Andreas Hettich GmbH & Co. KG
Föhrenstraße 12, D-78532 Tuttlingen / Germany
Phone +49 (0)7461 / 705-0
Fax +49 (0)7461 / 705-1125
info@hettichlab.com, service@hettichlab.com
www.hettichlab.com

Single Registration Number: DE-MF-000010680

Änderungen vorbehalten! , Modifications reserved! , Sous réserve de modifications ! , Con riserva di modifiche!

AB2300DEENFRIT / Rev. 11

Contents

1 Intended use

The centrifuge **EBA 270** is an in vitro diagnostic medical device according to the In Vitro Diagnostic Medical Devices Regulation (EU) 2017/746.
The device is used for centrifuging and enriching sample material of human origin for subsequent further processing for diagnostic purposes. The user can set each of the variable physical parameters within the limits set by the device.

The centrifuge may only be used by qualified personnel in closed laboratories. The centrifuge is only intended for the use referred to above. Intended use also includes observing all instructions in the Operating Manual and compliance with the required inspection and maintenance work.
Any other use or use beyond this is considered improper. Andreas Hettich GmbH & Co. KG shall not be liable for any damage arising from this.

2 Remaining risks

The device is built according to the state-of-the-art and the recognized safety regulations. If used and handled improperly, there could be life-threatening danger to the user or third parties, or the device could be impaired or there could be other property damage. The device is only to be used for its intended purpose and only when it is in safe working condition.

Malfunctions which could affect safety must be corrected immediately.

3 Technical specifications

Manufacturer	Andreas Hettich GmbH & Co. KG D-78532 Tuttlingen	
Model	EBA 270	
Basic-UDI-DI	4050674010007QC	
Type	2300	2300-01
Mains voltage (± 10%)	200 - 240 V 1~	100 - 127 V 1~
Mains frequency	50 - 60 Hz	50 - 60 Hz
Connected load	130 VA	125 VA
Current consumption	0.7 A	1.25 A
Max. capacity	6 x 15 ml	
Allowed density	1.2 kg/dm^3	
Speed (RPM)	4000	
Force (RCF)	2254	
Kinetic energy	250 Nm	
Obligatory inspection (DGUV Regel 100 - 500)	no	
Ambient conditions (EN / IEC 61010-1)		
– Set-up site	Indoors only	
– Altitude	Up to 2000 m above sea level	
– Ambient temperature	2°C to 40°C	
– Humidity	Maximum relative humidity 80% for temperatures up to 31°C, linearly decreasing to 50% relative humidity at 40°C.	
– Excess-voltage category (IEC 60364-4-443)	II	
– Pollution degree	2	
Device protection class	I	
Not suitable for use in explosion-endangered areas.		
EMC		
– Emitted interference, Interference immunity	EN / IEC 61326-1, Class B	FCC Class B
Noise level (dependent on rotor)	≤ 51 dB(A)	
Dimensions		
– Width	326 mm	
– Depth	389 mm	
– Height	239 mm	
Weight	approx. 13.5 kg	

4 Notes on safety

No claim of warranty will be considered by the manufacturer unless ALL instructions in this manual have been followed.

Reports of serious incidents involving the device

Report any serious incidents involving the device to the manufacturer and, if necessary, to the competent authority.

- **The centrifuge should be installed on a good, stable base.**
- **Before using the centrifuge absolutely check the rotor for firm placement.**
- **When the centrifuge is running, according to EN / IEC 61010-2-020, no persons, dangerous substances or objects may be within the safety margin of 300 mm around the centrifuge.**
- **Rotors, suspensions and accessories that possess traces of corrosion or mechanical damage or if their term of use has expired may not be used any longer.**
- **The centrifuge may no longer be put into operation when the centrifuging chamber has safety-related damages.**
- **For centrifuges without temperature control, when the room temperature is increased and/or if the device is frequently used, the centrifuging chamber could be heated up. Therefore, it can't be ruled out that the sample material might be changed due to the temperature.**

