Operating Instructions for Vibratory Disc Mill

Type RS200

Notes on these operating instructions 3
Warning instructions 3
Repairs 3
Safety 4
Safety instructions 4
Safety instructions – summarised, part 1 5
Safety instructions – summarised, part 2 6
Confirmation 7
Technical data 8
Use according to the intended purpose 8
Milling cup – nominal volume 8
Maximum charged grain size 8
Driving power 8
Motor speed 8
Emissions 9
Materials and analyses of milling tools 9
Systems of protection 9
Protective equipment 9
Mode of operation 9
Machine dimensions 9
Required floor space 9
Transport and installation 10
Packing 10
Transport 10
Temperature variations 10
Temperature variations 11
Intermediate storage 11
Erection 11
Parameters for the place of installation 11
Ambient temperature: 5°C to 40°C 11
Atmospheric humidity 11
Installation height: max. 2000 m above sea level 11
Transport safety device 11
Electrical connection 12
Important instructions for electrical connection 13
Serial interfaces 13
Operation 14
Connecting the power supply 14
Opening / closing / emergency unlocking 14
Insertion and clamping of the milling set of the RS200 15
Preparation of the milling process 16
Before starting the RS200 18
Suitable milling sets for the RS200 18
Milling set filling level 18
Guide values for material quantity and grain size 18
Cleaning the milling cups 19
Drying the milling cups 19
Operation via the display unit of the RS200 20
Symbols in the display unit 20
Setting possibilities via the display menu 21
Languages 21
False language selection 21
Manual operation 21
Milling programme 21
Milling time 21
Speed 21
Speed with agate 22
Starting time 23
Opening automatic 23
Warning sound 23
Service 23
Contrast / Brightness 24
Date / Time 24
Stand-by monitor 24
Fault signals in the display 25
F02 to F13 25
General 26
Cleaning 26
Maintenance 26
Maintenance of the rubber springs 26
Opening the cover 27
Wearing parts 27
Copyright 27
Alterations 27
Appendix ..... following pages

Notes on these operating instructions

These operating instructions for the vibratory disc mill, type RS200, give all the necessary information with regard to the areas mentioned in the contents.
Instructions are given for the definite target group(s) in each area, in order to ensure safe operation of the RS200 for its intended purpose. Knowledge of the relevant section is essential for safe, proper handling in each target group or groups.
This technical documentation is intended as a reference and instruction manual. The individual sections are complete in themselves.
These operating instructions do not include repair instructions. If repairs are necessary please contact your supplier or Retsch GmbH direct.
http://www.retsch.com

Warning instructions

Warnings are given by the following symbols:

Injury to persons

Damage to equipment

Follow the instructions for use

Repairs

These operating instructions do not include repair instructions. For your own safety repairs must be carried out only by Retsch GmbH, an authorised agent or by Retsch service technicians.

In this case please contact:

The Retsch agency in your country
Your supplier
Retsch GmbH directly

Your service address:

Safety

The RS200 is an ultra-modern, highly efficient product of Retsch GmbH, and corresponds to state of the art. If the machine is used according to the intended purpose with a knowledge of this technical documentation it is completely safe and reliable to operate.

Safety instructions

As the operating authority it is your duty to ensure that all persons charged with working on the RS200:

- have read and understood all the instructions on safety,
- from the beginning of work know all the instructions and regulations for the target group relevant to their work,
- have access to the technical documentation for this machine at all times without problems.
- New personnel should be familiarized with safe, proper handling of the machine before beginning work on the RS200, either by verbal instruction from a competent person or through this technical documentation.
- Improper operation can cause injury to persons or damage to the equipment. Your are responsible for your own safety and that of your employees.
- Ensure that no unauthorised persons have access to the RS200.

For your own safety have your employees confirm that they have been instructed in operation of the RS200. The draft of a suitable form is given at the end of the section on safety.

We exclude any claims for damages of any kind for injury to persons and damage to equipment arising from non-observance of the following safety instructions.

Safety instructions – summarised, part 1

Safety instructions

We exclude any claims for damages of any kind for injury to persons and damage to equipment arising from non-observance of the following safety instructions.

Use according to the intended purpose

Do not make any alterations to the machine and use only spare parts and accessories approved by Retsch. **Otherwise the Declaration of Conformity to the European directives declared by Retsch will lose its validity. Furthermore this will lead to loss of any kind of guarantee claims.**

Milling cup nominal volume

The filling quantity of the milling sets must be more than1/3 of the nominal volume.
The rings used could otherwise become damaged.

Packing

Please keep the packing material for the duration of the guarantee period, since if you have a complaint and the equipment is returned in inadequate packing your guarantee claim is at risk.

Transport

The RS200 must not be knocked, shaken or thrown during transport. Otherwise the electronic and mechanical components can be damaged.

Temperature variations

If the RS200 is subjected to high temperature variations (e.g. during air transport) it must be protected against condensed water. Otherwise there may be damage to the electronic components.

Supplied items

If the supplied items are incomplete and/or there is transport damage you must inform the transporter and Retsch GmbH immediately (within 24 hrs). Later complaints may possibly be no longer considered.

Ambient temperature

If the temperature drops below or exceeds ambient temperature the electrical and mechanical components can become damaged and performance data can change to an unknown extent.

Atmospheric humidity

At high atmospheric humidity the electrical and mechanical components can become damaged and performance data can change to an unknown extent.

Electrical connection

If the values on the type plate are not observed the electrical and mechanical components can become damaged.

Electrical connection should be carried out only by a qualified electrician. **Danger through current surge.**

Serial interface

The serial interface cables must not be longer than 2.5 m.
If the cables are longer this can result in disturbances during transmission of data.

Connecting the power supply

Never start the RS200 without the clamped milling set.
Mechanical components can become damaged through high unbalance.

If the values on the type plate are not observed the electrical and mechanical components can become damaged.

Emergency unlocking

The emergency unlocking device must never be operated when the machine is running – only when the machine is at a standstill and is disconnected from the mains supply.
Danger of injury through unbraked after-running of the drive.

