OPERATING INSTRUCTIONS

EASY WORKING. GREAT RESULTS.
FRITSCH

P-29

CUTTING MILL

READ THE INSTRUCTIONS PRIOR TO PERFORMING ANY TASK!

Valid from: 29.10X0/00200

Translation of the original operating instructions

Version 07/2025 Index 003

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Certification and CE conformity

Certification

Fritsch GmbH has been certified by TÜV Saarland Certification GmbH.

An audit has proven that Fritsch GmbH meets the requirements of DIN EN ISO 9001:2015 and DIN EN ISO 14001:2015.

CE conformity

The enclosed conformity declaration lists the guidelines to which the FRITSCH instrument conforms in order to bear the CE mark.

1 Basic structure

1 Funnel
2 Control panel
3 Air filter
4 Main switch
5 Hand guard
6 Collecting vessel
7 Sieve insert
8 Fixed knives
9 Silicone cover
10 Twist grip
11 2x O-ring
12 Fixed knife end stop
13 Rotor with 4 knives
14 Grinding chamber door
15 Plunger

2 Safety information and use

2.1 Requirements for the user

This operating manual is intended for persons assigned with operating and monitoring the Fritsch P-29. The operating manual and especially its safety instructions are to be observed by all persons working on or with this device. In addition, the applicable rules and regulations for accident prevention at the installation site are to be observed. Always keep the operating manual at the installation site of the P-29.

People with health problems or under the influence of medication, drugs, alcohol or exhaustion must not operate this device.

The P-29 may only be operated by authorised persons and serviced or repaired by trained specialists. All commissioning, maintenance and repair work may only be carried out by technically qualified personnel. Qualified personnel are persons who, because of their education, experience and training as well as their knowledge of relevant standards, regulations, accident prevention guidelines and operating conditions, are authorised by those responsible for the safety of the machine to carry out the required work and are able to recognize and avoid possible hazards as defined for skilled workers in IEC 364.

In order to prevent hazards to users, follow the instructions in this manual.

Malfunctions that impair the safety of persons, the P-29 or other material property must be rectified immediately. The following information serves both the personal safety of operating personnel as well as the safety of the products described and any devices connected to them: All maintenance and repair work may only be performed by technically qualified personnel.

This operating manual is not a complete technical description. Only the details required for operation and maintaining usability are described.

Fritsch has prepared and reviewed this operating manual with the greatest care. However, no guarantee is made for its completeness or accuracy.

Subject to technical modifications.

2.2 Scope of application

NOTICE

Fritsch laboratory mills are not intended for use in explosion-hazardous areas. Fritsch laboratory mills therefore fall outside the scope of the 94/9/EC Directive, but within the scope of the Machinery Directive 2006/42/EC. The use of Fritsch laboratory mills within explosion-hazardous areas is not permissible according to ATEX (94/9/EC) and is only allowed if additional explosion protection measures are taken. According to the Machinery Directive 2006/42/EC, there are no ignition sources in our mills that can become effective during normal operation. Nonetheless, there may be ignition sources in our mills that may become effective in the event of probable malfunctions.

Because Fritsch has only limited information on the composition of the ground product in use, its final fineness and therefore ultimately its ignition temperature, no statement regarding the explosion risk during intended use in conjunction with the occurring energy input can be made.

The occurrence of dust explosions can therefore never be completely ruled out. The user must create an explosion protection document in accordance with the ATEX 137 Directive (1999/92/EC) and define appropriate protective measures.

NOTICE

This laboratory instrument is designed for an 8-hour shift operation at 30 % duty cycle and not for continuous operation.

The duty cycle is defined as the ratio of load duration to run time. The run time is defined as load duration plus pause time. According to DIN EN 60034-1 (VDE 0530, IEC34-1) a continuous operation already takes place after a standardised run time of 10 minutes. At 30 % duty cycle (DC = ratio of load duration to run time) a load duration of 3 minutes and a pause time of 7 minutes would be within standard.

If the standardised run time of 10 minutes is exceeded, then, by definition, there would be a continuous operation and disproportionate temperature increases may occur, possibly involving increased wear.

The Cutting Mill can be used for the fast comminution of soft, medium-hard, brittle, tough and fibrous materials like:

Sheet rubber, plastics, refuse-derived fuel, dry meat, leather, wood, coal, malt, paper/cardboard, peat, animal feed, pasta, tablets, leaves, pellets, spices, fabric, straw, maize, bones, roots, tobacco...

2.2.1 Operating principle

The material is fed through a funnel into the cutting chamber. There, rotating knives (13) work together with fixed knives (8) to cut the material. The fine material falls through a sieve insert (7) into the collecting vessel (6).

2.3 Obligations of the operator

Before using the P-29, this manual is to be carefully read and understood. The use of the P-29 requires technical knowledge; only commercial use is permitted.

The operating personnel must be familiar with the content of the operating manual. For this reason, it is very important that these persons actually receive the present operating manual. Ensure that the operating manual is always near the device.

The P-29 may exclusively be used within the scope of applications set down in this manual and within the framework of guidelines put forth in this manual. In case of non-compliance or improper use, the customer assumes full liability for the functional capability of the P-29 and for any damage or injury arising from failure to fulfil this obligation.

