User Instructions

BANDELIN
Ultraschall seit 1955

SONOSHAKE

Shaking device SA 1028

Accessories for

SONOREX DIGITEC DT 1028 F ultrasonic baths

51336d GB/2019-06

CE

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General

The equipment, the accessories and the preparations are to be used in accordance with the user instructions 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.

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

The warnings and safety precautions (Section 1.5) are always to be followed 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 expire.

If any 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, to prevent damage to the device and danger to the user. When device parts are labelled with this symbol, reference must be made to the documentation.
	Warning	Warns of a hot surface.
	Important	Identifies information that is important for execution.
	Note	Identifies information provided for explanatory purposes.
IVD	In vitro diagnostics information	Identifies information that is important for in vitro diagnostics applications.
	Do not grip inside	For health reasons, touching the oscillating fluid is prohibited.
	Wear ear protectors	For health reasons, standing for long periods of time in the vicinity of the device without ear protectors is prohibited.
➢	Operating sequence instructions	Identifies instructions that are to be followed in the described sequence.

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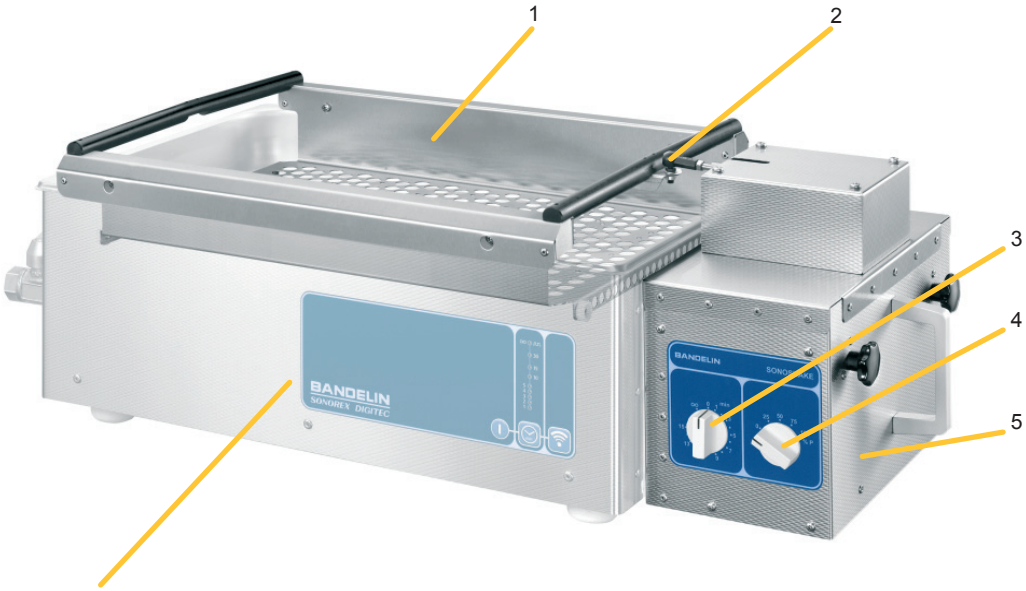
1 Product description

Shaking device SA 1028 for shaking samples above the SONOREX DIGITEC DT 1028 F flat ultrasonic bath.

Product features:

- Stainless steel roller carriage (1) with separable coupling (2)
- Knob (time switch) for 1-15 min and continuous operation (3)
- Knob (power selection switch) for 0, 25, 50, 75 or 100% (4)
- Drive unit with compact, easy-to-clean stainless steel housing (5)



(SONOREX DIGITEC DT 1028 F) SONOSHAKE SA 1028

1.1 Mode of operation

The shaking device comprises a roller carriage, which is positioned on the rim of the ultrasonic bath, and a drive unit with controls on the front. The drive unit is fixed to the ultrasonic bath to ensure the correct position of the device on the ultrasonic bath and prevent it becoming loose or moving during shaking.

The shaking device has four different shaking frequencies allowing up to max. 200 shakes/min with an amplitude of max. 20 mm.

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1.2 Purpose

The shaking device SA 1028 can be used in the scope of sample preparations, e.g., in laboratories, clinics and in industrial and academic research, to equip SONOREX DIGITEC DT 1028 F flat ultrasound devices with a shaking function (“SONOSHAKE”).

