Manual

Vibratory Feeder DR 100

Translation

Table of Contents

1 Notes on the manual

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

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

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

Amendment status:
The document amendment 0005 of the "Vibratory Feeder DR 100" manual has been prepared in accordance with the Directive of Machinery 2006/42/EC.

1.1 Disclaimer

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

1.2 Copyright

1.3 Explanation of signs and symbols

In this manual, the following signs and symbols are used:

Signs and symbols	Meaning
	Reference to recommendation and/or important information.
Bold font	Labelling of an important term.
• • •	Lists
1. (…) 2. (…) 3. (…)	Action steps of instructions.
(1), (2), (…) (a), (b), (..)	In the instructions, the relevant components are marked with (number) or (letter) for better orientation. The components have a fixed marking, which is defined in the chapter "Views of the device".
➔	Result of an action step

	In the versions of tis manual, the **Retsch DR 10 feed unit** is usually referred to as the **device**.

1.4 Explanations of the Safety Instructions

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

DANGER D1.0000

Risk of fatal injuries
Source of danger

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

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

WARNING W1.0000

Risk of life-threatening or serious injuries
Source of danger

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

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

⚠ CAUTION C1.0000

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

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

NOTICE N1.0000

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

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

2 Safety

CAUTION

C2.0002

Risk of injury
Lack of knowledge of the manual

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

Target group:
The DR 100 is intended for use in a laboratory environment for sample preparation. This manual is therefore addressed to personnel working with this device in a comparable environment who already have experience with similar devices.

The DR 100 is a modern, high-performance product from Retsch GmbH and state of the art. When used as intended with this device and with knowledge of the technical documentation available here, operational safety is assured.

2.1 Intended use of the device

The DR 100 is designed for uniform feed and conveying of free-flowing bulk materials and powders in dry condition up to the following feed size:

DR 100/15 ≤ 2 mm
DR 100/40 ≤ 6 mm
DR 100/75 ≤ 12 mm

As a laboratory instrument, the DR 100 is to be used exclusively for sample preparation and not as a production machine. The DR 100 is not a production machine. This laboratory instrument is designed for 8-hour single-shift operation at 30 % duty cycle.

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

The operating company and operators must have read the manual and be familiar with the full range of functions of the device.

CAUTION

C3.0006

Risk of injury
Sample material that is harmful to health

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

2.2 Improper use

The DR 100 may only be used for its intended use.

Any uses other than those described under intended use are considered to be improper.

The DR 100 is **not** suitable for processing of sample material that can form explosive mixtures with air.

Claims for damages in any form are excluded for property damage and personal injury resulting from improper use and/or failure to comply with the safety instructions.

2.3 Obligations of the operating company

2.3.1 Provisions

The user bears responsibility for ensuring that people working with the device and the corresponding equipment have taken note of and understood all relevant safety regulations.

2.3.2 Personnel

- Ensure that only trained personnel are deployed whose training and experience enable them to recognise risks and avoid potential hazards.
- Staff should be given regular training on using the device, and in particular regarding sudden events.
- Only allow trainee staff to work on the device when they are being supervised by qualified personnel.
- Check the safety awareness of staff regularly.
- Define staff responsibilities according to qualification and job description.
- Provide staff with personal protective equipment (PPE).
- Ensure that the following conditions have been met:
  – Staff have read and understood this Manual, and in particular the chapter on Safety.
  – Staff are aware and take note of the relevant accident prevention and safety regulations.

– Staff wear the designated personal protective equipment (PPE) when working with the device.

2.3.3 Workstation and device

- Ensure that there is sufficient lighting and ventilation at the workstation.
- Ensure that the exhaust air is properly conducted outside.
- All signs on the device must be kept in a legible condition.
- Ensure that all inspections and servicing work prescribed in this Manual are carried out.

2.3.4 Qualification of personnel

Work/operating phase	Qualification
Transport Installation Commissioning Operation Controlling Servicing Disposal	Qualified employee who has been trained in the safe use of the device.
Work on the electrical equipment on the device	Electrician who, on the basis of his/her training, knowledge and experience is able to evaluate the work assigned and recognise potential hazards.

2.3.5 Personal protective equipment (PPE)

Recommendations for personal protective equipment

Work/operating phase	Personal protective equipment (PPE)
Transport Set up	Safety footwear
Commissioning Installation of additional equipment Maintenance	No PPE required
Disposal	Safety footwear
Normal operation (operation and control)	Hearing protection

2.4 Protective Equipment

Emergency stop switch

The device is not equipped by default with an emergency stop switch. In case of emergency, the device must be shut down by pressing the main switch or by disconnecting the device from the power supply.

2.5 Repairs

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

In case of repair, please inform…

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

Service address:

2.6 Preventing risks during normal operation

Non-compliance with the following safety instructions is contrary to the intended use and constitutes a danger to personnel and a risk to operational safety.

Transport and set up

- Wear protective footwear during transport and set up.
- The device may only be connected to sockets with PE conductor.
- When connecting the device, the values on the nameplate must match the values of the electrical connection.

Operation

- Read the manual before using the appliance.
- Only operate the device at a workstation with sufficient space for secure set up of the device.
- Check the mains lead for damage before operation.
- Do not operate the device if damage is visible or suspected.
- Only operate the device in accordance with technical limits of use.
- Wear hearing protection during operation.
- Before operating the device, take measures to allow for limited communication during operation.
- Pay attention to the surroundings during grinding, as it is difficult to notice acoustic signals due to the background noise.
- Do not operate the device in potentially explosive atmospheres.
- Observe safety data sheets of samples and follow the instructions by taking appropriate measures in advance.

Maintenance and repair

- Before maintenance, switch off the device with the main switch.
- The device may only be cleaned dry or with a damp cloth.
- Do not clean the device with compressed air.
- Repairs may only be carried out by the manufacturer of the device or an authorised representative.

2.7 Preventing damage to equipment

- Protect the device from condensation in case of expected strong temperature fluctuations (e.g. during air transport).
- When transporting the device, avoid any impacts and vibrations.
- Observe the conditions for the installation site when setting up the device.
- The device may only be cleaned dry or with a damp cloth.
- Do not use solvents or aggressive cleaning agents for cleaning.
- For maintenance, only use original spare parts.

2.8 Confirmation Form for the Managing Operator

This manual contains essential instructions for operating and maintaining the device which must be strictly observed. It is essential that they be read by the user and by the qualified staff responsible for the device before the device is commissioned. This manual must be available and accessible at the place of use at all times.

The user of the device herewith confirms to the managing operator (owner) that he has received sufficient instructions about the operation and maintenance of the system. The user has received the manual, has read and taken note of its contents and consequently has all the information required for safe operation and is sufficiently familiar with the device.

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

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

User
Surname, first name (block letters)
Position in the company
Place, date and signature

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

3 The Vibratory Feeder DR 100

Use the Retsch DR 100 feed units for uniform feeding and conveying of free-flowing bulk materials and powders. Whether in direct connection with Retsch shredders or for simple feeding of balances, mixing and stirring processes or measuring devices; the DR 100 is suitable for flexible and effective applications.
The sample material enters the vibrating chute via the feed hopper. This is caused to vibrate at 50 or 60 Hz by an electromagnetic inline vibrator and to generate uniform material transport.
The vibration intensity and thus also the feed rate are infinitely adjustable.
The duration of the feed can be preselected and is digitally displayed. In standard operation, the DR 100 is directly controlled by the downstream devices depending on the load.
Parts which come into contact with the sample material are all made of stainless steel.
Performance data:

- Uniform feed and conveying of free-flowing bulk materials with a particle size of up to 12 mm or fine powders
- Digitally preselectable time operation from 1-99 min or continuous operation
- Stepless selection of vibration intensity
- Height adjustable hopper
- Parts which come into contact with the sample material made of stainless steel
- Customization to external and standard operation in combination with Retsch devices

NOTICE This laboratory instrument is designed for 8-hour single-shift operation at 30 % duty cycle. This device must not be used as a production machine or in continuous operation.

