Celltron

Operating manual

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INFORS HT

Celltron
Bench-top Shaker

Doc-ID: D010, 1, en_GB – Original
Art. 79331

More information about the product is available online at:
www.infors-ht.com/en/celltron

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Supplemental directives

About this Manual

This manual enables the safe and efficient handling of the device. All the information and instructions in this operating manual comply with the current standards, legal regulations and the latest technological developments.

This operating manual is a component part of the device. It must be kept near the device unit and be accessible to staff at all times. All persons working on or with the device must read the operating manual thoroughly and fully understand its contents before beginning any work. Adhering to all the safety notes and operating instructions in this manual is essential to ensure that work is carried out safely.

The scope of delivery may differ from the explanations, descriptions and figures in this operating manual due to special designs, additional options specified on ordering and the latest technical/mechanical modifications.

This manual contains illustrations to aid general understanding. These may differ from the actual device as supplied.

Customer Service and Services

The customer service of the manufacturer or the local licensed dealer is at your disposal for technical advice and specialist enquiries (contact details see ➦ https://www.infors-ht.com/en/contact/). Due to their familiarity with the potential applications of the device, the Customer Service team is able to provide information on whether the unit can be used for a specific application or modified to handle the planned process.

Declaration of Conformity

The device meets the general requirements of the following standards:

- Machinery Directive 2006/42/EC
- EMC Directive 2014/30/EU

The declaration of conformity in the sense of the Machinery Directive, Annex II 1 A is attached to the operating manual.

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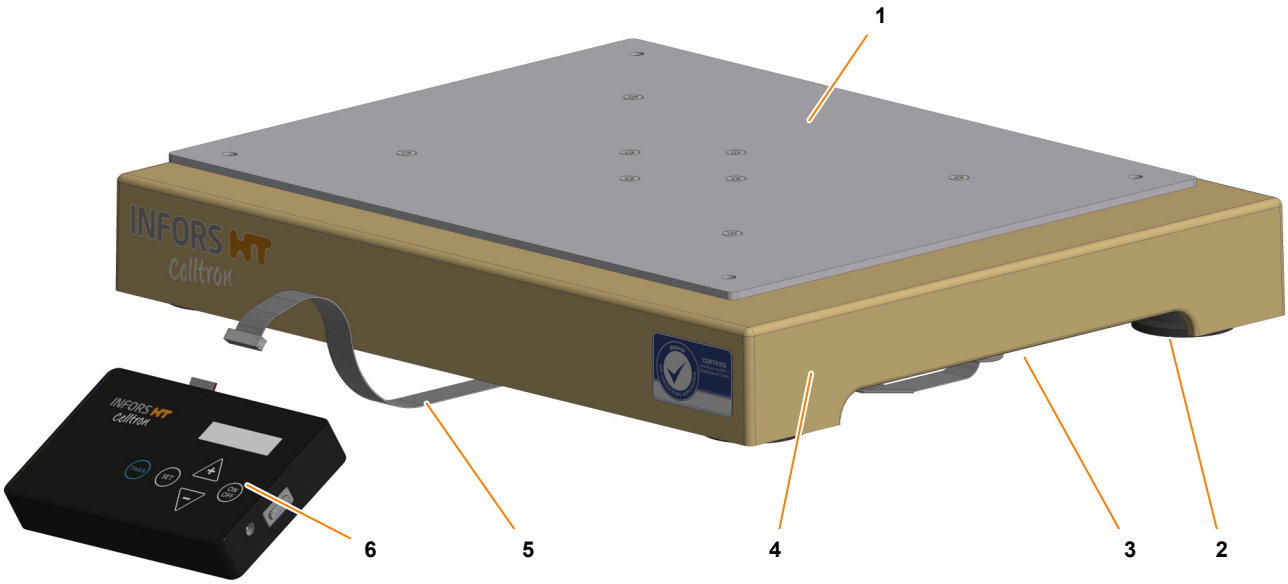
1 Overview of the Device

1.1 Basic Unit

Overview



1 Table
2 Non-slip feet (4 x)
3 Grip recess (on both sides)
4 Casing with magnetic drive
5 Flat-ribbon cable
6 Operating panel

Function

Celltron is a bench-top shaker developed specifically for use in CO_2 incubators. The basic unit consists of an anti-microbially coated casing with a magnetic drive. The table is connected to the drive hub by means of four hexagonal socket screws. To affix the cultivation vessels, various trays are available for mounting on the table.

The table moves in circles at speeds of 20 to 200 min^{-1}. To ensure the devices's stability, the devices stands on four non-slip feet. For transporting the device, there are grip recesses on both sides.

Operation

The devices is operated using an operating panel which is connected to the shaker using a flat-ribbon cable. The operating panel consists of a square plastic casing with a glass cover. If necessary, the operating panel can be installed on the outer wall or a door of a CO_2 cabinet. To affix the operating panel, it features four magnets on the back. On the casing of the operating panel, there is also a wire stand that can be folded out if necessary.

Power Supply

Power is supplied via a power supply unit which is connected to the operating panel. The flat-ribbon cable supplies the magnetic drive of the shaker with power and is used for data transfer between the operating panel and the shaker. The flip switch on the operating panel is used to switch the power supply on and off.

1.2 Magnetic Clips

The scope of delivery of the device also includes two magnetic clips used for affixing the cables on the outer casing of the CO_2 cabinet.

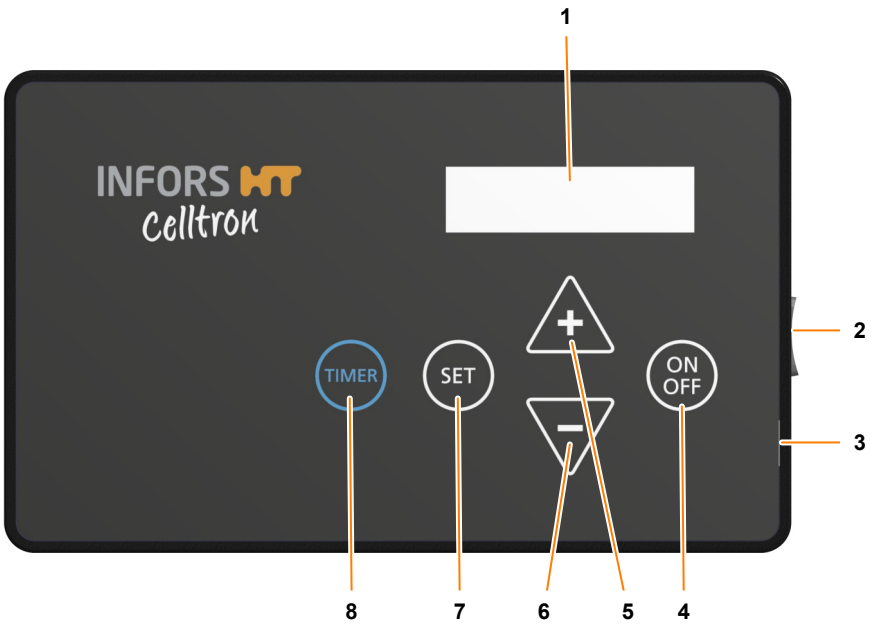
You can open the magnetic clips by pushing together the black flaps. Following that, the cables can be placed between the two sides of the clip. The magnets stick both to closets with sheet metal exteriors and those with stainless steel exteriors.

! NOTICE

To avoid damaging the magnetic clips, they must only be used on the outside under normal ambient conditions and not inside the CO_2 cabinet.

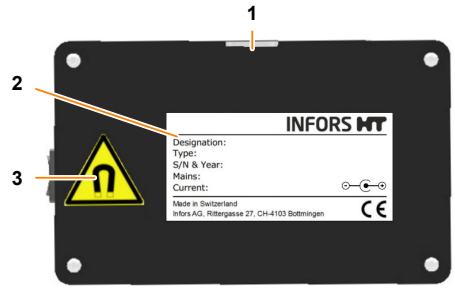
1.3 Operating Panel

Front View



Pos.	Designation	Function
1	Display	Shows target and actual values as well as error messages.
2	**On/Off** flip switch	Switching on and off the device as well as interrupting the power supply in an emergency.
3	Power supply connection	Connection socket for supplied power unit.
4	**ON/OFF** button	Activating or deactivating the shaker drive or timer.
5	**Plus** button	Increasing or decreasing the rotation speed or time of the timer. When the button is held down, the display runs up or down the specified value range in increasingly large intervals.
6	**Minus** button	
7	**SET** button	Activating programming mode. You have to push this button to enable other entries. This prevents accidental input.
8	**TIMER** button	Activating the timer function (➥ Chapter 5.4 'Programming Timer' on page 33).

