

# LAARMANN

*Innovators in Solids*

## USER'S MANUAL

### LAARMANN Continuous Ball Mill

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**Inhoud**




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## 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

	<b>Safety instructions</b> 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.
	<b>Use according to the intended purpose</b> 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.
	<b>Transport</b> Do not knock, shake or throw the LMCBM during transport. Otherwise the electronic and mechanical components may be damaged.
	<b>Packing material</b> 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.
	<b>Temperature variations</b> If the LMCBM is subjected to high temperature variations, protect it against condensed water. Otherwise the electronic components may be damaged.
	<b>Ambient temperature</b> 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.

	<b>Atmospheric humidity</b> If the humidity exceeds 85%, electronic and mechanical components can be damaged. Performance can be changed to an unknown extent.
	<b>Electrical connection</b> If the values for the mains power supply on the name plate are not observed, the electrical and mechanical components may be damaged.
	<b>Materials</b> 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.
	<b>Cleaning</b> Do not clean the outside of the LMCBM 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.
	<b>Repair</b> For your own safety, repairs must be carried out only by authorized service technicians.

## 2. GENERAL DESCRIPTION

The LMCBM is a (continuous) process and laboratory machine, which is suitable for milling and homogenizing soft, fibrous, hard and brittle materials in the dry and wet state. With a feeder and collecting unit the flow can be regulated while maintaining a continuous process. To manage the throughput and flow the machine can be set under a specific angle and has adjustable rpm.

The machine has multiple access points for cleaning to prevent cross contamination.



### 3. TECHNICAL FEATURES

#### **3.1. CONSTRUCTION**

The housing of LMCBM is made of steel plate varnished with powder coating RAL 5005.

#### **3.2. TECHNICAL DATA**

Power supply	220V $\pm$ 10% - 50/60Hz
Max. volume of inlet funnel	10 Litres
Weight	App. kgs
Noise emission	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 main cord is compatible with the local standard, or connect a local plug to the machine.

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 dealer.

### ***4.2. SELECTING THE RIGHT PLACE***

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

- Put the device on smooth and stable (concrete) floor.
- Leave enough space beyond the device.
- 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 LMCBM are given on the name plate. Ensure that these values correspond to the available power supply system. Connect the power cord to a grounded wall socket. The vibratory feeder should be connected to the side of the control box (right side) of the Ball Mill as shown below.



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.

Delivery content

Picture 1)



Laarmann Continuous Ball Mill

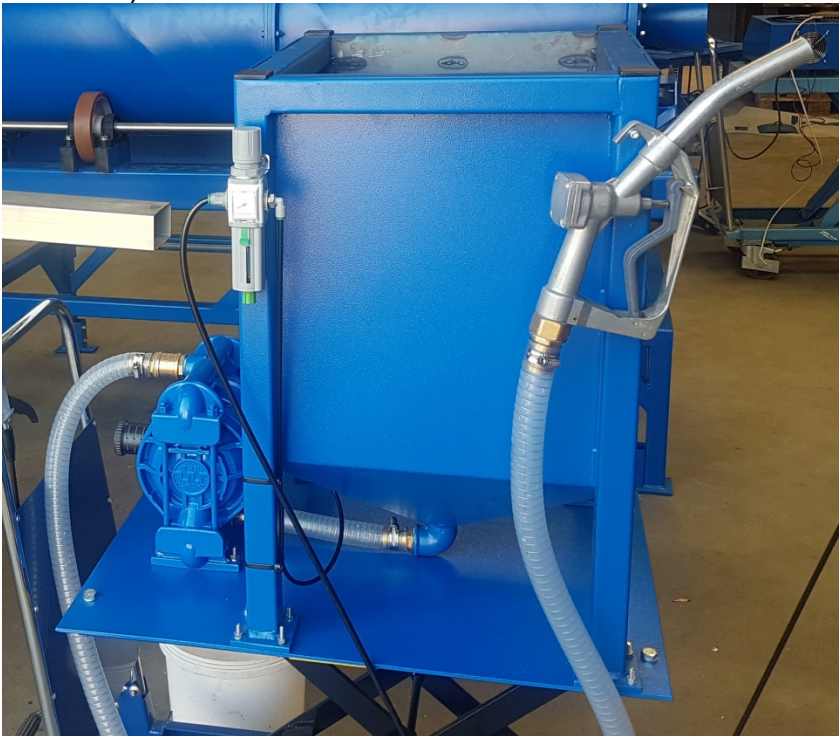


Picture 2)



Feeding module

Picture 3)



Collector / dispenser

## 5. INSTRUCTIONS FOR USE

When assuming operation always make sure safety protocols are followed and there are no hazards for the machine and the operator.

