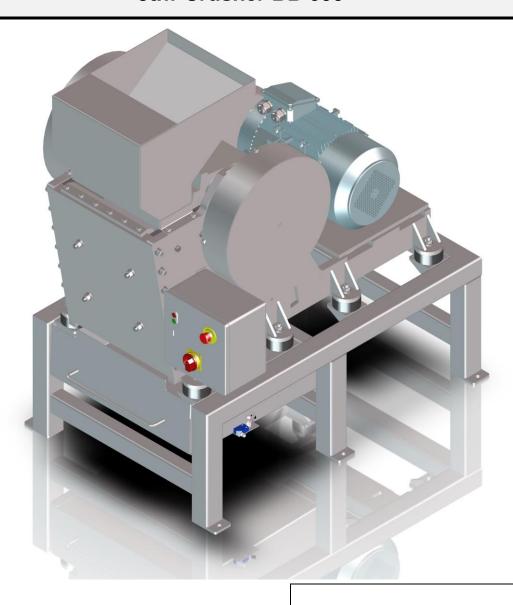
# Manual Jaw Crusher BB 600









# Copyright

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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 0001 of the "Jaw Crusher BB 600" 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 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 informthe Retsch GmbH representative in your countryyour supplier, orRetsch GmbH directly.			
Service address:	7		



## 2 Safety

## Safety Officer

The operating company itself must ensure the following with respect to persons authorised to work on the device:

- that they have read and understood all regulations contained in the chapter on safety;
- that they are aware before they start work of all instructions and regulations for the target group related to the work;
- that they have easy access to the manual for this device at all times;
- that they 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 manual.

▲ Improper operation can lead to personal injuries. The operating company itself is responsible for its safety and that of its staff. The operating company itself must ensure that no unauthorised persons have access to 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.

▲ People under the influence of intoxicating substances (medications, drugs, alcohol) or who are overtired may not operate the device or work on the device.



## 2.1 Explanations of the Safety Instructions

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

## **A** 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 **A 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 **A 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.

## 2.2 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.



## **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.



## 2.3 Protective Equipment

- The Jaw Crusher BB 600 can only be started when the collecting receptacle has been inserted into the base frame.
- A limit switch behind the collecting receptacle prevents the machine starting in an unsafe state.
- Pulling out the collection container initiates a category 1 stop of the shredding process. The power supply to the motor will be interrupted.
- The motor protection switch turns the drive motor off when the jaws are blocked.
- In the event of danger, the machine can be shut down at any time by pressing the emergency stop button .

## 2.4 Intended use

The Jaw Crusher BB 600 is suitable for grinding medium to extremely hard substances and for brittle and hard ductile materials.

As a laboratory instrument, the unit is intended exclusively for sample preparation and processing of solids and is not to be used as a production machine.

The instrument is designed for stationary operation in a dry and clean working environment.

The operator and operating personnel must have read the operating manual and be familiar with the full range of functions of the instrument.

## 2.5 Improper use

The Jaw Crusher BB 600 is not designed for continuous operation. Use in the private sphere and for applications other than those set out in the "Intended use" chapter is not permitted. Repairs and modifications may only be carried out by **Retsch GmbH** by an authorised representative, or by qualified service technicians.



## 2.6 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
managing operator or service technician
Surname, first name (block letters)
Position in the company
Place, date and signature



## 3 Technical Data

## 3.1 Use of the Device for the Intended Purpose

The Jaw Crusher BB 600 is suitable for grinding medium to medium-hard substances and brittle and hard ductile materials.

The machine can be used to grind the following materials:

- Concrete
- Ores
- Rocks
- Glass
- Ceramics
- Coal
- Minerals
- Slag
- Cement clinker

## NOTICE

N3.0007

## Range of application of the device

Long-term operation

- This laboratory device is designed for eight-hour single-shift operation with a duty cycle of 30 %.
- This device may not be used as a production machine nor is it intended for continuous operation.

**NOTICE:** This device is not designed as a production machine and for continuous operation, but as a laboratory device, intended for single-shift intermittent periodic operation of 8 hours per day.

## 3.2 Principle of Operation

The Jaw Crusher BB 600 is tough and powerful.

