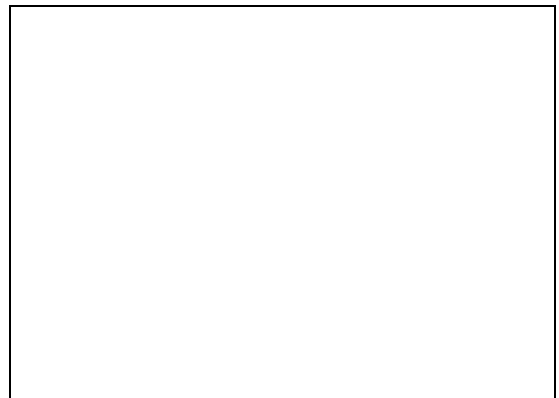


Manual

Jaw crusher and sample divider combination unit ABP 250



Translation



Copyright

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Retsch GmbH
Retsch-Allee 1-5
42781 Haan
Germany

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1 Notes on the Manual

This Manual provides technical guidelines for the safe operation of the device. Read this Manual through carefully before installing, putting into service and operating the device. Reading and understanding this Manual is essential for handling the device safely and as intended.

This Manual does not contain any repair instructions. Please contact your supplier or contact Retsch GmbH directly if anything is unclear or you have questions about these guidelines or the device, or in the case of any faults or necessary repairs.

You can find further information about your device at <http://www.retsch.com> on the pages for the specific device concerned.

Amendment status:

The document amendment 0003 of the "Jaw crusher and sample divider combination unit ABP 250" manual has been prepared in accordance with the Machinery Directive 2006/42/EC.

1.1 Disclaimer

This Manual has been prepared with great care. We reserve the right to make technical changes. We assume no liability for personal injuries resulting from the failure to follow the safety information and warnings in this Manual. No liability will be assumed for damage to property resulting from the failure to follow the information in this Manual.

1.2 Copyright

This document or parts of it or its content may not be reproduced, distributed, edited or copied in any form without prior written permission of Retsch GmbH. Damage claims shall be asserted in the case of infringements.

1.3 Explanation of signs and symbols

In this document the following **signs and symbols** are being used:

①	Reference to a recommendation and/or an important information
→	Reference to a chapter, table or figure
⇒	Action instruction
Name	Software menu function
[Name]	Software button
(Name)	Software checkbox

1.4 Explanations of the Safety Instructions

The following **warnings** in this Manual warn of possible risks and damage:

DANGER

D1.0000

Risk of fatal injuries
Source of danger

- Possible consequences if the danger is ignored.
- **Instructions and information on how to avoid the risk.**

Fatal or serious injuries may result if the “Danger” sign is disregarded. There is a **very high risk** of a life-threatening accident or lasting personal injury. The signal word **DANGER** is additionally used in the running text or in instructions.

WARNING

W1.0000

Risk of life-threatening or serious injuries
Source of danger

- Possible consequences if the danger is ignored.
- **Instructions and information on how to avoid the risk.**

Life-threatening or serious injuries may result if the “Warning” sign is disregarded. There is an **increased risk** of a serious accident or of a possibly fatal personal injury. The signal word **WARNING** is additionally used in the running text or in instructions.

CAUTION

C1.0000

Risk of injuries
Source of danger

- Possible consequences if the danger is ignored.
- **Instructions and information on how to avoid the risk.**

Average to slight injuries may result if the “Caution” sign is disregarded. There is an average or slight risk of an accident or personal injury. The signal word **CAUTION** is additionally used in the running text or in instructions.

NOTICE

N1.0000

Type of damage to property

Source of the damage to property

- Possible consequences if the information is ignored.
 - **Instructions and information on how to avoid the damage to property.**

Damage to property may result if the information is disregarded. The signal word **NOTICE** is additionally used in the running text or in instructions.

1.5 General Safety Instructions

⚠ CAUTION

C2.0002

Risk of injury

Lack of knowledge of the Manual

- The Manual contains all safety-related information. Disregarding the Manual can therefore lead to injuries.
 - **Read the Manual carefully before operating the device.**



Target group

All those operating, cleaning or working with or on the device.

This device is a modern, powerful product from Retsch GmbH and has been developed in line with the state-of-the art. The device is safe to use when operated correctly and when following the instructions in this manual.

Safety Officer:

The operating company itself must ensure that people authorised to work on the device...

- have read and understood all regulations contained in the chapter on safety;
- are aware before they start work of all instructions and regulations for the target group related to the work;
- have easy access to the technical documentation for this device at all times;
- have been familiarised with the safe and correct handling of the device before starting work on it, by means of a verbal introduction by a competent person and/or using this technical documentation.

⚠ CAUTION Improper operation can lead to personal injuries and damage to property. The operating company itself is responsible for its own safety and that of its staff. The operating company itself is responsible for ensuring that no unauthorised persons have access to the device.

⚠ CAUTION People under the influence of intoxicating substances (medications, drugs, alcohol), fatigue or health disorders are not allowed to operate the device.

CAUTION

C3.0015

Risk of injury

Improper modifications to the device

- Improper modifications to the device can result in injuries.
- **Do not make any unauthorised changes to the device.**
- **Only use the spare parts and accessories approved by Retsch GmbH!**

NOTICE

N2.0012

Changes to the device

Improper modifications

- The conformity declared by Retsch GmbH with the European Directives will lose its validity.
- Any warranty claims will be terminated.
- **Do not make any modification to the device.**
- **Use spare parts and accessories that have been approved by Retsch GmbH exclusively.**



1.6 Repairs

This manual does not contain any repair instructions. For safety reasons, repairs may only be carried out by Retsch GmbH or an authorised representative or by qualified service technicians.

In case of repair, please inform...

- ...the Retsch GmbH representative in your country,
- ...your supplier, or
- ...Retsch GmbH directly.

Service address:

1.7 Responsibility of the operating company

The company operating the machine is responsible for ensuring that every person working with the machine has been given precise instructions on the basis of this manual (commissioning, operation, servicing). Training for operating staff must include the following points:

- Intended use of the machine
- Hazard areas
- Safety regulations
- The company must be satisfied that staff have the required qualifications
- General instructions and what to do in an emergency
- Applicable accident prevention regulations
- Personal protective clothing required
- Operation of the machine according to this manual
- Recognised, applicable rules governing health and safety

Involve ABP 250 in your emergency planning:

- Integrate ABP 250 in your operating instructions regulating conduct in emergency situations.
- Integrate ABP 250 in your risk assessment in acc. with the German Ordinance on Industrial Safety and Health (BetrSichV) to prevent accidents during work processes.
- Consider fire-fighting measures, tackling the effects of leaking substances, possible radiation, rescuing people, first-aid measures.

1.8 Personnel qualification and target group of this manual

This manual is intended for trained assembly personnel , maintenance staff and users . Training must be provided in the language of the personnel concerned so that all instructions are understood. As such the following personnel qualifications are necessary:

Assembly, commissioning, instruction, troubleshooting, servicing work, as described in this manual	Skilled technical staff as well as external service providers who speak German and the language of the operating personnel. The usual skills communicated during training, e.g. as a plant fitter, mechatronics engineer or toolmaker, are prerequisites for the assembly, commissioning and troubleshooting of the machine. Employees must be able to manage all applicable mechanical tasks and be familiar with and have experience of dealing with these.
Operation	Education/training in accordance with the above section, responsibilities of trained employees.
Servicing/repairs	They must be experienced, trained professionals, familiar with requirements and guidelines.

2 Confirmation Form for the Managing Operator

This manual contains essential instructions for operating and maintaining the device which must be strictly observed. It is essential that they be read by the user and by the qualified staff responsible for the device before the device is commissioned. This 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 he has received sufficient instructions about the operation and maintenance of the system. The user has received the 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.

The managing operator should for legal protection have the user confirm the instruction about the operation of the device.

I have read and taken note of the contents of all chapters in this manual as well as all safety instructions and warnings.

User

Surname, first name (block letters)

Position in the company

Place, date and signature

Managing operator or service technician

Surname, first name (block letters)

Position in the company

Place, date and signature

3 Technical Data

3.1 Intended use

This device has not been designed as a production machine or for continuous operation, but rather as laboratory device for operation in an 8-hour single shift.

The **ABP 250** is suitable for grinding medium to hard substances as well as brittle and hard ductile materials. The final fineness that can be achieved can be up to 2 mm and less depending on the feed material.

The maximum feed size is <120 x 90 mm.

The following materials are examples of those that can be ground in the **ABP 250**:

Concrete, ores, rock, glass, ceramics, coal, minerals, slag, cement clinker etc.

The performance data, throughput and the final fineness level that can be achieved depend on the breaking properties and degree of hardness of the sample material and on the gap width that has been set. They can only be empirically calculated.

The Retsch applications laboratory will be happy to provide any further information you require. Any other use is considered to be improper and can lead to damage to property and even to personal injuries.

3.2 Protective Equipment

- This device may only be started once the door has been closed and the collecting receptacle has been inserted in the base frame.
- A limit switch behind the collecting receptacle prevents the device being started in an unsafe state.
- Pulling the collecting receptacle out results in the machine stopping immediately.
- The door can only be opened once the collecting receptacle has been removed.
- The motor protection switch turns the drive motor off if there is a blockage in the jaws.

3.3 Gap width

Gap width: 0 to 30 mm, adjustable using the threaded spindle

3.4 Degree of Protection

- IP 54

3.5 Emissions

Noise levels:

The noise levels are influenced by the properties of the sample material.

Example:

Feed material:	Marble pebbles (< 50 mm)
Gap width:	< 1 mm
Final particle size	< 4 mm
Grinding chamber filling level:	~ 65 %

Under these operating conditions, the workplace-related equivalent continuous sound level $L_{eq} = 84.7 \text{ dB(A)}$.

⚠ CAUTION

C4.0020

Failure to hear acoustic signals

Loud noises during grinding

- It is possible that acoustic warning signals and voice communication cannot be heard.
- **When planning the acoustic signals in the working environment, the volume of noises arising during grinding should be taken into consideration. It may be possible to use additional visual signals.**

⚠ CAUTION

C5.0045

Damage to hearing

A high noise level may arise depending on the type of the material, the jaws used and the duration of grinding

- Excessive noise in terms of level and duration can cause impairments or lasting damage to hearing.
- **Suitable sound insulation measures must be provided or hearing protection worn.**



3.6 Electromagnetic Compatibility (EMC)

- EMC class in accordance with DIN EN 55011: B

3.7 Rated Power

~ 3 000 W (VA), 3 Phasen, verschiedene Anschlussspannungen

3.8 Dimensions and Weight

- Height: ~ 1,460 mm
- Width: ~ 1,350 mm
- Depth: ~ 710 mm
- Weight: ~ 565 kg

3.9 Required Floor Space

- Width of floorspace: 1,350mm
- Depth of floorspace: 710 mm

No safety distance is necessary. To improve operability, you should plan to leave a space of around 50 cm to the left of the machine and a space of 60 cm at the front.

