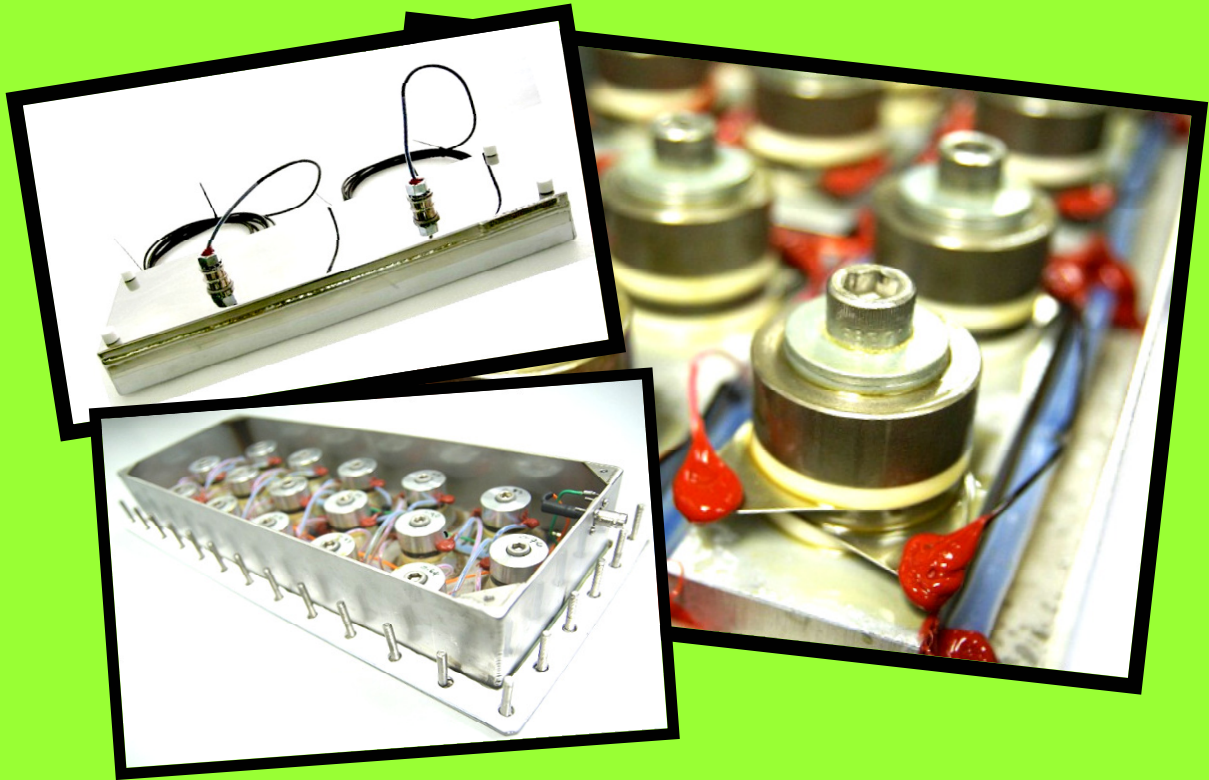


Instruction Manual

Immersible & Flange Type Transducer



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1. Important Notifications

WARNING 	High voltages exist when the electrical power is turned on. Always disconnect power when servicing the system. When operating the system, observe all practical precautions for the use of high voltage, as dictated by applicable electrical codes and regulations. Observe all operating precautions stated throughout this manual.
WARNING 	Only trained and certified personnel shall install the immersible into the cleaning bath.
CAUTION 	Never place your hands, arms, or any body part in the cleaning or rinse liquids when ultrasonic cleaning is in operation. Always use racks or baskets to hold the cleaning parts.
CAUTION 	The radiating surface of immersible transducer must be covered by liquid at all times to avoid overheating. Transducers damage due to overheating will not be covered by warranty.

