Ultrasonic Cleaning

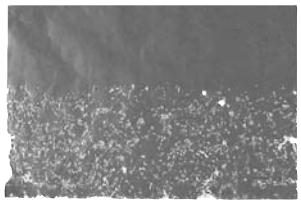
Series 8500

BRANSON

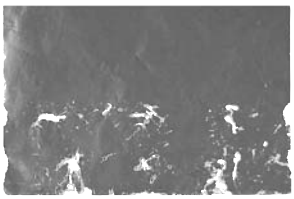
Technical Information for Series 8500 Generators and Transducers

Spherical Waves Technology

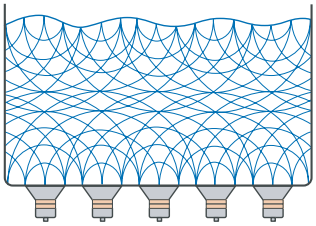
Branson's cleaning equipment can generate ultrasonic spherical waves in a tank. These spherical waves transmit throughout the tank to generate strong and uniform cavitation. In addition, sweep mode acting in a narrow band of +/-1000Hz improves the uniformity and quality of cleaning. On the other hand, competitors' products generate plain waves resulting in weak and strong strips of cavitation at a constant pitch due to the standing waves. Photos below show the test results that we have compared Branson with a competitor's product concerning cavitation distribution using Aluminum foil. Alkalescent aqueous solution with its temperature kept at 40°C was used. Ultrasonics was activated for 15 sec.

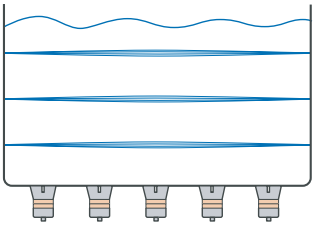


Spherical Waves
(Branson)



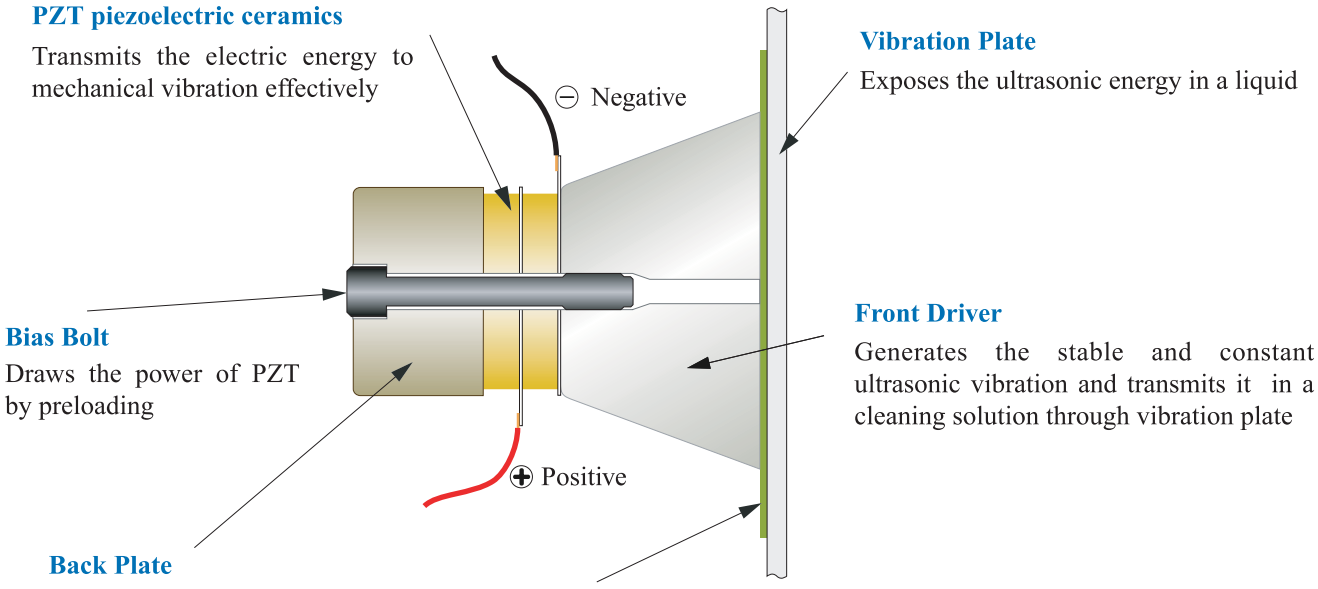
Plain Waves
(Competitors)





Transducer Element

The quality of Branson's ultrasonic cleaner depends on the material and the shape of the transducer element and how to mount it. Branson employs our proprietary assembling method with a bonding sheet to mount the transducer elements on the vibration plate.

