CEPA® Z 41 High-Speed Tubular Centrifuge

Operating manual
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**CEPA® Z 41 High-Speed Tubular Centrifuge**

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</table>
1 Operating instructions
1.1 Using this manual

- Carefully read this operating manual before using the device for the first time.
- Also observe the operating manual enclosed with the accessories.
- The operating manual should be considered as part of the product and stored in a location that is easily accessible.
- When passing the device on to third parties, be sure to include this operating manual.
- If this manual is lost, please request another one. The current version can be found on our website www.eppendorf.com.

1.2 Danger symbols and danger levels
1.2.1 Hazard symbols

<table>
<thead>
<tr>
<th>Hazard point</th>
<th>Material damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk of crushing</td>
<td>Electric shock</td>
</tr>
<tr>
<td>Corrosive</td>
<td>Heavy</td>
</tr>
</tbody>
</table>

1.2.2 Degrees of danger

The following degree levels are used in safety messages throughout this manual. Acquaint yourself with each item and the potential risk if you disregard the safety message.

| DANGER | Will lead to severe injuries or death. |
| WARNING | May lead to severe injuries or death. |
| CAUTION | May lead to light to moderate injuries. |
| NOTICE | May lead to material damage. |
1.3 Symbols used

<table>
<thead>
<tr>
<th>Example</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶</td>
<td>You are requested to perform an action.</td>
</tr>
<tr>
<td>1.</td>
<td>Perform these actions in the sequence described.</td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>•</td>
<td>List.</td>
</tr>
<tr>
<td>📘</td>
<td>References useful information.</td>
</tr>
</tbody>
</table>
2 Safety
2.1 Warnings for intended use

CAUTION! This equipment must be operated as described in this manual. If operational guidelines are not followed, equipment damage and personal injury can occur.

- Please read the entire operating manual before attempting to use this unit.
- Do not use this equipment in a hazardous atmosphere or with hazardous materials for which the equipment was not designed.

In the commercial sector, the high-speed tubular centrifuge is exclusively designed for the following purpose:

- Clarifying liquids from solids
- Concentrating solids in a liquid suspension
- Other applications in the industrial scale

The national regulations for the use of centrifuges must be observed (for Germany: German Occupational Safety Regulation BGR 500 "Betreiben von Arbeitsmitteln."

In case of doubt, the centrifuge may only be used for substances agreed upon with the manufacturer. Using any other substances requires the prior written approval of the manufacturer.

Any other use or any use going beyond this definition is considered contrary to the intended use. The manufacturer is not liable for any damages resulting from such misuse. The risk of such misuse lies entirely with the operating company.

The centrifuge has been built in accordance with state-of-the-art standards and recognized safety rules. Nevertheless, its use may constitute a risk to life and health of the personnel or third parties or a danger to the centrifuge or other property.

Therefore, the centrifuge must only be used in technically perfect condition, in accordance with its intended use and the instructions set out in the operating instructions and only by safety-conscious persons who are fully aware of the risks involved. Any malfunction, especially the ones affecting safety, must be eliminated immediately.

"Intended use" also includes observance of these operating instructions and compliance with the maintenance instructions.
2.2 Improper use

For the operation of the centrifuge, it is not permitted:

- To use any products which are not approved
- To use approved products in no accordance with the specified conditions (see Technical description on p. 69)
- To use the centrifuge in potentially explosive areas
- To bypass safety-related equipment (limit switches, sensors, measuring systems, or other materials)
- To convert or modify the centrifuge without prior approval of the manufacturer

The centrifuge may be operated and maintained by authorized and instructed personnel only.

During normal operation, the centrifuge must not be operated without safety devices. All safety devices must be properly installed and in full working order.

The centrifuge must not be operated in operating modes requiring temporary removal of certain safety devices (for example, in maintenance mode). After completing the maintenance work, all safety devices must be properly installed again and checked for functioning.

The centrifuge must not be operated when malfunctions and/or damages were detected. Detected malfunctions and/or damages must be eliminated immediately.

Warning signs and notes must not be removed or covered. They must always be clearly visible and legible.

---

**CAUTION! Risk of injury and damage**

- Improper operation may be fatal for the operating personnel or bystanders and result in damages to the centrifuge and materials. The purpose of the following safety signs and hazard warnings is to protect you, third parties and the machine. Therefore, they should be observed at all times.
2.3 Personnel requirements

- The centrifuge is to be commissioned, maintained and repaired by qualified personnel; these activities are to be supervised and controlled by responsible specialized personnel. Qualified personnel is recognized by the person responsible for the safety of the centrifuge as being able to carry out the required activities while avoiding possible dangers due to technical training, experience, instruction and knowledge of applicable standards, rules, accident prevention regulations and operating conditions.
- Only skilled electricians may work on the electrical devices of the centrifuge.
- Observe the legal age.
- Clearly set out the individual responsibilities of the personnel for commissioning, operating and maintaining the centrifuge.
- Define the responsibility of the assigned personnel. It must be possible for the personnel to reject instructions from third parties which are against the safety regulations.
- Trainees may only work on the centrifuge under the supervision of a skilled member of the staff.
- Unauthorized third parties are not allowed to stay in the work area of the centrifuge.

2.4 Personnel safety

When operating the centrifuge, the personnel must wear the following protective equipment:

- Tight-fitting clothes
- Protective footwear
- Ear protection (recommended)

If stipulated by the local governing regulations or product-specific requirements, additional protective equipment such as, for example, safety goggles, etc. must be worn.

All mandatory and prohibition signs attached to the centrifuge or its individual assembly groups must be observed at all times.

The operating company must ensure that all personnel requirements specified in these operating instructions are met.
2.5 Safety devices

Fig. 2-1: CEPA Z 41

1 Belt cover
2 Standstill monitor
3 Main switch/emergency stop
4 Spindle protection sleeve
5 Interlock solenoid
2.5.1 Main switch/emergency stop

The main switch switches the power supply of the centrifuge on/off. Even if the centrifuge is switched off at the main switch in case of an emergency, the cylinder continues to rotate for up to five minutes in the run-down phase until it comes to a standstill.

For all maintenance work, the main switch is to be set to O/OFF and secured with a padlock. In this way, unauthorized operation of the centrifuge is excluded (see Control elements on p. 22).

2.5.2 Standstill monitor

This monitoring sensor signals the standstill of the spindle after the run-down phase. Afterwards, the interlock solenoid releases the spindle protection sleeve for opening.

2.5.3 Spindle protection sleeve

The spindle protection sleeve covers the rotating spindle to prevent the users from reaching into rotating components. With the main switch in OFF position, the spindle protection sleeve is always locked.

2.5.4 Interlock solenoid

The interlock solenoid is a safety component of the spindle protection sleeve. With the main switch in ON position, the interlock solenoid releases the spindle:

- For operation when the discharge trays are mounted and the spindle protection sleeve is screwed on properly or
- After run-down when the monitoring sensor signaled the standstill of the spindle

2.5.5 Belt cover

DANGER! Risk of crushing

- Never switch on the centrifuge without belt cover.

All screws must be firmly tightened.

