Precellys
The Science of Lysing

USER MANUAL / MANUEL UTILISATEUR

PRECELLYS® Evolution

SUPER Homogenizer

SAMPLE PREPARATION & CELL LYSIS

bertin TECHNOLOGIES

A Company of ENIM GROUP

SOMMAIRE

INTRODUCTION

This user manual includes all necessary information regarding the unpacking, operation and maintenance of the Precellys® Evolution homogenizer.
The technical specifications of this product and all the information contained in this manual are liable to alteration without prior notice.

Read the leaflet carefully

1. Introduction

1.1. Safety instructions and recommendations

This user manual must be read carefully by all users prior to operating the Precellys® Evolution lyser/homogenizer. If the instrument is used in a manner not specified in this manual, the insurance provided for the equipment may be impaired. If there is any doubt or concern about the safety of the equipment, please contact your local distributor.

Bertin Technologies shall not be liable for any damage or injury that may occur as a result of operating the instrument in a different way to that stated in this document.

1.1.1. Use of lysing kits

Depending on the parameters of the Precellys® Evolution (speed, number of cycles, cycle duration, waiting time between two cycles), excessive overheating of the lysing tubes may lead to their sudden degradation.

In order to ensure the good working order of this Precellys® Evoution equipment, users are strongly recommended to use the Lysing Kits produced by Bertin Technologies and to comply with the use-by dates specified for each lysing kit. These use-by dates specify the maximum parameter levels (e.g. speed, number of cycles, cycle duration, waiting time between two cycles, etc) that must not be exceeded for the good preparation of biological samples.

Use-by dates for our lysing kits are available on our web site:
www.precellys.com

1.1.2. Risk of electric shock

Although this equipment is fully insulated and earthed, it is important for all users to be aware of the potential hazard of using liquid close to a power supply.
If any liquids are spilled, disconnect immediately the equipment from the main power supply (remove the power cord from the AC power input on the rear panel) and clean the equipment and the surrounding area.

- Do not reconnect the equipment until it has been fully inspected.
- Under no circumstances should the cover be withdrawn by the operator - risk of electric shock

1.1.3. Abnormal operation

Operating this equipment in any other way than that described in this user manual may impair the protection of the unit.

- **Never set the unit at an angle: Precellys® Evolution must always be used when evenly balanced on its 4 feet. Failure to comply with this instruction may result in damage to the internal components or in breakage of the plastic casing.**
- **High voltage warning: do not handle or operate the unit if the casing is wholly or partially removed or is damaged.**
- **Do not use or handle the unit when the protective earth is disconnected.**
- **Do not install any unauthorized cards, components or accessories as this may impair the safety of the unit and will render the warranty void.**
- **Ensure that the voltage indicated on the rear panel of the unit matches that of the local power supply.**
- **Ensure that the cable connections are correctly wired.**

Wiring colour codes are as follows:

	International code	***US code***
Live phase	*Brown*	*Black*
Neutral	*Blue*	*White*
Earth/ Ground	*Yellow & Green*	*Green*

1.1.4. Fuse

The equipment contains one replaceable external fuse located on the rear panel. If the fuse needs to be replaced, please use the following fuse: 5x20 – T 10 A – H 250 V. The fuse can easily be replaced by the user with the aid of a flat-blade screwdriver **(see § 7.2.3)**.

1.1.5. Biological risks

Gloves must always be worn when handling samples and all safety instructions related to bio-hazardous agents complied with in order to prevent any risk of contamination.

A sticker bearing the «Biological risk» symbol is supplied with the equipment and must be placed on the front side of the unit when used with samples of a potentially infectious nature.

WARNING:

Waste produced by the normal operation of this equipment must be placed in biological waste containers and removed and disposed of by specialized companies.

INTRODUCTION

WARNING:

Ne pas ouvrir le capot lors du fonctionnement.
Do not open the cover while running.

1.1.6. Safety warning symbol

The symbol illustrated below may be found on different parts of the unit.

Users must comply with all instructions associated with this symbol.
This equipment may only be repaired by persons authorized to do so by the manufacturer or the distributor.

1.1.7. Noise level

When operating at maximum speed (i.e. 10 000 rpm), the noise level of the apparatus does not exceed 70 dBa.