3.1 Technical data

Operating data	
Performance data	220 – 240 V, 50 Hz 110 – 120 V, 60 Hz
Rated power	24 W
Protection rating	IP20
Electromagnetic compatibility	EMC class according to DIN EN 55011:A This device contains a safety device that may lead to a shutdown in case of certain adverse network events. Such an occurrence does not pose a safety risk to the device. Restart the device by turning the main switch off and on again.
Noise emissions	Noise measurement according to DIN 45635-031-01-KL3. The noise characteristics depend on the set vibration intensity. LpAeq = 36 to 42 dB(A)

Sample material feed data	
Maximum sample volume / hopper volume	Type DR 100/15: 2.65 dm^3 / 2.8 l Type DR 100/40: 2.65 dm^3 / 2.8 l Type DR 100/75: 3.50 dm^3 / 3.5 l
Conveying rate (example)	Type DR 100/15: set layer height 8 mm, conveying rate approx. 0.5 dm^3/min Type DR 100/40: set layer height 30 mm, conveying rate approx. 0.5 dm^3/min Type DR 100/75: set layer height 35 mm, conveying rate approx. 0.5 dm^3/min Conveying medium silica sand at max. vibration intensity
Vibration frequency	3,000 vibrations at 50 Hz 3,600 vibrations at 60 Hz
Maximum feed size	Up to 12 mm

Required floor space	
Required floor space Required floor space with vibrating chute and hopper	175 mm x 280 mm 310 mm x 280 mm (no safety distances necessary)
Weight Weight with vibrating chute and hopper and holder	Approx. 9.7 kg Approx. 12 kg

Conditions for the installation site	
Installation height	Max. 2000 m a.s.l.
Ambient temperature	5 °C to 40 °C
Humidity	Maximum relative humidity 80 % up to 31 °C, decreasing linearly up to 50 % relative humidity at 40 °C