2.5.6 Other safety devices

- All cables and motors are protected against short circuit and overload.
- Individual sections and assembly groups are equipped with additional safety devices such as, for example, protective covers.
2.5.7 Safety measures

- Check all safety devices at regular intervals.
- Before operating the centrifuge, all safety devices must be properly installed and in full working order.
- Protective covers may only be removed in maintenance mode after standstill of the centrifuge, and after securing the centrifuge against being switched-on again.
- After completing the maintenance work, all protective covers must be properly installed again and checked prior to running the machine.

2.6 Danger zones

CAUTION!
- The centrifuge should be handled with care during transport and assembly.

WARNING! Risk of crushing
- Incorrect positioning of the centrifuge during transport and assembly may result in crushing injuries to fingers, hands and/or feet.

CAUTION! Risk of injury and damage
- Severe injuries possible. Therefore, only entrust experienced personnel who work carefully and properly with the transport and assembly of the centrifuge.

WARNING! Risk of electric shock
- The centrifuge uses dangerous mains voltage and high currents.

CAUTION! Risk of injury
- Fatal injuries caused by electric shock. Therefore, keep the control box closed and locked at all times.
- Only authorized personnel may store the key and access the control box.
2.7 Safety instructions

- To ensure safe and stable operation, the properties and the bearing capacity of the centrifuge's installation location must be sufficient, (see Transport on p. 77) and (see Installation requirements on p. 23).
- The floor must always be clean, dry and oil-free.
- Pipes and hoses for the inlet and outlet of the centrifuge must always be installed so that there is no risk of stumbling for the personnel.
- Never leave any objects, for example, tools in or on the centrifuge.
- Do not manipulate, shut down or remove safety devices.
- Keep all safety signs and hazard warnings applied to the centrifuge in a fully legible status.
- Make sure that nobody is standing in a danger zone before commissioning the centrifuge.
- Observe the switch-on/off procedures as well as all control indicators as specified by the operating instructions.
- Never pressurize the centrifuge or its individual assembly groups.
- Avoid any working method which impairs the operational safety of the centrifuge.
- In case of malfunctions or unusual events such as, for example, abnormal noise or vibrations, shut down the centrifuge immediately. Inform the relevant superior and let the malfunctions be eliminated immediately.

2.7.1 Electrical energy hazards

- The control box must be kept closed and locked at all times.
- Only authorized and qualified personnel may store the key.
- The control box may only be opened by a skilled electrician.
- Only skilled electricians may work on the electrical devices or components.
- Mark off the working area with a red and white safety chain and a warning sign. Only use insulated tools.
- Observe all applicable accident prevention measures when working on live assembly groups.
- When working on live parts is required, it is imperative to use the buddy system and call in a second person to press the main switch to cut off the power supply in case of emergency. The second person must be familiar with cardiopulmonary resuscitation procedures (CPR certified).
- The electrical equipment must be inspected/checked at regular intervals. Defects such as loose connections or melted/fused cables must be repaired immediately.
- Avoid touching electronic components (static discharge!).
- To measure signal voltages, use an appropriate measuring instrument with an internal resistance of at least 10 kΩ.
- If stipulated, disconnect all components which are to be inspected, maintained or repaired from the power supply. Check the disconnected components for zero potential prior to inspection, maintenance or repair.
- Use only original fuses with the correct current rating.
- The electrical equipment must not be modified without consulting the manufacturer and/or without written approval of the manufacturer.
2.7.2 Chemical substances and hazardous materials

- When handling chemical substances and hazardous materials, observe the safety regulations applicable to the product!
- Beware of the toxic, noxious, caustic and/or irritating properties of the chemical substances and hazardous materials used. Use MSDS, if possible.
- The operating company of the centrifuge must inform the personnel on how to handle hazardous materials.
- Observe all instructions in the safety data sheet given by the operating company of the centrifuge and the manufacturer of the hazardous materials.

2.8 Environmental compatibility

The centrifuge must be installed according to the national regulations for ground water protection and water pollution control (for Germany: Federal Water Act (WHG)).

Observe all national and local environmental protection regulations.

The manufacturer’s instructions are to be taken into account in the company regulations.
3 Product description

3.1 Introduction

These operating instructions contain all the information you need to operate, handle and maintain the CEPA Z 41 centrifuge.

This centrifuge is used to separate solids from a liquid (also referred to as clarifying cylinder). It is not possible to convert this clarifying cylinder into a separating cylinder, i.e. a centrifuge which continuously separates two liquids.

If you want to combine both processes, separating and clarifying, please contact the Carl Padberg Zentrifugenbau GmbH’s service department.

In addition to these operating instructions, you may receive additional manuals from the manufacturers of the individual components. Please use these operating instructions as a reference for understanding and operating the centrifuge.

Each person transporting, installing, commissioning, operating and maintaining the centrifuge must have read and understood:

- Operating instructions
- Safety regulations
- Safety instructions in the individual chapters and sections

To avoid operating errors and to ensure trouble-free operation, these operating instructions must always be accessible for the operating personnel.

The pictures and figures herein are only used to illustrate and explain the processes and procedures, and may differ from the actual configuration of the machine.
3.1.1 Scope of delivery

Fig. 3-1: Centrifuge

Fig. 3-2: Cylinder
<table>
<thead>
<tr>
<th>Tool Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW 20 open-ended spanner (2x)</td>
</tr>
<tr>
<td>30/32 hook spanner</td>
</tr>
<tr>
<td>40/42 hook spanner</td>
</tr>
<tr>
<td>52/55 hook spanner</td>
</tr>
<tr>
<td>68/75 hook spanner</td>
</tr>
<tr>
<td>SW 5 Allen key</td>
</tr>
<tr>
<td>SW 6 Allen key</td>
</tr>
<tr>
<td>Flat scraping tool</td>
</tr>
<tr>
<td>Round scraping tool</td>
</tr>
<tr>
<td>Cleaning tank</td>
</tr>
<tr>
<td>Spanner for accelerating gyro</td>
</tr>
<tr>
<td>Tool</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td><img src="image" alt="Spanner for bottom valve" /></td>
</tr>
<tr>
<td><img src="image" alt="Pivot ring spanner" /></td>
</tr>
<tr>
<td><img src="image" alt="Cross-beam" /></td>
</tr>
<tr>
<td><img src="image" alt="Cylinder bottom spanner" /></td>
</tr>
<tr>
<td><img src="image" alt="Cylinder cleaning brush" /></td>
</tr>
</tbody>
</table>

* provided that a bottom valve is contained in the purchase order.
3.2 Layout and functions

Fig. 3-3: CEPA Z 41

1 **Drive unit**
   Includes motor and belt below the cover.

2 **Control box with operating panel**

3 **Discharge trays**
The liquid fractions of the feed material collected during the centrifugation process can be found in the discharge tray. The standard discharge tray is provided with a TRI-CLAMP fitting to discharge the content.

4 **Foot bearing with inlet**

5 **Housing**

6 **Condensate drain**

7 **Internal cylinder**

8 **Internal top bearing**
3.3 Control elements

All operating and display elements are provided on the operating panel.