1.1.8. Electromagnetic interference

WARNING:
This is a Class A apparatus. This equipment may therefore cause radio-electric interference in a residential environment. In such cases, users should take appropriate measures.

1.1.9. Intensive use

If this device is used in an intensive manner (high speed, long cycle duration, fully loaded with 24 tubes, high number of cycles), the temperature of the system will increase. The increased temperature level may trigger the thermal security protection system. In this case, the electrical power input of the motor will cut off automatically to prevent the equipment from overheating.

1.2. Warranty

Bertin Technologies hereby certifies that this product is free of defects at the time of shipment.

This warranty is limited to a period of one (1) year and does not apply to the following parts: fuses, toric joints, containment seals, indented plate and tube holder.
This warranty is valid from the date of the installed equipment's online registration via the www.precellys.com web site.

This warranty is not applicable in the following circumstances:

- The equipment has not been installed, operated or maintained in compliance with the instructions described in this user manual.
- The equipment has been repaired or modified by unauthorized personnel.
- The equipment serial number has been damaged or removed.

1.3. Equipment references

Serial number: PRECELLYS EQ02520.300.RD000.0

1.4. Manufacturer's address

BERTIN TECHNOLOGIES
Parc d'activités du Pas du Lac - 10 bis, avenue Ampère - BP 284
78053 Saint Quentin en Yvelines Cedex - France
Tel: +33 (0)1 39 30 61 60 - Mail: info@precellys.com

1.5. Technical support

In the event that you are unable to find a solution to any technical issues, despite the information contained in this manual, please contact your nearest distributor.

2. Description of PRECELLYS® Evolution

2.1. Product overview

Precellys® Evolution has been designed for lysing and homogenising biological samples contained in glass tubes, at variable speeds, for the extraction of proteins, nucleic acids, drugs, etc. The equipment can simultaneously agitate at high speed tubes containing several millilitres of sample (full range of tube sizes available at ***www.precellys.com***).

Precellys® Evolution offers the following key advantages:

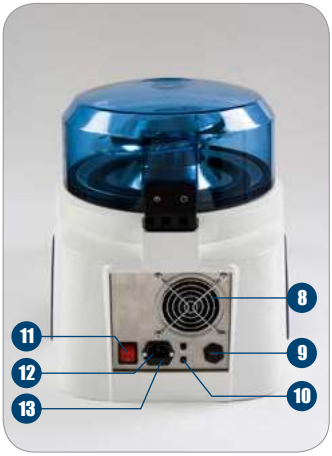
- Easy tube loading: an innovative system automatically blocks the lysing tubes during operation.
- Easy decontamination: zones which have to be decontaminated are easily accessible.
- Flexible and easy cycle programming (cycle, speed…).
- No alteration of the biological samples and no cross-contamination.
- Efficient and homogeneous lysis in all tubes, whatever their capacity

DESCRIPTION

Precellys® Evolution in pictures:

1. *Lid*
2. *Locking handle*
3. *Programming and control panel*

4. *Indented plate*
5. *Tube holder*
6. *Metallic support ring*
7. *Containment seal*



8. *Air intake vent*
9. *USB socket*
10. *Maintenance sockets*
11. *On/Off button*
12. *Power supply socket*
13. *Fuse*

The USB connection allows only the connection of data storage media (USB key)

2.2. Tube motion

Thanks to the equipment's design and symmetry, every tube of the same size strictly follows the same motion to ensure the same level of lysis and homogenization for each sample.

The centre of gravity of the tubes follows a tri-dimensional path on a sphere's surface. While the mixture contained in the tubes moves in all directions, it moves primarily in the vertical axis to allow for efficient homogenization. The movement generated by Precellys® Evolution is known as "precession" movement (i.e. tubes are not rotated).

The tubes must be compatible with the holder and must be capable of withstanding 600 G of linear acceleration during 5 minutes without suffering any deformation (see usage recommendations at *§ 1.1.1*).

The precession movement during biological sample homogenization causes the temperature of the samples, and the equipment, to rise.

