

# Magnetic drilling machine

## ECO.36

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

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

Congratulations on your purchase of the Euroboor ECO.36 portable magnetic drilling machine. Your model is designed to produce superior holes quickly and efficiently. Through years of experience, constant innovation and development, Euroboor 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 Operators 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**

**EUROBOOR BV**

Kryptonstraat 110  
2718TD Zoetermeer  
Netherlands  
T +31 79 361 49 90  
F +31 79 361 49 89

info@euroboor.com  
www.euroboor.com

www.fnglob.pl

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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 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 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**

- Tool service must be performed only by qualified repair personnel. Service or maintenance performed by unqualified personnel could result in a risk of injury.
- 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.
- 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.

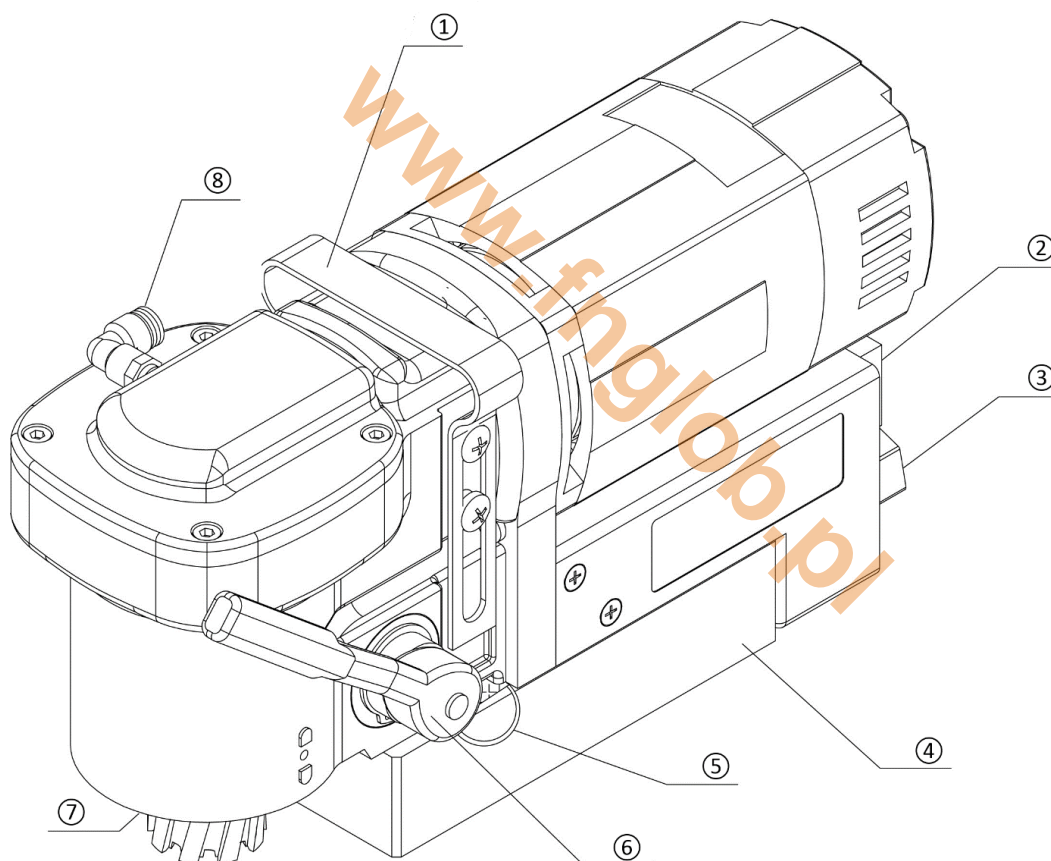
Always try to reduce these risks as much as possible.

## 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 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]

- |   |                                |
|---|--------------------------------|
| 1 | Carry handle                   |
| 2 | Motor switch                   |
| 3 | Magnet switch                  |
| 4 | Electromagnet                  |
| 5 | Safety strap (integrated part) |
| 6 | Ratchet feed handle            |
| 7 | Output shaft                   |
| 8 | Cutter coolant connector       |

## 2.3 Box contents

- 1 Carrying case
- 1 Magnetic drilling machine
- 1 Instruction manual
- 1 Ratchet feed handle
- 1 Drill guard + 2 thumbscrews
- 1 Oil tank with hose
- 1 Bottle of cutting oil
- 1 Allen key (3)
- 1 Safety 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:

*055T1501001*

breaks down to:

*055T 15 01 001*

Machine series

Year of manufacture





Month of manufacture

Identification number

## 2.5 Technical data

	<b>ECO.36</b>
<b>ANNULAR CUTTERS</b>	Ø 12 – 36 mm
<b>TWIST DRILLS</b>	Ø 1 – 14 mm (Weldon shank)
<b>THREADING</b>	-
<b>COUNTERSINKING</b>	-
<b>LENGTH</b>	310 mm
<b>WIDTH</b>	135 mm
<b>HEIGHT</b>	165 mm
<b>STROKE</b>	40 mm
<b>WEIGHT</b>	10,3 kg
<b>MAGNET</b>	160 x 80 x 37 mm (L x W x H)
<b>MAGNETIC FORCE</b>	1200 kg
<b>MOTOR POWER</b>	1050 W
<b>TOTAL POWER</b>	1100 W
<b>SPEED</b>	700 <sup>min-1</sup> (unloaded) 400 <sup>min-1</sup> (loaded)
<b>SPINDLE</b>	19,05mm Weldon quick connect
<b>POWER SOURCE</b>	110 – 120V AC / 60 Hz 220 – 240V AC / 50 – 60 Hz

## 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.

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## 3. Preparation & adjustment

### 3.1 Assembly



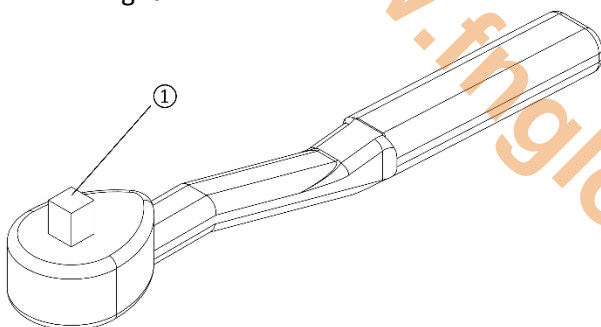
**WARNING:** To reduce the risk of injury, turn unit off and disconnect machine from power source before installing and removing accessories, before adjusting or changing set-ups or when making repairs. Be sure all switches are in the OFF position. An accidental start-up can cause injury.

#### FITTING THE FEED HANDLE

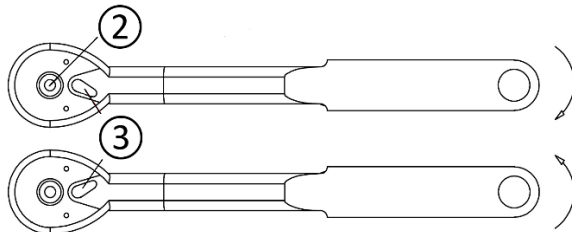
1. Take the ratchet feed handle, and line the square (image 2-1, ①) up with the square opening in the machine feed axle.
2. Push the ratchet in the machine feed axle while pressing the release button on the ratchet (image 2-2, ②)

You can place the feed handle in a position that best matches your drilling set-up

3. To change the rotation direction of the ratchet feed handle, you can switch the small lip (image 2-2, ③):
  - a. To move the ratchet feed handle in clockwise direction, switch the lip to the left
  - b. To move the ratchet feed handle in counterclockwise direction, switch the lip to the right