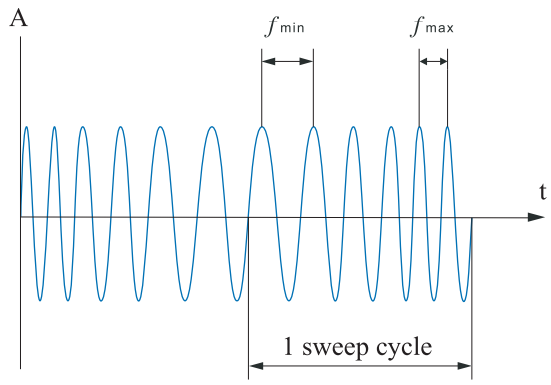


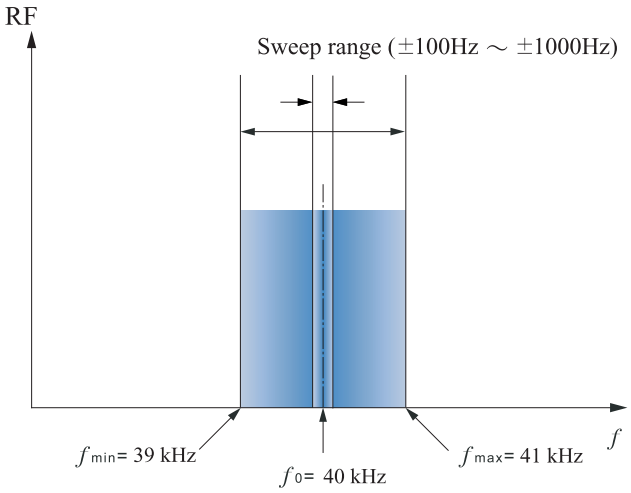
Sweep Mode

Sweep frequency is a circuit designed into a generator causing the signal sent to the transducer to vary slightly in frequency at a selected sweep rate. This sweep mode distributes the energy more evenly throughout the tank. It also prevents delicate parts from coming into the resonance with the frequency.

Sweep frequency

Band width of sweep frequency
(f_{max} - f_{min}) = 200 ~ 2000 Hz





Sweep rate

Sweep rate switch is selective as follows

Sweep Hi	———	1000 sweep cycles / sec
Sweep Lo	———	80 sweep cycles / sec

Key Features and Benefits

Line/load regulation compensates for liquid level and temperature changes as well as line voltage and load variations. Changes are held to less than 3% for very consistent cleaning.

True variable power control makes the cavitational intensity (not time) infinitely variable from 20% to 100%, which allows matching the power to your application. A bright LED display indicates the selected level.

Selectable sweep frequency permits the process engineer to select both band width and sweep rate to eliminate standing waves and improve ultrasonic activity distribution.

Auto tuning maintains optimum operating frequency around your application. It allows the generator to dynamically adjust to changing bath conditions optimizing performance around parameters such as temperature, liquid level, and tank loading.

Power modulation mode is a unique patented feature, which produces four times the peak power in the bath. This is helpful for tenacious soils or for driving difficult to cavitate chemistries like semi-aqueous and hydrocarbon formulations.

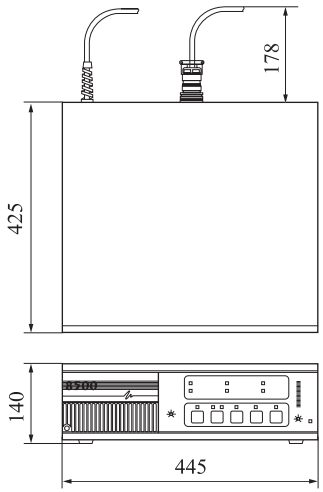
Series 8500

Branson's Series 8500 Advanced Ultrasonic Generator offer a full range of features to meet any precision cleaning requirement. Used on a simple cleaning tank or in a fully integrated cleaning system, the Series 8500 will deliver precise cleaning quickly, consistently, and cost effectively.

