Operators manual

V 1.0 EN

EUROBOOR

FOR PROFESSIONALS BY PROFESSIONALS

# Cordless magnetic drilling machine

# EBM.360

Serial number:

Date of purchase: / /

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

www.euroboor.com/register

[ only when registered you benefit from extended warranty ]

Congratulations on your purchase of the Euroboor EBM.360 Cordless Magnetic Drilling Machine. Your model is designed to produce superior holes quickly and efficiently. Through years of experience, constant innovation and development, Euroboor BV is committed to provide you with metal cutting tools and products to help you be more productive.

Before operating your new magnetic drilling machine, please read all instructions first. These include the Operator's Manual and Warning Label on the unit itself. With proper use, care, and maintenance, your model will provide you with years of effective hole drilling performance.

**TO REDUCE THE RISK OF INJURY USER MUST READ AND UNDERSTAND ALL INSTRUCTIONS**

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# 1. Safety

## 1.1 General safety instructions

Do not use this power tool before you have thoroughly read and completely understood this Instruction Manual and the “General Safety Instructions”, 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 including following.

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

This Operator’s Manual including the “General Safety Instructions” should be kept for later use and enclosed with the power tool, should it be passed on or sold.

**WORK AREA**

1. Keep your work area clean and well lit. Cluttered benches and dark areas invite accidents.
2. Do not operate magnetic drilling machine in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. Magnetic drilling machine may create sparks which may 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. Magnetic drilling machine plugs must match the outlet. Never modify the plug in any way. Do not us 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 magnetic drilling machines 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 cord away from heat, oil, sharp edges or moving parts. Replace damaged cords immediately. Damaged cords increase the risk of electric shock.
5. When operating a magnetic drilling machine, use an extension cord suitable for outdoor use. Use of a cord suitable for outdoor use 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) protected supply. Use of an RCD 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 machine while tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating magnetic drilling machines may result in serious personal injury.

2. Dress properly. Do not wear loose clothing or jewelry. Contain long hair. 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 switch is off before plugging in. Carrying magnetic drilling machines with your finger on the switch or plugging in magnetic drilling machines that have the switch on invites accidents.
4. Never place hands, fingers, gloves or clothing near cutting 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, or hearing protection must be used for appropriate conditions.
8. Always use supplied safety chain during any work on non-horizontal components. Mounting can release.

**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. During machine operations, the annular cutter must be cooled and lubricated with good quality cutting or lubrication oil. Remove the slug from the annular cutter after each hole. Caution, the slug may be hot!
3. Use clamps or other practical way to secure and support the work piece to a stable platform. Holding the work by hand or against your body is unstable and may lead to loss of control.
4. Do not use machine if switch does not turn it on or off. Any tool that cannot be controlled with the switch is dangerous and must be repaired.
5. 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.
6. Store idle magnetic drilling machines out of reach of children and other untrained persons. Tools are dangerous in the hands of untrained users.
7. Maintain machines with care. Keep cutting tools sharp and clean. Properly maintained tools, with sharp cutting edges are less likely to bind and are easier to control.
8. Check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the machine operation. If damaged, have the tool serviced before using. Many accidents are caused by poorly maintained tools.
9. Use only accessories that are recommended by Euroboor for your model. Accessories that may be suitable for one machine, may become hazardous when used on another machine.

**SERVICE**

1. Tool service must be performed only by qualified repair personnel. Service or maintenance performed by unqualified personnel could result in a risk of injury.
2. When servicing a tool, use only identical replacement parts. Follow instructions in the maintenance section of this manual. Use of unauthorized parts or failure to follow maintenance instructions may create a risk of electric shock or injury.
3. When using this machine, you MUST wear ear and eye protection.

## 1.2 Specific safety information

- Keep your fingers well out of the drill area;
- Avoid touching the drilled core that is automatically ejected by the centering pin when the working procedure is finished. Contact with the core when it is hot, or if it falls, can cause personal injuries;
- Always use the drill guard. Before switching on machine ensure the guard is closed securely;
- Always use the safety strap;
- The magnetic drilling machine is suitable for use on steel with a thickness starting from 5 mm, with zero air gap between the magnet core surface and the mounting surface. Curvature, coats of paint and surface irregularities will create an air gap. Keep the air gap to a minimum;
- Always place the machine on a flat surface
- Do not clamp the magnetic drilling machine on small or irregularly 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 until it has been mounted and installed according to these instructions;
- Do not switch on the machine before having checked that the magnetic stand has been tightened firmly to the mounting surface;
- Adjust the table so cutter does not extend into the work piece before drilling. Do not perform any design, assembly or construction activities on the work piece while the machine is switched on;
- Before switching on the machine, make sure all accessories have been mounted correctly;
- Always use the recommended speed for the accessories and the material;
- Do not use the machine on the same work piece on which electric welders are being used;
- Use only an appropriate cutting fluid. We offer a range of premium cutting oils and lubricants which are specially developed and selected for optimum performance and maximum tool life;
- 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 chuck guard operates properly;
- Ensure that metal chips or resinous residue cannot lead to blockage of the function;
- In case of jammed cutter disconnect the machine from the power supply, remove the reason for the jam before turning on the machine again.

**RESIDUAL RISKS**

In spite of the application of the relevant safety regulations and the implementation of safety devices, 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.