2. Product Description

2.1 Immersible Transducers

The immersible transducer is a completely encapsulated oscillating element radiating in one direction and powered by a generator. The immersible transducer can be installed at the side or bottom of the cleaning bath. The immersible transducer is made liquid tight by welding and it has 316L stainless steel “bright annealed” surface to minimize cavitation erosion. These transducer modules are specifically configured for optimal operation at the frequencies of 25 kHz and various higher frequency levels.

The below diagram illustrates the features and connections of the cleaning bath, immersible transducer, junction box, generator and power supply:

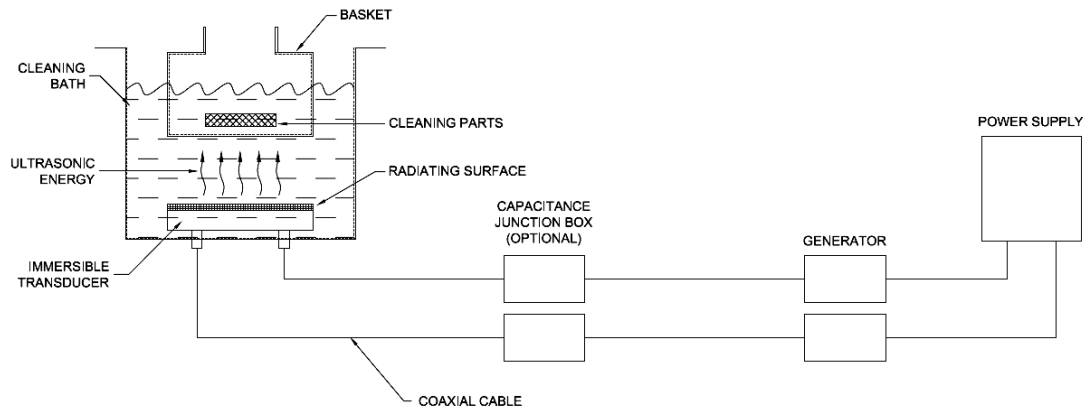
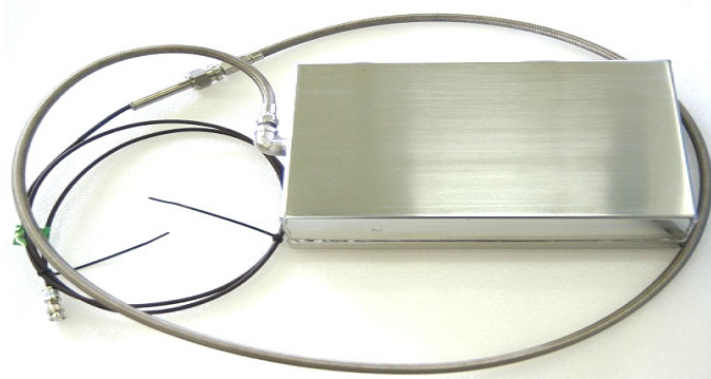


Figure 2-1: Immersible transducer, cleaning bath, junction box, generator & power supply

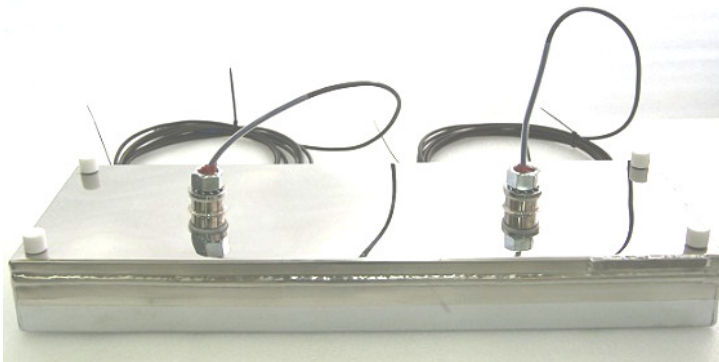


Figure 2-2: Immersible transducer without cover

Common types of immersible transducers:



