

High-performance ultrasound

Use and application

Practices and clinics



BANDELIN – The brand for ultrasonic baths in the medical field

Whether they are used in small practices, medical care centres or Central Sterile Services departments (CSSDs) in hospitals – ultrasonic baths from BANDELIN have been an integral part of these facilities for decades.

Our ultrasonic baths make everyday life easier when it comes to instrument reprocessing by providing effective, time-saving and thorough cleaning.

Ultrasonic baths are usually used in this environment for the pre-cleaning and cleaning of medical instruments. The type of instruments to be treated determines the selection of the appropriate ultrasonic bath. In addition,

the user's requirements regarding the ultrasonic bath's performance must be met, and the local conditions must be taken into account.

This guide provides an overview of the contemporary application options for BANDELIN ultrasonic baths. It contains tips and tricks for application and provides assistance with the selection of devices, useful accessories, and the right cleaning and disinfectant agent.

This complete overview enables the user to make the best choice of ultrasonic bath and process to suit their needs.



BANDELIN – Ultrasound since 1955

Company portrait

As a Berlin family business in its third generation, we specialise in the development, manufacture and sale of ultrasonic devices, corresponding accessories, and application-specific cleaning and disinfecting agents.

We stand out for our high level of vertical integration, modern production facility, and motivated employees, all of which guarantee a constant stream of new, high-quality products. Our devices contribute to our customers' success in the laboratory, medical, dental, pharmaceutical, industrial, trade and service sectors.

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

The period from 1996 to 2004 was shaped by the development and production of innovative ultrasonic cleaning baths and immersible transducers along with tube reactors for industrial applications.

In the years that followed, BANDELIN's product range was expanded with new ultrasonic devices for the laboratory. After the launch of the ultrasonic bath for the simultaneous cleaning and rinsing of MIS instruments, this was further developed for robotic instruments in 2014.

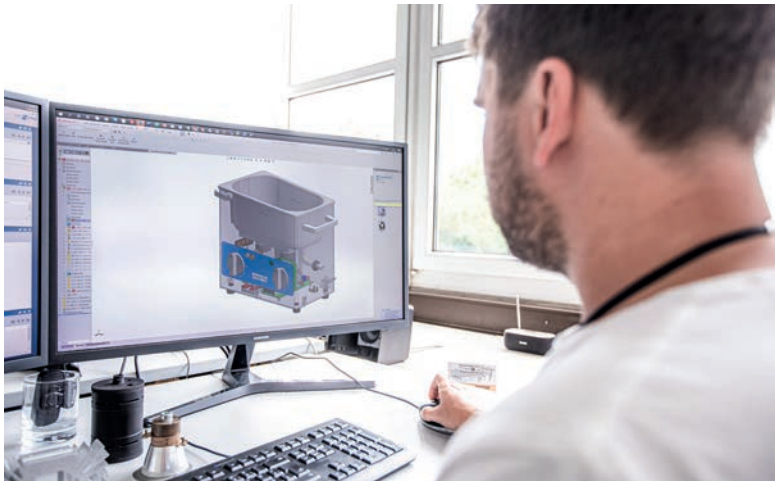
Today, the reputation of our brands SONOREX, SONOPULS, SONOMIC and TRISON represents the high quality awareness of our employees, and they have come to be synonymous with ultrasound in professional circles.

The most important product groups include:

- SONOREX – ultrasonic baths and reactors
- SONOPULS – ultrasonic homogenisers
- SONOMIC – an ultrasonic bath for rinsable MIS and standard instruments
- TRISON – an ultrasonic bath for robotics, rinsable MIS and standard instruments
- TICKOPUR – cleaning agents
- STAMMOPUR – cleaning and disinfecting agents

We are innovators in the development of new ultrasonic devices and in opening up new areas of application, and have now registered 79 patents / utility models and 68 trademarks. Our involvement in various committees for the development of new standards and guidelines contributes to ensuring the highest standards for ultrasonic applications.

BANDELIN is the market leader as the only complete supplier of ultrasonic devices, accessories, and cleaning and disinfecting agents with approvals and certifications in accordance with ISO 9001 and ISO 13485. We have already delivered more than one million devices to our customers.



Take a look at our company portrait in the medical field!



1955

SONOREX E 250-12
Manufacture of high-performance ultrasonic cleaning devices

1971

SONOREX TRANSISTOR RK
Ultrasonic baths with transistor technology

1982

SONOREX Z
Two-piece built-in ultrasonic devices for the medical field

1990

SONOREX DIGITAL DK
Digital ultrasonic baths

2005

SONOREX DIGITEC DT
Ultrasonic baths with digital controls

2006

SONOMIC MC
Ultrasonic bath for MIS instruments

2014

TRISON 3000
Ultrasonic bath for robotic instruments

2023

TRISON 4000.2
Ultrasonic bath for various robotic instruments

2025

SONOREX smart ST
Ultrasonic baths with touch-screen control and process documentation

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Ultrasound in practices and clinics

01



Requirements in practice

Are you a doctor with your own practice or part of the team? Find out more about cleaning and disinfecting solutions for medical instruments undergoing reprocessing.

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Requirements in medical care centres and day clinics

Larger than a practice, but not yet a CSSD. An ultrasonic bath of the right size speeds up reprocessing.

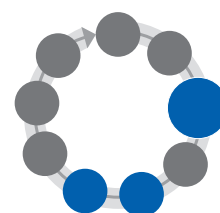
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Requirements in hospitals

Fast sieve cassette cycles are part of everyday life in CSSDs. With the right ultrasonic bath, you can optimise pre-cleaning.

[page 11](#)



Classification of the ultrasound application in the instrument cycle

Application of an ultrasonic bath in the instrument cycle in reprocessing.

[from page 12](#)



What is ultrasound?

Discover how ultrasound and ultrasonic baths work.

[page 14](#)



Advantages of ultrasonic cleaning

Ultrasonic cleaning of medical instruments offers many advantages. Let us show you.

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Structure of an ultrasonic bath

Basic structure, including an explanation of individual components.

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Requirements in medical care centres and day clinics

The hygiene requirements in medical care centres or day clinics do not differ fundamentally from the hygiene requirements in a doctor's office. This means that all instrument reprocessing measures correspond to those used in practices.

Nevertheless, instrument reprocessing can be organisationally different from a small practice. On the one hand, the throughput of instruments by several operators is significantly higher. This means more instruments require treatment in less time.

In practices, individual instruments are typically pre-cleaned in an ultrasonic bath before they are transferred for further reprocessing. In larger facilities, this can also

be achieved by a significantly larger ultrasonic bath. However, due to the high number of instruments to be reprocessed, it is also possible that entire trays (sieves) of instruments are pre-packed.



BANDELIN offers the appropriate ultrasonic baths, and accessories as needed, for both options of effective pre-cleaning using ultrasound, i.e., either individual instruments or entire sieves packed with instruments.

Requirements in practices

The reprocessing of medical devices is an essential part of practice hygiene. Practices are confronted with high demands on the instrument reprocessing process: the aim is to ensure safe reprocessing that is compliant with the standards of KRINKO/BfArM for the protection of patients and the team, to define lean and efficient work processes, and to ensure medical instruments become quickly available again and retain their value.

The variety of different instruments in practices requires efficient solutions for reprocessing.



The breadth and sometimes high complexity of different instruments – depending on the field of practice – make thorough cleaning or pre-cleaning essential for further reprocessing. Pre-cleaning with an ultrasonic bath provides the perfect foundation for reprocessing in medical applications because this process is very effective for the typically occurring impurities and thus ensures the desired results.

Depending on the field – whether general medicine, ENT, gynaecology or practices that work with rigid endoscopes – BANDELIN provides the correct and suitable ultrasonic bath.

Requirements in hospitals

In hospitals, there is a set standard for safe and KRINKO/BfArM-compliant reprocessing. In the form of "CSSD"s (Central Sterile Services departments), hospitals have created their own departments to ensure that instruments are reprocessed in accordance with standards.

In contrast to a private practice, which tends to use compact tabletop ultrasonic baths for pre-cleaning, a CSSD that processes several hundred instrument sieves per day is primarily concerned with optimising the workflow in an ergonomic way. Built-in ultrasonic baths that can be integrated

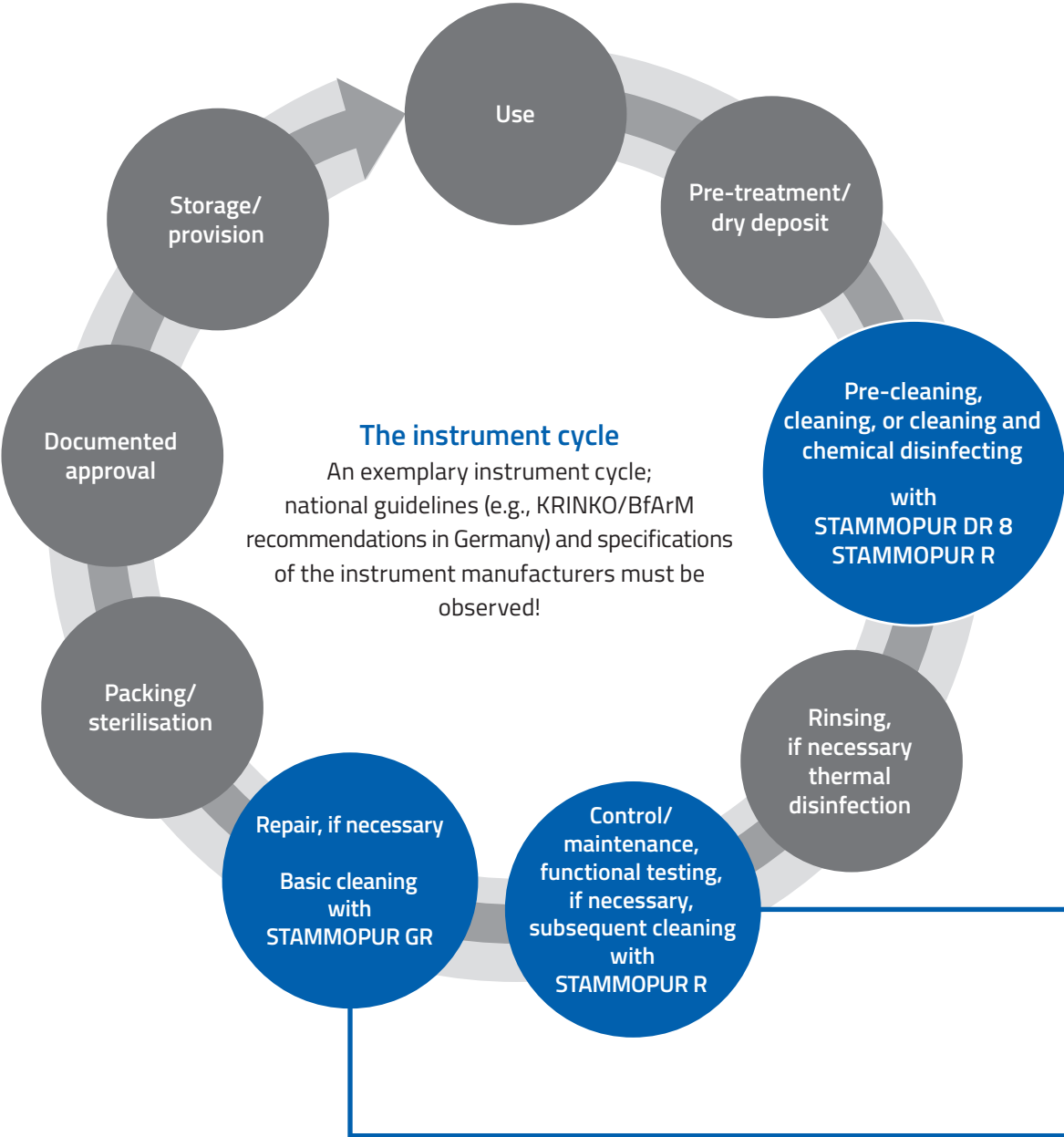
into a stainless-steel row of units in the unclean area of the CSSD are particularly suitable for this.



In terms of dimensions, these ultrasonic baths are designed in such a way that various sieves, such as ISO, DIN, or other variants, could be placed in the ultrasonic bath.

Efficient pre-cleaning for safe instrument reprocessing.

Classification of the ultrasound application in the instrument cycle



● = Application of the ultrasonic bath

Ultrasound application is one of the most effective and thorough methods for cleaning medical instruments and endoscopes. Highly effective, successful cleaning of the objects to be cleaned is an essential requirement for safe and compliant instrument reprocessing.

The versatility of an ultrasonic bath is made possible by the combination of ultrasonic application in conjunction with the relevant recommended agent.

That makes the application of an ultrasonic bath an important part of the instrument cycle in a practice.

Pre-cleaning and cleaning
Intensive pre-cleaning before the automated reprocessing process and manual cleaning in an ultrasonic bath with **STAMMOPUR R**

Cleaning in a medical laboratory and instrumentcleaning in an ultrasonic bath with **STAMMOPUR R**



Cleaning and chemical disinfecting
Cleaning and chemical disinfecting as part of manual reprocessing in an ultrasonic bath with **STAMMOPUR DR 8**

Disinfectant cleaning before automated reprocessing, also for user protection, in an ultrasonic bath with **STAMMOPUR DR 8**



Secondary cleaning and repeat cleaning
Secondary cleaning of residual impurities after thermal disinfection in an ultrasonic bath with **STAMMOPUR R**

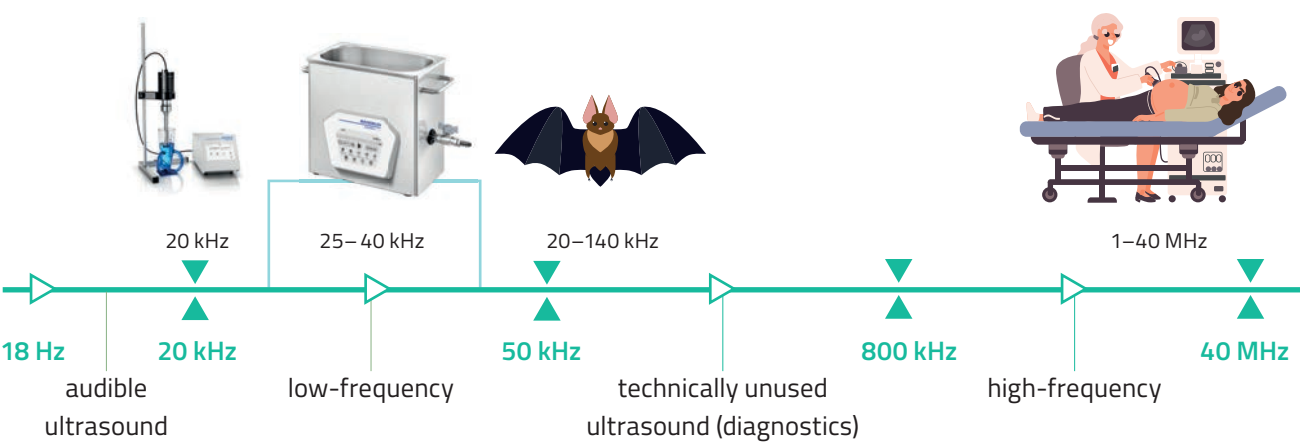


Repair, if necessary, basic cleaning
Basic cleaning of instruments and accessories that have become unsightly in an ultrasonic bath with **STAMMOPUR GR**





What is ultrasound? How does it work?



What is ultrasound and how does it work?

Vibrations with frequencies above 20 kHz (20,000 vibrations per second) are referred to as ultrasound.

The range of low-frequency ultrasound is used in the laboratory field, while a higher frequency range is used in medical diagnostics.

that dirt residues are blasted off the surfaces of the parts present in the liquid very effectively yet gently, even from recesses and drilling holes.

Other applications include, e.g., degassing or mixing liquids.

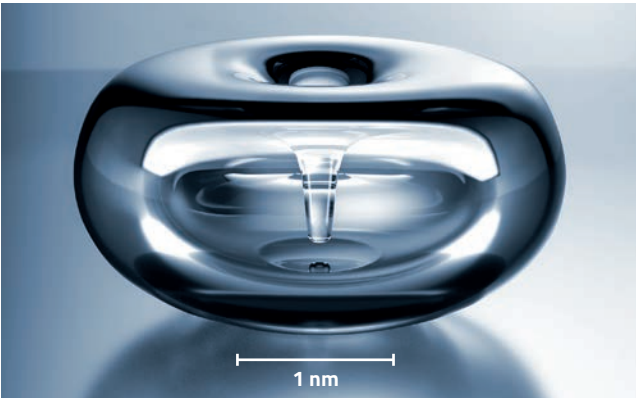
The low-frequency ultrasonic vibrations generate millions of tiny vacuum bubbles in all liquids, which immediately implode again, creating highly impactful pressure surges. This process is called cavitation. Low frequencies of 20 kHz produce bubbles of a larger diameter with more intense pressure surges compared to higher frequencies of 35 kHz. Low-frequency ultrasound has been used in a wide variety of ultrasonic baths for decades. The process of cavitation ensures

Cleaning with a SONOREX ultrasonic bath from BANDELIN

Cavitation

Ultrasound generates an intensive cycle of compression and tension in the water, creating the finest cavitation bubbles, which grow over several cycles and then implode intensely.

The resulting high shear forces and microjets of the implosions quickly blast off any adhering impurities from the surface.