Location requirements :

This floor-mounted device must be placed on a level, firm base.

3.10 Feed Grain Size

- Feed size: < 120 x 90 mm
- Final fineness: < 2 mm

The feed size depends on the sample material.

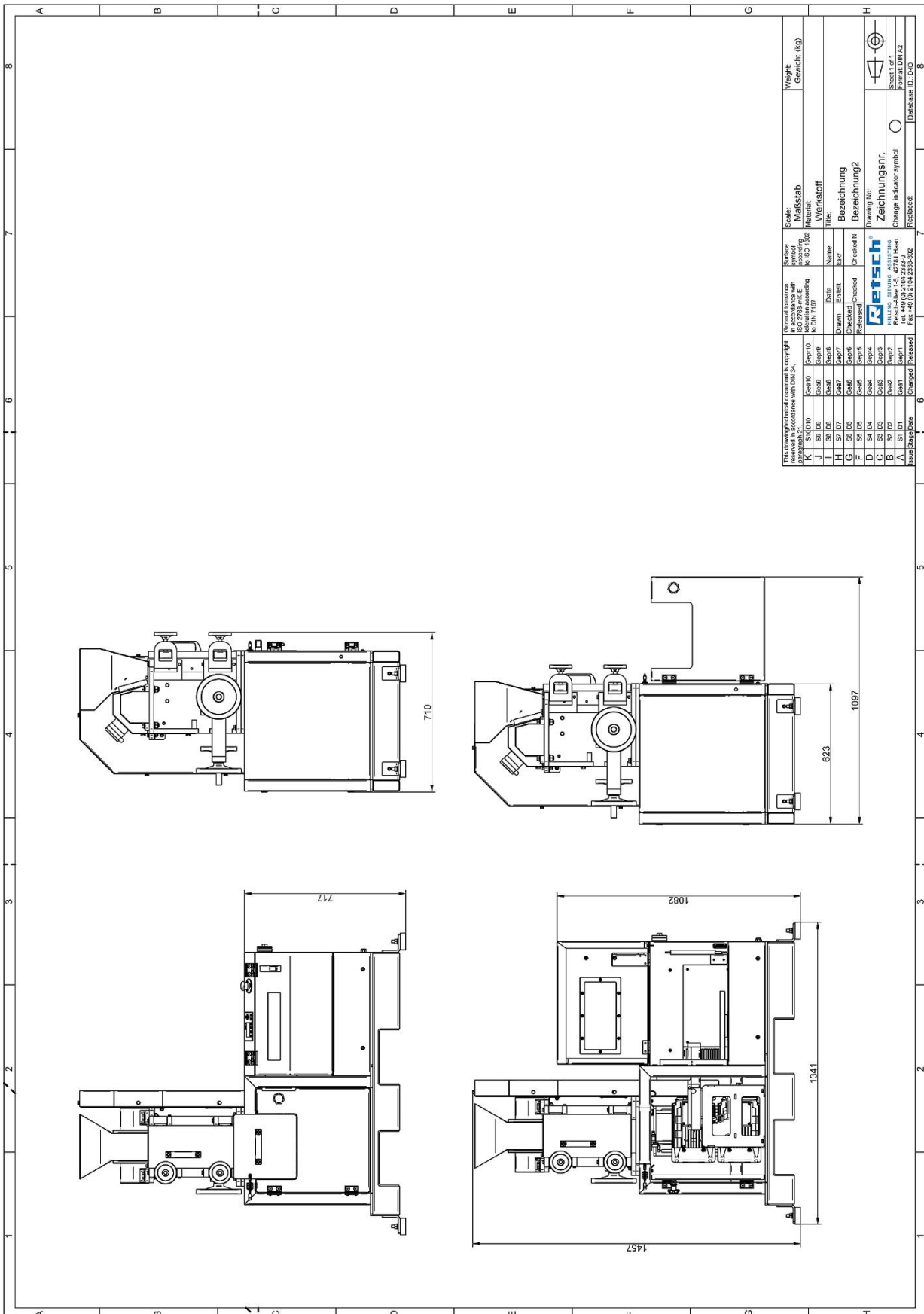
3.11 Grinding chamber volume

~ 1 200 ml

3.12 Degree of hardness of the sample material

The degree of hardness of the sample material should be above 3 on the Mohs' scale to achieve effective grinding. The degree jaws should be harder than the sample material to prevent increased wear on the jaws.

3.13 Installation drawing



4 Packaging, Transport and Installation

4.1 Packaging

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

NOTICE

N3.0001

Complaint or return

Keeping the packaging

- Inadequate packaging and insufficient securing of the device can jeopardise the warranty claim in the event of a complaint or return.
- **Keep the packaging for the duration of the warranty period.**

4.2 Transport

DANGER

D2.0001

Serious personal injury

Suspended loads

- If dropped, the great weight of the device would result in serious injuries or death.
- **People must never stand below suspended loads!**



NOTICE

N4.0017

Damage to components

Transport

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

NOTICE

N5.0014

Complaints

Incomplete delivery or transport damage

- 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.
- **Please check the delivery on receipt of the device for its completeness and intactness.**
- **Notify your forwarding agent and Retsch GmbH within 24 hours.**



Fig. 1: Transporting with forklift

The base frame of the ABP 250 enables it to be directly transported using a forklift or similar device.

⚠ WARNING	W2.0001
<p>Serious personal injury Load too heavy</p> <ul style="list-style-type: none"> – The device is extremely heavy, weighing 565 kg, which can lead to serious personal injury when it is lifted. • The device may only be lifted and transported using lifting gear! 	

⚠ CAUTION Only use suitable lifting gear that has been approved for the weight of the device.

The ABP 250 has a base frame using which the device can be lifted and transported with the help of lifting gear.

- ⇒ Move lifting gear such as a forklift under the base frame.
- ⇒ Slowly lift the device using the lifting gear and stabilise it to prevent it from toppling over.

4.3 Temperature Fluctuations and Condensation

NOTICE	N6.0016
<p>Damaged components due to condensation Temperature fluctuations</p> <ul style="list-style-type: none"> – The device may be exposed to substantial fluctuations in temperature during transport. The ensuing condensation can damage electronic components. • Wait until the device has acclimatised before putting it into service. 	

Temporary storage:

Also in case of an interim storage the device must be stored dry and within the specified ambient temperature range.

4.4 Conditions for the Installation Site

A floorspace of 1190 mm wide and 630 mm deep is required. The opening of the feed hopper is at a height of approx. 1430 mm.

The ABP 250 may only be installed on a level, firm base. Anchoring is not essential because the free moments of inertia only pass barely perceptible vibrations on to the surroundings, but it is possible using the drill holes in the feet.

Only operate the ABP 250 at an installation site with sufficient lighting.

- Installation height: max. 2 000 m above sea level
- Ambient temperature: 5 °C – 40 °C

WARNING

W3.0003

Serious personal injury
Contact between moving jaws in the grinding chamber

- Accidentally reaching into the grinding chamber and between moving jaws can cause serious injuries to hands.
- **Always operate the device with the feed hopper installed.**

NOTICE

N7.0021

Ambient temperature
Temperatures outside the permitted range

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

- Maximum relative humidity < 80 % (at ambient temperatures ≤ 31 °C)

For ambient temperatures U_T between 31 °C and 40 °C, the maximum relative humidity value L_F linearly decreases according to $L_F = -(U_T - 55) / 0.3$:

Ambient temperature	Max. rel. humidity
≤ 31 °C	80 %
33 °C	73.3 %
35 °C	66.7 %
37 °C	60 %
39 °C	53.3 %
40 °C	50 %

NOTICE

N8.0015

Humidity
High relative humidity


- Electronic and mechanical components may be damaged.
- The performance data alter to an unknown extent.
- **The relative humidity in the vicinity of the device should be kept as low as possible.**

4.5 Electrical Connection

⚠ WARNING W4.0005

Danger to life due to electric shock or fire
Incorrect connection to the power supply may result in parts of the housing or cables being live and in fires starting.

- Serious injuries or death due to an electric shock.
- Serious injuries or death due to fires.
- **The device may only be connected by a qualified electrician.**



NOTICE N9.0022

Electrical connection
Failure to observe the values on the type plate

- Electronic and mechanical components may be damaged.
- **Connect the device only to a mains supply matching the values on the type plate.**

⚠ 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.

- Information about the required voltage and frequency of the device can be found on the type plate.
- The listed values must agree with the existing mains supply.
- The device may only be connected to the power supply using the connection cable supplied.
- The circuit breaker for connecting the power cable to the power supply at the installation site should be suitable for higher start-up current and correspond to a type C characteristic (slow blow fuse).

NOTICE N10.0005

Electrical connection
Wrong direction of rotation on drive motor

- Electronic and mechanical components may be damaged.
- Insufficient grinding of the sample material.
- **Before putting into operation for the first time, check whether the direction of rotation of the motor (fan direction of rotation) complies with the direction arrow on the belt cover.**

4.6 Type Plate Description

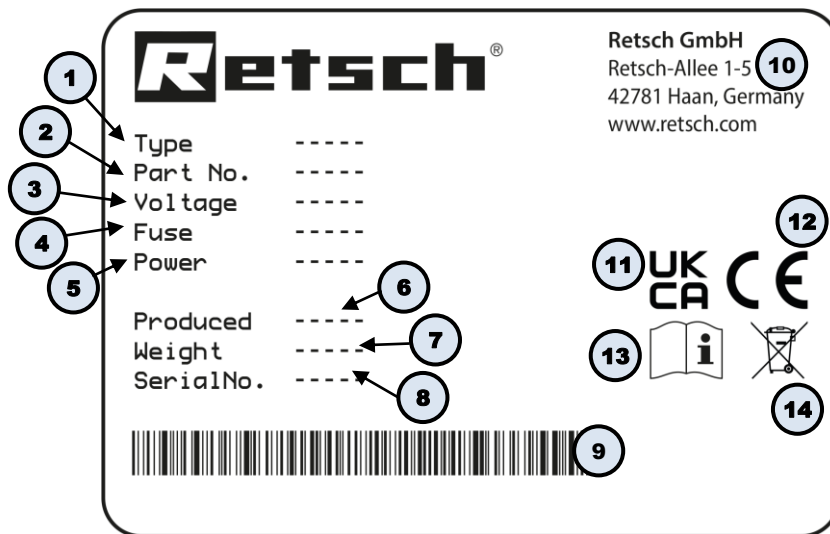


Fig. 2: Type plate

- 1 Device designation
- 2 Part number
- 3 Power version, Mains frequency
- 4 Fuse type and fuse strength
- 5 Capacity, Amperage
- 6 Year of production
- 7 Weight
- 8 Serial number
- 9 Bar code
- 10 Manufacturer's address
- 11 UKCA marking
- 12 CE marking
- 13 Safety warning: Read the manual
- 14 Disposal label


① In the case of queries please provide the device designation (1) or part number (2), as well as the serial number (8) of the device.

