EASY WORKING. GREAT RESULTS.
FRITSCH

A-18

HEAVY DUTY ANALYTICAL SIEVE SHAKER

READ THE INSTRUCTIONS PRIOR TO PERFORMING ANY TASK!

Valid starting with: 18.30x0/00100

Translation of the original operating instructions

Version 05/2025 Index 005

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Certification and CE conformity

Certification

Fritsch GmbH has been certified by TÜV Saarland Certification GmbH.

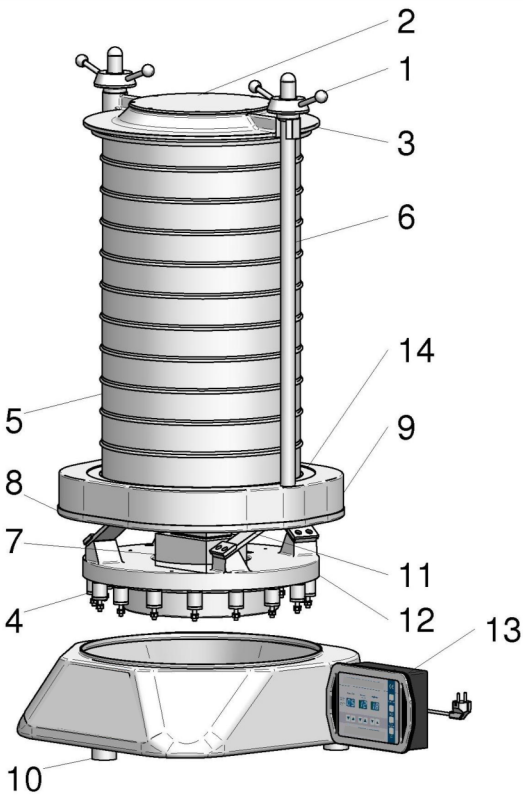
An audit has proven that Fritsch GmbH meets the requirements of DIN EN ISO 9001:2015 and DIN EN ISO 14001:2015.

CE conformity

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

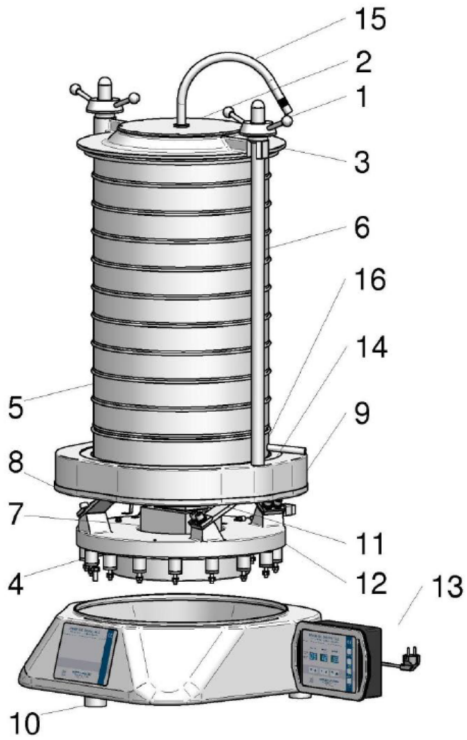
1 Basic structure

Dry sieving



1 Clamping nut with grips
2 Transparent screen
3 Machine lid
4 Rubber bumper
5 Test sieve stack
6 Guide rod
7 Oscillating solenoid with armature
8 Rubber profile
9 Base
10 Rubber bumper
11 Flat spring
12 Base plate
13 Separate control device
14 Rubber rings

Wet sieving



1 Clamping nut with grips
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6 Guide rod
7 Oscillating solenoid with armature
8 Rubber profile
9 Base
10 Rubber bumper
11 Flat spring
12 Base plate
13 Separate control device
14 Rubber rings
15 Wide spreading spray diffuser with water hose
16 Sieve pan with outlet

2 Safety information and use

2.1 Requirements for the user

This operating manual is intended for persons assigned with operating and monitoring the Fritsch A-18. The operating manual and especially its safety instructions are to be observed by all persons working on or with this device. In addition, the applicable rules and regulations for accident prevention at the installation site are to be observed. Always keep the operating manual at the installation site of the A-18.