Cavitation bubble

Advantages of ultrasonic cleaning

High cleaning effect in hard-to-reach areas, such as drilling holes, joints or gaps

Protection of the instruments

Fast instrument circulation

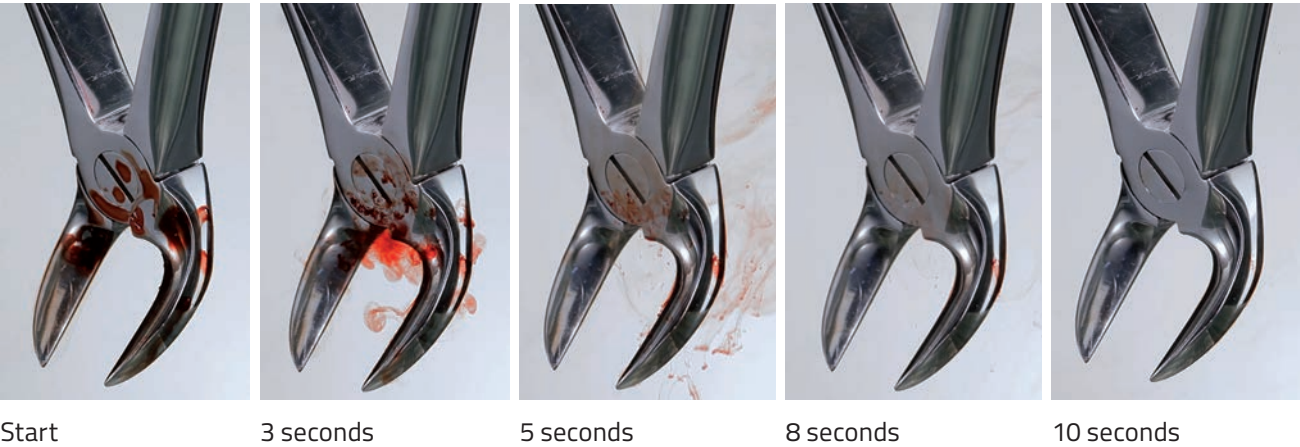
No time-consuming manual pre-cleaning required

Economical use of water, chemicals and energy

Disinfectant pre-cleaning for user protection

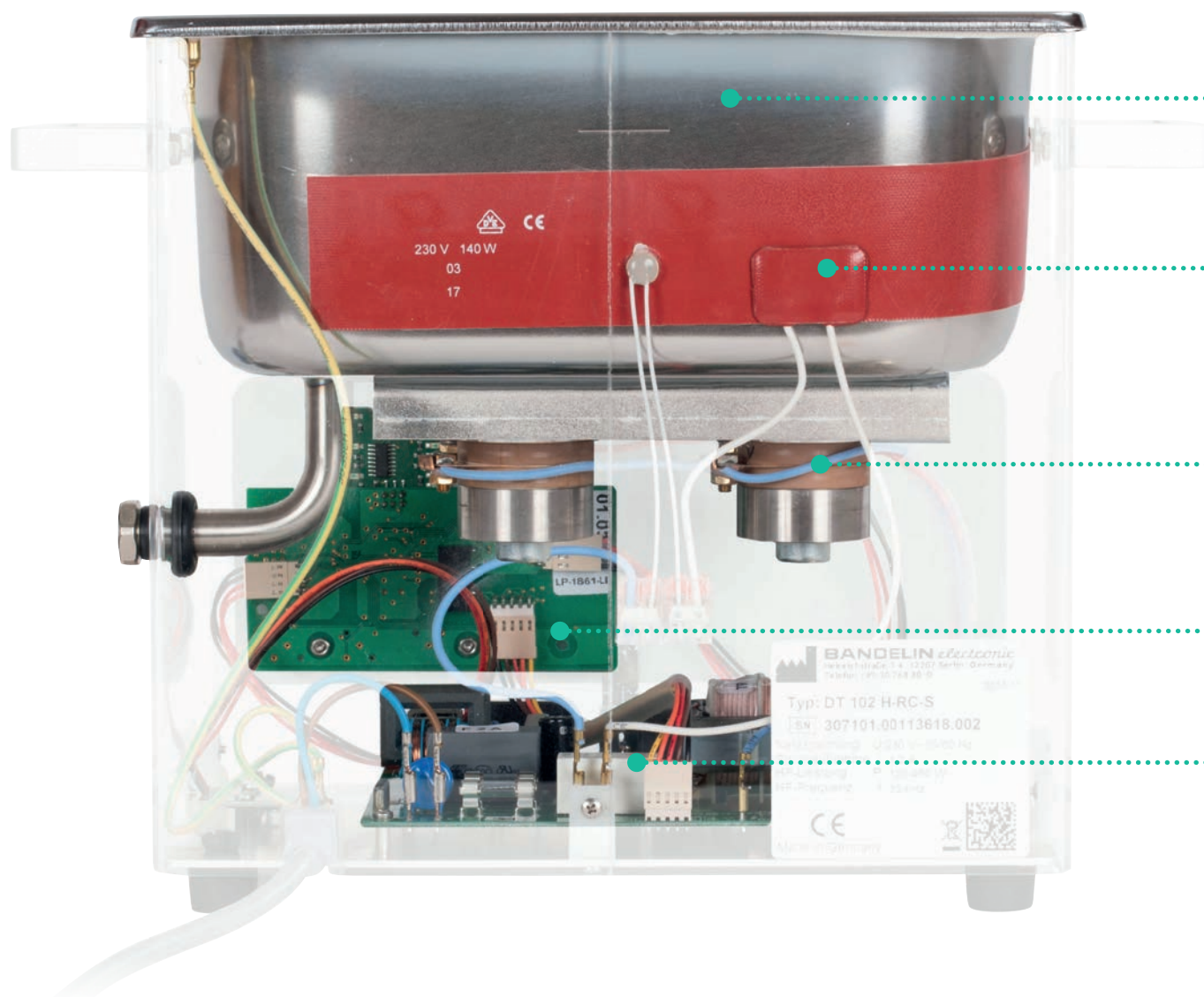
Ultrasound provides fast cleaning results

One application is the sonication of medical instruments contaminated with blood residues in a SONOREX ultrasonic bath and a suitable cleaning agent, such as STAMMOPUR R. After just a few seconds, the contamination is visibly removed from the instrument.



Structure of an ultrasonic bath

Ultrasonic baths handle a variety of tasks in day-to-day laboratory life. This makes for a correspondingly wide range of devices. The basis for successful application is an understanding of the basic structure of an ultrasonic bath and the resulting selection of equipment features and application parameters based on the application in question.



Oscillating tank

made of stainless steel 1.4301 (wrought), SONOREX RK/DT 102 H: additionally hard chromium plated, or some models stainless steel 1.4404 (welded), 2 mm material thickness

Heating

Surface heating elements, with automatic shutdown against excess temperature.

Oscillating systems

Conversion of the high-frequency voltage supplied by the generator by means of piezoelectric transducers into mechanical resonant oscillations of the same frequency. The connection between the oscillating systems and the stainless steel tank is made with a high-strength adhesive.

It is crucial to understand that the dimensions of the oscillating elements determine the operating frequency.

Once the dimensions have been defined, the operating frequency can no longer be varied. The number of oscillating elements determines the power in the bath.



Control unit

Preselection of the process parameters time and/or temperature.

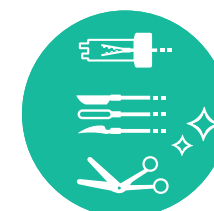
Ultrasonic generator

Conversion of the low-frequency mains voltage of 50/60 Hz into a high-frequency voltage of 35 or 40 kHz

Areas of application

02

Note: The majority of medical instruments are suitable for reprocessing in an ultrasonic bath. In principle, however, all instruments must be checked to ensure compatibility for reprocessing in an ultrasonic bath. The instrument manufacturer will provide precise reprocessing instructions.



Instrument cleaning

Remove a wide range of impurities from your medical instruments.

[from page 20](#)



Cleaning and chemical disinfecting of instruments

To provide greater safety for the user. Simultaneous pre-cleaning and chemical disinfection in one work step.

[from page 26](#)



Basic cleaning of medical instruments

Old instruments will regain their shine.

[from page 28](#)

Instrument cleaning

BANDELIN ultrasonic baths enable thorough and gentle cleaning of medical instruments with the right accessories and the agents specially manufactured for application in ultrasonic baths. They are used

- as mechanical support for manual cleaning processes
- to remove stubborn residues before or after mechanical reprocessing
- for cleaning support as an integral part of the mechanical reprocessing process.

In practices, day clinics or CSSDs in hospitals, there are a large number of impurities and contaminants that must be removed during instrument reprocessing in accordance with the relevant specifications.

Due to work being performed directly on the patient with medical instruments, it must be assumed that each instrument in use is potentially contaminated. Organic residues, such as adhering blood and secretions, are sometimes hardly visible, but pose a hygiene risk.

Thorough pre-cleaning is essential for proper reprocessing (e.g., thermal disinfection or sterilisation). Only completely clean instruments that have been disinfected or sterilised may be used on patients again.

An ultrasonic bath with the right accessories and a suitable cleaning agent therefore provides the best possible foundation for pre-cleaning contaminated instruments.

Examples of medical instruments to be cleaned

Depending on the specialisation, a wide variety of medical instruments are used on patients. The requirements for reprocessing vary depending on the intended use of the instruments. In this case, the main focus is on assessing whether instruments are to be categorised as critical in your classification. This classification applies to all surgical instruments, for example.

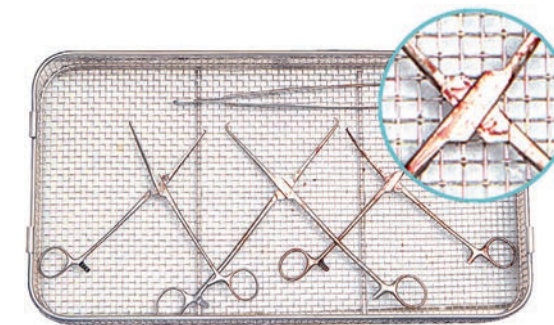
Regardless of the intended use and the associated reprocessing steps, the same applies to all instruments: without good cleaning, no disinfection or sterilisation can take place.



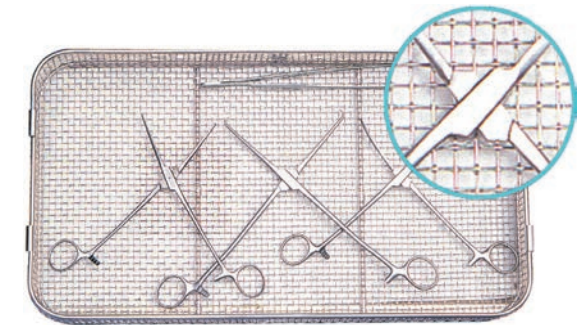
Positioning of the instruments in the ultrasonic bath

The instruments to be cleaned are either placed individually in an insert basket or packed in a sieve directly in the ultrasonic bath and cleaned. Care must be taken here to ensure that the instruments are stored safely in order to avoid damage to the instruments or prevent poorer results. Articulated instruments are always opened to ensure effective cleaning. Multi-part instruments must be disassembled as far as possible.

In general, ultrasound is effective wherever liquid can reach, meaning that overloading or incomplete coverage with the liquid will lead to poor cleaning results.



Medical instruments prior to ...



... and after ultrasonic cleaning



PRACTICAL TIP

Bath temperature

Ultrasound generates the desired cavitation in the bath liquid, which is what causes the cleaning effect during the process. Cavitation causes the bath liquid to heat up during operation.

When cleaning to remove organic residues, there is a risk that the proteins in these organic residues will become de-natured if temperatures are too high (> 40 °C). This leads to undesired protein fixation

(strongly adhering protein contamination), which makes further reprocessing of the instruments more difficult.

That is why you should always pay attention to the bath temperature. We recommend that the bath be cold for cleaning baths, as is also intended for the disinfectants for this reason. Operate the ultrasonic device at room temperature (18–25 °C).

Example equipment for smaller practices

Smaller practices often only have to reprocess individual instruments for non-surgical use. A compact ultrasonic bath such as the **SONOREX DIGITEC DT 100** is the right choice.



Practice

Example equipment

- Ultrasonic bath: SONOREX DIGITEC DT 100
- Accessories: Insert basket K 3 C, lid D 100
- Agent: STAMMOPUR R



Insert basket K 3 C



Lid D 100



STAMMOPUR R



DT 100

Example equipment for endoscopies in private practices

Due to their complexity, rigid endoscopes pose increased challenges for reprocessing. In addition, these instruments are quite long. The **SONOREX DIGITEC DT 156** has been developed precisely for this type of instrument.



Practice

Example equipment

- Ultrasonic bath: SONOREX DIGITEC DT 156
- Accessories: Insert basket K 6 L, lid D 156
- Agent: STAMMOPUR R



Insert basket K 6 L



Lid D 156



STAMMOPUR R



DT 156

Example equipment for larger practices

Larger practices that also work with more than one practitioner or which offer areas of surgical specialisation have a higher throughput of instruments for reprocessing. In order to optimise the workflow, a larger ultrasonic bath, e.g., the **SONOREX smart ST 514 H**, is recommended.



Practice

Example equipment

- Ultrasonic bath: SONOREX smart ST 514 H
- Accessories: Insert basket K 14, lid D 514
- Agent: STAMMOPUR R



Insert basket K 14



Lid D 514



STAMMOPUR R



ST 514 H



Example equipment in medical care centres and day clinics

A variety of instruments, a high throughput: the ultrasonic bath for pre-cleaning should have an appropriate capacity for the quantity of individual instruments to be cleaned. The **SONOREX smart ST 1028 H** with a matching insert basket is suitable for this.

Example equipment

- Ultrasonic bath: SONOREX smart ST 1028 H
- Accessories: Insert basket K 28, lid D 1028
- Agent: STAMMOPUR R



Medical care centres/
day clinics

Same device, but different accessories. If complete instrument trays are used for processing, the **SONOREX DIGITEC DT 1028** is the ultrasonic bath of choice. In terms of accessories, only one basket holder is required for this, in order to safely position the sieves with the instruments.

Example equipment

- Ultrasonic bath: SONOREX DIGITEC DT 1028
- Accessories: Basket holder KT 30, insert basket K 29 EM
- Agent: STAMMOPUR R



Medical care centres/
day clinics

Example equipment for CSSDs

The pre-cleaning of medical instruments in CSSDs is usually organised in complete trays (sieves). Due to the high number of instruments to be processed, the workflow, and thus efficient processing, is of the essence. The solution is built-in ultrasonic baths.

Example equipment

- Ultrasonic bath: SONOREX ZE 1058 DT
- Accessories: Basket holder KT 57, insert basket K 29 EM, lid D 57
- Agent: STAMMOPUR R



CSSDs/hospitals

If a built-in solution is not possible, the **SONOREX DIGITEC DT 1058 M** tabletop unit is recommended, which offers the same dimensions and functions as a typical built-in bath.

Example equipment

- Ultrasonic bath: SONOREX DIGITEC DT 1058 M
- Accessories: Basket holder KT 57, insert basket K 29 EM, lid D 57
- Agent: STAMMOPUR R



CSSDs/hospitals

Cleaning and chemical disinfection of instruments



Practice



Medical care centres / day clinics

Thorough pre-cleaning is the basis for the subsequent steps for safe and compliant instrument reprocessing. Pre-cleaning in an ultrasonic bath is the most effective, quickest, and most thorough method for this.

However, the protection of employees must also be taken into particular consideration during pre-cleaning.

STAMMOPUR DR 8 can be used for chemical disinfection and intensive cleaning in an ultrasonic bath. This protects the user from contaminated material during pre-cleaning of the instruments and from the potential risk

of infection in the event of contact with this material, for example, in the case of a minor injury. Despite personal protective equipment in the form of gloves, there is a risk of injury due to the sometimes very pointed and sharp-edged instruments.

For optimal user protection, the agent STAMMOPUR DR 8 is bactericidal and levurocidal according to the VAH list of disinfectants and also offers the advantage of limited virucidal activity. For full effectiveness, the dosage information and the duration of sonication must be observed.

Contaminants

- Blood

Agent

- **STAMMOPUR DR 8**
Certified by the German Association for Applied Hygiene (VAH), 2 % – 5 min: bactericidal, levurocidal, limited virucidal, incl. H5N1 and SARS-CoV-2, 2 % – 10 min: SV40, 3 % – 15 min: Adeno

Objects to be cleaned

- Instruments made of metal and also light metal

Application instructions

- Place the objects to be cleaned in the stainless-steel insert basket and hang the basket in the oscillating tank.

Example equipment

- Ultrasonic bath: SONOREX smart ST 102 H
- Accessories: Insert basket K 3 C, lid D 100
- Agent: STAMMOPUR DR 8



Ultrasonic cleaning and disinfectants

Ultrasonic cleaning, in combination with a disinfecting cleaning agent, offers many advantages in the practice workflow. With STAMMOPUR, BANDELIN offers a comprehensive range of cleaning and disinfecting agents.

Advantages of cleaning and chemical disinfection in an ultrasonic bath:

- High level of protection for staff
- No contamination of the cleaning solution
- Thorough removal of contamination
- Protection of the objects to be cleaned
- Protection of the ultrasonic components (oscillating tank and accessories)
- Reduced disinfection time in an ultrasonic bath, as verified by experts



Selection of the right accessories and agent is crucial for optimal cleaning results. BANDELIN offers a wide range of accessories for various applications in the medical field. For a simple and efficient workflow.



Watch our video:
Cleaning and chemical
disinfection of medical
instruments

youtube.com/watch?v=y6Nf4kCGFPU



Basic cleaning of instruments



Practice



Medical care centres / day clinics

Over time, instruments can become externally discoloured, stained, or encrusted due to various influences. Instruments undergo soiling in everyday work – both during treatment and during complex reprocessing. It is virtually impossible to remove temper colour or burnt-in soiling caused by sterilisation processes by hand, and oxide or limescale deposits cannot

be completely avoided either, despite the best care. This is why basic cleaning of the instruments in an ultrasonic bath is recommended to remove that soiling. With the right cleaning agent, old instruments will regain their lustre. The refurbishing process supports qualitative and ecological sustainability.

Contaminants

- Stains
- Encrustations
- Discolouration

Agent

- STAMMOPUR GR
5%, 3–10 min, 50–60 °C bath temperature
- For the contact liquid agent:
STAMMOPUR R 2%, 50–60 °C bath temperature

Objects to be cleaned

- Medical instruments made of stainless steel

Application instructions

- The application is performed in an ultrasonic bath with indirect sonication in inset beakers, e.g., in a plastic insert tub or in a beaker.

Example equipment

- Ultrasonic bath: SONOREX smart ST 102 H
- Accessories: Insert tub KW 3
- Agent: STAMMOPUR GR
- For the contact liquid agent:
STAMMOPUR R



Performing basic cleaning

Medical instruments made of stainless steel, precious metals, and titanium are suitable for basic cleaning with STAMMOPUR GR.

