

LAARMANN[®]

Innovators in Solids

USER'S MANUAL

LAARMANN Jaw Crusher LMC 200D

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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. In-proper operation can cause injury to persons or damage 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.
	Transport Do not knock, shake or throw the LMC 200D 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 LMC 200D 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 jaw plates Ensure that the jaw plates are inserted correctly. Otherwise they can be damaged, when starting the machine.
	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 LMC 200D 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.
	Repair For your own safety, repairs must be carried out only by authorized service technicians.

2 General Description

The LAARMANN laboratory Jaw Crusher is a robustly constructed single toggle type with one fixed jaw plate and one moving jaw plate. Designed for the smaller laboratory, or use by prospectors. It is capable of quickly crushing materials up to 85% of the jaw opening (215 mm x 110 mm) it is robust and long wearing and made of parts and materials easily serviced in a remote area.

Toggle adjustment is by means of jacking screw.

The crusher is supplied as a free standing floor mounted unit with the motor to the rear of the main body.

Comes complete with dust extraction point (from the top of the machine), hinged inlet hopper and removable sample bucket.

3. Technical Features

3.1 Construction

The housing of the LMC 200D is made of steel plate varnished with high resistant painting.

3.2 Technical Data

Power supply	3x 400V/50Hz
Rated power	5,5 KW
Average Crushing capacity depending on jaw opening and the breaking behaviour of the sample	1000 kg per hour
Dimensions W x D x H	640 mm x 990 mm x 1150 mm
Weight	480 kg gross
Noise emission	70 dB(A) empty running
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 transport.

Please keep the packing material for the duration 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

The correct installation procedure for the LMC 200D, being bolted to a concrete floor, is as follows:

- Ensure all site services are correctly measured and placed aside, ready for installation (i.e. correct cable length). Correct measurement and placement of the mounting holes is essential. It is advisable to place the machine in position and use the fixing holes in the base frame as a template.
- Drill the required number of holes into the floor to secure the machine, suitable for appropriate size.
- Lower the machine into place using a forklift and the eye bolts and take care to accurately position the machine. Secure the machine to the floor/platform.

4.3 Environmental conditions

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

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

5. Instructions for use

5.1 Pre-Operation

Prior to starting the crusher, perform the following checks.

- Perform a visual check on the machine to check for any damaged or broken parts.
- Check that all electrical connections have been made correctly.
- Ensure the dust extraction system has been installed correctly.
- Check that the hopper and jaw throat are clear of any material or objects that might damage the jaws.
- Ensure that the particle size adjustment lock bolt (46 mm) on the back of the pitman housing is secure with the lock nut.
- Remove the V belt cover and check the drive belt adjustment.
- Remove the flywheel cover and rotate the flywheel by hand to ensure the jaw plates do not touch and jam, and that the flywheel freely turns whole revolutions.
- Check that the crusher is seated correctly on its mounting

5.2 Operation of the Crusher

To manually dry commissioning the crusher, follow the procedure outlined below.

- Start and stop the crusher
- Run the crusher without any material for approximately two (2) hours. During this test run check the temperature of the side plates of the machine.

5.3 Testing the Crusher

The following steps outline proper testing to ensure correct operation of the crusher.

- Ensure the correct operation of all moving parts.
- Ensure the stop and start buttons operate correctly.
- Check that the crusher is not unusually noisy during operation.

5.4 Materials to be crushed

The LMC 200D is a crushing device for mineral sampling. Depending on the type of material being crushed, approximately 1000 kg/h (depending on product and size) can be crushed and collected in a tray beneath the jaws. Crushing size can be adjusted to client's specifications, to a minimum of 4 mm particle size.

5.5 Altering the crushing settings

The distance between the crusher jaws may be varied by adjusting the jacking bolt P/N 137131 to suit the product requirements.

- Release the **Hand wheel No. 1** located at the left side of the Crusher front view
- Release the **Hand wheel No. 2** located at the back
- Set the gap to required opening with **Adjusting wheel No. 3**
- Tighten **Hand wheel No. 2** located at the back
- Tighten **Hand wheel No. 1** located at the left side of the Crusher front view







6. Working instructions

6.1 General

Before carrying out any work on the machine, ensure that the power supply is disconnected and that any relevant isolator is locked out and labelled with a suitable warning notice.

Should it be necessary for maintenance purposes to put the machine into operation, it must be fitted with notices to the effect that it may start without warning; and that under no circumstances are tools, equipment or personnel to be allowed in the vicinity of the moving parts of the machine.

Should access to the moving parts be required for any reason, the motor shall be isolated as described and not reconnected to the power supply until all equipment and tools have been removed and personnel are clear of the internals of the machine.

	The crushing process should only be started, when the unit is mounted in an integrated process plant or equipped with hopper.
	Do not remove the in feed hopper during the crushing process. Although the grinding barrel are brought to a standstill immediately after the opening of the hood.
	Do not crush inflammable or explosive samples!
	Please note that the properties and therefore the dangerous nature of your sample, can change during the crushing process.

The general rules that follow for operation will ensure safe and efficient use of the crusher.

- Do not load the machine with material of a lump size larger than 215 x 90 mm.
- Do not overload the hopper with too much material. Allow the material to feed through at a reasonable rate of about 1000 kg per hour (depending on material and size).
- Never place hands inside the hopper or near any moving parts while the machine is operating.

