Instructions for Use

BANDELIN
Ultraschall seit 1955

SONOREX Ultrasonic bath

for aqueous fluids

for pipettes of up to 755 mm

valid for:

PR 140 D / PR 140 DH

51396b GB/2017-02

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General

The equipment, the accessories and the preparations are to be used in accordance with the Instructions for Use and/or the product information.

The instructions are part of the scope of delivery and are to be stored in the vicinity of the device for later reference. This also applies if possession of the device is transferred elsewhere.

Before the device is put into operation, these Instructions for Use should be read carefully and completely in order for the user to become familiarised with all functions.

The warnings and safety precautions (chapter 1.5) must always be heeded during use.

The manufacturer will not assume any responsibility for the device's safety or functional ability in the event of improper handling or usage contrary to the intended purpose. In the event of unauthorised alterations/modifications, both the warranty claim and the CE conformity will no longer be valid.

If Service is required, please contact the specialist dealer in charge or the manufacturer.

Symbols used:

Symbol	Significance	Explanation
	Danger	Identifies information that could signify a risk to life and limb, especially through electric shock, if not observed.
	Caution	Identifies information that is to be observed and adhered to without fail in order to prevent damage to the device and the user.
	Warning	Warning of hot surface.
	Important	Identifies information that is important for execution.
	Note	Identifies information provided for explanatory purposes.
	Medical note	Identifies information that is important for medical use.
	Do not grip inside	For health reasons, touching the oscillating fluid is prohibited.
	Wear hearing protection	For health reasons, standing for long periods of time in the vicinity of the device without ear protectors is prohibited.
➢	Handling instructions	Identifies instructions that are to be followed in the described sequence.

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A Decontamination - sample copy

1 Product description

SONOREX PR 140 D or PR 140 DH ultrasonic bath.
The exact serial number can be found on the type plate on the rear side of the ultrasonic bath.

Product features:

- Stainless steel oscillating tank (1) with high-grade PZT high-performance ultrasonic systems, ultrasound frequency 35 kHz
- Filling level mark for safe filling (2)
- Digital timer for 1, 2, 3, 4, 5, 10, 15, 30 min and continuous operation (3)
- Compact, easy-to-clean stainless steel housing (4)
- Rubber feet for safe positioning (5)
- Outlet with ball valve (6) for simple draining of bath fluid and hinged handles (7)
- Depending on the model, with heating (type "H").

1.1 Mode of operation

SONOREX PR 140 DH

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SONOREX ultrasonic baths use the effect of cavitation. Under their oscillating tank bottoms they contain piezoelectric transducers, the energy of which is transferred to the bath fluid with ultrasound frequency as mechanical oscillations. As a result, microscopically small bubbles are continuously formed in the bath fluid, which release energy upon imploding and generate local microcurrents. This process is called cavitation. During the cleaning process, it causes contamination to be "blasted" from the hard surfaces of the objects being treated. At the same time, dirt particles are dispersed and fresh bath fluid flows in.

SONOREX ultrasonic baths are efficiently supported by SweepTec®automatic frequency control. SweepTec® immediately balances load-dependent working point fluctuations to the optimal working point using fast frequency modulation. This produces an especially homogeneous and uniform ultrasound field in the bath volume for constantly reproducible results.

1.2 Purpose

The SONOREX ultrasonic bath is used for the treatment of pipettes, burettes, and other glass and/or plastic vessels with a maximum length of 755 mm. It works on the basis of low-frequency ultrasound and allows for very short sonication times.

For proper use, the vessels are to be placed in the special basket for sonication, and directly submerged in the sonication fluid. This guarantees the optimum dispersion of ultrasound while protecting the goods being sonicated.

The ultrasonic bath is to be used together with suitable, non-fixative disinfecting and/or cleaning agents in order to support and/or expedite their effect. Pursuant to section 2, para. 1 and section 3, paras. 1, 9 and 10 of the Medical Devices Act (MPG), the ultrasonic bath thus becomes a medical device, as an accessory to the preparations, and is to be treated as one.

The ultrasonic bath is operated from the front. The operation is usually carried out on the floor.

1.3 CE conformity

SONOREX ultrasonic baths are declared as medical products and satisfy the CE marking criteria for the European

- "Medical Device" directive
- "Low-voltage directive"
- "Electromagnetic compatibility" directive

in their currently valid versions.

A declaration of conformity can be requested from the manufacturer by providing the serial number.