For basic cleaning, indirect cleaning must be used in order to protect the ultrasonic tank, since strongly acidic solutions such as STAMMOPUR GR can be corrosive to the components of the ultrasonic bath with long-term exposure. In contrast, the instruments do not corrode due to the short duration of use.

To prepare for basic cleaning, an insert tub or an insert beaker is filled with the dosed agent STAMMOPUR GR. The contact liquid, e.g., STAMMOPUR R, 2%, is filled into the ultrasonic tank. For degassing, the insert tub or insert beaker is inserted into the ultrasonic bath and the ultrasound is switched on in accordance with the operating instructions of the ultrasonic device. After degassing, the instruments – disassembled and open



ned if necessary – are placed in the insert tub or insert beaker. During sonication, the lid must be kept on and, depending on the degree of discolouration, encrustation or stains, a process time of between 2 and 10 minutes in the ultrasonic bath should be selected.

PRACTICAL TIP

In contrast to the cleaning of organic residues, a high temperature is an important factor for success in basic cleaning. We therefore recommend an ultrasonic bath

with integrated heating to heat the cleaning solution to an optimum temperature of 50–60 °C. The best results are achieved in this temperature range.

Example equipment

- Ultrasonic Bath: SONOREX SUPER RK 514 H
- Accessories: Insert Tub KW 14
- Agent: STAMMOPUR GR
- For the contact liquid agent:
STAMMOPUR R



Ultrasonic baths

for instrument reprocessing

03



Criteria for purchasing an ultrasonic bath

Which would be the right ultrasonic
bath for you?
Our recommendations.

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Selection criteria for an ultrasonic bath

Optimal sonication results are achieved by selecting the ultrasonic bath that is suitable for the application, along with the appropriate accessories for holding the instruments. However, optimal selection of the agent

is just as crucial, whether for the cleaning effect or for generating a homogeneous sound field in the bath. With STAMMOPUR, BANDELIN offers a comprehensive range of cleaning and disinfectant agents.

Table-top device or built-in bath

Ultrasonic baths for medical use are available in two variants: installation-free table-top devices or built-in baths integrated into stainless steel furniture. A table-top device is certainly the right choice for practices. No installation effort, ready for operation after unpacking and, depending on the size, compact in the installation area. Small, compact devices are particularly suitable for smaller practices with little equipment.

Larger practices up to the size of medical care centres usually also use table-top devices, but in larger dimensions. A higher capacity is required for the ultrasonic bath due to the higher quantity of instruments to be cleaned.

Built-in appliances are mainly used in the CSSD department in hospitals. Instruments are not pre-cleaned there individually but packed in trays. For this purpose, integrated built-in devices that are optimally tailored to the workflow of the employees are ideal for making the entire instrument reprocessing process efficient.



Bath size

The choice of the right bath size depends on the applications and the objects to be cleaned. It is thus primarily the objects to be cleaned – in this case, medical instruments – that determine the choice of suitable accessories in which they must be placed, and thus the suitable ultrasonic bath.

It is therefore not the bath volume that is decisive but the space required by the objects to be cleaned. For example, an ultrasonic bath with a small base area and greater bath depth can have the same bath volume as a shallow ultrasonic bath with a larger base area.

The objects to be cleaned must be completely covered with the application liquid when being cleaned in an ultrasonic bath. Overlapping of the objects to be cleaned should also be avoided, so that the cleaning effect, in combination with the ultrasound, can fully take hold.

During indirect sonication, the vessels must be immersed at least 2 cm into the contact liquid so that

the ultrasound is transferred into the cleaning agent for the vessels.

If various ultrasonic applications are to be performed, always ensure that the ultrasonic bath is suitable for each application. It can save a lot of time to carry out several applications in one operation. In a larger bath, for example, instruments can be cleaned in a basket, and two beakers with different objects to be cleaned can be sonicated in different cleaning agents at the same time.

Another aspect is the space required for the device on the work surface and the installation conditions.

For rinsable MIS and complex robotic instruments, ultrasonic baths with additional functions, such as rinsing and movement of the instruments, are available to meet the increased requirements for cleaning.

Accessories

The selection of the right accessories is essential for successful cleaning in an ultrasonic bath.

BANDELIN offers a wide range of accessories that are optimally adapted to the cleaning requirements and can be used flexibly.

The objects to be cleaned determine the type of sonication (direct or indirect) and the choice of accessories. The objects to be cleaned must never be placed directly on the tank bottom, to avoid damaging it and the objects to be cleaned.

For small parts, gentle cleaning in a beaker is recommended. For basic cleaning, a plastic insert tub is suitable for particularly gentle and efficient cleaning.

The choice of cleaning agent depends on the degree of soiling and also influences the choice of accessories. Acidic cleaning agents, for example, may only be used for indirect sonication, in order to protect the oscillating tank from corrosion.

Documentation

The logging of processes is becoming increasingly relevant due to legal requirements or even in-house requirements due to the internal quality management of the practice or CSSD in question.

With the devices of the SONOREX smart series and with the TRISON 4000.2 ultrasonic bath, process logs can be easily saved on a USB stick or directly in the network.

Cleaning by direct or indirect sonication

Direct sonication:

The objects to be cleaned are directly exposed to cavitation in the ultrasonic bath, which means that the entire bath volume is available for sonication of the objects to be cleaned.



Indirect sonication:

The objects to be cleaned and sonicated are indirectly exposed to cavitation in an inset beaker, which enables the simultaneous sonication of different cleaning solutions or objects to be cleaned.



Ultrasonic baths with and without heating

The choice of an ultrasonic bath with or without heating depends on the cleaning application. You should take the following into account.

Device without heating:

- For cleaning after dry deposit, at temperatures above 40 °C, there is a danger of protein coagulation.
- Disinfectant liquids must not be heated up.

In devices with heating, this can be switched on, which means that the bath liquid can be heated, or the heating can remain deactivated, depending on the application. Ultrasonic baths from the SONOREX smart series with heating are equipped with temperature monitoring. A temperature range between 20 and 80 °C can be set. In addition, lower and upper temperature limits can be set so that the heating switches off automatically when these limit temperatures are reached. The user does not need an external temperature

Device with heating:

- For cleaning after wet deposit or for basic cleaning
- Contaminants such as grease and waxes are removed more quickly.

measuring device and will be able to intervene in the cleaning process in good time.



Instrument types to be cleaned

There are a variety of different medical instruments, from simple surgical instruments, such as scalpels, to highly complex robotics instruments.

Ultrasound is always the basis for thorough pre-cleaning for all instrument types. However, if the geometry of the instruments becomes more complex, for

example, due to cavities, drive units, joints, etc., it may be helpful to equip the ultrasonic bath with additional modes of action to ensure the cleaning of such complex instruments.

SONOMIC MC 1001

An important type of instrument used in many disciplines are hollow bodies, such as MIS instruments, trocars, rigid endoscopes and other instruments. In addition to the ultrasound, a rinsing function is also integrated here, with a special ultrasound bath, to ensure thorough internal cleaning.



■ Detailed information about the SONOMIC MC 1001 can be found starting on page 64.

TRISON 4000.2

For several years, robotics instruments have been becoming increasingly common. These highly complex instruments consist of a long shaft, i.e., a hollow body, in which the finest surgical tool tips can be moved via Bowden and control cables. This type of instrument is becoming more and more common, but also poses greater challenges in reprocessing, especially for users in CSSDs.

Compared to manual pre-cleaning, an ultrasonic bath that mechanically agitates and rinses the instruments achieves the best cleaning results.



■ Detailed information about the TRISON 4000.2 can be found starting on page 72.

SONOREX

Compact ultrasonic baths

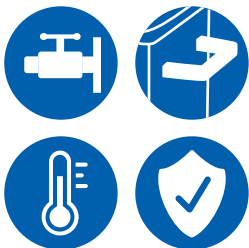
04



SONOREX series

The most important features of the controls and functions.

from page 38



Advantages of the SONOREX series

Solid arguments in favour of an ultrasonic bath from BANDELIN.

from page 42



SONOREX bath sizes and technical specifications

Overview of the SONOREX smart ST, DIGITEC DT and SUPER RK device series.

from page 44



SONOREX accessories

Combine our accessories to precisely suit your applications.

from page 48



Configuration example using the SONOREX smart ST 514 H

Combine our accessories to precisely suit your applications.

from page 51

SONOREX – Controls

SONOREX *smart* ST

Touch screen with intuitive controls

Bath sizes:

3.0–90.0 |



Ultrasonic baths with high-tech features, intuitively operated via a modern touchscreen with a user-friendly interface.

Product features



Clear display of the most important parameters during operation (time, temperature, power)



Power 10–100%, also for cleaning more sensitive parts



Continuous time setting 1 s–8 h



Process logging (via optional
USB/LAN DST 01 docking station, transferable
to other media)



10 individual programmes can be stored for reproducible processes



Acoustic feedback



Rapid degassing function



Sweep function for a homogeneous sound field



- Pulse – increases the wave frequency and thereby enhances the ultrasound effect



Eco programme with reduced energy consumption



Drip-proof touch display (IP32) – easy to clean



Safety shut-down after 8 h



Heating with protection
against dry running



- Protection against retardation of boiling



Default language selection: de, en, fr, it, es
Other languages optional



Help menu for each function



Dosing calculator for cleaning agent



Class 1 medical device, MDR-compliant



SONOREX smart ST 102 H

SONOREX – Controls

Ultrasonic baths in two versions

SONOREX SUPER RK

Conventional operation via a turning knob



Bath sizes of compact baths:
0.9 – 90 litres

Ultrasonic baths with turning knobs, including a user-friendly crossbar, which allows the time and/or temperature to be selected.

Product features

- Time setting: 1 – 15 min and continuous operation
- Adjustable temperature range (except ZE): with H version 30 – 80 °C, adjustable ± 5 , with RK 31 H: 65 permanently set
- Easy and intuitive to control
- Sweep – automatic frequency control ensures a homogeneous sound field



Medical device class I
MDR-compliant



SONOREX DIGITEC DT

Membrane keyboard, with rapid degassing



Bath sizes of compact baths:
0.9 – 90 litres

Ultrasonic baths with digital controls, which enable temperature and/or time to be set and rapid degassing to be activated.

Product features

- Time setting: 1, 2, 3, 4, 5, 10, 15, 30 min and continuous operation
- Adjustable temperature range (except ZE): with H version 20 – 80 °C, adjustable ± 2.5
- Excess temperature signal (except ZE) if the set temperature is exceeded, warning LED
- Membrane keyboard, particularly hygienic
- Safety shut-down after 12 hours
- Data memory for 1 programme
- DEGAS function, rapid degassing
- Protection against retardation of boiling
- Ultrasound active/deactivated
- Pulse – increases the wave frequency and thereby enhances the ultrasound effect
- Sweep – automatic frequency control ensures a homogeneous sound field



Medical device class I
MDR-compliant



Advantages of the **SONOREX** compact devices at a glance

MD Medical device class I
MDR-compliant



SONOREX SUPER RK 102 H

SONOREX DIGITEC DT 102 H

SONOREX smart ST 102 H

Durable design

- Compact, easy-care, stainless-steel housing
- Oscillating tank: made of stainless steel 1.4301 (drawn) SONOREX ST/DT/RK 102 H: additionally hard chrome plated, on some models stainless steel 1.4404 (welded), 2-mm material thickness
- High-performance oscillation systems made with highly stable ceramic piezoelectric materials
- Made in Germany



MADE IN GERMANY



Rounded tank edges

On the sides and on the bottom – making it easier to clean the oscillating tank. For hygienic handling of the ultrasonic bath.



Filling level mark

Easily recognisable embossing for the minimum filling level of the cleaning agent – makes filling the bath easier.



Welded outlet

With ball valve for emptying the ultrasonic bath (ST/DT/RK 102 H or later)

The outlet elbow is welded to the tank bottom and is not screwed on. This prevents leaks in the device and makes cleaning easier.



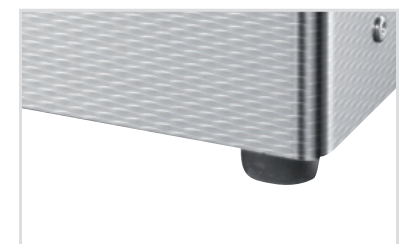
Fixed mains cable

In contrast to the plug-in mains cables that are otherwise usually found, these are permanently installed in SONOREX ultrasonic baths. This rules out ingress of liquid at this connection and the associated danger of a short circuit.



Device feet (plastic)

For a secure footing on any surface.



Handles

For easy and safe handling (except RK/DT 31, RK/DT 52, RK/DT 100, RK/DT 103 H, RK/DT 106, RK/DT 156, RK 170 H, RK 1040).



Heating

Depending on the model, with integrated heating. Adjustable temperature ranges:

- RK 30–80 °C, except RK 31 H: 65 °C fixed
- DT 20–80 °C



Protection against dry running

- Automatic switching off in the event of excessive temperature, e.g., triggered by an insufficient filling level.



SONOREX smart ST

Ultrasonic baths with a modern touch screen



from front to back: ST 102 H, ST 255 H and ST 514 H

Type	Code-no.	Internal dimensions oscillating tank L x W x D [mm]	Capacity [l]	External dimensions L x W x H [mm]	Ultrasonic peak power [W]	Ultrasonic nominal power [W]	Heating power [W]	Outlet Ball valve
ST 102 H	7100	240 x 140 x 100	3.0	260 x 160 x 250	480	120	140	G ¾, right
ST 103 H	7101	240 x 140 x 150	4.0	325 x 160 x 300	560	140	200	G ¾, right
ST 156 BH	7102	500 x 140 x 150	9.0	530 x 165 x 300	860	215	600	G ¾, right
ST 255 H	7104	300 x 150 x 150	5.5	325 x 175 x 300	640	160	280	G ¾, right
ST 510 H	7105	300 x 240 x 150	9.7	325 x 265 x 300	640	160	400	G ¾, left
ST 514 H	7106	325 x 300 x 150	13.5	355 x 325 x 300	860	215	600	G ¾, left
ST 514 BH	7107	325 x 300 x 200	18.7	355 x 325 x 350	860	215	600	G ¾, left
ST 1028 H	7108	500 x 300 x 200	28.0	555 x 325 x 350	1200	300	1300	G ¾, left
ST 1028 CH	7109	500 x 300 x 300	45.0	540 x 340 x 500	1200	300	1450	G ¾, left
ST 1050 CH	7110	600 x 500 x 300	90.0	640 x 540 x 500	2400	600	1950	G ¾, left

*Corresponds to 4 times the ultrasonic nominal power

DST 01
Docking station for digital process
documentation for SONOREX smart ST
with USB-A, USB-B and Ethernet connection
Cable length: approx. 2 m
Code no. 7120



SONOREX SUPER RK

Bath sizes and technical specifications



SONOREX SUPER RK 102 H

Type	Code-no.	Internal dimensions oscillating tank L x W x D [mm]	Capacity [l]	External dimensions L x W x H [mm]	Ultrasonic peak power* [W]	Ultrasonic nominal power [W]	Heating power [W]	Outlet ball valve
RK 31	329	190 x 85 x 60	0.9	205 x 100 x 180	160	40	–	–
RK 31 H	7523				160	40	70	–
RK 100	301	240 x 140 x 100	3.0	260 x 160 x 250	320	80	–	–
RK 100 H	312				320	80	140	–
RK 102 H	303				480	120	140	G ¼
RK 156	305	500 x 140 x 100	6.0	530 x 165 x 245	640	160	–	G ¼
RK 156 BH	646	500 x 140 x 150	9.0	530 x 165 x 300	860	215	600	G ¼
RK 255	3066	300 x 150 x 150	5.5	325 x 175 x 295	640	160	–	G ¼
RK 255 H	316				640	160	280	G ¼
RK 510	327	300 x 240 x 150	9.7	325 x 265 x 300	640	160	–	G ½
RK 510 H	321				640	160	400	G ½
RK 512 H	795	300 x 240 x 200	13.0	325 x 265 x 350	860	215	400	G ½
RK 514	277	325 x 300 x 150	13.5	355 x 325 x 305	860	215	–	G ½
RK 514 H	207				860	215	600	G ½
RK 514 BH	263	325 x 300 x 200	18.7	355 x 325 x 385	860	215	600	G ½
RK 1028	322	500 x 300 x 200	28.0	535 x 325 x 400	1200	300	–	G ½
RK 1028 H	324				1200	300	1300	G ½
RK 1028 C	661	500 x 300 x 300	45.0	540 x 340 x 500	2000	500	–	G ½
RK 1028 CH	143	500 x 300 x 300	45.0	540 x 340 x 500	1200	300	1450	G ½
RK 1050	323	600 x 500 x 200	58.0	640 x 540 x 425	2400	600	–	G ½
RK 1050 CH	184	600 x 500 x 300	90.0	640 x 540 x 530	2400	600	1950	G ½

*Corresponds to 4 times the ultrasonic nominal power

SONOREX DIGITEC DT

Bath sizes and technical specifications



SONOREX DIGITEC DT 102 H

Type	Code-no.	Internal dimensions oscillating tank L x W x D/D+ [mm]	Capacity [l]	External dimensions L x W x H [mm]	Ultrasonic peak power* [W]	Ultrasonic nominal power [W]	Heating power [W]	Outlet ball valve
DT 31	3200	190 x 85 x 60	0.9	205 x 100 x 180	160	40	–	–
DT 31 H	3220				160	40	70	–
DT 100	3210	240 x 140 x 100	3.0	260 x 160 x 250	320	80	–	–
DT 100 H	3230				320	80	140	–
DT 102 H	3235				480	120	140	G ¼
DT 156	3275	500 x 140 x 100	6.0	530 x 165 x 245	640	160	–	G ¼
DT 156 BH	3221	500 x 140 x 150	9.0	530 x 165 x 300	860	215	600	G ¼
DT 255	3215	300 x 150 x 150	5.5	325 x 175 x 295	640	160	–	G ¼
DT 255 H	3240				640	160	280	G ¼
DT 510	3245	300 x 240 x 150	9.7	325 x 265 x 300	640	160	–	G ½
DT 510 H	3206				640	160	400	G ½
DT 512 H	3226	300 x 240 x 200	13.0	325 x 265 x 350	860	215	400	G ½
DT 514	3250	325 x 300 x 150	13.5	355 x 325 x 305	860	215	–	G ½
DT 514 H	3211				860	215	600	G ½
DT 514 BH	3216	325 x 300 x 200	18.7	355 x 325 x 385	860	215	600	G ½
DT 1028	3255	500 x 300 x 200	28.0	535 x 325 x 400	1200	300	–	G ½
DT 1028 H	3231				1200	300	1300	G ½
DT 1028 CH	3266	500 x 300 x 300	45.0	540 x 340 x 500	1200	300	1450	G ½
DT 1050 CH	3271	600 x 500 x 300	90.0	640 x 540 x 530	2400	600	1950	G ½
DT 1058 M	304120	600 x 400 x 200/220+	50.0	670 x 470 x 400	2400	600	–	G ¼

