Operating instructions for flat-bed sieving machine type AS400 control

Notes on these operating instrutions

These operating instructions for the analytical sieving machine type **AS 400 control** give all necessary information on the sections mentioned in the contents.
They give instructions to the target group(s) defined in the respective sections for safe, correct handling of the **AS 400 control.** It is important that each target group or groups is (are) familiar with the relevant section, in order to ensure safe, reliable handling of the machine according to its intended use.
This technical documentation is for use as a reference work and as a learning aid. The individual sections are complete in themselves.
No repair instructions are included in these operating instructions. If repairs are necessary please contact your supplier or Retsch GmbH directly.
Retsch GmbH **www.retsch.com**

Warnings

The following signs are used to warn of hazards:

Personal injuries

Material damage

Repairs

These operating instructions do not contain any repair instructions. In the interests of your own safety, repairs should only performed by Retsch GmbH or an authorised representative (service technician).

In this case, please notify the following:

The local Retsch representative
Your supplier
Retsch GmbH direct

Your address for service:

Safety

The AS400 control is a modern, high-performance product manufactured by Retsch GmbH. It incorporates the latest technology. It is entirely safe in operation when used for the intended purpose and in accordance with the present technical documentation.

Safety instructions

You, as the owner/operator must ensure that the persons who are entrusted to work with the AS400 control:

- have read and understood all the regulations contained in the chapter on safety,
- have made themselves familiar, prior to starting work, with all the operating instructions and regulations relevant to that particular target group,
- have complete, immediate and unrestricted access to the - technical documentation for this machine,
- new personnel must have familiarised themselves with the safe use of the AS400 control and its intended purpose before starting work with the machine, either through verbal instruction by a competent person and / or with the help of the present technical documentation.
- Incorrect operation can result in injuries to persons and damage to property. You bear the responsibility for your own safety and that of the rest of your staff.
- Ensure that no unauthorised persons have access to the AS400 control.

  For your own protection have your employees confirm that they have been instructed in operation of the AS400. The draft of a suitable form is given at the end of the section on safety.

We exclude claims for damages in any form for damage to persons or property caused through non-observance of the following safety instructions.

Summary of safety instructions – part 1

Safety instructions

We exclude claims for damages in any form for damage to persons or property caused through non-observance of the following safety instructions.

Intended use

Do not make any changes to the machine and use only spare parts and accessories which have been approved by Retsch.
The declaration of conformity to the European directives by Retsch will otherwise lose its validity. Furthermore this will result in the loss of any kind of guarantee claims.

The AS400 control can cause major imbalances due to movements of the material being screened. It must therefore be installed on a suitable bench in the laboratory. The net weight of the AS400 control is 73 kg.

Base area required

The AS400 control can cause major imbalances due to movements of the material being screened. It must therefore be installed on a suitable bench in the laboratory. The net weight of the AS400 control is 73 kg

Packing

Please retain the packaging for the duration of the warranty since, in case of a complaint, returning in unsuitable packaging can jeopardize your warranty claims.

Transport

During transportation, do not subject the **AS400 control** to impacts, jolts or vibrations. The electronic and mechanical components could otherwise be damaged.

Temperature fluctuations

In case of wide temperature fluctuations (during shipment by air, for instance), protect the **AS400 control** from condensation. The electronic components could otherwise be damaged.

Scope of supply

If the shipment is incomplete or has suffered transport damage, you must notify the forwarder and Retsch GmbH immediately (within 24 hours). Under certain circumstances, claims lodged at a later date may not be considered valid.

Ambient temperature:

When the ambient temperature exceeds or falls below that specified, the electrical and mechanical components may be damaged, and performance data changed to an unknown extent.

Atmospheric humidity:

At a higher humidity, the electrical and mechanical components may be damaged, and performance data changed to an unknown extent.

Assembly

The AS400 control can cause major imbalances due to movements of the material being screened. It must therefore be installed on a suitable bench in the laboratory.
We recommend that the speed set should not exceed >200 r.p.m. or that the AS400 be fixed to the laboratory bench with metal sheets **A** if the analytical sieves used are ≥400mm and have high sieve stacks.
The net weight of the AS400 control is 70 kg.

Summary of safety instructions – part 1

Electrical connection

Failure to observe the values on the data plate can cause damage to the electrical and mechanical components.

Start - Interrupt - Stop

When sieves with a diameter of ≥ 400mm are used, only operate the AS400 to a maximum speed of 200 r.p.m.. Otherwise the sieve stack mass could create such large imbalances that the device slews out of control in wild movements. Or fasten the AS400 as described in the chapter "Assembly".

Setting the speed in "r.p.m." from 050-300

Never start at the maximum speed of 300 r.p.m., but rather increase the speed slowly. When using sieves with diameters from 400mm and the max. sieve stack, do not set the speed higher than 200 r.p.m.. Otherwise the masses set in motion too quickly can displace, causing the AS400 to tip over. Or fasten the AS400 as described in the chapter "Assembly".

Sieving aids

Ensure that the fabric of the sieve is not overstretched by overloading with sieving aids as this would have a detrimental effect on the precision of your analytical sieve.

Cleaning

Do not clean the AS400 control with running water. **Danger to life from electrical shock**
Only use a rag moistened with water. Never use solvents.

Parts subject to wear and tear

These operating instructions do not contain any repair instructions. In the interests of your own safety, repairs should only performed by Retsch GmbH or an authorised representative (service technician).

Confirmation

I have read and understood the foreword and the chaper on safety.