- **Before the initial operation of your centrifuge you should read and pay attention to the operating instructions. Only personnel that has read and understood the operating instructions are allowed to operate the device.**
- Along with the operating instructions and the legal regulations on accident prevention, you should also follow the recognised professional regulations for working in a safe and professional manner. These operating instructions should be read in conjunction with any other instructions concerning accident prevention and environmental protection based on the national regulations of the country where the device is to be used.
- This centrifuge is a state-of-the-art piece of equipment which is extremely safe to operate. However, it can lead to danger for users or others if used by untrained staff, in an inappropriate way or for a purpose other than that it was designed for.
- The centrifuge must not be moved or knocked during operation.
- In case of fault or emergency release, never touch the rotor before it has stopped turning.
- To avoid damage due to condensate, when changing from a cold to a warm room the centrifuge must either heat up for at least 3 hours in the warm room before being connected to the mains, or run hot for 30 minutes in the cold room.
- Only the rotor approved by the manufacturer for this device and the approved accessories may be used (see chapter "Anhang/Appendix, Rotoren und Zubehör/Rotors and accessories"). Before centrifuge vessels are used which are not listed in the chapter "Appendix, Rotors and accessories", the user must make sure they can be used by asking the manufacturer.
- The centrifuge rotor may only be loaded in accordance with the chapter "Loading the rotor".
- When centrifuging with maxim revolutions per minute the density of the materials or the material mixtures may not exceed 1.2 kg/dm^3.
- The centrifuge may only be operated when the balance is within the bounds of acceptability.
- The centrifuge may not be operated in explosion-endangered areas.
- The centrifuge must not be used with:
  – inflammable or explosive materials
  – materials that react with one another producing a lot of energy.
- If users have to centrifuge hazardous materials or compounds contaminated with toxic, radioactive or pathogenic micro-organisms, they must take appropriate measures.

For hazardous substances centrifuge containers with special screw caps must strictly be used. In addition to the screw cap centrifuge containers, for materials in hazard category 3 and 4 a biosafety system must be used (see the World Health Organisation's "Laboratory Biosafety Manual").
No biosafety systems are available for this centrifuge.

- The centrifuge must not be operated with highly corrosive substances which could impair the mechanical integrity of rotors, hangers and accessories.
- Repairs must only be carried out by personnel authorised to do so by the manufacturer.
- Only original spare parts and original accessories licensed by the Andreas Hettich GmbH & Co. KG company are allowed to be utilised.
- The following safety regulations apply:
  EN / IEC 61010-1 EN / IEC 61010-2-020 as well as their national deviations.
- The safe operation and reliability of the centrifuge can only be guaranteed if:
  – the centrifuge is operated in accordance with the operating instructions,
  – the electrical installation on the site where the centrifuge is installed conforms to the demands of EN / IEC stipulations.
- Meeting the country-specific requirements concerning occupational safety with regard to the use of laboratory centrifuges at the workplaces provided for this purpose by the user is the responsibility of the user.
- The unlocking pin made of plastic included in delivery may only be used for emergency unlocking (see the chapter "Emergency unlocking").
  The unlocking pin is to be kept in a safe place so that it is protected from unauthorized access.

5 Transport and storage

5.1 Transport

Before transporting the device, the transport securing device must be installed.

When the device and accessories are transported, the following ambient conditions must be complied with:

- Ambient temperature: -20°C to +60°C
- Relative humidity: 10% to 80%, non-condensing

5.2 Storage

The device and the accessories may only be stored in closed and dry rooms.

When the device and accessories are stored, the following ambient conditions must be complied with:

- Ambient temperature: -20°C to +60°C
- Relative humidity: 10% to 80%, non-condensing

6 Symbol meanings

Symbol on the device:

Attention, general hazard area.

Symbol on the device:

Observe operating instructions.
This symbol indicates that the user must observe the operating instructions provided.