This allows the simultaneous sonication and shaking of flasks of different shapes and sizes. This may have a catalytic effect during sonochemical processes, e.g., in the production of stable emulsions or the rapid degasification of fluids with a high gas content.

For the intended use, the samples must be placed in suitable vessels (e.g., laboratory flasks) and secured in the roller carriage ("indirect operation").
Existing SONOREX DIGITEC DT 1028 F ultrasonic baths can be equipped with the shaking device without any need for modifications. The shaking device must not be operated without a SONOREX DIGITEC DT 1028 F ultrasonic bath. The unit is intended for table-top operation.

In vitro diagnostic use of the device

IVD

The device can be used for in vitro diagnostic preparation or laboratory procedures (e.g., preparation of samples) in which medical information is gathered from the treatment of organic or inorganic material. In this case, it is classified and treated in accordance with the Directive 98/79/EC on in vitro diagnostic medical devices (IVD).

1.3 CE conformity

The shaking device SA 1028 is declared an IVD device and complies with the CE marking criteria of the European Directives:

- "IVD" directive
- "Low-voltage directive"
- "Electromagnetic compatibility" directive
- "Machinery directive"
- RoHS – directive

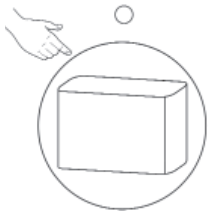
in their currently valid versions.

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

1.4 Technical data

The shaking device is interference-free and marked with a CE .
Safety: EN 61010-1,
EMC: EN 61326-1

Device type:	SA 1028
Order no.:	3249
Housing and roller carriage:	Stainless steel
Serial No.:	See type plate on rear of device
Mains supply:	100 - 230 V~ (± 10 %) 50/60 Hz; mains cable length 2 m
Max. current consumption:	0.8 A/230 V 1.3 A/115 V
Protection class:	I
Emission sound pressure level (A-weighted):	<70 dB(A)
Drive unit:	
Exterior dimensions:	225 × 320 × 235 mm
Weight:	4 kg (incl. fastening materials)
Roller carriage:	
Exterior dimensions:	465 × 340 × 105 mm
Interior dimensions:	410 × 280 × 70 mm
Weight:	1.75 kg (net)
Max. mass:	≤ 5 kg (roller carriage incl. load)
Shaking frequency:	nominal 200 shakes/min (at 100% power)
Amplitude:	20 mm / 12 mm
Degree of protection:	IP 20 according to DIN 60529



Protected against access to dangerous parts with fingers
Protected against solid foreign bodies with a diameter of 12 mm or larger

No protection against penetration of water

Ambient conditions according 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 dewing.
Only for indoor operation.

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IVD **Specifications for use as a medical device**

Name:	Shaking device SA 1028
UMDNS nomenclature (ECRI / DIMDI):	17-125
Purpose:	See Section 1.2
Classification (in acc. with Directive 98/79/EC for IVD):	Device category 5 device
Type, model, serial number, year of manufacture:	See type plate on rear of device for information

The device has been inspected pursuant to norms currently in effect and is to be installed and put into operation pursuant to EMC directions.

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

Startup on location, functional check and personnel training (§ 4):	Not required
Technical safety controls, (STK, § 11):	No specifications
Technical measurement controls, (MTK, § 14):	Not applicable

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.

1.5 Warnings and safety precautions

General

- In accordance with its intended use and these user instructions, the shaking device must only be used together with a SONOREX DIGITEC DT 1028 F ultrasonic bath. Consequently, the safety information in the SONOREX DIGITEC F series user instructions also applies.
- Keep the shaking device out of the reach of children and also of persons who have not been instructed in their operation by reference to these instructions.
- Do not insert any objects in the coupling opening.
- The shaking device adheres to prescribed EMC limit values, such that it can be assumed that the electromagnetic radiation emanating from the unit 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.
- Keep the surface of the device and the controls clean and dry!
- For cleaning and disinfection, only use cleaning agents and surface disinfectants which are suitable, approved, tested and compatible with the materials.
- The user instructions with their safety instructions must remain with the unit and must be observed without fail!
- If the shaking device is passed on, the user instructions with the safety instructions must also be handed over.

Damage and defects

- If any damage is identified, do not connect the shaking device up to the power supply.
- In the event of defects, disconnect the mains 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.

