Anton Paar

Reference Guide

Brabender Rotary mill

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Use of 30-mA RCDs

If local regulations prescribe the application of 30-mA RCDs in order to protect the socket circuits, the following points are to be considered concerning selection of the RCDs.

Three-phase drive controls with variable speed:

- For operation of three-phase instruments with a three-phase frequency inverter, all-current sensitive RCDs type B must be used.

  Anton Paar recommends the RCD type DFS4 B SK made by Doepke (SK = special characteristic for increased tripping threshold up to 2 A in the pulse frequency range). A structurally identical RCD with the type designation RCCB2 is available from Messrs. EPA.
- Do not connect more than one instrument to each RCD. Otherwise, the respective leakage currents of combined instruments may sum up and trigger the RCD.
- **Each Anton Paar device is tested as an individual consumer with the recommended RCDs and the real leakage current is documented.**

Single-phase instruments with variable speed drive units:

- For the operation of single-phase instruments with frequency inverters, at least variable-current sensitive RCDs (type F) must be used, although all-current sensitive RCDs of type B should be preferred. The recommendations given above apply here as well.
- **Each Anton Paar device is tested as an individual consumer with the recommended RCDs and the real leakage current is documented.**
- If the recommendations concerning the type and model of the RCD and/or concerning operation of the device as an individual consumer cannot be met, please contact Anton Paar. The Anton Paar program comprises leakage current compensation devices and isolating transformers which can be installed in the power supply line.

DGUV3 tests for electrical safety in compliance with the German Workplace Ordinance

Note that electrical safety tests in compliance with VDE 0701-0702 with a leakage current threshold value of 3.5 mA is not admitted for Anton Paar instruments.

Anton Paar instruments are subject to the EG machinery directive 2006/42/EG which requires conformity to EN 60204-1 (VDE 0113) for electric layout, equipment, and tests.

Chapter 18 (Tests) of the EN 60204-1 does not prescribe leakage current tests. However, chapter 8.2.8 of the machinery directive makes additional requirements on protective equipotential bonding for electric equipment with ground leakage currents of more than 10 mA AC or DC.

Attention!
Risk of formation of potentially explosive atmospheres!

Anton Paar laboratory mills are designed so as to prevent raising of flour dust and, as a consequence, the risk of formation of potentially explosive atmospheres within or by the machine.

Nevertheless, turbulences of flour dust or of flour dust deposits can occur outside the machine, entailing the risk of formation of potentially explosive atmospheres. As there are electric components outside the product wetted areas of the machine which might act as an ignition source of such potentially explosive atmosphere, there is the risk of explosion on the mounting site.

In order to prevent the formation of such potentially explosive atmospheres outside the machine, always strictly observe the following instructions:

- Always use suitable containers to collect the ground product!
- Always completely remove any spilled product before taking the machine into operation!
- Always keep the working place perfectly clean!
- In order to prevent flour dust clouds or turbulences in the atmosphere, a suitable exhaust system should be installed above the mill.
- Do not operate the machine in potentially explosive atmospheres!

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1 General Information

1.1 Use of the instruction manual

Read the manual thoroughly!

Anton Paar instruments/software are developed/designed and built according to the state-of-the-art and comply with the demand for simple and safe handling. In order to become familiar with the applications and to use the instrument/software in an optimum way, it is imperative to read this instruction manual very carefully before putting the instrument into operation.

Strictly observe instructions and safety instructions!

The instructions, safety instructions and precautions given in the present instruction manual have to be observed strictly.

This instruction manual is delivered with the instrument/software and is intended for operation in practice. It is to make the operating personnel familiar with the instrument/software and to inform them about details concerning transport, storage, mounting, start-up, operation, maintenance, trouble-shooting, and disposal.

Maintenance and service instructions must be observed for reasons of effective operational safety and a long lifetime of the instrument.

Keep and hand over with the instrument!

This instruction manual is, therefore, to be considered part of the instrument/software and must be kept and handed over with the instrument/software.

Keep instruction manual accessible at any time!

The operating personnel as well as the personnel in charge of maintenance and repair must always have free access to this instruction manual.

1.2 Disclaimer of liability

Within the scope of legal regulations, Anton Paar GmbH refuses any liability - for whatever legal argument - for direct or indirect damage caused in connection with the delivery or use of the instrument/software. This is in particular true for - but not limited to - improper use and/or improper operation and handling of the instrument/software.

In this context, Anton Paar GmbH explicitly excludes any warranty for wear parts, in particular for those with product contact.

Under no circumstances, Anton Paar GmbH can be made liable for any damage or injuries caused by non-observance of the safety regulations included in the data sheets of the producer of substances to be tested or processed with the instrument. This is also valid if a recommendation was made concerning the application of certain substances and/or if the provision of test material is part of the scope of delivery and service.

The instrument is subject to modifications of color and design as well as to technical modification without prior notice.

1.3 Scope of delivery

The scope of delivery is given in the shipping documents.

1.4 Scope of the instruction manual

The present instruction manual covers various models of the device which just differ by their connection data and/or other features that are irrelevant for the operation of the device. Apart from that, variants of the corresponding standard model with deviating features or equipment may be included. As far as these deviations are relevant to operation, they are mentioned explicitly in the instruction manual.

2 Contact

Data to be stated in case of inquiries

If there are any inquiries e.g. relating to handling of the instrument/software, ordering of spare parts, accessories, additional equipment or to sending back instruments or parts of the instrument/spare parts for maintenance or repair - all data given on the name plate must be stated.

For questions concerning the software, besides the ID no. of the software the version no. must be stated as well.

Contact

For any questions, further information, or in case of problems with the instrument or software, please do not hesitate to contact your local Anton Paar representative.

Find the contact data of your local Anton Paar representative on the Anton Paar website:

https://www.anton-paar.com

3 Stylistic features

3.1 General stylistic features

The following stylistic features are used in the instruction manual:

1. marks operating instructions in their serial order
   - ➢ [indented] marks individual steps of a preceding general instruction
   - ⇨ [indented] marks the consequences of a preceding action

➢ [in safety messages] marks operating instructions

- marks lists or (in instructions) alternatives
  - – [indented] marks subordinated lists

3.2 Mandatory signs

The following mandatory signs are used in the instruction manual:

General mandatory sign, additional information

Read the instructions before, cross reference

3.3 Design of safety messages

The safety messages given in the instruction manual are marked by a hazard warning sign and a signal word.

The signal word and the associated signal color indicate the relative severity of the hazard:

⚠ DANGER

Describes an **imminently hazardous situation** that will result in **death or serious injury** if not avoided.

⚠ WARNING

Describes a **potentially hazardous situation** that is likely to result in **death or serious injury** if not avoided.

⚠ CAUTION

Describes a **potentially hazardous situation** that may result in **minor or moderate injury** if not avoided.

NOTICE

Describes a situation that may result in **property damage** if not avoided.

4 Safety

4.1 Intended use

Intended use

The instrument may only be used in non-hazardous locations after having been completely assembled.

The device may only be used within the limits stated in chapter 7 "Technical Data") and only for milling the products listed in chapter 7.3 "Authorized/non-authorized products".

Improper application

The instrument must **NEVER** be used for testing of or in connection **with explosives** - explosion hazard!

Unauthorized modifications of the instrument may cause danger to the personnel or property damage and, moreover, result in loss of guarantee and are, therefore, forbidden.

4.2 Target group

Mounting, modification, disposal

Mounting, modification, and disposal of the instrument may only be carried out by technically skilled personnel with the corresponding qualifications.

Electric work is only allowed to be carried out by qualified and skilled electricians in compliance with the rules for electrical engineering.

Operation, cleaning

Routine operation and cleaning during routine operation of the instrument may only be carried out by skilled personnel.

The personnel in charge of operation and cleaning of the instrument must have been instructed by a skilled person.

The persons in charge of operation and cleaning of the instrument must have the technical and computer skills enabling them to carry out the work described in chapter 9 "Start-up", chapter 10 "Operation" and chapter 11 "Cleaning" safely and without any risk to themselves or others.

Maintenance, repair

Maintenance and repair work on the instrument are only allowed to be executed by Anton Paar service technicians or by skilled personnel authorized for this work.

4.3 Owner's duties

4.3.1 General owner's duties

The owner of the instrument must ensure that mounting, operation, maintenance of the instrument as well as repair and disposal, if applicable, are carried out exclusively by the personnel defined in chapter 4.2 "Target group".

The owner of the instrument has to furnish proof of training of the personnel in charge of operation, cleaning, and maintenance of the instrument.

Prior to instrument set-up, the owner of the instrument has to make sure of the proper condition, assembly, and mounting of the instrument according to the instructions given in chapter 8 "Mounting".

The owner of the instrument must ensure that the operating personnel read and understood the instruction manual of the instrument as well as the test material safety data sheets of the respective producer prior to testing and processing any test material with the instrument and that they will observe them.

The measures listed in the respective test material safety data sheets of the producer in order to avoid any possible danger when handling the corresponding material must strictly be observed.

4.3.2 Owner's duties for work with flammable dusts

When using the device with dust-like products that can ignite under certain circumstances and lead to explosion, the relevant measures for the prevention of dust explosions must be strictly observed!

The operating personnel must be trained in detail with regard to the dangers associated with the processing of such products and the relevant measures for the prevention of dust explosions.

4.4 Protective devices

4.4.1 Emergency motor stop button

4.4.1.1 Position and function of the emergency motor stop button

The instrument is equipped with an emergency motor stop button (see fig. below). Pressing the emergency motor stop button immediately stops the motor of the instrument.

Fig. 1: Emergency motor stop button

1 Emergency motor stop button 2 Button "ON"

⚠ WARNING

Risk of severe injury!

The emergency motor stop button helps to avoid potentially hazardous situations.

- ➢ Never bridge the emergency motor stop button!
- ➢ Never lock the emergency motor stop button mechanically!
- ➢ Always keep the emergency motor stop button visible and easily accessible!

4.4.1.2 Procedure after emergency motor stop

⚠ WARNING

Risk of severe injury, risk of property damage!

Before restarting the system upon actuation of the emergency motor stop button

- ➢ Make sure that the cause for the actuation of the emergency motor stop button has been eliminated!
- ➢ Make sure that there is no risk to the personnel or to the machine when restarting the system!

1. Make sure that there is no risk to the personnel or to the machine when restarting the system.
2. Slightly turn the emergency motor stop button until it pops out.
3. To restart the mill, press the button "ON" on the front of the pedestal body in order to switch on the drive again.
   - ⇨ The rotary mill starts immediately.

Button "ON"

4.4.2 Safety device on the door to the milling room

4.4.2.1 Position and function

A non-contact magnetic safety switch monitors the position of the door to the miling room. The actuator of this safety switch is located on the right outside of the door, the counterpart (sensor with LED) is mounted opposite on the housing of the milling room.

In combination with the safety lock on the door, the safety switch ensures that the mill can only be operated when the door has been completely closed and the door cannot be opened before the rotor with the knives has come to a safe and complete stop.

As soon as the safety lock on the door is turned open by a few turns and the door opens a small gap, the contact of the safety switch is interrupted and the motor is stopped automatically (cut-off point: gap width ≤ 8 mm).

Subsequently, the safety lock on the door must be turned some more turns before the door can be fully opened. This provides for a safe and complete stop of the slowing-down rotor before access to the milling room is possible.

