



Operating Manual for Mini Centrifuge Z 130 M

| | |
|---|--------------|
| 1. PRODUCT DESCRIPTION | 1 |
| 1.1 Usage in accordance with safety standards | 1 |
| 1.2 Brief description | 1 |
| 1.3 Delivery package | 1 |
| 1.4 Signs and indications of the centrifuge..... | 1 |
| 1.4.1 General..... | 1 |
| 1.4.2 Product nameplate | 2 |
| 1.4.3 Declaration of ATEX (94/9/EG) | 3 |
| 1.4.4 Following rules | 3 |
| 1.4.5 Warranty..... | 3 |
| 1.5 Installation of the centrifuge..... | 4 |
| 1.5.1 Unpacking the centrifuge..... | 4 |
| 1.5.2 Space requirements | 4 |
| 1.5.3 Installation | 4 |
| 2. OPERATION..... | 5 |
| 2.1 Starting up..... | 5 |
| 2.2 Loading rotor | 5 |
| Examples of properly balanced rotors: | 5 |
| Examples for improperly balanced rotors:..... | 6 |
| 2.3 Power switch..... | 6 |
| 3. MAINTENANCE..... | 7 |
| 3.1 Maintenance and cleaning | 7 |
| 3.1.1 General..... | 7 |
| 3.1.2 Cleaning and disinfection of the unit..... | 7 |
| 3.1.3 Cleaning and disinfection of the rotor | 8 |
| 3.1.4 Disinfection of PP rotors | 8 |
| 3.1.5 Glass breakage | 9 |
| 3.2 Life time of rotors, round and rectangular buckets, accessories | 9 |
| 4. REPAIR..... | 10 |
| 5. TRANSPORT, STORAGE, DISPOSAL | 11 |
| 5.1 Transport..... | 11 |
| 5.2 Storage | 11 |
| 5.3 Disposal..... | 11 |
| APPENDIX..... | 12 |
| Table 1: Technical Data: | I |
| EC conformity declaration | II |
| Redemption form / Decontamination certificate | III |
| 6. Notes | |

1. PRODUCT DESCRIPTION

1.1 Usage in accordance with safety standards



This symbol indicates safety instructions and points to potential dangerous situations. Before using the centrifuge the first time, please read the operating manual.

Failure to follow these instructions can result in personal injury and property damage.

Intended use includes the observance of all instructions in the instruction manual and carrying out inspection and maintenance.

This Hermle centrifuge was designed only for the separation of materials or mixtures with different density. Hermle centrifuges are intended exclusively for indoor use and for use by qualified personnel.

Only Hermle original rotors and accessories might be used. Any other use or intended use is considered improper. From the resulting damage the company Hermle Labortechnik is not liable.

1.2 Brief description

The unit type Z 130 M is a mini centrifuge, which we offer in two voltage variations 230V or 120V. The Z 130 M is suitable for applications with a fixed speed up to 5500 rpm and is capable for 12 x 1.5/2.0ml micro tubes and 4 x PCR strips.

Only use in this centrifuge the corresponding fixed angle rotor.

1.3 Delivery package

- 1 Centrifuge Z 130 M
- 1 Operating Manual Z 130 M

1.4 Signs and indications of the centrifuge

1.4.1 General



Instruction for disposal (see chapter 5.3, page 11)

1.4.2 Product nameplate (sample)



Company adress: Hermle Labortechnik GmbH, Siemensstr. 25, D-78564 Wehingen

TYPE: Type designation of the product

 REF: Order number

 SN: Serial number of the product

 Date of manufacture

 Manufacturer

MAX. Drehzahl: max. allowed speed of the unit

KIN. EN.: max. kinetic energy with corresponding rotor

U/I/f: Allowable voltage / max. current / frequency

P: Electrical input power

 before operating, read the operating manual

 Labeling, standards and guidelines that are considered

1.4.3 Declaration of ATEX (94/9/EG)

The **HERMLE Z 130 M** is not explosion-proof and must therefore not be operated in explosion-endangered areas or locations. During centrifugation, it is prohibited to stay within the safety zone of 30 cm around the centrifuge or deposit hazardous substances within this area. Centrifugation of flammable, explosive and radioactive substances or substances, which chemically react with high energy, is strictly prohibited!