1.4 Technical data

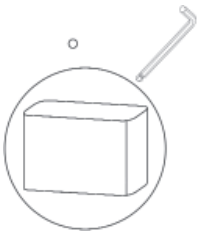
The ultrasonic bath is interference-free and carries the CE - mark.
Safety: EN 61010-1,
EMC: EN 61326-1

Bath

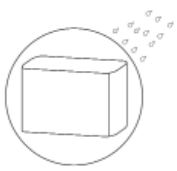
- material	stainless steel, 1.4571
- usable depth	850 mm
- filling volume, min. / max.	9 l / 18 l (upper/lower filling level mark)
- interior dimensions (L × W × H)	150 × 150 × 895 mm

Housing

- material	stainless steel, 1.4301
- exterior dimensions (L × W × H)	330 × 330 × 1005 mm
- degree of protection	IP 33 pursuant to EN 60529



Protected against access of instruments to dangerous components, protected against solid foreign bodies with a diameter of 2.5 mm or larger



Protected from spraying water up to 60° from its vertical axis

- protection class:	Class I
- HF frequency:	35 kHz
- PZT transducers:	4
- ultrasonic peak power*:	860 W
- HF power:	215 W_{eff}
- leakage current:	< 3,5 mA
- nominal voltage:	230 V~ (± 10%) 50/60 Hz,
- mains cable length:	2 m
- heating power:	700 W (PR 140 DH)
- current consumption:	1.0 A / 4.0 A (PR 140 D / PR 140 DH)
- device fuse:	F 2 A / F 6,3 A (PR 140 D / PR 140 DH)
- weight (net):	Approx. 18,5 kg

* In order to improve the effect, the ultrasound is modulated, thanks to which a 4-fold HF power value is obtained as ultrasonic peak power.

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Environmental conditions pursuant to EN 61 010-1

Overvoltage category:	II
Degree of contamination:	2
Permissible ambient temperature:	5 to 40°C
Permissible relative humidity up to 31°C:	80%
Permissible relative humidity up to 40°C:	50%

No condensation allowed.

Only for indoor operation.

Specifications for use as a medical device

Description:	Ultrasonic bath
UMDNS nomenclature (ECRI / DIMDI):	14-263
Purpose:	see chapter 1.2.
Classification (Medical Device Directive 93/42/EEC, appendix IX):	Class I; active medical device
Type, model, serial number, year of manufacture:	See type plate on the rear side for information

The ultrasonic bath has been inspected pursuant to norms currently in effect and must be installed and put into operation pursuant to EMC directions; information in this respect is found in the appendix.

Specifications pursuant to the Medical Devices Operator Ordinance (MPBetreibV):

Commissioning on site, functional check and personnel instruction (section 5):	Not required
Technical safety controls (section 6):	N/A
Technical measurement controls (section 11):	N/A

1.4.1 Electromagnetic ambient conditions (EMC)

The device was tested to DIN EN 61326-1 for electromagnetic compatibility (EMC) and complies with the requirements for class B devices according to EN 55011.
It is suitable for use in facilities and areas which are directly connected to a public low-voltage supply network, e.g. medical laboratory facilities.

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1.5 Warnings and safety precautions

General

- Keep the ultrasonic bath out of the reach of children and of persons who have not been instructed in its operation by reference to these instructions.
- We will not offer a guarantee for damages to the ultrasonic bath or or to the objects treated as a result of the use of inadequate disinfecting agents or detergents.
- Keep the surface of the ultrasonic bath and operating elements clean and dry.
- Do not expose the ultrasonic bath to corroding influences.
- Only move the ultrasonic bath when it is empty.
- Empty the ultrasonic bath only while turned off.
- Ultrasonic baths adhere to prescribed EMC limit values, such that it can be assumed that the electromagnetic radiation emanating from the units is harmless to humans. However, a binding statement for wearers of implants can only be made at the place of work and together with the implant manufacturer. In case of doubt, information regarding the allowable electromagnetic exposure level is to be obtained from the implant manufacturer.

Operation and transport

- Observe ambient and set-up conditions, see section 1.4.
- Only plug in the ultrasonic bath to an outlet with a grounded socket.
- Do not operate the ultrasonic bath without fluids.

- Do not immerse any parts of the body (e.g. hands, feet) or living beings (animals or plants) into the tank; in particular, do not immerse them in the ultrasonic fluid during ultrasound operation. Danger: Ultrasound has a cell-destroying effect.