Symbol in this document:

Attention, general hazard area.
This symbol refers to safety relevant warnings and indicates possibly dangerous situations.
The non-adherence to these warnings can lead to material damage and injury to personal.

Symbol on the device and in this document:

Beware of biohazard.

Symbol in this document:

This symbol refers to important circumstances.

Symbol on the device and in this document:

Symbol for the separate collection of electric and electronic devices according to the guideline 2012/19/EU.

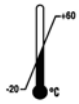
Applies in the countries of the European Union, as well as in Norway and Switzerland.

Symbol on the shipping carton label:

This way up.

Symbol on the shipping carton label:

The shipping packaging must be transported and
handled within the indicated humidity range (10% - 80%).



Symbol on the shipping carton label:

The shipping packaging must be stored, transported and
handled within the temperature range shown (-20°C - +60°C).

Symbol on the shipping carton label:

The shipping packaging must be kept away from rain and
kept in a dry environment.

Symbol on the shipping carton label:

Fragile, handle with care.

Symbol on the shipping carton label:

Stack limit. Maximum number of identical packages which may be stacked on the bottom package, whereby “n“ stands for the number of permissible packages. The bottom package is not included in “n”.

7 Delivery checklist

The following items and accessories are delivered with the centrifuge:

1 Connecting cable
2 Fuses
1 Release pin
1 One-opend-end wrench
1 Hex. pin driver for transport protection
1 Rotor
6 Hanger 10 ml
6 Hanger 5 ml
1 Notes on moving the equipment safely
1 Operating instructions

8 Initial operation

- **Position the centrifuge in a stable and level manner in a suitable place. During set-up, the required safety margin of 300 mm around the centrifuge is to be kept according to EN / IEC 61010-2-020.**

> **When the centrifuge is running, according to EN / IEC 61010-2-020, no persons, dangerous substances or objects may be within the safety margin of 300 mm around the centrifuge.**
>
> **Substances can be discharged through the ventilation opening on the rear side of the centrifuge. The device is to be placed in such a way that the air stream is not directed towards people.**

- Ventilation openings may not be blocked.
  A distance of 300 mm must be maintained from the ventilation slots and openings of the centrifuge.
- Check whether the mains voltage tallies with the statement on the type plate.
- Connect the centrifuge with the power cord to a standard mains socket. For connection ratings refer to Chapter "Technical specifications".
- Turn on the mains switch. Switch position "I".
  The last used centrifuge data will be displayed.
- Open the lid.
- Remove the transportation safety device in the centrifuge, see sheet ”Transportation safety device”.

9 Opening and closing the lid

9.1 Opening the lid

> The lid can only be opened when the centrifuge is switched on and the rotor is at rest. If it cannot be opened under these circumstances, see the section on “Emergency release”.

- Press the key OPEN and open the lid. The symbol "⌞" (lid open) illuminates in the rotation indicator.

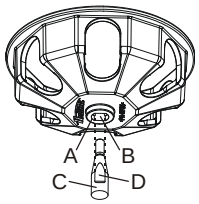
9.2 Closing the lid

> Do not bang the lid shut.

- Place the lid and lightly press down the front edge of the lid. The symbol "⎽" (lid closed) illuminates in the rotation indicator.

10 Installation and removal of the rotor

After every fifth removal of the rotor or when installing a new rotor, the fastening nut must be exchanged.



- Clean the motor shaft (C) and the rotor drilling (A), and lightly grease the motor shaft afterwards. Dirt particles between the motor shaft and the rotor hinder a perfect seating of the rotor and cause an irregular operation.
- Place the rotor vertically on the motor shaft. The driver areas (D) of the motor shaft must be located in the groove (B) of the rotor.
- Tighten the fastening nut of the rotor by turning it in the clockwise direction with the wrench included in delivery.
- Check the rotor for firm seating.

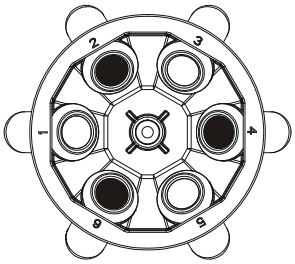
To ensure a tight fit of the rotor, the nut of the rotor must be hand-tightened.