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

The A-18 may only be operated by authorised persons and serviced or repaired by trained specialists. All commissioning, maintenance and repair work may only be carried out by technically qualified personnel. Qualified personnel are persons who, because of their education, experience and training as well as their knowledge of relevant standards, regulations, accident prevention guidelines and operating conditions, are authorised by those responsible for the safety of the machine to carry out the required work and are able to recognize and avoid possible hazards as defined for skilled workers in IEC 364.

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

Malfunctions that impair the safety of persons, the A-18 or other material property must be rectified immediately. The following information serves both the personal safety of operating personnel as well as the safety of the products described and any devices connected to them: All maintenance and repair work may only be performed by technically qualified personnel.

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

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

Subject to technical modifications.

2.2 Scope of application

The A-18 is exclusively for sieving granular materials (rocks and soils, food, glass, ceramics, pellets, fertilisers and seeds) to determine grain distribution. Any other use or use beyond this scope is considered unintended use. The manufacturer/supplier excludes all liability for any damage resulting from such use. The user is responsible for all associated risk.

2.2.1 Operating principle

The A-18 uses a three-dimensional sieving action for test sieves up to 450 mm in diameter. It has a self-adjusting amplitude. The whole system is driven by an electromagnetic drive. The device features a digital controller. Ten sieving parameter sets can be stored. As standard, it is delivered with a separate control device, which is equipped with a waterproof plug connection.

2.3 Obligations of the operator

Before using the A-18, this manual is to be carefully read and understood. The use of the A-18 requires technical knowledge; only commercial use is permitted.

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

The A-18 may exclusively be used within the scope of applications set down in this manual and within the framework of guidelines put forth in this manual. In case of non-compliance or improper use, the customer assumes full liability for the functional capability of the A-18 and for any damage or injury arising from failure to fulfil this obligation.

By using the A-18 the customer agrees with this and recognizes that defects, malfunctions or errors cannot be completely excluded. To prevent risk of damage to persons or property or of other direct or indirect damage, resulting from this or other causes, the customer must implement sufficient and comprehensive safety measures for working with the A-18.

Neither compliance with this manual nor the conditions and methods used during installation, operation, use and maintenance of the A-18 can be monitored by Fritsch GmbH. Improper execution of the installation can result in property damage and thus endanger persons. Therefore, we assume absolutely no responsibility or liability for loss, damage or costs that result from errors at installation, improper operation or improper use or improper maintenance or are in any way connected to these.

The applicable accident prevention guidelines must be complied with.

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

2.4 Information on hazards and symbols used in this manual

Safety information

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

DANGER

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

WARNING

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

CAUTION

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

NOTICE

This symbol and keyword combination points out a possibly hazardous situation that can result in property damage if not avoided.

ENVIRONMENT

This symbol and keyword combination points out a possibly hazardous situation that can result in environmental damage if not avoided.

Special safety information

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

DANGER

This symbol and keyword combination points out a directly hazardous situation due to electrical current. Ignoring information with this designation will result in serious or fatal injury.

DANGER

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

DANGER

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

WARNING

This symbol and keyword combination points out a directly hazardous situation due to movable parts. Ignoring information with this designation can result in hand injuries.

WARNING

This symbol and keyword combination points out a directly hazardous situation due to hot surfaces. Ignoring information with this designation can result in serious burn injuries due to skin contact with hot surfaces.

Safety information in the procedure instructions

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

Example:

1. Loosen screw.

2. ⚠ **CAUTION**

Risk of entrapment at the lid.

Close the lid carefully.