1 If you ordered the infinitely adjustable speed control (optional), the value of the speed reached is displayed here.

2 When this lamp lights up, the centrifuge is operating.

3 This button switches the centrifuge on.

4 The main switch/emergency stop switch is used to switch the power supply of the centrifuge on/off. In O/OFF position, the main switch can be locked with a padlock to, for example, prevent unauthorized commissioning of the centrifuge during maintenance work.

5 This button switches the centrifuge off.

6 When this lamp lights up, the centrifuge has come to a standstill and is ready to start. In the run-down phase, the cylinder continues to rotate for up to five minutes until it comes to a standstill.
4 Installation

4.1 Installation requirements

4.1.1 As-delivered condition

- Immediately upon receipt, it is recommended to carefully check the machine for transport damage. Any damage must be reported.
- Check the delivery for completeness.
- If the machine is stored temporarily, make sure that it is stored in a dry and dust-proof place.

4.1.1.1 Scope of delivery

The scope of delivery includes:

- The actual CEPA Z 41 centrifuge as ordered
- A cardboard box with the cylinder
- A package with spare parts (such as sealing rings, spare belt and wearing parts)
- Special tools used to perform maintenance and assembly work on the centrifuge
- Accessories as ordered

The installation material is not included in the scope of delivery.

4.1.2 Installation location requirements

- The floor must be level and provide sufficient bearing capacity which is to be determined by the operating company (see Technical description on p. 69).
- The installation location must allow the operator to access the centrifuge easily.
- The required space above the centrifuge is approx. 600 mm (2 ft).
- The installation location must be free of dust and dirt.
- The installation location must provide adequate lighting.
- The occurrence of explosive atmospheres at the installation location must be excluded.
- All structural measures must be completed before installing the centrifuge.
- All regulations for ground water protection and water pollution control must be observed.

4.1.3 Foundation loads

The foundation loads of the centrifuge are:

<table>
<thead>
<tr>
<th>Foundation loads</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal dynamic load:</td>
<td>33,982 N</td>
</tr>
<tr>
<td>Vertical dynamic load:</td>
<td>20,389 N</td>
</tr>
<tr>
<td>Vertical static load:</td>
<td>1,240 N</td>
</tr>
</tbody>
</table>
4.1.4 Installation at the destination

The operating company is solely responsible for the installation and assembly of the centrifuge. We recommend having the installation and assembly performed by the Carl Padberg Zentrifugenzentrum GmbH service personnel or a qualified specialist company.

CAUTION!

- The installation location must be clean and dry.

1. Remove the transport packaging and transport locks, and dispose of them according to local regulations.
2. Loosen the fastening screws with a 17 mm ring or open-ended spanner.
3. Remove the upper cover.

4. Screw the provided cross-beam onto the fastenings.

1 Cross-beam
5. Attach the centrifuge onto the cross-beam, then transport it to the installation location.

4.2 Assembly
4.2.1 Assembly conditions

Assembly is subject to the following conditions:

- Only use only suitable hoists and slings which are in technically perfect condition and provide sufficient load-bearing capacity.
- Never stand or work under suspended loads!

WARNING! Heavy

4.2.2 Assembly methods

In principle, you can install the centrifuge at its installation location in two ways:

- Holes have been drilled in the correct size and stud bolts have been inserted. In this case, position the machine on the provided stud bolts and bolt down.
- You install the machine at its destination and drill the mounting holes afterwards.

1 Concrete thickness
   Dimension: According to the anchor manufacturer's specifications

2 Borehole depth
   Dimension: According to the anchor manufacturer's specifications

3 If required, washers are used for horizontal alignment

4 HVU adhesive capsule/HAS-R anchor rod
   Dimension: M12x110 or similar
To fasten the centrifuge, we recommend the HILTI HVA adhesive capsule system.

1. Mount and fasten the centrifuge according to the installation location requirements.
2. Align the centrifuge on the foundation.
3. Remove the cover and the top bearing (see Checking and replacing the drive belt on p. 68).
4. Use a precision level to check the horizontal alignment at the flange. It must reach an accuracy of < 0.1 mm/m.

   **To this end, the following methods have been tried and tested:**
   - Mount the machine onto an adjustable base, then use the base to level the machine.
   - Put small metal strips under the boreholes below the housing.

5. Remove the cross-beam, then position and fasten the cover again.
6. Install the chemical anchors, then tighten them with a tightening torque of approx. 30 Nm.
7. Connect the inlet and outlet pipes.
8. Establish electrical connection.
9. Install the top bearing and refasten the cover.

The centrifuge is ready for initial start-up.

### 4.3 Connections

#### 4.3.1 Electrical connection

The electrical connections are to be made in accordance with the applicable regulations of the responsible utility company as well as in accordance with EN 1, part 1.

---

**WARNING! Risk of electric shock**

- All work on electrical installations and equipment has to be carried out by an electrician or by instructed personnel supervised and directed by a skilled electrician and in compliance with the rules and regulations pertaining to electric engineering.

---

**DANGER! Risk of electric shock**

- The electrical connections of the drives must be protected with adequate fuses.

---

#### 4.3.2 Inlet and outlet

- Discharge from discharge trays: TRI-CLAMP fitting
- Supply: hose nozzles
4.4 Commissioning
4.4.1 Inspections prior to initial operation

Prior to initial operation, check the motor for correct direction of rotation. To this end, proceed as follows:

1. Remove the upper cover.

2. Loosen the sensor screw.

3. Turn the probe on its side to have enough space for the drive belt.
4. Carefully press the belt pulley outwards to relieve the tension on the drive belt.

5. Carefully pull off the drive belt.

6. Carefully put the belt pulley back into its initial position.

7. Switch on the machine for a short period of time, then switch off immediately. (Caution: fast moving component)

8. Check that the drive rotates in the correct direction (clockwise). If not, switch the phases and check again.

9. Reinsert the (new) drive belt. To this end, carefully press the belt pulley outwards, then install the drive belt on the drive wheel.

10. After installing the drive belt, carefully put the belt pulley back into its initial position.

DANGER! Risk of crushing

- Make sure that your fingers are not between belt pulley and drive belt.

DANGER! Risk of crushing

- Do not let the belt pulley run freely in an uncontrolled manner.

DANGER! Risk of crushing

- Do not continue to work on the machine until the machine has come to a complete standstill.
11. Continue rotating the drive. In this way, the drive belt is automatically positioned correctly.
12. Screw the sensor onto its original position.

DANGER! Risk of crushing
- Do not let the belt pulley run freely in an uncontrolled manner.

13. Reinstall and fasten the cover.

The machine is ready for operation when the cylinder has been installed correctly (see Removing and installing the cylinder on p. 45).

4.4.2 Test run
4.4.2.1 Preparing the test run

1. Switch on the main switch. This signals the standstill and unlocks the spindle protection sleeve.
2. Screw the spindle protection sleeve upwards.
3. Screw the spindle protection sleeve onto the housing.

DANGER! Risk of crushing
- Never switch on the centrifuge without belt cover.

4. Slide the spindle upwards so that it is clamped in the upper position.
5. Remove the discharge tray(s).

6. Install the cylinder (see Removing and installing the cylinder on p. 45).

The cylinder is delivered by Carl Padberg Zentrifugenbau GmbH ready for operation and mechanically cleaned so that it can be used for a test run.

