

## Magnetic Drilling Machine with Induction Motor Technology

# ECO.i6



## **Welcome and Congratulations**

You've made an excellent choice by selecting this Magnetic Induction Drilling Machine—an industry-leading tool that sets a new benchmark in its class. At Euroboor, we design our machines to empower professionals like you to work faster, more efficiently, and with greater durability and precision. This machine is the result of continuous innovation and close collaboration with users worldwide. It reflects not just advanced engineering, but also a deep understanding of what professionals truly need.

We're proud to support your work with a tool that helps you deliver results that are not only professional, but exceptional.

Before you begin, please take a moment to read this manual carefully. It contains essential safety instructions and operational guidance to ensure optimal performance and long-term reliability.

### **IMPORTANT**

To reduce the risk of injury, the user must read and understand all instructions before operating the machine.

For support or to find contact details for our global offices, visit: <https://www.euroboor.com>

Note: This manual was originally written in English. In case of discrepancies in translated versions, the English version shall prevail.

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# 1. Safety

## 1.1 General safety instructions

Do not use this magnetic drilling machine before you have thoroughly read and completely understood this manual, specifically the “General safety instructions” and “Specific safety information”, including the figures, specifications, safety regulations and the signs indicating DANGER, WARNING and CAUTION.



**WARNING:** *When using electrical tools basic safety precautions should always be followed to reduce the risk of fire, electrical shock and personal injury.*

Please also observe the relevant national industrial safety regulations. Non-observance of the safety instructions can lead to an electric shock, burns and/or severe injuries.

This manual should be kept for later use and enclosed with the magnetic drilling machine, should it be passed on or sold.

### Work area

1. Keep your work area clean and well lit. Cluttered and dark work areas increase the change of accidents;
2. Do not operate a magnetic drilling machine in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. A magnetic drilling machine may create sparks which could ignite the dust or fumes;
3. Keep bystanders, children and visitors away while operating a magnetic drilling machine. Distractions can cause you to lose control.

### Electrical safety

1. A magnetic drilling machine plug must match the outlet. Never modify the plug in any way. Do not use any adapter plugs;
2. Avoid body contact with grounded surfaces such as pipes, radiators, ranges and refrigerators. There is an increased risk of electric shock if your body is grounded;
3. Do not expose the magnetic drilling machine to rain or wet conditions. Water entering a machine will increase the risk of electric shock;
4. Do not abuse the cord. Never use the cord to carry the magnetic drilling machine or pull the plug from an outlet. Keep the cord away from heat, oil, sharp edges or moving parts. Replace damaged cords immediately. Damaged cords increase the risk of electric shock;



*The frame of your magnetic drilling machine is designed for maximum safety and comfort. It is provided with an ergonomic handle and an integrated motor cable. This offers increased safety as the cable is completely incorporated in the frame. This prevents the user from getting caught in the cable and the cable from tearing or snapping off.*

5. When operating a magnetic drilling machine, use an extension cord suitable for outdoor use, this reduces the risk of electric shock;
6. If operating a magnetic drilling machine in a damp location is unavoidable, use a residual current device (RCD), this reduces the risk of electric shock.

## Personal safety

1. Stay alert, watch what you are doing and use common sense when using a magnetic drilling machine. Do not use the machine while tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating a magnetic drilling machine may result in serious personal injury;
2. Dress properly. Do not wear loose clothing or jewelry. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewelry, or long hair can be caught in moving parts;
3. Avoid accidental starting. Be sure the switch is off before plugging the machine in. Carrying a magnetic drilling machine with your finger on the switch or plugging in a magnetic drilling machine that has the switch on increases the change of accidents;
4. Never place hands, fingers, gloves or clothing near drilling area or rotating machine parts;
5. Remove adjusting keys or switches before turning the machine on. A wrench or a key that is left attached to a rotating part of the machine may result in personal injury;
6. Do not overreach. Keep proper footing and balance at all times. Proper footing and balance enables better control of the magnetic drilling machine in unexpected situations;
7. Use safety equipment. Always wear eye protection. Dust mask, non-skid safety shoes, hard hat and hearing protection must be used for optimal safety;
8. Always use the supplied safety chain during any work on non-horizontal surfaces. Magnetic drilling machine can release from surface.



**WARNING:** *Wear ear and eye protection when using this machine.*

## Machine use and care

1. When using the machine on non-horizontal surfaces, you must use cutting paste. Do not use oil because the oil can drip into the motor unit;
2. While operating the machine, the annular cutter must be cooled and lubricated with high quality cutting lubricants;
3. Always remove the slug from the annular cutter after each hole;



**CAUTION:** *The metal slug can be sharp and very hot!*

4. Use clamps or other practical solutions to secure and support the workpiece to a stable platform. Holding the workpiece by hand or against your body is unstable and may lead to loss of control;
5. Do not use the machine when the switch does not turn it on or off. Any machine that cannot be controlled with the switch is dangerous and must be repaired;
6. Disconnect the plug from the power source before making any adjustments, changing accessories or storing the tool. Such preventive safety measures reduce the risk of starting the tool accidentally;
7. Store your magnetic drilling machine out of reach for children and other untrained persons. Tools are dangerous in the hands of untrained users;
8. Maintain your machine with care. Keep cutting tools sharp and clean. Properly maintained tools, with sharp cutting edges are less likely to break and are easier to control;
9. Check for misalignment of moving parts, breakage of parts and any other condition that may affect the machine's operation. If you detect damage have the machine serviced before use. Many accidents are caused by poorly maintained tools;

10. Only use accessories that are recommended by EUROBOOR for your machine model. Accessories that are suitable for one machine may become hazardous when used on another machine.

## Service

- Tool service must be performed only by qualified repair personnel. Service or maintenance performed by unqualified personnel could result in risk of injury;
- When servicing a tool, use only identical replacement parts. Follow instructions in the maintenance section of this manual. Use of unauthorised parts or failure to follow maintenance instructions may create a risk of electric shock or injury;
- EUROBOOR offers Armature kits containing official EUROBOOR spare parts suitable for your magnetic drilling machine.

## 1.2 Specific safety information

- Keep your fingers away from the drilling area;
- Avoid touching the slug that is automatically ejected by the pilot pin when the working procedure is finished. Contact with the slug when it is hot, or if it falls, can cause personal injuries;
- Always use the safety guard. Before switching on the machine ensure that the guard is closed securely;
- Always use the safety chain;
- The magnetic drilling machine is suitable for use flat steel with a thickness starting from 6 mm. Curvature, coats of paint and surface irregularities will create a distance between the magnets and the steel. Keep it to a minimum;
- Do not clamp the magnetic drilling machine on small or irregular shaped objects;
- Always place the machine on a surface that is clear of shavings, chips, swarf and surface dirt;
- Keep the magnet clean and free of debris and swarf;
- Do not switch on the machine before checking whether the magnetic stand has been tightened firmly to the mounting surface;
- Adjust the machine so cutter does not extend into the workpiece before drilling. Do not perform any design, assembly or construction activities on the workpiece while the machine is switched on;
- Before switching on the machine, make sure all accessories have been mounted correctly;
- Do not switch on the machine until it has been mounted and installed according to all above mentioned instructions;
- Always use the recommended speed for the accessories and material you are working with;
- Do not use the machine on the same workpiece on which electric welders are working;
- Only use an appropriate cutting lubricant. EUROBOOR offers a wide range of well-considered cooling and lubrication products to match your requirements;
- Do not use liquid cutting fluids while drilling vertically or overhead. Dip the cutter in cutting paste or apply an appropriate spray for these applications;
- Do not pour cutting fluid into the reservoir while it is mounted in the bracket. Do not allow cutting fluid to enter the drill motor;
- Before use, ensure movable safety guard operates properly;
- In case of a jammed cutter, turn off the machine, disconnect the machine from the power supply and then remove the reason for the jam before turning on the machine again.

## **Residual risk**

In spite of following the relevant safety regulations and their implementation, certain residual risks cannot be avoided. These are:

- Impairment of hearing;
- Risk of personal injury from flying particles;
- Risk of burns due to accessories becoming hot during operation;
- Risk of personal injury due to prolonged use.