3.2 Views of the device

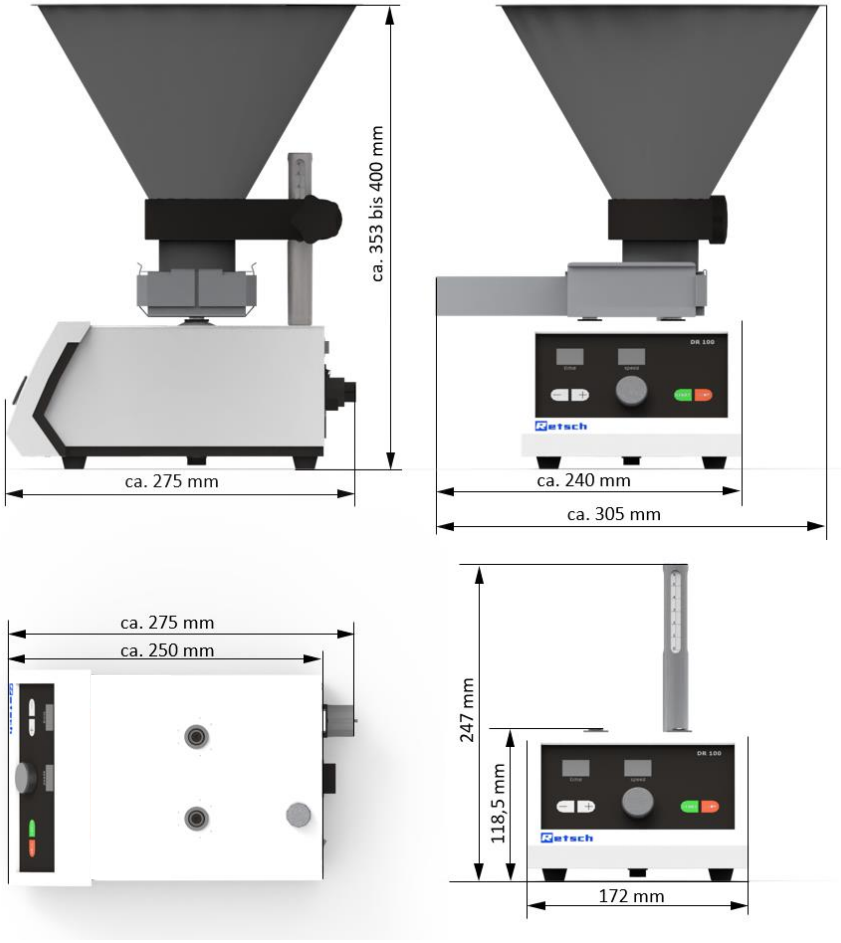

Fig. 1: Dimensions of the device

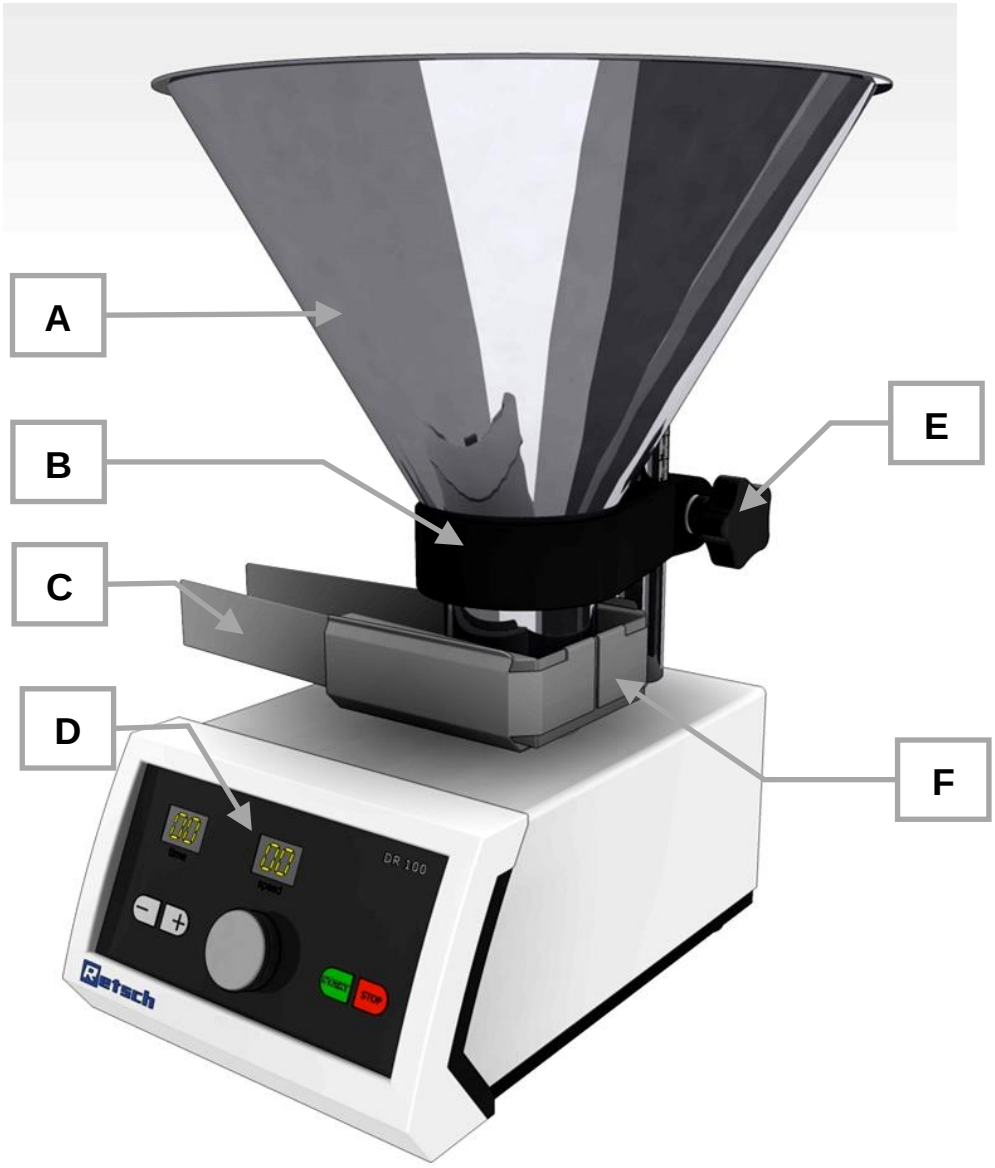

Fig. 2: Overall view of the device and individual parts

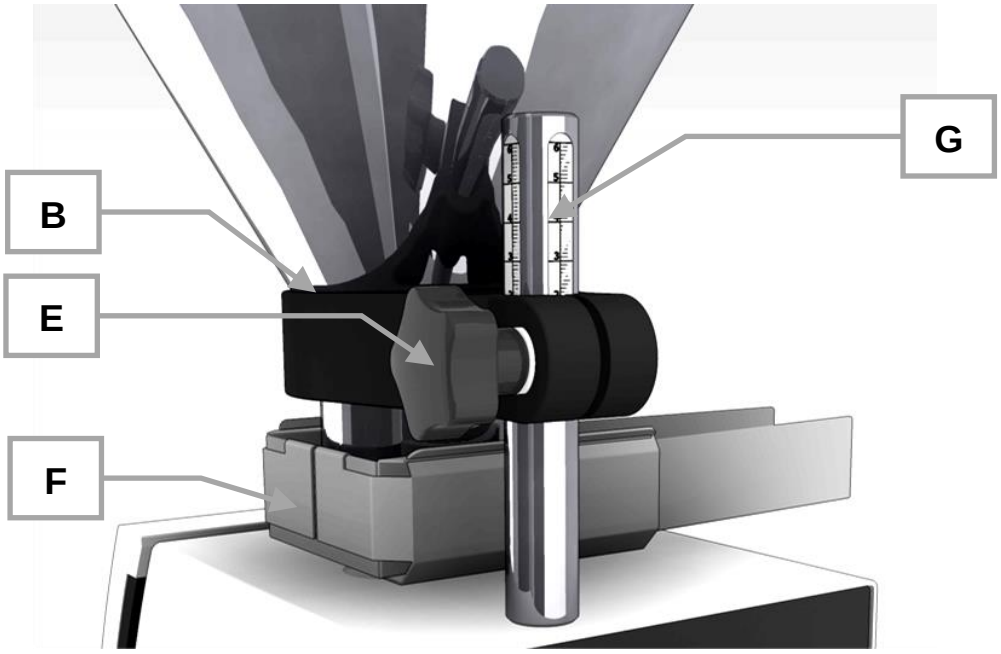

Fig. 3: Rear view of hopper support

Fig. 4: Rear of the device - Electrical connection and interface

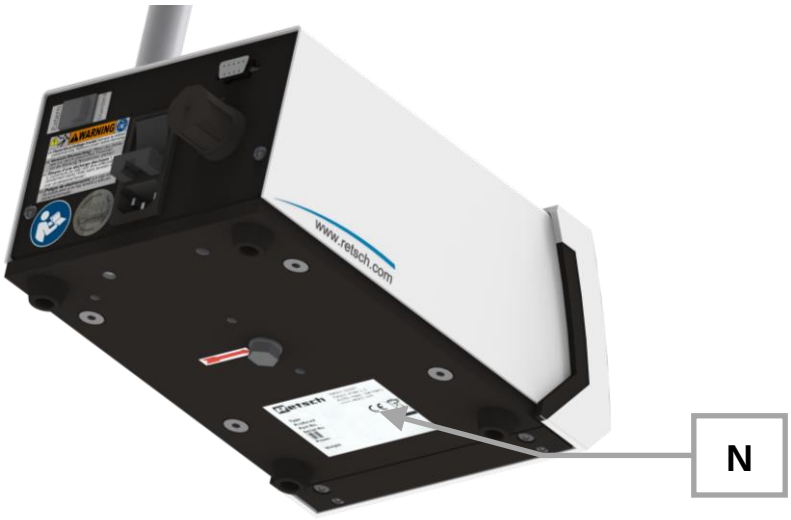

Fig. 5: Bottom of the device - Nameplate

3.3 Overview table of the parts of the device

Element	Description	Function
A	Feed hopper	Serves as a storage vessel, holds the feed material to be conveyed via the vibrating chute (**C**)
B	Hopper support	Is placed on the support rod (**G**), holds the feed hopper (**A**) and allows its height to be adjusted
C	Vibrating chute	Conveys the feed material
D	Operating unit	START / STOP, parameter setting
E	Locking screw of hopper support	Securing of the hopper
F	Support of vibrating chute	Supports the vibrating chute
G	Support rod	Supports the hopper support (**B**) and enables adjustment of the hopper support
H	Operating mode selector switch	Switching between **standard** and **external** operating mode
I	Interface	Connection of external devices (ZM 200, PT 100, PT 200)
J	Power switch	Switches the device on or off
K	Fuse drawer and fuse insert	Holds two glass fuses
L	Mains plug connection	Connects the device to the power supply
M	Interface	Connection of external devices (ZM 300)
N	Nameplate	Contains all device-specific information

3.4 Operating Controls, Displays and Functions

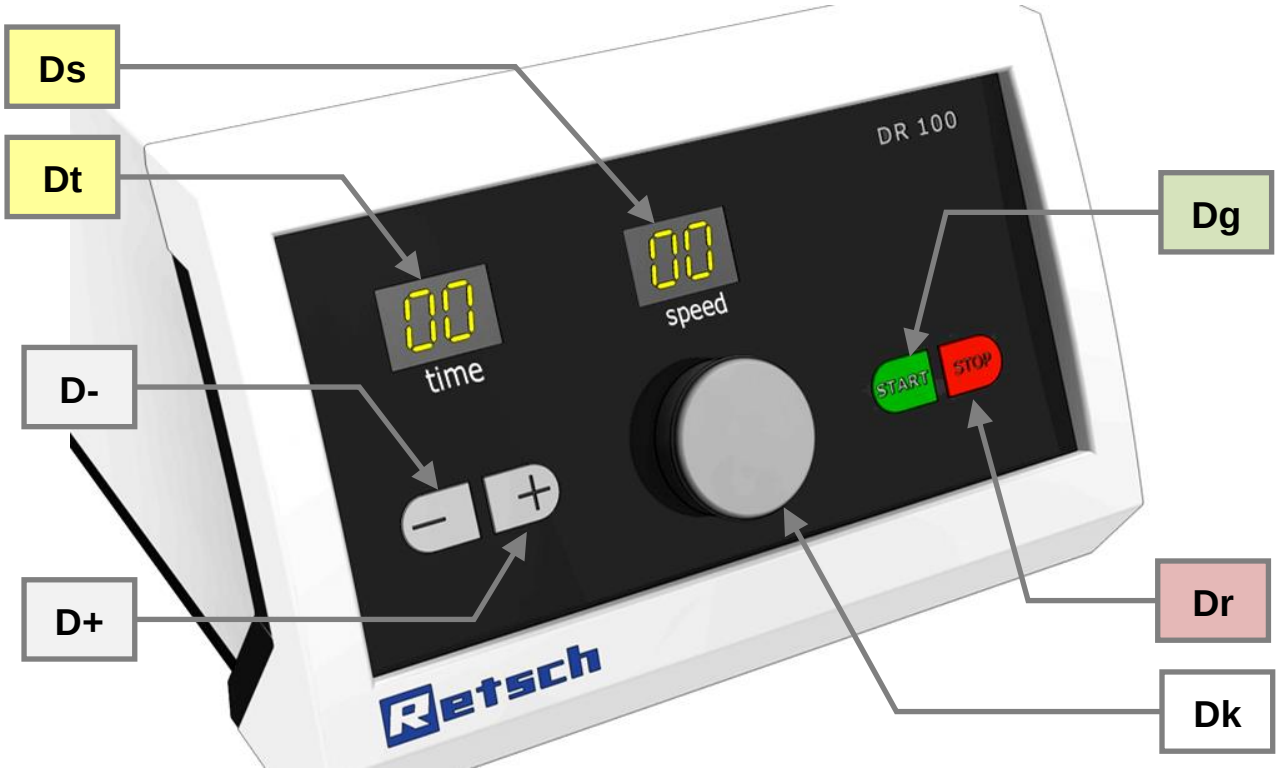

Fig. 6: Control panel

3.5 Overview Table of the Operating Elements and the Display

Element	Description	Function
Dt	**time** display	Display for the set feed time and error messages
Ds	**speed** display	Display of the vibration intensity or feed rate
D-	**-** button	Decreasing of feed time
D+	**+** button	Increasing of the feed time
Dg	START button	Starting of the device
Dr	STOP button	Stopping of the device / pause
Dk	Dial	Setting the vibration intensity or feed rate

3.6 Type Plate Description

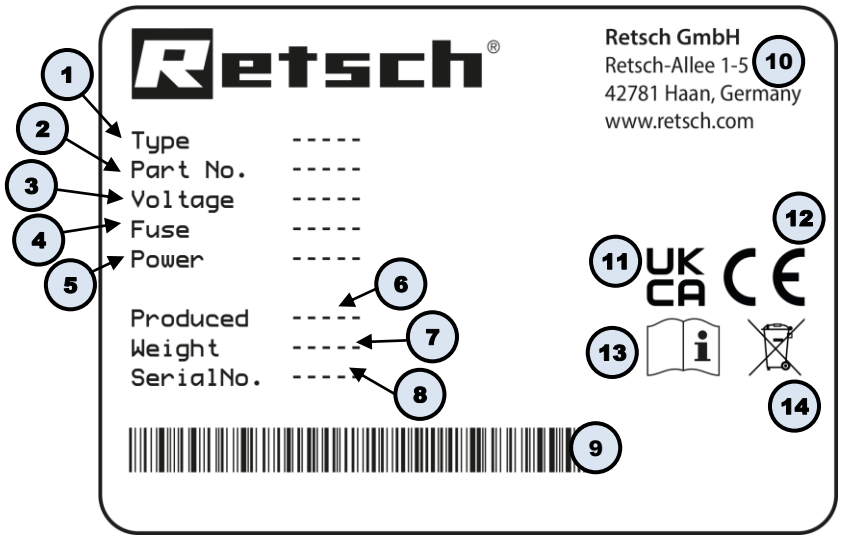

Fig. 7: Type plate

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

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

4 Packaging, Transport and Installation

4.1 Packaging

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

NOTICE N2.0001

Complaint or return
Keeping the packaging

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

4.2 Transport

NOTICE N3.0017

Damage to components
Transport

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

NOTICE N4.0014

Complaints
Incomplete delivery or transport damage

- The forwarding agent and Retsch GmbH must be notified immediately in the event of transport damage. It is otherwise possible that subsequent complaints will not be recognised.
- **Please check the delivery on receipt of the device for its completeness and intactness.**
- **Notify your forwarding agent and Retsch GmbH within 24 hours.**

4.3 Temperature Fluctuations and Condensation

NOTICE N5.0016

Damaged components due to condensation
Temperature fluctuations

– The device may be exposed to substantial fluctuations in temperature during transport. The ensuing condensation can damage electronic components.
- **Wait until the device has acclimatised before putting it into service.**

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

4.4 Conditions for the Installation Site

⚠ CAUTION C4.0047

Risk of injury caused by the device falling
Incorrect installation of the device

– Due to its weight, the device can cause injuries if it falls.
- **Only operate the device on a sufficiently large, strong and stable workstation.**
- **Ensure that all of the device feet are securely supported.**

NOTICE N6.0004

Setting up the device
Vibrations during operation

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

NOTICE N7.0002

Setting up the device
Disconnecting the device from the mains

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

NOTICE N8.0021

Ambient temperature
Temperatures outside the permitted range

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

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

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

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

NOTICE N9.0015

Humidity
High relative humidity

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

- Installation height: max. 2 000 m above sea level

4.5 Removing the Transportation Lock

WARNING W2.0005

Risk of injury due to the device falling down
Lifting the device above head height

- The device can fall causing serious injuries when lifted above head height.
- **Never lift the device above head height!**

NOTICE N10.0018

Transportation lock
Transport without transportation lock, or operation with transportation lock

- Mechanical components may be damaged.
- **Only transport the device with mounted transportation lock.**
- **Do not operate the device with built-in transportation lock.**

To protect the mechanical and electronic components in the device from damage during transport, there is a screw on the bottom of the DR 100 for securing during transport.