The machine is ready for operation in a test run once the cylinder is installed, the discharge tray(s) is(are) inserted and the spindle with the spindle protection sleeve are connected again.

4.4.3 Performing a test run
4.4.3.1 In liquid-less condition

In this condition, switch on the machine and wait until it reached its maximum speed.

Then switch the machine off again.

The aim of the test run is to check the drive and the mechanical components for functioning. If nothing unusual happens and you cannot hear any rumbling, rattling or other noises indicating a malfunction, the test run has been successful.
4.4.3.2 With filling

Typically, a test run with filling is performed with water. The aim of this test run is to check the machine function.

We recommend to proceed as follows:

1. Connect an inlet with a water reservoir and a pump to the bottom bearing or use an elevated water reservoir so that the height of fall is between 1 – 2 m.
2. Connect a hose to the discharge tray.
3. Switch on the machine and set to maximum speed. If the maximum speed is not reached within 1 minute, an error occurred. In this case, contact our after-sales service.

**NOTICE! Risk of damage**
- Only start the feeding process once the machine has completed start up.


**This process is divided into two stages:**
- **Stage 1:** The cylinder is completely filled with liquid. The liquid reaches the decantation edge.
- **Stage 2:** Once the cylinder is filled completely, the liquid flows into the discharge tray.

5. Switch off the pump.

**NOTICE! Risk of damage**
- You must not switch off the machine before all the liquid has run out of the centrifuge. Otherwise, the machine will be damaged.

6. Then switch off the machine when the liquid is no longer leaking at the outlet after stopping feeding.
5 Operation
5.1 Operation processes

Each operating cycle is divided into the following processes:

- Preparation
- Switch on
- Check
- Switch off
- Collection
- Cleaning
- Product change (if necessary)

- You are responsible!
- Observe the general safety instructions (see Warnings for intended use on p. 9).

5.2 Preparation

CAUTION! Risk of slipping and stumbling

- The installation location must be clean and dry. Pipes, hoses, cables or other objects must be installed so as to not interfere with the operation of the machine.

To start a new operating cycle, the following requirements must be met:

1. All operational preparations have been made.
2. All necessary adjustments following a product change as well as all specific adjustments have been made and will be observed (see Switching OFF on p. 35).
3. The cylinder has been cleaned and installed correctly (see Removing and installing the cylinder on p. 45).
4. The inlet and outlet connections have been installed correctly.
5. If no bottom valve is used, position the collecting tray at the condensate drain.
5.3 Switching ON

NOTICE! Risk of damage

- Wait until the operating speed has been reached before feeding the product. Feeding the product too early may cause considerable unbalance in the centrifuge.

NOTICE! Risk of damage to the centrifuge or its individual components. Switching off the machine while feeding the product may cause serious damage.

- If a problem occurred while feeding the product, the centrifuge must be operated until the discharge material emerges.
- In this case, add water as necessary.
- Do not switch off the centrifuge until the discharge material emerges and the feeding has been stopped.

1. Turn the main switch to ON, then wait until the red lamp signals standstill.
2. Press the green Centrifuge ON button; the green signal lamp signals centrifuge operation. The cylinder accelerates to the preset operating speed. This may take one minute.
   Make sure that the centrifuge is not running at idle speed for more than 5 minutes. The resulting heat will not damage the centrifuge but may change or damage the product fed.
3. Feed the product.
   Depending on assembly and volume flow, it may take up until 30 min until the cylinder is full and the discharge material exits. Over two liters of product have to be fed before liquid starts exiting.

5.4 Check

During the operating cycle, the following checks must be performed:

- Check that the entire system is tight and no liquid is leaking.
- Check the purity of the centrate. If the quality of the centrifuged liquid is no longer good enough, the reasons might be:
  - The cylinder cannot collect any solids; the operating cycle is completed.
  - The throughput of the feed material is too high. Reduce the throughput rate by using a smaller nozzle so that the feed material is fed into the cylinder at a slower speed. If nozzle size is not effective with a smaller nozzle, may have to reduce inlet flowrate.
- Monitor the operating noises of the centrifuge.
- Check the collecting tray at the condensate drain: If liquid leaks from the machine, a leakage test must be performed to find out where the leakage is.

For more information on typical error situations and troubleshooting (see Typical malfunctions and troubleshooting on p. 42).
We recommend specifying internal instructions for the checks.

5.5 Switching OFF

When the material is no longer flowing out of the outlet after finishing feeding, the operating cycle is completed. Switch off the centrifuge.

1. Stop the product feeder.
2. Press the red **Centrifuge OFF** button.
   - The motor is switched off and the cylinder continues to rotate for up to five minutes in the run-down phase until it comes to a standstill. The red **centrifuge standstill** signal lamp lights up when the spindle has come to a standstill. The interlock solenoid releases the spindle.
3. Screw on the spindle protection sleeve, then slide the spindle upwards until it locks into place.
   - This protects the machine from being restarted.
4. Turn the main switch to "OFF."

5.6 Collection or cleaning

At the end of the operating cycle, the cylinder has to be dismounted and the solid fractions collected in the cylinder during the centrifugal process have to be removed.

- If the solid fractions collected are **reusable material**, we refer to this process as **collection**.
- If the solid fractions collected are **waste material**, we refer to this process as **cleaning**.

1. Remove the cylinder (see **Removing and installing the cylinder on p. 45**).
2. If a bottom valve is used, empty the residual liquid (if any) from the cylinder into a suitable container.
   - You can skip this step if no bottom valve is fitted onto the cylinder.
3. Put the cylinder down onto an appropriate holding device or onto the assembly rail.
4. Use a cylinder bottom spanner to loosen the screw of the cylinder bottom.
5. Completely unscrew the cylinder bottom manually.

6. If no foil insert is used, then use the flat scraping tool to remove the solids by pulling them out. As an alternative, you can use the round scraping tool or brush. All these tools belong to the scope of supply.
5.6.1  With foil insert

Remove the foil on which the solids have settled and scrape them into a suitable container.

Very hard solids may prove difficult to remove. In this case, we recommend breaking the solids on the lower edge of the foil to reduce the pressure of the solid on the foil.

- Then, rinse the foil with a cleaner suitable for PTFE products.
- Check the foil for cracks or delaminations. Replace the foil if damaged.
- These parts can be autoclaved.

5.7  Stopping the machine by emergency stop

Only turn the emergency stop device in the event of a hazard! The machine runs down slowly.
- There may be subsequent damages to the machine or product!
- An emergency stop device must not be used to stop the machine during normal operation.

CAUTION!
- The machine requires a run-down phase of up to 5 minutes until it comes to a standstill.
5.8 Recommissioning the machine after an emergency stop event

---

**DANGER! Risk of injury and damage**

- Risk from uncontrolled restart of the machine.
- Risk of injury, product or machine damage when restarting the machine without eliminating the hazard.
- Before restarting the machine, identify the cause for the emergency stop and correct the emergency situation.

---

1. Correct the situation which caused the emergency stop.
2. Empty and clean the cylinder (see Preparation on p. 33).
3. Switch on the machine.

