

LAARMANN[®]

Innovators in Solids



LMSM 75-200 SIEVE SHAKER USER MANUAL

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Contents	Page
1 Safety information	3
1.1 Warning symbols	3
1.2 Safety instructions	4
2 General description	5
2.1 The sieving quantity	5-6
3 Technical features	
2.1 construction	7
2.2 technical data	7
4 Installation	
4.1 Unpacking	7
4.2 Selecting the right place	7
4.3 Mounting of threaded rods	8
4.4 Sieves preparation	8
4.5 Connecting the power cord	9
4.6 Environment conditions	9
5 Instructions for use	
5.1 Overall view	10
5.2 Control panel description	11
5.3 Operation of the sieving machine	11
5.4 Selection of sieving parameter	12
5.5 Sieving (start and stop)	12
6 Working instructions	
6.1 Clamping mechanism	13
5.2 General	13
7 Maintenance	
7.1 Wear	14
7.2 Cleaning	14
8 CE certificate	15

1 Safety information

Before using the machine, make sure to read and understand this manual thoroughly. Keep the manual close to the machine, easily accessible to all the users. Improper operation can cause injury to persons or damage to the equipment.

1.1 Warning symbols

The following are the warning symbols that are used in this manual.



This symbol indicates a potential risk and alerts you to proceed with caution.



This symbol indicates the presence of high voltage and warns the user to proceed with caution.



This symbol indicates risks associated with hot surfaces.

1.2 Safety instructions



Safety instructions

Claims for damages in any form whatsoever, for injury to persons or damage to the machine, caused through non-observance of the following safety instructions, are excluded.



Use according to the intended purpose

Do not make any alterations to the machine and use only approved spare parts and accessories. Otherwise the Declaration of Conformity will lose its validity and this will also lead to the loss of any guarantee claims.



Packing material

Please keep the packing material for the duration of the guarantee period. In case of a complaint and return of the machine in unsuitable packing material, your guarantee claim will be lost.



Temperature variations

If the LMSM-75/200 is subjected to high temperature variations, protect it against condensed water. Otherwise the electronic components may be damaged.



Ambient temperature

If the temperature drops below 5°C or exceeds 40°C, electronic and mechanical components can be damaged. Performance can be changed to an unknown extent.



Atmospheric humidity

If the humidity exceeds 85%, electronic and mechanical components can be damaged. Performance can be changed to an unknown extent.



Electrical connection

If the values for the mains power supply on the name plate are not observed, the electrical and mechanical components may be damaged.

**Inserting Sieve stack**

Ensure that the sieve stack are placed correctly on the platform of the sieving machine and accordingly fixed. Otherwise they can be damaged, when starting the machine.

**Removing sieve stack and handling of each individual test sieve**

When removing and handling sieve stack or individual test sieves, always wear protective gloves.

**Materials**

Observe the relevant regulations and directives for handling chemicals and hazardous materials.

**Cleaning**

Do not clean the LMSM-75/200 under running water. Danger to life through electric shock. Use only a soft cloth moistened with water.

**Repair**

For your own safety, repairs must be carried out only by authorized service technicians.

2 General description

The LMSM-75/200 is suitable for sieving soft, fibrous, hard and brittle materials in the dry and wet state and is designed for analytical test sieves from 75 to 203 mm (8"). All sieving parameters are digitally pre-selected and can be stored and recalled. The vibration is controlled by a microprocessor.

Depending on the characteristic of the sample material to be sieved a sieving process can be done down to 20 µm. The optimum filling level for each test sieve depends on the sieve frame diameter (75/100/150/200/203) and in relation of the mesh size of the test sieve.

2.1 The sieving quantity

The total sieving qty. to be sieved must be always in line with the diameter of the test sieve and the nominal sieve openings in order to achieve a reliable and representative sieving result. According to DIN 22019 / 1 the following maximum quantities of material for sieving are recommended:

Nominal Sieve openings in mm	Sieving product qty. in dm ³ valid for sieves with 200mm diameter
8,00 mm	0,500
3,15 mm	0,300
1,00 mm	0,140
0,50 mm	0,100
0,20 mm	0,060
0,63 mm	0,035
0,020 mm	0,020

Example: DIN 22019 / 1 (valid for ISO 3310/1 wire sieves and ISO 3310/2 perforated plate sieves)





The total amount of the sample to be sieved should not be more than 10% of the recommended total sieve volume. See 2.1.



The Material of the test sieves, collector bottom and sieve lid must be made from the same material. Stainless steel or plastic. In order to create a stack test sieves, collector bottom and sieve lid must have the same diameter.



3 Technical features

3.1 Construction

The housing of LMSM-75/200 is made of steel plate varnished with high resistant polyurethane lacquer.