Rear View



1 Folding stand
2 Identification plate
3 Warning magnetism (magnets are within the operating panel and therefore not visible)

1.4 Identification Plate

Content

The identification plate is designed to allow clear identification of the device. It contains the following information:

- Manufacturer's name
- Designation = category of device
- Type = device type (name)
- S/N = serial number
- Year = year of manufacture
- Mains = nominal voltage
- Current = power consumption
- Polarity plug
- Manufacturer's address

2 Safety and Responsibility

This chapter contains general information on safety when using the device. In the remaining chapters, warning messages are used only to highlight particular hazards directly arising from the actions being described.

It is essential to read the operating manual carefully – especially this chapter and the warning messages in the text – and to follow the instructions therein.

This chapter also refers to areas that are the responsibility of the provider due to certain risks arising from particular applications for which the device is used deliberately and with full awareness of the associated risks.

2.1 Explanation of Special Displays

2.1.1 Warning Messages

Warning messages in this manual are indicated by a coloured bar and begin with a signal word that signifies the degree of the hazard.

WARNING

The signal word “WARNING” indicates a potentially dangerous situation that may result in severe or fatal injuries if not avoided.

CAUTION

The signal word “CAUTION” indicates a potentially dangerous situation that may result in minor injuries if not avoided.

NOTICE

The word “NOTICE” on a blue bar indicates a situation that may result in significant damage to property if not avoided.

2.1.2 Other Messages

Texts that are marked in this way provide useful tips and recommendations for ensuring efficient, fault-free operation of the device.

2.2 Intended Use, Incorrect Use and Misuse

Intended Use

The device is designed to be used as a shaker for cultivating micro-organisms or cell cultures in a laboratory environment. The device is designed specifically for use in CO_2 incubators.

⚠ WARNING

The device is designed and built exclusively for the intended use described above.

Each instance of non-conventional use of the device is considered incorrect use and may lead to dangerous situations.

Intended use also includes following all the instructions in this manual, especially those relating to:

- The installation site
- Use of suitable cultivation vessels
- Personnel qualifications
- Permissible parameter setpoints
- Correct operation and maintenance

Incorrect Use/Misuse

Any failure to observe the requirements specified in this manual shall be deemed incorrect use, in particular, use of inappropriate cultivation vessels and/or unsuitable holders at rotation speeds that are too high.

Any use of the device outside the scope of the intended use as described above shall be deemed misuse. This also applies to applications for which the device is not designed, especially the following:

- The device is not protected against explosions. Use and manufacture of explosive gases as well as operating the device in the Ex area are therefore not permitted.

To use the device for special applications not covered by conventional, intended use, the device must be modified and certified accordingly by the manufacturer.

Any use of the device outside of a biotechnology laboratory, i.e. in any environment in which the conditions required for the safety of the personnel cannot be met or cannot be met to their full extent, shall also be deemed misuse.

2.3 Cultivation Vessels to be Used

NOTICE

Significant forces are applied to cultivation vessels, in particular in case of large vessels and high rotation speeds. Use of unsuitable or defective cultivation vessels can lead to glass breakage and therefore damage to property.

Approved Cultivation Vessels

The device has been designed for use with the following vessels using the holders designed specifically for them:

- Erlenmeyer flasks up to 5000 mL made of borosilicate glass (e.g. Schott Duran®) or high-grade plastic, such as polycarbonate (e.g. Corning®) etc.
- Fernbach flasks up to 3000 mL made of borosilicate glass (e.g. Schott Duran®) or high-grade plastic, such as polycarbonate (e.g. Corning®) etc.
- Other vessels with the holders designed for them:
  - Test tubes
  - Centrifuge tubes
  - Microtitre plates
  - Deep-well plates

To avoid the vessels coming out of the clamps at very high rotation speeds, they might have to be secured using cable ties underneath the springs or some other suitable measure.

2.4 Qualified Personnel

2.4.1 Operator

The operator operates the device in the context of the intended use. Only persons who have been trained for working in a biotechnology laboratory can be considered for the role of operator. These include, for example:

- Process technicians in the fields of biotechnology and chemistry
- Biotechnologists (biotechnicians)
- Chemists with a specialisation in biochemistry; chemists in the field of organic chemistry or biochemistry
- Life scientists (biologists) with special education in cytology, bacteriology, molecular biology, genetics, etc.
- Lab assistants (lab technicians) from various fields

To be allowed to operate the device, the operator must have received thorough training and have read and understood the operating manual.

The operator must be informed in a training session provided by the provider of the tasks delegated to the operator and the potential risks of improper conduct. Tasks that go beyond the scope of operation under normal conditions may only be performed by the operator if this is specified in the manual and the provider has explicitly entrusted said tasks to the operator.

Persons who are undergoing training or apprenticeships are only permitted to use the device under supervision and in accordance with the instructions of a trained and qualified technician.

2.4.2 Technician

The technician is an individual who, by virtue of their relevant professional education, training and/or experience, is competent to identify risks and prevent hazards arising from the use of the device. The technician is familiar with the environment in which they are operating and knows the relevant standards and regulations.

Technicians include, for example, the following groups of people:

- Qualified electricians
- Decontamination specialists
- Disassembly, disposal and recycling specialists

2.4.3 INFORS HT Service Technician or Licensed Dealer

Certain work may only be performed by the manufacturer's skilled personnel or by skilled personnel authorised by a licensed dealer. Other persons are not authorised to perform this work.

2.5 Unauthorised Persons

The term “unauthorised persons” applies to all persons who can access the work area but are not qualified to use the device in accordance with the aforementioned requirements.

Unauthorised persons are not permitted to operate the device or use it in any other way.

2.6 Responsibility of the Provider

Provider

The term “provider” applies to all persons who are responsible for making the device and the necessary infrastructure available. The provider bears a special level of responsibility with regard to the processes and the qualification and safety of the operators.

Provider Obligations

The device is used for industrial and scientific purposes. As such, the provider of the device is individually liable with regard to the legal requirements relating to occupational health and safety in a biotechnology laboratory. In particular:

- The provider is responsible for ensuring that the work and environmental regulations applicable in a biotechnology laboratory are observed.
- The provider must ensure that the device remains in safe and proper working condition throughout its entire term of use.
- The provider must ensure that all safety devices are fully functional and not disabled.
- The provider must ensure that the device is only operated by qualified personnel, and that said personnel receive sufficient training.
- The provider must ensure that the protective equipment required for working with the device is available and worn.
- The provider must ensure that this operating manual remains in the immediate vicinity of the device throughout its entire term of use.

2.7 General Hazards

This chapter residual risks that are always present when using the device in accordance with normal, intended use.

Electric Current

The device is operated electronically. There is an immediate risk of fatal injury if contact is made with live parts. The following points must be observed in order to avoid the risk of fatal injury:

- In case of damage to insulation, disconnect the device from the power supply immediately and arrange for it to be repaired.
- Disconnect the device from the power supply before commencing any work on the electrical components.
- Always use qualified electricians for any work on the electrical components.
- Disconnect the device from the power supply before commencing any maintenance, cleaning or repair work.
- If the power supply is defective, replace it with a power supply of the same type.
- Keep moisture away from live parts. It could cause a short circuit.
- Never remove covers from live parts.

Moving Parts

If you are not careful, the orbital movement of the table can result in parts of your body getting pinched or scratched or sustain other injuries. To avoid injuries, observe the following:

- Only load or unload the device when the table has come to a complete standstill. Never touch the moving parts of the device.
- Ensure that hair and lose clothing cannot come into contact with the rotating parts of the device.

Accessories and Spare Parts

Incorrect spare parts, imitations or spare parts that have not been authorised by the manufacturer and unauthorised accessories represent a significant safety risk. As such, we recommend procuring all spare parts and accessories from a licensed dealer or directly from the manufacturer.