5.9 Batch or product change

When changing the batch or product, all components which came into contact with the product must be cleaned or, if necessary, sterilized. This includes:

- The cylinder
- The feeder
- The discharge tray
- The bottom bearing
- The bottom valve if installed, and moreover, when changing the product, it must be checked:
  - If another nozzle must be installed.
  - If a pump must be installed or the inlet slope must be changed depending on the product.

5.10 Decommissioning

When decommissioning the centrifuge, observe the following points:

- Empty the cylinder completely.
- Clean the centrifuge.
- Have a skilled electrician disconnect the electrical connection.
5.11 Disassembly

CAUTION! Risk of injury

- The centrifuge may be disassembled by qualified personnel only.

Follow the assembly instructions in reverse order (see Assembly on p. 26).

Provide appropriate means of transportation for the transport from the installation location.
6 Troubleshooting

6.1 For your safety!

• You are responsible!
• Observe the general safety instructions (see Warnings for intended use on p. 9).

WARNING! Risk of electric shock

¬ In the event of a power supply failure, switch off the machine immediately.

WARNING! Risk of electric shock

¬ All work on electrical installations and equipment has to be carried out by an electrician or by instructed personnel supervised and directed by a skilled electrician and in compliance with the rules and regulations pertaining to electric engineering.

WARNING! Risk of electric shock

¬ Damaged insulation of the connection cables or missing covers of terminal boxes result in danger to life due to electric shock.

6.1.1 Troubleshooting measures

• If necessary, switch off the machine according to the operating instructions and secure it against accidental switch-on.
• If necessary, turn off the main control devices and remove the key. Attach a warning sign to the main switch.
• Mark off and secure the maintenance area.
• Inform the operating personnel.
• Appoint supervisors.
6.2 Typical malfunctions and troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine leaking at the base directly after switching on the pump</td>
<td>Incorrect injection pressure (nozzle too large while pressure too low; nozzle too small while pressure too high)</td>
<td>Replace nozzle</td>
</tr>
<tr>
<td></td>
<td>Cylinder rotates too slowly</td>
<td>Check drive belt</td>
</tr>
<tr>
<td>Machine leaking at discharge tray after a short period of operation</td>
<td>Outlet clogged</td>
<td>Clean outlet</td>
</tr>
<tr>
<td></td>
<td>Outlet diameter reduced too much</td>
<td>Increase diameter</td>
</tr>
<tr>
<td>Liquid leaking at discharge trays</td>
<td>Sealing ring worn out</td>
<td>Replace sealing ring</td>
</tr>
<tr>
<td>High running noise level</td>
<td>Guide ring too large</td>
<td>Replace guide ring</td>
</tr>
<tr>
<td></td>
<td>Pivot ring damaged</td>
<td>Replace pivot ring</td>
</tr>
<tr>
<td></td>
<td>Spindle not positioned in gear ring</td>
<td>Check spindle for correct position</td>
</tr>
<tr>
<td>Smell of rubber</td>
<td>Drive belt overrunning</td>
<td>Replace drive belt, then check belt pulley tension</td>
</tr>
<tr>
<td>Machine does not start</td>
<td>Main switch switched off</td>
<td>Switch on the main screen</td>
</tr>
<tr>
<td></td>
<td>Safety bolt jammed</td>
<td>Contact after-sales service</td>
</tr>
<tr>
<td>Machine does not reach correct speed</td>
<td>Belt pulley defective</td>
<td>Contact after-sales service</td>
</tr>
<tr>
<td></td>
<td>Belt pulley incorrectly pre-tensioned</td>
<td>Properly install the belt</td>
</tr>
</tbody>
</table>

After a malfunction, the cylinder must be cleaned to prevent unbalance.

6.3 Restart after troubleshooting

After troubleshooting, the machine can be restarted.

Check the machine for proper functioning.
7 Maintenance
7.1 Maintenance and repair
7.1.1 For your safety!

- You are responsible!
- Observe the general safety instructions (see Warnings for intended use on p. 9).

7.1.2 Personal requirements

All work has to be carried out by instructed, qualified and authorized personnel only.

All work on the electrical system has to be carried out by instructed, qualified and authorized electricians only.

If you have difficulties repairing the equipment, please do not hesitate to contact our service department.

---

**WARNING! Risk of injury**

- In principle, all maintenance, adjustment and other work must be performed at a complete standstill.
- Before commencing these tasks, make sure that the machine/equipment is switched off and cannot be switched on again accidentally or by unauthorized persons.
- Before switching on the machine/equipment, make sure that the starting process of the machine or parts of the machine will not endanger anyone.
- **Attention**: To this end, disconnect the machine/equipment depending on the load!

**WARNING! Risk of electric shock**

- The components in the control cabinet are live parts. Electric shock leads to fatal injuries.
- All work on electrical equipment has to be carried out under the supervision and direction of a skilled electrician and in compliance with the rules and regulations pertaining to electric engineering.

---

Due to dust particles from processing as well as deposits in the machine, a product-dependent breathing protection must be worn during maintenance, repair, inspection, checks and other kind of work. This particularly applies to open working areas.
7.1.3 Measures prior to routine maintenance

- If necessary, switch off the machine according to the operating instructions and secure it against accidental switch-on.
- If necessary, turn off the main control devices and remove the key. Attach a warning sign to the main switch.
- Mark off and secure the maintenance area.
- Inform the operating personnel, appoint a supervisor.

- For successful repair, ensure utmost cleanliness and care.
- Remove dust deposits at regular intervals!

7.1.4 Measures prior to restart after maintenance work

- Check the safety devices.
- Check the machine for proper functioning (collision-free operation).

<table>
<thead>
<tr>
<th>Interval</th>
<th>Assembly group</th>
<th>Activity</th>
</tr>
</thead>
</table>
| After every standstill                | Bottom bearing | - Remove bottom bearing from housing, then clean and remove excess/used grease.  
                                        |                | - Check guide ring for free movement, then manually grease the guide ring lightly. |
|                                      | Top bearing    | - If a rotor bearing is installed, manually rotate the rotor to check for free movement. While doing so, pay attention to bearing noises.   |
|                                      | Cylinder       | - Screw on protective cap for coupling thread protection, then clean and, if necessary, sterilize.  
                                        |                | - Check cylinder bottom seal for damage, replace if necessary.  
                                        |                | - Grease pivot prior to reuse; carefully treat all rotor and spindle threads and lightly grease them with Klüber grease (black tube). |
| Discharge trays                       |                | - Check all seals for damage and completeness, replace if necessary.      |
| Weekly inspection, after 40 operating hours at the latest | Bottom bearing | - Check lubrication of guide ring, relubricate if necessary.              |
|                                      | Cylinder       | - Check pivot ring for damages (score marks, scratches or burrs), replace if necessary.  
                                        |                | - Check all cylinder threads for damages; have a specialist or a CEPA employee remove them if necessary.  
                                        |                | - Check closing position of cylinder bottom (V markings).            |
### Interval

