

Operators manual

V 1.2 EN

  
FOR PROFESSIONALS BY PROFESSIONALS

Magnetic drilling machine

# TUBE.55S/T

Serial number:

Date of purchase:

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

[www.euroboor.com/register](http://www.euroboor.com/register)

[ only when registered you benefit from extended warranty ]

Congratulations on your purchase of the Euroboor TUBE.55S/T 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**

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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 safety strap or chain
- The magnetic drilling machine is optimized for use on steel starting with a thickness starting 3.5 mm with zero air gap between the magnet surface and the mounting surface. Keep the air gap to a minimum by cleaning the surface; this will affect the performance of the magnets significantly.
- The maximum allowable tip force of the magnetic drilling machine will increase with the thickness and type of material; air gaps, surface coatings and debris can reduce this value.
- 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 with both magnet arrays;
- 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 bECO
- ming hot during operation
- Risk of personal injury due to prolonged use.

Always try to reduce these risks as much as possible.

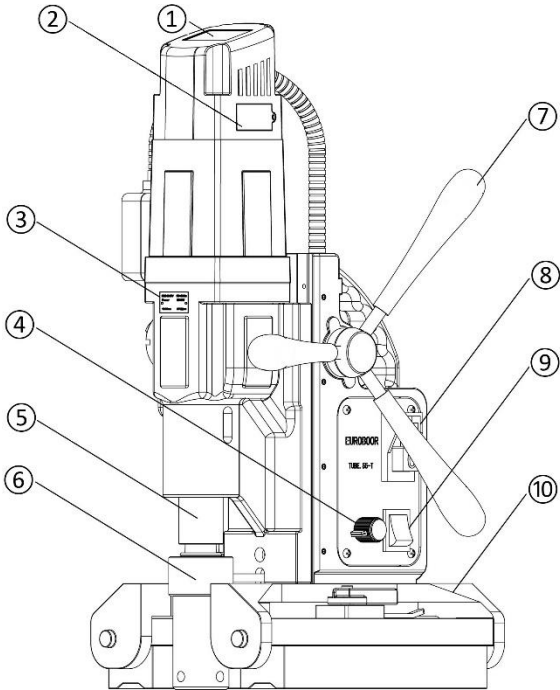
# 2. Description

## 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, reaming and tapping in a weather-protected environment using the application tools and accessories recommended by EUROBOOR.

The magnetic drilling machine can be used horizontally, vertically or overhead.

## 2.2 Description and features



- 1 LED display
- 2 Carbon brush cover
- 3 Gearbox guide
- 4 Speed control knob
- 5 Output shaft
- 6 Morse Taper spindle
- 7 Feed handle
- 8 Motor switch
- 9 L/R switch
- 10 Magnet base

[image 1-1]

## 2.3 Box contents

- 1 Carrying case
- 1 Magnetic drilling machine
- 1 Instruction manual
- 3 Handles
- 1 Oil tank + attachment pin
- 1 Bottle cutting oil
- 3 Allen keys (2.5, 4, 5)
- 1 Safety chain
- 1 Morse Taper 3 spindle
- 1 Spindle drift
- 4 Tap collets (DIN 376 M10/M12/M14/M16)
- 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 2 times: engraved on the frame, 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:

*55T1709001*

breaks down to:







<i>55T</i>	<i>17</i>	<i>09</i>	<i>001</i>
Machine series			
	Year of manufacture		
		Month of manufacture	
			Identification number



## 2.5 Technical data

<b>ANNULAR CUTTERS</b>	∅ 12 – 55 mm	∅ 7/16 – 2 3/16"
<b>TWIST DRILLS</b>	∅ 1 – 23 mm	1/16 – 15/16"
<b>THREADING</b>	M3 – M20	M3 – M20
<b>COUNTERSINKING</b>	∅ 10 – 60 mm	∅ 3/8 – 2 3/8"
<b>LENGTH</b>	320 mm	12 5/8"
<b>WIDTH</b>	210 mm	8 1/4"
<b>HEIGHT</b>	523 – 693 mm	20 9/16 – 27 1/4"
<b>STROKE</b>	170 mm	6 11/16"
<b>WEIGHT</b>	17,6 kg	39 lbs
<b>MAGNET</b>	266 x 239 x 82 mm (L x W x H)	10 1/2 x 9 7/16 x 3 1/4" (L x W x H)
<b>MAGNETIC FORCE</b>	860 kg	1895 lbs
<b>MOTOR POWER</b>	1600 W	14.5 A
<b>TOTAL POWER</b>	1700 W	15.5 A
<b>SPEED</b>	[I] 60-275 <sup>min-1</sup> [II] 100-500 <sup>min-1</sup>	[I] 60-275 <sup>min-1</sup> [II] 100-500 <sup>min-1</sup>
<b>SPINDLE</b>	MT 3 19.05 mm (3/4") Weldon	MT 3 19.05 mm (3/4") Weldon
<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.