3. Tighten screw.

Tips and recommendations

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

Further designations

To emphasise procedure instructions, results, lists, references and other elements, the following designations are used in this manual:

Designation	Explanation
1., 2., 3. …	Step-by-step procedure instructions
⇨	Results of steps in the procedure
	References to sections in this manual and relevant documentation
■	Lists without a specific order
[Button]	Operating elements (e.g. push button, switch), display elements (e.g. signal lamps)
'Display'	Screen elements (e.g. buttons, function key assignment)

2.5 Device safety information

Please observe!

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

⚠ **CAUTION**

Wear hearing protection!

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

WARNING

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

DANGER

Explosion hazard!

- When sieving oxidizable substances, e.g. metals or coal, there is a risk of spontaneous combustion (dust explosion) if the share of fine particles exceeds a certain percentage. When sieving these kinds of substances, special safety measures must be taken and the work must be supervised from a specialist.
- The A-18 is not explosion protected and is not designed to missing definition for variable 'to_materialbearbeitung' explosive materials.

- Do not remove the information signs.

NOTICE

Immediately replace damaged or illegible information signs.

- Unauthorised alteration of the A-18 will void Fritsch's declaration of conformity to European directives and void the guarantee.
- Only use the A-18 when it is in proper working order, as intended and in a safety- and hazard-conscious manner adhering to the operating manual. In particular, immediately rectify any malfunctions that could pose a safety hazard.
- If, after reading the operating manual, there are still questions or problems, please do not hesitate to contact our specialised personnel.

3 Technical data

3.1 Dimensions

585 x 575 x 1300 mm (depth x width x height)

3.2 Weight

Device without test sieves: 135 kg

Maximum weight of the sieve stack: 42 kg

3.3 Operating noise

The sound emitted by the machine in the workplace was assessed using comparative noise measurement in accordance with DIN 45635-01 KI1. The A-rated equivalent continuous sound pressure level is: LpAeq = 73 (dB).

3.4 Voltage

230 volts

110 volts with a transformer

3.5 Frequency

50 hertz

60 hertz

3.6 Protection class

IP 32

3.7 Power rating

Approx. 1200 VA at full load

3.8 Control

Fully electronic

4 Installation

4.1 Transport

The device is packaged in accordance with HPE packaging guidelines, which are defined by the Bundesverband Holzmittel, Paletten, Exportverpackungen e.V. (German Federation for Wood Packaging, Pallets and Export Packaging) and the Verein Deutscher Maschinenbauanstalten (Association of German Engineering Companies).

The device is delivered on a transport pallet with a wooden cover. We recommend using a forklift or pallet truck for transporting the packed device.

DANGER

Do not step under the transport pallet during transport.

WARNING

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

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

4.2 Unpacking

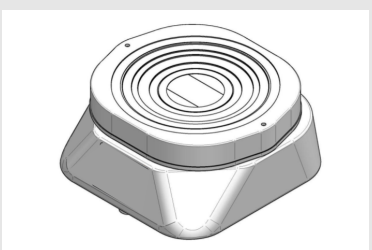
CAUTION

Crushing hazard!

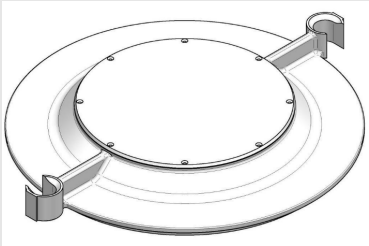
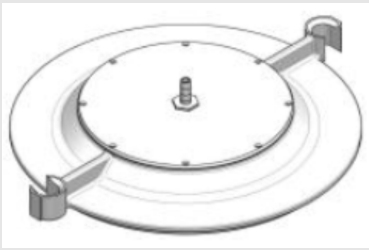
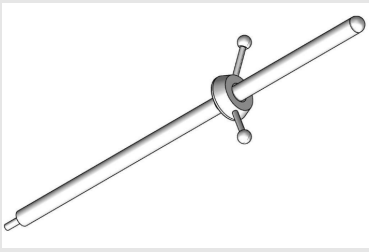
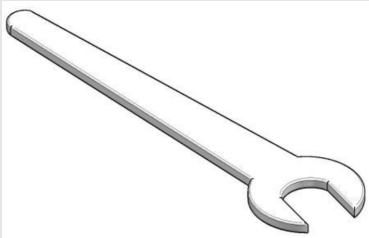
Always lift with 2 persons!