Insertion and clamping of the milling set of the RS200

Never start the RS200 without the clamped milling set.
Mechanical components can become damaged through high unbalance.

Preparation of the milling process

Please take necessary measures, depending on the dangerous nature of your milling material, in order to avoid danger to persons.

When removing and opening hot milling cups it is essential to wear protective gloves.
Danger of burning the hands.

Rub the rubber gasket in the clamping plate from time to time with talcum powder and do not leave the milling set in the RS200 after milling.
Strongly heated milling sets can stick together with the rubber of the clamping plate and are very difficult to remove.

The filling quantity of the milling set must not exceed 1/3 of the nominal volume.
The rings used could otherwise become damaged.

Safety instructions – summarised, part 2

Safety instructions when starting the RS200

Before starting the machine ensure that the milling set is clamped.
The milling set can be ejected. Danger of injury and damage to the equipment.

Tips for fine milling

When using easily flammable materials it is essential to observe the section „Wet milling of easily flammable materials".
Danger of explosion.

Guide values for the material quantity

If the filling level of the milling set is too high or too low the milling result will be impaired and this can cause damage (increased abrasion) to the milling set.

Please take necessary measures, depending on the dangerous nature of your milling material, to avoid danger to persons.

When removing and opening hot milling cups it is essential to wear protective gloves.
Danger of burning the hands.

Cleaning the milling cups

Do not subject milling cups with ceramic inserts to rapidly changing temperature differences when rinsing.
The ceramic units can crack through sudden temperature changes.

Wet milling of easily flammable materials.

Before using easily flammable materials as millling auxiliary agents it is essential to specify in writing the explosion protection documentation of the EC-directive, according to article 118 and 118a, as laid down in directive 89/391/EEC.

Cleaning

Do not clean the RS200 with running water.
Danger to life through current surge.
Use only a cloth moistened with water.
Solvents are not permitted.

Maintenance

Easy running of roller **1** on the closing pin is necessary for reliable closing via the automatic closing mechanism of the RS200.

Wearing parts

These operating instructions do not include repair instructions. For your own safety repairs should be carried out only by Retsch GmbH, an authorised agent or service technicians.

Confirmation

I have taken note of the section „Notes on these operating instructions" and the section on "Safety"

_____

Signature of operating authority

_____

Signature of service technician

Technical data

Machine type designation: RS200

Use according to the intended purpose

Retsch vibratory disc mills are used for rapid, loss-free, fine milling of medium-hard, hard/brittle and hard/tough materials. Both dry and wet milling operations can be carried out. Milling with solvents is permitted. In this case, however, the supplementary notes in the section „Wet milling with easily flammable materials" must be observed.

Soil samples, ores, coal, coke, corundum, metal oxides, minerals, plant samples, slags, silicates, cement and many other substances can be milled, easily, quickly and without loss. These oscillating disc mills are used successfully in **practically all areas of industry and research,** particularly where stringent requirements are set on purity, quickness, fineness and reproducibility.

They are not designed as production machines, but as laboratory equipment, intended for 8-hour single shift operation.

Do not make any alterations to the machine and use only spare parts and accessories approved by Retsch.
Otherwise the Declaration of Conformity with the European directives declared by Retsch loses its validity. **Furthermore this will result in the loss of any kind of guarantee claims.**

Milling cup – nominal volume

Special steel:	50 / 100 / 250 ml
Agate:	50 / 100 ml
Tungsten carbide:	50 / 100 ml

The filling quantity of the milling sets must be more than 1/3 of the nominal volume.
The rings used could otherwise become damaged.

Maximum charged grain size

The maximum charged grain size depends on the milling cup volume and the degree of hardness of the milling material.

Milling set 50 ml = max. grain size < 5mm
Milling set 100 ml = max. grain size <10mm
Milling set 250 ml = max. grain size <15mm

Driving power

1500 W

Motor speed

The speed is adjustable in the following range:

- 700 - 1500 min^{-1}

For agate sets adjustment of a speed greater than 700 min^{-1} is not possible.

If no milling set is clamped in position the speed is also limited to 700 min^{-1}.

Emissions

Noise characteristic values of RS200:

Noise measurement according to DIN 45635-31-01-KL3
The noise characteristic values are influenced mainly by the machine speed, material to be milled and the milling set.
Workplace-related emission value L_{pAeq} = up to 84 dB(A)
Noise power level L_{WA} = 99 dB(A)

Conditions of measurement:
Milling set : 250 ml steel with ring (90/125) and Puk (65)
Milling material : 100g cement clinker, grain size <2mm,
6 milling aid tablets C20
Speed : 1450 min-1
Noise level measuring instrument: Brüel & Kjaer 2237 Controller

Materials and analyses of milling tools

See: **www.retsch.com/english/docs/grinding_tools.pdf**

Systems of protection

IP40

Protective equipment

The RS200 is fitted with an automatic lid shutting device which prevents the machine being started in an unsafe condition. The machine can be started only with the lid closed.
The lid can be opened only when the machine is at a standstill.

Mode of operation

S1
Operation with constant load, the duration of which is sufficient for the thermal steady state condition to be reached (DIN VDE 0530 T1)

Machine dimensions

Height: up to approx. 1220 mm / width: 820 mm / depth: up to approx. 780 mm
Weight : RS 200 net approx. 210 kg

Required floor space

Height (open hood): 1900 mm / width: 820 mm /
depth: 780 mm;

A safety distance of 100 mm on the rear side is necessary so that the main switch can be operated.

Transport and installation

Packing

Packing is adapted to the transport route and conforms to the generally applicable packaging guidelines.

Please keep the packing material for the duration of the guarantee period since if there is a complaint and the machine is returned with inadequate packing your guarantee claim will be at risk.