By using the P-29 the customer agrees with this and recognizes that defects, malfunctions or errors cannot be completely excluded. To prevent risk of damage to persons or property or of other direct or indirect damage, resulting from this or other causes, the customer must implement sufficient and comprehensive safety measures for working with the P-29.

Neither compliance with this manual nor the conditions and methods used during installation, operation, use and maintenance of the P-29 can be monitored by Fritsch GmbH. Improper execution of the installation can result in property damage and thus endanger persons. Therefore, we assume absolutely no responsibility or liability for loss, damage or costs that result from errors at installation, improper operation or improper use or improper maintenance or are in any way connected to these.

The applicable accident prevention guidelines must be complied with.

Generally applicable legal and other obligatory regulations regarding environmental protection must be observed.

2.4 Information on hazards and symbols used in this manual

Safety information

Safety information in this manual is designated by symbols. The safety information is introduced by keywords that express the extent of the hazard.

DANGER

This symbol and keyword combination indicates an imminently hazardous situation that can result in death or serious injury if not avoided.

WARNING

This symbol and keyword combination indicates a potentially hazardous situation that can result in death or serious injury if not avoided.

CAUTION

This symbol and keyword combination indicates a potentially hazardous situation that can result in slight or minor injury if not avoided.

NOTICE

This symbol and keyword combination indicates a potentially hazardous situation that can result in property damage if not avoided.

Special safety information

To draw attention to specific hazards, the following symbols are used in the safety information:

DANGER

This symbol and keyword combination indicates an imminently hazardous situation due to electrical current. Ignoring information indicated in this way will result in serious or fatal injury.

DANGER

This symbol and keyword combination designates content and instructions for proper use of the machine in explosive areas or with explosive substances. Ignoring information indicated in this way will result in serious or fatal injury.

DANGER

This symbol and keyword combination designates content and instructions for proper use of the machine with combustible substances. Ignoring information indicated in this way will result in serious or fatal injury.

WARNING

This symbol and keyword combination indicates an imminently hazardous situation due to moving parts. Ignoring information indicated in this way can result in hand injuries.

WARNING

This symbol and keyword combination indicates an imminently hazardous situation due to hot surfaces. Ignoring information indicated in this way can result in serious burns due to skin contact with hot surfaces.

WARNING

This symbol and keyword combination indicates an imminently hazardous situation due to sharp or pointed edges. Ignoring information indicated in this way can result in serious cut injuries due to skin contact with sharp or pointed edges.

Safety information in the procedure instructions

Safety information can refer to specific, individual procedure instructions. Such safety information is embedded in the procedure instructions so that the text can be read without interruption during the procedure. The keywords described above are used.

Example:

1. Loosen the screw.
2. **CAUTION**

   Risk of entrapment at the lid.

   Close the lid carefully.
3. Tighten the screw.

Tips and recommendations

This symbol emphasises useful tips and recommendations as well as information for efficient operation without malfunction.

2.5 Device safety information

Please observe!

- Only use original accessories and original spare parts. Failure to observe this instruction can compromise the safety of the machine.
- Accident-proof conduct is to be strictly followed during all work.
- Comply with all currently applicable national and international accident prevention guidelines.

CAUTION

Wear hearing protection!

If a noise level of 85 dB(A) is reached or exceeded, ear protection should be worn to prevent hearing damage.

WARNING

The maximum accepted concentration (MAC) levels of the relevant safety guidelines must be observed; if necessary, ventilation must be provided or the machine must be operated under an extractor hood.

DANGER

Explosion hazard!

- When Comminution oxidizable substances, e.g. metals or coal, there is a risk of spontaneous combustion (dust explosion) if the share of fine particles exceeds a certain percentage. When Comminution these kinds of substances, special safety measures must be taken and the work must be supervised from a specialist.
- The P-29 is not explosion protected and is not designed to comminute explosive materials.

- Do not remove the information signs.

NOTICE

Immediately replace damaged or illegible information signs.

- Unauthorised alteration of the P-29 will void Fritsch's declaration of conformity to European directives and void the guarantee.
- Only use the P-29 when it is in proper working order, as intended and in a safety- and hazard-conscious manner adhering to the operating manual. In particular, immediately rectify any malfunctions that could pose a safety hazard.
- If, after reading the operating manual, there are still questions or problems, please do not hesitate to contact our specialised personnel.

2.6 Protective equipment

- Protective equipment must be used as intended and must not be disabled or removed.
- All protective equipment must be checked regularly for completeness and proper functioning.
- The Cutting Mill is equipped with a safety lock, which also protects the operator. This locks and unlocks the cutting rotor (13) when the twist grip (10) is turned. Furthermore, the safety lock with personal protection function prevents the operation of the Cutting Mill, if the cutting chamber is not properly closed.
- **Do not operate the device without a funnel (1)!**

The funnel (1) is a mechanical protective device that enables hazard-free filling.

- The hand guard (5) must not be removed. By removing the hand guard, there is a risk of reaching into the running rotor during operation without a collection vessel.