- In the event of continuous activity within a 2 m radius, adequate hearing protection must be used. Danger: Hearing loss possible if not wearing hearing protection during operation – the typical ultrasound cavitation noise can be perceived as very unpleasant.
- Do not operate the ultrasonic bath while unattended.

Damage and defects

- If damage to the ultrasonic bath is detected, do not connect the ultrasonic bath to the mains.
- In the event of defects, disconnect the power plug immediately.
- Repairs are only to be conducted by authorised skilled personnel or by the manufacturer.
- Defective parts may only be replaced with original parts.

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Advice for the medical field

- The ultrasonic bath is exclusively intended for use by skilled medical personnel. It may generate radio interferences or disrupt the operation of devices nearby. It may be necessary to take remedial measures such as realigning the device or reconfiguring the ultrasonic bath or the shield.
- During operation, portable or mobile HF communication systems in the vicinity of the ultrasonic bath should be turned off - their operation may be disrupted.
- When handling contaminated instruments, relevant personnel protection regulations are to be observed.
- When treating instruments, the instructions of the instrument manufacturer are to be followed.
- A combined disinfection and cleaning of pipettes in the ultrasonic bath is only possible with the use of special preparations (with the corresponding microbiological certificates). Ultrasound alone will not disinfect them!
- Only disinfection agents and/or detergents that are non-affixing may be used.
- In terms of concentration, temperature, and sonication time, the manufacturer specifications for the disinfection agent and/or detergent used are to be strictly adhered to.
- The compatibility between the goods to be treated and the preparation is to be verified on the basis of the respective manufacturer's specifications.
- Adhere to occupational safety measures (e.g., protective clothing, protective goggles, suitable gloves).

2 Preparation

Carefully unpack the ultrasonic bath and accessories and inspect them for completeness or possible transportation damages. If any damages or defects are found, these must be immediately notified in writing to the transportation company and to the supplier.

Before operation, the ultrasonic bath should be allowed to stand for 2 hours at its operating location so that it can adjust to the ambient conditions.

2.1 Scope of delivery

1 ultrasonic bath (PR 140 D), optionally with heating (PR 140 DH)

1 basket K 140 B

1 lid D 140 D

1 ball valve with hose socket and hose, packaged separately with sealing tape and assembly instructions

1 instructions for use

Additional accessories according to order – see delivery slip

2.2 Set-up / assembly

- Place the ultrasonic bath atop a firm, level and dry surface. In doing so
  - make sure that there is a water connection and a floor drain in the immediate vicinity,
  - do not block the air supply below the ultrasonic bath,
  - guard against moisture and wetness – risk of electric shock.
- Install the ball valve, hose socket and hose, which are included in the delivery, pursuant to the enclosed assembly instructions.

2.3 Start-up

- Thoroughly rinse the ultrasonic bath's oscillating tank with water before its first use.
- Connect the ultrasonic bath to the power supply (grounded socket).
- Conduct a function test - switch on ultrasonic bath, briefly switch on and turn off the ultrasound (maximum of 1 to 2 seconds), a hissing noise should be heard. Then, switch the device off again.

- Place accessories in the ultrasonic bath and place lid on top.

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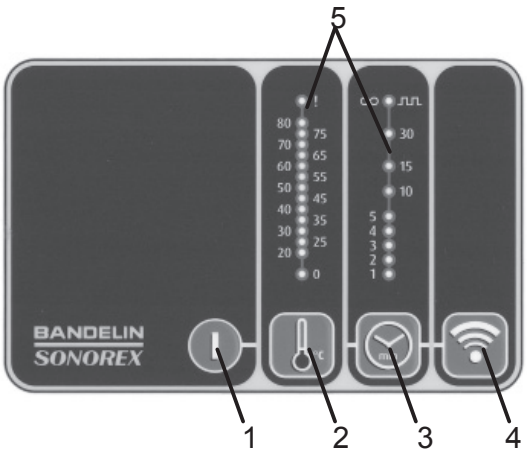
3 Operation

3.1 Operating elements

The ultrasound is controlled from the front:



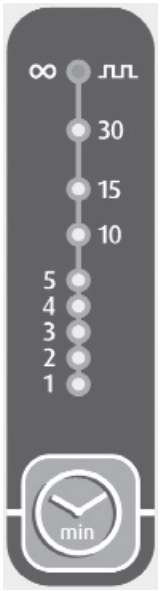
1 ultrasonic bath ON/OFF button
2 temperature setting button
3 time setting button
4 Start/Stop button – ultrasound
5 LEDs for temperature and time

There is no temperature setting button or temperature scale on ultrasonic baths without heating.

