

User manual – version 1.0.1 EN

 **EUROBOOR**  
FOR PROFESSIONALS BY PROFESSIONALS

# Core drill grinding machine

## ERM.100/3

Serial no.: \_\_\_\_\_

Date of purchase: \_\_\_\_\_

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# 1. Product description

## 1.1 Intended use

The Euroboor core drill grinding machine ERM.100/3 is exclusively intended for grinding core drills (annular cutters) of HSS-Co and TCT core drills.

The machine is not intended for any type of use other than the one specified here, and any such use will be seen as improper. Safe operation of the machine cannot be guaranteed if the core drill grinding machine is not used properly. In such cases, the customer will be responsible for all damages to material or person.

Please read this operating instructions document carefully, particularly the safety instructions.

## 1.2 Function description

The core drill grinding machine can be used to sharpen the core drill in the simplest possible manner. Its robust and precise construction, low power requirement and ergonomic design enable instant operation. The machine was designed in such a way that anyone can familiarize himself with the machine's operation in a short period of time, and core drills can be sharpened with maximum precision. Adjustment and grinding are undertaken manually.

## 1.3 Technical data

Dimensions L X B X H	410mm x 412mm x 390mm (without optics) 410mm x 412mm x 460mm (with optics)
Net weight, kg.	Approximately 29
Power supply	230 Volts, 50 / 60 Hz
Motor	230 Volts, 0.12 kW, 2,800 rpm
Travel path Motor carriage	75mm
Guidance carriage	215mm
Noise emission dBa	<70
Runtime of grinding disks	10
Grinding disk	Diamond grinding disk, coated galvanically, Diameter 125 mm, Hole diameter 10 mm Optional: ERM3.0011 CBN grinding disk for grinding stretched surfaces (flutes)
Core drill holder shaft bore	19,05mm ( $\frac{3}{4}$ ") (Weldon shaft) standard 31,75mm (1 $\frac{1}{4}$ ") (Weldon shaft) on request

Technical specifications subject to change without prior notice.

## 2. Safety instructions

### 2.1 Care obligation of customer

The core drill grinding machine ERM.100/3 was designed and produced after giving due consideration to danger analysis and after careful analysis of appropriate harmonized standards, as well as the further technical specifications. It conforms to the status of the latest technology and guarantees maximum possible safety.





However, the specified safety level can only be achieved if the necessary measures are taken during operation. The care obligation of the customer includes planning these measures and controlling their execution.

The customer must especially ensure that:





- The machine is used properly according to the specification (please refer chapter 1. Production description)
- The machine should only be operated in faultless and functionally sound condition. In particular the safety devices are to be checked for proper functioning regularly
- These original instructions need to be available in full and legible condition at the location where the machine is operated.
- Personnel handling the machine need to be provided with adequate instructions on work safety and environment protection on a regular basis. The operator needs to have read and understood the operating instructions document and the safety measures defined in them in particular.
- All the safety and warning signboards near the machine are not to be removed and are maintained in readable condition.

### 2.2 Explanation of the used safety signs

The following safety signs have been used in the present operating instructions document: These signs are supposed to attract the attention of the reader to the text of the adjacent safety instruction. These signs indicate that there is danger to the life and health of persons.

 <p>Use eye protection Protection to eyes against flying particles during the grinding process</p>	 <p>Please pull the power plug out before replacing the disk or changing the location of the machine</p>
 <p>General danger</p>	 <p>Danger of laser rays</p>

## 2.3 Basic safety measures

 <p>Use eye protection Wear protective glasses without exception while performing grinding jobs with the ERM.100/3. Dust from the grinding operation can damage your eyes seriously.</p>  <p>Remove the grinding disk protection only while replacing the grinding disk. Otherwise, the protection should always be there on the machine. The ERM.100/3 has a laser beam generating device. Eyes should never be exposed to the laser rays, as they may be damaged seriously. Avoid exposing the optical system directly to sunrays to avoid the danger of fire.</p>	 <p>Please pull the power plug out of the mains socket before replacing the grinding disk or changing the location of the machine.</p>  <p>Laser protection clauses: The laser source corresponds to the Laser Protection Class II according to DIN EN60825-1/94. No additional protection measures are therefore necessary.</p>
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## 2.4 Operating staff requirements

The machine should be operated only by staff who have read this operating instructions manual, and who observe them in practice.