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

SONOREX Accessories

The right accessories make application of ultrasound easier and, at the same time, protect the oscillating tank and the instruments. **Do not place objects to be cleaned or containers on the tank bottom!**

Insert baskets made of stainless steel

compatible with	Type	Code no.	Internal dimensions L x W x D [mm]	Mesh size [mm]	Figure
RK 31/H, DT 31/H	K 08	209	170 x 65 x 50	4 x 4	
RK 100/H, 102 H, DT 100/H, 102 H	K 3 C	3025	200 x 110 x 40	5 x 5	
RK 255/H, DT 255/H	K 5 C	3027	260 x 110 x 40	5 x 5	
RK 106, DT 106	K 6	356	215 x 215 x 50	5 x 5	
RK 156, DT 156	K 6 L	202	460 x 100 x 50	5 x 5	
RK 514/H, DT 514/H	K 14	354	275 x 245 x 50	5 x 5	
RK 1028/H, DT 1028/H	K 28	358	455 x 245 x 50	5 x 5	

Inset basket made of stainless steel

compatible with	Type	Code no.	Internal dimensions L x W x D [mm]	Mesh size [mm]	Figure
RK 1028/H, DL 1028 H, DT 1028/H	K 29 EM	688	470 x 240 x 45	4 x 4	

Basket holder

compatible with	Type	Code no.	Figure	compatible with	Type	Code no.	Figure
RK 1028/H, DL 1028 H, DT 1028/H	KT 30	7517		DT 1058 M	KT 57	7504	
RK 1028/H, DL 1028 H, DT 1028/H	KT 30 Z	7507		DT 1058 M	KT 57 Z	3078	

Silicone knob mat
with fastening knobs, for use in the insert basket

compatible with	Type	Code no.	For insert basket	External dimensions L x W [mm]	Figure
RK 100/H, 102 H, DT 100/H, 102 H	SM 3	7513	K 3 C	170 x 97	
RK 255/H, DT 255/H	SM 5	101	K 5 C	213 x 97	
RK 156, DT 156	SM 6	110	K 6 L	426 x 97	
RK 514/H, DT 514/H	SM 14	118	K 14, K 14 EM	235 x 245	
RK 1028/H, DT 1028/H	SM 29	178	K 28, K 29 EM	2 pcs. of 235 x 245	

Insert tub made of plastic

compatible with	Type	Code no.	Internal dimensions L x W x D, [mm]	Material	Figure
RK 100/H, 102 H, 103 H, DL 102 H, DT 100/H, 102 H/H-RC, 103 H	KW 3	715	195 x 115 x 88	Polyethylene – low density	
RK 255/H, DL 255 H, DT 255/H/H-RC	KW 5	240	254 x 96 x 130	Polyethylene – low density	
RK 514/H, DT 514/H	KW 14	613	280 x 215 x 145	Tank: polypropylene Lid: polycarbonate	
RK 1028/H/C/CH, DL 1028 H, DT 1028/H/C/CH	KW 28-0	717	437 x 230 x 155	Polypropylene	

Lid made of stainless steel
for when using insert baskets

compatible with	Type	Code no.	Figure
RK 31/H, DT 31/H	D 08	218	
RK 100/H, 102 H, 103 H, DL 102 H, DT 100/H, 102 H/H-RC, 103 H	D 100	3003	
RK 255/H, DL 255 H, DT 255/H/H-RC	D 255	3007	
RK 106, DT 106	D 6	346	
RK 156/BH, DL 156 BH, DT 156/BH	D 156	3004	
RK 514/H/BH, DL 514 BH, DT 514/H/BH/BH-RC	D 514	3010	
RK 1028/H, DT 1028/H, DL 1028 H	D 1028	3011	
DT 1058 M	D 1058 M	7526	

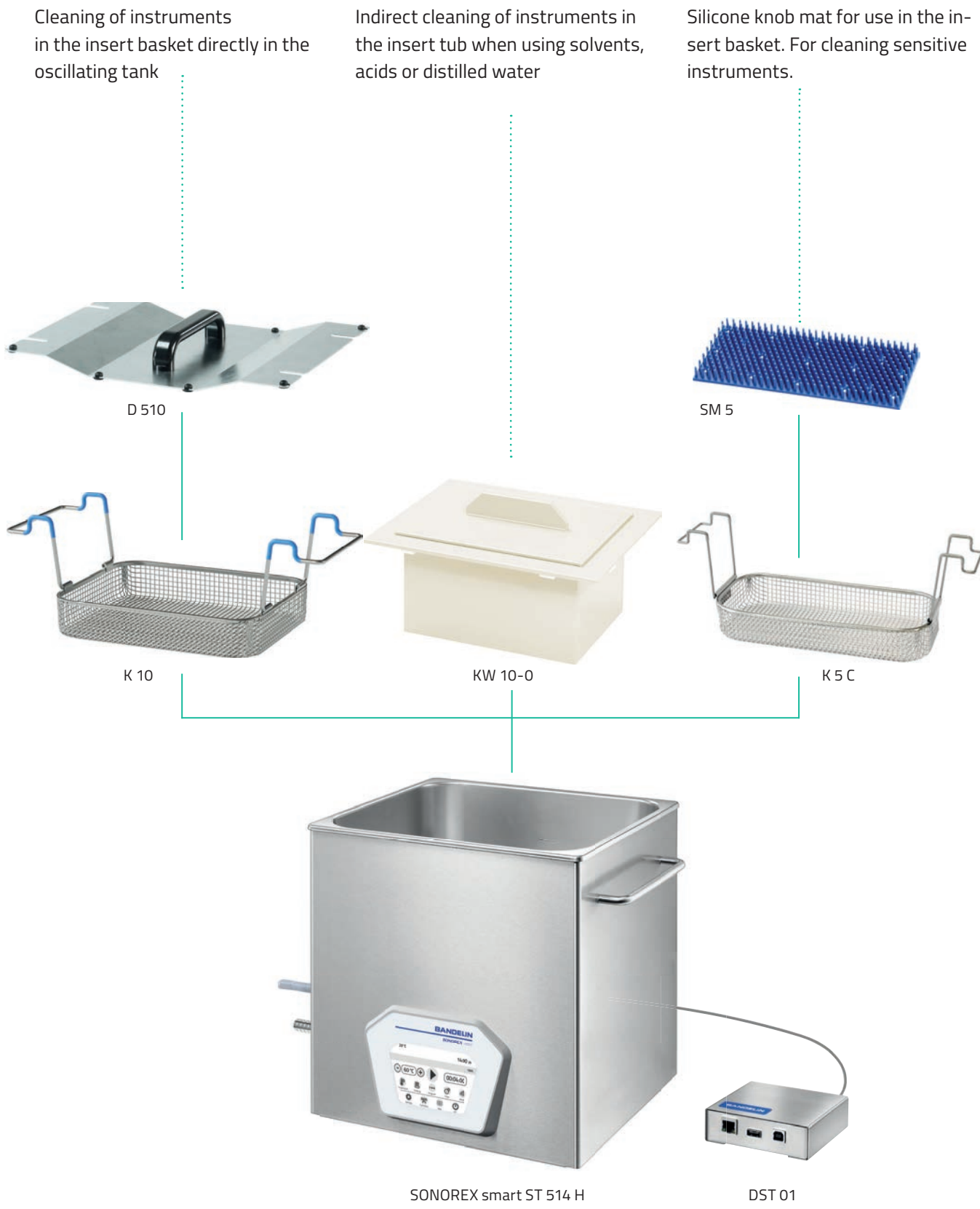
Foil test frame

The foil test is a simple method for displaying the intensity and distribution of cavitation in an ultrasonic bath.

compatible with	Type	Code no.	Dimensions L x W [mm]	Figure
RK 31/H, DT 31/H	FT 1	3190	160 x 110	
RK 100/H, 102 H, DT 100/H, 102 H,RK 106, DT 106, RK 255/H, DT 255/H	FT 4	3074	160 x 200	
RK 156, DT 156	FT 6	3222	220 x 410	
RK 514/H, DT 514/H	FT 14	3084	220 x 380	
ZE 1031/DT, ZE 1032/DT	FT 36	3673	470 x 360	
DT 1058 M	FT 37	3674	550 x 470	
RK 1028/H/C/CH, DT 1028/H/C/CH	FT 40	3094	420 x 430	

Configuration example using
SONOREX smart ST 514 H

In addition to choosing the right ultrasonic bath size, the right accessories, based on the application, are also essential. Various applications with the relevant accessories are listed below by way of example.

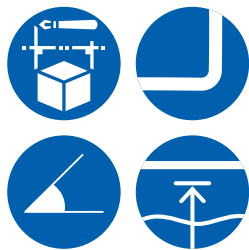




**SONOREX ZE bath sizes
and technical specifications**

All relevant facts about
our built-in baths at
a glance.

[from page 54](#)



**Advantages of the SONOREX ZE
built-in devices (series)**

Solid arguments in favour of
an ultrasonic bath as a built-in
device from BANDELIN.

[from page 56](#)



SONOREX ZE accessories

Necessary and optional
accessories for all
built-in variants.

[from page 60](#)



SONOBOARD Standard

The ready-for-use solution for
standard instruments.

[from page 62](#)

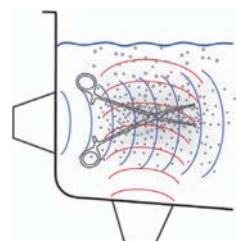
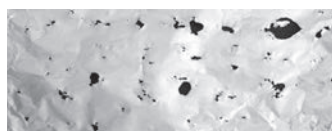
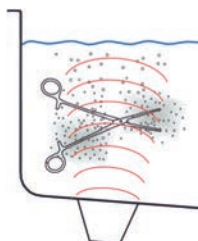
SONOREX built-in baths



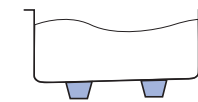
Built-in baths with bottom and lateral sonification

Based on the illustrations for the foil test below, it can be clearly seen that ultrasonic baths with bottom and lateral sonification produce a more homogeneous sound field than other baths equipped only with bottom sonification. This means a more uniform and gentle cleaning experience. This is an important aspect, especially with highly sensitive and sensitive instruments.

- Optimal sound distribution and reduction of acoustic shadows through additional lateral sonification
- Electronically generated sound field movements due to TwinSonic technology reduce local peak effects
- No additional oscillation required for the instrument basket, no additional space required in the work area
- Latest generator technology with Sweep
- Existing built-in tanks with bottom sonication only can be easily replaced thanks to the unchanged tank edge design

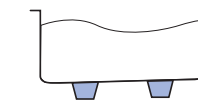


Equipment variants



Bottom sonication

The oscillating systems are mounted on the bottom of the tank.



Bottom and lateral sonication

The oscillating systems are mounted on one side of the tank and on its bottom.



Rinsing bath

Rinsing baths without ultrasound, e.g., for secondary rinsing with water.



Integrated or mobile?

The SONOREX ZE 1058 DT is available in two variants: as a built-in device or as a mobile device in a rollable cabinet, the SONOBOARD Standard.

For optimal workflows, integration of the SONOREX ZE built-in bath into a row of stainless-steel units is the best possible variant.

However, space in the CSSD is often limited, or conversion of the stainless-steel row of units is not possible at a particular time. In such cases, the SONOBOARD variant can be procured (more on this on page 62). The SONOBOARD is a ready-to-use set; i.e., all components are preassembled in a rollable stainless-steel cabinet. When the device is put into service, only the necessary media (electricity, sewerage and, if applicable, the dosing system) have to be connected, and the device will be ready for immediate use. No complex installation and no conversion, but a high degree of flexibility on site.

Fits into any pre-cleaning process



SONOBOARD Standard

All the advantages of the **SONOREX** built-in baths at a glance

MD

Medical device class I
MDR-compliant



Durable design
 Compact, easy-care, stainless-steel housing.
 Stainless-steel oscillating tank with high-performance oscillating systems.



Rounded tank corners
 on the sides and on the bottom make it easier to clean the tank. For hygienic handling of the ultrasonic bath.



Tilted tank bottom
 for better cleaning results through optimal sound propagation. The emptying of the tank is facilitated by the tank bottom, which is inclined towards the outlet, and dirt accumulation and residual liquid on the bottom are largely avoided.



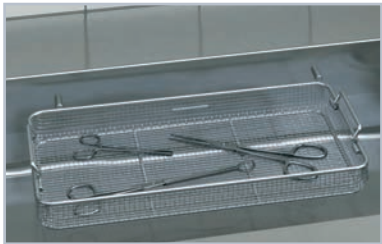
Outlet
 Easy outlet via an integrated rotary wheel in the front panel of the stainless-steel cabinet.



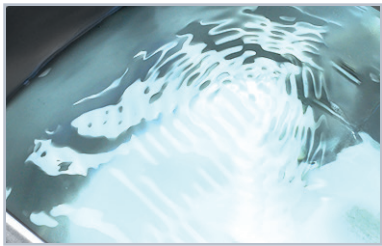
Optimal workflow
 The system is integrated into a stainless-steel cabinet to optimise the working height and ergonomics for the user.



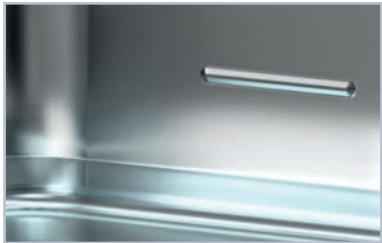
Wide range of applications
 Accommodates all common sieves and baskets, which means that BANDLEIN built-in devices can be used universally in CSSDs.



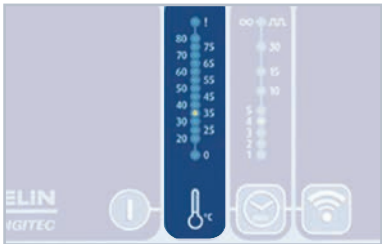
Maintenance-free
 SONOREX ZE built-in devices are maintenance-free. This saves on costs, and downtimes during operation are largely avoided.



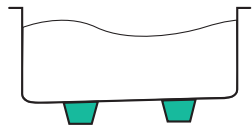
Filling level marking
 as a clearly recognisable embossing for the minimum filling level of the cleaning agent; makes filling the bath easier.



Temperature display (SONOREX ZE ... DT)
 for greater safety (prevention of proteincoagulation). If the bath liquid heats up to $\geq 40\text{ }^{\circ}\text{C}$, a red warning LED will also flash.



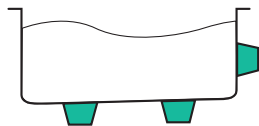
Ultrasonic baths for installation with bottom sonification



Type	Code-no.	Internal dimensions oscillating tank L x W x D/D+ [mm]	Capacity [l]	External dimensions L x W x H/H+ [mm]	Ultrasonic peak power* [W]	Ultrasonic nominal power [W]	Current consumption** [A]	Outlet Ball valve
ZE 1031	3060	510 x 300 x 200/220	29.0	570 x 360 x 270/290 ⁺	1200	300	1.4	Bead 1 ½
ZE 1031 DT	3217	510 x 300 x 200/220 ⁺	29.0	570 x 360 x 270/290 ⁺	1200	300	1.4	Bead 1 ½
ZE 1058	3050	600 x 400 x 200/220 ⁺	46.0	660 x 460 x 270/290 ⁺	2400	600	2.7	Bead 1 ½
ZE 1058 DT	3234	600 x 400 x 200/220 ⁺	46.0	660 x 460 x 270/290 ⁺	2400	600	2.7	Bead 1 ½

*corresponds to 4 times the ultrasonic nominal power **at 230 V~ (± 10%), 50/60 Hz ⁺inclined tank bottom, installation from below

Ultrasonic baths for installation with bottom and lateral sonication



Type	Code-no.	Internal dimensions Oscillating tank L x W x D/D+ [mm]	Capacity [l]	External dimensions L x W x H/H+ [mm]	Ultrasonic peak power* [W]	Ultrasonic nominal power [W]	Current consumption** [A]	Outlet Ball valve
ZE 1032	3075	510 x 300 x 200/220 ⁺	29.0	570 x 404 x 270/290 ⁺	1760	440	1.9	Bead 1 ½
ZE 1032 DT	3223	510 x 300 x 200/220 ⁺	29.0	570 x 404 x 270/290 ⁺	1760	440	1.9	Bead 1 ½
ZE 1059	3085	600 x 400 x 200/220 ⁺	46.0	660 x 504 x 270/290 ⁺	2400	600	2.7	Bead 1 ½
ZE 1059 DT	3248	600 x 400 x 200/220 ⁺	46.0	660 x 504 x 270/290 ⁺	2400	600	2.7	Bead 1 ½

*corresponds to 4 times the ultrasonic nominal power **at 230 V~ (± 10%), 50/60 Hz ⁺inclined tank bottom, installation from below

Rinsing baths for installation without ultrasound



Type	Code no.	Internal dimensions oscillating tank L x W x D/D+ [mm]	Capacity [l]	External dimensions L x W x H [mm]	Description
SW 31 Z	3048	510 x 300 x 200/220 ⁺	29.0	570 x 360 x 205/225 ⁺	Bead 1 ½, without drain set
SW 58 Z	3049	600 x 400 x 200/220 ⁺	46.0	660 x 460 x 205/225 ⁺	Bead 1 ½, without drain set
G 1 ½ type V drain set	31661	-	-	-	with turning knob and stainless-steel plug

⁺inclined tank bottom, installation from below

Scope of delivery of a built-in ultrasonic bath

An ultrasonic bath set for installation always consists of the components oscillating tank, generator and control unit. The set also includes a suitable foil test frame for the foil test. An optional drain set and accessories, such as a basket holder and lid, are available.



