LAARMANN®

*Innovators in Solids*


# LMDM200 DISC MILL
# USER MANUAL

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LMDM200 DISC MILL MANUAL

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# 1 Safety instructions

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 Safety symbols

Failure to comply with the sections of text marked in this way result in danger. Injuries are possible. Damage to the mill and accessories is possible, special care is required.

This symbol marks instructions for correct execution of certain jobs of work, e.g. that the work may only be carried out by an electrician.

This symbol indicates risks associated with hot surfaces.

## 1.2 Safety instuctions

**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

**Transport**

Do not knock, shake or throw the LMDM during transport. Otherwise the electronic and mechanical components may be damaged.

**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 LMDM 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 grinding media**

Ensure that the grinding media are inserted correctly in the machine. Otherwise they can be damaged, when starting the machine

**Removing and opening hot grinding media**

When removing and opening hot grinding media, always wear protective gloves. There is a danger of burning the hands

**Materials**

Observe the relevant regulations and directives for handling chemicals and hazardous materials. Milling of materials, which give a risk of fire or explosion,is prohibited.

**Cleaning**

Do not clean the LMDM under running water. Danger to life through electric shock.

Use only a soft cloth moistened with water. Cleaning agents and solvents should not be used, not for cleaning the milling tools either.

**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.

## 2 General description

The LMDM 200 is a laboratory machine, which is suitable for pulverizing and homogenizing hard and brittle materials in the dry and wet state. It is used for fast pulverizing.

The closed milling pulverizing system guarantees complete recovery of the samples. Final finenesses of down to 75 µm can be achieved, depending on the milling time and the specific properties of the sample material. The optimum filling of a LMDG200 is around 1-1.3 Liters of sample material.

The sample quantity should not be less than 50 grams.

The static and the moving disc must always be made of identical

## 3 Technical features

### 3.1 Instructions

The housing of LMDM 200 is made of steel plate with powder coated RAL5005 paint.

**Protective equipment**

The milling chamber of the LMDM 200 is safely closed by an electrical safety switch.

Starting of the machine is possible only when:

- power is connected
- the emergency switch is not activated
- The door is closed

### 3.2 Technical data

| | |
|---|---|
| Dimensions W x D x H | 865 x 420 x 385 mm |
| Weight | 135 kg |
| Power supply | 400V ± 10% - 50Hz |
| Rated power | 1.5kW |
| ON/Off | By ON/Off Switch |
| Standard collector volume | 3000 ml |
| Gap adjustment | By flexible setting |
| Throughput | Up to 150kg/h |
| Speed setting | 686rpm (828 rpm 60Hz) adjustable |
| Noise emission (without milling bowl) | 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 crate 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.

## 4.2 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. 200 mm at the back of the machine.
- 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.

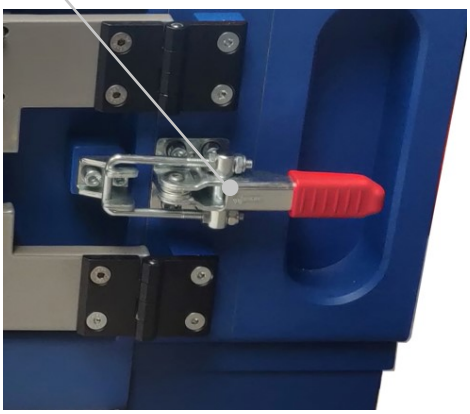
**Note: The machine should not be placed so, that it is difficult to pull out the cord plug from mains power supply.**

## 4.3 Connecting the power cord

The correct voltage and frequency for the LMDG 200 are given on the name plate. Ensure that these values correspond to the available power supply system. Connect the machine with the plug supplied to a grounded wall socket. To avoid interference from noise, surges and spikes, a dedicated line is preferred.

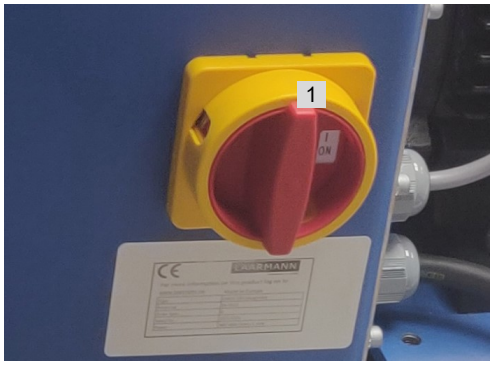
If no such line is available, avoid lines to which powerful electric motors, refrigerators and similar devices are connected. The power can be turned on and off by the emergency switch, located on the front cover at the right side of the machine. Light in the switch indicates, when the power is on.

## 5 Overall view

| Element | Description | Function |
|---|---|---|
| A | Feed | The sample can be placed here |
| B | Screen with rpm | View the current rpm of the disc mill on this display |
| C | Speed potentiometer | Speed can be increased and decreased |
| D | Emergency switch | Can be pressed in case of emergency must be turned to release |
| E | Start and Stop buttons | Press to start the machine or stop the machine |
| F | Power switch | Can be turned to close the power supply |
| G | Rotating disc | This is the main disc that will be rotating |
| H | Fixed disc | The second disc that stays in a fixed position |
| I | Closing handle | Handle to close the machine at both sides |
| J | Cleaning access | Can be opened to access the top part for cleaning and removing sample |

## 6 Operating the Disc Mill




- Before operation make sure the Disc Mill is placed on a fixed platform for safety
- Make sure the power supply is connected and the power switch(1) is turned on
- Press the start button(2) the run the disc mill
- Press the stop button(3) to stop the disc mill
- Use the knob(4) to increase the rpm. The maximum is 828pm (60hz) the speed is visible on the display(4)
- Insert the sample into the feeding hopper
- Use the cleaning opening(5) to access the discs from above
- Stop the milling operation by pressing the Emgency switch(6) in case of emergency


⚠ When operating the disc mill, always wear protective gloves.

