

*Innovative Ultrasonic Cleaning  
and  
Ultrasonic Deburring*

*Ultrasonic cavitation applied system manufacturer*

**BLUE STAR R&D CO.,Ltd**

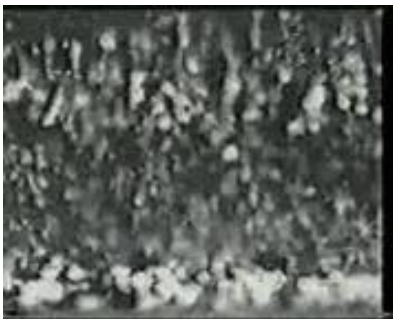
# The principle of innovative ultrasonic cleaning

## Innovative ultrasonic cleaning with explosive power



Please see the power of our innovative ultrasonic cleaning and forget about any other ultrasonic cleanings giving you mistaken idea. Our innovative ultrasonic cleaning technology will completely resolve all cleaning and deburring problems. We believe that our applied technology of enhanced ultrasonic cavitation will give you full satisfaction with cleaning and deburring in any industries. The left picture shows violent water splash on the water in the tank by ultrasonic power we create.

## Cavitation enhancement system



Our ultrasonic cleaning system can generate cavity of spherical nebula type (micro vacuum core nuclei) with degassing (nitrogen, oxygen) in liquid as a preprocessing, which is not simple air bubbles and gaseous nebula type cavity. This methodology is called the cavitation enhancement system. Then positive and negative powerful shock waves occurring more than 20,000 times per second do the ultrasonic cleaning and ultrasonic deburring. The left picture shows that countless cavity of spherical nebula type occurs vertically on the diaphragm. For correct usage of this technology, we need to understand exactly ultrasonic cleaning with the cavity.

## The Moment of spherical nebula type cavity occurring (1,000fps)



The left picture shows that the moment of countless spherical nebula type cavity (micro vacuum core group) occurring. The shape of such cavity is all spherical shape. Our ultrasonic cleaning is the strong applied technology of shock waves produced by the generation and the disappearance of the cavity.

• Gaseous nebula type cavity



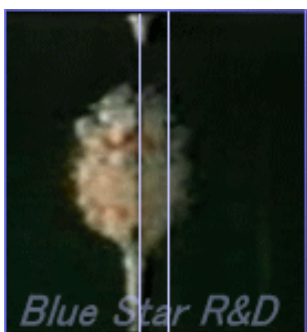
< weak >

• Spherical nebula type cavity



< strong >

## The Moment of cleaning foreign materials by the cavity (1,000fps)



Glass plate

We can provide our customers with the correct and real applied technology by our complete knowledge of ultrasound cleaning without the mistaken idea of it. If you feel there is no way of removing by all means or of solving cleaning problems anywhere, please let us know! And regarding unavoidable deburring of very small items in precision machining, our cavitation enhancement technology for ultrasonic deburring is being evolved now. The technology has been used as a real innovative deburring methodology all over the world.

# General Purpose

## Innovative • Ultrasonic Cleaning Systems

Compact size • Ultrasonic Cleaning Systems

### StarBaby-EH



Saving space, Low prices finally realized many requests !  
 Cleaning various dirt with powerful ultrasonic waves  
 It can correspond to any detergent

The nature of dirt      Oils • Metal chips • Dust •  
 Abrasive grain • Mold and Other

Detergent                      Pure water • City water • Water-soluble  
 detergent (Alkaline • Neutral)  
 \* Alcohols • Hydrocarbon solvent - S Type  
 (Safety-increase explosion-proof )

		StarBaby-EH-600	StarBaby-EH-1200	
Ultrasonic	Generator SIRIUS-SuperMulti II	25~275KHz 1φ200V 600W	25~275KHz 1φ200V 1200W	
Tray size (inside dimension)	W	300mm	400mm	
	D	200mm	300mm	
	H	75mm	75mm	
System	Size	W (machine only)	582mm	702mm
		D (including filter, SWBOX)	1068mm	1188mm
		H	1350mm	1350mm
		Operation Height	945mm	945mm
	Weight		350Kg	450Kg
	Tank size	W	360mm	480mm
		D	300mm	420mm
Liquid Depths		105mm (75mm)	105mm(75mm)	
Attached equipment	Deaeration vacuum pump, deaeration vacuum tower, circulation filter, the others			
Power	Electric	3φ200V3.5Kw	3φ200V5.0KW	

\* Please confirm the specification in advance. We continue to improve and develop.

# General Purpose

## Ultrasonic cleaning system

Ultrasonic cleaning system  
with cavitation enhancement system

### PERION-EH

This is a general-purpose and hand operated ultrasonic cleaning system with cavitation enhancement system. A circulating filter system and a vacuum degasser are equipped as well. It enables you to get extremely strong cleaning power by selecting proper frequency of oscillator.