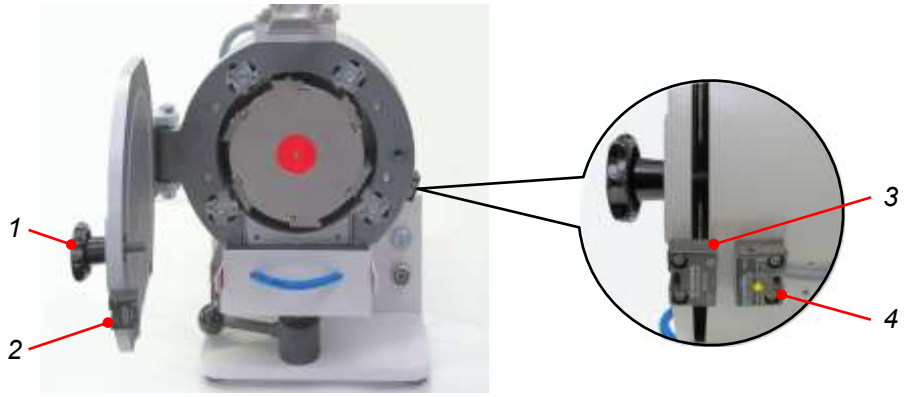

Fig. 2: Safety device on the door to the milling room

1	*Safety lock*	*3*	*Actuator of the safety switch*
2	*Magnetic safety switch (actuator) on the door*	*4*	*Sensor of the safety switch (LED on = switch activated)*

⚠ WARNING

Risk of severe injury, risk of property damage!

When the milling room is open, there is the risk of severe injury by the rotating knives and the risk of damage to or destruction of the mill by tools inserted into the milling room.

The safety switch prevents operation of the mill when the milling room has been opened.

The safety lock on the door to the milling room is designed so as to ensure a complete and safe standstill of the slowing-down rotor before access to the milling room is possible.

- ➢ Never dismantle or bridge the safety switch or put it out of function in any other way!
- ➢ Do not shorten the thread of the safety lock on the door of the milling chamber or modify the safety lock in any other way!
- ➢ Never insert any tools through the gap of the door into the milling room before the door can be fully opened!

4.4.2.2 Procedure upon motor stoppage by the safety switch

1. If applicable, carry out the necessary work (e.g. cleaning, knife adjustment, etc.).
2. Close the door to the milling room.
3. Screw in the safety lock all the way to the limit stop.
4. Press the button "OFF" on the front of the pedestal body in order to reset the safety relay.

Button "OFF"

Without a reset of the safety relay by pressing the button "OFF", the motor may not start when pressing the button "ON".

5. To restart the mill, press the button "ON" on the front of the pedestal body.

Button "ON"

⇨ The rotor mill restarts immediately.

4.4.3 Safety switch on the collector

4.4.3.1 Position and function

The position of the collector under the milling room is monitored by a non-contact magnetic safety switch. This safety switch prevents operation of the mill when the collector has been drawn off.

The actuator of this safety switch is located on the outer left side of the collector, the counterpart (sensor with LED) is mounted on the left guide plate of the collector.

As soon as the collector is being drawn off the pedestal base of the mill, the contact of the safety switch is interrupted and the motor is stopped automatically (cut-off point: gap width ≤ 10 mm).

⚠ WARNING

Risk of injury, risk of property damage!

When the collector has been drawn off, access from below to the milling room and to the rotating rotor is possible!

Risk of severe hand injury by the rotating rotor with the knives, risk of damage to or destruction of the mill by tools inserted into the milling room!

The safety switch prevents operation of the rotary mill when the collector has been drawn off.

➢ Never dismantle or bridge the safety switch or put it out of function in any other way!

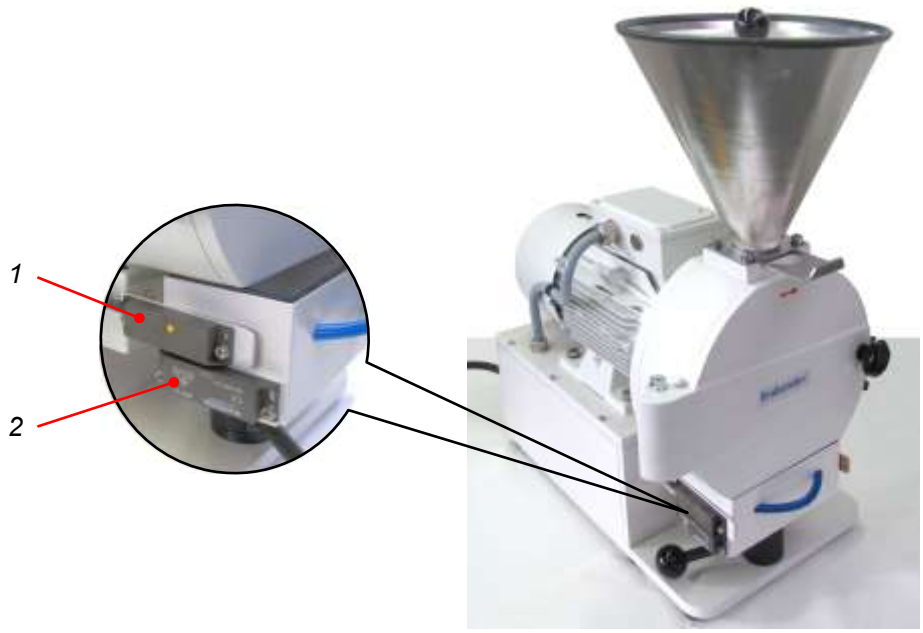

Fig. 3: Safety switch on the collector

1 Sensor of the safety switch (LED on = switch activated)

2 Actuator of the safety switch

4.4.3.2 Procedure upon motor stoppage by the safety switch

1. If applicable, carry out the necessary work (e.g. cleaning, knife adjustment, etc.).
2. Remount the collector and push it in all the way to the limit stop.
3. Shift the tension lever towards the left to fix the collector.
4. Press the button "OFF" on the front of the pedestal body in order to reset the safety relay.


Button "OFF"

Without a reset of the safety relay by pressing the button "OFF", the motor may not start when pressing the button "ON".

5. To restart the mill, press the button "ON" on the front of the pedestal body.


Button "ON"

⇨ The rotor mill restarts immediately.

4.4.4 Feed hopper with protective grid and cover

In the standard version of the rotary mill, a conical feed hopper with protective grid and cover is mounted on top of the milling room for feeding the product into the milling room.

The protective grid prevents access through the feed hopper onto the knives. The cover protects the operating personnel from injury due to product particles spurting from the milling room during the milling process.

A slide gate at the bottom of the feed hopper controls the product flow into the milling room.

Optionally, a hopper with a piston can be mounted instead of the standard feed hopper for feeding fibrous materials like hay (see chapter 8.3.2 "Mounting the feed hopper").

⚠ WARNING

Risk of severe injury, risk of property damage!

When the feed hopper or the protective grid of the feed hopper has been dismantled, access from the top into the milling room and onto the rotating knives is possible.

Risk of severe hand injury by the rotating knves, entanglement hazard, risk of damage to or destruction of the mill by tools inserted into the milling room!

The feed hopper with the protective grid inside is a fixed guard which prevents access to the rotating knives in the milling room. The cover on the feed hopper protects the operating personnel from injury due to product particles spurting from the milling room during operation.

- ➢ Never dismantle the protective grid in the feed hopper or modify it in any other way!
- ➢ Never operate the mill without the complete feed hopper being properly mounted and the cover being put on!
- ➢ Never insert any tools or other rigid objects into the feed hopper when the rotary mill is running - risk of destruction of the mill!

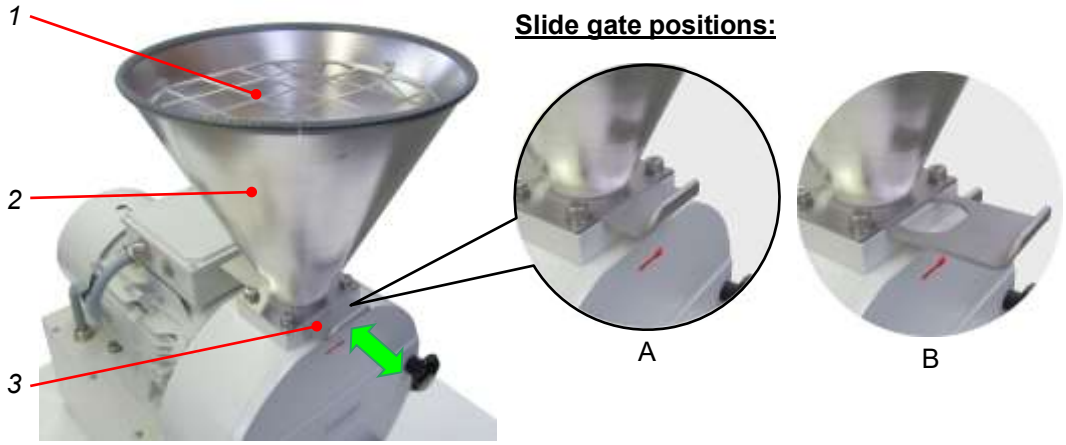

Fig. 4: Feed hoper, slide gate positions

1	*Protective grid*	*A*	*Open (feeding)*
2	*Feed hopper*	*B*	*Closed (no feeding)*
3	*Slide gate*		

4.5 Residual dangers

4.5.1 Explosion hazard due to swirling of flour or dust

⚠ WARNING

Danger to life, risk of injury due to dust explosion!

Flour or other fine dust dispersed in the air at a sufficiently high concentration can create a dangerous, highly explosive atmosphere. Even small deposits of flour or dust can lead to such an explosive atmosphere if they are swirled up. Even a small electric spark, e.g. due to operating an electrical switch, pulling a plug, electrostatic charge, friction, smoldering, glowing embers or hot surfaces can ignite the dust and cause a dust explosion.

Risk of serious injuries or death, risk of damage to or destruction of adjacent devices or even the entire structure!

- ➢ When using the device with dust-like products, the relevant measures to prevent dust explosions have to be observed strictly:
  - Installation of a suitable exhaust system above the source of dust
  - Avoiding of sparks due to electric, electrostatic or mechanical effects and avoiding of other sources of ignition such as hot surfaces, smoldering, glowing embers, cigarette smoke/ash (absolute smoking ban), etc.
  - Frequent checks of electric connections of the device and of adjacent devices
  - Electrostatic grounding of electrically chargeable devices and objects
  - Frequent and thorough cleaning of all surfaces from flour or dust deposits
  - Training of the personnel responsible for the operation, cleaning and maintenance of the device
- ➢ When loading dusty products into the feed hopper, position the exhaust system as close as possible above the feed hopper and be sure to switch it on!
- ➢ Always fill dusty products slowly and carefully into the feed hopper to avoid turbulence as far as possible!

4.5.2 Risk of injury when several persons work on the device

⚠ WARNING

Risk of injury, risk of property damage!

When several persons work simultaneously on the device, the drive unit may be started unintentionally while another person is still working on the device and rotating parts are open!

Danger of serious injuries, entanglement hazard! Risk of damage to or destruction of the device by tools!

- ➢ Never have two or more persons work simultaneously on the device!
- ➢ Never work on the device with open long hair or with loose garments (tie, scarf, shawl or the like) or jewelry!

4.5.3 Risk of injury due to the introduction of objects into the device

⚠ WARNING

Risk of injury, risk of property damage by inserting objects into the feed hopper during operation!

Danger of injury by parts spouting from the feed hopper, risk of damage to or destruction of the instrument when inserting tools or any other objects into the feed hopper during operation.

- ➢ Never insert any tools or other objects into the feed hopper during operation!
- ➢ Always pull the power cable of the instrument before inserting any objects into the feed hopper!

4.5.4 Danger due to harmful or irritant dust and/or spouting product

⚠ CAUTION

Risk of eye injuries or respiratory injuries due to harmful or irritant dust and/or spouting product!

Depending on the milling product, harmful or irritant dust may build up in the feed hopper and/or in the milling room. Getting in contact or breathing in such dust can lead to damage to your health! Product spouting out of the feed hopper can cause eye injuries!