- Remove the screws which attach the lid to the wooden case.
- Lift the lid off the transport crate.
- Remove the accessories.
- Compare the contents of the delivery with your order.

4.2.1 Scope of delivery



Drive with connection cable

	Machine lid with inspection glass (in the scope of delivery for the dry version)
	Machine lid with inspection glass and wide spreading spray diffuser (in the scope of delivery for the wet version)
	1 pair of guide rods with clamping nuts
	1 spanner SW27 DIN 894 WGB to attach the guide rods
	Separate control device with connection cable, euro-plug and wall bracket A 3 m PVC water hose is included in the scope of delivery for the wet version
	2 ring bolts

4.3 Setting up

NOTICE

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

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

DANGER

Do not step under the transport pallet during transport.

CAUTION

Use a transport crane to lift the device out of the packaging.

1. Screw the ring bolts provided in the corresponding bore holes.
2. Then lift the device out of the transport crate with the crane.
3. Place the device indoors, ideally, on a concrete floor. It does not have to be fastened to the surface.

NOTICE

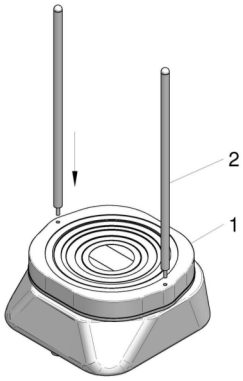
Do not use any rubber pads!

NOTICE

Never operate the device while it is standing on the transport pallet!

4.4 Mounting the guide rods

The sieve shaker is delivered fully assembled, apart from the guide rods.



1. Remove the ring bolts.
2. Screw the guide rods (2) into the thread of the vibrating plate (1) and tighten with the spanner.

3. Select an appropriate position for the wall bracket of the separate control device provided, and secure the bracket in place.
4. Connect the controller provided for the sieve shaker to the device drive.

4.5 Ambient conditions

WARNING

Mains voltage!

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

- The room temperature has to stay between 5 - 40°C.
- Altitudes up to 2000 m
- Degree of pollution 2 according to IEC 664.

4.6 Electrical connection

DANGER

Provide short-circuit protection!

Risk of damage due to short-circuits.

- Make sure that the socket is connected to a mains line protected with a residual current circuit breaker.

DANGER

Mains voltage!

Changes to the connection line may only be made by a qualified technician.

CAUTION

Ignoring the values on the type plate may result in damage to the electrical and mechanical components.

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

1. Plug the supplied power cord into the port (11) at the back of the device.
2. Then connect the device to the mains using the power cord!

5 Using the device

WARNING

If the sieves and clamping devices used are not genuine accessories, we assume no guarantee and exclude all liability for damage to the device or for personal injury.

WARNING

Make sure before starting the machine that the sieves have been clamped correctly and that there are no loose parts on the device.

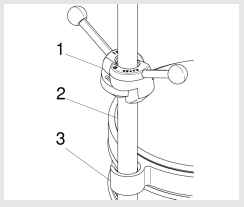
Failure to observe this will render void the guarantee, and releases us from liability for any resulting damage to the device as well as for any resulting personal injury.

NOTICE

When using the A-18, at least 4 test sieves (65 mm in height) have to be used.

5.1 Clamping the sieve stack

5.1.1 TwinNut clamping system



1	TwinNut clamping nut
2	Guide rod
3	Sieve cover

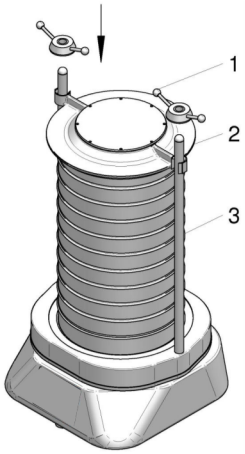
Height adjustment:

- Pull apart the halves of the nut.
- Slide the nut down the guide rod to the sieve cover.
- Then close the nut again.