## 2.5 Special types of dangers

You must perform the following activities before each start up:

- Check the machine for visual damages and repair any identified defects immediately
- The machine should only be operated in faultless condition

Check electrical fittings regularly:

- Reattach or tighten loose connections
- Ask an electrician to replace damaged wires or cables without any delay
- Never clean electrical fittings with water or similar liquids

Modifications to the machine:

- For security reasons, do not make any modifications in the machine on your own.
- Use only original spare parts consumables and accessories as they are designed specifically for the machine.

## 3. Installation

### 3.1 Environmental preconditions for installing the machine

- Use the core drill grinding machine only in dry rooms.
- Ambient temperature should be between 5°C and 50°C (4°F - 122°F)
- Humidity should be lower 90%, no condensation allowed
- The core drill grinding machine is a table top machine.  
Please ensure that the machine stands stable on a workbench.  
The place must guarantee a vibration-free operation of the machine.

### 3.2 Remove the transportation locking screws



Transportation lock

After removing the packaging and installing the machine at the workplace, please remove the transportation locking screws (refer to above image).

### 3.3 Instructions on disposal of packaging material



The carton packaging material can be recycled. The remaining packaging material must be disposed of as garbage.

## **4. Start up**

The following points must be observed and followed fully during start up, to avoid damage to the machine and potentially fatal physical injuries to the human body.

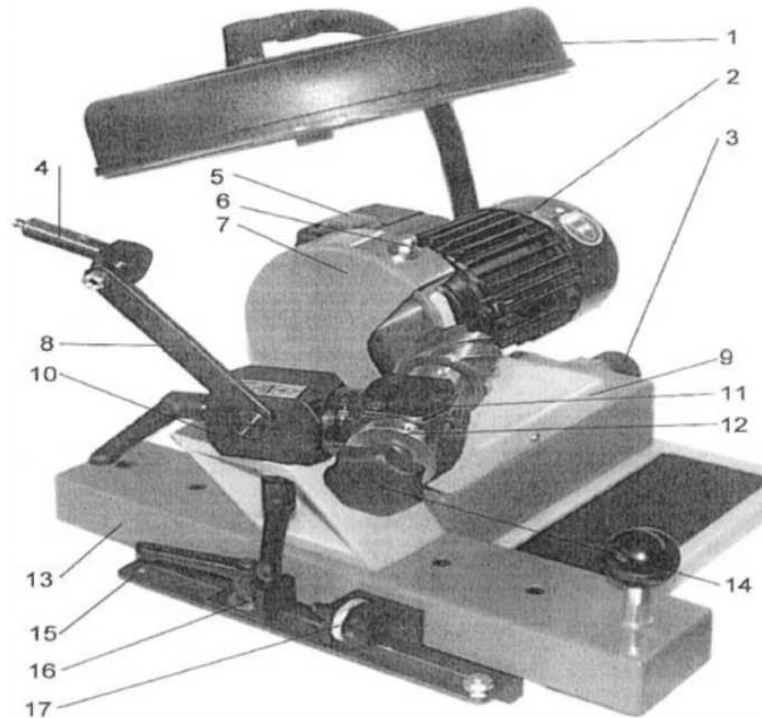
- Before undertaking the first start up, please check that all auxiliary tools and external parts have been removed from the machine.
- Check the direction of rotation of the motor before the start up
- Direction of rotation of grinding disk should always be downwards
- Please also read the chapter 2. Safety Instructions.
- Wear protective glasses

### **4.1 Controls before the first start up:**

- Check electrical elements for damages
- Check that the guides run smoothly
- Check the fixed parts