_____

Signature of owner/operator

_____

Signature of service technician

Technical specifications

Machine type designation:
AS400 control

Use according to the intended purpose

This machine is not intended as a production machine nor designed for continuous operation, but rather as laboratory equipment intended for one-shift, 8-hour per day operation.

The RETSCH AS400 control is used for dry sieving with analytical sieve shakers of up to 400 mm in diameter. The uniform, circular horizontal movement of the sieve precisely separates the material to be screened with a maximum grain size of 63 mm.

Fine and coarse grained materials, such as those used in milling, brewing, chemicals, stonework, earthwork, wood and plastic industries, can be separated precisely with the AS400 control.
The circular horizontal movement of the sieve is particularly beneficial for separating certain products, such as milled grain, wood chips and similar materials.

DIN 53477, for example, even specifies a circular sieve movement for testing plastics (granular press masses).

The AS400 control can be deployed as test equipment for quality control action under DIN EN ISO 9000 ff. The **power frequency independent control drive** enables the AS400 control to supply results reproducible anywhere in the world.

The speed/sieve plate acceleration and sieving time required are set, displayed and monitored digitally. It is supplied with test certificate and can be **calibrated**. An arrangement to allow the direction of turn to change at intervals can be linked in on request. Up to **9 sieve programs** can be stored directly in the machine and called up from there.

The AS400 control has an integrated interface to actuate all sieve parameters via the **EasySieve® software**. The interface cable required for this is supplied as standard.

Do not make any modifications to the machine and only use Retsch approved spares and accessories.

The conformity to the European guidelines declared by Retsch otherwise loses its validity.

It furthermore leads to the nullification of all warranty claims.

The AS400 control can cause major imbalances due to movements of the material being screened. It must therefore be installed on a suitable bench in the laboratory. The net weight of the AS400 control is 73 kg.

Emissions

Characteristic noise values :

Noise measurement according to DIN 45635-031-01-KL3
The characteristic noise values are determined primarily by the set amplitude width or sieve plate acceleration, the number of sieves deployed and the nature of the material to be screened.

Example :

Sound power level L_{WA} = 64 dB(A)
Workplace-related emission value L_{pAeq} = 58.4 dB(A)

Operating conditions :

Material to be screened = quartz sand, grain size <1mm, 5 sieves
speed = 150 rpm

Maximum loading

Max. quantity of material to be screened = 5 kg,
max. sieve stack mass = 15 kg.
It should be noted that, despite an integrated counterweight, work cannot be performed at 300 r.p.m. in every case. The large imbalance of, for example, 6x 400-type sieves, can cause the AS400 to move on the laboratory bench.
At a maximum sieve stack mass of >10 kg, we recommend that 200 r.p.m. should not be exceeded.

Protection systems

IP54 or IP20 around the sieve carrier passage

Equipment dimensions

Height: up to approx. 850 mm, Width: 540 mm, Depth : 507 mm
Weight: approx. 73 kg without sieve stack and without sieve clamping device

Base area required

540 mm x 507 mm; no safety clearances required.

The AS400 control can cause major imbalances due to movements of the material being screened. It must therefore be installed on a suitable bench in the laboratory. The net weight of the AS400 control is 73 kg.

Transport and assembly

Packaging

The packaging used is selected with the shipping mode in mind. It complies with the generally applicable packaging guidelines.

Please retain the packaging for the duration of the warranty since, in case of a complaint, returning in unsuitable packaging can jeopardize your warranty claims.

Transport

Whilst transporting the AS400 control to the final place of assembly after unpacking, ensure that the AS400 control is only held by the underside of the sheet metal housing.

The plastic front is not suitable for this purpose.

During transportation, do not subject the **AS400 control** to impacts, jolts or vibrations. The electronic and mechanical components could otherwise be damaged.

Temperature fluctuations

In case of wide temperature fluctuations (during shipment by air, for instance), protect the **AS400 control** from condensation. The electronic components could otherwise be damaged.

Intermediate storage

Ensure that the **AS400 control** is stored in a dry place, including intermediate storage.

Requirements for the assembly site

Ambient temperature :

5°C to 40°C

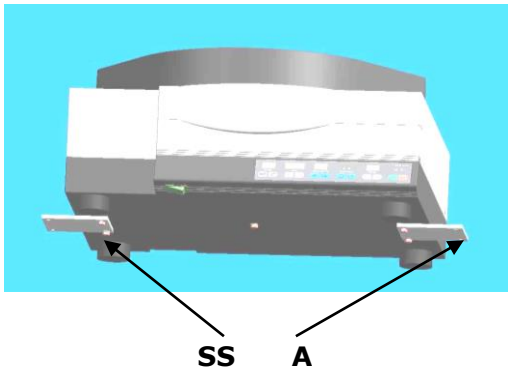
When the ambient temperature exceeds or falls below that specified, the electrical and mechanical components may be damaged, and performance data changed to an unknown extent.

Humidity :
Maximum relative humidity 80% at temperatures up to 31°C, linear decline down to 50% relative humidity at 40°C

At a higher humidity, the electrical and mechanical components may be damaged, and performance data changed to an unknown extent.

Altitude of assembly site :
Max. 2000 m above sea level

Assembly



Install the AS400 only on a stable laboratory bench to avoid unpleasant transmission of vibrations.

- Remove the hex bolts **SS** with an open-ended spanner
- Remove metal sheets **A** (transport fastening)

You can leave the two metal sheets mounted if you wish to fix the AS400 control to the laboratory bench.