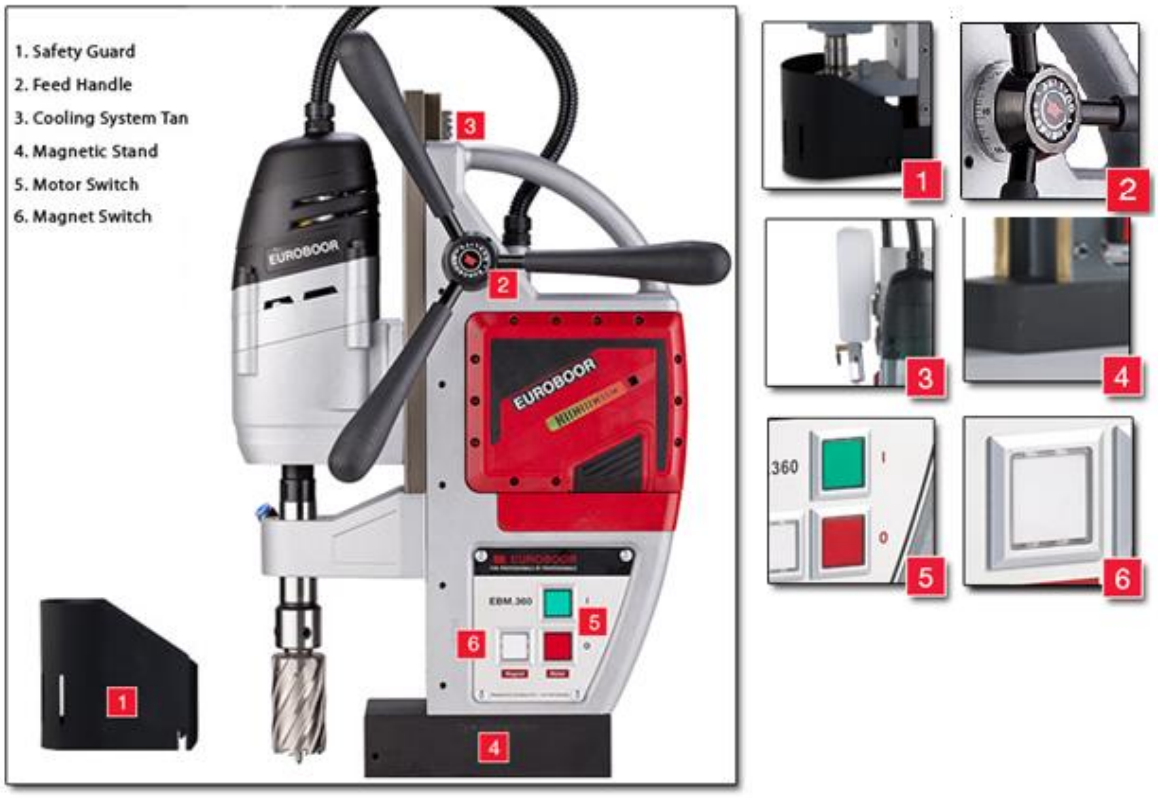
Always try to reduce these risks as much as possible.

# 2. Description

## 2.1 Intended use

This magnetic drilling machine is intended for commercial use as a drilling machine for drilling materials with a magnetizable surface using annular cutters and twist drills, and for countersinking 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 1-1]

## 2.3 Box contents

1 Carrying case
1 Magnetic drilling machine
1 Battery pack 37 V / 2.6 Ah
1 Instruction manual
3 Handles
1 Drill guard
1 Lubrication system
1 Bottle cutting oil
1 Allen Key 2.5 mm
1 Allen Key 4 mm
1 Allen Key 5 mm
1 Safety chain/strap
1 Set of ear plugs
1 Pair of safety glasses
1 Pair of 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 motor housing. 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:

3601305001

breaks down to:

*360* *13* *05* *001*
Machine series
Year of manufacture
Month of manufacture
Identification number

## 2.5 Technical data

| | EBM.360 | |
|---|---|---|
| **ANNULAR CUTTERS** | Ø 12 - 36 mm | Ø 7/16 – 1 7/16” |
| **TWIST DRILLS** | Ø 1 - 13 mm | Ø 1/16 – 1/2” |
| **THREADING** | - | - |
| **COUNTERSINKING** | Ø 10 – 40 mm | Ø 3/8 – 1 9/16” |
| **LENGTH** | 297 mm | 11 11/16” |
| **WIDTH** | 112 mm | 8 1/4” |
| **HEIGHT** | 420 - 610 mm | 16 9/16 – 24” |
| **STROKE** | 230 mm | 9 1/16” |
| **WEIGHT** | 11.7 kg | 25.8 lbs |
| **MAGNET** | 160 x 80 x 42 mm (L x W x H) | 6 5/16 x 3 1/8 x 1 5/8” |
| **MAGNETIC FORCE** | 1,700 kg | 3,750 lbs |
| **BATTERY** | 37V / 2.6 Ah Li-ion | 37V / 2.6 Ah Li-ion |
| **CHARGE TIME** | 0% to 75% - 17 minutes<br>75% to 100% - 58 minutes<br>Fully charged - 75 minutes | |
| **SPEED UNLOADED**<br>**SPEED LOADED** | 506 rpm<br>375 rpm | 506 rpm<br>375 rpm |
| **SPINDLE** | 19.05 mm (3/4") Weldon | 19.05 mm (3/4") Weldon |
| **POWER SOURCE CHARGER** | 110 – 120V AC / 60 Hz<br>220 – 240V AC / 50 – 60 Hz | |

**Emission values for sound and vibration**
(Two-figure – specifications as per ISO 4871)

**Sound emission**

| | |
|---|---|
| Measured A-weighted sound power level LwA (re 1 pW), in decibels | 89 |
| Measuring uncertainty KwA, in decibels | 3 |
| A-weighted emission pressure power level measured at the workplace LpA (re 20 µPa), in decibels | 89 |
| Measuring uncertainty KpA, in decibels | 3 |

**Vibration emission**

| | |
|---|---|
| Rated acceleration, in $m/s^2$ | 0.5 |
| Measuring uncertainty K, in $m/s^2$ | 1.5 |

**REMARK**: The sum of the measured emission value and respective measuring inaccuracy represents the upper limit of the values that can occur during measuring.

 Wear ear protection!

For measurement values obtained according to the respective product standard, see the last page of this Operator’s Manual.

## 2.6 Symbols

| Symbol | Term, meaning | Explanation |
|---|---|---|
|  | Read documentation | Be absolutely sure to read the enclosed documentation such as the Instruction Manual and the General Safety Instructions. |
|  | Wear ear protection | Use ear protection during operation. |
|  | Wear eye protection | Use eye-protection during operation. |
|  | Danger/warning/caution | Observe the information in the adjacent text! |
|  | European conformity symbol | Confirms the conformity of the power tool with the directives of the European Community. |
|  | Class of protection I | Product with basic insulation and exposed (touchable), conductive parts additionally connected to the protective earth conductor. |
| mm | Millimeter | Unit of measure for length, width, height or depth |
| kg | Kilogram | 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 |
| N | Newton | Unit of measure for the force |
| min | Minutes | Unit of measure for the time |
| no | No-load speed | Revolution speed at no-load |
| 1/min | per minute | Unit of measure for number of revolutions, strokes, impacts or oscillations per minute. |

## 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 unit off and disconnect machine 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 directions
2. Tighten firmly by hand

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

**BATTERY PACK**

Charge the battery before use. If performance diminishes, recharge the battery pack.
The ideal storage temperature is between 10° and 30°C.

Li-ion battery packs (37 V) have a capacity and signal display:

- Press button and the charge level is displayed by the LED lights;
- If red LED is displayed, the battery pack is almost flat and must be recharged;
- If all LED lights are flashing, the battery pack is to warm. Allow the battery pack to cool down.

**REMOVING AND INSERTING THE BATTERY PACK**

**Removal**

Press both buttons on the side of the battery pack and take out the battery pack from its position.

**Inserting**

Slide in the battery pack completely until it engages.