Clamping:

Tighten both TwinNut nuts at the same time.

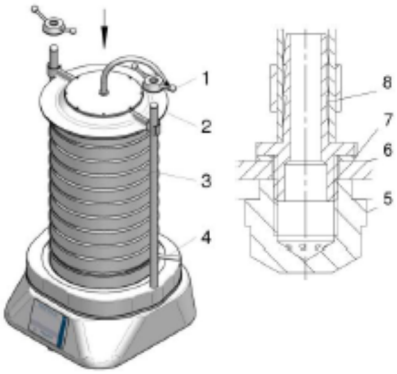
5.1.2 Clamping



1. Set up the test sieve stack (3).
2. Pour the sieving stock in the top test sieve.
3. Put on the machine lid (2).
4. Tighten both nuts (1) **at the same time**.

See ➦ Chapter "Sieve analysis in accordance with ISO 2591-1".

5.1.3 Preparing for wet sieving



1. Attach the wide spreading spray diffuser:

   Push the wide spreading spray diffuser (5) through the transparent screen (6); attach the sealing ring (7) and hose fitting (8). Tighten them.
2. Set up the sieve pan with outlet connector (4) and the test sieve stack (3) and pour the sieving stock in the top test sieve.
3. Put the machine lid (2) on and tighten both nuts (1) at the same time.
4. Slide the PVC water hose onto the wide spreading spray diffuser and attach the outlet hose to the outlet on the sieve pan.
5. Attach the wall bracket and mount the separate control device.

See ➦ Chapter "Sieve analysis in accordance with ISO 2591-1".

5.2 Sieve analysis in accordance with ISO 2591-1

During sieve analysis a certain amount of test stock is separated into fractions by one or several test sieves. The difficulty with sieve analysis lies in determining the cut-off point for the sieving process. It is recommended to determine the analytical cut-off point.

Detailed information about sieve analysis is included on the standard sheet:

- DIN 66 165, part 1 basics - 1987 version
- DIN 66 165, part 2 procedure - 1987 version

The standard sheets can be purchased from Beuth-Verlag, Berlin.

5.3 The maximum particle size permitted for test sieves

To avoid damaging the sieve base, the particle dimensions in a batch should not exceed 10 $w^{0.7}$ (w is mesh width in mm).

Example	
Nominal mesh width, w	Maximum particle size
mm	approx. mm
0.045	1
0.25	4
1.00	10
4.00	25