The feed material passes through the splash-free hopper and into the grinding chamber. Grinding takes place in the wedge-shaped shaft between the jaws. The feed material is crushed and moved downwards by the elliptical motion.

The sample falls into a removable collecting receptacle as soon as it is finer than the smallest discharge gap width.

The infinitely variable adjustment of the gap width ensures an optimum setting for the feed material and for the desired final fineness level.

## 3.3 Dimensions and Weight

 Height:
 ~1,575 mm

 Width:
 ~1,073 mm

 Depth:
 ~1,456 mm

 Weight:
 ~1,300 kg net



## 3.4 Required Floor Space

Width of floorspace: 1,080 mm Depth of floorspace: 1,500 mm

No safety distance is required!

A space of around 50 cm should be planned on the left-hand side of the machine for better operability.

## 3.5 Mains connection

220 V, 60 Hz

400 V, 50 Hz

480 V, 60 Hz

600 V, 60 Hz

Mains voltage fluctuations +/- 10%

## 3.6 Rated Power

19200 VA, 3~

#### 3.7 Pre-fuse

32 A

## 3.8 Degree of Protection

- IP 55

#### 3.9 Emissions

#### Noise data

Noise measurement in accordance with DIN 45635-31-01-KL3

Noise levels are significantly influenced by the properties of the sample material.

## Example 1:

Sound power level  $L_{WA} = 101.7 \text{ dB}(A)$ 

Workplace-related emissions value  $L_{pAeq} = 89.5 \text{ dB}(A)$ 

## Operating conditions:

Feed material: marble pebbles, particle size <90 mm

Set gap width: < 6 mm Final particle size: < 10 mm

Fill level of the grinding chamber: approx. 65 %

#### Example 2:

Sound power level  $L_{WA} = 102 dB(A)$ 

Workplace-related emissions value  $L_{pAeq} = 90 \text{ dB}(A)$ 

#### Operating conditions:

Feed material: quartz pebbles, particle size <55 mm

Set gap width: < 6 mm Final particle size: < 10 mm

Fill level of the grinding chamber: approx. 65 %



# **A** CAUTION

## 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.



C4.0045

## 3.10 Electromagnetic Compatibility (EMC)

- EMC class in accordance with DIN EN 55011: A

#### 3.11 Feed Grain Size

Feed size: < 350x170 mm

Final fineness: < 6 mm

## 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 Gap width

The spacer plates enable a gap width adjustment of 6 mm to approx. 62 mm for the toothed breaking jaws and from 1 mm to approx. 53 mm for the corrugated breaking jaws:

Spacer plate [mm]	Gap opening [mm] for toothed breaking jaws	Gap opening [mm] for corrugated, smooth breaking jaws
-	62	53
5	58	44
10	47	35
15	38	30
20	33	22
25	25	15
30	18	7
35	12	1
37 (Maximum)	6	No usage possible



# 3.14 Installation drawing

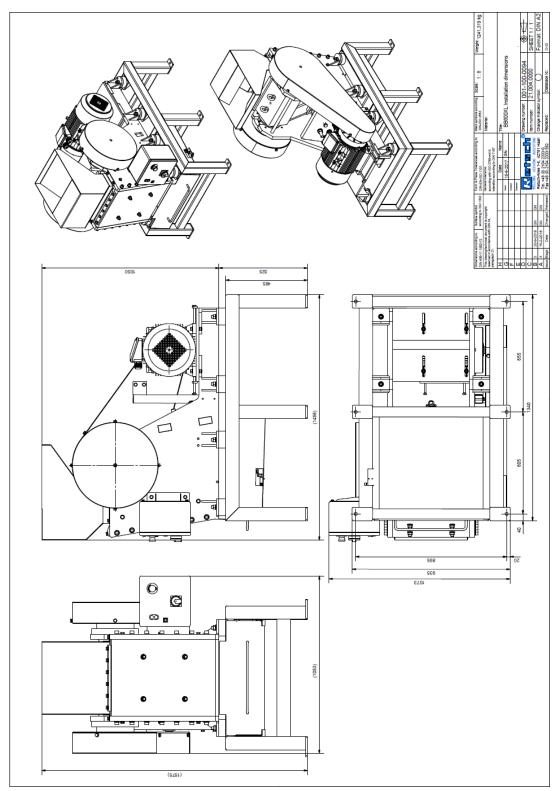


Fig. 1: Installation drawing



# 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**

N4.0001

## **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

## A

#### **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!

## A

## **WARNING**

W2.0011

#### **Serious injuries**

Excessive weight



- The machine is extremely heavy, weighing 1300 kg, and can lead to serious injuries when lifted.
- The machine may only be lifted and transported using lifting gear!

