SONOREX Ultrasound in the Medicine
Treatment of Medical Instruments
in High-Power Ultrasonic Baths

In SONOREX units
simultaneous
disinfection and cleaning
in 5 minutes

With SONOMIC®
controlled disinfection and
cleaning of rinseable keyhole surgery instruments
Frequently Asked Questions

### Which Instruments Can Be Treated with Ultrasound?

<table>
<thead>
<tr>
<th>General Purpose Instruments</th>
<th>Micro-Surgical Instruments</th>
<th>Rinsable Keyhole Surgery-Instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>operating scissors, needle holders, tweezers, forceps, trocars, scalpels</td>
<td>in neurosurgery and ophthalmology</td>
<td>detachable endoscopic instruments micro clamps etc</td>
</tr>
<tr>
<td>Endoscopic Accessories</td>
<td>ECG and EEG-Electrodes</td>
<td>Small Parts</td>
</tr>
<tr>
<td>biopsy forceps, valves</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Advantages of Ultrasonic Cleaning

- Fast instrument circulation
- The disinfection time is reduced to 5 minutes
- Gentle intensive cleaning
- Instruments are getting in touch with the disinfection solution for a short time only and do not run the risk of corrosion
- Economical use of resources as water, chemicals and electricity
- Cleans rapidly, even from places difficult to get to such as cavities, holes etc. without provoking mechanical damage

### How to Select the Proper Ultrasonic Bath

Size and number of objects to be cleaned determine the size of the ultrasonic bath. When selecting the unit the dimensions of the accessories, e.g. baskets have to be considered. To avoid overcharging, it is recommended to choose the next larger unit. This also allows supplementary applicatons at a later stage.

### When Is a Heater Recommended?

**Ultrasonic baths without heater:** For disinfection and simultaneous cleaning after dry deposit. Disinfectant solutions may not be warmed up as the protein starts to coagulate at a temperature of 40 °C (104 °F).

**Ultrasonic baths with heater:** For cleaning after wet deposit or for basic cleaning. Baths with heating are the first choice for the basic cleaning because warmed up cleaning solutions reduce the cleaning time and therefore residues are removed faster.

### What Kind of Accessories Should Be Used?

Baskets ease the loading of parts to be cleaned in the tank and also protect the tank bottom from scratching. Do not staple instruments. Instruments like forceps and scissors must be opened completely or detached, if necessary. Instruments must be covered completely with cleaning liquid. Air has to escape from hollows and hoses. Special accessories, like silicone knob mats guarantee gentle storage of sensitive instruments. The use of plastic insert tubs is necessary for the basic cleaning. Tank lids protect the liquid from outside dirt.

### Recommended Agents

The disinfectant and cleaning agents STAMMOPUR have been especially developed for the application in ultrasonic baths. Microbiological expertises are available for the time reduction of the disinfection process. Flammable liquids like alcohol or aggressive cleaning liquids like acids and saline solutions may not be used. Water without any appropriate additives does neither disinfect nor clean.

### Ultrasonic Disinfection and Cleaning

- **used instruments**
- **dry deposit**
- **simultaneous disinfection and intensive cleaning in an ultrasonic bath**
  - in 5 minutes using STAMMOPUR DR 8 (2 % dosage)
- **wet deposit**
  - disinfection with basic cleaning
- **rinsing**
- **intensive cleaning in an ultrasonic bath**
  - within 3 - 10 minutes using STAMMOPUR R (2 % dosage)
- **rinsing • drying • sterilisation**
Where do I find what

Criteria for selection ultrasonic baths
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disinfecting and cleaning agents
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## Criteria for Selection Ultrasonic Baths

<table>
<thead>
<tr>
<th>Feature</th>
<th>SONOREX DIGITEC</th>
<th>SONOREX SUPER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank volume (litres)</td>
<td>0.9 – 90.0</td>
<td>0.9 – 58.0</td>
</tr>
<tr>
<td>Control elements</td>
<td>push-buttons</td>
<td>turning knobs</td>
</tr>
<tr>
<td>Time setting (min)</td>
<td>1 – 30, continuous operation ∞</td>
<td>1 – 15, continuous operation ∞</td>
</tr>
<tr>
<td>Safety shut-down</td>
<td>after 12 hours</td>
<td>no</td>
</tr>
<tr>
<td>Heater</td>
<td>optional, version „H“</td>
<td>optional, version „H“</td>
</tr>
<tr>
<td>Heater, thermostaically adjustable</td>
<td>20 – 80 °C</td>
<td>30 – 80 °C RK 31 H: 65 °C fixed</td>
</tr>
<tr>
<td>Excess temperature signal</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Protection against delay in boiling</td>
<td>yes, optionally switch-on</td>
<td>no</td>
</tr>
<tr>
<td>Setting accuracy of bath temperature</td>
<td>± 3.5 K</td>
<td>± 5 K</td>
</tr>
<tr>
<td>Thickness of s/s tank/material</td>
<td>0.8 mm, 1.4301</td>
<td>0.8 mm, 1.4301</td>
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<tr>
<td>Marking of filling level for safe dosage</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Warranty period (years)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>One-piece drain</td>
<td>yes, from DT 255</td>
<td>yes, ab RK 255</td>
</tr>
<tr>
<td>Liquid protection</td>
<td>protected against spray</td>
<td>drip-proof</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP 33</td>
<td>IP 32</td>
</tr>
<tr>
<td>Ultrasonic frequency (kHz)</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Sweep</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>PZT-transducers</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Degas</td>
<td>yes</td>
<td>nein</td>
</tr>
<tr>
<td>Mains supply 230 V~, 50/60 Hz or</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Mains supply 115 V~, 50/60 Hz</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Data memory</td>
<td>1 program</td>
<td>no</td>
</tr>
<tr>
<td>CE marked as medical device</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>
### Small Handy Unit for ECG-/EEG-Electrodes and Small Parts