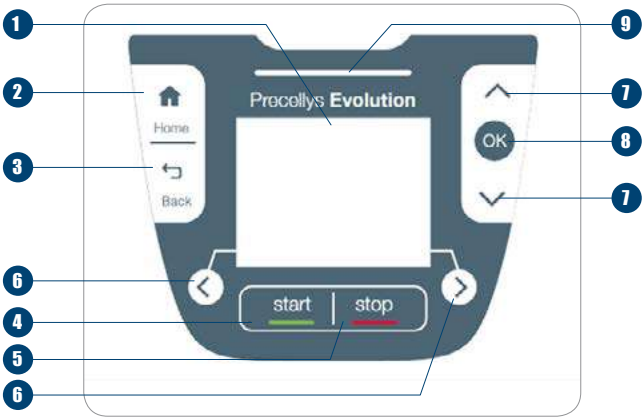


DESCRIPTION

2.3. Control panel

The screen immediately lights up when Precellys® Evolution is switched on and displays the main menu after a few seconds, once the system has booted up.

1. *Screen: displays all the equipment operating instructions and current status*
2. *Home button: to return to the main menu*
3. *Back button: to go up one level in the menu tree*
4. *Start button: to launch a lysing cycle*
5. *Stop button: to halt a lysing cycle / to go back to the protocol start menu*
6. *Left/Right buttons: to navigate horizontally in the different menus of the MMI*
7. *Up/Down buttons: to navigate horizontally in the different menus of the MMI / to increase or decrease adjustable parameters*
8. *OK button: to validate a selection*
9. *Light signal: indicates the equipment's ongoing operating status*
   - *Fixed green: equipment in working order and awaiting launch of a lysing cycle*
   - *Flashing green: lysing cycle in progress*
   - *Fixed red: shutting down or equipment fault*



2.4. MMI menus

A few seconds after switching on the equipment the main menu will be displayed, enabling access to the different menus of the menu tree described below:

Main menu	Sub-menus or possible actions	Description
Start	Choose a pre-set protocol	Press the Left/Right buttons to select from the sliding bar at the bottom of the screen.
	Adjust a protocol setting (solely in «Work» mode)	1. Navigate in the screen using the Up/Down buttons 2. Select the setting to adjust by pressing the OK button 3. Adjust the value of the setting using the Up/Down buttons 4. Validate the new value by pressing the OK button
	Launch a lysing protocol	Press the Start button When the protocol has ended, press the Stop button to go back to the previous menu
System settings	Choose language	Change the language of the MMI by pressing the OK button
	Set date	Adjust the date and time by pressing on the OK button and then using the Up/Down and Left/Right buttons
Protocol management	Create	Create a new protocol that will then be displayed in the sliding program bar (see «Choose a pre-set protocol»)
	Edit	Modify a pre-set protocol
	Delete	Delete a pre-set protocol (see «Choose a pre-set protocol»)
	Move	Change the position of programs in the sliding program bar (see «Choose a pre-set protocol») NB: the position of the «Work» program cannot be changed.
Data management (USB)	Save all programs to USB	Transfer all protocols recorded in the Precellys® Evolution unit to an external data storage source
	Load all programs from USB	Transfer all protocols from an external data storage source to the Precellys® Evolution unit. **WARNING: this action will delete all protocols currently registered in the unit**
	Save file history to USB	Back up the equipment's file history: protocols launched, alerts, date changes…
	Update equipment from USB	Upload a new version of the MMI software

DESCRIPTION

2.5. Programming

Precellys® Evolution has been designed to operate at a maximum speed of 10 000 rpm (rotations per minute).

A Precellys® Evolution lysing protocol is composed of several successive cycles, between which the lid must not be opened.
Speed and other parameters can be adjusted via the control panel:

Protocol parameters	Values
Tube capacities	2 mL, 7 mL or 15 mL
Speed*	from 4 500 to 6 800 rpm and from 7 200 to 10 000 rpm in increments of 100 rpm
Number of cycles	from 1 to 10
Cycle duration	from 10 to 900 seconds in increments of 1 second
Waiting time between 2 cycles	from 1 to 120 seconds in increments of 1 second

** Programming of speeds between 6900rpm and 7100rpm is not permitted, in order to ensure good working order and maximum product life.*

The operator is responsible for programming the unit. For each speed range, the manufacturer recommends an operating range to prevent abnormal temperature rise ***(see paragraphs 1.1.1 and 5.3 for further details)***.