2.7 Hazardous points

- Crushing hazard when closing the grinding chamber.
- Sharp edges on the rotor.

2.8 Electrical safety

2.8.1 Protection against restart

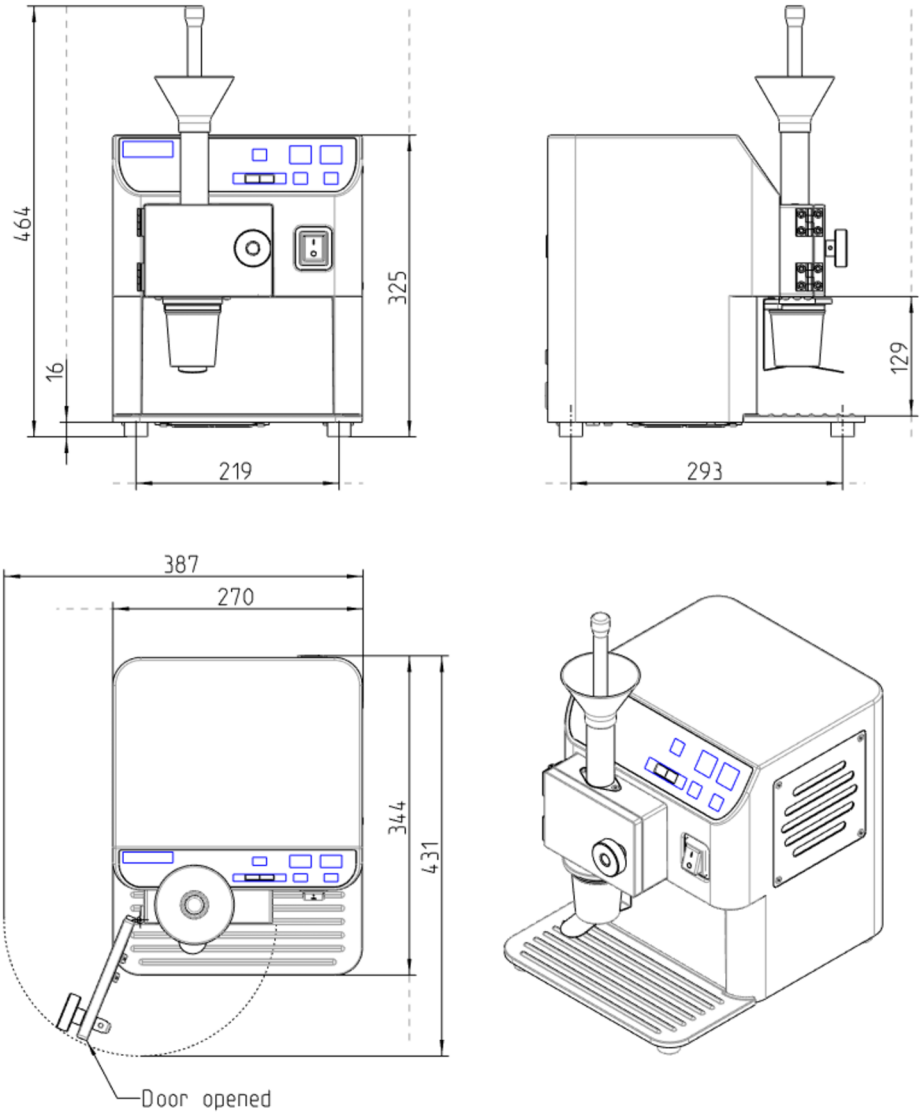
If there is a power failure and subsequent return of the voltage during operation, the grinder stops and the grinding chamber can be opened.

2.8.2 Overload protection

In the event of an overload, the frequency converter reports a malfunction.

3 Technical data

3.1 Dimensions



3.2 Weight

Net: 19 Kg

3.3 Speed

Serial number	Speed
29.10X0.00	500 - 6000 rpm

3.4 Operating noise

CAUTION

The noise emissions depend MAINLY on the grinding material used. Hearing protection is therefore always worn at the discretion of the operator. We generally recommend wearing hearing protection with the following properties:

- SNR value: 37 dB
- L value: 34 dB
- M value: 35 dB
- H value: 36 dB

Standards: EN 352, AS/NZS 1270

The noise level is approx. 78 dB (A) when idling. The value fluctuates strongly depending on the comminution material.

3.5 Voltage

29.1010.00	100 - 120 V	50 - 60 Hz
29.1020.00	200 - 240 V	50 - 60 Hz

3.6 Protection class

IP 21

3.7 Current consumption

- 29.1010.00 - 7 A
- 29.1020.00 - 4 A

Transient overvoltages in accordance with overvoltage category II are permitted.

3.8 Power consumption

- 29.10X0.00 - 400 W

3.9 Electrical fuses

The fuse is integrated in the power connection element on the back.

3.10 Material

Feed size

Depending on material: up to 25 mm. Harder material: max. 5 mm.

Batch-wise sample feeding!

Throughput

Depending on the material properties and the sieve used, up to 60 ml per batch and 20 batches per hour.

