Laarmann Quadro

Module: Cutting Mill CM100

Edition	Month	Year
1.0	December	2011

Table of Contents

1. Operating instructions

The Laarmann Quardro has been developed to combine 4 different machines in one, via modules. This manual concerns the treatment and guidelines of the

Quadro CM, with the Cutting Mill CM100 module.

This manual is guide in dealing with different materials, how to use the CM100 for safety and proper operation. For different materials, the relevant sections of the guidebook note on requirements for safe and proper operation. This file can be used as reference and training manual work. Maintenance methods of operation are not included in this description of them. If you need service, please contact the vendor directly.

2. Safety

CM100 is an advanced and efficient product If the user when using the equipment, materials, choose the correct file and are familiar with this technology, its operation is safe.

- understand all the safety regulations
- before the work starts, every step taken by the clear instructions and work with operating rules of the relevant objects
- fully understand the technical documentation and no doubt
- The new operator before use skilled personnel to operate the verbal means
- Guide or manual should be strictly in accordance with this operation.
- improper operation may cause personal injury and equipment damage. Please note that your personal safety.

For non-compliance with safety instructions and material loss arising from personal injury, our statement will not have the liability.

2.2 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 of sharp parts.

2.2. 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 LMQ-CM 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 LMQ-CM 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.
	**Inserting milling cups** Ensure that the milling cups are inserted correctly in the milling cup holder. Otherwise they can be damaged, when starting the machine. Both milling positions must always be used. Otherwise this will cause considerable unbalance.
	**Cleaning and Removing parts in the grinding chamber** When the grinding chamber will clean and/or knife set will be changed, be aware of the danger of cutting the fingers.
	**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 LMQ-CM 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.
	**Repair** For your own safety, repairs must be carried out only by authorized service technicians.

2.3 Maintenance:

This part of the instructions does not contain any repair instructions. For your personal safety and maintenance, please contact the manufacturer or its authorized representatives (services engineers) for maintenance.

3. Technical Specifications

3.1 General description

The CM100 can process a large varieties of materials and at the end of each milling, the door can be opened, the rotor with cutting knifes can be removed by hand very easily to clean up of the grinding chamber.

The CM100 can be used for batch and continuous grinding of samples

The CM100 can mill flexible, medium-hard and fiber products and mixed products.
The unique shape of the milling tool drive with variable speed can be exempted from the effects of grinding material for fast, efficient grinding. Co-products.

The milling tools do not apply to grind damp or wet materials.

3.2 Features

- Fast and gentle milling.
- 3 blade knife which by rotating the material gradually spread.
- 4 cutting stators are fixed in pairs and located into the special grooves in chamber;
- The cutting durable tools are made of material after special treatment.
- The required grain size is controlled by size of the bottom sieve.
- Nominal voltage: 220 VAC，50 HZ.
- Power: 1.5 kW.
- Speed: 500~3000 RPM, continuously adjustable.

Do not make any changes to the instrument and use only the original parts and accessories.

3.4 Collector

Standard collector up to 5.000 ml is possible.

3.5 Body size

Chamber with motor:	310 x 550 x 240 mm
Frame:	660 x 700 x 850 mm
Long funnel size：	300 x 300 x 300 mm
Collection barrel:	diameter 192 x 201 mm

3.6 Weight

Net: 90 kg

3.7 Required working area

1000 mm x 1000 mm

4. Transport and installation

4.1 Packaging

Packaging rules are consistent with transport requirements conform the general packaging rules.

During the warranty period, save the packaging, so that in case of problems protects your legitimate interests.

4.2 Transportation

CM100 during transport process, not shock, throw. Doing so may cause damage to circuit components and equipment.

4.3 Supplier list

- CM 100 master: 1 units (including the controller and funnel)
- Bracket: 1 set
- Collection bucket: 1
- Operating Instructions: 1
- Power cable: 1（10A/250V）
- Fuse: 2 (10A/250V)

Check whether the goods are complete, including individual parts ordered

If the goods are incomplete or damaged during transport, immediately (24 h period) to inform distributors and factory

4.4 Installation parameters of the goods

Working temperature

Ambient temperature between 5° C and 40° C.

When the ambient temperature is above or below the specified temperature, may damage electronic components and equipment, operating characteristics will be unpredictable.