Scope of delivery of the SONOREX ZE 1058 DT:

- TE 1058.2 oscillating tank
- GT 1003 M-C generator
- ST 30.1 DT control unit
- FT 37 foil test frame

Digital control unit with membrane keyboard and temperature display***

Type	Code no.	compatible with	Time setting	Description
ST 30.1 DT	309810	ZE 1031 /DT, ZE 1032 /DT, ZE 1058 /DT, ZE 1059 /DT	1, 2, 3, 4, 5, 10, 15, 30 min, ± 5% and continuous operation (∞)	The ST 30.1 DT digital control unit has an integrated temperature display and offers the user more security to prevent protein coagulation. If the bath liquid heats up to > 40 ° C, a red warning LED will also flash. Recommendation of the Commission for Hospital Hygiene and Infection Prevention (KRINKO) at the Robert Koch Institute (RKI) and the Federal Institute for Drugs and Medical Devices (BfArM) Federal Health Gazette 2012 ■ 55:1244-1310

***Recommendation of the Commission for Hospital Hygiene and Infection Prevention (KRINKO) at the Robert Koch Institute (RKI) and the Federal Institute for Drugs and Medical Devices (BfArM) Federal Health Gazette 2012 ■ 55:1244-1310

Simple control unit with turning knob

Type	Code no.	compatible with	Time setting	Description	Figure
ST 15.1	1851	ZE 1031 /DT, ZE 1032 /DT, ZE 1058 /DT, ZE 1059 /DT	1 – 15 min, ± 5% and continuous operation (∞)	Control unit with turning knob, without temperature monitoring	

Drain set

Type	Code no.	compatible with	Description	Figure
Drain set	31661	ZE 1031 /DT, ZE 1032 /DT, ZE 1058 /DT, ZE 1059 /DT	Complete drain set, including Bowden cable actuation and stainless-steel plug.	

Accessories

The right accessories make application of ultrasound easier and, at the same time, protect the oscillating tank and the instruments. **Do not place objects to be cleaned or containers on the tank bottom!**

Required accessories

Type	Code no.	compatible with	Description	Figure
Insert basket K 29 EM	688	ZE 1031 /DT, ZE 1032 /DT, ZE 1058 /DT, ZE 1059 /DT	Insert basket for holding the objects to be cleaned. A basket holder is required. Internal dimensions: 470 × 240 × 45 mm (L × W × D), mesh size: 4 × 4 mm, load: max 10 kg Material: stainless steel	
Basket holder KT 30	7517	ZE 1031 /DT, ZE 1032/DT	Basket holder without handles as a supplement to the insert basket. 1/-DIN basket or ISO basket Material: Stainless steel	
Basket holder KT 57	7504	ZE 1058 /DT, ZE 1059 /DT	Basket holder without handles as a supplement to the insert basket. 1/-DIN basket or ISO basket Material: Stainless steel	
Basket holder KT 30 Z	7507	ZE 1031 /DT, ZE 1032/DT	Basket holder with handles as a supplement to the insert basket. 1/-DIN basket or ISO basket Material: Stainless steel	
Basket holder KT 57 Z	3078	ZE 1058 /DT, ZE 1059 /DT	Basket holder with handles as a supplement to the insert basket. 1/-DIN basket or ISO basket Material: Stainless steel	
Drain set	31661	ZE 1031 /DT, ZE 1032 /DT, ZE 1058 /DT, ZE 1059 /DT	Complete drain set, including Bowden cable actuation and stainless-steel plug	

Optional accessories

Type	Code no.	compatible with	Description	Figure
Lid D 30	7522	ZE 1031 /DT, ZE 1032 /DT,	Lid for when using insert baskets. Material: Stainless steel	
Cover D 57	7520	ZE 1058 /DT, ZE 1059 /DT	Cover when using insert baskets. Material: Stainless steel	
Hinged lid D 1031 G	3232	ZE 1031 /DT, ZE 1032/DT	Hinged lid with gas spring and EPDM gasket Material: Stainless steel	
Hinged lid D 1058 G	3232	ZE 1058 /DT, ZE 1059 /DT	Hinged lid with gas spring and EPDM gasket Material: Stainless steel	
Silicone knob mat SM 29	178	ZE 1031 /DT, ZE 1032 /DT, ZE 1058 /DT, ZE 1059 /DT	Silicone knobmat with fastening knobs as a supplement to the insert basket K 29 EM. For the safe storage of sensitive objects to be cleaned during the cleaning process. External dimensions: 235 × 245 mm, PU: 2 pieces	
Insert tub KW 28-0	717	ZE 1031 /DT, ZE 1032/DT	Made of plastic with lid. Especially for basic instrument cleaning in STAMMOPUR GR.	
Foil test frames FT 36	3673	ZE 1031 /DT, ZE 1032/DT	For functional testing of the ultrasonic bath with the foil test	
Foil test frames FT 37	3674	ZE 1058 /DT, ZE 1059 /DT	For functional testing of the ultrasonic bath with the foil test	

SONOBOARD Standard

The ready-to-use solution for standard instruments

The practical addition to your sink system or for individual use.

For selected ultrasonic baths, BANDELIN offers ready-to-use sets, consisting of an ultrasonic bath and a practical stainless-steel cabinet. The double-walled, stainless-steel cabinets are fitted with overlapping fronts and all-round rubber seals on doors and panels. Their flexible positioning, thanks to lockable castors, the ergonomic working height, and the additional storage space make them high-quality and indispensable hospital equipment.

SONOBOARD offers high resistance to scratches and impacts and is extremely resistant to chemicals. The smooth, stainless-steel surfaces reduce the accumulation of germs and bacteria to a minimum and meet the highest hygiene requirements.

Putting into service and control are quick and easy to do!

MD Medical device class I
MDR-compliant



SONOBOARD is delivered as a ready-to-use set; only the media connections need to be established.

SONOBOARD STANDARD features

- Control on the front side
- Digital control unit with temperature monitoring according to KRINKO recommendation*
- Suitable for 1/1 DIN and ISO baskets

*Recommendation of the Commission for Hospital Hygiene and Infection Prevention (KRINKO) at the Robert Koch Institute (RKI) and the Federal Institute for Drugs and Medical Devices (BfArM), Federal Health Gazette 2012 • 55:1244-1310

Ready-to-use set:

- Ultrasonic bath SONOREX ZE 1058 DT with accessories
- Functional cabinet FS 900 S

Technical information

Internal dimensions of the oscillating tank, L x W x D [mm]	600 x 400 x 200/220 ⁺
Capacity [l]	46.0
Operating volume [l]	3232
Code no. (Version)	3452
External dimensions, incl. castors, L x W x H [mm]	900 x 700 x 930
Ultrasonic peak power* [W]	2400
Ultrasonic nominal power [W]	600
Ultrasonic frequency [kHz]	35
Pulse	✓
Sweep	✓
Time setting [min]	1,2,3,4,5,10,15,30, infinite
Temperature monitoring	✓
Thickness of tank material [mm]	2
Filling level mark	✓
Outlet	G 1½ fitting with turning knob and stainless-steel plug, siphon G 1½ with hose
Mains supply: 230 V~ (± 10%), 50/60 Hz 115 V~ (± 10%), 50/60 Hz	✓ ✓

*Corresponds to 4 times the ultrasonic nominal power ⁺inclined tank bottom

Accessories

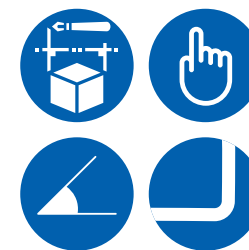
For standard instruments Code no.	Basket holder KT 57 Z 3078	Insert basket K 29 EM 688	 KT 57 Z	 K 29 EM
Lid Code no. (Version)	D 57 7520			
Hinged lid Code no.	D 1058 G 3232			
Foil test frame Code no.	FT 38 3672			



SONOMIC – Ultrasonic baths for MIS and standard instruments

Clean instruments
comfortably and reliably.

[from page 62](#)



Advantages of the SONOMIC

Impressively easy to use
and clean.

[from page 64](#)



SONOMIC technical specifications

Overview of the most
important key data.

[page 66](#)



SONOMIC accessories and consumables

Perfectly equipped for every
application.

[page 67](#)

SONOMIC

Ultrasonic baths for MIS and standard instruments

Three patents in one device!

The reliable internal cleaning of MIS instruments and rinsable parts of other instruments ensures their usability. SONOMIC has been specially developed for these instruments and combines

- gentle ultrasonic cavitation,
 - effective suction flushing and
 - individual instrument testing
- in one device.

The integrated flow control for each connected instrument ensures safe cleaning results and prevents instrument malfunctions.

The advantages at a glance:

- Safety through patented individual instrument rinsing and testing
- Patented suction flushing principle
- Patented universal adapter for connecting instruments up to 10 mm in diameter
- Temperature and level monitoring
- Reproducible program schedule
- Versatile use: use also for standard instruments
- Documentation by means of log printing
- Available as a tabletop or built-in device

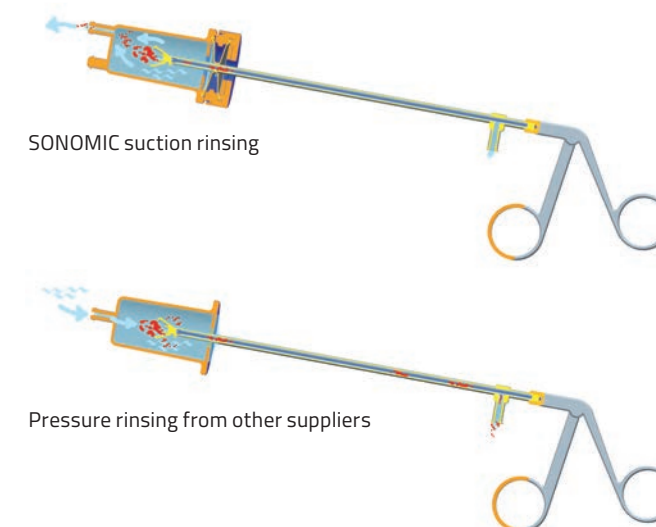
Individual instrument testing instead of overall testing

If different MIS instruments are rinsed at the same time, the rinsing result for individual instruments cannot be controlled.

In SONOMIC, this problem is solved with the innovative channel selector. It only ever activates one instrument for rinsing and thus enables single flow control. The minimum flow rate is 2 ml/s at 0.8 bar negative pressure; otherwise, the instrument is identified as "non-passing" and displayed on the touchscreen. This process monitoring, with determination, assignment and clear display of the successful rinsability of each individual instrument, ensures better safety during reprocessing.

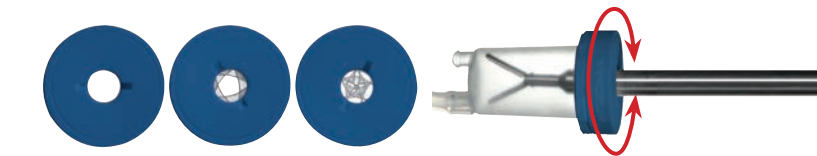
SONOMIC suction rinsing compared to pressure rinsing from other suppliers

As a rule, the largest proportion of contamination collects at the distal end of MIS instruments. With comparable devices from other manufacturers, MIS instruments are often rinsed with pressure from the distal end. Contaminants are transported through the entire lumen of the instruments, which poses an increased risk of unwanted deposits, especially at constrictions in the area of the handles and other difficult areas of the instruments. The direct introduction of the dissolved contaminants into the bath liquid is to be regarded as a further negative effect. The suction rinsing function of the SONOMIC at the distal ends of the instruments removes dirt counter to the direction of penetration. At the same time, fresh cleaning solution flows in. This prevents unnecessary contamination of the rear lumen parts of the instruments. Suctioned contaminants pass via the adapters into the replaceable filter and thus not back into the bath liquid.



Instrument connection to universal adapter without seal change

In SONOMIC, twelve rinsable MIS instruments with diameters from 3 to 10 mm can each be connected to one of the identical adapters, without the adapter seal having to be changed. The twisting principle of the seal guarantees a complete seal on the outer shaft of the instruments. The highly elastic sealing material is ultrasonically tested and resistant to the STAMMOPUR R and STAMMOPUR DR 8 agents.



Rotation principle of the adapter seal

Filling level and temperature monitoring

In the SONOMIC, the correct bath filling level is monitored with the integrated filling level sensor. In the event of non-compliance, sonication cannot be started, and the user receives an error message on the touchscreen.

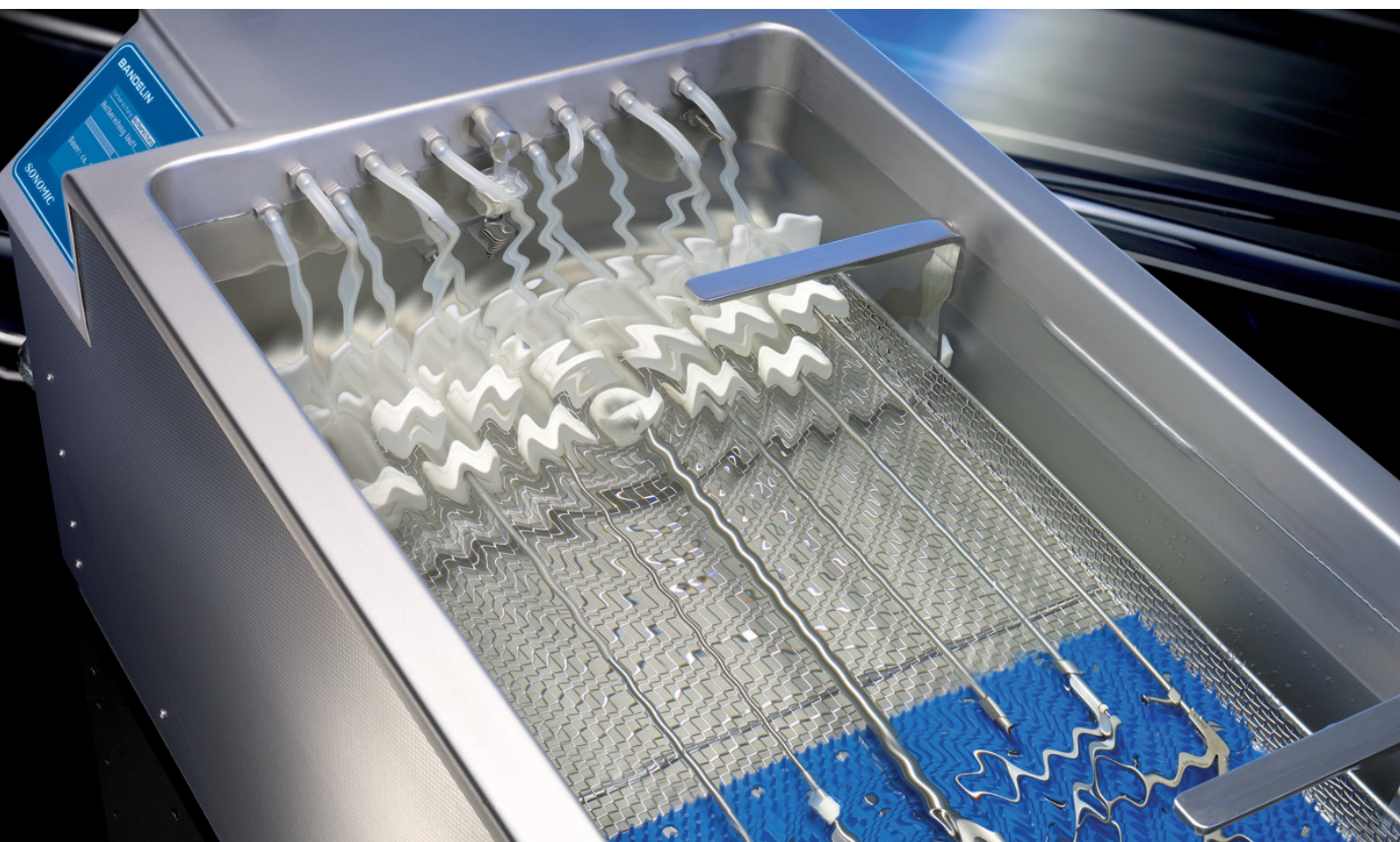
A temperature sensor checks before each cycle whether the bath temperature is within the permissible range. If the temperature of the bath liquid is too low (< 18 °C), the heating will switch on automatically. To prevent protein coagulation, a warning message is displayed at a temperature of approx. 40 °C.

Safety through reproducible program schedule

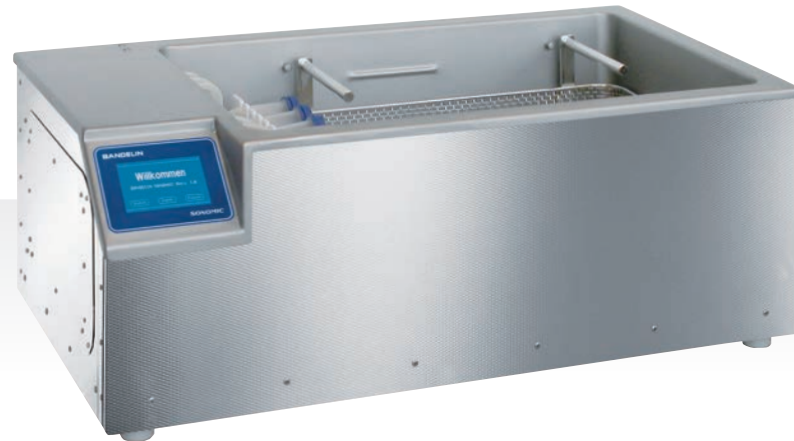
The operating program of the SONOMIC contains a self-test and gives the user clear instructions on all necessary work steps. This includes, for example, the adapter check, which is indispensable for the reliable identification of non-continuous instruments.

Documentation by means of log printing

The SONOMIC has several interfaces available for quality verification. If necessary, logs with the following data can be printed: cleaning mode, temperature of the bath, evaluation of the continuity, and much more.