3.1.1 Ultrasound

With the ultrasonic bath turned on – ON/OFF button – the time is preset, then the ultrasound output is turned on with the Start/Stop button.

Timed operation



- It is set by pressing buttons → Time 1, 2, 3, 4, 5, 10, 15 or 30 minutes
  - After pressing the Start/Stop button, a running light displays the remaining time optically.
  - Once the time expires, the ultrasonic output is stopped automatically.
- Premature pressing of the Start/Stop button ends the ultrasound output.

Continuous operation

- It is set by pressing buttons → LED ∞ lights up
  - After pressing the Start/Stop button, the top (green) LED lights up continuously.
  - The ultrasonic bath does not turn off automatically: press the Start/Stop button to switch it off.

Remarks

- For safety reasons, the ultrasound bath is turned off automatically if no button is pressed for more than 12 hours.
- While turned off, the ultrasonic bath may remain connected to the mains. It can be disconnected from the mains by pulling the mains plug.

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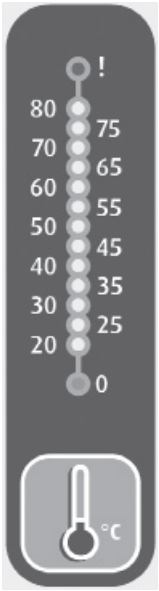
3.1.2 Heating

The heating is controlled by the temperature setting button.

When the ultrasonic bath is switched on, the green LED "0" lights up.

- Set the required temperature by pressing the button → Temperature range 20-80°C.
  - Set temperature = yellow illuminated LED.
  - Actual temperature = yellow flashing LED.
    It flashes slowly when above the set temperature (=heating is off), and rapidly when below it (=heating is on).
  - Once the set temperature is reached, only the corresponding LED lights up.
    The LED "!" flashes red if the temperature exceeds 80°C.
  - Switching off the heating manually:
    Keep the temperature setting button depressed for more than 2 seconds.
    The green LED "0" lights up.



Remarks

- The heating system works independently from the ultrasound.
- The last selected temperature is not saved.
  When the ultrasonic bath is switched on again (ON/OFF), the target temperature defaults to "0".
- The heating will automatically turn on every time that the bath temperature drops below the set temperature.
- The temperature scale display is accurate to ±2.5°C.

Avoid retardation of boiling

If a temperature is set, the ultrasonic bath attempts to reach the selected temperature immediately.
When heating (without the ultrasound switched on), the ultrasound is automatically switched on for 3 seconds per minute to agitate the liquid and consequently avoid retardation of boiling.

- This function is always active at temperatures > 60°C and cannot be switched off!
- The function can be switched off for temperatures < 60°C. It must be reactivated every time the unit is switched on. Activating the function:
  By pressing the temperature setting button when you switch the unit on (ON/OFF).

3.2 Device signals **- not applicable -**

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3.3 Special functions

3.3.1 Degas

⎍ – in the time scale area

- The DEGAS function is used to degas the unit before the treatment. The required time can be set with the time setting button if desired. Then, keep the Start/Stop button depressed for at least 2 seconds.
  You can switch it off early by pressing the Start/Stop button again.
  In addition to the countdown, the top green LED (⎍) also flashes during degassing.
- Switching between ultrasound – degas: If the Start/Stop button is kept depressed for a long time when ultrasound is running, the ultrasound is firstly switched off and then reactivated with the Degas function after approx. 2 seconds.

3.3.2 Blocking/releasing continuous operation

∞ – in the time scale area

- To avoid accidentally turning on the continuous operation, the continuous operation can be blocked:

➢ Pull out the mains plug.

➢ Press and hold the preset time button and insert the mains plug at the same time. The yellow LED "1 min" lights up in confirmation.

The function can be released again in the same way. The green continuous operation LED (∞) lights up in confirmation.

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4 Use

The objects are directly sonicated, i.e. they are placed into the special basket and submerged directly in the sonicating fluid.

It is possible to soak the goods to be treated or the glass devices in a special storage container without subsequent re-sorting by the tried-and-tested yesr system.
This loosens up stubborn deposits and shortens the sonication time.