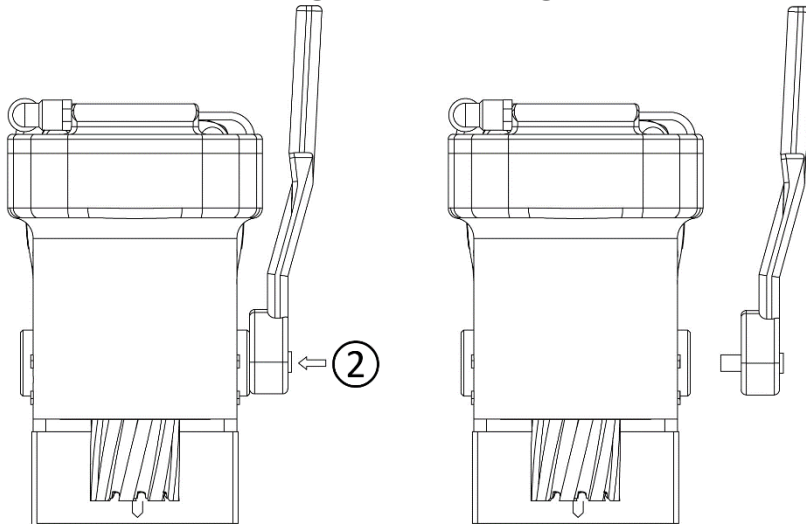


[image 2-1]



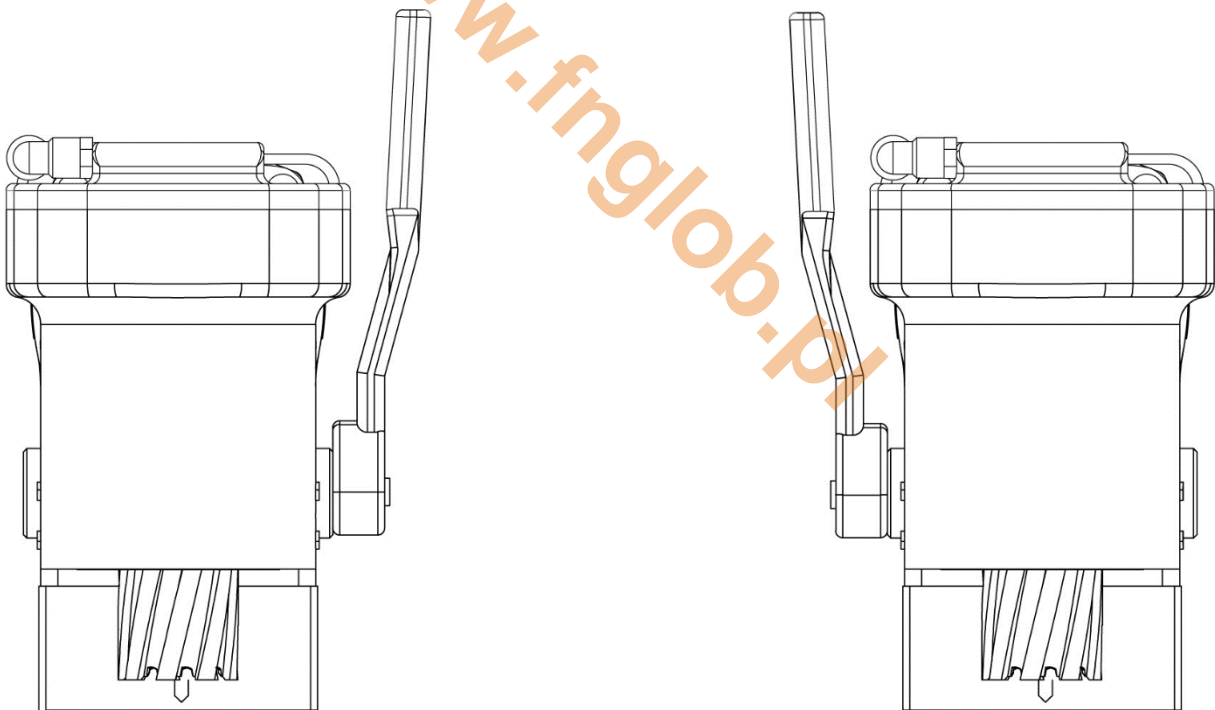
[image 2-2]

4. To release the ratchet feed handle from the machine, press the release button on the ratchet feed handle (image 2-2, ② and image 2-3, ②) and pull it away from the machine



[image 2-3]

5. It is possible to position the ratchet feed handle on either side of the machine (image 2-4). Method of fitting and releasing (steps 1. to 4.) is always the same.

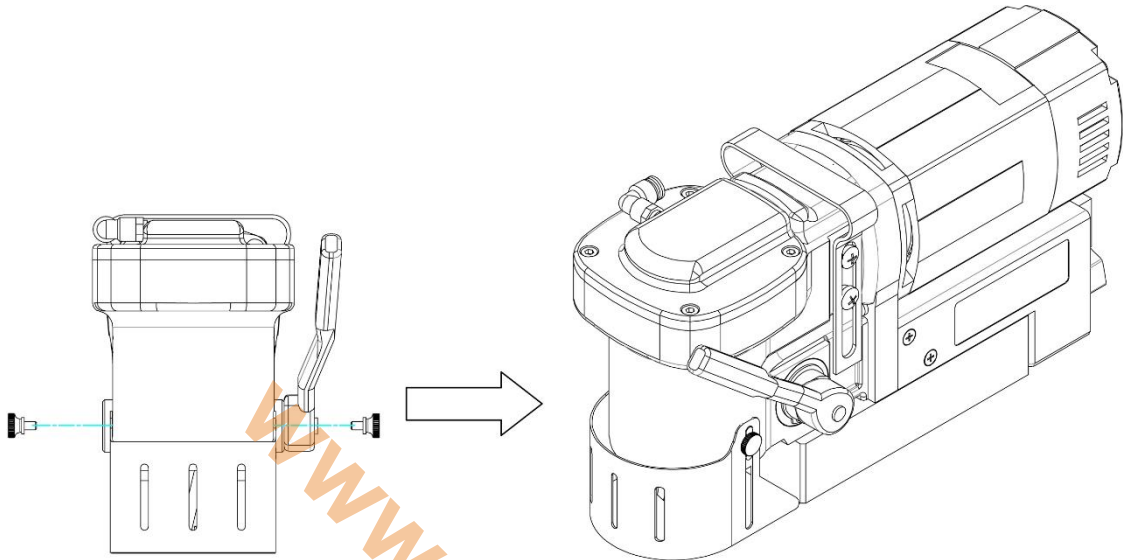


[image 2-4]

### MOUNTING THE DRILL GUARD

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

1. Place the drill guard in front of the machine. Make sure the long slots on the side clip over the small humps protruding from the gearbox body.
2. Fit the two thumbscrews in the designated holes, and tighten by hand.  
Make sure the drill guard is fitted firmly, but the screws should not be overtightened.

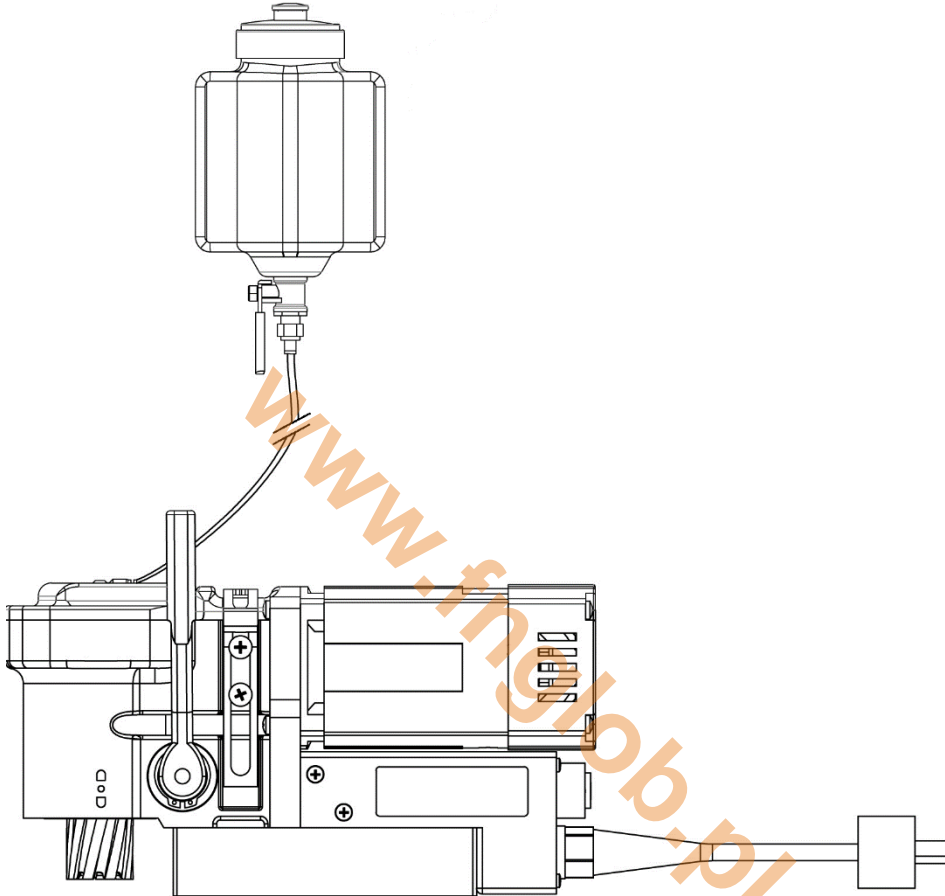


[image 2-5]