**SONOREX DIGITEC DT 31**  
Code No.: 3200  
Code No.: 329  

<table>
<thead>
<tr>
<th></th>
<th>Electodes</th>
<th>Small Parts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technical Data</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inner tank dimensions:</td>
<td>190 × 85 × 60 mm (l × w × d)</td>
<td></td>
</tr>
<tr>
<td>Material:</td>
<td>stainless steel 1.4301</td>
<td></td>
</tr>
<tr>
<td>Capacity:</td>
<td>0.9 litres</td>
<td></td>
</tr>
<tr>
<td>Filling volume:</td>
<td>0.6 litres</td>
<td></td>
</tr>
<tr>
<td>Transducer:</td>
<td>1 PZT-broad beam transducer</td>
<td></td>
</tr>
<tr>
<td>Ultrasonic peak output:</td>
<td>240 W</td>
<td></td>
</tr>
<tr>
<td>HF-output:</td>
<td>30 W \text{eff}</td>
<td></td>
</tr>
<tr>
<td>Current consumption:</td>
<td>0.2 A</td>
<td></td>
</tr>
<tr>
<td>External dimensions:</td>
<td>DT 31: 205 × 100 × 170 mm (l × w × h)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RK 31: 205 × 100 × 155 mm (l × w × h)</td>
<td></td>
</tr>
<tr>
<td>Weight:</td>
<td>1.8 kg</td>
<td></td>
</tr>
</tbody>
</table>

### Standard Units for Small Instruments

**SONOREX DIGITEC DT 100** *(ill.)*  
Code No.: 3210  
Code No.: 301  

**SONOREX DIGITEC DT 100 H**  
with Heater  
Code No.: 3230  
Code No.: 312  

<table>
<thead>
<tr>
<th></th>
<th>Electodes</th>
<th>Small Parts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technical Data</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inner tank dimensions:</td>
<td>240 × 140 × 100 mm (l × w × d)</td>
<td></td>
</tr>
<tr>
<td>Material:</td>
<td>stainless steel 1.4301</td>
<td></td>
</tr>
<tr>
<td>Capacity:</td>
<td>3.0 litres</td>
<td></td>
</tr>
<tr>
<td>Filling volume:</td>
<td>2.0 litres</td>
<td></td>
</tr>
<tr>
<td>Transducer:</td>
<td>1 PZT-large area transducer</td>
<td></td>
</tr>
<tr>
<td>Ultrasonic peak output:</td>
<td>320 W</td>
<td></td>
</tr>
<tr>
<td>HF-output:</td>
<td>80 W \text{eff}</td>
<td></td>
</tr>
<tr>
<td>Heater:</td>
<td>DT/RK 100 H 140 W</td>
<td></td>
</tr>
<tr>
<td>Current consumption:</td>
<td>DT/RK 100 0.4 A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DT/RK 100 H 1.0 A</td>
<td></td>
</tr>
<tr>
<td>External dimensions:</td>
<td>260 × 160 × 250 mm (l × w × h)</td>
<td></td>
</tr>
<tr>
<td>Weight:</td>
<td>DT/RK 100 3.4 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DT/RK 100 H 3.6 kg</td>
<td></td>
</tr>
</tbody>
</table>
Compact Unit for Instruments up to 25 cm Length

SONOREX DIGITEC DT 255
Code No.: 3215

SONOREX DIGITEC DT 255 H
with Heater (ill.)
Code No.: 3240

Technical Data
- Inner tank dimensions: 300 × 150 × 150 mm (l × w × d)
- Material: stainless steel 1.4301
- Capacity: 5.5 litres
- Filling volume: 3.8 litres
- Transducers: 2 PZT-large area transducers
- Ultrasonic peak output: 640 W
- HF-output: 160 W_{eff}
- Heater: DT/RK 255 H 280 W
- Current consumption: DT/RK 255 0.7 A
  DT/RK 255 H 2.0 A
- External dimensions: RK - 325 × 175 × 305 mm (l × w × h)
  DT - 325 × 175 × 295 mm (l × w × h)
- Weight: DT/RK 255 5.2 kg
  DT/RK 255 H 5.3 kg
- Features: handles
  outlet with ball valve G ¼

Round Unit for Flexible Endoscope Accessories

SONOREX DIGITEC DT 106
Code No.: 3270

SONOREX SUPER RK 106
Code No.: 306

Technical Data
- Inner tank dimensions: Ø 240 mm, 130 mm deep
- Material: stainless steel 1.4301
- Capacity: 5.6 litres
- Filling volume: 4.0 litres
- Transducers: 4 PZT-broad beam transducers
- Ultrasonic peak output: 480 W
- HF-output: 120 W_{eff}
- Current consumption: 0.6 A
- External dimensions: Ø 265 mm, 270 mm high
- Weight: 5.5 kg
- Features: outlet with ball valve G ¼
### Long Unit for Instruments up to 45 cm Length

**SONOREX DIGITEC DT 156**  
Code No.: 3275

<table>
<thead>
<tr>
<th>General Instruments</th>
<th>Micro-Instruments</th>
<th>Endoscopic Parts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Technical Data**

- Inner tank dimensions: 500 × 140 × 100 mm (l × w × d)
- Material: stainless steel 1.4301
- Capacity: 6.0 litres
- Filling volume: 4.0 litres
- Transducers: 4 PZT-broad beam transducers
- Ultrasonic peak output: 640 W
- HF-output: 160 W
- Current consumption: 0.7 A
- External dimensions: 530 × 165 × 245 mm (l × w × h)
- Weight: 6.1 kg
- Features: outlet with ball valve G ¼

**SONOREX SUPER RK 156**  
Code No.: 305

### Long Unit for Instruments up to 65 cm Length

**SONOREX SUPER RK 158 S**  
Code No.: 320

<table>
<thead>
<tr>
<th>General Instruments</th>
<th>Micro-Instruments</th>
<th>Endoscopic Parts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Technical Data**