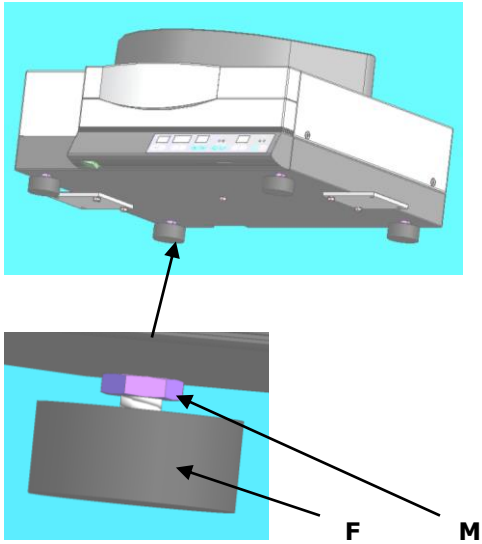
The metal sheets can be used for individual fastening.

The AS400 control can cause major imbalances due to movements of the material being screened. It must therefore be installed on a suitable bench in the laboratory.

We recommend that the speed set should not exceed >200 r.p.m. or that the AS400 be fixed to the laboratory bench with metal sheets **A** if the analytical sieves used are ≥400mm and have high sieve stacks.

The net weight of the AS400 control is 70 kg.

Alignment



In order to ensure that the AS400 sits securely, all 4 feet must contact the installation surface.
The height of the left rear foot can be adjusted for this purpose.

- Undo counter nut **M** – open-jawed spanner size 17
- Turn **F** to extend or retract it
- Retighten counter nut **M**

Electrical connection

- Refer to the data plate for the voltage and frequency at which the AS400 control is to be operated.
- Ensure that the values shown there correspond to those for the local power supply.
- Use the supplied power cord to connect the AS400 control to the power supply.
- When plugging the power cord into the power source, use an external fuse corresponding to the local regulations.

Failure to observe the values on the data plate can cause damage to the electrical and mechanical components.

Operation

Operating elements and their use

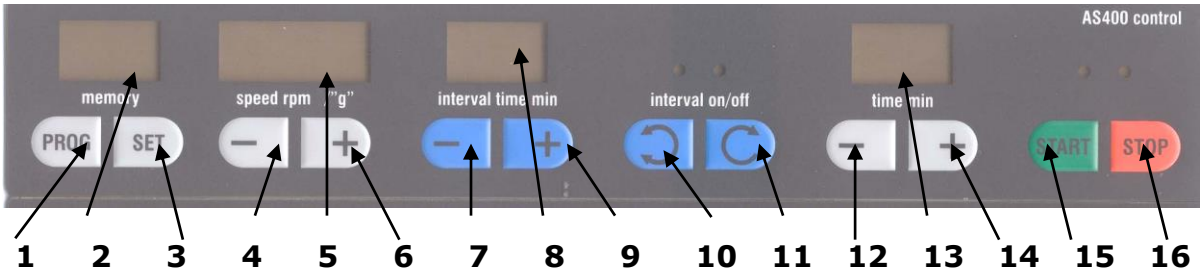
A Cold device plug combination

C Fuse drawer with glass fuses

B Serial connection

D Protective cap for the serial connection

E ON / OFF switch

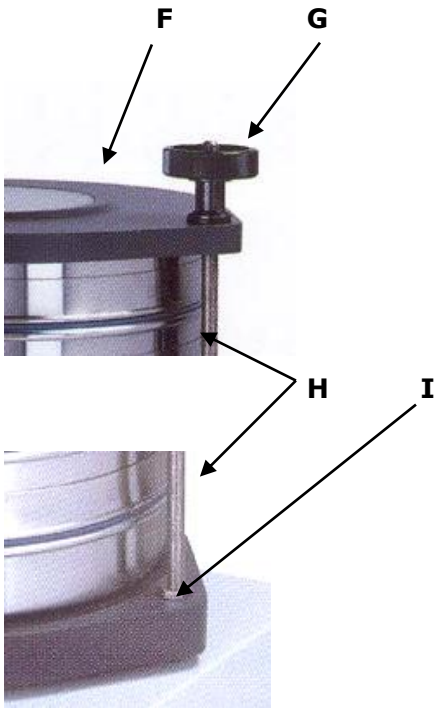


1	Key call-ups the preset sieve parameters. **P1-P9** and **on**
2	The selected program **P1-P9 / on** is displayed here. If the AS400 is controlled by the **EasySieve®** software program, **ES** appears in the display.
3	Key activates adjustment mode for the preselected program places **P1-P9**
4	Key reduces the speed, **50-300 r.p.m.** or sieve plate acceleration in **"g"**
5	Display shows the speed from **50 – 300 r.p.m.** or sieve plate acceleration in **"g"**
6	Key increases the speed, **50-300 r.p.m.** or sieve plate acceleration in **"g"**
7	Key reduces the interval time, **1 – 10 min.**
8	Display shows the preselected interval time **1 – 10 min**.
9	Key increases the interval time, **1 – 10 min**.
10	Key switches intermittent mode **ON**, the left-hand LED illuminates.
11	Key switches intermittent mode **OFF**, the right-hand LED illuminates,
12	Key increases the sieving period, **1 – 99 min**.
13	Display shows the preselected sieving period **1 – 99 min**.
14	Key reduces the sieving period, **1 – 99 min**.
15	Key **START**, starts the sieving process and the green LED illuminates
16	Key **STOP**, ends the sieving process and the red LED illuminates

Installing and clamping the analytical sieves

The **AS400 control** is suitable for use with analytical sieves with outer diameters of 100 / 150 / 200 / 203(8") / 305(12") / 315 and 400mm.
A variety of clamping units and covers are available for this purpose (see the accessories listing).