### FITTING THE LUBRICATION SYSTEM

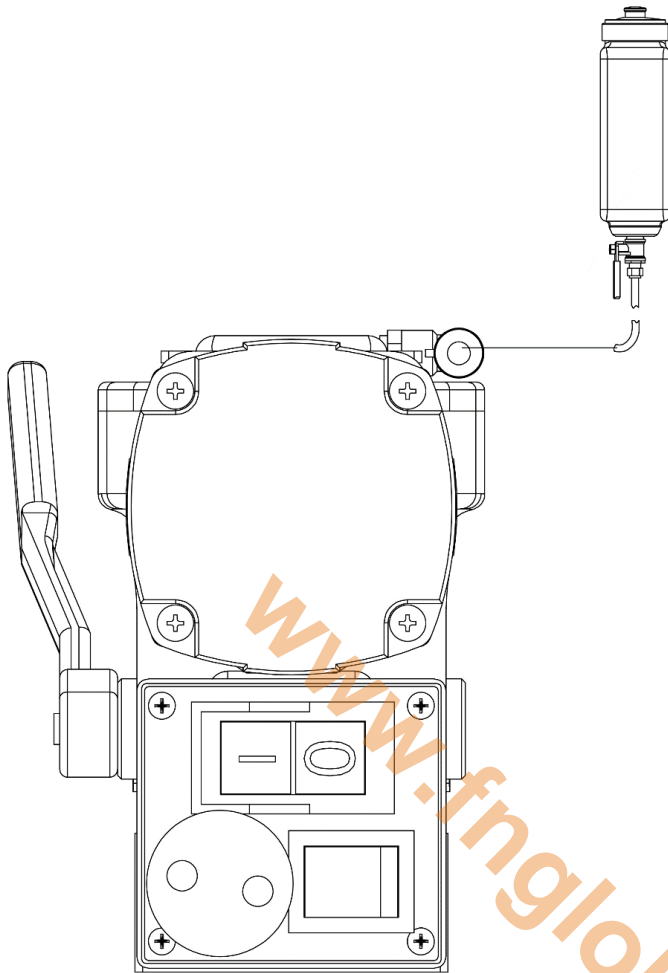
The lubrication system can be used for horizontal drilling applications (the drill being used horizontally).

1. The coolant bottle is equipped with an extra long hose. This hose can be cut to the desired length.
2. The coolant bottle is equipped with an magnet at the back. This makes it possible to place the coolant bottle against any ferro product. (image 2-6)



[image 2-6]

3. Connect the coolant hose to the drilling by pushing it firmly into the connector on the machine (image 2-7)



[image 2-7]

4. To disconnect the coolant hose, press the blue ring on the connector and gently pull out the hose

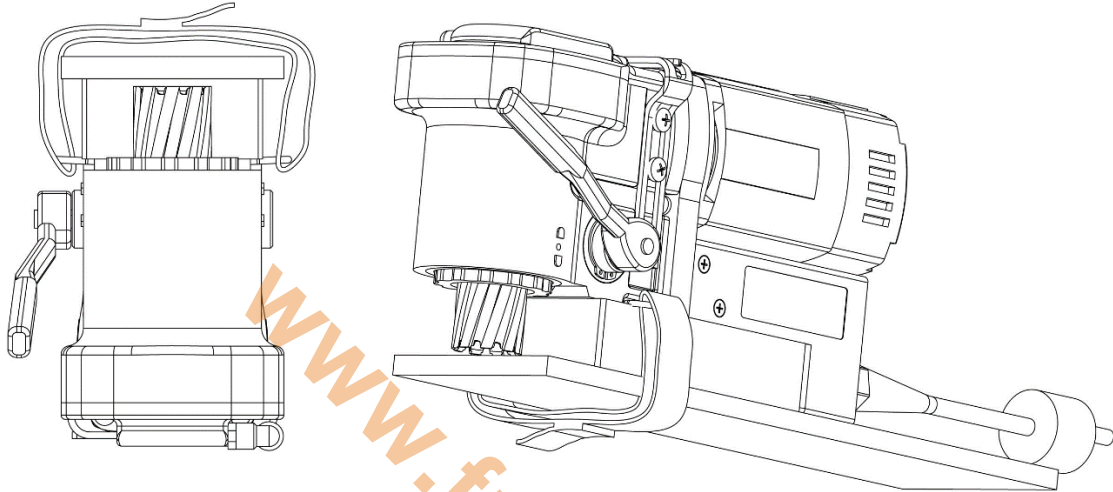
### FITTING THE SAFETY BELT

The safety belt should always be used during operation. Use of the safety belt limits the risk of personal injury when for some reason magnets comes loose from the workpiece (such as loss of power supply).

In no way does the use of the safety belt clear the operator from following other safety and operating instructions.

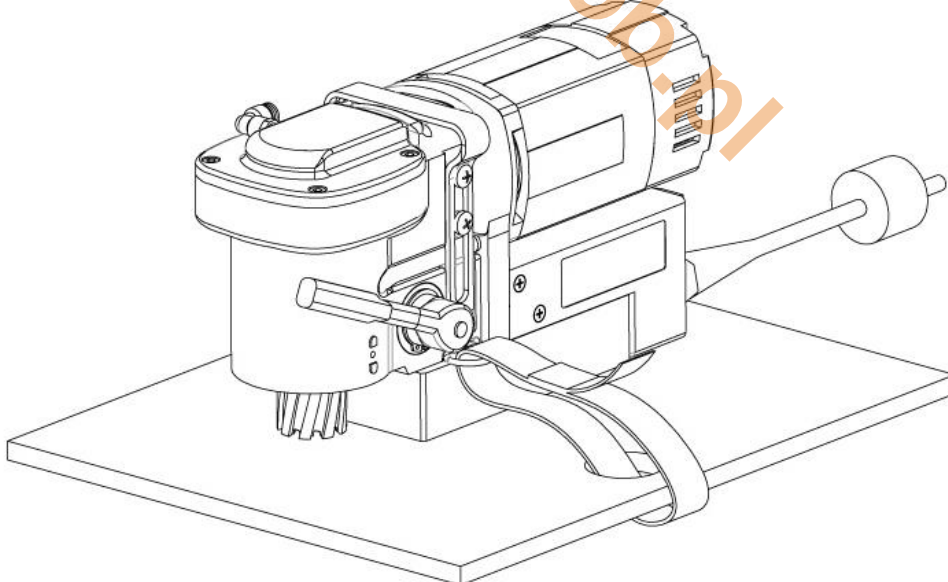
The safety belt can be used in 2 different ways:

1. On a narrow workpiece by looping the belt through the 2 D-rings and underneath the workpiece (image 2-8). Pull the belt through its buckle and make sure the belt is tight all-around.



[image 2-8]

2. On a larger workpiece, by looping the belt through 1 D-ring and an available opening in the workpiece itself (image 2-9). Pull the belt through its buckle and make sure the belt is tight all-around.



[image 2-9]

### 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 or 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<sup>2</sup>; 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.



