

High-power ultrasound

Products, use and application

Industry – Service – Maintenance



BANDELIN – The ultrasound specialist for the industry

Ultrasonic devices from BANDELIN are used in industry for a wide range of cleaning applications. There are no limits to the size of the cleaning systems thanks to the immersible transducers that can be retrofitted in tanks. Applications include the cleaning of intermediate products in production (turned or milled parts) and the removal of cutting oil, swarf and cooling lubricants after production.

Another area of application is ultrasonic cleaning in maintenance (e.g. milling cutters, electrostatic filters) and (injection) moulds in ultrasonic immersion baths. In maintenance, it is often possible to avoid the costly purchase of new spare parts, as the cleaned components can be used again with maximum reliability after maintenance.

Ultrasonic cleaning is often used in industry for surface preparation by removing organic contamination, e.g. before painting or galvanising. Lapping pastes or polishing

pastes can be removed from surfaces in ultrasonic baths without leaving any residue and without subjecting the workpiece to mechanical stress.

Due to its universal applicability and high material compatibility, ultrasonic cleaning can be used for most surfaces and applications. BANDELIN offers a wide range of SONOREX TECHNIK-devices for individual cleaning processes, which fulfil today's requirements for quality, economy and environmental compatibility.

The appliances are available in various sizes and designs, from individual appliances to complete cleaning lines. The latter, with the appropriate peripherals, are modular and flexible for the respective application (e.g. integrated rinsing and drying) or the available space.



BANDELIN – Ultrasound since 1955

Company portrait

We – a Berlin-based family business in its third generation – specialise in the development, manufacture and sale of ultrasonic devices, corresponding accessories and application-specific cleaning and disinfection products.

A high level of vertical integration, a modern production facility and motivated employees characterise us and are a guarantee for constantly new quality products. Our appliances contribute to the success of our customers in the laboratory, medical, dental, pharmaceutical, industrial, trade and service sectors.

Our company began developing and manufacturing high-performance ultrasonic devices back in 1955. The constant expansion of the product range and the sharp rise in sales figures led to an expansion of the production area in 1985. In 1992, ultrasonic homogenisers and adjustable, power-constant ultrasonic generators were launched on the market.

The period from 1996 to 2004 was characterised by the development and production of innovative ultrasonic cleaning baths and immersible transducers as well as tubular reactors for industrial applications.

In the years that followed, BANDELIN's product range was expanded to include new laboratory ultrasonic devices. Following the introduction of the ultrasonic bath for the simultaneous cleaning and rinsing of MIS instruments, its further development for robotic instruments followed in 2016.

Today, the reputation of our brands SONOREX, SONOPULS, SONOMIC and TRISON stands for the high quality awareness of our employees and is equated with ultrasound in professional circles.

- The most important product groups include
- SONOREX - Ultrasonic baths and reactors
 - SONOPULS - Ultrasonic homogenisers
 - SONOMIC - Ultrasonic bath for rinsable MIS and standard instruments
 - TRISON - Ultrasonic bath for robotic, rinsable MIS and standard instruments
 - TICKOPUR - Cleaning preparations
 - STAMMOPUR - Cleaning and disinfection products

We are innovators in the development of new ultrasonic devices and the opening up of new areas of application and have registered 79 patents / utility models and 68 trade marks in the past. Our involvement in various committees in the development of new standards and guidelines serves to ensure the highest standards for ultrasonic applications.

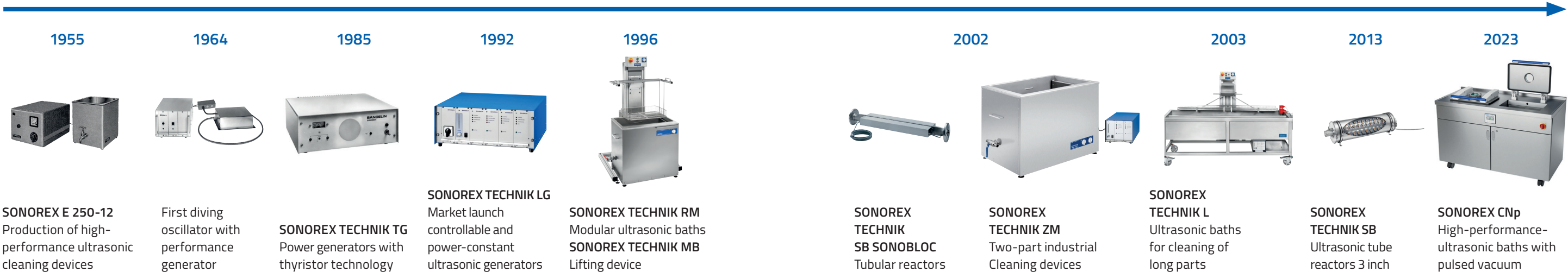
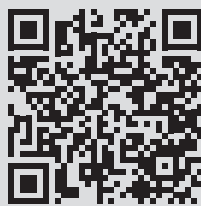
As the only full-range supplier of ultrasonic devices, accessories and disinfection and cleaningprepa rates with approvals and certifications in accordance with ISO 9001 and ISO 13485, BANDELIN is the market leader. Over one million devices have already been delivered to our customers.



Take a look at our company portrait Industry!



<https://www.youtube.com/watch?v=vw1xxbCAd6U&t=26s>



Contents

BANDELIN – The ultrasound specialist for industry	3
BANDELIN – Ultrasound since 1955	4
Advantages of ultrasonic cleaning	8
Influencing factors – The interplay of four factors	9
SONOREX TECHNIK Typical areas of application for ultrasonic baths	10
Advantages of SONOREX TECHNIK devices at a glance	12
01 • SONOREX TECHNIK – Overview	16
SONOREX TECHNIK device selection	18
SONOREX TECHNIK RM-ST	19
SONOREX TECHNIK multi-frequency ultrasonic baths	20
SONOREX TECHNIK accessories	21
Modular device set-ups	22
Examples of modular device setups	23
02 • Ultrasonic devices and peripherals – The right size and equipment for every application	26
13 litres – SONOREX TECHNIK – Ultrasonic and rinsing baths device size RM 16.2	28
31 litres – SONOREX TECHNIK – Ultrasonic and rinsing baths device size RM 40.2	32
62 litres – SONOREX TECHNIK – Ultrasonic and rinsing baths device size RM 75.2	36
110/115 litres – SONOREX TECHNIK – Ultrasonic and rinsing baths device size RM 110/112	40
160/170 litres – SONOREX TECHNIK – Ultrasonic and rinsing baths device size RM 180/182	48
220/230 litres – SONOREX TECHNIK – Ultrasonic and rinsing baths device size RM 210/212	56
SONOREX TECHNIK RL 70.2 UH Ultrasonic bath – extra long and narrow	64
SONOREX TECHNIK W 65.2 and W 300 Ultrasonic baths – Especially for marine applications	65
SONOREX TECHNIK L 220 and L 320 – double tank for cleaning and rinsing	66
SONOREX CNp 28-2 / CNp 28-2 L – high-performance ultrasonic bath with pulsed vacuum	68
03 • SONOREX TECHNIK Accessories and peripherals	72
Cascade pipes – Overview and functional principle	74
Lifting device MB with oscillation	76
Tank racks WG	78
Transport cart TW	79
Base frame UG	79
Filtration FA – Overview and functional principle	80
Oil separator OX – Overview and functional principle	82
Circulating air dryer UT – Overview and functional principle	84
Trough dryer TO – Overview and functional principle	80

Oil separator OX – Overview and functional principle	82
Air circulation dryer UT – Overview and functional principle	84
Trough dryer TO	86
Oscillation MO	87
Planer head holder HA	88
High-performance immersible transducers and flat transducer plates	92
Assembly examples	93
High-power ultrasonic generators LG	94
Module concept LG generators	95
High-power ultrasonic generators TG and SG	96

05 • Cleaning preparations TICKOPUR 98

TICKOPUR – Cleaning preparations products	100
TICKOPUR R 33	103
TICKOPUR TR 7	104
TICKOPUR TR 13	105
TICKOPUR RW 77	106
TICKOPUR R 60	107
TICKOPUR R 32	108
TICKOPUR R 36	109
TICKOPUR TR 14	110
TICKOPUR R 30	111
TICKOPUR R 27	112
TICKOPUR TR 3	113
TICKOPUR TR 2	114
TICKOPUR J 80 U	115
TICKOPUR KS 1	116
Dosing aids	116
FAQs – Preparations	117

06 • Reactors 118

SONOREX TECHNIK Sonoreactor SONOBLOC	120
SONOREX TECHNIK Sonoreactor VORTEX	122

07 • Service 124

Ultrasound equipment for rent	126
FAQs	128
Contact	130

Advantages of ultrasonic cleaning

Parts cleaning with ultrasound has been gaining in importance in all areas of industry, service and trade for years. The use of SONOREX TECHNIK ultrasonic baths and TICKOPUR products, which are specially adapted

to the respective requirements, meets the constantly increasing demands for quality, economy and environmental compatibility in cleaning.



Economical

Regular ultrasonic cleaning saves money. The gentle effect of ultrasound extends the service life of the items to be cleaned and reduces the need for spare parts. Fast cleaning times shorten downtimes.



Thorough

Ultrasonic cleaning processes are effective and have a very high cleaning effect. Brushing or wiping is not necessary and therefore there is no damage to the items to be cleaned or their surfaces. Even intricately shaped parts are cleaned.



Environmentally friendly

Use of biodegradable cleaning products instead of environmentally harmful solvents. Oil separators and bath filtration extend the service life of the cleaning fluid and thus reduce chemical and water consumption.



User-friendly

Ultrasonic cleaning devices are easy to install and operate. Special training is not required.

Influencing factors

The interplay of four factors

The success of a cleaning process is significantly dependent on four basic parameters: the ultrasound, the temperature, the time and the appropriate cleaning preparation.

These four factors are interdependent, but their magnitude can be changed. The cleaning effect can be optimised by changing one or more parameters.

Ultrasound

In liquids, ultrasound creates tiny vacuum bubbles that immediately implode again (cavitation). The resulting forces cause the dirt particles to be intensively and gently removed from the cleaning object.

Temperature

Many detergents only develop their full effect at higher bath temperatures. The cleaning fluid can be heated by the appliance heater.



Chemistry

The cleaning chemicals promote cavitation, reduce the surface tension of the water and dissolve and bind dirt particles. Special cleaning agents are used depending on the type of soiling.

Time

The combined use of chemicals and ultrasound reduces cleaning time by up to 90% compared to other methods. Depending on the contamination, it can take from a few seconds to several minutes.

SONOREX TECHNIK

Typical areas of application for ultrasonic baths

Precision mechanics

Cleaning stainless steel, brass and aluminium parts

Mechanical engineering

Cleaning and degreasing bearings, crankshafts, indexable inserts, workpieces, electrostatic filters

Grinding and polishing

Cleaning lampshades, removing lapping and polishing pastes

Mould cleaning

Cleaning injection moulds

Automotive industry / Workshop / Service

Cleaning of injection nozzles, carburettors, spray guns, nozzles, shock absorbers, engine parts, circuit boards and cutting tools, tools, etc.

Wood processing industry

Cleaning of woodworking tools and machine parts in maintenance

Medical technology

Cleaning prostheses, implants and joints

Power stations

Cleaning oil and welding fume filters, Decontamination

Gastronomy

Cleaning and degreasing e-filters and coffee filters vending machine parts

Occupational safety – Fire protection

Cleaning respiratory masks and sooted parts

Transport technology

Cleaning of relays, soldering frames, gearboxes and share motors

Pneumatic tools

Removal of grease, oil, abrasion and resin in the repair process

Cleaning with ultrasound – examples



dirty on the left, cleaned on the right

Material testing

Cleaning and degreasing measuring tools

Office technology

Parts cleaning of copiers, printers, franking machines, housings and keyboards

Energy industry

Cleaning fittings and water meters

Optics and glass industry

Pre-cleaning and intermediate cleaning of optics and lenses

Thin film technology

Cleaning sensor parts

Pharmaceutical industry

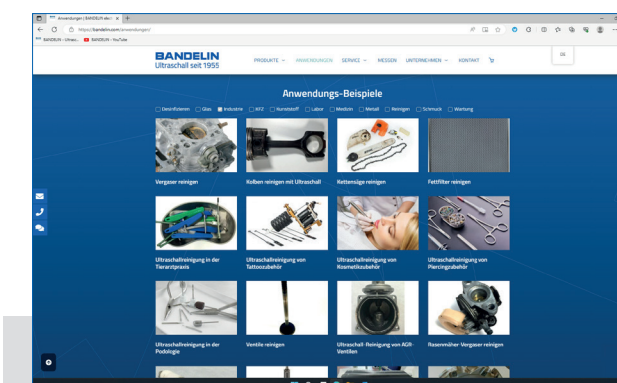
Cleaning metal filters and tableting punches

Sports and leisure industry

Cleaning climbing holds in climbing gyms, golf clubs and balls, diving equipment, etc.

Jewellery industry

Cleaning metal watch straps, chains, rings, etc.



More information in videos:



youtube.com/bandelin

or here:

bandelin.com/en/applications/



Cleaning with ultrasound – examples



dirty on the left, cleaned on the right

Advantages of the **SONOREXTECHNIK**-devices at a glance



SONOREX TECHNIK RM 16.2 UH

SONOREX TECHNIK RM 210 UH



Durable design

- Compact, easy-care stainless steel housing
- Oscillating tank made of stainless steel 1.4404
- Housing made of stainless steel 1.4301
- High-performance oscillating systems manufactured with highly stable ceramic piezoelectric materials
- Made in Germany



MADE IN
GERMANY



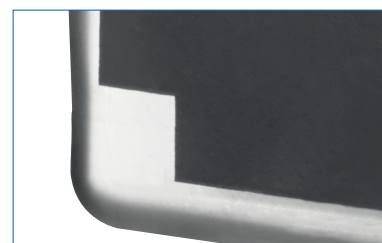
Welded cleaning tank

made of 2 mm stainless steel 1.4404.
In contrast to deep-drawn tanks, welded cleaning tanks have a significantly longer service life.



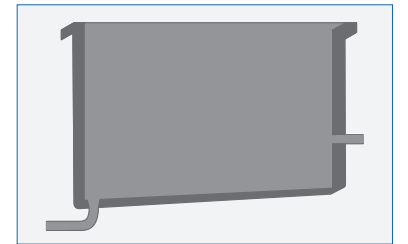
Rounded bath corners

Device sizes RM 112, RM 182 und RM 212.
On the sides and at the bottom; facilitate cleaning of the oscillating tank. For hygienic handling of the ultrasonic bath.



Inclined tank bottom

for better cleaning results thanks to optimised ultrasound dispersion. Emptying the tanks is made easier by the inclined tank bottom towards the drain, which largely prevents the accumulation of dirt and residual liquid on the floor.



Welded drain

with 3-way ball valve for emptying or refilling the tank and connecting a filtration system.
No plastic seal present that could lead to leaks or release substances into the liquid.



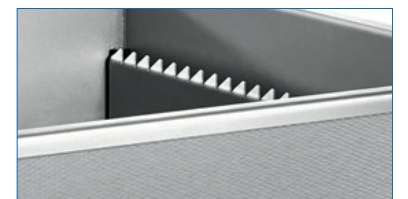
Fill level mark

as an easily recognisable embossing for the minimum fill level of the cleaning fluid; facilitates filling.



Overflow gutter

In connection with an oil separator, floating dirt, oil and liquid grease can be removed from the surface of the bath.

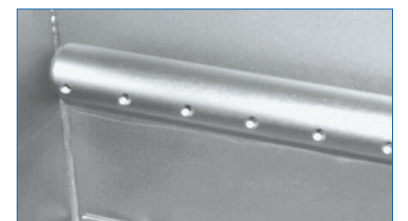


Additional drain on the overflow gutter

for connecting an oil separator or emptying the overflow pocket.



In connection with an oil separator, the **sprinkle tube** generates a uniform surface flow over the entire bath surface in the direction of the overflow gutter, which guides floating oil and grease from the bath surface into the overflow gutter.



Height-adjustable feet

For levelling uneven surfaces.





Interface

For connecting a PLC or robotics control.



Stepless power control

With the separate generator of the SONOREX TECHNIK ZM ultrasonic baths.



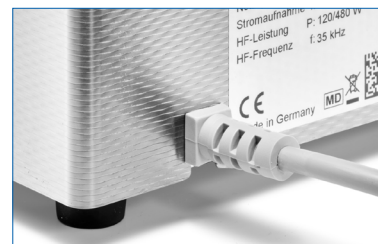
Heating

With integrated heating, depending on model.
Adjustable temperature ranges: 30–80°C



Fixed mains cable

In contrast to the usual plugged-in mains cables, these are permanently installed in SONOREX ultrasonic baths. This prevents liquid from penetrating this connection and the associated risk of a short circuit.



Metal handles

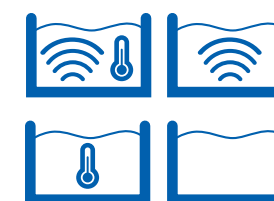
For easy and safe handling.



Dry-running protection for the heating

Automatic switch-off in the event of overtemperature, e.g. triggered by a low fill level.





Device selection

BANDELIN offers a wide range of SONOREX TECHNIK devices for customised cleaning processes.

page 18



SONOREX TECHNIK RM

One-piece ultrasonic baths with integrated generator underneath the oscillating tank.

page 19



SONOREX TECHNIK ZM

Two-part ultrasonic baths with separate generator to control the ultrasound.

page 20



SONOREX TECHNIK Accessories

Baskets, lids, drop plates, cascade pipes

page 21



Modular device installation and examples

Making work easier through flexible cleaning systems.

from page 22

SONOREX TECHNIK device selection

Four variants of ultrasonic baths in all bath sizes

Constantly rising demands on product quality increasingly require the use of high-quality and flexible ultrasonic device technology. BANDELIN offers a wide range of SONOREX TECHNIK appliances for customised cleaning processes that meet today's requirements for quality, economic efficiency and environmental compatibility. The appliances can be combined and, supplemented with the appropriate peripherals, result in modular and flexible cleaning ranges with, for example, integrated rinsing and drying.

UH Ultrasonic baths with heating – for cleaning. The heating supports the cleaning effect of the chemicals. With control display, thermostatically adjustable from 30 – 80 °C



U Ultrasonic baths without heating – for cleaning temperature-sensitive parts or for rinsing.



H Rinsing baths (without ultrasound) with heating. With control display, thermostatically adjustable from 30 – 80 °C.



Rinsing baths without ultrasound and without heating – rinsing after ultrasonic cleaning.



SONOREX TECHNIK RM-ST

Ultrasonic and rinsing baths, appliance sizes RM16.2 to RM 212

One-piece ultrasonic baths with integrated generator below the oscillating tank.
Compact sizes for a wide range of applications.



NEW

Remote control

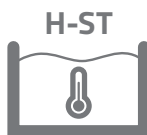
The interface enables separate remote control of the heating and ultrasound via potential-free contacts. The activity of the heating and the fill level are signalled back from the device. The interface is compatible with all commercially available PLCs and robot controls.



Ultrasonic bath with heating and interface for connection of a PLC or robotic control

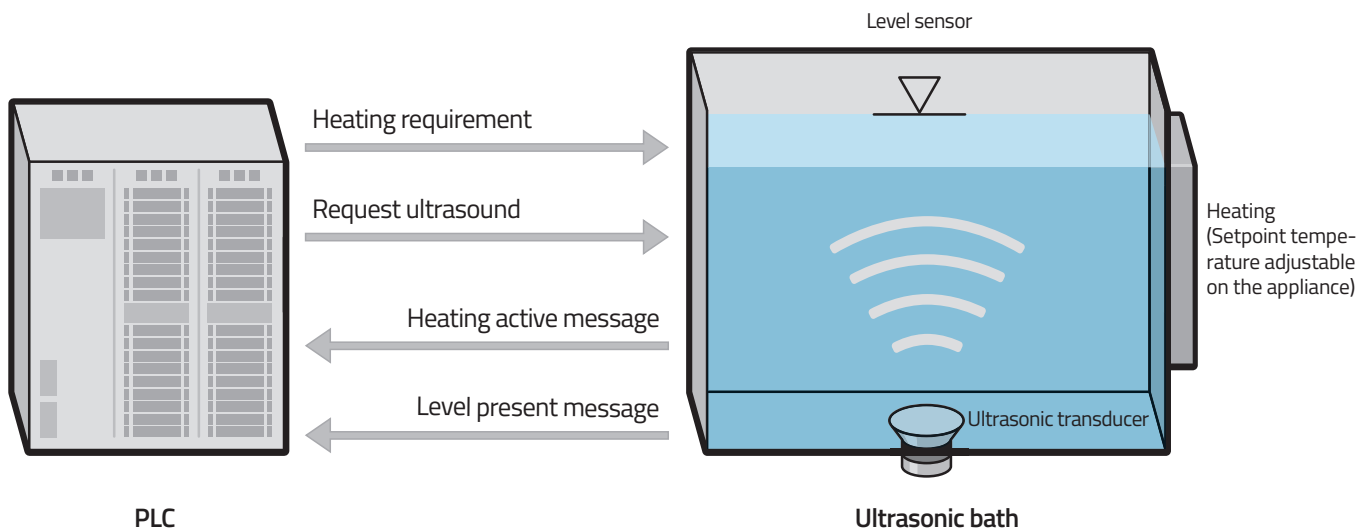


Ultrasonic bath without heating, with interface for connecting a PLC or robotic control



Rinsing bath with heating and interface for connecting a PLC or robotic control, without ultrasound

Schematic representation



Further information can be found in the instructions for use.

SONOREX TECHNIK multi-frequency ultrasonic baths

Device sizes ZM 112 to ZM 212

Separate ultrasonic generators

- The generator can be set up separately from the wet area.
- Stepless power control.
- Variable time setting possible with remote control.
- Serial interface and remote control connection for external control of the generator.
- Commissioning of several cleaning tanks, also of different frequencies, possible with one generator.



ZM 212 UHL

Ultrasonic generator



LG 3020 T

More about the possible combinations of ultrasonic generators from page 94.



SM 3



PRO 3



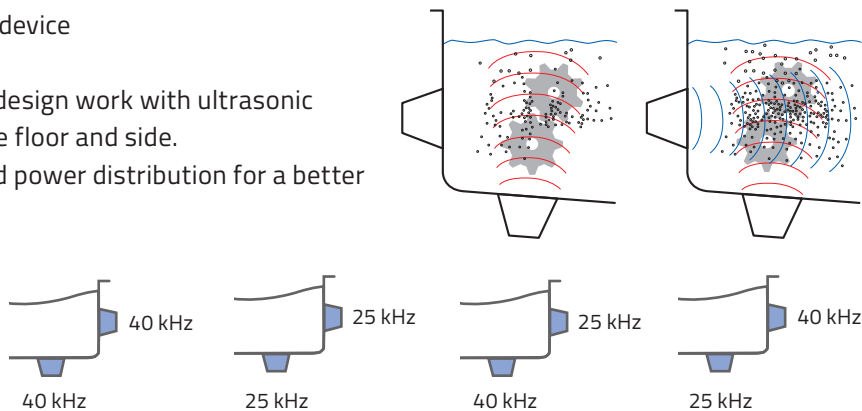
M 1003 or M 1503

All ultrasonic generators can be equipped and combined with different modules. The selection of the power and operating modules depends on the total output of the ultrasonic oscillating systems to be connected and the desired controllability of the application.

TwinSonic design as a multi-frequency device

Multi-frequency devices in TwinSonic design work with ultrasonic systems of different frequencies on the floor and side. The advantages are an even sound and power distribution for a better cleaning result in less time.

Multi-frequency versions 4 variants



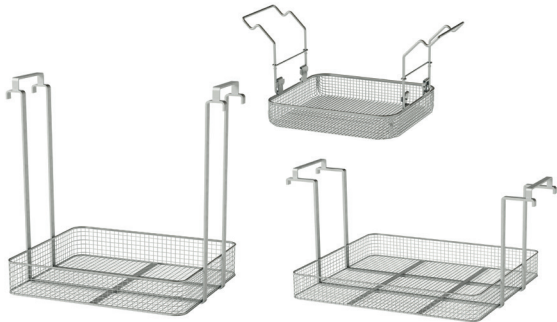
SONOREX TECHNIK accessories

Suitable accessories for every ultrasonic device

BANDELIN offers high-quality accessories such as insert baskets, lids and drop plates for the SONOREX ultrasonic baths. The accessories are optimised for cleaning applications in the industrial sector.

Baskets

During ultrasonic cleaning, the items to be cleaned must not be placed on the tank bottom, as the vibrations of the oscillating systems can cause abrasion between the items to be cleaned and the tank itself. It is therefore necessary to use a suitable cleaning basket. With the help of a basket, the items to be cleaned can also be conveniently placed in the appliance and removed for rinsing after cleaning without the user coming into contact with the cleaning or disinfecting liquid.



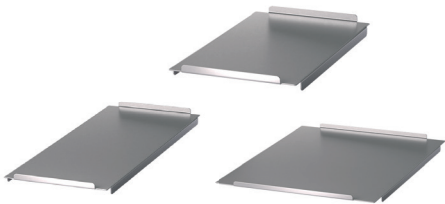
Lids

The matching lid for an ultrasonic bath protects the cleaning fluid from contamination. In addition, the noise is dampened during operation of the ultrasonic bath. The lids are designed in such a way that any condensation is channelled back into the ultrasonic bath.



Drop plates

They serve as drip and splash protection between the baths when several baths are installed as a cleaning/rinsing section.



Cascade pipes

Combine two rinsing baths in your individual cleaning line into one water circuit with our cascade pipes sets and save a lot of precious rinsing water. Available for all bath sizes.