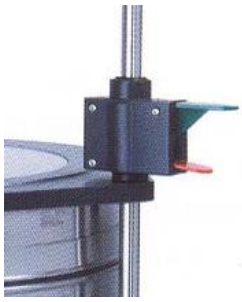
With the standard sieve clamping unit



- Screw the threaded rods **H** into the sieve disk and lock with the hex nuts **I**.
- Center the selected sieve stack on the sieve disk
- Lay the standard clamping cover **F** over the threaded rods on the top sieve.
- Tilt the clamping nuts **G** to slide them over the stand thread and down to the clamping cover and fasten securely by hand.

We recommend the use of talcum powder if the base pan sticks to the smooth surface of the sieve carrier when removing the sieve stack.

With the comfort sieve clamping unit



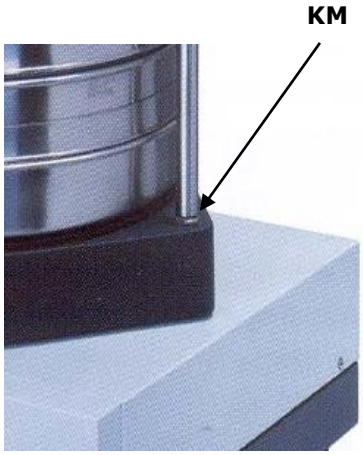
- Screw the mounting rods into the sieve disk
- Center the selected sieve stack on the sieve disk
- Slide the comfort clamping cover over the mounting rods, whereby pressing the red lever upwards allows the clamping cover to move. The green levers remain in their initial position.
- Slide the clamping cover down to the top sieve
- Press the green lever downward several times, whereby the red lever may not be moved.

To release, use the thumb to press only the red lever upward, the sieve cover can now be slid upward.
If, after the sieving process, the red lever proves difficult to move, press the green lever and the red lever simultaneously for a short time to release the tension.

We recommend the use of talcum powder if the base pan sticks to the smooth surface of the sieve carrier when removing the sieve stack.

When using the **comfort** sieve clamping unit, we recommend that the mounting rods are cleaning from time to time. In addition, the **comfort** sieve clamping unit produces unavoidable clamping notches on the mounting rods after a certain period of time, which can hinder secure clamping.

It is therefore necessary to examine the mounting rods at regular intervals for notches in the clamping area, and then turn them through 90°, if required. Use a 17mm open-ended spanner for this purpose.



Turning the mounting rods:

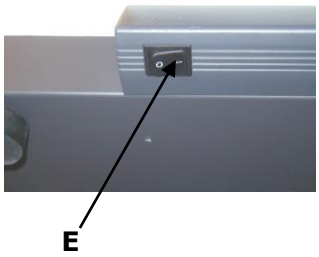
- Release lock nut **KM**.
- Turn the mounting rods through 90°.
- Retighten the lock nut securely.

If turning the mounting rods through 90° does not produce any notch free areas, we recommend that the mounting rods be replaced.

Operating the AS400 control

Switching on and off

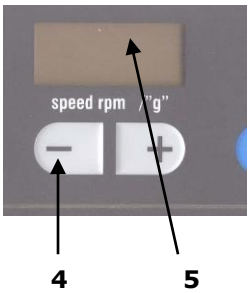
The main switch **E** is located at the left-front under the **AS400 control**.

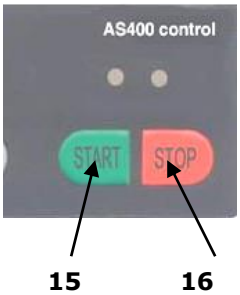


- Turn the main switch on
- **On** illuminates in the **memory** display
- **050** illuminates in the **speed/"g"** display
- The **interval off** LED illuminates
- Two bars illuminate in the **time** display

The **AS400 control** is now ready for operation, without intermittent mode, in continuous duty, at a speed of 50 r.p.m..

Automatic recognition of imbalance





The AS400 is equipped with a function which automatically recognises any imbalance.
Even running of the AS400 is monitored by imbalance sensors. In case of an acceleration >=0.3g, the sensors switch off the drive unit of the AS400.

Imbalance triggering characteristic

- Display **5** flashes
- The green LED above button **15** extinguishes
- The red LED above button **16** lights up

The AS400 can no longer be started.

Reset – restarting the AS400

- Display **5** flashes
- Press button **4** to reduce the speed until display **5** no longer flashes

The AS400 can now be started again by pressing button **15** once more.

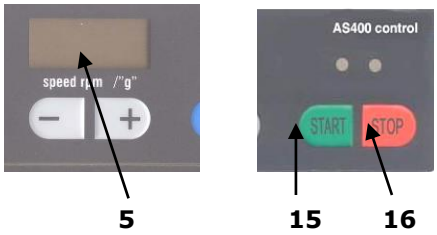
Necessary reductions :

201 – 300 reduce to **200**
151 – 200 reduce to **150**
101 – 150 reduce to **100**
76 – 100 reduce to **75**
51 – 75 reduce by **1 rpm**

- Speeds of <**050** are not possible

Start - Interrupt - Stop

When sieves with a diameter of ≥ 400mm are used, only operate the AS400 to a maximum speed of 200 r.p.m.. Otherwise the sieve stack mass could create such large imbalances that the device slews out of control in wild movements. Or fasten the AS400 as described in the chapter "Assembly".