Flexible Cable Immersibles



Double Bulkhead Immersibles

2.2 Flange Type Transducers

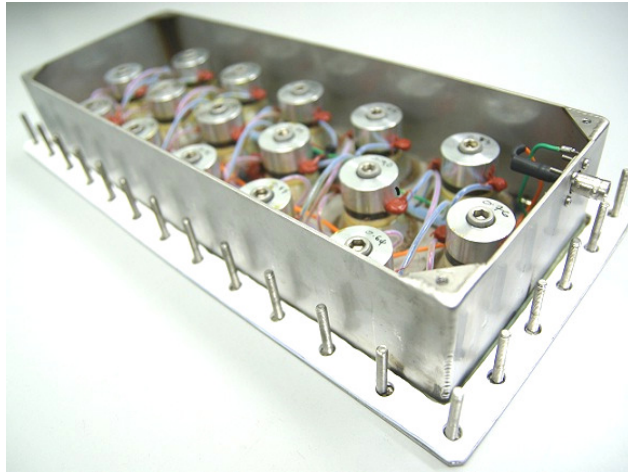


Figure 2-3: Flange Type Transducer

The Flange Type Transducer (FTT) is a plate with transducer stacks and is usually covered by a transducer shield. The FTT is not an immersible transducer. They are fitted to the outside of the tank or containers with welded or press-on mounting frames.

The sound generated is directed extremely accurately into the liquid by the diaphragm. The high-grade transducer elements will ensure maximum sonic yield. The FTT are available in numerous standard frequencies and also customer-specific designs.

The below diagram illustrates the features and connections of the cleaning bath, FTT, junction box, generator and power supply:

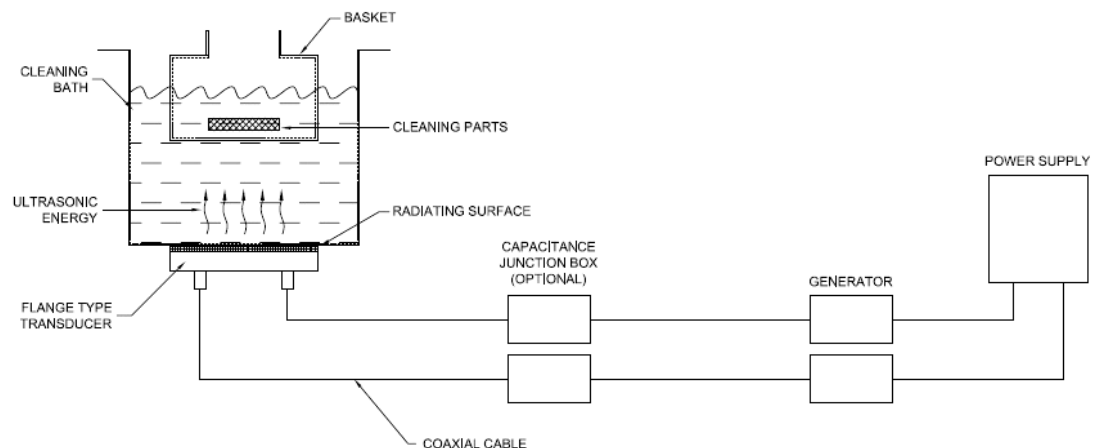


Figure 2-4: Flange Type Transducer, cleaning bath, junction box, generator & power supply

3. Installation

3.1 Flexible Cable Immersible

NOTE 	As immersibles will tend to float, use mechanical fixtures to hold the immersibles. Do not use any fixtures which touch the radiating surface. If holding brackets are provided with the immersible, secure it properly to the tank.
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NOTE 	The smaller units can be held by a clamp or rod on the end fitting where the flexible cable is attached.
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Step	Description
1	Place the immersible in the tank or container.
2	Fill in tank or container with enough cleaning solution to cover the radiating surface completely.
3	Connect the coaxial cable from the immersible to the generator module.

3.2 Bulkhead Immersible

NOTE 	Ensure that the radiating surface of the immersible is directed towards parts being cleaned.
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Step	Description
1	Place the immersible in the tank or container with the 3/4" diameter mounting stud in the appropriate hole or holes in the tank wall. The diameter of these holes should be 7/8".
2	Mount or place the junction box so that liquid from the tank will not spill on the box. NOTE: If two mounting studs are present, one stud may not have any wires for it because it is used only to provide a stable mounting.
3	Fill the tank or container with enough cleaning solution to completely cover the radiating surface.