Working humidity

When the relative humidity of the ambient temperature exceeds 32 ° C
Maximum relative humidity less than 80%.

Installation height

Maximum altitude of 2.000 meter.

4.5 Bracket and machine installed

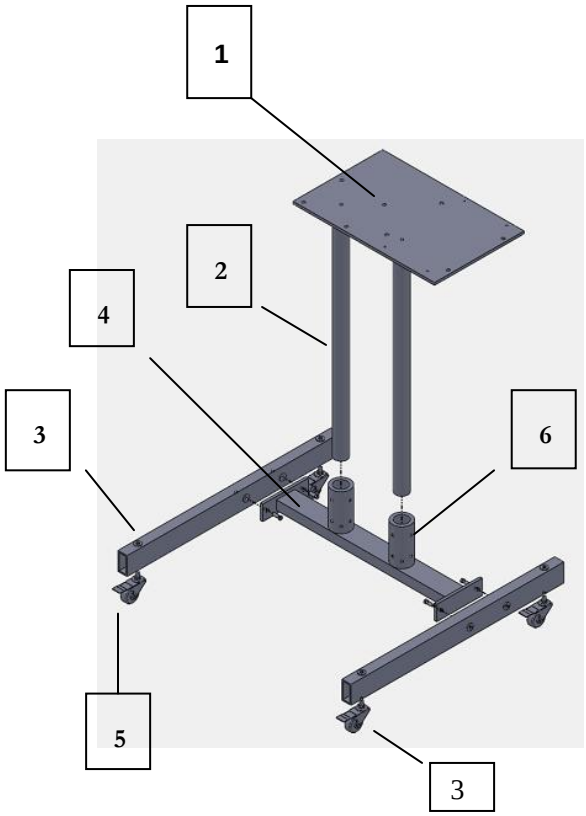


Figure 4.1

The CM100 instrument provides a bracket which available is as an accessory purchase.

Assembly steps:

- The mounting plate (1) with the middle beams (2) connect into the two sockets on the floor base (4) fixed with 3 screw connections.
- Screw 4 Specifications: Hex screw / M8X25 mm / 4;
- 1 into the middle of the body seat bracket connected the two cylindrical barrel beam 2, with 6 hex screw fixation. Screw specifications: socket head cap screws / M8X25/16 stars;
- 5 the four wheels were installed on both the base 3.

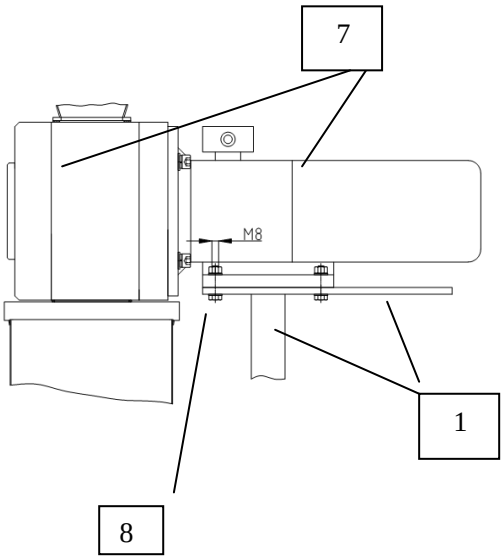


Figure 4.2

Installation machine body

- 7 the CM 100 body placed in the body seat bracket 1, Figure 4.2
- 8 with four hex bolts, will be fixed in the body the body on the seat frame 1
- Hexagonal bolts 8: M10X45 / 4 stars, nuts M10 / 4

Note: CM 100 prior to the feed hopper mounted on the body on the ship

Installed in the feed hopper is not the case, can not operate CM100.
Injuries to hands and skin are dangerous!!