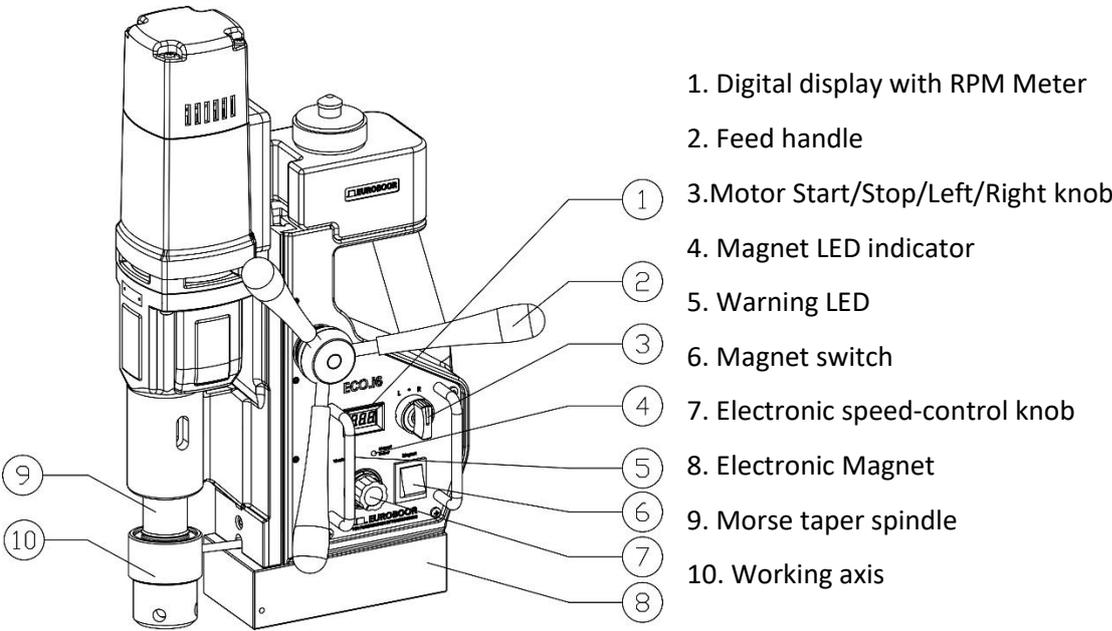
Always try to reduce these risks as much as possible.

# 2. Description

## 2.1 Intended use

This magnetic drilling machine is intended for commercial use as a drilling machine for drilling materials with a flat magnetizable surface using annular cutters and twist drills, and for countersinking, reaming and tapping, in a weather-protected environment using the application tools and accessories recommended by EUROBOOR. The magnetic drilling machine can be used horizontally, vertically or overhead.

## 2.2 Description and features



[image 2-1]

## 2.3 Case contents

- 1 x ECO.i6 magnetic drilling machine
- 3 x handles
- 1 x hex key 2.5 mm
- 1 x hex key 3 mm
- 1 x hex key 4 mm
- 1 x hex key 5 mm
- 1 x lubrication system
- 1 x safety chain
- 1 x arbor MT 3 - 19.05 mm (3/4"), including lubrication ring (IMC.30/19-N)
- 1 x Morse taper ejector drift key
- 1 x user manual
- 1 x safety guard
- 1 x safety ear protection
- 1 x safety goggles
- 1 x safety gloves

## 2.4 Serial number

The serial number is mentioned on the machine 3 times: engraved on the frame and magnet, plus on the serial no. sticker on the top cover. Additional serial no. stickers are provided with the machine for your administration.

The serial number will help you and your sales point validate and identify the machine.

As example:

*60i2510001*

breaks down to:

*60i 25 10 001*

Machine series

Year of manufacture

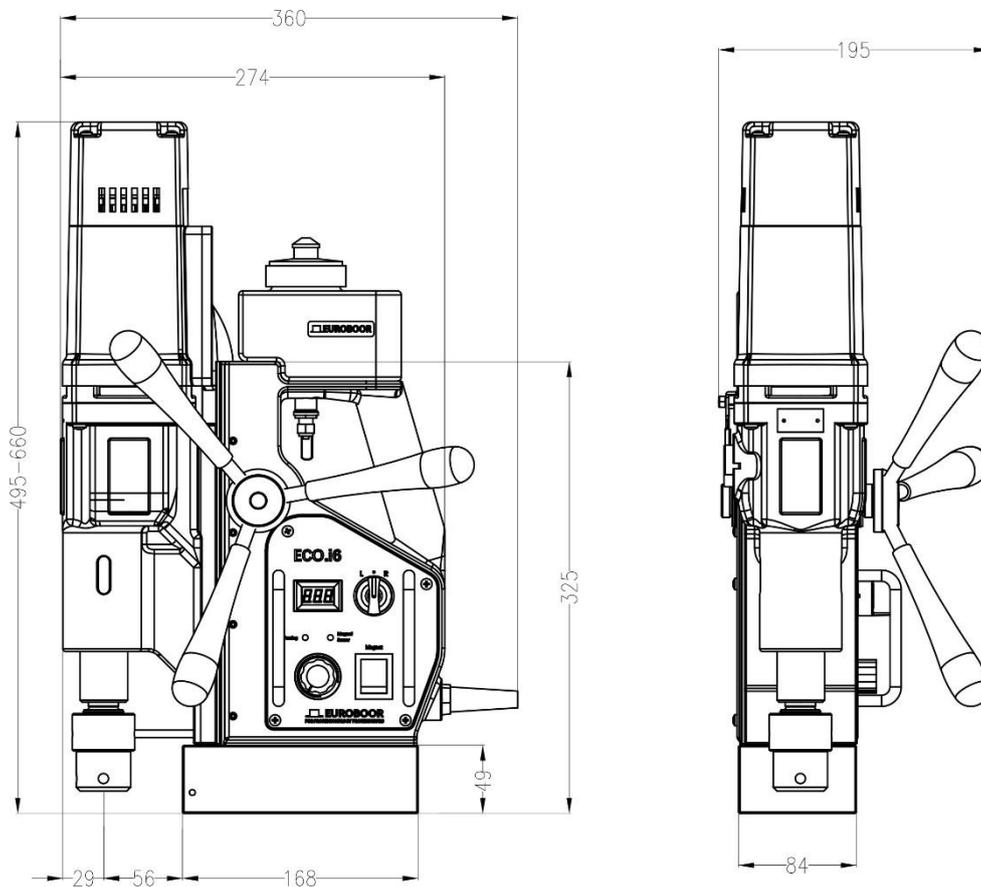
Month of manufacture

Identification number

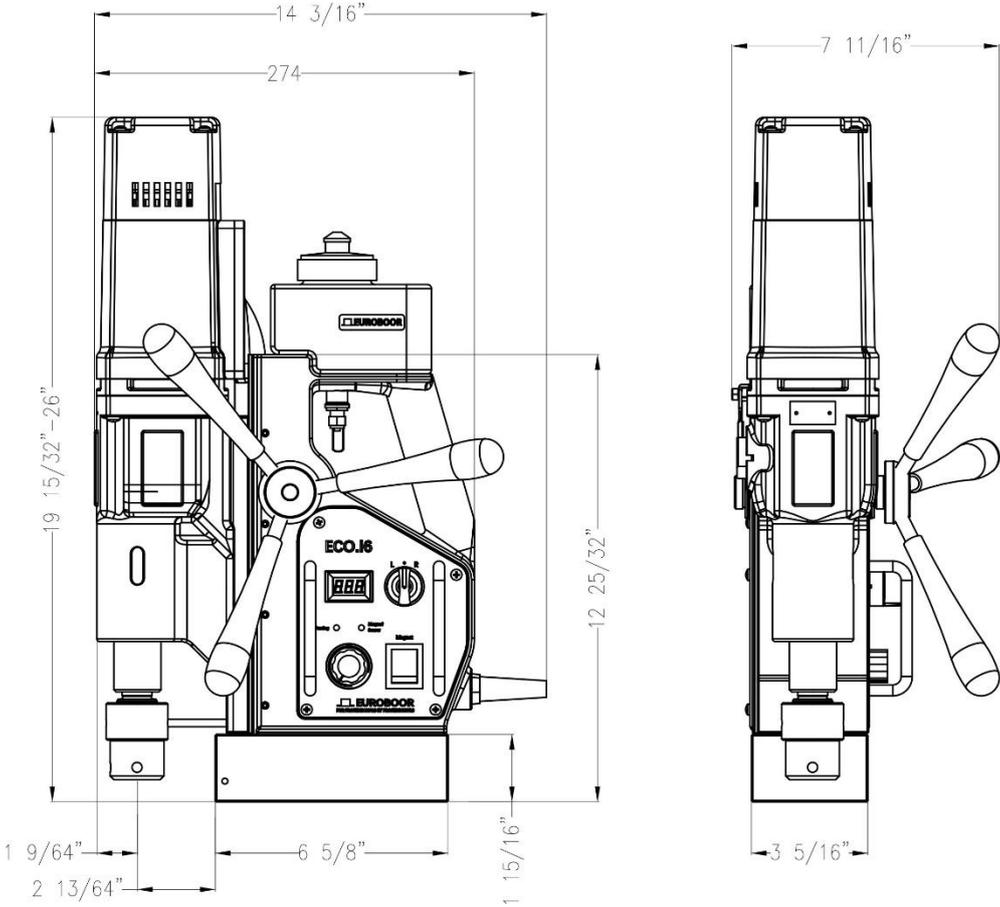
## 2.5 Technical data

	Metric	Imperial
Annular cutters	∅ 12 - 60 mm	∅ 7/16 - 2 23/64"
Twist drills	∅ 1.5 - 23 mm	5/8 - 15/16"
Tapping	M3 - M20	M3 - M20
Countersinking	∅ 10 - 60 mm	∅ 3/8 - 2 3/8"
Length	360 mm	14 3/16"
Width	195 mm	7 11/16"
Height	495 - 660 mm	19 15/32 - 26"
Stroke	165 mm	6 15/32"
Weight	16 kg	35.27 lbs
Magnet (L x W x H)	168 x 84 x 49 mm	6 5/8 "x 3 5/16" x 1 15/16"
Magnetic force	1,200 kg	2,640 lbs
Motor power	1,500 W	13.5 A
Total power	1,600 W	14.5 A
Speed	[I] 121 - 334 rpm [II] 334 - 927 rpm	
Spindle (Weldon)	MT 3 19.05 mm	MT 3 3/4"
Voltage	220 - 240 AC ~ 50 / 60 Hz	110-120 AC ~ 60 Hz