5 First Commissioning

⚠ WARNING W5.0002

Danger to life through electric shock
 Damaged power cable


- Operating the device with a damaged power cable or plug can lead to life-threatening injuries caused by an electric shock.
- **Before operating the device, check the power cable and plug for damage.**
- **Never operate the device with damaged power cable or plug!**



⚠ WARNING W6.0004

Danger to life due to electric shock
 Electrically conductive parts of the housing due to contact with live cables inside the housing

- An electric shock can result in burns, cardiac arrhythmia, respiratory arrest and cardiac arrest.
- **Always operate the device using a mains socket protected by a residual current circuit breaker (RCCB).**



NOTICE N11.0002

Setting up the device
 Disconnecting the device from the mains

- A separation of the device from the mains must be possible at any time.
- **Set up the device in such a way, that the connection for the power cable is always easily accessible.**

NOTICE N12.0004

Setting up the device
 Vibrations during operation

- Depending on the operating mode of the device, slight vibrations may occur.
- **Set up the device only on a vibration-free, plane and stable surface.**

5.1 Installation of the Device

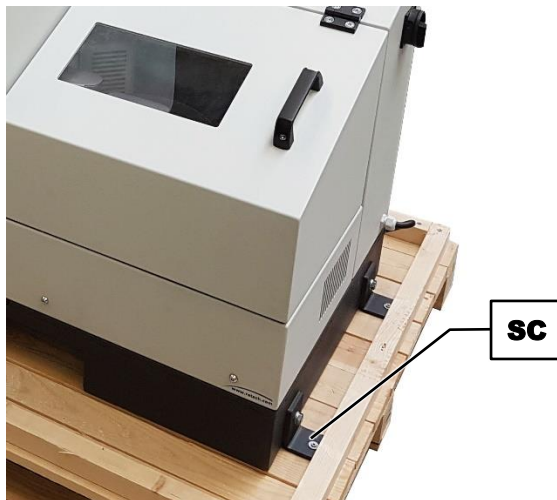


Fig. 3: Securing on the transport pallet

On delivery, the device is screwed onto the transport pallet.

- ⇒ Remove the four screws (**SC**) from the transport pallet.
- ⇒ Using a forklift, lift the ABP 250 up.
- ⇒ Attach the four feet of the device provided (vibration absorbers) to the base frame.
- ⇒ Place the ABP 250 onto the intended installation surface.

If the device is installed without the feet (vibration absorbers), it must be screwed to a level, firm base.

- ⇒ Screw the ABP 250 to the base using four suitable hex screws.

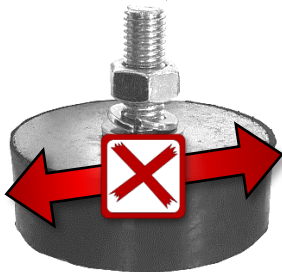


Fig. 4: Device feet: do not push or pull device

NOTICE

N13.0002

Damage to the device feet

Pushing or pulling the device

- If the device is pushed or pulled across a surface, this can damage the device feet (vibration dampers).
- **Do not pull or push the device.**
- **Lift the device if you need to move it.**

5.2 Lubricating the device when putting it into service for the first time

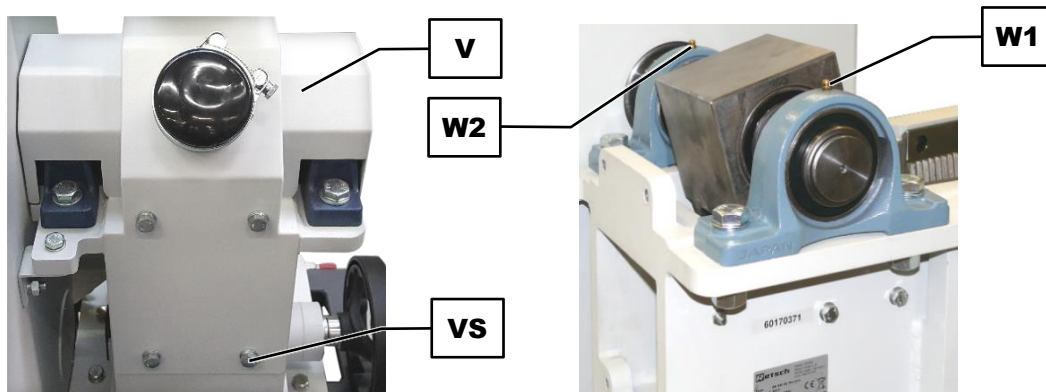


Fig. 5: Putting into service for the first time: Lubrication points

NOTICE The ABP 250 must be lubricated after **eight operating hours** when put into service for the first time . Use the supplied grease press that is filled with Shell Gadus S2 V220 2 for lubrication.

The following quantities of grease are required for the two lubrication points (**W1, W2**) on the device:

Lubrication point	Quantity (grams)	Operating state
W1	7	Standstill
W2	7	Standstill

Lubricating the lubrication points (W1, W2) under the cover

- ⇒ Switch the ABP 250 off.
- ⇒ Disconnect the ABP 250 from the power supply and secure to prevent it restarting.
- ⇒ Remove the feed hopper.
- ⇒ Unscrew the four M10x25 hex screws (**VS**) on the cover (**V**) at the back of the device
- ⇒ Remove the cover (**V**) from the device.
- ⇒ Place the grease press on the lubrication points in turn (**W1, W2**) and press the right amount of grease into the respective lubrication point.
- ⇒ Place the cover (**V**) back onto the device.
- ⇒ Secure the cover (**V**) using the four M10x25 hex screws (**VS**).
- ⇒ Assemble the feed hopper on the device.

5.3 Use of the Device for the Intended Purpose

⚠ CAUTION

C6.0005

Risk of injury

Potentially explosive atmosphere

- The device is not suitable for use in potentially explosive atmospheres. Operating the device in a potentially explosive atmosphere can lead to injuries caused by an explosion or fire.
- **Never operate the device in a potentially explosive atmosphere!**

⚠ CAUTION

C7.0006

Risk of injury

Sample material that is harmful to health

- Sample material that is harmful to health can injure people (illness, contamination).
- **Use suitable extraction systems with sample material that is harmful to health.**
- **Use suitable personal protective equipment with sample material that is harmful to health.**
- **Take note of the safety data sheets for the sample material.**



⚠ CAUTION

C8.0010

Risk of burns or poisoning

Varying sample properties

- The properties and therefore also the chemical reactivity of the sample can change during the grinding process and can cause burns or poisoning as a result.
- **Do not process any substances in this device whose chemical reactivity is so changed by grinding that there is a risk of explosion or poisoning.**
- **Take note of the safety data sheets for the sample material.**



⚠ CAUTION

C9.0004

Risk of injury

Explosive or flammable samples

- Samples can explode or catch fire during the grinding process.
- **Do not use any samples in this device that carry a risk of explosion or fire.**
- **Take note of the safety data sheets for the sample material.**



NOTICE

N14.0007

Range of application of the device

Long-term operation

- This laboratory device has been designed for 8-hour single shift operation.
- **This device must not be used as a production machine or deployed in continuous operation.**

NOTICE

N15.0000

Selection of suitable materials

- You might be using unsuitable materials.
 - **Use the manufacturer's application database to check whether your sample material is suitable for use.**

5.4 Principle of Operation

The **ABP 250** is a robust and powerful forced feed crusher with sample divider. The feed material reaches the grinding chamber through the splash-free hopper. Grinding takes place in the wedge-shaped shaft between the fixed crusher arm and the crusher arm that is moved by an eccentric shaft. The feed material is crushed and moved downwards by the elliptical movement.

As soon as the material is finer than the smallest discharge gap width it falls into a conveyer that conveys the material to the sample divider. The continuous gap adjustment ensures an optimal setting based on the feed material and the desired final fineness level.