1. Remove the transport lock (**TS**) with a SW13 open end wrench.

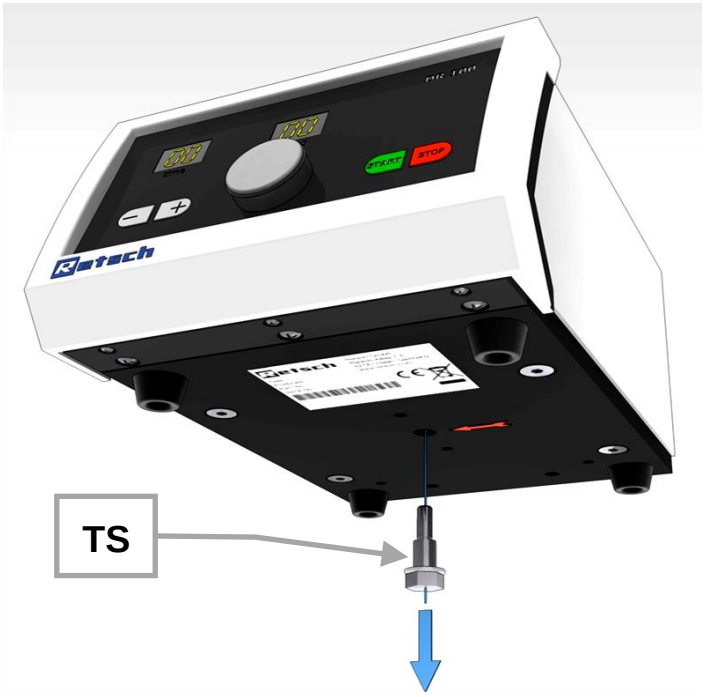

Fig. 8: Removing the transport lock

4.6 Mounting the support for the vibrating chute

1. Before installing the support, check that the dust seals (**Fn**) are correctly fit.

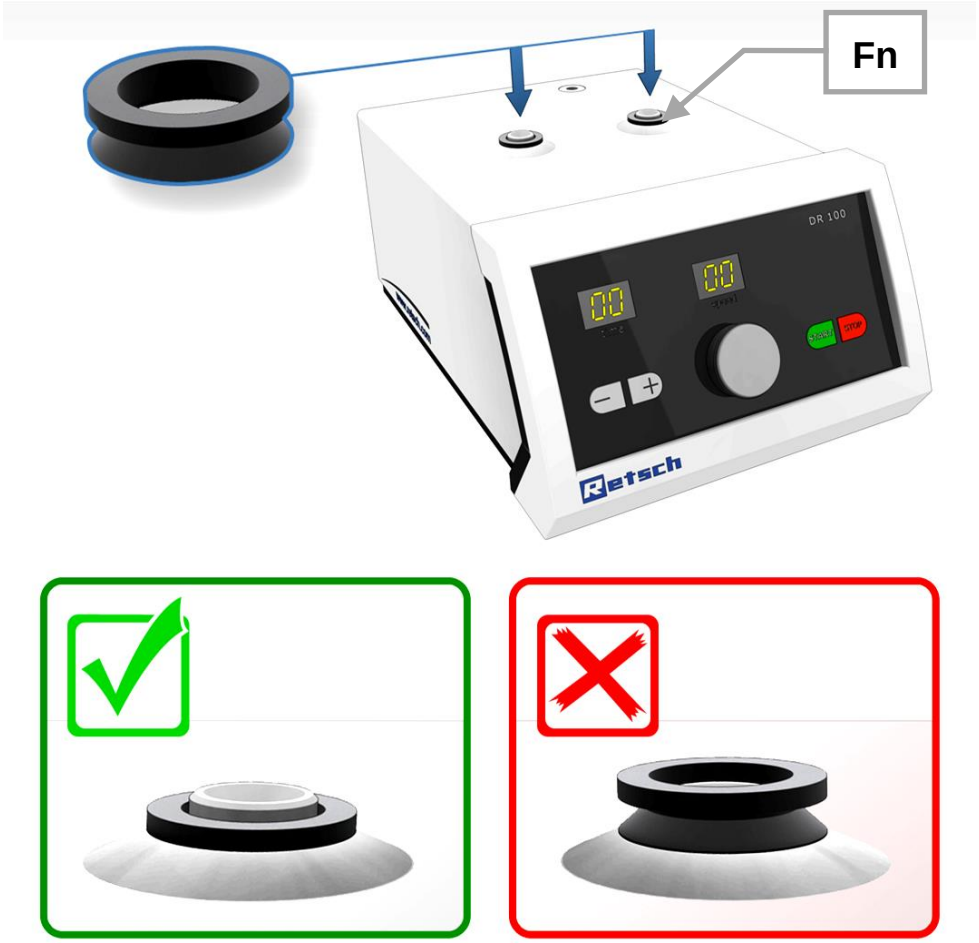

Fig. 9: Correct fit of dust seal

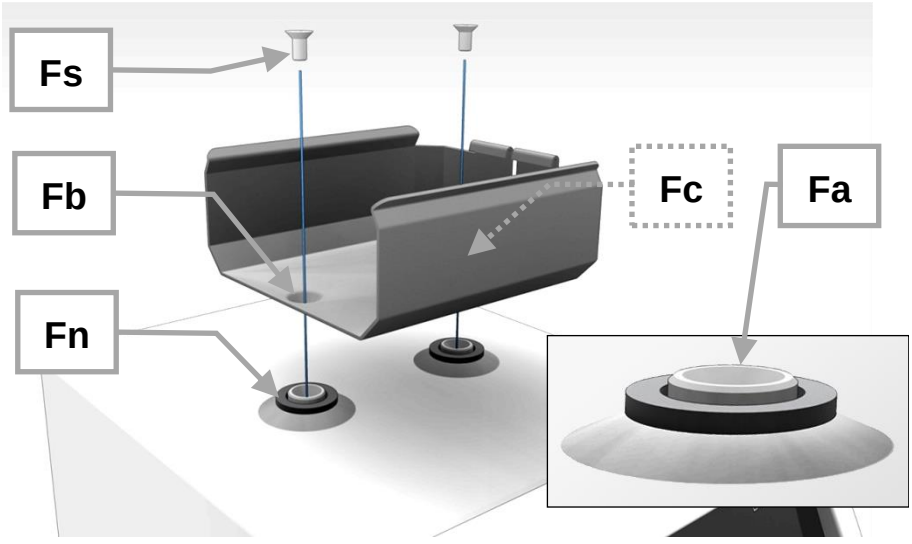

Fig. 10: Installing the support for the vibrating chute

2. Insert the countersunk screws (**Fs**) into the holes (**Fb/Fc**) of the bracket.
3. First tighten the screw (**Fc**) with a Phillips screwdriver.
4. Afterwards, tighten the screw (**Fb**).

NOTICE Without a firm connection between the vibrating chute and the screw (**Fa**), the transmission of vibrations is not sufficient. The feed cannot be controlled.