2.8 Particular Hazards

This chapter covers particular hazards and residual risks that may arise when using the device for special applications in accordance with normal, intended use.

Since the use of the device for such applications is deliberate, it is the responsibility of the operators and the provider to ensure that all personnel are protected from potential damage to health. The provider is responsible for ensuring that the appropriate protective device for such applications is provided, and that the necessary infrastructure is in place.

Flammable or Explosive Substances

The use or production of flammable or explosive substances does not fall under the intended use, as the device is not explosion-proof. If the provider intends to use the device for such applications, it is essential to check the suitability of the device with the relevant local authorities.

There is a risk of explosions when using impure process gases: You must therefore only use process gases without impurities.

Corrosive or Toxic Substances

The use or production of corrosive or toxic substances entails a significant health risk. As such, special measures must be taken to protect personnel for such applications.

Since the device is used deliberately for such applications, it is the responsibility of the personnel to ensure that they have sufficient protection.

Bioactive or Pathogenic Organisms

The use or production of bioactive substances or pathogenic organisms or genetically modified cultures entails a significant health risk. As such, special measures must be taken to protect personnel.

- Follow internal safety regulations when handling bioactive substances, pathogenic organisms or genetically modified cultures.

2.9 Warning Symbols on the Device

The following warning symbols (stickers) are attached to the device:

Warning Symbols	Position	Meaning
	On the back of the operating panel.	Magnetic fields can damage laptops, hard drives, EC cards, data media and other items susceptible to magnetism. Hence, keep the operating panel away from all equipment or objects that could be damaged by magnetic fields.

WARNING

Illegible or missing warning symbols on the device will lead to the personnel being exposed to risks that the warning symbols in question were designed to make them aware of.

It is the provider's responsibility to ensure that all the stickers with warning symbols on the device are always intact.

2.10 Declaration of Decontamination

When returning the device for repair, disassembly or disposal, a legally compliant declaration of decontamination is required for the safety of all involved and due to legal requirements. The following must be observed if this is the case:

- The device, component or accessory which is to be repaired must be entirely decontaminated before being sent to the manufacturer.
- The provider is therefore required to completely and truthfully fill out a declaration of decontamination, and have it signed by the person responsible.
- The declaration of decontamination must be affixed on the outer packaging in which the device is sent back.
- These forms can be obtained from the licensed dealer or the manufacturer.

If the return shipment is not accompanied by a signed and complete declaration of decontamination or it is not affixed to the outer packaging, the shipment will be returned unopened to the sender at their expense (see also T&C).

3 Accessories

The following chapters describe all accessories that are generally available for the device. For special applications, please contact our customer service for advice.

3.1 Trays

Different trays are available for the device; these can be purchased individually or ordered with the device. In addition to the universal table tray, which can be equipped as desired, various trays with fixed features are available for different purposes.

3.1.1 Universal Table Tray

Overview

The tray referred to as “universal table tray” features drill holes on a grid so that it can be equipped as desired. For equipping, various clamps and test tube holders are available; these can be combined as desired (➥ Chapter 3.2 ‘Clamps and Other Holders’ on page 22).

The universal table tray is made of stainless steel and can be sterilised in the autoclave if required.

The separately available Sticky Stuff adhesive matting can also be stuck onto the universal table tray.

Technical Data

Data	Value	Unit
Material	1.4301	
Size	365 x 300	mm
Threaded holes	M4	
Threaded holes quantity	120	
Threaded holes grid	28.28 x 28.28	mm
Sterilisation in autoclaves	YES	

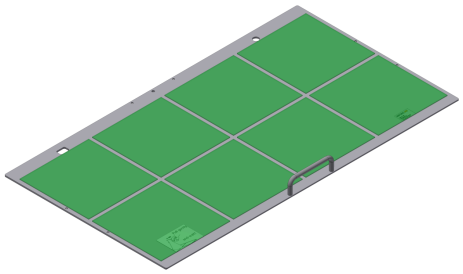
3.1.2 Tray with Sticky Stuff

NOTICE

If condensate forms on the tray or the culture vessels, the adhesiveness of the Sticky Stuff adhesive matting is no longer guaranteed. This can result in cultivation vessels separating from the adhesive matting and breaking.

Hence, consider the following when using Sticky Stuff:

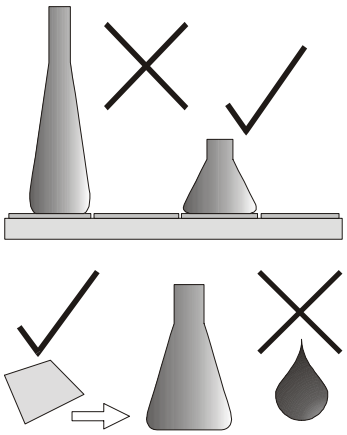
- Ensure that condensate does not form on the tray or the culture vessels. This is particularly necessary when cultivation is started at low temperatures and the temperature is then increased.
- Let cultivation vessels that were stored in the fridge warm up to ambient temperature first before placing them on the adhesive matting.



- If you are looking for a very flexible option for equipping the tray, the tray with Sticky Stuff offers an ideal alternative.
- However, you have to keep in mind that rotation speeds are limited when using Sticky Stuff (for more information on this, refer to the table at the end of the chapter).

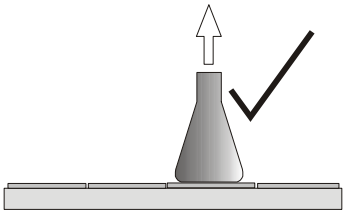
Due to limited resistance to disinfectants as well as the risk of unintentional detaching of flasks, Sticky Stuff is not suitable for cultivating pathogenic microorganisms.

Using Sticky Stuff

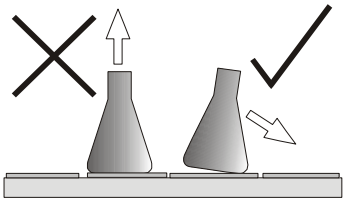


- Use only vessels with a broad flat base. Large Erlenmeyer flasks (e.g. 3000 mL) adhere more strongly than smaller ones (e. g. 500 mL).
- Ensure that the entire bases of the flasks are on the adhesive matting. They must not extend beyond the edge of the tray.
- Check vessels for damage prior to use and replace, if necessary.

  Never use damaged vessels!
- Prior to putting down any vessel, ensure that its base is dry, clean and grease-free.

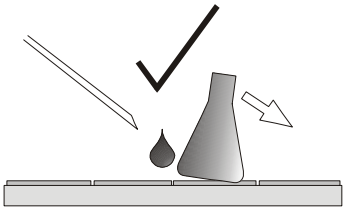


- Prior to the shaking process, gently pull on every vessel to ensure they are all stuck on firmly.
- If the humidity is too high or the temperatures are too low or if there are extreme jumps in temperature (e.g. when using the timer function), keep an eye on condensate. Condensate can result in vessels detaching from the adhesive matting.

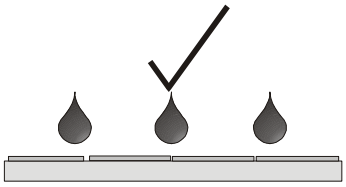


- To remove vessels, gently and evenly pull or push on the neck and wait a few seconds.

  Never apply force!
- In case of large vessels, it can take 20 to 30 seconds until they detach from the adhesive matting.

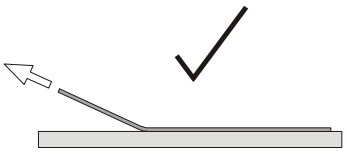


- Vessels that are stuck can be removed from the adhesive matting by using a syringe to inject water under the flask.
- Due to their shape (wide base, short neck), Fernbach flasks in particular can be difficult to remove. If necessary, cover part of the adhesive matting with the protective foil provided.



- The adhesive power can deteriorate over time due to dust and dirt. To clean and restore full adhesive power, thoroughly wipe down the surfaces with a brush or a dish sponge and clear water with mild detergent (dishwashing liquid). Then allow to dry overnight.
- Quaternary ammonium compounds are suitable for disinfection.
- Note the application time and rinse thoroughly with water afterwards. If the adhesive matting is disinfected at regular intervals, it might need to be replaced sooner.