## 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.

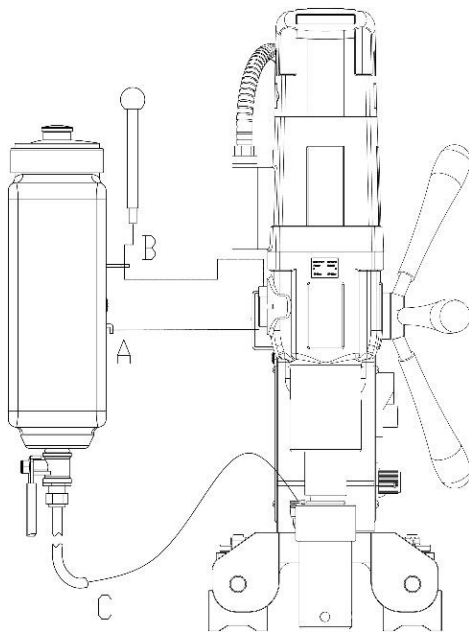
#### FITTING THE FEED HANDLES

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.

#### FITTING THE LUBRICATION SYSTEM

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



1. Hang the coolant tank (A) on the coolant tank holder
2. Position and tighten the attachment pin (B)
3. Connect the coolant hose (C) to the fitting on the Morse Taper spindle. Make sure the hose is connected fully and tightly
4. To disconnect the coolant hose, press the blue ring on the connection and gently pull out the hose

[image 2-1]

#### 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.

## 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 3,5 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.

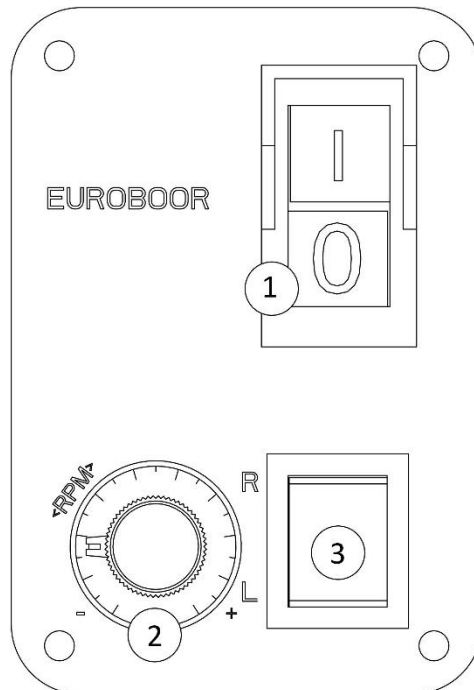


**WARNING:** To reduce the risk of serious personal injury, turn tool off and disconnect tool from power source before making any adjustments or removing/installing attachments or accessories.

### 4.1 Control panel

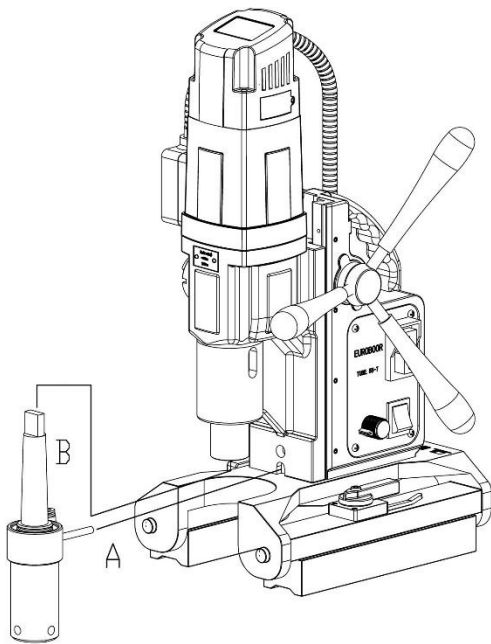
The control panel on your magnetic drilling machine is designed for maximum operating facility and safety.

1. Motor switch
2. Speed control knob
3. L/R switch

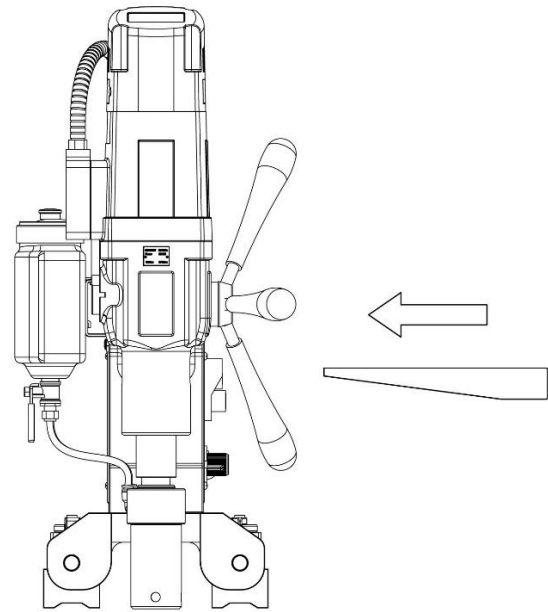


[image 2-2]