## 5. Operation

### 5.1. Description of the operating elements



- |                                       |                           |
|---------------------------------------|---------------------------|
| 1. Precision optics (optional)        | 10. Grinding head support |
| 2. Motor                              | 11. Core drill holder     |
| 3. Motor feed                         | 12. Section disk          |
| 4. Laser source                       | 13. Guidance carriage     |
| 5. Switch                             | 14. Philips-head screw    |
| 6. Grinding disk protection fastening | 15. Stop rail             |
| 7. Grinding disk protection           | 16. Quick adjusting angle |
| 8. Laser guidance rod                 | 17. Fine tuner            |
| 9. Motor angle                        |                           |

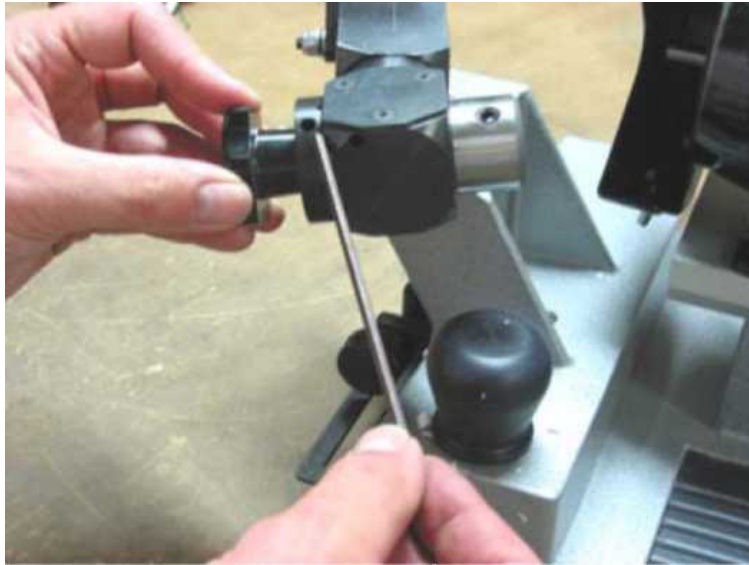
### 5.2 Adjusting and installing the machine

#### 5.2.1 Replacing the index plate

The index plate of the core drill grinding machine determines the precision of the grinding of core drills with various numbers of teeth.

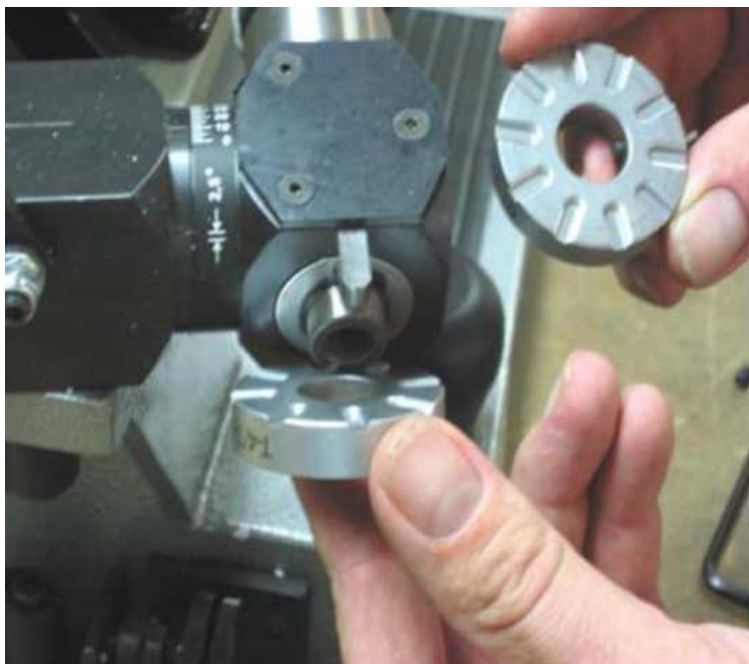
As standard the machine is supplied including index plate 8/10 for use with cutters with 4, 5, 8 and 10 teeth. See chapter 7. Accessories for optionally available index plates.