Start:

Press START / key **15**

- The green LED above key **15** illuminates
- Display **5** shows the run-up of the machine to the preset value.

During the sieving time, the speed or the sieve plate acceleration are kept constant within the stipulated tolerances.

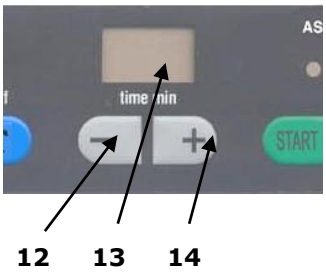
Interrupt (pause function) :

- Press STOP / key **16** once
- The red LED above key **16** illuminates
- The values remain visible
- Press START / key **15**
- The sieving process is resumed

Stop (standby function) :

- Press STOP / key **16** twice
- The red LED above key **16** illuminates
- The entire display goes out
- Activate the LED displays = press key **15** once
- New values can now be entered
- Press START / key **15** a 2nd time
- The function as with **Start** is executed.

Setting the time



When the **AS400 control** is turned on, the sieving time is still undetermined = 2 bars **- -** in display **13**.

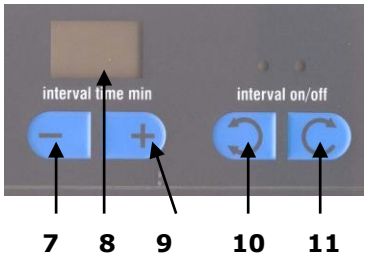
Switch on time 1 – 99 min. :

- Key **12** reduces the time down to 1 min.

if undershot, two bars appear = undetermined sieving time

- Key **13** increases the time up to 99 min.

if overshot, two bars appear = undetermined sieving time



Intermittent – continuous operation

When the **AS400 control** is switched on, intermittent operation is initially disabled. In intermittent mode, the machine runs until the final, controlled standstill, followed by a pause of 2 seconds stand-still, before the drive starts turning in the opposite direction.

Enabling intermittent mode of 1-10 min. :

- Press key **10**
- The LED above key **10** illuminates
- Display **8** shows **2 min**.
- Pressing key **9** raises the interval period by up to 10 min.

If 10 min. is overshot, start again with 1 min.

- Key **7** reduces the interval period down to 1 min.

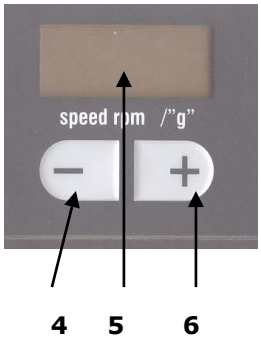
If 1 min. is undershot, start again with 10 min.

Disabling intermittent mode :

- Press key **11**
- The LED above key **11** illuminates
- Display **8** is extinguished

Setting the speed in "r.p.m." from 050-300

Never start at the maximum speed of 300 r.p.m., but rather increase the speed slowly. When using sieves with diameters from 400mm and the max. sieve stack, do not set the speed higher than 200 r.p.m.. Otherwise the masses set in motion too quickly can displace, causing the AS400 to tip over. Or fasten the AS400 as described in the chapter "Assembly".



The speed of the sieve disk is shown as a measured value in display **5** marked with **speed/"g"**.
The speed is preset to **050 r.p.m.** when the **AS400 control** is turned on.

Increase :

- Key **6** increases the speed up to 300 r.p.m. in discrete steps of 1 r.p.m.
- Hold down key **6**, after 5 sec. rapid adjustment of 10 r.p.m. is possible

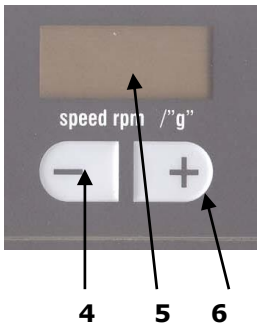
if 300 r.p.m. is exceeded 050 r.p.m. appears again

Reduce :

- Key **4** reduces the speed down to 050 r.p.m. in discrete steps of 1 r.p.m.
- Hold down key **4**, after 5 sec. rapid adjustment of 10 r.p.m. is possible

if 050r.p.m. is undershot, 300 r.p.m. appears again

Setting the sieve plate acceleration in "g" from 1 – approx. 1.51g



When the **AS400 control** is switched on, the speed is preset to **050 r.p.m.** and can be switched to sieve plate acceleration mode by simultaneously pressing and holding down
keys 4+6 for **2s**.

The display **5** marked as **speed/"g"** will show a multiple of the Earth's gravity **"g"** as the measured value. (1g = 9.81m/s^2)

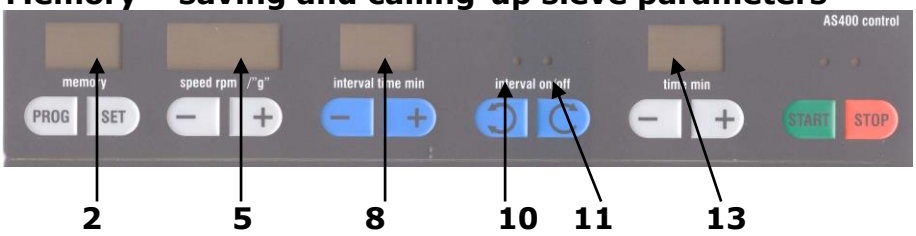
Reduce :

- Key **4** reduces the sieve plate acceleration down to 1g in discrete steps
- Hold down key **4**, after 5 sec. the rapid adjustment function will commence

Increase :

- Key **6** increase the sieve plate acceleration up to approx. 1.51g in discrete steps
- Hold down key **6**, after 5 sec. the rapid adjustment function will commence

Memory – saving and calling-up sieve parameters



The memory function, thus saving or calling-up preselected sieve parameters, is only available in standby mode. You are able to change and overwrite program places **P1** to **P9** at any time.