- Inner tank dimensions: 700 × 150 × 180 mm (l × w × d)
- Material: stainless steel, 1.4571 (V4A), 2 mm
- Capacity: 18.0 litres
- Filling volume: 13.0 litres
- Transducers: 8 PZT-broad beam transducers
- Ultrasonic peak output: 1200 W
- HF-output: 300 W
- Current consumption: 1.4 A
- External dimensions: 750 × 200 × 385 mm (l × w × h)
- Weight: 17.9 kg
- Features: outlet with ball valve G ½
Compact Unit for Instruments up to 32 cm Length also Suitable for 1/2 DIN Trays

SONOREX DIGITEC DT 514 (ill.)
Code No.: 3250

SONOREX DIGITEC DT 514 H with Heater
Code No.: 3211

Technical Data
- Inner tank dimensions: $325 \times 300 \times 150$ mm ($l \times w \times d$)
- Material: stainless steel 1.4301
- Capacity: 13.5 litres
- Filling volume: 9.0 litres
- Transducers: 4 PZT-large area transducers
- Ultrasonic peak output: 860 W
- HF-output: $215 \text{ W}_{\text{eff}}$
- Heater: DT/RK 514 H 600 W
- Current consumption: DT/RK 514 1.0 A
  DT/RK 514 H 3.6 A
- External dimensions: $355 \times 325 \times 305$ mm ($l \times w \times h$)
- Weight: DT/RK 514 8.2 kg
  DT/RK 514 H 8.8 kg
- Features: outlet with ball valve G ½ handles

General Instruments | Micro-Instruments
--- | ---
Endoscopic Parts | Endoscopic Parts

Universal Unit for Instruments up to 48 cm Length, also Suitable for 1/1 DIN Trays

SONOREX DIGITEC DT 1028 (ill.)
Code No.: 3255

SONOREX DIGITEC DT 1028 H with Heater
Code No.: 3231

Technical Data
- Inner tank dimensions: $500 \times 300 \times 200$ mm ($l \times w \times d$)
- Material: stainless steel 1.4301
- Capacity: 28.0 litres
- Filling volume: 19.0 litres
- Transducers: 8 PZT-broad beam transducers
- Ultrasonic peak output: 1200 W
- HF-output: $300 \text{ W}_{\text{eff}}$
- Heater: DT/RK 1028 H 1300 W
- Current consumption: DT/RK 1028 1.4 A
  DT/RK 1028 H 7.0 A
- External dimensions: $535 \times 325 \times 400$ mm ($l \times w \times h$)
- Weight: DT/RK 1028 4.3 kg
  DT/RK 1028 H 14.7 kg
- Features: outlet with ball valve G ½ handles

General Instruments | Micro-Instruments | Keyhole Surgery Instruments
--- | --- | ---
Endoscopic Parts | Endoscopic Parts | Endoscopic Parts

SONOREX SUPER RK 514 (ill.)
Code No.: 277

SONOREX SUPER RK 514 H with Heater
Code No.: 207

SONOREX SUPER RK 1028 (ill.)
Code No.: 322

SONOREX SUPER RK 1028 H with Heater
Code No.: 324

General Instruments | Micro-Instruments
--- | ---
Endoscopic Parts | Endoscopic Parts

SONOREX Ultrasonic Baths
Treatment of Medical Instruments in Ultrasonic Baths

Fast instrument circulation and gentle intensive cleaning through simultaneous disinfection and cleaning in 5 minutes.
No damage of the instruments by „brushing“

SONOREX DIGITEC DT 514 with K 14

Endoscopic accessories in fixing-clamps FE 12
Keyhole surgery instruments in support MH 28
Micro-surgical instruments on silicone knob mat SM 14

Prior to ultrasonic cleaning
After ultrasonic cleaning
Controlled Disinfection and Cleaning of Rinseable Keyhole Surgery Instruments

**SONOMIC® Ultrasonic Unit**

**Technical Data**

- Inner tank dimensions: 650 × 400 × 210/230* mm (l × w × d)
  (*tank with oblique bottom)
- Material: stainless steel AISI 304, 2 mm thick
- Filling volume: 35,0 litres
- Outlet: with turning handle
- Transducers: 12 PZT-broad beam transducers
- Ultrasonic frequency: 40 kHz
- Ultrasonic peak output: 2400 W
- HF-power: 600 W_{eff}
- Preservation heating, program-controlled: 400 W
- Current consumption: 2.9 A
- External dimensions: 860 × 490 × 415 mm (l × w × h)
- Weight with basket and lid: 40.0 kg

**Ready for use set consisting of:** Code No.: 2300
Advantages

Thoroughness through repeated suction rinsing
When using a keyhole surgery instrument, contaminations enter the lumen of the instrument from the distal end. Not the entire lumen will be contaminated. Through repeated suction rinsing, supported by ultrasound at the distal end of the instrument, the contamination will be removed against the direction of penetration. At the same time, fresh disinfection and cleaning solution flows in. Contamination cannot accumulate on the constrictions in the area of the handle.

Connection of instruments without exchange of seals
12 rinseable keyhole surgery instruments with diameters from 1 mm to 10 mm can each be connected to one of the identical adapters without having to exchange the adapter seal for this. The innovative rotating principle of the seal guarantees a complete sealing at the external shaft of the instrument. This is essential for a perfect suction rinsing with the disinfection and cleaning solution through the instrument. The highly elastic sealing material has been tested in ultrasound and is resistant against the disinfectant. An exchange of seal is only necessary after approx. 500 load cycles. It can be carried out very easily without tools thanks to the structure of the adapter.

Individual examination of instruments instead of overall check
If several instruments are being connected simultaneously to a sucking or pressure pump, the rinsing result cannot be controlled. By means of the channel selector in SONOMIC, always only one instrument out of maximal 12 connected instruments will be linked to the sucking pump at a time. A flow rate sensor determines the flow rate for the selected instrument. The minimum value for continuous instruments is a flow rate of 2 ml/sec. Instruments which are not continuous are thus safely identified and indicated on the touch-screen. Their withdrawal for separate decontamination has to be confirmed individually.