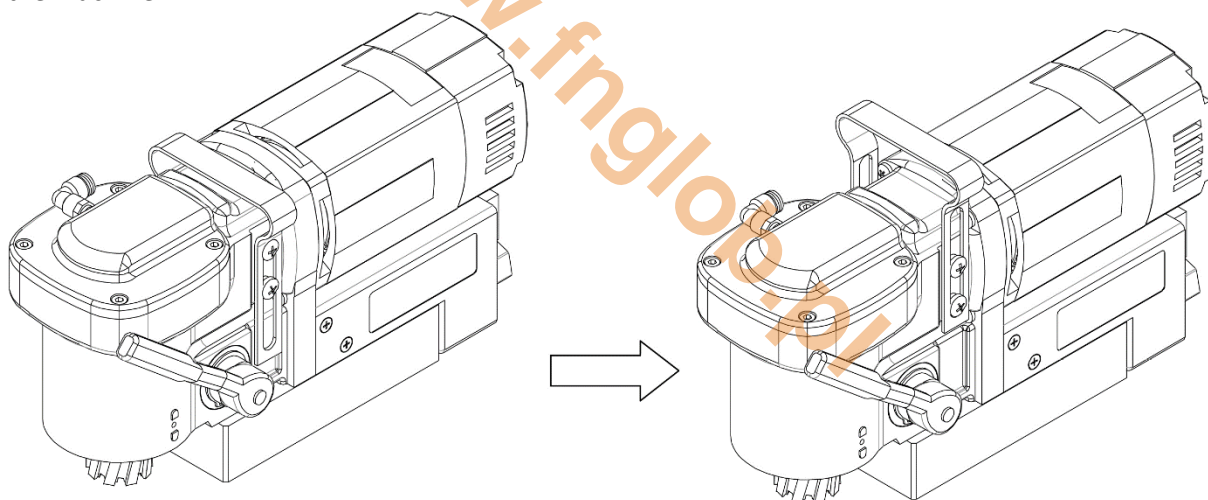
**WARNING:** To reduce the risk of serious personal injury, turn tool off and disconnect tool from power source before making any adjustments or removing/installing attachments or accessories.

### 4.1 Carrying handle

This machine is designed to be carried by hand only, with the use of the integrated retractable carrying handle. Always check if the 4 screws holding the carrying handle in place are still firmly tightened prior to carrying the machine

- 1) To extract the carrying handle, gently pull it up at both ends simultaneously (image 2-10).
- 2) The machine should be carried with one hand only, with 4 fingers (all other than the thumb).
- 3) To retract the carrying handle, gently push it down. Be careful not to get any body parts stuck.

It is advised to have the carrying handle retracted during operation, as it increases clearance around the machine.

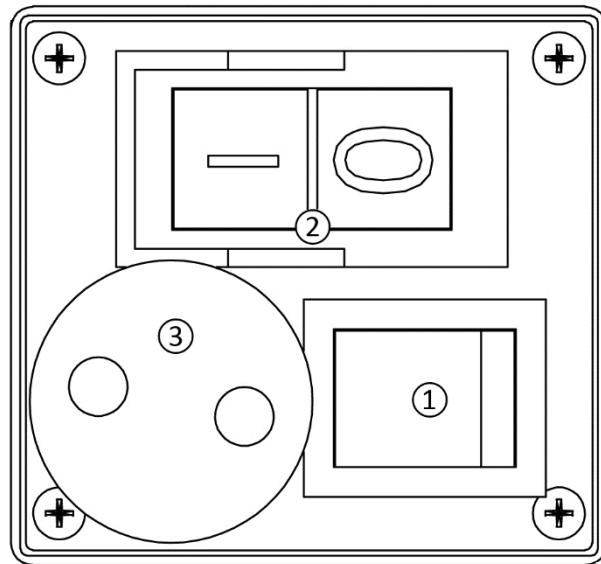


[image 2-10]

## 4.2 Control panel

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

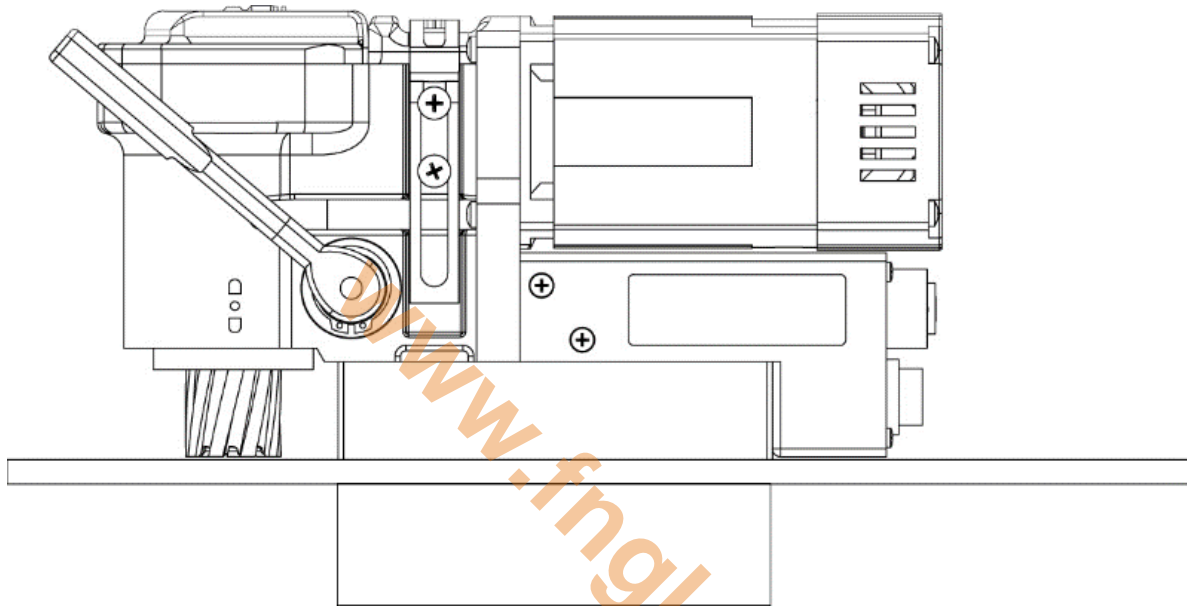
1. Magnet switch
2. Motor switch
3. Power cable



### 4.3 Electromagnet

Make sure the magnetic drilling machine is placed on a smooth, clean, level and solid surface without any objects or debris 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 as shown in image 2-12.



[image 2-12]

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

The electromagnet may not be able to create a good enough magnetic field. Causes may be:

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

It is the responsibility of the operator to make sure the workpiece offers the best basis for the magnetic drilling machine to adhere.

1. Place the machine on the workpiece
2. Connect the machine to the power supply
3. Position the machine in the exact desired spot
4. Press the red magnet switch to activate the magnet, the magnet switch will be lit (red)
5. To deactivate the magnet, press the red magnet switch again

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 workpiece. Do not connect any other machines to the electrical outlet the machine is plugged into, as it may result in the loss of magnetic force.

**We need to point out that this is only an indication and not a certainty that the magnet will not release from the material. Euroboor accepts no liability for insufficient adhesion from any cause.**

Always use the safety strap 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 website [www.euroboor.com](http://www.euroboor.com) where several vacuum tightening systems and pipe clamping systems can be found.

## 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.

## 5. Working with operating 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.

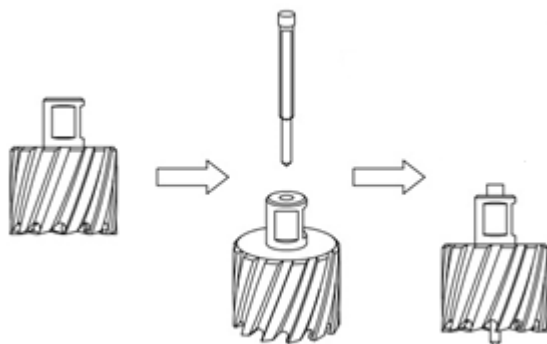
Some materials of low hardness contain abrasive substances leading to rapid cutting edge wear at high speeds. Feed rates are governed by rigidity of set-up, volume of material to be removed, surface finish and available machine power.

#### DRILLING A HOLE

Now that you have read the explanatory information and safety recommendations above, you are ready to actually start drilling. Follow these 13 steps for best drilling result :

This magnetic drilling machine can only be used with annular cutters with Weldon shank, with either one or two (positioned at 90°) flats.