Modular device setups

Every water-based cleaning process essentially takes place in three steps: Firstly, the dirt is removed, followed by rinsing to remove the residue and finally the component must be dried. Depending on the initial soiling and the desired degree of cleanliness at the end of the process, the three main steps can be subdivided into further intermediate stages. For example, pre-cleaning can increase the service life of the main cleaning tank or the use of a final rinse with demineralised water can prevent limescale from drying on the component.

The SONOREX TECHNIK appliance series enables the optimum cleaning steps to be put together cleaning

steps through the customised configuration or combination the modular appliances – from pre-cleaning to drying.

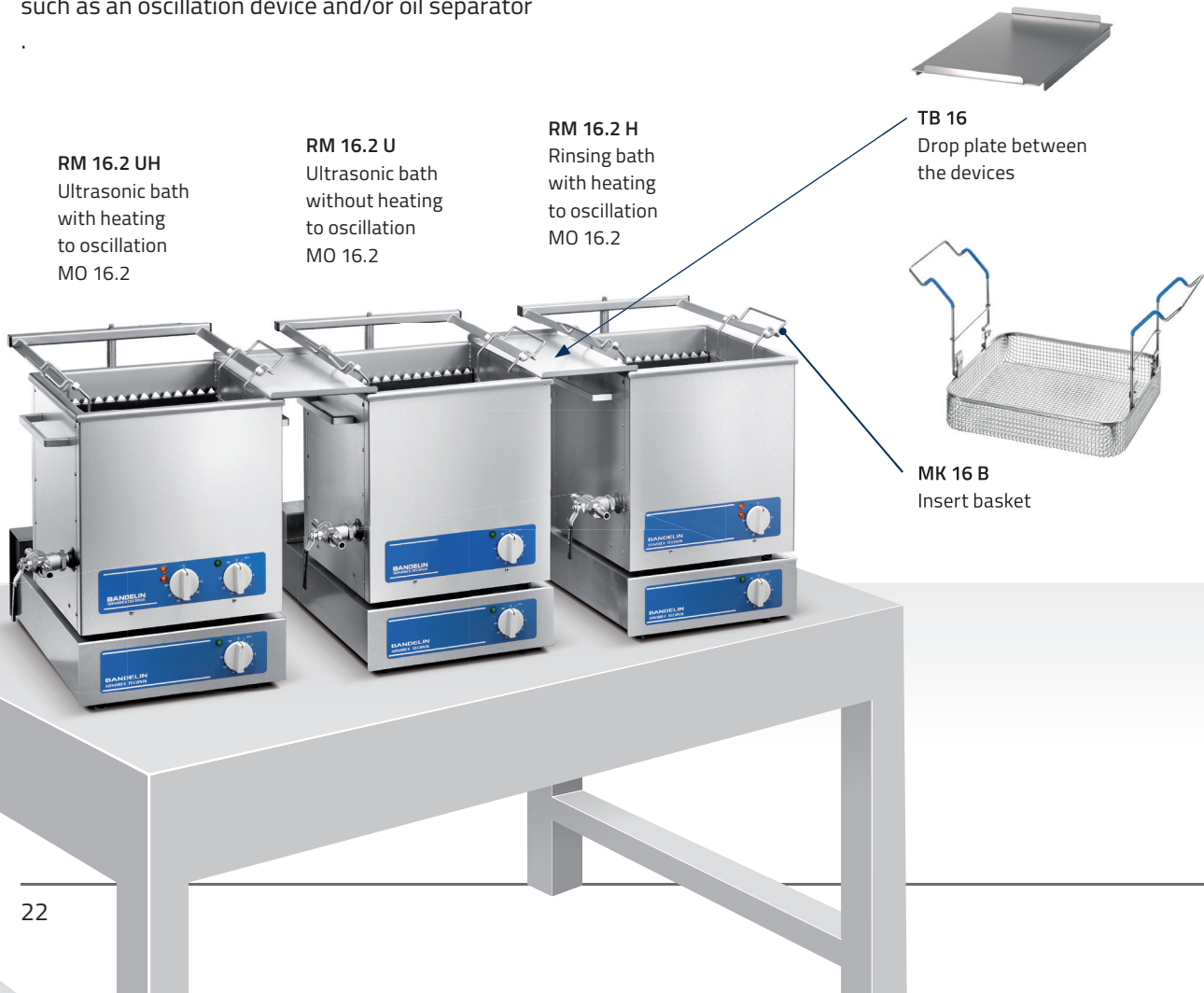
With our appliances and the appropriate peripherals, a modular design can be realised in a wide variety of configurations for almost any application – from the individual cleaning tank to the complete cleaning line.

The set-up and conversion are as quick and easy as the operation.

Examples of modular device setups

RM 16 appliance series with oscillation

For effective cleaning of smaller parts, our RM 16 series can be combined into a small street and operated individually with accessories such as an oscillation device and/or oil separator



Examples of modular device setups

RM 16 appliance series with lifting device

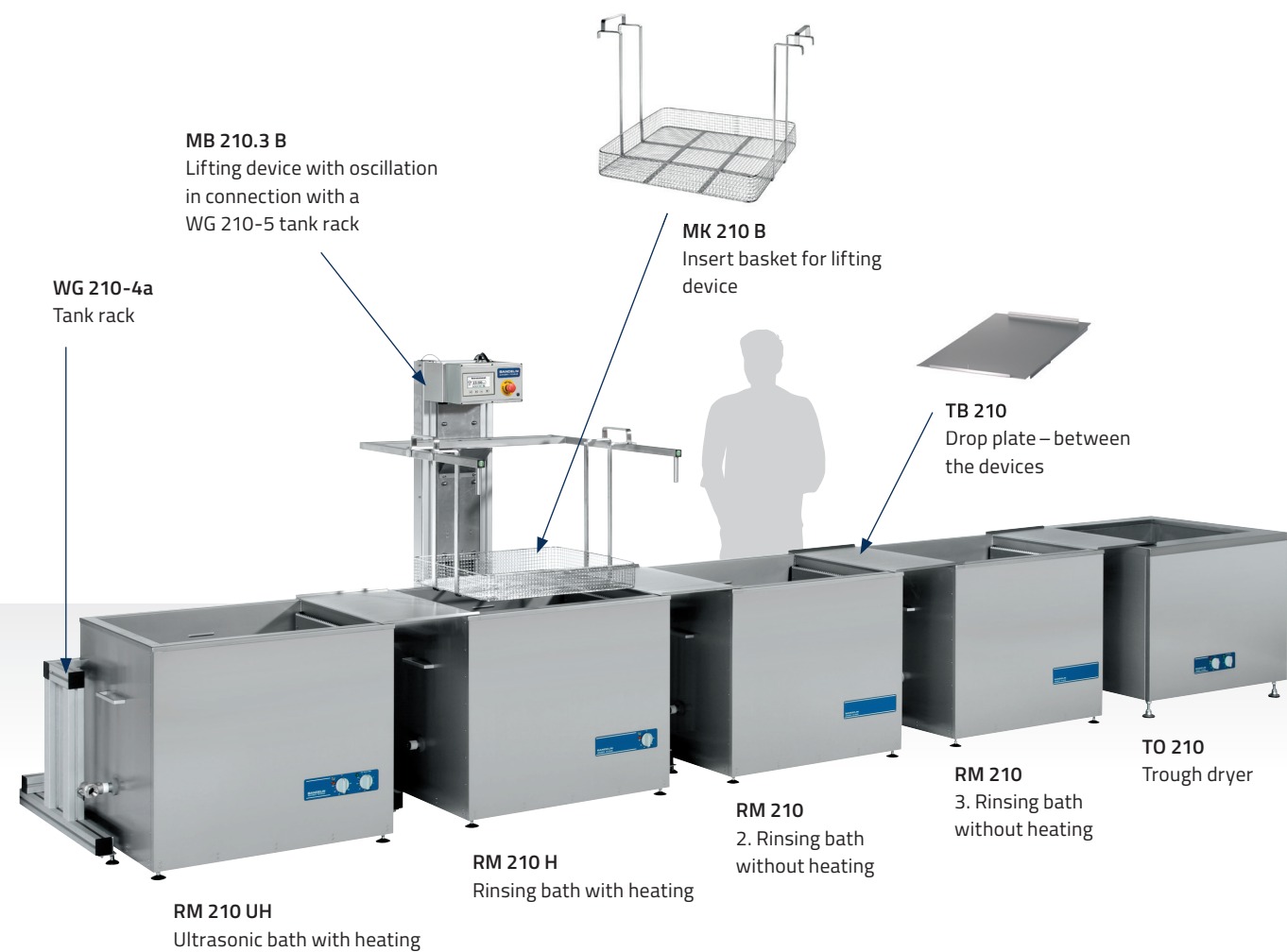
For even more professional requirements, a small cleaning station with mobile lifting device can also be set up flexibly. Heavier parts can be conveniently lift from one bath to the next and, if necessary dry with our circulating air dryer.



Examples of modular device setups

RM 210 appliance series with lifting device and peripherals

Of course, we offer the right size for every requirement - from our compact devices with 13 litres (RM 16) to our large baths with 230 litres (RM 210 and RM 212) for particularly bulky items. With the right peripherals, such as the oil separator and cascade pipes (see also page 74), time-consuming cleaning becomes noticeably more convenient, faster and more efficient.



Ultrasound devices and peripherals

The right size and equipment for every application

02



**SONOREX TECHNIK
RM 16.2**

Internal dimensions of the
oscillating tank:
325 × 275 × 200/210⁺

l × w × d / d⁺ [mm], ⁺inclined tank bottom

from page 28



**SONOREX TECHNIK
RM 40.2**

Internal dimensions of the
oscillating tank:
475 × 300 × 300/315⁺

l × w × d / d⁺ [mm], ⁺inclined tank bottom

from page 32



**SONOREX TECHNIK
RM 75.2**

Internal dimensions of the
oscillating tank:
575 × 500 × 300/315⁺

l × w × d / d⁺ [mm], ⁺inclined tank bottom

from page 36



**SONOREX TECHNIK
RM 110 / 112**

Internal dimensions of the
oscillating tank:
600 × 450 × 450

l × w × d [mm]

from page 40



**SONOREX TECHNIK
RM 180 / 182**

Internal dimensions of the
oscillating tank:
1000 × 500 × 400

l × w × d [mm]

from page 48



**SONOREX TECHNIK
RM 210 / 212**

Internal dimensions of the
oscillating tank:
750 × 650 × 500

l × w × d [mm]

from page 56



**SONOREX TECHNIK
Special baths**

Ultrasonic baths
designed for
special applications.

from page 64

SONOREX TECHNIK

Ultrasonic and rinsing bath RM 16.2



RM 16.2 UH

One-piece ultrasonic bath with integrated generator underneath the oscillating tank. Compact size for a wide range of applications.

Operating volume:	Ultrasonic frequency:
13 litres	40 kHz

Internal dimensions of oscillating tank l × w × d/d⁺:

325 × 275 × 200/210⁺ mm

External dimensions l × w × h:

365 × 340 × 390 mm

- Welded cleaning tank
- Welded drain
- Heating 30-80 °C
- Overflow gutter
- Additional procedure
- Metal handles
- Fill level marking
- Inclined tank bottom
- Fixed mains cable

Technical data RM 16.2

Type	Code No.	Internal dimensions oscillating tank l × w × d/d ⁺ [mm]	Operating volume [l]	External dimensions l × w × h [mm]	Ultrasonic peak power* [W]	Ultrasonic nominal power [W]	Heating power [W]	Frequency [kHz]
RM 16.2 UH	8204	325 × 275 × 200/210 ⁺	13.0	365 × 340 × 390	1200	300	800	40
RM 16.2 U	8205						-	
RM 16.2 H	8206				-	-	800	-
RM 16.2	8207						-	

*corresponds to 4 times ultrasonic nominal power power; +inclined tank bottom

Technical data RM 16.2 ST

Ultrasonic bath with heating and interface for connection of a PLC or robotic control

UH-ST

Ultrasonic bath without heating, with interface for connecting a PLC or robotic control

U-ST

Rinsing bath with heating and interface for connection of a PLC or robotic control, without ultrasound

H-ST

Type	Code No.	Internal dimensions oscillating tank l × w × d / d ⁺ [mm]	Operating volume [l]	External dimensions l × w × h [mm]	Ultrasonic peak power* [W]	Ultrasonic nominal power [W]	Heating power [W]	Frequency [kHz]
RM 16.2 UH-ST	8680	325 × 275 × 200/210 ⁺	13.0	365 × 340 × 390	1200	300	800	40
RM 16.2 U-ST	8681						-	
RM 16.2 H-ST	8682				-	-	800	-

*corresponds to 4 times ultrasonic nominal power power; +inclined tank bottom

Accessories

BANDELIN offers high-quality accessories such as insert baskets, lids and drop plates for the SONOREX ultrasonic baths.

The accessories are optimised for cleaning applications in the industrial sector.

Baskets

Type	Code No.	Internal dimensions l × w × d [mm]	Mesh size [mm]	Max. load [kg]	Illustration
MK 16 B	8408	275 × 245 × 50	5 × 5	10	
MK 16 MB when using a lifting device MB	8412	275 × 245 × 50	5 × 5	10	

Lid

Type	Code No.	Illustration
MD 16	8440	

Drop plate

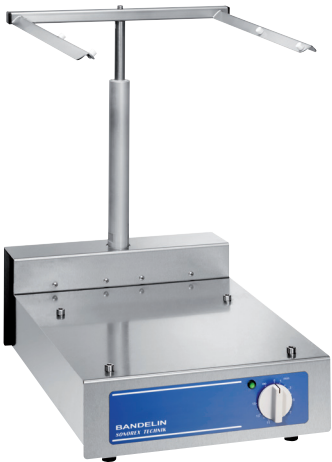
Type	Code No.	Illustration
TB 16	8400	

Cascade pipes

Type	Code No.	Illustration
KV 16	8450	

SONOREX TECHNIK

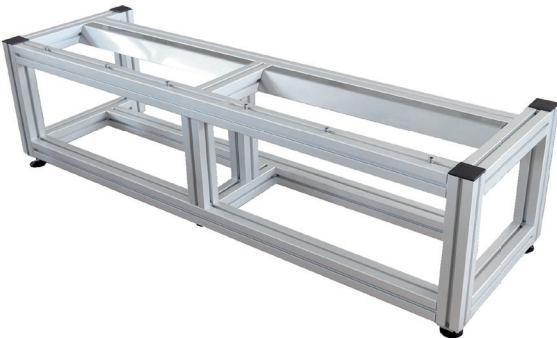
For device size RM 16.2 – additional equipment



Oscillation MO 16.2
Code No. 8306



Lifting device MB 16.3
Lifting device with oscillation
in connection with WG 16
Code No. 8390



Tank rack WG 16
in connection with MB 16.3
Code No.
8506 WG 16-2 for 2 tanks
8500 WG 16-3 for 3 tanks
8507 WG 16-4 for 4 tanks

Type	Code No.	Description
WG 16-2	8506	Tank rack for 2 tubs in connection with MB 16.3
WG 16-3	8500	Tank rack for 3 tubs in connection with MB 16.3
WG 16-4	8507	Tank rack for 4 tubs in connection with MB 16.3

Type	Code No.	Description
MB 16.3	8390	Lifting device with oscillation in connection with WG 16.3
MO 16.2	8306	Oscillation

SONOREX TECHNIK

For device size RM 16.2 – peripheral devices



Filtration FA 16
Consisting of:
Filter device FA 610,
Connection kit APF 16
Code No. 8608

More information on the functional principle
filtration FA can be found on page 81.



Oil separator OX 16
Consisting of:
Oil separator OX 500,
Connection kit AOX 16
Code No. 8600A

For more information on the operating
principle of OX oil separators, see page 83.



Air circulation dryer UT 16
Internal dimensions:
325 × 300 × 200 mm, l × w × d
Code No. 8380

You can find more information on the operating
principle of the air circulation dryer UT on page 85.

Type	Code No.	Description
FA 16	8608	Filtration
OX 16	8600A	Oil separator
UT 16	8380	Air circulation dryer

SONOREX TECHNIK

Ultrasonic and rinsing bath RM 40.2



RM 40.2 UH

One-piece ultrasonic bath with integrated generator underneath the oscillating tank. Compact size for a wide range of applications.

Operating volume:

31 litres

Ultrasonic frequency:

40 kHz

Internal dimensions of oscillating tank l × w × d / d⁺:
475 × 300 × 300/315⁺ mm

External dimensions l × w × h:
540 × 340 × 495 mm

- Welded cleaning tank
- Welded drain
- Heating 30-80 °C
- Overflow gutter
- Additional procedure
- Metal handles
- Fill level marking
- Inclined tank bottom
- Fixed mains cable

Technical data RM 40.2

Type	Code No.	Internal dimensions oscillating tank l × w × d / d ⁺ [mm]	Operating volume [l]	External dimensions l × w × h [mm]	Ultrasonic peak power* [W]	Ultrasonic nominal power [W]	Heating power [W]	Frequency [kHz]
RM 40.2 UH	8214	475 × 300 × 300/315 ⁺	31.0	540 × 340 × 495	2000	500	1300	40
RM 40.2 U	8215						-	
RM 40.2 H	8216				-	-	1300	-
RM 40.2	8217						-	

*corresponds to 4 times ultrasonic nominal power power; +inclined tank bottom

Technical data RM 40.2 ST

Type	Order No.	Internal dimensions oscillating tank l × w × d / d ⁺ [mm]	Operating volume [l]	External dimensions l × w × h [mm]	Ultrasonic peak power*	Ultrasonic nominal power	Heating power	Frequency [kHz]
					[W]	[W]	[W]	
RM 40.2 UH-ST	8683	475 × 300 × 300/315 ⁺	31.0	540 × 340 × 495	2000	500	1250	40
RM 40.2 U-ST	8684						-	
RM 40.2 H-ST	8685				-	-	1250	-

*corresponds to 4 times ultrasonic nominal power power; +inclined tank bottom

Accessories

BANDELIN offers high-quality accessories such as insert baskets, lids and drop plates for the SONOREX ultrasonic baths.

The accessories are optimised for cleaning applications in the industrial sector.

Baskets

Type	Code No.	Internal dimensions l × w × d [mm]	Mesh size [mm]	Max. load [kg]	Illustration
MK 40 B	8409	430 × 240 × 50	5 × 5	10	
MK 40 MB when using a lifting device MB	8413	430 × 240 × 50	5 × 5	10	
MK 40 S	8410	430 × 240 × 50	5 × 5	40	
MK 40 BS when using a lifting device MB	8411	430 × 240 × 50	5 × 5	40	

Lid

Type	Code No.	Illustration
MD 40	8442	

Drop plate

Type	Code No.	Illustration
TB 40	8401	

Cascade pipes

Type	Code No.	Illustration
KV 40	8451	

SONOREX TECHNIK

For appliance size RM 40.2 – additional equipment



Oscillation MO 40
Code No. 8303



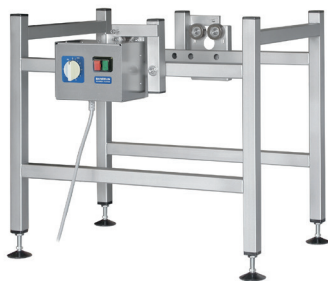
Lifting device MB 40.3
Lifting device with oscillation
in connection with WG 40
Code No. 8391



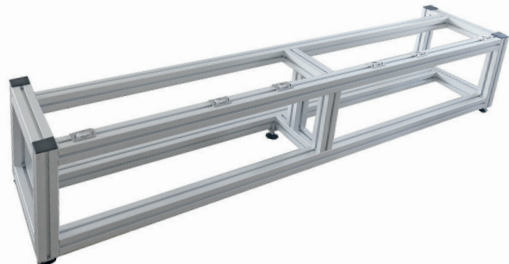
Transport cart TW 40
Code No. 8330



Base frame UG 40
Code No. 8325



Planing head holder HA 40
Code No. 8494



Tank rack WG 40
in connection with MB 40.3
Code No.
8508 WG 40-2 for 2 tanks
8501 WG 40-3 for 3 tanks
8509 WG 40-4 for 4 tanks

Type	Code No.	Description
MB 40.3	8391	Lifting device with oscillation in connection with WG 40
MO 40	8303	Oscillation
HA 40	8494	Planing head holder
WG 40-2	8508	Tank rack for 2 tubs in connection with MB 40.3
WG 40-3	8501	Tank rack for 3 tubs in connection with MB 40.3
WG 40-4	8509	Tank rack for 4 tubs in Connection with MB 40.3
UG 40	8325	Base frame
TW 40	8330	Transport cart

SONOREX TECHNIK

For device size RM 40.2 – peripheral devices



Filtration FA 40
Consisting of:
Filter device FA 610,
Connection kit APF 40/75
Code No. 8609

More information on the functional principle
filtration FA can be found on page 81.



Air circulation dryer UT 40
Internal dimensions:
500 × 300 × 300 mm, l × w × d
Code No. 8381

You can find more information on the operating
principle of the air circulation dryer UT on page 85.



Oil separator OX 40
Consisting of:
Oil separator OX 500,
Connection set AOX 40/75
Code No. 8601A

For more information on the operating principle
of OX oil separators, see page 83.

Type	Code No.	Description
FA 40	8609	Filtration
OX 40	8601A	Oil separator
UT 40	8381	Air circulation dryer

SONOREX TECHNIK

Ultrasonic and rinsing bath RM 75.2



RM 75.2 UH

One-piece ultrasonic bath with integrated generator underneath the oscillating tank. Compact size for a wide range of applications.

Operating volume:

62 litres

Ultrasonic frequency:

40 kHz

Internal dimensions of oscillating tank
l × w × d / d⁺:

575 × 500 × 300/315⁺ mm

External dimensions l × w × h:

640 × 540 × 520 mm



Welded cleaning tank



Welded drain



Heating 30–80 °C



Overflow gutter



Additional procedure



Metal handles



Fill level marking



Inclined tank bottom



Fixed mains cable

Technical data RM 75.2



Ultrasonic bath with heating



Ultrasonic bath



Rinsing bath with heating



Rinsing bath

Type	Order No.	Internal dimensions oscillating tank l × w × d / d ⁺ [mm]	Operating volume [l]	External dimensions l × w × h [mm]	Ultrasonic peak power* [W]	Ultrasonic nominal power [W]	Heating power [W]	Frequency [kHz]
RM 75.2 UH	8208	575 × 500 × 300/315 ⁺	62.0	640 × 540 × 520	4000	1000	1950	40
RM 75.2 U	8209						-	
RM 75.2 H	8218				-	-	1950	-
RM 75.2	8219						-	

*corresponds to 4 times ultrasonic nominal power power; ⁺inclined tank bottom

Technical data RM 75.2 ST

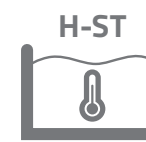
Ultrasonic bath with heating and interface for connection of a PLC or robotic control



Ultrasonic bath without heating, with interface for connecting a PLC or robotic control



Rinsing bath with heating and interface for connection of a PLC or robotic control, without ultrasound



Type	Code No.	Internal dimensions oscillating tank l × w × d / d ⁺ [mm]	Operating volume [l]	External dimensions l × w × h [mm]	Ultrasonic peak power* [W]	Ultrasonic nominal power [W]	Heating power [W]	Frequency [kHz]
RM 75.2 UH-ST	8686	575 × 500 × 300/315 ⁺	62.0	640 × 540 × 530	4000	1000	1950	40
RM 75.2 U-ST	8687						-	
RM 75.2 H-ST	8688				-	-	1950	-

*corresponds to 4 times ultrasonic nominal power power; ⁺inclined tank bottom

Accessories

BANDELIN offers high-quality accessories such as insert baskets, lids and drop plates for the SONOREX ultrasonic baths.

The accessories are optimised for cleaning applications in the industrial sector.

Baskets

Type	Code No.	Internal dimensions l × w × d [mm]	Mesh size [mm]	Max. load [kg]	Illustration
MK 75 B	8416	530 × 445 × 50	12.5x12.5	10	
MK 75 MB when using a lifting device MB	8414	530 × 445 × 50	12.5x12.5	10	
MK 75 S	8475	530 × 445 × 50	12.5x12.5	40	
MK 75 BS when using a lifting device MB	8429	530 × 445 × 50	12.5x12.5	40	

Lid

Type	Code No.	Illustration
MD 75	8444	

Drop plate

Type	Code No.	Illustration
TB 75	8402	

Cascade pipes

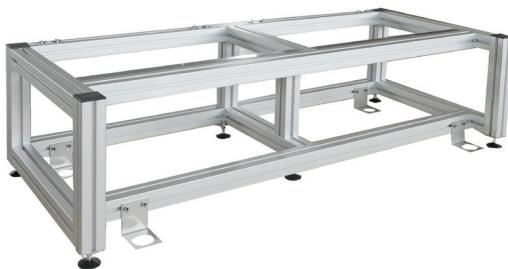
Type	Code No.	Illustration
KV 75	8452	

SONOREX TECHNIK

For device size RM 75.2 – additional equipment



Lifting device MB 75.3
with oscillation in connection with WG 75
Code No. 8392



Tank rack WG 75
in connection with MB 75.3
Code No.
8517 WG 75-2 for 2 tanks
8502 WG 75-3 for 3 tanks
8518 WG 75-4 for 4 tanks



Base frame UG 75
Code No. 8326



Transport cart TW 75
Code No. 8331

Type	Code No.	Description
MB 75.3	8392	Lifting device with oscillation in connection with WG 75
WG 75-2	8517	Tank rack for 2 tubs in connection with MB 75.3
WG 75-3	8502	Tank rack for 3 tubs in connection with MB 75.3
WG 75-4	8518	Tank rack for 4 tubs in connection with MB 75.3

Type	Code No.	Description
UG 75	8326	Base frame
TW 75	8331	Transport cart

SONOREX TECHNIK

For device size RM 75.2 – peripheral devices



Filtration FA 75
Consisting of:
Filter device FA 620,
Connection kit APF 40/75
Code No. 8610

More information on the functional principle filtration FA can be found on page 81.