Increased disinfecting and cleaning efficiency through ultrasound
Efficiency of disinfection and cleaning is strongly increased during suction rinsing and during external disinfection through switching on the ultrasound. Existing contamination at the distal end and in the lumens of the instruments are thoroughly removed by means of gentle ultrasonic cavitation without damaging the instruments.

Application in the SONOMIC unit:
Simultaneous disinfection and intensive cleaning with STAMMOPUR DR 8 at 2 %. Cleaning with STAMMOPUR R at 2 %. (see page 22/23)

Safety through strict program sequence
Coordinated steps of operation and defined times of impact are necessary for degassing the liquid, for exhaust and repeated internal rinsing of the instruments as well as for complete external disinfection. The user is being provided with clear instructions leading him through the single steps of the operational program where he cannot interfere: among these for example the adapter check per charge which is mandatory for a safe identification of non-continuous instruments allowing to sort out such instruments. Finally, an external disinfection and cleaning even in the sealing areas of the instruments is being effected. The operational program also contains self checks and gives leads which are shown on the touch-screen. This way, a high availability of SONOMIC is assured. Detached contamination from the instruments is retained in an easily accessible filter which has to be replaced upon request.

With SONOMIC, a controlled disinfection and cleaning of instruments which can be reproduced at any time is feasible. EU patent pending.

Versatility through multiple use
SONOMIC has been especially developed for simultaneous disinfection and cleaning of rinseable keyhole surgery instruments. But even rinseable parts of other instruments can be connected to the adapters, provided that the external diameter is between 1 mm and 10 mm. Disinfection and cleaning of lumens of rinseable instruments or of rinseable parts of other instruments assure their functional capability. Contamination is reliably removed, rough-running or jam of instruments is prevented. Even those instruments which had been sorted out before may be used after disinfection and cleaning in SONOMIC because older contaminations are removed.

Additionally, other medical instruments such as scissors and forceps can also be placed loosely into the basket and can be disinfected and cleaned as well.

– further information www.sonomic.eu –
Simultaneous Disinfection and Cleaning of maximal 12 Rinseable Instruments

**Adapter**
Leak-proof connection for suction rinsing of instruments with diameters from 1 mm up to 10 mm, without exchange of sealings for disinfection and cleaning of instrument lumens. EU patent pending.

**Touch-Screen**
User-guiding menu, clear instructions and information about the current status.

**Channel Selector**
Selection of only one instrument for suction rinsing and check of liquid flow. EU patent pending.

**Suction Pump**
Generation of required vacuum for suction rinsing and check of liquid flow of the selected instrument.

**Filter**
Filtering of detached soiling from the rinsing liquid. Easy manual exchange of the filter, no tools required.

**Gentle Ultrasound**
Foil-tests according IEC/TR 60886 (1987-03) from the inner adapter section and from the inside of a rinseable keyhole surgery instrument show the gentle impact of the ultrasound.

**Round Tank Corners**
at the bottom and the sides facilitate cleaning of the tank. Caking of residues is avoided.

**Flow Rate Sensor**
Measurement of flow rate of the selected instrument to determine successful disinfection and cleaning.
Accessories

Lid D 1000 MC
– contained in the set –
plastic, transparent
protection against contamination
Code No: 3312

Baslet K 1000 MC with Handles
– contained in the set –
stainless steel,
with holders for dripping over the oscillating tank:
sieve tray 520 × 340 × 50 mm  (l × w × d)
Code No: 3311

Silicone Knob Mat SM 1000 MC
for gentle storage of instruments
in the basket K 1000 MC
Contents of 2 pieces ever 245 × 172 mm.
Code No: 3313

Consumables

Filter Fl 1000
– 30 pieces contained in the set –
Packet 30 pcs
Code No: 3356
Packet 100 pcs
Code No: 3357

Adapter Seals AD 1000
– 12 pieces contained in the set –
Packet 12 pcs
Code No: 3353
Packet 24 pcs
Code No: 3354
Packet 36 pcs
Code No: 3355

Adapter with Seal and Hose ADS 1000
– 12 pieces contained in the set –
Packet 1 pcs
Code No: 3350
Packet 12 pcs
Code No: 3351
Advantages

- Space-saving and simple mounting into the worktop thus free work area
- Filling mark for correct dosage
- Inclined tank bottom from ZE 1031
- Operating elements at front side
- Hygienic maintenance through rounded tank and installation from below
- Simple assembly by means of screwing on
- Appropriate for DIN- / ISO trays
## Criteria for the Selection ZE Built-In Units

