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Operating Instructions for Tap Sieving Machine Type AS200 tap

Retsch[®]

Notes on these operating instructions

These operating instructions for the tap sieving machine, type AS 200 tap, give all the necessary information with regard to the areas mentioned in the contents.

Instructions are given for the definite target group(s) in each area, in order to ensure safe operation of the AS 200 tap for its intended purpose. Knowledge of the relevant section is essential for safe, proper handling in each target group or groups.

This technical documentation is intended as a reference and instruction manual. The individual sections are complete in themselves.

These operating instructions do not include repair instructions. If repairs are necessary please contact your supplier or Retsch GmbH direct.

Warning instructions

Warnings are given by the following symbols:



Injury to persons



Damage to equipment



Observe instructions for use

Repairs

These operating instructions do not include repair instructions. For your own safety repairs must be carried out only by Retsch GmbH or an authorised agent.

In this case please contact:

The Retsch agency in your country and
Your supplier
Retsch GmbH directly

Your service address:

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Safety

The AS 200 tap is an ultra-modern, highly efficient product of Retsch GmbH, corresponding to state of the art. If the machine is used according to the intended purpose with a knowledge of this technical documentation it is completely safe and reliable to operate.

Safety instructions

As operating authority it is your duty to ensure that all persons charged with working on the AS 200 tap:

- have read and understood all the instructions on safety,
- from the beginning of work know all the instructions for handling and regulations for the target group relevant to their work,
- have access to the technical documentation for this machine at all times without problems.
- New personnel should be familiarized with safe, proper handling of the machine before beginning work on the AS 200 tap, either by verbal instruction from a competent person or through this technical documentation.
- Improper operation can cause injury to persons or damage to the equipment. You are responsible for your own safety and that of your employees.
- Ensure that no unauthorised persons have access to the AS 200 tap.

For your own protection have your employees confirm that they have been instructed in operation of the AS 200 tap. The draft of a suitable form is given at the end of the section on safety.



We exclude any claims for damages of any kind for injury to persons and damage to equipment arising from non-observance of the following safety instructions.

Safety instructions – summarised, part 1

Safety instructions



We exclude any claims for damages of any kind for injury to persons and damage to equipment arising from non-observance of the following safety instructions.

Use according to the intended purpose



Do not make any alterations to the machine and use only spare parts and accessories approved by Retsch.

Otherwise the Declaration of Conformity to the European Directives declared by Retsch will lose its validity. Furthermore this will lead to loss of any kind of guarantee claims.

Packing



Please keep the packing material for the duration of the guarantee period, since if you have a complaint and the equipment is returned in inadequate packing your guarantee claim is at risk.

Transport



The **AS 200 tap** must not be knocked, shaken or thrown during transport. Otherwise the electronic and mechanical components can be damaged.

Temperature variations



If the **AS 200 tap** is subjected to high temperature variations (e.g. during air transport) it must be protected against condensed water. Otherwise there may be damage to the electronic components.

Supplied items



If the supplied items are incomplete and/or there is transport damage you must inform the transporter and Retsch GmbH immediately (within 24 hrs). Later complaints may possibly be no longer considered.

Ambient temperature:



If the temperature drops below or exceeds ambient temperature the electrical and mechanical components can become damaged and performance data can change to an unknown extent.

Atmospheric humidity:



At high atmospheric humidity the electrical and mechanical components can become damaged and performance data can change to an unknown extent.

Installation:



In order to ensure reliable operation the AS 200 tap must be doweled firmly to the subsurface by means of the transport angle piece.

Electrical connection / connecting to the mains supply



If the values given on the type plate are not observed the electrical and mechanical components can become damaged.

Safety instructions - summarised, part 2

Sieving aids



Ensure that the sieve fabric is not expanded excessively through overloading with sieving aid, since this will impair the precision of your analytical sieves.

Quantities of material to be sieved



The sieves must not be overloaded. Overloading destroys the sieve fabric and impairs the sieving results..

Cleaning



The **AS 200 tap** must not be cleaned with running water.
Danger to life through current surge.
Use only a cloth moistened with water. Solvents are not permitted.

Wearing parts



These operating instructions do not include repair instructions. For your own safety repairs must be carried out only by Retsch GmbH, an authorised agent or Retsch service technicians.

Confirmation

I have taken note of the section „Notes on these operating instructions“ and the section on „Safety“.

Signature of operator

Signature of operating authority

Technical data

Machine type designation: AS 200 tap

Use according to the intended purpose

This machine is not designed as a production machine or for continuous operation, but as a laboratory apparatus intended for 8 hour single-shift operation.

The RETSCH AS 200 tap is used for dry sieving with analytical sieves of diameter up to 203 mm. In this process the uniform, rotating sieve movement and the tapping impulse guarantees exact separation of the material to be sieved, with a charged grain size of up to max. 25 mm.

Fine and coarse grained materials, such as those produced in milling plants, breweries, as well as in the chemical, stone, earth, wood and plastic industries, can be separated exactly with the AS 200 tap.

The horizontal, rotating movement of the material to be sieved is particularly advantageous for separation of products such as milled grain, wood chips or similar materials.

Thus, for example DIN 53477 specifies a rotating sieve movement for testing plastics (granular moulded plastic material).

The AS 200 tap can be used as testing equipment for quality control according to DIN EN ISO 9000 ff

The required sieving time is digitally set, displayed and monitored.

The AS 200 tap has an integrated interface for triggering all the sieving parameters through the **EasySieve®-Software**. The interface cable required for this is included in the supplied items.