**INSERTING AND REMOVING AN ACCESSORY**

Remove the battery pack from the machine before any adjustments, conversions or servicing are performed.

If the tool is jammed: Press the RED switch “O” to switch off the motor unit.
Remove the annular cutter from the borehole.

The tool holder accepts annular cutters with a 19,05 mm Weldon shank with one or more flats.

***WARNING:*** *The teeth of a cutter are very sharp and can be dangerous.*

1. In order to fit an annual cutter it is necessary to remove the guard (1);
2. Slide the pilot pin through the hole in the center of the cutter shank;
3. Insert the shank of the accessory as far into the tool holder as possible;
4. Tighten the two Allen screws with Allen key;
5. To remove the accessory, loosen the Allen screws and take out the cutter.

**MOUNTING THE DRILL GUARD**

The guard protecting against chippings and accidental contact must always be mounted during operation.

1. Hold the guard in front of the magnet, aligning the slots in the guard with the holes in the magnet.
2. Fit the screws into the hole located in the side of the magnet.

***WARNING:*** *Always use the Safety guard.*

**FITTING THE LUBRICATION SYSTEM**

The lubrication system can be used for horizontal drilling applications (the drill being used vertically).

1. Hold the cooling tank against the bracket on the slide and push it in its place.
2. Connect the coolant hose to the fitting on the Morse Taper spindle. Make sure the hose is connected fully and tightly
3. To disconnect the coolant hose, press the blue ring on the connection and gently pull out the hose

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 or overhead drilling applications. Instead use Euroboor cutting paste*

**FITTING THE SAFETY CHAIN**

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

***WARNING:*** *Always use the safety chain when using machine vertically and/or up-side-down.*

***WARNING:*** *The safety chain does not replace the magnetic force of the magnetic drilling machine: it is simply used to secure against falling in the event of a magnet malfunction.*

## 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 device must be used.
When work on steel materials with a material thickness of less than 5 mm, the work piece 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 protective devices or slightly damaged components to ensure they are operating perfectly and as intended.
Check that moving are in perfect working order and do not jam and check whether parts are damaged. All parts must be correctly installed and fulfill all conditions necessary to ensure perfect operation of the machine.
Damaged protective devices and parts must be repaired or replaced according to specifications by EUROBOOR of any authorized EUROBOOR dealer.

**DO NOT** use under wet conditions or in presence of flammable liquids or gases. This magnetic drilling machine is a professional power tool.

**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 through the EUROBOOR service organization.

**EXTENSION CABLE**
If an extension cable is required, use an approved 3-core extension cable suitable for the power input of this tool (see technical data).The minimum conductor size is 1.5 $mm^2$; the maximum length is 30 meter. When using a cable reel, always unwind the cable completely.

**TRY A FEW SIMPLE PROJECTS USING SCRAP MATERIAL UNTIL YOU DEVELOP A "FEEL" FOR THE MACHINE**

**LET THE MACHINE RUN IN FOR A PERIOD OF 8-10 HOURS BEFORE STARTING WITH BIG OPERATIONS. DO NOT LOAD THE MACHINE TOO MUCH DURING RUN-IN PERIOD**

**NEVER USE THE MACHINE IN 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.*

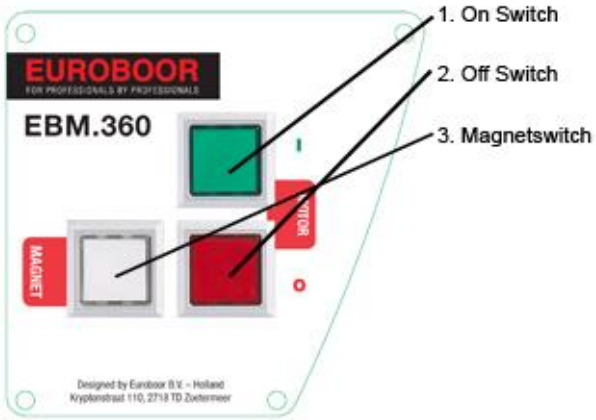
## 4.1 Control panel

**THE CONTROL PANEL**
The control panel on your magnetic drilling machine is designed for maximum operating facility and safety.

**1 - The ON Switch (GREEN):**
This (upper) switch is used to switch the motor unit On (“I“);

**2 – The OFF Switch (RED)**
This (lower) switch is used to switch the motor unit Off (“O“);

**3 - The Magnet Switch (WHITE):**
This switch is used to turn on the main power and also to switch the magnet On and Off. Also this switch indicates if the generated magnetic force is enough for the tool to operate safely.




[image 2-2]

The indicator is enclosed in the magnet switch and has two collors:

- GREEN – SAFE for use
- Alternately lightning up RED and GREEN and making a beeping sound – Not safe for use

In order to operate properly, the machine has to be turned on following the procedure as described below.

**ACTIVATING THE MAGNET**
Connect the machine to the work piece. To activate the magnet, press de WHITE switch (image. 2-2). The switch will be lit GREEN if the generated magnetic force is sufficient to work safely. If the switch starts flashing RED and GREEN and making a beeping noise, there is not enough magnetic force and the motor is not able to start.
To deactivate the magnet, press the same button again.

**TURNING THE MOTOR ON AND OFF**
The drill motor can only be switched on when the magnet is activated. To turn ON the motor, press the GREEN button “I”, the WHITE magnet switch will be lit yellow. To turn OFF the motor, press the RED button “O”.

## 4.2 Spindle

This machine is equipped with a detachable tool holder (spindle) with bottom ¾" (19,05mm) Weldon connection.
To accommodate a drill chuck (either directly to the gearbox output shaft or with adapter), the spindle can be detached.

1. Hold the gearbox output shaft in place with a narrow 18 mm spanner
2. Loosen the spindle from the gearbox output shaft in counterclockwise direction with a 22 mm spanner at the top of the spindle
3. Gently pull the spindle through the coolant ring and spindle holder, while holding the coolant ring in place
4. You are now able to attach an adapter, drill chuck or different accessory to the gearbox output shaft. The thread specification is 1/2"x20 UNF.

To reattach the spindle, follow above steps in reverse order. Make sure all parts are correctly aligned, and firmly tightened.

## 4.3 Electromagnet

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

The workpiece must be at least 5 mm thick for the magnet to stick, but minimal 3 mm thick to hold the weight of the machine and to drill safely. In case the workpiece is between 3 and 5 mm, make sure to make a proper base to create a good magnetic field.

The electromagnet will work best on surfaces of at least 10 mm thickness.