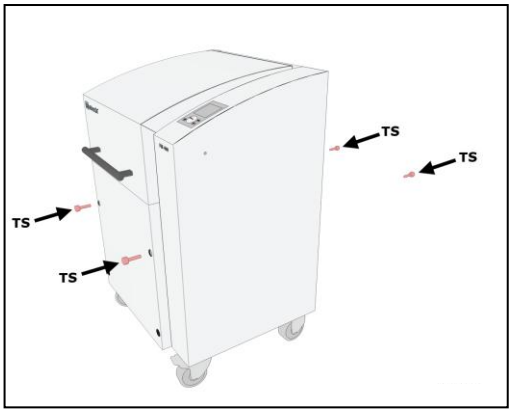


Fig. 2 Fitting the transport screws

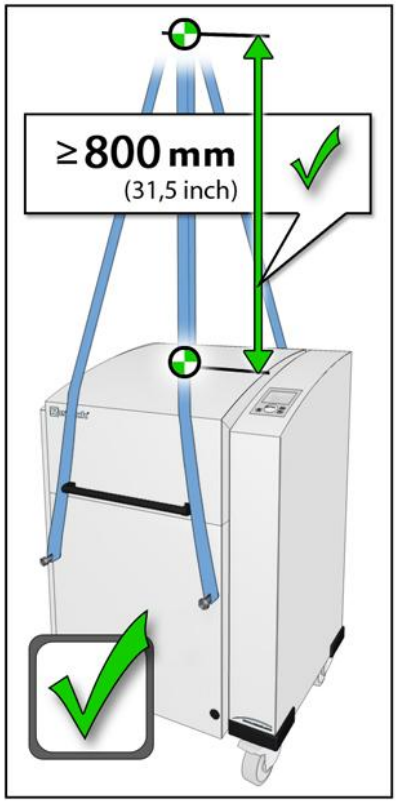
Transport

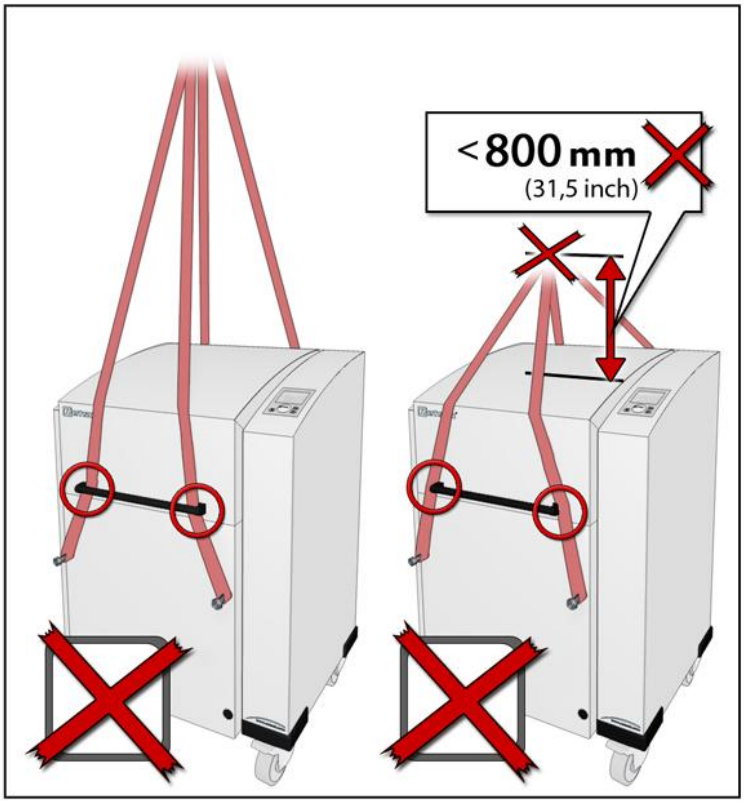
The RS200 (210 kg) is to be lifted and transported only be the transport screws **TS** supplied with the machine. (Fig. 2 Fitting the transport screws)

Net weight of RS200 approx. 210 kg

Lifting above head height is not permitted.

The RS200 must not be knocked, shaken or thrown during transport. Otherwise the electronic and mechanical components can become damaged.





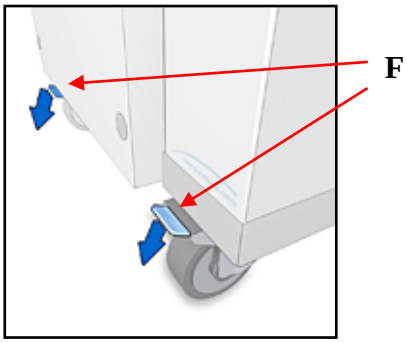
Temperature variations

If temperature variations are high (e.g. during air transport) the RS200 must be protected against condensed water. Otherwise the electronic components can become damaged.

Intermediate storage

Ensure that the RS200 is also stored dry during intermediate storage.

Erection



Erect the RS200 on a firm base. Further parameters are given in the section „Technical data".

Net weight of RS200: approx. 210 kg

The machine must be locked in position before starting up. For this purpose press the locking lever **F** of the two front rollers downwards.

Parameters for the place of installation

Ambient temperature: 5°C to 40°C

If the ambient temperature drops below or exceeds these values the electrical and mechanical components can become damaged and performance data are changed to an unknown extent.

Atmospheric humidity

Maximum relative humidity = 80% at temperatures up to 31°C, decreasing linearly down to 50% relative humidity at 40°C.

At higher atmospheric humidity the electrical and mechanical components can become damaged, and performance data are changed to an unknown extent.

Installation height: max. 2000 m above sea level

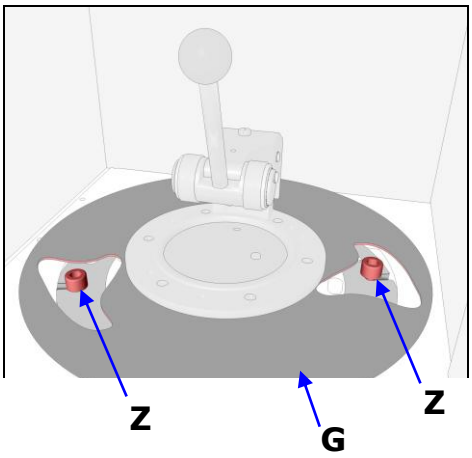


Fig. 3 Transport safety device

Transport safety device

The driving unit of the RS200 is locked for transport. Before starting up for the first time the two cheese-head screws **Z** fitted under the rubber cover **G** must be removed (Fig. 3 Transport safety device).