Do not make any alterations to the machine and use only spare parts and accessories approved by Retsch.

Otherwise the Declaration of Conformity to European directives given by Retsch will lose its validity.

Furthermore this will also lead to the loss of any kind of guarantee claim.



The AS 200 tap can cause considerable unbalance through the movement of the sieved material. Therefore it must be installed on a suitable laboratory bench. The net weight of the AS 200 tap is 68 kg.

Emissions

Noise characteristic values:

Noise measurement according to DIN 45635-031-01-KL3

The noise characteristic values are influenced by the set amplitude or sieve bottom acceleration, the number of sieves clamped and the type of sieved material.

Example 1:

Emission value related to workplace $L_{pAeq} = 82 \text{ dB(A)}$

Operating conditions:

Sieved material = quartz sand, grain size <1mm, 5 sieves

Example 2:

Emission value related to workplace $L_{pAeq} = 65 \text{ dB(A)}$

Operating conditions:

Sieved material = quartz sand, grain size <1mm, 5 sieves

With noise insulating hood.

Maximum loading

Max. sieved material quantity = 3 kg

Max. weight of set of sieves = 6 kg

Max. height of set of sieves: 6 sieves (50 mm) + 1 collecting bottom

Systems of protection

IP54 or IP10 in vicinity of inlet to sieve carrier

Apparatus dimensions

Width: 700mm, height: approx.650mm, depth: 450mm

Weight: approx. 68 kg (without set of sieves)

Required bench space

800mm x 550mm; no safety distance required.

Technical data

Number of oscillations of sieve plate: 280/min.

Number of tapping impulses: 150/min.

Transport and Installation

Packing

Packing is adapted to the transport route and conforms to the generally applicable packing guidelines.



Please keep the packing material for the duration of the guarantee period since if there is a complaint and the machine is returned in inadequate packing your guarantee claim will be at risk.

Transport

After unpacking the AS 200 tap is to be lifted and transported only by the transport screws **TS** supplied with the machine. **Fig. 1**

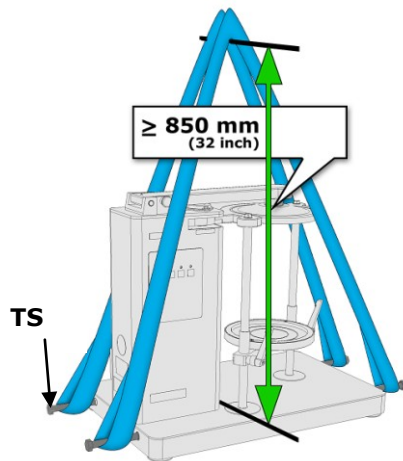


Abb. 1

Net weights:

AS 200 tap approx. 68 kg

AS 200 tap with noise insulating hood
approx. 92 kg



Lifting above head height is not permitted.



The **AS 200 tap** must not be knocked, shaken or thrown during transport. Otherwise the electronic and mechanical components can become damaged.

Temperature variations



If temperature variations are high (e.g. during air transport) the **AS 200 tap** must be protected against condensed water. Otherwise the electronic components can become damaged.

Intermediate storage

Ensure that the **AS 200 tap** is also stored dry during intermediate storage.

Parameters for the place of installation

Ambient temperature:

5°C to 40°C



If the ambient temperature drops below or exceeds these values the electrical and mechanical components can become damaged and performance data are changed to an unknown extent.

Atmospheric humidity:

Maximum relative humidity = 80% at temperatures up to 31°C, decreasing linearly down to 50% relative humidity at 40°C.



At higher atmospheric humidity the electrical and mechanical components can become damaged and performance data are changed to an unknown extent.

Installation height:

Max. 2000 m above sea level

Installation

Install the AS 200 tap only on a stable, safe subsurface. Otherwise undesirable vibrations can be transmitted.

Alignment

To ensure that the AS 200 tap has a reliable standing position all 4 feet must be in contact with the installation surface.