The attachment force generated by the magnet depends on various factors. The electromagnet may not be able to create a good enough magnetic field. Causes may be:

- Surface not flat
- Workpiece not magnetizable (e.g. aluminium)
- Workpiece coated or painted
- Workpiece not thick enough

If the LED light of the Magnet Switch lights up GREEN, the magnet is generating sufficient attachment force. If this switch alternately lights up RED en GREEN together with a beeping sound, the magnet does not generate sufficient attachment force and the Motor will not start (for safety reasons).

Make sure to solve any of these matters before proceeding in any way and creating unsafe situations.

***CAUTION:*** *EUROBOOR EBM.360 does not allow turning on the motor if LED light in the Magnet Switch alternately lights up RED/GREEN. If turning on the machine is possible while this happens, please return the machine to EUROBOOR or any authorized dealer.*

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

**We need to point out that this is only an indication and not a certainly that the magnet will not release from the material. Euroboor accepts no liability ensuring from 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 2 coils; make sure that both coils are in contact with the material. **Do not** connect any other machines to the electrical outlet 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 brochure or our website www.euroboor.com where several vacuum tightening systems and pipe clamping systems are mentioned.

## 4.4 Switching motor on and off

The motor unit can only be switched ON when the magnet is activated. To switch the motor ON, press the green button with marking “I”. To switch the motor OFF, press the red button with marking “O”.

## 4.5 Tool lubrication

**IN 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

- 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.

## 4.6 Safety rules *37V/2.6 Ah lithium -ion battery pack*

Read all instructions. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury. The term “power tool” in all of the warnings listed below refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.

- Remove the battery pack from the machine before any adjustments, conversions or servicing are performed.
- Before fitting the battery pack, make sure that the machine is switched off.
- Do not open the battery packs
- Do not place the battery pack or cells on or near fires, heaters, other high temperature locations, or apply heat to the battery.
- Do not pierce the battery with any sharp objects, strike the battery with a hammer, tools, or heavy objects, step on the battery pack, or otherwise damage the outer casing.
- Do not subject the battery pack to strong impacts or shocks.
- Do not expose the battery to water or any other type of liquid, or allow the battery to get wet.
- Do not leave the battery in direct sunlight, and avoid storing spare battery packs inside cars in extreme hot weather. Doing so may cause the battery to generate heat, rupture, or ignite. Using the battery in this manner may also result in a loss of performance and a shortened life expectancy. When a battery becomes too hot, the built-in protection circuitry is activated, preventing the battery from charging further. Heating the battery can destroy the safety devices, and can cause additional heating, rupture or ignition of the battery cells.
- Never short-circuit, reverse polarity, disassemble, damage or heat the battery pack over 100°C (212°F).
- If an exposed lithium-ion battery does start a fire , it may burn even more violently if it comes into contact with water or even the moisture in the air. DO NOT THROW WATER ON A BURNING LI-ION BATTERY! A class C fire extinguisher must be used.
- Do not use the Battery Pack if the Battery Pack casing is broken or if a Battery Pack emits an unusual odor, smoke, or excessive heat or leaks any substance. Avoid contact with any substance seeping from the Battery Pack.
- Keep out of reach of children and pets. Exposure to Battery Pack voltage could result in death or serious injury.
- The cells within the Battery Packs contain toxic substances. Do not attempt to open Battery Packs. Do not insert any object into the Battery Packs or use any device to pry at the Battery Pack casing. If you insert an object into any of the Battery Packs’ ports or openings you could suffer electric shock, injury, burns, or cause a fire. Attempting to open the Battery Pack casing will damage the casing and could release toxic and harmful substances, and will render the pack unusable.
- If battery fluid leaks out and comes into contact with your skin, rinse immediately with plenty of water. If battery fluid leaks out and comes into contact with your eyes, wash them with clean water and seek medical attention immediately
- As with all rechargeable batteries, do not charge near flammable materials

- Do not disassemble or modify the battery pack . The battery contains safety and protection devices which, if damaged, may cause the battery to generate heat, rupture or ignite.
- Any modification may damage the battery pack or cells and will invalidate any warranty claim.
- If you happen to get any electrolyte from the cells on your skin, wash thoroughly with soap and water. If in your eyes, do not rub. Rinse thoroughly with water and seek medical

**CAUTION:** *If at any point during the charging process none of the LEDs are lit, remove the battery pack from the charger to avoid damaging the product. DO NOT insert another battery. Return the charger and battery to your nearest service center for service or replacement.*

**CAUTION:** Charge in a well ventilated area. Do not block charger vents. Keep them clear to allow proper ventilation.

**BATTERY PROTECTION FEATURES**

EUROBOOR 37V lithium-ion batteries are designed with features that protect the lithium-ion cells and maximize battery life. Under some operating conditions, these built-in features may cause the battery and the tool it is powering to act differently from nickel-cadmium batteries.
During some applications, the battery electronics may signal the battery to shut down, and cause the tool to stop running. To reset the battery and tool, release the trigger and resume normal operation.

**NOTE:** To prevent further shut down of the battery, avoid forcing the tool. Switching to a lower speed will also prevent shut down.
If releasing the trigger does not reset the battery and tool, the battery pack is depleted. If depleted, the battery pack will begin charging when placed on the lithium-ion charger.

**TO CHARGE**

A fully discharged battery pack with a temperature between 0° (32°F) and 65° (150°F) will charge in about an hour.

- Use battery pack only with the recommended EUROBOOR charger.
- Connect the charger to a power supply. Make sure the power supply is normal household voltage, **220 volts, AC only, 60 Hz**.
- Attach the battery pack to the charger by aligning the raised ribs on the battery pack with the grooves in the charger, then slide the battery pack onto the charger.
- Do not place the charger and battery pack in an area of extreme heat or cold. They will work best at normal room temperature.

**NOTE:** The charger and battery pack should be placed in a location where the temperature is more than 10° (50°F) but less than 38° (100°F).

- The battery pack will become slightly warm to the touch while charging. This is normal and does not indicate a problem.
- After charging is complete, the green LED will remain on until the battery pack is removed from the charger or charger is disconnected from the power supply.
- When batteries become fully charged, unplug the charger from the power supply and remove the battery pack.

**CHARGING A HOT BATTERY PACK**

If the battery pack is above normal temperature range, the red LED will begin flashing and the green LED will be off. When the battery pack cools down to approximately 150°F, the charger will automatically begin fast charge mode.

**CHARGING A COOL BATTERY PACK**

If the battery pack is below normal temperature range, the red LED will begin flashing and the green LED will be off. When the battery warms to a temperature of more than 32°F, the charger will automatically begin charge mode.

**COLD WEATHER OPERATION**

The lithium-ion battery pack can be used in temperatures down to -4°F. Put the battery pack on a tool and use the tool in a light duty application. After about a minute, the pack will have warmed up and begin operating normally.