- General purpose extremely strong ultrasonic cleaning system
- Vertical motion device included
- Continuously vacuum deaerating device included
- Filter, vacuum device included
- Cavitation control tank
- Horizontal drawn shutter



Item		Type	①PERION-EH-1200 ②PERION-EH II -2400	①PERION-EH-2400 ②PERION-EH II -4800	PERION-EH-3600
		Ultrasonic	Generator SIRIUS-SuperMulti II	25~275kHz 1φ200V ①1200W ②2400W	25~275kHz 1φ200V ① 2400W ②4800W
Transducer SIRIUS-SuperMulti	25~275kHz ①1W/cm <sup>2</sup> 1200W ②2W/cm <sup>2</sup> 2400W		25~275kHz ①1W/cm <sup>2</sup> 2400W ②2W/cm <sup>2</sup> 4800W	25~275kHz 1W/cm <sup>2</sup> 3600W	
Tray size (inside dimension)	W	400mm	600mm	720mm	
	D	300mm	400mm	500mm	
	H * 1	75mm	75mm	75mm	
System	Size	Liquid Depth	165mm	165mm	165mm
		W (machine only)	850mm	1050mm	1170mm
		W (including filter, SWBOX)	1046mm	1246mm	1366mm
		D	1250mm	1350mm	1450mm
		H	1355mm	1455mm	1555mm
		Signal Tower	1650mm	1650mm	1650mm
	Liquid amount	50ℓ	85ℓ	130ℓ	
Weight	empty	195kg	235kg	275kg	
	full	240kg	315kg	395kg	
Attached equipment	Heater	1φ200V 2kw	1φ200V 3kw	1φ200V 5kw	
Power	Electric	3φ200V ①5.5kw ②6.7kw	3φ200V ①8kw ②10.5kw	3φ200V 11kw	

Type of soil : oil • chip • dust • abrasive grain • mold • the others Liquid : pure water • city water • water soluble detergent(alkaline • neutral)  
\* Alcohols • Hydrocarbon solvent—S type (improved explosion resistance)

\* Please check the specifications in advance.

We continue to improve and development of technology.

# Ultrasonic Cleaning Systems

## Ultrasonic Metal mask Cleaning Systems Cleaning, Dry up within 3 minutes !



Next generation type high performance Ultrasonic metal mask cleaning systems which can also correspond also class 100 clean rooms.

Succeeded join development of high performance metal mask cleaning systems with automotive parts manufacturer DENSO Co., Ltd !

Excellent cleaning performance

Always monitor the ultrasonic oscillation state.

Pursuit easy maintenance and easy to use !

High speed aspiration • High speed air brow •

Suction double drying

## In development Ultrasonic Cleaning Systems

### Desktop type • Ultrasonic Cleaning System POLARIS

A desktop type cleaning system with many requests will be released soon !

It removes dirt with super strong ultrasonic wave which is not in conventional desktop type.

Earnestly producing in progress !

## Detergent

Detergent for ultrasonic cleaner also provides available.

- Ariel NON-F

It is an alkaline detergent for low foaming ultrasonic waves.

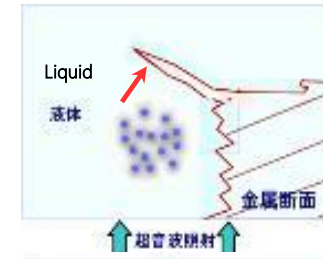
- Bianca

It is a water-soluble surfactant.



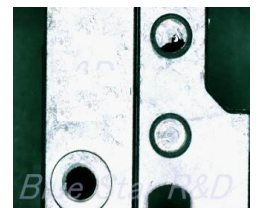
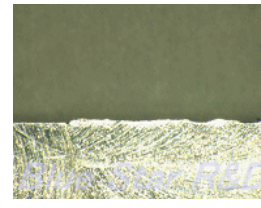
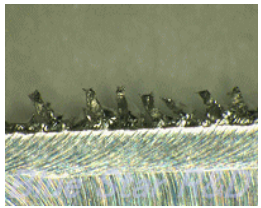
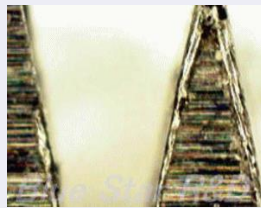
# The principle of innovative ultrasonic cleaning

## Deburring Principle



As amount of gas contained in liquid falls below a certain level, the type of cavity generated by ultrasound in the liquid changes from gaseous nebula type to spherically nebula type. This makes stronger shock waves. When the cavity generated, the positive shockwaves occur outside of them. When the cavity disappeared, negative shockwaves occur inside of them. This phenomenon is repeated 200M times per second. Such continuous shock waves cause fatigue failure and deburr. This is the principle of ultrasonic deburring. Please refer to the left pictures.