- Removing the rotor: Screw the fastening nut off by turning it in the counterclockwise direction. Lift the rotor off of the motor shaft.

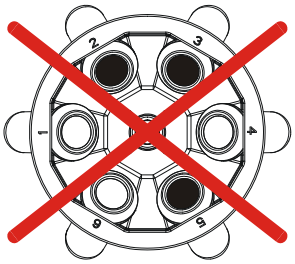
11 Loading the rotor

Standard centrifuge containers of glass will not stand RCF values exceeding 4000 (DIN 58970, pg. 2).

- Check the rotor for firm seating.
- With swing-out rotors all rotor positions must be lined with **identical** hangers.
- The rotors and hangers may only be loaded symmetrically. The centrifuge containers have to be distributed evenly on all rotor positions. For authorised combinations see Chapter "Anhang/Appendix, Rotoren und Zubehör/Rotors and accessories".



Rotor is evenly loaded



Not permitted!
Rotor is not evenly loaded

- The centrifuge containers may only be filled outside of the centrifuge.
- The maximum filling quantity for the centrifuge containers specified by the manufacturer must not be exceeded.
- When loading the hangers and when the hangers are swivelling out while the centrifuge is running, no liquid may enter the hangers or the centrifuging chamber.
- In order to maintain the weight differences within the centrifuge container as marginal as possible, a consistent fill level in the containers is to be heeded.
- The weight of the permissible filling quantity is specified on each rotor. This weight may not be exceeded.

12 Control and display elements

See figure on page 2.

Fig. 1: Display and control panel

12.1 Symbols on the control panel

Rotation indicator. The rotation indicator lights up and rotates anticlockwise while the rotor is turning.

When the rotor is stationary, the status of the lid is displayed by symbols in the rotation indicator:
Symbol ⌞ : Lid open
Symbol ⎽ : Lid closed

Operator errors and occurring faults are indicated on the display (see Chapter "Faults").

12.2 Keys and setting options

RPM x 100 ▲ ▼

- Speed
  A numeric value of 500 RPM up to the maximum rotor speed can be set. For maximum rotor speed, see chapter "Anhang/Appendix, Rotor und Zubehör/Rotor and accessories". Preset in steps of 100 (RPM = displayed value x 100).
  If the key ▲ or ▼ is kept pressed, the value changes with increasing speed.
- Display the brake step.

t ▲ ▼

- Running time
  - Preset from 1 - 99 minutes, in 1 minute steps
  - Continuous operation "--"
- Braking steps 0 or 1. Step 1 = short run-down time, Step 0 = long run-down time.

If the key ▲ or ▼ is kept pressed, the value changes with increasing speed.

START

- Start centrifugation run.

STOP

- End centrifugation run.
  The rotor runs down with the preselected brake step.
- Save the brake step.

PULSE

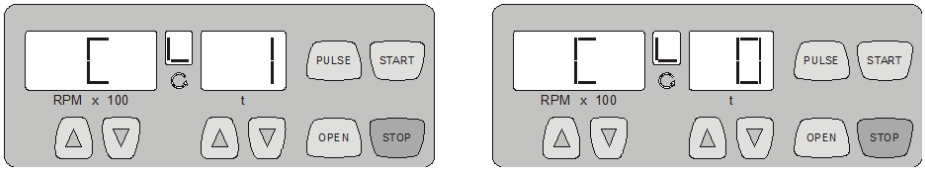
- Short-time centrifugation.
  The centrifugation run occurs while the key PULSE is kept pressed.
- Display the brake step.

OPEN

- Unlock the lid.