To do this lift the rubber cover **G** upwards and unscrew the cheese-head screws. Then pull out the cheese-head screws side wards together with the sleeve **P** (Fig. 4 Removing the transport safety device).

Keep the cheese-head screws for further transport.

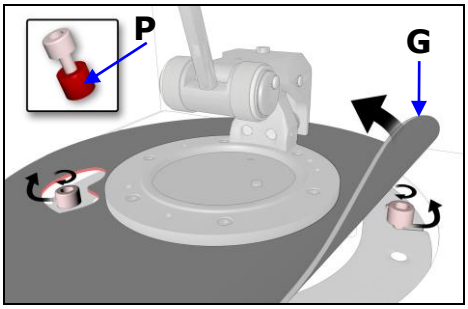


Fig. 4 Removing the transport safety device

Electrical connection

- Voltage and frequency for the RS200 are given on the type plate.
- Ensure that these values correspond to the available power supply system.
- Connect the RS200 to the power supply system using the supplied connection cable.
- Protection by external fusing is to be carried out when connecting the mains cable to the power supply, according to the regulations at the place of installation.

!	If the values on the type plate are not observed this can cause damage to the electronic and mechanical components.
	Electrical connection should be carried out only by a qualified electrician. **Danger through current surge.**

Important instructions for electrical connection

1. Electrical connection without a protective conductor PE is not permissible.

2. The drive of your RS200 is fitted with a frequency converter. To fulfil the EMC directive this is fitted with a line filter and shielded cables to the motor. If your RS200 includes a fault-current protective system, fault throwing may result through the anti-interference wiring of the frequency converter when this is switched on (switching on takes place each time the milling chamber hood is closed). This can occur without there being a fault on your RS200 or your mains installation.

   According to state of the art selective a.c.-d.c. sensitive fault-current protective systems are recommended for such cases. The tripping current must be adequately dimensioned since capacitive compensating currents occurring only for a short time (shielded cables, line filter) when switching on can easily cause fault throwing.

   Under certain circumstances it may be necessary to operate the RS200 without a fault-current protective system. In this case, however, it should be checked whether this is inconsistent with the local regulations of the electricity supply company or other applicable institutions or standards.

If the values on the type plate are not observed this can result in damage to the electrical and mechanical components.

Serial interfaces

- Inactive interface **Sc** for optional data communication with an external device. This necessitates updating of the software.
  (Fig. 5 Serial interface)

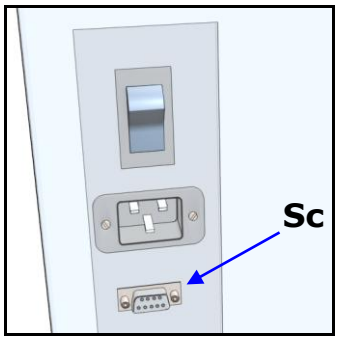


Fig. 5 Serial interface

The interface cables must not be longer than 2.5 m.
Longer cables can cause disturbances during transmission of data.

Operation

Connecting the power supply

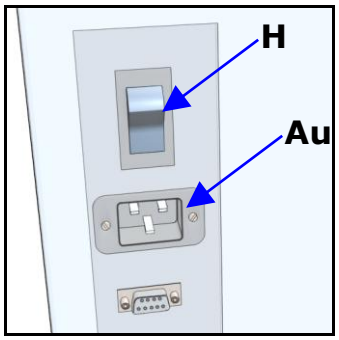


Fig 6 Receiving socket and main switch

Ensure that the voltage and frequency of your mains supply correspond to the values on the type plate of the RS200. The mains supply must be fused up to at leasts 16A.
(Fig. 6 Receiving socket and main switch)

- Plug the mains cable into the receiving socket **Au** on the rear side of the equipment.
- Plug the mains plug into the mains socket.
- Switch on the main switch **H**.

Never start the RS200 without the clamped milling set. **Mechanical components can become damaged through too high unbalance.**

If the values on the type plate are not observed this can result in damage to the electrical and mechanical components.

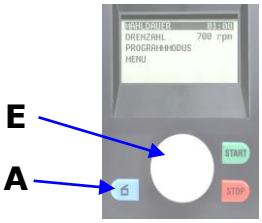


Fig7 Control panel

When the RS200 is switched on for the first time the language menu is displayed.
The language of your country must now be selected by turning the control knob E. By pressing this knob selection is confirmed and the display shows "Open lid".
(Fig 7 Control panel)

Opening / closing / emergency unlocking

Fig 8 Housing lid

Opening

The following steps are necessary in order to insert the milling cup(s) and to clamp it (these):

- Connect RS200 to the mains supply
- Switch on the main switch on the rear side
- Press button **A** - 

The safety closing device opens and the lid **D** can be swung open. The milling chamber is now freely accessible.

Closing

Locking the milling chamber is possible only if the RS200 is connected to the mains supply and the main switch on the rear side of the machine is switched on.

- Close the housing lid **D**
  (Fig. 8 Housing lid)

A sensor senses the closing pin of the housing lid and the motor-driven lid closing mechanism is switched on.

The housing lid **D** is automatically locked.

Fig. 9 Emergency unlocking

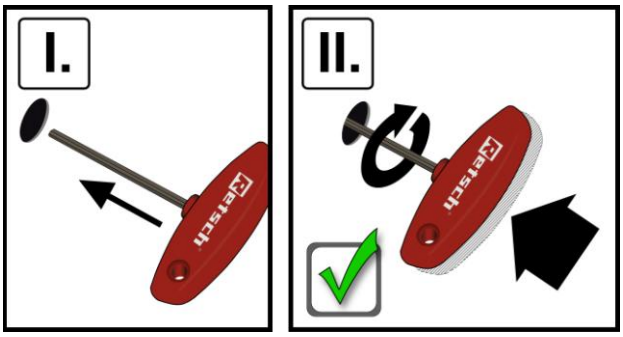
Emergency unlocking
A key for the machine is included in the delivery, with which the RS200 can be manually opened if there is a power failure. (Fig. 9 Emergency unlocking)

- (**I**) Insert the (**S**) key into the (**O**) opening on the right-hand side.
- (**II**) To unlock the gear, the key must be pushed in further with some degree of force. While pushing the key in, turn it in a clockwise direction as far as it will go.