### Dimensions (mm)



**Dimensions (Inches)**



## 2.6 Symbols

Symbol	Term, meaning	Explanation
	Read documentation	Be sure to read the documentation in this user manual and specifically the “General safety instructions” and “Specific safety information”
	Wear ear protection	Use ear protection during operation
	Wear eye protection	Use eye protection during operation
	Danger/warning/caution	Read and apply the information in the adjacent text!
	European conformity	Conformity with EEA machine regulations
	Class of protection I	Product with basic insulation and exposed (touchable)conductive parts additionally connected to the protective earth conductor
	Electromagnetic Compatibility	Able to function acceptably in its electromagnetic environment
	International Electrotechnical Commission	Conformity with international electrotechnical safety standards
	ISO9001	Certified in accordance with ISO9001:2015 quality management system
	UL	Certified by Underwriters Laboratories (UL), a recognized laboratory for safety testing approved by US federal agency OSHA
mm	Millimetre	Unit of measure for the dimensions
"	Inch	Unit of measure for the dimensions
kg	Kilogram	Unit of measure for the mass
lbs	Pounds	Unit of measure for the mass
V	Volt	Unit of measure for the electric voltage
A	Ampere	Unit of measure for the electric current intensity
W	Watt	Unit of measure for the output
rpm	Revolutions per minute	Unit of measure for the revolutions

## 2.7 Environmental



Separate collection. This product must not be disposed of with normal household waste.



Separate collection of used products and packaging allows materials to be recycled and used again. Re-use of recycled materials helps prevent environmental pollution and reduces the demand for raw materials.

Local regulations may provide for separate collection of electrical products from the household, at municipal waste sites or by the retailer when you purchase a new product.

## 3. Preparation & adjustment

### 3.1 Assembly



**WARNING:** To reduce the risk of injury, turn machine off and disconnect from power source before installing and removing accessories, before adjusting or changing set-ups or when making repairs. Be sure all switches are in the OFF position. An accidental start-up can cause injury.

#### Fitting the feed handles

1. Fit each of the three feed handles by screwing them into the hub in clockwise direction;
2. Tighten firmly by hand.

The handles are supposed to face slightly outward. Be careful not to cross-thread any of the components.

#### Filling the container with fluid

In order to use the lubrication system, it must be filled with a sufficient amount of cutting fluid.

1. Make sure the flow regulator is closed;
2. Unscrew the cap;
3. Fill the container with cutting fluid;
4. Screw the cap back on.



**WARNING:** Do not use the lubrication system in vertical drilling applications.

#### Fitting the safety chain

1. Pass the safety chain through the frame grip opening;
2. Wrap the chain around the workpiece;
3. Securely close the chain using the lock.



**WARNING:** The safety chain does not replace the magnetic force of the magnetic drilling machine: it is simply used to protect the operator in the event of machine slipping.

### 3.2 Prior to use

- ✓ Please make sure that the contacting surface for the magnet is level, clean and rust free. Remove any varnish or primer. When working on materials that are not magnetizable, suitable fixation devices, obtainable as accessories from EUROBOOR, e. g. suction plate, vacuum plate or pipe-drilling machine must be used.
- ✓ When working on steel materials with a material thickness of less than 6 mm, the workpiece must be reinforced with an additional steel plate in order to guarantee the magnetic holding power.

- ✓ Check the machine for possible damage; Before using the machine, you must carefully check the protective components or slightly damaged components to ensure they are operating perfectly and as intended.
- ✓ Check that moving parts are in perfect working order, do not jam and check whether the parts are damaged. All parts must be correctly installed and fulfill all conditions necessary to ensure perfect operation of the machine.
- ✓ Damaged protective components must be repaired or replaced according to specifications by EUROBOOR or any authorized EUROBOOR dealer.
- ✓ **DO NOT** use under wet conditions or in presence of flammable liquids or gases.
- ✓ **DO NOT** let children come into contact with the machine. Supervision is required when inexperienced operators use this machine.

### Electrical safety

The electric motor has been designed for one voltage only. Always check that the power supply corresponds to the voltage on the rating plate.

Your EUROBOOR magnetic drilling machine is designed in class I (grounded) according to EN 61029-1. Earth wire is required.

If the supply cord is damaged, it must be replaced by a specially prepared cord available at EUROBOOR or your EUROBOOR dealer.

### Extension cable

If an extension cable is required, use an approved 3-core cable suitable for the power input of this machine (see technical data):

- The minimum conductor size is 2.5 mm<sup>2</sup> (for 220V) or 14 AWG (Amperage Wire Gauge for 110V) for 7.5m (± 25 ft).
- The minimum conductor size is 2.5-4 mm<sup>2</sup> (for 220V) or 14 AWG (Amperage Wire Gauge for 110V) for 15m (± 50 ft).



**WARNING:** *When using a reel, always unwind the cable completely!*

### Useful tips

- Try a few simple projects using scrap material until you develop a “feel” for the magnetic drilling machine;
- Let the machine run in for a period of eight to ten hours before starting with big operations. Do not load the machine too much during this run-in period;
- Never use the machine with serious overload;
- Keep the machine clear from moisture at all times to protect the machine, yourself and others.

# 4. Using the machine

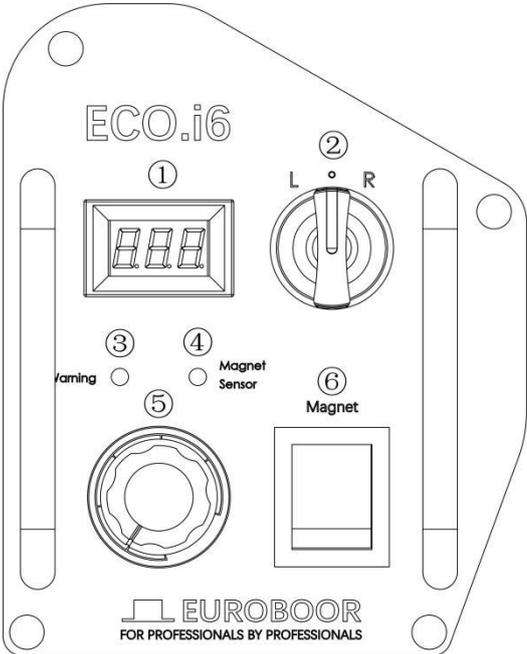
 **WARNING:** Always observe the safety instructions and applicable regulations.

 **WARNING:** To reduce the risk of serious personal injury, turn tool off and disconnect tool from power source before making any adjustments or removing/installing attachments or accessories.

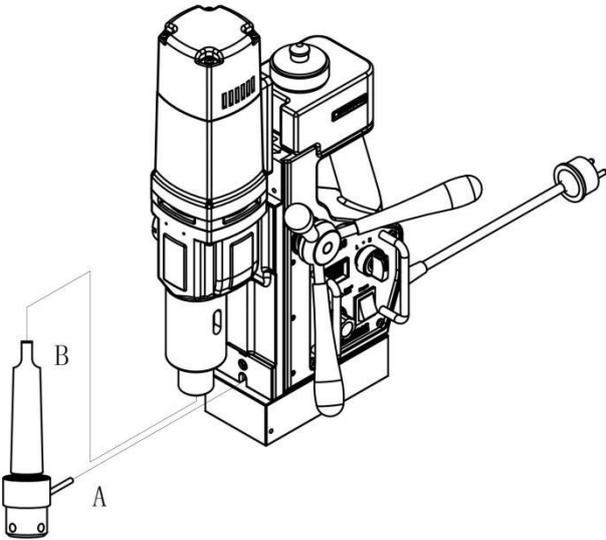
## 4.1 Control panel

The control panel is designed for maximum ease of use and safety.

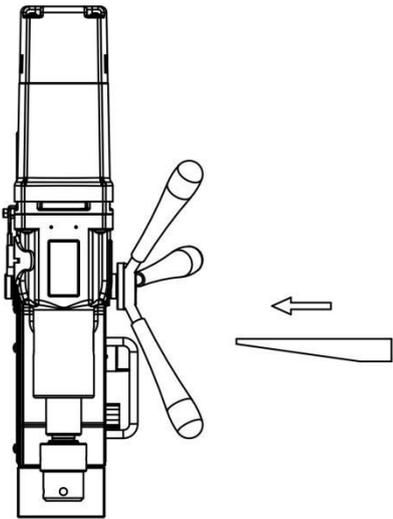
- 1. Digital display and RPM Meter
- 2. Motor L/R knob
- 3. Warning LED
- 4. Magnet LED indicator
- 5. Electronic speed control knob
- 6. Electromagnet switch



## 4.2 Morse taper arbor



[image 4-2]



[image 4-3]

1. Make sure the inside of the output shaft and the Morse Taper spindle are clean and free of grease
2. Align the coolant ring rotation limiter with the recess in the gearbox (A)
3. Firmly slide the Morse Taper spindle into the output shaft by hand (B). Make sure the spindle is properly positioned. You should not be able to pull it out by hand.
4. To remove the Morse Taper spindle
  - Switch of the motor
  - Rotate the mechanical gear switch to neutral (see chapter Gearbox)
  - Rotate the output shaft until the slots on the shaft align with the slots on the gearbox
  - Gently tap the supplied drift into the slots to push the Morse Taper arbor out

### 4.3 Electromagnet

Make sure the magnetic drilling machine is placed on a smooth, clean, level and solid surface without any objects or debris to guarantee maximum adhesion.

