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1 Notes on the Manual

This operating manual is a technical guide on how to operate the device safely and it contains all the information required for the areas specified in the table of contents. This technical documentation is a reference and instruction manual. The individual chapters are complete in themselves.

Familiarity (of the respective target groups defined according to area) with the relevant chapters is a precondition for the safe and appropriate use of the device.

This operating manual does not contain any repair instructions. If faults arise or repairs are necessary, please contact your supplier or get in touch with Retsch GmbH directly.

Application technology information relating to samples to be processed is not included but can be read on the Internet on the respective device’s page at www.retsch.com.

Changes

Subject to technical changes.

Copyright

Disclosure or reproduction of this documentation, use and disclosure of its contents are only permitted with the express permission of Retsch GmbH.

Infringements will result in damage compensation liability.
1.1 Explanations of the Safety Instructions

In this Operating Manual we give you the following safety warnings:

**Serious injury** may result from failing to heed these safety warnings. We give you the following warnings and corresponding content.

![WARNING]

**Type of danger / personal injury**

Source of danger
- Possible consequences if the dangers are not observed.
- **Instructions on how the dangers are to be avoided.**

We also use the following signal word box in the text or in the instructions on action to be taken:

![WARNING]

**Moderate or mild injury** may result from failing to heed these safety warnings. We give you the following warnings and corresponding content.

![CAUTION]

**Type of danger / personal injury**

Source of danger
- Possible consequences if the dangers are not observed.
- **Instructions on how the dangers are to be avoided.**

We also use the following signal word box in the text or in the instructions on action to be taken:

![CAUTION]

In the event of possible **property damage** we inform you with the word “Instructions” and the corresponding content.

**NOTICE**

**Nature of the property damage**

Source of property damage
- Possible consequences if the instructions are not observed.
- **Instructions on how the dangers are to be avoided.**

We also use the following signal word in the text or in the instructions on action to be taken:

**NOTICE**
1.2 General Safety Instructions

**CAUTION**

**Read the Operating Manual**
Non-observance of these operating instructions
- The non-observance of these operating instructions can result in personal injuries.
- **Read the operating manual before using the device.**
- **We use the adjacent symbol to draw attention to the necessity of knowing the contents of this operating manual.**

**Target group:** All persons concerned with the machine in any form

This machine is a modern, high performance product from Retsch GmbH and complies with the state of the art. Operational safety is given if the machine is handled for the intended purpose and attention is given to this technical documentation.

You, as the owner/managing operator of the machine, must ensure that the people entrusted with working on the machine:
- have noted and understood all the regulations regarding safety,
- are familiar before starting work with all the operating instructions and specifications for the target group relevant for them,
- have easy access always to the technical documentation for this machine,
- and that new personnel before starting work on the machine are familiarised with the safe handling of the machine and its use for its intended purpose, either by verbal instructions from a competent person and/or by means of this technical documentation.

Improper operation can result in personal injuries and material damage. You are responsible for your own safety and that of your employees.

Make sure that no unauthorised person has access to the machine.

**CAUTION**

**Changes to the machine**
- Changes to the machine may lead to personal injury.
- **Do not make any change to the machine and use spare parts and accessories that have been approved by Retsch exclusively.**

**NOTICE**

**Changes to the machine**
- The conformity declared by Retsch with the European Directives will lose its validity.
- You lose all warranty claims.
- **Do not make any change to the machine and use spare parts and accessories that have been approved by Retsch exclusively.**
1.3 Repairs

This operating manual does not contain any repair instructions. For your own safety, repairs may only be carried out by Retsch GmbH or an authorized representative or by Retsch service engineers.

In that case please inform:

<table>
<thead>
<tr>
<th>The Retsch representative in your country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your supplier</td>
</tr>
<tr>
<td>Retsch GmbH directly</td>
</tr>
</tbody>
</table>

Your Service Address:
2 Confirmation

This operating manual contains essential instructions for operating and maintaining the device which must be strictly observed. It is essential that they be read by the operator and by the qualified staff responsible for the device before the device is commissioned. This operating manual must be available and accessible at the place of use at all times.

The user of the device herewith confirms to the managing operator (owner) that (s)he has received sufficient instructions about the operation and maintenance of the system. The user has received the operating manual, has read and taken note of its contents and consequently has all the information required for safe operation and is sufficiently familiar with the device. As the owner/managing operator you should for your own protection have your employees confirm that they have received the instructions about the operation of the machine.

<table>
<thead>
<tr>
<th>User</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Surname, first name (block letters)</td>
<td></td>
</tr>
<tr>
<td>Position in the company</td>
<td></td>
</tr>
<tr>
<td>Signature</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service technician or operator</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Surname, first name (block letters)</td>
<td></td>
</tr>
<tr>
<td>Position in the company</td>
<td></td>
</tr>
<tr>
<td>Place, date and signature</td>
<td></td>
</tr>
</tbody>
</table>

I have read and taken note of the contents of all chapters in this operating manual as well as all safety instructions and warnings.
3 Packaging, Transport and Installation

3.1 Packaging

The packaging has been adapted to the mode of transport. It complies with the generally applicable packaging guidelines.

**NOTICE**

**Storage of packaging**

– In the event of a complaint or return, your warranty claims may be endangered if the packaging is inadequate or the machine has not been secured correctly.