Replacing the Adhesive Matting



To replace the adhesive matting proceed as follows:

1. Thoroughly moisten the tray with water.
2. Release the adhesive matting on one side of the tray and then pull upwards at an angle.
3. Degrease the tray with acetone and apply new wet adhesive matting (as per separate installation instructions). Only remove protective foil prior to use.

   ➡ The removed adhesive matting can be reused and can be reapplied after regeneration in water.

Service Life

Sticky Stuff is a consumable that typically has to be replaced every 2 to 5 years. The service life depends on how the material is used and cleaned. If you are regularly using aggressive chemicals to clean or disinfect, we recommend replacing the Sticky Stuff every 2 years.

NOTICE

Normal ageing and/or use of aggressive chemicals reduces the adhesiveness. This can result in vessels coming lose and thus damaging the device.

- Replace severely worn adhesive matting.
- Only use absolutely clean, dry and grease-free adhesive matting.
- Check the adhesiveness prior to use. If you are unsure, slowly increase the rotation speed and check that the vessels adhere safely.

Suitable/Unsuitable Vessels

Sticky Stuff is suitable for use in combination with the following vessels:

- Erlenmeyer or Fernbach flasks made from glass or polycarbonate with a smooth bottom and without crowning

When using unsuitable vessels, the adhesive power is reduced significantly. If unsuitable vessels are used in combination with Sticky Stuff, it is the user's responsibility to check if the adhesiveness suffices.
In addition, only reduced rotation speeds are possible when using unsuitable vessels. Unsuitable vessels include, for example:

- High and narrow vessels
- Bottles
- Erlenmeyer flasks with crowning and correspondingly reduced contact area

3.2 Clamps and Other Holders

For individual fitting of the universal table tray, various clamps and holders are available.

3.2.1 Clamps

For fitting a universal table tray, clamps of various sizes are available. These can be ordered individually and mounted on the universal table tray.

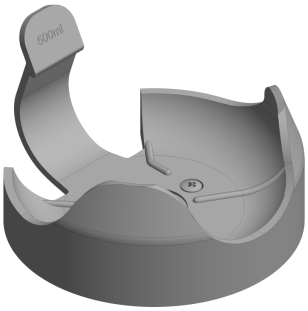
Stainless Steel Clamps

The following stainless steel clamps are available:

For flask type	Volume		
Erlenmeyer	25 mL	500 mL	4000 mL
	50 mL	1000 mL	5000 mL
	100 mL	2000 mL	
	250 mL	3000 mL	
Fernbach	1800 mL	2800 mL	

Data	Value
Material	Stainless steel
Fastening screws	25 to 50 mL: M4 x 6 100 to 5000 mL: M4 x 8
Temperature range	95 °C
Cleaning	Mild neutral cleaning agent
Disinfection	Commercially available disinfectant
Sterilisation in an autoclave	YES

Plastic Clamps



The following plastic clamps are available:

For flask type	Volume		
Erlenmeyer	100 mL	250 mL	500 mL

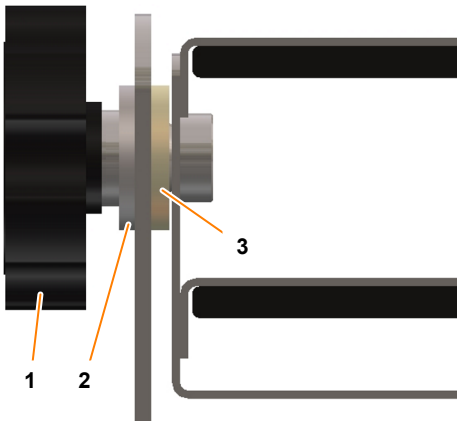
Data	Value
Material	POM Co polymer
Fastening screws	M4 x 6
Temperature range	65 °C
Cleaning	Mild neutral cleaning agent
Disinfection	Commercially available disinfectant
Sterilisation in an autoclave	NO

3.2.2 Test Tube Holder

Test tube holders are used to securely affix different sized test tubes. Test tube holders can be screwed onto a universal table tray or placed on Sticky Stuff adhesive matting.

The following test tube holders are available (details and special variants on request):

- For long test tubes; Ø 8 to 30 mm
- For short test tubes; Ø 12 to 18 mm
- For plastic tubes with ventilation lid; Ø 16 and 30 mm
- Special holders, e. g. for 600 mL culture vessel



If necessary, the inserts with the tubes can be tilted by loosening the black nuts (1). The tilt can be set freely. Then tighten the nuts again.

The entire inner part with the holders for the tubes can be removed by loosening the black nuts, whereby the u-shaped holder remains on the tray.

When inserting the inner parts, ensure that the feet of the holder (part on the tray) on both sides rest between the rubber ring (3) and the Teflon washer (2).

Test tube holders can also be used on a tray with Sticky Stuff. To do this, the pre-installed screw must be removed from the base plate.

NOTICE

The test tube holders adhere extremely strongly to the Sticky Stuff so that water has to be sprayed underneath the edge of the holder with a syringe in order to remove them. This is done to prevent damage to the holder or the tray.

4 Installation and Commissioning

4.1 Location Requirements for Installation

4.1.1 Operating Conditions at the Installation Location

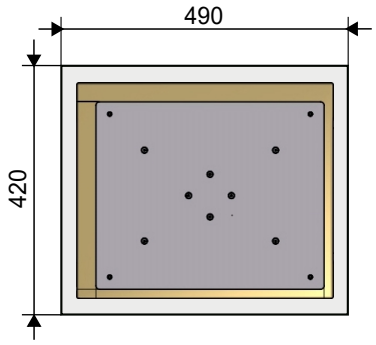
The following requirements must be met for the installation of the device:

Temperature range	Shaker:	4 to 60 °C
	Operating panel:	4 to 45 °C
Humidity (non-condensing)	Shaker:	10 to 98 %
	Operating panel:	10 to 60 %
Restrictions	▪ Do not expose to direct sunlight ▪ Do not expose to dust ▪ Do not expose to vibrations	
The device may only be set up indoors.		

- The installation site must be level, sufficiently stable and able to bear loads.
- There must not be any sources of electrical interference near the unit.
- The power switch (**On/Off** flip switch) on the operating panel must be easily accessible.
- Protect the operating panel from spray.
- The shaker can be set up in the interior of a CO_2 cabinet. The operating panel, in contrast, must be placed outside the CO_2 cabinet.

Any other type of installation must first be checked with the manufacturer and requires the manufacturer's consent in writing.

4.1.2 Required Floor Space



- To set up the device, 490 x 420 mm of floor space are required (device size: 450 x 380 mm).
- During operation, a minimum distance of 20 mm must be maintained to all walls and other equipment.

4.2 Installing the Device

4.2.1 Setting up the Device in the CO_2 Cabinet

NOTICE

The operating panel will be damaged if exposed to high humidity or high CO_2 concentrations.

Always set up the operating panel outside of the CO_2 cabinet.

NOTICE

The flat-ribbon cable of the device can be damaged if it is bent or squeezed when it is being guided through the door of the CO_2 cabinet.

Be very careful when you guide the flat-ribbon cable through the door of the CO_2 cabinet.

The device has been developed specifically for operation in a CO_2 cabinet. To set up the device in a CO_2 cabinet, proceed as follows:

1. Place the shaker in the CO_2 cabinet. In doing so, ensure that you place the device on a flat and stable surface.
2. Guide the flat-ribbon cable with the operating panel to the outside.
3. Close the door to the CO_2 cabinet.
4. If necessary, seal openings to prevent CO_2 loss.
5. Affix the operating panel to the ferro-magnetic surface (door or side wall) or use the folding stand to place it on a flat surface.
6. If necessary, affix the power cable to the ferro-magnetic surface using the supplied magnetic clips.

4.2.2 Establishing the Power Supply

The device is suitable for use with 100/230 Volt alternating current and a frequency of 50 to 60 Hertz. Prior to connecting the power supply, check whether the voltage value on the identification plate matches the local mains voltage. If the specified voltage values differ, do not connect the device under any circumstances but contact the manufacturer immediately.

NOTICE

Any undischarged electrostatic charge can damage the (open-loop) control and drive of the device. Hence, use of an unsuitable power unit poses a risk of damage to property.

- Only use the original power unit for power supply.
- The device may only be connected to a properly installed earthed socket.