Always turn the machine on before feeding to prevent piles from emerging and influencing the process. Ensure that both cover plates are installed before starting the milling process.

### ***5.1. FEEDING THE MACHINE***

You can feed the mill using the Feeding module as shown in picture 2.

Before putting material into the feeder the operator needs to turn on the feeder by using the switch as shown below. The operator need to feed the funnel and the vibratory feeder regulates the flow into the machine.

The operator can control the intensity of the feeder by turning the black knob as shown below.

Always secure the feeding module by putting the brakes on to prevent the module from moving around while operating.

The height is adjustable by either pumping the paddle below by foot or pressing the handle on the bar.

### ***5.2 COLLECTING AND DISPENSING MATERIAL***

Position the collecting unit at the end of the drum by the sieve to collect the processed material.

When the material is small enough to fit through the sieve it is collected in the collector unit as shown in picture 3.

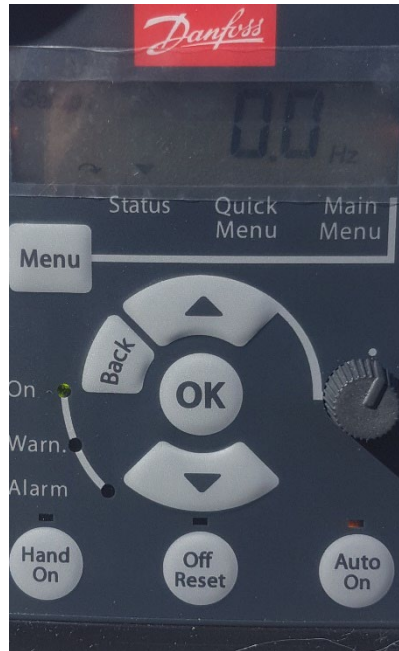
The machine pressurizes the hose with the material inside the collector.

When using the handle the stored material will flow out the nozzle.

Never set the pressure above 6 bar, this will cause harm to the machine and the material will flow too fast.

Note: the collecting unit can also be used for cleaning the inside of the machine. Fill it with water to rinse the inside of the drum.

## 6. WORKING INSTRUCTIONS BALL MILL



Above you see the overview of the controls for the Ball Mill and an enlargement of the display.

To operate the machine make sure that the emergency button is standing in upright position and that the power cord is connected.

Determine the angle on which the machine has to work by pressing either the up or down button.

Pressing the up button causes the machine to tilt downwards towards the end of the drum. The drum lifts up at the side of the motor.

Pressing the up button causes the machine to tilt upwards towards the end of the drum. The drum lifts up at the side of the collector.

In the middle of the frame is an degrees meter as shown below.



You can set the drum under the desired angle by pressing either the up or down button and verifying it by checking the degrees meter.



After setting the machine under the desired angle you can start the machine by pressing the green button in the middle. Stopping the machine can be done using the red button. In case the machine needs to stop immediately do NOT use the red button but use the emergency button.

When the machine is starting the display will show the rpm of the drum. You can change the rpm by turning the small knob next to the display. The rpm has a range from 9.1 to 45.8 rounds per minute.

Please do not alter any values and/or press other buttons on the display.

## **6.1. GENERAL**

The LMCBM is a high performance product. Because of the large selection of accessories, the LMCBM 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 applications etc.

	Do not mill inflammable or explosive samples!
	Please note that the properties and therefore the dangerous nature of your sample, can change during the milling process.

## **6.2. MAINTENANCE**



LMCBM is maintenance free. When used and cleaned properly, no maintenance and setting is necessary. Do not make any alterations to the machine and use only approved spare parts and accessories.

## **6.3. WEAR**

The Ball Mill can become worn out, depending on the frequency of the milling operation and the material to be divided. All parts should be regularly checked for wear and replaced, if necessary.



## 6.4. 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.
	Do not clean the outside LMCBM under running water. Danger to life through electric shock.

When going to clean the machine switch out the cover plates for the open ones as shown below.



You can then attached the tubes to guide the material towards the bucket/collector placed below the frame.

By using the collector (when filled with water for cleaning) you can wash away the remaining residue and by tilting the barrel you can guide the water towards the opened cover plates.

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Note: Manual subject to technical modifications.