For high speed operation, users are advised to reduce the duration of each cycle and to allow the unit to cool down between 2 cycles (for at least 2 minutes). A security device disables the unit to prevent overheating.

2.6. Equipment specifications

Technical specifications			
Power supply	230 V – 50 Hz (EU standard) 110 V – 60 Hz (US standard)		
Consumption	<1 kVA		
Fuse	5x20 – T 10 A – H 250 V		
Safety information	Class A apparatus		
Physical specifications			
Width	380 mm		
Length	520 mm		
Height	400 mm (635mm with lid open)		
Weight	< 30 kg		
Operating temperature	15 - 30°C		
Humidity	15 - 85 % RH		
Altitude	< 2000 m		
Operating specifications			
Speed range	4500 – 10 000 rpm		
Number of cycles	1 – 10		
Cycle duration	10 – 90 seconds		
Waiting time between 2 cycles	1 – 120 seconds		
User interface			
Keypad	9 push buttons		
Display features	- 1 LCD colour screen (16-bit, 3.5") - 1 indicator light (green and red)		
Capacity [1]			
Number of tubes	24	12	6
Single tube volume	0,5mL / 2 mL	7 mL	15 mL

[1] *Precellys® Evolution is equipped with removable tube holders that offer greater flexibility in terms of handling different tube types. The full list of sample tubes that can be used with Precellys® Evolution is available at* ***www.precellys.com***

TRANSPORT AND STORAGE

3. Transport and storage

3.1. Transport

WARNING:
Avoid violent shocks that may damage the equipment.

Before transporting the equipment, it is essential to:
1- Reposition the protective foam to retain the tube holder in place
2- Close the lid
3- Use the original packing components.

3.2. Storage

WARNING:
In case of a large difference of temperature between the storage area and the laboratory, let the unit cool to room temperature in order to limit the risk of condensation.

The unit must be stored in a dry area at a temperature ranging from +0°C to +50°C.

4. Installation

4.1. Unpacking

WARNING:
Do not connect the unit to the power supply until the installation process is complete.
Never set the unit at an angle: Precellys® Evolution must always be used when evenly balanced on its 4 feet. Failure to comply with this instruction may result in damage to the internal components or in breakage of the plastic casing.

1. Check the contents of the box in order to ensure that all of the following items are present:
- 1 user manual (French/English)
- 1 Precellys® Evolution (including one 2ml indented plate, one 2ml tube holder, one toric joint and one containment seal)
- 1 power cable*
- 1 spare toric joint
- 1 spare fuse
- 1 QC report
- 1 EC certificate of conformity
- 1 manufacturer's inspection certificate

In the event that any of these items are missing, please contact your local distributor immediately.

* *A plug adapter or compatible power cable (not included) will be required for countries other than the following: Europe, United Kingdom, USA, Switzerland and Australia.*

WARNING:
To remove the equipment from box, do not lift it by holding onto the lid. Use either the specially designed extraction handles or the notches located on both sides of the lower casing of the unit. For greater convenience, notches are also present in the protective foam. Given its weight, it is advisable that two operators move the unit.

2. Carefully remove Precellys® Evolution (weight = 27.2 kg) from its box and place it on a clean, flat and stable work surface: the 4 feet are height-adjustable to ensure optimum stability of the equipment.

3. Inspect the equipment carefully and report any damage to the carrier immediately.

4. Keep the box, the protective foam and the documentation in a safe place; all will be required in the event that the equipment needs to be returned.

4.2. Installation and connection to power supply

1. Remove the protective foam located around the metallic support ring and reposition the containment seal (see § 7.2.2).

WARNING:
Keep this protective foam in a safe place as it must be put back in place before shipping the unit. If the unit is returned to the distributor or manufacturer without this protection in place, the warranty will be cancelled.

The containment seal must be positioned in compliance with the instructions provided in this user manual in order to ensure optimum operator protection. The containment seal is indeed a key element in ensuring the containment of all electrical parts of the equipment and protecting them against accidental liquid spillages.