Electrical connection

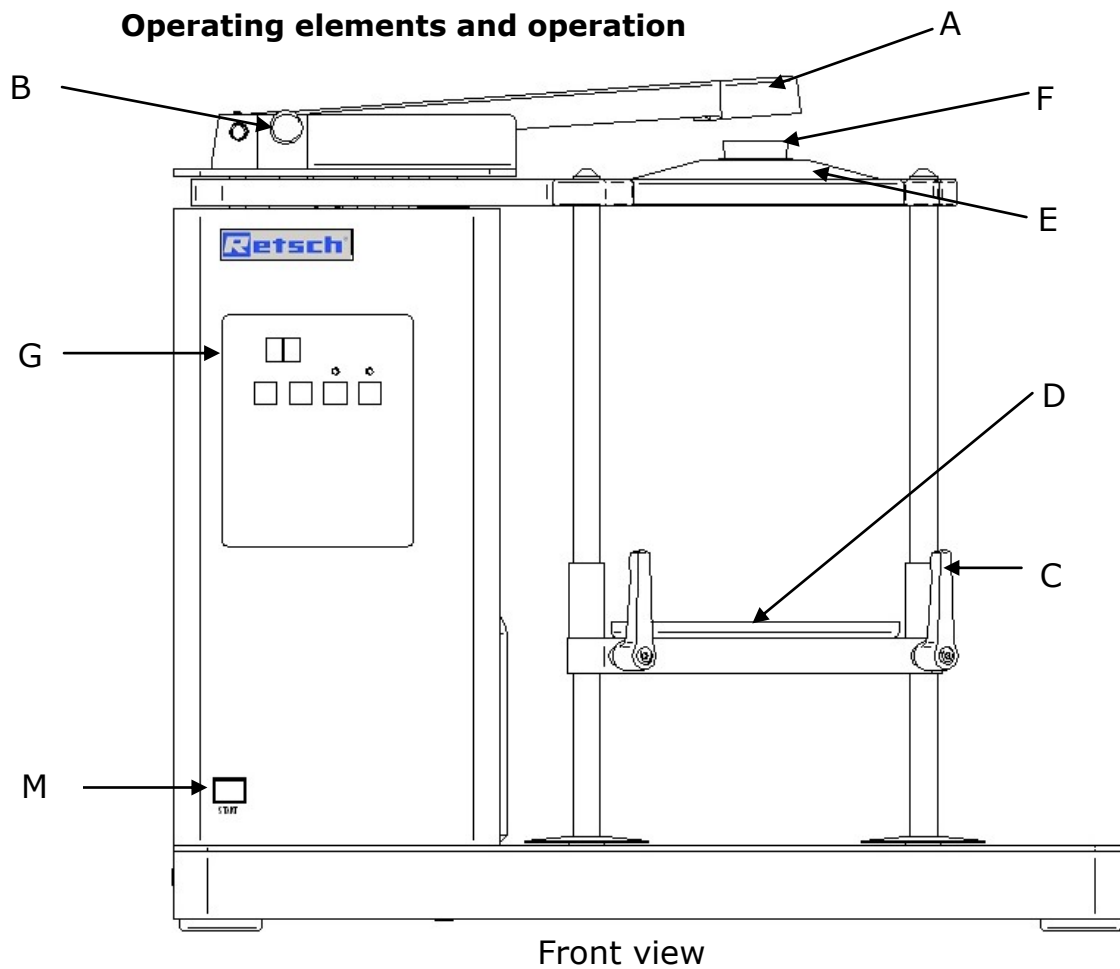
- Voltage and frequency for the AS 200 tap are given on the type plate.
- Ensure that these values correspond to the available power supply system.
- Connect the AS 200 tap to the power supply system using the supplied connection cable.
- Protection by external fusing is to be carried out when connecting the mains cable to the power supply, according to the regulations at the place of installation.



If the values on the type plate are not observed, this can cause damage to the electrical and mechanical components.

Operation

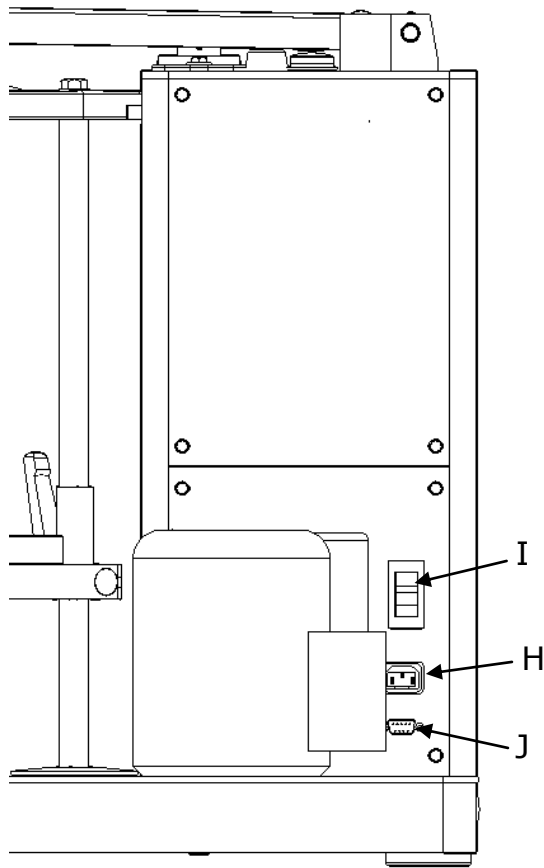
Operating elements and operation



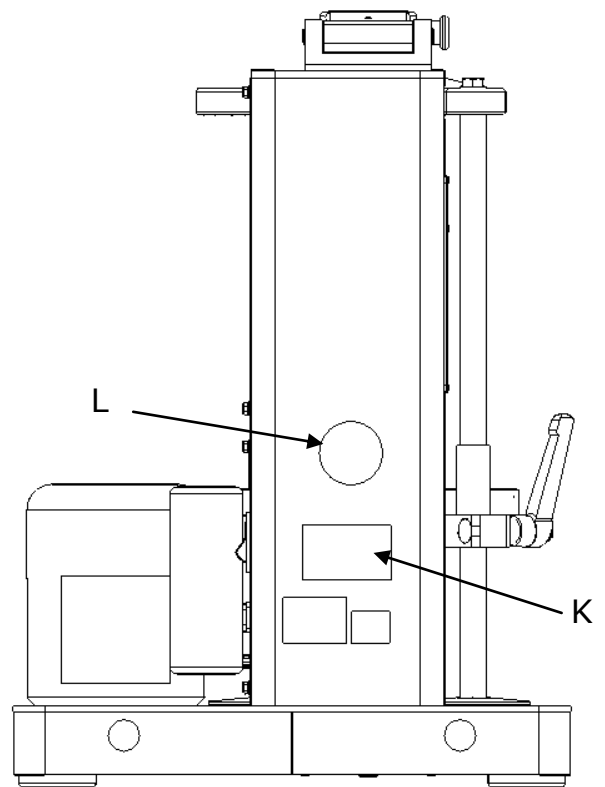
Operating elements and their function

Table of functions

Element	Description	Function
A	Tapping arm	Transmits tapping impulses to sieved material.
B	Stop bolt	Enables the tapping impulses to be switched off.
C	Clamping lever	Facilitates adaption to different heights of the set of sieves
D	Sieve plate	Holds the set of sieves.
E	Sieve lid	Centers the set of sieves and and retains the cork stopper.
F	Cork stopper	Transmits the tapping impulses to the sieve lid.
G	Display and operating unit: For explanation see below	Time preselection and starting/stopping the machine
M	Press button START	Starts the machine when both start buttons (M + 15) are pressed simultaneously.