<table>
<thead>
<tr>
<th>Criteria</th>
<th>SONOREX SUPER ZE ... DT</th>
<th>SONOREX SUPER ZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank volume (litres)</td>
<td>13.5–46.0</td>
<td>3.0–46.0</td>
</tr>
<tr>
<td>Inclined tank bottom</td>
<td>ZE 514 DT – no,</td>
<td>ZE 100/514 – no,</td>
</tr>
<tr>
<td></td>
<td>ZE 1031/1032/1058/1059 DT – yes</td>
<td>ZE 1031/1032/1058/1059 – yes</td>
</tr>
<tr>
<td>Ultrasonic transducers at the bottom</td>
<td>ZE 514 DT/1031 DT/1058 DT</td>
<td>ZE 100/514/1031/1058</td>
</tr>
<tr>
<td>Ultrasonic transducers at the bottom and at side</td>
<td>ZE 1032 DT/1059 DT</td>
<td>ZE 1032 /1059</td>
</tr>
<tr>
<td>Control elements</td>
<td>push-buttons</td>
<td>turning knobs</td>
</tr>
<tr>
<td>Time setting (min)</td>
<td>ST 30 DT: 1–30, continuous operation ∞</td>
<td>ST 15: 1–15, continuous operation ∞</td>
</tr>
<tr>
<td>Safety shut-down</td>
<td>after 12 hours</td>
<td>no</td>
</tr>
<tr>
<td>Excess temperature signal</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Protection against delay in boiling</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Thickness of s/s tank/material</td>
<td>ZE 514 DT – 0.8 mm, 1.4301</td>
<td>ZE 100/514 – 0.8 mm, 1.4301</td>
</tr>
<tr>
<td></td>
<td>ZE 1031/1032/1058/1059 – 2 mm, 1.4571</td>
<td>ZE 1031/1032/1058/1059 – 2 mm, 1.4571</td>
</tr>
<tr>
<td>Marking of filling level for safe dosage</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Warranty period (years)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Liquid protection</td>
<td>ZE 514 DT – rinsing set G 1½</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ZE 1031/1032/1058/1059 – bead 1½”, rinsing set G 1½ optional</td>
<td>ZE 100/ 514 – rinsing set G 1½</td>
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<td>ZE 1031/1032/1058/1059 – bead 1½”, rinsing set G 1½ optional</td>
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<td>Rinsing tubs - optional</td>
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<td>Ultrasonic frequency (kHz)</td>
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<td>Sweep</td>
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<td>PZT-transducers</td>
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<td>yes</td>
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<td>Degas</td>
<td>yes</td>
<td>no</td>
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<tr>
<td>Mains supply 230 V~, 50/60 Hz or</td>
<td>yes</td>
<td>yes</td>
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<tr>
<td>Mains supply 115 V~, 50/60 Hz</td>
<td>yes</td>
<td>yes</td>
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<tr>
<td>Data memory</td>
<td>1 program</td>
<td>no</td>
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<tr>
<td>CE marked as medical device</td>
<td>yes</td>
<td>yes</td>
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</table>
SONOREX SUPER Built-In Units

Instrument Disinfection and Cleaning for Group Practices, Decentralised and Centralised Treatment

Ultrasonic Built-in Unit for Small Instruments
SONOREX SUPER ZE 100
Code No.: 2060

Technical Data
ZE 100 consisting of oscillating tank, HF-generator with timer

- Internal tank dimensions: 240 × 140 × 100 mm (l x w x d)
- Material: stainless steel AISI 304
- Capacity: 3.0 litres
- Filling volume: 2.0 litres
- Transducer (bottom): 1 PZT-large area transducer
- Overall dimensions: 257 × 155 × 165 mm (l x w x h)
- Outlet: rinsing set 1½"
- Insertion in the workplate: installation from above
- HF-generator: 80 × 180 × 195 mm (l x w x h)
- Ultrasonic peak output: 320 W
- HF-output: 80 W_{eff}
- Current consumption: 0.4 A
- Total weight: 2.9 kg

Option: Built-in rinsing tank SW 10 Z without ultrasonic transducers with drain set 1½" Code No. 3001

Ultrasonic Built-In Unit for Instruments up to 32 cm Length, also Suitable for 1/2-DIN Trays
SONOREX SUPER ZE 514
Code No.: 2097

Technical Data
ZE 514 consisting of oscillating tank, HF-generator and control unit ST 15
ZE 514 DT consisting of oscillating tank, HF-generator and control unit ST 30 DT

- Internal tank dimensions: 325 × 300 × 150 mm (l x w x d)
- Material: stainless steel AISI 304
- Capacity: 13.5 litres
- Filling volume: 9.0 litres
- Transducers (bottom): 4 PZT-large area transducers
- Overall dimensions: 350 × 324 × 215 mm (l x w x h)
- Outlet: rinsing set 1½"
- Insertion in the workplate: installation from above or from below
- HF-generator: 305 × 310 × 142 mm (l x w x h)
- Ultrasonic peak output: 860 W
- HF-output: 215 W_{eff}
- Current consumption: 1.0 A
- Total weight: 7.8 kg

Option: Built-in rinsing tank SW 14 Z without ultrasonic transducers with drain set 1½" Code No. 088

SONOREX SUPER ZE 514 DT
Code No.: 3202
Ultrasonic Built-In Unit for Instruments up to 48 cm Length, also Suitable for 1/1-DIN Trays
SONOREX SUPER ZE 1031
Code No.: 3060

SONOREX SUPER ZE 1031 DT
Code No.: 3217

Technical Data
ZE 1031 consisting of oscillating tank with oblique bottom* for easy emptying, HF-generator and control unit ST 15
ZE 1031 DT consisting of oscillating tank with oblique bottom* for easy emptying, HF-generator and control unit ST 30 DT

Internal tank dimensions: 510 × 300 × 200/220 mm (l × w × d)
Material: stainless steel AISI 316 Ti, 2 mm
Capacity: 29.0 litres
Filling volume: 20.0 litres
Overall dimensions: 570 × 360 × 270 mm (l × w × h)
Outlet: bead 1½”
Transducers (bottom): 8 PZT-broad beam transducers
Insertion in the workplate: Installation from below
HF-generator: 305 × 310 × 142 mm (l × w × h)
Ultrasonic peak output: 1200 W
HF-output: 300 Wef
Current consumption: 1.4 A
Total weight: 16.7 kg

Option: Built-in rinsing tank SW 31 Z
without ultrasonic transducer Code No. 3048
Drain set 1 1/2” Code No. 601

Ultrasonic Built-In Unit for Instruments up to 53 cm Length, also Suitable for ISO ou 1/1-DIN Trays
SONOREX SUPER ZE 1058
Code No.: 3050

SONOREX SUPER ZE 1058 DT
Code No.: 3234

Technical Data
ZE 1058 consisting of oscillating tank with oblique bottom* for easy emptying, HF-generator and control unit ST 15
ZE 1058 DT consisting of oscillating tank with oblique bottom* for easy emptying, HF-generator and control unit ST 30 DT