2. Position the toric joint in place (see § 7.2.1).

3. Check the coherence of the technical specifications provided in this user manual with the voltage delivered by your local electric power supply (see § 2.1).

WARNING:
If the voltage supplied is not the same as that indicated on the equipment, the electronic components of the latter may be irreversibly damaged.

4. Ensure that the air intake vents and the base of the casing are unobstructed: the air extraction vent is located beneath the unit.

WARNING:
Allow a space of at least 10 cm around the air intake and extraction vents.

5. Connect Precellys® Evolution to the mains power supply using a compatible power cable.

WARNING:
This equipment must be powered from a mains supply equipped with a protective earth/ground terminal.

INSTRUCTIONS

5. Instructions for use

WARNING:

Gloves should be worn and all necessary precautions taken with regard to infection-related risks when using this equipment and when handling samples.

5.1. Preparing samples

Samples must be prepared in Precellys Lysing kits recommended by Bertin Technologies, a list of which can be found at ***www.precellys.com (see § 1.1.1)***

Only recommended Bertin Technologies' lysing kits should be used. Other accessories may impair the protection of the unit.

5.2. Launching a lysing protocol

5.2.1. Switching on the equipment

Once connected to the power supply, the equipment is switched on using the ***On/Off*** switch on the rear, close to the AC power input.

A few seconds after being switched on, the main menu will appear on the control panel screen. The operator must then select the desired lysing protocol from the ***«Start»*** menu.

WARNING:

Never open the lid while the metallic support ring is in motion. If the lid is opened while a lysing protocol is in progress, the protocol will stop automatically.

5.2.2. Opening the lid

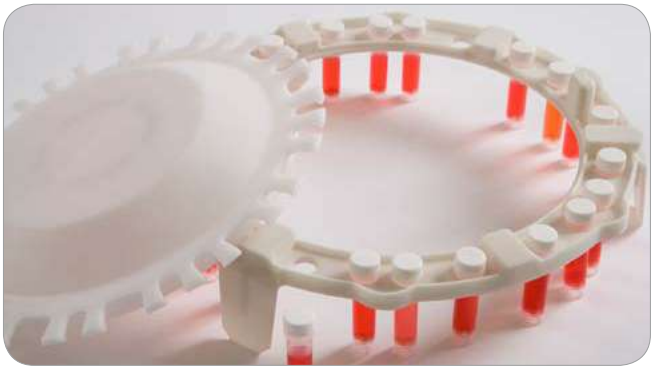
To open the lid: release the locking handle and raise the lid until it will go no further.

5.2.3. Loading lysing tubes

Lysing tubes containing samples are positioned in the tube holder and then held in place by the indented plate, which must be removed for the loading and unloading of the tube holder.

The tube holder is removable and is designed in such a way as to allow it to stand on its legs even when fully loaded with tubes. It is also possible to operate the equipment when the tube holder is only partially loaded.

A vacuum system holds the indented plate onto the metallic support ring. The prongs of the indented plate retain the tubes in place while the unit is running, and the tubes are released when the vacuum pressure is released (a few seconds after the end of a lysing cycle).



Example of 2mL indented plate and 2 mL tube holder

1 . Remove the indented plate

2 . Position the tubes in the tube holder (2, 7 ou 15mL)

3. Put the indented plate back in place

5.2.4. Closing the lid

Lower the lid until the locking handle clicks into place.

5.2.5. Lysing protocol procedure

After confirming the launch of a lysing protocol by pressing the ***«Start»*** button, the system creates a vacuum below the indented plate.
Once the tubes are correctly held in place (i.e. sufficient vacuum), the protocol will begin and the green light will flash.
A timer counts down the remaining time (in minutes and seconds) until the end of the protocol.

NB:
Time and speed settings cannot be changed while a protocol is in progress.

INSTRUCTIONS

WARNING:

Ensure that the system has stopped completely before opening the lid.

To prevent the equipment from overheating, a rest period of 2 to 5 minutes between two lysing protocols is strongly recommended.

5.2.6. End of a lysing protocol

At the end of a lysing protocol, the system returns to the ***«Start»*** menu. The vacuum created beneath the indented plate will be released a few seconds after the system has shut down: the indented plate cannot be removed during this short period.