5. Check the tightness of the screws.

4.7 Inserting the vibrating chute

1. Clamp the rear edge (**Cr**) of the vibrating chute under the tabs (**Fk**) of the support (**F**).

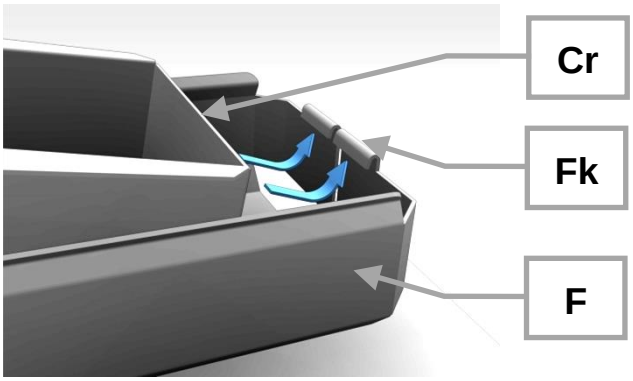

Fig. 11: Inserting the vibrating chute

2. Press the vibrating chute (**C**) into the support (**F**) until the vibrating chute (**C**) firmly engages.

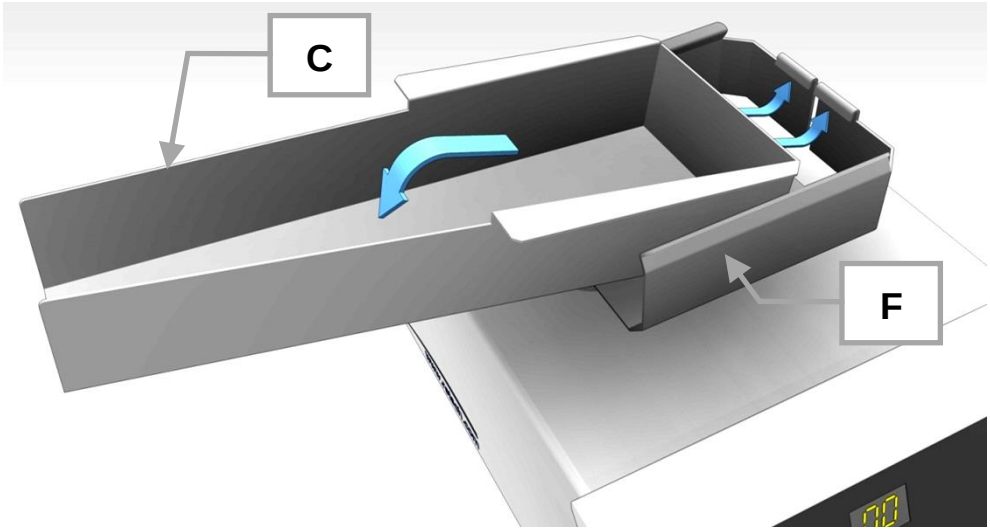

Fig. 12: Engaging the vibrating chute

4.8 Mounting the hopper support rod

1. Screw the rod (**G**) for the funnel holder into the threaded hole (**Gb**) on the housing.

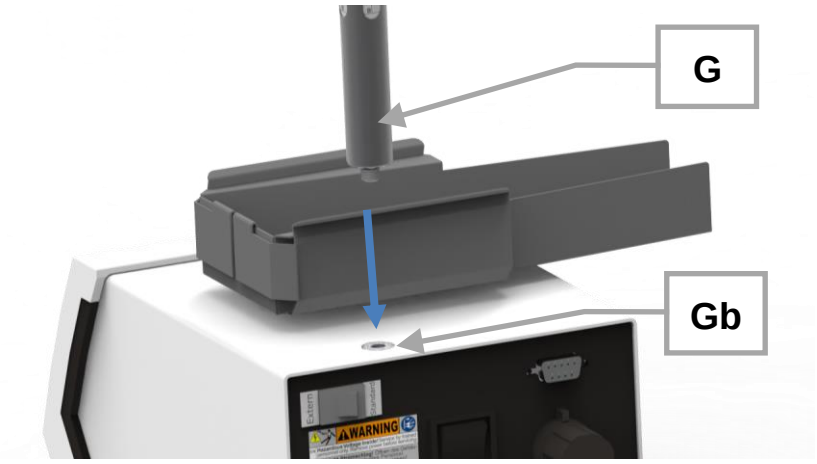

Fig. 13: Installing the rod for the hopper support

4.9 Mounting the hopper support

The hopper support allows the hopper to be placed in the correct position by turning and moving it in height.

1. Loosen the clamping screw (**E**).
2. Place the hopper support (**B**) on the rod (**G**).
3. Tighten the clamping screw (**E**).

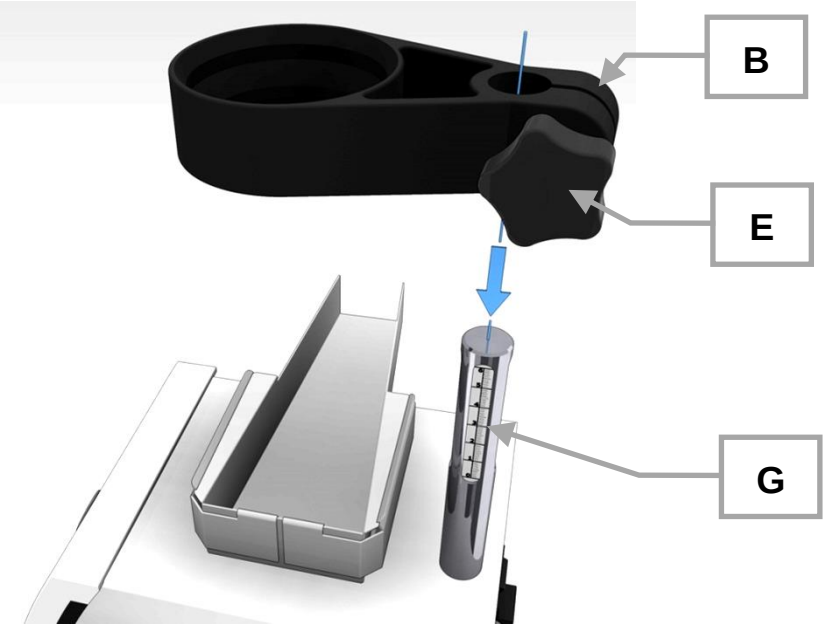

Fig. 14: Attaching the hopper support

4.10 Inserting the hopper

1. Insert the funnel (**A**) into the support (**B**).

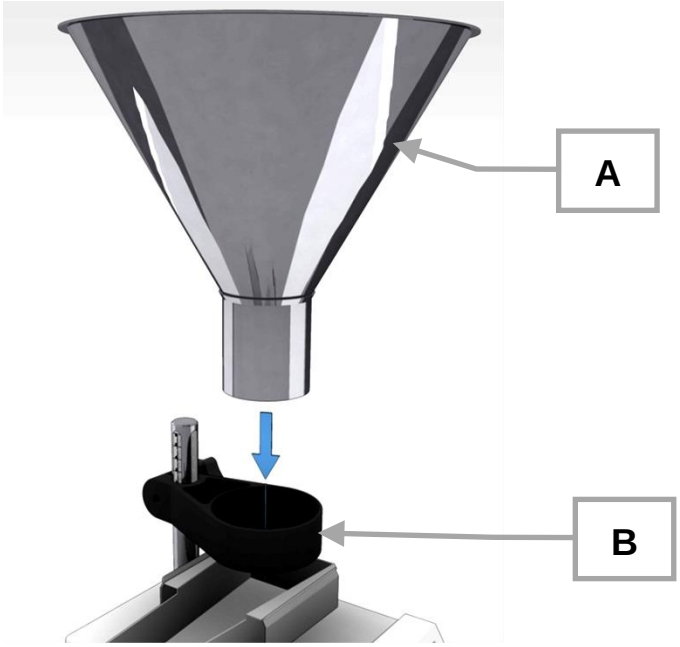

Fig. 15: Inserting the hopper

5 First Commissioning

5.1 Electrical Connection

⚠ WARNING W3.0015

Risk to life caused by an electric shock
Connection to socket without a protective earth conductor

- Connecting the device to sockets without a protective earth conductor can lead to life-threatening injuries caused by an electric shock.
- **Always operate the device using sockets with a protective earth conductor (PE).**

⚠ WARNING W4.0002

Danger to life through electric shock
Damaged power cable

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

NOTICE N11.0022

Electrical connection
Failure to observe the values on the type plate

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

⚠ WARNING When connecting the power cable to the mains supply, use an external fuse that complies with the regulations applicable to the place of installation.

- Check the type plate for details on the necessary voltage**,** frequency, and maximum external current source fuse for the device.
- The listed values must agree with the existing mains supply.
- Only use the supplied power cable to connect the device to the mains supply.

The DR 100 must be connected to the power supply on site for initial commissioning.

Ensure the following before connecting the device to the power supply:

- The application site complies with the installation requirements;
- The device is securely and firmly in place;
- The power values for the device (type plate) correspond to the values of the power supply at the site.

5.2 Connecting the device to the power supply

Connect the device to the power supply as described below:

1. Match the voltage and frequency on the nameplate (**N**) of the device with the values on site.
2. Plug the enclosed mains lead into the mains plug connection (**L**).
3. Plug the other end of the mains lead into a socket at the installation site.
4. Provide external fuse protection in accordance with the regulations of the installation site.