The cover can now be opened.

The emergency unlocking device must never be operated when the machine is running – only when the machine is at a standstill and is disconnected from the mains supply.

Danger of injury through unbraked, after-running of the drive.



Insertion and clamping of the milling set of the RS200

RS 200 Max. Speed ≤ 1200 min^{-1}

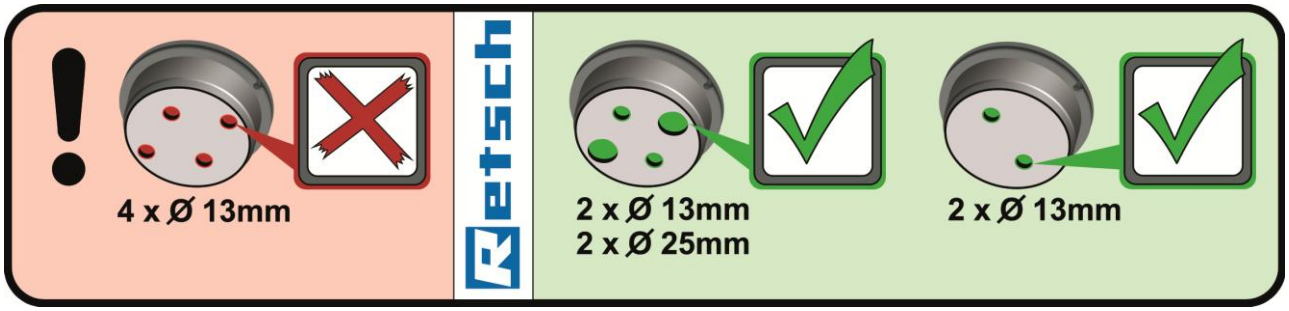
RS 100 Max. Speed ok

Wolframcarbid Tungsten carbide (WC) grinding sets (01.462.0177 • 01.462.0265 • 01.462.0264)

NOTE: RS 200: Operate WC grinding sets only at speeds ≤1200 min-1.

RS 100 max. speed ok.

Do not use the grinding jar if it has 4 identical 13-mm-diameter boreholes on the bottom.
These grinding jars may only be used in RS200 devices that do not have a change index after the serial number. This means that if a change index (e.g. xxxxxxxxx-F) is specified behind your device's serial number, you may not use the older grinding jar described in the above.
Older grinding jars with 4 identical boreholes on the bottom (13mm) can be reworked free of charge.



In the RS200 a Retsch milling set of volumes 50 / 100 / 250 ml and materials special steel / agate / tungsten carbide can be used.

Never start the RS200 without the clamped milling set. **Mechanical components can become damaged.**

Preparation of the milling process

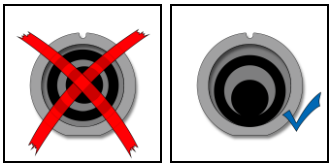


Fig. 10 Positioning ring and disc

- Fit the milling cup with a disc and a ring. Two rings can also be inserted, depending on the milling set. **Position the rings and disc as shown in the illustration opposite.** (Fig. 10 Positioning the ring and disc)

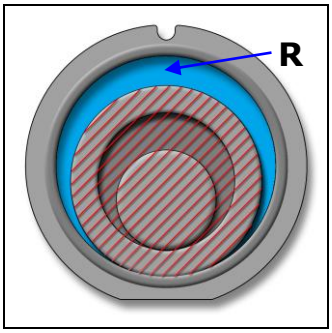


Fig.11 Filling volume of milling cup

- The material to be milled is filled into the space **R** between the milling cup wall and the first ring. For an optimum milling result do not fill any material into the space between the inner ring and disc. (Fig. 11 Filling volume of milling cup)
- Remove any residues of the milling material adhering to the milling cup (e.g. with a brush).
- Close the milling cup with the lid, not forgetting the seal.
- Engage the milling set in the locking bolt **B** of the holding device by turning slightly. (Fig. 12 Locking bolt)

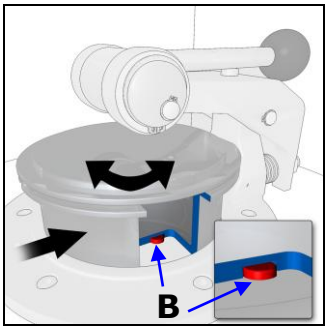


Fig. 12 Locking bolt

- The milling set is clamped with the eccentric lever **S**
- You can then close the hood and start the RS200 (Fig. 13 Eccentric lever)

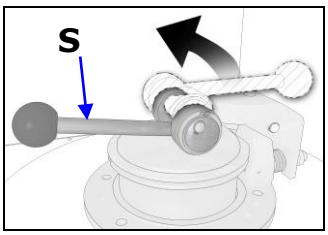


Fig.13 Eccentric lever

Please take necessary measures, depending on the dangerous nature of your milling material, to avoid danger to persons.

When removing and opening hot milling sets it is essential to wear protective gloves. **Danger of burning the hands.**
Rub the rubber gasket in the clamping plate from time to time with talcum powder and do not leave the milling set in the RS200 after milling. **Strongly heated milling sets can stick together with the rubber in the clamping plate and are then very difficult to remove.**

Before starting the RS200

The milling cup clamping device has proved itself for many years, and is easy and reliable to handle. In order to guarantee safety of the operator and a long service life of the machine components the milling cups must be clamped carefully.

Please remember that the RS200 is a milling machine with a very high power input into the milling material; therefore the milling cups must be fixed properly.