• Please keep the packaging for the duration of the warranty period.

3.2 Transport

**NOTICE**

**Transport**

– Mechanical or electronic components may be damaged.

• The machine may not be knocked, shaken or thrown during transport.

**NOTICE**

**Complaints**

– The forwarding agent and Retsch GmbH must be notified immediately in the event of transport damage. It is otherwise possible that subsequent complaints will not be recognised.

• Notify your forwarding agent and Retsch GmbH within 24h

3.3 Temperature fluctuations and condensed water

**NOTICE**

**Temperature fluctuations**

The machine may be subject to strong temperature fluctuations during transport (e.g. aircraft transport)

– The resultant condensed water may damage electronic components.

• Protect the machine from condensed water.

3.4 Conditions for the Installation Site

**Ambient temperature:** 5°C to 40°C
NOTICE

Ambient temperature

- Electronic and mechanical components may be damaged and the performance data alter to an unknown extent.
- Do not exceed or fall below the permitted temperature range of the machine (5°C to 40°C / ambient temperature).

3.5 Installation of the Device

Installation height: maximum 2000 m above sea level

3.6 Type Plate Description

![Type Plate Description Diagram]

Fig. 1: Type plate lettering

1 Device designation
2 Year of production
3 Part number
4 Serial number
5 Manufacturer’s address
6 CE marking
7 Disposal label
8 Bar code
9 Power version
10 Mains frequency
11 Capacity
12 Amperage
13 Number of fuses
14 Fuse type and fuse strength
In the case of questions please provide the device designation (1) or the part number (3) and the serial number (4) of the device.

### 3.7 Electrical Connection

**WARNING**

When connecting the power cable to the mains supply, use an external fuse that complies with the regulations applicable to the place of installation.

- Please check the type plate for details on the necessary voltage and frequency for the device.
- Make sure the levels agree with the existing mains power supply.
- Use the supplied connection cable to connect the device to the mains power supply.
- Make sure that the voltage and frequency of your mains connection corresponds to that on the type plate of the RS200.
  - The mains connection must be fused to at least 16A
  - An electrical connection without protective earth PE is not permitted.

The drive of the device is equipped with a frequency converter. In order to satisfy the EMC Directive, this is fitted with a mains filter and shielded cables to the motor. If your mains connection includes a residual current protection device, the suppressor capacitor wiring of the frequency converter when this is switched on (it is switched on by closing the grinding chamber hood) can lead to accidental triggering of the residual current protection device without any error being present on the device or in the mains installation.

In accordance with the state of the art, selective all current sensitive residual current protection devices are recommended for such cases. The tripping current must be sufficiently dimensioned because capacitive compensating current (shielded cable, mains filter) which only occurs for a short time can easily lead to accidental triggering.

In certain circumstances it may be necessary to operate the device without a residual current protection device. It is then necessary, however, to check that this does not contravene the local regulations of the electricity company or other institutions and the applicable standards.

### 3.8 Creating interface connection

![Serial interface](image)

- Inactive interface (SC) for optional data communication with an external device. This requires updating of the software.

**NOTICE**

The interface cable must not be longer than 2.5m. Longer cables can lead to faults in data transmission.
3.9 Transport

**WARNING**

Serious personal injury
Falling loads
- The appliance is very heavy and can therefore cause serious personal injuries if it falls down.
  • Lifting above head height is not permissible!

**NOTICE**

Transportation lock
Transport without transportation lock, or operation with transportation lock
- Mechanical components may be damaged.
  • Only transport the device with mounted transportation lock.
  • Do not operate the device with built-in transportation lock.

Fig. 3: Unscrewing the transport lock from the transport pallet

The device is secured to the transport pallet by the transport lock and four nuts.
- Use a 13mm spanner to unscrew the four nuts.
Packaging, Transport and Installation

Fig. 4: Removing the transport lock from the device

Four bolts secure the transport lock underneath the device.
- Use a 13mm spanner to unscrew the four bolts.

Fig. 5: Mounting the transport screws

The device should only be lifted and transported using the 4 transport screws (TS) provided.
Net weight approx. 210 kg
NOTICE

Transport

- Mechanical or electronic components may be damaged.
- The machine may not be knocked, shaken or thrown during transport.

3.10 Installation of the Device

Fig. 6: Attaching the hoist

Fig. 7: Locking the transport rollers
• Place the device on a firm surface.
Please refer to the “Technical Data” chapter for further parameters.
The device must be locked before it is put into operation.
• Press the locking lever (FH) of the two front rollers down.

3.11 Removing the Transportation Lock

**Fig. 8: Transport lock access**

The drive unit of the device is locked during transport.
Before putting into operation for the first time, the two cylinder screws (ZS) fitted under the rubber cover (GA) must be removed.
• Lift up the rubber cover (GA).

**Fig. 9: Releasing the transport lock**

• Unscrew the two cylinder screws (ZS).
• Pull the cylinder screws (ZS) together with the sleeve (PM) out sideways.

*NOTICE*
Keep the cylinder screws for any future transport.
Fig. 10: Removing the transport lock
4 Technical Data

4.1 Use of the Device for the Intended Purpose

CAUTION
Risk of explosion or fire
Changing sample properties
- Consider that the properties and therefore also the hazardousness of your sample can change during the grinding process.
- Do not use any substances in this device which carry the risk of explosion or fire.