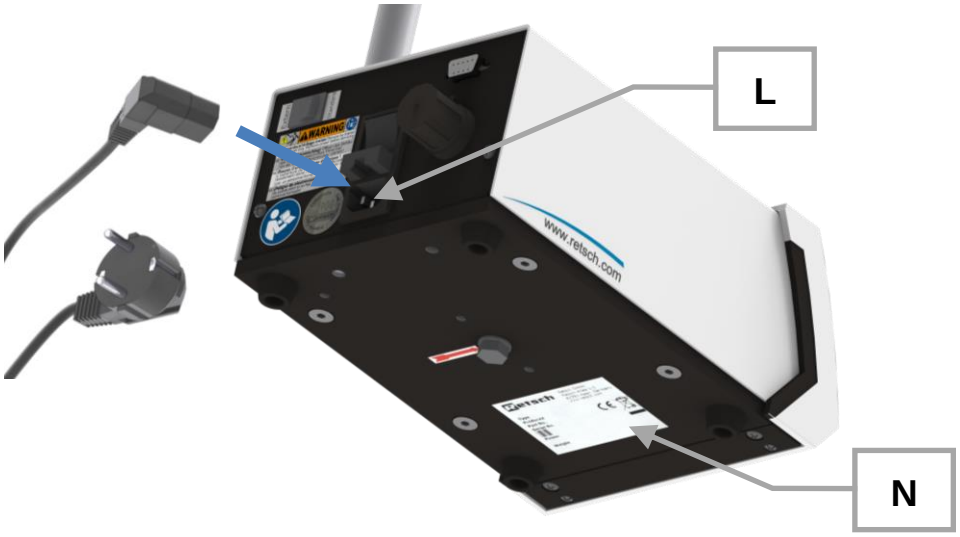

Fig. 16: Establishing the electrical connection

6 Operating the Device

6.1 Switching On and Off

1. Press the power switch (**J**) at the rear of the device to switch it on or off.

6.2 Setting the operating time

The device can be operated in continuous operation or for a preset time.

NOTICE This laboratory instrument is designed for 8-hour single-shift operation at 30 % duty cycle.

6.2.1 Continuous operation

1. Press (**D-**) or (**D+**) until "co" appears in the display when the setting exceeds or falls below 1 or 99 minutes.
[continuous]

➔ The device is ready for continuous operation.

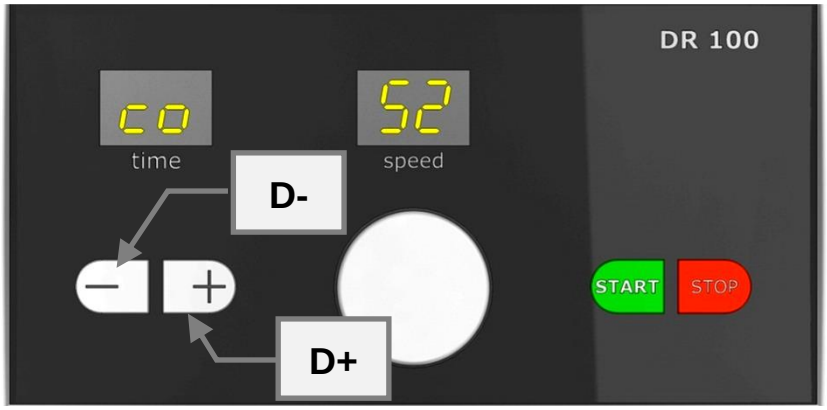

Fig. 17: Runtime setting

6.2.2 Time setting

In addition to continuous operation, the feed time can be set from 1 - 99 minutes in steps of one minute. If the setting of 1 or 99 minutes is exceeded or not reached, "co" appears in the **time** display.

1. Press (**D-**) to reduce the feed time.
2. Press (**D+**) to extend the feed time.

➔ In the **time** display, the feed time is displayed in minutes.

6.3 Setting the feed speed

1. Turn the dial (**Dk**) counter-clockwise until **speed** "**00**" is displayed.
2. Press START (**Dg**).

➔ The vibrating chute vibrates slightly.

3. Turn the dial (**Dk**) clockwise until the desired feed rate is reached.

➔ The device conveys the fed material into the specified collecting vessel or device.

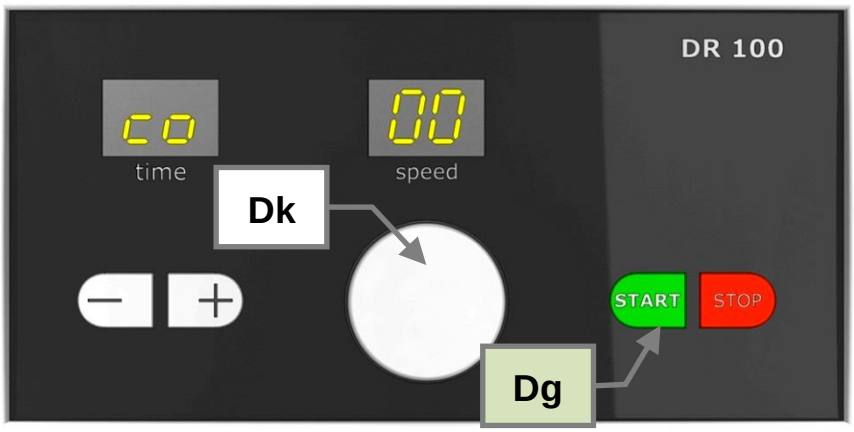

Fig. 18: Setting the feed rate

The feed rate is set by adjusting the voltage supply at the built-in inline vibrator of the DR 100 (phase angle control).
The setting is made at the dial (**Dk**):

- Clockwise increases the rate
- Counter-clockwise reduces the rate

NOTICE The indication in the **speed** display only serves as a setting aid and is not reproducible, as:

- the mains voltage is usually not stable
- the performance of the inline vibrator fluctuates depending on the operating time due to heating or cooling.

6.4 Starting, Interrupting, Stopping

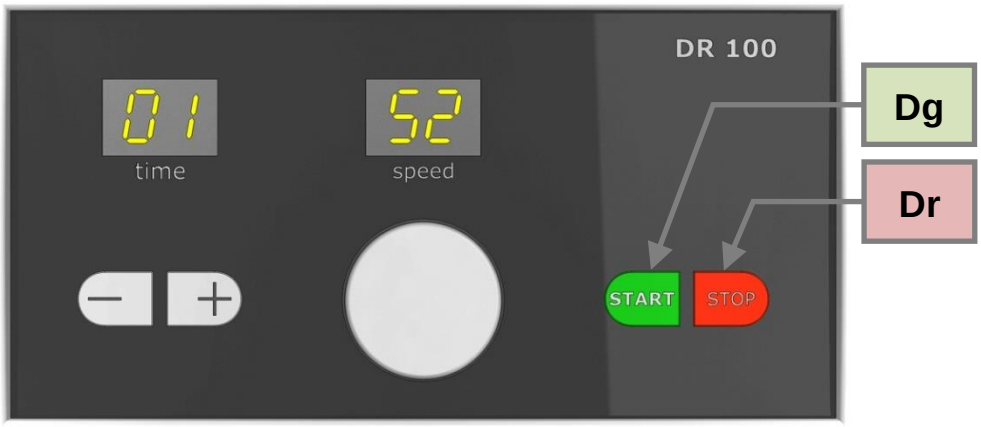

Fig. 19: Starting, stopping or cancelling the feed process

6.4.1 Start

1. Set the desired parameters for the feed process.
2. Press **START** (**Dg**).

➔ The feed is started with the set parameters.

6.4.2 Interrupt (pause)

1. Press **STOP** (**Dr**).

➔ The feed is interrupted and the displays continue to show the current values.

2. By pressing **STOP** (**Dr**) again, the feed is cancelled.

6.4.3 Continue

1. Press **START** (**Dg**).

➔ The feed of the sample continues until the set runtime has expired.

6.4.4 Cancel

1. Press **STOP** (**Dr**) once.

➔ The feed is interrupted and the displays continue to show the current values.

2. Press **STOP** (**Dr**) a second time.

➔ The remaining runtime is deleted. A point is shown in both displays.

3. Press START (**Dg**).

➔ The set values of the last feed are displayed.

Alternative approach:

1. Switch off the power switch (**J**) at the rear.

➔ The feed is cancelled and the remaining runtime is deleted. After switching on, the set runtime is displayed.

6.5 Setting the layer height

The hopper support allows the hopper to be placed in the correct position by turning and moving it in height.

1. Loosen the locking screw (**E**) of the hopper support.
2. Set the desired layer height (**Sh**) between the lower edge of the feed hopper (**A**) and the bottom of the vibrating chute (**C**).
3. To do so, move the funnel support up or down as desired.
4. Tighten the locking screw (**E**) of the hopper support.

NOTICE The layer height between the lower edge of the feed hopper and the bottom of the vibrating chute depends on the particle size of the feed material.
The layer height should be at least 3x greater than the maximum particle size of the feed material.
The scale of the support rod (**G**) only serves as an orientation guide for the set layer height. The actually set layer height cannot be read off directly.