3.1 Technical data

Power supply	230V ± 10% - 50/60Hz
Rated power	400W
Fuses	2 x T2A 250V
Vibrational frequency regulation	Digital, from 3 to 30 Hz (180 - 1800 min ⁻¹), in 0.1 Hz steps
Timer	00 Sec - 99 Min., Display of sieving time in minutes
Max. Sieve diameter	200 mm und 8" (203mm)
Min. Sieve diameter	75mm
Dimensions W x D x H	300 x 240 x 240 mm (670 mm with rods)
Weight	30 kg
Noise emission (without milling balls)	70 dB(A)
Ambient temperature	5°C - 40°C
Atmospheric humidity	< 85% RH

4 Installation

4.1 Unpacking

Before the installation, carefully examine the delivery for possible damage or missing parts. Open the box and take the machine out of the box. Check that the machine has not been visibly damaged during the transport.

Please keep the packing material for the duration of the guarantee period. In case of a complaint and return of the machine in unsuitable packing material, your guarantee claim will be lost.

Check that the mains cord is compatible with the local standard.

If any kind of damage occurred during transport, immediately make a complaint to the carrier. Any incorrect delivery or missing parts should be reported to the distributor.

4.1 Selecting the right place

When selecting the right place for the machine, please consider the following:

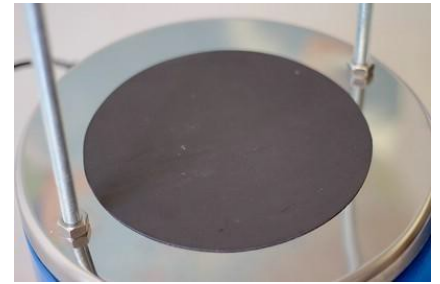
- Put the device on smooth, horizontal and stable place.
- Leave enough space beyond the device for normal air circulation, min. 10 cm.
- Leave enough space around the device, that you will easy control and maintain it.
- Don't use the device in surroundings, where there are fast temperature and humidity changes. Also avoid places exposed to direct sunlight and places nearby heating devices.
- Avoid places, where the possibility of shocks and vibrations exists.

Note: The machine should not be placed so, that it is difficult to pull out the cord plug from mains power supply.

4.3 Mounting of threaded rods

For mounting the threaded rods please proceed as following:

1. Screw threaded rods into the sieve plate
2. Fix threaded rods fix with hexagon nuts



4.4 Sieves preparation

Depending on the version the sieving machine can be equipped with the following sieve diameter:

Ø/75/100/150/200/ and 8"

The Sieves must be placed as following:

1. The collector bottom must be placed on the sieve plate.
2. All test sieves are stacked on top of the sieve bottom. Please take care that the test sieve with the smallest opening is located at the collector bottom and the larger sizes are stacked.

Finally the top sieve is secured with the steel cover and secured with the 2 clamping elements.



- 1.12mm
- 500µm
- 200µm
- 63µm



Picture Sieve stack

For wet sieving the sieving machine can be equipped with a collector bottom with outlet and with a lid with spray nozzle.



Collector bottom for wet sieving

4.5 Connecting the power cord

The correct voltage and frequency for the LMSM-75/200 are given on the name plate. Ensure that these values correspond to the available power supply system.

Fit one end of the power cord, included in the delivery, into the mains socket on the machine. Connect the other end of the cord to a grounded wall socket.

To avoid interference from noise, surges and spikes, a dedicated line is preferred. If no such line is available, avoid lines to which powerful electric motors, refrigerators and similar devices are connected.

The power can be turned on and off by the POWER switch, located on the right side of the housing of the machine. Light in the switch indicates, when the power is on.

4.6 Environment conditions

The machine has been built for operating in laboratory environment. Therefore the environmental conditions should be the following:

- Temperature from 5°C to 40°C
- Humidity up to 85% RH, non-condensing

Ambient temperature

If the temperature drops below 5°C or exceeds 40°C, electronic and mechanical components can be damaged. Performance can be changed to an unknown extent.



Atmospheric humidity

If the humidity exceeds 85%, electronic and mechanical components can be damaged. Performance can be changed to an unknown extent.



5 Instructions for use

5.1 Overall view



Position	Description	Function
1	Control panel display	Time and vibrational frequency setting, starting / stopping the machine.
2	Steel sieve cover	For closing of the sieve stack
3	Sieve clamp	For securing of the sieve stack
4	Bakelite Knobs	For securing of the sieve stack
5	Threaded rods	For positioning heights of the sieve stack
6	Rubber Feet	For the optimum transfer of the vibration
7	Mains socket	Connection for power cord to the machine.
8	Machine sticker	Contains all information about the machine

5.2 Control panel description



- Press button **Select** to start the programming of parameters (Power, Cycle, Timer)
- Press button **Up** for increasing of each individual value (Power, Cycle, Timer)
- Press button **Down** for decreasing of each individual value (Power, Cycle, Timer)
- Press button **Run** to start or to stop the sieving operation.-Press button **Power** for changing in ON or in STANDBY mode.