3.11 Final fineness

Achievable average final fineness depending on sieve insert: 0.25 - 6 mm.

4 Installation

4.1 Transport

CAUTION

When lifting off, at least 2 persons are required!

DANGER

Crushing hazard!

Due to falling during transport.

Wear safety shoes!

- When lifting the device hold it underneath at the back and front.

WARNING

Improper lifting can lead to personal injury or property damage. The machine is only to be lifted with suitable equipment and by qualified personnel.

The guarantee excludes all claims for damage due to improper transport.

4.2 Unpacking

- Pull out the 4 nails that fasten the lid to the surrounding packaging. (for delivery in a wooden crate!)
- Remove the lid.
- Take out the accessories and the foam parts.
- Then lift the device out of the wooden crate or cardboard box.
- Please store the transport packaging so that it can be reused if you need to return the product. Fritsch GmbH accepts no liability for damage caused by improper packaging (packaging that is not from Fritsch).
- Compare the contents of your delivery with your order.

4.3 Setting up

NOTICE

Allow the device to acclimatise for two hours before commissioning. High temperature differences can lead to condensation in the device and damage to the electronics after switching on.

Strong temperature fluctuations can occur during transport or interim storage. Depending on the temperature difference between the installation site and the transport or storage environment, condensation can form inside the device. This can damage the electronics if the devices are switched on too early. Wait for at least two hours after setup before switching on the device.

DANGER

Do not step under the transport pallet during transport.

WARNING

Crushing hazard!

Always lift with 2 persons.

Hold the bottom edge of the housing when lifting.

NOTICE

Never operate P-29 while it is standing on the transport pallet!

NOTICE

Keep the air outlet on the side ventilation grate free. Risk of overheating!

Place the P-29 on a flat, stable surface. Fastening to this surface is not necessary.

- Ensure that the P-29 is easily accessible.

4.4 Ambient conditions

WARNING

Mains voltage

- The device may only be operated indoors.
- The surrounding air must not contain any electrically conductive particles.
- Maximum relative humidity 80% for temperatures up to 31 °C, linearly decreasing down to 50% relative humidity at 40 °C.

- The room temperature should be between 5 and 40 °C.
- Altitudes up to 2000 m
- Degree of pollution 2 according to IEC 60664-1:2007.

4.5 Electrical connection

Before establishing the connection, compare the voltage and current values stated on the type plate with the values of the mains system to be used.

(see ➦ *Chapter 3.1 'Technical data' on page 13*).

4.6 Connections

1. USB port for firmware updates
2. Extensions - ports for connecting accessories
3. Fuse 8 AT at 100 - 120 V and 4 AT at 200 - 240 V
4. Mains connection with 2A medium-blow fuse

4.7 Assembly of funnel and collecting container

To commission the system, mount the funnel and the holder for the collecting vessel.

Slide the funnel onto the feed tube. To install the holder for the collection vessel, proceed as follows:

1. Insert the cup holder.
2. Secure this using the 4 screws.

5 Initial start-up

5.1 Switching on

1. Connect the device to the mains using the mains plug.
2. Switch on the main switch on the front of the device.

5.2 Function check

1. Check the fit of the rotor, counterblades and screen. For further information skip to linktarget doesn't exist but @y.link.required='true'.
2. Close the grinding chamber.
3. Place the collection vessel below the grinding chamber.
4. Press the START button to switch on the device.
   ➡ The cutting mill starts up.

5.3 Switching off

1. Press the STOP button to switch off the device.
2. Switch off the main switch if the cutting mill is to be idle for a longer period of time (e.g. overnight).

6 Using the device

WARNING

If the grinding elements used are not original accessories, we provide no guarantee and exclude all liability for damage to the device.

6.1 Opening the cutting mill

1. Switch on the main switch on the front.
2. Turn handle (10) to unlock the grinding chamber door.
3. Open the grinding chamber door.

6.2 Inserting / changing the fixed knives

Depending on the wear, the fixed knives can be turned three times before they have to be replaced.

1. Open the cutting mill (see ➦ *'Opening the cutting mill'*).
2. The fixed knives are not screw-fastened and can be pulled out of the respective guide using the enclosed pulling tool.
3. When installing, make sure that all surfaces are clean and that the counter knives are in contact with the grinding chamber rear wall!

6.3 Inserting / changing a rotor

CAUTION

Risk of injury!

Beware of sharp edges and the weight of the rotor!

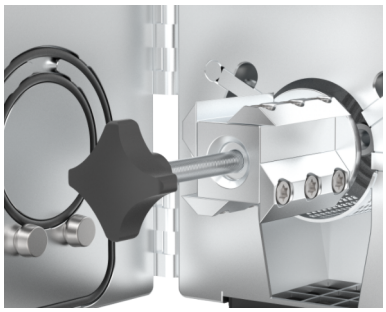
Wear class S2 safety gloves and safety shoes when changing the rotor!

NOTICE

If the rotor cannot be detached due to a lack of holding force, do not operate the device any further. Fritsch Service must be informed.