5.5 Views of the Instrument

5.5.1 Front

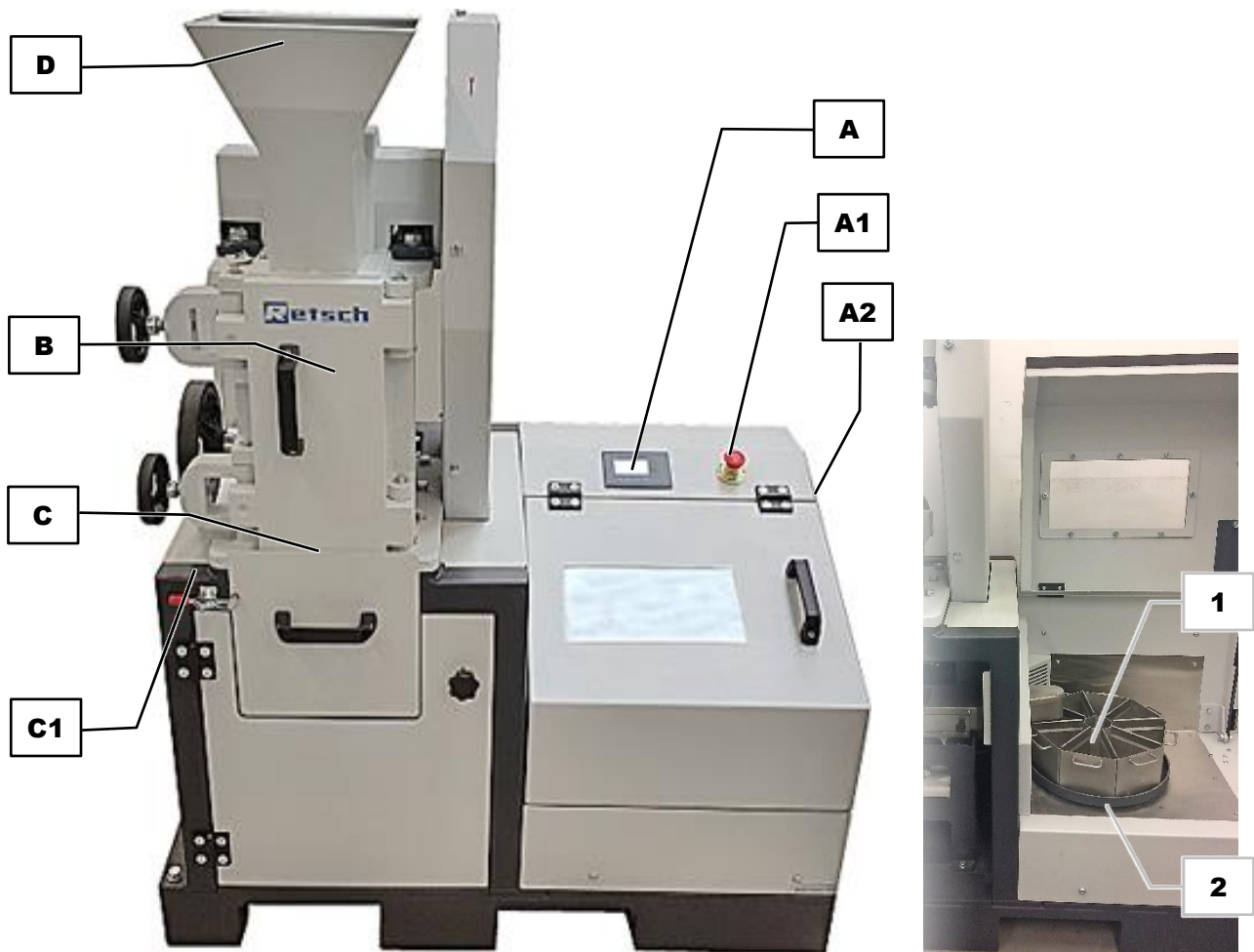


Fig. 6: Front view of the device

Element	Description	Function
A	Display, control panel	Controls and starts the device
A1	Emergency stop switch	Switches all functions off in an emergency
A2	Main switch	On the right-hand side of the device (not visible)
B	Door	Open = access to the grinding chamber Closed = drawer can be inserted, ABP 250 can be started, accidental access is not possible
C	Collecting receptacle	Collects the sample material
C1	Lock for the collecting receptacle	Stops the collecting receptacle opening by itself
D	Feed hopper	For adding material, prevents accidental access to the crushing chamber, stops the sample material gushing out
1	Part module	Modules (e.g. module for 8 part samples)
2	Module support	For holding and turning the divider module

5.5.2 Part modules

Part modules (5 litres)

<p>1 part sample with rejection mechanism (5 litres per sub-process)</p>	<p>8 part samples without rejection mechanism (4.5 litres per sub-process)</p>

5.5.3 Control element and display

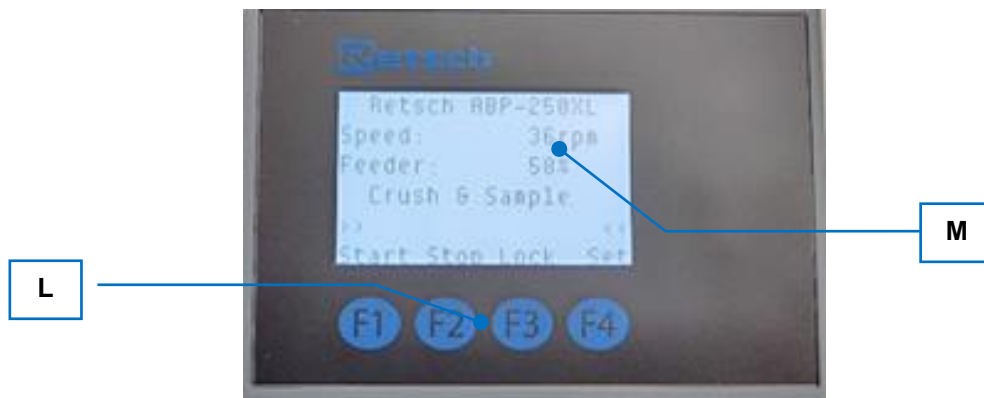


Fig. 7: Display with function keys

Element	Description	Function
L	Function keys F1 to F4	F1 = Start command; F2 = Stop command; F3 = Locks or unlocks the cover; F4 = Settings (setup)
M	Display	Displays the control functions and parameters

5.5.4 Side view

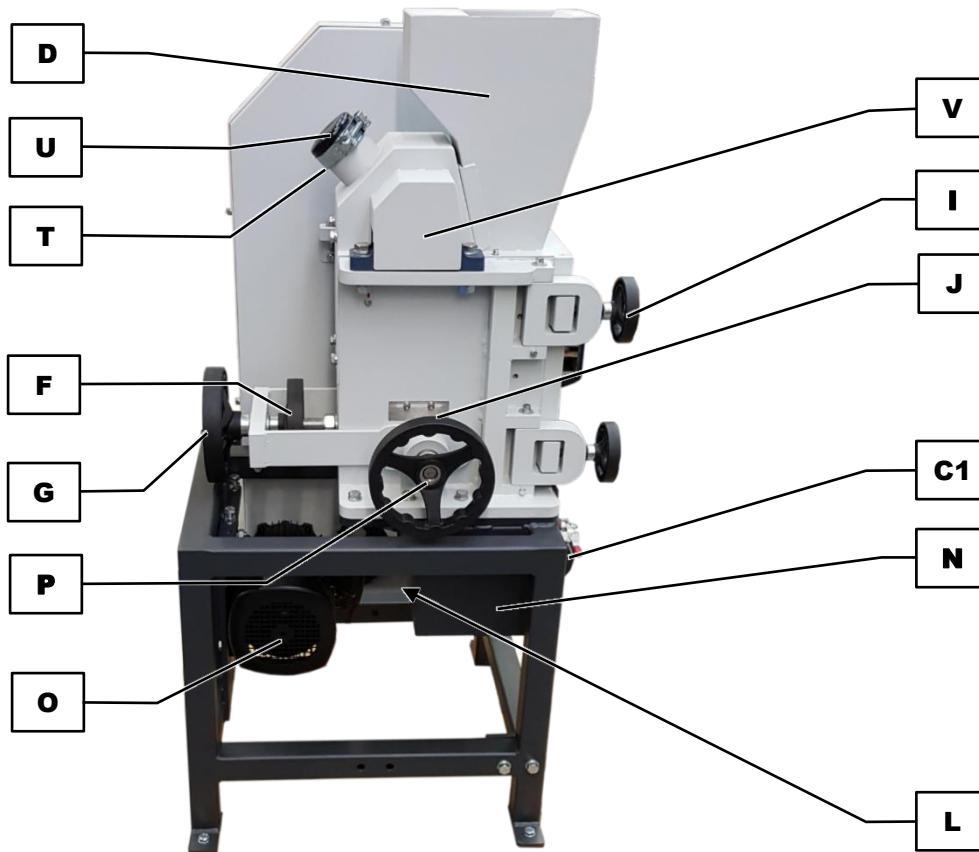


Fig. 8: Side view of the device

Element	Description	Function
C1	Lock for the collecting receptacle	Locks the collecting receptacle (drawer)
D	Feed hopper	Hopper with contact protection when feeding sample material
F	Lock nut	Locks the threaded spindle G
G	Threaded spindle	Changes the gap width
I	Door lock	Locks the door
J	Scale	Scale for adjusting the gap width
L	Limit switch	Stops the drive when the draw is opened
N	Collecting receptacle	Collecting receptacle (drawer) collects the ground sample material
O	Drive motor	Device drive
P	Hand wheel clamp	Retains the set gap width
T	Hose clamp	Secures the cover U on the dust extractor
U	Cover/dust extraction connection	Cover of the dust extraction socket. Dust extraction is possible during the grinding process
V	Cover of lubrication points	Cover for lubrication points W1 and W2

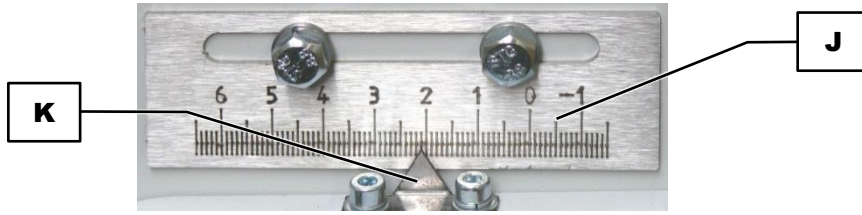


Fig. 9: Scale for adjusting the gap width

Element	Description	Function
J	Scale	Scale for adjusting the gap width
K	Pointer	Marks the gap width on the scale

5.6 Settings

5.6.1 Adjusting the gap width

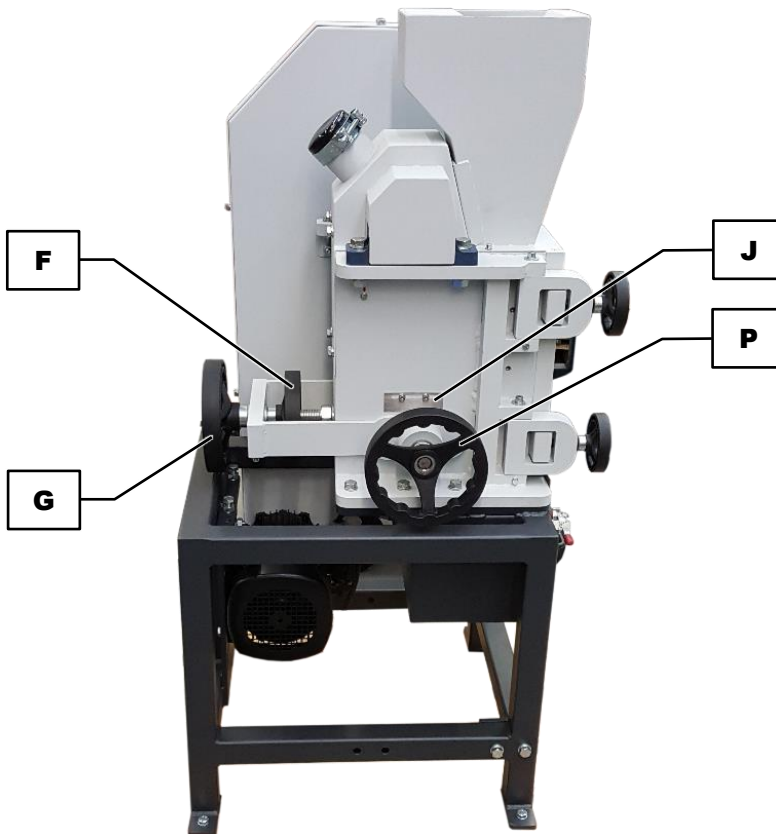


Fig. 10: Adjusting the gap width (zero position)

- ⇒ Start the ABP 250 while the device is idling.
- ⇒ Unscrew the lock nuts (**F**) in a clockwise direction.
- ⇒ Unscrew the locating screw (**P**) in an anticlockwise direction.
- ⇒ Carefully twist the threaded spindle (**G**) to the right until it is just possible to hear the meeting of the two jaws.