Rear view



Side view

Operating elements and their function

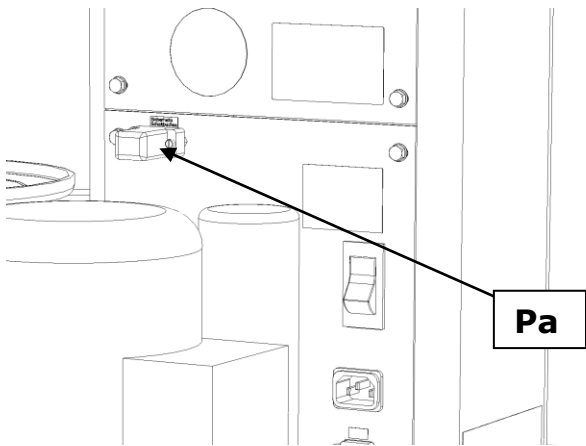
Table of functions

Element	Description	Function
H	Machine socket	Connection for mains cable of the machine
I	ON / OFF switch	For switching the AS 200 tap on and off, and serves as a motor protection switch
J	Interface RS232	Enables communication with EasySieve® to be carried out.
K	Type plate	Information on the machine and connected loads
L	Information plate BDA	Refers to operating instructions.

Connect Safety Device



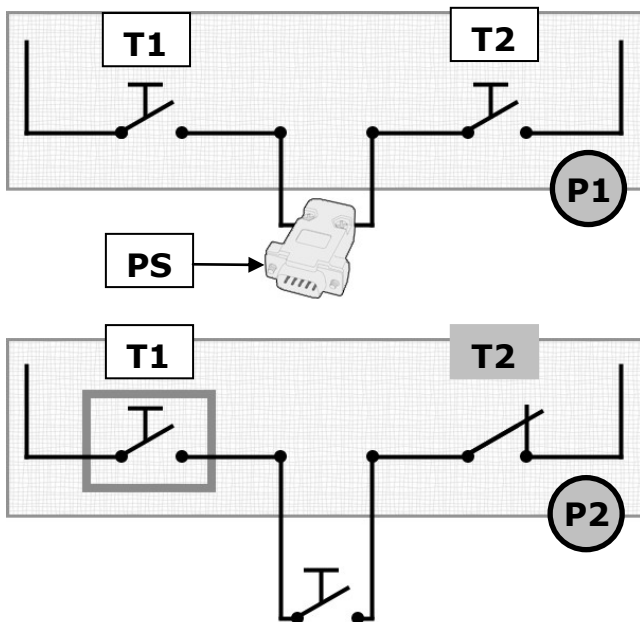
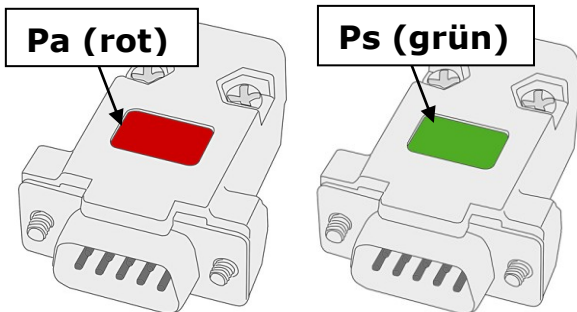
When installing the AS 200 tap, special attention must be paid to mounting the protective devices correctly in order to meet the requirements of the harmonised EN292-1 standard.



Depending on the safety device selected either the PS safety plug can be fitted or the local safety devices can be connected with the aid of the safety socket.

Make sure that if the PS safety plug is being used on its own the operator is protected from any inadvertent reaching into the machine.

- Remove the **Pa** (red) cover and replace it with the **Ps** safety plug (green).



Other safety devices can be connected to this socket by trained personnel.

On delivery the machine is in P1 mode program (see adjacent picture).

After the connection of an external safety device, the Start T2 (M) pushbutton can be deactivated by switching over to program mode P2.

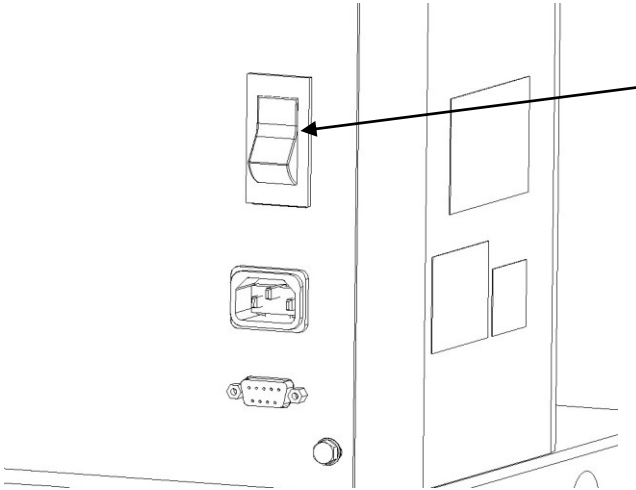
- Turn off the machine.
- While keeping the two TIME + - buttons pressed down, switch on the machine.
- Press the STOP button to save the program mode.