4.1 Instructions for use

Instructions – filling

- Verify that the ball valve is closed.
- Ultrasound and heating must be turned off.
- Do not fill ultrasonic tank with hot water. Maximum filling temperature: 50°C.
- At least drinking-quality water must be used to fill the oscillating tank.
- Water without additives is not suited for sonication. BANDELIN recommends the TICKOPUR or STAMMOPUR preparations.
- Do not use distilled or deionised water without additives.
- The fill level must always be at least at the lower filling level mark.
  A low fill level will damage the ultrasonic bath!
- Thoroughly rinse parts that have come in contact with aggressive chemicals (acids, chloride ions), before sonication.
- When using preparations, the safety instructions included in the respective product leaflets must be fundamentally adhered to.

- Do not use any combustible fluids (e.g. benzine, solvents) or chemicals that contain chloride ions or that separate (some disinfectants, household cleaners, and dish detergents), for sonication in the stainless steel tank.
- Replace used sonication fluids, do not refresh by adding fluids.

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Notes - Temperature and heating

- Warmed-up fluids intensify the ultrasound effect. Experience has shown that the best results are obtained with a bath temperature of 50 to 60°C. At higher temperatures, the effect of the ultrasound cavitation decreases again, however[1].
- In order to save time during use, the bath fluid may be preheated during degassing.
- Ultrasound energy warms up the sonication fluid (even without additional heating). Through continuous sonication and/or by covering the oscillating tank, the fluid temperature may increase faster and even rise above the maximum adjustable value of the thermostat (80°C). For this reason, the temperature must be controlled when treating temperature-sensitive parts.
- For an optimum bath temperature, adhere to the specifications of the specimen manufacturer!
- To protect the electronic components, the ultrasound output is reduced upon reaching a critical temperature in order to inhibit a further increase in the interior temperature.
- The fluid in the oscillating tank may not exceed a maximum operating temperature of 100°C.

- Mix disinfectant with cold water, run ultrasonic bath without heating, avoid temperatures of >40°C.

1 MILLNER, R.: Wissenspeicher Ultraschalltechnik, Fachbuchverlag publishing house, Leipzig 1987

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4.2 General use

Step 1: Fill and insert objects to be sonicated

The tank is filled with water (tap water or deionised water) and with a preparation containing surfactants to reduce the surface tension, see chapter 7.3.
With the device switched off.

- Fill oscillating tank with 2 litres of water.
- Add dosed cleaning agent.
- Carefully fill it up with 7 or 16 litres of water, taking care to avoid foaming as much as possible.

Step 2: Degassing the fluid

Freshly-filled bath fluid or fluid that has remained in the oscillating tank for a longer period of time must be degassed prior to use. See also chapter 4.3.1.

- Remove the basket from the oscillating tank.
- Place lid on top.
- Turn on the ultrasonic bath.
- Set the degassing time to 10 minutes and start the ultrasonics.

Step 3: Preheat fluid

In ultrasonic baths with built-in heating, the fluid may be preheated independently of the ultrasound. This increases the ultrasound effect, especially when removing fats, oils and polishing paste residue, and shortens the duration of the subsequent ultrasound.

- Remove the basket from the oscillating tank.
- Place lid on top.
- Set the desired temperature, see chapter 3.1.2. The ultrasonic bath begins heating immediately.

Step 4: Insert objects to be treated

Before every sonication it is necessary to check whether the sonication fluid needs to be cleaned or replaced.

- Place soiled parts such as pipettes in the pipette basket with the tips pointing upwards.
  - The basket prevents damage to the objects to be sonicated and to the bottom.
  - Overloading the basket will reduce the ultrasound effect.
  - Air must be able to escape from hollow areas.
- Verify that the objects to be treated are fully covered by fluid.
- Place lid on top.

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Step 5: Ultrasound – operation

Fundamentally, the sonication time is to be set as short as possible in order to protect the parts to be treated and the oscillating tank.
In the case of disinfection fluids, the length of time will depend on the concentration of the respectively-used preparation.
In the case of stubborn residue, conduct sonication for a longer time if necessary.

- Set the required sonication time and start the ultrasound, see chapter 3.1.

Step 6: Removing treated objects

After sonication, the parts are to be removed from the ultrasonic bath. Allowing them to remain for a longer time in the bath fluid may damage them.

- Switch off the ultrasound.
- Remove the basket and place it securely on a horizontal surface.

Depending upon the set temperature or the duration of sonication, the basket and parts may be hot!