## Some Cases of deburring



# General Purpose

## Ultrasonic Deburring and Cleaning System

Compact size • Ultrasonic Deburring and Cleaning Systems

### StarBaby-DB



Saving space, Low prices finally realized many requests !  
For precision parts deburring.  
It can remove various burrs and also clean at the same time.

- Items for  
Automotive parts, Medical parts, Precision parts like mobile phone parts etc.
- Materials  
Various metals, Plastics, Ceramics, and their compound materials

Item		Type	StarBaby-DB-1200	StarBaby-DB-2400
Ultrasonic		Generator SIRIUS-SuperMulti II	25~275KHz 1φ200V 1200W	25~275KHz 1φ200V 2400W
Tray size (inside dimension)		W	300mm	400mm
		D	200mm	300mm
		H	75mm	75mm
System	Size	W (machine only)	582mm	702mm
		W (including filter, SWBOX)	1068mm	1188mm
		H	1350mm	1350mm
		Operation Height	945mm	945mm
	Weight		350Kg	450Kg
	Tank Size	W	360mm	480mm
D		300mm	420mm	
Liquid Depths		105mm (75mm)	105mm(75mm)	
Attached equipment	Deaeration vacuum pump, deaeration vacuum tower, circulation filter, Heat exchanger, the others			
Power	Electric	3φ200V3.5Kw	3φ200V5.0KW	
Required equipment			Chiller required for water cooling Recommendation : ORION RKE750A1-V-G2	Chiller required for water cooling Recommendation : ORION RKE1500B1-V-G2

# General Purpose Ultrasonic Deburring and Cleaning System

Cavitation enhancement system  
Ultrasonic Deburring and Cleaning system

## PERION-DB

This is a general-purpose and manual-operated ultrasonic cleaning and deburring system with cavitation enhancement system. A circulating filter system and a vacuum degasser are equipped as well. As utilizing with spherical nebula cavity, powerful ultrasonic cleaning and deburring could be possible. If delicate items, such as semiconductor components and small electronic parts, have to be cleaned and deburred, selecting proper frequency of oscillator enables you to make it easier.

- Materials  
Various metals, Plastics, Ceramics, and their compound materials
- Liquid usage  
Pure water • City water
- Hydrocarbon solvent-Style (improved explosion resistance)  
DBU (Rust preventive agent or surface active agent are available)  
DBR (Hexagon rotating basket)  
DB-20 (20KHz very strong deburring system)



Item \ Type		PERION-DB-1200	PERION-DB-2400	PERION-DB-3600	PERION-DB-4800	PERION-DB-6000	
Ultrasonic	Generator SIRIUS-SuperMulti II	25~275KHz 1φ200V 1200W	25~275KHz 1φ200V 2400W	25~275KHz 1φ200V 3600W	25~275KHz 1φ200V 4800W	25~275KHz 1φ200V 6000W	
	Transducer SIRIUS-SuperMulti	25~275kHz 2W/cm <sup>2</sup> 1200W	25~275KHz 2W/cm <sup>2</sup> 2400W	25~275KHz 2W/cm <sup>2</sup> 3600W	25~275KHz 2W/cm <sup>2</sup> 4800W	25~275KHz 2W/cm <sup>2</sup> 6000W	
Tray size (inside dimension)	W	300mm	400mm	500mm	600mm	800mm	
	D	200mm	300mm	360mm	400mm	400mm	
	H * 1	30mm	30mm	30mm	30mm	30mm	
System	Size	W(Machine only)	870mm	990mm	1050mm	1100mm	1310mm
		D (including filter, SWBOX)	1682mm	1802.1mm	1862.1mm	1912mm	2121.6mm
		D	1160mm	1280mm	1340mm	1340mm	1340mm
		H	1546mm	1546mm	1591mm	1700mm	1812.3mm
		Signal Tower	1924mm	1924mm	1924mm	1924mm	1924mm
	Liquid amount	21.5ℓ	29ℓ	55ℓ	70ℓ	73ℓ	
	Weight	Empty	275Kg	325Kg	315Kg	375kg	420Kg
Full		325Kg	375Kg	375Kg	450Kg	500Kg	
Attached equipment	Chiller * 2	Applicable	Applicable	Applicable	Applicable	Applicable	
Power	Electric	3φ200V3.5kw	3φ200V5.5KW	3φ200V 8KW	3φ200V 11KW	3φ200V12.5KW	

\*.Chiller is separately needed.

We continue to improve and development of technology.



## Ultrasonic Deburring and Cleaning System

Three in ONE!! Deburring and polishing and cleaning!  
Full automatic ultrasonic deburring, polishing and cleaning machine

Successfully developed and commercialized for full automatic ultrasonic deburring, polishing and cleaning machine for precision parts!  
Water usage and no need to use abrasive compounds. Rust reventative is also possible.  
Effective for various type of precision parts.