Air circulation dryer UT 75
Internal dimensions:
600 × 500 × 300 mm, l × w × d
Code No. 8382

You can find more information on the operating principle of the air circulation dryer UT on page 85.



Oil separator OX 75
Consisting of:
Oil separator OX 500,
Connection set AOX 40/75
Code No. 8602A

For more information on the operating principle of OX oil separators, see page 83.

Type	Code No.	Description
FA 75	8610	Filtration
OX 75	8602A	Oil separator
UT 75	8382	Air circulation dryer

SONOREX TECHNIK

Ultrasonic and rinsing bath RM 110



RM 110 UH

One-piece ultrasonic bath with integrated generator underneath the oscillating tank. Compact size for a wide range of applications.

Operating volume:
110 litres Ultrasonic frequency:
25 / 40 kHz

Internal dimensions of oscillating tank l × w × d:
600 × 450 × 450 mm

External dimensions l × w × h:
780 × 550 × 800 mm



Welded cleaning tank



Welded drain



Heating 30-80 °C



Overflow gutter



Additional procedure



Metal handles



Fill level marking



Inclined tank bottom



Fixed mains cable

Technical data RM 110



Type	Code No.	Internal dimensions oscillating tank l × w × d [mm]	Ope- rating volume [l]	External dimensions l × w × h [mm]	Ultrasonic peak power* [W]	Ultrasonic nominal power [W]	Heating power [W]	Frequency [kHz]
RM 110 UH	8230 - 40 kHz 8240 - 25 kHz	600 × 450 × 450	110.0	780 × 550 × 800	4000	1000	4800	40 or 25
RM 110 U	8231 - 40 kHz 8241 - 25 kHz						-	
RM 110 H	8232				-	-	4800	
RM 110	8233				-	-	-	-

*corresponds to 4 times ultrasonic nominal power power

Accessories RM 110

BANDELIN offers high-quality accessories such as insert baskets, lids and drop plates for the SONOREX ultrasonic baths. The accessories are optimised for cleaning applications in the industrial sector.

Baskets

Type	Code No.	Internal dimensions l × w × d [mm]	Mesh size [mm]	Max. load [kg]	Illustration
MK 110	8423	530 × 410 × 90	12.5x12.5	20	
MK 110 S	8476	530 × 410 × 90	12.5x12.5	40	
MK 110 B when using a lifting device MB	8417	530 × 410 × 90	12.5x12.5	20	
MK 110 BS when using a lifting device MB	8481	530 × 410 × 90	12.5x12.5	40	

Lid

Type	Code No.	Illustration
MD 110	8446	

Drop plate

Type	Code No.	Illustration
TB 110	8403	

Cascade pipes

Type	Code No.	Illustration
KV 112	8456	

SONOREX TECHNIK

Ultrasonic and rinsing bath RM 112



RM 112 UH

One-piece ultrasonic bath with integrated generator underneath the oscillating tank. Compact size for a wide range of applications.

Operating volume:

115 litres

Ultrasonic frequency:

25 / 40 kHz

Internal dimensions of oscillating tank
l × w × d / d⁺:

600 × 450 × 450/470⁺ mm

External dimensions l × w × h:

780 × 610 × 800 mm



Welded cleaning tank



Welded drain



Heating 30–80 °C



Overflow pocket



Additional procedure



Metal handles



Fill level marking



Inclined tank bottom



Fixed mains cable

Technical data RM 112



Type	Code No.	Internal dimensions oscillating tank l × w × d / D ⁺ [mm]	Operating volume [l]	External dimensions l × w × h [mm]	Ultrasonic peak power* [W]	Ultrasonic nominal power [W]	Heating power [W]	Frequency [kHz]
RM 112 UH	9102 - 40 kHz 9101 - 25 kHz	600 × 450 × 450/470 ⁺	115.0	780 × 610 × 800	4000	1000	4800	40 or 25
RM 112 U	9104 - 40 kHz 9103 - 25 kHz						-	
RM 112 H	9105						4800	-
RM 112	9106						-	

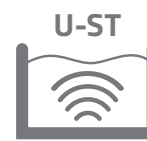
*corresponds to 4 times ultrasonic nominal power power; ⁺inclined tank bottom

Technical data RM 112 ST

Ultrasonic bath with heating and interface for connection of a PLC or robotic control



Ultrasonic bath without heating, with interface for connecting a PLC or robotic control



Rinsing bath with heating and interface for connection of a PLC or robotic control, without ultrasound



Type	Code No.	Internal dimensions oscillating tank l × w × d / d ⁺ [mm]	Operating volume [l]	External dimensions l × w × h [mm]	Ultrasonic peak power* [W]	Ultrasonic nominal power [W]	Heating power [W]	Frequency [kHz]
RM 112 UH-ST	8772 - 40 kHz 8771 - 25 kHz	600 × 450 × 450/470 ⁺	115.0	780 × 610 × 800	4000	1000	4800	40 or 25
RM 112 U-ST	8774 - 40 kHz 8773 - 25 kHz						-	
RM 112 H-ST	8775				-	-	4800	-

*corresponds to 4 times ultrasonic nominal power power; ⁺inclined tank bottom

Accessories RM 112

BANDELIN offers high-quality accessories such as insert baskets, lids and drop plates for the SONOREX ultrasonic baths.

The accessories are optimised for cleaning applications in the industrial sector.

Baskets

Type	Code No.	Internal dimensions l × w × d [mm]	Mesh size [mm]	Max. load [kg]	Illustration
MK 110	8423	530 × 410 × 90	12.5x12.5	20	
MK 110 S	8476	530 × 410 × 90	12.5x12.5	40	
MK 110 B when using a lifting device MB	8417	530 × 410 × 90	12.5x12.5	20	
MK 110 BS when using a lifting device MB	8481	530 × 410 × 90	12.5x12.5	40	

Lid

Type	Code No.	Illustration
MD 110	8446	

Drop plate

Type	Code No.	Illustration
TB 110	8403	

Cascade pipes

Type	Code No.	Illustration
KV 112	8456	

SONOREX TECHNIK

Multi-frequency ultrasonic bath ZM 112



ZM 112 UH

Two-part devices with separate generator for power control, optionally with side sound and Twinsonic.

Operating volume:
115 litres
Ultrasonic frequency:
25 / 40 kHz

Internal dimensions of oscillating tank
l × w × d / D+:
600 × 450 × 450/470+ mm

External dimensions l × w × h:
780 × 610 × 800 mm

- Welded cleaning tank
- Inclined tank base
- Stepless Power control
- Overflow gutter
- Rounded bath corners
- Heating 30-80 °C
- Fill level marking
- Sprinkle tube
- Metal handles
- Welded drain
- Dry-running protection
- Fixed mains cable
- Additional procedure
- Height-adjustable feet

Accessories Ultrasonic generator

Remote control
the generators can be switched on and off with an external control contact via the connection socket on the rear.

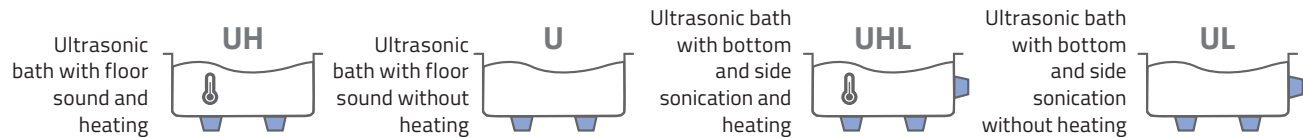


Type	Code No.	Description
FS 7	8468	Remote control cable
FS 15 L	8466	Remote control with timer

FS 7: Remote control cable, 7 m long, one end with plug
Code No. 8468

FS 15 L: Remote control with timer 1-15 min and continuous operation, cable with plug, 7 m long
Code No. 8466

Technical data ZM 112



		Internal dimensions oscillating tank	Operating volume	External dimensions	Ultrasonic peak power*	Ultrasonic nominal power	Heating power	Frequency	
Type	Code No.	l × w × d / d+ [mm]	[l]	l × w × h [mm]	[W]	[W]	[W]	[kHz]	
ZM 112 UHL	9128 - 25/25 kHz 9130 - 25/40 kHz 9132 - 40/40 kHz 9134 - 40/25 kHz	600 × 450 × 450/470+	115.0	780 × 610 × 800	2 × 4000	2 × 1000	4800	25 and / or 40	
	9136 - 25/25 kHz 9138 - 25/40 kHz 9140 - 40/40 kHz 9142 - 40/25 kHz				-				
	ZM 112 UH				9120 - 25 kHz 9122 - 40 kHz	4000	1000	4800	25 or 40
					ZM 112 U	9124 - 25 kHz 9126 - 40 kHz		4000	

*corresponds to 4 times ultrasonic nominal power power; +inclined tank bottom

Accessories ZM 112

BANDELIN offers high-quality accessories such as insert baskets, lids and drop plates for the SONOREX ultrasonic baths. The accessories are optimised for cleaning applications in the industrial sector.

Baskets

Type	Code No.	Internal dimensions l × w × d [mm]	Mesh size [mm]	Max. load [kg]	Illustration
MK 110	8423	530 × 410 × 90	12.5x12.5	20	
MK 110 S	8476	530 × 410 × 90	12.5x12.5	40	
MK 110 B when using a lifting device MB	8417	530 × 410 × 90	12.5x12.5	20	
MK 110 BS when using a lifting device MB	8481	530 × 410 × 90	12.5x12.5	40	

Lid

Type	Code No.	Illustration
MD 110	8446	

Drop plate

Type	Code No.	Illustration
TB 110	8403	

Cascade pipes

Type	Code No.	Illustration
KV 112	8456	

SONOREX TECHNIK

For device sizes RM 110, RM 112 and ZM 112 - additional equipment



Lifting device MB 110.3 B
with oscillation in connection with WG 110
Code No. 8396



Lifting device MB 110.3
with oscillation
Code No. 8393

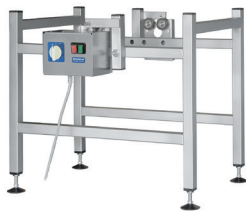


Tank rack WG 110
in connection with MB 110.3 B
Code No.
8520 WG 110-2 for 2 tanks
8521 WG 110-3 for 3 tanks
8522 WG 110-4 for 4 tanks

Type	Code No.	Description
MB 110.3	8393	Lifting device with oscillation for one appliance
MB 110.3 B	8396	Lifting device with oscillation in connection with WG 110
HA 110	8496	Planing head holder for RM 110 Stainless steel
HA 112	8497	Planing head holder for RM 112 Stainless steel
WG 110-2	8520	Tank rack for 2 tubs in connection with MB 110.3 B
WG 110-3	8521	Tank rack for 3 tubs in connection with MB 110.3 B
WG 110-4	8522	Tank rack for 4 tubs in connection with MB 110.3 B



Planing head holder HA 110
for appliance size RM 110
Code No. 8496



Planing head holder HA 112
for appliance size RM/ZM 112
Code No. 8497

SONOREX TECHNIK

For device sizes RM 110, RM 112 and ZM 112 – peripheral devices



Filtration FA 110
Consisting of:
Filter device FA 620,
Connection kit APF 110/180/210
Code No. 8611

More information on the functional principle filtration FA can be found on page 81.

Type	Code No.	Description
FA 110	8611	Filtration
OX 110	8603A	Oil separator
TO 110	8337	Trough dryer



Oil separator OX 110
Consisting of:
Oil separator OX 500,
Connection set AOX 110/180/210
Code No. 8603A

For more information on the operating principle of OX oil separators, see page 83.



Trough dryer TO 110
Internal dimensions:
600 × 500 × 350 mm, l × w × d
Code No. 8337

SONOREX TECHNIK

Ultrasonic and rinsing bath RM 180



RM 180 UH

One-piece ultrasonic bath with integrated generator underneath the oscillating tank. Compact size for a wide range of applications.

Operating volume:
160 litres Ultrasonic frequency:
25 / 40 kHz

Internal dimensions of oscillating tank l × w × d:
1000 × 500 × 400 mm

External dimensions l × w × h:
1180 × 600 × 800 mm



Welded cleaning tank



Welded drain



Heating 30-80 °C



Overflow gutter



Additional procedure



Metal handles



Fill level marking



Inclined tank bottom



Fixed mains cable

Technical data RM 180



Type	Code No.	Internal dimensions oscillating tank l × w × d [mm]	Operating volume [l]	External dimensions l × w × h [mm]	Ultrasonic peak power* [W]	Ultrasonic nominal power [W]	Heating power [W]	Frequency [kHz]
RM 180 UH	8250 - 40 kHz 8260 - 25 kHz	1000 × 500 × 400	160.0	1180 × 600 × 800	2 × 4000	2 × 1000	7200	40 or 25
RM 180 U	8251 - 40 kHz 8261 - 25 kHz						-	
RM 180 H	8232				-	-	7200	
RM 180	8233				-	-	-	-

*corresponds to 4 times ultrasonic nominal power

Accessories

BANDELIN offers high-quality accessories such as insert baskets, lids and drop plates for the SONOREX ultrasonic baths. The accessories are optimised for cleaning applications in the industrial sector.

Baskets

Type	Code No.	Internal dimensions l × w × d [mm]	Mesh size [mm]	Max. load [kg]	Illustration
MK 180	8424	930 × 460 × 90	12.5x12.5	20	
MK 180 B when using a lifting device MB	8418	930 × 460 × 90	12.5x12.5	20	
MK 180 S	8477	930 × 460 × 90	12.5x12.5	40	
MK 180 BS when using a lifting device MB	8482	930 × 460 × 90	12.5x12.5	40	
MK 180 A	8427	930 × 460 × 215	12.5x12.5	20	

Lid

Type	Code No.	Illustration
MD 180	8447	

Drop plate

Type	Code No.	Illustration
TB 180	8404	

Cascade pipes

Type	Code No.	Illustration
KV 110	8453	



SONOREX TECHNIK

Ultrasonic and rinsing bath RM 182



RM 182 UH

One-piece ultrasonic bath with integrated generator underneath the oscillating tank. Compact size for a wide range of applications.

Operating volume:
170 litres

Ultrasonic frequency:
25 / 40 kHz

Internal dimensions of oscillating tank l × w × d/D+:
1000 × 500 × 400/420+ mm

External dimensions l × w × h:
1180 × 660 × 800 mm

- Welded cleaning tank
- Welded drain
- Heating 30-80 °C
- Overflow gutter
- Additional procedure
- Metal handles
- Fill level marking
- Inclined tank bottom
- Fixed mains cable

Technical data RM 182

UH

Ultrasonic bath with heating

U

Ultrasonic bath

H

Rinsing bath with heating

Rinsing bath

Type	Code No.	Internal dimensions oscillating tank l × w × d / d+ [mm]	Operating volume [l]	External dimensions l × w × h [mm]	Ultrasonic peak power* [W]	Ultrasonic nominal power [W]	Heating power [W]	Frequency [kHz]
RM 182 UH	9202 - 40 kHz 9201 - 25 kHz	1000 × 500 × 400/420+	170.0	1180 × 660 × 800	2 × 4000	2 × 1000	7200	40 or 25
RM 182 U	9204 - 40 kHz 9203 - 25 kHz						-	
RM 182 H	9205				-	-	7200	-
RM 182	9206				-	-	-	

*corresponds to 4 times ultrasonic nominal power power; +inclined tank bottom

Technical data RM 182 ST

UH-ST

Ultrasonic bath with heating and interface for connection of a PLC or robotic control

U-ST

Ultrasonic bath without heating, with interface for connecting a PLC or robotic control

H-ST

Rinsing bath with heating and interface for connection of a PLC or robotic control, without ultrasound

Type	Code No.	Internal dimensions oscillating tank l × w × d/d+ [mm]	Operating volume [l]	External dimensions l × w × h [mm]	Ultrasonic peak power* [W]	Ultrasonic nominal power [W]	Heating power [W]	Frequency [kHz]
RM 182 UH-ST	8777 - 40 kHz 8776 - 25 kHz	1000 × 500 × 400/420+	170.0	1180 × 660 × 800	2 × 4000	2 × 1000	7200	40 or 25
RM 182 U-ST	8779 - 40 kHz 8778 - 25 kHz						-	
RM 182 H-ST	8780				-	-	7200	-

*corresponds to 4 times ultrasonic nominal power power

Accessories

BANDELIN offers high-quality accessories such as insert baskets, lids and drop plates for the SONOREX ultrasonic baths. The accessories are optimised for cleaning applications in the industrial sector.

Baskets

Type	Code No.	Internal dimensions l × w × d [mm]	Mesh size [mm]	Max. load [kg]	Illustration
MK 180	8424	930 × 460 × 90	12.5x12.5	20	
MK 180 B when using a lifting device MB	8418	930 × 460 × 90	12.5x12.5	20	
MK 180 S	8477	930 × 460 × 90	12.5x12.5	40	
MK 180 BS when using a lifting device MB	8482	930 × 460 × 90	12.5x12.5	40	
MK 180 A	8427	930 × 460 × 215	12.5x12.5	20	

Lid

Type	Code No.	Illustration
MD 180	8447	

Drop plate

Type	Code No.	Illustration
TB 180	8404	

Cascade pipes

Type	Code No.	Illustration
KV 110	8453	

SONOREX TECHNIK

Multi-frequency ultrasonic bath ZM 182



Two-part devices with separate generator for power control, optionally with side sound and Twinsonic.

Operating volume:
170 litres

Ultrasonic frequency:
25 / 40 kHz

Internal dimensions of oscillating tank
l x w x d / d⁺:
1000 x 500 x 400/420⁺ mm

External dimensions l x w x h:
1180 x 660 x 800 mm

- Welded cleaning tank
- Inclined tank base
- Stepless Power control
- Overflow gutter
- Rounded bath corners
- Heating 30-80 °C
- Fill level marking
- Sprinkle tube
- Metal handles
- Welded drain
- Dry-running protection
- Fixed mains cable
- Additional procedure
- Height-adjustable feet

Accessories ultrasonic generator

Remote control
the generators can be switched on and off with an external control contact via the connection socket on the rear.

Type	Code No.	Description
FS 7	8468	Remote control cable
FS 15 L	8466	Remote control with timer

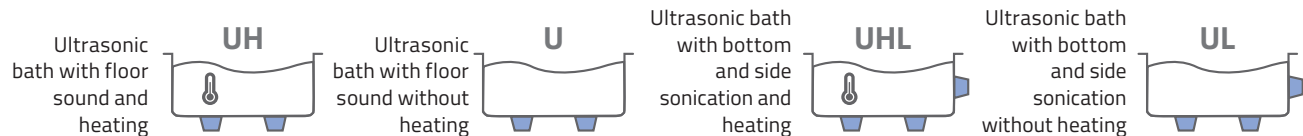


FS 7: Remote control cable, 7 m long, one end with plug
Code No. 8468



FS 15 L: Remote control with timer 1-15 min and continuous operation, cable with plug, 7 m long
Code No. 8466

Technical data ZM 182



		Internal dimensions oscillating tank	Operating volume	External dimensions	Ultrasonic peak power*	Ultrasonic nominal power	Heating power	Frequency
Type	Order No.	l × w × d / d+ [mm]	[l]	l × w × h [mm]	[W]	[W]	[W]	[kHz]
ZM 182 UHL	9228 - 25/25 kHz 9230 - 25/40 kHz 9232 - 40/40 kHz 9234 - 40/25 kHz	1000 × 500 × 400/420+	170.0	1180 × 660 × 800	2 × 6000	2 × 1500	7200	25 and / or 40
	9236 - 25/25 kHz 9238 - 25/40 kHz 9240 - 40/40 kHz 9242 - 40/25 kHz				-			
	ZM 182 UL				2 × 6000	-		
					ZM 182 UH	2 × 4000	7200	25 or 40
ZM 182 U	2 × 4000					-		

*corresponds to 4 times ultrasonic nominal power power; + inclined tank bottom

Accessories ZM 182

BANDELIN offers high-quality accessories such as insert baskets, lids and drop plates for the SONOREX ultrasonic baths. The accessories are optimised for cleaning applications in the industrial sector.

Baskets

Type	Code No.	Internal dimensions l x w x d [mm]	Mesh size [mm]	Max. load [kg]	Illustration
MK 110	8423	530 x 410 x 90	12.5x12.5	20	
MK 110 S	8476	530 x 410 x 90	12.5x12.5	40	
MK 110 B when using a lifting device MB	8417	530 x 410 x 90	12.5x12.5	20	
MK 110 BS when using a lifting device MB	8481	530 x 410 x 90	12.5x12.5	40	

Lid

Type	Code No.	Illustration
MD 110	8446	

Drop plate

Type	Code No.	Illustration
TB 110	8403	

Cascade pipes

Type	Code No.	Illustration
KV 112	8456	

SONOREX TECHNIK

For appliance sizes RM 180, RM 182 and ZM 182 – additional equipment



Lifting device MB 180 B
with oscillation in connection with WG 180
Code No. 8315



Lifting device MB 180
with oscillation
Code No. 8311



Tank rack WG 180
in connection with MB 180 B
Code No.
8523 WG 180-2 for 2 tanks
8524 WG 180-3 for 3 tanks
8525 WG 180-4 for 4 tanks

Type	Code No.	Description
MB 180	8311	Lifting device with oscillation for one appliance
MB 180 B	8315	Lifting device with oscillation in connection with WG 180
WG 180-2	8523	Tank rack for 2 tubs in connection with MB 180
WG 180-3	8524	Tank rack for 3 tubs in connection with MB 180
WG 180-4	8525	Tank rack for 4 tubs in connection with MB 180

SONOREX TECHNIK

For device sizes RM 180, RM 182 and ZM 182 – peripheral devices



Filtration FA 180
Consisting of:
Filter device FA 620,
Connection kit APF 110/180/210
Code No. 8612

More information on the functional principle filtration FA can be found on page 81.

Type	Code No.	Description
FA 180	8612	Filtration
OX 180	8604A	Oil separator
TO 180	8338	Trough dryer



Oil separator OX 180
Consisting of:
Oil separator OX 500,
Connection set AOX 110/180/210
Code No. 8604A

For more information on the operating principle of OX oil separators, see page 83.



Trough dryer TO 180
Internal dimensions:
1000 × 500 × 400 mm, l × w × d
Code No. 8338

SONOREX TECHNIK

Ultrasonic and rinsing bath RM 210



RM 210 UH

One-piece ultrasonic bath with integrated generator underneath the oscillating tank.
Compact size for a wide range of applications.

Operating volume:	Ultrasonic frequency:
210 litres	25 / 40 kHz
Internal dimensions of oscillating tank l × w × d: 750 × 650 × 500 mm	
External dimensions l × w × h: 930 × 750 × 800 mm	

- Welded cleaning tank
- Welded drain
- Heating 30-80 °C
- Overflow gutter
- Additional procedure
- Metal handles
- Fill level marking
- Inclined tank bottom
- Fixed mains cable

Technical data RM 210

<div><div>UH</div><div>U</div><div>H</div><div></div></div> <div><div>Ultrasonic bath with heating</div><div>Ultrasonic bath</div><div>Rinsing bath with heating</div><div>Rinsing bath</div></div>								
Type	Code No.	Internal dimensions oscillating tank l × w × d [mm]	Operating volume [l]	External dimensions l × w × h [mm]	Ultrasonic peak power* [W]	Ultrasonic nominal power [W]	Heating power [W]	Frequency [kHz]
RM 210 UH	8270 - 40 kHz 8280 - 25 kHz	750 × 650 × 500	210.0	1180 × 600 × 800	2 × 4000	2 × 1000	7200	40 or 25
RM 210 U	8271 - 40 kHz 8281 - 25 kHz						-	
RM 210 H	8272				-	-	7200	
RM 210	8273				-	-	-	-

*corresponds to 4 times ultrasonic nominal power power

Accessories

BANDELIN offers high-quality accessories such as insert baskets, lids and drop plates for the SONOREX ultrasonic baths.

The accessories are optimised for cleaning applications in the industrial sector.

Baskets

Type	Code No.	Internal dimensions l × w × d [mm]	Mesh size [mm]	Max. load [kg]	Illustration
MK 210	8425	680 × 610 × 90	12.5x12.5	20	
MK 210 B when using a lifting device MB	8419	680 × 610 × 90	12.5x12.5	20	
MK 210 S	8478	680 × 610 × 90	12.5x12.5	40	
MK 210 BS when using a lifting device MB	8483	680 × 610 × 90	12.5x12.5	40	

Lid

Type	Code No.	Illustration
MD 210	8448	

Drop plate

Type	Code No.	Illustration
TB 210	8405	

Cascade pipes

Type	Code No.	Illustration
KV 210	8455	



13 litres

31 litres

62 litres

110/115 litres

160/170 litres

210/230 litres

SONOREX TECHNIK

Ultrasonic and rinsing bath RM 212



RM 212

One-piece ultrasonic bath with integrated generator underneath the oscillating tank. Compact size for a wide range of applications.