The workpiece must at least be 6 mm (1/4") thick for the magnet to stick and to drill safely. In case the workpiece is between 3 mm (1/8") and 6 mm (1/4"), make sure to make a proper base to create a good magnetic field as shown below.

The electromagnet will work best on surfaces of at least 10 mm (3/8") thickness.

When the electromagnet is not able to create a good enough magnetic field, this may be caused by:

- Surface not being flat;
- Workpiece is not magnetisable (e.g. aluminium);
- Workpiece is coated or painted;
- Workpiece is not thick enough.

In this situation the magnet indicator will light up RED. Make sure to solve any of these matters before proceeding in any way and creating unsafe situations.



The magnet LED indicator lights up GREEN when the generated magnetic force is sufficient to hold the machine in position while not drilling;



**WARNING:** Do not use this machine when LED indicator is RED. Magnet may not generate sufficient attachment force

**We want to point out that above mentioned precautions and indicators do not guarantee that the magnet will not release from the material. EUROBOOR accepts no liability when it comes to the magnet indicator not functioning or functioning poorly.**

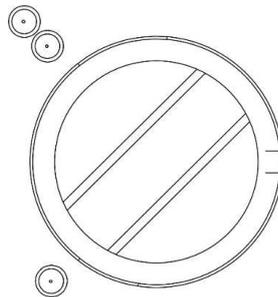
Make sure that the magnet attaches tightly to the work piece before turning on the motor unit of the magnetic drilling machine. EUROBOOR magnets have two coils; make sure that both coils are in contact with the material. Do not connect any other machine to the same electrical outlet to which the magnetic drilling machine is plugged into, as it may result in the loss of magnetic force.

Always use the safety chain included. Drilling above your head is extremely dangerous and is not recommended. For the use of magnetic drilling machines on pipes, not-flat or non-magnetic materials, we refer to our catalogue or our website [www.euroboor.com](http://www.euroboor.com) where several vacuum tightening systems, pipe clamping systems and Tube machines can be found.

## 4.4 Gearbox

1. To select the correct gear from neutral (horizontal) position:
  - a. Rotate the switch counter clockwise to position **o**, this is gear 1;
  - b. Rotate the switch clockwise to position **oo**, this is gear 2;
2. A gear is only correctly selected when the gearbox switch is aligned with the indicators on the gearbox;

In case you have trouble fully and correctly selecting a gear, the gears in the gearbox might be misaligned. Slightly rotating the output shaft by hand will help you align the gears and correctly and fully select the intended gear.



[image 4-6]



**WARNING:** *Never touch any moving machine parts!*

## 4.5 Switching motor on and off

To switch the motor ON, turn the motor Start/Stop/Left/Right knob to "L" or "R" position. To switch the motor OFF, turn the motor Start/Stop/Left/Right knob to neutral position.



**WARNING:** Before switching the motor on, pls switch on the magnet and make sure that the magnet LED indicator is green.

## 4.6 Motor rotation

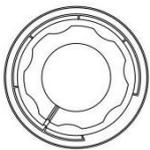
The rotational direction of the motor can be changed:

- Rotate the L/R knob in position (R) will make the motor rotate clockwise;
- Rotate the L/R knob in position (L) will make the motor rotate counter clockwise;
- Rotate the L/R knob in middle position will not make the motor rotate (neutral position).

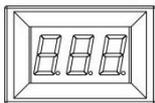
## 4.7 Motor speed control

The optimal drilling speed depends on the material being drilled, the type of drill bit, and its diameter. Selecting the correct speed will make your work safer, more efficient, and longer-lasting. It will also result in a smoother, more professional finish and extend the lifespan of your tools.

The speed control knob (potentiometer) allows you to electronically control the speed of the motor (in both clockwise and anticlockwise direction) in combination with both mechanical gears.



The indicator of the potentiometer in bottom left corner is minimum speed  
The indicator of the potentiometer in bottom right corner is maximum speed



The exact spindle speed can be read on the Digital display and RPM Meter after you have turned on the motor.

### Exact Spindle Speed in Gear I and Gear II

Gear 1 o      Speed 121-334 rpm

Gear 2 oo     Speed 334-927 rpm



*Use the Cutting Speed Calculator to select the right speed for your cutter and the material to be cut. Scan the QR Code for a direct link to the Cutting Speed Calculator.*

## 4.8 Overload Protection



Built-in electronic torque control will automatically stop the motor in case of overload. Once torque control program is activated, turn the R/L knob in the neutral position, then turn the knob in "L" or "R" Again to restart the drilling work.

## 4.9 Overheat protection



This machine is supplied with an all-time electronic overheat protection. If the temperature of the motor unit runs up to 70° C (148 °F), the motor unit will stop. After a few minutes it can be started again. When it is possible to start the motor again, let the motor run idle at full speed for a couple of minutes to let the motor cool down more in an efficient way.

## 4.10 GYRO-TEC safety



This EUROBOOR magnetic drilling machine is equipped with GYRO-TEC safety functionality. It features a gyroscopic sensor which detects acceleration and displacement in any direction. Whenever the machine recognizes a sudden or unwanted movement the motor will be shut down automatically by the machine's electronics.

This safety functionality offers protection to the user in various circumstances, such as:

- Sudden loss of magnetic force while in operation;
- Excessive vibration caused by incorrect drilling procedure, worn-out cutting tools, etc;
- Sudden displacement of the workpiece to which the magnetic drilling machine is attached.

By the motor shutting down automatically, risk of damaging or hurting the machine, tools, workpiece and operator is reduced.

Every time the motor is started, the machines electronics need a moment to run a systems check and initiate the safety system. The GYRO-TEC safety feature engages 3 seconds after the motor is started.

It is very important to note that this functionality raises the safety level, but does not prevent the operator from using the machine incorrectly. The operator should always follow instructions described in this manual and take all necessary safety precautions.

## 4.11 Power protection



The power protection feature is two-fold; it consists of both power fluctuation protection and power surge protection. Special safety components built into the electronics of the machine make it more reliable in situations where power supply can be of varying quality due to factors:

- Around the workplace, for example caused by switching on high power or unreliable electrical devices, a broken circuit breaker or faulty wiring;
- Outside the workplace, for example caused by an instable power grid or lightning.

A machine with this feature is able to cope with standard rated voltage and frequency fluctuations ranging from:

- 110-120V~60Hz, or
- 220-240V~50/60Hz

reducing the probability of breakdown and minimising down-time and repair cost.

## 4.12 Tool lubrication

### HORIZONTAL APPLICATIONS

In order to use the lubrication system, the tank must be filled with a cutting fluid or oil

1. Make sure the flow regulator is closed
  2. Unscrew the cap
  3. Fill the container with cutting fluid or oil
  4. Screw the cap back on
- Open the tank cap vent nipple to start flow.
  - Adjust the fluid flow as required using the flow regulator;
  - Add more cutting fluid if the shavings (metal chips) become blue.

### VERTICAL AND OVERHEAD APPLICATIONS

Dip the cutter in cutting paste or apply an appropriate spray.



**WARNING:** Do not use the lubrication system in vertical or overhead drilling applications. Instead use EUROBOOR cutting paste.

Make sure to use only suitable cutting oil or fluid. EUROBOOR offers a wide range of cutting lubricants for all tool and material combinations. Proper cooling will help you create better and faster results, and extend the lifetime of your tools.

## 5 Working with operation tools

### 5.1 Annular cutters

Annular cutters only cut material at the periphery of the hole, rather than converting the entire hole to shavings. As a result, the energy required to make a hole is lower than for a twist drill. When drilling with an annular cutter, it is not necessary to drill a pilot hole.



**WARNING:** Do not touch the cutter or the parts close to the cutter immediately after operation, as they may be extremely hot and cause burns to the skin. Ensure nobody is in the work area where the metal core (slug) is ejected.

#### Drilling conditions

The ease with which material can be drilled depends on several factors including tensile strength and abrasion resistance. Whilst hardness and/or strength is the usual criterion, wide variations in machinability can exist among material showing similar physical properties.

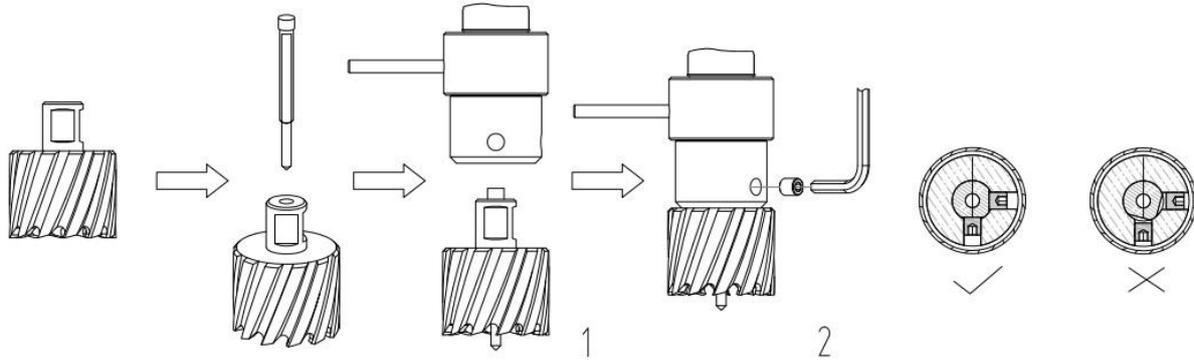
The drilling conditions are dependent on requirements for tool life and surface finish. These conditions are further restricted by the rigidity of the tool and the workpiece, lubrication and machine power available. The harder the material, the lower the cutting speed.