- ➢ Always wear suitable safety goggles and respiratory protection when working on the mill!
- ➢ Always ensure there is a sufficient distance for your respiratory organs. Keep them away from the milling product!
- ➢ During operation, always put the cover onto the feed hopper!

4.5.5 Risk to human or animal health by consumption of products

⚠ CAUTION

Risk to human or animal health!

Products processed with the instrument are unfit for human or animal consumption! This also applies when these products are mixed with foodstuff.

- ➢ Do not eat products processed with the instrument or give out as foodstuff, not even when mixed with foodstuff!

4.5.6 Danger by electricity

⚠ WARNING

Danger to life, risk of injury due to voltage leading parts!

In case of improper use of electric components, there is the risk of serious injuries or death by direct or indirect contact with live parts or connections!

- ➢ Work on electrical equipment is only to be carried out by authorized electricians!
- ➢ Do not run the machine with faulty electric connections or connections that are not ready for operation!
- ➢ Before connecting the instrument to the power supply, make sure that the line voltage and frequency match the data given on the name plate!
- ➢ Only connect the power plug to a correctly installed power outlet with protection contact (PE)!
- ➢ Avoid a tripping hazard when laying the power cable! Highlight any tripping positions!
- ➢ Keep access to the electric modules closed always. Access only by authorized personnel with the appropriate training and security briefing!
- ➢ Always pull the power plug before opening any access to the electric modules of the instrument!
- ➢ Always pull the power cable on the plug, never pull on the cable!
- ➢ Do not expose the power cable and the plug to humidity!

5 Transport and Storage

5.1 Packaging

Packaging of the instrument, accessories, and additional equipment

The instruments are packed properly and professionally into wooden crates.

Small parts, accessories, and additional equipment may be packed in separate boxes or crates

Small parts and accessories are packed separately into cardboard boxes or bags contained in the crates.

Additional equipment is packed either in the same crate as the instrument or in a separate crate, depending on the scope of the order.

Shipping labels on the crate

It is essential to observe the following labels on the outside of the crate(s):

This side up!

Fragile, handle with care!

Keep dry!

5.2 Unpacking

1. Upon arrival of the instrument, the owner must inspect the shipping crate for any outside damage.
2. If any damage is detected, notify the transport guide immediately.

   

   Please also refer to chapter 5.4 "Checking for and notification of damage".
3. Remove the cover of the crate(s).

NOTICE

Parts of the instrument may be damaged!

- ➢ When removing the lateral walls of the crate, take care of braces and supports within the crate as well as of bolt connections at the bottom of the crate, etc.!
- ➢ Carefully remove the lateral walls of the crate.

4. Unpack the instrument with care. Take particular care for small parts or accessories within the packing material.

   

   Leave cover hoods and protective films on the instrument until mounting and commissioning, respectively.
5. Inspect the packing material very carefully.

   

   Depending on the way of shipping and on circumstances that are beyond the manufacturer's influence, parts of the instrument may have loosened during transport despite proper and professional packing and may be hidden within the packing material.
6. Dispose the packing material in an ecologically friendly way in compliance with the local regulations concerning disposal only after the owner of the instrument has found the scope of delivery to be complete.

   

   For checking the scope of delivery, please refer to chapter 5.3 "Checking the scope of delivery".

5.3 Checking the scope of delivery

1. The owner of the instrument must compare the scope of delivery with the shipping documents in a timely manner to the arrival of the instrument at the place of destination.
2. If there is any discrepancy, notify Anton Paar immediately in writing.

Any delayed claims made by the owner regarding missing equipment or spare parts will not be provided replacements free of charge.

5.4 Checking for and notification of damage

1. Upon arrival of the instrument, inspect the shipping crate(s) for outside damage.
2. Immediately upon unpacking and checking of the scope of delivery, check the instrument as such for any signs of damage.

If damage is found, notify immediately:

- the transport guide
- Anton Paar GmbH

3. If damage is found, notify the transport guide immediately.
4. Provide a copy of the transport damage report to Anton Paar GmbH immediately. Also provide the place and time of the damage.

If the ownership of the equipment was transferred to the buyer at the same time of or prior to transportation, the buyer is liable for all damages incurred during transportation. The buyer or the receiver must observe the regulations of the insurance policy.

If necessary, the average adjuster appointed by the claim opponent must be given the opportunity to inspect the shipment/the instrument.

⚠ WARNING

Risk of injury, risk of property damage by a defective instrument!

A defective instrument can result in unknown hazards for humans and instrument!

➢ Never mount or use a defective instrument!

5.5 Transport

1. Move the unpacked instrument with extreme caution to the intended installation site.

NOTICE

Risk of damage to the instrument!

Avoid slamming on surfaces!

The instrument or parts of it may be damaged by slamming it on a surface.

➢ Put down the instrument carefully!

5.6 Storage

NOTICE

Risk of corrosion by contact with aggressive products!

Residual product, especially residues of aggressive products like e.g. ceramics, distilled water, etc. may cause wear such as abrasion and/or corrosion up to pitting within very short time.

Likewise, storage in humid or aggressive environment may cause corrosion and, in extreme cases, pitting corrosion.

➢ Thoroughly clean and dry all machine parts before storage, especially product wetted parts! Make sure that all edges, angles, and grooves are clean and dry.

➢ Pack individual parts separately in protective nets!

➢ Store the instrument and all parts thereof in dry and safe environment only!

➢ Put the instrument on a support that is at least 200 mm high, in order to protect the instrument from soil moisture!

➢ Arrange storage areas in a way that moisture can escape and periodical inspections are possible!

Extreme temperature fluctuations or long exposure to direct sun may cause damage to the instrument or machine!

➢ Do not expose the instrument or parts thereof to extreme temperature fluctuations or strong sunlight!

For details concerning the admissible limit values of environment temperature and humidity, please refer to chapter 7 "Technical Data".

6 Components and functional features

6.1 General description

The rotary mill is a laboratory mill for grinding different kinds of material before analysis.

A selection of authorized and non-authorized products for processing with the rotary mill is given in chapter 7.3 "Authorized/non-authorized products".

The exchangeable screen at the bottom of the milling room provides for variable degrees of fineness.

The scope of delivery of the rotary mill comprises:

- Standard feed hopper with protective grid and cover
- 3 screens (0.5 mm, 1.0 mm, 1.5 mm)

The following components need to be ordered separately in case of need:

- Further screens
- Feed hopper with piston for fibrous materials

6.2 Designation of the sides of the instrument

"Front side" The side of the rotary mill with the door to the milling room and the "ON" and "OFF" buttons is referred to as **"front side"** in the following.

"Right side" The side with the emergency motor stop button is referred to as **"right side"** in the following.

6.3 Product labels

6.3.1 Name plate

The name plate of the instrument contains the following information:

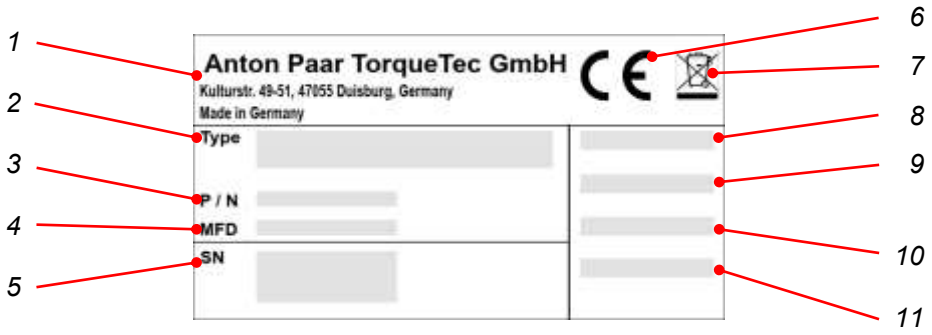

Fig. 5: Name plate

1	*Manufacturer's name and address*	*7*	*Device must not be disposed of with household waste*
2	*Instrument name*	*8*	*Admissible line frequency*
3	*ID no./Electric drawing no.*	*9*	*Admissible voltage*
4	*Year of mounting*	*10*	*Rated current*
5	*Serial number*	*11*	*Rated power*
6	*CE sign*		

6.3.2 Further product labels

Signification: Sense of rotation of the rotor (front view: counter-clockwise)

6.4 Overview display

The fig. below shows the main parts of the device.

Fig. 6: Main components of the rotary mill

1	*Cover of the feed hopper*	*8*	*Tension lever of the collector*
2	*Feed hopper*	*9*	*Motor*
3	*Slide gate*	*10*	*Pedestal body*
4	*Door to the milling room*	*11*	*Emergency motor stop button*
5	*Rotary knob for opening the door to the milling room (safety lock)*	*12*	*Safety device on the door*
		13	*Button "ON"*
		14	*Button "OFF"*
6	*Safety switch on the collector*		
7	*Collector*		

Inside the rotary mill, there are the following main parts:

- Four round knives fixed in the mill casing
- Rotor with six flat knives
- Exchangeable screen

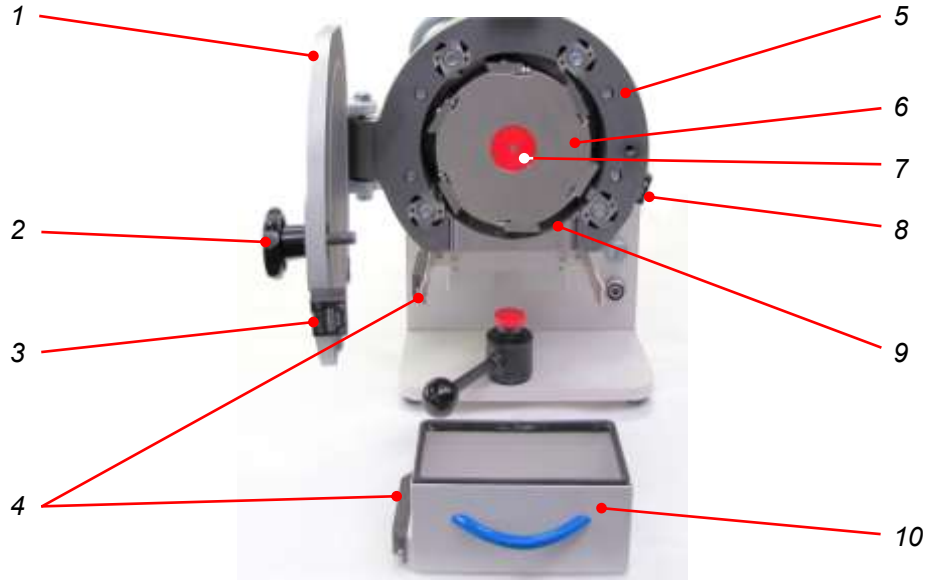

Fig. 7: Main components in the interior of the rotary mill

1	*Door to the milling room*
2	*Rotary knob for opening the door to the milling room (safety lock)*
3	*Safety switch on the door (actuator)*
4	*Safety switch on the collector*
5	*Mill casing with four fixed round knives*
6	*Rotor with six flat knives*
7	*Cover plate of the tensioning element*
8	*Safety switch on the mill casing (counter part)*
9	*Exchangeable screen*
10	*Collector*

6.5 Main components

6.5.1 Drive motor

The rotary mill is driven by a 1.1 kW three-phase motor which provides for a constant speed of 750 min^{-1} (50 Hz) or 900 min^{-1} (60 Hz).

The motor is equipped with a motor protection circuit.

Pressing the button "ON" starts the motor, pressing the button "OFF" stops it.

6.5.2 Feed hopper

The feed hopper is fixed above the milling room on the mill casing. The product is fed through the feed hopper into the milling room.