After the **AS400 control** has been turned on, display **2** shows **"on"**.
The next program place **P1** to **P9** is reached by pressing the **PROG** key. **on** reappears in the display after program place **P9**.

- **on** = the sieve parameters **5/8/10-11** and **13** can be freely set here.

or

- **P1** to **P9** = sieve parameters can be stored and called-up here
- **Start** = sieving process is started with the sieve parameters stored in program place **P1** to **P9**.

Occupying storage space

- Press the **PROG** key until the required storage place **P1-P9** has been reached.
- Press the **SET** key, all displays flash
- Set sieve parameter **5/8/10-11/13**

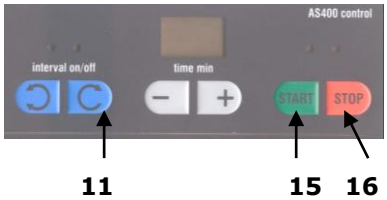
Programming mode can be aborted by repressing the **PROG** key, values are not saved

- Press the **SET** key, the values are saved

The displays stop flashing, the adjustment lock is activated, the sieve parameters are stored.

If the **AS400 control** is actuated with a PC and the **"EasySieve®"** sieve software, display **2** shows **"ES"**. No manual changes to the sieve parameters are possible in this mode because the values are taken from the software program.

Signal tone for the end of sieving



If the sieving process runs to the end without interruption, the end is then signalled by a tone sounding 5 times.

Disabling the signal tone :

- Press keys **11** and **16** simultaneously

confirmed by a signal.

Enabling the signal tone :

- Press keys **11** and **15** simultaneously

confirmed by a signal.

Retsch analytical sieves

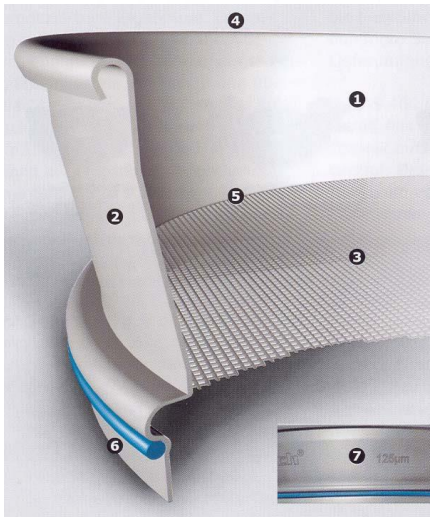
Analytical sieves with 200 and 203mm Ø

The new RETSCH sieves are initially available in the three design models intended for sophisticated laboratory analysis:

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

They are, of course, compatible with other standardised sieves.

The new sieves are compatible with the rest RETSCH's range and can also be combined with articles from most other manufacturers without problem.



Other significant benefits:
Each sieve leaves our factory with a works' certificate or – on request – with a special acceptance test certificate as per **DIN ISO 3310-1**.

Calibration certificates guarantee an even higher statistical security and show how we strive for perfection.

1. Sieve frames "from one mould" and seamless fabric transition prevents cross-contamination (no solder or residues etc.)
2. Highly resistant to corrosion and easy to clean because of the high alloyed stainless steel used (316L / 1.4435)
3. 15% lighter than traditional sieves whilst simultaneously offering a larger free sieving area
4. Exemplary product quality due to fully automated production and constant optical inspection
5. Innovative resistance welding technology guarantees permanently tight sieve fabric
6. Maximum stability and optimum sealing of the sieve stack
7. Unique sieve designation and traceability due to individual laser engraving

Analytical sieves with 100/150/305 and 400mm Ø

The accuracy and the reliability of the analysis result are decisively dependent not only on the sieving machine delivering reproducible results, but also on the quality of the analytical sieves.

Retsch analytical sieves are high quality measuring instruments for which only the fabrics and screens which comply with the relevant standards are used.

Analytical sieves with 100 / 150 / 305 (12") / 400mmØ

- Sieve plates, frame and labelling executed in compliance with standards
- Tested 5-times with quality certification to DIN ISO, ASTM, BS
- On request, with an individual test certificate for control of test and measuring equipment as per ISO 9000 ff
- Sieve plates made of non-rusting wire mesh fabric, 20µm to 125mm
- Also available in round or square perforated sheet

Sieve accessories

There are base pans, base pans with discharge, intermediate pans, intermediate rings and sieve covers available which are compatible with the different analytical sieves. Sieving aids and sieve stands complete the range of accessories.

Please refer to our price list for details on how to order the analytical sieves and the other available accessories.

Tested quality – black on white

RETSCH certificates

Before being delivered, each sieve is optically gauged and provided with a **works' certificate**.

On request, you receive a protocol with the **acceptance test certificate** which documents the measurement results in tabular form and in graphics, or a **calibration certificate** with more detailed statistics.