To establish the power supply to the device, proceed as follows:

1. Ensure that the flip switch on the operating panel (1) is in the *Off* position.
2. Connect the round plug of the power unit to the power connection on the operating panel (2).
3. Connect the power unit to the building's power supply.
4. Ensure that the mains connection is freely accessible on the operating panel at all times.

4.2.3 Checking the Stability

NOTICE

If the surface is not stable, the device can move uncontrollably. This can damage other equipment or objects nearby.

Before commissioning at the site of operation and after each repositioning, check if the device runs smoothly.

During commissioning, you must check the stability of the device. To do so, proceed as follows:

1. Set the shaking speed to 50 min^{-1}.
2. Start the shaker drive.
3. Check the device for vibrations or uneven operation. To do this, increase the shaking speed from slow to maximum speed and continue checking if the device runs smoothly.
4. If there are strong vibrations, move the device. If this does not make the device run smoothly, contact the manufacturer.

5 Operation

5.1 Switching the Device on

NOTICE

If the shaker drive is switched on, the shaker automatically starts at the set speed when connected to the power supply and/or activated on the flip switch. Uncontrolled movements of the shaker can cause material damage.

Prior to switching on the device, ensure that there are no foreign objects on the table.

→ Actuate the **On/Off** flip switch (1) on the operating panel.

➡ Once it has been switched on, the device will automatically run a self-test and the installed firmware version is displayed briefly. As soon as the device is ready for operation, the display alternates between the set setpoint and the message *Stopped*.

➡ If the shaker drive was not deactivated before the device was switched off last, the message *Power Fail Restarted* appears when the device is switched on. In this case, the shaker drive is activated automatically and accelerates to the set setpoint. This message can be confirmed by pressing any button.

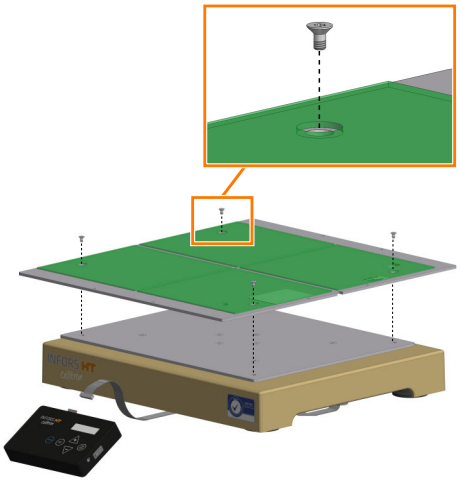
5.2 Loading the Device

CAUTION

If the loading mass of the table is too high or too low or the load is distributed unevenly, high rotation speeds can cause vibrations. This can result in the device moving uncontrollably.

– Never operate the device without a tray and loading.
– In case of strong vibrations, reduce the rotation speed and check the loading weights or the distribution of the load.

5.2.1 Fitting the Tray



The table is equipped with four threaded holes to affix the tray safely on the table. To do so, proceed as follows:

1. Place the tray on the table so that no edge sticks out.
2. Affix the tray to the table using the supplied Phillips-head screws. Evenly tighten the Phillips-head screws cross-wise

NOTICE

If the tray is not affixed securely to the table, the tray may cause material damage when the table is moving.

Do not start up the device unless the tray has been affixed correctly.

5.2.2 Mounting the Holders

NOTICE

The threaded holes of the tray can be damaged if the fastening screws are not screwed straight into the thread.

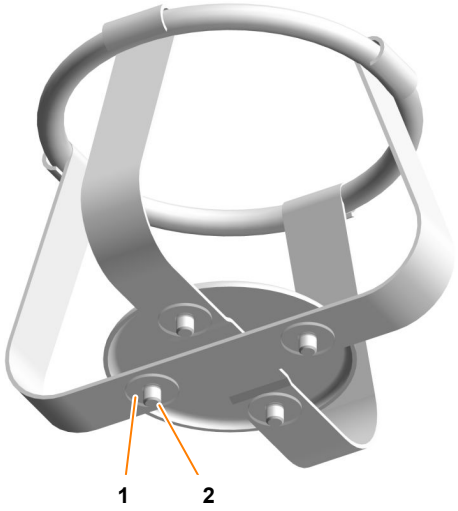
- Place the screws vertically on the drill holes.
- Ensure they can be tightened easily.

NOTICE

All holders are supplied with pre-fitted screws. If a test tube holder or box for microtitre plates is placed on the Sticky Stuff adhesive matting, there is a risk that the adhesive matting is damaged by protruding screws.

Remove the screws before you place test tube holders or microtitre plates on the Sticky Stuff adhesive matting.

Mounting a Holder



Clamps, test tube holders and boxes for microtitre plates are fixed to the tray using screws. The device is delivered with pre-fitted screws. The screws are each secured with one flat gasket at the bottom so that they cannot fall out. Only use the screws provided or screws of the same size for mounting.

To mount a holder, proceed as follows:

1. Loosen the flat gaskets (1).
2. Position the holder on the tray.
3. Centre a screw (2) on the threaded hole in the tray and screw it in loosely. It must still be possible to turn the holder.
4. Align the holder so that all screws are vertical above the respective threaded hole in the tray.
5. Insert the screws loosely. Ensure that the screws are screwed in straight and do not tilt.
6. Evenly tighten all screws cross-wise.

Screw Sizes

NOTICE

If screws that are too long are used to install the holders, these will stick out at the bottom of the tray. This has the effect that the tray can no longer be inserted and affixed correctly.

If you have to replace lost fastening screws, you must use screws that comply with the specification below.

Holder	Size	Screw	Flat gasket
Steel clamps	25 to 50 mL	Flat head screw with Phillips head M4 x 6 A4	D = 3.2 x 12 x 0.5
	100 to 5000 mL	Flat head screw with Phillips head M4 x 8 A4	D = 3.2 x 12 x 0.5
Plastic clamps	100 to 500 mL	Flat head screw with Phillips head M4 x 6 A4	D = 3.2 x 12 x 0.5
Test tube holder	Ø 8 to 30 mm	Oval head screw with Phillips head M4 x 6 A2	D = 3.2 x 12 x 0.5

5.2.3 Loading the Device

CAUTION

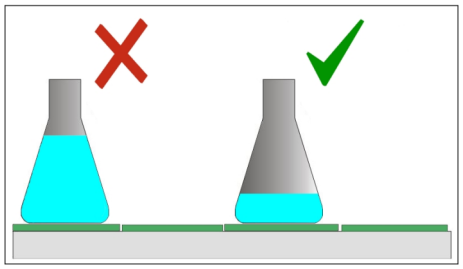
The table can cause injuries due to the considerable vibration moment.

Before you load or unload the device, turn off the shaker drive and wait until the table has come to a complete standstill.

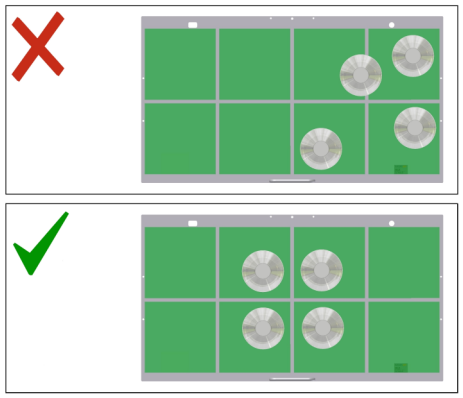
1. If the shaker drive is active, use the **ON/OFF** button to deactivate it.
2. Wait until the table has come to a standstill.
3. Load or unload the tray. Observe the notices in the next chapter.

5.2.4 Tips & Tricks for Loading the Tray

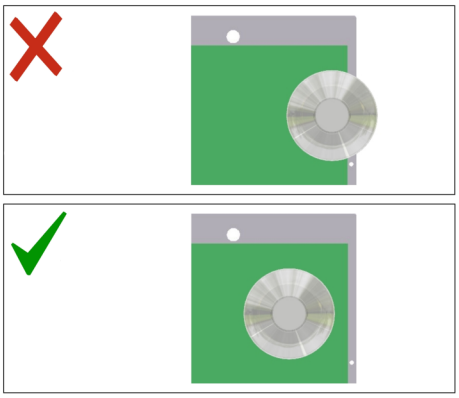
Observe the following notices when loading the tray:



- The working volume should not exceed 1/3 of the total volume of the vessel.