1. Install the annular cutter
  - Place the pilot pin into the cutter, as shown in image 3-1



[image 3-1]

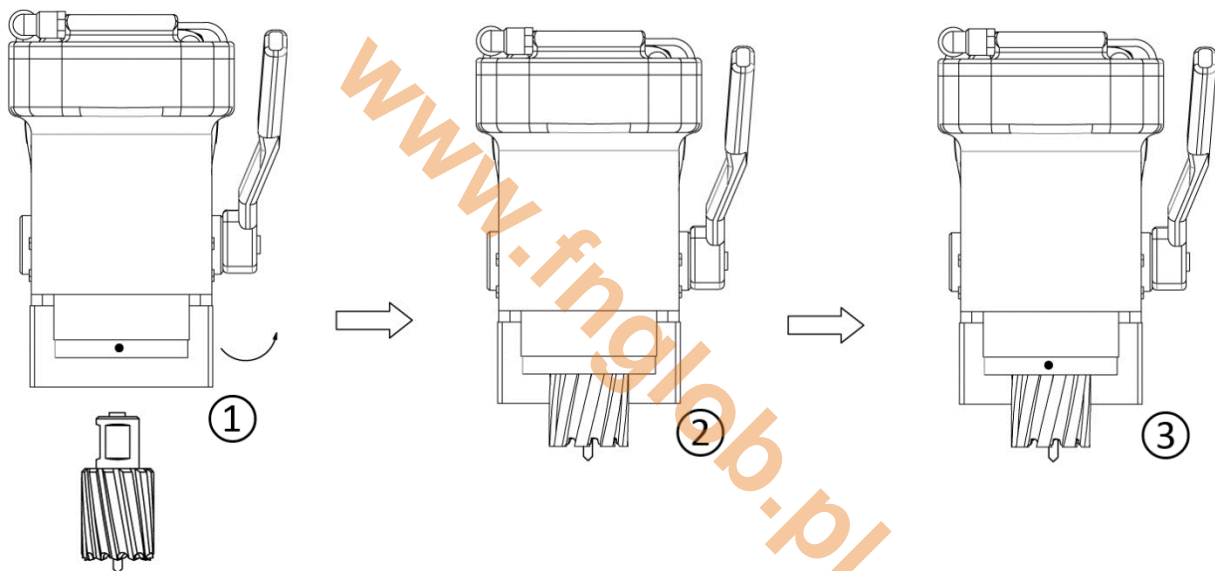
- Make sure the machine output shaft protrudes enough from the gearbox body to easily grip the lock ring
- Locate the white dot on the lock ring on the output shaft. If necessary, rotate the output shaft by hand in clockwise direction until the white dot is visible

The white dot indicates the location of the cutter lock

**ALWAYS MAKE SURE THE POWER PLUG IS DISCONNECTED!**

- Line-up one of the flats on the cutter shank with the white dot (image 3-2, ①)
- Rotate the lock ring in counterclockwise direction to open up the tool holder and hold the lock ring. The white dot on the lock ring moves with it, but the cutter lock remains at the same position (image 3-2, ①)
- Gently push the cutter into the output shaft as far as it will go, and release the lock ring (image 3-2, ②)
- The lock ring will jump back, and the cutter will be tightened inside the machine output shaft (image 3-2, ③)
- To make sure the cutter is fully locked inside the machine output shaft, gently try to rotate the cutter in the output shaft in both directions, and check if the lock ring can be rotated any further in clockwise direction

**PROTECT YOUR HANDS FROM THE SHARP CUTTER!**



[image 3-2]

2. Precisely mark the centre 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. Open the valve of the auto coolant system to allow the coolant oil to flow
6. Switch on the motor and allow it to run at full speed
7. Start moving the ratchet feed handle towards the front of the machine, pushing down the output shaft and annular cutter

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!!!***

9. Adjust the oil supply when necessary
9. Apply less pressure when the drill cuts through the material. The slug will be pushed out of the cutter by the pilot pin.
10. Move the ratchet feed handle back until the output shaft is in its highest position and switch off the motor unit
11. Remove the burrs, metal chips and clean the cutter and surface without getting injuries.
13. To remove the annular cutter, hold the cutter while turning the lock ring in counterclockwise direction, and pull down the cutter.  
After drilling the cutter can be hot, resulting in a tighter fitment inside the output shaft. If this makes the cutter hard to remove, wait a few minutes for the cutter to cool down and try again.

**PROTECT YOUR HANDS FROM THE SHARP CUTTER!**

**Caution:** The metal piece drilled out can be sharp and very hot!!

## 5.2 Twist drills

This magnetic drilling machine can be used with Weldon shank twist drills. For fitment and removal, follow instructions as provided in chapter [5.1 Annular cutters].

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## 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 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 GREASE

The gearbox grease should be checked and replaced at least once a year to ensure maximum lubrication and cooling, and thus the best performance and durability of the machine.

### CHECK ARMATURE

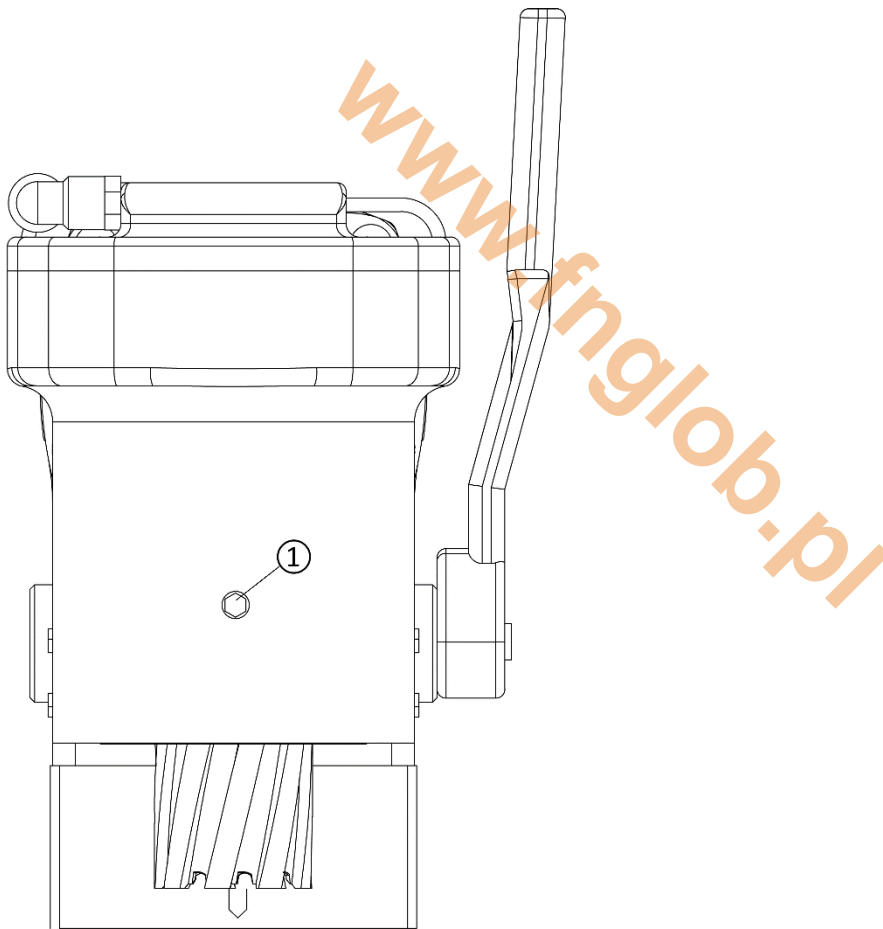
This should be checked at least 1 per month to check that there are visual signs of damage to the body or to the commutator. Some signs of wear will be seen on the commutator over a period of time this is normal as this is the part that comes in contact with the brushes but any signs of abnormal damage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

### ADJUSTMENT OF OUTPUT SHAFT

An essential requirement of the machine is that the output shaft can move in a smooth and controlled manner, free of lateral movement and vibration.

When supplied new, the output shaft has already been adjusted for ideal movement. After some time, up and down movement may become a little loose, requiring adjustment.