13 Setting the brake step

- Switch off the mains switch.
- Keep the key ▲ beneath the speed indicator and the key PULSE pressed simultaneously.
- Switch on the mains switch and release the keys again.
  The speed indicator shows the machine version and the time indicator shows the set brake step: e.g.:



  If the machine version and brake step are not displayed, press the ▲ key under the speed indicator until they are displayed.
  The machine version is set by the manufacturer and cannot be changed.
- Set the desired brake step with the keys ▲ ▼ beneath the time indicator.
  Step 1 = short run-down time, Step 0 = long run-down time.
  For run-down times, see chapter "Anhang/Appendix, Rotor und Zubehör/Rotor and accessories".
- Press the key STOP to save the setting.

14 Centrifugation

> ⚠ When the centrifuge is running, according to EN / IEC 61010-2-020, no persons, dangerous substances or objects may be within the safety margin of 300 mm around the centrifuge.

> ☞ The centrifugation run can be interrupted at any time by pressing the key STOP.
>
> The time and speed can be changed during the centrifugation run, with the keys ▲ ▼.
>
> If the key ▲ or ▼ is kept pressed, the value changes with increasing speed.
>
> After a centrifugation run, the display flashes until the cover is opened or a key is pressed.
>
> If the symbol "▁" (lid closed) and "▙" (lid open) flashes alternately in the rotation indicator ⟳, operation of the centrifuge can only be continued after opening the lid.

- Switch on the mains switch (switch position "I").
- Load the rotor and close the centrifuge cover.

14.1 Centrifugation with preselected time

- Set the desired speed with the keys ▲ ▼ beneath the speed indicator.
- Set the desired time with the keys ▲ ▼ beneath the time indicator.
- Press the key START. The rotation indicator ⟳ appears while the rotor is turning.

> ☞ The time is displayed in minutes. The last minute is counted down in seconds.
> When the time is displayed in minutes, a point flashes next to the number.

- After expiry of the time or if the centrifugation run is interrupted by pressing the key STOP, the rotor runs down with the set brake step.

During the centrifugation run the rotor speed and the remaining time are displayed.

14.2 Continuous operation

- Set the desired speed with the keys ▲ ▼ beneath the speed indicator.
- Set the time to zero with the key ▼ beneath the time indicator. "**--**" is displayed.
- Press the key START. The rotation indicator ⟳ appears while the rotor is turning. The time count starts from 0.

> ☞ The first minute is counted up in seconds, and then the time is displayed in minutes.
> When the time is displayed in minutes, a point flashes next to the number.

- Press the key STOP to end the centrifugation run. The rotor runs down with the set brake step.

During the centrifugation run the rotor speed and the expired time are displayed.

14.3 Short-time centrifugation

- Set the desired speed with the keys ▲ ▼ beneath the speed indicator.
- Keep the key PULSE pressed. The rotation indicator ↻ appears while the rotor is turning. The time count starts from 0.

> The first minute is counted up in seconds, and then the time is displayed in minutes.
> When the time is displayed in minutes, a point flashes next to the number.

- Release the key PULSE again to end the centrifugation run. The rotor runs down with the set brake step.

During the centrifugation run the rotor speed and the expired time are displayed.

15 Acoustic signal

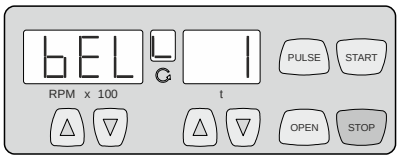
The acoustic signal sounds:

- After a disturbance occurs, in 2 second intervals.
- After completion of a centrifugation run and rotor standstill in 30 second intervals.

The acoustic signal is stopped by opening the lid or pressing any key.

The acoustical signal can be activated or deactivated as follows when the rotor is at a standstill:

- Switch off the mains switch.
- Keep the key ▲ beneath the speed indicator and the key PULSE pressed simultaneously.
- Switch on the mains switch and release the keys again.
- Press the key ▲ beneath the speed indicator until the following display appears:



The acoustical signal setting is displayed on the time display.
0 = acoustical signal deactivated, 1 = acoustical signal activated.

- With the ▲ ▼ keys below the time display, set **0** or **1**.
- Press the key STOP to save the setting.