Some materials of low hardness contain abrasive substances leading to rapid cutting edge wear at high speeds. Feed rates are governed by rigidity of set-up, volume of material to be removed, surface finish and available machine power.

## Drilling a hole

Now that you have read the information and safety recommendations above, you are ready to actually start drilling. Follow these 12 steps for best drilling result:

1. Install the annular cutter:
  - Place the pilot pin into the cutter;
  - Align the flat faces on the cutter shank with the screws in the tool holder;
  - Make sure the cutter shank is entered fully and correctly;
  - Tighten the screws;



[image 5-1]

2. Precisely mark the center of the hole;
3. Use the pilot pin to position the machine in the correct position, with the tip of the pilot pin to meet the marked center of the hole;
4. Switch on the magnet and verify that the drill is in the right position and that the machine is pushed tight against the work piece;
5. Fill the holes of the spindle with oil;
6. Switch the motor on and allow it to run at the required speed;
7. Turn the feed handles to start drilling. Apply only a slight pressure when the annular cutter touches the metal. Do not push the annular cutter with force into the metal;
8. Apply a regular pressure while drilling. The drilling performance does not improve by putting more pressure on the machine. Too much pressure will overload the motor and your annular cutter will be worn sooner;  
***A continuous, non-discoloured iron swarf is a sign of correct drilling speed and a well-cooled, sharp cutter. Let the cutter do the job and give it time to cut the metal!***
9. Stop drilling regularly, refill the holes of the spindle and continue drilling;
10. Apply less pressure when the drill cuts through the material. The slug will be pushed out of the cutter by the pilot pin;
11. Turn the feed handles to put the motor in highest position and switch off the motor unit;
12. Remove the burrs, metal chips and clean the cutter and surface without getting injuries.



**CAUTION:** *The slug can be sharp and very hot!*

## 5.2 Twist drills

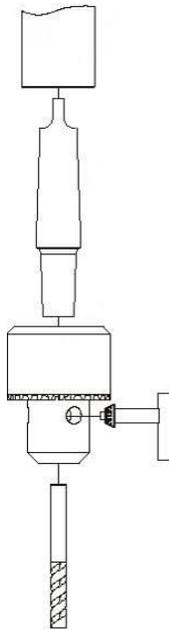
### Weldon shank 19.05 mm (3/4")

Fit the twist drill with 19.05 mm (3/4") Weldon shank (EUROBOOR code SPI or SSPI) into the provided MT3 to Weldon 19.05 mm (3/4") arbor (IMC.30/19-N) and fasten the screws with the provided Allen key.

Follow the further steps in paragraph Annular cutters.

### Standard parallel shank (DIN338)

1. Remove the Morse Taper 3 (MT3) arbor for Weldon shanks (see paragraph Morse Taper arbor)
2. Fit a MT3 arbor connection
  - a. EUROBOOR code 1/2UNF-MC3 for 1/2" x 20 UNF drill chuck connections
  - b. EUROBOOR code B16-MC3 for B16 drill chuck connections
3. Fit the appropriate twist drill chuck to the arbor
4. Fit the drill with parallel shank and fasten it



[image 5-2 | Example of fastening a drill with a key]

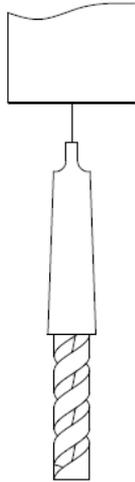
5. Precisely mark the center of the hole, and use the tip of the twist drill to position the machine.

For further steps see paragraph Annular cutters.

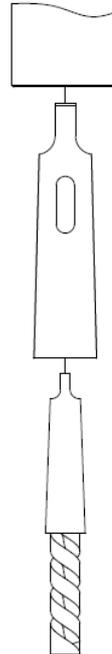
### Morse Taper shanks (MT2 or MT3)

1. Remove the Morse Taper 3 (MT3) arbor for Weldon shanks (see paragraph Morse taper arbor)

2. Fit a twist drill with a MT3 shank
3. For twist drills with a MT2 shank fit an MT3-MT2 adapter (EUROBOOR code IBK.MC3-MC2) before fitting the drill (see below)



[image 5.3 | fitting drill with MT3 shank]



[image 5.4 | fitting drill with MT3-MT2 adapter]

4. Precisely mark the center of the hole, and use the tip of the twist drill to position the machine.

For further steps see paragraph Annular cutters.

### 5.3 Machine taps

This machine is equipped with counter clockwise rotation and can therefore also be used for tapping.

#### Drill tap combination with Weldon 19.05 mm (3/4") shank

1. Fit the drill tap (EUROBOOR code EDT) into a spindle with 19.05 mm (3/4") connection and fasten by tightening the screws with the provided Allen key;
2. Make sure the direction of rotation is set at clockwise (right = R);
3. Drill the required hole and tap simultaneously;
4. Switch off the motor and set the direction of rotation to counter clockwise (left = L);

Switch on the motor again, and guide the motor unit upwards with the feed handles to allow

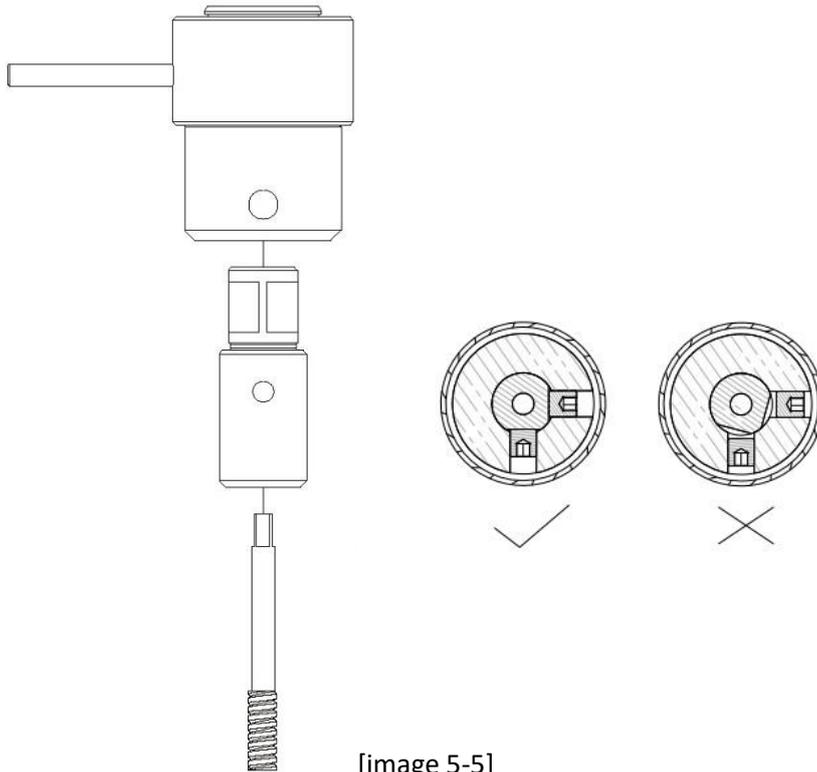
#### Machine taps (DIN 371/376) with Weldon adapter

1. Drill the hole for the tap on the recommended size;
2. Switch off the machine and change the cutter or drill for the tap holder and the machine tap;



**WARNING:** Do not change the position of the machine!

3. Install the machine tap in the tap holder (EUROBOOR code TCM) and tighten the screws;
4. Fit the tap holder with the Weldon shank into the spindle;



[image 5-5]

5. Select the lowest gear and speed and set the direction of rotation to clockwise (right = R);
6. Switch on the motor and set the machine tap onto the drilled hole;
7. Guide the motor unit down with the feed handle without exerting;
8. Switch off the motor and set the direction of rotation to counter clockwise (left = L).
9. Switch on the motor again and allow the machine tap to come completely out of the work piece. Guide the motor unit upwards with the feed handles to avoid damaging the start of the thread.



**WARNING:** Do not let your tap push up the motor unit by itself!

Make sure to properly lubricate while performing tapping work, see paragraph Annular cutters.

## 5.4 Step drills and countersinks

To install drills for reaming (EUROBOOR step drill set ESS.430/2) and countersinking (EUROBOOR countersink set CBS.620) follow the steps mentioned in the previous paragraphs.



## 6. Maintenance

Your EUROBOOR magnetic drilling machine with Induction Technology has been designed to operate over a long period of time. Thanks to the advanced Induction motor technology that eliminates wear-and-tear components such as carbon brushes and commutators on the armature, your ECO.i6 requires minimal maintenance and will remain fully operational throughout its entire lifespan.

Continuous satisfactory operation depends upon proper tool care and regular cleaning.