The software is now set to the P2 program mode. P2 appears in the display.

Operation of the AS 200 tap

Switching on and off

The main switch is located on the rear left side of the **AS 200 tap**



- Switch on the main switch
- - - lights up in the display **time min**
- The LED **STOP** lights up

The **AS 200 tap** is now without an interval and is ready for functioning in continuous operation at a speed of 50 min^{-1} .

Display and operating element

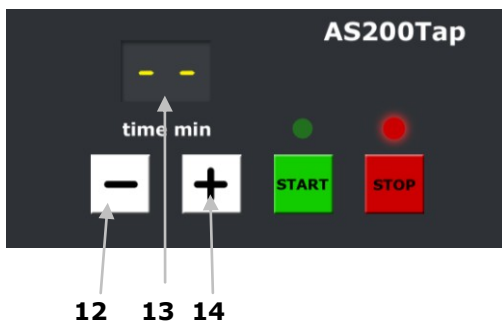
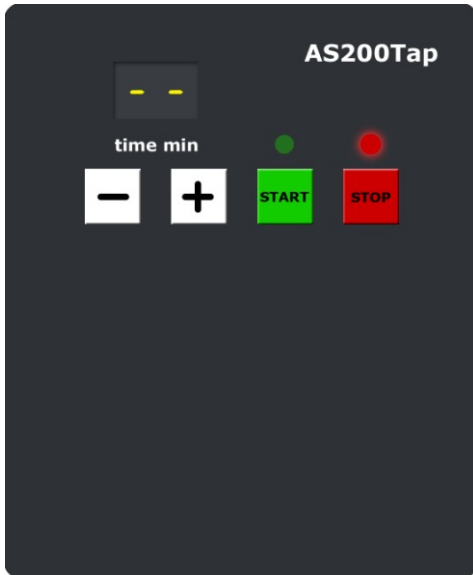
The button + increases the sieving time in the range from **1 – 99 min.**

The button – reduces the sieving time and is shown in the display in the range from **1 – 99 min.**

Set continuous operation is shown with - - in the display.

Press the **START** button to start the sieving operation. The green LED lights up.

The sieving operation is ended with the **STOP** button and the red LED lights up.



Setting the time and continuous operation

When switching on the **AS 200 tap** the sieving time is undetermined.

Two dashes - - are shown in the display **13.**

Increasing the time:

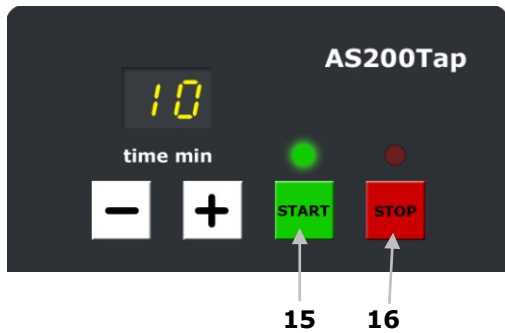
Button **13** increases the time up to 99 minutes.

Reducing the time:

Button **12** reduces the time down to a value of one minute.

Continuous operation:

If the time drops below one minute two dashes appear in the display. This activates continuous operation. This also applies when 99 minutes are exceeded.



Starting – Interrupting - Stopping

Starting:

Press START / button **15** and **M** simultaneously

- Green LED over button **15** lights up

Interrupting (pause function):

- Press STOP / button **16** once
- Red LED over button **16** lights up
- Values remain visible
- Press START / button **15** and **M** simultaneously
- Sieving process is continued

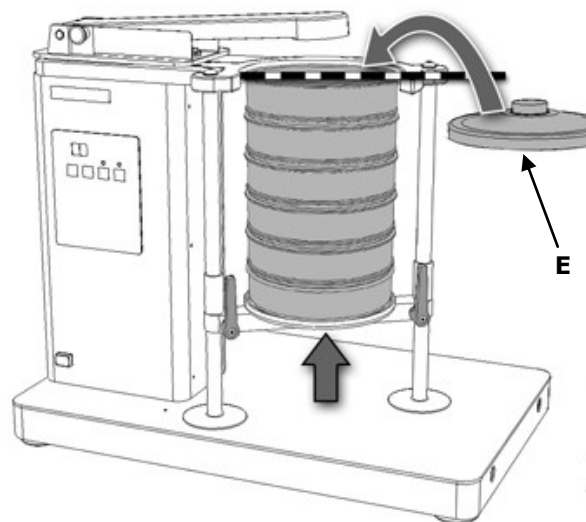
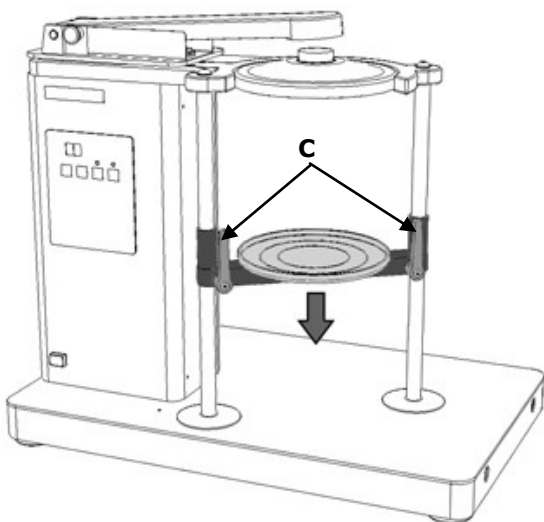
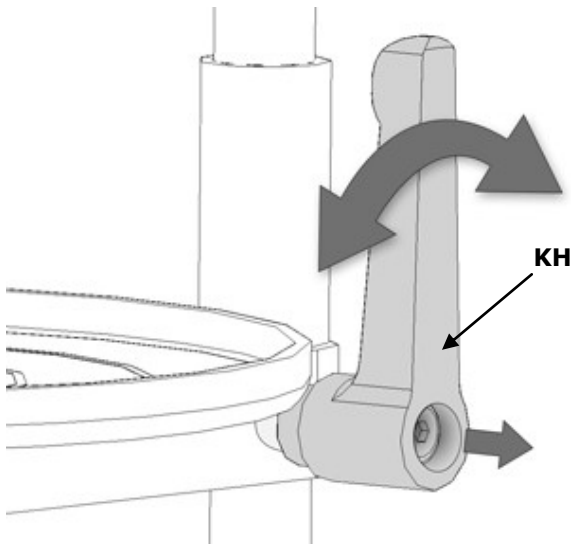
Stopping (stand-by function):