6.2 Maintenance

The following table indicates checks and adjustments which should be carried out to ensure trouble free use of the LMC 200D.

Operation and Location	Every 10 Hours or Every Shift	Every one (1) Month	Every twelve (12) Months
Overall Machine	Visual inspection for obvious defects		
V Belts		Check for correct tension & wear	
Main Shaft Bearings		Check for wear	
Main Pitman Bearing		Check for wear	
Jaw Plates	Check for wear &/or breaks		
Side Liners	Check for wear &/or breaks		
Lubrication		See Lubrication Schedule	
Jaw Plate Draw Bolts	Check that they are secure & not broken		
Floor mountings		Check that Crusher is still secure	

Check the belt tension and condition. The belt should have no more than 11.5mm deflection at the centre with a 2 kilogram of force (spring balance will suffice).

Inspect belt condition for cracks, swelling or softening.

Inspect toggle seats and main bearings for any signs of wear and excessive movement.

6.3 Wear

The jaw plates and side liners used in the LMC 200D are subject to very abrasive action through normal use. The materials and finishes used are selected to attain the longest possible useful life of these items consistent with efficient operation of the crusher. However they do wear out.



Note: the jaw plates are reversible, but side liner plates are not.

6.4 Replacing jaw plates

Because different types of material result in different wear characteristics, it is not possible to state a definitive guide to replacement requirements. Visual inspection and inability to attain the minimum jaw gap will indicate the requirements to replace or rotate the jaw plates and side liner plates. Unusually rapid wear of any crushing component should be referred to LAARMANN for advice.

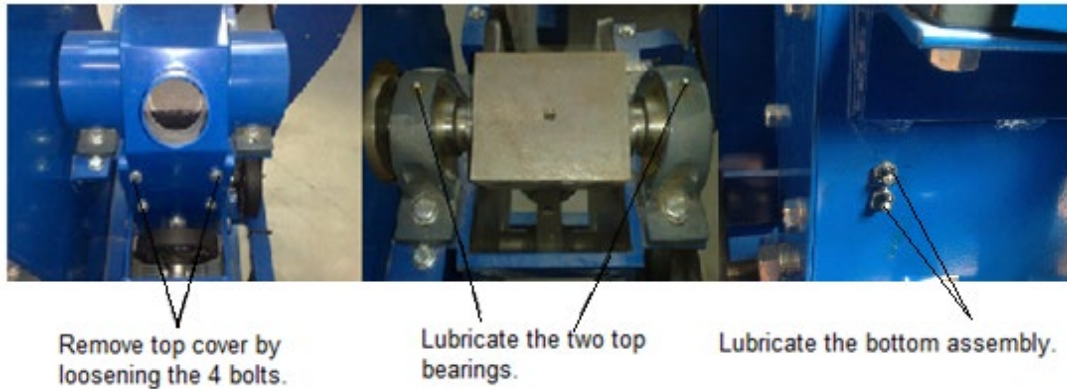
- Remove the collector bucket
- Open the front door of the Crusher which gives access to the chamber
- Remove top clamp of fixed jaw plate which holds the jaw plate in position
- Remove top clamp of moveable jaw plate which holds the jaw plate in position
- Remove used jaw plate and replace with new one
- Fix top clamp of moveable jaw plate which holds the jaw plate in position
- Fix top clamp of fixed jaw plate which holds the jaw plate in position

6.5 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 LMC 200D under running water. Danger to life through electric shock.

6.6 Lubrication

Prior to applying grease, wipe the grease nipples, apply grease to all points and then leave a layer of grease on the nipple to protect against entry of dirt until the next lubrication time.



6.7 Lubrication Schedule

Main Shaft Bearings: Lubricate every 2 weeks - Shell Alvania (#2or3)
 Main Pitman Bearings: Lubricate every 2 weeks - Shell Alvania (#2or3)

Apply 7g of grease to each point
 Lubricate whilst machine is in motion.

7. Spare Parts

Jaws and side liners should last a considerable time. A six monthly inspection should suffice to ascertain if a replacement is necessary. It may be prudent however, to have certain spares on hand. Spare parts recommended to be held in stock are listed below.

Bearings are long lasting and a stock item which can be delivered in a short period.

No	DESCRIPTION	PART No	QTY	AVAILABILITY ex Roermond
1	Vee belts	225146	1	Stock
2	Fixed jaw	137113	1	Stock
3	Moving jaw	137114	1	Stock
4	Side liners	137119	2	Stock
5	Bronze bush	137121	1	Stock
6	Main Pitman Bearings	137124	1 set	Stock
7	Jacking bolt	137131	1 set	Stock

LAARMANN
Jaw Crusher LMC 200D

EG MACHINE GUIDELINES 98/37/EG
DECLARATION OF CONFIRMITY

Product	Jaw Crusher
Model	LMC 200D
Voltage	400V/ 50Hz

Hereby LAARMANN confirms that the mentioned machine meets all the standard requirements according to the EEC guidelines. EMS 89/336/EEC (revised by directives 91/263/EEC, 92/31/EEC and 93/68/EEC) 2006/95/EC (previous 73/23/EC)

Machine Type: LMC 200D

Harmonized Standard

ISO 12100-2:2003, ISO 13857:2008, IEC 60204-1 Ed 5.1, IEC 61010-1 Ed 2.0:2001

A detailed description of the machine and the corresponding guidelines and Safety measures can be found in the manual.

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Roermond, April 2012