All the advantages of the **SONOMIC** at a glance



MD Medical device class I
MDR-compliant



Durable design

- Easy-care stainless-steel housing
- Stainless-steel oscillating tank
- High-performance oscillating systems made of stable materials
- Made in Germany



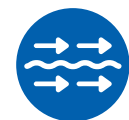
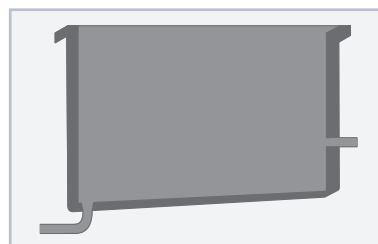
Rounded tank corners

on the sides and on the bottom make it easier to clean the tank. For hygienic handling of the ultrasonic bath.



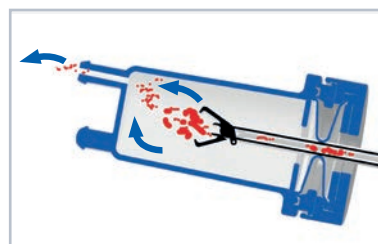
Tilted tank bottom

for better cleaning results through optimal sound propagation. The emptying of the tank is facilitated by the tank bottom, which is inclined towards the outlet, and dirt accumulation and residual liquid on the bottom are largely avoided.



SONOMIC suction rinsing

optimises rinsing, as impurities are removed directly at the distal end.



Welded outlet

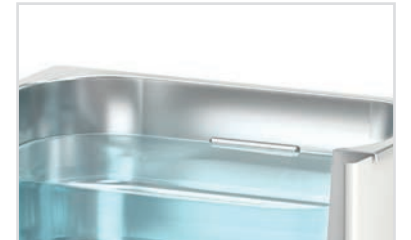
with ball valve for emptying the ultrasonic bath.

The outlet elbow is welded to the tank bottom and is not screwed on. This prevents leaks in the device and makes cleaning easier.



Filling level marking and level sensor

as a clearly recognisable embossing for the minimum filling level of the cleaning agent – makes filling the bath easier.



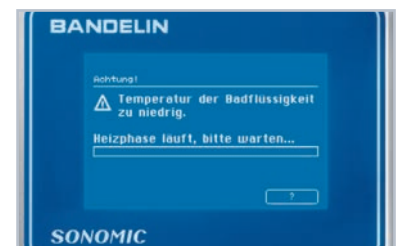
User-friendly

operation via a modern touchscreen (96 x 61 mm). The clearly structured operating program guides you through all the necessary work steps.



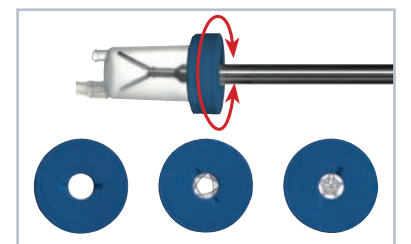
Heating and temperature monitoring

program-controlled heating to achieve the minimum temperature and temperature monitoring.



Universal adapter

for holding a wide range of hollow body and MIS instruments with a diameter of 3 to 10 mm.



Sweep – automatic frequency control

ensures a homogeneous sound field



Technical information

SONOMIC MC 1001

Ready-to-use set:

- Ultrasonic bath MC 1001
- Basket K 1001 MC
- 12 adapters with seals and ADS 1000 hose
- 12 x AD 1000 adapter seals
- Adapter testing strips APB 1000
- 30 EF 1001 filter inserts
- Foil test frame FT 38



Oscillating tank internal dimensions L x W x D [mm]	650 x 400 x 160/170+
Capacity [l]	42.5
Operating volume [l]	27.0
Code no.	3315
External dimensions L x W x H [mm]	860 x 490 x 325
Ultrasonic peak power * [W]	2400
Ultrasonic nominal power [W]	600
Ultrasonic frequency [kHz]	40
Operation: Touchscreen 96 x 61 mm	3
Heating, program-controlled [W]	400
Pulse	3
Sweep	3
Temperature monitoring	3
Thickness of tank material [mm]	2.0
Filling level mark	3
Level sensor	3
Outlet	Ball valve 3/4", Threaded sleeve G 3/4, at rear on the right
Interfaces	USB-B, RS-232, LPT

*Corresponds to 4 times the ultrasonic nominal power +inclined tank bottom

Accessories and consumables

Accessories

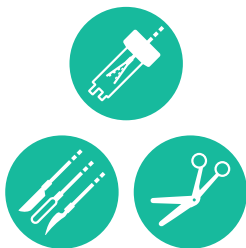
	Type	Code no.	Description	Figure
Loose lid	D 1000 MC	3312	Protects the bath liquid from contamination, and condensation water is drained into the oscillating tank. Recommended pursuant to the German Technical Rules for Biological Agents (TRBA) 250.	
Hinged lid	D 1001 G	3310		
Insert basket	K 1001 MC	3324	with comb bar for adapters, internal dimensions 520 x 340 x 50 mm L x W x D, mesh size 5 x 5 mm	
Silicone knob mat	SM 1000 MC	3313	Total dimensions of 2 pcs. in a set 245 x 340 mm L x W with fastening knobs	
Foil test frame	FT 38	3672	–	

Consumables

	Type	Code no.	PU [pcs]	Figure
Filter cartridge	EF 1001	3365 3366	30 100	
Adapter seal	AD 1000	3353 3354 3355	12 24 36	
Adapter with gasket and hose	ADS 1000	3350 3351	1 12	
Adapter testing strip	APB 1000	3358	2	

TRISON 4000.2

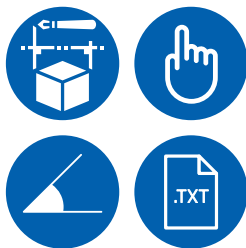
Ultrasonic bath for robotic, MIS and standard instruments



TRISON 4000.2
Ultrasonic bath for robotic, MIS and
standard instruments

The future of cleaning solutions –
versatile, precise, and efficient.

from page 74



**Advantages of the
TRISON 4000.2**

Compilation of the
most important features
and strengths.

from page 78



TRISON 4000.2 MIC

High-performance ultrasonic bath
for cleaning MIS
and standard instruments

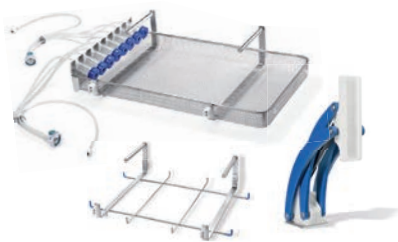
from page 81



TRISON 4000.2
Technical specifications

From operating volume to
ultrasonic peak power.

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TRISON 4000.2
Accessories and
consumables

Indispensable aids for
various requirements.

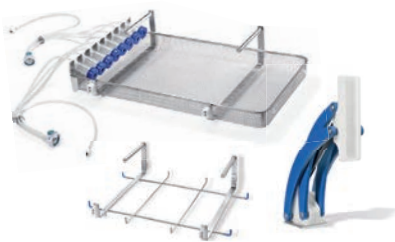
page 83



SONOBOARD TRISON 4000.2
Ready-to-use set

The practical addition
to your sink system or
for individual use.

page 84



SONOBOARD TRISON 4000.2
Technical specifications
and accessories

Simplify everyday
cleaning processes

from page 85

TRISON 4000.2

Ultrasonic bath for robotics, MIS and standard instruments



Robot-assisted surgery? The future starts now.

These robotic systems, now used in many clinics to support surgical treatment, offer the surgeon numerous advantages. First of all, they ensure a gentle and highly precise, minimally invasive procedure that can be carried out in such a way that nerves and organs can be preserved.

For patients, interventions can be better tolerated and put less strain on the body, and the recovery time is shortened. The highly complex technology has long been a standard in modern surgery and will become even more relevant for other medical disciplines in the future.

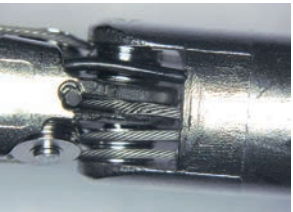


Complex instruments = complex treatment?

Due to their complex structure, robotic instruments have many critical points for treatment. The non-disassemblable instruments consist of a housing with a long, thin shaft, various filigree Bowden cables and complex tips.

Due to their nature and surgical use, robotic instruments must be prepared in many individual process steps for the next application on the patient. Particular attention is paid to effective pre-cleaning before the actual disinfection and sterilisation processes. Purely manual pre-cleaning, which not only requires a lot of staff because of the repeated manual rinsing, moving and cleaning, but is also prone to error, is not acceptable as a treatment step for many users.

The alternative: an ultrasonic bath, specially developed for pre-cleaning robotics instruments – the TRISON 4000.2.



Robotics instrument before and after cleaning

TRISON 4000.2 – the standard for pre-cleaning of robotic instruments

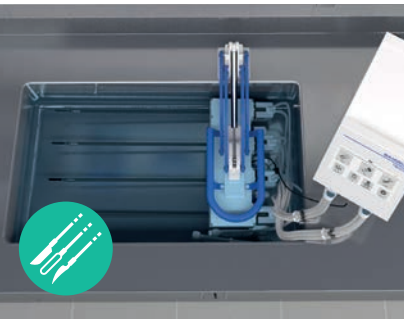
It is an innovative, modular ultrasonic bath adapted to robotics instruments, which enables the 3 basic functions of cleaning, rinsing and movement of the instruments in one process. This process ensures the best and reproducible cleaning results, saves time during pre-cleaning, optimises the overall treatment process and also offers valid process documentation. The intuitive operation via the large touch display also ensures safe handling.

-  **Ultrasound**
achieves the best possible cleaning results.
-  **Movement**
improves cleaning performance.
-  **Rinsing**
ensures effective interior cleaning.



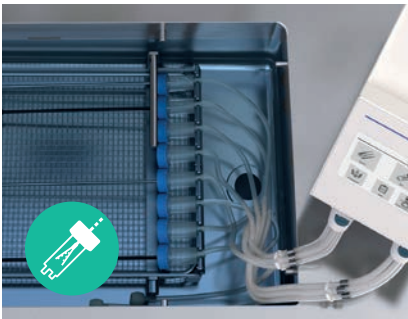
1 device – 3 possible uses

The TRISON has been specially developed for robotic instruments. MIS and standard instruments can also be cleaned effectively with the appropriate accessories. In order to meet the particular cleaning requirements in the best possible way, a cleaning program is available for each type of instrument.



Robotics

For simultaneous cleaning of up to 4 robotic instruments using the Twist moving device and corresponding hose connections for rinsing.



MIS

Ultrasonic cleaning and sequential individual rinsing of up to 8 MIS instruments in the specially developed TRISON rack. The rinsing pipe is monitored in the MIS program.



Standard

For cleaning instruments in DIN and ISO sieves before further machine processing. A basket holder is required.

Integrated or mobile?

The TRISON 4000.2 is available in two variants: as a built-in device or as a mobile device in a rollable cabinet, the SONOBOARD TRISON.

For optimal workflows, the integration of the TRISON into a stainless-steel row of units is the best possible variant. Depending on the orientation of the pre-cleaning area, the ultrasonic bath can be installed on the left or right side.

However, space in the CSSD is often limited, or conversion of the stainless steel line is not possible at a certain time. In such cases, the TRISON can be obtained as the SONOBOARD variant (more on this on page 84). The SONOBOARD is a ready-to-use set; i.e., all components are preassembled in a rollable stainless-steel cabinet. When the device is put into service, only the necessary media (electricity, sewerage and, if applicable, the dosing system) have to be connected, and the device will be ready for immediate use. No complex installation and no conversion, but a high degree of flexibility on site.



Fits into any pre-cleaning

The TRISON is integrated into a stainless-steel row of units.



The TRISON as the SONOBOARD variant.

Easy control – safe processes

Control via a 7-inch touch display

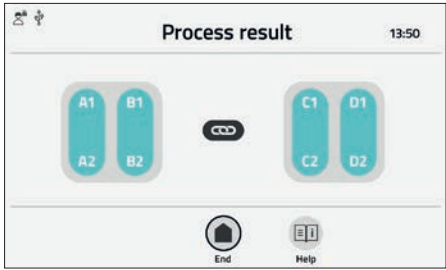
Everything at a glance

The programs can be selected directly with one click on the home screen. Other useful functions, such as rapid degassing, device care and settings, can be easily selected by means of large buttons with supporting icons.



User-optimised menu navigation:

- Program short start or supporting program management
- Illustration of individual steps
- Help pages with explanations
- Individual settings (language, process times, warning temperatures, etc.)
- Program favourites
- Initial configuration when the device is put into service
- Service access



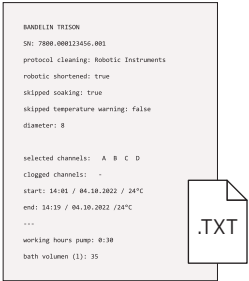
Process screen with successful rinsing.



Illustration of individual steps.

Process documentation

The TRISON 4000.2 has an interface concept for digital process documentation. For each individual cleaning process, a protocol is created with all relevant parameters for the cleaning. The protocols can be transmitted via the USB interface. Alternatively, the TRISON can be integrated into CSSD management software via the integrated network interface.



All the advantages of the **TRISON** at a glance

MD

Medical device class I
MDR-compliant



- Durable design
- Easy-care stainless-steel housing
 - Stainless-steel oscillating tank
 - High-performance oscillating systems made of stable materials
 - Made in Germany



Robotics

For simultaneous cleaning of up to 4 robotic instruments using the Twist moving device and corresponding hose connections for rinsing.



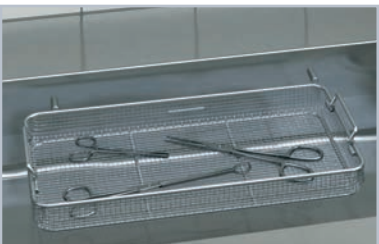
MIS

Ultrasonic cleaning and sequential individual rinsing of up to 8 MIS instruments in the specially developed TRISON rack. The rinsing pipe is also monitored in the MIS program.



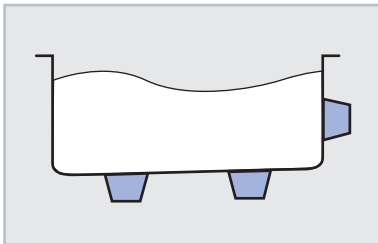
Standard

For cleaning instruments in DIN and ISO sieves before further machine processing. A basket holder is required.



Bottom and lateral sonification

for more uniform and gentle cleaning thanks to optimal sound distribution and reduction of acoustic shadows.



Flexible assembly

Available as a left or right version – for integration into a row of units or as a single solution in a rollable cabinet.



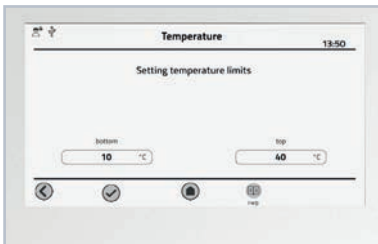
Tilted tank bottom

for better cleaning results thanks to optimal sound propagation. The emptying of the tank is facilitated by the tank bottom, which is inclined towards the outlet, and dirt accumulation and residual liquid on the bottom are largely avoided.



Temperature monitoring with warning function

Ensures that the set limit values are complied with.



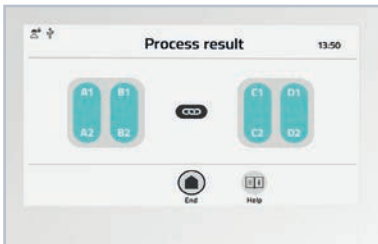
User languages

Easy selection of different language outputs.



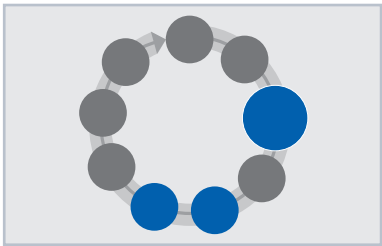
Process safety through self-monitoring

Control of all functions to avoid incorrect operation. The process result is clearly displayed.

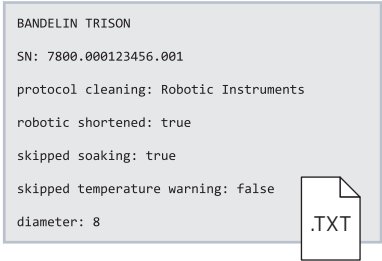




Overall process optimisation
Increases the quality and reproducibility of the entire reprocessing chain.



Process documentation
The TRISON 4000.2 has an interface concept for digital process documentation.



Ease of use
The programs can be selected directly with one click on the home screen. Other useful functions, such as rapid degassing, device care and settings, can be easily selected by means of large buttons with supporting icons.



User-optimised menu navigation
Illustration of individual steps and help pages with explanations



DU 4000 dosing unit
A fully integrated and automatic dosing unit saves manual processes



TRISON 4000.2 MIC

Consisting of:

- TRISON TE 4000 oscillating tank with drain set
- TRISON GT 4000 M-C ultrasonic generator
- TRISON Base TB 4000.2 control unit
- TRISON Rack TR 3001 basket
- FT 4 foil test frame
- 30 EF 1001 filter inserts

The TRISON 4000.2 MIC is available in two variants: as a built-in device or as a mobile device in a rollable cabinet, the SONOBOARD TRISON.