<table>
<thead>
<tr>
<th>Semi-annual inspection; after 500 operating hours at the latest; carried out by service technicians</th>
<th>Bottom bearing</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Belt</td>
<td>• Check guide ring for wear.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Check guide ring for dimensional accuracy (replace when differing by more than 0.3 mm).</td>
</tr>
<tr>
<td></td>
<td>Housing</td>
<td>• Check all screw joints at the housing and the base plate for completeness and tight fit.</td>
</tr>
<tr>
<td></td>
<td>Top bearing</td>
<td>• Check for running noises and free movement, replace the ball bearing if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Check coupling spiders and rubbers, replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Check spindle seat for damages, replace if necessary.</td>
</tr>
<tr>
<td></td>
<td>Cylinder</td>
<td>• When replacing the guide ring (bottom bearing), replace the pivot ring, too.</td>
</tr>
<tr>
<td></td>
<td>Belt pulley</td>
<td>• Check for quiet running, free movement and surface pressure, replace tension spring and ball bearing if necessary.</td>
</tr>
<tr>
<td>Annual inspection; carried out by service technicians</td>
<td></td>
<td>• According to BGR 500, this inspection may be performed by qualified personnel only. Please contact CEPA GmbH, your local distributor or a corresponding inspection authority.</td>
</tr>
</tbody>
</table>

#### 7.2 Removing and installing the cylinder

#### 7.2.1 Removing the cylinder

**Use the supplied tools.**

1. Unscrew the nut at the spindle protection sleeve.
2. Screw the spindle protection sleeve into the housing.

3. Slide the spindle upwards so that the discharge tray is freely accessible. The spindle automatically locks in the top bearing when you slide the spindle upwards as far as possible.

4. Use the two SW 20 open-ended spanners to loosen the coupling nut. Make sure that the two spanners are positioned as close as possible to each other before pulling them apart.

1 Correct position
The two open-ended spanners are close to each other.

2 Incorrect position
The two open-ended spanners are too far apart. The spindle may be damaged.
5. Remove the protective cap from the parking receptacle, then screw the protective cap onto the cylinder head thread.

1 Screw this protective cap... 2 ...onto the cylinder head

6. Remove the discharge tray(s).
7. Put a cloth on the edge of the housing to prevent damage to the cylinder wall.

8. Carefully remove the cylinder from the bottom bearing by lifting it vertically. Then remove the cylinder by pulling it upwards over the cloth.

**CAUTION! Risk of injury**

- Without the residues, the cylinder weighs up to 7.5 kg. Always grab the cylinder securely and hold it carefully.

**NOTICE! Risk of damage**

- The cylinder should never come into contact with the edge of the housing and should never be supported on the edge of the housing without supporting material.
9. Put the cylinder down onto the assembly rail or another appropriate support. Now the settled solids can be removed.

10. Clean the cylinder. The cylinder must be thoroughly cleaned before installation.

**WARNING! Risk of injury and damage**

- If you do not use the assembly rail, secure the detached cylinder against rolling away or falling down.
- If the cylinder is dropped or damaged, inform the Carl Padberg Zentrifugenbau GmbH service department.
7.2.1.1 Installing the cylinder

1. Grease the pivot ring at the cylinder bottom.

1 Pivot ring

2. Put a cloth on the edge of the housing to prevent damage to the cylinder wall, then carefully slide the cylinder into the housing.

3. Carefully lower the cylinder until the pivot ring is precisely positioned in the guide ring of the bottom bearing. The figure on the following page shows the situation inside the housing.
4. Place the discharge tray(s) on the edge of the housing. While doing so, check the seals for completeness and integrity.

5. Now remove the protective cap from the cylinder head thread, then screw the protective cap onto the parking receptacle.

1 Screw this protective cap...

2 ...onto the parking receptacle.
6. Knock out the spindle from its anchoring and catch it with your hands.

1. **Spindle anchoring**  
   Loosen the spindle here.

2. **Spindle protection sleeve**  
   Hold your hand under the spindle protection sleeve to catch the spindle.

---

**NOTICE! Risk of damage**

- Always hold your hand under the spindle protection sleeve when loosening the spindle so that the spindle does not hit the cylinder.
7. Turn the bottom of the spindle so that the outer cone locks into the inner cone. Then the spindle can only be turned with greater resistance because the drive is now rotated together with the spindle.

8. Put the coupling nut onto the cylinder head, then manually tighten it. Use an open-ended spanner to fix the cylinder.

The resistance increases at a certain point. This means that the cylinder is lifted when turning the nut so that the cylinder floats freely in the base. Subsequently, the cylinder will only be attached to the upper bearing and the lower bearing is used for guidance only.

### Notice! Risk of damage

- If the spindle is not correctly linked (geared) with the drive, the spindle will be damaged.
- If the machine is switched off in this state, the metal will glow up and cause damage.
9. Tighten the screws with a second open-ended spanner. The two spanners should be as close as possible to each other so that they can be used with one hand.

**NOTICE! Risk of damage**
- This method prevents the spindle from bending during assembly.

10. Remove the spindle protection sleeve, then manually screw it onto the cylinder head.
The machine is ready for operation when the fastener is flush with the sleeve seal (see arrows below) of the discharge tray.

7.3 Opening and closing the cylinder bottom

When working on the cylinder, it must be positioned on the assembly rail or similar support.

1. To open the cylinder bottom, loosen the screw joint of the cylinder bottom with the cylinder bottom spanner.

Fig. 7-1: Cylinder bottom spanner
2. Then manually unscrew the cylinder bottom.

3. If a bottom valve is used, put down the cylinder bottom on the cylinder bottom support bracket or similar support.

4. Open the screw joint with the spanner for the bottom valve.
5. Manually unscrew the valve housing.

6. Remove the bottom valve with the valve rubber.

7.3.1 Accelerator

Depending on configuration, the cylinder bottom may be additionally equipped with an accelerator. To unscrew the accelerator, the supplied spanner is required.

Fig. 7-2: Spanner for accelerating gyro
To remove the accelerator, put on the spanner for the accelerating gyro and unscrew the accelerator.

The installation of the bottom bearing body is carried out in reverse order. To this end, observe the following:

- Always grease the thread before screwing the components together (see Fig. 7-2 on p. 59).
- The cylinder bottom must be screwed down easily. If not, the thread was jammed. In this case, loosen the screw joint and try again.
- All components of a cylinder must be assembled according to their serial number. If more than one cylinder are open at the same time, make sure that the components match each other (see Fig. 7-2 on p. 59).

**NOTICE! Risk of damage**

- After screwing the cylinder bottom onto the cylinder tube, the upper arrow must be between the two lower arrows.
If the distance is greater, either the components were not assembled properly or the sealing ring between cylinder bottom and cylinder tube is excessively worn out. In both cases, the cylinder must not be installed or used.

1 Cylinder thread
Grease this area before screwing the components together.
7.3.2 Without bottom valve

The cylinder bottom without bottom valve must be assembled with these components.

1 Accelerating gyro
2 Cylinder bottom seal
3 Cylinder bottom
4 Pivot ring
7.3.3 With bottom valve

The cylinder bottom with bottom valve must be assembled with these components.

1 Accelerating gyro
2 Valve rubber
3 Valve insert
4 Cylinder bottom seal
5 Cylinder bottom
6 Pivot ring
7.4 Removing and installing the discharge tray(s)

Discharge tray removal and installation is part of the cylinder installation and removal procedure.

During installation, make sure that all components are assembled as shown in the following figure.