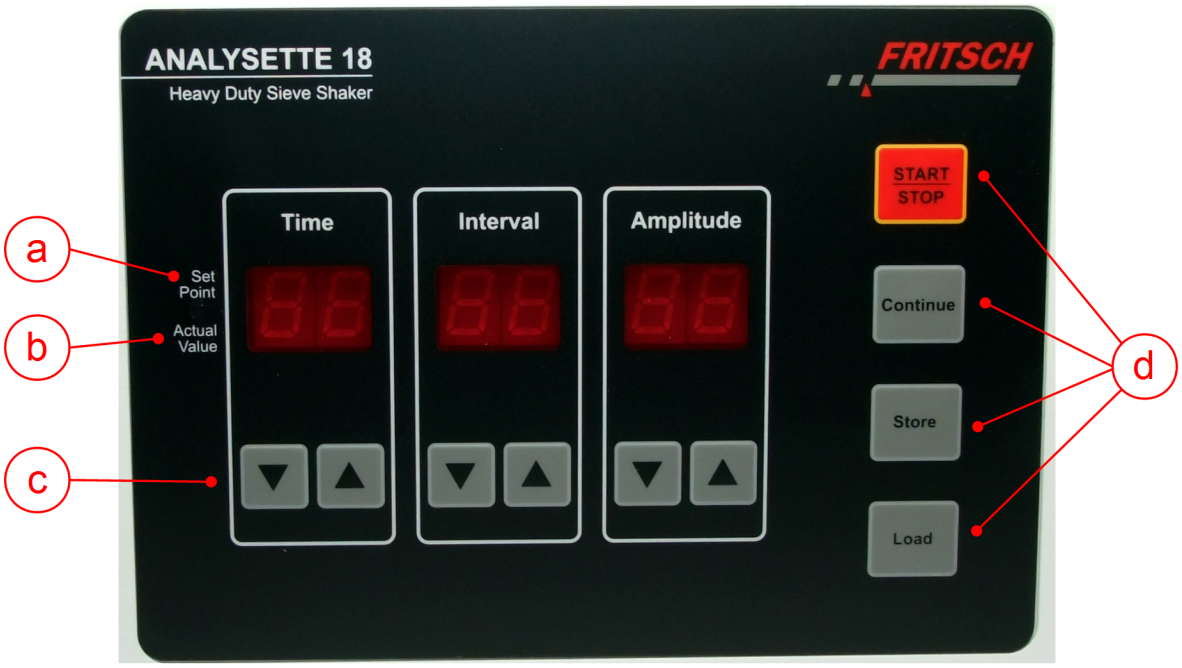
5.4 Recommended bulk volume for test sieves with diameters of 400 mm

	Bulk volume for test sieves with a diameter of 400 mm	
Nominal mesh width w	**Feeding volume**	**Maximum sieve residue**
µm	**approx. cm³**	**approx. cm³**
25	44	22
32	52	26
45	60	30
63	70	34
90	84	42
125	100	50
180	120	60
250	140	70
355	160	80
500	200	100
710	240	120

	Bulk volume for test sieves with a diameter of 400 mm	
Nominal mesh width w	**Feeding volume**	**Maximum sieve residue**
mm	**approx. cm³**	**approx. cm³**
1.0	280	140

	Bulk volume for test sieves with a diameter of 400 mm	
Nominal mesh width w	**Feeding volume**	**Maximum sieve residue**
mm	**approx. cm³**	**approx. cm³**
1.4	320	160
2.0	400	200
2.8	480	240
4.0	700	350
5.6	800	400
8.0	1000	500
11.2	1600	800
16.0	2000	1000
22.4	3200	1600

5.5 Start-up and operation



a Set points
b Actual values
c Adjustment buttons: left (-), right (+)
d Function buttons

For setting the sieving time, interval time, and amplitude, there is a pair of buttons for each setting. The left button decreases the set point and the right button increases it. Hold one of the buttons down to scroll through the numbers more quickly.

5.5.1 Switching on

Switch on the machine with the main switch (which is located on the underside of the control device). Zero will appear in each display.

5.5.2 Time

The sieving time is set in minutes in the set point / actual time display. The maximum value is 99 minutes. After pressing "Start", the display switches to the actual value display, which counts down the remaining sieving time. When the set point has elapsed, the sieving process ends. If no sieving time (set point 00) is provided, the machine will run without a time limit.

5.5.3 Interval

The interval time is set in seconds in the set point / actual time display. Display 00 = continuous operation without interruption. Display 01 - 99 = sieving time in seconds, interruption 1 second. After pressing "Start", the display switches to the actual value display, which shows the remaining interval time.

5.5.4 Amplitude

The amplitude set point can be set in steps of 0.1 mm up to 2.0 mm. After pressing "Start", the display switches to the actual value display, which shows the measured amplitude value during sieving.

5.5.5 Start / Stop

This button starts the machine. The remaining sieving time is visible in the set point / actual value display. During the sieving process the input buttons for the set point are disabled. After pressing "Stop" the input buttons for the set point are enabled.

5.5.6 Continue

This button can be used to continue a sieving process after "Stop" has been pressed (this can only be used when the sieving time has been previously been set).

5.5.7 Store

This button can be used to store 10 set points (time, interval, amplitude) and will not be affected by power failures.