25 kHz

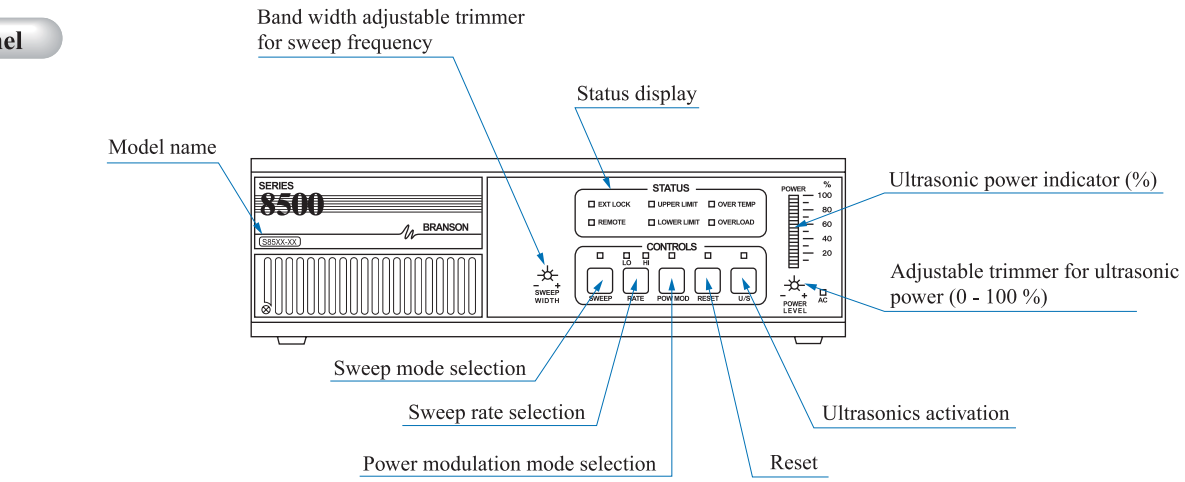
40 kHz

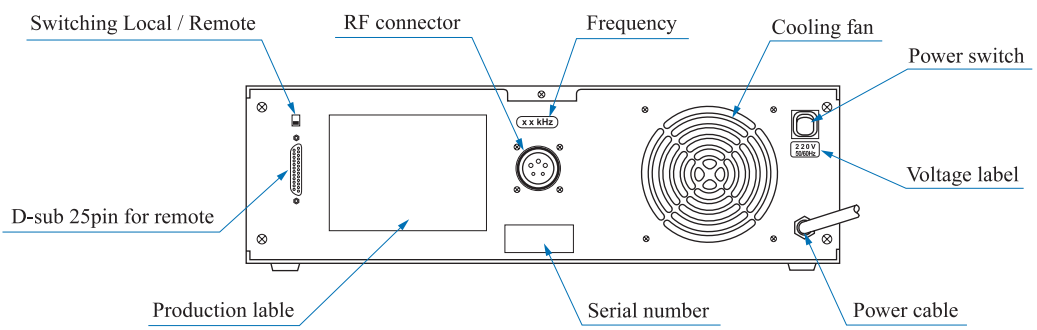
Model	Operating Frequency	Output Power	Transducer Elements	Power Source Requirements	Weight
S-8525-12	25 kHz	500 W	12	220V 1 ϕ 4.0A	13.6 kg
S-8525-18	25 kHz	750 W	18	220V 1 ϕ 5.5A	〃
S-8525-24	25 kHz	1000 W	24	220V 1 ϕ 6.5A	〃
S-8525-36	25 kHz	1500 W	36	220V 1 ϕ 8.0A	〃
S-8525-48	25 kHz	2000 W	48	220V 1 ϕ 11.0A	〃
S-8540-12	40 kHz	500 W	12	220V 1 ϕ 4.0A	〃
S-8540-18	40 kHz	750 W	18	220V 1 ϕ 5.5A	〃
S-8540-24	40 kHz	1000 W	24	220V 1 ϕ 6.5A	〃
S-8540-36	40 kHz	1500 W	36	220V 1 ϕ 8.0A	〃
S-8540-48	40 kHz	2000 W	48	220V 1 ϕ 11.0A	〃



(unit : mm)

S-8500 Panel





Series 8500HF High Frequency

High frequency ultrasonics has been shown to be very effective for removal of small particles. It also effectively cleans while reducing the potential for damage that can occur with conventional ultrasonics. There are three types in frequencies as 80kHz, 120kHz and 170kHz. All of the generators operate with the same transducer designs.