**MAINTENANCE**

This battery pack is equipped with lithium-ion rechargeable batteries. Length of service from each charging will depend on the type of work you are doing.

These batteries have been designed to provide maximum trouble-free life. However, like all batteries, they will eventually wear out. Do not disassemble battery pack and attempt to replace the batteries. Handling of these batteries, especially when wearing rings and jewelry, could result in a serious burn.

To obtain the longest possible battery life from EUROBOOR lithium-ion batteries, we suggest the following:

- Remove the battery pack from the charger once it is fully charged and ready for use.
  For battery pack storage longer than 30 days:
- Store the battery pack where the temperature is below 80°F and away from moisture.
- Store battery packs in a 30%-50% charged condition.
- Every six months of storage, charge the pack as normal.

**BATTERY PACK REMOVAL AND PREPARATION FOR RECYCLING**

To preserve natural resources, please recycle or dispose of batteries properly.

This product contains lithium-ion batteries. Local, state or federal laws may prohibit disposal of lithium-ion batteries in ordinary trash.

Consult your local waste authority for information regarding available recycling and/or disposal options.

**WARNING:**

Upon removal, cover the battery pack's terminals with heavy-duty adhesive tape. Do not attempt to destroy or disassemble battery pack or remove any of its components. Lithium-ion batteries must be recycled or disposed of properly. Also, never touch both terminals with metal objects and/or body parts as short circuit may result. Keep away from children. Failure to comply with these warnings could result in fire and/or serious injury.

## 4.7 Battery charger

**CHARGING THE BATTERY**
On the battery charger there are two lights (RED and GREEN)

When the RED light flashes the battery is charged (2% - 80%). When the GREEN light flashes the last 20% of the battery is charged.
When the green light stops flashing and remains lit green, the battery is fully charged and ready for use.

**CAUTION**: When both the RED and GREEN light are simultaneously lit than either the battery charger or the battery it's self is too hot. If the RED and GREEN light on the charger are alternately flashing RED/GREEN, there is a general error.

***BATTERY CHARGING TEMPERATURE PROTECTION***
*If the battery reaches 50°C, the charger will stop charging. Error signals: the RED and GREEN light are simultaneously lit RED and GREEN. The charger will start charging again if the temperature of the battery is 45°C or less ( Over temperature recovery).*

**SIGNALS ON THE MACHINE**
**Signals well-functioning magnetic drilling machine**

- When the EBM.360 magnetic drilling machine is well positioned on the work piece, press the magnet (white) switch to on the magnet. The LED will flash 2x GREEN and then remain lit GREEN.
- When the motor is switched on (green switch), the magnet switch will be lit yellow.

**Signaling malfunctioning of the magnetic drilling machine**

- When the (white) magnet switch is flashing alternately RED/GREEN together with an acoustic sound, then there is not enough magnet force or magnet is not working
- When the (white) magnet switch is flashing RED, the battery is low;
- When the (white) magnet switch is flashing YELLOW, there is over current and the motor will stop.

# 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 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.

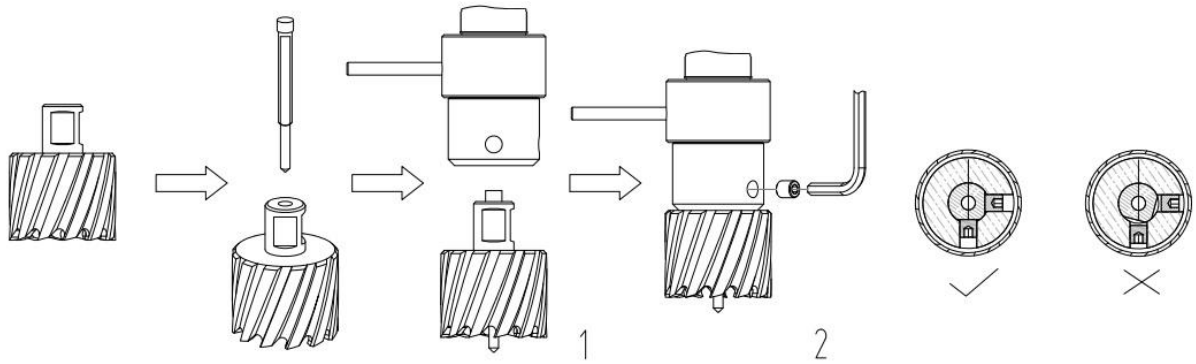
The drilling conditions are dependent on requirements for tool life and surface finish. These conditions are further restricted by the rigidity of the tool and the work piece, lubrication and machine power available. The harder the material, the lower the cutting speed.

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 explanatory 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 (1)
   - Tighten the screws (2)




[image 3-1]

2. Precisely mark the center of the hole

3. Use the pilot pin to position the machine and 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. If your machine is equipped with a auto coolant system, put open the valve to release the oil. If your machine does not have an auto coolant system, fill the holes of the spindle with oil.

6. Switch the motor on at and allow it to run at full speed.

7. Turn the arms to start drilling. Apply only a slight pressure when the annular cutter touch 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 tool. 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 !!!***
   ***For a hole 32 mm/ 1-1/4" in a 25 mm (1") steel plate, EUROBOOR recommends one minute drilling time.***

9. Adjust the oil supply when necessary, if your drill does not have an auto coolant system, 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 arms 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 metal piece drilled out can be sharp and very hot!!

## 5.2 Twist drills

1. Remove the spindle as described in chapter 4.2
2. Attach a drill chuck to the gearbox output shaft either directly or with an (extension) adapter
3. Precisely mark the center of the hole, and use the tip of the twist drill to position the machine and in the correct position, with the tip of the twist drill to meet the marked center of the hole.

Steps 4-12: see chapter Annular cutters.

## 5.3 Countersinks

Thanks to its wide range of operating speeds, the machine can also be used for reaming or counter-sinking.

Follow the steps mention in chapter Twist drills.

# 6. Maintenance

Your EUROBOOR power tool has been designed to operate over a long period of time with a minimum of maintenance. Continuous satisfactory operation depends upon proper tool care and regular cleaning.

⚠ **CAUTION: To reduce the risk of injury, turn unit 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**
Machine must be checked before operation for any signs of damage that will affect the operation of the machine. Particular notice must be taken of the mains 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 function parts from being damaged.

**CARBON BRUSHES**
Brushes should be checked to make sure there is no abnormal wear present. This should be checked at least once a week if used frequently. If the carbon brush has worn more than 2/3 the original length the brushes should be changed. Failure to do so may cause damage to the machine.

**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 not to hold as efficiently and may cause injury to the operator.
When the machine us 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 MACHINES GREASE**
The gearbox grease should be checked once a month to ensure all moving components are covered to prevent wear. The grease should be changed at least once a year to ensure you gain the best from the machine.