### **Replacing the index plate**

Select the appropriate index plate for your core drill. To replace the index plate turn the knob in the clockwise direction until the grub screw in the index plate is facing upwards. Tighten the edge screw (refer to Figure a). Turn the knob in anti-clockwise direction. Loosen the grub screw (Allen key 2.5) and remove the index plate.



### **Inserting the index plate**

Place the selected index plate on the shaft. Make sure one of the grooves on the side you want to use is placed against the spring-loaded selector. Tighten the grub screw lightly and turn the knob in the clockwise direction and tighten it. Then fully tighten the grub screw on the index plate.

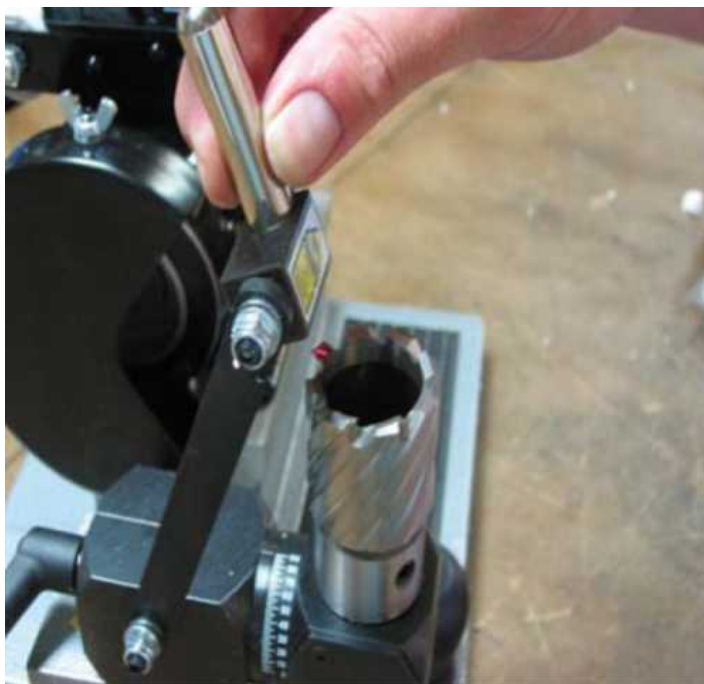
## 5.2.2 Aligning a core drill



While performing the adjustments, please note that the drill cutters are very sharp and you can suffer physical injuries easily. Always wear safety gloves.



- 1) Set the core drill holder at **90 degrees**.



- 2) Switch on the laser beam with the red button on top of the laser beam housing
- 3) Direct the laser beam with the help of the laser guidance rod to align it above one of the teeth.
- 4) Rotate the core drill in the holder until the laser beam only just touches the tip of the selected tooth.
- 5) MARK THE FIRST ALIGNED TOOTH

**SPECIAL NOTE:**

While adjusting the core drill in the holder, please ensure that the grub screw is not in contact with a flat position of the Weldon shank of the cutter. To prevent the slightest of unintended movement of the cutter the grub screw must lie on the rounding of the cutter shank.

**5.3 Operating the machine**

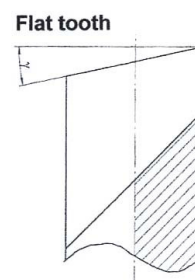
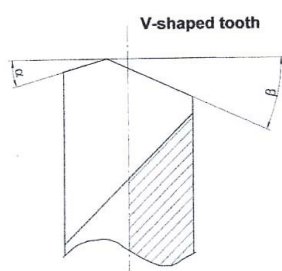
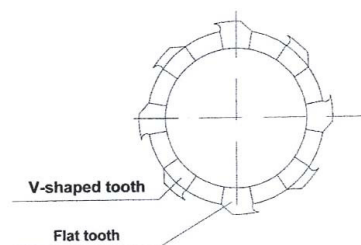
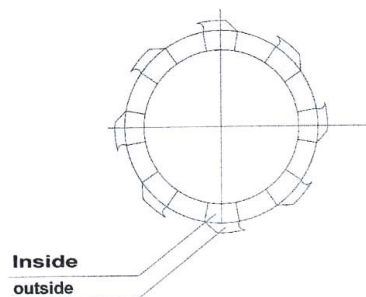