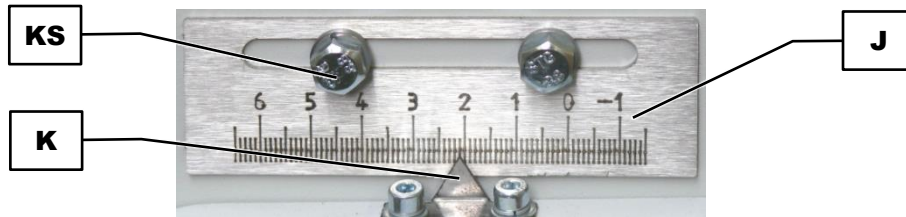


Fig. 11: Moving the scale

Move the scale (J) if the pointer (K) on the scale (J) is **not** on "0":

- ⇒ Unscrew the two hex screws (KS).
- ⇒ Move the scale (J) sideways until the pointer is on zero.
- ⇒ Tighten the two hex screws (KS) again.
- ⇒ Then set the desired gap width for the next grinding process.

NOTICE Always set the gap width of the ABP 250 to **more than 0 mm**. Where the minimum gap width is required, open the gap just wide enough for the meeting of the two jaws to no longer be audible.

Any blockage that arises can cause damage to the mechanical components.

5.6.2 Setting the gap width

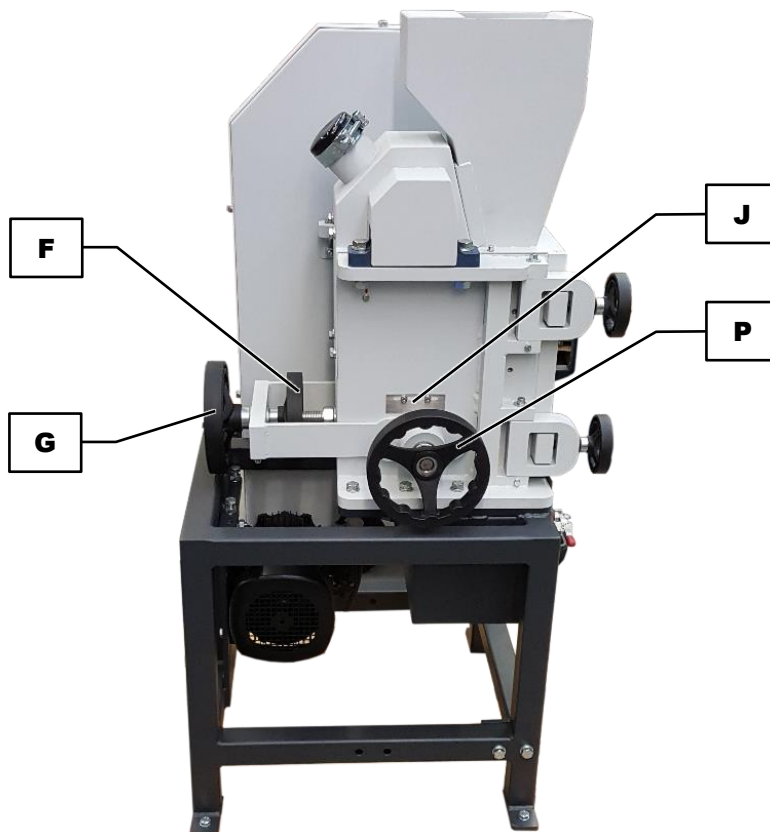


Fig. 12: Adjusting the gap width

- ⇒ Start the ABP 250 while the device is idling.
- ⇒ Unscrew the lock nuts (F) in a clockwise direction.
- ⇒ Unscrew the locating screw (P) in an anticlockwise direction.
- ⇒ Reduce the gap: turn the threaded spindle (G) to the right.
- ⇒ Increase the gap: turn the threaded spindle (G) to the left.

The pointer (**K**) shows the approximate gap width on the scale (**J**).

NOTICE If the pointer (**K**) does not move when adjusting the gap width, the jaw has become stuck due to dirt. In this case you can release the jaw by twisting the lock nut (**F**) to the left.

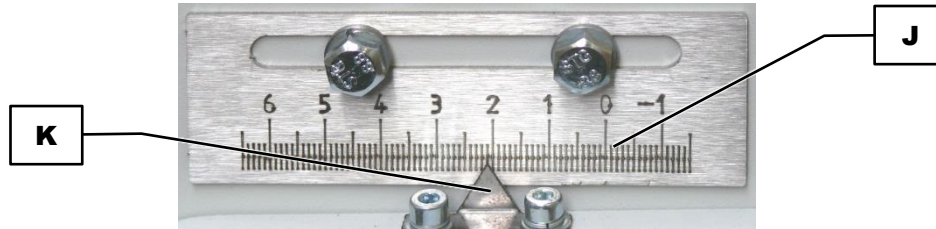


Fig. 13: Scale for adjusting the gap width

NOTICE The maximum gap width is 30 mm .

- ⇒ Tighten the lock nut (**F**) in an anticlockwise direction.
- ⇒ Tighten the locating screw (**P**) in a clockwise direction.

5.7 Opening and closing the jaw crusher

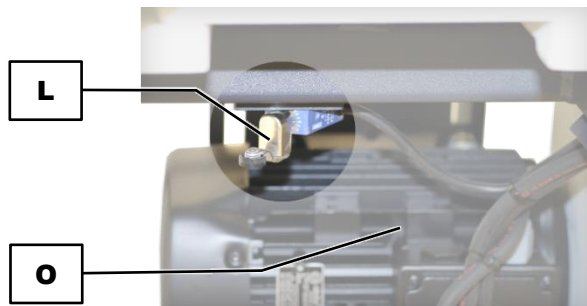


Fig. 14: Limit switch behind the collecting receptacle

NOTICE There is a limit switch (**L**) behind the collecting receptacle which stops the drive motor (**O**) for safety reasons when the collecting receptacle is removed.

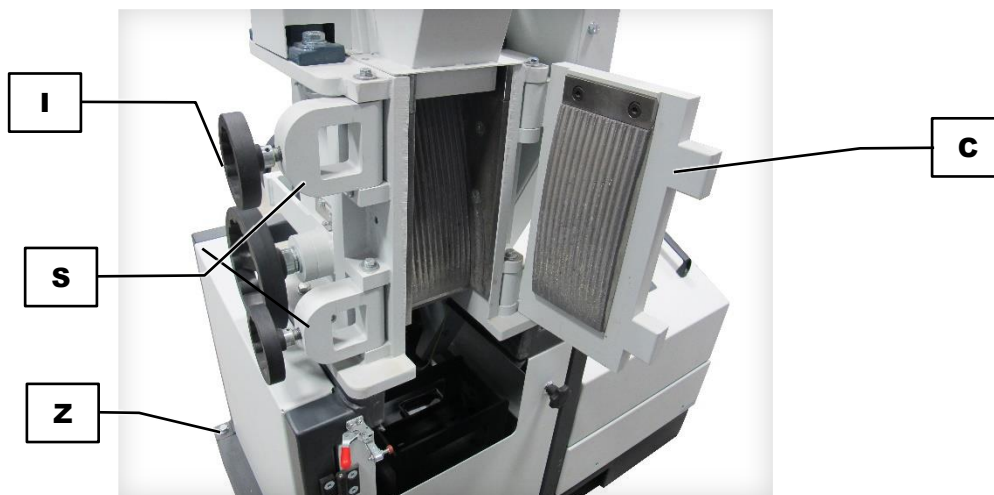


Fig. 15: Opening and closing the door

Opening the door

- ⇒ Pull the collecting receptacle (**N**) from the base frame (**Z**) and place it to one side.
- ⇒ Open the two hand wheels of the door lock (**I**) by turning to the left.
- ⇒ Fold back the two door clamps (**S**) to the side.
- ⇒ Open the door (**C**).

Closing the door

- ⇒ Close the door (**C**).
- ⇒ Fold back the two door clamps (**S**) to the door.
- ⇒ Close the two hand wheels of the door lock (**I**) by turning to the right.
- ⇒ Slide the collecting receptacle (**N**) into the base frame (**Z**).

5.8 Dust extraction

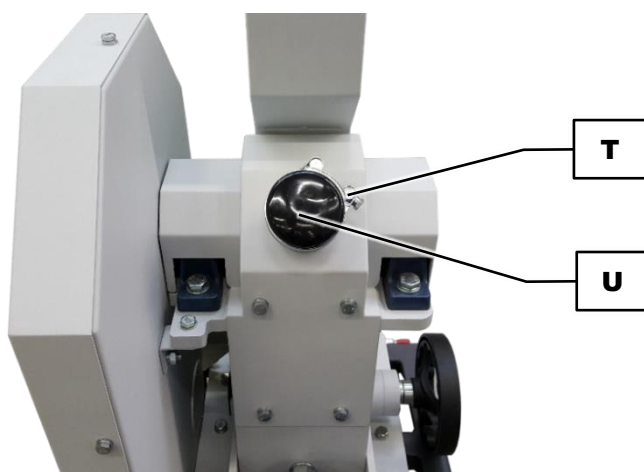


Fig. 16: Socket for dust extraction

NOTICE Dust can be extracted using an industrial vacuum cleaner or extraction unit where necessary. The socket for the dust extraction on the ABP 250 has an outer diameter of 76 mm (inner diameter of 72 mm).