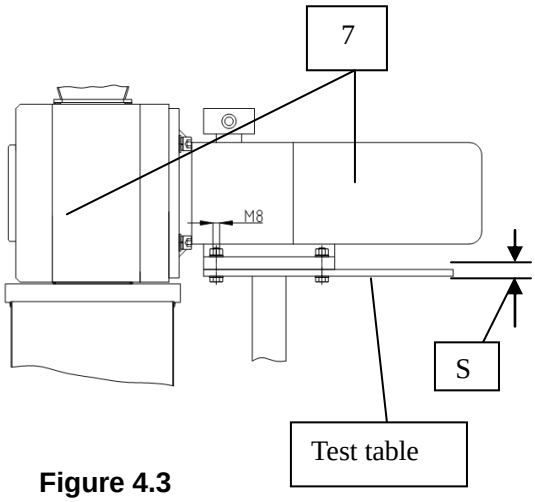


Figure 4.3

4.7 Figure 4.3 desktop installation

- CM100 can be installed on your bench.
- Test measurement of the thickness of the table S
- On the table marked with the CM100 corresponding holes on the motor position
- the table with enough distance from the edge of a table collection barrels to install and uninstall. Position.
- Drill 4 holes with a lay
- With hexagonal bolts M 10mm, length of Test tables thickness S + 45mm, fixed body 7

Power connection diagram 4.4 4.8

Figure 4.4

- CM100 see the rated nameplate voltage and frequency.
- Applications must ensure that the same value and voltage rating.
- Please use the supplied power cord.
- Fuse Specifications: 10A/250VAC

5, operation of the device

5.1 Operating components: Figure 5.1-5.2

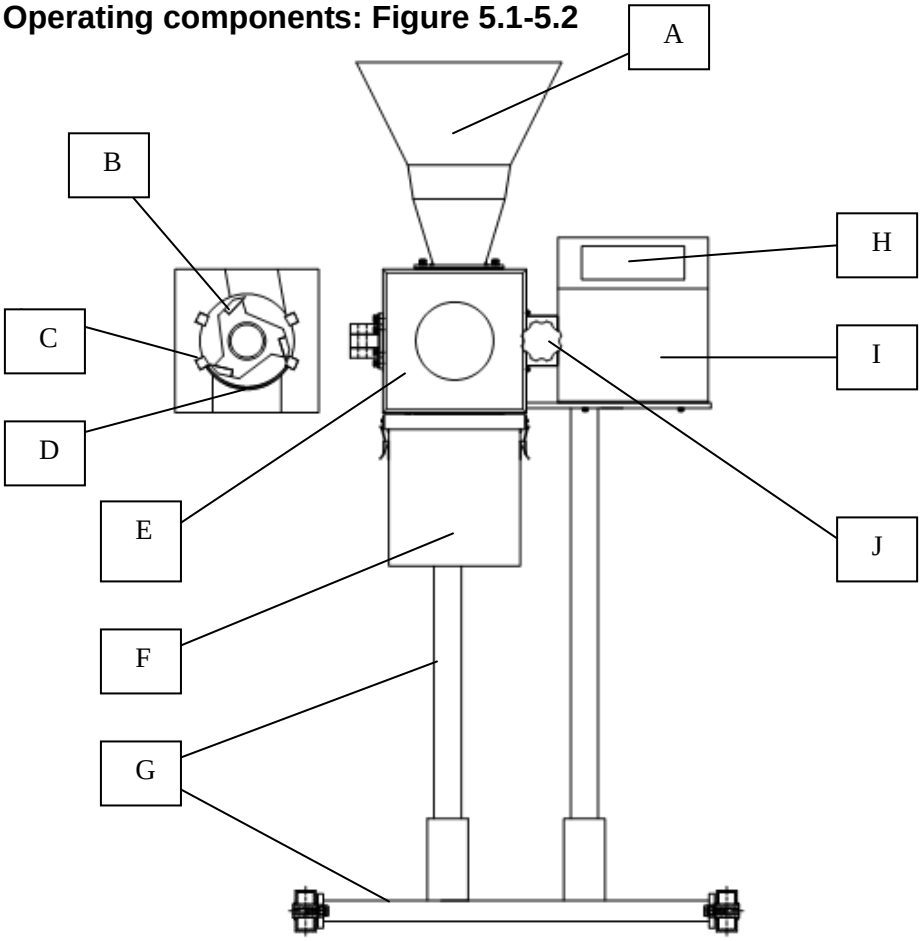


Figure 5.1

Figure 5. 2

5.2 Operation Parts Description

No.	Name	Function
A	Hopper	Feed sample
B	Rotor knifes	Cutting the sample by rotation
C	Stator knifes	Cutting the sample
D	Bottom sieve	Control the particle size at the bottom sieve plate material
E	Grinding chamber door	Access to the grinding chamber
F	Collection barrel	Receiver samples
G	Support frame	Installation of the bare unit
H	Operating panel	Controlling equipment
I	Control cabinet	Installation of electrical control unit
J	Manual handle	For opening and closing the door of the grinding chamber
K	Power switch / socket	Power supply to the instrument
L	Back plate Control cabinet	Closure control cabinet