Internal dimensions of the oscillating tank, L x W x D [mm]	770 x 420 x 165/190 ⁺
Capacity [l]	60.0
Operating volume [l]	35.0
Code no.	7856 (built-in device), 7858 (SONOBOARD)
External dimensions, incl. castors, L x W x H [mm]	1200 x 700 x 930
Ultrasonic peak power* [W]	3040
Ultrasonic nominal power [W]	760
Ultrasonic frequency [kHz]	38
Pulse	✓
Sweep	✓
Time setting [min]	menu-driven
Temperature monitoring	✓
Thickness tank material [mm]	2.0
Filling level mark	✓
Outlet	G 1½ fitting with turning knob and stainless-steel plug, siphon G 1½ with hose
Mains supply: 230 V~ (± 10%), 50/60 Hz 115 V~ (± 10%), 50/60 Hz	✓ ✓
Current consumption** [A]	3.5
Interfaces	USB-A, Ethernet

*corresponds to 4 times the ultrasonic nominal power ** at 230 V~(± 10%) 50/60 Hz ⁺inclined tank bottom

TRISON 4000.2

Consisting of:

- TRISON TE 4000 oscillating tank with drain set ①
- TRISON GT 4000 M-C ultrasonic generator②
- TRISON Base TB 4000.2 control unit ③
- TRISON Twist moving device TT 4000 Xi ④ or TT 4000 Si ⑤
- TRISON Lift TL 4000 pivot-mounted arm ⑥
- 30 EF 1001 filter inserts
- FT 42 foil test frame



Technical specifications

	TRISON 4000.2 Xi		TRISON 4000.2 Si	
Oscillating tank internal dimensions L x W x D [mm]	770 x 420 x 165/190 ⁺			
Capacity [l]	60.0			
Operating volume [l]	35.0			
Code no. (Version)	7861 (right)	7862 (left)	7859 (right)	7860 (left)
External dimensions L x W x H [mm]	Oscillating tank: 770 x 420 x 165/190 ⁺ / Ultrasonic generator: 400 x 360 x 170 Control unit (including rotary base): 370 x 200 x 360 Pivot arm: 240 x 95 x 350			
	Moving device Xi: 345 x 160 x 175		Moving device Si: 405 x 205 x 190	
Ultrasonic peak power* [W]	3040			
Ultrasonic nominal power [W]	760			
Ultrasonic frequency [kHz]	38			
Lateral sonication	✓			
Pulse	✓			
Sweep	✓			
Temperature monitoring	✓			
Thickness of tank material [mm]	2.0			
Filling level mark	✓			
Outlet	G 1 ½, fitting with turning knob and stainless-steel plug			
Installation in work plate	from below			
Mains supply: 230 V~ (± 10%), 50/60 Hz	✓			
Current consumption** [A]	3.5			
Interfaces	USB, Ethernet			

*corresponds to 4 times the ultrasonic nominal power ** at 230 V~[± 10%] 50/60 Hz ⁺inclined tank bottom

Accessories and consumables

	Type	Code no.		External dimensions L × W × H [mm]	Function and compatibility
Dosing unit		DU 4000	7899	-	Dosing unit for filling the ultrasonic bath with water and cleaning preparation
TRISON Rack		TR 3001	Right 7631 Left 7731	640 × 405 × 150	Basket with connections for up to 8 rinsable MIS instruments; right and left version available
TRISON Rack		TR 4000	7632	690 × 405 × 150	for Hugo™ RAS System or Versius® Surgical Robotic System robotic instruments
Inset basket		K 29 EM	688	470 × 240 × 45	Receptacle for the objects to be cleaned (e.g., standard instruments)
Basket holder		KT 3000 Z	7761	–	Receptacle for the insert basket
Lid		D 4000 A	right 7955 Left 7956	–	Universally applicable for all TRISON applications; for TRISON Twist only in lowered position; right and left version available
Spacer		TX 4000 Xi	7763	–	Spacer of the TRISON Twist Xi for stackers; VE 2 pcs.
Foil test frame		FT 42	3224	700 × 440	The foil test is a simple method for displaying the intensity and distribution of cavitation in an ultrasonic bath.

Consumables

Filter cartridge Code no.		EF 1001, 30 pcs. 3365	EF 1001, 100 pcs. 3366
Adapter seals Code no.		AD 1000, 8 pcs. 3361	AD 1000, 24 pcs. 3354
Adapter with seal Code no.		ADT 1000, 1 pc. 7770	ADT 1000, 8 pcs. 3359
Adapter testing strip Code no.		APB 3000, 2 pcs. 7771	
Hose set with couplings for TRISON Twist Code no.		For Xi: SLS 4000 TT 1 pc. 3362	For Si: SLS 3000 TT, 1 pc. 3363
Hose set with couplings for TRISON rack, without adapter Code no.		SLS 3000 TR 3364	

SONOBOARD TRISON 4000.2

Ready-to-use set

The practical addition to your sink system or for individual use!

For selected ultrasonic baths, BANDELIN offers ready-to-use sets, consisting of an ultrasonic bath and a practical stainless steel cabinet. The double-walled stainless steel cabinets are equipped with overlapping fronts and all-round rubber seals on doors and panels. Their flexible positioning, thanks to lockable castors, their ergonomic working height, and the additional storage space make them high-quality and irreplaceable hospital equipment.

SONOBOARD offers high resistance to scratches and impacts and is extremely resistant to chemicals. The smooth, stainless-steel surfaces reduce the accumulation of germs and bacteria to a minimum and meet the highest hygiene requirements.

Putting into service and control are quick and easy to do!

MD Medical device class I
MDR-compliant

SONOBOARD is delivered as a ready-to-use set; only the media connections need to be established.

Features

- Improved cleaning by combining ultrasound, rinsing and movement for robotics instruments
- Design optimised for robotics instruments
- Safety through individual instrument rinsing and testing
- Easy to connect the instruments
- Temperature monitoring (robotics and MIS mode)
- Logging function
- Available as right and left version

Ready-to-use set:

- TRISON 4000.2 Xi ultrasonic bath with accessories
- Functional cabinet FS 1200 TR
- Optional: DU 4000 dosing unit



Technical specifications

Internal dimensions of the oscillating tank, L x W x D [mm]	770 x 420 x 165/190 ⁺	
Capacity [l]	60.0	
Operating volume [l]	35.0	
Code No. (Version)	7855 (right)	7854 (left)
External dimensions, incl. castors, L x W x H [mm]	1200 x 700 x 930	
Ultrasonic peak power* [W]	3040	
Ultrasonic nominal power [W]	760	
Ultrasonic frequency [kHz]	38	
Pulse	✓	
Sweep	✓	
Time setting [min]	menu-driven	
Temperature monitoring	✓	
Thickness tank material [mm]	2.0	
Filling level mark	✓	
Outlet	G 1½ fitting with turning knob and stainless-steel plug, siphon G 1½ with hose	
Mains supply: 230 V~ (± 10%), 50/60 Hz 115 V~ (± 10%), 50/60 Hz	✓	✓
Current consumption** [A]	3.5	
Interfaces	USB-A, Ethernet	

*corresponds to 4 times the ultrasonic nominal power ** at 230 V~(± 10%) 50/60 Hz ⁺inclined tank bottom

Accessories

For robotics instruments Code no. (Version)	TRISON Twist TT 4000 Xi 7821 (right), 7921 (left)	TRISON Twist TT 4000 Si 7820 (right), 7920 (left)	
For MIS instruments Code no. (Version)	TRISON Rack TR 3001 7631 (right), 7731 (left)		
For standard instruments Code no.	Basket holder KT 3000 Z 7761	Insert basket K 29 EM 688	
Lid Code no. (Version)	D 4000 A 7955 (right), 7956 (left)		
Foil test frame Code no.	FT 42 3224		

Cleaning and disinfecting agents

08



Cleaning and disinfecting agents

Optimal cleaning and disinfection results in the ultrasonic bath are achieved by using special cleaning and disinfecting agents that are formulated for this process.

from page 88



Agent for cleaning and chemical disinfection

STAMMOPUR DR 8

page 90



Agents for cleaning

In instrument reprocessing:
STAMMOPUR R

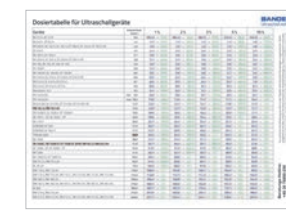
Special application
Instrument maintenance:
STAMMOPUR GR

from page 91



Dosing aid accessories

page 93



Dosing calculator, dosing table and hygiene plan supplement

from page 93



Agents FAQ

Short answers to the most important questions.

from page 95

STAMMOPUR

Cleaning and disinfecting agents

The use of ultrasonic cleaning for successful instrument reprocessing has proven itself for decades and is all the more topical today, as the requirements for instrument reprocessing are constantly being increased. The method of "ultrasonic cleaning of medical instruments" is at the cutting edge of technology and science due to its highly effective cleaning performance.

Specially formulated cleaning and disinfecting agents are required to achieve optimal reprocessing results in an ultrasonic bath. With the special disinfectants from DR.H.STAMM GmbH Chemische Fabrik, BANDELIN offers highly effective cleaning and VAH-listed cleaning and disinfecting agents. With their cavitation-promoting pro-

perties, the agents support the cleaning process while also being gentle on the objects to be cleaned and helping to prolong the service life of the ultrasonic device.

The high-quality agents achieve reliable results, save resources, and effectively utilise valuable time and labour in daily instrument reprocessing. STAMMOPUR is formulated for the optimal interaction of ultrasound and the agent – expertise for the benefit of the user.

All agents, as well as the ultrasound equipment, are made in Germany.


eIFU

More information can be found at: bandelin.com/produkte/praeparate/stammopur/



Product information, instructions for use / eIFUs and EC safety data sheets can be downloaded as a PDF file at bandelin.com/docs-category/downloads



Note: Some common cleaning and disinfecting agents from other manufacturers may contain components that attack the ultrasonic oscillating tank and can lead to equipment failure due to, for example, pitting.

The interaction of ultrasonic cleaning and the cleaning and disinfection device

The state of the art in science and technology is to subject the instruments to a (disinfecting) pre-cleaning in an ultrasonic bath, even when using automated reprocessing in a cleaning and disinfection device. This pretreatment in an ultrasonic bath ensures the best results in the overall treatment process in combination with the cleaning and disinfection device.

Non-pre-cleaned instruments that still contain impurities after reprocessing in the cleaning and disinfection device must go through the reprocessing cycle again after post-cleaning. The often stubborn impurities caused by the high temperatures during thermal disinfecting in the cleaning and disinfection device can be reliably cleaned with STAMMOPUR R in an ultrasonic bath.

Thorough cleaning of instruments with STAMMOPUR GR

Over time, instruments can become externally discoloured, stained, or encrusted due to various influences. Instruments undergo soiling in everyday practice – both during use and during complex reprocessing. It is virtually impossible to remove temper colours or burnt-in soiling caused by sterilisation processes by hand. Oxide or limescale deposits cannot be completely avoided either, despite the best care. Basic cleaning of the

instruments in an ultrasonic bath is recommended to remove these impurities. With the special cleaning agent STAMMOPUR GR, old instruments will regain their lustre. The refurbishing process supports qualitative and ecological sustainability.

Medical programme overview

Agent \ Application	Instrument cleaning	Pre-cleaning	Disinfectant pre-cleaning	Cleaning and disinfecting	Disinfecting	Special application
STAMMOPUR DR 8 Instrument disinfecting and intensive cleaning, concentrate, mildly alkaline	✓	✓	✓	✓	✓	
STAMMOPUR R Instrument cleaner, concentrate, mildly alkaline	✓	✓				
STAMMOPUR GR Basic instrument cleaner, concentrate, strongly acid						✓

DR·H·STAMM – Quality

The many decades of successful co-operation between DR.H.STAMM GmbH Chemische Fabrik and BANDELIN electronic GmbH & Co. KG in the development of cleaning and disinfecting agents has led to a wealth of expertise in all areas of ultrasonic cleaning.

The decades of experience and extensive knowledge of DR.H.STAMM GmbH Chemische Fabrik are reflected in our compliance with the **Medical Device Regulation (MDR)**, among other regulations.

All STAMMOPUR agents are medical devices and are already certified pursuant to Regulation (EU) 2017/745, or the MDR for short. All agents fulfil the new, current regulatory requirements to ensure the long-term safety of your processes used in instrument reprocessing as part of cleaning and disinfecting.

All agents must be used in accordance with the **KRINKO/BfArM recommendation**.

Their listing by the German Association for Applied Hygiene (**VAH listing**) underlines the quality and reliability of the disinfectants.



An overview of all medical devices for medical and dental application.

Detailed information can be found on the following pages and additionally on the Internet at:

- www.dr-stamm.de/produktinformationen/
- www.dr-stamm.de/manuals/
- www.dr-stamm.de/sicherheitsdatenblaetter/


eIFU

bandelin.com/produkte/praeparate/stammopur/



STAMMOPUR DR 8

Instrument disinfecting and intensive cleaning

Intensive cleaning and chemical disinfecting of medical instruments and accessories

- VAH certification, C€ 0483
- Bactericidal, levurocidal, limited virucidal
- Effective against avian influenza virus H5N1 and SARS-CoV-2
- Very powerful cleaning effect in an ultrasonic bath
- Very short ultrasonic treatment times alongside low concentration in use
- Very high material compatibility
- Mildly alkaline
- Economical due to low concentration in use
- Free of aldehydes, chlorine and phenols

STAMMOPUR DR 8 is a concentrate for manual chemical disinfection and disinfecting, non-fixing intensive cleaning of medical instruments and accessories in ultrasonic baths, as well as in immersion baths.

made of metal, including light metal, titanium, glass, ceramic, porcelain, plastic and rubber.

It is for **application** in instrument reprocessing for general, surgical, invasive and non-invasive medical instruments and accessories in CSSDs, in clinics, in doctors' surgeries and in medical foot care.

STAMMOPUR DR 8 is also successfully used for the treatment of rigid endoscopes and MIS instruments in an ultrasonic bath.

In the case of critical and semi-critical medical products, further processing steps are required. Do not use for final disinfection.

Active ingredients: amines, propionates
Mildly alkaline, pH 9.4 at 1% in demineralised water, biodegradable.

Application in an ultrasonic bath
(dosage • treatment time)
2 % • 5 min: *bactericidal¹, levurocidal², limited virucidal³*
incl. H5N1 and SARS-CoV-2
2 % • 10 min: *SV40³*
3 % • 15 min: *Adeno³*

Application without ultrasound
(dosage • treatment time)
1 % • 60 min: *bactericidal¹, levurocidal²*
2 % • 30 min or 3 % • 15 min: *bactericidal¹, levurocidal², limited virucidal³ incl. H5N1 and SARS-Cov-2; additionally SV40³*

¹EN 13727, EN 14561, DGHM, high load; ²EN 13624, EN 14562, DGHM, high load; ³EN 14476, high load

Effectiveness reports are available and can be requested.

Litres	1	2	5	10
Code no.	–	972	974	6028



STAMMOPUR R

Instrument cleaner

Cleaning and pre-cleaning of medical instruments and accessories

- Very powerful cleaning effect in an ultrasonic bath
- High blood-dissolving capacity
- Also removes stubborn, dried-up soiling
- Very short ultrasonic treatment times alongside economical, low concentration in use
- Very high material compatibility
- Mildly alkaline
- Pleasant smell
- Also recommended for pre-cleaning
- Can be used as a contact liquid

STAMMOPUR R is a concentrate for manual cleaning and pre-cleaning in an ultrasonic bath or in an immersion bath process of **general, surgical, invasive and non-invasive medical instruments and accessories and components of medical products** made of metal, titanium, glass, porcelain, ceramic and plastic.

It is for **application** in the instrument reprocessing process in CSSDs (Central Sterile Services departments), in clinics, in doctors' surgeries and in medical foot care.

For endoscopes and endoscopic accessories, the suitability recommendations of Karl Storz GmbH and Richard Wolf GmbH are available. The specifications of the manufacturers of endoscopes and their accessories must be strictly observed during treatment with STAMMOPUR R, especially in an ultrasonic bath.

Base: tensides
Mildly alkaline, pH 9.5 at 1% in demineralised water, biodegradable.

Dosage • Treatment time

Application in an ultrasonic bath:
2 % • 3 – 10 min

Application without ultrasound:
3 – 5 % • max. 12 h
depending on the nature and persistence of the soiling.

Litres	1	2	5	10
Code no.	988	934	989	6029



STAMMOPUR GR

Basic instrument cleaner

Basic cleaning for the restoration of medical instruments and accessories

- Basic cleaning as a downstream instrument reprocessing process
- Very powerful cleaning effect, though it will only work in conjunction with the ultrasonic effect in the ultrasonic bath at 50 – 60 °C.
- Very high material compatibility
- Strongly acid
- Economical due to low concentration in use
- Application exclusively by indirect sonication in the inset beaker

STAMMOPUR GR is a concentrate for manual basic cleaning, in an ultrasonic bath, of **medical instruments, accessories and components of medical products** made of stainless steel, precious metal, titanium, glass, porcelain, ceramic and plastic.

This agent is intended for removing temper colours, oxides, stains, mineral residues and burnt-on residues.

It is for **application** in the process of repairing and maintaining medical instruments, accessories and components of medical products, in CSSDs, in clinics and in doctor's practices.

In the process of basic cleaning during maintenance and repair for refurbishing, STAMMOPUR GR supports qualitative and ecological sustainability.

Not suitable for acid-sensitive materials, such as light metals, or for damaged chrome plating.

Dosing ▪ Treatment time ▪ Temperature

Application in an ultrasonic bath:
5% ▪ 3 – 10 min ▪ 50 – 60 °C

Application exclusively by indirect sonication in the inset beaker

STAMMOPUR R (dosage: 2%), for example, can be used as a contact liquid.

Base: phosphoric acid, tensides
strongly acid, pH of 1.9 at 1% in demineralised water, biodegradable

Litres	1	2	5	10
Code no.	968	938	969	6031



Dosing aids

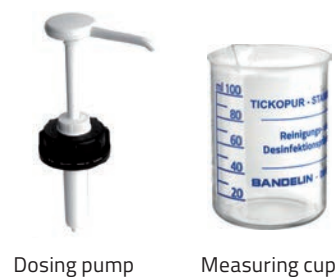
Dosing pump

This makes it easy to remove cleaning and disinfectant products from the jerrycans and reliably prevents spillage.

	For use with	Code no.
Dosing pump	5-l jerrycan	268
Dosing pump	10-l jerrycan	2660
Measuring cup	100 ml	294

Measuring cup

For precise dosing of the cleaning and disinfecting agent volumes taken from the dosing table.



Dosing calculator

The cleaning and/or disinfectant used is key for a successful ultrasonic application. The correct dosage of the concentrate is crucial.

If the dosage is too low, this will prevent success and constitutes misuse. That is why dosages and treatment times must be strictly adhered to.

Overdosing also constitutes misuse, because that can have an effect on material compatibility.

A safe and successful application can be determined by using the dosing calculator at bandelin.com/en/service/dosierrechner/.

After entering the desired concentration and the amount of working solution to be prepared, the dosing calculator will indicate how much concentrate and water are required.

The required concentration depends on the application to be performed. Detailed information can be found in the operating instructions for the agent in question.

The amount of working solution relates to the operating volume of the existing device. The operating volume refers to the filling volume of the tank up to the filling level mark. You can find it in the relevant operating instructions for the ultrasound device.