**CHECK ARMATURE**
This should be checked at least 1 per month to check that there are visual signs of damage to the body or to the commutator. Some signs of wear will be seen on the commutator over a period of time this is normal as this is the part that comes in contact with the brushes but any signs of abnormal damage and the part should be replaced.

**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 is 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 2.5until 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 guide way at both sides
- Lubricate the gear rack

After repeated use, the gear rack may become loose. If necessary, adjust the 5 self-locking set screws at the left side. Tighten screws in series until the gear rack moves freely in the dove-tail guide 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 authorized 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 product, 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 product.*

Consult your dealer for further information on the appropriate accessories.

# 7. Trouble shooting

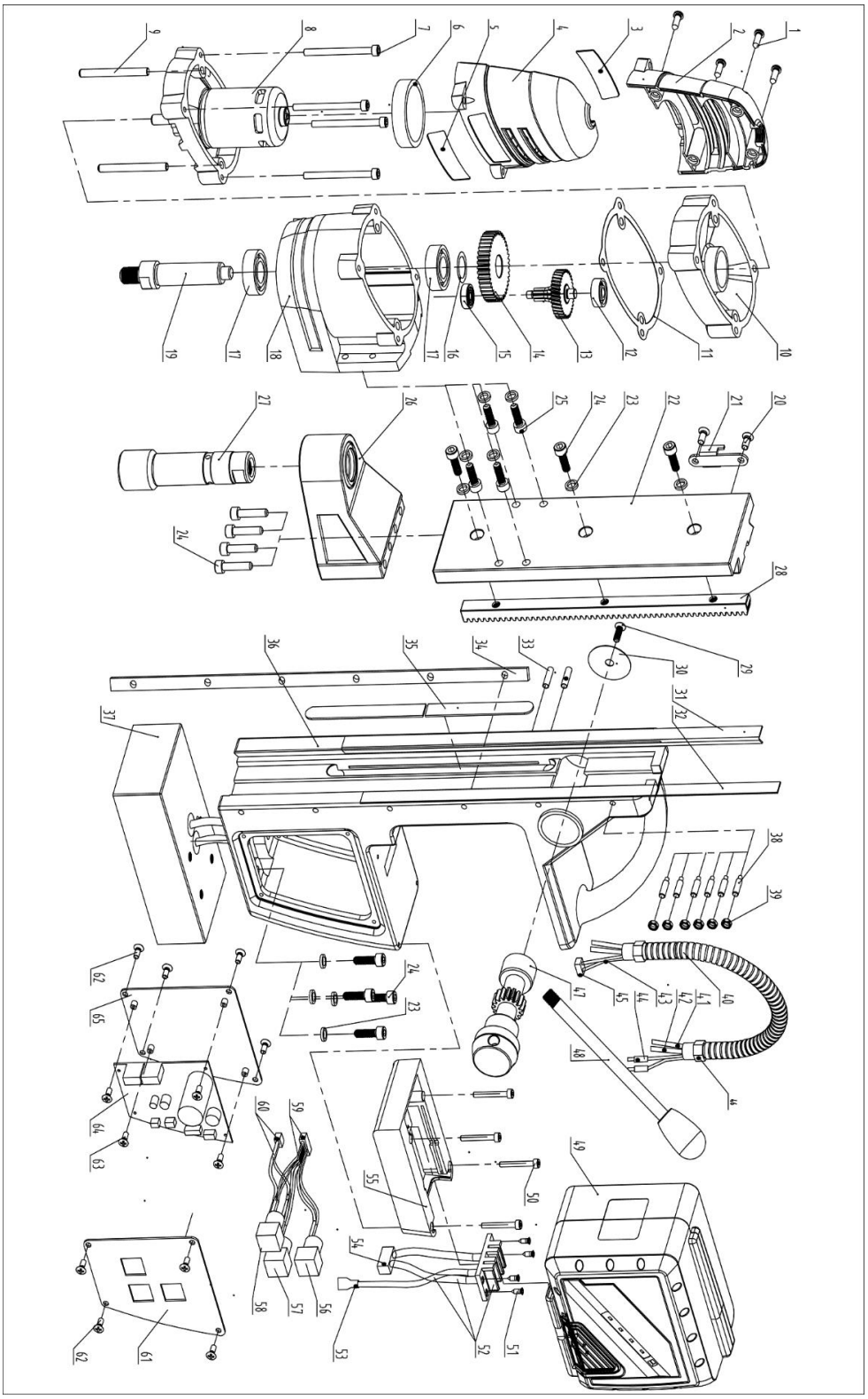
| | |
|---|---|
| Magnet and motor do not function | - The magnet switch is not connected to the power supply<br>- Damaged or defective wiring<br>- Defective fuse<br>- Defective magnet switch<br>- Defective Control Unit<br>- Defective power supply |
| Magnet does function, the motor does not work | - Damaged or defective wiring<br>- Carbon brushes are stuck or worn out<br>- Defective magnet switch<br>- Defective On / Off switch<br>- Defective Control Unit<br>- Defective armature and/or field |
| Magnet does not function, the motor does | - Defective magnet<br>- Defective wiring of magnet<br>- Defective Control Unit |
| Annular cutters break quickly, holes are bigger than the hole cutter | - Clearance in the guide<br>- Bent spindle<br>- Shaft extending from the motor is bent<br>- Bent pilot pin |
| Motor running roughly and/or seizing up | - Bent spindle<br>- Shaft extending from the motor is bent<br>- Triangular guide not mounted straight<br>- Dirt between spindle and triangular guide |
| Motor starts running when magnet switch is turned on | - Damage or defective relais in control unit |
| Motor making a rattling sound | - Gear ring (bottom of the armature) worn out<br>- Gear(s) worn out<br>- No grease in gear box |
| Motor humming, big sparks and motor has no force | - Armature damaged (burned)<br>- Field burned<br>- Carbon brushes worn out |
| Motor does not start or fails. | - Damaged or defective wiring<br>- Dirt in sensor Speed Control Unit<br>- Defective or loose magnet on top of armature<br>- Damaged or defective (sensor) Speed Control Unit<br>- Damage to Armature or field coil<br>- Damaged or defective carbon brushes |
| Guiding takes a great deal of effort | - Guide is set too tight<br>- Guide is dry, needs to be greased<br>- Guide/gear- rack/rotation system dirty or damaged |

| | |
|---|---|
| Insufficient magnetic force | - Damaged or defective wiring<br>- Bottom of magnet not clean and dry<br>- Bottom of magnet not flat<br>- Work piece is not bare metal<br>- Work piece is not clean or flat<br>- Work piece is less than 10 mm (too thin)<br>- Defective Control Unit<br>- Defective magnet |
| Frame under voltage | - Damaged / defective wiring<br>- Defective magnet<br>- Motor seriously dirty |
| Fuse blows when magnet switch is turned on | - Damaged or defective wiring<br>- Wrong value fuse<br>- Defective magnet switch<br>- Defective Control Unit<br>- Defective magnet |
| Fuse blows when motor is started | - Damaged or defective wiring<br>- Wrong value fuse<br>- Motor running roughly<br>- Defective Armature and / or Field<br>- Carbon brushes worn out<br>- Defective Control Unit |
| Rotation system free stroke too long | - Loose or defective gear-rack<br>- Defective rotation system |