**CAUTION:** *To reduce the risk of injury, turn the machine off and disconnect machine from power source before installing and removing accessories, before adjusting or changing set-ups or when making repairs. Be sure the switch is in the OFF position. An accidental start-up can cause injury.*

Just as every magnetic drilling machine with moving parts, your EUROBOOR magnetic drilling machine also needs regular maintenance service. A few recommendations follow :

### Visually check the machine for damage

The machine must be checked before operating for any signs of damage that will affect the operation of the machine. Particular notice must be taken of the main cable, if the machine appears to be damaged it should not be used. Failure to do so may cause injury or death.

### Cleaning

- Clean all dirt, dust, metal chips and burrs of your magnetic drilling machine;
- Blow dirt and dust out of the main housing with dry air as often as dirt is seen collecting in and around the air vents. Wear approved eye protection and an approved dust mask;
- Never use solvents or other harsh chemicals for cleaning the non-metallic parts of the tool. These chemicals may weaken the materials used in these parts. Use a cloth dampened only with water and mild soap. Never let any liquid get inside the tool; never immerse any part of the tool into a liquid.

### Operation of the machine

The machines operation must be checked to ensure that all components are working correctly. Replace any defective parts immediately. This prevents properly functioning parts from being damaged.

### Check magnetic base

Before every operation the magnetic base should be checked to make sure that the base is flat and there is no damage present. An uneven magnet base will cause the magnet to hold not as efficiently and may cause injury to the operator. When the machine is put out of use for a longer period, apply a small amount of machine oil to the underside of the magnetic base for rust protection. Clean the magnetic base again with next use.

### Check gearbox oil (IBO.G101)

The oil should be checked once a month to ensure all moving components are covered to prevent wear. The oil should be changed at least once a year to ensure you gain the best from the machine.

### Adjustment of slide

An essential requirement of the machine is that the slide can move in a smooth and controlled manner, free of lateral movement and vibration. This situation can be maintained by periodic adjustment of the slide and can be accomplished in the following manner:

1. Place the machine in an upright position and, by means of the capstan, raise the slide to its highest position. Clean the aluminum rails and apply a small amount of light machine oil to the wear surfaces;
2. Gently feed in setting screw with supplied Allen key 2.5 until slight resistance is encountered. Follow your way down adjusting all setting nuts and screws;
3. Operate the slide up and down a few times to test the movement and make any further necessary adjustments. Try to ensure that all the screws are exerting a uniform pressure on the slide from top to bottom. A perfectly adjusted slide will operate freely up and down without any sideways movement.

### **Lubricating the feed travel**

The feed travel should be lubricated periodically with grease to ensure smooth operation.

- Raise the motor unit to the highest position possible;
- Lubricate the dove-tail guideway at both sides;
- Lubricate the gear rack.

After repeated use, the gear rack may become loose. If necessary, adjust the five self-locking set screws at the left side. Tighten screws in series until the gear rack moves freely in the dove-tail guideway but does not allow the motor to wobble.

### **Repair, modification and inspection**

Repair, modification and inspection of EUROBOOR Magnetic drilling machines must be done by EUROBOOR or an EUROBOOR authorised dealer. The spare parts list will be helpful if presented with the machine to the EUROBOOR dealer for service when requesting repair or other maintenance.

EUROBOOR machines are constantly being improved and modified to incorporate the latest technological advancements. Accordingly, some parts (i.e. part numbers and/or design) may be changed without prior notice. Also, due to EUROBOOR's continuing program of research and development, the specifications of machines are subject to change without prior notice.



**WARNING:** *Since accessories, other than those offered by EUROBOOR, have not been tested with this machine, use of such accessories with this tool could be hazardous. To reduce the risk of injury, only EUROBOOR recommended accessories should be used with this machine.*

Consult your dealer for further information on the appropriate accessories.

## 7. Trouble shooting

### 7.1 General Issues

Panel LED and display screen are both off	<ul style="list-style-type: none"> <li>- External power supply may not be connected</li> <li>- Power switch may not be turned on</li> <li>- Fuse may be damaged</li> <li>- Power switch may be damaged</li> <li>- Internal connecting wires may be loose</li> </ul>
Magnet LED indicator is red	<ul style="list-style-type: none"> <li>- Magnetic base may not be adsorbed on the steel plate</li> <li>- Steel plate surface may be uneven</li> <li>- There may be objects between the steel plate and the magnetic base</li> <li>- Magnetic base surface may be uneven</li> <li>- The adsorbed steel plate may be too thin</li> <li>- Reed switch may not be plugged in</li> <li>- Reed switch may be damaged</li> </ul>
Alarm light flashes red continuously	<ul style="list-style-type: none"> <li>- Selector switch may not be in the middle position</li> <li>- RS485 combination cable may be damaged</li> <li>- Potentiometer board may be damaged</li> <li>- Control board may be damaged</li> <li>- Drive board may be damaged</li> <li>- Power switch was turned off and then on again directly after a protective shutdown</li> </ul>
Display screen is off	<ul style="list-style-type: none"> <li>- Power switch may not be turned on</li> <li>- Potentiometer 4-core wire may be loose</li> <li>- Potentiometer board may be damaged</li> </ul>
Machine does not start	<ul style="list-style-type: none"> <li>- Control board may be damaged</li> <li>- Drive board may be damaged</li> <li>- Connecting wires may be loose</li> </ul>
Adjusting the potentiometer knob does not change speed on display	<ul style="list-style-type: none"> <li>- Hall sensor PCB board may be damaged</li> <li>- Hall sensor PCB board 3P terminal may not be plugged in securely</li> <li>- Potentiometer board may be damaged</li> <li>- Potentiometer board 4-core wire may not be plugged in securely</li> </ul>

## 7.2 Detailed Fault Code Description

Display Code	Cause
E01	Acceleration overcurrent
E02	Deceleration overcurrent
E03	Constant speed overcurrent
E04	Acceleration overvoltage
E05	Deceleration overvoltage
E06	Constant speed overvoltage
E07	Drive board heat sink overheating
E08	Inverter module protection
E09	Overvoltage during shutdown
E10	Undervoltage during operation
E12	EEPROM read/write fault
E16	Control board heat sink overheating
E18	Inverter overcurrent protection
E21	Gyroscope initialization failure
E22	Angle deviation fault
E23	Gyroscope data read fault

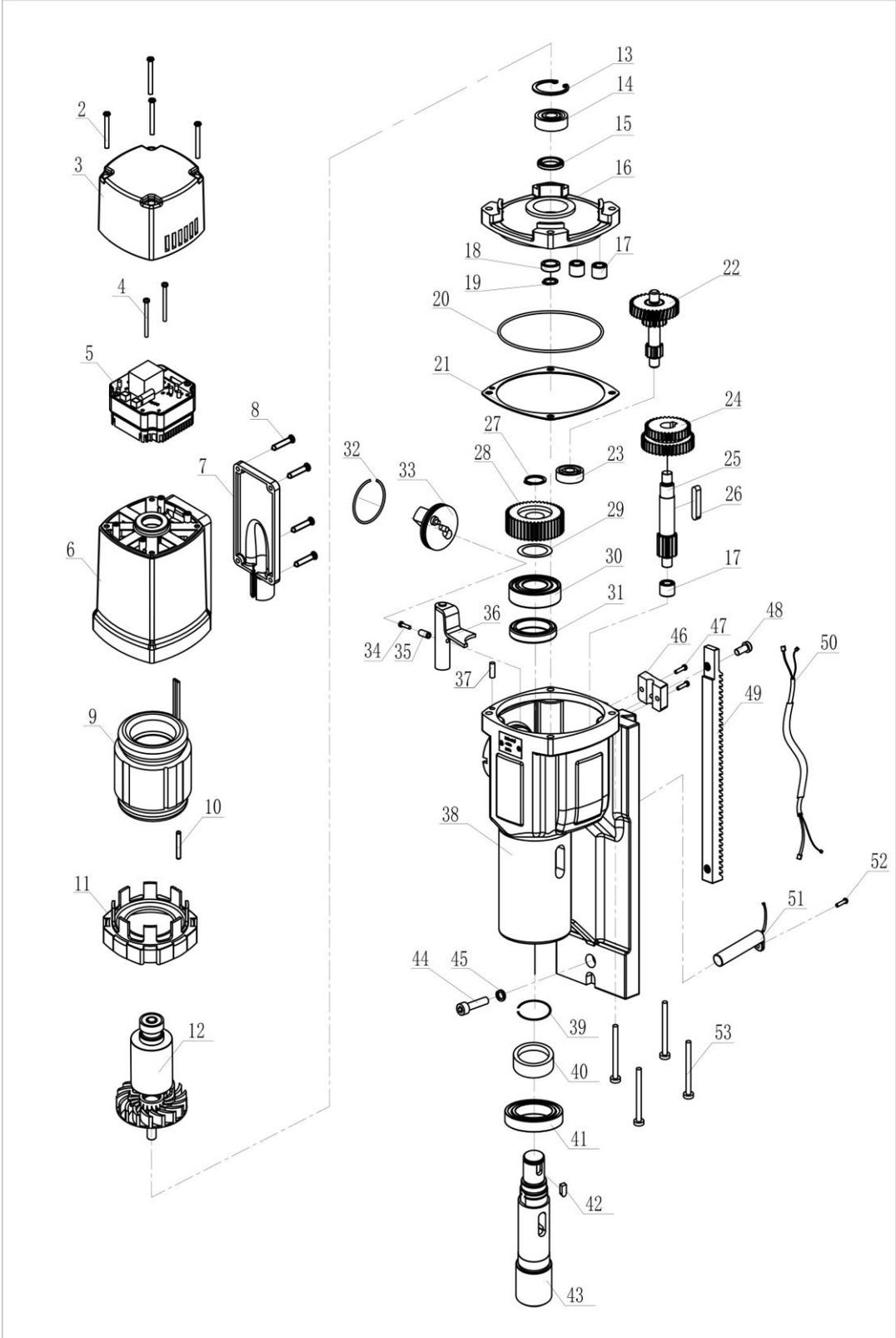
**Special Reminder:** If it is necessary to open the top cover, side cover, front panel, rear panel, or disconnect wiring for machine maintenance, it is essential to discharge the machine. The specific operation is as follows: First, start the machine without load, allowing the motor to run freely. Then, adjust the potentiometer to maximum. After the speed stabilizes, directly turn off the power switch, unplug the power cord, and then set the selector switch to the reset "0" position (middle position). Proceed with the next steps of maintenance and inspection.