Operation and transport

- Only plug the shaking device in to an outlet with a grounded socket.
- Observe ambient conditions, see Section 1.4.
- Only insert and remove samples with the shaking device switched off.
- Secure flasks in the roller carriage prior to switching on the shaking in order to ensure that they do not move and/or topple over.
- To avoid damage and environmental risks as well as damaging the samples, suitable, sealed flasks should be used.
- To avoid wave pounding, maintain the filling level in the ultrasonic bath and adjust the power setting to the number of samples.
- Do not touch any parts of the device or reach into the device when shaking is in progress.

- Do not move the ultrasonic bath while shaking is in progress!
- Only transport the drive unit and roller carriage separately.
- Do not allow the unit to run without supervision.

2 Preparation

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

2.1 Scope of delivery

1 Roller carriage
1 Drive unit
1 Clip bearing
1 Fastening material set
1 User instructions

Additional accessories according to order – see delivery note

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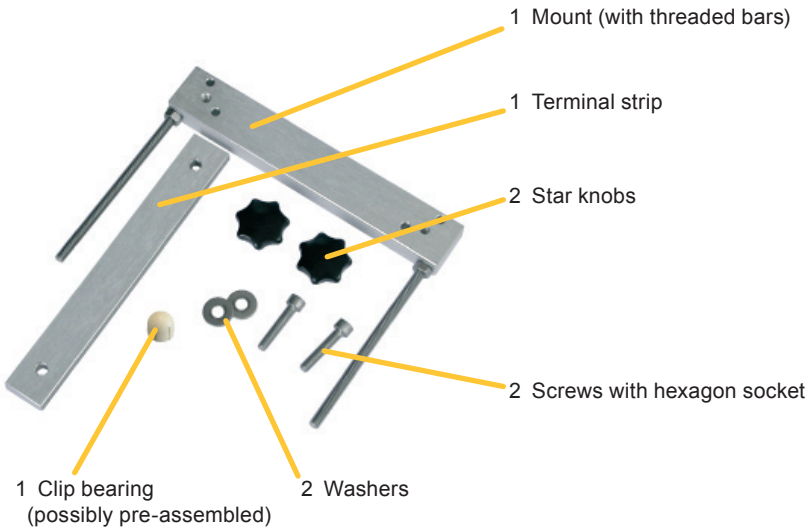
2.2 Set-up / assembly

Guard against moisture and wetness – risk of electric shock.

Installation of the shaking device SA 1028 is only possible on the right side of the ultrasonic bath.

2.2.1 Fastening material set



A size 5 Allen key is required for the installation (not included in the scope of delivery).

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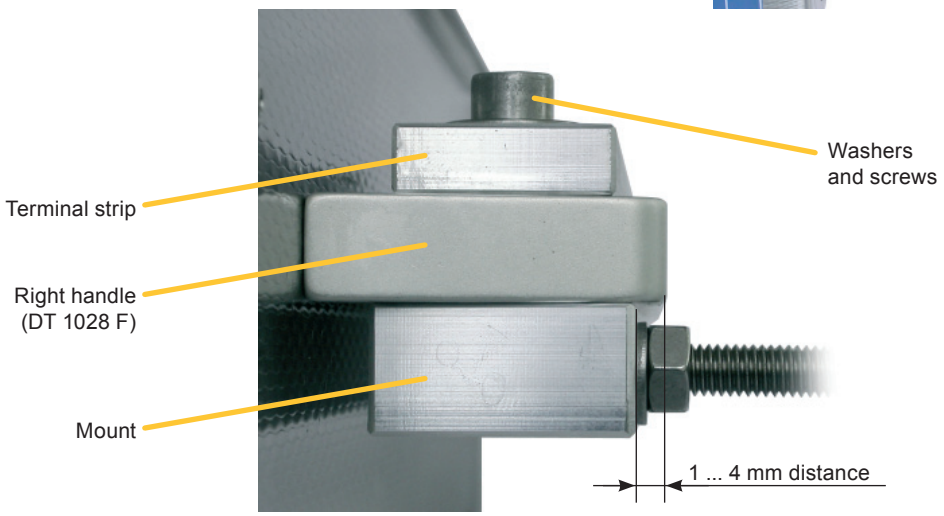
2.2.2 Installing the mount

- ➢ Position the mount in the centre below the right handle of the ultrasonic bath.
- ➢ Place the terminal strip on the handle.
- ➢ Secure the mount and the terminal strip on the handle with the washers and screws.