1. Open the cutting mill

2. Remove the oval-head screw using the supplied Torx screwdriver (T20).



3. Fit the star handle screw and pull the rotor off the shaft.
4. Use the star handle to push the rotor onto the shaft. Make sure the groove in the rotor lines up with the tongue on the shaft. There is a mark on the front of the rotor that shows where the groove is located. Remove the star handle screw.
5. You can reinstall the rotor with the oval-head screw by turning it clockwise with the supplied T20 Torx screwdriver.
6. Close the cutting mill (see ➦ *Closing the cutting mill*).

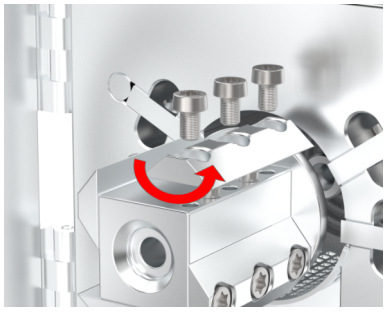
Turning the rotating knives:

⚠ CAUTION

Wear safety gloves!

Mind the knife blades when installing or removing cutting tools. They are very sharp and pose a cutting hazard.

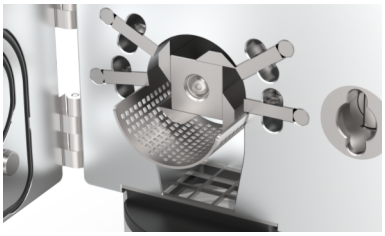
Depending on the wear, the rotating knives can be turned once before they have to be replaced.



1. Remove the rotor.
2. Remove the three screws of the rotating knives using the Torx screwdriver (T20) provided.

3. To remove the rotating knives, insert the star handle screw into the middle thread and pull the blade off the two cylinder pins by gently moving it back and forth.
4. Turn the knives through 180° horizontally and fasten them again using the three screws.

6.4 Inserting/Changing the sieve insert



1. Open the cutting mill (see ➦ *Opening the cutting mill*).
2. Pull the sieve insert (7) out to the front. The rotor (13) does not need to be removed.
3. Before pushing in the sieve insert (7) clean the cutting chamber thoroughly, so that everything can be closed tightly again.
4. Close the cutting mill (see ➦ *Closing the cutting mill*).

6.5 Closing the cutting mill

1. Before closing the cutting mill, clean the cutting chamber, the contact surfaces of the housing and, in particular, the locking surfaces of the lock.
2. Close the grinding chamber door.
3. Turn the handle to lock.
   ➡ If the grinding chamber is properly closed, the *'lock state'* LED on the control panel lights up green.

6.6 Control panel

1 Start button
2 Stop button
3 Minus button
4 Plus button
5 Lock state

1. To start the P-29 press the *'Start'* button. This button has a green LED. The following are displayed:
   - Flashing green - no malfunctions, all start conditions met. Door is shut and correctly locked.
   - Green - machine is running
2. To stop the P-29 push the *'Stop'* button. This button can also be used to acknowledge faults.
3. Use buttons 3 and 4 to set the speed in 100 rpm increments between 500 and 6000 rpm.

4. Display 5 shows the state of the locking unit.

   The following are displayed:

   - Green - grinding chamber is correctly closed, but can be opened
   - Flashing green - door open
   - Red - grinding chamber is locked and drive is running. Grinding chamber must not be opened.
   - Flashing red - machine is decelerating. The grinding chamber must not be opened until the LED lights up green!

5. The *'Speed'* field displays the set rotational speed.

6.7 Comminution procedure

CAUTION

Wear safety goggles for comminution using the standard funnel!

In the case of free-flowing material, particles could be ejected from the funnel.

1. Switch the device on at the main switch.
2. Close the cutting mill (see ➦ *Closing the cutting mill*).
3. Insert the collecting vessel (6).
4. Pull the plunger (15) out fully.
5. Switch on the device → Press the Start button (see ➦ *Switching on*).
6. Add some comminution material.

   ⇒ An operating noise becomes audible.

   The quantity of comminution material varies depending on the particle feed size and the grindability of the comminution material. It is best to start with small quantities and increase them depending on the success of the comminution.
7. If necessary, press the comminution material into the cutting chamber with the plunger.
8. When the operating noise becomes quieter, the comminution procedure is complete.

   ➡ More comminution material can be added.

If you finished the comminution procedure using the 'Stop' button, the LED of the 'Start' button starts to flash green. If the lock LED lights up green, the grinding chamber can be opened.

6.7.1 Using the plunger

The plunger has two different sides to feed the sample material in the funnel into the grinding chamber. One side is smooth and round, suitable for finer material, and the other side is thinner, suitable for long, fibrous material, such as straw.

Material with good flowing properties can be fed using the optionally available spiral valve (29.1176.16) of the P-29 .

6.7.2 Funnel cover

For free-flowing sample material, use the funnel cover included in delivery. This is simply placed on the funnel and prevents the sample material from being transported back up out of the funnel.

6.8 Overload of the cutting mill

When filling and making downward movements with the plunger, the operating noise must be observed. The sound level is approximately identical to the load on the machine. You can clearly hear from the pitch when the mill reduces the speed due to overload.