Internal tank dimensions: 600 × 400 × 200/220 mm (l × w × d)
Material: stainless steel AISI 316 Ti, 2 mm
Capacity: 46.0 litres
Filling volume: 32.0 litres
Transducers (bottom): 16 PZT-broad beam transducers
Overall dimensions: 660 × 460 × 270 mm (l × w × h)
Outlet: bead 1½”
Insertion in the workplate: Installation from below
HF-generator: 305 × 310 × 142 mm (l × w × h)
Ultrasonic peak output: 2400 W
HF-output: 600 Wef
Current consumption: 2.7 A
Total weight: 22.8 kg

Option: Built-in rinsing tank SW 58 Z
without ultrasonic transducers Code No. 3049
Drain set 1½” Code No. 601
Ultrasonic Built-In Units with Simultaneous Irradiation from the Bottom and from the Side

- Optimal distribution of sonic waves and reduction of ultrasound shadow through additional lateral irradiation
- Electronically induced movements of sound field by means of TwinSonic® technology reduce local peaks of impact resulting in an even cleaning performance in the ultrasonic bath
- No additional lifting gear required for the instrument basket, no additional space required within the work area
- Intense and still gentle cleaning effect for micro instruments particularly damageable
- Generators state-of-the-art with SweepTec® frequency automatic adapt the ultrasound effect continuously to conditions in the bath
- Unvaried construction of tank border allows easy replacement of older built-in tanks

![Ultrasonic Effect Diagram]

**Effect of Cavitation**
Illustration through foil test according to IEC/TR 60886 (1987-03) ...

... in ultrasonic cleaning unit with irradiation from the bottom

... in ultrasonic cleaning unit with irradiation from the bottom and from the side
Ultrasonic Built-In Unit for Instruments up to 48 cm Length, also Suitable for 1/1-DIN Trays
SONOREX SUPER ZE 1032
Code No.: 3075

Technical Data
ZE 1059 consisting of oscillating tank with oblique bottom* for easy emptying, HF-generator and control unit ST 15
ZE 1059 DT consisting of oscillating tank with oblique bottom* for easy emptying, HF-generator and control unit ST 30 DT

Inner tank dimensions: 510 x 300 x 200/220* mm (l x w x d)
Material: stainless steel, 1.4571 (V4A), 2 mm
Capacity: 29.0 litres
Filling volume: 20.0 litres
Overall dimensions: 570 x 410 x 270/290* mm (l x w x h)
Outlet: bead G 1½"
Transducers - bottom: 8 PZT-broad beam transducers
- side: 4 PZT-broad beam transducers
Insertion in the workplate: installation from below
HF-generator: 350 x 310 x 142 mm (l x w x h)
Ultrasonic peak output: 1760 W
HF-output: 440 W$_{eff}$
Current consumption: 2.0 A
Total weight: 18.7 kg
Option: Built-in rinsing tank SW 31 Z
without ultrasonic transducers Best.-Nr. 3048
Drain set 1 1/2" Best.-Nr. 601

Ultrasonic Built-In Unit for Instruments up to 53 cm Length, also Suitable for ISO ou 1/1-DIN Trays
SONOREX SUPER ZE 1059
Code No.: 3085

Technical Data
ZE 1059 consisting of oscillating tank with oblique bottom* for easy emptying, HF-generator and control unit ST 15
ZE 1059 DT consisting of oscillating tank with oblique bottom* for easy emptying, HF-generator and control unit ST 30 DT

Inner tank dimensions: 600 x 400 x 200/220* mm (l x w x d)
Material: stainless steel, 1.4571 (V4A), 2 mm
Capacity: 46.0 litres
Filling volume: 32.0 litres
Transducers - bottom: 11 PZT-broad beam transducers
- side: 5 PZT-broad beam transducers
Overall dimensions: 660 x 510 x 270/290* mm (l x w x h)
Outlet: bead G 1½"
Insertion in the workplate: installation from below
HF-generator: 350 x 310 x 142 mm (l x w x h)
Ultrasonic peak output: 2400 W
HF-output: 600 W$_{eff}$
Current consumption: 2.7 A
Gesamtgewicht: 23.3 kg
Option: Built-in rinsing tank SW 58 Z
without ultrasonic transducers Best.-Nr. 3049
Drain set 1½" Best.-Nr. 601
When using appropriate accessories the ultrasound application becomes easier. The oscillating tank and parts to be cleaned will be protected. Parts to be cleaned or vessels must not be placed on the bottom of the ultrasonic bath.

<table>
<thead>
<tr>
<th>Insert Basket</th>
<th>stainless steel</th>
<th>- protects valuable instruments</th>
<th>- avoids damages at the tank bottom</th>
<th>- optimum transfer of ultrasonic effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>K 6 - to be set in</td>
<td>Mesh sizes:</td>
<td>5 x 5 mm</td>
<td>K 08:</td>
<td>4 x 4 mm</td>
</tr>
</tbody>
</table>

**Insert Basket** stainless steel – basket holder is necessary! Mesh size 4 x 4 mm

<table>
<thead>
<tr>
<th>Basket Holder</th>
<th>stainless steel – for inset baskets or 1/2- and 1/1-DIN or ISO sieve trays</th>
</tr>
</thead>
<tbody>
<tr>
<td>KT 14</td>
<td>for K 14 EM or 1/2-DIN sieve trays</td>
</tr>
<tr>
<td>KT 30</td>
<td>for K 29 EM or 1/1-DIN sieve trays</td>
</tr>
<tr>
<td>KT 30 Z</td>
<td>like KT 30, with handles</td>
</tr>
<tr>
<td>KT 57</td>
<td>for K 29 EM, 1/1-DIN or ISO sieve trays</td>
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<tr>
<td>KT 57 Z</td>
<td>like KT 57, with handles</td>
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</table>

<table>
<thead>
<tr>
<th>Lid</th>
<th>stainless steel to protect the liquid from outside dirt</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZE 514: D 14 installation from below</td>
<td></td>
</tr>
</tbody>
</table>

**Lid** stainless steel – covers the tank completely especially for inset baskets without short handles

**Lid** stainless steel especially for inset baskets with short handles

ZE 514: D 14 T installation from above

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</tbody>
</table>
## Special Accessories

### Silicone Knob Mat
Contact-free storage of very sensitive micro-instruments. Avoids damages of the instruments. To be fixed in the basket. Good ultrasound permeability.