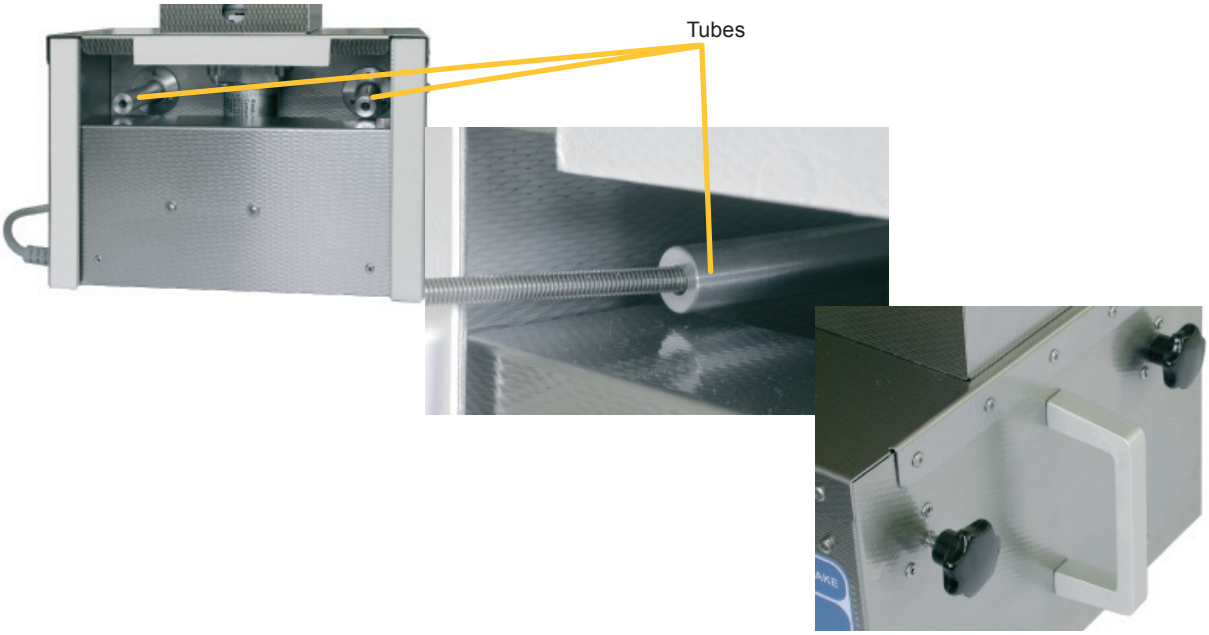
Important

The mount must be secured centrally on the handle, so that the sliding rod does not grind.
Refer to the image in
Section 2.2.5 “Checks”.



2.2.3 Secure/fasten device

- ➢ Push the drive unit onto the threaded bars – through the tubes – as far as it will go.
- ➢ The screw the star knobs onto the threaded bars and tighten.



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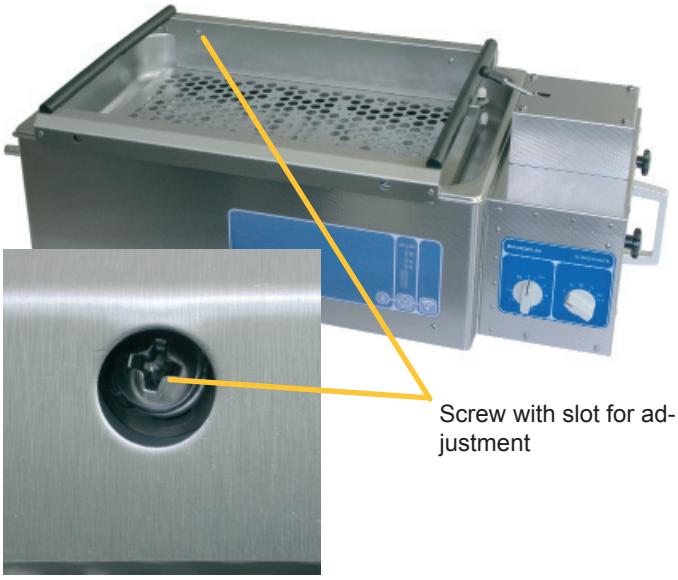
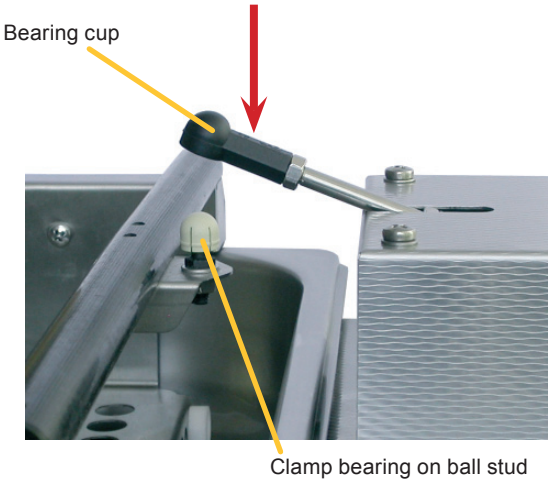
2.2.4 Positioning/adjusting the roller carriage