Enter the set point and press the "Store" button. Enter the memory location (01-10) in the time display field (which flashes) and press "Store" again to save the values.

5.5.8 Load

This button can be used to recall the desired memory location (01-10). Select the desired memory location with the time adjustment buttons. The sieving process can be performed by pressing the "Load" button again.

5.5.9 Deleting

Switch the machine off and on again. The display shows 00. Press the "Store" button. Select the memory location to be deleted with the time +/- buttons and press "Store".

5.6 PC connection

e Serial interface on the underside of the external control device

The heavy duty analytical sieve shaker can be connected to a PC for exchanging data. This takes place via the serial interface using a RS 232 cable which is not included in the scope of delivery. The serial interface is located on the external control device. This makes it possible to communicate with the evaluation software or any other laboratory information and management system (LIMS) to evaluate the analysis.

6 Cleaning

DANGER

Mains voltage!

- Before beginning with cleaning work, disconnect the mains plug and protect the device against being unintentionally switched back on!
- Do not allow any liquids to flow into the device.
- Indicate cleaning work with warning signs.
- Put safety equipment back into operation after cleaning work.

When cleaning the entire device, adhere to the guidelines of the Accident Prevention Regulation (BGV A3) – especially if the device has been set up in a dusty environment or if processing grinding stock that produces dust.

6.1 Sieves

CAUTION

Use of a brush can destroy the fine mesh wire of the sieve!

Only use mechanical assistance for coarse sieves.

With small mesh widths there is the danger that as a result of shifting the position of the mesh wire, the sieve will no longer have the correct mesh width.

We recommend using the "LABORETTE 17" ultrasonic cleaner to clean the sieves. More powerful ultrasonic cleaners can destroy the mesh wire. Place the sieve vertically or head first into the cleaning fluid.

As far as possible, clean the sieves after every use. The sieves can be dried in a drying cabinet at a maximum of 95 °C (shorten the drying time by rinsing with alcohol).

6.2 Device

The machine can be cleaned with a soft, damp cloth when it is in the switched off state. Use a solution composed of water and mild detergent. Do not use solvents for cleaning.

7 Maintenance

DANGER

Mains voltage

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

DANGER

Note that the sieve shaker must be repaired, maintained and inspected exclusively by a qualified electrician in accordance with national regulations (e.g. VBG 4) because improper repairs can lead to significant dangers for the user.

We recommend keeping a safety logbook ➦ Chapter 11 'Safety logbook' on page 33, where all work (maintenance, repairs.....) performed on the device is entered.

The most important element of maintenance is regular cleaning!

If a machine part and the corresponding equipment is replaced or changed, this part has to be checked again in accordance with EN 60 204-1. We recommend that you contact our service team in the event of a fault or malfunction:

Fritsch GmbH

Milling and Sizing

Industriestraße 8

D - 55743 Idar-Oberstein

Phone: +49 (0)6784/ 70-0

Fax: +49 (0)6784/ 70-11

E-Mail: info@fritsch.de

Internet: http://www.fritsch.de/service/support/

To make it possible to localise the error that has occurred, the LED display temporarily shows (approx. 5 seconds) a corresponding error code in the form 'E nn' in the first row.

E 00 - 04

If this display appears, there is an error in the machine's electronics. In this case the machine has to be returned.

NOTICE

The device should be sent in for a maintenance check in our factory at least every two years.

8 Disposal

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

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

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

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

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

FRITSCH WEEE coverage

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

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

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

9 Guarantee terms

Guarantee period

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

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

Conditions for claims against the guarantee

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

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

Reasons for loss of the guarantee

The guarantee will not be granted in cases where:

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

Costs not covered by the guarantee

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

Further information about the guarantee

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

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

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

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

NOTICE

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

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

10 Exclusion of liability

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

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

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

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

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

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

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

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

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

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

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

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

11 Safety logbook

Date	Maintenance / Repair	Name	Signature

Date	Maintenance / Repair	Name	Signature

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