CAUTION
Risk of explosion or fire
- On account of its design, the device is not suitable for use in hazardous (potentially explosive) atmospheres.
- Do not operate the device in a hazardous atmosphere.

CAUTION
Danger of personal injury
Dangerous nature of the sample
- Depending on the dangerous nature of your sample, take the necessary measures to rule out any danger to persons.
- Observe the safety guidelines and datasheets of your sample material.

Target group: Operator, All persons concerned with the machine in any form.

Machine type designation: RS200

The RS200 vibratory disc mill is used for the fast, loss-free and reproducible pulverisation of medium hard, hard, brittle and fibrous materials to analytical fineness. Thanks to the novel Stabilized Plane Drive, the mill runs smoothly and safely, also with heavy grinding sets and at maximum speed.
The vibratory disc mill is used successfully in almost all areas of industry and research. This applies in particular where there are high demands in terms of hygiene, speed, fineness and reproducibility.
The RS200 is particularly suitable for preparing samples for spectral analysis because it achieves high degrees of final fineness in the shortest time.
Due to its robust design, the RS200 has proven to be especially good in the construction materials sector (cement), in geology, mineralogy, metallurgy and in power plants.
Soil, concrete, electronic components, ores, glass, ceramics, coal, coke, corundum, metal oxide, minerals, plant parts, slag, silicates, cement, cement clinker and many other substances can be ground easily, fast and without loss.
Advantages

- Reproducible grinding results using the "Stabilized Plane Drive" (prevents tumbling of the grinding set)
- Variable speed 700 – 1,500min-1
- Extremely short grinding duration
- Agate and tungsten carbide recognition for automatic speed reduction
- 10 standard operating procedures can be saved
- No sample loss thanks to optimal O-ring seal
- Wide choice of materials for neutral-to-analysis grinding
- Closed, noise insulated grinding chamber
- Grinding jar quick release
- Slide-in system for the ergonomic insertion of the grinding jars
- Automatic lid closing

NOTICE

Area of use of the machine

- This machine is a laboratory machine designed for 8-hour single-shift operation.
- **This machine may not be used as a production machine nor is it intended for continuous operation.**

4.2 Grinding jar nominal volume

<table>
<thead>
<tr>
<th>Material</th>
<th>50</th>
<th>100</th>
<th>250ml</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardened steel</td>
<td>50</td>
<td>100</td>
<td>250ml</td>
</tr>
<tr>
<td>Tungsten carbide</td>
<td>50</td>
<td>100</td>
<td>250ml</td>
</tr>
<tr>
<td>Agate</td>
<td>50</td>
<td>100</td>
<td>ml</td>
</tr>
<tr>
<td>Zirconium oxide</td>
<td>50</td>
<td>100</td>
<td>ml</td>
</tr>
<tr>
<td>Steel (1.1740)</td>
<td>50</td>
<td>100</td>
<td>250ml</td>
</tr>
</tbody>
</table>

NOTICE

Wear or damage to the grinding set

No filling or insufficient filling quantity

- Increased wear or damage to the grinding set is possible if the grinding set is operated without filling or with insufficient filling quantity.
- **The grinding set must be filled to at least 1/3 of the nominal volume.**

4.3 Feed Grain Size

In addition to the instrument settings, the filling level of the grinding jar is also of crucial importance for a successful grinding process in the Vibratory Disc Mill of Retsch GmbH. The table indicates approximate values for the recommended amount of sample as a function of the
grinding set used. A median filling (sample quantity) results in best grinding efficiency and increases the life time of the grinding sets.

<table>
<thead>
<tr>
<th>Grinding set nominal volume [ml]</th>
<th>Sample quantity [ml]</th>
<th>Max. feed size [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>15 – 50</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>100</td>
<td>35 – 100</td>
<td>&lt; 10</td>
</tr>
<tr>
<td>250</td>
<td>80 – 250</td>
<td>&lt; 15</td>
</tr>
</tbody>
</table>

4.4 Rated Power

1500W

Make sure that the voltage and frequency of your mains connection corresponds to that on the type plate of the device. The mains connection must be fused to at least 16A.

**NOTE**

**Reduction of tool service life**

Abrasive sample materials
- The presence of abrasive composite materials during grinding can considerably reduce tool service life.
- **When grinding electronic scrap, take the properties of the composite materials into account.**

4.5 Motor rotation speed

The speed can be adjusted within the following range:
- 700 - 1500min⁻¹

In the case of agate grinding sets, it is not possible to set a speed greater than 700min⁻¹.
In the case of tungsten carbide grinding sets, it is not possible to set a speed greater than 1200min⁻¹.