16 Relative centrifugal force (RCF)

The relative centrifugal force (RCF) is given as a multiple of the acceleration of gravity (g). It is a unit-free value and serves to compare the separation and sedimentation performance.

These values are calculated using the formula below:

$$RCF = \left(\frac{RPM}{1000}\right)^2 \times r \times 1{,}118 \qquad \Rightarrow \qquad RPM = \sqrt{\frac{RCF}{r \times 1{,}118}} \times 1000$$

RCF = relative centrifugal force
RPM = rotational speed (revolutions per minute)
r = centrifugal radius in mm = distance from the centre of the turning axis to the bottom of the centrifuge container. For more on the centrifugal radius see the chapter "Anhang/Appendix,Rotoren und Zubehör/Rotors and accessories".

The relative centrifugal force (RCF) stands in relation to the revolutions per minute and the centrifugal radius.

17 Centrifugation of materials or mixtures of materials with a density higher than 1.2 kg/dm^3

When centrifuging with maxim revolutions per minute the density of the materials or the material mixtures may not exceed 1.2 kg/dm^3.
The speed must be reduced for materials or mixtures of materials with a higher density.

The permissible speed can be calculated using the following formula:

$$\text{Reduced speed } (n_{red}) = \sqrt{\frac{1.2}{\text{Greater density [kg/dm}^3\text{]}}} \text{ x maximum speed [RPM]}$$

e.g.: maximum speed RPM 4000, density 1.6 kg/dm^3

$$n_{red} = \sqrt{\frac{1.2\ \text{kg/dm}^3}{1.6\ \text{kg/dm}^3}} \text{ x } 4000\ \text{RPM} = 3464\ \text{RPM}$$

If in doubt you should obtain clarification from the manufacturer.

18 Emergency release

The lid cannot be opened during power failure. An emergency release has to be executed by hand.

For emergency release disconnect the centrifuge from the mains.
Open the lid only during rotor standstill.
Only the plastic release pin provided may be used for emergency release.

See figure on page 2.

- Switch off the mains switch (switch position "0").
- Look through the window in the lid to be sure that the rotor has come to a standstill.
- Insert the release pin horizontally into the hole (fig. 1, A). Push the release pin in as far as possible, until the lid can be opened when pressing down the pin.
- Open the lid.

19 Maintenance and servicing

The device can be contaminated.

Pull the mains plug before cleaning.
Before any other cleaning or decontamination process other than that recommended by the manufacturer is applied, the user has to check with the manufacturer that the planned process does not damage the device.

- Centrifuges, rotors and accessories must not be cleaned in rinsing machines.
- They may only be cleaned by hand and disinfected with liquids.
- The water temperature must be between 20 – 25°C.
- Only detergents/disinfectants may be used which:
  - have a pH between 5 - 8
  - do not contain caustic alkalis, peroxides, chlorine compounds, acids and alkaline solutions
- In order to prevent appearances of corrosion through cleaning agents or disinfectants, the application guide from the manufacturer of the cleaning agent or disinfectant are absolutely to be heeded.

19.1 Centrifuge (housing, lid and centrifuging chamber)

19.1.1 Surface cleaning and care

- Clean the centrifuge housing and the centrifuging chamber regularly, using soap or a mild detergent and a damp cloth if required. For one thing, this services purposes of hygiene, and it also prevents corrosion through adhering impurities.
- Ingredients of suitable detergents:
  soap, anionic tensides, non-ionic tensides.
- After using detergents, remove the detergent residue by wiping with a damp cloth.
- The surfaces must be dried immediately after cleaning.
- In the event of condensation water formation, dry the centrifugal chamber by wiping out with an absorbent cloth.
- Lightly rub the rubber seal of the centrifuge chamber with a rubber care product after each cleaning.
- The centrifuging chamber is to be checked for damage once a year.

If damage is found which is relevant to safety, the centrifuge may no longer be put into operation. In this case, notify Customer Service.