- ⇒ Loosen the hose clamp (**T**) on the dust extraction socket.
- ⇒ Pull the protective cover (**U**) from the socket.
- ⇒ Connect a suitable suction pipe (not included) to the dust extraction socket.
- ⇒ Attach the suction pipe to the socket using the hose clamp (**T**).

6 Operating the device

6.1 Opening the device

The following steps are necessary to open the cover:

- Connect the device to the power supply.
 - Turn the main switch on.
 - Unlock the cover using the function key (F3) on the display.
- The safety switch is unlocked, and the cover can be opened.

6.2 Closing the device

- Close the cover.
- The sensor detects that the cover has been closed.
- The cover can now be locked using the function key F3 on the display.
- The cover locks automatically once the device has been disconnected from the power supply.

6.3 Switching On / Off

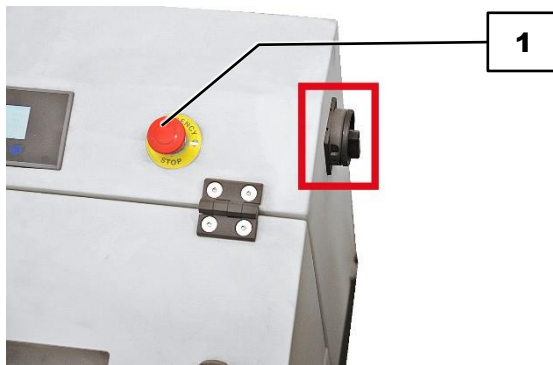


Fig. 17: Position of the main switch

- ⇒ Turn the ABP 250 on at the main switch on the right-hand side of the device.
- ⇒ Release the emergency stop switch (1) if you have not done so already.
- ⇒ Turn the ABP 250 off using the emergency stop switch (1) at the front of the device.

NOTICE The ABP 250 may only be stopped during normal operation when there is no longer any sample material in the crushing chamber. The jaws can otherwise become blocked and mechanical components may be damaged.

NOTICE The ABP 250 may only be started up when the crushing chamber is empty. Grinding material placed in the crushing chamber or feed hopper before starting the device leads to a blockage and can result in damage to mechanical components.

The grinding process can only be started when the door has been closed and the drawer inserted. A limit switch prevents the ABP 250 being started while open.

6.4 Inserting the part module

NOTICE **Wear or damage to the device**

Operating the device without the part module may result in greater wear or damage to the device.

The part module is placed on the empty rotary disc, and is then ready for use.



Fig. 18: View of the rotary disc without the part module



Fig. 19: Inserted part module for 8 part samples or one part sample with rejection mechanism

6.5 Preparing the sub-process

Inserting the vibratory feeder



Fig. 20: Positioning the vibratory feeder.

The safety pin (L) must be pulled backwards in order to insert the chute.

Inserting the part module

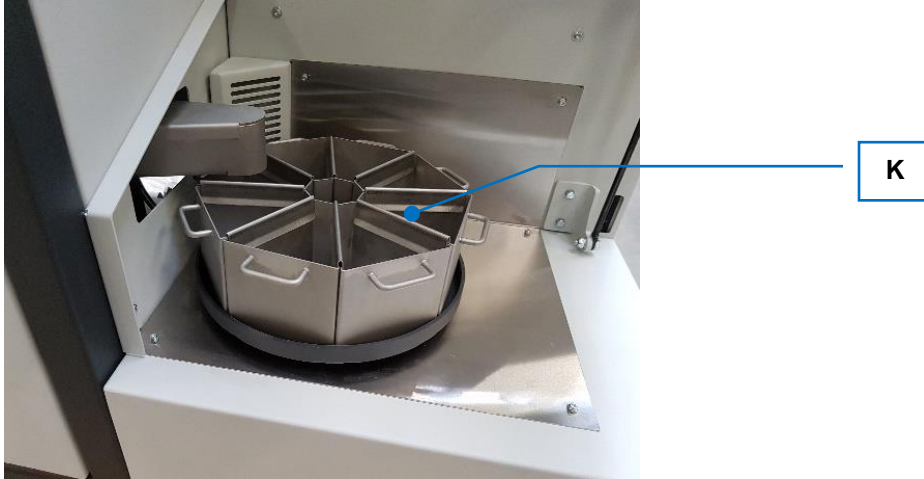


Fig. 21: Module for 8 part samples with clamps (K)

6.6 Display unit

Start screen

Press any button.



Fig. 22: Start screen

Select the following:

- F1: Start Press F1 to start the machine
- F2: Stop Press Sie F2 to stop the machine
- F3: Lock Press F3 to lock the housing. In order to be able to use this function the cover must be completely closed. Once locked, "Ready" is displayed and the process can be started.



Fig. 23: Locked and ready to start

F4: Settings (setup)

Press F4 to change the parameters.
The screen shows the following:

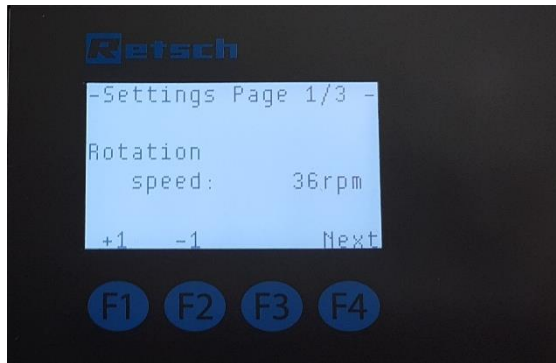


Fig. 24: Settings screen 1/3 – setting the rotation speed 18-53 rpm

Rotation speed

Press F1 to increase the rotation speed or F2 to reduce the rotation speed.

F1: + 1 rpm

F2: - 1 rpm

F4: Next (next setting)

Pressing key F4 again takes you to the next point:

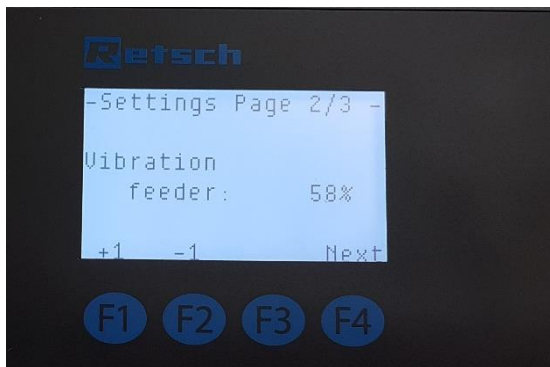


Fig. 25: Settings screen 2/3 – conveyor

Vibratory feeder (conveyor)

Press F1 to increase the vibration intensity or F2 to reduce it.

F1: + 1 %

F2: - 1 %

F4: Next (next setting)

Pressing key F4 again takes you to the next point:

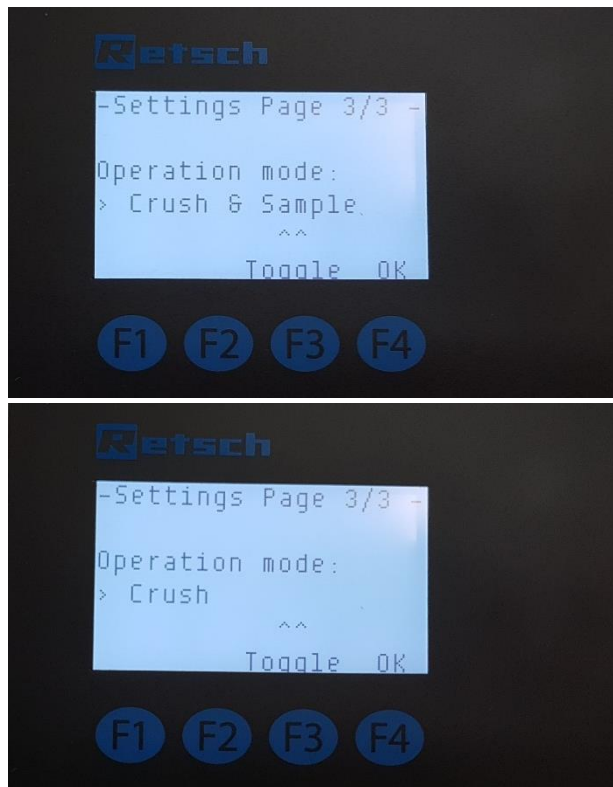


Fig. 26: Settings screen 3/3 – operating modes

Modes:

Press F3 to switch between the “Crush” and “Crush&Sample” modes.

Crush: Only the jaw crusher starts up. The appropriate collecting receptacle without outlet is required on the jaw crusher here.

Crush&Sample: Here the jaw crusher is used with simultaneous sample division.

F4: OK Settings are accepted

After confirming the settings you return to the start screen. You can start the process once the housing has been locked and “Ready” is shown on the display.

6.7 Starting the crushing process

NOTICE

N16.0003

Damage to mechanical components

Overfilling the feed hopper and the grinding chamber

- Feeding too much sample material can result in increased wear to the jaws and wearing plates and to blockages.
- **Do not use the feed hopper for storing sample material.**
- **The grinding chamber should not be filled over 65%.**

- **The sample material may have a maximum length of 120 mm x 90 mm.**
- **Fill larger and firmer sample material slowly and gradually into the feed hopper.**
- **If necessary, pre-grind larger and firmer sample material using a larger gap width.**

The purpose of the feed hopper (D) is to add the sample material to the grinding chamber, hold back sample material that splashes back and prevent anybody reaching into the grinding chamber.

Larger pieces of sample material should only be placed individually into the feed hopper (D). Observe the change in the grinding noise, and only add more sample material when there is a distinct reduction in the grinding noise.

6.8 Adding sample material

CAUTION

C10.0045

Damage to hearing

A high noise level may arise depending on the type of the material, the jaws used and the duration of grinding

- Excessive noise in terms of level and duration can cause impairments or lasting damage to hearing.
- **Suitable sound insulation measures must be provided or hearing protection worn.**



NOTICE Start the ABP 250 before you begin adding sample material! The ABP 250 can only be started when the door has been closed and the collecting receptacle inserted. The maximum feed size must not exceed **120 mm x 90 mm**.

- ⇒ **While the device is running**, fill the sample material slowly and continuously into the feed hopper (D). This guarantees more effective and faster grinding.
- ⇒ Depending on the properties of the sample material, the crushing chamber may not be filled more than 2/3 full, otherwise the jaws can become blocked and the motor protection switch turns the drive off. Continuous overfilling produces extreme wear on the wearing plates in the crushing chamber.
- ⇒ During the grinding process, pay attention to the quantity of sample material in the collecting receptacle (N). The collecting receptacle (N) must be emptied as soon as the filled quantity reaches 90% of its volume.