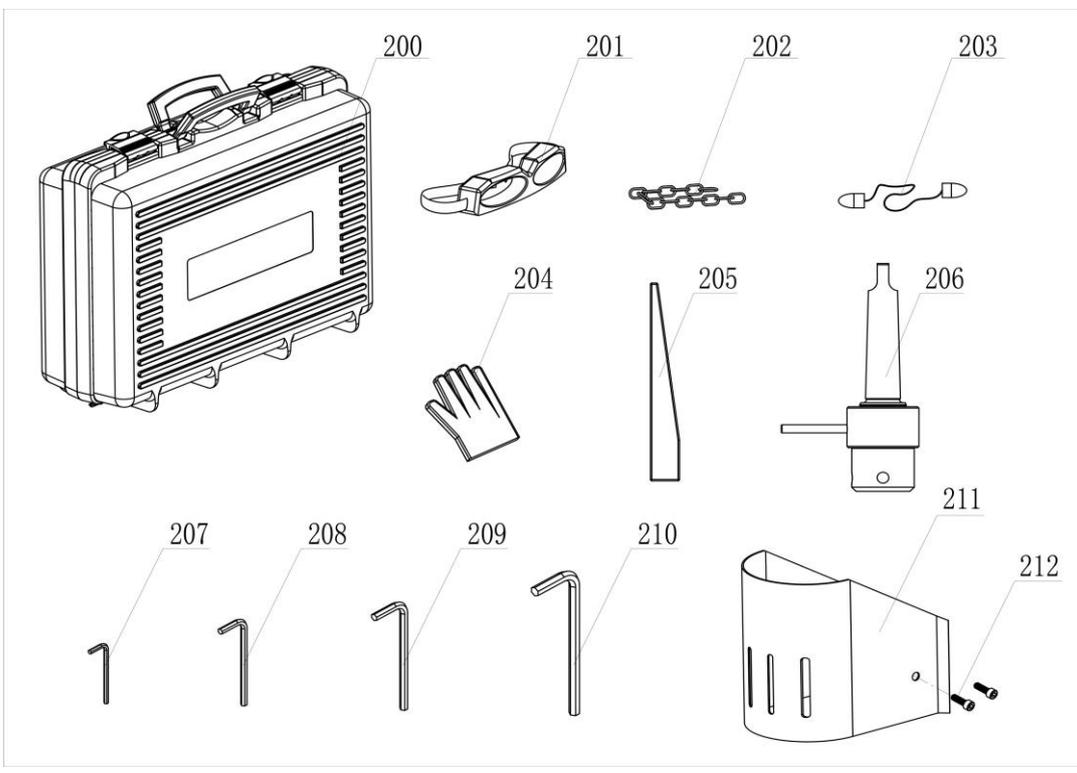
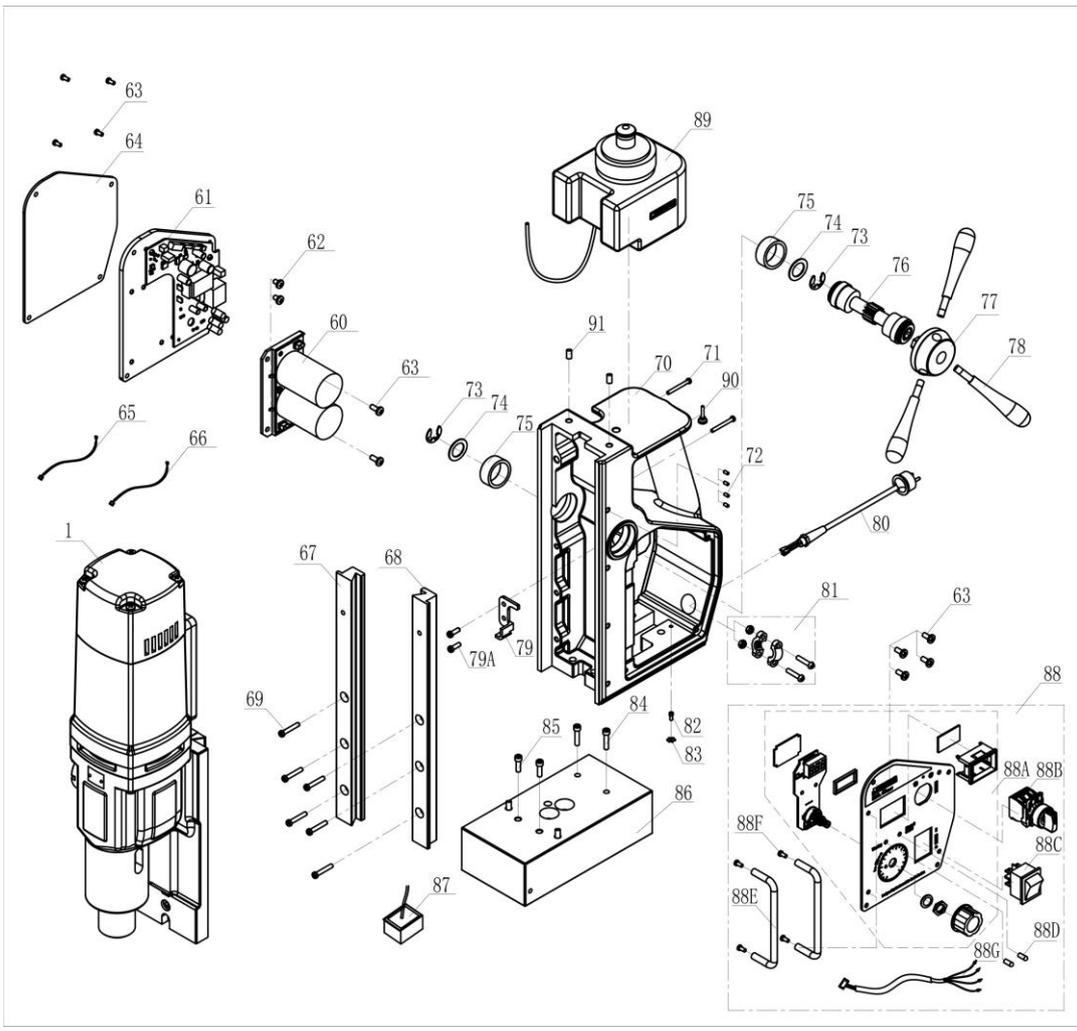


