

ULTRASONIC TRANSDUCERS



Immersible transducers
and flat transducer plates

Immersible transducers and flat transducer plates

High-power ultrasonic transducers like immersible transducers and flat transducer plates are used for ultrasonic cleaning and degreasing as well as for supporting or accelerating chemical or physical processing. For this purpose, they are fixed into new or already existing tanks or basins. Immersible transducers and flat transducers plates are manufactured of titanium stabilized stainless steel resulting in a high durability and long life span. Depending on the required processing, the assembling is made with different connections for various installations.



Trasduttori ultrasonici immersibili ad alta potenza

Typical applications

Surface technology	Cleaning and degreasing as a prepreparation stage for coating, varnishing; ultrasound supported preparation in electroplating for achieving perfect coating.
Automotive industry	Degreasing and cleaning of engine parts
Machine and plant engineering	Cleaning of parts after turning, milling, drilling, lapping, and intermediate cleaning before further processing; cleaning of stainless steel chains.
Printing industry	Cleaning of printing rollers
Semiconductor industry	Cleaning of insulating ceramics and wafers
Beverage industry	Degassing control after filling and leak test of bottles containing carbon dioxide
Wire industry	Removing of drawing lubricant and oxidations
TV industry	Cleaning of teletubes
Plastics technology	Removing of separating agent residues from moulds
Textile industry	Intensive colouring of textile tapes and fabric lengths, and cleaning of healds
Aviation	Cleaning of coolers

ADVANTAGES OF HIGH-POWER ULTRASONIC TRANSDUCERS:

- Simple retrofitting of existing equipment as used in galvanic processes
- Small space requirements for installation at the tank sides or on the tank bottom
- Individual arrangement of transducers in cleaning and rinsing tanks

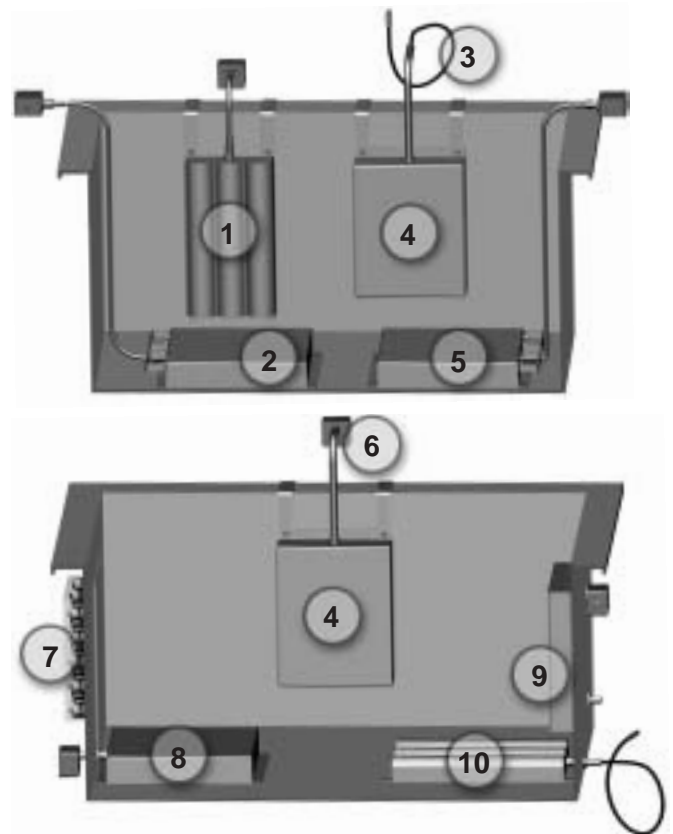
- Cost-saving alternative caused by alternating insertion of transducers into different tanks in case of successive cleaning processes
- Direct irradiation of complicated prefabricated parts
- When being used with LG-generators an individual power adjustment can be selected for a gentle or very strong cleaning.
- Multi-frequency irradiation in case of a very regular power distribution is required

Following criteria must be considered when selecting adequate ultrasonic transducers

Output:	Tank volume in litres x 5 = minimum of required ultrasonic power in Watts
Frequency:	40 kHz for delicate objects such as printed circuit boards, wafers optical devices etc. 25 kHz for the cleaning of very dirty machine and engine parts etc.
Dimensions:	Space in the tank or basin
Mounting:	Installation of oscillating systems at the bottom and/or at the side
Installation type:	Temporary or permanent assembly of ultrasonic transducers
Connections:	Dry or damp ambience conditions

Mounting examples

1. Immersible transducer with bent stainless steel pipe for hanging into the tank.
2. Immersible transducer with PTFE-protection hose, stainless steel braiding.
3. Fixed cable connection with high-strength cable gland (hoseproof).
4. Immersible transducer with bent stainless steel pipe for hanging into the tank.
5. Immersible transducer with PTFE-protection hose, stainless steel braiding with 90° bend.
6. Quick-connect-technology with connection box TA (drip-proof).
7. Flat transducer plate with protective cover.
8. Immersible transducer with stainless steel feedthrough pipe.
9. Immersible transducer with bolt mounting.
10. CONVEX Immersible transducer with stainless steel feed-through pipe and fixed cable.