6.9 Removing sample material after grinding

CAUTION

C11.0005

Burns

Heating of the sample material during grinding

- Hot surfaces on the collecting receptacle or the grinding chamber can cause burns.
- Hot sample material in the collecting receptacle can cause burns.
- **Allow the hot sample material to cool down before removing the collecting receptacle and opening the door.**
- **Wear protective gloves.**



CAUTION

C12.0010

Heavy collecting receptacle

Depending on the density of the sample material or the filling level, the filled collecting receptacle may be very heavy.

- Due to its weight, a filled collecting receptacle can cause personal injuries when lifted out from the base frame.
- **As a general rule, always use both hands to pull the collecting receptacle out of the base frame.**
- **Two people should always remove a heavy collecting receptacle from the base frame.**
- **Wear safety shoes.**

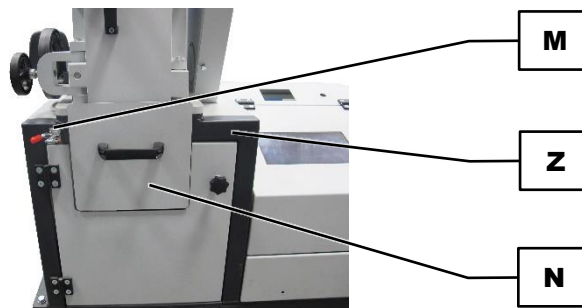


Fig. 27: Collecting receptacle

- ⇒ Turn the ABP 250 off.
- ⇒ Open the lock (**M**) on the collecting receptacle (**N**).
- ⇒ Pull the collecting receptacle (**N**) from the base frame (**Z**).
- ⇒ Remove the ground sample material from the collecting receptacle (**N**).

- ① The ABP 250 can be retrofitted for batch processing or continuous operation with a collecting hopper and a 30 l collecting receptacle which are available as optional [accessories](#).

NOTICE

N17.0004

Damage to mechanical components

Crusher blockage and the motor switching off

- Due to the size and geometry of the grinding chamber, blockages may occur when feeding a large quantity of big pieces of firmer sample material.
- If the device is not switched off promptly in the event of blockages, a motor protection switch turns the overloaded drive motor off.
- **Switch the device off immediately when there is a blockage, open the door and remove the sample material causing the blockage.**
- **Reduce the feed of sample material to the feed hopper.**
- **Fill larger and firmer sample material slowly and gradually into the feed hopper.**
- **If necessary, pre-grind larger and firmer sample material using a larger gap width**

7 Cleaning, Wear and Maintenance

⚠ CAUTION

C13.0013

Risk of injury

Improper repairs

- Unauthorised and improper repairs can cause injuries.
- **Repairs to the device may only be carried out by the Retsch GmbH, an authorised representative or by qualified service technicians.**
- **Do not carry out any unauthorised or improper repairs to the device!**

7.1 Cleaning

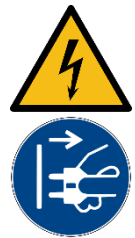
⚠ WARNING

W7.0003

Risk to life caused by an electric shock

Cleaning live parts with water

- Cleaning the device with water can lead to life-threatening injuries caused by an electric shock if the device has not been disconnected from the power supply.
- **Only carry out cleaning work on the device when it has been disconnected from the power supply.**
- **Use a cloth moistened with water for cleaning.**
- **Do not clean the device under running water!**



⚠ CAUTION

C14.0031

Risk of injury

Cleaning with compressed air

- When using compressed air for cleaning purposes dust and remnant of the sample material can be flung around and injure eyes.
- **Always wear safety glasses when cleaning with compressed air.**
- **Observe the material safety data sheets of the sample material.**



NOTICE

N18.0009

Damage to the housing and device

Use of organic solvents

- Organic solvents may damage plastic parts and the coating.
- **The use of organic solvents is not permitted.**

- ⇒ Clean the housing of the device with a damp cloth and common domestic detergent where necessary. Make sure that no water or detergent gets into the inside of the device.
- ⇒ Clean the grinding chamber and jaws using a brush, and vacuum the material residue released using an industrial vacuum cleaner.
- ⇒ Stubborn sample residue can be removed by a grinding process with quartz or broken glass.
- ⇒ The grinding chamber can alternatively be cleaned using compressed air.

7.1.1 Removing and installing the feed hopper

WARNING

W8.0003

Serious personal injury
 Contact between moving jaws in the grinding chamber

- Accidentally reaching into the grinding chamber and between moving jaws can cause serious injuries to hands.
- **Always operate the device with the feed hopper installed.**

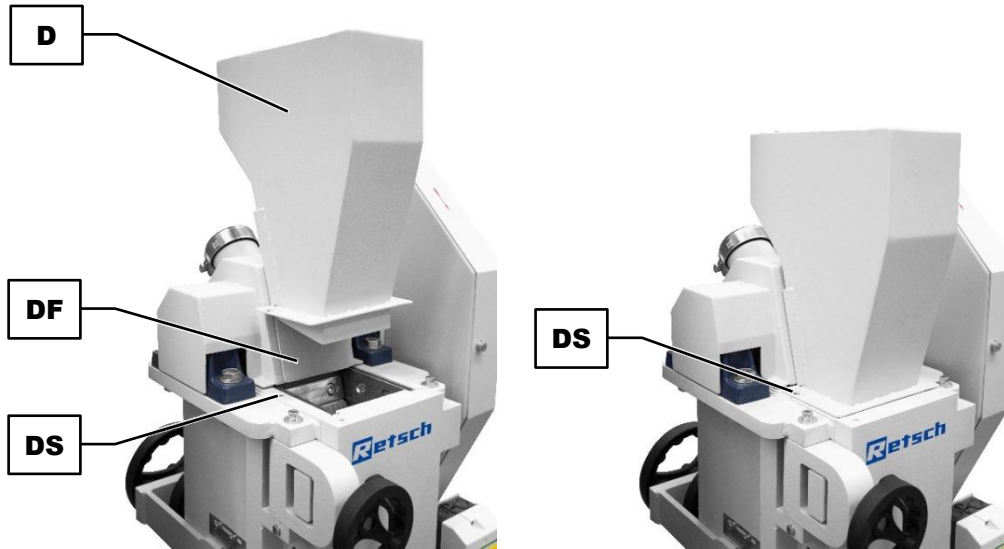


Fig. 28: Removing and assembling the feed hopper

Removing the feed hopper

- ⇒ Switch the ABP 250 off.
- ⇒ Disconnect the ABP 250 from the power supply and secure to prevent it restarting.
- ⇒ Unscrew the M6 Allen screw (DS).
- ⇒ Lift the feed hopper (D) up and out.

Assembling the feed hopper

- ⇒ Slide the feed hopper (D) downwards from above over the guide plate (DF).
- ⇒ Secure the feed hopper (D) using the M6 Allen screw (DS).

7.1.2 Cleaning the feed hopper

WARNING

W9.0003

Serious personal injury
 Contact between moving jaws in the grinding chamber

- Accidentally reaching into the grinding chamber and between moving jaws can cause serious injuries to hands.
- **Always operate the device with the feed hopper installed.**

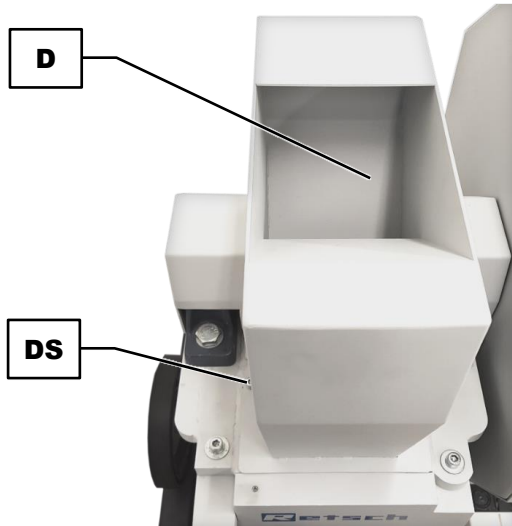


Fig. 29: Cleaning the feed hopper

29

- ⇒ Switch the ABP 250 off.
- ⇒ Disconnect the ABP 250 from the power supply and secure to prevent it restarting.
- ⇒ Unscrew the M6 Allen screw (**DS**).
- ⇒ Lift the feed hopper (**D**) up and out.
- ⇒ Clean the feed hopper (**D**) using compressed air.
- ⇒ The feed hopper (**D**) can additionally be wiped out using a damp cloth and household detergent.
- ⇒ Place the feed hopper (**D**) back on the device and secure it using the M6 Allen screw (**DS**).

7.2 Wear

Jaws may become worn depending on the frequency of grinding operations and the quality of the sample material. The jaws (**Q**) and wearing plates (**R**) should be inspected for wear regularly and replaced where necessary.

7.2.1 Replacing the breaking jaws

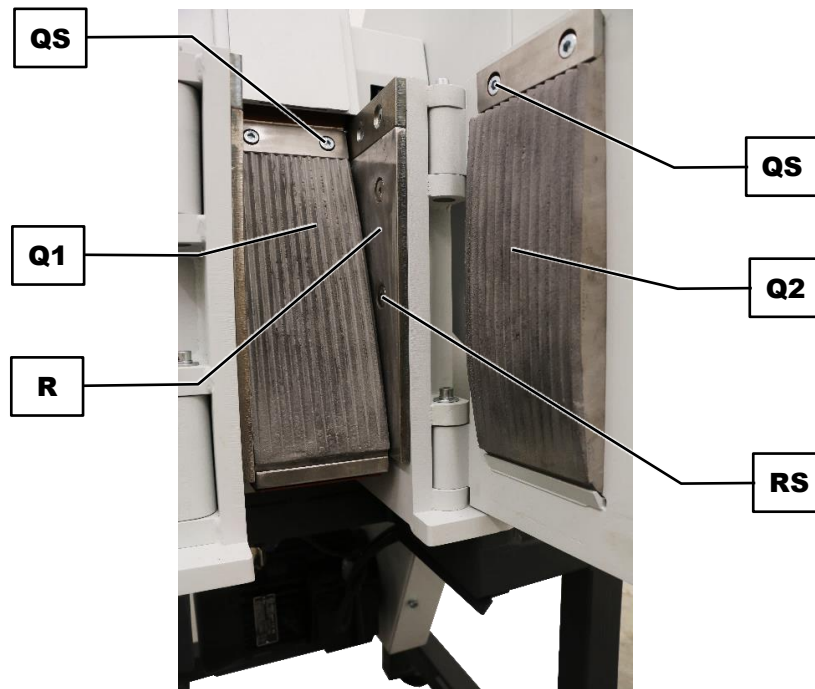


Fig. 30: Replacing the jaws

NOTICE

Injuries and damage to the device

If not handled correctly there is a risk of injuries and damage to the jaws.