**Operate with caution!** This step is only for use when machine inspection and repair are required

# 8. Exploded view & spare part list

## 8.1 Exploded view

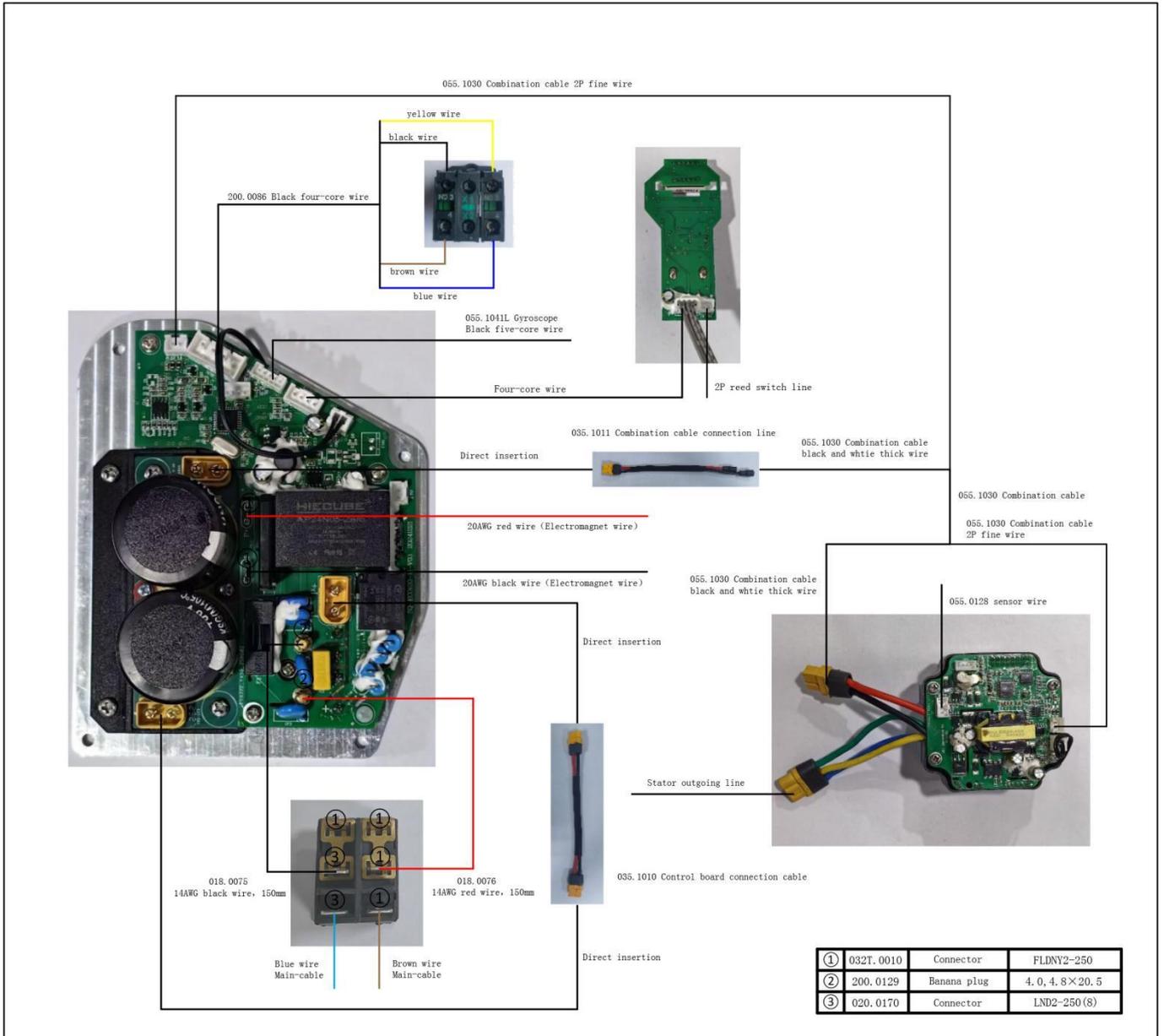




## 8.2 Spare parts list

No	Part no.	Description	Qty
1	060B.1001	Motor unit 220V	1
	060B.1001A	Motor unit 110V	1
2	035.0043	Screw 304-M4×80	4
3	030.0107	End Cover	1
4	035.0028	Screw with washer assembly	2
5	035.0022	Driver PCB unit 220V	1
	035.0022A	Driver PCB unit 110V	1
6	055.0117	Housing	1
7	055.0118	Cable-housing	1
8	055.0119	Screw	4
9	WS055.0027	Field 220V	1
	WS055.0027A	Field 110V	1
10	055.0158	Pin $\phi 4 \times 18$	1
11	055.0121	Spacer	1
12	055.1032	Armature set	1
13	032.0166	Circlip $\phi 28$	1
14	050.0070	Bearing 6001V	1
15	050.0064	Oil seal SOG $\phi 15 \times \phi 21 \times 3 \text{mm}$	1
16	050.0236Y	Inner-gear-plate	1
17	040.0161	Bearing HK0810	3
18	050.0065	Rotor iron seal $\phi 15 \times \phi 10 \times 5$	1
19	020.0114	Circlip $\phi 10$	1
20	050.0071	O-ring $\phi 1.8 \times \phi 82$	1
21	050.0125	Sealing paper gasket	1
22	055.1033	First-gear set	1
23	032.0126	Bearing 608ZZ	1
24	060.0171	Gear	1
25	050.0231	Axle 1×13T	1
26	050.0301	Key 5×5×28	1
27	050.0076	Circlip $\phi 20$	1
28	050.0463	Gear 1×45T	1
29	050.0462	Gasket $\phi 20.5 \times 28 \times 0.2$	1
30	030.0009	Bearing 6004DDU	1
31	055.0141	Oil seal SOG $\phi 24 \times \phi 37 \times 7$	1
32	050.0078	Stop-ring $\phi 40.8 \times \phi 36.2 \times 1.5$	1
33	050.1014	Speed-control-knob set	1
34	020.0329	Inner hexagon bolt M4×16	1
35	050.0082	Screw-holder $\phi 7 \times \phi 4.5 \times 12$	1
36	055.1037	Clutch Shaft set	1
37	032.0211	Casing-Pin	1
38	055.1038	Gear-box set	1
39	055.0144	Stop-ring $\phi 26 \times 1.2$	1
40	055.0142	Bonded NdFeB magnet	1
41	050.0068	Bearing 61906	1
42	050.0077	Key 6×6×12	1
43	050.0467	Spindle-drive-shaft	1
44	100.0066	Inner hexagon bolt M6×30	1
45	020.0106C	Washer M6	1
46	020.0198	Adaptor block	1
47	020.0102	Inner hexagon bolt M4×12	2
48	030.0012	Inner hexagon bolt M6×12	1
49	055.0112	Rack	1
50	055.1030	Combo Cable-unit	1
51	055.1031	Sensor unit	1
52	020.0327	Screw M4×10	1
53	035.0045	Inner hexagon bolt M5×40	4
60	055.1034	Capacitance PCB unit 220V	1
	055.1034A	Capacitance PCB unit 110V	1
61	035.0038	Control PCB unit 220V	1
	035.0038A	Control PCB unit 110V	1
62	055.0145	Screw 304-M4×6	2
63	020.0327	Screw M4×10	10
64	035.0016	Rear-panel-plate 220V	1
	035.0016A	Rear-panel-plate 110V	1
65	035.1011	Wires set	1
66	035.1010	Wires set	1
67	055.0133	Aluminum-rail(left)	1
68	055.0132	Aluminum-rail(right)	1
69	100.0022	Inner hexagon bolt M5×20	6
70	055B.0001	Frame	1
71	035.0034	Inner hexagon bolt M5×30	2
72	020.0231	Hexagon socket set screw M5×6	4
73	020.0132	Circlip 19	2
74	020.0077M	Ender Cover $\phi 24 \times \phi 37 \times 1.5$	2
75	032.0127A	Powder-metal-bearing 28×32×7	2
76	055.0061M-1	Rocker shaft	1
77	018.1013	Capstan hub assembly	1
78	020.0315X	Arm for capstan	3
79	055.0136	Pressing-plate	1
79A	020.0331	Inner hexagon bolt M4×10	2
80	060.1016	Main-cable 220V EU	1
	060.1016A	Main-cable 110V USA	1
	060.1016AU	Main-cable 220V AU	1
	060.1016K	Main-cable 220V UK	1
	060.1016M	Main-cable 220V Matus	1
	060.1016N	Main-cable 220V Brazil	1
	020.0031	Coupling nut PG11	1
81	032.1020X-CK	Cable-clamp set	1
82	036.0007	Inner hexagon bolt M4×8	1
83	040.0286F	Gasket M4	1
84	020.0146S	Inner hexagon bolt M6×22	2
85	020.0146A	Inner hexagon bolt M6×25	2
86	055.1035	Magnet 220V	1
	055.1035A	Magnet 110V	1
87	055.1041L	GYRO-PCB	1
88	055.1040	Front panel set	1
88A	055.1039	Potentiometer control set (incl.front-panel)	1
88B	200.0085	Starting switch	1
88C	020.0011-1	Magnet-switch	1
88D	200.0106	Light guide	2
88E	035.0040	Handle	2
88F	035.0047	Inner hexagon bolt M4×10	4
88G	200.0086	Black four-core wire	1
89	055.1036	Kettle integration	1
90	035.0041	Hand screw	1
91	040.0036	Pin	2
200	055.0203S	PP box integration	1
201	020.0107	Glasses	1
202	032.2013	Anti-falling chain (integration)	1
203	020.0109	Earplugs	1
204	020.1008S	Canvas gloves XL	1
	020.1008L	Canvas gloves L	1
205	100.0461A	Spindle-drive-shaft	1
206	080.2002	Morse taper #3 -19.05	1
207	020.0111	Allen wrench S2.5	1
208	020.0110	Allen wrench S3	1
209	020.0112	Allen wrench S4	1
210	020.0113	Allen wrench S5	1
211	050.2003	Big protective cover	1
212	020.0223	Hexagon socket bolt M5×10	2

### 8.3 Wiring diagram



①	032T.0010	Connector	FLDNY2-250
②	200.0129	Banana plug	4.0, 4.8×20.5
③	020.0170	Connector	LND2-250(S)

## 8.4 Warranty and service

### Warranty

Euroboor B.V. warrants this magnetic drilling machine to be free of material defects and workmanship errors under normal use for a period of 12 months after date of purchase.

This 12 month period can be extended to 24 months in total by registering the product on our website: <https://euroboor.com/support/register/>

Serial number:

Date of purchase:

**Don't forget to register your machine at:**

<https://euroboor.com/support/register/>

**[ only when registered you benefit from extended warranty ]**

### Service

To maximise the lifetime of your EUROBOOR machine always use service and parts from an official EUROBOOR distribution channel. Whenever in need of such, always contact original point of sales or if no longer existent the distributor of EUROBOOR products in your country.