1. Sleeve seal
2. Tray cover
3. Tray seal
4. Discharge tray
5. Tray seal

7.5 Removing and installing the bottom bearing

Typically, you must remove and reinstall the bottom bearing when cleaning the machine after a batch change or when having to replace the nozzle after a product change.

**NOTICE! Risk of damage**

- You must not remove the bottom bearing until the machine has come to a complete standstill.

1. Remove the inlet from the bottom bearing connection.
2. Use the 52/55 hook spanner to loosen the screw at the nozzle seat.

3. Manually unscrew the bottom bearing.
4. Then the bottom bearing is disassembled into nozzle and nozzle base.
5. Use the 40/42 hook spanner to loosen the screw of the bottom bearing body at the housing.

6. Then completely unscrew the bottom bearing body manually.

Fig. 7-3: Bottom bearing body
7. Use the 30/32 hook spanner to loosen the bottom bearing sleeve. To do so, use the 40/42 hook spanner to fix the bottom bearing body.

8. Manually unscrew the bottom bearing body. In this way, the bottom bearing body is disassembled into its individual components.
The installation of the bottom bearing body is carried out in reverse order. To this end, observe the following:

- Check the guide ring for damages and/or marks. Replace if damaged or showing marks.
- Check that the guide ring is not excessively worn out. Its maximum inner diameter should be 17.8 mm; the guide ring must be replaced every 200 operating hours (see *Typical malfunctions and troubleshooting on p. 42*). In case of doubt, use a calliper.

1 Guide ring

- Always grease the thread before screwing the components together.
- During installation, make sure that all components are assembled as shown in the figure on the following page.
7.6 Replacing the nozzle

Nozzle replacement is part of the bottom bearing installation and removal procedure (see Removing and installing the bottom bearing on p. 62). As a rule, the nozzle must only be replaced when changing the product.
7.7 Checking and replacing the drive belt

7.7.1 Checking the drive belt

1. Remove the upper cover.
2. Check the drive belt for cracks or other damages. Replace when damaged or showing cracks.
3. Check that the belt pulley is positioned correctly.

7.7.2 Removing the drive belt

1. Loosen the sensor screw.
2. Turn the probe on its side to have enough space for the drive belt.
3. Carefully press the belt pulley outwards to relieve the tension on the drive belt.
4. Carefully pull off the drive belt.
5. Carefully put the belt pulley back into its initial position.

7.7.3 Installing a (new) drive belt

1. Reinsert the (new) drive belt.
2. Carefully press the belt pulley outwards, then install the drive belt on the drive wheel.
3. After installing the drive belt, carefully put the belt pulley back into its initial position.
4. Continue rotating the drive. In this way, the drive belt is automatically positioned correctly.
5. Screw the sensor onto its original position.
6. Reinstall and fasten the cover.
8 Technical data

8.1 Technical description

The CEPA production centrifuges of the Z series are high-speed tubular centrifuges designed for continuous operation. The liquid is fed into the rotating cylinder from below where it is accelerated. The solid settles at the cylinder wall. The liquid rises in the cylinder and exits in a clean state.

8.2 Specifications

<table>
<thead>
<tr>
<th>General</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (L x W x H)</td>
<td>720 x 410 x 1170 mm</td>
</tr>
<tr>
<td>Total weight</td>
<td>120 kg</td>
</tr>
<tr>
<td>Transport weight</td>
<td>250 kg</td>
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<tr>
<td>Altitude</td>
<td>2000 m</td>
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</table>

<table>
<thead>
<tr>
<th>Connections</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical system</td>
<td>Mains voltage and frequency: see order confirmation</td>
</tr>
<tr>
<td></td>
<td>Current consumption 50 Hz: 3.3/1.9 A</td>
</tr>
<tr>
<td></td>
<td>Current consumption 60 Hz: 4.6 A</td>
</tr>
<tr>
<td></td>
<td>Power consumption 50/60 Hz: 0.9 kW</td>
</tr>
<tr>
<td></td>
<td>Protection class: IP 54</td>
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<tr>
<td>Feed material inlet</td>
<td>Min. pressure: 0 bar</td>
</tr>
<tr>
<td></td>
<td>Max pressure: 0.5 bar</td>
</tr>
<tr>
<td>Outlet</td>
<td>Depressurized</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor speed</td>
<td>50 Hz: 2800 rpm; ±10 %</td>
</tr>
<tr>
<td></td>
<td>60 Hz: 3300 rpm; ±10 %</td>
</tr>
<tr>
<td>Cylinder speed</td>
<td>20000 rpm</td>
</tr>
<tr>
<td>G-factor</td>
<td>Max. 16991; ±10 %</td>
</tr>
<tr>
<td>Inner cylinder diameter</td>
<td>76 mm</td>
</tr>
<tr>
<td>Max usable cylinder capacity</td>
<td>2 dm³, depending on product</td>
</tr>
<tr>
<td>Loading weight</td>
<td>4 kg</td>
</tr>
<tr>
<td>Throughput</td>
<td>Without bottom valve: 20 – 500 l/h</td>
</tr>
<tr>
<td></td>
<td>With bottom valve (optional): 20 – 250 l/h</td>
</tr>
<tr>
<td>Run-down time of cylinder</td>
<td>Up to 5 min.</td>
</tr>
</tbody>
</table>

Ambient conditions and emissions
8.3 Conformity

This centrifuge was designed and manufactured in Germany.

The centrifuge will be delivered with a CE mark on the nameplate and an EC Declaration of Conformity according to Appendix II, Part 1 A of the Machinery Directive 2006/42/EC provided that all required components are integrated. Otherwise, a Declaration of Incorporation will be provided.

These operating instructions meet all requirements of the European Union, particularly, the requirements of the Machinery Directive 2006/42/EC.

8.3.1 EC directives

The centrifuge complies with the requirements of the following EC Directives:

- 2006/42/EC Machinery Directive
- 2006/95/EC Low Voltage Directive
- 2002/95/EC Restriction of Hazardous Substances Directive

8.3.2 European standards

Among others, the standards applied for implementing these Directives are:

- EN 12100-1:2003, EN 12100-2:2003
- EN 12457
- EN 60204-1:2006
- EN 13857, EN 50081-2, EN 50082-2
- EN 13849-1, 2
- EN ISO 14121-1

Ambient conditions

<table>
<thead>
<tr>
<th></th>
<th>Ambient temperature during operation: -5 – 45 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Relative humidity (non-condensing): 80 %</td>
</tr>
</tbody>
</table>

Emissions

<table>
<thead>
<tr>
<th></th>
<th>Measured sound pressure level: 85 dBA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The operating company is responsible for possible emissions of the feed material used</td>
</tr>
</tbody>
</table>
8.4 Manufacturer's data

If anything is unclear or if you have questions concerning the centrifuge or the operating instructions, do not hesitate to contact:

Carl Padberg Zentrifugenbau GmbH

Geroldsecker Vorstadt 60

D-77933 Lahr

Phone: +49 (0) 78 21 / 92 49-0

Fax: +49 (0) 78 21 / 92 49-92

Email: info@cepa.de

Internet: www.cepa.de

8.5 Warranty and exclusion of liability

8.5.1 Warranty

We assume no liability for damages or malfunctions caused by operating errors, noncompliance with these operating instructions or improper maintenance.