Pulling the plunger out on time prevents overloading of the mill and protects the rotor (13), the fixed knives (8) and the sieve (7).

1. Allow the device to cool down.
2. Switch the main switch back on after brief cooling phase.

7 Cleaning

DANGER

Mains voltage!

- Before beginning with cleaning work, unplug the mains plug and protect the device against being unintentionally switched back on.
- Indicate cleaning work with a warning sign.
- Do not allow any liquids to run into the device.

NOTICE

Depending on the moisture content of the material to be comminuted, the mill must be freed from residues and cleaned after each grinding operation.

7.1 Housing

The cutting mill can be wiped down with a damp cloth.

7.2 Cutting chamber

NOTICE

Do not use compressed air for cleaning! When the rotor is removed, compressed air can cause dust to settle in the locking mechanism and thus cause a fault.

Clean the cutting chamber with a vacuum cleaner and brush.

1. Unlock twist grip (10).
2. Fully open the grinding chamber door.
3. Remove the rotor, the fixed knives, the sieve insert and the O-rings in the grinding chamber door.
4. Clean the cutting chamber and all removed parts. Metal parts can be rubbed with alcohol. Clean O-rings under running water.

NOTICE

Make sure that all grinding accessories (e.g. hopper, grinding chamber, rotor) are completely dry before assembly. Moisture can impair functionality and cause damage to the device.

7.3 Funnel

CAUTION

Always pull the power plug before detaching the filler pipe!

The funnel can be easily removed for cleaning and rubbed down with a damp cloth.

7.4 Cleaning the filter foam mat

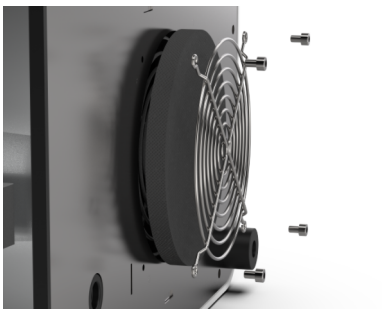
NOTICE

Maintenance of this filter mat is absolutely required. The drive motor is not sufficiently cooled when the filter mat is excessively soiled. This results in motor failure.

Filter foam mat on the right side of the device

1. Unscrew the four screws on the right side and remove the air outlet.
2. Remove the grille by removing the four screws.
3. Remove the filter foam mat (order no. 90.0745.16) and vacuum-clean it. Coarse dirt can be washed out with water.
4. Allow the foam mat to air-dry.
5. Position the filter foam mat and screw the filter cover back on using the four screws.

Filter foam mat on the underside



1. Pull out all plugs on the back of the device.
2. Place the Cutting Mill on the left or right side.
3. Remove the four screws of the filter cover.
4. Remove the filter foam mat (order no. 90.0745.16) and vacuum-clean it. Coarse dirt can be washed out with water.
5. Allow the damp foam mat to air-dry.
6. Position the filter foam mat and screw the filter cover back on using the four screws.
7. Stand the unit up again and reconnect the cables as previously.

8 Maintenance

DANGER

Mains voltage

- Before beginning with maintenance work, unplug the mains plug and protect the device against being unintentionally switched back on again!
- Indicate maintenance work with warning signs.
- Maintenance work may only be performed by specialised personnel.
- Put safety equipment back into operation after maintenance or repair work

We recommend keeping a safety logbook ➥ Chapter 13 'Safety logbook' on page 36, where all work (maintenance, repairs.....) performed on the device is entered.

The most important element of maintenance is regular cleaning!

The following procedure should be carried out every six months:

1. Open the grinding chamber.
2. Place the hex key used to disassemble the rotor onto the rotor retaining screw.
3. Turn the key clockwise with moderate manual force.

   ➥ The rotor must not move.

NOTICE

This **anti-clockwise process** is required in everyday use to dismantle the rotor. The rotor must be dismantled at the latest after several grindings for cleaning purposes when the device is used as intended. If the safety lock is faulty, dismantling is **not** possible due to the lack of counterforce.

This safety lock must be **tested periodically** during operation in addition to the bi-annual test.

9 Repairs

DANGER

Mains voltage!

- Before beginning with repair work, unplug the mains plug and protect the device against being unintentionally switched back on.
- Indicate repair work with warning signs.
- Repair work may only be performed by specialised personnel.
- Put safety equipment back into operation after maintenance work.

DANGER

The frequency converter contains capacitors that remain charged to a potentially fatal voltage even after the power (AC or DC) is switched off. If the frequency converter has been switched on, the power supply must be disconnected for a minimum of ten minutes and an absence of voltage must be established before work can continue.

DANGER

After the device is switched off, the temperature of components inside the device, in particular the locking magnet, the drive motor and the frequency converter, may exceed permissible values. We recommend unplugging the device for a minimum of ten minutes and allowing it to cool down before opening it.