The deburring capability of Ultrasonic deburring and polishing machine and a traditional barrel polishing way are almost same, however, as for the polishing capability, the ultrasonic way is more excellent than the barreling way. This is confirmed by light reflection. Also, it is slimy when it is touches by fingers.



### 【Specifications】

Hexagon rotation basket(vertically opposite angle) : 200mm:L300mm Inner weight 10kg

Process : Inlet conveyor→ultrasonic barrel polishing→ultrasonic barrel polishing→drying→drying→outlet conveyor

Cycle time : 1 basket/ 15 minutes (standard)

Size of main body : D:1650[mm] W:2975[mm] H:2050 [mm]

Addition control panel Total body size : W : 3400 [mm]

Inlet conveyor [outside Length] : W : About 820 [mm]

Outlet conveyor [outside Length] : W : About 820 [mm]

System weight : About 1850 [kg] concrete withstand load 500kg/m<sup>2</sup>

System total weight : About 2215 [kg] (Including liquid)

Signal tower : H 2250 [mm]

Attachment device : vacuum pump for deaeration, vacuum deaeration tower, circulation filter, heat exchanger, chiller [water cooling device] vertical movement device, the others

Options : pure water system (ion exchanger resin, activated carbon filter)

### 【Utilities】

A. Electric power supply	: 3φ 220 [V] 50 [Hz]	
	: capacity 23 [KW] 26[KVA]	
B. Pure water	: 3~ 5[ℓ/min] IN 1/2B Inlet pressure 0.2~0.3[MPa]	
C. Air	: 500 [ℓ/min]	For horizontal movement operation of drying tank cylinder. For levating/lowering cylinder, horizontally movement,for air blowing
	IN 3/4B 0.4MPa	
D. Exhaust ventilation	: About 5~10 [Nm <sup>3</sup> /min] or more	φ100[mm]×1 place
	static pressure 20[mmAq]	Exhaust fan included
E. Exhaust ventilation	: Discharging port 1B	
F. Chiller	: 3φ 200V 4.6 KW sepalete placement	

## *Ultrasonic Deburring and Cleaning System*

Why Blue Star machine is effective for cleaning?  
How can we have strong cleaning power?  
Blue Star R&D can solve any questions about ultrasonic.

Multi-purpose full automatic Ultrasonic cleaning and deburring system with cavitation enhancement system

### **VEGA**



This is a multi-purpose and fully automatic cleaning and deburring system that can carry all processes and all options from cleaning and deburring to drying automatically, such as cleaning(deburring), rinse and drying. This system is the up-to-date ultrasonic cleaning and deburring system by combining with our all knowledge, technologies and expertise.

Vacuum pre-treatment Ultrasonic cleaning and deburring system with cavitation enhancement system

### **MARS**



This is an ultrasonic cleaning and deburring system with vacuum pre-treatment. Before deburring, all gasses on processing object in the cleaning tank is eliminated completely by making the liquid in the tank vacuum. This system is suitable for cleaning and deburring of objects including air stayed its inside such as having blind holes and including depressed area where air remaining at. This system is equipped with a circulation filtration mechanism and a vacuum deaerator.

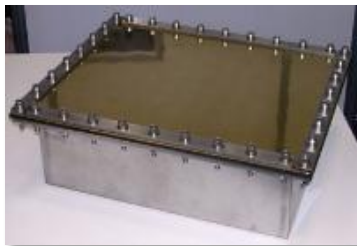
## Other ultrasonic applied products

The way of ultrasonic is unlimited.

For washing clothes or for food industry like washing rice, recycle washing for filter, Persian carpet and so on.

Please contact us!

Wide band and multiple wave Ultrasonic oscillator and ultrasonic transducer **SIRIUS II**



**SIRIUS II** 25KHz~275KHz 600W~14400W

The other basic frequencies

20KHz, 40KHz, 68KHz, 125KHz, 165KHz

-Wide band and multiple wave simultaneous oscillation

-Frequency range : 25KHz (primary basic frequency) - 275KHz

-Secondary basic frequencies 40KHz, 68KHz, 125KHz and 165KHz

## Ultrasonic Tester BST02a / Sensor Probes USS02a

Ultrasonic intensity tester.

Adjustment of an ultrasonic transducer unit and a generator is very useful.

Suitable for regularly inspection of ultrasonic intensity of a work tank.

Easy to read by 3-digit and a bar graph display.

Safe and handy operability by battery power.

Display and output by three comparative strength level is free setting.

Excellent linearity of the detection sensitivity.

Two-stage of response speed can be selected.

A data logger can be connected from an external output.

Level judgement and control etc are easy.



*What can we **clean** and **deburr** for you?*

***Creativity***

***Passion***

***Vanguard***

***Dream***

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