4.6 Emissions

**CAUTION**

**Possibility of acoustic signals not being heard**

Loud grinding noises
- Acoustic alarms and voice communication might not be heard.
- **Consider the volume of the grinding noise in relation to other acoustic signals in the work environment. You may wish to use additional visual signals.**
4.7 Noise levels RS200:

Noise measurement in accordance with DIN 45635-31-01-KL3
The noise levels are largely influenced by the machine speed, the grinding material and the grinding set.
Workplace-related emissions value \( L_{pAeq} = \) up to 84dB(A)
Sound power level \( L_{WA} = 99\text{dB(A)} \)

Measurement conditions:
Grinding set: 250ml steel with ring (90/125) and Puk (65)
Sample material: 100g cement clinker, particle size <2mm, 6 C20 grinding aid tablets
Speed: \( 1450 \text{min}^{-1} \)
Sound level meter: Brüel & Kjaer 2237 Controller

4.8 Degree of Protection

IP40

4.9 Protective Equipment

The device is equipped with automatic lid closing which prevents it being started in an unsafe state.
– The device can only be started with closed lid.
– The lid can only be opened when the device has come to a halt.
– The device can only be started with taut clamping lever.
– The device is switched off automatically if the clamping lever comes loose during grinding.

4.10 Dimensions and Weight

Height: up to approx. 1220mm / Width: 820mm / Depth: up to approx. 780mm
Weight: RS200 net approx. 210kg

4.11 Required Floor Space

Height (open hood): 1900mm / Width: 820mm /
Depth: 780mm;
A clearance distance of 100mm is necessary at the back to guarantee space to operate the main switch.
5 Operating the Device

5.1 Views of the Instrument

Fig. 11: View of the device from the front

Fig. 12: Close-up of the grinding chamber
Fig. 13: View of the back of the device

5.2 Overview table of the parts of the device

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>Locking bolt</td>
<td>Locks the grinding set</td>
</tr>
<tr>
<td>A</td>
<td>Hood</td>
<td>Closes the grinding chamber</td>
</tr>
<tr>
<td>B</td>
<td>Damper for hood</td>
<td>Secures the hood when it is open</td>
</tr>
<tr>
<td>H</td>
<td>Clamping unit for grinding chamber</td>
<td>Clamps grinding jar on the support</td>
</tr>
<tr>
<td>I</td>
<td>Grinding chamber support</td>
<td>Support for grinding jar and centring aid</td>
</tr>
<tr>
<td>J</td>
<td>Rubber seal</td>
<td>Seals the inside of the housing of the grinding chamber</td>
</tr>
<tr>
<td>K</td>
<td>Pin closing mechanism</td>
<td>Safety lock for the hood</td>
</tr>
<tr>
<td>L</td>
<td>Control panel</td>
<td>Device controller</td>
</tr>
<tr>
<td>M</td>
<td>Closing mechanism</td>
<td>Support for pin closing mechanism</td>
</tr>
<tr>
<td>N</td>
<td>Handle for clamping unit</td>
<td>Handle to close the clamping unit</td>
</tr>
<tr>
<td>O</td>
<td>Sensor for type of grinding jar</td>
<td>Automatic grinding jar recognition</td>
</tr>
<tr>
<td>P</td>
<td>Clamping block</td>
<td>Clamps the grinding jar using the clamping lever</td>
</tr>
<tr>
<td>Q</td>
<td>Main switch</td>
<td>Disconnects the device from the mains</td>
</tr>
<tr>
<td>R</td>
<td>IEC socket</td>
<td>Power supply for the power cable</td>
</tr>
<tr>
<td>S</td>
<td>Serial interface</td>
<td>Interface for communication with the device</td>
</tr>
</tbody>
</table>
5.3 Operating elements and displays

![View of the control panel](image)

**F** Operating button (rotary/push button)    Rotary control to operate the device settings

**G** Button to open the hood    Unlocks the hood

**C** Display    Displays the control functions and parameters

**D** START button    Starts grinding

**E** STOP button    Stops grinding

5.4 Overview Table of the Operating Elements and the Display

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Operating button (rotary/push button)</td>
<td>Rotary control to operate the device settings</td>
</tr>
<tr>
<td>G</td>
<td>Button to open the hood</td>
<td>Unlocks the hood</td>
</tr>
<tr>
<td>C</td>
<td>Display</td>
<td>Displays the control functions and parameters</td>
</tr>
<tr>
<td>D</td>
<td>START button</td>
<td>Starts grinding</td>
</tr>
<tr>
<td>E</td>
<td>STOP button</td>
<td>Stops grinding</td>
</tr>
</tbody>
</table>

5.5 Opening the device

The following steps are necessary in order to be able to use and clamp the grinding jar.

- Connect the device to the mains.
- Switch on the main switch at the back of the device.
- Press the button.

The safety lock opens and the lid can be lifted up.
5.6 Closing the device

It is only possible to lock the grinding chamber if the device has been connected to the power supply and the main switch at the back of the device has been switched on.

• Shut the housing lid.
  – A sensor detects the closing pin of the housing lid and the motorised lid closing mechanism is switched on.
  – The housing lid is locked automatically.

5.7 Emergency Unlocking

**CAUTION**

Emergency Unlocking

Drive continuing to run

– There is a substantial risk of injury if the drive and associated device parts run on a long time without being braked!

• Activate the emergency unlocking only when the machine has come to a complete stop and is disconnected from the power supply.

---

Fig. 15: Emergency release

A key is provided with device delivery. This can be used to open the device manually in the case of a power failure.

• Remove the cap (AK).
• Place the key (SN) in the opening (NR).
  – To unlock the gear mechanism, it is necessary to push the key in further using a little force.
Fig. 16: Emergency release procedure

- At the same time as pushing the key (SN) in, rotate it in a clockwise direction as far as it will go.
  - The lock is open and the lid can be lifted up.