5.2.7. Interruption of lysing cycle by the operator

Operators can interrupt a lysing protocol at any moment by pressing the ***«Stop»*** button.

When a protocol is interrupted by the operator, the time remaining is displayed. Pushing the button ***«Stop»*** or ***«Start»*** allows the system to go back to the ***«Start»*** menu. The vacuum created beneath the indented plate will be released a few seconds after the system has shut down: the indented plate cannot be removed during this short period.

WARNING:

Use of lysing kits beyond their use-by date may result in sudden damage to tubes.

5.3. Lysing kit use-by dates

Lysing kits provided by Bertin Technologies must be used before the use-by date indicated at ***www.precellys.com***. Use of lysing kits beyond their use-by date may result in sudden damage to tubes.

6. Alarm messages

WARNING:
Never open the lid while the metallic support ring is in motion.

Alarm message	Possible cause	Action
Pressure error	Tubes recommended by Bertin Technologies are not correctly positioned in the holder.	1. Reposition the lysing tubes in the holder. 2. Press on the centre of the indented plate during the vacuum phase (lid open).
	The indented plate or tube holder are not positioned correctly.	Reposition the indented plate on the metallic support ring and ensure that it is positioned correctly using the positioning guide.
	The toric joint is not positioned correctly.	Reposition the toric joint on the metallic support ring and ensure that it is correctly adjusted to fit on the metallic support ring.
	The indented plate is damaged.	Replace the indented plate.
	The toric joint is damaged.	Replace the toric joint (see § 7.2.1)
	The vacuum circuit is not working correctly.	1. Switch off the unit. 2. Contact Bertin Technologies' technical support team.
Lid error	The lid is not closed properly.	1. Check that nothing is preventing the lid from closing. 2. Press the lid and ensure that the handle is locked properly.
	The detection system is faulty.	1. Switch off the unit. 2. Contact Bertin Technologies' technical support team.
Motor error	The motor temperature has reached its maximum safety limit.	1. Leave the unit switched on to allow the ventilation system to keep running. 2. Ensure that the air intake and extraction vents are unobstructed. 3. If after 30' continuous ventilation the alarm message is still displayed, contact Bertin Technologies' technical support team.
	The power supply is not compatible with the equipment.	Check the coherence of the voltage specified on the rear of the equipment and the voltage delivered by your local electric power supply.
	The speed regulation or detection system is faulty.	1. Switch off the unit. 2. Contact Bertin Technologies' technical support team.

MAINTENANCE

WARNING:

Prior to any maintenance operation the equipment must be cleaned and decontaminated according to the infection risk associated with the samples being treated and using suitable personal protection equipment. Upon completion of service and maintenance, ensure that the device is in a safe condition.

7. Maintenance

7.1. Troubleshooting guide

The list of the main issues encountered during normal operation and the actions to take are listed in the table below:

Issue encountered	Possible cause	Action
The fan is not working	No power supply to mains plug.	1. Check the mains voltage. 2. Ensure that the voltage of the unit matches that delivered by the mains power supply. 3. Ensure that the unit is plugged in properly.
	Faulty fuse.	Replace the fuse (*see § 7.2.3*)
	Faulty cooling system.	1. Switch off the unit. 2. Contact Bertin Technologies' technical support team.
No display on the screen	No power supply to mains plug.	1. Check the mains voltage. 2. Ensure that the voltage of the unit matches that delivered by the mains power supply. 3. Ensure that the unit is plugged in properly
	Faulty fuse.	Replace the fuse *(see § 7.2.3.)*
	Faulty display system.	1. Switch off the unit. 2. Contact Bertin Technologies' technical support team.
One or more tubes are not tight	The cap has not been properly screwed on or the tube is faulty.	If a dangerous or potentially-dangerous product is contained in the tube, apply the proper decontamination procedure *(see § 8.)*.
	The tube used is not a Precellys tube.	
	The limits of use have not been met.	
Power cut	-	For safety purposes, the indented plate is held down by vacuum pressure. Reconnect the power supply in order to remove the indented plate.