INSTALLATION FACILITIES FOR IMMERSIBLE TRANSDUCERS

Constructional characteristics	with plug-in cable connection IP 51	with fixed cable connection IP 65
E - for hanging into the tank. With welded bent stainless steel pipe and suspension hooks. This type is easily displaceable and consecutively applicable in a different number of tanks.	E	EF
B - with liquid-proof bolt mounting. Through tank bottom or side walls resulting in a working area being free of disturbing cables. The cable routing to the generator is made outside the tank.	B	BF
R- with liquid-proof pipe. Through the tank wall	R	RF
P - with flexible PTFE - Protection hose of 2 m length. With stainless steel braiding (AISI 304 Ti), for placing directly on the tank bottom	P	PF
W - with stainless steel bend 90 ° (AISI 304 Ti) and flexible PTFE-protection hose of 2 m length. With stainless steel braiding (AISI 304 Ti), for placing directly on the tank bottom in case of small mounting place	W	WF

Directions on the Quick-connect-technology. Immersible transducers are normally equipped with connection boxes with HF-sockets. When operating the equipment in wet ambience we recommend to order a fixed cable connection F with high strength cable glands (hoseproof). Flat transducer plates are equipped with HF-sockets only, without connection boxes.

Ultrasonic Transducers

DESCRIPTION

Quick Connect Technology



The Quick Connect Technology allows an efficient and secure connection between the high-power ultrasonic transducers and the power module of the LG-generator.

EMC protection: according to guideline 89/336/ECC

Protection class: IP: 51 (drip-proof)

HF connection cable: 5 m length, with plugs at both ends

Extension: Cable extension without plug up to a maximum length of 15 m available

DESCRIPTION

Immersible Transducers T for quick installation



IMMERSIBLE TRANSDUCERS T
for quick installation

Immersible transducers are used for sonication in big tanks or basins without making larger modifications at the existing equipment.

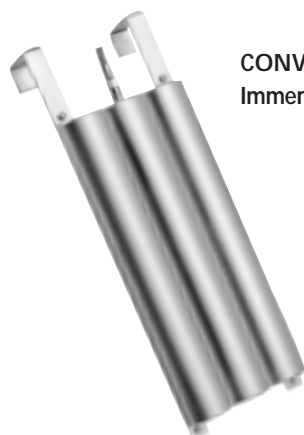
Features:

- Stainless steel housing of 2 mm thickness, AISI 316 Ti, TIG welded
- Ultrasonic frequencies: 25 kHz alternatively 40 kHz
- Drip-proof or hoseproof HF-cable connections
- 10 different versions support the variety of the application

HF-output effective	Radiating surface	External dimensions	25 kHz	40 kHz
Watts	(l x w) mm	(l x w) mm	h = 100 mm	h = 80 mm
200	170 x 160	230 x 160	T 25 04 1...	T 40 04 1...
300	325 x 235	385 x 235	T 25 06 3...	T 40 06 3...
400	325 x 160	385 x 160	T 25 08 3...	T 40 08 3...
400	595 x 80	655 x 80	T 25 08 5...	T 40 08 5...
500	325 x 235	385 x 235	T 25 10 3...	T 40 10 3...
500	415 x 325	475 x 325	T 25 12 4...	T 40 12 4...
500	415 x 265	475 x 265	T 25 14 4...	T 40 14 4...
500	595 x 235	655 x 235	T 25 14 5...	T 40 14 5...
1000	415 x 325	475 x 325	T 25 20 4...	T 40 20 4...
1000	475 x 325	535 x 325	T 25 22 4...	T 40 22 4...
1000	565 x 355	625 x 355	T 25 24 5...	T 40 24 5...
1000	595 x 235	655 x 235	T 25 22 5...	T 40 22 5...
1000	595 x 415	655 x 415	T 25 26 5...	T 40 26 5...
1000	775 x 205	835 x 205	T 25 22 7...	T 40 22 7...
New 1500	595 x 355	655 x 355	T 25 305...	T 40 305...
New 1500	595 x 415	655 x 415	T 25 325...	T 40 325...
New 1500	775 x 415	835 x 415	T 25 387...	T 40 387...
2000	565 x 355	625 x 355	T 25 40 5...	T 40 40 5...
2000	595 x 415	655 x 415	T 25 44 5...	T 40 44 5...
2000	775 x 355	835 x 355	T 25 46 7...	T 40 46 7...
2000	895 x 445	955 x 445	T 25 48 8...	T 40 48 8...