The feed hopper is equipped with a protective grid and a cover. The protective grid prevents access through the feed hopper onto the knives. The cover protects the operating personnel from injury due to product particles spurting from the milling room during the milling process.

A slide gate at the bottom of the feed hopper controls the product flow into the milling room.

Optionally, a hopper with a piston can be mounted instead of the standard feed hopper for feeding fibrous materials like hay (see chapter 8.3.2 "Mounting the feed hopper").

Fig. 8: Standard feed hopper

Fig. 9: Feed hopper with piston for fibrous products

1 Feed hopper with protective grid
2 Mill casing

3 Piston

6.5.3 Mill casing, knives

The mill casing is flanged directly to the motor. The rotor with six exchangeable flat knives is fixed via a tensioning element on the motor shaft.

When the motor is started, the rotor with the six flat knives rotates so that the six flat knives operate edge against edge with the four stationary round knives in the mill casing. The flat knives on the rotor can be adjusted by means of a set screw so as to align them towards the round knives and, thus, adjust the milling gap.

The round knives in the mill casing have four cutting edges each. One cutting edge being worn, the knife can be turned by 90° so as to use the next cutting edge.

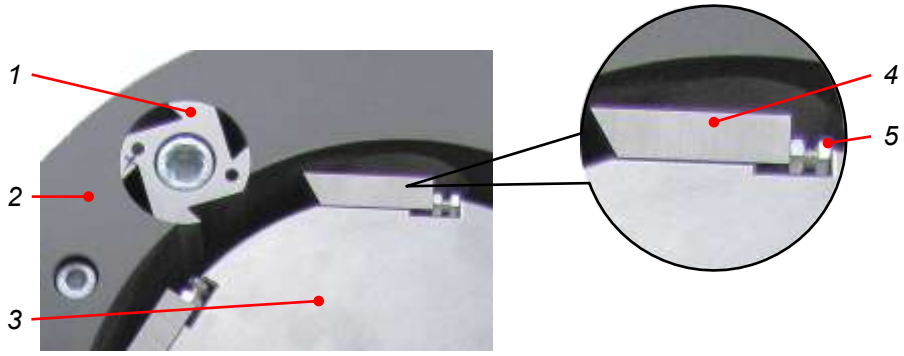

Fig. 10: Mill casing with knives

1	*Round knife*	*4*	*Flat knife*
2	*Mill casing*	*5*	*Set screw of the flat knife*
3	*Rotor*		

6.5.4 Screen

The screen is mounted inthe lower part of the mill casing.

The standard scope of delivery of the rotary mill comprises three screens with different perforation:

- 0.5 mm
- 1.0 mm
- 1.5 mm

By mounting screens with different perforations, the degree of fineness of the regrind can be varied.

Screens with other perforations are available from Anton Paar. Please contact the Anton Paar service in case of need.

Fig. 11: Mmill casing with mounted screen

1 Screen

7 Technical Data

7.1 General technical data

Drive	Motor:	1.1-kW three-phase motor
	Speed:	750 min^{-1} (50 Hz) or 900 min^{-1} (60 Hz)
	Safety devices:	● Safety lock and non-contact magnetic safety switch on the door to the milling room ● non-contact magnetic safety switch on the collector
Current supply	Electricity ● 282360 ● 295259	 3 x 400 V + N + PE, 50/60 Hz, 3.6 A 3 x 230 V + PE, 50/60 Hz, 6.6 A
	Permissible (power) voltage change:	± 10 %
Dimensions and weight	Dimensions (W x H x D):	approx. 370 mm x 740 mm x 630 mm
	Weight (net):	approx. 79 kg
Environmental conditions	● Storage: Temperature Relative humidity	 - 25 °C - + 55 °C max. 80 % without condensation The above-named maximal values for temperature and relative humidity must not occur simultaneously.
	● Operation: Temperature Relative humidity	 + 5 °C - + 45 °C max. 80 % without condensation The above-named maximal values for temperature and relative humidity must not occur simultaneously.

The dimensions stated above usually include necessary equipment such as power cord, heating/cooling hoses etc. in addition to the pure instrument dimensions.

7.2 Noise measurement

The noise measurement was run under normal operating conditions over the entire speed range of the instrument. The measurement was carried out at a distance of 1 meter and a height of 1.6 meters.

The measured equivalent continuous sound pressure level is

$$L_{eq} < 70 \text{ dB(A)}$$

7.3 Authorized/non-authorized products

NOTICE

Risk of damage to or destruction of the mill by unsuited products!

Unsuited raw material can cause increased wear on the knives and, in extreme cases, damage to or destruction of the mill!

- ➢ Only the products listed below under "Authorized products" may be processed with the mill.
- ➢ Products other than those listed below may only be processed after consultation with and authorization by Anton Paar GmbH.
- ➢ If in doubt, please contact the Anton Paar service before processing any unknown product (see chapter 2 "Contact").

Authorized products

Authorized products for milling with the rotary mill are, among others:

- leather
- grain
- tobacco, roots, leaves
- dried pasta
- linoleum
- cellulose, synthetic fibers
- hay, grass, straw
- plastic granules, etc.

For fibrous products with a high tenacity like hay, grass, straw, etc., Anton Paar recommends the use of the feed hopper with piston (additional equipment).

Non-authorized products

Unauthorized products which must not be processed with the rotary mill are:

- products with a high oil content such as nuts, oil seeds, or similar products.
- hard, brittle, and solid products like metal, glass, ceramics, plastic film, and similar products

8 Mounting

8.1 Safety notes concerning mounting

⚠ WARNING

Risk of injury, risk of property damage by a dropping instrument or by wrong posture when persons carry or move the instrument!

- ➢ Always wear work shoes with protective caps when moving the instrument!
- ➢ When lifting and carrying the instrument, take care for a straight and upright posture!
- ➢ Lift the instrument with two persons (one on every side) onto a suitable carriage in order to carry it to the desired place of mounting!
- ➢ Do not carry the instrument over long distances!

⚠ CAUTION

Risk of injury, risk of property damage!

Improper mounting may cause danger of injury to the personnel and risk of damage to the instrument.

- ➢ All mounting work on the instrument may only be carried out with care by technically skilled personnel!

8.2 Requirements to the place of mounting

- Mount the instrument in a closed room where it is protected from weather factors.
- Select the place of mounting so as to ensure enough space for the operating personnel to move safely without any restrictions.
- Do not mount the instrument near heat sources (heating, presses, etc.).
- The intended base for mounting the instrument must be even and plane, clean, and strong enough to carry the instrument.
- Make sure that the instrument is protected against vibration (make sure the instrument is stable!).
- The connection and adaptation points for power supply to the instrument must be as near as possible to the mounting place of the instrument.

Concerning power supply data, please refer to chapter 7 "Technical Data".

8.3 Setup and assembly

8.3.1 Setting up the instrument

NOTICE

Risk of overheating of the motor due to insufficient ventilation!

Overheating due to insufficient ventilation can cause damage to the motor.

➢ When mounting the device, take care to provide enough space in front of and/or above the ventilation grille(s) of the motor to allow for sufficient cooling air circulation.

1. Make sure to remove all covering hoods and protective films.
2. By means of a suitable lifting device or with two or more persons, place the device onto a sturdy, vibration-free and horizontal base.
3. Make sure that the instrument stands firmly and safely and cannot wobble or tip over.

Fig. 12: Ventilation grille on the rear side

1 Ventilation grille

8.3.2 Mounting the feed hopper

⚠ WARNING

Risk of severe injury, risk of property damage!

When the feed hopper or the protective grid of the feed hopper has been dismantled, access from the top into the milling room and onto the rotating knives is possible.

Risk of severe hand injury by the rotating knves, entanglement hazard, risk of damage to or destruction of the mill by tools inserted into the milling room!

The feed hopper with the protective grid inside is a fixed guard which prevents access to the rotating knives in the milling room. The cover on the feed hopper protects the operating personnel from injury due to product particles spurting from the milling room during operation.

- ➢ Never dismantle the protective grid in the feed hopper or modify it in any other way!
- ➢ Never operate the mill without the complete feed hopper being properly mounted and the cover being put on!
- ➢ Never insert any tools or other rigid objects into the feed hopper when the rotary mill is running - risk of destruction of the mill!

If the feed hopper has been dismantled for shipping purposes, the feed hopper must be mounted as follows before first start-up.

The optional feed hopper with piston can be mounted likewise.

1. Put the feed hopper on top of the feed opening of the mill casing of the rotary mill.
2. Fix the feed hopper on the mill casing using the four M8 Allen screws and the corresponding washers and Schnorr tooth lock washers (serial order: Allen screw - Schnorr tooth lock washer- washer).
3. Draw the slide gate at the bottom of the feed hopper out all the way to the limit stop to close the feed opening until start-up.

   This is to make sure that no material or tools enter the milling room by mistake which might damage the mill during start-up.

8.3.3 Mounting the screen

When the rotary mill is delivered, the screen usually has been factory mounted. If this is not the case or if another screen is to be used, please proceed as follows.

1. Shift the tension lever of the collector to the right in order to release the collector.

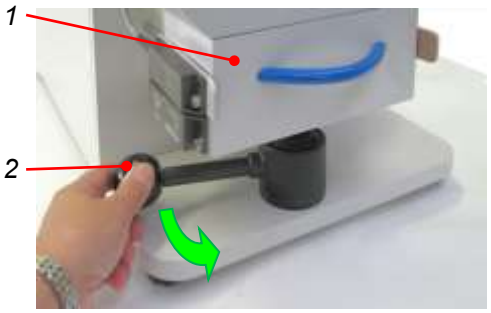

Fig. 13: Releasing the tensioning lever of the collector

1 Collector *2 Tensioning lever of the collector*

2. Pull out the collector towards the front side.

Fig. 14: Pulling out the collector

3. Turn the safety lock on the door to the milling room counter-clockwise until the door can be opened.
4. Open the door to the milling room.
5. Pull out the screen at the bottom of the milling room straightly towards the front side.

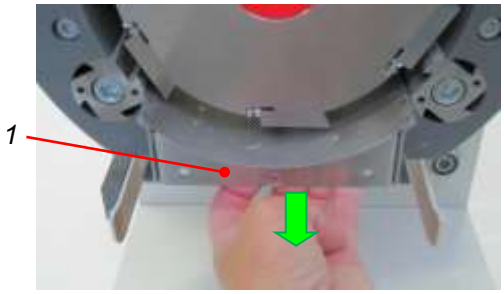

Fig. 15: Pulling out the screen

1 Screen

6. Insert the desired screen from the front side straightly in-between the two lateral guide rails and push it towards the rear side all the way to the limit stop.

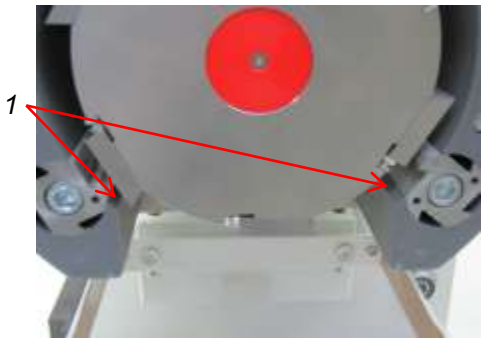

Fig. 16: Mounting the screen

1 Guide rails for the screen

7. Close the door to the milling room so that the safety lock fits into the corresponding threaded bore and screw in the safety lock all the way to the limit stop.
8. Push the collector under the screen straightly from the front side.
9. Shift the tension lever of the collector to the left all the way to the limit stop in order to fix the collector.

8.4 Power supply connection

⚠ WARNING

Danger to life, danger of serious injuries due to electrocution!

Improper grid connection may lead to overvoltage and cable fire and can cause damage to the instrument! In case of a damaged cable and/or power plug, live parts may be exposed!