7.2. Replacement of spare parts

This paragraph specifies the maintenance actions that users must perform on a regular basis in order to ensure the continuous good working order of Precellys® Evolution:

Wearing part	Reference	Frequency of replacement	Why?
2 mL indented plate	SP02520-810-NC001.0	1 year or when damaged	Essential for maintaining tubes in place during homogenization.
2 mL tube holder	SP02520-820-NC001.0	1 year or when damaged	Essential for maintaining tubes in place during homogenization.
7 mL indented plate	SP02520-810-NC002.0	1 year or when damaged	Essential for maintaining tubes in place during homogenization.
7 mL tube holder	SP02520-820-NC002.0	1 year or when damaged	Essential for maintaining tubes in place during homogenization.
15 mL indented plate	SP02520-810-NC003.0	1 year or when damaged	Essential for maintaining tubes in place during homogenization.
15 mL tube holder	SP02520-820-NC003.0	1 year or when damaged	Essential for maintaining tubes in place during homogenization.
Toric joint	SP02520-810-NC005.0	6 months or when damaged	Essential for maintaining tubes in place during homogenization.
Containment seal	SP02520-810-NC004.0	1 year or when damaged	Essential for maintaining tubes in place during homogenization.
Fuse	SP02520-810-NC006.0	When blown	-
Anti-rotation kit	SP02520-810-NC007.0	1 year or when damaged	Essential for maintaining tubes in place during homogenization.

WARNING:

Potentially dangerous voltage exists inside the instrument. In order to ensure user safety, in particular during cleaning and/or decontamination procedures, the containment seal must not be damaged in any way (perforation, tear, etc.)

Never set the unit at an angle: Precellys® Evolution must always be used when evenly balanced on its 4 feet. Failure to comply with this instruction may result in damage to the internal components or in breakage of the plastic casing.

MAINTENANCE

7.2.1. Replacing the toric joint

The toric joint located on the metallic support ring can show signs of wear over time. It is strongly recommended to replace the toric joint whenever the “Pressure Alarm” message is displayed permanently. As an additional precaution, the joint should be changed at least every six months.

7.2.2. Replacing the containment seal

The containment seal should be replaced at least once a year. This procedure does not require the dismantling of the metallic support ring.

1. Place the interior part of the containment seal against the metallic ring.
2. Place the exterior part of the containment seal against the casing.

7.2.3. Replacing the fuse

A flat-blade screwdriver is required for changing the fuse.

Flat-blade screwdriver

Fuse

WARNING:

Switch off the equipment and disconnect from the mains power supply before performing this operation.

8. Cleaning & Decontamination

For safety purposes and to prevent any damage to the equipment, the recommendations listed below should be strictly complied with:

- Do not spray water or cleaning products directly onto the unit, especially the air vents and fan intake.
- Always disconnect the equipment from the mains before cleaning.
- Do not use caustic soda or acetone.
- Do not use an aerial decontamination process.

8.1. Recommendations

The exterior casing of the unit can be cleaned with a sponge or a damp cloth, moistened with water or alcohol.

8.2. Example decontamination procedure

In the event that a tube breaks during a lysing cycle, decontaminate parts that may have been contaminated with an appropriate disinfectant.

The choice of decontamination procedure is the sole responsibility of the user.

Parts that may have been contaminated can be cleaned with a sponge or a damp cloth moistened with bleach diluted at 6° Cl.

If another decontamination procedure is to be used, please first contact our technical support team to ensure that the chosen procedure is compatible with the equipment.

9. Repair and Disposal

9.1. Repair

The equipment must be cleaned and decontaminated in accordance with the procedure described in § 8.2 before shipment for repair.

The equipment must be sent with a return form (see annex 1) indicating clearly, at the very least, the procedure used, the persons involved and the date on which cleaning and/or decontamination was performed.

If the return form is missing from the consignment, Bertin Technologies after-sales team reserves the right to refuse to perform repairs.

9.2. Disposal

The cleaning and contamination procedure must be performed prior to disposing of the equipment so as to ensure total human and environmental protection.

The equipment, its spare parts and consumables are the object of separate waste collection procedures in accordance with the EU directive pertaining to waste electrical and electronic equipment (WEEE) 2002/96/EC.

Bertin Technologies is under no circumstances whatsoever legally bound to take back this equipment.