9.1 Error messages

No.	Fault description	Cause	Remedy
Er01	Start button - short circuit		Contact Fritsch Service
Er02	Stop button - short circuit		Contact Fritsch Service
Er03	Plus button - short circuit		Contact Fritsch Service
Er04	Minus button - short circuit		Contact Fritsch Service
Er05	Motor temperature too high	The rotor is braked or the grinding chamber is too heavily soiled	Acknowledge the error with the Stop button. Clean the grinding chamber and the labyrinth seals (see ➦ *Cleaning*).
Er06	Grinding chamber door not closed	Door not locked properly, surfaces of the grinding chamber door soiled or lock defective.	Acknowledge the error with the Stop button.

No.	Fault description	Cause	Remedy
Er06	Grinding chamber door not closed	Door not locked properly, surfaces of the grinding chamber door soiled or lock defective.	Close the grinding chamber door before starting. If the error occurs despite the grinding chamber door being closed, clean the door switch (if necessary with compressed air). If the error persists, contact Fritsch Service.
Er07	Door contacts - channel discrepancy		Clean the actuator on the door (if required with compressed air). If the error persists, please contact Fritsch Service.
Er08	Inadequate fan speed		Contact Fritsch Service
Er09	Error saving to EEPROM		Contact Fritsch Service
Er10	Emergency off triggered		
Er11	Emergency off - channel discrepancy		
Er12	No speed detected by frequency converter	The motor is blocked or not active.	Clean the grinding chamber and the labyrinth seals (see ➦ *Cleaning*). If the error persists, please contact Fritsch Service.
Er13	STO - at least 1 channel is not available		Contact Fritsch Service
Er14	STO - STO activation faulty		Contact Fritsch Service
Er15	STO - STO discrepancy error		Contact Fritsch Service
Er16	Frequency converter	Does not signal readiness	Switch off the device for 30 seconds. Then switch the device back on again. If the error persists, contact Fritsch Service.
Er17	Frequency converter	No frequency converter connected	Contact Fritsch Service
Er18	Frequency converter	Temperature too high	Wait until the device has cooled down and restart it after several minutes. Clean the grinding chamber and the labyrinth seals (see ➦ *Cleaning*). If the error persists, please contact Fritsch Service.
Er19	Frequency converter	Speed not reached	Switch off the device and clean the grinding chamber. Feed the grinding stock more slowly. Clean the grinding chamber and the labyrinth seals (see ➦ *Cleaning*). If the error persists, please contact Fritsch Service.
Er20	Frequency converter	Current limit reached	Switch off the device and clean the grinding chamber. Feed the grinding stock more slowly.

No.	Fault description	Cause	Remedy
Er20	Frequency converter	Current limit reached	Clean the grinding chamber and the labyrinth seals (see ➦ *Cleaning*). If the error persists, please contact Fritsch Service.
Er21	Frequency converter	Communication timeout	Contact Fritsch Service
Er22	Frequency converter	Signals error	Contact Fritsch Service
Er23	Frequency converter	Converter detects that the device is not stationary at start-up	Contact Fritsch Service

10 Disposal

It is hereby confirmed that FRITSCH has implemented the directive 2002/95/EC of the European Parliament and Council from 27th January 2003 for the limitation of the use of certain dangerous substances in electrical and electronic devices.

FRITSCH has registered the following categories according to the German electrical and electronic equipment act, section 6, paragraph 1, clause 1 and section 17, paragraphs 1 and 2:

Mills and devices for the preparation of samples have been registered under category 6 for electrical and electronic tools (except for large stationary industrial tools).

Analytical devices have been registered under category 9, monitoring and control instruments.

It has been accepted that FRITSCH is operating only in the business-to-business area. The German registration number for FRITSCH is WEEE reg. no. DE 60198769

FRITSCH WEEE coverage

Since the registration of FRITSCH is classified for bilateral transactions, no legal recycling or disposal process is described. FRITSCH is not obliged to take back used FRITSCH devices.

FRITSCH declares it is prepared to take back used FRITSCH devices for recycling or disposal free of charge whenever a new device is purchased. The used FRITSCH device must be delivered free of charge to a FRITSCH establishment.

In all other cases FRITSCH takes back used FRITSCH devices for recycling or disposal only against payment.

11 Guarantee terms

Guarantee period

As manufacturer, FRITSCH GmbH provides – above and beyond any guarantee claims against the seller – a guaranty valid for the duration of two years from the date of issue of the guarantee certificate supplied with the device.

Within this guarantee period, we shall remedy all deficiencies due to material or manufacturing defects free of charge. Rectification may take the form of either repair or replacement of the device, at our sole discretion. The guarantee may be redeemed in all countries in which this FRITSCH device is sold with our authorisation.

Conditions for claims against the guarantee

This guarantee is subject to the condition that the device is operated according to the instructions for use / operating manual and its intended use.

Claims against the guarantee must include presentation of the original receipt, stating the date of purchase and name of the dealer, together with the complete device type and serial number.