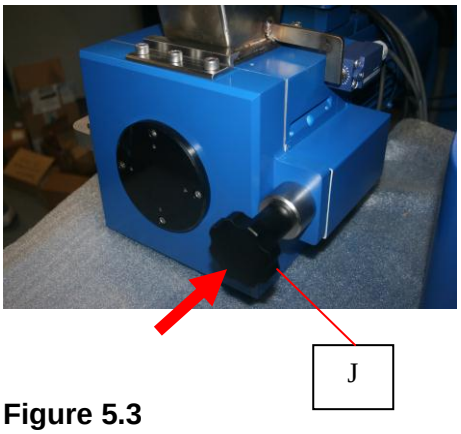


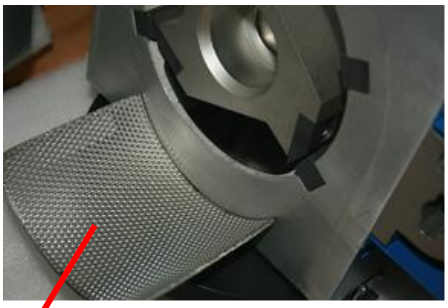
Figure 5.3

5.3 Open and close the grinding chamber Figure 5.3

- Only when the CM100 is stopped while grinding chamber to open the door.
- Pressing the STOP button on the control panel, the instrument stops running,
- Press down firmly on the black hand wheel J and about 90 degrees counter-clockwise to open the door of the grinding chamber
- Press down firmly on the black Manual handle J and about 90 degrees clockwise to close the door of the grinding chamber
- **WAIT WITH OPENING THE DOOR WHEN MACHINE HAS COMPLETELY STOPPED**

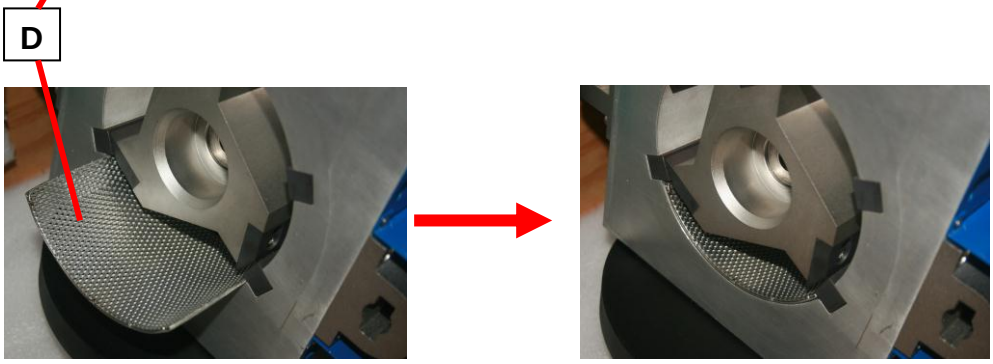
When the motor is running do not open the door of the grinding chamber! There is risk of personal injury!

When grinding or other harmful to health of toxic materials, you must protect of inhaling harmful substances of dangerous goods!



5.4 Insert the bottom sieve

- Turn off Power switch CM100
- Open the door grinding chamber
- Insert the bottom sieve **D** into the grinding chamber