# 8. Exploded view & spare part list

## 8.1 Exploded views

**EBM.360**



## 8.2 Spare part lists

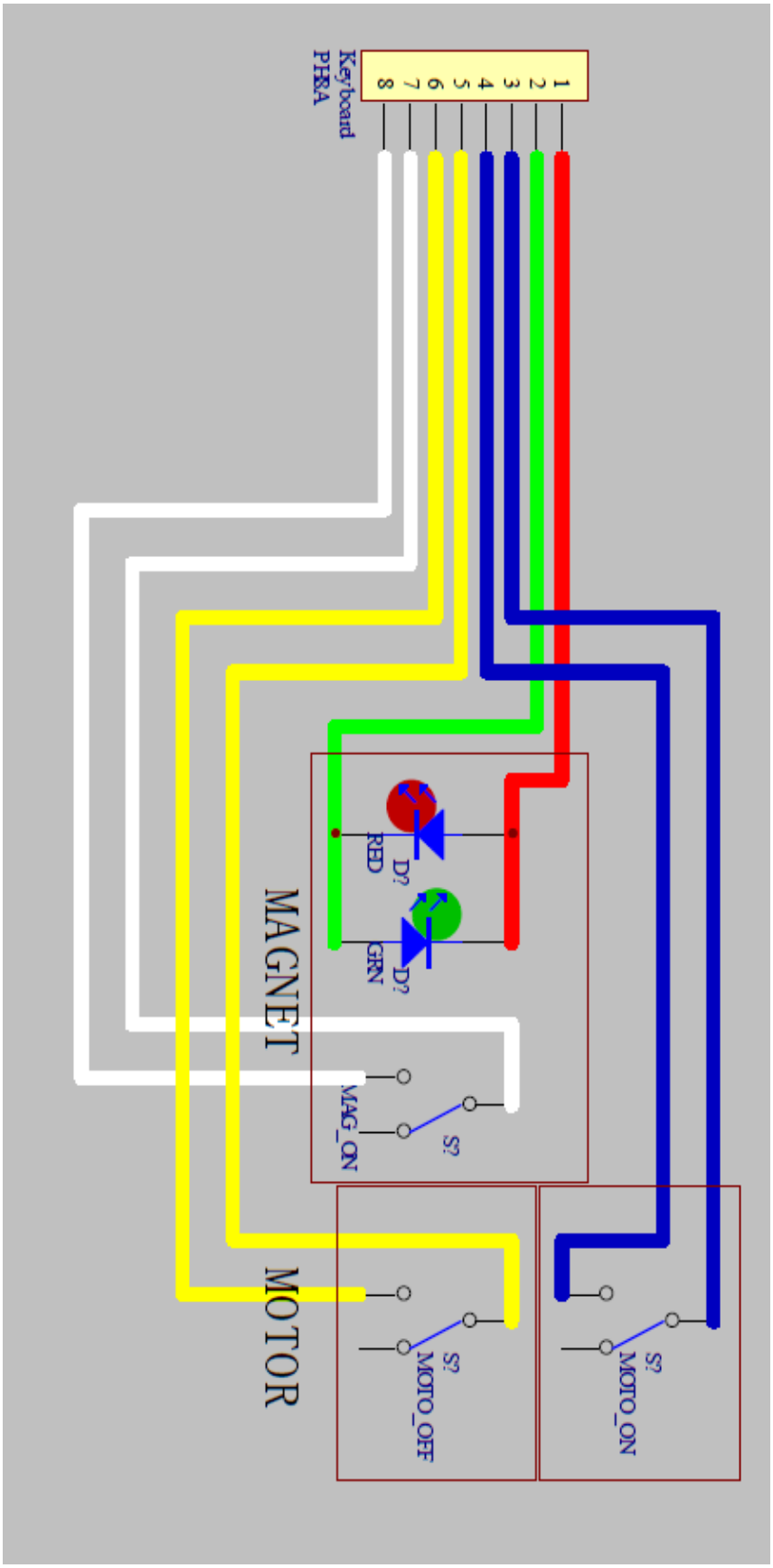
### EBM.360

| No | Part number | Description | Qty |
|---|---|---|---|
| 1 | 032.0116 | Screw M4 x 16 | 4 |
| 2 | 360.1002 | Motorhousing left | 1 |
| 3 | 360.1003 | Label left | 1 |
| 4 | 360.1004 | Motorhousing right | 1 |
| 5 | 360.1005 | label right | 1 |
| 6 | 360.1007 | Bolt M5 x 60 | 4 |
| 7 | 360.1008 | Motor unit assembly | 1 |
| 8 | 360.1009 | Pin 6 x 60 | 2 |
| 9 | 360.1010 | Lower Inner gear plate | 1 |
| 10 | 360.1011 | Gasket | 1 |
| 11 | 032.0221 | Bearing 608 8 x 22 x 7 | 1 |
| 12 | 360.1013 | Bevel gear assembly | 1 |
| 13 | 360.1014 | Spindle gear | 1 |
| 14 | 360.1015 | Bearing 626 ZZ | 1 |
| 15 | 032.0191 | Adapter ring 17 x 24 x 0.2 | 1 |
| 16 | 032.0196 | Bearing 6003 DDU | 2 |
| 17 | 360.1018 | Gear casing | 1 |
| 18 | 032.0201 | Spindle drive shaft | 1 |
| 19 | KSP.MS | Screw M5 x 10 | 2 |
| 20 | KSP.M/3 | Tank holder | 1 |
| 21 | 360.1027 | Slide | 1 |
| 22 | 020.0111 | Washer M6 DIN7980 | 11 |
| 23 | 020.0156 | Bolt M6 x 20 | 11 |
| 24 | 020.0106 | Screw M6 x 14 | 4 |
| 25 | 360.1026 | Steady | 1 |
| 26 | 020.0116 | Spindle complete 112 mm | 1 |
| 27 | 360.1028 | Rack | 1 |
| 28 | 020.0081 | End screw BKVZ M6 x 16 | 1 |
| 29 | 020.0077 | End plate | 1 |
| 30 | 360.1030 | Rail set Aluminium (L/R) L-profile | 1 |
| 31 | | | |
| 32 | 360.1050 | Screw M5 x 25 | 1 |