Danger of serious injury or death due to direct or indirect contact with live parts or connections!

- ➢ Before connecting the instrument to the power supply, make sure that the power supply data correspond to the data on the name plate of the instrument!
- ➢ Switch off the instrument before connecting it to the power supply!
- ➢ Make sure that the power cable and plug are in a perfect and technically safe condition and are not damaged!
- ➢ Only connect the instrument to a socket with a protective earth contact (PE)!
- ➢ Avoid a tripping hazard when laying the power cable! Highlight any tripping positions!
- ➢ Do not expose the power cable and the plug to humidity!

1. Make sure that the instrument has been switched off.
2. Connect the power cable of the instrument to a socket with a protective earth contact (PE).
3. To prevent static charge or different potentials, a ground cable can be connected to the equipotential bonding screw on the rear side of the instrument (not imperative).

   Concerning potential equalization see also chapter 16.2 "Electric interferences".

Fig. 17: Power supply connection

1 Equipotential bonding screw 2 Power cord

4. Make sure that the emergency motor stop button has not been pressed down (the LED on top of the emergency motor stop button must not light).

   ⇨ The device is now ready for operation.

9 Start-up

9.1 Safety notes concerning start-up

⚠ CAUTION

Risk of injury, risk of property damage!

Improper start-up of the instrument involves the danger of injury to the personnel and the risk of damage to the instrument.

➢ Commissioning of the instrument may only be performed by qualified operating personnel!

9.2 Preparations

1. Make sure that the instrument stands firmly and safely.
2. Make sure that the isolator switch is off.
3. Make sure that the emergency motor stop button is free and easily accessible and has not been pressed down.
4. Make sure that the door to the milling room has been closed completely.
5. If not yet done, connect the power cord of the instrument to the power supply.

9.3 Functional check of the safety devices

Check function of all safety devices every day before starting work!

Make a functional check of all safety devices every day before starting work!

9.3.1 Emergency motor stop button

Button "ON"

1. To start the rotary mill, press the button "ON" on the front of the pedestal body.
   ⇨ The rotary mill starts immediately.

   If the motor does not start, the safety relay possibly has not been reset.
   - ➢ Press the button "OFF" to reset the safety relay.
   - ➢ Press the button "ON".
     ⇨ The mill starts.
2. Check the sense of rotation of the rotor immediately by looking from the top into the feed hopper:
   The rotor must rotate to the left, seen from the top, i.e. counter-clockwise (see arrow on the door to the milling room).

NOTICE

Risk of property damage!

A wrong sense of rotation may cause damage to the rotary mill!

- ➢ In case of a wrong sense of rotation, immediately stop the rotary mill by pressing the emergency motor stop button!
- ➢ Inform the Anton Paar service dept. (see chapter 2 "Contact")!
- ➢ Do not start up the instrument!

3. Press down the emergency motor stop button with your hand.
   ⇨ The motor must stop immediately.
   ⇨ The emergency motor stop button lights up.

   If the motor does not stop immediately upon actuation of the emergency motor stop button, the emergency motor stop button may be defective.

Fig. 18: Emergency motor stop button

1 Emergency motor stop button

⚠ CAUTION

Risk of injury in case of a defective emergency motor stop button!

If the emergency motor stop button is defective, the drive motor cannot be stopped quickly in case of emergency - risk of injury.

If the emergency motor stop button is defective:

- ➢ Immediately switch off the instrument!
- ➢ Inform the Anton Paar Service dept. (see chapter 2 "Contact")!
- ➢ Do not start up the instrument!

4. To restart the mill upon actuation of the emergency motor stop button proceed as follows:
   - ➢ Make sure that there is no risk to the personnel or to the machine when restarting the system.
   - ➢ Slightly turn the emergency motor stop button until it pops out.
   - ➢ To restart the mill, press the button "ON" on the front side of the pedestal body.
     - ⇨ The mill starts immediately.

Button "ON"

5. Continue immediately checking the function of the safety switch on the door to the milling room.

   Please refer to chapter 9.3.2 "Safety device on the door to the milling room" for this purpose.

9.3.2 Safety device on the door to the milling room

1. While the rotary mill is running, turn the safety lock on the door to the milling room in counter-clockwise direction so that the door slightly opens.

   ⇨ As soon as the two parts of the safety switch have a distance of ≤ 8 mm from each other, the motor must stop immediately.

   If the motor of the rotary mill does not stop up to a max. gap width of 8 mm, the magnetic safety switch may be defective.

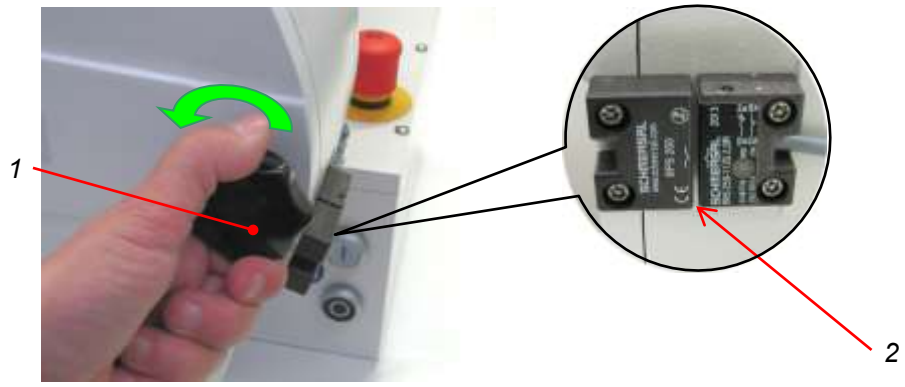

Fig. 19: Safety lock and safety switch on the door to the milling room

1 Safety lock *2 Gap width ≤ 8 mm*

⚠ WARNING

Danger of serious injury, risk of property damage!

In case of a defective safety switch, the door to the milling room can be opened while the mill is running.

Risk of most serious hand injury by the rotating knives, risk of damage to or destruction of the rotary mill by tools being inserted into the milling room.

In case of a defective safety switch:

- ➢ Immediately stop the mill by pressing down the emergency motor stop button!
- ➢ Inform the Anton Paar service dept. (see chapter 2 "Contact")!
- ➢ Do not start up the mill!

2. When the motor stops properly, close the door completely by turning the safety lock clockwise all the way to the limit stop.

Button "OFF"

3. Press the button "OFF" on the front of the pedestal body in order to reset the safety relay.

   Without a reset of the safety relay by pressing the button "OFF", the motor may not start when pressing the button "ON".

Button "ON"

4. To restart the mill, press the button "ON" on the front of the pedestal body.

   ⇨ The rotor mill restarts immediately.

9.3.3 Safety switch on the collector

1. While the rotary mill is running, shift the tension lever of the collector to the right in order to release the collector.

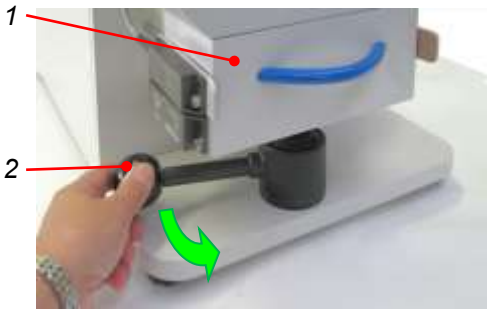

Fig. 20: Releasing the tensioning lever of the collector

1 Collector *2 Tensioning lever of the collector*

2. Pull out the collector by some millimeters.

Fig. 21: Pulling out the collector

⇨ As soon as the collector has been pulled out by a few millimeters (max. 10 mm), the motor must stop immediately.

If the motor of the rotary mill does not stop upon pulling out the collector by more than 10 mm, the magnetic safety switch on the collector may be defective.

⚠ WARNING

Danger of serious injury, risk of property damage!

In case of a defective safety switch, the collector can be pulled out completely while the mill is running so that the access to the rotating knives is possible.

Risk of most serious hand injury by the rotating knives, risk of damage to or destruction of the rotary mill by tools being inserted from the bottom into the milling room.

In case of a defective safety switch:

- ➢ Immediately stop the mill by pressing down the emergency motor stop button!
- ➢ Inform the Anton Paar service dept. (see chapter 2 "Contact")!
- ➢ Do not start up the mill!

3. When the motor stops properly, push back the collector all the way to the limit stop.

Button "OFF"

4. Press the button "OFF" on the front side of the pedestal body in order to reset the safety relay.

Without a reset of the safety relay by pressing the button "OFF", the motor may not start when pressing the button "ON".

⇨ The mill is now ready for operation and can be started by pressing the button "ON".

Button "ON"

10 Operation

10.1 Preparation of the mill and of the product

NOTICE

Risk of damage to or destruction of the mill due to unsuited product!

Rather moist milling product may be difficult to grind, causing insufficient grinding, obstruction of the screen, and, in extreme cases, damage to the knives and to the rotary mill.

Bulky and/or rather coarse product may obstruct the knives and, in extreme cases, cause damage to or destruction of the knives and of the rotary mill.

Unsuited milling product can lead to increased wear of the knives and, in extreme cases, cause damage to or destruction of the knives and of the rotary mill.!

- ➢ The product to be ground should be as dry as possible and should not tend to glue or stick!
- ➢ Crush bulky and/or coarse material before loading it into the mill.
- ➢ In case of product with unknown grinding properties, always run preliminary tests!
- ➢ If in doubt, please ask the Anton Paar service dept. (see chapter 2 "Contact")!

1. Make sure that the perforation of the screen mounted meets the required degree of fineness and is suited for the product:
   - ➢ Open the door to the milling room.
   - ➢ Check the perforation of the screen: The perforation is engraved on the front side of the screen (see fig. below).

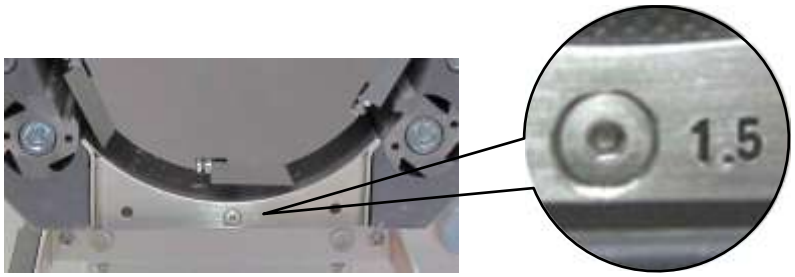

Fig. 22: Screen with engraved perforation

   - ➢ When the correct screen has been mounted, close the door to the milling room and turn the safety lock clockwise all the way to the limit stop.

     Concerning screen change, please refer to chapter 8.3.3 "Mounting the screen".

2. Make sure that the collector is empty.

10.2 Milling process

10.2.1 Safety notes concerning operation

⚠ WARNING

Danger to life, risk of injury due to dust explosion!

Flour or other fine dust dispersed in the air at a sufficiently high concentration can create a dangerous, highly explosive atmosphere. Even small deposits of flour or dust can lead to such an explosive atmosphere if they are swirled up. Even a small electric spark, e.g. due to operating an electrical switch, pulling a plug, electrostatic charge, friction, smoldering, glowing embers or hot surfaces can ignite the dust and cause a dust explosion.

Risk of serious injuries or death, risk of damage to or destruction of adjacent devices or even the entire structure!