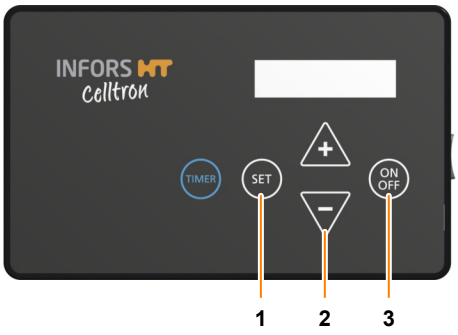
- To ensure smooth operation, place the cultivation flasks symmetrically in the middle of the tray. Do not place heavy vessels at the edge of the tray.



- If the flasks extend beyond the edge of the tray, they could collide with the wall, resulting in the vessels breaking. Therefore, always position cultivation vessels on the tray so that they do not protrude.
- If the tray is only loaded lightly and is going to be run at high rotation speeds, place additional cultivation vessels filled with water on the tray. This will make the device run smoothly.

5.3 Activating/Deactivating the Shaking Function

Activating the Shaking Function



To activate the shaking function, proceed as follows:

1. Press the **SET** button (1) to activate programming mode.
2. If necessary, use the **Plus** or **Minus** button (2) to set the setpoint.
3. Press the **ON/OFF** button (3) to activate the shaking function.
   ➡ The shaker drive starts and accelerates to the set setpoint. The display shows the current actual value.

You can change the shaking speed at any time by pressing the **SET** button followed by the **Plus** or **Minus** button. After a delay of 5 seconds, changes to the speed are saved without additional confirmation.

Deactivating the Shaking Function

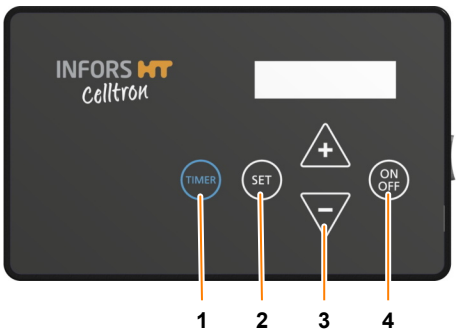
The shaking function is deactivated by pressing the **SET** button followed by the **ON/OFF** button in the same way as when it is activated. If the shaking function is deactivated, the display alternates between the set setpoint and the message *Stopped*.

5.4 Programming Timer

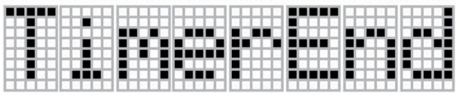
The timer has two operating modes: the time-delayed activation and the time-delayed deactivation of the shaking function:

- If the timer is activated while the shaking function is active, the shaker drive is switched off after the entered time period.
- If the timer is activated while the shaking function is not active, the shaker drive is switched on after the entered time period.

To activate the timer, proceed as follows:



1. Press the **SET** button (2) to activate programming mode.
2. If necessary, use the **Plus** or **Minus** button (3) to set the set-point for the rotation speed.
3. Press the **ON/OFF** button (4) to activate or deactivate the shaking function.
4. Press the **TIMER** button (1) to activate timer programming.
5. Press the **Plus** or **Minus** button (3) to set the required time.
6. Press the **ON/OFF** button (4) to activate the timer.
   - ➡ Depending on whether or not the shaking function was active when you set the timer, the shaker drive is either activated or deactivate after the set time.
   - ➡ The message *TimerEnd* appears in the display and an acoustic signal sounds. This message can be confirmed by pressing any button.



You can display the remaining time on the timer by pressing the **TIMER** button at any time. If the timer is deactivated, the message *TimerOff* appears.

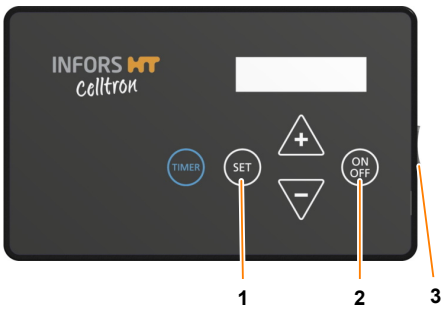
5.5 Switching off the Device

NOTICE

If the shaker drive is not deactivated before the device is switched off, it is automatically activated when the device is switched back on. This can damage the device and the cultivation vessels.

Deactivate the shaker drive before switching off the device.

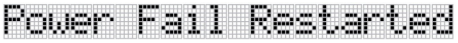
To switch off the device, proceed as follows:



1. Press the **SET** button (1) followed by the **ON/OFF** button (2) to deactivate the shaker drive.
2. Actuate the **On/Off** flip switch (3) on the operating panel.
3. If the device is not going to be used for an extended period of time, unplug the power plug.

5.6 Behaviour in Case of a Power Interruption

If the power supply to the device is interrupted during a cultivation process (e.g. by flicking the power switch or in case of a power failure), the setpoint for the rotation speed and the time remaining on the timer will be stored.



If the power supply is restored, the device will automatically restart with the last stored setpoints. The alarm message *Power Fail Restarted* will appear in the display as a warning. The alarm message can be confirmed by pressing any button; it will then disappear.

6 Rectifying Faults

6.1 Safety Notes

⚠ WARNING

Improper rectification of faults may lead to dangerous situations.

- To prevent life-threatening electric shocks, always switch off the device and disconnect it from the power supply before carrying out any work to find the cause of the fault or to rectify the fault.
- Never remove the covers of the device.
- Damaged parts may only be replaced by an INFORS HT service technician, a licensed dealer or authorised expert personnel.
- Contact the manufacturer in case of faults that cannot be resolved by following the notices below. For service contact details, see page 2.

6.2 Fault Tables

The following tables describe possible reasons for faults and how to resolve them.

General faults

Fault description	Cause	Remedy	Personnel
The display does not light up after activating the power switch (**On/Off** flip switch).	Power supply to the device interrupted.	**1.** Check if the plugs are plugged in correctly. **2.** Check the mains connection.	Operator
Unusual emissions (smoke, noises, smell)	The device is defective.	Immediately switch off the device, disconnect it from the power supply and contact your local Infors representative.	INFORS HT service technician or licensed dealer
The message *No Shaker Found* is displayed.	The data transfer between the operating panel and shaker is interrupted.	Switch the device off and then on again. If the message persists, contact your local Infors representative.	Operator INFORS HT service technician or licensed dealer

Faults related to the shaker drive

Fault description	Cause	Remedy	Personnel
The table does not move.	The shaker drive is not switched on.	Switch on the shaker drive.	Operator
	The table is blocked by foreign objects.	Dismantle table and remove foreign objects.	Operator
	The drive is defective.	Contact your local Infors representative.	INFORS HT service technician or licensed dealer
The setpoint is not reached.	The load is too heavy.	Reduce the load.	Operator
The shaker drive accelerates too quickly or runs too fast.	The drive control system is defective.	Contact your local Infors representative.	INFORS HT service technician or licensed dealer
Strong vibrations occur.	The load is too heavy or too light, so the device is no longer balanced.	Reduce the load to the prescribed value.	Operator
	The load is distributed unevenly.	Load the tray in the centre. If possible, do not place any heavy weights in the corners of the tray.	Operator
	The rotation speed is too high.	Reduce the rotation speed.	Operator
	The device is not standing straight.	Place the device on an flat surface.	Operator
	The substructure (bench) is too weak.	Place the device on a stable bench or the floor.	Operator
	The rollers of the table are worn.	Contact your local Infors representative and replace the rollers.	Operator

6.3 Returning for Repair

The provider must return the device or the faulty component part(s) to the manufacturer if, after consulting the service department of the local dealer or the manufacturer, on-site diagnosis and/or repair is not possible.

If the device, component or accessory has to be returned to the manufacturer for repair, a legally compliant declaration of decontamination is required for the safety of all parties involved and to comply with legal requirements (➥ Chapter 2.10 ‘Declaration of Decontamination’ on page 18).

7 Cleaning and Maintenance

WARNING

Improper cleaning and maintenance of the device may lead to dangerous situations.

- To prevent life-threatening electric shocks, always switch off the device and disconnect it from the power supply before carrying out any maintenance or cleaning.
- Never remove the covers of the device.
- Damaged parts may only be replaced by an INFORS HT service technician, a licensed dealer or authorised expert personnel.