19.1.2 Surface disinfection

- If infectious materials penetrates into the centrifugal chamber this is to be disinfected immediately.
- Ingredients of suitable disinfectants:
  ethanol, n-propanol, ethyl hexanol, anionic tensides, corrosion inhibitors.
- After using disinfectants, remove the disinfectant residue by wiping with a damp cloth.
- The surfaces must be dried immediately after disinfecting.

19.1.3 Removal of radioactive contaminants

- The agent must be specifically labelled as being an agent for removing radioactive contaminants.
- Ingredients of suitable agents for removing radioactive contaminants:
  anionic tensides, non-ionic tensides, polyhydrated ethanol.
- After removing the radioactive contaminants, remove the agent residue by wiping with a damp cloth.
- The surfaces must be dried directly after removing the radioactive contaminants.

19.2 Rotor and accessories

19.2.1 Cleaning and care

- To avoid corrosion and changes to the materials, the rotor and accessories have to be cleaned regularly with soap or a mild cleaning agent and a moist cloth. Cleaning is recommended at least once a week. Contaminants must be removed immediately.
- Ingredients of suitable detergents:
  soap, anionic tensides, non-ionic tensides.
- After using detergents, remove detergent residue by rinsing with water (only outside of the centrifuge) or wipe off with a damp cloth.
- The rotor and accessories have to be dried immediately after cleaning.
- The rotor and accessories have to be checked monthly for wear and tear and damage due to corrosion.

The rotor and accessories must no longer be used if they show signs of wear or corrosion.

- Check the firm seating of the rotor on a weekly basis.

19.2.2 Disinfection

- If infectious material should get on the rotors or accessories, they must be appropriately disinfected.
- Ingredients of suitable disinfectants:
  ethanol, n-propanol, ethyl hexanol, anionic tensides, corrosion inhibitors.
- After using disinfectants, remove disinfectant residue by rinsing with water (only outside of the centrifuge) or wipe off with a damp cloth.
- The rotors and accessories must be dried directly after disinfection.

19.2.3 Removal of radioactive contaminants

- The agent must be specifically labelled as being an agent for the removal of radioactive contaminants.
- Ingredients of suitable agents for removing radioactive contaminants:
  anionic tensides, non-ionic tensides, polyhydrated ethanol.
- After removing the radioactive contaminants, remove agent residue by rinsing with water (only outside of the centrifuge) or wipe off with a damp cloth.
- The rotors and accessories must be dried directly after removing the radioactive contaminants.

19.2.4 Rotors and accessories with limited service lives

The use of certain rotors, hangers and accessory parts is limited by time.
These are marked with the maximum permitted number of operating cycles or with an expiration date and the maximum permitted number of operating cycles or just with the expiration date; e.g.:

- "einsetzbar bis Ende: IV. Quartal 2011 / usable until end of: IV. Quarter 2011" or
  "einsetzbar bis Ende Monat/Jahr: 10/2011 / usable until end of month/year: 10/2011"
- "Max. Lauf Zyklen / max. cycles: 40000".

For safety reasons, rotors, hangers and accessory parts may no longer be used if either the indicated maximum number of operating cycles or the indicated expiration date has been reached.

19.3 Autoclaving

The rotor and accessories must not be autoclaved.

19.4 Centrifuge containers

- With leakiness or after the breakage of centrifuging containers broken container parts, glass splinters and leaked centrifugation material are to be completely removed.
- The rubber inserts as well as the plastic sleeves of the rotors are to be replaced after a glass breakage.

Remaining glass splinters cause further glass breakage!

- If this concerns infectious material, a disinfection process is to be executed immediately.

20 Faults

If the fault cannot be eliminated with the help of the fault table, please inform Customer Service.

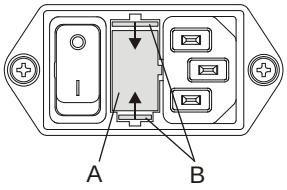
Please specify the type of centrifuge and the serial number. Both numbers can be found on the name plate of the centrifuge.