- ➢ When using the device with dust-like products, the relevant measures to prevent dust explosions have to be observed strictly:
  - Installation of a suitable exhaust system above the source of dust
  - Avoiding of sparks due to electric, electrostatic or mechanical effects and avoiding of other sources of ignition such as hot surfaces, smoldering, glowing embers, cigarette smoke/ash (absolute smoking ban), etc.
  - Frequent checks of electric connections of the device and of adjacent devices
  - Electrostatic grounding of electrically chargeable devices and objects
  - Frequent and thorough cleaning of all surfaces from flour or dust deposits
  - Training of the personnel responsible for the operation, cleaning and maintenance of the device
- ➢ When loading dusty products into the feed hopper, position the exhaust system as close as possible above the feed hopper and be sure to switch it on!
- ➢ Always fill dusty products slowly and carefully into the feed hopper to avoid turbulence as far as possible!

⚠ CAUTION

Risk of eye injuries or respiratory injuries due to harmful or irritant dust and/or spouting product!

Depending on the milling product, harmful or irritant dust may build up in the feed hopper and/or in the milling room. Getting in contact or breathing in such dust can lead to damage to your health! Product spouting out of the feed hopper can cause eye injuries!

- ➢ Always wear suitable safety goggles and respiratory protection when working on the mill!
- ➢ Always ensure there is a sufficient distance for your respiratory organs. Keep them away from the milling product!
- ➢ During operation, always put the cover onto the feed hopper!

NOTICE

Risk of obstruction of the mill!

When the slide gate is completely open, the product falls into the rotary mill at once.

This may obstruct the rotary mill and, in extreme cases, cause damage to or destruction of the knives and the rotary mill!

- ➢ Before loading the product into the feed hopper, completely draw out the slide gate in order to close it!

10.2.2 Grinding process

1. Make sure that the slide gate at the bottom of the feed hopper has been completely closed, that means pulled out all the way to the limit stop.
2. Load the product into the feed hopper of the rotary mill slowly in order to prevent the formation of dust clouds.
3. Put the cover onto the feed hopper so that the feed hopper is covered completely.

Button "ON"

4. Press the button "ON" on the front side of the pedestal body to start the mill.
   ⇨ The mill starts immediately.
5. Wait a few seconds in order to make sure that full speed has been reached.
6. Carefully push in (open) the slide gate under the feed hopper a little bit to allow the product to fall down slowly into the milling room.
7. During the grinding process, check the filling level of the collector as follows from time to time.
   - ➢ Pull out the slide gate under the feed hopper completely in order to close the feed opening.
   - ➢ Shift the tension lever of the collector to the right to release the collector.
   - ➢ Pull out the collector towards the front side in order to check the filling level.
     ⇨ When pulling out the collector, the safety switch automatically stops the rotary mill.

Fig. 23: Pulling out the collector

   - ➢ If required, completely pull out the collector and empty it.
   - ➢ If applicable, remount the collector in-between the two guide rails and push it towards the rear side all the way to the limit stop.
   - ➢ Shift the tension lever of the collector to the right all the way to the limit stop to lock the collector.

Button "OFF"

➢ Press the button "OFF" on the front of the pedestal body to reset the safety relay.

Without a reset of the safety relay by pressing the button "OFF", the motor may not start when pressing the button "ON".

Button "ON"

➢ Press the button "ON" on the front of the pedestal body to restart the rotary mill.

⇨ The mill starts immediately.

➢ Wait a few seconds to make sure that the full speed has been reached.

➢ Push in (open) the slide gate under the feed hopper carefully in order to continue the grinding process.

8. Upon completion of the grinding process, press the button "OFF" on the front side of the pedestal body to stop the rotary mill.

⇨ The mill stops.

9. Clean the rotary mill immediately.

Concerning cleaning, please refer to chapter 11 "Cleaning".

11 Cleaning

11.1 Safety notes concerning cleaning

⚠ WARNING

Danger to life, risk of injury due to dust explosion!

Flour or other fine dust dispersed in the air at a sufficiently high concentration can create a dangerous, highly explosive atmosphere. Even small deposits of flour or dust can lead to such an explosive atmosphere if they are swirled up. Even a small electric spark, e.g. due to operating an electrical switch, pulling a plug, electrostatic charge, friction, smoldering, glowing embers or hot surfaces can ignite the dust and cause a dust explosion.

Risk of serious injuries or death, risk of damage to or destruction of adjacent devices or even the entire structure!

- When cleaning the device after processing of dusty products, smoking is absolutely prohibited in the workplace!
- Do NOT blow the device with compressed air after processing of dusty products!
- After processing of dusty products, remove adhering product residues with a damp cloth only!
- Thoroughly remove adhering product residues from the outer surfaces of the device, from adjacent devices and from the floor. Ensure to avoid turbulence as far as possible!

⚠ CAUTION

Risk of injury, risk of eye injuries or respiratory injuries during cleaning of the mill!

The cutting edges of the round and flat knives are extremely sharp - risk of injury!

- ➢ Be extremely careful when cleaning the knives in order to prevent injury by the sharp cutting edges!
- ➢ Always wear suitable safety goggles when cleaning the mill!

Depending on the product processed, harmful or irritant dust may form and accumulate in the feed hopper and/or in the milling room which may cause irritation of the eyes and respiratory tract.

When blowing the mill with compressed air (prohibited after processing of dusty products), product residues and dust may be thrown out - risk of eye injury or irritation, risk of respiratory complications! Machines or instruments nearby may be damaged by product particles being thrown out.

- ➢ Always wear suitable safety goggles and respiratory protection when working on the instrument!
- ➢ Always keep a sufficient distance of the respiratory organs to the product!
- ➢ Preferably clean the mill with a **vacuum cleaner** in order to avoid dust clouds which build up when using compressed air!
- ➢ If compressed air is used for cleaning, be very careful and reduce air pressure to a minimum!
- ➢ When blowing the mill or parts thereof with compressed air, make sure that there are no persons or sensitive instruments nearby that might be hurt or damaged by ejected particles or dust!

The use of substances hazardous to health for cleaning may cause health problems!

- ➢ The relevant hygiene guidelines for instruments handling food products must be noted!

NOTICE

Risk of property damage!

The use of unsuited cleaning agents or tools can cause damage to the instrument.

- ➢ Only use soft paint brushes, soft and non-linting cloths, and/or a vacuum cleaner for cleaning the instrument!
- ➢ Never use any sharp-edged or pointed tools or any other tools that might damage the instrument!
- ➢ Never use scouring powder or abrasive cleaners - these will damage the surfaces of the instrument as well!
- ➢ Never use any corrosive cleaning agents!

Humidity, especially distilled water, or residues of other aggressive products cause wear such as abrasion and/or corrosion up to pitting.

IMPORTANT NOTE:

All product wetted parts are wear parts, i.e. warranty for such parts is generally excluded.

- ➢ Clean the instrument thoroughly after each process!
- ➢ Dry all parts thoroughly after cleaning!

11.2 General remarks

Between the individual grinding processes, it usually suffices to remove the product residues with a paint brush and a dry, non-linting cloth and then to clean the milling room and the collector with a vacuum cleaner or with compressed air. Dismantling of the rotor is usually not necessary in such cases.

After grinding of moist or oily products, dismantle the screen. Subsequently, grind 1 - 3 kg of grain (e.g. wheat, if necessary even up to 5 kg, depending on the moisture or oil content of the product processed before) in order to bind the moisture or oil. Finally, clean the rotary mill as described in the following

Concerning cleaning between the individual grinding processes, please refer to chapter 11.3 "Cleaning after each grinding process".

However, depending on the product processed and on other factors, dismantling of the rotor may be necessary in order to clean the surfaces behind the rotor from any regrind residues.

Dismantling and remounting of the rotor may only be carried out by Anton Paar service technicians or by skilled personnel trained and authorized by Anton Paar to do so!

Concerning complete cleaning, please refer to chapter 11.4 "Complete cleaning incl. dismantling of the rotor".

11.3 Cleaning after each grinding process

1. **Only after grinding of moist or oily products (otherwise, continue with step no. 2):**

   Depending on the moisture or oil content of the product processed before, grind approx. 1 - 3 kg of grain (e.g. wheat, if necessary even up to 5 kg) as described before in order to bind the moisture or oil.

2. Shift the tension lever of the collector to the right to release the collector.

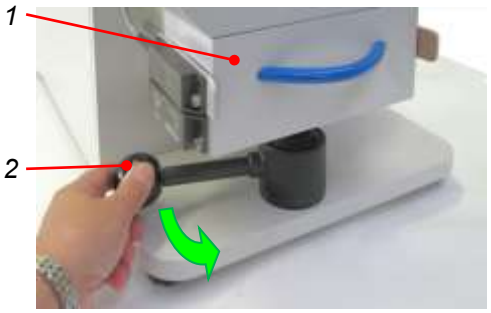

Fig. 24: Releasing the tensioning lever of the collector

1 Collector *2 Tensioning lever of the collector*

3. Pull out the collector and empty it.

Fig. 25: Pulling out the collector

4. Clean the collector with a paint brush and a dry, non-linting cloth.
5. Open the slide gate (push it in completely) and clean the feed hopper with a vacuum cleaner or blow it with compressed air carefully.

Blowing with compressed air is prohibited after processing of dusty products!

6. Turn the safety lock on the door to the milling room counter-clockwise until the door can be opened.

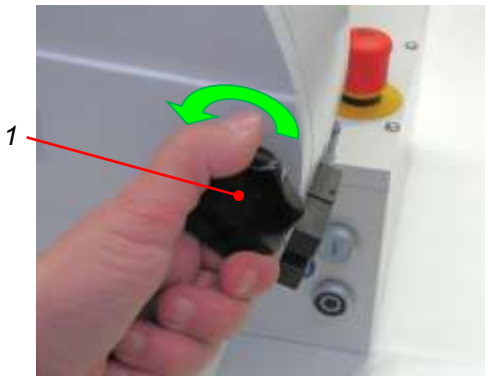

Fig. 26: Opening the safety lock on the door to the milling room

1 Safety lock

7. Open the door to the milling room.
8. Pull out the screen at the bottom of the milling room straightly towards the front side.

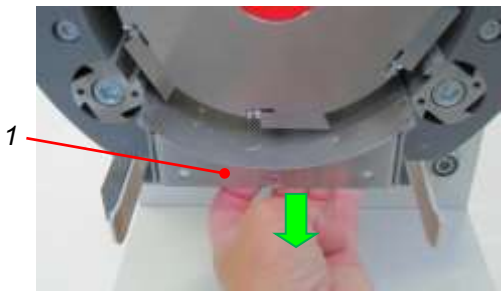

Fig. 27: Pulling out the screen

1 Screen

9. Carefully tap and brush off any regrind residues sticking to the screen.
10. Clean the milling room and the knives with a paint brush thoroughly from any regrind residues.
11. Carefully blow out the milling chamber with compressed air or clean it with a vacuum cleaner.

Blowing with compressed air is prohibited after processing of dusty products!

12. Insert the clean screen from the front side straightly in-between the two lateral guide rails and push it towards the rear side all the way to the limit stop.

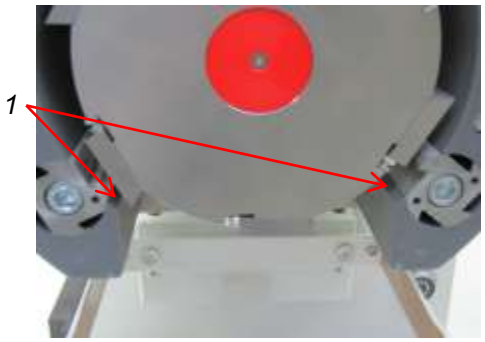

Fig. 28: Mounting the screen

1 Guide rails for the screen

13. Close the door to the milling room so that the safety lock fits into the corresponding threaded bore and screw in the safety lock all the way to the limit stop.
14. Push the collector under the screen straightly from the front side.
15. Shift the tension lever of the collector to the left all the way to the limit stop in order to fix the collector.

11.4 Complete cleaning incl. dismantling of the rotor

⚠ WARNING

Risk of injury, risk of property damage!