#### **NOTICE**

N5.0017

#### 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**

N6.0014

## 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.



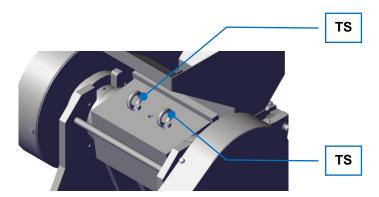


Fig. 2: Transport bolts

The Jaw Crusher BB 600 can be transported using a crane or other suitable means of transport:

• To do this, wind ropes through the two transport bolts (TS) on the machine.

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

The BB 600 has a base frame (**Z**) 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 (**Z**).
- ⇒ Slowly lift the device using the lifting gear and stabilise it to prevent it from toppling over.

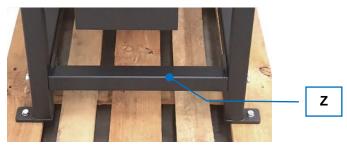


Fig. 3: Base frame

## 4.3 Temperature Fluctuations and Condensation

**NOTICE** 

N7.0016

## Damaged components due to condensation

Temperature fluctuations

- 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

Installation height: max. 2 000 m above sea level

Ambient temperature: 5 °C – 40 °C

## NOTICE

N8.0021

## **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)</li>

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**

N9.0015

#### 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

## **MARNING**

W3.0005

#### 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**

N10.0022

#### **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.

**MARNING** 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 at the installation site for connecting the mains cable to the mains should be suitable for higher inrush currents. It is recommended to use a type C circuit breaker or a Neozed or NH type fuse. The rated current of the fuse can be found on the rating plate or in the technical data.

## **NOTICE**

N11.0005

#### **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

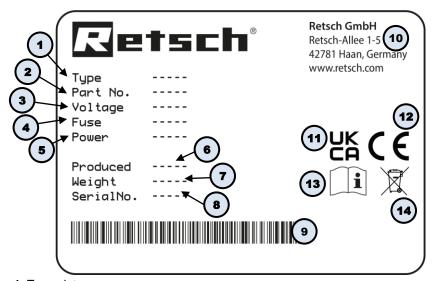


Fig. 4: Type plate

- 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 Views of the device

# 5.1 Front

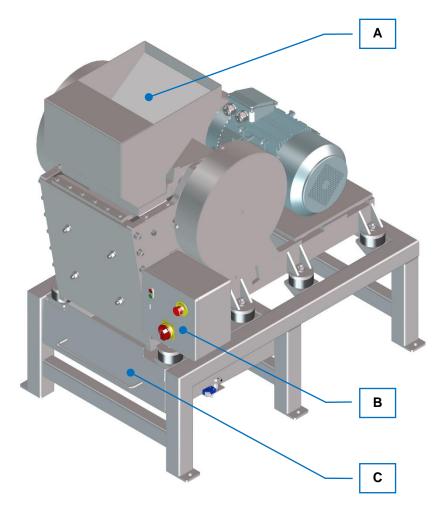


Fig. 5: Front view

Element	Description	Function
Α	Feed hopper	For adding material.
В	Control element	For operating and controlling the machine.
С	Collecting receptacle	Collects the sample material.  The limit switch in the base frame actuates if the collecting receptacle is removed during operation.