Calibration service

As a special service we offer to calibrate your analytical sieve. In doing so, we record all the relevant information for the sieve according to standardised gauging methods, and confirm these in the requested **certificate**.

Working instructions

Sieving aids

When dealing with material that is difficult to separate, we recommend the additional use of sieving aids in the individual sieve fractions. Depending on the width of the sieve meshing and the preselected vibration intensity, pearls made of agate, rubber, porcelain or nylon bristles and Vulkollan cubes may be used. Also refer to the table below.

Ensure that the fabric of the sieve is not overstretched by overloading with sieving aids as this would have a detrimental effect on the precision of your analytical sieve.

Refer to the paragraph on sieving material quantities for the recommended material volume.

Overview table

Sieving aids	Quantity per sieve or charge	Supplier	Area of use	Caution !!
Vulkollan cubes	5 pcs., 12x12	RETSCH, Haan	Planetary sieving machines	
Bristles	3 pcs.	RETSCH, Haan		
Plastic rings	3 pcs., various Ø			
Brushes			Manual sieving	
Highly dispersed silicic acids (aerosil)	0.5 to 2%	Degussa, Ffm	Materials to be screened are fine, sticky, fatty and electrostatically charged	Check applicability and compatibility before adding!
- " - aluminium oxide	0.5 to 1%	Degussa, Ffm		
- " - talcum			Latex and rubber powder	
Dry			Materials to be screened are very wet or damp	
Guide dry, warm air through the sieve set			Hygroscopic materials to be screened	
Intermittent sieving		RETSCH, Haan	Materials to be screened are fine, stick easily, or only fall through the mesh with difficulty	Intermittent switching (changes direction of rotation) is built into the AS400 flat-bed sieving machine and can be switched on, if required.

Sieving material quantities

The sieve stack required for sieve analyses is composed of analytical sieves arranged one above the other, with progressively larger holes towards the top, plus the base pan.

To ensure fast separation with exact results, the quantity of the material to be screened should be adapted to the sieve diameter and the nominal size of the openings.
The relevant standards on sieve analysis (e.g. DIN 22019 / part 1) state guideline values in which the following maximum charge quantities are recommended:

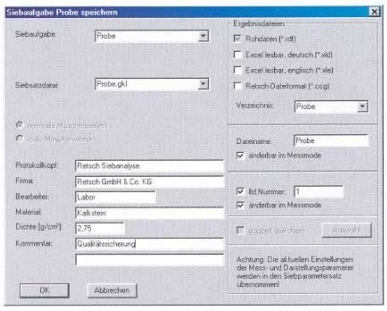
Nominal widths of the screen openings	Material quantities in dm^3 at 400 mm sieve diameter
18	4,000
10	2,400
8	2,000
6,3	1,600
5	1,400
3,15	1,200
1	0,600
0,8	0,500
0,5	0,400
0,315	0,320

EasySieve®

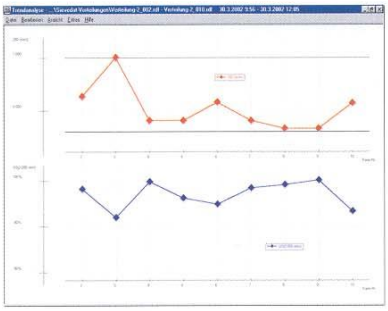
Control, evaluation, documentation.

EasySieve®, the software package from RETSCH for grain size analysis, is superior to manual evaluation in many respects. This is because the software is able to perform the required measuring and weighing processes automatically – from determining the weights of the sieves to evaluating the data. And in a much more simple and comfortable manner – thus making life easier.

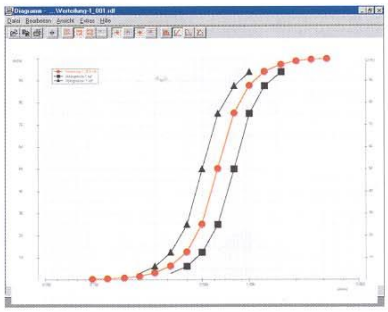
The software is structured in a self-explanatory way and follows the logical chain of events involved in analysing grain sizes. This makes it possible to use it with confidence in a fairly short time. The multiplicity of evaluation options additionally provides the utmost flexibility in adapting to demanding, individual applications.



Parameter input specification limits

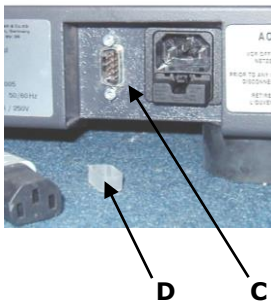


Trend analysis of product processes



Comparison with

Serial PC connection



The **AS400 control** can be connected to the serial interface of a personal computer for the purpose and transmitting and receiving data. This is done with the normal 9 pole RS232 cable supplied as standard with the **AS400 control**. This makes it possible to communicate with the **EasySieve®** evaluation software available as an accessory.

- Remove cap **D**, if the port is not used, this protects it from dust and moisture
- Connect one end of the serial cable to **C** and the other to the PC

General

Cleaning

For thorough, gentle and time-saving cleaning of your analytical sieves, we recommend the Retsch ultrasonic baths.
Ask for our special publication "Care and cleaning of analytical sieves" free-of-charge.