Perform a MAINS RESET:
- Switch off the mains switch (switch position "0").
- Wait at least 10 seconds and then switch on the mains switch again (switch position "I").

Message/ fault	Cause	Remedy
No display	No voltage Mains input fuses defective.	- Check distribution voltage. - Check mains power input fuse, refer to Chapter "Change mains input fuse". - Mains switch ON.
- 1 -	Tacho error Failure of speed impulses during operation.	- The device may not be switched off as long as the rotation display is lit up and rotating. Wait until the "▁" icon (lid closed) appears in the rotation display (after about 120 seconds) and then run a "POWER RESET".
- 2 -	Power failure during the centrifugation run. (The centrifugation run was not finished.)	- When stationary, open lid and press START key. - Repeat the centrifugation run if necessary.
- 3 -	Balance error The rotor is unevenly loaded.	- Open lid when rotor is stationary. - Check the loading of the rotor, see chapter "Loading the rotor". - Repeat the centrifugation run.
- 4 -	Fault in control unit or power unit.	- Perform a MAINS RESET when the rotor has been stationary.
- 5 -	Motor or motor control defective.	
- 6 - - 8 -	Supply voltage outside tolerance (see Technical Data).	- Perform a MAINS RESET when the rotor has been stationary. - Check supply voltage.
- 7 -	Overspeed	- Perform a MAINS RESET when the rotor has been stationary
- 9 -	Excess temperature	- When rotor is stationary, open lid using emergency unlocking (see Emergency Unlocking chapter). - Allow motor to cool down.
- b -	Rotation too slow	- Perform a MAINS RESET when the rotor has been stationary.
- C -	Fault in control unit.	
- d -	Error in lid locking or lid closure.	
- E -	Short circuit in control unit / power unit.	
- F -	Incorrect machine version	- Inform Customer Service.

21 Change mains input fuses

Switch off the mains switch and separate the device from the mains!



The fuse holder (A) with the mains input fuses is located next to the mains switch.

- Remove the connecting cable from the machine plug socket.
- Press the snap-fit (B) against the fuse holder (A) and remove.
- Exchange defective mains input fuses.

  Only use fuses with the rating defined for the type. See the following table.

- Reinsert the fuse holder until the snap-fit clicks shut.
- Reconnect the device to the mains supply.

Model	Type	Fuse	Order no.
EBA 270	2300	T 1,6 AH/250V	E891
EBA 270	2300-01	T 3,15 AH/250V	E997

22 Acceptance of the centrifuges for repair

If the centrifuge is returned to the manufacturer for repair, it must be decontaminated and cleaned to protect persons, environment and material.

We reserve the right to accept contaminated centrifuges.

Costs incurred for cleaning and disinfection are to be charged to the customer.

We ask for your understanding in this matter.

23 Disposal

The device can be disposed of via the manufacturer.

A Return Material Authorisation (RMA) form must always be requested for a return.

If necessary, contact the Technical Service Department of the manufacturer:

Andreas Hettich GmbH & Co. KG
Föhrenstrasse 12
78532 Tuttlingen, Germany
Phone: +49 7461 705 1400
Email: service@hettichlab.com

Disposal costs may be incurred.

WARNING

Risk of pollution and contamination for people and the environment.

When disposing of the centrifuge, people and the environment may be polluted or contaminated by incorrect or improper disposal.

- Removal and disposal may be carried out only by a trained and authorized service personnel.

The device is intended for the commercial sector ("Business to Business" - B2B).
According to Directive 2012/19/EU, the devices may no longer be disposed of with household waste.
The appliances are assigned to the following groups according to the Stiftung Elektro-Altgeräte Register (EAR (German foundation under civil law)):

- Group 5 (small appliances)

The crossed-out bin symbol indicates that the device must not be disposed of with household waste.

Regulations governing disposal of such devices may differ in individual countries. If necessary, contact the supplier.