- Never spin toxic or pathogenic material without adequate safety precautions, i.e. centrifugation of buckets / tubes without or with defective hermetic sealings is strictly prohibited. The user is obliged to perform appropriate disinfection procedures in case dangerous substances have contaminated the centrifuge and or its accessories. When centrifuging infectious substances, always pay attention to the General Laboratory Precautions. If necessary, contact your safety officer!
- It is prohibited to run the centrifuge with rotors other than listed for this unit.



This device may only be operated by trained specialist staff. They must have carefully read the operating manual and be familiar with the function of the device.

1.4.4 Following rules

- Do not operate the centrifuge in case it is not installed correctly.
- Do not operate the centrifuge when dismantled (e.g. without housing).
- Do not run the centrifuge when mechanical or electrical assembly groups have been tampered with unauthorized persons.
- Do not use accessories such as rotors and buckets, which are not exclusively approved by HERMLE Labortechnik GmbH, except commercially available centrifuge tubes made of glass or plastic.
- Do not spin extremely corrosive substances, as they may cause material damages and impair mechanical resistance.
- Do not operate the centrifuge with rotors or buckets, which show any signs of corrosion or mechanical damage.

The manufacturer is responsible for safety and reliability of the centrifuge, only if:

- the unit is operated in accordance with this instruction manual.
- modifications, repairs or other adjustments are performed by HERMLE-authorized personnel and the electrical installation of the related location corresponds to the IEC-regulations.

1.4.5 Warranty

The centrifuge has been subjected to thorough testing and quality controls. In the unlikely case of any manufacturing faults occurring, the centrifuge and rotors are covered by warranty for a period of 24 months from date of delivery. This warranty becomes invalid in case of mishandling, damage and negligence and further in case of usage of inappropriate spare parts and / or accessories or unauthorized modification of the unit.

Technical modification rights are reserved by the manufacturer in respect to technical improvement!

1.5 Installation of the centrifuge

1.5.1 Unpacking the centrifuge

Model **Z 130 M** is supplied in a carton.

Remove the strap retainer, open the carton and remove the centrifuge. The instruction manual must always be kept with the centrifuge!

1.5.2 Space requirements



The centrifuge should be installed on an even solid surface, if possible on a laboratory cabinet / table or some other solid vibration free surface.

During centrifugation, the centrifuge must be placed in a way, that there is a minimum space of 30 cm on each side of the unit according to the standards EN 61010-2-020.

Do not place the centrifuge next to a window or a heater, where it could be disposed to excessive heat, as the performance of the unit is based on an ambient temperature of 23°C.

1.5.3 Installation

Follow these steps:

- Check whether power supply corresponds with the one named on the manufacturer's rating label, which is mounted on the rear panel.
- The line voltage circuit breaker is max. 16 A (type K) slow release for commonly used instruments.
- In case of emergency, there must be an emergency switch off installed outside the room in order to disconnect the power supply of the unit.
- Connect the centrifuge with the mains.
(The socket for the power cord must be easy to reach respectively easy to disconnect).
- Switching it on using the mains power switch (I).

2. OPERATION

2.1 Starting up

- Attach the power cord and place the power switch into the on "I" position.
- Open the lid and load your samples into the included rotor. Always ensure a balanced load (Please see the following section, **Loading the Rotor**, for details.)
- Close the lid, the rotor quickly accelerates to the maximum speed of 5500 rpm.
- When the desired run time is completed, push on the lid tab to open the lid, the rotor quickly brakes to a stop and the samples can be retrieved.



ATTENTION: Never attempt to remove samples until the rotor has come to a complete stop.



ATTENTION:

Do not operate the centrifuge with rotors or buckets which show any signs of corrosion or mechanical damage.