The warranty becomes void in the following cases:

- Improper assembly and commissioning
- Incorrect use
- Non-use of original spare parts and original accessories
- Modifications without the manufacturer’s approval
- None or irregular maintenance
8.5.2 Exclusion of liability

All technical information, data and notes for operation in these operating instructions are based upon the latest information available at the time of printing, taking into account our experience and the best of our knowledge.

Our products are subject to continuous improvement. Therefore, we reserve the right to modify the assembly groups described in these operating instructions. Therefore, no claims can be derived from the information, illustrations and descriptions contained in these operating instructions.

We expressly point out that only original spare parts and original accessories which have been approved by us may be used. The same applies to components from other manufacturers.

Please note that the contents of these operating instructions are not part of a previous or existing agreement, promise or legal relationship or an amendment thereto. All obligations of Carl Padberg Zentrifugenbau GmbH are specified in the respective sales contract which also contains the complete and solely applicable warranty conditions. These contractual warranty conditions are neither extended nor restricted by the contents of these instructions and documents.
9 Ordering information

9.1 Accessories

Tab. 9-1: Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guide ring (2x), Ø 24x17 mm, 65x14 mm</td>
<td>P0160-6101</td>
</tr>
<tr>
<td>Pivot ring, Ø 17.5x12 mm</td>
<td>P0160-6110</td>
</tr>
<tr>
<td>D1 nozzle, Ø 1 mm</td>
<td>P0622-0552</td>
</tr>
<tr>
<td>D2 nozzle, Ø 2 mm (factory-installed)</td>
<td>P0622-1741</td>
</tr>
<tr>
<td>D3 nozzle, Ø 3 mm</td>
<td>P0622-1742</td>
</tr>
</tbody>
</table>

9.2 Spare parts

Tab. 9-2: Spare parts

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belt, 1400x25 mm</td>
<td>P0700-4005</td>
</tr>
<tr>
<td>Cylinder bottom seal, Ø 80x75x2 mm</td>
<td>P0280-1634</td>
</tr>
<tr>
<td>Tray seal, Ø 199x191x3 mm</td>
<td>P0622-0421</td>
</tr>
<tr>
<td>Sleeve seal, Ø 51x37x4 mm</td>
<td>P0622-0420</td>
</tr>
<tr>
<td>MULTI3 grease box (250 g)</td>
<td>P0622-0202</td>
</tr>
<tr>
<td>Klüber UNV grease (20 g tube)</td>
<td>P0622-1880</td>
</tr>
</tbody>
</table>

Full spare parts kits are available for the CEPA Z 41 P0621-1042 for a 2-year kit.

9.3 Optional parts

9.3.1 Foil insert

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTFE Foil for clarifying cylinder</td>
<td>P0622-0810</td>
</tr>
<tr>
<td>PTFE Foil-separating cylinder</td>
<td>P0622-2140</td>
</tr>
</tbody>
</table>

The foil insert facilitates the removal of the solids collected inside the cylinder. When using such a foil insert, the flat scraping tool is no longer required.

If possible, the foil should be stored flat or rolled along its short side. This maintains the internal stress so that the foil is automatically positioned on the tube.

When inserting the foil, ensure correct overlapping: The overlapping part must be positioned so that the foil is tight to the tube when the cylinder is rotating.
Fig. 9-1: Foil insert

1 Correct position
The overlapping part is dragging; the solids remain on the outside of the foil.

2 Incorrect position
The overlapping part is positioned so that the solids are pushed into the gap when the cylinder is rotating.
9.3.2 Cooling and heating coil

The cooling/heating coil is integrated in the housing to maintain the inlet temperature of the suspension. The cooling/heating coil connection is G3/8" (USA NPT3/8").

- The cooling coil is not suitable for cooling down the product. It is only used to maintain the inlet temperature. The cooling coil can be configured with an additional chiller.

Fig. 9-2: Cooling/heating coil

The permissible temperature range is -30 °C – +60 °C. As the operating company, you must take the necessary safety measures in accordance with the temperatures applied.

During commissioning and operation, observe the following:

- Check the cooling/heating coil for tightness. Make sure that the sealing materials match the cooling medium used.
- The connections between cooling system and centrifuge must be flexible to compensate the movements of the centrifuge system.
- The cooling/heating medium is injected from below, the outlet is located at the top.
- If required, you - as the operating company - have to install a ventilation system.

9.3.3 Infinitely adjustable speed control

The infinitely adjustable speed control is used to regulate the centrifuge in a speed range of approximately 50 – 100 % of the maximum speed. For technical/physical reasons, the centrifuge cannot be controlled in a range of 0 – 50 %.

In addition, the adjustment range of the infinitely adjustable speed control is limited by the simultaneous use of the bottom valve.
### 9.3.4 Other options

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder bottom support bracket</td>
<td>795-15073</td>
</tr>
<tr>
<td>Assembly rail</td>
<td>795-13866-03</td>
</tr>
</tbody>
</table>
10 Transport, storage and disposal

10.1 Transport

**WARNING! Risk of injury**

- Sliding, tilting or falling loads due to transport errors may lead to severe injury and damage.

- Before using hoists and cranes, read and observe the safety regulations of the manufacturers.
- Carefully fasten and secure the heavy machine components at the hoists.
- Only use appropriate and technically faultless hoists and lifting accessories with sufficient load-bearing capacity.
- Only entrust experienced personnel with the transport and attachment of loads.
- Use designated or appropriate attachment points.
- Properly secure the loads.
- Never stand or work under suspended loads!
- Wear protective footwear.
- Observe all local safety regulations for transport.
- Only transport the centrifuge with appropriate hoists.

10.2 Storage

Until assembly, leave the centrifuge on the transport pallet or in the transport box in its original packaging and temporarily store it in a dry room.

**WARNING! Corrosive**

- Incorrect storage may lead to corrosion damage as well as damage to the control system and wiring.

Do not store the transport pallet or box with the centrifuge outdoors or in damp rooms.

When storing the centrifuge temporarily for more than six months, consult the Carl Padberg Zentrifugenbau GmbH service department for appropriate measures.

When shutting down for up to six months, cover the centrifuge with a cotton blanket to protect from dust.

After prolonged storage, check the centrifuge for serviceability.

- Prevent condensation. Do not use plastic foil for coverage.
- When shutting down for more than six months, consult the CEPA service department to discuss appropriate measures.
10.3 Disposal

In case the product is to be disposed of, the relevant legal regulations are to be observed.

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

Within the European Community, the disposal of electrical devices is regulated by national regulations based on EU Directive 2012/19/EU pertaining to waste electrical and electronic equipment (WEEE).

According to these regulations, any devices supplied after August 13, 2005, in the business-to-business sphere, to which this product is assigned, may no longer be disposed of in municipal or domestic waste. To document this, they have been marked with the following identification:

![Image of the disposal symbol]

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

In Germany, this is mandatory from March 23, 2006. From this date, the manufacturer has to offer a suitable method of return for all devices supplied after August 13, 2005. For all devices supplied before August 13, 2005, the last user is responsible for the correct disposal.
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Evaluate your manual

Give us your feedback.
www.eppendorf.com/manualfeedback