DESCRIPTION

CONVEX Immersible Transducer TC




CONVEX
Immersible transducer TC


HF-output effective	Radiating surface	External dimensions	40 kHz
Watts	(l x w) mm	(l x w) mm	h = 80 mm
300	634x 90	694 x 90 x 68	TC 40 10 6...
600	634x 172	694 x 172 x 68	TC 40 20 6...
1000	634x 260	694 x 260 x 68	TC 40 30 6...


Applications: Super fine cleaning of delicate parts. Near field irradiation in process technology

Features:

- Convex radiating surface
- Consistent sound distribution
- Stainless steel material of 2 mm thickness, AISI 316 Ti, TIG-welded
- Ultrasonic frequency 40 kHz
- Homogeneous cleaning efficiency
- Little surface erosion
- Extended life span

DESCRIPTION	HF-output effective	Radiating surface	External dimensions	40 kHz
CONCAVE Immersible Transducer TN	Watts	(l x w) mm	(l x w) mm	h = 80 mm
 <p>CONCAVE Immersible Transducer TN</p> <p>Applications:</p> <ul style="list-style-type: none"> • Focused intensive cleaning of longish or lamentous parts • Especially suitable for wire cleaning <p>Features:</p> <ul style="list-style-type: none"> • Concave radiating surface • Uniform sound distribution • Stainless steel material of 2 mm thickness, AISI 316 Ti, TIG-welded • Ultrasonic frequency 40 kHz 	300	634 x 90	694 x 90 x 84	TN 40 10 6...

DESCRIPTION	Immersible Transducers RT 4-1040	Immersible Transducers RT 6-2040
Cylindrical Immersible Transducers RT		
 <p>CYLINDRICAL IMMERSIBLE TRANSDUCERS RT 4-1040 E RT 6-2040</p> <p>Applications:</p> <ul style="list-style-type: none"> • Inside cleaning of casings • Media irradiation in reactors, fermenters etc. • Used as Sonoreactor in reactor housing (see page 23) <p>Features:</p> <ul style="list-style-type: none"> • Radial irradiation characteristics • Circumpolar sound distribution along the axis • Stainless steel material, AISI 316 Ti, TIG-welded • Ultrasonic frequency 40 kHz • Little surface erosion • Extended life span 	<ul style="list-style-type: none"> • Cylinder dimensions without flange (senza flangia di fissaggio): Ø 104 x 691 mm • Flange: DN100, ND 10 come da DIN 2527 • HF-fixed cable connection: lunghezza 5 metri • Frequency: 40 kHz • HF-output effective: 1000 W 	<ul style="list-style-type: none"> • Cylinder dimensions without flange (senza flangia di fissaggio): Ø 108 x 755 mm • Flange: DN150, ND 16 come da DIN 2527 • HF-fixed cable connection: lunghezza 5 metri • Frequency: 40 kHz • HF-output effective: 2000 W