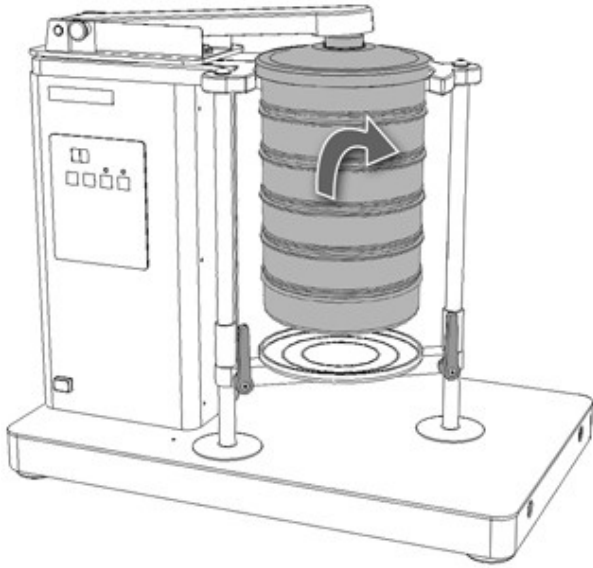
- Press STOP / button **16** twice
- Red LED over button **16** lights up
- The complete display is extinguished
- Activate displays = press button **15** once
- New values can now be entered
- Press START / button **15** a second time
- Function as with **Starting** is carried out

Inserting the sieve stack

The **AS 200 tap** is suitable for analytical sieves of 200 mm and 203 mm (18") outside diameter.

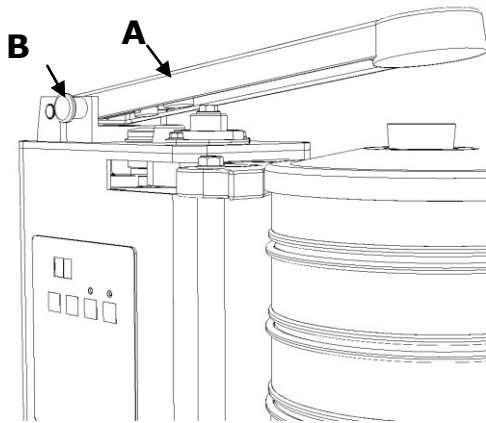
- In order to loosen the clamping screws easily you can change the position of the clamping levers KH independently of the clamping screws. To do this pull the clamping levers forwards and turn them both to the required position.
- Then unscrew the two clamping screws C and push the carriage downwards. Tighten both clamping screws firmly again.
- Place the sieve stack in the middle of the carriage and loosen the two clamping screws.
- Push the carriage upwards until the top edge of the sieve stack is at the same level as the guide ring. Then tighten the clamping screws again.
- Lift the tapping arm slightly and place the sieve lid E with cork plug on the top sieve.





Removing the sieve stack

- To remove the sieve stack lift this slightly, together with the lid, and at the same time press the tapping arm upwards.
- Withdraw the sieve stack forwards.



Switching off the TAP function

- Pull out the stop bolt **B** and turn this. The tapping arm **A** now locks into place when this is lifted into the top position.

The AS 200 tap now works as a plane sieving machine.

Retsch Analytical Sieves

Analytical sieves of diameter 200 and 203 mm

To begin with the new RETSCH sieves are available in the three different types which are most important for sophisticated laboratory analysis:

- 200 x 25 mm
- 200 x 50 mm
- 203 x 50 mm = 8" x 2"

Compatibility with other standard sieves is of course guaranteed.

The new sieves are compatible with the standard range of RETSCH sieves and can be combined with most other sieve makes without problems.

This is also important for you:

Every sieve leaves our company with a works certificate or – if required – with a special acceptance test certificate according to **DIN ISO 3310-1**.

Calibration certificates guarantee an even greater statistical reliability and document our aim at perfection.

1. Sieve frame is cast in one piece and gauze transition without grooves prevents cross contamination (no solder, no residues etc)
2. High corrosion resistance and easy cleaning through the use of high alloy stainless steels (316L or 1.4435)
3. 15% lighter than traditional sieves with at the same time increased free sieving surface
4. Unsurpassed product quality through fully automatic production and complete optical inspection
5. Innovative electric resistance welding technique guarantees taut sieve gauze
6. Maximum stability and optimum sealing of the set of sieves
7. Clear sieve marking and traceability through individual laser engraving

Sieve accessories

Collecting bottoms, collecting bottoms with outlet, intermediate sieve bottoms, intermediate rings and sieve lids are available to fit the various analytical sieves. Sieving aids and sieve stands complete the range of accessories.