5.8 Inserting the Grinding Jar

NOTE

Reduction of tool service life
Abrasive sample materials
  - The presence of abrasive composite materials during grinding can considerably reduce tool service life.
- When grinding electronic scrap, take the properties of the composite materials into account.

5.8.1 Grinding jar

The RS200 can be used with a Retsch grinding set with a volume of 50 / 100 / 250ml and with special steel / agate / tungsten carbide materials.
5.8.1.1 Tungsten carbide (TC) grinding sets

Only use tungsten carbide grinding sets in the RS200 at speeds of \( \leq 1200 \text{min}^{-1} \).

Do not use any grinding jars with 4 identical drilled holes (13mm in diameter) on the bottom.

<table>
<thead>
<tr>
<th>Grinding jar material</th>
<th>Number of drilled holes</th>
<th>Drilled hole 25mm</th>
<th>Drilled hole 13mm</th>
<th>Reworking possible</th>
<th>No reworking required</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC (old)</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>Agate (old)</td>
<td>4</td>
<td>-</td>
<td>4</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>TC (new)</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>Ok</td>
</tr>
<tr>
<td>Steel (all types); zirconium oxide</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>Ok</td>
</tr>
<tr>
<td>Agate (new)</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>Ok</td>
</tr>
</tbody>
</table>

Fig. 17: Grinding jar information on device label

5.8.2 Preparing the grinding process

Place a disc and a ring on the grinding jar.
- Position the ring and disc as shown in the diagram.
Operating the Device

Fig. 18: Positioning the ring and disc

- Fill grinding material into the space (RZ) between the grinding jar wall (MW) and the inner ring (RE).
  - For best grinding results, the area (RS) between the inner ring (RE) and the disc (SC) must remain empty.

Fig. 19: Filling area of the grinding jar

- Remove any residual grinding material on the grinding jar wall, the inner ring and the disc, e.g. using a brush.
- Check whether the lid seal has been inserted.
- Close the grinding jar with the lid.
- Open the clamping lever (SH).
- Push the grinding jar into the support.
Fig. 20: Inserting the grinding jar

- Ensure that the grinding set engages in the locking bolt (AB).

Fig. 21: Locking bolt

- Where necessary, turn the grinding set slightly to engage it in the locking bolt (AB).

Fig. 22: Clamping the grinding set
• Clamp the grinding set using the clamping lever (SH).
• You can then close the hood and start the device.

CAUTION
Scalding/burns
Hot grinding jar
– Depending on the grinding process, the material being ground and accordingly the grinding jar can become very hot.
• Wear appropriate protection always when touching the grinding jar if it is hot.
• Never open hot grinding jars! Allow the grinding jars to cool down to room temperature before opening.

The grinding chamber clamping mechanism is easy to use and reliable. The basic prerequisite both for safety of the operator and for the life of the machine components is the accurate clamping of grinding jars.

Please remember that this device concerns grinding equipment which applies very high amounts of energy into the sample material, and that the grinding set therefore needs to be locked into position carefully.
– The device can only be started when the clamping lever has been clamped.
– The device is automatically switched off if the clamping lever comes loose during grinding.

5.9 Grinding jar carrier

<table>
<thead>
<tr>
<th>Useful volume</th>
<th>50ml</th>
<th>100ml</th>
<th>250ml</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Steel</td>
<td>TC</td>
<td>Agate</td>
</tr>
<tr>
<td>Insert</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without insert</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
Fig. 23: Insert 1 for 50ml grinding jar (steel, TC)

Fig. 24: Insert 2 for 50ml grinding jar (agate)

Fig. 25: Insert 3 for 50ml grinding jar (zirconium oxide)
Fig. 26: Insert 4 for 100ml grinding jar (TC)

Fig. 27: Without insert for 250ml and all other grinding jars

Fig. 28: Inserting the insert
5.10 Display unit – operation of the device

5.11 Symbols in the Display Unit

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>Menu navigation</td>
<td>Switching between manual operating mode, program and basic settings</td>
</tr>
<tr>
<td>C2</td>
<td>Specification of grinding parameters</td>
<td>Displaying and setting grinding parameters</td>
</tr>
<tr>
<td>C3</td>
<td>Icons for device functions</td>
<td>Displaying the functional statuses of sound, automatic opening and grinding jar recognition</td>
</tr>
<tr>
<td>C4</td>
<td>Icon for scrolling direction</td>
<td>Displays the possible scrolling directions</td>
</tr>
<tr>
<td>C5</td>
<td>Grinding parameters</td>
<td>Display of values</td>
</tr>
</tbody>
</table>

Fig. 29: View of the menu on the display unit

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Symbol" /></td>
<td>Automatic opening switched on</td>
</tr>
<tr>
<td><img src="image2.png" alt="Symbol" /></td>
<td>Automatic opening switched off</td>
</tr>
<tr>
<td><img src="image3.png" alt="Symbol" /></td>
<td>Automatic grinding jar recognition – agate detected</td>
</tr>
<tr>
<td><img src="image4.png" alt="Symbol" /></td>
<td>Automatic grinding jar recognition – TC detected</td>
</tr>
<tr>
<td><img src="image5.png" alt="Symbol" /></td>
<td>Acoustic warning signal on</td>
</tr>
<tr>
<td><img src="image6.png" alt="Symbol" /></td>
<td>Acoustic warning signal off</td>
</tr>
<tr>
<td><img src="image7.png" alt="Symbol" /></td>
<td>Scrolling upwards or downwards possible</td>
</tr>
<tr>
<td><img src="image8.png" alt="Symbol" /></td>
<td>Only scrolling upwards possible</td>
</tr>
<tr>
<td><img src="image9.png" alt="Symbol" /></td>
<td>Only scrolling downwards possible</td>
</tr>
</tbody>
</table>
This device offers a new, very convenient user interface. All relevant data can be entered and retrieved using a graphics display with one-button operation. The menu is available in different languages.