Before starting the machine ensure that the milling set is clamped.
Milling set can be ejected; danger of injury and damage to equipment.

Suitable milling sets for the RS200

Do not use the grinding jar if it has 4 identical 13-mm-diameter boreholes on the bottom.
These grinding jars may only be used in RS200 devices that do not have a change index after the serial number. This means that if a change index (e.g. xxxxxxxxx-F) is specified behind your device's serial number, you may not use the older grinding jar described in the above.
Older grinding jars with 4 identical boreholes on the bottom (13mm) can be reworked free of charge.

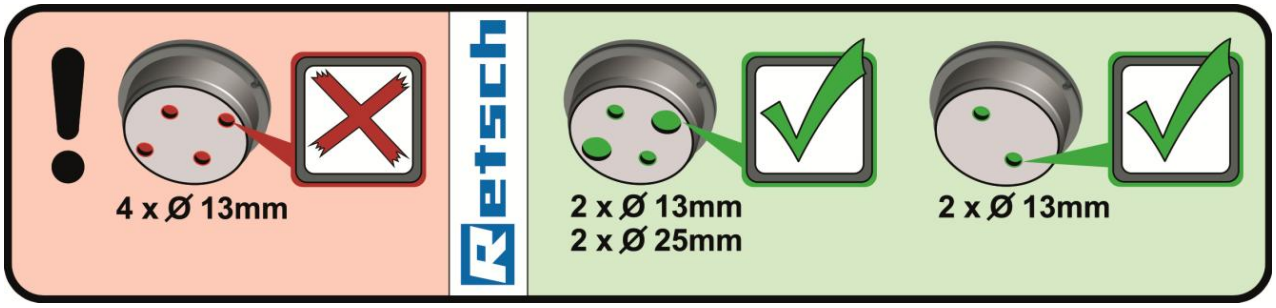


Fig. 14 Milling sets

The RS200 is suitable only for milling sets with a nominal volume of 50 – 250 ml.

These are available in the following materials:

- Special steel 50/100/250ml
- Free of heavy metal 100/250ml
- Agate 50/100ml
- Tungsten carbide 50/100ml
- Zirconium oxide 50/100ml

The milling sets have been developed specially for extreme test conditions, such as long-term trials, high mechanical loading and maximum rotary speeds – also for mechanical alloying.

Milling set filling level

Guide values for material quantity and grain size

Milling cup nominal volume	**Max. charged grain size**	**Sample quantity max./recommended**
50 ml	< 5 mm	< 50/35 ml
100 ml	< 10 mm	< 100/75 ml
250 ml	< 15 mm	< 250/150 ml

The milling set to be used is determined by the sample volume and max. charged grain size. Selection of the milling set material depends on the degree of hardness of the milling material and the effect of possible abrasion on the subsequent analysis.

If the filling level of the milling set is too high or too low the milling result will be impaired and damage (wear increase) to the milling set can result.

Please take necessary measures, depending on the dangerous nature of your milling material, to avoid danger to persons.

When removing and opening hot milling cups it is essential to wear protective gloves.
Danger of burning the hands.

Cleaning the milling cups

To clean the milling cups the seal between the lid and milling cup must be removed.

Milling cups, including those with bonded ceramic inserts, can be cleaned with alcohol or petrol, or can also be boiled out briefly.

Do not subject milling cups with ceramic inserts to sudden temperature variations during rinsing.
The ceramic inserts can crack through sudden temperature differences.

Drying the milling cups

The milling cups can be dried in a drying oven, at any time after cleaning, at the temperatures given below.

Milling cup material	Temperature
Special steel	Up to 200°C
Stainless steel	Up to 200°C
Tungsten carbide	Up to 150°C
Agate	Up to 120°C
Zirconium oxide	Up to 120°C

Operation via the display unit of the RS200

Fig. 15 Control panel

The mill has a new, very comfortable operator control system. All relevant data can be entered or called via a graphic display with one knob operation.
The menu system is multilingual.

	Name	Function
A	**Display**	Displays the menu, parameter settings, operating instructions and fault signalling.
B	**START button**	Starts the milling process
C	**STOP button**	Stops the milling process
D	**Button**	Opens the milling chamber hood
E	**Setting knob**	By turning and pressing, all menu points can be selected and parameters set. **Turning 1** By turning, the various menu points can be selected. Selected menu points are displayed inversely. **Turning 2** Setting of parameters in the opened menu points (see Pressing 1) **Pressing 1** Selected menu points are opened **Pressing 2** Short pressing confirms setting of parameters **Pressing 3** Continuous pressing: jump back to the 1st menu level

Symbols in the display unit


Programme mode – Take over parameters


Programme mode – Change programme


Programme mode – Delete programme


Warning sound off


Service due

°C Motor or frequency converter too hot

Setting possibilities via the display menu

For setting possibilities on the display described below please observe the menu structure on this page. The selection bar in the display should be operated as follows:

- Vertical manoeuvering through the structure by **turning** the setting knob
- Horizontal manoeuvering through the menu structure by **pressing** the setting knob
- Setting of numerical values or decisions by **turning** the setting knob
- Confirmation of settings by **pressing** the setting knob
- With "RETURN" you go to the previous menu structure level
- By **continuous pressing** of the setting knob you return to the basic screen

Languages		
Menu	**Display**	**Languages**

You can select the language here. After selection and pressing the setting knob the complete menu structure is shown in this language.

False language selection
If the wrong language is accidentally selected switch off the unit at the main switch.

Keep the buttons 

pressed simultaneously and switch on the unit again.
After selecting the correct language switch off the equipment and then immediately on again.
Confirm your selection by pressing the setting knob.
The unit is now set permanently in your language and you are in the main menu.

Manual operation	If this function is set you can call and change all parameters and functions at any time. This is also possible during milling.