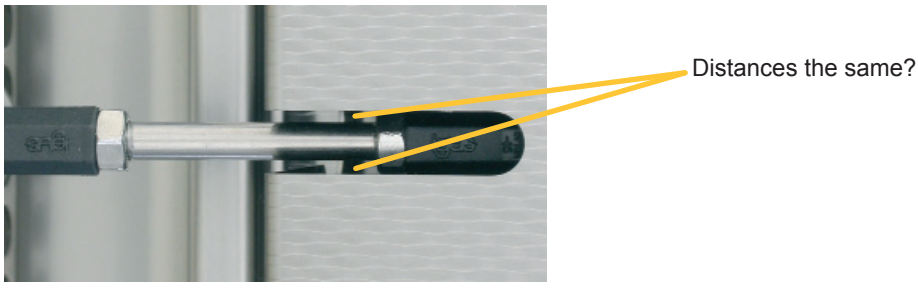
- Press the clamp bearing onto the ball stud (clicks in).
- Position the roller carriage onto the rim of the ultrasonic bath.
- Then check whether it rolls easily on the rim of the bath. If the roller carriage wobbles or grinds on the rim of the bath, it should be adjusted using the screw (rear left, outside).
- After adjustment, check whether the clamp bearing is on the ball stud and then press the bearing cup onto the ball stud (clicks in).





2.2.5 Check the coupling opening

Once the ball stud has clicked into place, thesliding rod should be in the centre of the coupling opening, see image.
If this is not the case, the installation of the mount must be corrected as described in Sections 2.2.2 and 2.2.3 so that the sliding rod is in the centre and grinding is avoided.



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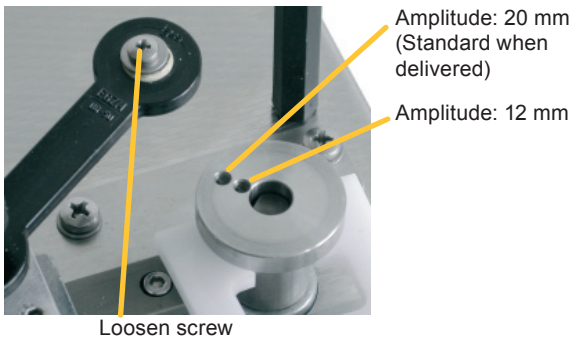
2.3 Changing the amplitude setting

The amplitude of the roller carriage during shaking is set to 20 mm when the device is delivered.
Alternatively, an amplitude of 12 mm can also be set.

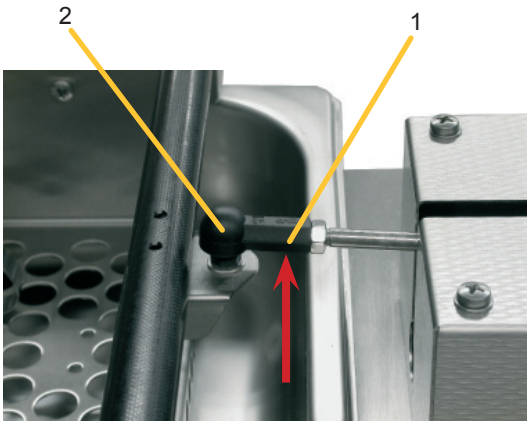
- Disconnect device from mains power.
- Unscrew the cover of the shaking device.
  ATTENTION: PE connection.
- The amplitude can be changed by adjusting the position of the screw, see adjacent image.
- Then secure the cover and reconnect the device with the mains.