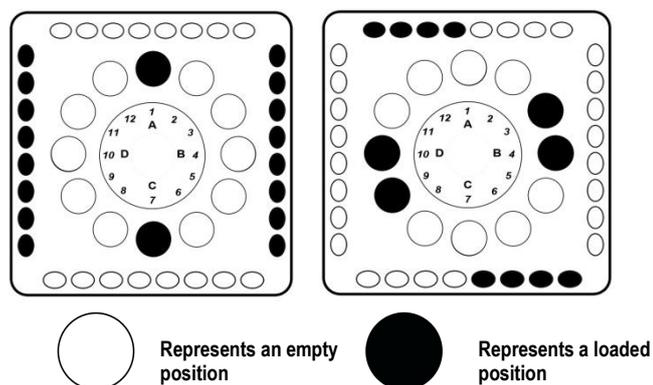
Do not operate with extremely corrosive substances, which could damage the rotor and unit.

2.2 Loading rotor

Rotors must be load symmetrically and with equal weight (see figure 1). The adapter may only be load with the appropriate vessels. The weight differences between the filled vessels are as low as possible to keep. Therefore we recommend to weighting with a balance. This reduces the wear of drive and the acoustic operating noise.

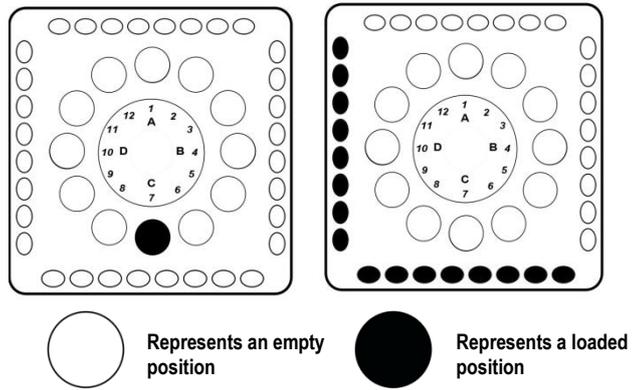
Examples of properly balanced rotors:

Figure 1



Examples for improperly balanced rotors:

Figure 2



2.3 Power switch

The power switch is on the left side at the back wall of the housing (see figure 3)



Figure 3: Power switch

3. MAINTENANCE

3.1 Maintenance and cleaning

3.1.1 General

Care:

Maintenance of the centrifuge is confined to keeping the rotor, the rotor chamber and the rotor accessories. Clean as well the accessories especially the sealings of the aerosol-tight rotors and insert bolts of swing out rotors. Afterwards lubricate the bolts or sealings with the recommended HERMLE vaseline - order no. 41-5215.

Lubricants containing molycote and graphite are not allowed.

Please pay special attention to anodized aluminium parts. Breakage of rotors can be caused even by slightest damages.

In case of rotors, buckets or tube racks getting in touch with corrosive substances the concerned spots have to be cleaned carefully.

Corrosive substances are for instance: alkalis, alkaline soap solutions, alkaline amines, concentrated acids, solutions containing heavy metals, water-free chlorinated solvents, saline solutions, e.g. salt water, phenol, halogenated hydrocarbons.



Cleaning – unit, rotors, accessories:

- Turn the device off and disconnect it from the power supply before you begin any cleaning or disinfecting. Do not pour liquids into the housing interior.
- Do spray disinfectant on the device.
- Thorough cleaning not only has its purpose in hygiene but also in avoiding corrosion based on pollution.
- In order to avoid damaging anodized parts such as rotors, reduction plates etc., only pH-neutral Detergents with a pH-value of 6-8 may be used for cleaning. Alkaline cleaning agents (pH-value > 8) must not be used.
- After cleaning, please ensure all parts are dried thoroughly, either by hand or in a hot-air cabinet (max. Temperature + 50°C).
- It is necessary to coat anodized aluminium parts with anti-corrosion oil regularly in order to increase their life-spans and reduce corrosion predisposition.
- Due to humidity or not hermetically sealed samples, condensate may be formed. The condensate has to be removed from the rotor chamber with a soft cloth regularly.
-



The maintenance procedure has to be repeated every 10 to 15 runs, but at least once at week!