<table>
<thead>
<tr>
<th>Pushbuttons SMK 10 (10 sets)</th>
<th>Code No. 3029</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM 3</td>
<td>170 × 97 mm, for K 3 C</td>
</tr>
<tr>
<td>SM 5</td>
<td>213 × 97 mm, for K 5 C</td>
</tr>
<tr>
<td>SM 6</td>
<td>426 × 97 mm, for K 6 L</td>
</tr>
<tr>
<td>SM 14</td>
<td>235 × 245 mm, for K 14, K 14 EM</td>
</tr>
<tr>
<td>SM 18 S</td>
<td>639 × 97 mm, for K 18 S</td>
</tr>
<tr>
<td>SM 29</td>
<td>470 × 245 mm, for K 28, K 29 EM</td>
</tr>
</tbody>
</table>

### Fixing-Clamp Set
Set comprising 2 large and 5 small plastic clamps to fix securely flexible endoscopic accessories. Avoids damages at biopsy forceps and instruments. To be fixed in the basket. Facilitates the disinfection and cleaning.

### Keyhole Surgery Instrument Support
For 6 tubes of detachable keyhole Surgery instruments with diameters from 5 to 10 mm. The predetermined diagonal position supports the air outlet of the tubes to fill in disinfection solution. To be fixed in the basket.

### Insert Tub with Lid
for basic instrument cleaning with STAMMOPUR GR.

<table>
<thead>
<tr>
<th>Bottom dimensions × depth (l × w × d)</th>
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</thead>
<tbody>
<tr>
<td>KW 3</td>
</tr>
<tr>
<td>PE-natural</td>
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<tr>
<td>195 × 115 × 88</td>
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<tr>
<td>KW 5</td>
</tr>
<tr>
<td>PE-natural</td>
</tr>
<tr>
<td>254 × 96 × 130</td>
</tr>
<tr>
<td>KW 14</td>
</tr>
<tr>
<td>PP-white</td>
</tr>
<tr>
<td>280 × 215 × 145</td>
</tr>
<tr>
<td>KW 28-0</td>
</tr>
<tr>
<td>PP-natural</td>
</tr>
<tr>
<td>437 × 230 × 155</td>
</tr>
</tbody>
</table>

### Plastic Inset Basket
Basket holder necessary! Avoids damages of the instruments. Suitable from 4 to 137 °C. Hole size 10,4 × 6,8 mm.

<table>
<thead>
<tr>
<th>Bottom dimensions × depth (l × w × d)</th>
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</thead>
<tbody>
<tr>
<td>K 14 EP</td>
</tr>
<tr>
<td>PP-blue</td>
</tr>
<tr>
<td>230 × 250 × 45 mm, for KT 14</td>
</tr>
<tr>
<td>K 29 EP</td>
</tr>
<tr>
<td>PP-blue</td>
</tr>
<tr>
<td>420 × 200 × 45 mm, for KT 30/Z, KT 57/Z</td>
</tr>
</tbody>
</table>

### Plastic Insert Basket
Avoids damages of the instruments. Suitable from 4 to 137 °C. Hole size 10,4 × 6,8 mm.

<table>
<thead>
<tr>
<th>Bottom dimensions × depth (l × w × d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K 14 P</td>
</tr>
<tr>
<td>PP-blue</td>
</tr>
<tr>
<td>230 × 250 × 45 mm</td>
</tr>
<tr>
<td>K 28 P</td>
</tr>
<tr>
<td>PP-blue</td>
</tr>
<tr>
<td>420 × 200 × 45 mm</td>
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</tbody>
</table>

### Tables

<table>
<thead>
<tr>
<th>Units</th>
<th>Accessories</th>
<th>Silicone Knob Mat Type</th>
<th>Code No.</th>
<th>Fixing-Clamp Set Type</th>
<th>Code No.</th>
<th>Support Type</th>
<th>Code No.</th>
<th>Insert Tub Type</th>
<th>Code No.</th>
<th>Plastic Insert Basket Type</th>
<th>Code No.</th>
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<tbody>
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<td>SM 3</td>
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<td>715</td>
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<td>SM 6</td>
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<td>-</td>
<td>K 29 EP</td>
<td>3083</td>
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</table>
To achieve the optimum ultrasonic efficiency, it is necessary to use special disinfection and cleaning solutions. They must have cavitation-improving and material-protecting features for the ultrasonic application. The protection of the objects and the oscillating tank must be guaranteed, even during intensive usage.

Many customary cleaning and disinfection agents contain substances that can attack the oscillating stainless steel tank.

STAMMOPUR concentrates have been especially developed for ultrasonic application and are marked CE according to the Medical Devices Directive (MDD). All solutions are environmentally friendly, biodegradable and easy to dispose.

Instrument Disinfection and Intensive Cleaning
STAMMOPUR DR 8 - VAH-Certified, limited virucidal

Simultaneous disinfection and intensive cleaning of instruments after dry deposit. High blood dissolution, for instruments heavily contaminated with incrustations of blood and secretions. Due to short irradiation time especially recommended for the disinfection and cleaning of very sensitive and valuable micro-surgical and MIS-instruments and endoscopic accessories. Recommended by a known manufacturer of endoscopes. Solution applicable under strain for 3 days. Very high material compatibility, suitable for all materials. Non-odiferous.