Exact order data for the analytical sieves and available accessories are given in our price list.

Tested quality – in black and white



RETSCH certificates

Before dispatch every sieve is measured optically and provided with a **works certificate**.

If required you can have a report with the **acceptance test certificate** in which the measured results are documented in tabular form and graphically, or a **calibration certificate** with more detailed statistics.

Calibration service

As a special service we will recalibrate your analytical sieves. In this case all relevant information from measurement of the sieve conforming to standard is recorded and confirmed in the required **certificate**.



Working Instructions

Sieving aids

For materials which are difficult to separate we recommend the additional use of sieving aids in the individual sieve fractions. For this purpose balls of agate, rubber, porcelain or nylon brushes and Vulkollan cubes can be used, depending on the mesh size of the sieve and the preselected oscillation intensity. See also the table below.



Make sure that the sieve fabric is not excessively expanded through overloading with sieving aids since this will impair the precision of your analytical sieves.

For recommended quantities of sieving material see the section „Quantities of material to be sieved“

Overview table

Sieving aids	Quantity per sieve or sieved material	Supplier	Field of application	Caution!!
Cubes of Vulkollan	5, 12x12	RETSCH, Haan	With use of plane sieving machines	
Brushes	3	RETSCH, Haan		
Plastic rings	3, various dia.			
Small brushes			With hand sieving	
Highly dispersed silica (Aerosil)	0.5 to 2%	Degussa, Ffm	With fine, sticky, greasy sieved materials and materials which are electrostatically charged	Before adding check usability and compatibility
- " - Aluminium oxide	0.5 to 1%	Degussa, Ffm		
- " - Talcum			With crude rubber and rubber powder	
Drying			With very wet / very damp sieved material	
Pass dry warm air through the set of sieves			With hygroscopic sieved materials	
TAP function			With fine, easily sticking sieved materials which fall through the meshes only with difficulty	A TAP function is built into the Tap Sieving Machine AS 200 tap, which can be switched off as required.

Quantities of material to be sieved

A set of sieves required for sieve analysis is made up of a number of analytical sieves arranged one on top of the other with increasing mesh size.

In order to guarantee quick fractioning with an exact result the quantity of material to be sieved must be adapted to the sieve diameter and the nominal diameter of the openings.

Guide values for this are given in the respective standard specifications for sieve analysis, e.g. according to DIN 22019/1 the following maximum added quantities are recommended:

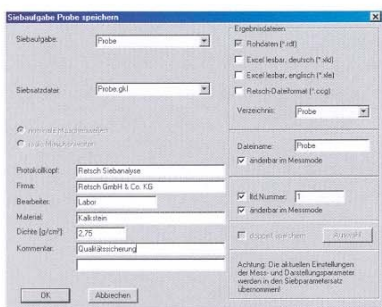
Nominal diameter of sieve openings	Material quantities in dm ³ for 200mm diameter
8	0 . 5 0 0
3 . 1 5	0 . 3 0 0
1	0 . 1 4 0
0 . 5	0 . 1 0 0
0 . 2	0 . 0 6 0
0 . 0 6 3	0 . 0 3 5
0 . 0 2 0	0 . 0 2 0

EasySieve®

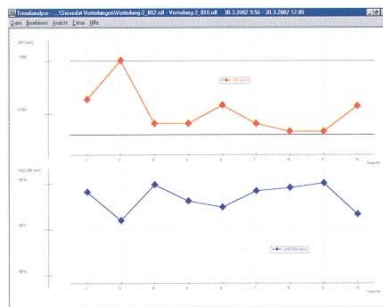
Control, evaluation, documentation

EasySieve®, the software for grain size analysis from RETSCH, is far superior to manual evaluation in many respects. This is because the software is able to carry out the measuring and weighing operations automatically – from registering the weights of the sieves up to evaluation of the data. This can be accomplished more easily and more conveniently than ever before – hence „easy“.

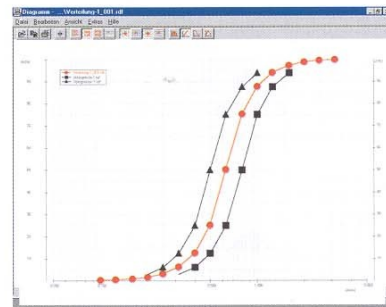
The software design is self-explanatory and corresponds to the logical sequence of a grain size analysis. Therefore the learning phase can be kept very short. The large number of evaluation possibilities also permits absolute flexibility with regard to the adaption to sophisticated individual problems.



Parameter input
specification limits



Trend analysis of product processes

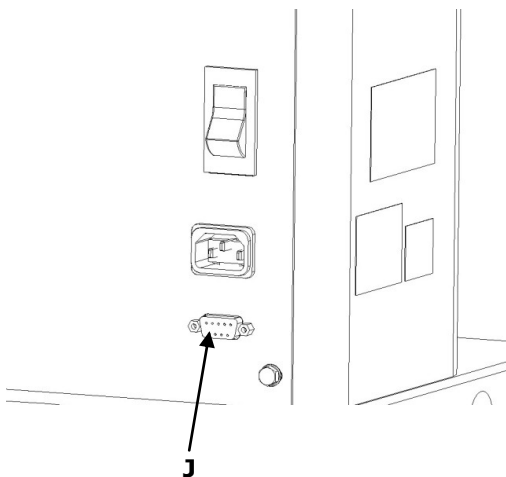


Comparison with

PC – serial connection

The **AS 200 tap** can be connected serially with a PC for data acceptance and data transfer. For this a commercial 9-pole RS232 cable, included with the **AS 200 tap**, is used. In this way communication with the **EasySieve®** evaluation software (available as an accessory) is possible.