- Connect the unit to the power supply, after the equipment is completely dry.
- Do not carry out disinfection with UV-, beta- and gamma-rays or other high energy radiation.
- Metal rotors can be autoclaved.
- Rotor lid and adapters can also be autoclaved (max. 121°C, 20 min).
- The tube racks are made of PP and can **not** be autoclaved at 134°C.

3.1.2 Cleaning and disinfection of the unit

1. Open the lid before you turn off the unit. Disconnect it from the power supply.

2. Removed the rotor by using an allen wrench (1.5mm) to loosen the set screw. Once loosened, the rotor can be pulled upward and removed from the motor shaft.
3. For cleaning and disinfection of the unit and the rotor chamber using the above mentioned cleaner (see chapter 3.1.1).
4. Clean all accessible areas of the device and its accessories, including the power cord with a damp cloth.
5. Wash the rubber seals and rotor chamber thoroughly with water.
6. Rub the dry rubber seals with glycerol or talc to prevent these to becoming brittle. Other components of the unit, e.g. the lid lock, motor shaft and rotor must not be greased.
7. Dry the motor shaft with a soft, dry and lint-free cloth.
8. Control the unit and accessories for damage.

Remove at least every six months adherent dust from the ventilation slots in the centrifuge by using a soft brush. Turn off the centrifuge and pull the plug before doing that.

3.1.3 Cleaning and disinfection of the rotor

1. Clean and disinfect the rotors, rotor lids and adapters with the mentioned cleaner in chapter 3.1.1).
2. Use a bottle brush to clean and disinfect the rotor bores.
3. Rinse the rotors, rotorlid and adapter with clear water. Particular the drillings of angle rotors.
4. For drying of the rotors and accessories set them on a towel. Place the angle rotors with bores down, to dry them to.
5. Dry the rotor cone with a soft, dry and lint-free cloth and look for damage. Do not grease the rotor cone.

3.1.4 Disinfection of PP rotors

The recommended time for autoclaving: 15 – 20 min at 121°C (1 bar)



ATTENTION: The sterilization time of 20 min. must not be exceeded. Sterilization again and again will cause reduction of the mechanical resistance of the plastic material

Before the autoclaving the PP-rotor and adapter must thoroughly be cleaned to avoid the burning in of dirty residues.

You can disregard the consequences of some chemical residues to plastic materials at ambient temperatures. But at the high temperatures of the autoclaving those residues may corrode and destroy the plastic. The objects must be thoroughly washed up with distilled water after the cleaning but before the autoclaving. Residues of any cleaning liquids may cause fissures, whitening and stains.

Gassterilization

Adapters, bottles and rotors may be gassterilized with Ethylenoxyd. According to the duration of the application you may give long enough an airing to the items after the sterilization and before using them again.



ATTENTION: Because the temperature may rise during the sterilization, rotors, adapters and bottles must not be closed respectively must be totally unscrewed.

Chemical sterilization

Bottles, adapters and rotors may be treated with the usual liquid disinfectants.

 **ATTENTION:** Before applying any other cleaning resp. Decontamination method than recommended by the manufacturer, contact the manufacturer to ensure that it will not damage the unit or the rotor.

Additional information for aerosol-tight rotors, lids and buckets

The aerosol tightness of rotors, rotor lids, buckets and caps has been tested and certified by the „TÜV Nord CERT GmbH, Certification Body Consumer Products, Essen (Germany)“ in accordance with Annex AA of IEC 61010-2-020. The certificates can be downloaded on our webpage www.hermle-labortechnik.de. Aerosol-tight rotors and buckets are marked with the label „aerosol-tight“.

 **ATTENTION:** Autoclaving, mechanical stresses and contamination by chemicals or other aggressive solvents can impair the aerosol-tightness of the rotors and buckets.

- Check the integrity of the seals of the aerosol-tight rotor lids or caps before each use.
- Use only aerosol-tight rotor lids or caps if the seals are undamaged and clean.
- Replace the seals of aerosol-tight lids and caps after five autoclaving cycles.
- **Never** store aerosol-tight rotors or buckets closed.