Operating volume:	Ultrasonic frequency:
230 litres	25 / 40 kHz
Internal dimensions of oscillating tank l × w × d/d ⁺ :	
750 × 650 × 500/520⁺ mm	
External dimensions l × w × h:	
930 × 810 × 800 mm	

- Welded cleaning tank
- Welded drain
- Heating 30-80 °C
- Overflow gutter
- Additional procedure
- Metal handles
- Fill level marking
- Inclined tank bottom
- Fixed mains cable

Technical data RM 212

Type	Order no. No.	Internal dimensions oscillating tank l × w × d/d ⁺ [mm]	Ope- rating volume [l]	External dimensions l × w × h [mm]	Ultrasonic peak power* [W]	Ultrasonic nominal power [W]	Heating power [W]	Frequency [kHz]
RM 212 UH	9302 - 40 kHz 9301 - 25 kHz	750 × 650 × 500/520 ⁺	230.0	930 × 810 × 800	2 × 4000	2 × 1000	7200	40 or 25
RM 212 U	9304 - 40 kHz 9303 - 25 kHz						-	
RM 212 H	9305						7200	
RM 210	9306						-	

*corresponds to 4 times ultrasonic nominal power power +inclined tank bottom

Technical data RM 212 ST

- Ultrasonic bath with heating and interface for connection of a PLC or robotic control
- Ultrasonic bath without heating, with interface for connecting a PLC or robotic control
- Rinsing bath with heating and interface for connection of a PLC or robotic control, without ultrasound

Type	Code No.	Internal dimensions oscillating tank l × w × d / d ⁺ [mm]	Ope- rating volume [l]	External dimensions l × w × h [mm]	Ultrasonic peak power* [W]	Ultrasonic nominal power [W]	Heating power [W]	Frequency [kHz]
RM 212 UH-ST	8782 - 40 kHz 8781 - 25 kHz	750 × 650 × 500/520 ⁺	230.0	930 × 810 × 800	2 × 4000	2 × 1000	7200	40 or 25
RM 212 U-ST	8784 - 40 kHz 8783 - 25 kHz						-	
RM 212 H-ST	8785				-	-	7200	-

*corresponds to 4 times ultrasonic nominal power power; +inclined tank bottom

Accessories

BANDELIN offers high-quality accessories such as insert baskets, lids and drop plates for the SONOREX ultrasonic baths.

The accessories are optimised for cleaning applications in the industrial sector.

Baskets

Type	Code No.	Internal dimensions l × w × d [mm]	Mesh size [mm]	Max. load [kg]	Illustration
MK 210	8425	680 × 610 × 90	12.5x12.5	20	
MK 210 B when using a lifting device MB	8419	680 × 610 × 90	12.5x12.5	20	
MK 210 S	8478	680 × 610 × 90	12.5x12.5	40	
MK 210 BS when using a lifting device MB	8483	680 × 610 × 90	12.5x12.5	40	

Lid

Type	Code No.	Illustration
MD 210	8448	

Drop plate

Type	Code No.	Illustration
TB 210	8405	

Cascade pipes

Type	Code No.	Illustration
KV 210	8455	

SONOREX TECHNIK

Multi-frequency ultrasonic bath ZM 212



ZM 212 UH

Two-part devices with separate generator for power control, optionally with side sound and Twinsonic.

Operating volume: **230 litres**
Ultrasonic frequency: **25 / 40 kHz**

Internal dimensions of the oscillating tank l x w x d / d+: **750 x 650 x 500/520+ mm**

External dimensions l x w x h: **930 x 810 x 800 mm**

- Welded cleaning tank
- Inclined tank base
- Stepless Power control
- Overflow gutter
- Rounded bath corners
- Heating 30-80 °C
- Fill level marking
- Sprinkle tube
- Metal handles
- Welded drain
- Dry-running protection
- Fixed mains cable
- Additional procedure
- Height-adjustable feet

Accessories Ultrasonic generator

Remote control the generators can be switched on and off with an external control contact via the connection socket on the rear.



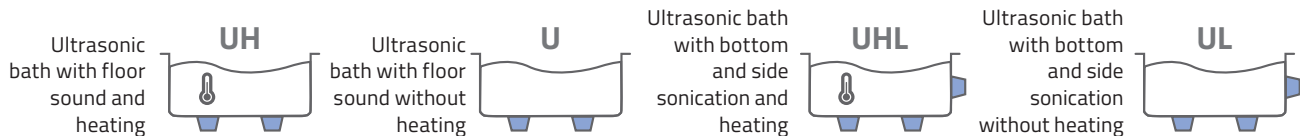
FS 7: Remote control cable, 7 m long, one end with plug
Code No. 8468



FS 15 L: Remote control with timer 1-15 min and continuous operation, cable with plug, 7 m long
Code No. 8466

Type	Code No.	Description
FS 7	8468	Remote control cable
FS 15 L	8466	Remote control with timer

Technical data ZM 212



Type	Order no. No.	Internal dimensions oscillating tank l x w x d / D+ [mm]	Operating volume [l]	External dimensions l x w x h [mm]	Ultrasonic peak power* [W]	Ultrasonic nominal power [W]	Heating power [W]	Frequency [kHz]
ZM 212 UHL	9328 - 25/25 kHz	750 x 650 x 500/520+	230.0	930 x 810 x 800	2 x 6000	2 x 1500	7200	25 and / or 40
	9330 - 25/40 kHz							
	9332 - 40/40 kHz							
	9334 - 40/25 kHz							
ZM 112 UL	9136 - 25/25 kHz	750 x 650 x 500/520+	230.0	930 x 810 x 800	2 x 6000	2 x 1500	-	25 and / or 40
	9138 - 25/40 kHz							
	9140 - 40/40 kHz							
	9142 - 40/25 kHz							
ZM 112 UH	9120 - 25 kHz	750 x 650 x 500/520+	230.0	930 x 810 x 800	2 x 6000	2 x 1500	7200	25 or 40
	9122 - 40 kHz							
ZM 112 U	9124 - 25 kHz	750 x 650 x 500/520+	230.0	930 x 810 x 800	2 x 6000	2 x 1500	-	25 or 40
	9126 - 40 kHz							

*corresponds to 4 times ultrasonic nominal power power; +inclined tank bottom

Accessories ZM 212

BANDELIN offers high-quality accessories such as insert baskets, lids and drop plates for the SONOREX ultrasonic baths. The accessories are optimised for cleaning applications in the industrial sector.

Baskets

Type	Code No.	Internal dimensions l x w x d [mm]	Mesh size [mm]	Max. load [kg]	Illustration
MK 110	8423	530 x 410 x 90	12.5x12.5	20	
MK 110 S	8476	530 x 410 x 90	12.5x12.5	40	
MK 110 B when using a lifting device MB	8417	530 x 410 x 90	12.5x12.5	20	
MK 110 BS when using a lifting device MB	8481	530 x 410 x 90	12.5x12.5	40	

Lid

Type	Code No.	Illustration
MD 110	8446	

Drop plate

Type	Code No.	Illustration
TB 110	8403	

Cascade pipes

Type	Code No.	Illustration
KV 112	8456	

SONOREX TECHNIK

For appliance sizes RM 210, RM 212 and ZM 212 - additional equipment



Lifting device MB 210.3 B
with oscillation in connection with WG 110
Code No. 8398



Lifting device MB 210.3
with oscillation
Code No. 8395



Tank rack WG 210
in connection with MB 210.3 B
Code No.
8526 WG 210-2 for 2 tanks
8527 WG 210-3 for 3 tanks
8528 WG 210-4 for 4 tanks

Type	Code No.	Description
MB 210.3	8395	Lifting device with oscillation for one appliance
MB 210.3 B	8398	Lifting device with oscillation in connection with WG 210
HA 210	8498	Planing head holder for RM 210 UH Stainless steel
WG 210-2	8526	Tank rack for 2 tubs in connection with MB 210 B
WG 210-3	8527	Tank rack for 3 tubs in connection with MB 210 B
WG 210-4	8528	Tank rack for 4 tubs in connection with MB 210 B



Planing head holder HA 210
for appliance size RM 210 UH
Code No. 8498

SONOREX TECHNIK

For device sizes RM 210, RM 212 and ZM 212 – peripheral devices



Filtration FA 210
Consisting of:
Filter device FA 620,
Connection kit APF 110/180/210
Code No. 8613

More information on the functional principle filtration FA can be found on page 81.

Type	Code No.	Description
FA 210	8613	Filtration
OX 210	8605A	Oil separator
TO 210	8339	Trough dryer



Oil separator OX 210
Consisting of:
Oil separator OX 500,
Connection set AOX 110/180/210
Code No. 8605A

For more information on the operating principle of OX oil separators, see page 83.



Trough dryer TO 210
Internal dimensions:
750 × 650 × 500 mm, l × w × d
Code No. 8339

SONOREX TECHNIK RL 70.2 UH
Ultrasonic bath – extra long and narrow



Extra-long ultrasonic bath. Excellent for cleaning long parts such as pipes, profiles, gang saw blades and long planing knives.

- Welded cleaning tank
- Extra long oscillating tank
- Welded drain
- Heating 30 – 80 °C

- Fill level marking
- Sloping tank base
- Fixed cable



Special bath	Code No.	Internal dimensions Oscillating tank l × w × d/d+ [mm]	Operating volume [l]	External dimensions l × w × h [mm]	Ultrasonic Top performance* [W]	Ultrasonic Rated power [W]	Heating power [W]	Frequency [kHz]
RL 70.2 UH	8226	1700 × 250 × 250/280+	76.0	1750 × 300 × 450	4000	1000	2000	40

*corresponds to 4 times ultrasonic nominal power power; operating voltage 230 V~ (±10 %), 50/60 Hz
+inclined tank base

Stainless steel accessories

Type	Code No.	Description
RE 70 L	8229	Basket insert, open at the narrow sides (for use in basket carrier KT 70 L) - Max. load max. 40 kg - Internal dimensions: 1578 × 216 × 63 mm, l × w × d - Mesh size 12 × 12 mm
KT 70 L	8227	Basket carrier Max. load max. 40 kg Internal dimensions: 850 × 240 × 245 mm, l × w × d
MD 70	8228	Lid made of stainless steel

SONOREX TECHNIK W 65.2 and W 300
Ultrasonic baths – especially for shipping

The ultrasonic bath with high freeboard prevents the bath liquid from spilling over even in the event of heavy movement and is therefore particularly suitable for shipping.

Thanks to the deep oscillating tank, the appliance can also be used to clean particularly large parts by filling the bath higher.

- Tank with high freeboard
- Extra deep oscillating tank
- Welded drain
- Heating 30-80 °C
- Fill level marking
- Fixed cable
- Metal handles

- + for W 300
- Dry-running protection
 - Height-adjustable feet



Special bath	Order No.	Internal dimensions oscillating tank l × w × d/d+ [mm]	Operating volume [l]	External dimensions l × w × h [mm]	Ultrasonic Top power* [W]	Ultrasonic Rated power [W]	Heating power [W]	Frequency [kHz]
W 65.2	8689	500 × 300 × 450/465+	31.0	560 × 360 × 650	1200	300	1450	40
W 65.2-ST	8690							
W 300	8342	1000 × 500 × 600	185.0	1180 × 600 × 1000	2 × 4000	2 × 1000	7200	25
W 300	8343	1000 × 500 × 600	185.0	1180 × 600 × 1000	2 × 4000	2 × 1000	7200	40

*corresponds to 4 times ultrasonic nominal power power; 50/60 Hz; W65: operating voltage 230 V~ (±10 %), 50/60 Hz;
W 300: operating voltage 400 V~ (±10 %), 50/60 Hz; W 300 also available with built-in autotransformer for connection to the existing ship's power supply on request; +Inclined tank base

Stainless steel accessories

Type	Code No.	Description
WK 65	8191	Insert basket - Max. load max. 10 kg - Internal dimensions: 455 × 245 × 50 mm, l × w × d - Mesh size 5 × 5 mm
WD 65	8192	Lid

Type	Code No.	Description
WK 300	8347	Insert basket - Max. load max. 20 kg - Internal dimensions: 930 × 460 × 90 mm, l × w × d - Mesh size 12.5 × 12.5 mm
WK 300 S	8348	Insert basket - Max. load max. 40 kg - Internal dimensions: 930 × 460 × 90 mm, l × w × d - Mesh size 12.5 × 12.5 mm
WD 300	8346	Lid, especially for use in shipping
MD 180	8447	Lid

SONOREX TECHNIK L 220 and L 320

Double tank for cleaning and rinsing in one appliance

Mobile double tank for cleaning and rinsing long shafts, tubes and spindles, as well as blinds, lamp louvres, reflectors, healds, preforms or slats.

Additional equipment:
Lifting device for lifting the basket in and out with oscillation to enhance the cleaning effect as well as suspension heating with temperature control.

Welded cleaning tank

Extra long oscillating tank

Extra narrow oscillating tank

Stainless steel double tank

Fill level marking

Welded drain, per tank

Two-handed operation
(when using a lifting device
LB 220.3 or LB 320.3)

L 220

Type	Internal dimensions Oscillating tank l x w x d/d+ [mm]	Operating volume [l]	Order No.	External dimensions l x w x h [mm]	Ultrasonic Top performance* [W]	Ultrasonic Rated power [W]	Current recording** [A]
L 220	2200 x 300 x 300/370+	185 per chamber	8290 set	2320 x 750 x 850	2 x 4000	2 x 1000	8.6
L 320	3200 x 300 x 300/370+	270 per chamber	8291 set	3320 x 750 x 850	4 x 4000	4 x 1000	13.0

+ultrasonic/rinsing chamber; *corresponds to 4 times ultrasonic nominal power power;
**for L 320 per phase L 220: Operating voltage 230 V~ (±10 %), 50/60 Hz, L 320: Operating voltage 400 V 3N~ (±10 %) 50/60 Hz

Accessories Ultrasonic bath L 220

Type	Code No.	Description	Type	Code No.	Description
LR 220	8435	Storage grid per chamber, two-piece, stainless steel Total max. load max. 40 kg Dimensions 1000 x 285 x 110 mm, l x w x h	D 220	8460	Lid, two-piece, stainless steel
			D 220 H	8461	Lid, two-piece, for appliance with heating, stainless steel

Accessories for ultrasonic bath L 320

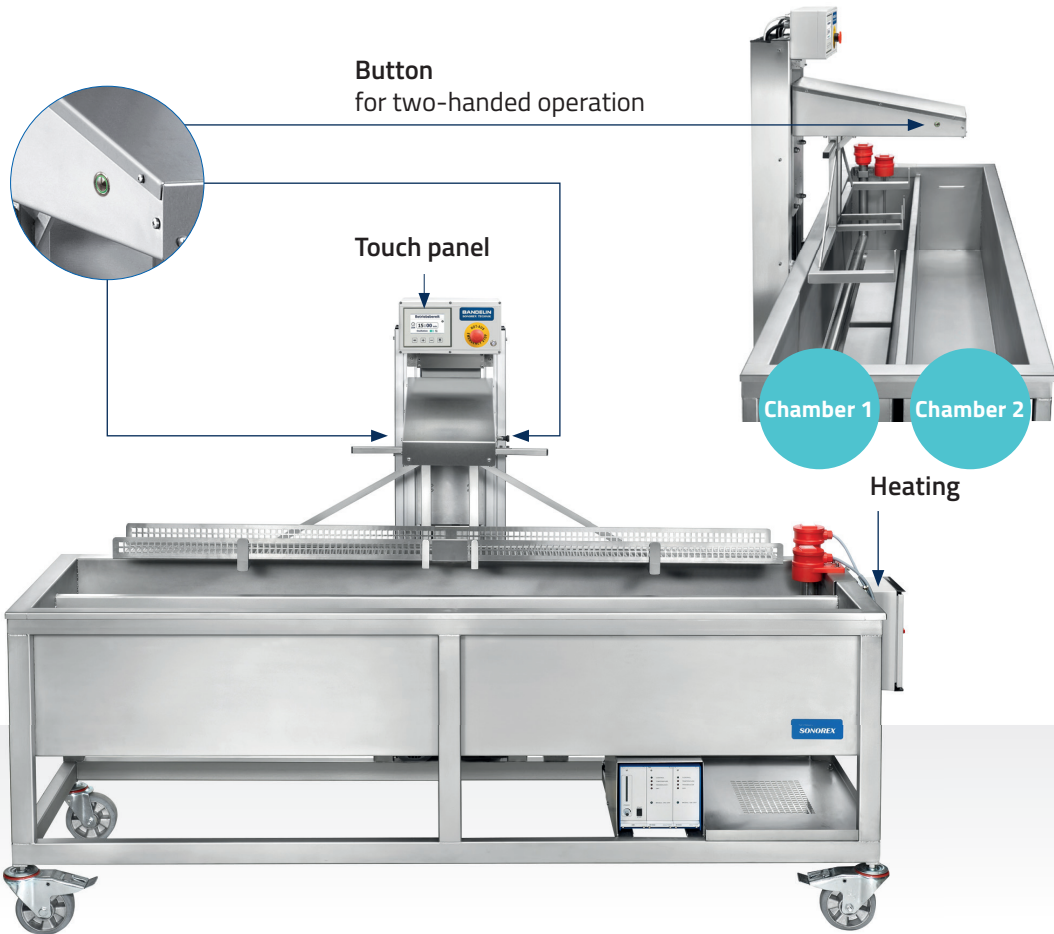
Type	Code No.	Description	Type	Code No.	Description
LR 320	8436	Storage grid per chamber, three-part, stainless steel; Total max. load max. 40 kg Dimensions 1000 x 285 x 110 mm, l x w x h	D 320	8462	Lid, three-piece, stainless steel
			D 320 H	8463	Lid, three-part, for appliance with heating, stainless steel

Regular and professional cleaning with ultrasound guarantees gentle care for the extension of the service life of the parts to be cleaned. There is no need for time-consuming manual wiping, rubbing and brushing.

The ultrasound generates microscopically small bubbles in the cleaning fluid. These implode and

remove all dirt from the objects like an "electronic brush". The oscillating movement of the lifting device intensifies the cleaning effect of the ultrasound.

The 2nd chamber is used for subsequent rinsing with clear water.



SONOREX CNp 28-2 / CNp 28-2L

High-performance ultrasonic bath with pulsed vacuum



Effective cleaning using the CNp process (Cyclic Nucleation Process), a combination of ultrasonic and pulsed vacuum cleaning in one compact device.

For residue-free cleaning of complex components, capillary cavities, hoses or bulk goods.

- 1-click cleaning start
- Welded outlet
- Dry-running protection
- Stainless steel double tank
- Rounded bath corners
- Fill level marking
- Heating 30-80 °C
- Castor feet

Ready-to-use sets:

- SONOREX CNp 28-2 or CNp 28-2 L
- Insert basket K 28 M (2 pcs.)
- Basket carrier KT 28 (2 pcs.)

The "L" version also has a ultrasonic power control.



Type	Code No.	Internal dimensions oscillating tanks l × w × d/d+ [mm]	Operating volume [l]	External dimensions l × w × h [mm]	Ultrasonic peak power* [W]	Ultrasonic rated power [W]	Heating-power [W]	Current consumption** [A]
SC 28-2	7200	510 × 300 × 260/280+	28	1550 × 800 × 985	1200	300	3000	15.7
SC 28-2 L	7210	510 × 300 × 260/280+	28	1550 × 800 × 985	240/480/960/1200	60/180/240/300	3000	15.7

All values (except external dimensions) per tank.
*inclined tank bottom; *corresponds to 4 times ultrasonic nominal power power; **per phase

The CNp process: Ultrasound + vacuum

CNp is the most effective combination of two mechanical cleaning processes: powerful loosening of soiling using ultrasound and removal of particles from the finest gaps using pulsed vacuum. The CNp process guarantees absolutely thorough cleanliness in the shortest possible time.

Ultrasonic cleaning



Powerful piezoelectric oscillating systems are supplied with high-frequency voltage by an ultrasonic generator. The oscillation generated is transmitted into an aqueous solution, where it causes the finest cavitation bubbles to form and implode. Ultrasonic cleaning effectively removes adhering soiling from the cleaningwell and ensures gentle cleaning.

Vacuum cleaning



In an aqueous solution, the static pressure is reduced and boiling bubbles are generated (boiling bubbles-effect). These form even in capillary structures. The spatial expansion of the clearly visible bubbles displaces the liquid from the finest cavities and the dirt particles dissolved in them are effectively removed. When the bubbles implode, unused cleaning fluid is flushed into the cavities. Even capillaries that were previously difficult to wet are reached by the cleaning solution using this method and washed out without residue in the subsequent CNp rinsing process.

Product video

[youtube.com/watch?v=KI2ZAF7Rvk0&t=4s](https://www.youtube.com/watch?v=KI2ZAF7Rvk0&t=4s)

Further information can be found on our website [bandelin.com](https://www.bandelin.com)



Recommended cleaning agent: TICKOPUR R 36

Litres	1	2	5	10	200
Code No.	6024	854	884	852	-

More on this from page 98/99

Stainless steel accessories

Type	Code No.	Description
K 28 EM	7202	Basket insert (basket carrier required), max. max. load 10 kg, Internal dimensions 455 × 245 × 50 mm, mesh size 5 × 5 mm
KT 28	7203	Basket carrier for insert basket K 28 EM or 1/1 DIN basket, max. max. load 10 kg



SONOREX CNp 28-2 and CNp 28-2 L

High-performance ultrasonic bath with pulsed vacuum

Areas of application



Medicine

The finest structures in medical device production such as stents or lumens can be optimally cleaned of impurities and residues.



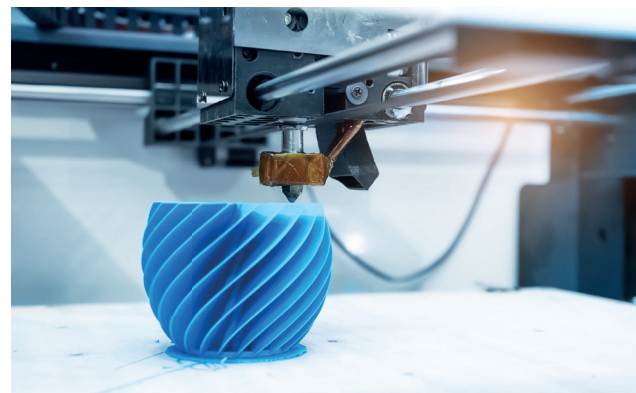
Laboratory

Complex equipment, analysers and hard-to-clean accessories can be cleaned easily, quickly and thoroughly – both on the outside and in the smallest interior areas.



Industry

The highest standards of cleanliness can be met, particularly in production and maintenance. The new compact device offers a space-saving and economical solution for every requirement.



Additive manufacturing

The SONOREX CNp 28-2 is the ideal addition to the manufacturing process in the field of rapid prototyping. Deposits can be reliably removed from sintered structures even in the finest intermediatespaces.

Advantages at every level



Lid with sight glass

This enables direct process monitoring when setting up the appliance.



Safe and defined operation

With automatic temperature control, time programme and fill level monitoring.

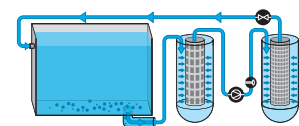


Maintenance-free



Double tank design

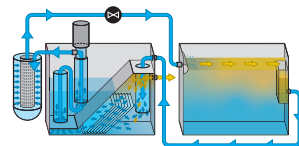
Intensive cleaning and rinsing at the same time or 2 x cleaning or 2 x rinsing.



**SONOREX TECHNIK
Filtration FA**

Overview and
operating principle

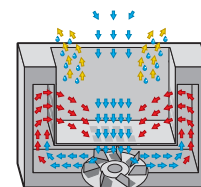
from page 80



**SONOREX TECHNIK
Oil separator OX**

Overview and
operating principle

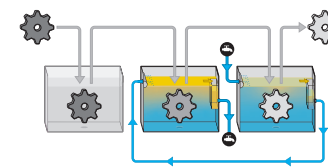
from page 82



**SONOREX TECHNIK
Circulating air dryer UT**

Overview and
operating principle

from page 84



**SONOREX TECHNIK
Cascade pipes**

Overview and
operating principle

page 74



**SONOREX TECHNIK
Lifting device MB
with oscillation**

Overview

page 76



**SONOREX TECHNIK
Accessories**

Overview of tub frames,
transport carts
and base frames

from page 78



**SONOREX TECHNIK
Trough dryer TO**

Overview

page 86



**SONOREX TECHNIK
Oscillation MO**

Overview

page 87



**SONOREX TECHNIK
Planing head holder HA**

Overview

page 88

Cascade pipes

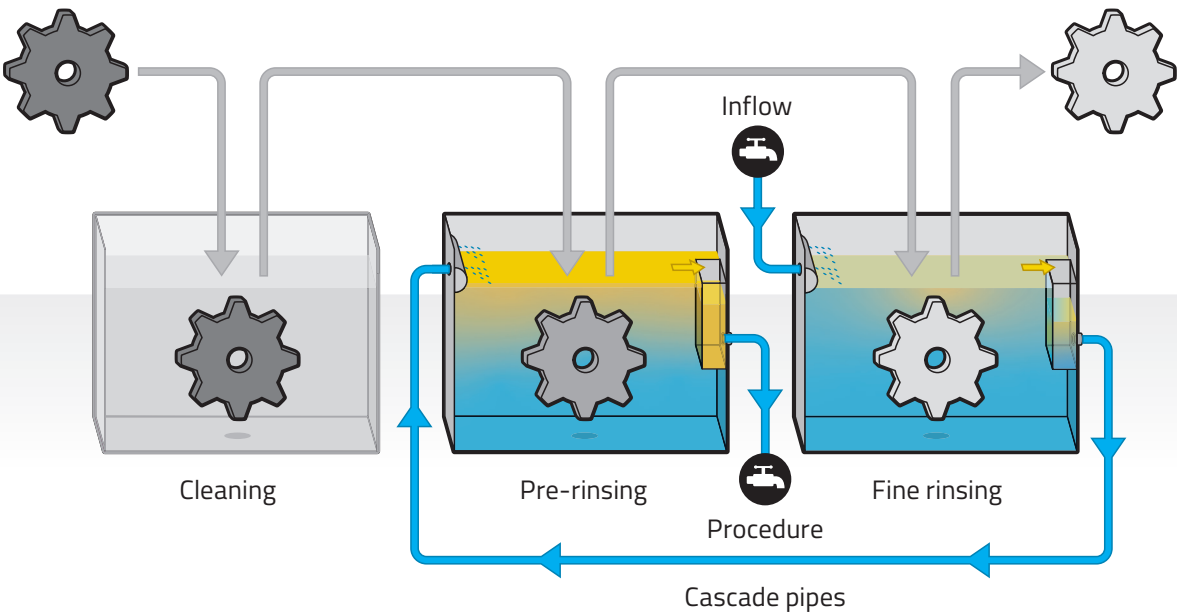
Combine two rinsing baths in your individual cleaning line into one water circuit with our cascade pipes sets and save a lot of precious rinsing water. Available for all bath sizes.