This can be done by tightening the grub screw at the front of the machine with supplied allen key (size 3 mm), as seen on image 4-1, ①



[image 4-1]

After adjustment the output shaft should be easy to move up and down, but should also stay at any height position. Do not overtighten the grub screw!

### 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.

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## 7. Trouble shooting

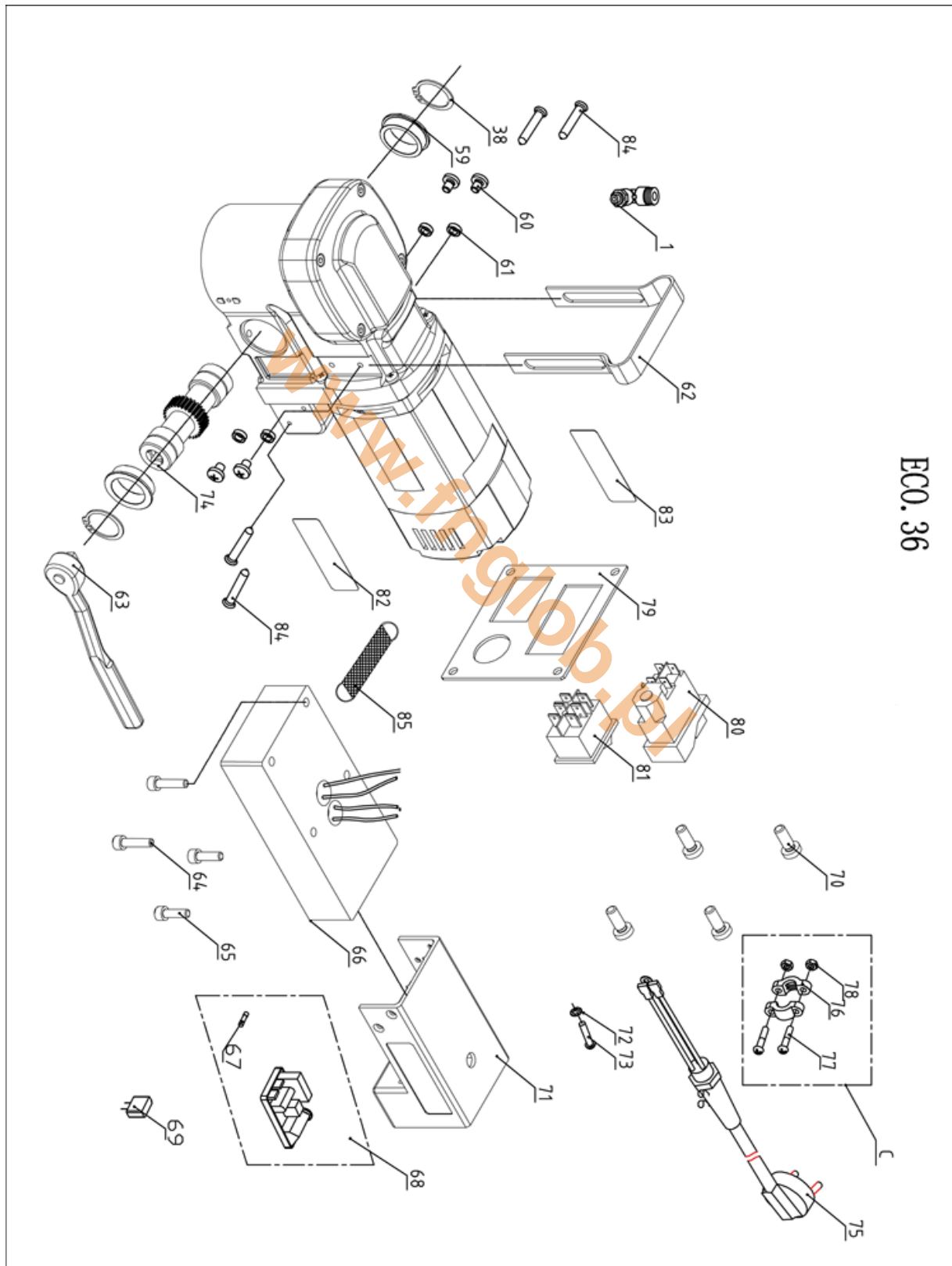
Magnet and motor do not function	<ul style="list-style-type: none"> <li>- The magnet switch is not connected to the power supply</li> <li>- Damaged or defective wiring</li> <li>- Defective fuse</li> <li>- Defective magnet switch</li> <li>- Defective Control Unit</li> <li>- Defective power supply</li> </ul>
Magnet does function, the motor does not work	<ul style="list-style-type: none"> <li>- Damaged or defective wiring</li> <li>- Carbon brushes are stuck or worn out</li> <li>- Defective magnet switch</li> <li>- Defective On / Off switch</li> <li>- Defective Control Unit</li> <li>- Defective armature and/or field</li> </ul>
Magnet does not function, the motor does	<ul style="list-style-type: none"> <li>- Defective magnet</li> <li>- Defective wiring of magnet</li> <li>- Defective Control Unit</li> </ul>
Annular cutters break quickly, holes are bigger than the hole cutter	<ul style="list-style-type: none"> <li>- Clearance in the guide</li> <li>- Bent spindle</li> <li>- Shaft extending from the motor is bent</li> <li>- Bent pilot pin</li> </ul>
Motor running roughly and/or seizing up	<ul style="list-style-type: none"> <li>- Damaged output shaft</li> <li>- Worn transfer gear</li> <li>- Dirt in output shaft</li> </ul>
Motor starts running when magnet switch is turned on	<ul style="list-style-type: none"> <li>- Damage or defective relays in control unit</li> </ul>
Motor making a rattling sound	<ul style="list-style-type: none"> <li>- Gear ring (bottom of the armature) worn out</li> <li>- Gear(s) worn out</li> <li>- No grease in gear box</li> </ul>
Motor humming, big sparks and motor has no force	<ul style="list-style-type: none"> <li>- Armature damaged (burned)</li> <li>- Field burned</li> <li>- Carbon brushes worn out</li> </ul>
Motor does not start or fails.	<ul style="list-style-type: none"> <li>- Damaged or defective wiring</li> <li>- Dirt in sensor Speed Control Unit</li> <li>- Defective or loose magnet on top of armature</li> <li>- Damage to Armature or field coil</li> <li>- Damaged or defective carbon brushes</li> </ul>
Guiding takes a great deal of effort	<ul style="list-style-type: none"> <li>- Adjustment grub screw has been overtightened tight</li> <li>- Dirt between output shaft and gearbox housing</li> <li>- Dirt in height adjustment gear/rack assembly</li> <li>- Insufficient lubrication on outside of output shaft</li> </ul>
Insufficient magnetic force	<ul style="list-style-type: none"> <li>- Damaged or defective wiring</li> <li>- Bottom of magnet not clean and dry</li> <li>- Bottom of magnet not flat</li> <li>- Work piece is not bare metal</li> <li>- Work piece is not clean or flat</li> <li>- Work piece is less than 10 mm (too thin)</li> <li>- Defective Control Unit</li> <li>- Defective magnet</li> </ul>

Frame under voltage	<ul style="list-style-type: none"> <li>- Damaged / defective wiring</li> <li>- Defective magnet</li> <li>- Motor seriously dirty</li> </ul>
Fuse blows when magnet switch is turned on	<ul style="list-style-type: none"> <li>- Damaged or defective wiring</li> <li>- Wrong value fuse</li> <li>- Defective magnet switch</li> <li>- Defective Control Unit</li> <li>- Defective magnet</li> </ul>
Fuse blows when motor is started	<ul style="list-style-type: none"> <li>- Damaged or defective wiring</li> <li>- Wrong value fuse</li> <li>- Motor running roughly</li> <li>- Defective Armature and / or Field</li> <li>- Carbon brushes worn out</li> <li>- Defective Control Unit</li> </ul>
Rotation system free stroke too long	<ul style="list-style-type: none"> <li>- Loose or defective gear-rack</li> <li>- Defective rotation system</li> </ul>