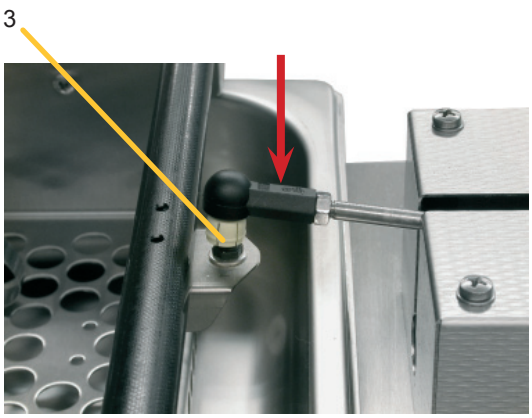
Setting the amplitude



2.4 Start-up

- Release the coupling on the roller carriage: Grasp the lever 1 behind the bearing cup 2 and pull it upwards. Leave or place the clip bearing 3 back on the ball stud. The roller carriage can now be taken off the ultrasonic bath.
- Equip the roller carriage with the holding clamps (see Section 4.2) or replace the clamps if already mounted.
- Position the roller carriage back on the rim of the bath and check it for free movement.
- Press/click the bearing cup 2 onto the lever 1 on the ball stud (with clip bearing 3).
- Connect the device up to the power supply (grounded socket).
- Conduct a function test – turn the device on briefly. The shaking device must move evenly and must not wobble or grind on the ultrasonic bath. Then switch device off again.
- If necessary, equip the roller carriage with holding clamps, see Section 4.1.





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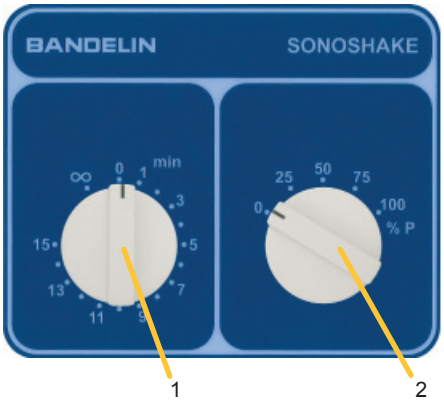
3 Operation

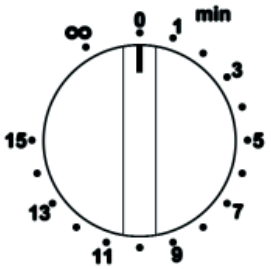
The operation is carried out via the knobs on the front.



1 Turning knob for time setting ON / OFF with preset time
2 Power setting knob

3.1 Time setting

The knob for time setting turns the device on and off and sets the time period for the shaking.



Timed operation:

- Turn knob to the right
  → range of time 1 - 15 minutes
  Once the time has elapsed, the time switch will automatically turn off.
- By turning the knob back, the operating time will be shortened, i.e., the time switch will be turned off.

Continuous operation:

- Turn knob to the left
  → Setting ∞
  The device will not turn off automatically,
  to switch it off turn the knob left, back to "0".

Notes

- While turned off, the timer may remain connected to the mains.
  It can be disconnected from the mains by pulling the mains plug out.
- An “engaging” of the time switch is barely felt if mains voltage is not present, e.g. if the mains plug is disconnected or the fuse is blown.
  The time switch only works if mains voltage is present.

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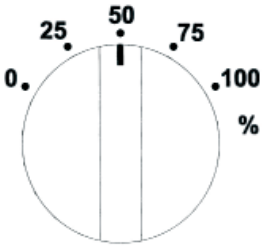
3.2 Power setting

The shaking frequency will be adjust via the knob for power setting (shakes/min).

Possible power settings	shaking frequency [shakes/min]
0%	0
25%	~ 55
50%	~ 110
75%	~ 165
100%	~ 220



The shaking frequency can also be changed during operation.

Caution!

Risk of splashing – with larger samples and higher power settings!

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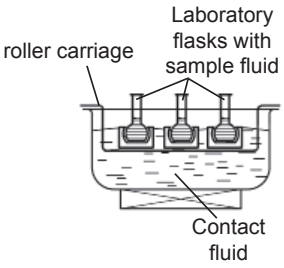
4 Use

The shaking device is used together with the SONOREX DIGITEC DT 1028 F flat ultrasonic bath. Depending on the application, the shaking usually occurs indirectly in laboratory flasks or other vessels, which are positioned in the roller carriage.
Direct sonication of objects in the bath fluid is not permitted in the DT...F ultrasonic baths and the shaking device.