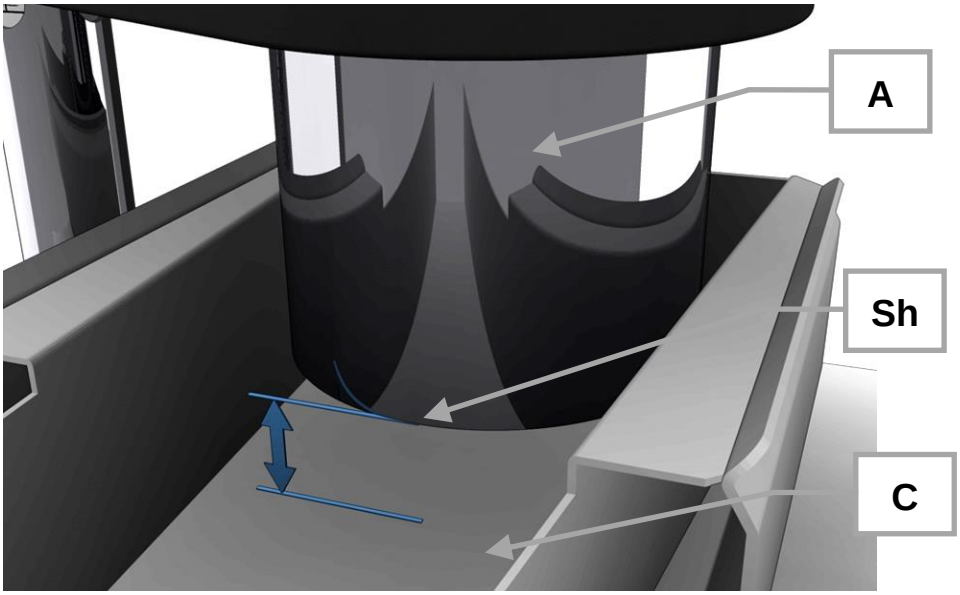

Fig. 20: Layer height

6.6 Creating interface connection

The device has two interfaces that allow communication with other devices. In the following, the interface connection and possible operation are described.

	For connection to other devices via the interfaces of the device, this manual provides an adapted and suitable description which, however, does not include all details. When operating other devices, also observe any device-specific manuals.

6.6.1 Interface for ZM 200

Fig. 21: Interface connection

The device can be connected to the Retsch ZM 200 interface (**Z**) via the interface (**I**). Use the corresponding interface cable (**Ik**).

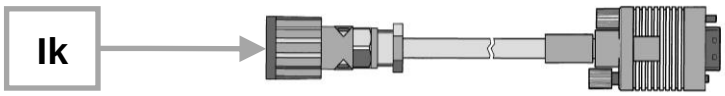

Fig. 22: ZM 200 interface cable

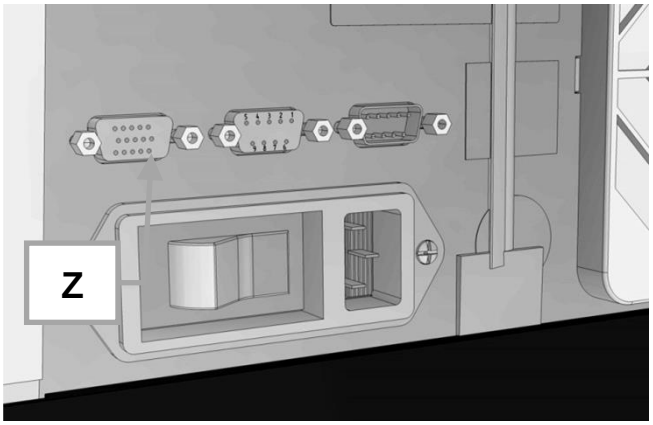

Fig. 23: Interface at ZM 200

Connect and operate the device with the ZM 200 as follows:

1. Connect the interface (**I**) on the DR 100 to the interface (Z) on the ZM 200.
2. Set the mode selector switch (**H**) to **standard**.
3. Connect both devices to the power supply.

NOTICE Set the DR 100 feed rate to a low value before starting the ZM 200. Otherwise, the ZM 200 is overloaded when starting the DR 100 and can no longer reduce the feed. Mechanical components can be damaged.

4. Set the feed rate on the dial (**Dk**) to a low value.
5. Fill the feed hopper (**A**) with material.
6. Check the position of the DR 100 over the sample inlet on the ZM 200.
7. Start the ZM 200.

➔ There is a communication check between ZM 200 and DR 100.

➔ The DR 100 conveys the feed material into the ZM 200.

8. Slowly turn up the dial (**Dk**) until the desired feed rate is reached.

NOTICE When using the interface, overloading of the ZM 200 can be prevented by the automatic overload detection system. As soon as an overload of the ZM 200 becomes apparent, the ZM 200 automatically reduces the feed rate of the DR 100.

6.6.2 Interface to PT 100 / PT 200

The device can be connected to the Retsch devices PT 100 and PT 200 via the interface (**I**). Use the corresponding interface cable (**Im**).

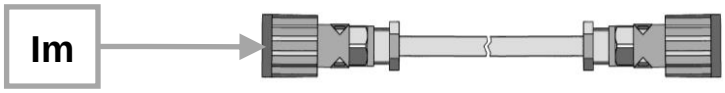

Fig. 24: PT 100 and PT 200 interface cable

Connect and operate the device with the PT 100 / PT 200 as follows:

1. Connect the interface (**I**) on the DR 100 to the interfaces on the Retsch devices PT 100 / PT 200.
2. Set the mode selector switch (**H**) to **standard**.
3. Connect both devices to the power supply.
4. Set the feed rate on the dial (**Dk**) to a low value.
5. Fill the feed hopper (**A**) with material.
6. Check the position of the DR 100 over the sample inlet on the PT 100 / PT 200.
7. Start the PT 100 / PT 200.

➔ There is a communication check between PT 100 / PT 200 and DR 100.

➔ The DR 100 conveys the feed material into the PT 100 / PT 200.

8. Slowly turn up the dial (**Dk**) until the desired feed rate is reached.

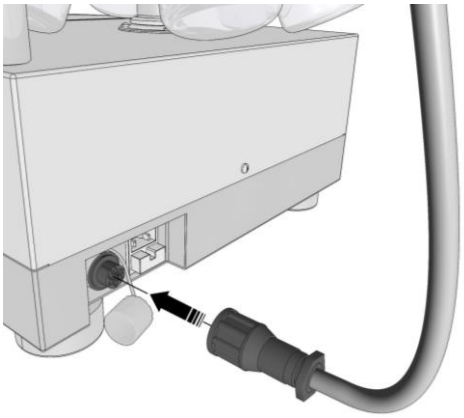

Fig. 25: Interface at PT 100

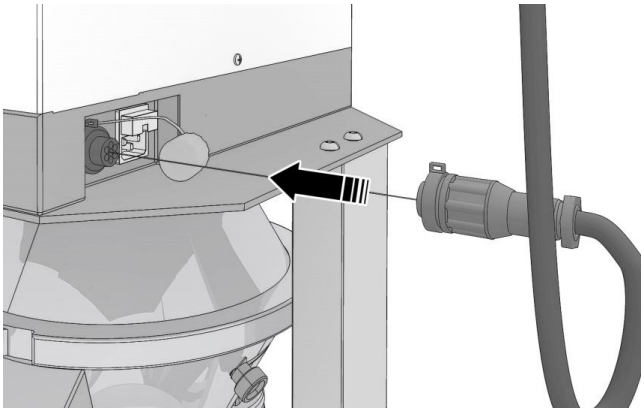

Fig 26: Interface at PT 200

6.6.3 Interface to the ZM 300

When using the interface for the ZM 300, the feed rate of the DR 100 feed unit is controlled by the grinding process of the ZM 300. If the grinding capacity limit is exceeded, the feed rate of the DR 100 is automatically reduced to prevent overdosing.

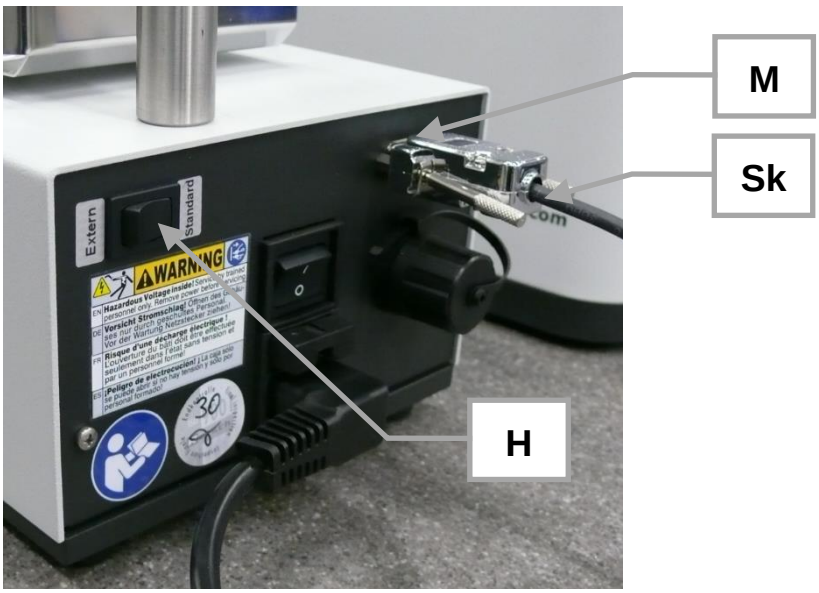

Fig. 27: ZM 300 interface connection

The device can be connected to the Retsch ZM 300 interface (**Z**) via the interface (**M**). Use the corresponding interface cable (**Sk**).