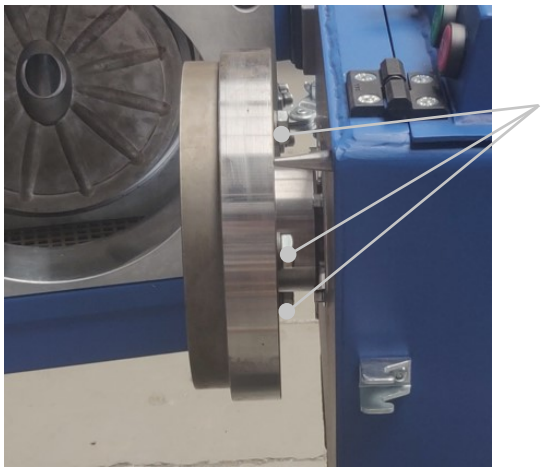
⚠ The milling process can only be started, when the front door is closed.

⚠ Do not open thefront door during the milling process, also not by force.

⚠ Do not mill inflammable or explosive samples! For these kind of samples, please contact LAARMANN for special features.

⚠ Please note that the properties and therefore the dangerous nature of your sample, can change during the milling process.

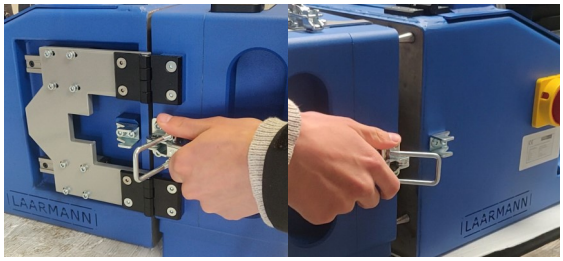
### 6.1 Replacing the discs

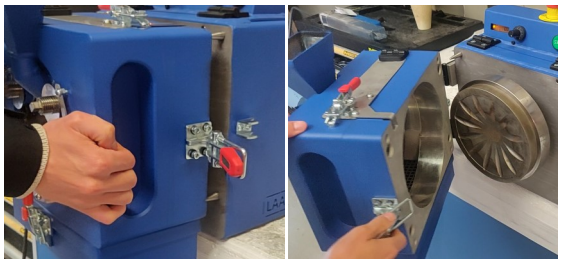


- Place the disc mill on on a platform before removing the discs
- Remove the power supply from the machine
- Open the cover
- remove the bolts on each side

⚠ When removing discs, always wear protective gloves and working shoes

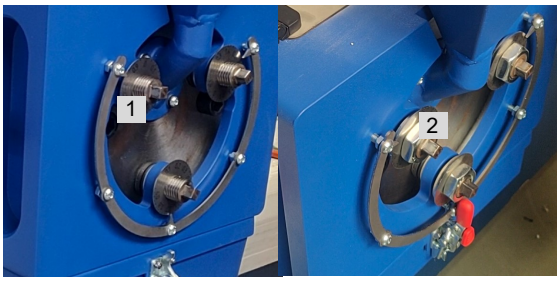
## 6.2 Opening the door



- To open the disk grinder for accessing the discs open the first and second safety switch
- Use both handle grips to pull the front backwards
- The door can now be opened to the left side

## 6.3 point zero adjustment and gap settings




- Loosen the 3 screws (1) to get the grinding disc into position
- When the grinding Discs are into postion tighten the 3 screws(1)
- Loose the 3 nuts (2) and adjust the scale to the point zero
- Tighten the 3 nuts (2) when it’s finished

- Now that all the points are equal the gap settings can be adjusted
- Make sure that the gap settings are adjusted the same range as the other 3 points
- Use the 3 nuts (1) to get the required gap setting

## 7 Troubleshooting

| Problem | Explaining / Solution |
|---|---|
| Machine is not starting | Check the mains power supply.<br>Check if the front door is closed<br>Turn the emergency switch and release it. |

## 8 Maintenance

Before starting the maintenance it's important to switch remove the power and turn the power switch off . A lock can be placed on the power switch

### 8.

LMDG200 needs to be greased first time after 20 hours. Later intervals each 40 Hours.

LAARMANN advises to use LAARMANN GREASE. Similar can be graphite free, high temperature grease.

### 8.2 Wear

The milling tools can become worn out, depending on the frequency of the milling operation and the milled material. The static and the rotating disc should be regularly checked for wear and replaced, if necessary.

### 8.3 Cleaning

Before cleaning the machine, unplug the mains cord from wall socket. Use only a soft cloth moistened with water. Cleaning agents and solvents should not be used, not for cleaning the milling tools either. Do not clean the LMDG 200 under running water. Danger to life through electric shock.

# Legal notice

This LAARMANN manual is subjected to changes. no claims can be made on basis of this manual

All machines all sold under our general terms and conditions

LAARMANN®

*Innovators in Solids*

CE

Disc Mill

Type LMDM200

| | |
|---|---|
| Product | Disc Mill |
| Model | LMDM200 |
| Power supply | 400V/50Hz |

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

2006/42/EG European machine guideline

2014/35/EU Low Voltage Guidelines

ISO 12100, ISO 294-2, ISO 13850 Safety guidelines

BGV A3 General electrical facitilies

2014/30/EU Electromagnetic Compatibility Directive (EMC)

NEN-EN-IEC 61000-6-2:2019 Immunity

EN 61010-1 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.

<u>This conformity certificate will lose its validity in case of:</u>

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

LAARMANN GROUP B.V. Roermond, May 2021