3.1.5 Glass breakage

With high g-values, the rate of glass tube breakage increases. Glass splinters have to be removed immediately from rotor, buckets, adapters and the rotor chamber itself. Fine glass splinters will scratch and therefore damage the protective surface coating of a rotor. If glass splinters remain in the rotor chamber, fine metal dust will build up due to air circulation. This very fine, black metal dust will extremely pollute the rotor chamber, the rotor, the buckets and the samples.

If necessary, replace the adapters, tubes and accessories to avoid further damages. Check the rotor bores regularly for residues and damages.

 **ATTENTION:** Please check the relevant specifications of the tubes centrifuges with the manufacturer!

3.2 Life time of rotors, round and rectangular buckets, accessories

Rotors and rotor lid made of aluminium or stainless steel, have a operating life of max. 7 years from first use.

Transparent rotor lids and caps made of PC or PP for rotors and buckets, tube racks and adapters of PP have a maximum service life up to **3 years** from first use.

Condition for the operating life:

Proper use, damage-free condition, recommended care

4. REPAIR



Health risk from contaminated equipment, rotors and accessories

In case of returning the centrifuge for repairing to the manufacturer, please notice the following:

The centrifuge **must** be decontaminated and cleaned before the shipment for the protection of persons, environment and material.

Please fill out the below completely form:

Decontamination certificate at goods return delivery (see APPENDIX p.III)

and put the decontamination form to the outside of the box.

We reserve the right to accept contaminated centrifuges. Further on all costs occurred for the cleaning and disinfection of the units will go to the debit of the customer's account.

Thank you for your understanding.

5. TRANSPORT, STORAGE, DISPOSAL

5.1 Transport

- Before transporting, take out the rotor.
- Only transport the unit in the original packaging.
- Use a transport aid for transporting over longer distances to fix the motor shaft.

| | air temperature | rel. humidity | air pressure |
|------------------------|-----------------|---------------|----------------|
| General transportation | -25 bis 60 °C | 10 bis 75 % | 30 bis 106 kPa |

5.2 Storage

During storage of the centrifuge the following environmental conditions must be observed:

| | air temperature | rel. humidity | air pressure |
|------------------------|-----------------|---------------|----------------|
| General transportation | -25 bis 55 °C | 10 bis 75 % | 70 bis 106 kPa |

5.3 Disposal

In the event of disposing of the product, please observe the applicable legal regulations.

Information on the disposal of the electrical and electronic devices in the European Community:.

The disposal of the electrical devices is regulated within the European Community by national regulations based on EU Directive 2002/96/EC pertaining to waste electrical and electronic equipment (WEEE).

In accordance with this, any devices delivered after 13/08/2005 on a business-to-business basis, which includes the product, may no longer be disposed of in household waste. To document this they have been marked with the following identification:



Because disposal regulations may differ from one country to another within the EU please contact your supplier if necessary.

RoHS II Compliance

HERMLE Labortechnik GmbH, Siemensstraße 25, 78564 Wehingen, hereby declares and certifies that all components manufactured are RoHS II compliant according to the definition and restrictions given by the European Parliament Directive 2011/65/EC on the restriction of use of certain hazardous substances in electrical and electronic equipment.

APPENDIX

| | |
|--|------------|
| Table 1: Technical Data: | I |
| EC conformity declaration | II |
| Redemption form / Decontamination certificate | III |

Table 1: Technical Data:

