

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. Using an excessively worn tip can affect your results and possibly overload the generator. Solid probes must be used for samples containing organic solvents or low surface tension liquids. Sapphire tips erode more slowly than titanium and are recommended for processing solutions that include abrasive materials.



Standard Probes



Part #	Type of Tip	Processing Volume	Tip Diameter	Intensity	Amplitude (microns)
4220	Replaceable Tip	10-250 ml	1/2" (12.7 mm)	High	120 µm
4219	Solid Tip	10-250 ml	1/2" (12.7 mm)	High	120 µm
4219S	Sapphire Tip	10-250 ml	1/2" (12.7 mm)	High	120 µm
4207	Replaceable Tip	25-500 ml	3/4" (19.1 mm)	Medium	60 µm
4208	Solid Tip	25-500 ml	3/4" (19.1 mm)	Medium	60 µm
4208S	Sapphire Tip	25-500 ml	3/4" (19.1 mm)	Medium	60 µm
4209	Solid Tip	50-1,000 ml	1" (25.4 mm)	Low	30 µm
4209S	Sapphire Tip	50-1,000 ml	1" (25.4 mm)	Low	30 µm
4210	Replaceable Tip	50-1,000 ml	1" (25.4 mm)	Low	30 µm

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.



New Tip



Worn Tip

Part #	Tip Diameter	For Use With
4406	1/2" (12.7 mm)	#4220
4407	3/4" (19.1 mm)	#4207
4408	1" (25.4 mm)	#4210

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	Intensity	Amplitude (microns)
4417	0.2-5 ml	1/16" (1.6 mm)	Ultra High	320 µm
4418	0.5-15 ml	1/8" (3.2 mm)	Ultra High	240 µm
4420	5-50 ml	1/4" (6.4 mm)	High	115 µm
4422*	0.5-15 ml	1/8" (3.2 mm)	Very High	205 µm
4421*	Coupler required for use of a Stepped Microtip			



Coupler

Stepped Microtip

* Stepped Microtip Assembly
The coupler screws directly into the converter.

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" (12.7 mm)
406HWT	Replaceable Tip	5"	1/2" (12.7 mm)
407HW	Solid Tip	5"	3/4" (19.1 mm)
407HWT	Replaceable Tip	5"	3/4" (19.1 mm)
408HW	Solid Tip	5"	1" (25.4 mm)
408HWT	Replaceable Tip	5"	1" (25.4 mm)
406FW	Solid Tip	10"	1/2" (12.7 mm)
406FWT	Replaceable Tip	10"	1/2" (12.7 mm)
407FW	Solid Tip	10"	3/4" (19.1 mm)
407FWT	Replaceable Tip	10"	3/4" (19.1 mm)
408FW	Solid Tip	10"	1" (25.4 mm)
408FWT	Replaceable Tip	10"	1" (25.4 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. A 3 to 1 gain booster is available for custom applications.

Part #	For Use With	Gain Ratio
4121	3/4" and 1" 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	25-500 ml	3/4" (19.1 mm)	120 µm
4306	Solid Tip	25-500 ml	3/4" (19.1 mm)	120 µm
4310	Solid Tip	50-1,000 ml	1" (25.4 mm)	60 µm
4311	Replaceable Tip	50-1,000 ml	1" (25.4 mm)	60 µm

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