- After the cleaning processes, rinse the treated parts with water of at least drinking quality. Visually review the sonication results. A final rinse is conducted using the type of water appropriate for the goods, e.g. deionised, distilled or ultrapure water.
- Before the next sonication, verify the service life (see chapter 4.3.2) of the bath fluid. Heed the specifications of the preparation manufacturer. If necessary, empty the oscillating tank.

Important:

If an ultrapure water connection or similar is not available:
The final rinse can also be conducted in an available storage container using the type of water appropriate for the goods, see chapter 7.

Step 7: Empty the oscillating tank.

Layers of contamination on the tank bottom reduce the ultrasonic output.
The oscillating tank is to be emptied after a long period of use or sonication of heavily soiled parts, see chapter 4.3.2.

- Switch off the ultrasonic bath (ON/OFF button).
- Pull out the mains plug.
- Empty the oscillating tank by placing the ball valve handle in the direction of the discharge to open the outlet.
- After emptying the oscillating tank, rinse it thoroughly.
  For additional care instructions, see chapter 5.

4.3 Further information

4.3.1 Degassing

Degassing the sonication fluid increases the ultrasound effect.
Freshly-filled fluid or fluid that has remained in the oscillating tank for a longer period of time must be degassed prior to use. Gases dissolved in the fluid (e.g. oxygen) are reduced through degassing and the ultrasound effect is thus significantly improved.

Switch on the ultrasound (without sonication objects, basket, etc.)

- Ultrasonic baths with up to 10 litres bath volume: 10 min
- Ultrasonic baths with more than 10 litres bath volume: 30 min

The cavitation noise changes during degassing, loud degassing noises disappear at the end of the degassing process, the ultrasonic bath appears to work more quietly.
A lower noise level, however, does not mean a reduction in ultrasonic power. It rather means the end of the degassing process and an improvement in the ultrasound effect.

4.3.2 Disposal of sonication fluids

The working solution is disposed of pursuant to the specifications of the product leaflet and the label. All aqueous solutions made by DR. H. STAMM GmbH are prepared pursuant to the regulations of the Washing and Cleansing Agents Act, are biodegradable, and may be added to sewerage as working solutions. Strongly acidic and strongly alkaline fluids are to be previously neutralised pursuant to technical data sheet specifications. The manufacturer specifications for the corresponding preparation should be observed.
During cleaning, materials hazardous to water depending on the type of contamination, such as oils, heavy metal compounds, etc., may be introduced to the working solution. If the limit values are exceeded, the working solution must be reconditioned (removal of contaminants) or be disposed of as toxic waste.
Disinfecting and cleaning agents that become contaminated when used are considered "waste material" pursuant to the German Waste Act (AbfG) and may not be taken back by the manufacturer.
In every case, the statutory provisions and regulations of municipal wastewater plants are to be adhered to. Information is provided by municipal wastewater plants as well as by environmental agencies.

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5 Cleaning and maintenance of the ultrasonic bath

To achieve an optimum lifespan for the ultrasonic bath, cleaning and maintenance are to be conducted regularly.

CAUTION!

Disconnect the ultrasonic bath from the mains before cleaning / maintenance.

Do not rinse or immerse the ultrasonic bath in water and do not expose it to splash water.

No guarantee is given for damages caused by the use of unsuitable disinfection agents or detergents.

5.1 Cleaning and care

Oscillating tank

The oscillating tank of an ultrasonic bath is a wear part.
It is continuously exposed to cavitation during ultrasound operation. Dirt particles remaining in the tank abrade and damage the tank surface due to the movement of the fluid, therefore

- Thoroughly and frequently rinse the oscillating tank with water and rub dry using a soft cloth.
- Regularly remove residue from the edges of the oscillating tank using a commercial stainless steel cleaning product without any abrasive additives.
- Do not use steel wool, scrapers or graters for cleaning / maintenance.
- Metal particles that remain on the stainless steel surface as well as rust particles from the water pipe system penetrate the passive protective layer of the stainless steel. The stainless steel is "activated" in this process and it begins to rust. The extraneous rust produces localised corrosion of the stainless steel. For this reason, remove metal parts such as screws, filings, etc. from the oscillating tank, and immediately remove rust stains using a soft cloth and a commercial stainless steel cleaning product without abrasive additives.

Housing

- Do not use any abrasive cleaners, only commercial care products without abrasive additives.
- Housing is to be wiped off only from the outside with a moist cloth; afterwards, allow to dry alone or wipe dry.