Desired concentration of the working solution (%)
Desired quantity of working solution (l)
Calculate

Calculate Clear fields

bandelin.com/en/service/dosing-calculator/

SONOREX smart ST ultrasonic baths – intelligent dosing aid directly on the display

SONOREX smart ultrasonic baths have an integrated dosing calculator that can be operated directly via the display. Simply enter the desired working filling volume and the concentration of the cleaning and disinfecting agent – the system will automatically calculate the exact proportions:

- How many parts of water
- How many parts of cleaning agent/disinfecting agent must be added to achieve the optimal cleaning performance.





Quick start

The most important steps for a quick start with the SONOREX ultrasonic bath.

[from page 98](#)



The foil test

Performance testing of an ultrasonic bath using the foil test.

[page 100](#)



Ultrasonic baths for hire

Hire one of our ultrasonic baths for a specific period only.

[from page 102](#)



FAQs

The important questions, answered briefly.

[from page 104](#)



Your contact person in the medical field

Let our expert advise you competently and personally.

[page 106](#)



Quick start – for using appliances in the medical field



1

Structure of the ultrasonic bath

- See operating instructions

2

Selection of accessories, suitable for the application

- The selection of accessories depends on the objects to be cleaned and on the degree of contamination
- Selecting the method – direct or indirect sonication

Note: The objects to be cleaned must not be placed directly on the tank bottom!

3

Filling the ultrasonic bath

- Filling the bath with tap water or demineralised water with a disinfectant

Note: Note the filling level mark. The filling level must not fall below the mark. Please note that the objects to be cleaned or inset beaker may also displace water and cause the bath to overflow.

4

Selection of the disinfectant

- Select the appropriate agent (see pages 90–92)
- Determine the correct concentration. Use our dosage table for this and follow the usage instructions for the disinfectant

Note: With the STAMMOPUR agents, BANDELIN offers a wide range of agents that are specifically developed for ultrasonic cleaning.

5

Degassing bath liquid

Remove the dissolved gases by switching on the ultrasound or using the DEGAS function on the SONOREX smart ST series and the SONOREX DIGITEC DT series.

Guide values for degassing times:

Bath volume up to 10 litres: approx. 10 min,

Bath volume > 10 litres: approx. 30 min

6

Introducing objects to be cleaned

- Place the objects to be cleaned in the basket, the holder or the inset beaker.
- You can generally use the accessories of your choice, e.g., suitable for the activities before and/or after sonication, if you choose the device accordingly

Notes: The objects to be cleaned must not overlap. Instruments with joints must always be inserted in an opened state. There should be no air-filled cavities. The objects to be cleaned must be completely covered with cleaning agent.

7

Setting the sonication parameters

Setting the temperature and sonication time:

- Based on your own experience or
- in accordance with the application instructions or the usage instructions for the disinfectant

Notes: First select a low sonication time, e.g., 3 minutes for cleaning instruments. Ultrasonic cleaning is extremely effective in a very short time.

8

Optional: activate process logging (only SONOREX smart ST) via optional USB/LAN DST 01 docking station, transferable to other media.

9

Starting the application

Note: Caution when cleaning instruments with organic residues: Ensure the correct bath temperature to avoid protein denaturation.

10

Completing the cleaning process

- Rinse the objects to be cleaned thoroughly and, if necessary, perform further reprocessing steps.
- Care of the ultrasonic bath (observe the operating instructions)

Note: Correct operation and proper care of the ultrasonic bath will result in a long lifespan.



Degassing an
ultrasonic bath



Filling an
ultrasonic bath



The foil test – functional test for an ultrasonic bath

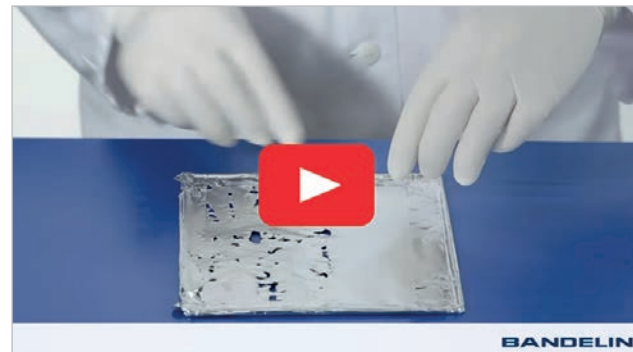
Functional test for an ultrasonic bath

The foil test is recommended for the functional testing of an ultrasonic bath – when it is first put into service, and then at regular intervals thereafter (e.g., quarterly). The user is responsible for how often it is performed. The foil test is a simple method for displaying the intensity and distribution of cavitation in an ultrasonic bath. It is performed by inserting aluminium foil stretched over a foil test frame. Depending on the sonication time, the foil will be perforated or destroyed to a certain extent by cavitation.

In order to be able to reproduce the test results, it is important that the test conditions are always the same:

- The oscillating tank is filled up to the filling level mark
- Temperature of the sonication fluid
- Duration of degassing
- Positioning of the frame
- Foil type (brand, thickness)
- Sonication time
- Type and concentration of the ultrasound agent

To document the foil tests you have performed, download the foil test documentation template from bandelin.com/en/docs-category/downloads/



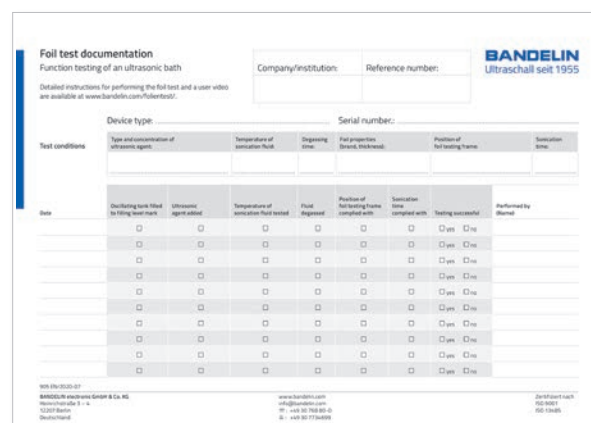
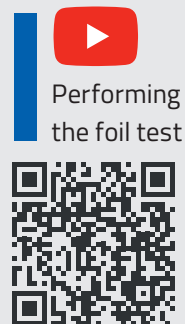
youtube.com/watch?v=5lvx-RsEz8Q

The foils can be archived in a suitable manner (scan, photo, etc.). This makes it possible to compare the foils at any time.

The perforated areas of the foils should be of roughly the same size and distribution – they are never identical. Regular foil tests are the only way to check the process, e.g., when reproces-

sing medical devices. For the foil test, various FT foil test frames can be requested from the manufacturer BANDELIN. The foil test frames are available for a wide range of tank dimensions. Aluminium household foil is also required for the test procedure; this is not included in the scope of delivery.

[the foil test](#)

A square QR code with a black and white pixelated pattern, used for linking to digital content.

- A website with information on the foil test with a download section



Ultrasonic baths for hire

Would you like to see the performance and quality of our ultrasonic baths for yourself before buying them? Then you can start by renting the appropriate device.

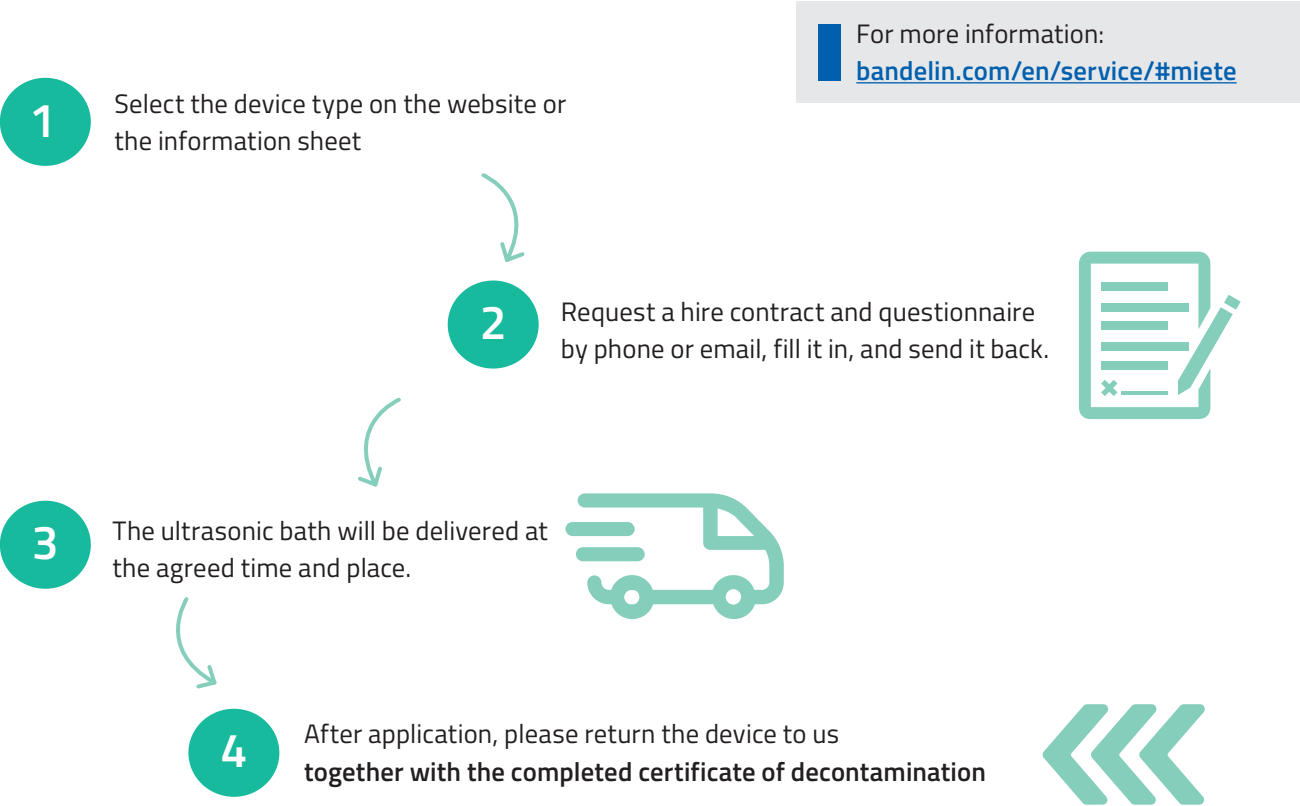
Do you need a replacement device at short notice to tide you over while yours is being repaired, or perhaps as an interim solution for a new purchase? We also offer rental devices for this purpose.

All devices used in the medical environment, whether compact devices, SONOMIC or TRISON, are available for loan.

Please note: Rental is only possible within Germany.
The rental of ultrasonic baths is only offered to commercial customers. The minimum rental period is one week.



4 simple steps for hiring your device



Devices

Type	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]	Ultrasonic frequency [kHz]	Heating power [W]	Ball valve outlet
RK 31/H, DT 31/H	190 x 85 x 60	0.6	205 x 100 x 180	160	40	35	70	–
RK 100/H, DT 100/H	240 x 140 x 100	2.0	260 x 160 x 250	320	80	35	140	–
RK 102 H, DT 102 H, ST 102 H	240 x 140 x 100	2.0	260 x 160 x 250	480	120	35	140	G ½, right
ST 103 H	240 x 140 x 150	2.7	325 x 160 x 300	560	140	35	200	G ½, right
ST 156 BH	500 x 140 x 150		530 x 165 x 300	860	215	35	600	G ½, right
RK 255/H, DT 255/H, ST 255 H	300 x 150 x 150	3.8	325 x 175 x 295	640	160	35	280	G ½, right
ST 510 H	300 x 240 x 150	6.6	325 x 265 x 300	640	160	35	400	G ½, left
RK 514/H, DT 514/H, ST 514 H	325 x 300 x 150	9.0	355 x 325 x 305	860	215	35	600	G ½, left
ST 514 BH	325 x 300 x 200	12.5	355 x 325 x 350	860	215	35	600	G ½, left
RK 1028/H, DT 1028/H, ST 1028 H	500 x 300 x 200	19.0	535 x 325 x 400	1200	300	35	1300	G ½, left
ST 1028 CH	500 x 300 x 200	30	540 x 340 x 500	1200	300	35	1450	G ½, left
DT 1058 M	600 x 400 x 200/220*	35.0	670 x 470 x 400	2400	600	35	–	G ¾, right
RK 1050	600 x 500 x 200	41.0	640 x 540 x 425	2400	600	35	–	G ¾, left
RK 1050 CH, DT 1050 CH, ST 1050 CH	600 x 500 x 300	60.0	640 x 540 x 530	2400	600	35	230 V – 1950 W, 115 V – 1450 W	G ¾, left

*corresponds to 4 times the ultrasonic nominal power **without ball valve and handles *inclined tank bottom

Type	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]	Ultrasonic Frequency [kHz]
SONOMIC MC 1001	650 x 400 x 160/170*	27.0	860 x 490 x 325	2400	600	40
SONOBOARD TRISON 4000.2	770 x 420 x 165/190*	35.0	Moving device Xi: 345 x 160 x 175 Movement device Si: 405 x 205 x 190	3040	760	38

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

Accessories

Rental devices are always supplied with the appropriate accessories.

FAQs

Ultrasound and cavitation – what is it?

Vibrations with frequencies above 20 kHz (20,000 vibrations per second) are referred to as ultrasound. These vibrations generate millions of tiny vacuum bubbles in all liquids during the tension phase, which implode in the pressure phase, creating highly effective pressure surges. This process is called cavitation.

Which ultrasonic bath should I choose?



Representation of a cavitation bubble



Close-up of an ultrasonic transducer.

The size of the objects to be cleaned determines the size of the tank and thus the required type of device.

The basket dimensions must be taken into account when selecting the device. To avoid overloading the device, it is advisable to choose a slightly larger device. This will also provide room for further applications.

Further decision criteria include, in particular, the operating elements and the desired design – see the following page. For rinsable MIS and complex robotic instruments, ultrasonic baths with additional functions, such as rinsing and movement of the instruments, are available to meet the increased requirements for cleaning.

Does an ultrasonic bath need to have heating?

For cleaning after dry deposit, devices without heating are primarily used, because at temperatures above 40 °C there is a danger of protein coagulation. Devices with heating are used for the basic cleaning of instruments, as the cleaning time is shortened by the heating of the bath liquid, and dirt is removed more quickly.

Which accessories are necessary?

Objects to be cleaned must not lie on the tank bottom. Baskets and other inset beakers prevent scratches on objects to be cleaned and the tank bottom.

For cleaning very small or sensitive parts, other accessories are useful, for example, for careful storage. For reasons of occupational safety, it is recommended to cover the ultrasonic baths during operation (see TRBA 250).

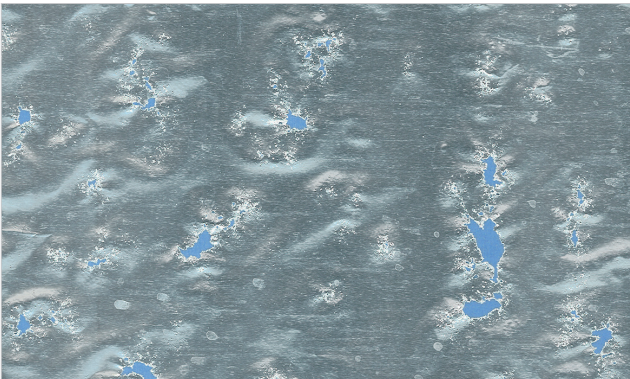
Which liquids can be used?

STAMMOPUR disinfectants are specially developed for application in ultrasonic baths. Water without cleaning agent does not clean. Do not use household cleaning agents or pure demineralised water! When working with acids, a plastic insert tub must be used. Do not use combustible or explosive liquids directly in the oscillating tank!

How can ultrasonic baths be tested?

The effect of ultrasonic baths is determined by the intensity and distribution of the process-typical cavitation in the oscillating tank. The foil test (according to IEC TR 60886) is a simple method for displaying the intensity and distribution of cavitation in an ultrasonic bath. For this purpose, an inserted aluminium foil is perforated or destroyed to a certain extent by cavitation, depending on the duration of sonication. The same test conditions are important for the reproducibility of the foil test. Suitable frames for carrying out the foil test are available as accessories for the ultrasonic baths.

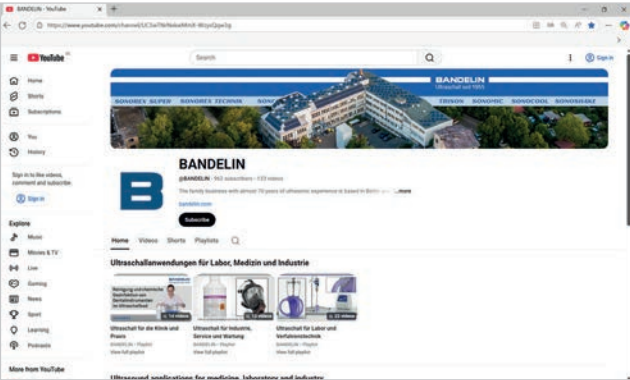
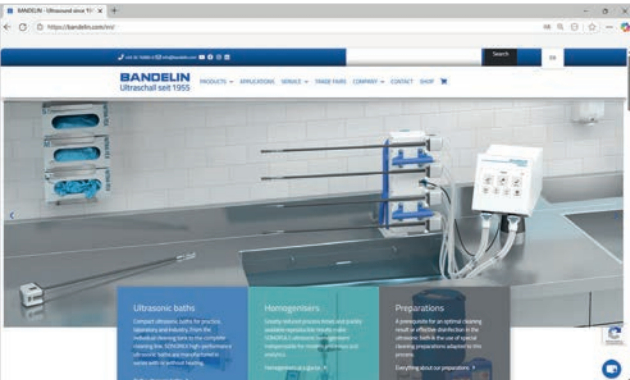
More information about the foil test can be found on page 100.



Above: Performing a foil test.
Below: Perforated foil after the test.

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... visit our website with our own YouTube channel and many helpful application videos!
Or contact us directly... We will be happy to advise you – call us on 030 76880-212!



Take a look at our application video:
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Your contact person in the medical field

We will be happy to advise you personally.
Ask our expert.



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