Dismantling and remounting of the rotor require expert skills and knowledge and must be carried out with utmost care and precision.

Even the smallest inaccuracies during mounting of the rotor inevitably lead to damage up to complete destruction of the rotary mill - risk of most serious injury to the operating personnel!

- ➢ Dismantling and remounting of the rotor may only be carried out by Anton Paar service technicians or by skilled personnel trained and authorized by Anton Paar to do this work!
- ➢ Dismantling and/or remounting of the rotor by the owner/user of the rotary mill without previous training by Anton Paar is not permitted!
- ➢ If the rotor needs to be dismantled, please contact the Anton Paar Service dept. (see chapter 2 "Contact")!

The rotor is very heavy and can fall down during dismantling or remounting!

Risk of most serious injuries by the rotor and the sharp cutting edges of the flat knives mounted therein, risk of damage to or destruction of the rotor and of the flat knives when the knife holder falls down!

- ➢ Always wear safety shoes with protective caps as well as suitable protective gloves during dismantling and/or mounting of the rotor!
- ➢ Always wear suitable protective gloves during all cleaning work on the rotary mill!

1. Clean the rotary mill as described in chapter 11.3 "Cleaning after each grinding process", steps no. 1 - 11.
2. Unscrew the Allen screw fixing the cover of the tensioning element (2.5-mm Allen key).

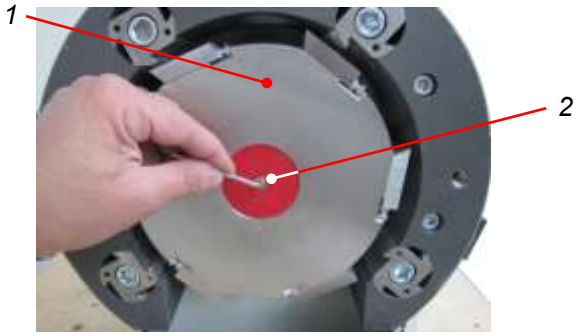

Fig. 29: Losening the cover plate on the rotor

1 Rotor *2 Allen screw of the cover plate*

3. Remove the cover plate from the rotor.

   ⇨ The Allen screws of the tensioning element are now accessible.

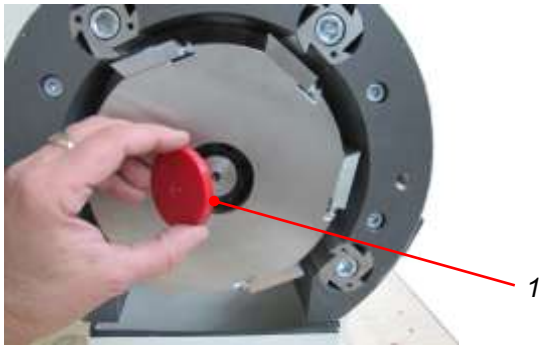

Fig. 30: Removing the cover plate

1 Cover plate

4. Loosen the six Allen screws of the tensioning element slightly so that the rotor can be drawn off the shaft.

   Just loosen the six Allen screws of the tensioning element a little bit, do not unscrew them completely!

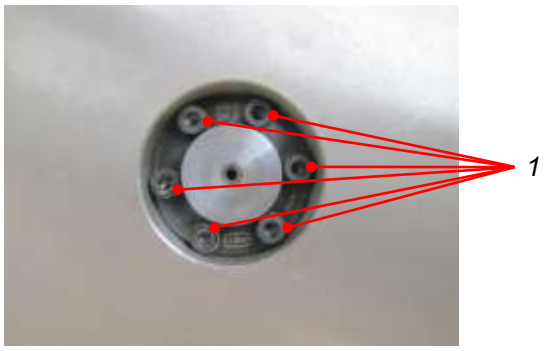

Fig. 31: Allen screws of the tensioning element

1 Allen screws of the tensioning element

⚠ WARNING

Risk of injury, risk of property damage!

The rotor is very heavy and can fall down during dismantling or remounting!

Risk of most serious injuries by the rotor and the sharp cutting edges of the flat knives mounted therein, risk of damage to or destruction of the rotor and of the flat knives when the rotor falls down!

➢ Always wear safety shoes with protective caps as well as suitable protective gloves during dismantling and/or mounting of the rotor!

When dismantling the rotor, the tensioning element within the bore of the rotor can fall down and get damaged!

➢ Take care that the tensioning element does not fall down when pulling off the rotor!

5. Carefully pull the rotor off the shaft towards the front side. When doing so, take care that the tensioning element does not fall out of the rotor or down from the motor shaft.

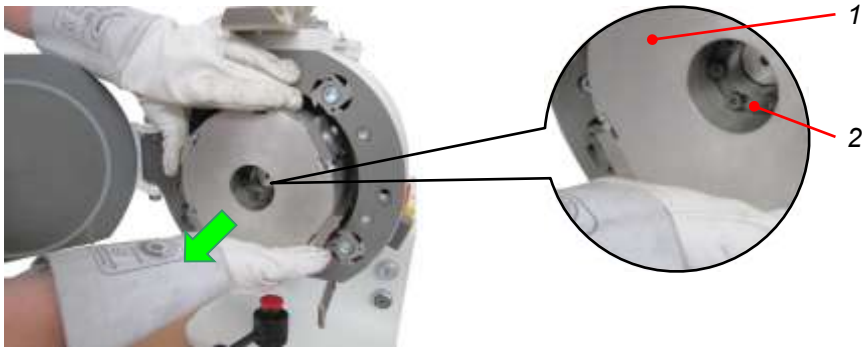

Fig. 32: Dismantling the rotor

1 Rotor *2 Tensioning element in the rotor*

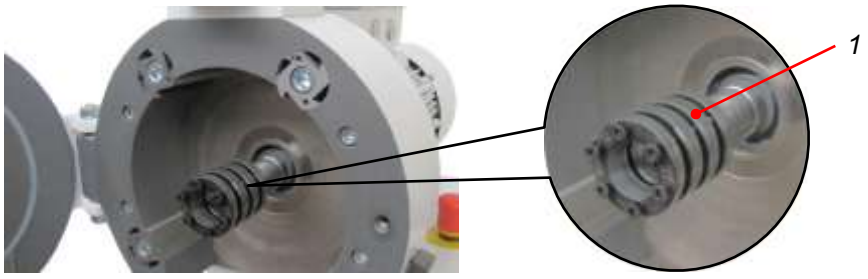

Fig. 33: Rotor dismantled

1 Tensioning element, here: on the motor shaft

NOTICE

Risk of destruction of the tensioning element!

If the Allen screws of the tensioning element are tightened without the rotor having been mounted, the tensioning element can be damaged.

➢ Never tighten the Allen screws of the tensioning element when the rotor has been dismantled!

6. Clean the rotor and all sides of the flat knives thoroughly with a paint brush.

   Clean the edges and grooves with particular care.

7. Vacuum the rotor all around or blow it out with compressed air.

   Clean the grooves on the fixtures of the flat knives with particular care.

8. Vacuum the milling room all around, too, or blow it out with compressed air.

   Clean the cavities in the mill casing housing the four round knives with particular care.

9. Visually check all flat and round knives for wear.

   Concerning exchange of the flat knives and turning of the round knives, please refer to chapter 12 "Maintenance".

10. If applicable, pull the tensioning element off the motor shaft and insert it from the front side into the bore of the rotor.

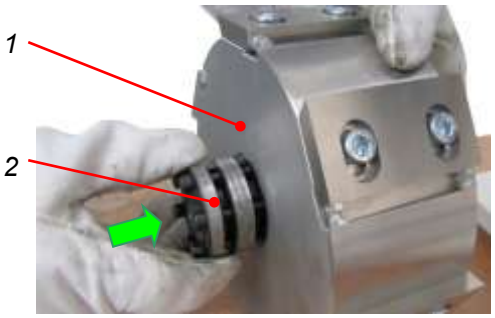

Fig. 34: Inserting the tensioning element into the bore of the rotor

1 Rotor *2 Tensioning element*

11. Take the rotor with the tensioning element inside and push it from the front side onto the motor shaft until it can no longer fall down.

Fig. 35: Mounting the rotor onto the motor shaft

12. Slide the two 0.2-mm sheet gages from the accessory kit behind the right and left side of the rotor and push the rotor against them all the way to the limit stop.

Slide the two sheet gages behind flat knives to prevent the knives from rubbing against the rear wall when the rotor rotates.

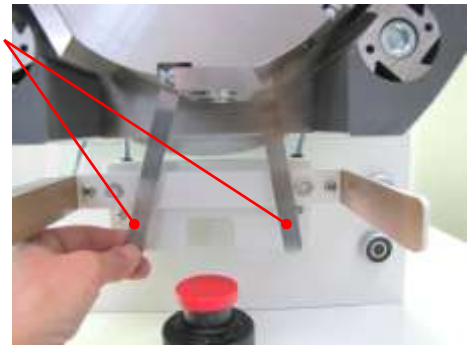

Fig. 36: Sheet gages behind the rotor

1 Sheet gages

13. Slightly tighten the six Allen screws of the tensioning element crosswise before tightening them firmly.
14. Remove the two sheet gages from behind the rotor.

15. Release the motor brake as follows:
    - ➢ Screw the release lever from the accessory kit (ID no. 4 79 869) into the threaded bore on the rear top of the motor.
    - ➢ Press the release lever towards the rear side (see fig. below).

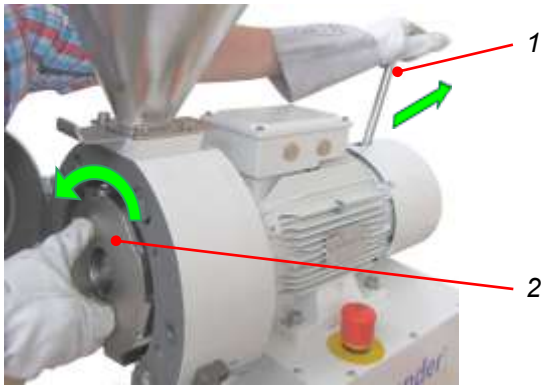

Fig. 37: Releasing the motor brake, checking idle run of the rotor

1 Release lever 2 Rotor

16. Turn the rotor counter-clockwise with your hand (see fig. above) and thoroughly listen for any sliding or scratching noise in order to make sure that the rotor rotates freely and does not rub against the rear wall of the mill casing.
17. Shift the release lever of the motor brake towards the front side again to lock the motor brake.
18. Insert the clean screen from the front side straightly in-between the two lateral guide rails and push it towards the rear side all the way to the limit stop.

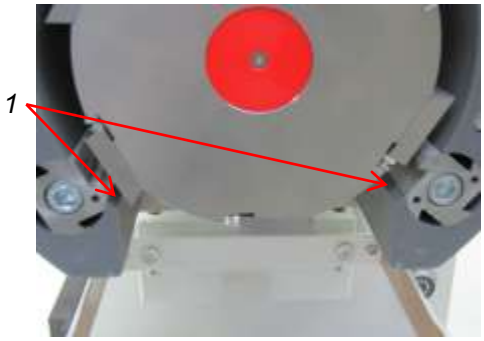

Fig. 38: Mounting the screen

1 Guide rails for the screen

19. Close the door to the milling room so that the safety lock fits into the corresponding threaded bore and screw in the safety lock all the way to the limit stop.
20. Push the collector under the screen straightly from the front side.
21. Shift the tension lever of the collector to the left all the way to the limit stop in order to fix the collector.

12 Maintenance

To ensure a correct maintenance of the Brabender instrument, the Anton Paar Service offers a maintenance contract to be purchased.
Please contact your local Anton Paar representative to do so. Find the contact data of your local Anton Paar representative on the Anton Paar website

https://www.anton-paar.com

13 Trouble-shooting

This chapter lists some possible troubles that may occur during operation of the instrument and measures to be taken to eliminate these troubles.