5.11.1 Adjustment options using the display menu

The selection bar in the display should be operated as follows:

Rotating function I)
- Rotate the operating button to get to the different menu items. The selected menu items are marked by the dark selection bar. Areas that cannot be changed are skipped.

Rotating function II)
- Rotate the operating button to change numerical values and decisions in the menu items.

Press I)
- Press the operating button to open selected menu items.

Press II)
- Press the operating button to confirm settings.

Press III)
- Keeping the operating button pressed for longer takes you back to the basic screen (Level 1).

5.11.2 Navigating between operating modes

- Rotate the operating button in a clockwise direction until the dark line cursor is in the navigation menu (C1).
- Press the operating button (F).
  - The icon for the scrolling direction (C4) changes from

  ![Icon](image1)

  to

  ![Icon](image2)

  - By pressing the operating button, navigate between manual operation, Programs 01 to 10 and the basic settings operating modes.
- Press the operating button (F) to activate the selected operating mode.
  - The icon for the scrolling direction (C4) changes from

  ![Icon](image1)

  to

  ![Icon](image2)

  - By rotating the operating button, switch to the sub-items of the selected menu item.

5.12 Direct access to the language menu

If you have unintentionally set the wrong language, you can go straight to the language menu by following the steps below.
• Switch the device off at the main switch.
• Switch the device on while simultaneously pressing the buttons START - STOP – Open hood.
• After selecting the correct language, switch the device off and then immediately back on.
• Confirm your selection by pressing the operating button.

The device is now set permanently to your language and you are in the main menu.
5.13 Menu structure

Complete overview of all menu items:

**MANUAL OPERATING MODE**
- Grinding duration
- Speed
- Start in:
  - Screen message:
    - Press STOP to cancel
- Back
- Save parameters
  - Program
  - Save
  - Back

**PROGRAM [01 - 10]**
- Grinding duration
- Speed
- Change program
  - Program
    - Grinding duration
    - Speed
    - Save
    - Back
  - Delete program
    - Program
    - Delete
    - Back

**BASIC SETTING**
- Automatic opening
- Language
- Brightness
- Date
- Time
- Acoustic signal
- Service
- Operating hours
- Software version of display
- Software version of controller

**Update software**
- Display
  - Software update will be started automatically
- Controller
  - Software update will be started automatically
- Back
- Back

5.14 Operating modes

You can select the following operating modes using the menu navigation (C1):

5.14.1.1 Manual operating mode

If this function has been set, you can call up and change all parameters and functions at any time. This is also possible during milling.

5.14.1.2 Program 01 to 10

The previously set parameters, grinding duration and speed can be saved in the memory in Programs 01 to 10.
5.14.1.3 Basic settings
The following device settings can be adjusted in this settings menu:
- Automatic opening
- Language
- Brightness
- Date
- Time
- Acoustic warning signal
- Service

5.15 Manual Mode
5.15.1 Grinding duration
00:01 to 99:59 (minutes : seconds)

5.15.2 Speed
700 to 1500 rpm

5.15.3 Start in
00:00:01 to 99:59:59 (hours : minutes : seconds)
You can adjust a countdown to the starting of the device here.
- Press the STOP button to cancel the countdown.

5.15.4 Save parameters
You can save previously set parameters such as grinding duration and speed in a memory here.
- Set the desired parameters.
- By rotating the operating button (F), switch to the Save parameters menu item.
- Press the operating button (F).
  - The Save parameters menu opens and the dark line cursor is placed on Program.
  - Press the operating button (F) to select a storage location for the program.
  - By rotating the operating button (F), switch to the desired storage location.
  - Press the operating button (F) to exit the storage location selection.
- Select either
  - Save to save the settings or
  - Back to cancel without saving.
5.16 Programme Mode

5.16.1 Grinding duration
Display of the saved grinding duration: 
00:01 to 99:59 (minutes : seconds)

5.16.2 Speed
Display of the saved speed: 
700 to 1500 rpm

5.16.3 Change program
You can change the saved parameters of any program in this menu.

- By rotating the operating button (F), switch to the Change program menu item.
- Press the operating button (F).
  - The Save parameters menu opens and the dark line cursor is placed on Program.

  NOTICE
  You can change the active program or any other program.

  • Press the operating button (F) to activate the program selection.
  • By rotating the operating button (F), switch to the desired storage location.
  • Press the operating button (F) to exit the storage location selection.
  • Set the desired grinding parameters.
  • To finish, select either
    - Save to save the settings or
    - Back to cancel without saving.
  
  NOTICE
  It is not possible to start a program that has not been saved.