Suitable for appliance ranges	Type	Code No.
RM 16.2	KV 16	8450
RM 40.2	KV 40	8451
RM 75.2	KV 75	8452
RM 110	KV 110	8453
RM 112	KV 112	8456
RM 180	KV 180	8454
RM 182	KV 182	8457
RM 210	KV 210	8455
RM 212	KV 212	8458



The functional principle

Fresh rinse water from the fine rinse inlet is fed into the pre-rinse tank via the overflow pocket with the cascade pipes and can thus be used once again for the coarse pre-rinse before it flows into the drain.



SONOREX TECHNIK

Lifting device MB with oscillation






The electrically operated lifting device with oscillation facilitates the lowering and lifting of the fabric basket. The slowly oscillating up and down movement increases the cleaning effect of the ultrasound and rinses off the loosened dirt more effectively.

After the set time has elapsed, the lifting device returns to its starting position so that the detergent drips off.

In connection with a tank rack, the basket can be moved between individual appliances.

- Innovations:**
- Operational safety and user-friendly control thanks to two-hand operation and the intuitive touch panel.
 - Simple activation of the process via the two-hand operation on the support arms
 - Clear visibility of operating time and Status display in plain text and traffic light colours
 - Optional deactivation of oscillation
 - Can be retrofitted at any time

Suitable for appliance ranges	Type	Code No.	Description
RM 16.2	MB 16.3	8390	Lifting device with oscillation in connection with WG 16
RM 40.2	MB 40.3	8391	Lifting device with oscillation in connection with WG 40
RM 75.2	MB 75.3	8392	Lifting device with oscillation in connection with WG 75
RM 110, RM 112, ZM 112	MB 110.3	8393	Lifting device with oscillation
RM 180, RM 182, ZM 182	MB 180.3	8394	Lifting device with oscillation
RM 210, RM 212, ZM 212	MB 210.3	8395	Lifting device with oscillation
RM 110, RM 112, ZM 112	MB 110.3 B	8396	Lifting device with oscillation in connection with WG 110
RM 180, RM 182, ZM 182	MB 180.3 B	8397	Lifting device with oscillation in connection with WG 180
RM 210, RM 212, ZM 212	MB 210.3 B	8398	Lifting device with oscillation in connection with WG 210

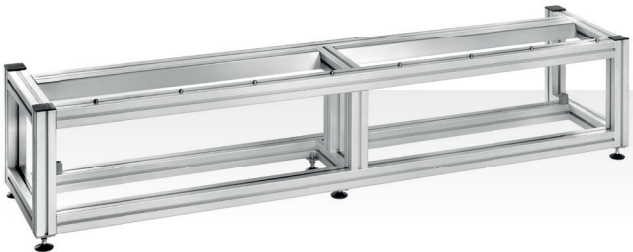
-  Oscillation
-  Lateral displacement
-  Touch panel
-  Can be retrofitted at any time
-  Two-handed operation



Tank racks WG

For ultrasonic and rinsing baths of the RM and ZM appliance series

Ultrasonic and rinsing baths can also be combined with a movable lifting device MB as multi-stage appliance rows. The cleaning baskets can thus be conveniently transported between the bath racks WG for 2 bath cleaning stages. The MB lifting device is moved sideways from one bath to another on an aluminium bath frame. The tank racks are designed for the appliance sizes of the SONOREX TECHNIK RM and ZM appliance ranges.



Tank rack WG for 2 tubs

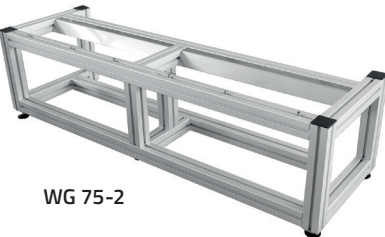
Type	Code No.	Type	Code No.	Type	Code No.
WG 16-2	8506	WG 75-2	8517	WG 180-2	8523
WG 40-2	8501	WG 110-2	8520	WG 210-2	8526



WG 75-2

Tank rack WG for 3 tubs

Type	Code No.	Type	Code No.	Type	Code No.
WG 16-3	8517	WG 75-3	8502	WG 180-3	8524
WG 40-3	8502	WG 110-3	8521	WG 210-3	8527



WG 75-2

Tank rack WG for 4 tubs

Type	Code No.	Type	Code No.	Type	Code No.
WG 16-4	8523	WG 75-4	8518	WG 180-4	8525
WG 40-4	8524	WG 110-4	8522	WG 210-4	8528



WG 16-4

Transport cart TW

The transport cart TW is mobile and can therefore be set up flexibly. Two lockable castors enable safe working with the ultrasonic bath on it and bring it to an ergonomic workingheight. An ultrasonic bath can be easily stored on the transport cart when not in use.



Suitable for appliance ranges	Type	Code No.
RM 40/U/H/UH, RK 1028 CH, DT 1028 CH	TW 40	8330
RM75/U/H/UH	TW 75	8331

Base frame UG

The base frame UG with height-adjustable feet allows you to ride at an ergonomic working height.



Suitable for appliance ranges	Type	Code No.
	UG 40	8325
RM 40/U/H/UH, RM 75 /U/H/UH, RK 1028 CH, DT 1028 CH, W 65	UG 75	8326

SONOREX TECHNIK

Filtration FA

For filtering aqueous liquids for baths from the SONOREX TECHNIK range

The combination of pre-filter and fine filter continuously removes unwanted particles from the cleaning fluid. This helps to ensure that the cleaning fluid can be used for longer without losing its effectiveness. Filtration can be easily combined with any of our ultrasonic baths.



Integrated filter service life monitoring



High resistance



Reliable operation thanks to magnetically coupled centrifugal pump



Compact footprint



Clear status display

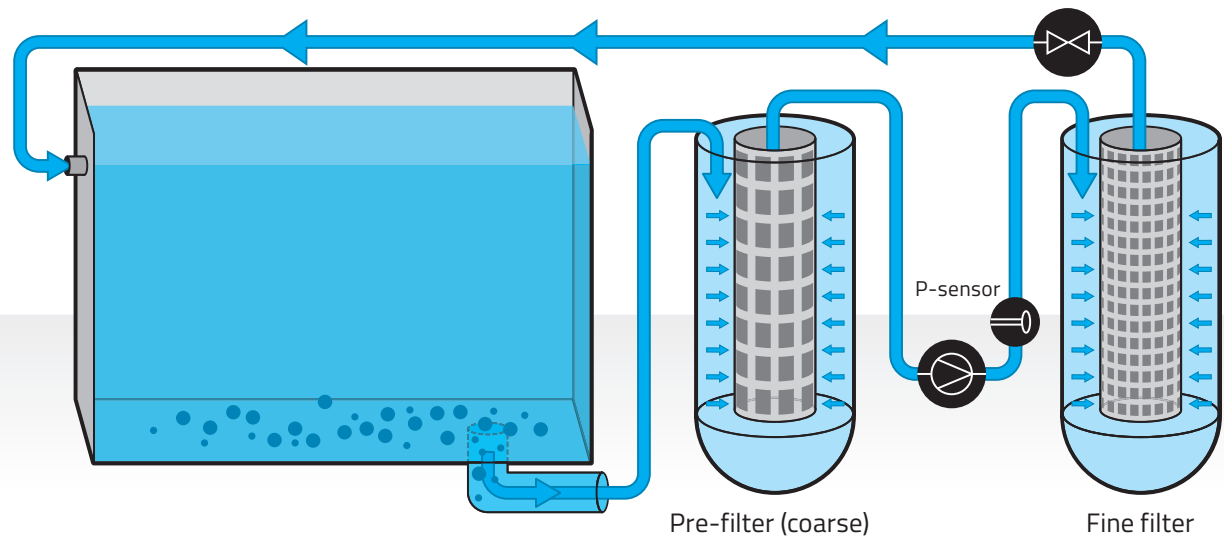


Standard filter cartridges

Suitable for appliance ranges	Type	Code No.	External dimensions
			l × w × h [mm]
RM 16.2	FA 16	8608	455 × 565 × 670
RM 40.2	FA 40	8609	
RM 75.2	FA 75	8610	
RM 110, RM 112, ZM 112	FA 110	8611	
RM 180, RM 182, ZM 182	FA 180	8612	
RM 210, RM 212, ZM 212	FA 210	8613	

The functional principle

The cleaning fluid in the ultrasonic bath, including any particles that have sunk, is pumped back into the ultrasonic bath via a pre-filter and fine filter. The pre-filter serves to protect the centrifugal pump from coarse contamination, while the fine filter reliably removes the particles from the cleaning liquid. The wastewater limit values are not exceeded as a result.



Replacement filter

Type	Code No.	Description	Illustration
EF 10 VF filter cartridge	794	Pre-filter for filter devices FA 16/40 Perlon, 9 3/4", fineness 350 micrometres	
EF 20 VF filter cartridge	8584	Pre-filter for filter device FA 75/110/180/210 Perlon, 20", fineness 350 micrometres	
EF 1025 filter cartridge (10 pcs.)	238	Fine filter for filter device FA 16/4 Polypropylene, 9 3/4", fineness 25 micrometres	
EF 2025 filter cartridge (10 pcs.)	8585	Fine filter for filter device FA 75/110/180/210 Polypropylene, 20", fineness 25 micrometres	

Oil separator OX

Oil separator for removing floating oil and grease from cleaning fluids

Oil separators are used to extend the service life of aqueous cleaning fluids.
The cleaning performance remains stable over a long period of time and recontamination during parts removal due to floating oil and grease is avoided.
This system not only contributes to cost savings on cleaning agents, but also supports the environmental compatibility of the cleaning process.
The oil separator can be easily combined with any of our SONOREX TECHNIK ultrasonic baths.



- Reduction of bath changes
- Saving on water and cleaning products
- Integrated filtration
- Integrated buffer tank
- Clear status display

Suitable for appliance ranges	Type	Code No.	External dimensions, including switch box with main switch l x w x h [mm]
RM 16.2	OX 16	8600A	730 x 580 x 700
RM 40.2	OX 40	8601A	
RM 75.2	OX 75	8602A	
RM 110, RM 112, ZM 112	OX 110	8603A	
RM 180, RM 182, ZM 182	OX 180	8604A	
RM 210, RM 212, ZM 212	OX 210	8605A	

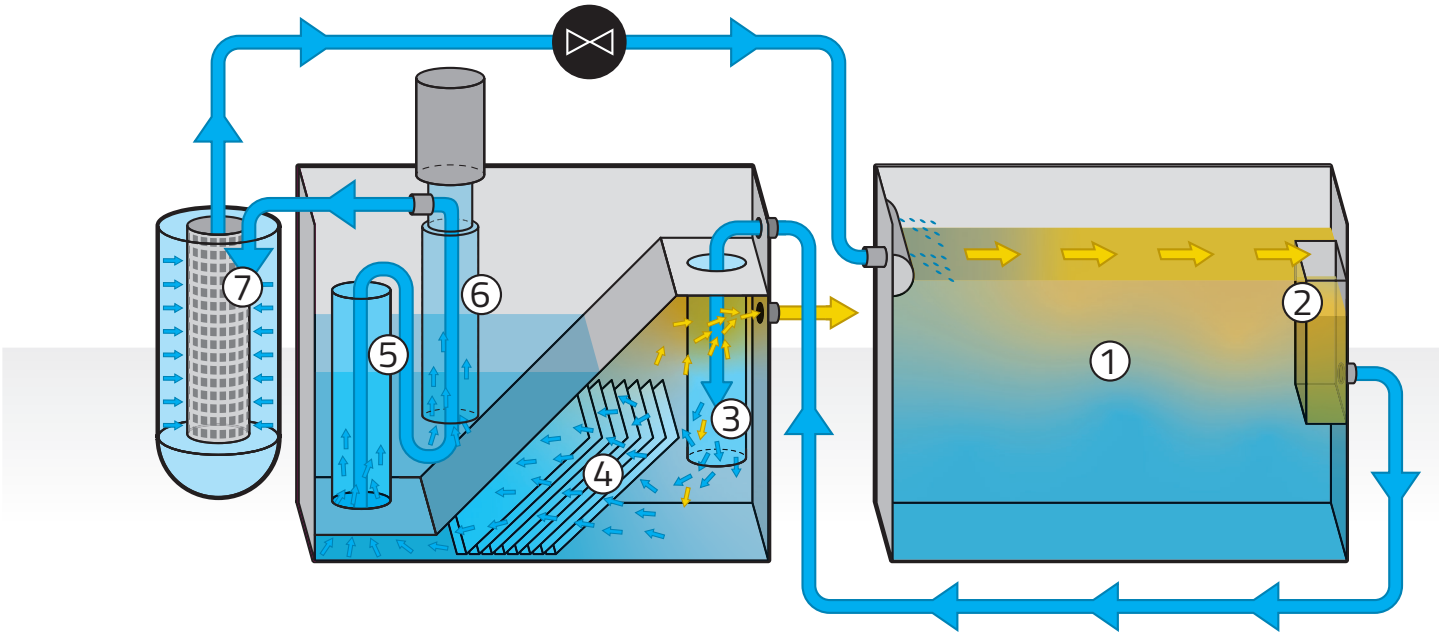


The functional principle

The OX Oil separator increases the service life and effectiveness of aqueous cleaning fluids by precisely separating oils and greases from the cleaning fluid.

The mixture of oil and cleaning fluid is channelled from the ultrasonic cleaning bath (1) via the overflow pocket (2) into the first chamber of the oil separator (3). Here, due to gravity, the oil is separated from the aqueous

phase on coalescence plates (4). This does not fall below the waste water limit values. The remaining liquid flows into the second chamber at the bottom and rises there according to the principle of communicating pipes (5). An immersion pump (6) is located in the second chamber, which pumps the liquid through a fine filter (7) back into the ultrasonic bath (1).



Replacement filter

Type	Code No.	Description
EF 1025 filter cartridge (10 pcs.)	238	Fine filter Polypropylene, 9 3/4", fineness 25 micrometres



SONOREX TECHNIK

Circulating air dryer UT, for appliance sizes RM 16.2 to RM 75.2

The recirculating air dryer not only offers efficient efficient and time-saving drying, but also enables fast further processing of the cleaned components. Thanks to its high compatibility with the modular RM ultrasonic baths, it can be seamlessly integrated into existing processes or cleaning lines. Available in three sizes (UT 16, UT 40, UT 75), it offers flexibility for different requirements and quantities. Direct feeding through the lifting device MB lifting device enables a smooth process, cleaning, rinsing and drying are perfectly coordinated.



The functional principle

The circulating air dryer is used to dry cleaned and rinsed workpieces. The heated air is directed onto the objects to be dried via air ducts. This ensures time-saving drying even of parts with high water adhesion. The circulating air is drawn in at the bottom of the tank via a fan and discharged into the drying chamber via the side walls.

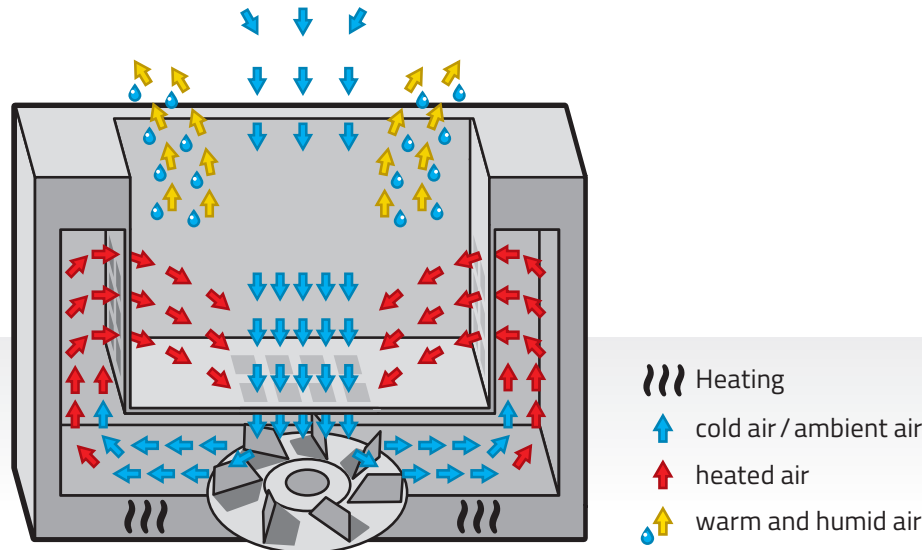
A small proportion of the circulating air flow is always exchanged via the open-top appliance. The ability of the circulating air to absorb moisture is thus maintained. Insulation made of aluminium-coated glass fibre mats guarantees time-saving heating of the drying chamber and efficient operation.

Rapid operational readiness

Short drying time



- Short drying times enable fast further processing of cleaned components.
- Maximum compatibility with the modular RM ultrasonic baths.
- Available in three sizes (UT 16, UT 40, UT 75).
- Direct feeding via lifting device MB possible.
- Cleaning, rinsing, drying – perfectly coordinated from a single source.



Combination example

All peripheral devices can be combined modularly with our ultrasonic baths or integrated into individual cleaning lines for a highly efficient cleaning process.



SONOREX TECHNIK

Trough dryer TO, from appliance series RM 110

The trough dryer is used for the rapid drying of cleaned and rinsed workpieces. The air heated by heating elements is directed onto the items to be dried via optimally arranged air ducts. This enables fast and intensive drying, especially for parts with high water adhesion. A small part of the circulating air flow is always exchanged via the open-top system. This maintains the ability of the circulating air to absorb moisture. The desired drying temperature and operating time are set via the front controls. An automatic temperature-switch-off function is also integrated, which switches off the heating elements if the temperature exceeds 120 °C indoors.



Short drying time

Perfect integration

High part throughput

Suitable for	Type	Code No.	Internal dimensions l x w x d [mm]	External dimensions l x w x h [mm]	Volume Boiler room [l]	Adjustable temperature range [°C]	Heating power [kW]	Illustration
RM 110, RM 112, ZM 112	TO 110	8337	600 x 500 x 350	750 x 700 x 800	105	30 -110	10	
RM 180, RM 182, ZM 182	TO 180	8338	1000 x 500 x 400	1250 x 750 x 800	200	30 -110	12	
RM 210, RM 212, ZM 212	TO 210	8339	750 x 650 x 500	1000 x 900 x 800	244	30 -110	12	

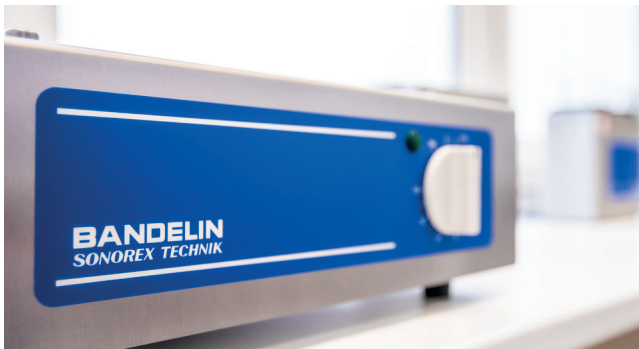
SONOREX TECHNIK

Oscillation MO

For ultrasonic and rinsing baths of the appliance series RM 16.2 and RM 40.2

The electrically operated oscillation device enables automatic oscillation in the cleaning or rinsing tanks. The slowly oscillating up and down movement increases the cleaning effect of the ultrasound and rinses off the dissolved dirt more effectively.

- The filled cleaning basket is hung by hand on the support arm of the oscillation device.
- The basket starts to oscillate automatically when the timer is switched on.
- After the set time has elapsed, the oscillation stops and the items to be cleaned remain in the cleaning fluid.



Ideal for heavily soiled parts

Easy handling

Can be retrofitted at any time

Suitable for	Type	Code No.	Dimensions l x w x h [mm]
RM 16.2/U/H/UH	MO 16.2	8306	365 x 500 x 560
RM 40.2/U/H/UH	MO 40.2	8303	560 x 450 x 665

SONOREX TECHNIK

Planing head holder HA

- Quickly cleaned planing heads, without subsequent cleaning
- Motorised axle drive
- Greatly reduced risk of injury compared to manual cleaning
- Simple retrofitting to existing ultrasonic baths
- Significant time and cost savings compared to manual cleaning
- For planer heads up to 80 kg



High load capacity

Universally applicable

Can be retrofitted at any time

The HA planing head holder enables quick and thorough cleaning in the SONOREX TECHNIK Ultrasonic bath without the need for subsequent cleaning.

The entire cutting surface is guided through the intensive ultrasonic field with the help of the motorised axis drive. This facilitates the preparation of the planing heads and greatly reduces the risk of injury compared to manual cleaning. A suitable planer head holder can easily be retrofitted to an existing SONOREX ultrasonic bath. This results in significant time and cost savings compared to manual cleaning.

The frame and planing head mounting axle are made of 1.4301 stainless steel. The diameter of the planing head mounting axle is 1" (tube: Ø 33.7 x 3.2 mm), other mounting axles with Ø 20 – 50 mm can be used if required but must be provided by the customer and are not included in the scope of delivery.

The maximum total load is 80 kg. The speed of the drive roller is approx. 1 rpm.

Suitable for appliance size	Type	Code No.
RM 40.2	HA 40	8494
RM 110	HA 110	8496

Suitable for appliance size	Type	Code No.
RM 112, ZM 112	HA 112	8497
RM 210	HA 210	8498

Cleaning examples

Particularly heavily soiled and gummy tools can be cleaned quickly, easily and effectively. The following are particularly suitable for ultrasonic cleaning:

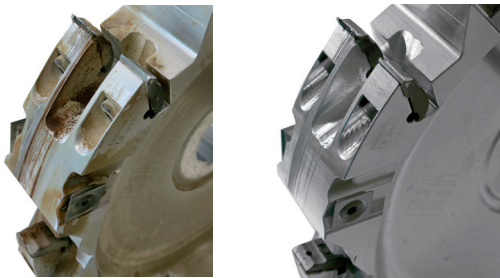
- Planing heads
- Milling cutter
- Gummed-up knives and cutting edges
- Screw heads added
- Fastening screws for inserts or planing knives

Tool maintenance can save costs.

Hard resin deposits on the tools, especially on the saw blades, rub against the cutting surfaces of the workpieces. This leads to carbonisation, cracks and higher feed forces. The tools appear blunt, but can often be used again after cleaning.

If the saw blade needs to be sharpened, cleaning with ultrasound is particularly recommended, as the grinding wheels become unusable due to contact with the resin.

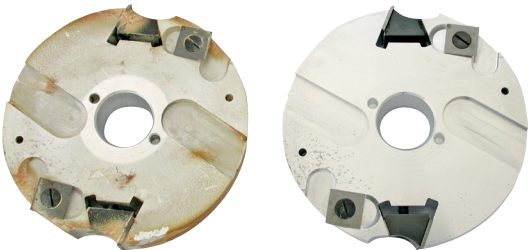
Fastening screws, blade seats and cutting edges should also be cleaned, as otherwise the tools cannot be used accurately. Ultrasound is excellent for cleaning the fine crevices and grooves of the screws.



Planing head (before and after comparison)



Saw blade (before and after comparison)



Milling cutter (before and after comparison)



Recommended cleaning agent: **TICKOPUR TR 13** or for light soiling: **TICKOPUR R 33**.

TICKOPUR TR 13

Litres	1	2	5	10	200
Code No.	844	872	848	6018	853

TICKOPUR R 33

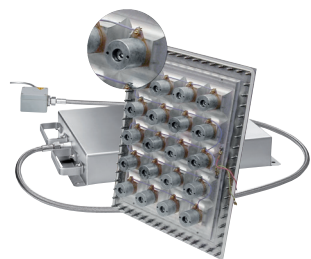
Litres	1	2	5	10	200
Code No.	830	883	831	6023	837

More on this from page 98/99

Immersible transducers and generators

For equipping tanks with ultrasound

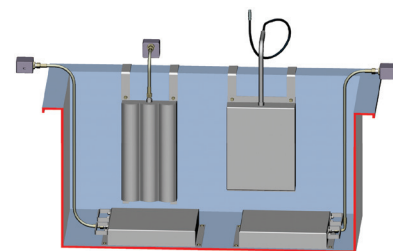
04



SONOREX TECHNIK
High-performance immersible
transducers and flat
transducer plates

For converting tanks for
industrial ultrasonic cleaning.

page 92



SONOREX TECHNIK
Installation examples

For the installation of immer-
sible transducers and flat
transducer plates.

page 93



SONOREX TECHNIK
High-performance ultrasonic
generators LG

With various power and
control modules.

page 94



SONOREX TECHNIK
Module concept
generators LG

Interchangeable operating
and power modules for more
flexibility.