No.	Error	Cause/measure
1	**Device cannot be started**	**Cause:** ● No power supply ● Wrong supply voltage ● Collector not mounted properly (safety switch!) ● Door to the milling room not properly closed (safety switch!) ● Safety relay not having been reset after activation of one of the two safety switches ● Emergency motor stop button activated ● Motor overheated **Measures:** 1. Check whether the power plug has been connected properly to a power supply outlet with protection contact. 2. Check whether the supply voltage matches the data on the name plate(s) of the instrument(s). 3. Check whether the collector has been pushed in all the way to the limit stop so that the two parts of the non-contact magnetic safety switch can communicate with each other. 4. Check whether the door to the milling room has been properly closed so that the two parts of the non-contact magnetic safety switch can communicate with each other.  Button "OFF" 5. Press the button "OFF" on the front side of the pedestal body of the rotary mill in order to reset the safety relays. 6. Check whether the emergency motor stop button has been actuated (pressed down): Slightly turn the emergency motor stop button until it pops out.  The emergency motor stop button lights when actuated (pressed down). 7. If the motor is overheated: ➢ Have the device cool down. ➢ Place the device so that there is enough space in front of the ventilation grille(s) to ensure sufficient air ventilation for motor cooling.

No.	Error	Cause/measure
2	**Unzureichende Vermahlung**	**Cause:** ● Unsuited product loaded ● Unsuited screen mounted ● Knives worn out **Measures:** 1. Make sure that the product is suited for the rotary mill. See chapter 7.3 "Authorized/non-authorized products". If in doubt, please do not hesitate to ask the Anton Paar service department (see chapter 2 "Contact"). 2. Make sure that the screen mounted is suited for the product and for the desired fineness. If it is not, mount another screen. See chapter 8.3.3 "Mounting the screen". 3. Check the degree of wear of the cutting edges. If required, exchange the cutting edges/knives. Exchange of the cutting edges or knives and knife adjustment may only be carried out by Anton Paar service technicians or by skilled personnel trained and authorized by Anton Paar to do this work! Concerning exchange of the cutting edges and knives, please refer to .

No.	Error	Cause/measure
3	**Mill obstructed**	**Cause:** ● Unsuited product loaded ● Unsuited screen mounted ● Slide gate opened before the mill was started ● Knives worn out ● Knives mounted wrongly and, hence, being damaged **Measures:** 1. Immediately press down the emergency motor stop button to stop the mill. ⇨ The mill stops immediately. ⇨ The red LED on the emergency motor stop button lights. 2. Pull out the slide gate at the bottom of the feed hopper all the way to the limit stop to close the feed opening. 3. Open the door to the milling room.

No.	Error	Cause/measure

[3] *[continued]*

⚠ CAUTION

Risk of injury, risk of property damage!

The cutting edges of the round and flat knives are extremely sharp - risk of injury!

- ➢ Be extremely careful when working in the milling room in order to prevent injury by the sharp cutting edges!
- ➢ Always wear suitable safety goggles for all work in the milling room!

4. Use a paint brush or a wooden spatula to remove the product as far as possible from the milling room and the knives.
5. Release the motor brake as follows:
   - ➢ Screw the release lever from the accessory kit into the threaded bore on the rear top of the motor.
   - ➢ Press the release lever towards the rear side.
6. Carefully turn the rotor a little bit by hand in order to completely remove the product obstructing the rotary mill.
7. Carefully remove the product obstructing the rotary mill.
8. If necessary, repeat steps no. 6 and 7 until the product has been removed completely.
9. Carefully turn the rotor with your hand in order to make sure that it rotates freely and that there is no more product between the rotor and the rear wall of the mill casing.

   

   While turning the knife holder, check the degree of wear of the knives and make sure that all knives have been mounted properly and are tight.

   

   In case of any worn out cutting edges/knives, please follow the instruction in .
10. Lock the motor brake.
11. Close the door to the milling room completely.
12. Make sure that the slide gate at the bottom of the feed hopper has still been pulled out and that the feed opening is still closed.
13. Slightly turn the emergency motor stop button until it pops out.
    - ⇨ The red LED on the emergency motor stop button goes off.

No.	Error	Cause/measure

[3] [continued]

Button "OFF"

Button "ON"

14. Press the button "OFF" on the front side of the pedestal body of the rotary mill in order to reset the safety relays.

    Without a reset of the safety relay by pressing the button "OFF", the motor may not start when pressing the button "ON"..

15. Press the button "ON" on the front of the pedestal body to restart the rotary mill.

    ⇨ The mill starts immediately.

16. Have the rotary mill run without product for some seconds and listen whether it runs smoothly and evenly.

17. Push in (open) the slide gate under the feed hopper carefully to allow the product to slowly fall down into the milling room.

18. When the rotary mill runs properly and without any problems, the slide gate may be opened further very carefully, depending on the product to be processed, in order to continue the grinding process.

19. If the measures described above are not successful, please contact the Anton Paar Service.

14 Repair

If your instrument needs to be repaired, please contact your local Anton Paar representative.

Find the contact data of your local Anton Paar representative on the Anton Paar website:

https://www.anton-paar.com

15 Disposal

For environmentally compliant disposal of the device or its components, please observe all applicable national and international regulations (e.g., directives on waste electrical and electronic equipment). The secure deletion of any personal data stored in the software is the sole responsibility of the owner of the device/software in accordance with applicable data protection requirements. For further information or assistance, please contact your local Anton Paar representative.

Lubricating the gear unit implies the use of the process material gear oil/grease. It is within the responsibility of the owner of this machine to observe and apply the manufacturer's regulations and instructions in the safety data sheets concerning disposal - even of residues - of this process material.

In case of a necessary disposal of the instrument or of parts thereof, we recommend entrusting an authorized disposal company with the disposal of the machine/machine parts in order to make sure that the local regulations concerning collection, recycling, and disposal as well as those concerning documentation are observed.

16 Annex

16.1 Accessories, spare parts, additional equipment

For accessories, spare parts and additional equipment, please contact your local Anton Paar representative in case of need.

Find the contact data of your local Anton Paar representative on the Anton Paar website:

https://www.anton-paar.com

16.2 Electric interferences

The close arrangement of electric instruments in an electrically disturbed environment may cause electric interferences on the power supply connection that require potential equalization.

Example no. 1: Potential equalization with separate ground cables (for separate wall outlets or separate distribution boxes)

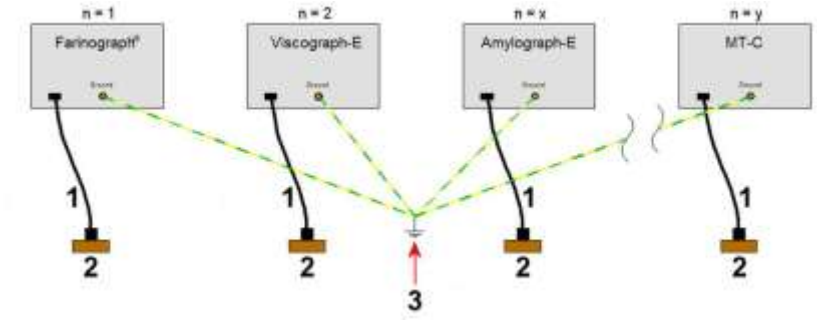

Fig. 39: Potential equalization with separate ground cables

1	*Power cord*	*3*	*Connect ground cable for potential equalization*
2	*Wall outlet*		

Example no. 2: Potential equalization without separate ground cable (with a single, common power outlet extension)

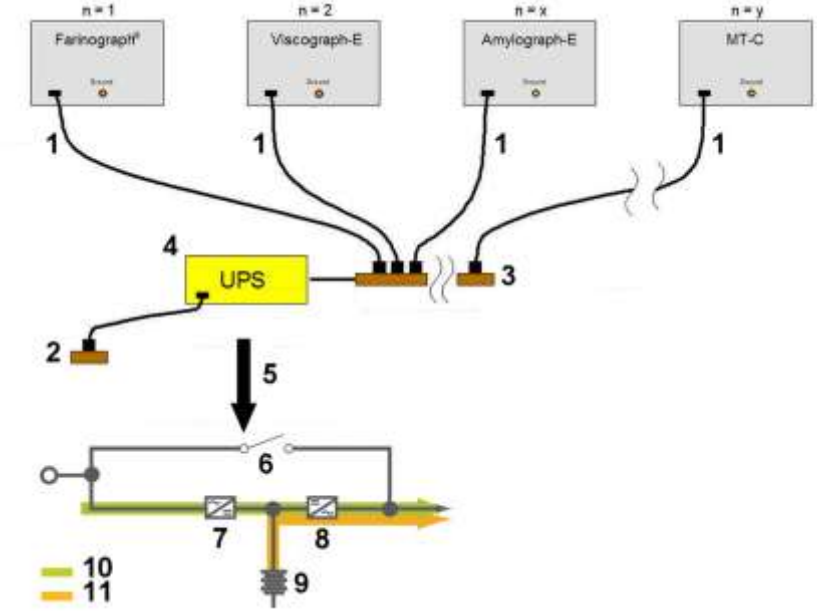

Fig. 40: Potential equalization with common power outlet extension

1	*Power cord*	*6*	*Internal static bypass*
2	*Wall outlet*	*7*	*AC to DC rectifier*
3	*Potential equalization with power outlet extension*	*8*	*DC to AC inverter*
		9	*Battery*
4	*UPS: if required, for weak power supply grid*	*10*	*Normal operation*
		11	*Battery power*
5	*IMPORTANT: Use double-conversion UPS!*		

Example no. 3: Potential equalization with separate ground cables (for different voltages and separate wall outlets)

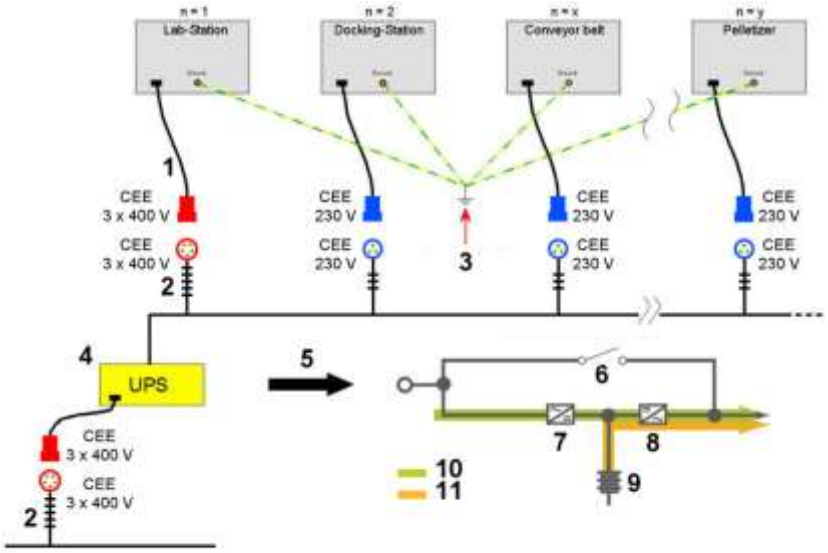

Fig. 41: Potential equalization with separate ground cables

1	*Power cord*	*6*	*Internal static bypass*
2	*Wall outlet*	*7*	*AC to DC rectifier*
3	*Connect ground cable for potential equalization*	*8*	*DC to AC inverter*
		9	*Battery*
4	*UPS: if required, for weak power supply grid*	*10*	*Normal operation*
		11	*Battery power*
5	*IMPORTANT: Use double-conversion UPS!*		

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