5.16.4 Delete program
In this menu you can delete the stored parameters of any program.

  NOTICE
  Only the parameters stored in the respective program are deleted. The program is still saved in the designated location.

  • By rotating the operating button (F), switch to the Delete program menu item.
  • Press the operating button (F).
    - The Delete program menu opens and the dark line cursor is placed on Program.
  • Press the operating button (F) to activate program selection.
  • By rotating the operating button (F), switch to the desired program.
  • Press the operating button (F) to exit the program selection.
  • To finish, select either
    - Delete to delete settings or
    - Back to cancel without saving.
    - You will then return to the Program level.
5.17 Basic settings

NOTICE
No grinding can be started while the basic settings menu is active.

5.17.1 Automatic opening
In this menu you can set whether the grinding chamber lid opens automatically when grinding has finished or is only opened when the button is pressed.
If the function is switched off, the following pictogram is shown on the display as confirmation.

![Pictogram for automatic opening](image)

Fig. 30: Pictogram for automatic opening

5.17.2 Language
You can select the menu language here. After selecting the language and pressing the operating button, the entire menu structure is displayed in your language.

NOTICE
The language menu is displayed when the device is switched on for the first time.
• Select the language of the country by pressing the operating button.
  – Press to confirm the selection; “Open lid” appears in the display.

5.17.3 Brightness
The brightness can be adjusted to the respective user or environment (sunshine, glare etc.).

5.17.4 Date
The current date can be entered here. The device can be disconnected from the mains for up to 30 days before the settings are lost.

5.17.5 Time
The time can be entered here. The time then appears in the stand-by monitor. The device can be disconnected from the mains for up to 30 days before the settings are lost.

5.17.6 Acoustic warning signal
Error messages in the event of incorrect operation can be supported acoustically by an acoustic warning signal. The corresponding pictogram appears if the function has been switched off.

5.17.7 Service
5.17.7.1 Operating hours
Grinding hours are counted, i.e. the total times between START and STOP. The times cannot be manipulated.
5.17.7.2  **Software version of display**
Shows the software version of the display.

5.17.7.3  **Software version of controller**
Shows the version of operating software.

5.17.7.4  **Update software**

SOFTWARE VERSION
The version of the operating software can be called up and updated as required. If necessary, get in touch with your Retsch distributor.

Should you have reached this menu by mistake and cannot return to the previous menu, switch the device off at the main switch and re-start it.
6 Error Messages and Information Notes

6.1 Error Messages

Error messages inform the user about detected device or programme errors. In the event of an error message, a fault has occurred, in which the operation of the device or the programme is automatically interrupted. Such faults must be resolved before next startup.

<table>
<thead>
<tr>
<th>Error code</th>
<th>Description</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>E11</td>
<td>Failure drive / motor</td>
<td> Switch off the main switch and wait for 30 s before switching on again.</td>
</tr>
<tr>
<td></td>
<td></td>
<td> If the error persists, contact service.</td>
</tr>
<tr>
<td>E20</td>
<td>Failure main board</td>
<td> Switch off the main switch and wait for 30 s before switching on again.</td>
</tr>
<tr>
<td></td>
<td></td>
<td> If the error persists, contact service.</td>
</tr>
<tr>
<td>E26</td>
<td>Failure frequency converter</td>
<td> Switch off the main switch and wait for 30 s before switching on again.</td>
</tr>
<tr>
<td></td>
<td></td>
<td> If the error persists, contact service.</td>
</tr>
<tr>
<td>E50</td>
<td>Failure safety circuit</td>
<td> Switch off the main switch and wait for 30 s before switching on again.</td>
</tr>
<tr>
<td></td>
<td></td>
<td> If the error persists, contact service.</td>
</tr>
<tr>
<td>E51</td>
<td>Failure safety switch</td>
<td> Switch off the main switch and wait for 30 s before switching on again.</td>
</tr>
<tr>
<td>(locking mechanism)</td>
<td></td>
<td> If the error persists, contact service.</td>
</tr>
<tr>
<td>E52</td>
<td>Failure switch 1 (clamping</td>
<td> Switch off the main switch and wait for 30 s before switching on again.</td>
</tr>
<tr>
<td></td>
<td>bracket not closed)</td>
<td> If the error persists, contact service.</td>
</tr>
</tbody>
</table>

6.2 Information Notes

Notices inform the user on specific device or programme processes. The operation of the device or programme may be interrupted briefly, but there is no fault. The information notice must be acknowledged by the user to continue the process. Information notices provide additional information for the user as an aid, but do not represent any device or programme errors.

<table>
<thead>
<tr>
<th>Notice code</th>
<th>Description</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>H10</td>
<td>Allow drive to cool down</td>
<td> Stop the grinding process.</td>
</tr>
<tr>
<td></td>
<td></td>
<td> Allow the device to cool down.</td>
</tr>
<tr>
<td>H42</td>
<td>Open and close lid/cover</td>
<td> Confirm the message on the control panel.</td>
</tr>
<tr>
<td></td>
<td></td>
<td> Open the hood.</td>
</tr>
</tbody>
</table>
7 Cleaning, Wear and Maintenance

![WARNING]

**WARNING**

Risk of a fatal electric shock
- An electric shock can cause injuries in the form of burns and cardiac arrhythmia, respiratory arrest or cardiac arrest.
- Do not clean the blender under running water. Use only a cloth dampened with water.
- Disconnect the power supply plug before cleaning the blender.