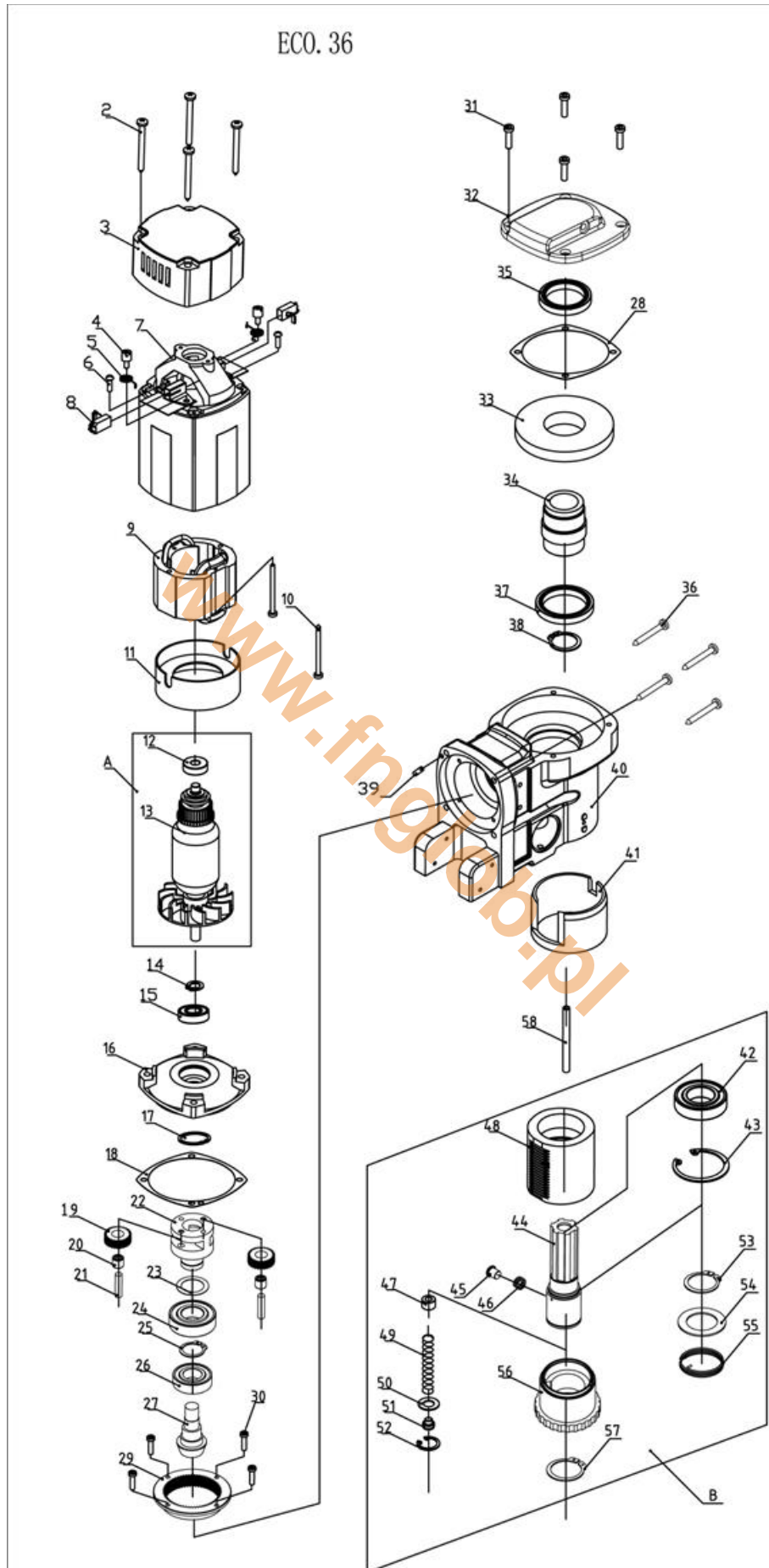
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## 8. Exploded view & spare part list