Use eye protection

Always wear protective glasses while working with the Euroboor core drill grinding machine

Core drills come in different variations. The variations with matching grinding order are:

- 1) Only V-shaped teeth
  - a. Inner surface
  - b. Outer surface
- 2) Alternating flat & V-shaped teeth
  - a. Inner surface V-shaped teeth
  - b. Outer surface V-shaped teeth
  - c. Flat teeth



### 5.3.1 Grinding the core drill teeth

Different manufacturers produce different variations of core drills with different diameters. If you have the manufacturer provided grinding instructions of your core drill, use the data specified in the document. If you do not have grinding instructions provided by the manufacturer of your core drill, we recommend the following general base settings:

#### STANDARD CORE DRILLS

Shape of teeth	Column Scale	Column Scale	Cutter Holder	Cutter Holder
<b>V-Shaped teeth</b>	Inside	Outside	Inside	Outside
All dividing disks	20°	7.5°	5°	22°
<b>Flat teeth</b>	Column Scale	Arbor Holder		
All dividing disks	6°	15°		

#### TCT CORE DRILLS

Shape of teeth	Cutter Holder	Column Scale	Column Scale	Cutter Holder	Cutter Holder
<b>Teeth</b>	Outside	Inside	Outside	Inside	Outside
All dividing disks	22°	20°	7.5°	7.5°	17.5°

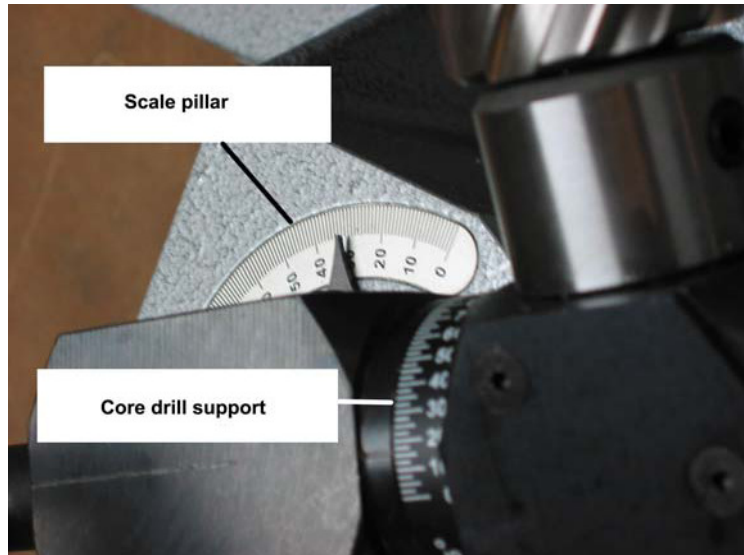
**FOLLOWING INSTRUCTIONS ARE SPECIFIED AS BASE GUIDELINE FOR STANDARD EUROBOOR HSS ANNULAR CUTTERS. ALWAYS CHECK MEASUREMENTS AND ANGLES AND FINE-TUNE WHEN NECESSARY. FOR ALTERNATIVE CUTTERS, USE MANUFACTURER PROVIDED SPECIFICATIONS OR REVERT TO THE SETTINGS PROVIDED ON THIS PAGE.**

## Grinding inner surface

Mark the inner surface of the first tooth

Set the column scale to  $27.5^\circ$

Set the cutter holder to  $7.5^\circ$

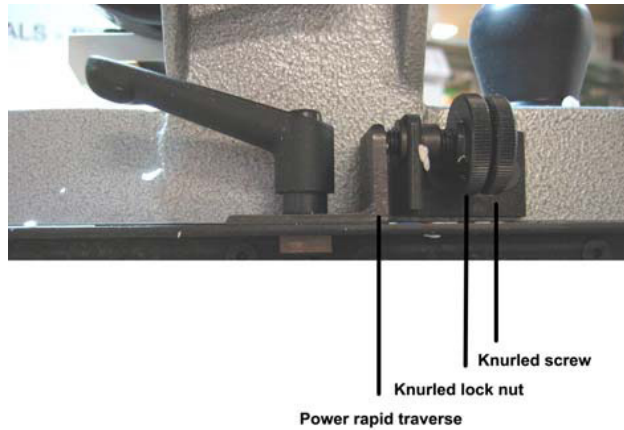


- 1) After making these angular settings, move both the cutter holder slide towards the grinding wheel, and grinding wheel towards the cutter.