Anticorrosive. Without aldehydes, chlorine, phenols. Bactericidal (incl. Tb.-B., helicobacter pylori), fungicidal, limited virucidal (Vaccinia, BVDV, Papova, HBV, HCV, HIV, H5N1), mildly alkaline pH 9.4 at 1 %.

Active agents in 100 g: 9.9 g bis(3-aminopropyl)dodecylamin, 8.4 g didecylmethylpoly(oxethyl)ammoniumpropionate; 5-10 % non-ionic tensides, 30-50 % solvents, complexing agents, pH-regulators, adjusting agents.

Expertises: Bacteria, fungi according DGHM: Dr. F.-A. Pitten, Gießen 11/05; Prof. Dr. Schubert, Frankfurt 6/99; Prof. Dr. Werner, Schwerin, 12/98;
HBV/HIV: Prof. Dr. Fröhner, München 8/99; Vaccinia, Papova, BVDV, HSV1; Prof. Dr. L. Döhner, D. Becher, Greifswald 8/06 and 9/06; Helicobacter pylori: Prof. Dr. Werner, Schwerin 8/00; Time durability: Prof. Dr. Werner, Schwerin 10/99, Time reduction by ultrasound: Dr. W. U. Färber, Gießen 8/02

Hazard identification: C, corrosive.

Wet Deposit and Final Disinfection

Simultaneous disinfection and cleaning. Suitable for wet deposit with pre-cleaning. Due to the comprehensive efficacy also suitable for final disinfection of very sensitive and thermo sensitive instruments.

Anticorrosive, high material compatibility, applicable for all materials. Without formaldehyde, chlorine and phenols. Bactericidal (incl. Tb.-B.), fungicidal, virucidal (incl. HBV, HIV, polio). Neutral pH 7 (1 %).

Active agents in 100 g: 6.0 g glutaraldehyde, 8.0 g didecylmethylammoniumchlorid, <5 % non-ionic tensides, 2-Propanol, corrosion inhibitors.

Expertises: Bacteria, fungi according DGHM (12.07.1991): Prof. Dr. Hartmann, Berlin 8/93; Dr. Bernhard, Berlin 1/94 and 6/94;
Viruses (HBV/HIV): Dr. Steinhann, Bremen 4/96; Viruses (polio, adenovirus, papova, vaccinia): Prof. Dr. Hartmann, Berlin 9/92,
Time reduction by ultrasound: Prof. Dr. Hartmann, Berlin 2/95.

Hazard identification: C, corrosive

Always read the label and product information before using the disinfectants.
Intensive Instrument Cleaning

STAMMOPUR R

Intensive cleaner for medical instruments after wet deposit. High cleaning efficiency, even for instruments heavily contaminated with incrustations of blood and secretions. Anticorrosive, very high material compatibility, applicable for all materials. In dosage of 2 % also applicable as contact liquid in the ultrasonic bath - e.g. for recommended basic cleaning of spotted and ugly looking instruments with STAMMOPUR GR. Without phosphates, aldehydes and chlorine. Main active agents: tensides, mildly alkaline pH 9.6 at 1 %.

<table>
<thead>
<tr>
<th>Volumes</th>
<th>Code No.</th>
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<tbody>
<tr>
<td>2-litres-bottle</td>
<td>934</td>
</tr>
<tr>
<td>5-litres-jerrycan</td>
<td>989</td>
</tr>
<tr>
<td>25-litres-jerrycan</td>
<td>976</td>
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</tbody>
</table>

Basic Instrument Cleaning

STAMMOPUR GR

Basic instrument cleaner for the maintenance of spotted, encrusted and ugly looking instruments. Removes tarnish, metal oxides, rust, spotting, burned-in residues after sterilisation and mineral residues e.g. lime. Caution with damaged chroming and nickel-plated parts. Not for light metals, tin and zinc. Not to be used for routine cleaning. Main active agents: phosphoric acid, tensides, pH 1.9 at 1 %.

Hazard identification: C, corrosive

Application only in plastic insert tubs, special accessories see page 13:

<table>
<thead>
<tr>
<th>Volumes</th>
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<tbody>
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<td>5-litres-jerrycan</td>
<td>969</td>
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<td>25-litres-jerrycan</td>
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</table>
Disinfection and Cleaning

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<th>Disinfection of Instruments</th>
<th>Instrument Cleaning</th>
<th>Basic Cleaning</th>
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<tr>
<td>STAMMOPUR DR 8</td>
<td>STAMMOPUR DR</td>
<td>STAMMOPUR R</td>
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<tr>
<td>STAMMOPUR GR</td>
<td></td>
<td>STAMMOPUR GR</td>
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<tr>
<td>bactericidal (incl. Tb.-B.)</td>
<td>•</td>
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</tr>
<tr>
<td>Helicobacter pylori</td>
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<td></td>
</tr>
<tr>
<td>fungicidal</td>
<td>•</td>
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<tr>
<td>limited virucidal</td>
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<tr>
<td>Vaccinia, HBV, HCV, HIV, H5N1</td>
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<tr>
<td>Papova</td>
<td>•</td>
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<tr>
<td>virucidal (Polio, Adeno, Vaccinia, Papova)</td>
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<td>Intensive cleaning</td>
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<td>pre-cleaning</td>
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<td>basic cleaning</td>
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<thead>
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<th>Characteristics</th>
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<tr>
<td>without aldehydes</td>
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<td>without phenols</td>
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<td>without chlorine</td>
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<table>
<thead>
<tr>
<th>Material Compatibility</th>
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<td>steel, stainless steel, precious metal, plastic</td>
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<tr>
<td>light metal</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>acrylic glass, rubber</td>
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</tbody>
</table>

**Bandelin electronic**

being specialised in manufacturing ultrasonic units for disinfection and cleaning.

6552 e/2007-09
All units are RFI proof and CE marked according to MDD (Medical Device Directive).
Subject to technical alterations without notice.

**Bandelin**

www.bandelin.com
info@bandelin.com

55 Years of Experience in Ultrasound Technology