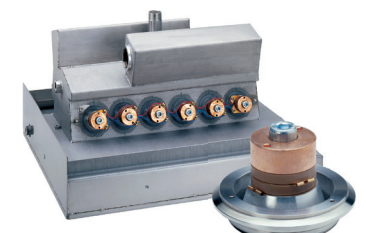
page 95



SONOREX TECHNIK
High-performance ultrasonic
generators TG and SG

Especially for plant
engineering;
Accessories.

page 98



**Customised equipping with
ultrasonic oscillating systems**

Customised equipping with
ultrasonic oscillating systems
for a wide range of tasks and
assemblies.

page 99

SONOREX TECHNIK

High-performance immersible transducers and flat transducer plates

High-performance transducer systems such as immersible transducers and flat transducer plates are used to convert tanks for industrial ultrasonic cleaning or to accelerate chemical or physical processes.

Immersible transducer

for quick installation in larger tubs.

Features:

- 2 mm thick stainless steel housing 1.4404, TIG-welded
- Ultrasonic frequencies 25 kHz or 40 kHz
- Various designs support the versatility of use



Blast clad composite sound

Increased mechanical stability due to robust design.

Solid aluminium and stainless steel panels are inseparably joined together by blasting force.

Oscillating elements are screwed onto this composite panel and no longer glued.

Features:

- Long service life due to low wear
- Stainless steel plating: 3 mm, 1.4571
- High temperature stability up to max. 125 °C
- Suitable for pressure and vacuum loads
- Innovative radiation characteristics
- Ultrasonic frequencies 25 kHz or 40 kHz
- Use as an immersible transducer and flat transducer plate

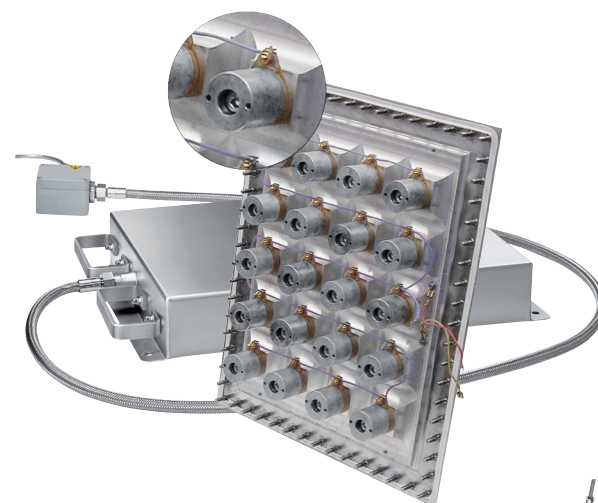
They are powerful and reliable and have an even sound distribution thanks to large-area transducer systems. The oscillating systems are supplied with energy by high-performance ultrasonic generators.

Flat vibration plates

for space-saving installation where space is limited. The usable dimensions of the tank are retained.

Features:

- 3 mm thick Stainless steel plate 1.4404
- Ultrasonic frequencies 25 kHz or 40 kHz
- Installation in rectangular tank cut-out
- No holes and templates required for threaded bolts



CONCAVON immersible transducer TN

Features:

- Concave radiating surface
- Even sound distribution
- Concentrated cleaning effect
- 2 mm stainless steel 1.4404, TIG-welded
- Ultrasonic frequency 40 kHz



CONVEXON TC immersible transducer

Features:

- Convex radiating surface
- Even sound distribution
- Homogeneous cleaning effect
- Low surface erosion
- Increased service life
- 2 mm stainless steel 1.4404, TIG-welded
- Ultrasonic frequency 40 kHz



Do you have any questions about our high-performance immersible transducers and flat transducer plates? Our experts will be happy to advise you individually on request!

SONOREX TECHNIK

Assembly examples

For installation in existing tanks, optionally with plug-in HF cable quick-Connect technology (IP 51) or with fixed HF cable connection (IP 65)

Quick Connect technology with plenum box TA (drip-proof) – IP 51.

Fixed cable connection F with PG screw connection (protected against water jets) – IP 65.

CONVEXON

Immersible transducer TC... E

for hanging, with curved, welded stainless steel tube and suspension hook, easy to move and can therefore be used in different bathrooms.

Immersible transducer T... W

with 90° stainless steel elbow (1.4301) and flexible 2 m PTFE protective hose, stainless steel-reinforced, e.g. for laying on the tank floor where space is limited.

Immersible transducer T... E / EF

for hanging, with curved, firmly welded stainless steel tube and suspension hooks, easily relocatable and can therefore be used in different bathrooms.

Immersible transducer T... P

with PTFE protective hose, (2 m, flexible), stainless steel reinforced (1.4301), e.g. for placing on the base of the tank.

Immersible transducer T... B

with stainless steel bolt fastening through the wall, as through no disruptive cables in the work area. The cable routing to the generator is outside the tank.

Flat oscillating plate P

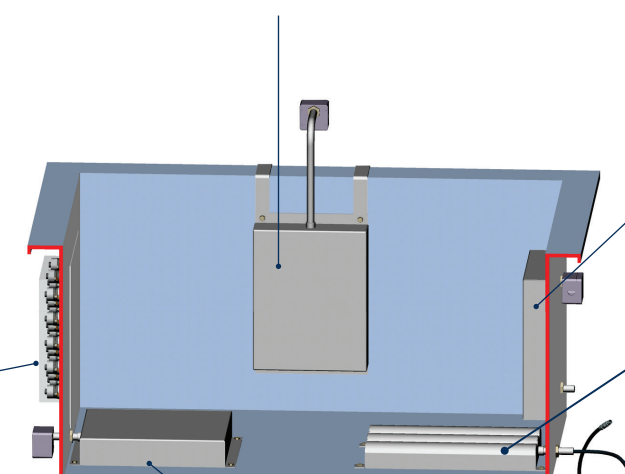
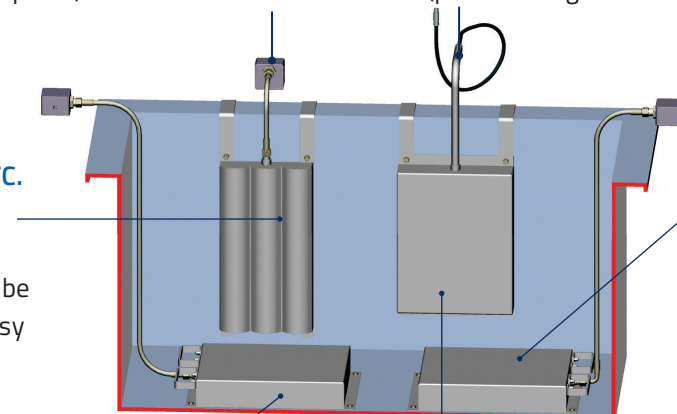
for installation in the tank with cover as contact protection.

CONVEXON Immersible transducer TC... RF

with stainless steel pipe feed-through the wall, with fixed cable.

Immersible transducer T... R

with pipe feed-through made of Stainless steel through the wall.



SONOREX TECHNIK

High-performance ultrasonic generators LG

Powerful generators are used to operate the high-performance immersible transducers and flat transducer plates

Module generators LG

The microprocessor-controlled ultrasonic generators-
ratoren LG deliver RF power up to max. 9.0 kW at
25 kHz or 40 kHz.

The selection of the generator with power and
operatingmodules depends on the total output of the
ultrasonic oscillating systems to be connected to and
the desired controllability of the application.

At the heart of the ultrasonic generators are power
modules up to 1.5 kW with control of all operating para-
meters by an on-board microprocessor.



Rear: LG 8008 D – 8.0 kW,
Front, from left to right: LG 4004 F – 4.0 kW and
LG 3020 T – 3.0 kW

Operating and power modules for LG generators

SM 3 control module

- Stepless adjustment of the target power 10-100% via rotary control
- START-STOP switch for switching the HF output on / off



Processor module PRO 3

- Customised programming of individual power modules
- Degassing function
- Error display



Power modules M 1003 and M 1503

- LEDs signal the operating status
- Module switch for individual activation of individual powermodules
- Power consistency $\pm 2\%$
- Open-circuit, short-circuit and overload-proof



Do you have any questions about our high-performance LG ultrasonic generators?
Our experts will be happy to advise you individually on request!

SONOREX TECHNIK

Module concept LG generators

Proven modular technology – reliable and powerful, with interchangeable operating and power modules

Modular

All modules of the LG generator can be easily inserted and replaced from the front. The settings are made via the SM 3 or PRO 3 operating modules, while the power is output via the M power modules.

Flexible

To increase the generator output, additional power modules are simply inserted into free slots. Mixed configurations with modules of different frequencies (25 or 40 kHz) and outputs are possible.

Communicative

The rear connections for remote control and the RS 232 serial interface allow the generators to be integrated into higher-level monitoring and control systems.

Ultrasonic generators

Table housing (T) up to 3.0 kW

Dimensions (l × w × h): 218 × 405 × 198 mm
Mains connection: 230 V~ ($\pm 10\%$) 50 / 60 Hz

Operating modules

Power modules



Industrial enclosure (F) up to 6.0 kW

Dimensions (l × w × h): 488 × 405 × 203 mm
or 19" device rack
for switch cabinet installation
Mains connection: 400 V 3N~ ($\pm 10\%$) 50 / 60 Hz



Industrial enclosure (D) up to 9.0 kW

Dimensions (l × w × h): 488 × 405 × 425 mm
or 19" device rack
for switch cabinet installation
Mains connection: 400 V 3N~ ($\pm 10\%$) 50 / 60 Hz





TG 1503 – 1.5 kW TG 3003 – 3.0 kW

TG 1503 and TG 3003 compact generators – specially designed for plant construction

The microprocessor-controlled ultrasonic generators TG 1503 and TG 3003 deliver HF power up to max. 3.0 kW at 25 kHz or 40 kHz, with TG 3003 a mixed configuration is also possible.
The compact design enables installation in a standard control cabinet, and wall mounting is possible using mounting brackets (optional).

Compact generators TG 1503
Dimensions (l x w x h): 250 x 460 x 110 mm
Mains connection: 230 V~ (± 10 %) 50/60 Hz

Compact generators TG 3003
Dimensions (l x w x h): 250 x 460 x 160 mm
Mains connection: 230 V~ (± 10 %) 50/60 Hz

Remote control / Control

Remote control



Remote control FS 15 L

The generators can be switched on and off with an external control contact via the connection socket on the rear.

FS 7: Remote control cable, 7 m long, with plug on one end

FS 15 L: Remote control with timer 1-15 min and continuous operation, cable with plug, 7 m long

RS 232 interface for PLC or PC



Generator SPS

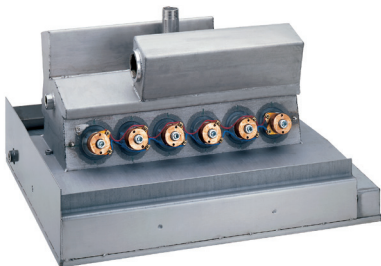
The generator can be integrated into higher-level control and monitoring systems via the interface. The modules are controlled directly by the PLC at.

Do you have any questions about our high-performance ultrasonic generators TG? Our experts will be happy to advise you individually on request!

Customised equipping with ultrasonic oscillating systems

Examples of assemblies

Tubs, basins, plates, flanges, pipes and other metal assemblies are fitted with ultrasonic transducer systems directly for cleaning purposes or other sonication tasks if the use of immersible transducers or flat transducer plates is not possible. The transducer systems are bonded to the outersurfaces in such a way that the sound effect is directed into the liquid or onto an object in the liquid.



Fouldard basin for the sonication of colour fleets



Probe flange of a refractometer



Polarimeter tube for analysis

Project planning notes
The intended mounting surfaces must be flat. The power per ultrasonic transducer system is max. 50 watts. The transducer systems can be fitted with an aluminium cover (degree of protection IP 20), which provides protection against contact but not against splash water.

Ultrasonic oscillating systems	PD 40 12	PD 25 17
Frequency [kHz]	40	25
Diameter of adhesive surface per system [mm]	at least 55	min. 65
Installation height without cover [mm]	55	77
Installation height with cover [mm]	70	90
Ultrasonic generator TG 50 / Z to TG 500 / Z		
Number of possible oscillating systems [pcs.]	1 to 10	1 to 10
HF output power [W]	30-500	30-500
Ultrasonic generator LG 1001 T to LG 3020 T / PRO Ultrasonic generator TG 1503 or TG 3003		
Number of possible oscillating systems [pcs.]	6 to 60	6 to 60
HF output power [W]	300-3.000	300-3.000

Other assembly variants – also for curved surfaces, e.g. pipes – on request.

Small generators TG 50-TG 500 / Z for connection to special assemblies

TG generators
HF power up to 500 W
Ultrasonic frequency:
40 kHz or 25 kHz



TG 50



TG 100 Z

Mains connection:
230 V~ (± 10 %), 50/60 Hz
alternative:
115 V~ (± 10 %), 50/60 Hz

TICKOPUR cleaning preparations

Highly efficient cleaning – only if the chemistry is right

05



TICKOPUR

Cleaning concentrates for ultrasonic cleaning, matched to material and contamination.

from page 100



Accessories

Dosing aids

page 116



FAQ – Preparations

The most important questions – briefly answered.

page 117

TICKOPUR – Cleaning preparations

Universal use and special preparations to fulfil your process requirements

For use in ultrasonic cleaning, BANDELIN offers a range of effective TICKOPUR cleaning preparations for a variety of cleaning requirements in industry, service and maintenance. Regardless of whether a mild or intensive cleaning agent is required – reliable results are achieved with the high-quality preparations, resources are saved and valuable time and labour are used effectively in the daily workflow. The TICKOPUR cleaning preparations are formulated for use in ultrasonic baths. With their properties and

application ranges, they comprehensively fulfil the requirements of aqueous (parts) cleaning. The preparations are formulated to promote cavitation, this means: the optimum interaction of ultrasound and preparation – expertise to the benefit of the user.

All preparations are, like the ultrasonic devices, Quality – Made in Germany.

The right cleaning preparation for optimum cleaning success

In addition to ultrasonic power, dosage, sonication duration and temperature, specially formulated cleaning products are also required to achieve optimum cleaning results in the ultrasonic bath. Specially adapted means that the preparations support the ultrasonic effect through their cavitation-promoting formulations. The

usual indication that preparations are also suitable for ultrasound does not cover the same performance. The choice of preparation is always a connection between the items to be cleaned (material) and the uncleanliness. Specific details can be found in the Descriptions of the preparations on the following pages the pages.

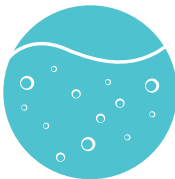
Demulsifying cleaners

Greases and oils float on the surface and are thus easy to remove. The service life of the cleaning-bath is extended by discharging the oil and greasecontaining impurities from the cleaning solution using an oil separator. Recontamination with oil or grease during the removal of the items to be cleaned from the cleaning solution is prevented.



Emulsifying cleaners

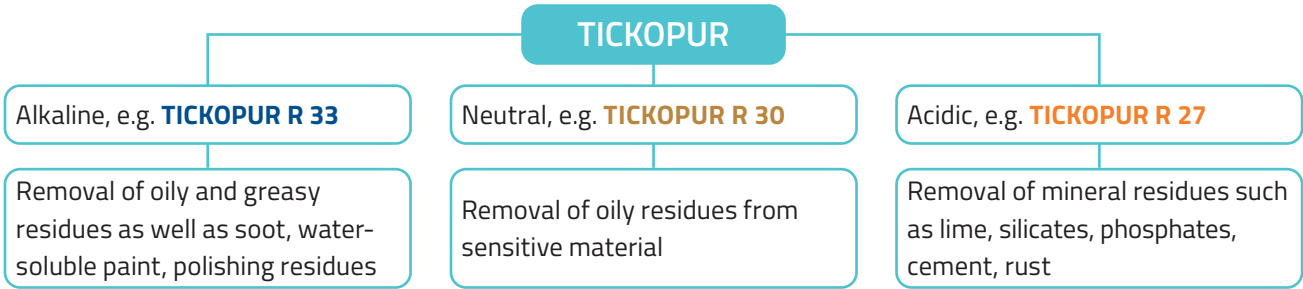
Grease and oil removed from the surface of the parts are bound by the cleaner and kept in suspension. There is no recontamination when the cleaned parts are removed from the bath fluid.



Special feature of TICKOPUR R 33:

It is a cleaning preparation with predominantly emulsifying properties. If the solution is left to stand for a longer period of time without ultrasound exposure, a demulsifying effect occurs in the cleaning solution, which can be utilised when using oil separation devices.

Important note: Only drinking water without the addition of cleaning agents does not clean. Household detergents are not suitable due to their ingredients and can even damage the items to be cleaned and the ultrasonic cleaner. Do not use pure demineralised water without the addition of cleaning agents. Do not use flammable or explosive liquids directly in the oscillating tank!



TICKOPUR products at a glance

Product name	Title	emulsifying demulsifying	Special feature	pH value*	page
Alkaline					
TICKOPUR R 33	Universal cleaner	demulsifying emulsifying	covers a large number of applications	11.1	103
TICKOPUR TR 7	Universal cleaner	demulsifying	silicate-free	8.9	104
TICKOPUR TR 13	Intensive cleaner	demulsifying	silicate-free	12.1	105
TICKOPUR RW 77	Special cleaner	emulsifying	with ammonia	10.2	106
TICKOPUR R 60	Intensive cleaner	emulsifying	phosphate-free, silicate-free	12.3	107
TICKOPUR R 32	Special cleaner	emulsifying	free of complexing agents	11.1	108
TICKOPUR R 36	Special cleaner	demulsifying	surfactant-free, low-foaming	11.1	109
TICKOPUR TR 14	Flux remover	-	surfactant-free, non-foaming, with ammonia	10.7	110
Neutral					
TICKOPUR R 30	Neutral cleaner	emulsifying	neutral	7.0	111
Sour					
TICKOPUR R 27	Special cleaner	emulsifying	Phosphoric acid base	1.9	112
TICKOPUR TR 3	Special cleaner	emulsifying	Citric acid base	2.8	113
TICKOPUR TR 2	Special cleaner	demulsifying	Phosphoric acid base silicate-free	3.6	114
TICKOPUR J 80 U	Deoxidising agent	-	cyanide-free	1.5	115
Preparation <i>without</i> cleaning					
TICKOPUR KS 1	Corrosion protection for ferrous metals	-	solvent-free	7.4	116

* at 1% in deionised water



All preparations are available in several container sizes, here 2, 5, 10 and 200 litres

More information bandelin.com/en/products/preparations/



TICKOPUR – From gentle to demanding cleaning tasks

BANDELIN electronic offers a range of effective TICKOPUR cleaning products for ultrasonic cleaning. The products are developed, tested and manufactured in close co-operation with the manufacturer DR.H.STAMM GmbH Chemische Fabrik for use in ultrasonic baths.

DR.H.STAMM GmbH Chemische Fabrik is certified according to ISO 9001 and ISO 13485.

The cleaning success depends on the implementation of the application steps described below, which are shown here for the large number of applications. The specific parameters can be found on the product pages.

We always recommend preliminary tests to determine the application parameters.

The dosage of the preparations

The specified dosage for the preparations applies to the number of applications, but can also be exceeded. The undiluted use of the concentrates without dosing in water is not intended.

For TICKOPUR preparations, a higher dosage can lead to a shorter sonication time. The saving of preparation can be compensated by a longer sonication duration. This must be checked for the specific application.

The dosing calculator on the <https://bandelin.com/en/service/dosing-calculator/> website supports the exact calculation of the dosing.

In terms of economic efficiency and sustainability, the basic principle is: as little as possible, as much as necessary.

The duration of use

The sonication duration applies to the majority of applications. Extending the sonication time beyond this may be necessary for individual applications to achieve the desired cleaning result. As a general rule, always select the shortest effective sonication time to protect the items to be cleaned. The exposure time without an ultrasonic bath is usually significantly shorter than twelve hours. It is up to the user to determine the necessary exposure time and it should be as short as possible.

The temperature in the application

Higher application temperatures can shorten the cleaning process or are necessary for successful cleaning. TICKOPUR cleaning solutions can be used at 20 – 60 °C / 80 °C, depending on the preparation. The temperature of the bath must be selected depending on the material of the items to be cleaned, the type and strength of the soiling and the information on the preparation.

As a rule, the temperature of the cleaning solution should be between 50 – 60 °C is recommended. Thermolabile materials should be cleaned at a lower temperature.

Rinsing after use

Rinse thoroughly with tap water, rinse with deionised water for stain-free drying. Rinsing at higher temperatures can support the drying of the items to be cleaned

Temporary corrosion protection

The temporary corrosion protection is effective during application and is removed by rinsing after application. If corrosion protection is required after application, it must be applied afterwards.

Please note

The application parameters specified for the preparations apply to a large number of applications. Even within the specified values, the items to be cleaned may be exposed to stresses that can be avoided by customising the parameters.

We always recommend preliminary tests to determine the material resistance.

In individual cases, it may be necessary to use the preparations outside the specified areas. The use of the preparations outside the specified areas requires a prior material compatibility test of the cleaning material.

Shelf life of the cleaning preparations

The shelf life of originally sealed cleaning and deoxidising preparations from DR. H. STAMM GmbH is at least six years from the date of manufacture, which is indicated in the form YYMMDD after the designation LOT, provided that the generally accepted storage conditions are observed.

TICKOPUR R 33

Universal cleaner – mildly alkaline

Concentrate for mildly alkaline ultrasonic cleaning, enables intensive cleaning and degreasing, thorough and gentle cleaning, with a universal, wide range of applications. Can also be used for light metals and includes temporary corrosion protection.

- Very high cleaning effect in the ultrasonic bath
- Very short ultrasonic treatment times with low application concentration
- Economical due to low application concentration
- Gentle on materials, very high material compatibility
- Caution with aluminium, tin and zinc
- With temporary corrosion protection
- Residue-free rinsing
- Emulsifying and demulsifying, see information p. 100
- Extension of the bath service life when using oil separation
- Mildly alkaline
- Biodegradable

TICKOPUR R 33 is a concentrate for cleaning and degreasing in ultrasonic baths as well as in immersion baths and for wipe cleaning.

Removes general impurities, organic and inorganic residues, impurities from workpiece processing such as drilling, grinding, polishing and lapping residues, oily and greasy impurities, soot, pigments, gumming and waxes, light combustion and coking residues, distillation residues, oily and greasy contaminants, soot, pigments, resin and waxes, light combustion and coking residues, distillation residues

from

Tools, workpieces, disassembled and undisassembled machines and their components, devices and parts in industry, trade and service as well as objects in analytical, optical glasses, occupational safety equipment (PPE)

from

Metal (including light metal), glass, ceramics, porcelain, plastic and rubber.

Examples of applications for TICKOPUR R 33:

Turned and milled parts, electrostatic filters, injection moulds, filters, tools, parts to be bonded, tabletting stamps, respiratory masks

Application in an ultrasonic bath
(dosage · exposure time):
3-5 % · 1-10 min

Application without ultrasound
(dosage · exposure time):
3-10 % · max. 12 h

For heavy soiling, heat up to 80 °C.
Observe the notes on the temperature / exposure time of the solutions on page 102.

EXAM-certified for ultrasonic application.

Parts made of aluminium, tin and zinc should initially be sonicated/inserted at max. 50 °C for no longer than 3 minutes, then continue treatment under visual inspection (change in material of the items to be cleaned). Parts made of aluminium, brass and copper may discolour.

Active ingredient base: surfactants, phosphate, silicate, complexing agent
mildly alkaline, pH 11.1 at 1% in deionised water, biodegradable.

Litres	1	2	5	10	200
Code No.	830	883	831	6023	837



TICKOPUR TR 7

Universal cleaner
demulsifying – silicate-free – mildly alkaline

Concentrate for mildly alkaline ultrasonic cleaning,
silicate-free and demulsifying formulation, with
temporary corrosion protection.

- Silicate-free
- Very high cleaning effect in the ultrasonic bath
- Very short ultrasonic treatment times with low application concentration
- Economical due to low application concentration
- High material compatibility
- With temporary corrosion protection
- Residue-free rinsing
- Demulsifying
- Extension of the bath service life when using an oil separator
- Mildly alkaline
- Biodegradable

TICKOPUR TR 7 is a concentrate for gentle cleaning and degreasing in ultrasonic baths, immersion baths and wipe cleaning. It is used in processes that would be impaired by silicates and are undesirable or disruptive.

Removes grease, oils, waxes, pigments, solder pastes and residues from processing such as drilling, grinding, polishing and lapping residues
from
Tools, workpieces, disassembled and undisassembled machines, devices and their components and parts
from
Metal, glass, ceramics, porcelain, plastic and rubber.

- Application examples for TICKOPUR TR 7:
- Solder pastes
 - Oily turned and milled parts
 - Mildly alkaline cleaning when using an oil separator

Preliminary tests on the resistance of sensitive materials are recommended.

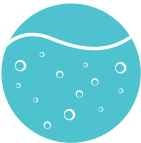
Application in an ultrasonic bath
(dosage · exposure time) :
0.1-5 % · 1-10 min

Application without ultrasound
(dosage · exposure time):
1-20 % · max. 12 h

For heavy soiling, heat up to 80 °C.
Observe the notes on the temperature / exposure time of the solutions on page 102.

Active ingredient base: surfactants, complexing agents, alcohols, carbonate
mildly alkaline, pH 8.9 at 1% in deionised water, biodegradable.

Litres	1	2	5	10	200
Code No.	836	867	838	6017	839



TICKOPUR TR 13

Intensive cleaner – demulsifying – silicate-free

Concentrate for intensive alkaline ultrasonic cleaning,
silicate-free and demulsifying, with temporary corrosion protection, for cleaning injection nozzles (diesel and petrol).