# 5.2 Back

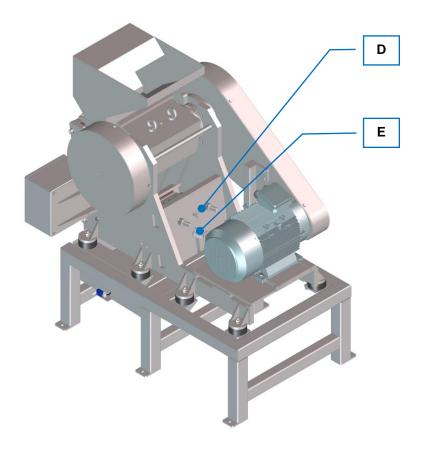


Fig. 6: Rear view

Element	Description	Function
D	Lock nuts	Counter the spacer plates when adjusting the gap
E	Spring	For adjusting the gap



# 5.3 View of the control unit

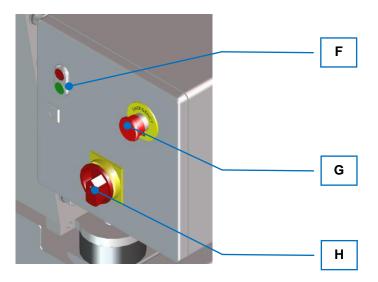


Fig. 7: Control element

Element	Description	Function
F	On/Off switch	Switches the jaw crusher on or off.
G	Emergency stop button	Stops the machine in the event of danger.
Н	Main switch	Switches the machine on or off.



## 6 First Commissioning

## A

#### **WARNING**

W4.0002

## Danger to life through electric shock

Damaged power cable



- Operating the device with a damaged power cable or plug can lead to lifethreatening 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!

## A

## **WARNING**

W5.0004

## 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

N12.0002

#### 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**

N13.0004

#### 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.



## 6.1 Installation of the Device



Fig. 8: Securing to the transport pallet

On delivery, the Jaw Crusher BB 600 is screwed to the transport pallet.

- Remove the hex screws (SC) from the transport pallet.
- Using a forklift, lift the machine up.
- Place the machine onto the intended installation surface. Set up the device only on a vibration-free, plane and stable surface.
- Screw the machine firmly onto the base using suitable hex screws (SC).

## 6.2 Establishing the power supply

# **WARNING**

W6 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.

The Jaw Crusher BB 600 is connected to the power supply as follows:

- Ensure that the machine has been securely installed; see "Installation of the Device".
- Using the connecting cable provided, connect the machine to the operator's power supply.
   Also see "<u>Electrical Connection</u>".
- When doing so comply with local regulations and safety measures.



## 7 Operating the Device

## A

## **CAUTION**

C5.0005

## 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**

C6 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.

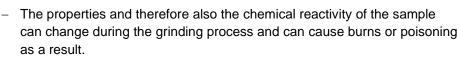


#### CAUTION

C7.0010

## Risk of burns or poisoning

Varying sample properties





- 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**

C8.0004

## 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.

## 7.1 Switching On / Off

**NOTICE** The Jaw Crusher BB 600 may only be started up with an empty crushing chamber. Grinding material placed in the crushing chamber or the feed hopper before starting the machine will result in a blockage and possibly damage to mechanical components.

The control unit is located on the front of the Jaw Crusher BB 600, see "View of the control unit".

Start the machine as follows:

- Turn the main switch (H) to the "ON" position and release the emergency stop button (G) where applicable.
- Switch the machine on using the green button (F).
   The motor is started up and the moving crusher arm is set in motion.

The grinding process can only be started if the drawer on the collecting receptacle (C) (see "<u>Front view</u>") has been completely pushed in. Please ensure that you close and lock the drawer in order to prevent it slipping out due to vibrations.

When open, a limit switch prevents the machine starting (also see (C) in "Front view.

**NOTICE** Stop the Jaw Crusher BB 600 when there is no longer any grinding material in the crushing chamber.

Mechanical components may be damaged by a possible blockage.

The control unit is on the front of the Jaw Crusher BB 600, see "View of the control unit".

The machine is switched off as follows:

- Switch the machine off using the red knob (F).
- Turn the main switch (H) to the "OFF" position.

In an emergency: the machine is shut down immediately when the emergency stop button (G) is pressed.

The motor is disconnected from the power supply and the moving crusher arm comes to a halt.