7.1 Maintenance

The device requires hardly any maintenance. This reduces the running costs to certain regular checks and cleaning.

Keep in mind that various media or gases will have more or less corrosive effects on the metal parts. When using particularly aggressive substances, more frequent checks are required in order to maintain smooth operation.

7.2 Cleaning and Disinfection

If substances, especially substances hazardous to health, have been spilled on or in the device, the device must be thoroughly cleaned and disinfected. The device should also be routinely cleaned and disinfected at regular intervals to ensure trouble-free operation.

If you are not sure about the compatibility of cleaning agents and disinfectants, contact INFORS HT.

NOTICE

Insufficient cleaning and disinfection can lead to damage to cultures due to contamination.

7.2.1 Cleaning the Device

Detergents

Mild detergents, e.g. dishwashing liquid or neutral cleaning agents, are suitable for all surfaces:

- Exterior surfaces of the casing
- Operating panel

Cleaning and Maintenance

- Table
- Trays (incl. clamps and other holders)

NOTICE

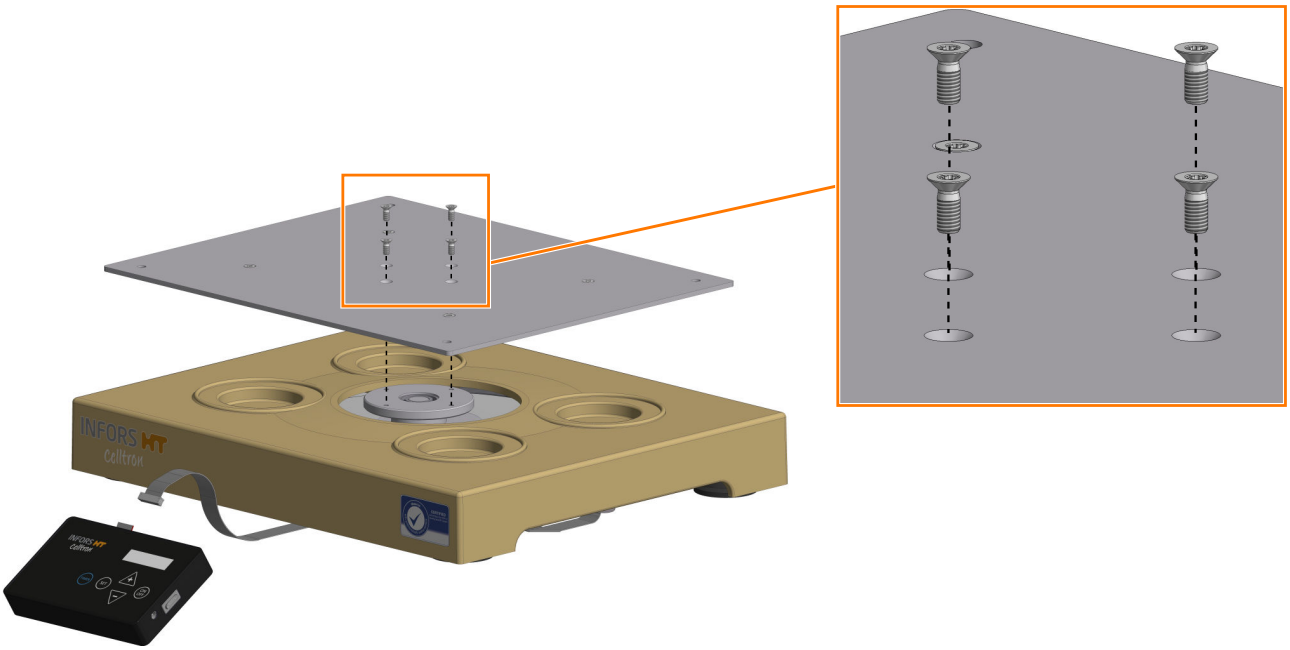
Aggressive detergents, solvents and abrasive cleaning utensils (hard sponges, brushes) can scratch surfaces, damage the device and impair its function.

If you are using scratching or abrasive cleaning utensils, you severely reduce the breaking resistance of the glass panel. The glass panel can break if knocked or dropped. Hence, only clean the surface of the operating panel with a soft cloth.

Dismantling the Table

You can dismantle the table to make it easier to clean the device. To do so, proceed as follows:

1. Turn off the device and pull out the plug.



2. Loosen and remove the Torx screws of the table.
3. Lift up the table.
4. Clean casing and table.
5. After cleaning, turn the table around and place it back on the drive axle.
6. Use the Torx screws to affix the table. Manually tighten the Torx screws cross-wise

Notices on Cleaning

To clean the surfaces, use a soft cloth, ideally lint-free. This applies in particular to the operating panel. Disinfect using commercially available disinfectant if necessary. Only use permitted auxiliary materials for cleaning and disinfection. After cleaning, use a cloth to dry the device.

Sterilisation of the Table

If necessary, the table incl. guide rollers can be sterilised at temperatures up to 120 °C. In contrast, the basic unit and operating panel must not be sterilised.

7.2.2 Disinfecting the Device

Only use quaternary ammonium compounds for wipe-down disinfection. As a tried as tested disinfectant, we recommend Fermacidal D2.

NOTICE

Heat (temperatures above 80 °C), aggressive disinfectants such as chlorine bleach and UVC radiation can damage the device and significantly limit the function and service life of the device.

We recommend against using UV lamps for disinfection of the device because the UV rays can massively damage the housing in case of multiple applications.

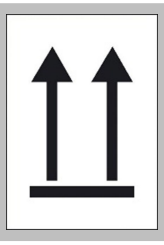
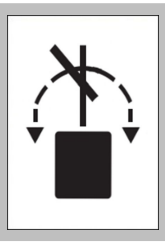
8 Transport and Storage

WARNING

Improper transport, use of incorrect auxiliary equipment and careless handling of the device may lead to injuries and significant damage to property.

Never push the device as this could result in the feet being damaged or the base plate being dented.

8.1 Symbols on the Packaging

			
Fragile The content of the package is fragile. Do not drop the package and avoid impact.	**Top** Marks the top of the device. The package must be transported and stored in a way that ensures that the arrows always point up.	**Protect from humidity** Protect the package from humidity and keep it dry.	**Do not roll** The package must not be rolled.

8.2 Transport Inspection

When you receive the delivery, immediately inspect it for completeness and any potential damage sustained during transport.

If you can see damage from outside, proceed as follows:

- Do not accept the delivery or only under reserve.
- Make a note of the extent of the damage on the shipping documents or on the carrier's delivery note.
- Lodge a complaint.

Lodge a complaint for each defect as soon as you detect it. Claims for compensation can only be asserted within the claim period in accordance with the general terms and conditions.

8.3 Transport

The device and accessories are packaged in a box. The packaging is intended to protect the device from transport and other damage until the device is commissioned. Therefore, do not destroy the packaging and remove it just before commissioning.

When transporting the device, observe the following:

- Hold the device on the two grip recesses.
- For transport, disconnect the power supply of the operating panel.
- Safeguard the operating panel against falls.
- Observe the symbols on the packaging for correct transport.

8.4 Storage

- Decontaminate, thoroughly clean and dry the device every time before placing it in storage.
- Store the device and its components clean, dry and protected against dust, dirt and liquids.
- Store the device and its components in a cool place with low humidity but protected against frost.
  - Storage temperature: 10 °C to 35 °C.
  - Relative humidity, non-condensing: 10 % to 60 %.
- Protect the device from aggressive media, direct sunlight and vibrations.

9 Disassembly and Disposal

The device must be disassembled and disposed of in an environmentally-friendly manner if it is not in use anymore.

If the device is to be returned to the manufacturer for disassembly and disposal, a legally compliant declaration of decontamination is required for the safety of all parties involved and to comply with legal requirements (➥ Chapter 2.10 'Declaration of Decontamination' on page 18).

9.1 Disassembly

Prior to disassembly:

- Switch off the device and secure against reactivation.
- Physically disconnect the main energy supply from the device and wait for any components to fully discharge.
- Remove and dispose of all operating and auxiliary materials as well as remaining processing materials in an environmental acceptable manner.

Clean and disassemble component parts professionally with regard to any local regulations concerning employment and environmental protection. If possible, separate materials.