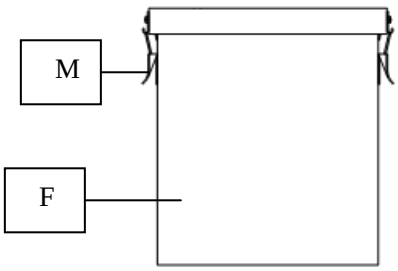


Figure 5.5 Collector 5.5 Installation of

- Hanging collected barrel F
- lock clip M

Figure 5.5

5.6 Grinding sample material

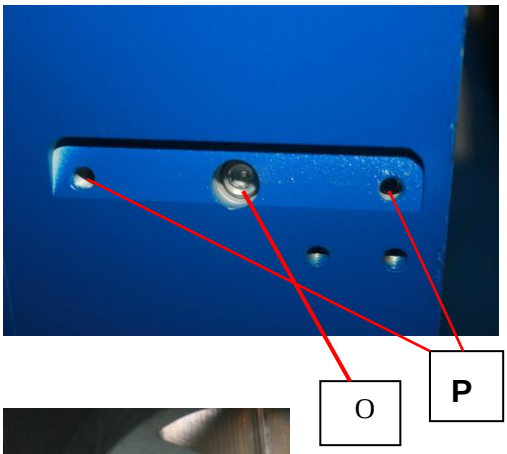
Only feeding when the CM100 run. **Material build-up** will damage the instrument's parts!

Feed size must not exceed the maximum size of equipment. **Will make the CM100 stop functioning and may damage the device unit**

Use a slow and continuous feed. **Excess feed will make the CM100 to stop running and will damage the machine Parts!**

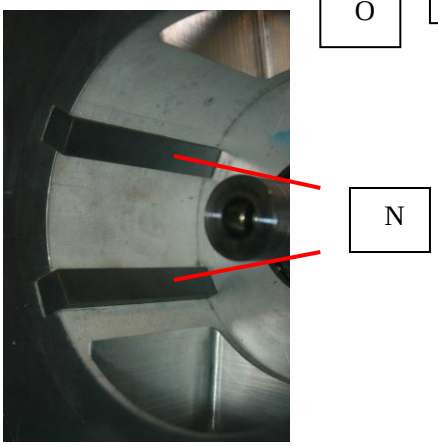
During grinding, the dust may be run out from the feed hopper. When confronted with damage to the body of toxic or abrasive materials, use ventilation equipment. **The risk of inhaling harmful dust!**

Many of the chemical materials are explosive mixtures by composition of the air after grinding. Please test your material specifications before grinding of the materials. **Explosive hazard!**



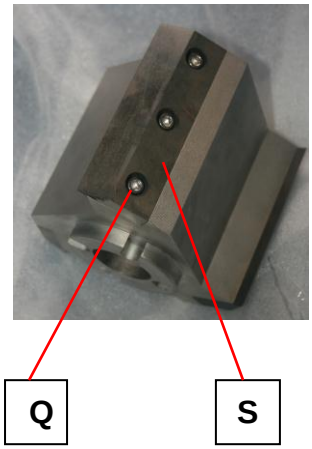
5.7.1 Replacement static knifes

- Power cut off the instrument
- Open the door. Clean the grinding Chamber.
- Unscrew screw **O** and remove
- Replacement static knife **N** (4x)
- Tighten the screw **O**.



5.7.2 Replacement rotor knifes

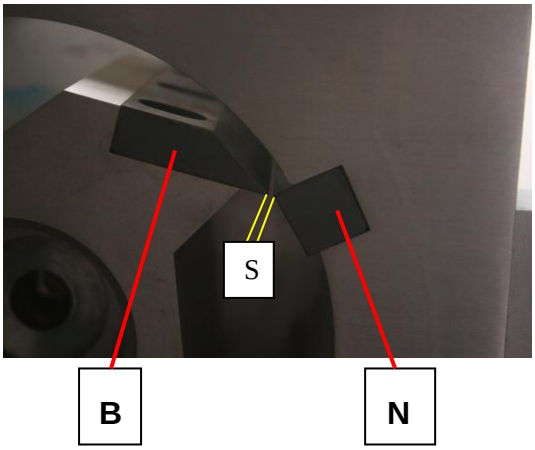
- Power cut off the instrument
- Open the door. Clean the grinding chamber.
- Pull out the rotor with the knifes. **Be care of personnel injuries by sharp knifes!**
- Unscrew screw **Q (3x)** and remove
- Replacement static knife N (3x)
- Tighten the screw **O.**