Reasons for loss of the guarantee

The guarantee will not be granted in cases where:

- Damage has arisen due to normal wear and tear, especially for wear parts, such as: Crushing jaws, support walls, grinding bowls, grinding balls, sieve plates, brush strips, grinding sets, grinding disks, rotors, sieve rings, pin inserts, conversion kits, sieve inserts, bottom sieves, grinding inserts, cutting tools, sieve cassettes, sieve and measuring cell glasses.
- Repairs, adaptations or modifications were made to the device by unauthorized persons or companies.
- The device was not used in a laboratory environment and/or has been used in continuous operation.
- Damage is present due to external factors (lightning, water, fire or similar) or improper handling.
- Damage is present that only insubstantially affects the value or proper functioning of the device.
- The device type or serial number on the device has been changed, deleted, removed or in any other way rendered illegible
- The above-mentioned documents have been changed in any way or rendered illegible.

Costs not covered by the guarantee

This guarantee excludes any costs for transport, packaging or travel that accrue in the event the product must be sent to us or in the event that one of our specialist technicians is required to come to your site. Any servicing done by persons not authorised by us and any use of parts that are not original FRITSCH accessories and spare parts will void the guarantee.

Further information about the guarantee

The guarantee period will neither extend nor will a new period of guarantee begin in the event that a claim is placed against the guarantee.

Please provide a detailed description of the type of error or the complaint. If no error description is enclosed, we shall interpret the shipment as an assignment to remedy all recognisable errors or faults, including those not covered by the guarantee. Errors or faults not covered by the guarantee shall in this case be rectified at cost.

We recommend reading the operating manual before contacting us or your dealer, in order to avoid unnecessary inconvenience.

Ownership of defective parts is transferred to us with the delivery of the replacement part; the defective part shall be returned to us at buyer's expense.

NOTICE

Please note that in the event that the device must be returned, the device must be shipped in the original Fritsch packaging. Fritsch GmbH denies all liability for any damage due to improper packaging (packaging not from Fritsch).

Any enquiries must include a reference to the serial number imprinted on the type plate.

12 Exclusion of liability

Before using the product, be sure to have read and understood this operating manual.

The use of the product requires technical knowledge; only commercial use is permitted.

The product may be used exclusively within the scope of applications set down in this operating manual and within the framework of guidelines put forth in this operating manual and must be subject to regular maintenance. In case of non-compliance, improper use or improper maintenance, the customer assumes full liability for the functional capability of the product and for damage or injury arising from violating these obligations.

The contents of this operating manual are subject in entirety to copyright law. This operating manual and its contents may not be copied, further distributed or stored in any form, in part or in whole, without the prior written consent of Fritsch.

This operating manual has been prepared to the best of our knowledge and checked for accuracy at the time of printing. FRITSCH GMBH assumes no guarantee or liability whatsoever for the accuracy or completeness of the contents of this operating manual, including but not limited to the implied warranties of merchantability and fitness for a particular purpose, unless liability is expressly prescribed by applicable laws or jurisprudence.

FRITSCH GMBH expressly reserves the right to modify and/or update this operating manual without prior notice. The same applies to modifications and improvements to the products described in this operating manual. It is the responsibility of the user to ensure that they have the current version of this operating manual. For more information, please contact your local FRITSCH GMBH distributor or Fritsch GmbH, Industriestr. 8, D-55473 Idar-Oberstein.

Not all parts shown here are necessarily installed in the product. The buyer is not entitled to delivery of these parts. If interested, please contact your local FRITSCH GMBH distributor or Fritsch GmbH, Industriestr. 8, D-55743 Idar-Oberstein.

FRITSCH GMBH takes the greatest care to ensure that the quality, reliability and safety of your products are continuously improved and adapted to the state of the art. The supplied products as well as this operating manual conform to the current state of the art when they leave the sphere of influence of FRITSCH GMBH.

By using the product the customer agrees with this and recognizes that defects, malfunctions or errors cannot be completely excluded. To prevent risk of damage to persons or property or of other direct or indirect damage, resulting from this or other causes, the customer must implement sufficient and comprehensive safety measures for working with the product.

Fritsch GmbH excludes any liability, warranty, or other obligation to compensate for damages, regardless of whether this liability, warranty, or other obligation is explicit or implicit, contractual or arising from unlawful acts or prescribed contractually, by law, or otherwise. In no event shall the buyer be entitled to any compensation from Fritsch GmbH for any special, direct, indirect, coincidental or consequential damage, including but not limited to lost profits, lost savings, lost sales or financial loss of any kind or for compensation of third parties, for downtimes, for lost goodwill, for damage to or replacement of equipment and property, for costs or restoration of materials or goods related to the product or the use of our products, for other damage

or injury to persons (including fatal injuries) or similar. The above exclusion of liability is limited by mandatory liability as prescribed by laws or jurisprudence. Liability for negligence is excluded in all cases.

No permission is given expressly, implicitly or otherwise for the use of patents, brands or other copyrights. We also assume no liability for copyright infringements or infringements of the rights of third parties arising from the use of this product.

Neither compliance with this operating manual nor the conditions and methods used during installation, operation, use and maintenance of the product can be monitored by Fritsch GmbH. Improper execution of the installation can result in property damage and thus endanger persons. Therefore, we assume absolutely no responsibility or liability for loss, damage or costs that result from errors at installation, improper operation or improper use or improper maintenance or are in any way connected to these.

13 Safety logbook

Date	Maintenance / Repair	Name	Signature

Date	Maintenance / Repair	Name	Signature

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