5.2 Disinfection for medical applications

If microbiologically-contaminated objects are treated in the ultrasonic bath, hygienic safety after application is important. In order to avoid any cross-contamination as a result of the settling of microorganisms, especially along the tank edge and in the drain outlet area, but also on the user interfaces, these areas are to be regularly cleaned and disinfected pursuant to the hygiene plan using a VAH-certified or effective surface disinfectant.

5.3 Warehousing / storage

During long periods of non-use, the ultrasonic bath should be stored in a cool, dry location. The lid should be placed on top in order to protect the oscillating tank from outside contamination.

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6 Maintenance and repair

6.1 Maintenance

SONOREX ultrasonic baths require no maintenance.
For purposes of regular control, the following functional checks may be carried out.

6.2 Functional checks

Checking control lights

A test routine can be started for an internal function check:
To do so, the ultrasonic bath must be switched off. When the Start/Stop button is pressed and held, the ultrasonic bath is switched on with the ON/OFF button.
All LEDs light up successively for 1/3 of a second. The last set values are then displayed.
The test is then successfully completed.
If there are any deviations, the ultrasonic bath must be sent in for checking/repairs.

Checking the ultrasound and/or heating

The function can be tested using a standard wattmeter. It is to be inserted between the ultrasonic bath's power plug and the power outlet.

- Fill the oscillating tank with fluid, see chapter 4.2.
- For testing purposes, only the ultrasound or only the heating system needs to be plugged in. Then, the value displayed should be compared with the corresponding value in the technical data (chapter 1.4) (tolerances ± 20%).

6.3 Error analysis

SONOREX ultrasonic baths are robustly constructed and designed for a high level of reliability.
Nevertheless, the possibility of a malfunction due to a defective component can never be fully discounted.
The following overview of possible sources of error should serve as an aid for error detection and elimination.

- Ultrasonic bath oscillates weakly, unevenly, or noise is too loud:
  - Has fluid been properly degassed? ⇒ Treat for 15 min.
  - Is it overloaded with objects to be treated? ⇒ Remove a few parts.
  - Uneven noises (wobbling) ⇒ No error – slightly adjust the fill level of the fluid.
- Heating system defective?

  The ultrasonic bath can be readily operated without heating.
- Slight erosion visible on the tank bottom? ⇒ Natural wear. Ultrasonic bath OK.

Any malfunctions are to be communicated in writing to the manufacturer.

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6.4 Repairs and service

If errors or defects are ascertained as a result of the functional check, and if it is impossible to rectify such errors, the ultrasonic bath may no longer be used. In such a case, please contact the supplier or the manufacturer:

BANDELIN electronic GmbH & Co. KG
Heinrichstrasse 3-4
12207 Berlin

Repair service:
Tel.: +49-(0)-30 – 768 80 – 13
Fax: +49-(0)-30 – 76 88 02 00 13

E-mail:
info@bandelin.com

In the case of returns, the general terms and conditions for delivery and payment of BANDELIN electronic GmbH & Co. KG shall apply.
In addition, the ultrasonic bath must be cleaned and decontaminated (if necessary), see the following chapter.

6.4.1 Decontamination certificate

If the ultrasonic bath is sent back to the manufacturer for repairs (with accessories, if applicable), the form "Certificate of Decontamination" must be filled out and affixed to the packaging on the outside, in a visible spot.
If this form has not been filled out, we reserve the right to refuse receipt of the package in order to protect our employees.

The form can be downloaded from the Internet as a PDF file:
www.bandelin.com - Download ...
A sample copy can be found in the appendix.

6.4.2 Exchanging fuses

CAUTION!

Repair work may only be carried out by authorised, qualified personnel or by the manufacturer. The manufacturer assumes no liability for unauthorised interventions on the ultrasonic bath!

The mains plug must be pulled before opening the ultrasonic bath!
There is a risk of electric shock from live parts in the ultrasonic bath!

- Empty ultrasonic bath.
- Turn over ultrasonic bath.
- Loosen the screws around the casing.
- Carefully remove the base plate.
- If required, carefully separate the electrical plug connections between the base plate with generator circuit board and the casing with oscillating tank.
- Exchanging fuses:
  - After inspection, exchange only the defective fuses.
- Reassemble in reverse order.

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7 Accessories

The proper accessories facilitate use of the ultrasound and also protect the oscillating tank and the goods to be treated.

Additional information may be obtained from our supplier, our sales representatives, or from our website.