5.8 Adjust the gap

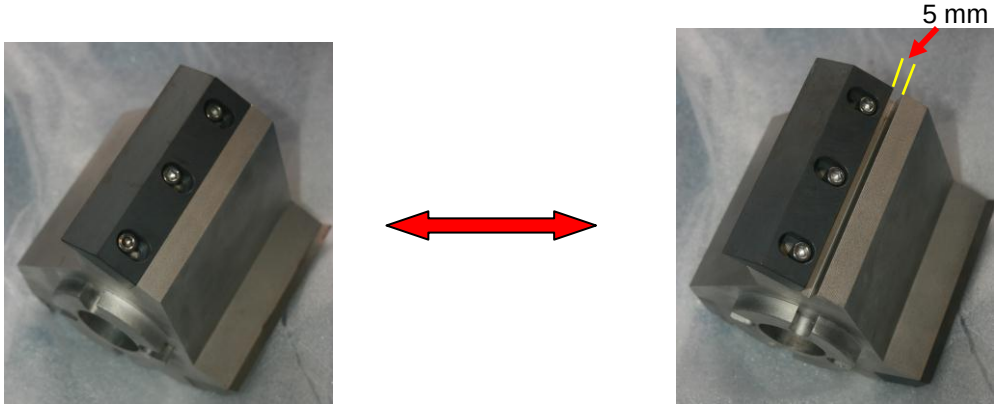
5.8.1 Adjusting by setting the static knife

- Use a feeler gauge for detection gap **S** between **rotor knife B** and **static knife N**.
- Gap settings => 0.2mm, < 0.5mm.
- Reduce the gap:
- Release screw **O**, screw **P (2x)** clockwise rotation, tighten the screw **O**.
- Constantly check with a feeler until the gap to meet the requirements
- Tighten screw **O**, applied torque = 7 N / m.
- Increasing the gap:
- Release screw **O**,, symmetry parallel to loosen the screw **P**, counterclockwise rotation, tighten the screw **O**, Continuously check with a feeler until the gap to meet the requirements.
- Tighten screw **O**, applied torque = 7 N / m.



5.8.2 Adjusting by setting the rotor knife

The procedure as in § 5.8.1 but then with the rotor knifes. The hardened steel do have oval holes to change the position of the knife on the rotor block.



5.9 Preparation before grinding Operation

- Disconnect the equipment power supply
- Insert the bottom sieve you selected
- Placed cutter
- Turn off the door grinding Chamber
- Fasten the collecting bucket

Start CM100 only after feeding. **Blocked Materials may cause equipment damage!**

Figure 5.8

5.10 Standard hopper

- The sample size hopper mainly for standard samples
- Cable waste
- Scrap carpets
- Straw, grass and similar materials
- Twigs and similar materials
- The material into the hopper
- Promote the use of plug material feed

Handle long material, please bring protective gloves Or it may hurt the hand.
When push materials, only use the feed plug. Use of other auxiliary equipment may result in damaged equipment accessories。
Do not sample more than raw material damage shape **Rebound material, resulting in injury.**

5.11 Start the instrument

- Close the door of the grinding Chamber
- Set the grinding speed
- Pressing START key to start the equipment