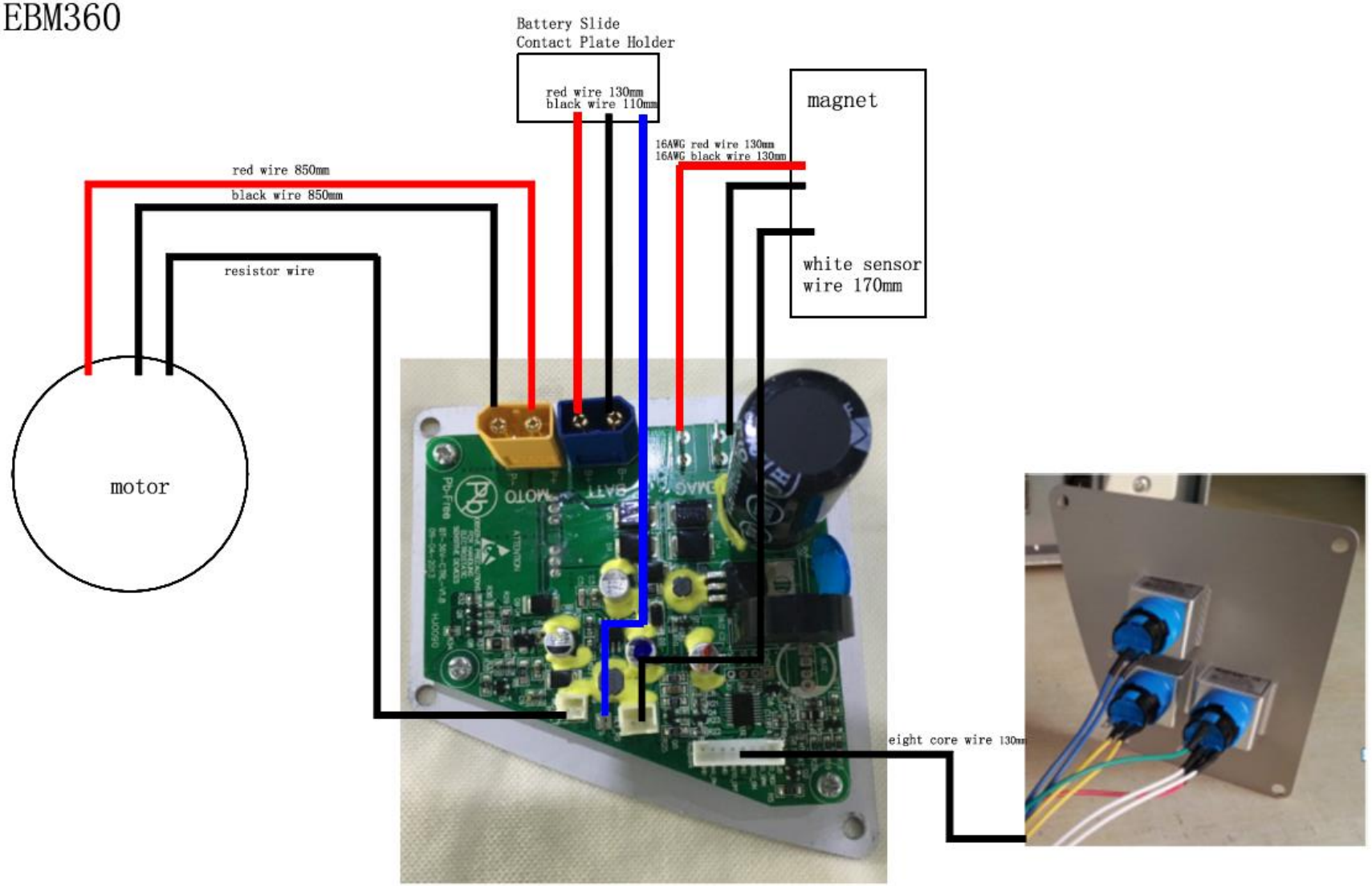
| No | Part number | Description | Qty |
|---|---|---|---|
| 33 | 020.0229 | Screw M4 x 20 | 6 |
| 33A | 020.0229A | Screw M4 x 18 | 4 |
| 34 | 360.1035 | Wires-Cover | 2 |
| 35 | 360.1038 | Frame 2019-05 | 1 |
| 36 | 360.1037 | Magnet | 1 |
| 37 | 020.0231 | Screw M5 x 6 | 6 |
| 39 | 360.1040 | Motor cable cover | 1 |
| 40 | 360.1041 | Wire connector #1 + | 1 |
| 41 | 360.1042 | Wire #2 | 1 |
| 42+44 | 360.1043 | Wire connector #3 + | 1 |
| 43 | 360.1044 | Wire #4 | 1 |
| 45 | 020.0041 | Coupling nut PG9 (motor cable) | 2 |
| 46 | 020.0061/XB | Capstan hub assembly black | 1 |
| 47 | 020.0315 | Arm for capstan | 3 |
| 48 | 360.0001 | Battery pack 7.6Ah | 1 |
| | 360.0004 | Battery pack 2.6Ah | |
| 49 | 020.0059 | Screw M4 x 25 | 2 |
| 50 | 360.1050 | Bolt M4 x 30 | 2 |
| 51 | 360.1051 | Screw ST2.9 x 8 | 4 |
| 52 | 360.1052 | Battery contact board | 1 |
| 53 | 360.1053 | Connector | 1 |
| 54 | 360.1054 | Connector | 2 |
| 55 | 360.1055 | Battery slide base | 1 |
| 56 | 360.1056 | On switch | 1 |
| 57 | 360.1057 | Off switch | 1 |
| 58 | 360.1058 | Magnet switch | 1 |
| 59 | 360.1059 | Wire connector + | 1 |
| 61 | PP.F-EBM.360/2019 | Front panel EBM.360/2019 | 1 |
| 62 | 020.0101 | Panel screw BKVZ M4 x 8 | 8 |
| 63 | 360.1063 | Screw M3 x 8 | 4 |
| 64 | 360.1064 | Control-unit | 1 |
| 65 | PP.R-EBM.360/2019 | Rear panel EBM.360/2019 | 1 |

## 8.3 Wiring diagram

**EBM.360**



# EBM360


Battery Slide
Contact Plate Holder
red wire 130mm
black wire 110mm
magnet
16AWG red wire 130mm
16AWG black wire 130mm
red wire 850mm
black wire 850mm
resistor wire
white sensor
wire 170mm
motor
eight core wire 130mm