The device must always be switched off and disconnected from the mains before any interventions for cleaning or servicing purposes.

7.1 Cleaning

![Fig. 31: Closing pin maintenance](image)

The following maintenance work should be carried out at regular intervals, and at least monthly to guarantee the operational safety of the device:
- Check roller (1) of the closing pin for free movement, and oil where necessary, e.g. using sewing machine oil.
- Clean the magnets (2) on the closing pin.
7.2 Replacing the machine fuses

**WARNING**

Mortal danger from electric shock
Exposed power contacts
- When replacing fuses on the cutout or fuse adapter you may come into contact with live contacts. An electric shock can lead to burns and to cardiac arrhythmias or to respiratory arrest and cardiac arrest.
- Remove the mains cable before replacing fuses.

---

**NOTICE**

Always replace both fuses (TB).
- Type of fuse: 2 x 200mA T 250V
- Unscrew the fuse holders (TC1) and (TC2).
- Remove the fuse from the fuse holders and insert the new fuses.
- Place the fuse holders with the inserted fuses in the openings (TA).

---

Fig. 32: Changing the fuses
7.3 Maintenance

![WARNING]

**Risk of loss of life through electric shock**

Strong voltage through capacitor discharge

- Due to capacitor discharge on the frequency inverter, the device conducts voltage for up to **3 minutes** after the plug has been pulled out.

- You may come into contact with live contacts when the device is open. An electric shock can lead to burns and arrhythmia or to respiratory failure and heart failure.

- **After removing the mains lead, wait 3 minutes before opening the device.**

---

**Fig. 33:** Disconnecting the plug
Cleaning, Wear and Maintenance

Fig. 34: Removing the cover

- Press the open hood button and open the hood.
- Remove the bottom caps (ADK).
- Unscrew the two cylinder head bolts (ZKS).
- Pull the bottom suspension (UA) upwards to unhinge it.

**NOTICE**
- The three rubber springs (GF) must be lubricated again at the top and bottom end of the guide bolts every 250 operating hours. Use Klüber high performance lubricating grease type “Staburags NBU 4MF” or an equivalent high performance lubricant.
- To do this, remove the rubber springs and apply a sufficient quantity of grease in the two openings.

Fig. 35: Positions of the rubber springs

- After servicing the rubber springs, insert the bottom cover.
- Secure the bottom cover using the two cylinder head bolts.
7.4 Wearing parts

Fig. 36: Rubber springs

- Replace the 3 rubber springs (GF) after approx. 500 operating hours.
  - Order No. 03.228.0003

Fig. 37: Rubber pad

- Replace the rubber pad (GP) after approx. 300 operating hours.
  - Order No. 03.243.0069
8 Return for Service and Maintenance

Fig. 38: Returned goods dispatch note

RETSCH devices and accessories can only be accepted for repair, maintenance or calibration if the returned goods despatch note has been correctly completed in full.

- When returning a device, attach the returned goods dispatch note to the outside of the packaging.

In order to eliminate any health risk to our employees, we reserve the right to refuse acceptance and to return the respective delivery at the expense of the sender.
9 Disposal

Please observe the respective statutory requirements with respect to disposal.

Information on disposal of electrical and electronic machines in the European Community. Within the European Community the disposal of electrically operated devices is regulated by national provisions that are based on the EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

Accordingly, all machines supplied after 13.08.2005 in the business-to-business area to which this product is classified, may no longer be disposed of with municipal or household waste. To document this they have the following label:

![Disposal label](image)

Fig. 39: Disposal label

Since the disposal regulations within the EU may differ from country to country we would request you to consult your supplier.
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VIBRATORY DISC MILL
RS 200 | 20.730.xxxx

EU DECLARATION OF CONFORMITY

Hereewith we declare, represented by the signatory, that the above mentioned device complies with the following directives and harmonized standards:

Machinery Directive 2006/42/EC
Applied standards, in particular:
DIN EN ISO 12100  Safety of machinery
DIN EN ISO 13857  Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs
DIN EN 60204-1 Safety of machinery - Electrical equipment of machines

EMC Directive 2014/30/EU
Applied standards, in particular:
DIN EN 55011 Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement
DIN EN 61000-3-2 Electromagnetic compatibility (EMC)
DIN EN 61000-3-3 Electromagnetic compatibility (EMC)
DIN EN 61326-1 Electrical equipment for measurement, control and laboratory use - EMC requirements

Low Voltage Directive 2014/35/EU
Applied standards, in particular:
DIN EN 61010-1 Safety requirements for electrical equipment for measurement, control and laboratory use

Authorized person for the compilation of technical documents:
Dr. Loredana Di Labio (technical documentation)

Furthermore, we declare that the relevant technical documentation for the above mentioned device has been compiled according to Annex VII Part B of the Machinery Directive, and we undertake to submit this documentation on request to the market surveillance authorities.

In case of a modification of the device not previously agreed with Retsch GmbH, as well as the use of unauthorised spare parts or accessories, this declaration will lose its validity.

Retsch GmbH

Dr. Ing. Frank Janetta, Team Leader R&D Department

Haan, 05/2016