5.12 to stop the instrument

- Pressing STOP key to stop the instrument

5.13 Operation Panel

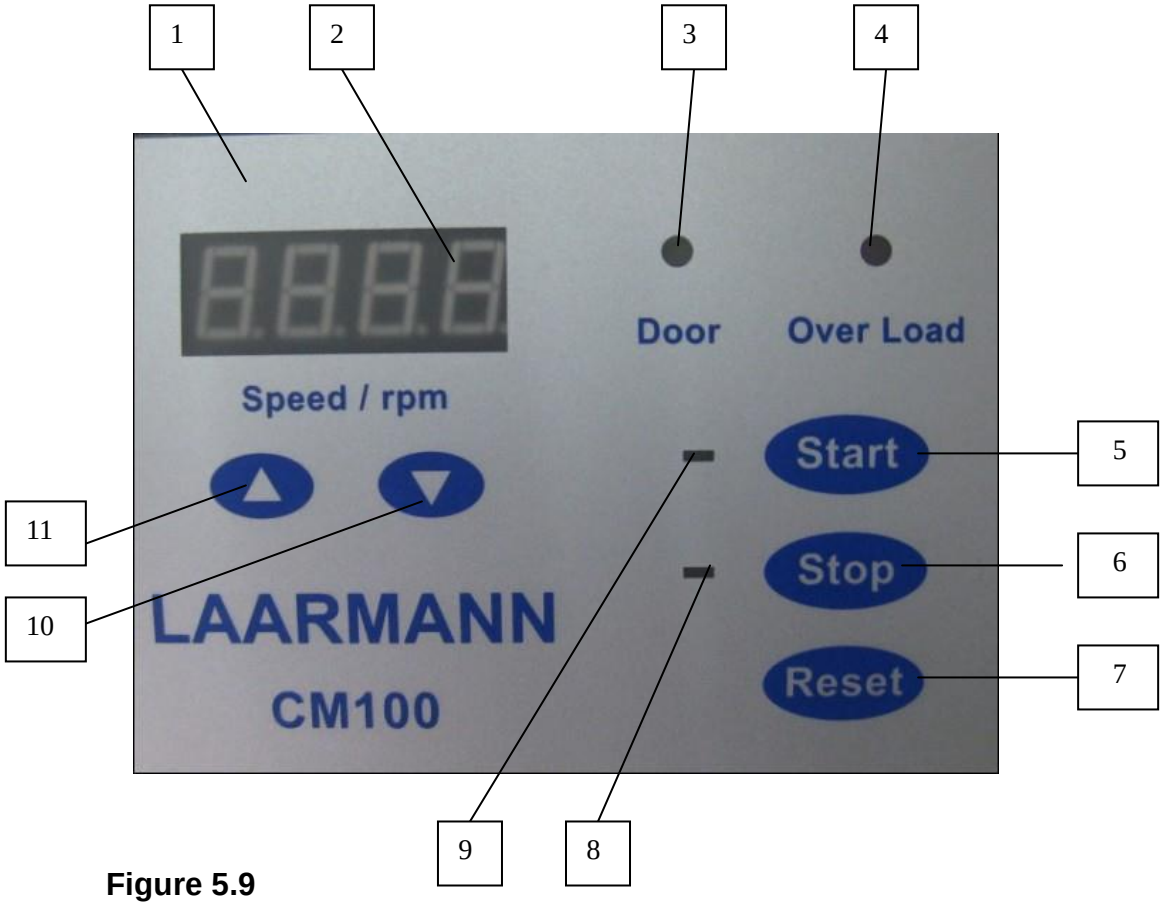


Figure 5.9

No.	Name	Function
1	Operation Panel	Control of the operation of the instruments
2	Digital display	Shows speed cutting rotor
3	Door Indicator	Lights up when the door is opened
4	Overload Indicator	When cutting drive is overload it will light up.
5	Start button	Start the instrument
6	Stop button	Stop the instrument
7	Reset button	Overload reset
8	Red indicator	After stopped it lights up
9	Green indicator	After startup it lights up
10	Speed button	Reduce the rotor speed
11	Speed button	Increase the rotor speed

6. Conventional

6.1 Cleaning

- Stop the CM100
- Turn off the power switch the back of the instrument control cabinet
- Open the door of the grinding chamber
- You can use brushes, industrial vacuum cleaners, compressed air for cleaning.
- If necessary, pull out by hand will be turn the cutter easy to clean.
- Clean the instrument only with a damp cloth.

Cleaning the instrument must be Turn off the back of the instrument control cabinet the power switch. A risk of personal injury

Flow of clean water cleaning device is not available CM100; There is risk of electric shock
Prohibit the use of solvents, otherwise may damage the CM 100 of the plug

6.3 Safety Switch

- Every month to be detected CM100 at the back of Manual handle the door safety switch to ensure it is available to ensure safe operation.

Detection methods

- Switch Turn off the instrument power supply
- Open the door and remove the rotor
- Close the door of the grinding Chamber
- Start the CM100
- Open the door grinding Chamber 5 to 10 degrees, the instrument should be stopped

If the motor does not stop turning, everything can not be used!

When the door is open, if the safety switch can not stop running the instrument, the instrument can not continue to use.
A risk of personal injury!