80 kHz

120 kHz

170 kHz

Model	Operating Frequency	Output Power	Transducer Elements	Power Source Requirements	Weight
S-8580-12	80 kHz	500 W	12	220V 1 ϕ 5.0A	13.6 kg
S-8580-18	80 kHz	750 W	18	220V 1 ϕ 6.0A	↑
S-8580-24	80 kHz	1000 W	24	220V 1 ϕ 7.0A	↑
S-85120-12	120 kHz	500 W	12	220V 1 ϕ 4.0A	↑
S-85120-18	120 kHz	750 W	18	220V 1 ϕ 5.0A	↑
S-85170-6	170 kHz	250 W	6	220V 1 ϕ 2.5A	↑
S-85170-12	170 kHz	500 W	12	220V 1 ϕ 3.5A	↑

Quadrasonic High Frequency Generator and the PLC Controller

Quadrasonic offers four different frequencies to meet any production cleaning requirement. Used on a simple cleaning tank or with immersible transducers in an integrated cleaning system, Quadrasonic will deliver precise cleaning quickly, consistently and reliably.

Quadrasonic Generator

Generator Model	Operating Frequency	Output Power	Transducer Elements	Power Source Requirements	Weight
Quadrasonic	40/80/120/170 kHz	500 W	12	220V 1 ϕ 5.0A	9 kg

Dimensions : 267mmW x 427mm D x 381mm H

4 Frequencies

Option:

Generator at 750 W power for 40, 80 and 120 kHz
PLC controller for Quadrasonic

PLC Controller
Model SPC-MF 500W

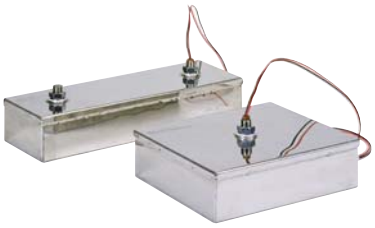
Immersible Transducers

Branson immersible transducers provide versatile ways to add ultrasonics to new or existing tankage in a variety of industrial setting. Type 316L bright annealed stainless steel construction permits use of a wide range of cleaning chemistries and gives higher temperature operation available at 100°C because of its high efficient transmitting capability. Immersibles are available in three mounting configurations as shown below, and they are custom made for your particular requirements. The standard 40kHz transducer is capable of being driven by 40, 80, 120 or 170kHz.

Model	Operating Frequency	Output Power	Transducer Elements	Dimensions (mm)	Weight
L□610-6	25 kHz	250 W	6	152 x 254 x 84H	8 kg
L□618-12	25 kHz	500 W	12	152 x 458 x 84H	14 kg
L□1012-12	25 kHz	500 W	12	254 x 305 x 84H	14 kg
L□1212-12	25 kHz	500 W	12	305 x 305 x 84H	15 kg
A□610-6	40 kHz	250 W	6	152 x 254 x 84H	8 kg
A□618-12	40 kHz	500 W	12	152 x 458 x 84H	14 kg
A□1012-12	40 kHz	500 W	12	254 x 305 x 84H	14 kg
A□1212-12	40 kHz	500 W	12	305 x 305 x 84H	15 kg

Fill in the blank of model name "□" selecting the types "D" "G" "F" as the mounting configurations.