- Intensive cleaning
- Silicate-free
- Very high cleaning effect in the ultrasonic bath
- Very short ultrasonic treatment times with low application concentration
- Economical due to low application concentration
- High material compatibility
- Not for alkali-sensitive materials such as light metals, tin, zinc, non-ferrous metals
- With temporary corrosion protection
- Residue-free rinsing
- Demulsifying
- Extension of the bath service life when using oil separation
- Alkaline and biodegradable

TICKOPUR TR 13 is a concentrate for intensive cleaning and degreasing in ultrasonic baths as well as in immersion baths and wipe cleaning. It is used in processes that would be impaired by silicates and are undesirable or disruptive.

Removes resinification, combustion and coking residues, residues from processing such as drilling, grinding, polishing and lapping residues, soot, grease, oils, waxes, pigments and colour haze
from
Tools, workpieces, disassembled and undisassembled machines, devices and their components and parts
from
Steel, stainless steel, precious metals, glass, ceramics, porcelain, plastic and rubber.

- Application examples for TICKOPUR TR 13:
- Automotive injection nozzles (injectors for diesel and petrol injection)
 - Engine parts of combustion engines
 - Injection moulding tools
 - Spinnerets

Application in an ultrasonic bath
(dosage · exposure time):
0.1-10 % · 1-10 min

Application without ultrasound
(dosage · exposure time):
1-20 % · max. 12 h

For heavy soiling, heat up to 80 °C.
Observe the notes on the temperature / exposure time of the solutions on page 102.

- Woodworking tools
- Soldered parts

Not for alkali-sensitive materials such as light metals, tin, zinc, non-ferrous metals.

Active ingredient base: surfactants, sodium hydroxide, complexing agents, alcohols
alkaline, pH 12.1 at 1% in deionised water, biodegradable.

Litres	1	2	5	10	200
Code No.	844	872	848	6018	853



TICKOPUR RW 77

Special cleaner – with ammonia – phosphate-free

Concentrate for mildly alkaline ultrasonic cleaning and degreasing, highly effective for heavy soiling.

- Based on surfactants and ammonia
- Phosphate-free
- Very high cleaning effect in the ultrasonic bath
- Very short ultrasonic treatment times with low application concentration
- Economical due to low application concentration
- High material compatibility
- Alkali-sensitive materials can be attacked. Take care with light metals, especially aluminium.
- Residue-free rinsing
- Emulsifying
- Mildly alkaline
- Biodegradable

TICKOPUR RW 77 is a concentrate for the powerful removal of heavy soiling and for degreasing in ultrasonic baths as well as in immersion baths and in wipe cleaning. It is used in processes that would be impaired by phosphates and are undesirable or disruptive.

Use only in well ventilated rooms or under the fume cupboard.

Removes resinification, combustion residues as well as soot, pigments and colour haze, contamination from grease, oils, waxes, oxides, fluxes and heavy residues from workpiece processing such as drilling, grinding, polishing and lapping residues from

Workpieces and tools, devices and their components, printed circuit boards in service from

Steel, stainless steel, non-ferrous metals (slightly deoxidising effect on brass and copper), precious metals (slightly deoxidising effect), glass, ceramics, porcelain, plastic and rubber.

Application examples for TICKOPUR RW 77:

- Brass cartridge case cleaning for reloading
- Printed circuit boards in the service area
- Watch cleaning and jewellery cleaning, light deoxidation, depending on the duration of use

Application in an ultrasonic bath
(dosage · exposure time):
5-10 % · 1-10 min

Application without ultrasound
(dosage · exposure time):
10 % · max. 12 h

For heavy soiling, heat up to 80 °C.
Observe the notes on the temperature / exposure time of the solutions on page 102.

- Precious metal coins – thorough cleaning and slight deoxidisation, depending on the duration of use
- Cleaning and optical refurbishment of brass parts such as e.g. nozzles

TICKOPUR RW 77 is formulated for heavier soiling. We recommend checking the material resistance of the cleaning product by carrying out preliminary tests.

Alkali-sensitive materials may be attacked. Take care with light metals, especially aluminium. Reduce the sonication / exposure time to a minimum (< 3 min).

Active ingredient base: surfactants, complexing agents, alcohol, ammonia
mildly alkaline, pH 10.2 at 1 % in deionised water, biodegradable.

Litres	1	2	5	10	200
Code No.	870	898	871	6026	-



TICKOPUR R 60

Intensive cleaner – phosphate-free – highly alkaline

Concentrate for intensive, highly alkaline ultrasonic cleaning, formulated free of phosphate and silicate, for high cleaning requirements, with sodium hydroxide.

- Phosphate and silicate-free formulation
- Free from organic solvents
- Saponifying
- With temporary corrosion protection
- Very high cleaning effect in the ultrasonic bath
- Very short ultrasonic treatment times with low application concentration
- Economical due to low application concentration
- High material compatibility
- Not for alkali-sensitive materials such as light metals, tin, zinc and non-ferrous metals
- Residue-free rinsing
- Emulsifying
- Highly alkaline
- Biodegradable

TICKOPUR R 60 is a concentrate for the intensive removal of heavy soiling and degreasing in ultrasonic baths as well as in immersion baths and wipe cleaning. It is used in processes that would be impaired by phosphate and silicate and are undesirable or disruptive.

Removes coking residues, resinification, soot, grease, oils, waxes, pigments, colour haze, certain varnish and paint residues, residues from workpiece processing such as drilling, grinding, polishing and lapping residues, as- shed glue and plastic residues, support materials from 3D printing in an aqueous process.

from Workpieces and tools and their components, disassembled and undisassembled machines and their components, 3D printing

Steel, stainless steel, precious metals, glass, ceramics, porcelain, plastic and rubber.

Not for alkali-sensitive materials such as light metals, tin, zinc and non-ferrous metals.

Application in an ultrasonic bath
(dosage · reaction time) :
2 – 20 % · 1 – 10 min

Application without ultrasound
(dosage · contact time):
10 – 30 % · max. 12 h

For heavy soiling, heat up to 80 °C.
Observe the notes on the temperature / exposure time of the solutions on page 102.

Application examples for TICKOPUR R 60:

- Filters
- Squeegees
- Nozzles
- Forms of vulcanisation
- Saw blades
- Injection moulded parts with ashed impurities
- 3D prints

Active ingredient base: sodium hydroxide, surfactants, complexing agents
strongly alkaline, pH 12.3 at 1 % in deionised water, biodegradable.

Litres	1	2	5	10	200
Code No.	820	896	818	6025	845



TICKOPUR R 32

Special cleaner – free of complexing agents

Concentrate for mildly alkaline ultrasonic cleaning, formulated for processes and cleaning requirements, where no complexing agents may be used.

- Complexing agent-free formulation
- With corrosion protection
- Very high cleaning effect in the ultrasonic bath
- Very short ultrasonic treatment times with low application concentration
- Economical due to very low application concentration (dosage from 0.25 %)
- High material compatibility, parts made of aluminium, tin or zinc can be attacked
- Residue-free rinsing
- Emulsifying
- Mildly alkaline
- Biodegradable

TICKOPUR R 32 is a concentrate for cleaning and degreasing in ultrasonic baths as well as in immersion baths and wipe cleaning. It is used in processes that would be impaired by complexing agents and are undesirable or disruptive.

Removes organic and inorganic residues, oily and greasy impurities and distillation residues **from** Tools, workpieces, disassembled and undisassembled machines and their components, devices and parts in industry, trade and service as well as objects in analytics **from** Metal, including light metal, glass, ceramics, porcelain, plastic and rubber.

Parts made of aluminium, tin and zinc should initially be sonicated/inserted at max. 50 °C for no longer than 3 minutes, then continue treatment under visual inspection (change in material of the items to be cleaned). Brass and copper parts may discolour.

Application in an ultrasonic bath
(dosage · exposure time):
0.25–5 % · 1–10 min

Application without ultrasound
(dosage · exposure time):
1–10 % · max. 12 h

For heavy soiling, heat up to 80 °C.
Observe the notes on the temperature / exposure time of the solutions on page 102.

- Application examples for TICKOPUR R 32:
- Recommended for use on burnished surfaces. The black oxidation is not affected by the special formulation (without complexing agents).
 - Formulated for processes that require complexing agent-free aqueous cleaning solutions

Prepare the solution with deionised water or very soft tap water to prevent turbidity.

Active ingredient base: surfactants, phosphate, silicate alkaline, pH 11.1 at 1% in deionised water, biodegradable.

Litres	1	2	5	10	200
Code No.	828	882	832	6022	842



TICKOPUR R 36

Special cleaner – surfactant-free

Concentrate for mildly alkaline ultrasonic cleaning, formulated for low-foaming processes and surfactant-free cleaning requirements.

- Surfactant-free and low-foaming formulation
- Very high cleaning effect in the ultrasonic bath
- Very short ultrasonic treatment times with low application concentration
- Economical due to very low application concentration (dosage from 0.25 %)
- High material compatibility
- Residue-free rinsing
- Demulsifying
- Mildly alkaline
- Biodegradable

TICKOPUR R 36 is a concentrate for cleaning and degreasing in ultrasonic baths, immersion baths, wipe cleaning and high-pressure cleaning. It is used in processes that would be impaired by surfactants and are undesirable or disruptive.

Removes organic and inorganic residues, oily and greasy impurities and distillation residues **from** Tools, workpieces, disassembled and undisassembled machines and their components, devices and parts in industry, trade and service as well as objects in analytics **from** Metal, including light metal, glass, optical glass, ceramics, porcelain, plastic and rubber.

- Application examples for TICKOPUR R 36:
- Recommended for use in the BANDELIN SONOREX CNp high-performance ultrasonic bath with pulsed vacuum, consequently in the CNp process
 - Formulated for processes that require surfactant-free aqueous cleaning solutions
 - Lamella cleaning (textile lamellas) e.g. in the BANDELIN SONOREX TECHNIK L220/ L320

Application in an ultrasonic bath
(dosage · exposure time) :
0.25–5 % · 1–10 min

Application without ultrasound
(dosage · exposure time):
1–10 % · max. 12 h

For heavy soiling, heat up to 80 °C.
Observe the notes on temperature / Exposure time of the solutions on page 102.

Active ingredient base: phosphate, silicate, complexing agent
mildly alkaline, pH 11.1 at 1% in deionised water, biodegradable.

Litres	1	2	5	10	200
Code No.	852	884	854	6024	858



TICKOPUR TR 14

Flux remover – alkaline – surfactant-free

Concentrate for alkaline ultrasonic cleaning,
Removal of fluxes from printed circuit boards during
production.

- Contains ammonia
- Free from organic solvents
- Surfactant-free
- Non-foaming
- Saponifying
- Very high cleaning effect, only in an ultrasonic bath
- Very short ultrasonic treatment times with low ap-
plication concentration
- Economical due to low application concentration
- Gentle on materials, very high material compatibility
- Caution with alkali and water-sensitive components
- Residue-free rinsing
- Emulsifying
- Alkaline
- Biodegradable

TICKOPUR TR 14 is a concentrate for the removal of
resin fluxes and unsoldered solder pastes in ultrasonic
baths. It is used in processes that would be impaired by
foaming preparations and are undesirable or disruptive.

Use only in well ventilated rooms or under the fume
cupboard.

Removes resin fluxes, solder pastes, ionic and
non-ionic residues, drilling and grinding residues,
fingerprints, greases and oils
from
assembled and unassembled printed circuit boards,
solder frames, electronic components and assemblies
from
Metal, glass, ceramic, plastic, rubber.

Application examples for TICKOPUR TR 14:

- Cleaning after processing assembled and
unassembled PCBs
- TICKOPUR RW 77 is available in the service area.

Application in an ultrasonic bath
(dosage · exposure time · temperature):
10% · 0.5–3 min · 60–70 °C

Observe the notes on the temperature / exposure time
of the solutions on page 102.

Preliminary tests on the resistance of sensitive
materials are recommended.

High cleaning effect, which, however, only becomes
effective in conjunction with the ultrasonic effect in the
ultrasonic bath and increased temperature.

Active ingredient base: complexing agent, carbonate,
silicate, sodium hydroxide, ammonia
alkaline, pH 10.7 at 1 % in deionised water,
biodegradable.

Litres	1	2	5	10	200
Code No.	859	873	861	6019	864



TICKOPUR R 30

Neutral cleaner

Concentrate for neutral, material-friendly ultrasonic
cleaning, effective against light soiling and for degrea-
sing, with temporary corrosion protection.

- Very high cleaning effect in the ultrasonic bath
- Very short ultrasonic treatment times with low
application concentration
- Economical due to very low application
concentration
- Gentle on materials, very high material compatibility
- With temporary corrosion protection
- Residue-free rinsing
- Emulsifying
- Neutral
- Biodegradable

TICKOPUR R 30 is a concentrate for the particularly
gentle removal of light soiling and for degreasing in
ultrasonic baths as well as in immersion baths and for
wipe cleaning.

TICKOPUR R 30 is suitable for many materials and has
a very high material compatibility due to its neutral for-
mulation. Preliminary tests on the resistance of highly
sensitive materials are recommended.

Removes light residues from workpiece processing such
as grinding, polishing and lapping residues, grease and
oil films, light sooting (carbon black) and light soiling
from
Workpieces and tools from processing, disassembled
and undisassembled machines and their components,
devices and their components
from
Metal (including light metal), glass, ceramics, porcelain,
plastic and rubber.

Application in an ultrasonic bath (dosage · exposure time):
1–5 % · 1–10 min

Application without ultrasound (dosage · Exposure time):
1–10 % · max. 12 h

For heavy soiling, heat up to 60 °C.
Observe the notes on the temperature / exposure time of
the solutions on page 102.

Application examples for TICKOPUR R 30:

- sensitive workpieces and tools from processing
and service

TICKOPUR R 30 is suitable for all materials commonly
used in laboratories and has a very high material com-
patibility. Preliminary tests on the resistance of highly
sensitive materials are recommended.

Active ingredient base: surfactants, complexing agents
Corrosion inhibitors
neutral, pH 7 at 1% in deionised water, biodegradable.

Litres	1	2	5	10	200
Code No.	810	879	811	6021	814



TICKOPUR R 27

Special cleaner – based on phosphoric acid

Concentrate for acidic ultrasonic cleaning, highly effective against heavy mineral residues, rust and metal oxides, grease and oil films.

- Phosphoric acid base
- Very high cleaning effect in the ultrasonic bath
- Very short ultrasonic treatment times with low application concentration
- Economical due to low application concentration
- Suitable for acid-resistant materials
- Not for light metals, tin, zinc, damaged chrome plating
- For unprotected steel: depending on the alloy, material changes are possible
- Residue-free rinsing
- Emulsifying
- Sour
- Biodegradable

TICKOPUR R 27 is a concentrate for descaling, rust removal, grease and oil film removal in ultrasonic baths as well as in immersion baths and wipe cleaning.

Removes heavy mineral residues such as lime, silicates, phosphates, cements as well as rust, tarnish, metal oxides, grease and oil films from Workpieces and tools, machine parts, chains, fittings from Steel, stainless steel, precious metals, glass, ceramics, porcelain, plastic and rubber.

Application examples for TICKOPUR R 27:

- Water-bearing fittings, nozzles, filters, aerators, pump housings, valves, water baths.
- Water meter, water filter, humidifier,
- Bath lift (in chronological order according to TR 13)
- Chains
- Deoxidising copper contacts

Application in an ultrasonic bath (dosage · exposure time) : 5 % · 2 – 10 min

Application without ultrasound (dosage · exposure time): 10 – 20 % · max. 12 h

For heavy soiling, heat up to 60 °C. Observe the notes on the temperature / reaction time of the solutions on page 102.

Not for light metals, tin, zinc or damaged chrome plating.

For unprotected steel: depending on the alloy, material changes are possible.

Active ingredient base: phosphoric acid, surfactants acidic, pH 1.9 at 1% in deionised water, biodegradable.

Litres	1	2	5	10	200
Code No.	815	874	816	6020	826



TICKOPUR TR 3

Special cleaner – based on citric acid – with corrosion protection

Concentrate for weakly acidic ultrasonic cleaning based on citric acid, particularly gentle on materials, with temporary corrosion protection.

- Citric acid base
- Very high cleaning effect in the ultrasonic bath
- Very short ultrasonic treatment times with low application concentration
- Economical due to low application concentration
- Gentle on materials, very high material compatibility
- Caution with aluminium, tin, zinc
- Brass and copper are slightly brightened
- With temporary corrosion protection
- Residue-free rinsing
- Emulsifying
- Weakly acidic
- Biodegradable

TICKOPUR TR 3 is a concentrate for cleaning general soiling, descaling, removing flash rust and degreasing in ultrasonic baths as well as in immersion baths and wipe cleaning.

Removes mineral residues, flash rust, oxides, pigments, impurities from workpiece processing such as drilling, grinding, polishing and lapping residues, oil and grease-like impurities, light combustion and coking residues, distillation residues from Workpieces and tools, devices and their components as well as parts, disassembled and undisassembled machines and their components from Steel, stainless steel, metal (including non-ferrous and light metals), glass, ceramics, porcelain, plastic and rubber.

Application examples for TICKOPUR TR 3:

- Filters, optical glasses, device components
- Used for the gentle removal of impurities from workpiece processing of non-ferrous and light metals.

Application in an ultrasonic bath (dosage · exposure time): 5 % · 1 – 10 min

Application without ultrasound (dosage · exposure time): 1 – 20 % · max. 12 h

For heavy soiling, heat up to 50 °C. Observe the notes on the temperature / exposure time of the solutions on page 102.

Parts made of aluminium, tin and zinc should initially be sonicated / soaked at max. 50 °C for no longer than 3 minutes, then continue treatment under visual inspection (change in material of the items to be cleaned). Brass and copper parts are slightly brightened.

Preliminary tests on the resistance of sensitive materials of the cleaning goods are recommended.

Active ingredient base: citric acid, surfactants, corrosion inhibitor slightly acidic, pH 2.8 at 1% in deionised water, biodegradable.

Litres	1	2	5	10	200
Code No.	913	923	935	6016	973



TICKOPUR TR 2

Special cleaner – demulsifying – acidic – silicate-free

Concentrate for acidic ultrasonic cleaning, particularly gentle on materials, with temporary corrosion protection.

- Phosphoric acid base
- Silicate-free
- Very high cleaning effect in the ultrasonic bath
- Very short ultrasonic treatment times with low application concentration
- Economical due to very low application-concentration (dosage from 0.1 %)
- Gentle on materials; caution with light metal, tin and zinc
- With temporary corrosion protection
- Residue-free rinsing
- Demulsifying
- Extension of the bath service life when using oil separation
- Sour
- Biodegradable

TICKOPUR TR 2 is a concentrate for cleaning general soiling, descaling, removing flash rust and degreasing in ultrasonic baths as well as in immersion baths and wipe cleaning. It is used in processes that would be impaired by silicate and are undesirable or disruptive.

Removes mineral residues, flash rust, pigments, soiling from workpiece processing such as drilling, grinding, polishing and lapping residues, oily and greasy soiling and waxes

from Workpieces and tools, disassembled and undisassembled machines and their components and devices and their components as well as for parts from

Metal (also light metal to a limited extent), glass, ceramics, porcelain, plastic and rubber.

Application examples for TICKOPUR TR 2:

- Used for the gentle removal of grease and oil from workpiece machining

Application in an ultrasonic bath (dosage · exposure time):
0.1 – 5 % · 1 – 10 min

Application without ultrasound (dosage · exposure time):
1 – 20 % · max. 12 h

For heavy soiling, heat up to 80 °C.
Observe the notes on the temperature / exposure time of the solutions on page 102.

Parts made of aluminium, tin and zinc should initially be sonicated/inserted at max. 50 °C for no longer than 3 minutes, then continue treatment under visual inspection (change in material of the items to be cleaned). Parts made of aluminium, brass and copper may discolour.

For unprotected steel: depending on the alloy, material changes are possible.

Preliminary tests on the resistance of sensitive materials of the cleaning goods are recommended.

Active ingredient base: phosphoric acid, surfactants, corrosion inhibitor, alcohols
acidic, pH 3.6 at 1 % in deionised water, biodegradable.

Litres	1	2	5	10	200
Code No.	891	866	893	6015	851



TICKOPUR J 80 U

Deoxidising agent – ready to use – acidic – cyanide-free

Ready-to-use solution for acidic surfacedeoxidation, with tarnish protection and very short application time in indirect sonication.

- Ready to use
- Cyanide-free
- Very high deoxidising effect
- Application in the ultrasonic bath only in the insert vessel
- Very short ultrasound treatment times
- Residue-free rinsing
- Weakly acidic
- Biodegradable

TICKOPUR J 80 U is a ready-to-use solution for removing oxide and sulphide layers in the ultrasonic bath in indirect sonication or immersion processes.

Removes oxide and sulphide layers from Jewellery, coins, works of art, parts made of precious metals and their alloys from Precious metals and their alloys, copper, brass, bronze.

Not for light metals, steel, tin, zinc, pearls, coral, soft gemstones, parts with artificial oxidation and silver/ gold-plated parts.

Application examples for TICKOPUR J 80 U:

- Preparation of coins and busts, as well as other metallic artefacts
- Removal of interfering oxide layers before further processing
- Removal of interfering sulphide layers before further processing

Application in an ultrasonic bath (undiluted · Exposure time):
< 30 seconds, do not heat the solution (room temperature)

Application without ultrasound (undiluted · Exposure time):
< 3 minutes, do not heat the solution (room temperature)

Instructions for use:

- Preliminary tests on the resistance of sensitive materials of the cleaning goods are recommended.
- Deoxidise different metals in separate vessels.
- Thorough aqueous rinsing, if necessary passivate the items to be cleaned in an alkaline solution (TI-KOPUR R 33 or TICKOPUR RW 77).

Active ingredient base: non-ionic surfactants, thiourea, organic and inorganic acids, corrosion inhibitor slightly acidic, pH 1.5, biodegradable.

Litres	1	2	5	10	200
Code No.	880	914	881	6027	-



TICKOPUR KS 1

Corrosion protection for ferrous metals – neutral – non-greasy

Concentrate for the corrosion protection of ferrous metals in ultrasonic and immersion baths, solvent-free and non-greasy.

- Concentrate
- Solvent-free
- Non-greasy, even after drying
- Economical due to very low application dosage
- Very short ultrasound treatment times
- Residue-free removal in an aqueous solution / water
- Neutral
- Biodegradable

TICKOPUR KS 1 is a concentrate for the protection of ferrous metals for use in ultrasonic baths, as well as in wiping and immersion bath applications.

Removes corrosion from ferrous metals in warehouses-storage or before further processing

from

Tools, disassembled and undisassembled machines, devices and parts

from

Grey cast iron, carbide and unprotected steels of various alloys.

Application in an ultrasonic bath
(dosage · exposure time):
0.2 – 2.0 % · 5 sec – 2 min

Application without ultrasound
(dosage · exposure time):
0.5 – 2.0 % · 15 sec – 5 min

Solutions from 1.0 % that are prepared with city water (>25 °dH) may become cloudy.

Note: Heat the TICKOPUR KS 1 solution to 60–70° C so that the parts dry more quickly after treatment due to their own heat. The drying temperature of the parts should not exceed 120° C.

Active ingredient base: carboxylic acids, amines neutral, pH 7.4, biodegradable.

Litres	1	2	5	10	200
Code No.	-	6011	6012	-	-



Dosing aids

Dosing pump

This makes it easy to remove cleaning and disinfectant products from the canisters, spillage is reliably prevented.

	Suitable for	Code No.
Dosing pump ①	5 litre canister	268
Dosing pump ①	10 litre canister	2660
Measuring cup ②	100 ml	294

Measuring cup

For precise dosing of the volumes of cleaning or disinfectant preparations taken from the dosing table.



FAQ – Preparations

Should I rinse off the cleaning solution?

Rinsing is required in almost all cases of application, as the cleaning solution with the impurities it contains can dry up on the parts in spots and possibly react further with the surface (material attack, discolouration).

When does the cleaning fluid become cloudy?

This can occur if the drinking water used is too hard and/or the dosage is too low. In addition, the impurities introduced can cloud the solution.

When do cleaning solutions flocculate?

When preparing the cleaning solutions, ensure manual mixing after adding the concentrate. Ultrasound alone does not lead to sufficient circulation in the solution, so that precipitation or flocculation or even gel formation can occur at the water/concentrate phase boundaries. A simple method of mixing can already be used when preparing the solution for use: half of the required water is placed in the ultrasonic bath and then the concentrate is added. When subsequently topping up with the remaining amount of water, mixing takes place automatically from. Cleaning solutions can also flocculate during certain cleaning processes if the contamination reacts with the components of the cleaning solution. A long standing time of a solution can also lead to precipitation. Therefore, check the solution regularly and replace it at an early stage if necessary.

What does temporary corrosion protection mean for our cleaning products at ?

The corrosion protection is active during sonication in the bath, but is removed from the surface of the parts by a subsequent thorough aqueous rinse.

Can I add/re-add?

Adding or re-dosing should be avoided, as the components of the cleaning solution are bound differently, which can lead to a shift in the concentration of ingredients with undesirable effects in the event of re-dosing.

Can I mix the cleaning solution with other products?

Mixing the cleaning solution with other preparations is not permitted. The cleaning effect after mixing no longer corresponds to the product claim and can even lead to the solution becoming ineffective.

Caution! When mixing preparations, strong and/or dangerous chemical reactions may occur.

Is it possible to use it in the food sector?

Basically yes. These are aqueous formulations, whose ingredients are water-soluble and can be removed from the cleaned surfaces without leaving any residue by thorough aqueous rinsing.

Replacing the exhausted cleaning solution

The service life of the cleaning solution cannot be generally determined. Even if the cleaning solution is already saturated with impurities, this does not mean that it needs to be prepared again.