### SPECIAL NOTE

Grind the marked tooth as last. To start, first grind the next tooth.

- 2) Slide the core drill onto the stationary grinding disk and set its lateral stop on it (see figure below). Fine-tune the setting by turning the adjusting screw of the stop in the reverse direction till the next milling tooth is no longer in contact with the grinding disk.
- 3) Now grind the outer free surface set by you by moving the guidance carriage to and fro. The delivery from the motor feed should be low and it should remain constant for all other cuts. This way you can ensure that the cuts remain at the same level.
- 4) After grinding the first cut, pull the guide carriage back and turn the star-shaped screw head in the clockwise direction (direction of the arrow) till the next section is reached. To position the next cut, do not change the motor feed. Repeat the grinding operation till all the cuts have been ground.



### Grinding outer surface

With the inside of the marked V-shaped tooth now ground, mark the outer surface of the same tooth

Set the column scale to  $17.5^\circ$

Set the cutter holder to  $31^\circ$

Repeat steps 1 – 4 described under “Grinding inner surface”

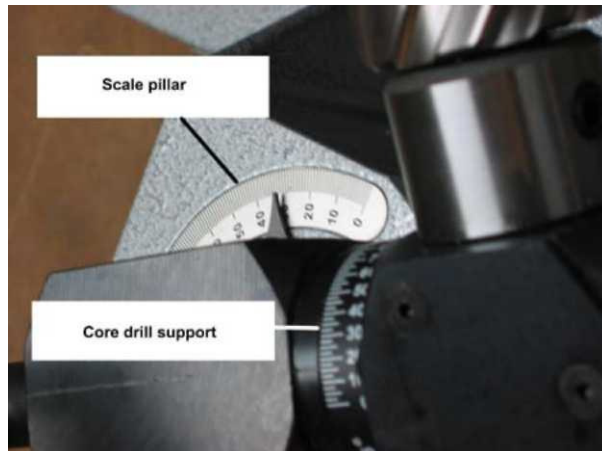
### 5.3.2 Grinding stretched surfaces



The use of Euroboor optional grinding disk ERM3.0011 (see also chapter 7. Accessories) is recommended for grinding the stretched surfaces on standard Euroboor cutters.

For information on replacing the diamond disk, please refer to chapter 5.4 Replacing the Grinding Disk.

Set the column scale to 50°  
Set the cutter holder to 25°



### **SPECIAL NOTE**

The value of this setting is not the same for all core drills.

- 1) Move the core drill along the grinding disk in stationary condition, and if necessary, correct the angular setting (the angular setting can be in the 15 to 30 degree range).
- 2) After making the angular adjustments, bring the core drill with the guide carriage and motor feed near the grinding disk. Grind the stretched surface with the radial diamond disk provided for the purpose. Do not grind the tooth that was aligned (marked tooth). Instead, grind the next stretched surface below it.
- 3) Move the core drill along the grinding disk in stationary condition until the stretched surface touches the diamond disk. Set the lateral stop and the fine tuner in such a way that the stretched surface can be ground.
- 4) Now grind the stretched surface set by you. Feed through the fine tuner should be low, and it should be uniform for all the stretched surfaces. After grinding the first stretched surface, pull the guidance carriage back and turn the knob in the clockwise direction (direction of arrow) right up to the next section. You can position the next stretched surface in this manner. Do not alter the motor feed and the fine tuner position. Repeat the grinding process till all the stretched surfaces have been ground.