## 7.2 Adjusting the gap width

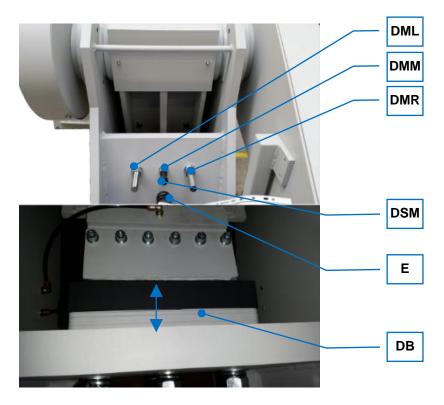


Fig. 9: Adjusting the gap width

The gap width can be adjusted as follows:

- Turn the Jaw Crusher BB 600 off at the main switch (H) (see "View of the control element").
- Disconnect the machine from the power supply and secure to prevent it restarting.
- Unscrew the outer lock nuts (DML) and (DMR).
   Wrench opening SW 36.
- Unscrew the middle lock nut (DMM).
   Wrench opening SW 30.
- Screw in the middle screw (DSM), wrench opening SW 30.
   Ensure that the spring (E) is tensioned at all times.
- Insert the desired combination of spacer plates (DB).
   The gap will be wider when you remove the spacer plates and will be narrower when you insert the spacer plates. Also see "Gap width".





Fig. 10: Spacer plates

- Unscrew the middle screw (DSM).
   Ensure that the spring (E) is tensioned at all times.
- Tighten the outer lock nuts (DML) and (DMR).
   Torque approx. 190 Nm.
- Tighten the middle lock nut (DMM).
   Torque approx. 110 Nm.
- Adjust the spring pre-load so that the spring is 55 mm long.
   Wrench opening SW 30.



Fig. 11: Spring pre-load

## 7.3 Adding sample material



## **CAUTION**

## 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.





N16.0003

#### **NOTICE**

## 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.
- Do not fill the grinding chamber to over 65% full.
- Do not exceed the specified maximum feed size for the sample material.
- Fill larger and firmer sample material slowly and gradually into the feed hopper.
- Pre-grind larger and firmer sample material with a larger gap where necessary.

**NOTICE** Filling the crushing chamber to more than 2/3 full may damage the guide plates on the feed hopper (A) and will result in sample material being conveyed by the activated crusher arm into the crusher housing behind the crusher arm.



The fill volume also influences the fine share in the pre-ground sample. The fuller the crushing chamber, the higher the fine share may be.

**NOTICE** With respect to the fill level, attention should also always be paid to the volume of the collecting receptacle (D). The fill quantity must not exceed the volume of the collecting receptacle (D).

**NOTICE** Only fill the feed hopper (A) and the crushing chamber when the machine is in operation.

The feed hopper (A) is not intended for storing sample material, rather its sole purpose is for feeding the material into the crushing chamber. It furthermore prevents inadvertent access to the crushing chamber and holds back any splashing sample material.

## 7.4 Removing sample material after grinding



#### CAUTION

# 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.



C11.0010

C10.0005

• Wear protective gloves

## A

## CAUTION

## 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.



NOTICE N17.0004

# Damage to mechanical components

Jaw blockage with the motor shutting down

- 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 machine is not switched off in time in the event of blockages, a motor protection switch turns the overloaded drive motor off.
- Switch the machine off immediately when there is a blockage 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.

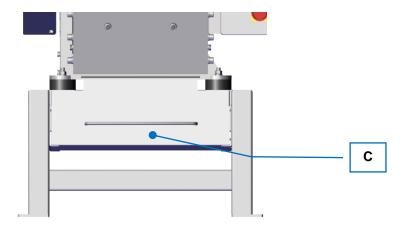


Fig. 12: Collecting receptacle

- Switch the Jaw Crusher BB 600 off.
- Pull the collecting receptacle (C) out of the base frame.
- Remove the ground sample material from the collecting receptacle (C).



#### 8 Cleaning, Wear and Maintenance

## **CAUTION**

C12.0013

## 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!

#### Cleaning 8.1



## 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!

## A

## **CAUTION**

C13.0031

## 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.



Observe the material safety data sheets of the sample material.





#### Damage to the housing and device

Use of organic solvents

NOTICE

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

N18 0009



## 8.1.1 Cleaning the machine housing

The machine is best cleaned using an industrial vacuum cleaner and brush with a long handle:

- Clean the housing of the Jaw Crusher BB 600 with a damp cloth and standard household detergent.
- Ensure that no water or detergent gets inside the machine.