5.3 Operation of the sieving machine

→ Press button **Power** for selecting ON FUNCTION mode.

→ Press button **Power again** for selecting „STAND BY FUNCTION“ The sieving machine shows automatically all last programmed values: (**Power, Cycle, Timer**)

5.4 Selection of sieving parameters



- Press button **Select** to start the programming of parameters (Power, Cycle, Timer)
- Display "**POWER**" start to flash and by pressing the buttons "**up**" or "**down**" the vibration power can be increased or decreased between (1-9)
- "**up**" is for increasing the vibration and "**down**" is for decreasing the vibration
- The vibration height (2xAmplitude) can be selected between 1-9.



- Press button **Select** again to start the programming of the cycle.
- Display "**CYCLE**" start to flash and by pressing the buttons "**up**" or "**down**" the cycle time can be increased or decreased between (1-9 seconds)
- "**up**" is for increasing the cycle and "**down**" is for decreasing the vibration
- The cycle can be adjusted between 1-9 seconds.



- Press button **Select** again to start the programming of the timer.
- Display "**TIMER**" start to flash and by pressing the buttons "**up**" or "**down**" the time can be increased or decreased.
- "**up**" is for increasing the time and "**down**" is for decreasing the time
- The sieving time is either continuously (00) or can be selected between 1-99 minutes
- Press button **Select** again. All Parameter are stored. Without final pressing off he button Select the software does automatically store all parameters after 10 Seconds.
- (Power, Cycle, Timer)

5.5 Sieving (start and stop)

- Press button **Run** to start the sieving operation. All selected parameters are recalled.
 - Press button "**RUN**" again. The sieving process is stopped and all pre- selected sieving parameters are shown in the display.
- #### 5.6. PAUSE AND PARAMETERS MODIFICATION DURING THE SIEVING PROCESS
- Press button **Select**. For Modification of the sieving parameters during the sieving analysis (see 4.3) or to interrupt the sieving analysis.
 - Press button "**RUN**" to stop the sieving machine. Press button "**RUN**" again to start the sieving machine.

6 Working instructions

6.1 Clamping mechanism

The sieving machine is equipped with a simple but effective Clamping mechanism. Consisting of 2 threaded rods, 2 clamping elements and 1 sieve clamp.

The sieve clamp should be placed on the upper sieve. (Picture 1) The by rotating the cover clockwise the cover is in a proper position. (Picture 2). By rotating the 2 clamping nuts clockwise the cover and the sieve stack is fixed and secured (Picture 3).



6.2 General

The LMSM-75/200 is a high performance product. Because of the large selection of accessories, the LMSM-75/200 is a machine with many different application possibilities in laboratories, industry and research. It is used mainly in the chemical and pharmaceutical sectors and in mineralogical and biological applications etc.

7 Maintenance

The LMSM-75/200 is maintenance free. When used properly, no maintenance and setting is necessary. Do not make any alterations to the machine and use only approved spare parts and accessories.

7.1 Wear

The rubber plate, threaded rods and clamping elements can become worn out, depending on the frequency of the sieving operation. The rubber plate, threaded rods and clamping elements should be regularly checked for wear and replaced, if necessary.



7.2 Cleaning

The rubber plate, threaded rods and clamping elements can become worn out, depending on the frequency of the sieving operation. The rubber plate, threaded rods and clamping elements should be regularly checked for wear and replaced, if necessary.



POWER cable: Please always remove prior to do a cleaning.



Sieving machine
Type LMSM-75/200

Product	Sieving machine
Model	LMSM-75/200
Power supply	200V/50Hz and other voltages

This declaration of conformity confirms compliance of the above mentioned equipment to the relevant sections of the following European Directives:

2004/108/EEG	Electromagnetic Compatibility Directive (EMC)
2006/95/EEG	Laagspannings richtlijn
2006/42/EEG	Machine richtlijn
EN 60204-1 Part 1	Safety of Machinery – Electrical Equipment of Machines

WARNING:

This equipment is required to be operated strictly in accordance with the instructions given in the operating manual supplied with the product. All supply voltages and frequencies as stated on the rating plate must be used. External power cables and connectors must be supplied by LAARMANN. Any additional equipment used must be of a type approved by LAARMANN.

This conformity certificate will lose its validity in case of:

- Usage of unlicensed spares
- Usage of unlicensed accessories
- Any self made modifications of the