Notes on the use with the ultrasonic coupling

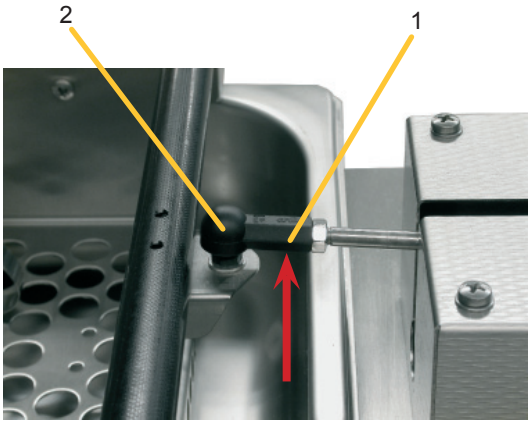
If inset beakers are used in the ultrasonic bath, a contact fluid must always be used as otherwise the ultrasound cannot pass through the air (between the ultrasonic oscillating tank and the inset beaker). This contact fluid must be able to transfer the ultrasound to the fluid in the inset beaker without loss if possible.
For more detailed information and instructions on correct ultrasound applications, please refer to the user instructions for the ultrasonic bath.

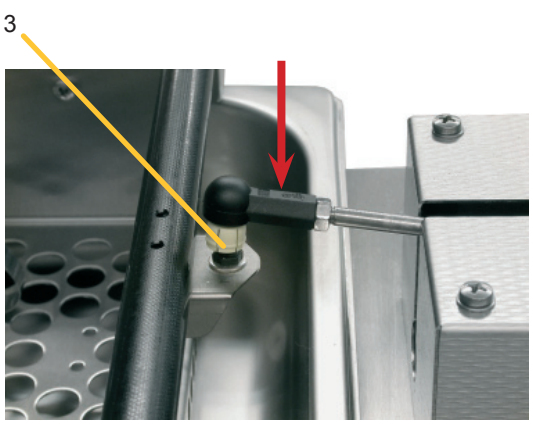
4.1 Preparing the roller carriage for the application

To avoid the flasks' moving around or tipping over during operation of the shaking device, BANDELIN recommends the use of special "EK" holding clamps, see Section 7.

The device must always be switched off before the roller carriage is equipped with the holding clamps. The ultrasonic bath should also be switched off during the procedure.

- Release the coupling on the roller carriage: Grasp the lever 1 behind the bearing cup 2 and pull it upwards. Leave or place the clip bearing 3 back on the ball stud. The roller carriage can now be taken off the ultrasonic bath.
- Equip the roller carriage with the holding clamps or replace the clamps if already mounted.
- Position the roller carriage back on the rim of the bath and check it for free movement.
- Press/click the bearing cup 2 onto the lever 1 on the ball stud (with clip bearing 3).





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4.2 Shaking

It is possible to treat multiple sample vessels with different fluids at the same time.

When treating small quantities of combustible fluids in sample vessels, the country-specific guidelines/regulations that are currently in effect are to be observed!

Remove any air bubbles below the vessels.

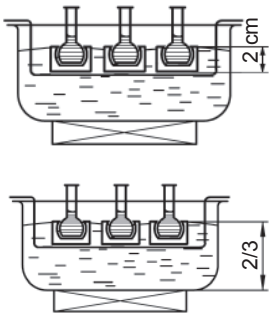
Step 1: Fill the ultrasonic bath and degas it

Check that the oscillating tank is filled with water and a suitable preparation to reduce the surface tension (contact liquid), please refer to the user instructions of the ultrasonic bath.

Step 2: Insert objects to be treated

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

- The laboratory flasks can be secured in the roller carriage with EK holding clamps, see chapter 7.1.
- Equip the roller carriage with laboratory flasks.
- The laboratory flasks must be immersed at least 2 cm deep in the contact fluid. Ensure the oscillating tank is 2/3 full.
- The fill level of the oscillating tank must always be at or slightly above the filling level mark following equipment. A low fill level will damage the ultrasonic bath!



Step 3: Power setting

- Set the knob for power setting to the lowest setting, see Section 3.2.
- Check that the movement does not make any sample fluid come out of the laboratory flasks. Only then should you start the ultrasonic bath in accordance with the user instructions.