## 8.1.2 Cleaning the feed hopper and grinding chamber

## 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.

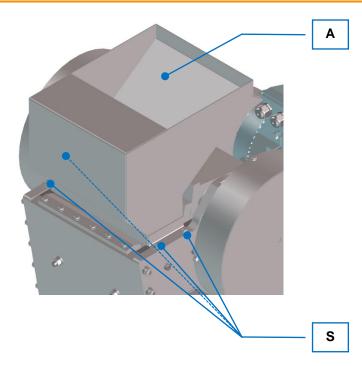


Fig. 13: Feed hopper

- Turn the Jaw Crusher BB 600 off by the main switch (H) (see "View of the control unit").
- Disconnect the machine from the power supply and secure to prevent it restarting.
- Unscrew the four hex screws (S) around the feed hopper (A).
- Lift the feed hopper (A) up and off.
- Clean the feed hopper (A) using a damp cloth and household detergent.
- Clean the grinding chamber and jaws with a brush and vacuum the loosened material residue with an industrial vacuum cleaner.
- The grinding chamber may alternatively be carefully cleaned with compressed air.
- After cleaning, replace the feed hopper above the grinding chamber.
- Secure the feed hopper (A) again using the four hex screws (S).



#### 8.2 Wear



C14.0013

## 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!

Jaws may wear depending on the frequency of grinding and the property of the sample material. The jaws and the wearing plates should be inspected regularly for wear and replaced where necessary.

## 8.2.1 Replacing the breaking jaws

The jaws on the Jaw Crusher BB 600 are replaced as follows:

- Turn the machine off by the main switch (H) (see "View of the control unit").
- Disconnect the machine from the power supply and secure to prevent it restarting.

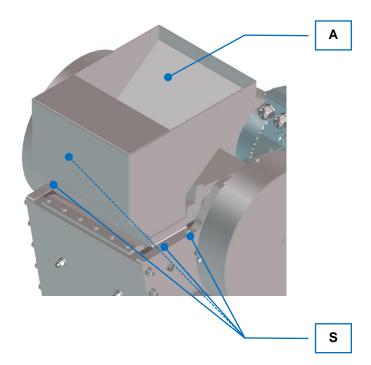


Fig. 14: Feed hopper

- Unscrew the four hex screws (S) for the feed hopper (A).
- Lift the feed hopper (A) up and off.
- Set the gap width to maximum.
   To do this, unscrew the lock nuts and remove the spacer plates (see "Adjusting the gap width").



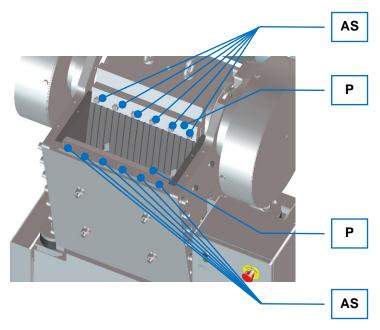


Fig. 15: Removing the cover plates

Loosen the screws (AS) and remove the cover plates (P).

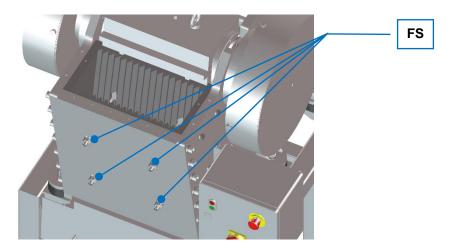


Fig. 16: Unscrewing the fixing screws

- Unscrew the four fixing screws (FS) on both jaws.
- Gently tap the surface of the jaws so that they come away from the support and slide downwards.



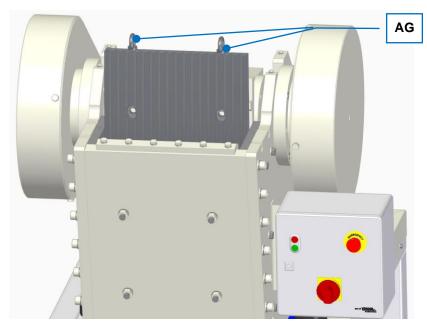


Fig. 17: Removing the jaws

- Screw the eye bolts (AG) into the threads on the top of the crusher jaws.
- Use the eyebolts as lifting straps and guide the lifting straps through the eyebolts.
- Lift the crusher jaws out of the device.
- The worn crusher jaws shall be removed and subsequently, the new crusher jaws may be inserted in reverse order.