No-obligation telephone consultation:
+49-(0)-30 – 768 80 – 0

Website:
www.bandelin.com

7.1 Required accessories

The required accessories such as the basket K 140 B and lid D 140 D are already included in the scope of supply.
Do not place any objects directly on the oscillating bottom.
The exception is the special basket, which does not disturb the cavitation field or damage the tank bottom.

Pipette basket K 140 B

Dimensions (Ø × H)	120 × 850 mm
Order No.	703

Lid D 140 D

Dimensions (L × W × H)	220 × 147 × 26 mm
Order No.	3967

7.2 Optional accessories **– not applicable –**

7.3 Chemical agents

Special preparations that are suitable for use with ultrasound, i.e. cavitation-conducive, biodegradable, easily disposable, gentle to the material and long-lasting, are required for use with ultrasound.

BANDELIN recommends the TICKOPUR or STAMMOPUR concentrates by DR. H. STAMM GmbH, which have been especially developed for ultrasound use and which optimally utilise the ultrasound.
Additional information may be obtained from our supplier, our sales representatives, or from our website.

No-obligation telephone consultation:
+49-(0)-30 – 768 80 – 280

Website:
www.dr-stamm.de

The following agents have been approved for use in the ultrasonic bath PR 140 C:

Preparations	Dosage	Order No.
TICKOPUR R 33 Universal cleaner with corrosion protection Mildly alkaline, pH 9.9 (1%)	1-5%	2 l - 883 5 l - 831 25 l - 835
TICKOPUR R 27 Special cleaner for decalcification and rust removal Acidic, pH 1.9 (1%)	5%	2 l - 874 5 l - 816 25 l - 817
STAMMOPUR DR 8 Instrument disinfection and intensive cleaning VAH-certified Aldehyde-free, chlorine-free and phenol-free concentrate for disinfection and intensive cleaning in one step, with corrosion protection, mildly alkaline, pH 9.4 (1%). Bactericidal (incl. Tb-B), yeasticidal, virucidal against vaccinia, BVDV, papovavirus, adenovirus, HBV, HCV, HIV, H5N1.	1 – 3%	2 l - 972 5 l - 974 25 l - 936

IMPORTANT!

- When using preparations, the safety instructions on the labels and in the respective product leaflet must be adhered to.
- Keep the preparations out of the reach of children and also of persons who have not been instructed in their use by reference to the product information.
- Do not ingest or inhale the preparations, and do not allow them to come into contact with the eyes or skin.
- Specimens in powder form may only be used fully dissolved.

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8 Consumable materials - not applicable -

9 Taking the unit out of service

If the ultrasound no longer works, it must be appropriately disposed of. Some electrical components are considered to be toxic waste.

10 Key words - not applicable -

If Service is required, please contact the specialist dealer or the address specified.

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Zertifiziert nach
EN ISO 9001:2008
EN ISO 13485:2012

A Decontamination - sample copy

Certificate of Decontamination

! ! ! CAUTION! ! !
This form must be visibly affixed to the outside of the package!

This "Certificate of Decontamination" is intended to protect the occupational health and safety of our employees pursuant to the German Protection against Infection Act and trade association accident prevention regulations.

Please understand that we can only initiate work operations when this Certificate is submitted.

Before sending the unit back to us for inspection/repair, the unit and accessories must be cleaned pursuant to current laws and regulations and, if necessary, must also be disinfected with a surface disinfection agent listed by the VAH.

Device type: _____

Serial number: _____

Accessories: _____

Device / accessories ...	
are not contaminated:	☐
were cleaned before shipping?	☐
are free of toxic matter?	☐
have been decontaminated and/or disinfected and no longer pose a health risk?	☐

What type of toxic materials have the device / accessories been in contact with?

Corrosive ☐
Toxic ☐
None ☐
Biologically hazardous (e.g. microorganisms) ☐
Radioactive ☐

Certificate of Decontamination

! ! ! CAUTION! ! !
This form must be visibly affixed to the outside of the package!

Legally binding statement

I/We hereby declare that the device and accessories found in this package have been cleaned and/or disinfected pursuant to current laws and regulations and that the information provided in this declaration is correct and complete:

Company / Institute: _____

Street and number: _____

Postal code, city: _____

Department: _____

Name: _____

Telephone, extension: _____ Fax: _____

Reason for return:

_____

Thank you, in this way you help us to reduce costs.

_____

_____

_____

_____ _____ _____

Date Signature Company stamp

Important:

The instructions for user in this and other languages, as well as further information, can be found in the enclosed CD.