CAUTION:
When working with aggressive preparations/sample, if splashes fall in the contact fluid or on the stainless steel surface: change the contact fluid immediately if necessary, clean the surfaces and wipe dry.

Step 4: Time setting

- Set the required shaking period, see Section 3.1.
- Set the required sonication period at the ultrasonic bath and start the ultrasound, see separate user instructions.

Step 5: Switch off

➢ If necessary switch off the shaking device and ultrasonic bath.

Step 6: Removing the laboratory flasks

Then remove the laboratory flasks from the roller carriage

CAUTION:
Depending on the length of the sonication, the flasks/samples may be hot.

➢ Before the next sonication, verify the service life of the contact liquid. Heed the specifications of the preparation manufacturer. If the solution becomes heavily contaminated, it should be replaced earlier as it can reduce the efficacy of the ultrasound. For more detailed information, please refer to the user instructions of the ultrasonic bath.

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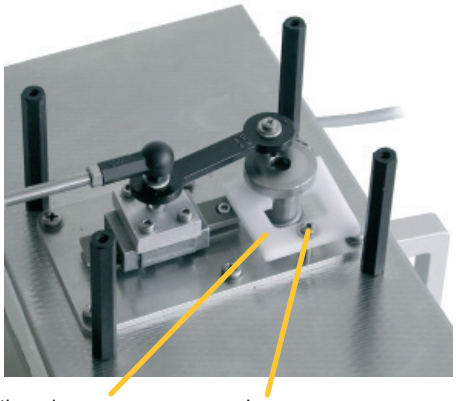
5 Cleaning/disinfection and care of the device

- Always unplug the mains plug before cleaning the device!
- Do not rinse off the device or immerse it in water: simply wipe the exterior with a damp cloth.
- Do not use any steel wool, scratchers or scrapers.
- The surface of the device should be cleaned and disinfected regularly by the operator in accordance with the hygiene plan and using a VAH-certified or effective surface disinfectant. If disinfection and cleaning is not performed correctly or regularly, there is a risk of microorganisms colonising the device and causing microbiological contamination, particularly in the roller carriage, which can result in a cross infection.
- Rust particles from the water pipe system can penetrate the passive protective layer of the stainless steel, "activating" the stainless steel and making it begin to rust. The extraneous rust produces localised corrosion of the roller carriage. For this reason, remove rust stains immediately using a soft cloth and a commercial stainless steel cleaning product without abrasive additives.
- If scum/residues remain in the roller carriage after extended periods of use, they should be removed using a commercial stainless steel cleaning product without abrasive additives.
- If sounds (slight squeaking) are heard after extended periods of use as a result of wear debris on the friction clamp, these can rectified by cleaning (blow debris away), see adjacent image. Remove the friction clamp if necessary.



5.1 Warehousing / storing

During extended periods without use, the shaking device should be stored in a cool, dry place. The roller carriage should be taken off the drive unit.

6 Maintenance and repair

The devices do not require any maintenance.

6.1 Repairs and service

If you identify errors or defects that cannot be rectified, the device must not be used further. In such a case, please contact the supplier or the manufacturer:

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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 device is to be cleaned and decontaminated (if necessary), see the following section.

6.2 Decontamination certificate

If the shaking device is sent back to the manufacturer for repairs (with accessories, as the case may be), the form "Certificate of decontamination" is to 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 ...

7 Accessories

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

BANDELIN offers a broad range of accessories.
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

Internet:
www.bandelin.com

7.1 Required accessories

EK holding clamps are required for securing the laboratory flasks.
They prevent the flasks from moving around or toppling over and can be secured in the roller carriage quickly and without any problems.
Holding clamps are not included in the scope of delivery.

type	Order No.	For flask size	Quantity fitting in roller carriage
EK 10	7521	10 ml	35
EK 25	7519	25 ml	35
EK 50	7518	50 ml	18
EK 100	7516	100 ml	12
EK 250	3259	250 ml	10

EK 10

EK 100

7.2 Preparations **- not applicable -**

8 Taking the unit out of service

If the device no longer works, it is to be appropriately disposed of.

9 Key words

BANDELIN electronic GmbH & Co. KG • Heinrichstraße 3-4 • 12207 Berlin • Deutschland • info@bandelin.com

P

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

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Zertifiziert nach
ISO 9001
ISO 13485

Note:

The user instructions in this and other languages as well as further information are available on the supplied CD.