3.3 Flange Type Transducer

Step	Description
1	Place and weld the FTT at the bottom of the tank or container.
2	Ensure that it is secured properly. Else, redo welding.
3	Fill in tank or container with cleaning solution.
4	Connect the coaxial cable from the FTT to the generator module.

4. Operation

WARNING

Ensure that junction box does not come into contact with cleaning solution as it is not liquid tight.

NOTE

Ensure that the radiating surface of the immersible is directed towards parts being cleaned.

NOTE

Capacitance junction box will be provided if coaxial cable is more than 20ft. (*only applicable to Genesis generators*)

NOTE

Plug coaxial cable from immersible transducer to generator module with the correct frequency and voltage supply.

Step	Description
1	Fill the cleaning bath with enough liquid to cover the radiating surface completely.
2	Connect the coaxial cable from the immersible to the generator module.
3	Before operating, check generator serial tag for proper power requirement.
4	Insert the plug of the generator to the power supply socket and switch it ON.
5	Refer to the Generator manual for detailed information on the generator's operations
6	Immerse parts to be cleaned into cleaning bath.
7	Switch ON the generator to start cleaning process. NOTE: You should hear the ultrasonic sound once the generator is turned ON.
8	Check that the fan of the generator is operating for proper cooling.

Step	Description
9	Leave parts in the cleaning bath until the desired duration lapses.
10	To stop cleaning process, switch OFF the generator and remove parts.
11	Repeat the same process for the next parts to be cleaned.
12	Power OFF the generator when complete.

4.1 Degassing

NOTE 	Perform degassing ONLY on Genesis generator.
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NOTE 	To degas, switch to the “Lo” position for half-wave modulation. (NOTE: Although the peak power is the same, average power is reduced by one-half). Degassing of normal water detergent solutions will usually be completed within 10 minutes.
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Degassing is the removal of unwanted dissolved gas from the liquid. As the cavities form, they fill with unwanted air which appears as bubbles. These resist collapse and tend to remain suspended in the liquid, serving as “shock absorbers” which can reduce cleaning efficiency.

The amount of air in the cleaning bath liquid can be reduced by switching off or modulating the sound energy to permit adjacent bubbles to coalesce, float to the surface, and escape. The type of modulation is important, for the correct balance between de-gassing and cleaning efficiency must be determined for each application.

5. Routine Maintenance

DANGER 	Always unplug or disconnect the generator assembly from power source before maintenance or repair. Failure to do so may result in injury or death due to presence of high voltage.
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NOTE 	For generator maintenance, refer to the cleaning of generator in the generator instruction manual.
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5.1 Immersible Transducer

No.	Description
1	Drain the cleaning solution from the cleaning bath. Manually clean the radiating surface with a non-abrasive cloth and a non-abrasive cleaner. Rinse thoroughly.
2	Visually inspect the radiating surface condition for cavitations erosion. Check for any leakage.

6. Troubleshooting

6.1 Correcting Problems

The troubleshooting steps on the following page are recommended prior to contacting the factory. If further service is required, contact Crest Ultrasonics.

Problem	Possible Causes	Corrections
No ultrasonics activity in tank	Loose connection from the generator to the tank.	Secure the connection.
Generator cannot power up	Fuse blown	Replace fuse
	No Power at AC outlet	Circuit breaker of AC outlet may have tripped or fuse may have blown. Reset breaker or replace fuse.
Low activity in tank (Foil Test)	Bad acoustic coupler component.	Call the Crest Service Department.
	Full wave/Half-wave toggle switch in half-wave (low) position. (For Genesis Generator)	Place switch in full-wave (high) position.
	Cleaning liquid (particularly solvents) does not reach operating temperature or does not completely degas.	Leave generators and heaters “ON” until liquid is up to temperature.
	Low power intensity from the generator.	Increase the power intensity

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