- **To prevent the jaws falling down, hold them tight while unscrewing the screws.**

- ⇒ Switch the ABP 250 off.
- ⇒ Disconnect the ABP 250 from the power supply and secure to prevent it restarting.
- ⇒ Remove the feed hopper. .
- ⇒ Set the gap width to the maximum gap.

Changing the jaw in the grinding chamber

- ⇒ Unscrew the M10x25 Allen screws (**QS**) of the jaw (**Q1**) in the grinding chamber.
- ⇒ Remove the clamp and then take the jaw (**Q1**) out of the grinding chamber.
- ⇒ Place the longer, new jaw (**Q1**) into the clamp of the grinding chamber with the polished side facing downwards.
- ⇒ Secure the jaw (**Q1**) using the clamp and the M10x25 Allen screws (**QS**). The tightening torque is **40 Nm**.

Changing the jaw on the inside of the door

- ⇒ Unscrew the M10x25 Allen screws (**QS**) of the jaw (**Q**) on the inside of the door.
- ⇒ Remove the clamp and then take the jaw (**Q2**) out of the inside of the door.
- ⇒ Place the shorter, new jaw (**Q2**) into the inside of the door with the polished side facing downwards.
- ⇒ Secure the jaw (**Q2**) using the clamp and the M10x25 Allen screws (**QS**). The tightening torque is **40 Nm**.

- ⇒ Set the gap width to the necessary gap.
- ⇒ Assemble the feed hopper.

7.2.2 Replacing the wearing plates

Replacing the wearing plates in the grinding chamber

Also change the wearing plates (**R**) where necessary:

- ⇒ Unscrew the M10x25 Allen flat head screws (**RS**) on the wearing plates (**R**) and remove the wearing plates (**R**) from the grinding chamber.
- ⇒ Place the new wearing plates (**R**) sideways into the grinding chamber.
- ⇒ Secure the wearing plates (**R**) using the M10x25 Allen flat head screws (**RS**) and secure the screw connection using Loctite 241.

7.3 Maintenance

7.3.1 Lubricating the device

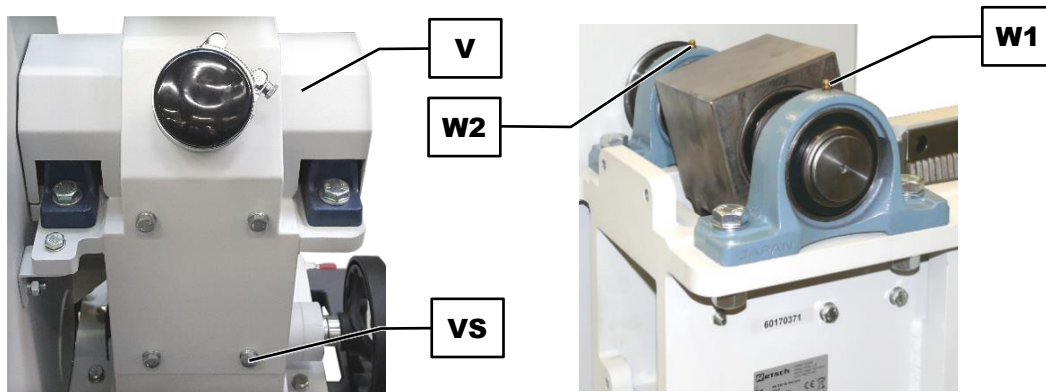


Fig. 31: Lubrication points

NOTICE The ABP 250 must be regularly lubricated. There are two lubrication points (**W1**, **W2**) on the device. Use the supplied grease press for lubrication.

The following amounts of grease are needed after specific intervals:

Lubrication point	Quantity (grams)	Interval (operating hours)	Operating state
W1	7	60	Standstill
W2	7	60	Standstill

NOTICE Use natural-coloured, lithium saponified (graphite-free) grease. Shell Gadus S2 V220 2 is supplied with the ABP 250.

Lubricating the lubrication points (**W1**, **W2**) under the cover

- ⇒ Switch the ABP 250 off.
- ⇒ Disconnect the ABP 250 from the power supply and secure to prevent it restarting.
- ⇒ Remove the feed hopper.
- ⇒ Unscrew the four M10x25 hex screws (**VS**) on the cover (**V**) at the back of the device.
- ⇒ Remove the cover (**V**) from the device.
- ⇒ Place the grease press on the lubrication points in turn (**W1**, **W2**) and press the right amount of grease into the respective lubrication point.
- ⇒ Place the cover (**V**) back onto the device.

- ⇒ Secure the cover (**V**) using the four M10x25 hex screws (**VS**).
- ⇒ Assemble the feed hopper on the device.

7.3.2 Checking the limit switch

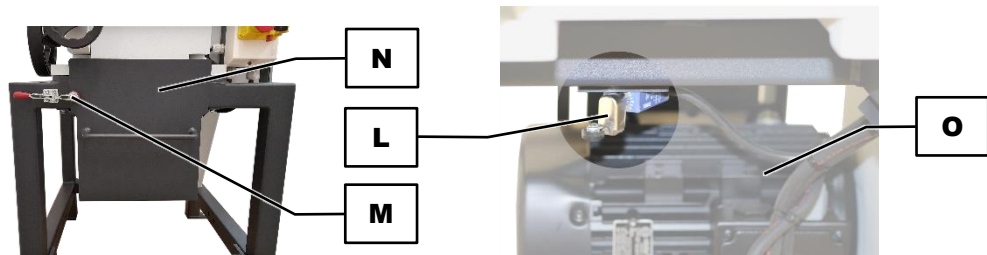


Fig. 32: Checking the limit switch

NOTICE The function of the limit switch (**L**) must be checked regularly every **6 months**.

Conducting the limit switch check

- ⇒ Switch the ABP 250 on (idling).
- ⇒ Open the lock (**M**) on the collecting receptacle (**N**).
- ⇒ Pull the collecting receptacle (**N**) out.

Result: the limit switch (**L**) **must** turn the drive motor (**O**) **off**.

- ⇒ Slide the collecting receptacle (**N**) back into the base frame.

Result: the drive motor (**O**) **does not start**. It can only be switched back on using the ON switch.

- ⇒ Close the lock (**M**) on the collecting receptacle (**N**).
- ⇒ Switch the ABP 250 on using the ON switch.

8 Return for Service and Maintenance



Fig. 33: Return form

The acceptance of devices and accessories of the Retsch GmbH for repair, maintenance or calibration can only be effected, if the return form including the decontamination declaration service has been correctly and fully completed.

- ⇒ Download the return form located in the download section "Miscellaneous" on the Retsch GmbH homepage (<http://www.retsch.com/downloads/miscellaneous/>).
- ⇒ When returning a device, attach the return form to the outside of the packaging.

In order to eliminate any health risk to the service technicians, Retsch GmbH reserves the right to refuse the acceptance and to return the respective delivery at the expense of the sender.

9 Accessories

Information on available accessories as well as the respective manuals are accessible directly on the Retsch GmbH homepage (<http://www.retsch.com>) under the heading "Downloads" of the device.

Information on wear parts and small accessories can be found in the Retsch GmbH general catalogue also available on the homepage.

In case of any questions concerning spare parts please contact the Retsch GmbH representative in your country, or Retsch GmbH directly.

10 Disposal

In the case of a disposal, the respective statutory requirements must be observed. In the following, information on the disposal of electrical and electronic devices in the European Community are given.

Within the European Community the disposal of electrically operated devices is regulated by national provisions that are based on the EU Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE).

Accordingly, all devices supplied after August 13th 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, the devices are provided with the disposal label.

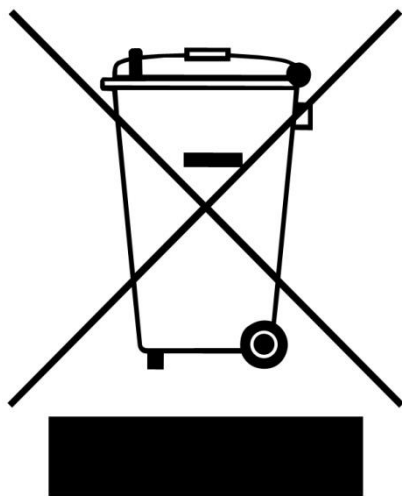


Fig. 34: Disposal label

Since the disposal regulations worldwide and also within the EU may differ from country to country, the supplier of the device should be consulted directly in case of need.

This labelling obligation is applied in Germany since March 23rd 2006. From this date on, the manufacturer must provide an adequate possibility of returning all devices delivered since August 13th 2005. For all devices delivered before August 13th 2005 the end user is responsible for the proper disposal.

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JAW CRUSHER AND SAMPLE DIVIDER COMBINATION UNIT

ABP 250 | 21.496.xxxx

EU DECLARATION OF CONFORMITY

We, represented by the undersigned, hereby declare that the above device complies with the following directives and harmonised standards:

Machinery Directive 2006/42/EC

Applied standards, in particular:

DIN EN ISO 12100 Machine Safety - General Design Principles

Electromagnetic compatibility 2014/30/EU (tested at 230 V, 50 Hz)

Applied standards, in particular:

EN 55011 Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement
DIN EN 61326-1 Electrical equipment for measurement, control and laboratory use - EMC requirements

Restriction of hazardous substances (RoHS) 2011/65/EU

Authorised person for compilation of the technical documentation:

Julia Kürten (Technical Documentation)

Furthermore, we declare that the relevant technical documentation for the above device has been prepared in accordance with Annex VII Part A of the Machinery Directive and we undertake to submit the documentation to the market surveillance authorities on request.

In the event of a modification of the device not agreed on by Retsch GmbH, as well as the use of non-approved spare parts or accessories, this declaration loses its validity.

Retsch GmbH

Haan, 09/2023



Dr. Alexander Mühlig, Technical Manager





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Retsch GmbH
Retsch-Allee 1-5
42781 Haan
Germany