| | | | |
|--|---|-----------------------|--|
| Manufacturer | Benchmark Scientific inc. | | |
| Type | Z 130 M | | |
| Dimensions | | | |
| Width | 14,6 cm | | |
| Depth | 20,3 cm | | |
| Height | 10,8 cm | | |
| Weight with rotor | 1,3 kg | | |
| max. speed | 5500 min ⁻¹ | | |
| max. volume | 12 x 1.5/2.0 ml and 4 x PCR-strips | | |
| max. RCF | 2000 x g | | |
| allowable density | 1,2 kg/dm ³ | | |
| allowable kinetic energy | 58 Nm | | |
| Mains power connection AC | 230 V / 50-60 Hz 1 ph | 120 V / 50-60 Hz 1 ph | |
| Voltage fluctuation | ± 10 % | | |
| Current consumption | 0,12 A | 0,18 A | |
| Power consumption | 0,04 KW | 0,04 KW | |
| Audit requirement (BGR 500) | nein | | |
| Ambient conditions (EN / IEC 61010-1) | | | |
| - Environment | for indoor use only | | |
| - High | Use up to an altitude of 2000 m above MSL | | |
| - Ambient temperature | 2°C up to 35 °C | | |
| - Max. relative humidity | Max. relative humidity 80 % for temperatures up to 31°C, Decreasing linearly to 50 % relative humidity up to 35°C. | | |
| - Overvoltage category (IEC 60364-4-443) | II | | |
| - Degree of contamination | 2 | | |
| Class of protection I | Class of protection (DIN EN 60529) IP 20 | | |
| Not suitable for use in hazardous environments | | | |
| Noise level (depending on the rotor) | 52 +2,0 dB(A) | | |
| Write from operator: | | | |
| Inventory-No.: | _____ | | |
| Monitoring-No.: | _____ | | |
| Environment: | _____ | | |
| Maintenance contact: | _____ | | |
| responsible service office | HERMLE Labortechnik GmbH Siemensstraße 25 78564 Wehingen Tel.: (49)7426 / 96 22-17 Fax: (49)7426 / 96 22-49 | _____ | |
| responsible dealer | _____ | | |

**EG Konformitätserklärung
EC Conformity Declaration**



Hermle Labortechnik GmbH - Siemensstr. 25 - D-78564 Wehingen – Germany

Das bezeichnete Produkt entspricht den einschlägigen grundlegenden Anforderungen der aufgeführten EG-Richtlinien und Normen. Bei einer nicht mit uns abgestimmten Änderung des Produktes oder einer nicht bestimmungsgemäßen Anwendung verliert diese Erklärung ihre Gültigkeit.

The Product named below fulfills the relevant fundamental requirements of the EC directives and standards listed. In the case of unauthorized modifications to the product or an unintended use this declaration becomes invalid.

Produkttyp
Product type

**Laborzentrifugen mit Zubehör
Laboratory centrifuge with accessories**

Typenbezeichnung
Typ designation

Z 130 M

Einschlägige EG-Richtlinien / Normen
Relevant EC directives / standards

**RL 72/33/EEC, 89/336/EEC
EN 61010-1 :1993/A2 :1995, EN 61010-2-020, EN 50081-1 (-2), EN 50082-1:1997
EN 55011:1991/A1 :1997/A2:1996, EN 55022 :1994+A1+A2
EN 61000-3-2 (-3) :1995**

HERMLE
LABORTECHNIK 



Alexander Hermle
Geschäftsführer, Managing Director

Wehingen, den 15.10.2015

Decontamination certificate at goods return delivery

Enclose at all returns of equipment and assemblies absolutely!

The completely full declaration about the decontamination is prerequisite for the assumption and further processing of the return. If no corresponding explanation is enclosed, we carry out decontamination with costs at your expense.

Surname; last name: _____

Organization / company: _____

Street: _____

ZIP CODE: _____ **place:** _____

Telephone: _____ **fax:** _____

E-Mail: _____

Please fill out in block capitals!

| Pos. | Crowd | Decontaminated object | Serial number | Description / Comment |
|------|-------|-----------------------|---------------|-----------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |

Are these parts listed above in touch with the following substances?

Health endangering watery solutions, buffers, acids, alkalis:..... Yes No

Potentially infectious agents: Yes No

Organic reagents and solvent: Yes No

Radioactive substances: α.. β.. γ.. Yes No

Health endangering proteins: Yes No

DNA: Yes No

These substances have reached the equipment/assembly? Yes No

Which one, if yes: _____

Description of the measures for the decontamination of the listed parts:

I confirm the proper decontamination:

Company/dept . _____ place and date: _____

Signature of the authorized person: _____



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Technische Änderungen vorbehalten.
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