9.2 Disposal

Recycle disassembled components if no agreement is made concerning reclaim or disposal.

- Scrap metals.
- Recycle plastic components.
- Sort and dispose of the remaining components according their material composition.

⚠ WARNING

Electronic waste, electronic components, lubricants or other auxiliary materials/supplies are subject to hazardous waste regulations and may only be disposed of by registered specialist disposal firms.

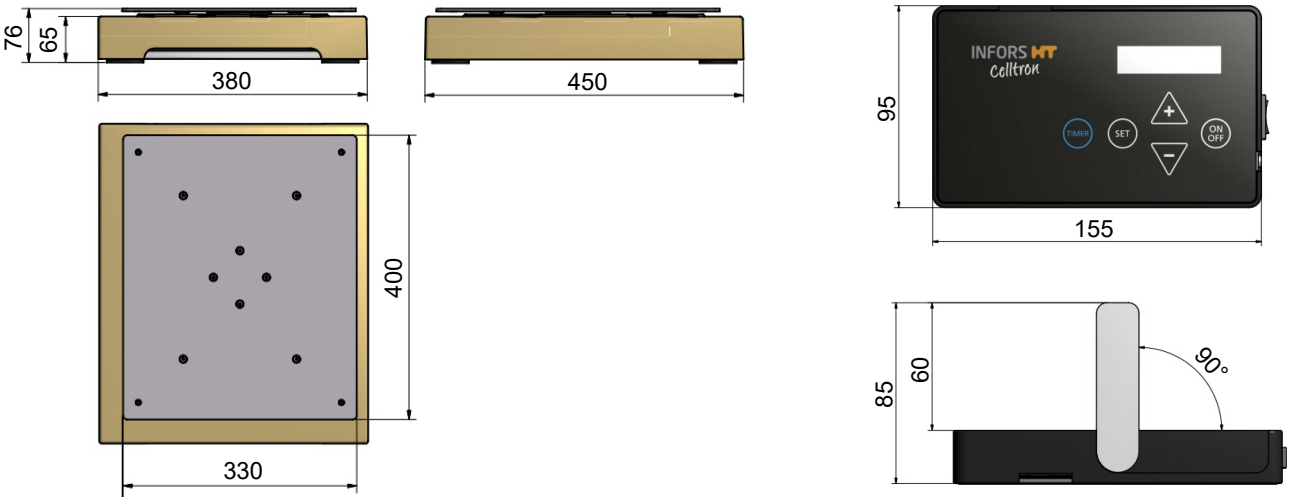
Disassembly and Disposal

For disposal, the system units must be disassembled and dismantled into individual material groups. These materials must be disposed of according to the applicable national and local legislation. Local authorities or specialist disposal firms can provide information regarding environmentally acceptable disposal.

If no special arrangements have been made for return, Infors devices with the required declaration of decontamination can be sent back to the manufacturer for disposal.

10 Technical Data

10.1 Dimension Drawings



All dimensions in mm

10.2 Weight

Data	Value	Unit
Basic unit	11	kg
Operating panel	0.4	kg

10.3 Dimensions

Basic Unit

Data	Value	Unit
Width	450	mm
Height	76	mm
Depth	380	mm

Table

Data	Value	Unit
Width	400	mm
Depth	330	mm

Operating Panel

Data	Value	Unit
Width	95	mm
Length	155	mm
Thickness	25	mm
Thickness (with folded out wire stand)	85	mm

Cables

Data	Value	Unit
Flat-ribbon cable length	1.5	m
Power cable length	2	m

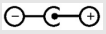
10.4 Shaker Drive

Data	Value	Unit
Drive	Magnetic drive	
Direction of rotation	Clockwise	
Rotation speed range [1)]	20 to 200	min^{-1}
Throw	25	mm
Increment	1	min^{-1}
Control precision (at maximum rotation speed, Full Scale)	± 1	%

[1)] *The actual rotation speed that can be achieved depends on a variety of factors, such as loading, vessel type (e.g. flasks with baffles) and the fixtures used (e.g. clamps or Sticky Stuff adhesive matting).*

10.5 Electrical Connection and Power Values

Electrical Connection Values

Data	Value	Unit
Voltage	100/230	VAC
Frequency	50/60	Hz
Operating voltage	24	VDC
Power unit output amperage	max. 1.88	A
Polarity: 		

Electrical Power Values

Data	Value	Unit
Power consumption during typical use (average load at 100 min-1)	ca. 4	W

10.6 Limits

Data	Value	Unit
Rotation speed	20 to 200	min^{-1}
Maximum load incl. tray	2.5	kg

The specified shaking speeds only apply to loading standard Erlenmeyer flasks with a maximum filling of 1/3 of the total volume of the flask.

When using differently shaped flasks or other filling volumes, it might not be possible to reach the maximum shaking speeds.

10.7 Protection Type

Data	Value
Casing	IP54 (as per DIN EN 60529)
Operating unit	IP32 (as per DIN EN 60529)

10.8 Materials

Component	Material
Casing	ABS plastic (acrylonitrile butadiene styrene), corrosion-free, anti-microbial coating
Operating panel	PVC, dafety glass
Magnetic clip	Clip: Polystyrene Grips: LDPE
Universal table tray	X5CrNi18-10 (1.4301, AISI 304)
Sticky Stuff tray	Aluminium, anodised

Component	Attachment
Bench attachment	4 hexalobular socket screws, M5 x 10
Roller attachment	4 hexalobular socket screws, M5 x 10
Tray attachment	4 hexalobular socket screws, M4 x 6

10.9 Operating Conditions

Basic Unit (Bench-Top Shaker)

Data	Value	Unit
Temperature range	4 to 60	°C
Relative humidity, non-condensing	10 to 98	%
Altitude operating location	max. 2000	M above sea level
Max. CO_2 content	20	%

Operating Panel and Power Unit

Data	Value	Unit
Temperature range	4 to 45	°C
Relative humidity, non-condensing	10 to 60	%

Data	Value
CO_2 content	Only use outside of the CO_2 cabinet.

10.10 Emissions

Data	Value	Unit
Sound pressure	< 70	dB(C)
Heat output	4	W

10.11 Operating and Auxiliary Materials

NOTICE

Using the wrong auxiliary materials can result in significant damage to property.

Only use the auxiliary materials prescribed by the manufacturer in accordance with the table below.

Description	Permitted Products
Detergent	▪ Mild neutral cleaning agent ▪ Dishwashing detergent
Disinfectant	Quaternary ammonium compounds

11 EU Declaration of Conformity

EG-Konformitätserklärung

EC-Declaration of conformity

Déclaration CE de conformité

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Gemäss der EG-Maschinen-Richtlinie 2006/42/EG, Anhang II 1 A

In accordance with directive on machinery 2006/42/EC, appendix II 1 A

D´après la directive relative aux machines 2006/42/CE 2006, annexe II 1 A

Hersteller *Manufacturer* *Fabricant*	Infors AG Rittergasse 27 CH-4103 Bottmingen
Bezeichnung *Designation* *Désignation*	Tischschüttler Bench-top shaker Agitateur de table
Typ *Type* *Type*	Celltron
Ab Release *From release* *A partir du version*	alle Releases all releases toutes les versions
Ab Seriennummer *From serial number* *A partir du numéro de série*	S-000127197

Dieses Gerät entspricht den grundlegenden Anforderungen der Richtlinien

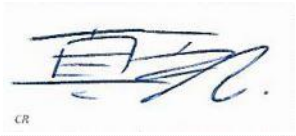
This device is in compliance with the essential requirements of directives

Cet appareil est conforme aux exigences essentielles des directives

Maschinenrichtlinie 2006/42/EG	*Directive on machinery 2006/42/EC*	*Directive relative aux machines 2006/42/CE*
EMV-Richtlinie 2014/30/EU	*EMC directive 2014/30/EU*	*Directive CEM 2014/30/UE*

Aussteller
Issuer
Editeur

Bevollmächtigter für die technische Dokumentation
Person authorised to compile the technical file
Person autorisée à constituer le dossier technique



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Representative for conformity
Responsable de la conformité

M. Heuschkel
Chief Technology Officer

Bottmingen, 15. Nov. 2021

Ort, Datum
Place, date
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