In practice, it has proven to be a good idea to only prepare the cleaning solution again when

- Cleaning takes significantly longer than with a fresh solution, but the cleaning result is still satisfactory
- Cleaning takes longer and the cleaning result is not satisfactory
- The cleaning result is not satisfactory.

As part of the process evaluation of the cleaning procedure, the user can also define individual, measurable parameters that require the cleaning solution to be replaced.

Subsequent dosing is not recommended.



Reactors

For use in process engineering and cleaning



**SONOREX TECHNIK
Sonoreactors**

SONOBLOC tube reactors for use in process engineering and cleaning.

from page 120



**SONOREX TECHNIK
Sonoreactors**

VORTEX vortex reactors for use in process engineering.

from page 122

SONOBLOC

Tube reactors for use in process engineering and cleaning



Properties

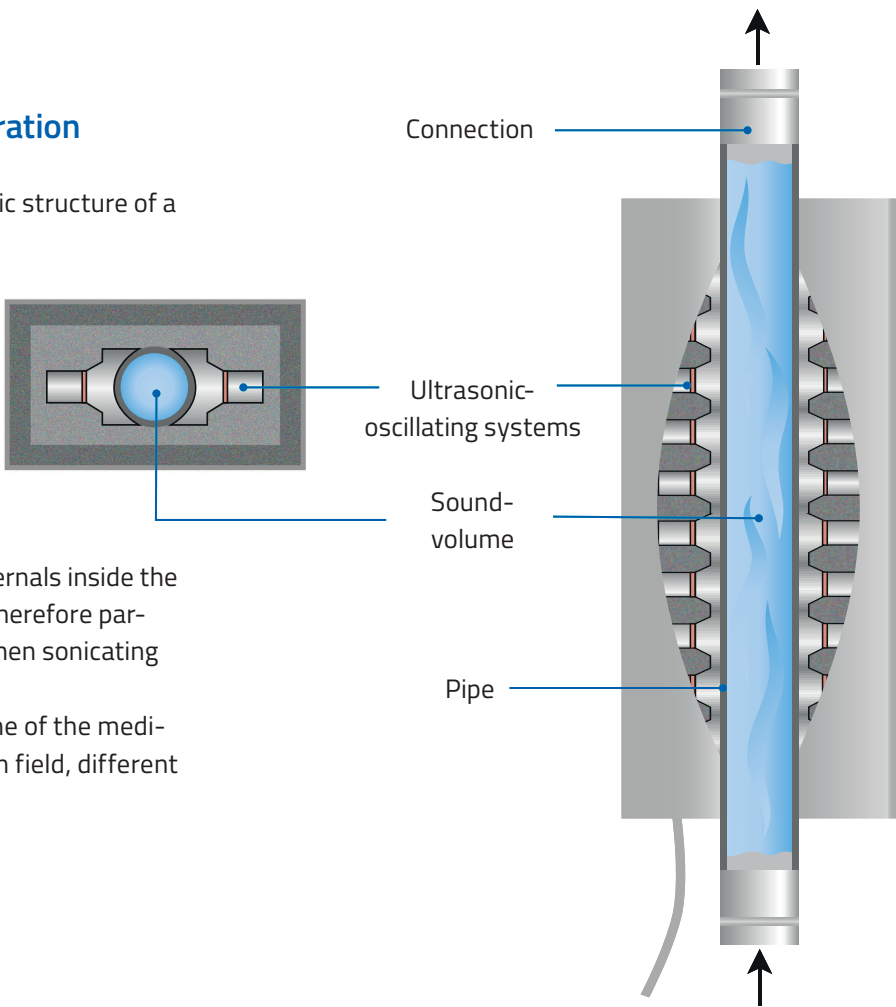
- Large-volume flow-through sonication across the entire pipe cross-section of the reactor
- Advantageous intensive sonication of thin and/or filamentous products due to pronounced focus zone in the reactor tube
- Space-saving narrow design for narrow parallel installations
- Optimised design for 25 kHz or 40 kHz ultrasonic operating frequency
- Easy scale-up for expandable series or parallel operation thanks to modular design
- Easy installation and versatile use thanks to victaulic connection technology; optionally with threaded, flanged or tri-clamp connections
- Extra long service life thanks to 3.6 mm thick stainless steel tube material 1.4404
- Standard version with housing degree of protection IP 30. For use in environments with high exposure to dust and humidity with housing protection – degree of protection IP 65.
- Reproducible results thanks to power control via a microprocessor-controlled ultrasonic generator.

Applications

- Intensive ultrasonic treatment of flexible filamentary products and continuous wire or ribbon-shaped profiles
- Acceleration of disintegration and/or decomposition of organic material to increase biogas yields and in the treatment of sewage sludge
- Support for the disinfection of fish farm recirculating water contaminated with germs and parasites
- Dispersing solids in liquids (pharmaceutical production)
- Support for disinfection (bacteriakilling) in water and wastewater treatment
- CO₂ degassing from aqueous reactants
- Efficient cleaning of greases, oils, emulsions and/or cracking residues during single and multi-wire cleaning
- Support for industrial and biotechnological processes in purification, disintegration, degassing and deagglomeration

Structure and mode of operation

The illustrations show the schematic structure of a type RB 8 tubular reactor. Tubular reactors enable intensive flow-through sonication of high volume flows in process engineering and are also used for wire cleaning. The powerful oscillation systems are fixed to the outside of the reactor tube at this design, which means that there is no need for internals inside the reactor tube. Tubular reactors are therefore particularly insensitive to blockages when sonicating substrates containing solids. Depending on the desired dwell time of the medium to be sonicated in the cavitation field, different reactor sizes are available at.



Technical data	RB 8-1002.01 - .04	RB 8-1004.01 - .04	RB 81-1002.01	RB 101-2002.01
Filling volume [litres]	2,4			6,4
Sonation volume [litres]	2,0			4,5
Flow rate [l/min]	1 – 100			1 – 100
Sonation distance [mm]	910			860
Power density, max. [W/l]	500			444
Nominal ultrasonic power [W]	1000			2000
Ultrasonic frequency [kHz]	25	40	25	25
Pipe dimensions (Ø × material thickness) [mm]	60,3 × 3,6			88,9 × 3,6
Pipe length incl. connections [mm]	.01 = 1215 / .02= 1215 / .03= 1100 / .04= 1215			1215
Pipe diameter, internal [mm]	53			81,7
Pipe material	Stainless steel, 1.4404			
Housing dimensions (l × w × h) [mm] (Ø × H) [mm]	260 × 120 × 990* -		285 × 150 × 1075 -	- 340 × 1000*
HF connection cable (EMC-protected), Quantity [pcs.] × length [m]	1 × 5			2 × 5
Internal pressure, max. [bar]	10			10
Weight, net [kg]	~ 35			~ 50
Degree of protection	IP 30		IP 65	IP 65
Ultrasonic generator (separate)	LG 1001 T			LG 2002 T

* incl. mounting bracket

SONOREX TECHNIK

Sonoreactors

VORTEX

Vortex reactors for use in process engineering



Properties

- High-intensity flow-through sonication through targeted rotation of the sonication medium in the reactor
- High process yield due to cavitation-intensive Ultrasonic near field in narrow reaction gap
- Efficient omnidirectional characteristic due to large-area reactor external assembly
- Wide range of applications thanks to single-frequency or TwinSonic design for 25 kHz and / or 40 kHz ultrasonic operating frequency
- Easy scale-up for expandable series or parallel operation thanks to modular design
- Simple installation and versatile use thanks to victaulic connection technology; optionally with threaded, flange or Tri-Clamp connections
- Long service life thanks to 2.6 mm thick stainless steel tube material 1.4404
- Reproducible results thanks to power control via a microprocessor-controlled ultrasonic generator

Applications

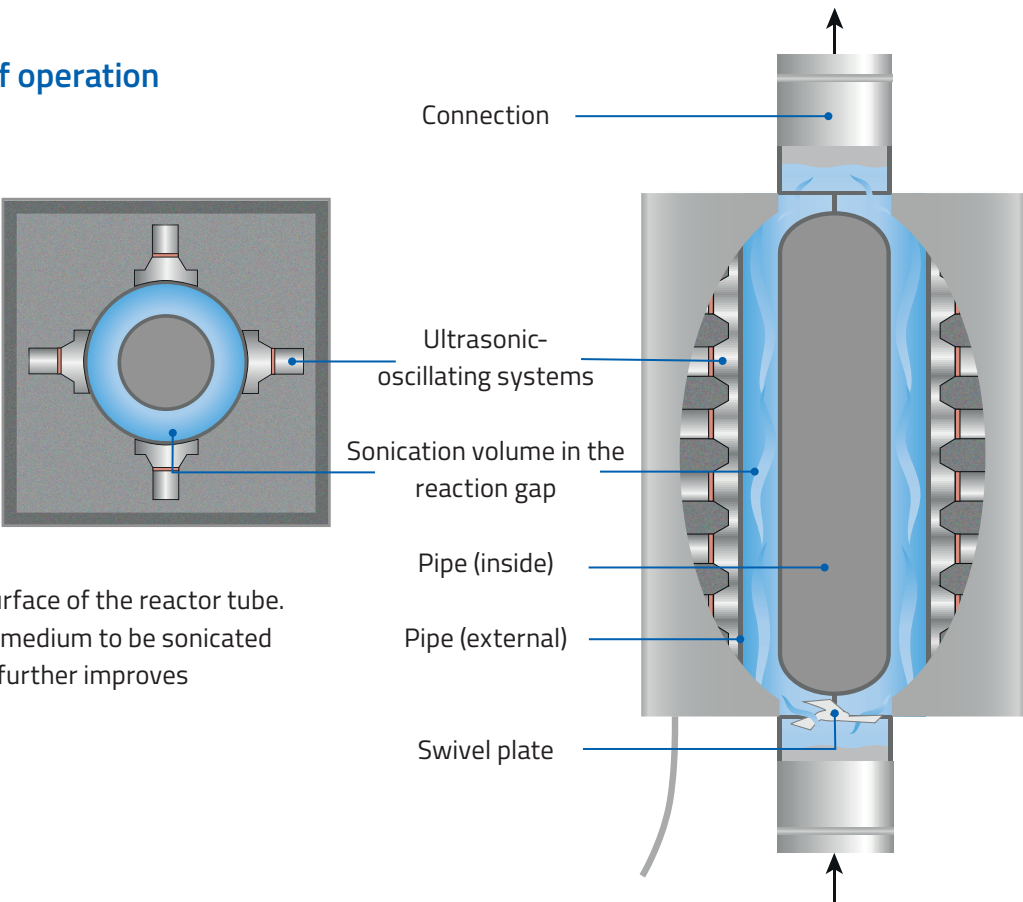
- Intensification of industrial, biotechnological and chemical processes (suspension, emulsification, Desagglomeration, reaction acceleration, degassing)
- Intensive degassing of dye and photographic casting solutions
- CO₂ degassing from aqueous reactants
- Support for disinfection (bacteriakilling) in water and wastewater treatment
- Sterilisation of organic ingredients in industrial rinsing liquids
- Support for the disinfection of fish farm recirculating water contaminated with germs and parasites
- Production of ultra-fine polishing pastes for the waferindustry
- Homogenising colour pigments in oil (colour production)



Two exemplary areas of application for sonoreactors; in the colour and cosmetics industries

Structure and mode of operation

The illustrations show the schematic structure of the type WB 4 vortex reactor. The vortex reactor enables the defined flow of the liquid medium to be sonicated through a double slit and guarantees homogeneous sonication on the particularly cavitation-intensive inner surface of the reactor tube. Additional turbulence of the medium to be sonicated as it enters the reactortube further improves homogenisation.



Technical data	WB 4-1402.01 - .04	WB 4-1503.01 - .04	WB 4-1604.01 - .04
Filling volume* [litres]	~5		
Sonication volume [litres]	2,9		
Flow rate [l/min]	1 – 50		
Sonication distance [mm]	500		
Power density, max. [W/l]	480	520	550
Nominal ultrasonic power [W]	1400	1500	1600
Ultrasonic frequency [kHz]	25	25 and 40	40
Pipe dimensions, inside / outside (Ø x material thickness) [mm]	104 x 2 / 139,7 x 2,6		
Pipe length incl. connections [mm]	.01 = 856 / .02= 856 / .03= 796 / .04= 856		
Pipe material	Stainless steel, 1.4404		
Housing dimensions (l x w x h) [mm]	290 x 290 x 642		
Reaction gap [mm]	15		
Solid particles	< 5 mm		
HF connection cable (EMC-protected), Quantity [pcs.] x length [m]	1 x 5	2 x 5	2 x 5
Internal pressure, max. [bar]	10		
Weight, net** [kg]	~ 50		
Degree of protection	IP 30		
Ultrasonic generator (separate)	LG 1510 T	LG 2002 T	LG 2002 T

* The filling volume depends on the connection variants.
** The weight depends on the type (vortex reactor block) and the total output.

Service

Everything from a single source, everything from Germany

07



Ultrasonic devices for rent

For one-off or
sporadic
cleaning applications.

from page 126



FAQs

The most important questions –
answered briefly.

from page 128



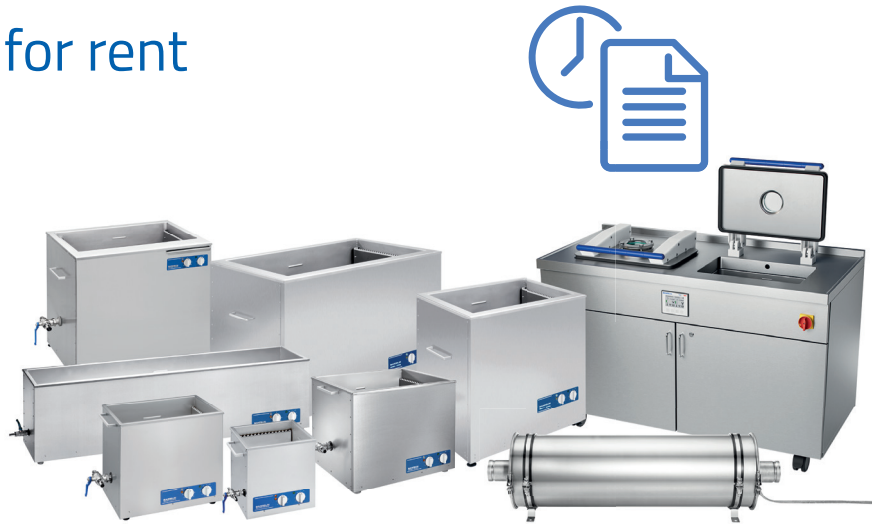
Contact us

Ask our
experts.

page 130

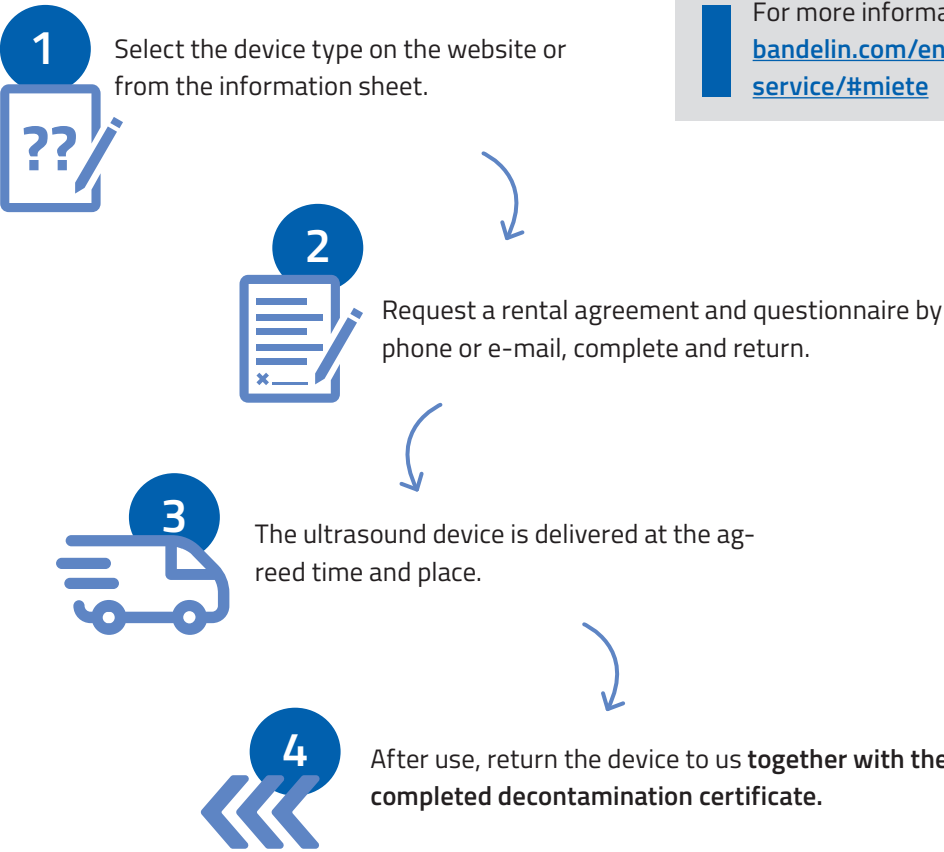
Ultrasound equipment for rent

Do you need an ultrasonic device for parts cleaning for a specific period or would you like to test whether our devices are suitable for your cleaning tasks? We rent out ultrasonic baths in seven sizes from 13 to 230 litres working volume, ultrasonic reactors and our CNp (ultrasound with pulsed vacuum for cleaning the smallest capillary openings). Are you interested?



Note: Hire is only possible within Germany. The hire of ultrasonic devices is only offered to commercial customers. The minimum rent period is one week.

4 simple steps to your rent device



For more information:
bandelin.com/en/service/#miete

Download the decontamination certificate:
bandelin.com/fragebogen/Dekontamination_GB_BANDELIN.pdf

Ultrasonic baths

Type	Internal dimensions of the oscillating tank l x w x d [mm]	Operating volume [l]	External dimensions l x w x h [mm]	Ultrasonic peak performance* [W]	Ultrasonic rated power [W]	Ultrasonic frequency [kHz]	Heating power [W]	Current consumption [A]
RM 16 UH	325 x 275 x 200	13,0	365 x 340 x 390	1200	300	40	800	4.8
RM 40 UH	480 x 300 x 300	30,0	540 x 340 x 500	2000	500	40	1250	7.7
RM 75 UH	580 x 500 x 300	60,0	640 x 540 x 530	4000	1000	40	1950	12.9
RM 110 UH	600 x 450 x 450	110,0	780 x 550 x 800	4000	1000	25	4800	10.5**
RM 180 UH	1000 x 500 x 400	160,0	1180 x 600 x 800	2 x 4000	2 x 1000	40	7200	14.8**
RM 212 UH	750 x 650 x 500	230,0	930 x 810 x 800	2 x 4000	2 x 1000	40	7200	14.8**
RL 70 UH	1700 x 250 x 250	70,0	1750 x 300 x 450	4000	1000	40	2000	13.0

*corresponds to 4 times ultrasonic nominal power power; **per phase
Operating voltage RM 16 UH - 75 UH + RL 70 UH: 230 V~ (±10%) 50/60 Hz, RM 110 UH-212 UH: 400 V 3N~ (±10%) 50/60 Hz, CEKON plug 16 A

CNp 28-2 – Ultrasonic bath with pulsed vacuum

Type	Internal dimensions Oscillating tank l x w x d [mm]	Operating volume [l]	External dimensions l x w x h [mm]	Ultrasonic Top performance* [W]	Ultrasonic Rated power [W]	Heating power [W]	Current consumption [A]
SC 28-2	510 x 300 x 260/280	28 per chamber	1550 x 800 x 985	2 x 1200	2 x 300	2 x 3000	max. 15.7

Ultrasonic reactors

Type	Soundvolume [l]	Power density, max. [W]	Internal pressure, max. [bar]	Ultrasonic Rated power [W]	Ultrasonic Frequency [kHz]	Pipe dimensions		
						outside (Ø x material thickness) [mm]	inside (Ø x material thickness) [mm]	Length incl. Connections [mm]
SB 101-2002.01	2.0	444	10	2000	25	88.9 x 3.6	81.7	1215
SB 8-1002.01	2.0	500	10	1000	25	60.3 x 3.6	53	1215
SB 81-1002.01	2.0	500	10	1000	25	60.3 x 3.6	53	1215
WR 4-1402.01	2.9	480	10	1400	25	139.7 x 2.6	104 x 2	856
WR 4-1503.01	2.9	160,0	10	1500	25 and 40	139.7 x 2.6	104 x 2	856
WR 4-1604.01	2.9	5500	10	1600	40	139.7 x 2.6	104 x 2	856

FAQs

What is ultrasound?

Vibrations with frequencies above 18 kHz (18.000 vibrations per second) are referred to as ultrasound. During the tension phase, these vibrations lead to the generation of millions of tiny vacuum bubbles in all liquids, which implode during the compression phase and generate highly effective pressure surges. This process is called cavitation. Low frequencies around 25 kHz generate bubbles of larger diameter with powerful pressure surges compared to higher frequencies around 40 kHz, which are preferably used for intensive and gentle cleaning.

How does ultrasound work?

The cavitation causes dirt residues to be blown off the parts in the liquid, even from recesses and drill holes.

Ultrasonic cleaning takes just a few minutes and is more effective than any manual cleaning method. At the same time, it has a gentle effect, as mechanical damage such as scratches are minimised.



Close-up of an ultrasonic transducer

Which bathroom size should I choose?

The size of the cleaning objects determines the size of the bath and therefore the type of appliance required.

The basket dimensions must be taken into account when selecting the device. It is advisable to choose a slightly larger appliance so that the ultrasound can work from all sides. This also provides scope for further applications.

Further decision criteria include, in particular, the geometry of the parts to be cleaned and the type of contamination. For complex cleaning tasks, additional devices such as rinsing baths and lifting devices are available to meet the increased cleaning requirements.



Illustration of a cavitation bubble

Does an ultrasonic bath require heating?

Heated cleaning fluids shorten the cleaning time. Soiling is removed more quickly. For cleaning in the industrial sector, devices with heating are usually used.

Is the set temperature kept constant?

Cavitation heats the sonicated liquid. Ultrasonic baths with heating have a temperature preselector. Once the set temperature is reached, the heater switches off, but the temperature in the bath is still increased by the ultrasound: the mechanical energy of the ultrasound is converted into thermal energy.

Which accessories are required?

Cleaning objects must not lie on the pan floor. Baskets and other insert containers prevent scratches on the items to be cleaned and the tank bottom. For cleaning very small or sensitive parts, additional accessories are useful, e.g. for gentle storage.

A lid reduces the noise level and protects the liquid in the oscillating tank from external contamination. Due to the lid design, the condensation water is channelled back into the oscillating tank.

Which liquids may be used?

TICKOPUR preparations are specially designed for use in the Ultrasonic bath. The cleaning medium should be selected carefully depending on the material of the parts and the contamination. An unsuitable cleaning medium can damage the parts. Water without detergent does not clean. Do not use household cleaners or pure demineralised water! Do not use flammable or explosive liquids directly in the oscillating tank!

How often does the bath fluid need to be changed?

The frequency of changing the bath fluid depends on the number of parts to be cleaned and the type of contamination.

If the bath fluid is too contaminated, the cleaning effect is reduced. This can be delayed by using e.g. filtration or oil separation.

What does degassing mean and does it have to be done before the sonication process?

Yes, for a few minutes to expel dissolved gases. This is important for effective cleaning, as hard cavitation only occurs after gases have been removed. The degassing time depends on the size of the bath and the hardness of the water.

How many parts can be cleaned at the same time?

Parts should not overlap. There must be sufficient free space between the individual parts; bulk material must be distributed loosely.

Can ultrasound damage the parts?

There are thousands of implosions of cavitation bubbles per second, which are very powerful. Nevertheless, ultrasonic cleaning is a safe procedure as the energy is at a "microscopically" small level. The cavitation bubbles have diameters of only 1-3 nm!

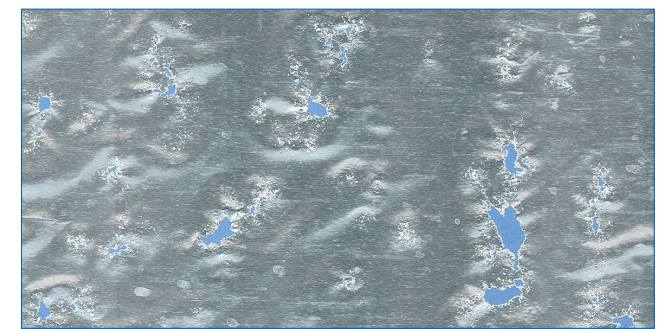
Can I reach into the ultrasonic bath during operation?

This should be avoided. Ultrasonic baths usually operate between 50-60 °C. The cleaning agents used can also cause skin damage, and immersing the hands in the ultrasonic bath during ultrasound delivery should also be avoided as it can cause damage to the bone tissue.

Is hearing protection necessary?

Hearing protection is recommended for continuous activity in the vicinity of the device.

Take a look at our application video at:
bandelin.com/en/applications/foil-test/



Above: Carrying out a foil test.

Below: Perforated film after the test.

How can I test the function of the ultrasonic bath?

We recommend the foil test according to IEC/TR 60886: An aluminium foil is stretched over a wire frame and sonicated for approx. 3 min. A perforation in the film must then be visible.

If you want to know more ...

... visit our website with integrated YouTube channel and many helpful application videos! Or contact us directly ... We will be happy to advise you, call us at **+49 (0)30 76880-19.**

More information about us:
bandelin.com/en/docs/prospekte/company-2/



Contact us

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