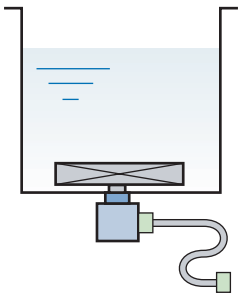
Type D

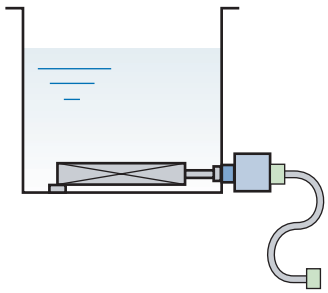


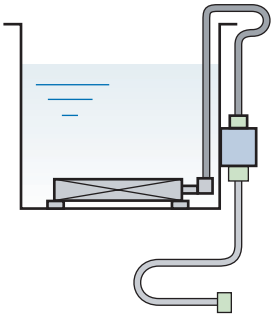
Type G

Type F

Illustrations



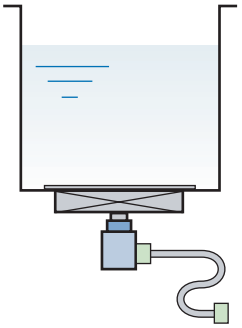




Transducer Flange Type

This Flange Type is developed for bottom face installment, allowing to effectively use the space of a tank. It is easy to keep a tank clean. This flange type has a variation of vacuum transducers which enable to clean complicated parts with degas water. Branson vacuum transducer has such a thin vibration plate that the maximum conversion efficiency can be obtained.

Flange Type



Ultrasonic Cleaning Tanks with Transducers

Branson ultrasonic tanks provide versatile ways to meet localized cleaning needs in a variety of industrial settings. Type 316L bright-annealed stainless steel construction permits use of a wide range of cleaning chemistries. Ten standard sizes range from 10 to 142 liters capacities. All tanks have heaters that are controlled by thermostat. 40kHz tanks can be used with 80/120/170 kHz generators.

Model	Operating Frequency	Output Power	Transducer Elements	Tank Capacity	Outer Dimensions (mm)	Inner Dimensions (mm)	Heater Capacity	Heater Voltage	Weight
CH610-25-6	25 kHz	250 W	6	10 ℓ	310 x 210 x 370H	254 x 152 x 254H	700 W	120/220 V	12 kg
CH1012-25-12	25 kHz	500 W	12	20 ℓ	360 x 310 x 370H	305 x 254 x 254H	700 W	120/220 V	20 kg
CH1216-25-18	25 kHz	750 W	18	38 ℓ	462 x 362 x 420H	406 x 305 x 305H	1400 W	220 V	30 kg
CH1620-25-24	25 kHz	1000 W	24	83 ℓ	565 x 460 x 520H	508 x 406 x 406H	2500 W	220 V	45 kg
CH2024-25-36	25 kHz	1500 W	36	142 ℓ	665 x 565 x 623H	610 x 510 x 505H	2500 W	220 V	62 kg
CH610-40-6	40 kHz	250 W	6	10 ℓ	310 x 210 x 370H	254 x 152 x 254H	700 W	120/220 V	12 kg
CH1012-40-12	40 kHz	500 W	12	20 ℓ	360 x 310 x 370H	305 x 254 x 254H	700 W	120/220 V	20 kg
CH1216-40-18	40 kHz	750 W	18	38 ℓ	462 x 362 x 420H	406 x 305 x 305H	1400 W	220 V	30 kg
CH1620-40-24	40 kHz	1000 W	24	83 ℓ	565 x 460 x 520H	508 x 406 x 406H	2500 W	220 V	45 kg
CH2024-40-36	40 kHz	1500 W	36	142 ℓ	665 x 565 x 623H	610 x 510 x 505H	2500 W	220 V	62 kg

Cylindrical and Pentagonal Inline Liquid Processor

These liquid processors can help speed up degassing, disintegration, dispersion, mixing, emulsification, or extraction. Liquids to be processed are passed through the tube and exposed to a very high intensity ultrasonic field. These designs assure uniform ultrasonic activity throughout the volume of these processors.

Model	Operating Frequency	Input Power	Transducer Elements	Exposure Area	Process Capacity	Outer Dimensions (mm)	Material	Generator
LP680-35	40 kHz	780 W	35	762 x ϕ162	15 ℓ	762 x ϕ 305	SUS316L	S-8540LP-35
LP680-20	40 kHz	450 W	20	457 x ϕ162	9 ℓ	457 x ϕ 305	〃	S-8540LP-20
WF3-16	40 kHz	–	16	203 x ϕ73	0.8 ℓ	280 x ϕ 260	〃	S-8540LP-16

BRANSON

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