## 5.4 Replacing the grinding disk



Always pull the plug out of the mains socket before replacing the grinding disk. No core drill should be in the holder while replacing the grinding disk.



- 1) Unscrew the wing nut at the top
- 2) Remove the grinding disk cover
- 3) Loosen the nut bolt retaining the grinding disk with an Allen key and pull off the grinding disk out of the motor shaft.



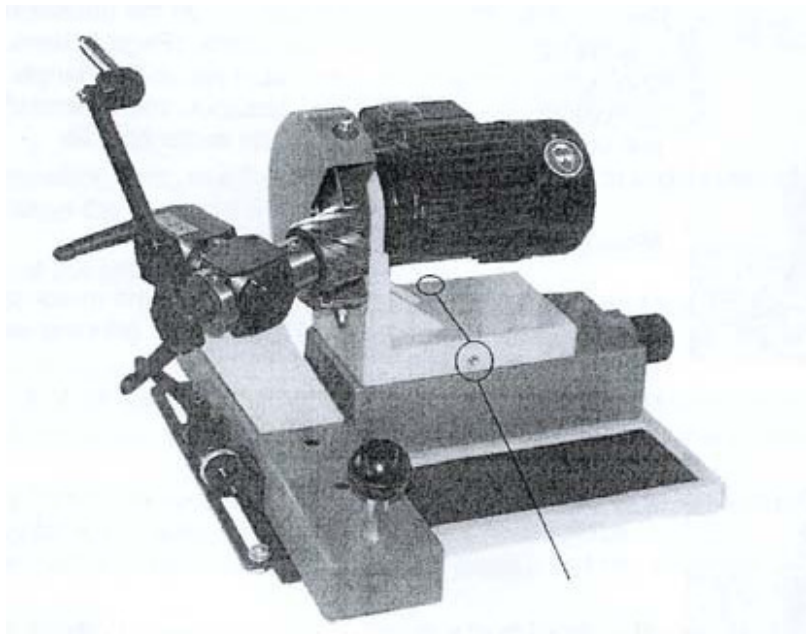
- 4) Assemble the appropriate grinding disk on the motor shaft. Make sure the grinding wheel can rotate freely without touching any of the machine parts.
- 5) Fasten the retaining bolt
- 6) Reassemble the grinding disk cover on the machine



## 6. Maintenance

### 6.1 Cleaning and lubrication

- The grinding dust in the core drill grinding machine must be cleaned at least once a week with a soft brush
- Remove stubborn impurities with a usual commercial machine cleaner
- After cleaning, all moveable parts of the machine must be lubricated with a few drops of machine oil
- To avoid corrosion of the blank parts, some oil should also be applied on these parts and then a soft cloth should be used to wipe the oil off
- The motor carriages should be lubricated at least once in six months through the lubricating nipples at the sides:



### 6.2 Repairs

For service and repair on assemblies like the grinding head or the guide carriage seek the help of a specialized Euroboor repair point, to make sure the values and settings are maintained or corrected.

## 7. Accessories

ERM3.0001	CBN Grinding wheel
ERM3.0002	SDC Grinding wheel
ERM3.0003	Cutter holder 31,75 mm (1 ¼") Weldon
ERM3.0004	Lock wrench M8x15
ERM3.0005	Head support wrench M8x30
ERM3.0006	Laser beam generator
ERM3.0007	Head support wrench M8x75
ERM3.0008	Index plate 6/7
ERM3.0009	Index plate 8/10
ERM3.0010	Index plate 9
ERM3.0011	CBN Grinding wheel (stretched surfaces)

## 8. Warranty

Euroboor warranty on ERM.100/3 covers material defects and manufacturing mistakes. Wear and tear parts conditioned by operation, lack of maintenance, improper use of the machine and damages caused by the use of force are excluded from warranty. For additional details contact your point of sales.

**Always provide the serial number of the machine when submitting for guarantee.**

The machine can be returned only after obtaining prior approval from our side. We reserve the right to charge transportation costs in case of unauthorized returns.