Do not clean the AS400 control with running water.
Danger to life from electrical shock

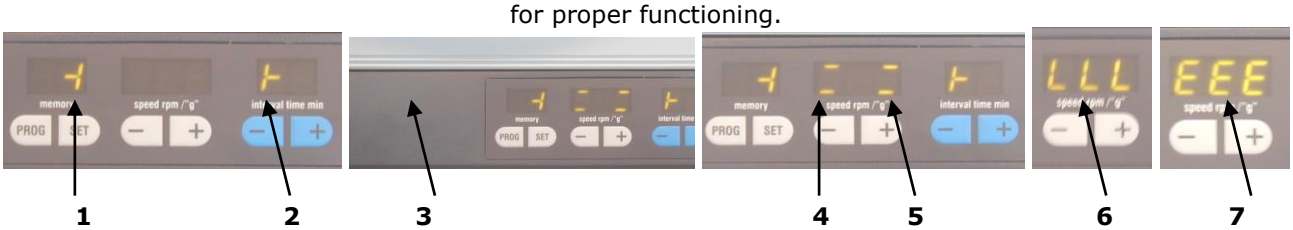
Only use a rag moistened with water.
Never use solvents.

Maintenance

If you use your AS400 control for quality control purposes, it should then be calibrated regularly in accordance with DIN EN ISO 9000 ff. In this context, please contact or your dealer or speak directly to Retsch GmbH.
Otherwise the **AS400 control** is virtually maintenance-free.

Inspections

The imbalance sensors should be checked at least 1x per month for proper functioning.



- Switch the AS400 on from the main switch.
- At the same time press the **SET** and **START** buttons and hold down for 2 seconds

Symbols **1** and **2** should appear.

- Gently tap the trim **3** on the left next to the keyboard foil until both sensors have triggered, the display shows

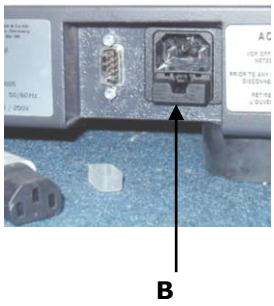
- Bar symbol **4** for the 1st sensor
- Bar symbol **5** for the 2nd sensor

The successful check is stored and concluded by simultaneously pressing the **SET** and **STOP** buttons.

If this is not stored or one of the sensors has failed, the symbols **6** or **7** appear on the display.

- Symbol **6** means repeat the sensor test
- Symbol **7** means sensor defect = replace the control.

Replacing fuses



Two glass fuses SPT 6.3A (5x20mm) are required.

- Unplug the power at the socket
- Pull out fuse holder **B**
- Exchange the fuse
- Re-insert fuse holder **B**

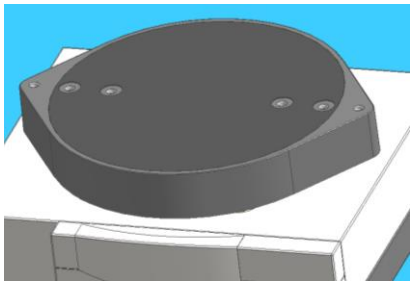
Safety regulations (table) for the AS400 control **from the chapters**

Process	Action	Hazards
Safety	Non-compliance with safety instructions leads to material damage and injuries to people	Any and all claims to damages are excluded
Packaging	Retain the packaging until the warranty time has elapsed	Your warranty claim can be threatened in case of complaint if a part is returned in inadequate packaging
Transport	Do not subject the AS400 control to impacts, jolts or vibrations during transport	Electronic and mechanical components can be damaged
Temperature fluctuations	In case of temperature fluctuations, protect the AS 400 control from condensation	Electronic components can be damaged
Assembly	Only install the AS400 control on a suitable laboratory bench	It can cause major imbalances due of movement of the material being screened.
Scope of supply	If the shipment is incomplete and / or it has been damaged during transport, you must notify the forwarder and Retsch GmbH immediately (within 24 hours).	Under certain circumstances later complaints may not be considered.
Ambient temperature	Below 5°C Above 40°C	Electronic and mechanical components can be damaged. Performance data can be changed to an unknown extent.
Humidity	Above 80% at temperatures of up to 31°C	Electronic and mechanical components can be damaged. Performance data can be changed to an unknown extent.
Electrical connection	power system does not agree with the values stated on the data plate	Electronic components can be damaged
Cleaning	Unplug the power at the socket each time before cleaning. Never clean with running water	**Danger to life from electric shocks** **Danger to life from electric shocks**

Changes

Technical changes are reserved.

Parts subject to wear and tear



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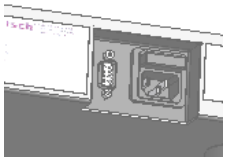

Art No. 05.699.0075

Art.Nr. 03.070.0029

Art.Nr. 32.742.0010

Art.Nr. 32.248.0002

These operating instructions do not contain any repair instructions. In the interests of your own safety, repairs should only performed by Retsch GmbH or an authorised representative (service technician).

EU Declaration of Conformity

Translation

VIBRATORY SIEVE SHAKER

AS 400 control | 30.022.xxxx

EU DECLARATION OF CONFORMITY

Herewith we declare, represented by the signatory, that the above mentioned device complies with the following directives and harmonized standards:

Machinery Directive 2006/42/EC

Applied standards, in particular:

DIN EN ISO 12100	Safety of machinery
DIN EN 60204	Safety of machinery - Electrical equipment of machines

EMC Directive 2014/30/EU

Applied standards, in particular:

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

Low Voltage Directive 2014/35/EU

Applied standards, in particular:

DIN EN 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use

Authorized person for the compilation of technical documents:

Dr. Loredana Di Labio (technical documentation)

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.

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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