## 8.2.2 Replacing the wearing plates

Proceed as follows to replace the wearing plates:

Remove the feed hopper, see "<u>Cleaning the feed hopper and grinding chamber</u>".

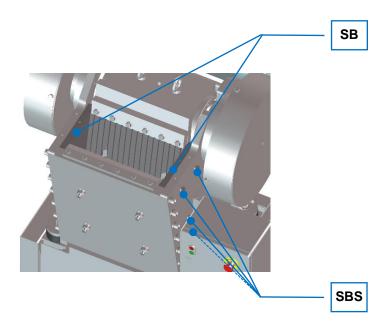


Fig. 18: Wearing plate fastening



Unscrew the four fixing screws (SBS) on each wearing plate (SB).

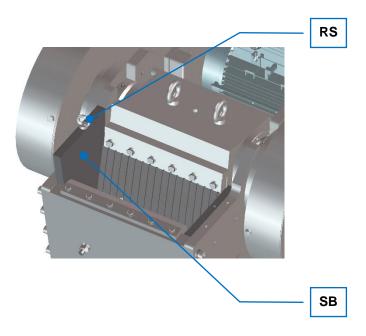


Fig. 19: Wearing plate fastening

- Screw one eyebolt (RS) into each designated drill hole at the top of the wearing plate (RS).
- Lift the wearing plates (SB) slightly to release them.
- Using a crane, lift the wearing plates out from the crushing chamber by the eyebolts.
   The wearing plates have been removed and the new wearing plates can be inserted in reverse order.

#### 8.3 Maintenance



C15.0013

## 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!



## 8.3.1 Lubricating the device

The Jaw Crusher BB 600 must be lubricated again after around 60 operating hours:

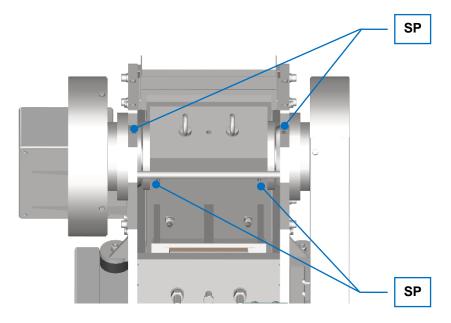


Fig. 20: Lubrication points

- Apply a sufficient amount of grease (approx. 4 to 7 g) to the marked lubrication points (SP).
- Use natural coloured, lithium saponified and graphite-free grease, such as Shell Gadus S2
   V220 2 or BP Energrease LS-EP 2 as lubricant.
- Apply the grease to the lubrication points using a standard grease press.

## 8.3.2 Checking the limit switch

A functional inspection of the limit switch must be conducted every 6 months.

Check the function of the limit switch as follows:

- Start the Jaw Crusher BB 600.
- Open the draw on the collecting receptacle (D), see "Front view".

  The limit switch must activate, and the machine must stop or coast to a halt.
- Close the drawer on the collecting receptacle (D).
   The machine must **not** start up.
- Turn the machine on by the main switch (H).
   The machine starts and runs normally.



## 9 Return for Service and Maintenance



Fig. 21: 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.



## 10 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.



## 11 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 13<sup>th</sup> 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.

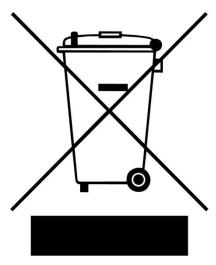


Fig. 22: Disposal label

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 23<sup>rd</sup> 2006. From this date on, the manufacturer must provide an adequate possibility of returning all devices delivered since August 13<sup>th</sup> 2005. For all devices delivered before August 13<sup>th</sup> 2005 the end user is responsible for the proper disposal.

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# **EU Declaration of Conformity**

Translation

# **JAW CRUSHER**

BB 600 | 21.004.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

DIN EN ISO 13849-1 Safety of machinery - Safety-related parts of control systems
DIN EN 60204-1 Safety of machinery - Electrical equipment of machines

## Electromagnetic compatibility 2014/30/EU (tested at 400 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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