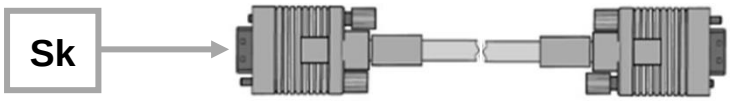

Fig. 28: ZM 300 interface cable

Fig. 29: Interface at ZM 300

Connect and operate the device with the ZM 300 as follows:

1. Connect the interface (**M**) on the DR 100 with the interface cable (**Sk**) to the interface (**Z**) on the ZM 300.
2. Set the mode selector switch (**H**) to **standard**.
3. Connect both devices to the power supply.

After the devices have been connected to each other via the interface cable and switched on, the DR 100 feed unit is controlled by the ZM 300. This is indicated by the identification "PC" (Process Control) on the display of the DR 100 feed unit. When a grinding process is started, the parameters configured on the ZM 300 are used.
Between the grinding processes of the ZM 300, the DR 100 can be adjusted and operated as usual at the control elements.

Fig. 30: Display of the feed unit when controlled by the ZM 300

6.7 Standard operating mode

1. Set the operating mode selector switch (**H**) at the rear of the device to **standard**.
2. Connect both devices to the power supply.
3. Switch on the device at the power switch (**J**).
4. Switch on the ZM 200 / ZM 300 or the PT 100 / PT 200 at the power switch.

In standard mode, the DR 100 is controlled via the connected centrifugal mill or the connected sample divider. The ZM 200 / ZM 300 or the PT 100 / PT 200 must be connected via the interface (**I**) using a control cable.

As soon as the ZM 200 / ZM 300 or the PT 100 / PT 200 is started via the start button, the display shows "time" (**Dt**) of the DR 100 "EC" (external control). The control behaviour of the DR 100 is now controlled by the ZM 200 / ZM 300 or the PT 100 / PT 200.

NOTICE When the centrifugal mill (ZM 200) or sample divider (PT 100 / PT 200) is running, only the vibration intensity of the DR 100 can be adjusted with the dial (**Dk**).
All other buttons are inactive.

NOTICE When the DR 100 feed unit is controlled by the ZM 300, the feed rate of the feed unit is controlled via the operating elements of the ZM 300.
All control elements on the control panel of the DR 100 feed unit are deactivated.

If the ZM 200 / ZM 300 or the PT 100 / PT 200 is switched on but not started or not connected to the DR 100 via the control cable, the display shows "time" (**Dt**) "co" (continuous). In this case, all functions of the buttons are enabled. The DR 100 is running continuously with the set values and without control by the ZM 200 / ZM 300 or the PT 100 / PT 200.

6.8 External operating mode

In external mode, there is no control via the ZM 200 / ZM 300 or the
PT 100 / PT 200. In this mode, the feed rate can only be adjusted via the dial (**Dk**).

When the DR 100 is switched on at the power switch (**J**), the chute immediately starts conveying at the set values. The vibration of the chute is only stopped again when the feed rate is set to 0 or the DR 100 is switched off at the power switch **(J**).

1. Set the operating mode selector switch (**H**) at the rear of the device to **external**.
2. Connect both devices to the power supply.
3. Switch on the device at the power switch (**J**).

7 Servicing

This chapter contains descriptions on cleaning and maintaining the DR 100.

⚠ CAUTION C5.0013

Risk of injury
Improper repairs

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

7.1 Cleaning

Cleaning must be performed when necessary and at least monthly to ensure the reliability and operational safety of the DR 100.

⚠ WARNING W5.0003

Risk to life caused by an electric shock
Cleaning live parts with water

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

⚠ WARNING W6.0008

Risk of death caused by an electric shock
Penetration of water if the mains plug is not fully plugged in

– If the IEC connector is not fully plugged in to the IEC appliance socket, water may enter the socket causing an electric shock.
- **Only operate the device with the IEC connector fully plugged in.**

⚠ CAUTION C6.0031

Risk of injury
Cleaning with compressed air

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

7.1.1 Cleaning the outside of the device

Clean the device with a damp cloth. Make sure that no water gets inside the device.

7.1.2 Cleaning the feed hopper and vibrating chute

Clean the feed hopper and the vibrating chute of the appliance with a damp cloth and, if necessary, a household cleaning agent. Make sure that no water or cleaning agent gets inside the device.

Only use neutral cleaning agents. Do not use cleaners containing solvents! Acetone must not be used!
Test the cleaning agent at an unobtrusive place beforehand.

7.2 Maintenance

The DR 100 is maintenance-free.
No maintenance work needs to be carried out if the device is used as intended.

⚠ CAUTION C7.0015

Risk of injury
Improper modifications to the device

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

7.3 Wear

⚠ CAUTION C8.0013

Risk of injury
Improper repairs

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

7.3.1 Replacing the Fuses

⚠ WARNING

W7.0014

Risk to life caused by an electric shock
Exposed contacts

- Replacing the fuses without pulling out the mains plug can lead to life threatening injuries caused by an electric shock on contact with the fuse holder or the live contacts on the fuse.
- **Pull out the mains plug before replacing the fuses.**

The DR 100 is protected by two glass fuses type T2A/250 V. To replace the device filters, proceed as follows:

1. Pull the mains plug out of the socket.
2. Remove the mains lead from the DR 100.
3. Push the lever (**Kh**) upwards and pull out the drawer (**K**) at the rear of the device.
4. Replace the fuses (**Ks**).
5. Reinsert the drawer (**K**) with the new fuses.
6. Re-establish the mains connection.

➔ The device fuses have been replaced and the device is ready for use again.

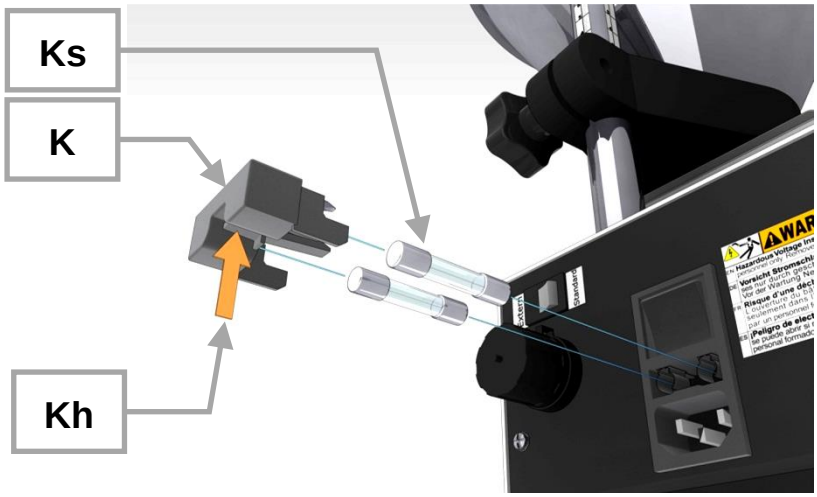

Fig. 31: Replacing the fuses

7.4 Returning for repair and maintenance

Fig. 32: Return form

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

⇨ Download the return form located in the download section "Miscellaneous" on the Retsch GmbH homepage (http://www.retsch.com/downloads/miscellaneous/).

⇨ When returning a device, attach the return form to the outside of the packaging.

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

8 Disposal

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

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

Accordingly, all devices supplied after August 13th 2005 in the business-to-business area, to which this product is classified, may no longer be disposed of with municipal or household waste. To document this, the devices are provided with the disposal label.

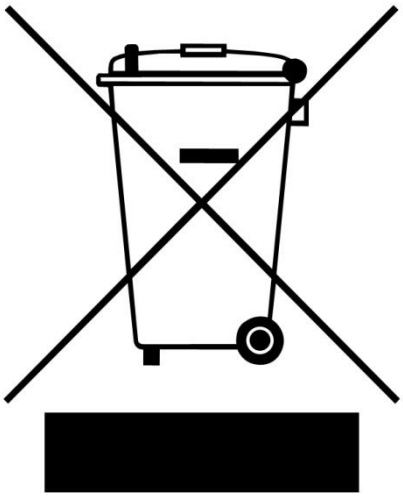

Fig. 1: Disposal label

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

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

9 Index

EU Declaration of Conformity

Translation

VIBRATORY FEEDER

DR 100 | 70.938.xxxx

EU DECLARATION OF CONFORMITY

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

Machinery Directive 2006/42/EC

Applied standards, in particular:

DIN EN ISO 12100	Machine Safety - General Design Principles
DIN EN 61010-1	Safety Regulations for Electrical Measurement, Control, Regulation and Laboratory Devices

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

Applied standards, in particular:

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

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

Authorised person for compilation of the technical documentation:
Julia Kürten (Technical Documentation)

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

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

Retsch GmbH

Haan, 09/2023

Dr. Frank Janetta, Head of Development

CE