DESCRIPTION	HF-output effective	Radiating surface	External dimensions	25 kHz	40 kHz
Flat Transducers Plates	Watts	(l x w) mm	(l x w) mm		
 <p>FLAT TRANSDUCERS PLATES</p> <p>Flat transducer plates are installed into the side wall or into the tank bottom, if only limited space is available. The nominal tank dimensions remain unchanged.</p> <p>Features:</p> <ul style="list-style-type: none"> • Stainless steel plates of 3 mm thickness, AISI 316 Ti • Ultrasonic frequencies : 25 kHz alternatively 40 kHz optional • Drip-proof HF-cable connections • Installation in rectangular outcut • Drilling jigs and bores for mounting bolts are not required! 	200	170 x 160	255 x 230	P 25 04 1...	P 40 04 1...
	300	325 x 235	380 x 305	P 25 06 3...	P 40 06 3...
	400	325 x 160	380 x 230	P 25 08 3...	P 40 08 3...
	400	595 x 80	680 x 155	P 25 08 5...	P 40 08 5...
	500	325 x 235	380 x 305	P 25 10 3...	P 40 10 3...
	500	415 x 325	480 x 380	P 25 12 4...	P 40 12 4...
	500	415 x 265	480 x 330	P 25 14 4...	P 40 14 4...
	500	595 x 235	680 x 305	P 25 14 5...	P 40 14 5...
	1000	415 x 325	480 x 380	P 25 20 4...	P 40 20 4...
	1000	475 x 325	555 x 380	P 25 22 4...	P 40 22 4...
	1000	565 x 355	630 x 430	P 25 24 5...	P 40 24 5...
	1000	595 x 235	680 x 305	P 25 22 5...	P 40 22 5...
	1000	595 x 415	680 x 480	P 25 26 5...	P 40 26 5...
	1000	775 x 205	855 x 280	P 25 22 7...	P 40 22 7...
	New 1500	595 x 355	680 x 430	P 25 30 5...	P 40 30 5...
	New 1500	595 x 415	680 x 480	P 25 32 5...	P 40 32 5...
	New 1500	775 x 415	855 x 480	P 25 38 7...	P 40 38 7...
	2000	565 x 355	630 x 430	P 25 40 5...	P 40 40 5...
2000	595 x 415	680 x 480	P 25 44 5...	P 40 44 5...	
2000	775 x 355	855 x 430	P 25 46 7...	P 40 46 7...	
2000	895 x 445	955 x 530	P 25 48 8...	P 40 48 8...	

Generators

DESCRIPTION
RACK 3 KW



Dimensions (l x w x h): 405 x 218 x 198 mm
 mains connection: 230 V ~ 50/60 Hz

RACK 6 KW



Dimensions (l x w x h): 405 x 488 x 203 mm
 mains connection: 400 V 3N ~ 50/60 Hz

DESCRIPTION

RACK 9 KW



Dimensions (l x w x h): 405 x 488 x 225 mm
mains connection: 400 V 3N ~ 50/60 Hz

Operating modules

DESCRIPTION

Control module SM



A control module is built-in into all LG generators as a standard. The ultrasound output set with the adjustable rotary controller applies to all power modules of the same generator. The power modules take over the controlling and monitoring of the generator functions as well as possible error indication. The programming of the power modules may even be made through the RS 232-interface by means of a SPS equipment or by a PC using the software. The control module may be replaced by the processor module PRO in all generator versions.

- Continuous setting of the nominal output range from 10 to 100 % via rotary controller
- Bar display indicates the nominal output in %
- On/Off switch for the power modules

Processor module PRO



The processor module PRO enables an individual programming of the power modules. Consequently, the controlling of complex tasks, the computer-based connection to industrial processes as well as the design of various applications are possible. The programming of the power modules is directly made at the processor module or via the RS 232-interface by a SPS or using the software on a PC.

- LCD display to indicate the outputs and settings
- Setting of processing and offset times of separate modules
- Degas function for quick degassing of the bath liquid
- Switching on/off separate modules
- Elapsed time indicator
- Language selection: German/English
- Indication of external control by a PC or SPS
- Error indication with date and time

Power modules M 1002 and M 1502

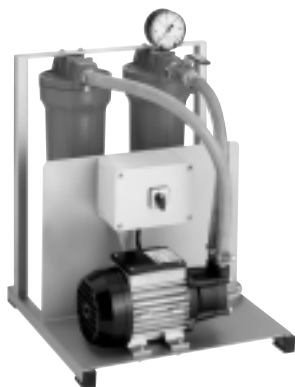


The combination of microprocessor technology with modern and powerful semiconductors in the output stage allows an efficient circuit technology of a very high efficiency. The microprocessor based status analysis guarantees a high operational reliability. LEDs on the front indicate the relevant operating status. The power modules are protected against short circuits, no-load and overload.

Accessories industrial series

DESCRIPTION

FILTRATION PF



To be connected to the ultrasonic cleaning tank. Particles appearing during cleaning are extracted by filter. This way, service life of the bath is extended and cleaning efficiency is retained.

OIL SEPARATOR



To be connected to the ultrasonic cleaning tank, if parts soiled with oily or greasy contaminations are to be cleaned. Dirt accumulations floating on the bath's surface are led via the overflow gutter into the oil separator, and are separated by means of gravitation.

DI-WATER TREATMENT WA



To be connected to the last rinsing tank in the row, in order to remove stain making water residues occurring during drying process on the cleaned parts.

TROUGH DRYER TO



The cleaned parts are dried after rinsing in order to remove residual moisture rapidly.