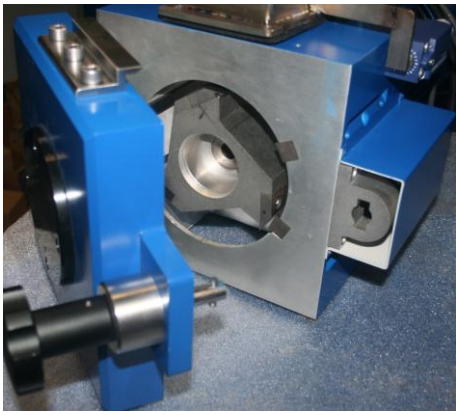
6.4 Maintenance

If the material is wet grinding material, CM100 must conduct a comprehensive clean-up and drying.

6.5 Changes

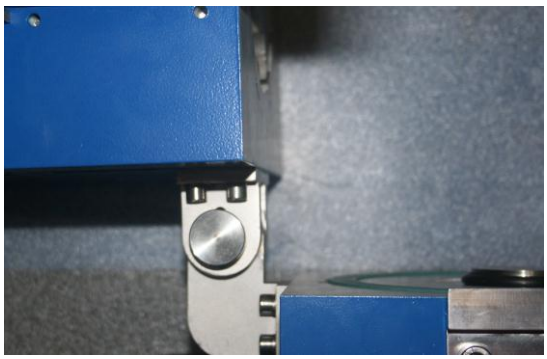
In case of technical change without notice

6.6 Door construction

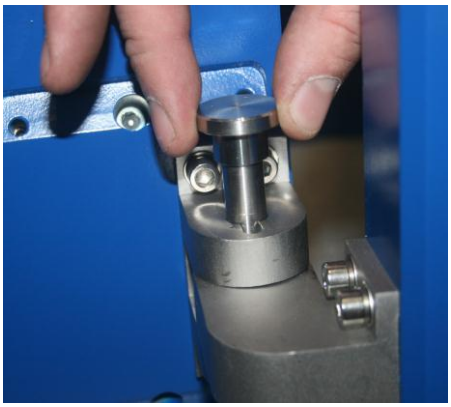


Opening the door by rotating 90 degrees of locking knob.

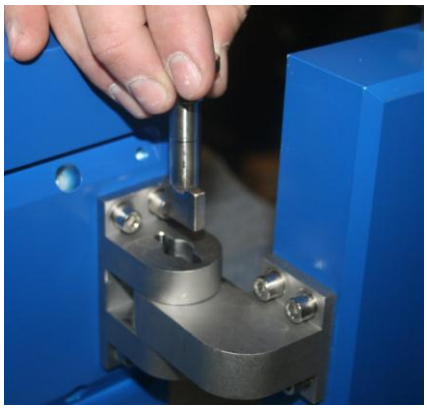
New hinge with safety lock



90 degrees opening of the door, to remove key.

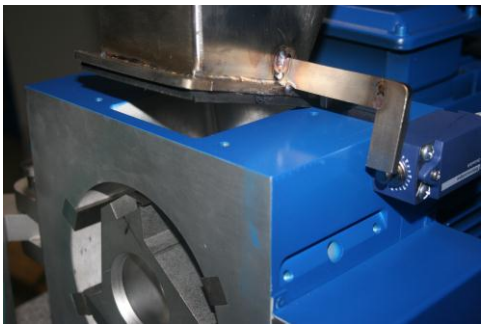


Removing the key

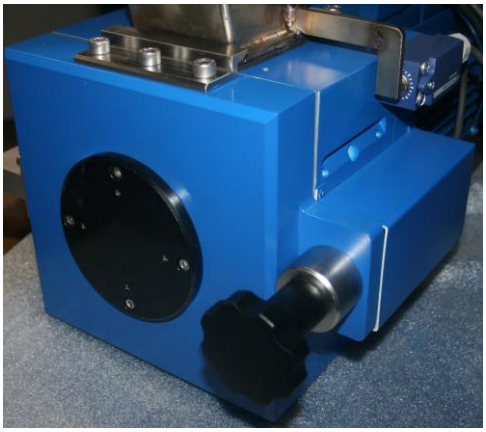


Removed key (please hold door in place with other hand)

6.7 Hopper construction



Safety switch hopper lid.



Closed door to activate electro safety switch

LAARMANN

Laarmann Quadro

Model CM version

CE

Product	Laarmann Quadro
Model	LMQ-CM100
Power supply	230 V/50 Hz

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.

<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, December 2011

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Ing. René Locht Bsc (Mech)
Manager Engineering