Milling programme	• To get to the „Milling programme" function press the setting knob with "Manual operation" set. Milling programme 1 appears, flashing, in the display. Furthermore data which may already have been stored in Milling programme 1 are also displayed. • By turning the setting knob to the right you can select other milling programmes 2-10. Any parameters which may have been stored are displayed each time. • You can start the machine directly with the selected milling programme. • To return to „manual operation" turn the setting knob completely to the left and confirm with the setting knob.

Milling time	00:01 bis 99:00 Minutes: Seconds
START	The RS200 is started with the preselected milling time and the speed last used.

Speed	700 to 1500 rpm
START	The RS200 is started with the preselected milling time and the preselected speed.

! For milling cups with agate lining the speed is limited to 700 rpm and cannot be changed.
The same applies if no milling cup is clamped.

Speed with agate	700 rpm

If no milling cup, or a milling cup with agate lining, is clamped, the speed is limited to 700 rpm and cannot be changed.

Figure 1

Figure 2

If no milling cup, or a milling cup with agate lining, is clamped the display in fig. 1 appears.

After confirmation with the START button the menu (fig. 2) appears in the display and all parameters except speed can be changed.

START	The RS200 is started with the preselected milling time.

Programme mode

	Take over parameters	Here all the previously set parameters, such as milling time, speed, interval and pause, can be stored in a store.

- Set the required parameter.
- Change to „Programme mode" in the menu, press the setting knob and confirm „Take over parameters" again. The menu shows „Milling programme" and on the right the storage location number.
- Turn the setting knob to the right until you have found a milling programme with empty storage locations, or one which you wish to overwrite.
- By pressing the setting knob you can reserve the selected storage location.
- You can now choose between „Store parameter?" or "Cancel".
- You will then be returned again into the "Programme mode" level.

Programme mode

	Change programme	Here all previously stored parameters, such as milling time, speed, interval and pause, can be changed. It is also possible to enter new parameters.

Select „Programme mode", „Change programme" and confirm with the setting knob. The display shows the milling programme with storage location number again.

- To select the „Milling programme" to be changed press the setting knob; only the storage location numbers are inverse – the milling programme is changed by turning the setting knob.
- Confirm the milling programme to be changed by pressing; you can now change the parameters.
- After this you can „Store (the changed) parameters" or "Cancel".
- You will then be returned again to the "Programme mode" level.

Programme mode

	Delete programme	Here all the previously stored parameters can be deleted.

- Select „Programme mode", press the setting knob and confirm „Delete programme" again.
- Select the milling programme to be deleted by turning the setting knob, and confirm by pressing.
- You can now "Delete programme" or "Cancel".
- You will then be returned again to the programme mode level

Starting time		
	Start in xxh xxm **Cancel**	Starting can be preselected here in steps of 01 to 99 hrs or 01 to 60 min.
START	The RS200 is started with the preselected milling time and speed after the set starting time has elapsed.	
	Ensure that the milling cups have been clamped properly before you start the machine unattended.	
	Even though starting without the lid closed is not possible, make sure that the lid is closed before you start the machine unattended.	
STOP	You can interrupt running of the starting time at any time with the STOP button and with the main switch on the rear side of the unit. You then have to reprogramme the starting time.	

Opening automatic

MENU	SETTINGS	OPENING AUTOMATIC

Here you can preselect whether the milling chamber lid is automatically lifted at the end of milling, or is to be opened only by pressing the knob. If the function is switched off the

pictogram  appears in the display to confirm this.

Warning sound

MENU	SETTINGS	WARING SOUND

Fault signals through incorrect operation can be supported acoustically by a warning sound.

With the function switched off the corresponding pictogram appears 

Service

MENU	SETTINGS	SERVICE

The service menu is divided into four sub-menus:

- **SERVICE INSTRUCTIONS**
  Service instructions are filed here in the form of a checklist which is intended to facilitate effective, regular service and to improve the operating state of the machine. See also the section General / Maintenance.
- **SERVICE INTERVAL**
  An individual service interval can be seet here, according to the environment of the machine. After this time the operator is required to have the machine serviced. The time to be set is related to the total sum of milling times (times between START and STOP). A time between 1 – 99 hrs can be set. If the environmental conditions are rough we recommend that the works preset time is reduced.
- **OPERATING HOURS**
  The milling hours are counted, i.e. the total sum of the times between START and STOP. These times cannot be manipulated.
- **OPERATING SOFTWARE**
  The operating software version can be interrogated and, if necessary, updated. When required please contact your Retsch distributor.
  If you have accidentally got into the menu and jumping back into the previous menu is not possible, switch off the unit at the main switch and restart.

Contrast / Brightness

MENU	DISPLAY	CONTRAST
		BRIGHTNESS

Contrast and brightness can be adapted to each user or to the environment (sunlight, dazzling etc).
If you have accidentally selected the wrong contrast or brightness (the display can no longer be seen), switch off the unit at the main switch, keep the buttons START, STOP and LID OPEN pressed simultaneously and switch on again. You are now in the language selection and the setting values CONTRAST and BRIGHTNESS have the works presettings again.

Date / Time

MENU	DATE
	TIME

The actual date and time can be entered here.
The time then appears in the stand-by monitor.
The unit can be disconnected from the mains for up to 30 days without the settings being lost.

Stand-by monitor

After 15 minutes inactivity of the unit (times after a STOP command) the stand-by monitor switches on automatically.
By pressing one of the buttons, or touching the setting knob, the stand-by monitor disappears without carrying out the command which has been made.
If you were in a sub-menu when the stand-by monitor was activated, you return to this selection window automatically.
The stand-by monitor cannot be set and cannot therefore be switched off.

Fault signals in the display

F02 to F13

Appearing in display	Appearing in display
F03 **Problem in safety circuit of lid lock Service necessary!**	**F04** **Open or close lid, otherwise lid lock defective Service necessary!**
Fault appears with the lid closed if the lid lock is defective. • Switch off machine at the main switch and switch on again. If the fault reappears this is a safety problem and servicing is necessary.	Fault appears with the lid closed if the lid lock is defective. • Switch off machine at the main switch and switch on again. If the fault reappears this is a safety problem and servicing is necessary.