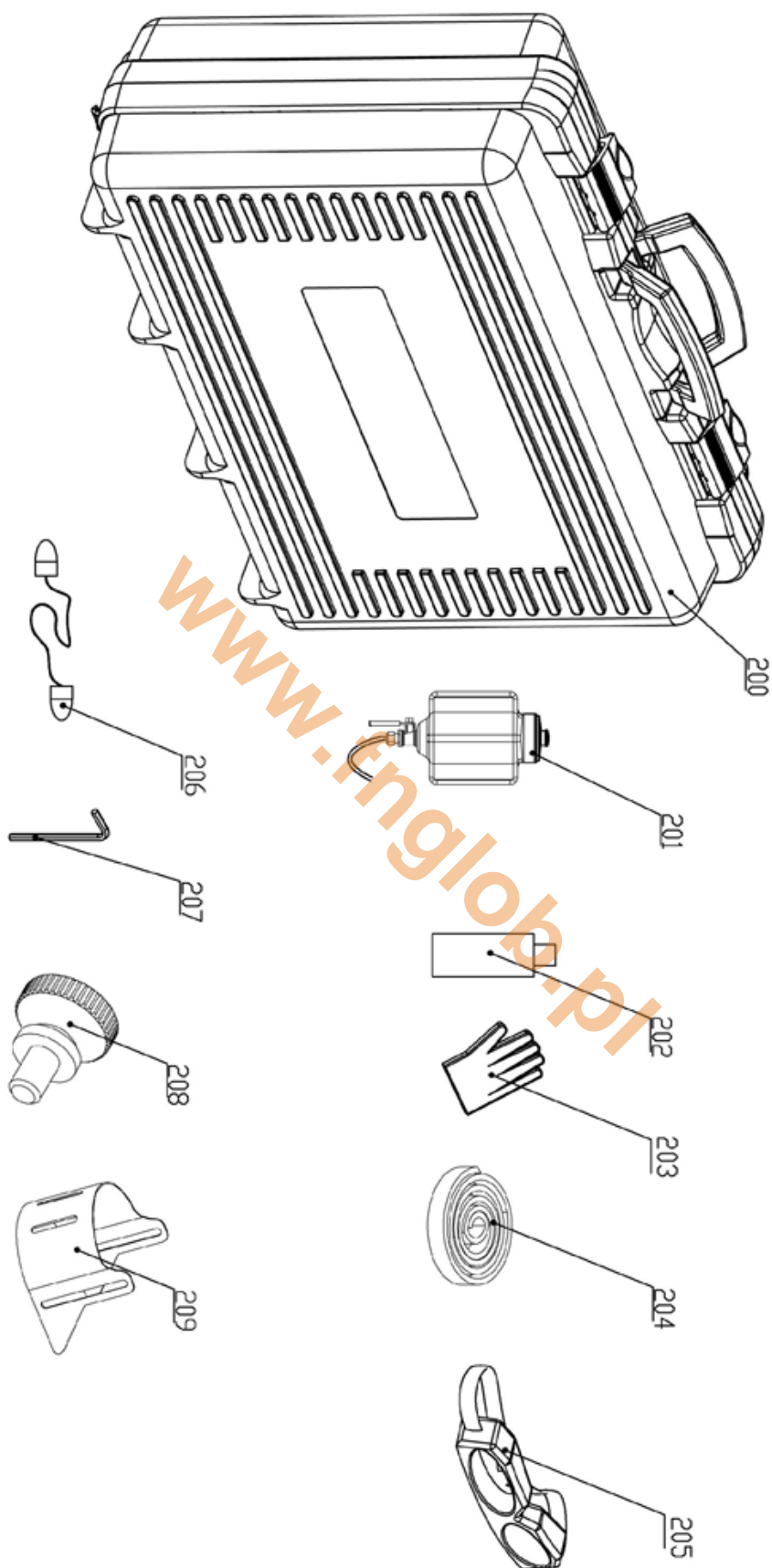
### 8.1 Exploded views



# ECO. 36



## EC0.36

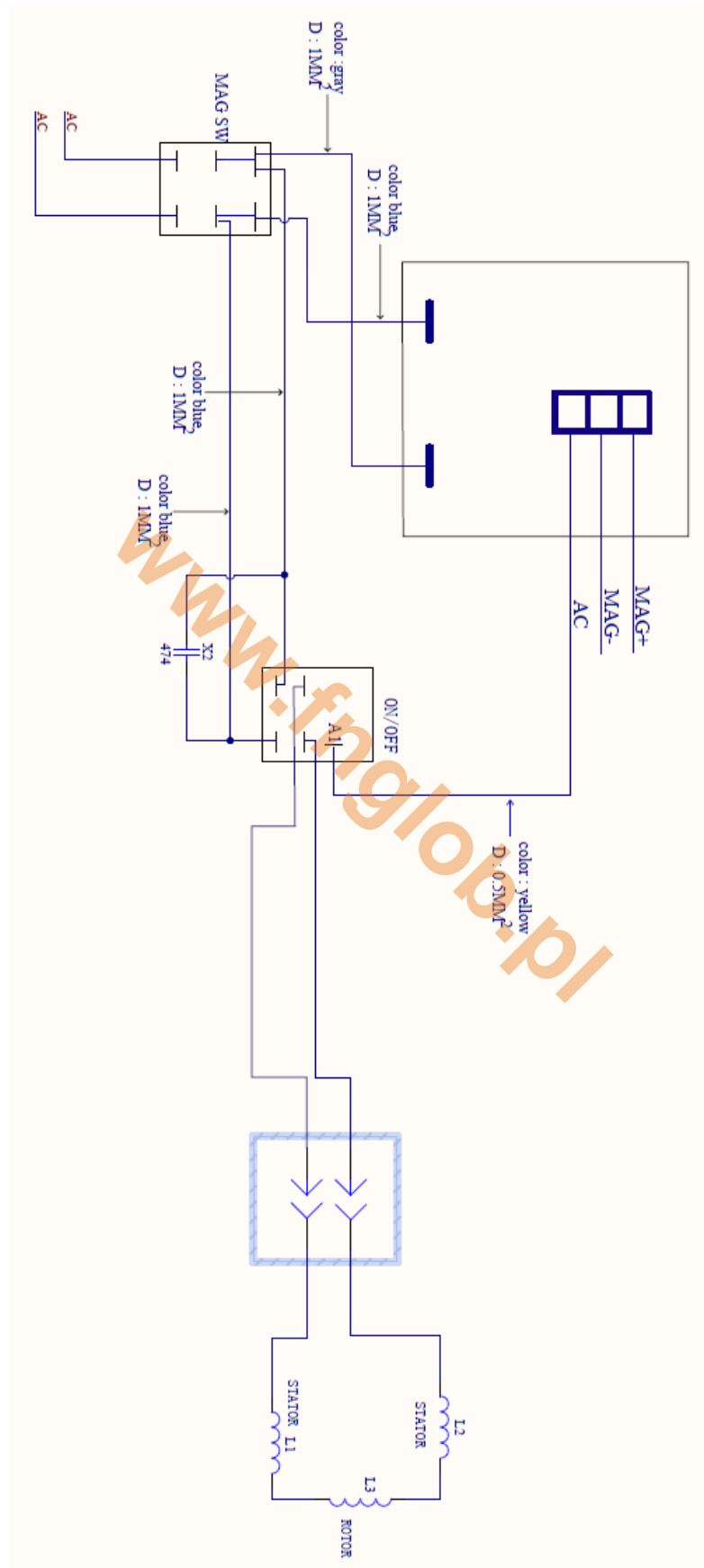


## 8.2 Spare part lists

No.	Description	Article number	Qty
1	Connector	KSP.S	1
2	Torx Screw	036.0043	4
3	End cover	032.0111	1
4	Screw	032.0136	2
5	Carbon brush holder spring	032.0141	2
6	Screw	020.0181A	2
7	Housing	036.1012	1
8	Carbon brush set 220V	032.0146	1
	Carbon brush set 110V	032.0147	
9	Field 220V	036.0047	1
	Field 110V	036.0049	
10	Screw	032.0156	2
11	Baffle	032.0161	1
12-13	Armature incl. bearing 220V	036.1017	1
	Armature incl. bearing 110V	036.1018	
14	Circlip	032.0166	1
15	Bearing	032.0171	1
16	Inner gear plate	036.0236	1
17	Circlip	032.0166	1
18	Gasket	032.0237	1
19-26	Gear assembly	036.1020	1
27	Gear	036.0025	1
28	Gasket	036.0138	1
29	Gear	036.0035	1
30	Screw	036.0007	4
31	Screw	036.0012	4
32	Gear plate	036.0002	1
33-34	Gear/shaft assembly	036.1021	1
35	Bearing	036.0022	1
36	Torx Screw	036.0044	4
37	Bearing	036.0023	1
38	Circlip	036.0018	3
39	Pin	050.0025	2
40-41	Gearbox incl. adaptor ring	036.1022	1
42-57	Spindle assembly complete	036.2002	1
58	Tube	036.0017	1
59	Adaptor ring	036.0064	2
60	Screw	036.0028	4
61	Screw	036.0029	4

No.	Description	Article number	Qty
62	Handle	036.0152	1
63	Spanner	036.0026	1
64	Screw	360.1024	2
65	Screw	020.0146	2
66	Magnet	036.1005	1
67	Fuse	020.0017	1
67-68	Control unit incl. fuse 220V	020.0001/3	1
	Control unit incl. fuse 110V	020.0001/31	
69	Capacitor	020.0257	1
70	Screw	055.0022	4
71	Cable cover	036.0003	1
72	Washer	040.0286F	1
73	Screw	036.0007	1
74	Arm capstan	036.0065	1
75	Main cable 220V Europe	020.0036	1
	Main cable 220V Australia	020.0036/AUS	
	Main cable 110V USA	020.0036/USA	
	Main cable 220V UK	020.0036/UK	
	Main cable 110V UK	020.0036/UK 110-16A	
76-78	Cable clamp assembly	020.0037	1
79	Switch panel	036.0006	1
80	Motor switch 220V	030E.0091/Y	1
	Motor switch 110V	030E.0092/Y	
81	Magnet switch	020.0011	1
82	Type plate 220V CE	036.0015	1
	Type plate 110V ETL	036.0015A	
83	Instruction plate	036.0016	1
84	Screw	036.0036	4
85	D-belt	036.0040	1
200	Machine case	CAS.36	1
201	Coolant tank	036.2019	1
202	Coolant oil, 200ml bottle	IBO.10.200	1
203	Glove	SAF.300	1
204	Safety belt	036.0033	1
205	Glass	SAF.100	1
206	Ear Plug	SAF.200	1
207	Allen key	IMB.US3	1
208	Thumb screw	036.0027	2
209	Safety guard	036.0111	1

## 8.3 Wiring diagrams



## 9. Certification

### Declaration of conformity

EUROBOOR BV  
Kryptonstraat 110  
2718TD Zoetermeer  
The Netherlands



declares

that the following appliance complies with all relevant CE mark Directives requirements:

<i>Product</i>	Magnetic drilling machine
<i>Model</i>	MD3 (ECO.36)
<i>Ratings and principal characteristics</i>	220-240V~, 50/60Hz, 1050W, n <sub>o</sub> :700/min, Class 1
<i>Relevant Standard(s) / Specification(s)</i>	EN 61029-1:2009 + A11:2010
<i>/ Directive(s)</i>	EN 12717:2001 + A1:2009 The Machinery Directive 2006/42/EC
<i>Verification Issuing Office</i>	Intertek Testing Services
<i>Verification Number</i>	17052977SHA-V1
<i>Report Number(s)</i>	170502977SHA-001

and that the following appliance:

<i>Product</i>	Magnetic drilling machine
<i>Model</i>	MD3 (ECO.36)
<i>Ratings and principal characteristics</i>	110-120V~, 60Hz, 8.5A, Class 1

conforms to

UL standard 987 Issued: 2011/10/19 ED: 8 Rev: 2013/12/19 Stationary and Fixed Electric Tools

is certified to

CSA C22.2#71.1 Issue:1989/09/01 Portable Electric Tools General Instruction No 1-5 (R1999)

<i>Verification Issuing Office</i>	Intertek Testing Services
<i>Control Number</i>	4004921
<i>Report Number(s)</i>	170502987SHA-001

Albert Koster

A blue ink signature of Albert Koster, consisting of stylized initials and a surname.

Managing Director