 mm)	60 µm