Appearing in display	Appearing in display
F07 **Motor speed control is defective**	**F15** **Problem in safety circuit of frequency converter Service necessary!**

Appearing in display	Appearing in display
F16 **Motor is overheated No START possible** **Please allow to cool**	**F17** **Motor is overheated Has been switched off Please allow to cool** **Continue with STOP**

Appearing in display	
F18 **Problem in safety circuit of transformer** **Service necessary!**	

General

Cleaning

Do not clean the RS200 with running water.
Danger to life through current surge.
Use only a cloth moistened with water. Solvents are not permitted.

Maintenance

To ensure that your RS200 will function reliably, the following maintenance work should be done from time to time, but at the latest every month :

- Check that roller 1 in the locking bolt moves easily. If it doesn't, oil it, e.g. with sewing machine oil.
  (Fig. 17 Locking bolt)
- Clean magnets 2 in the locking bolt.
- To ensure that the grinding jar can be clamped and released safely, it is essential that the clamping mechanism can move easily. It must be checked and cleaned every day and lubricated when necessary.
  (Fig. 17.1 Locking bolt)

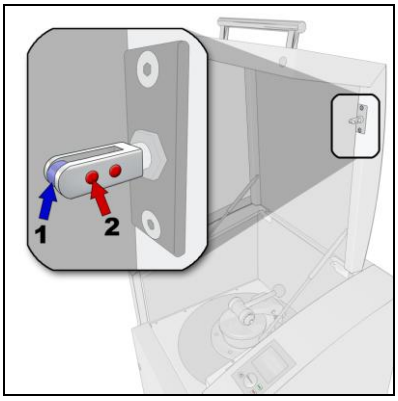


Fig. 17 Locking bolt

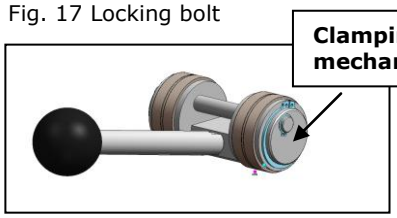
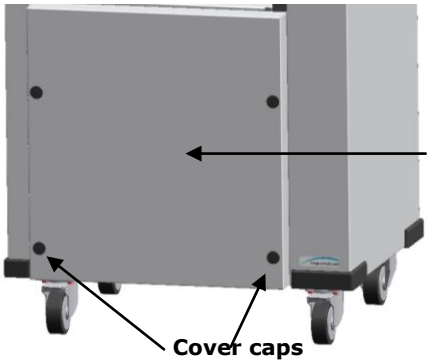


Fig. 17.1 Clamping mechanism

To ensure that the housing cover on the RS 200 can close reliably, it is essential that roller 1 in the locking bolt can move easily.

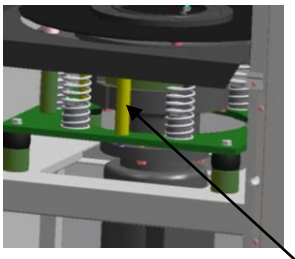
Maintenance of the rubber springs

Caution! Due to capacitor discharging at the frequency converter the device conducts voltage for up to 3 minutes after the mains plug has been disconnected.



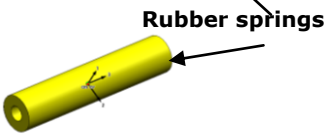
Opening the cover

- Press the "open cover" button or
- disconnect the mains plug at the back of the machine and use the emergency unlocking key (see chapter on Emergency Unlocking)
- Remove only the lower cover caps.
- Unscrew the two cheese-head screws.
- Take off the lower cover.



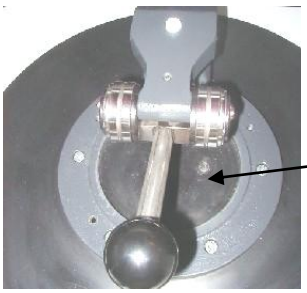
The three rubber springs must be greased every 250h operating hours at the top and bottom ends of the guide bolts. Use the "Staburags NBU 4MF" heavy-duty lubricant type from Klüber or another heavy-duty lubricant of the same quality.

- To grease, remove the rubber springs and put a sufficient quantity of grease into the two holes.



Wearing parts

The 3 rubber springs should be replaced after approx. 500 operating hours. Order no. 03.228.0003



The rubber plate should be replaced after approx. 300 operating hours. Order no. 03.243.0045

! These operating instructions do not include any repair instructions. In the interests of your own safety, repairs should only be performed by Retsch GmbH or authorised agent or service technicians.

Copyright

Alterations

Subject to technical alterations without notice.

CERTIFICATE OF CE-CONFORMITY

Translation

VIBRATORY DISC MILL

RS 200

Certificate of CE-Conformity according to:

EC Mechanical Engineering Directive 2006/42/EC

Applied harmonized standards, in particular:

DIN EN ISO 12100	Security of machines

EC Directive Electromagnetic Compatibility 2004/108/EC

Applied standards, in particular:

EN 61000-3-2/-3	Electromagnetic compatibility (EMC)
EN 61236	Electrical measuring, operating, controlling and laboratory equipment – EMC-requirements in conjunction with EN 61000
EN 55011	Limit values and measuring procedures for noise suppression of industrial, scientific and medical high frequency devices

Additional applied standards, in particular

DIN EN 61010	Safety prescriptions concerning measuring-, operating-, controlling- and laboratory equipment

Authorized person for the compilation of technical documents:
J. Bunke (technical documentation)

The following records are held by Retsch GmbH in the form of Technical Documentation:
Detailed records of engineering development, construction plans, study (analysis) of the measures required for conformity assurance, analysis of the residual risks involved and operating instructions in due form according to the approved regulations for preparation of user information data.

The CE-conformity of the Retsch Vibratory Disc Mill Type RS 200 is assured herewith.

In case of a modification to the machine not previously agreed with us as well as the use of not licensed spare parts and accessories this certificate will lose its validity.

Retsch GmbH

Haan, January 2010

Dr. Stefan Mähler
Manager technical services

CE

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