- Remove the cap which protects the connection from dust and moisture when not used
- Connect connection **J** with the PC through the serial cable



General

Cleaning

For thorough, careful, time-saving cleaning of your analytical sieves we recommend Retsch ultrasonic baths.
Please ask for our special leaflet „Care and Cleaning of Analytical Sieves“, which is free of charge.



Do not clean the AS 200 tap under running water.
Danger to life through current surge.

Use only a cloth moistened with water.
Solvents are not allowed.

Maintenance

The **AS 200 tap** is essentially maintenance-free.

Safety regulations (table)

For the **AS 200 tap** from the various sections

Process	Action	Danger
Safety	Danger to equipment and injury to persons arising from non-observance of the safety instructions	Claims for damages in any form are excluded.
Packing	Please keep the packing material for the duration of the guarantee period	A complaint and returning in inadequate packing can put your guarantee claim at risk.
Transport	Do not knock, shake or throw the AS 200 tap during transport	Electronic and mechanical components can become damaged.
Temperature variations	In case of temperature variations protect the AS 200 tap control from condensed water	Electronic components can become damaged.
Installation	Install the AS 200 tap only on a suitable laboratory bench	The machine can produce considerable unbalance through movement of the sieved material.
Supplied items	If the delivery is incomplete and/or there is transport damage you must inform the transporter and Retsch GmbH immediately (within 24 hrs)	Later complaints may possibly no longer be considered.
Ambient temperature	Drops below 5°C Exceeds 40°C	Electronic and mechanical components can become damaged. Performance data can change to an unknown extent.
Atmospheric humidity	Exceeds 80% at temperatures up to 31°C	Electronic and mechanical components can become damaged. Performance data can change to an unknown extent.
Electrical connection	Power mains system does not agree with values on type plate	Electronic components can become damaged.
Cleaning	Remove mains plug before every cleaning operation. Do not clean under running water	Danger to life through current surge Danger to life through current surge.

Alterations

Subject to technical alterations without notice.

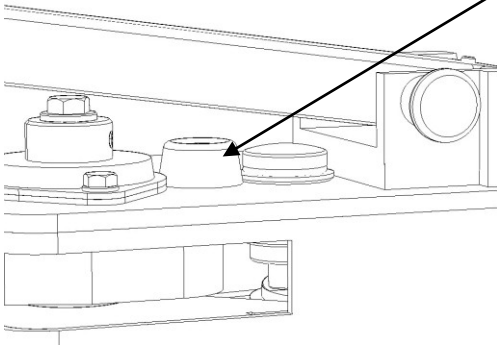
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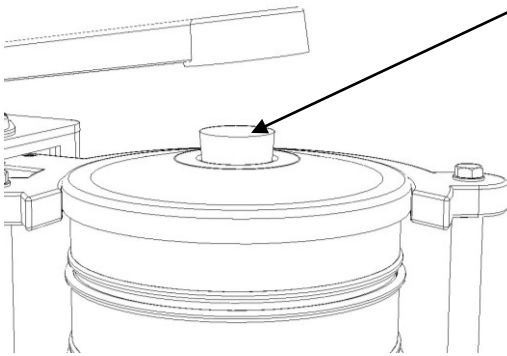
Persons violating are liable to pay damages.

Wearing parts

Item 26 / Art. No. 03.382.0024 tapping tool and
Item 51 / Art. No. 05.114.0090 O-ring



Item 41 / Art. No. 03.753.0028 cork stopper



These operating instructions do not include repair instructions. For your own safety repairs should be carried out only by Retsch GmbH or an authorised agent.

TAP SIEVING MACHINE

AS 200 tap | 30.025.0001

DECLARATION OF INCORPORATION

Herewith we declare, represented by the signatory, that the above mentioned device is an *incomplete* machine, which is intended for completion by a security system to be provided, and which corresponds to the basic requirements of the following directives:

Machinery Directive 2006/42/EC

EMC Directive 2014/30/EU

Low Voltage Directive 2014/35/EU

In particular, the harmonized standards

DIN EN ISO 12100	Safety of machinery
DIN EN 55011	Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement
DIN EN 60204	Safety of machinery - Electrical equipment of machines
DIN EN 61000-3-2	Electromagnetic compatibility (EMC)
DIN EN 61000-3-3	Electromagnetic compatibility (EMC)
DIN EN 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use
DIN EN 61326-1	Electrical equipment for measurement, control and laboratory use - EMC requirements

can only be met, if protection guards against reaching into the working area from all sides, a sound insulation, and electrical connections are properly installed.

The commissioning of the incomplete machine is prohibited until it has been completed by the above mentioned components and complies with the regulations of the Machinery Directive, and an EC Declaration of Conformity has been obtained in accordance with Annex II Part A.

Furthermore, we declare that the relevant technical documentation for the above mentioned device has been compiled according to Annex VII Part B of the Machinery Directive, and we undertake to submit this documentation on request to the market surveillance authorities.

Authorized person for the compilation of technical documents:

Dr. Loredana Di Labio (technical documentation)

In case of a modification of the device not previously agreed with Retsch GmbH, as well as the use of unauthorised spare parts or accessories, this declaration will lose its validity.

Retsch GmbH

Haan, 05/2016



Dr. Ing. Frank Janetta, Team Leader R&D Department

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