## 4.2 Morse taper spindle



[image 2-3]



[image 2-4]

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

## 4.3 Gearbox

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

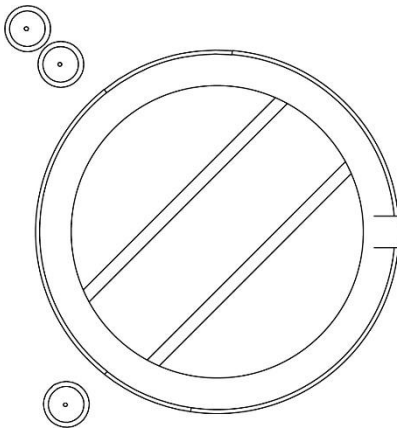
In case you have trouble fully and correctly selecting a gear, the gears in the gearbox might be misaligned. Slightly rotating the output shaft by hand will help you align the gears and correctly and fully selecting the intended gear.

**NOTE: never touch moving machine parts!**

3. Speed selection for annular cutters (also see plate on gearbox):

- o  $\varnothing$  27-55 mm Rotating speed 60-275<sup>min-1</sup>
- oo  $\varnothing$  12-26 mm Rotating speed 100-500<sup>min-1</sup>

For sizes  $\varnothing$  27-55 MM the usage of TCT annular cutters is recommended.



[image 2-5]



**WARNING:** *never touch moving machine parts!*



## 4.4 Magnet base

By combining Magswitch's patent-pending rotating magnet technology and Euroboor's smartest magnetic drilling unit yet, we have created a tool that is capable of quickly and safely drilling on contoured and flat surfaces. Magswitch LAY magnets allow for a much more efficient field on thinner material, allowing more consistent tip forces.

The attachment force generated by the magnets depends on various factors:

- Thickness of the material
- Material grade
- Paint or coating of the material the magnet is placed on
- Metal chips, oil or other dirt under the magnet

As guideline on regular construction steel:

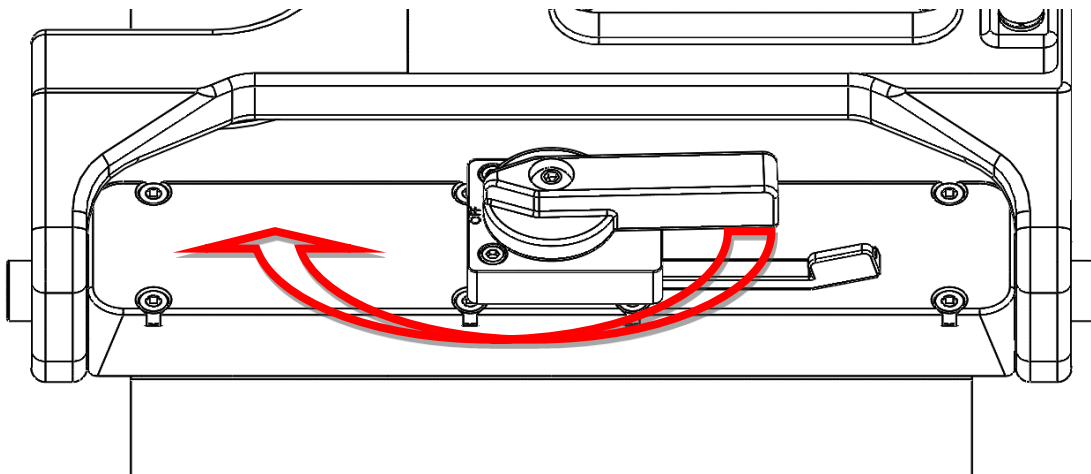
Minimal required material thickness: 3,5 mm (1/8")

Full saturation as from material thickness: 12,5 mm (1/2")

Make sure that both magnet arrays attach tightly to the workpiece before turning on the motor unit of the magnetic drilling machine.

For placement on the outside of a pipe, minimum outer diameter of 80 mm (3.5") is required.

Always use the safety chain included. Drilling above your head is extremely dangerous and is not recommended.



[image 2-6]

## Activating the magnets

Both magnet arrays are to be handled individually.

- Make sure the magnet arrays are switched OFF (narrow part of both ratcheting action handles pointing to the marking "OFF")
- Place the magnetic drilling machine on the workpiece in the desired location, and make sure both magnet arrays are positioned correctly and the machine is in a stable position
- Rotate the ratcheting action handles:
  - o For precise positioning: partly (around 90 degrees) clockwise, this allows for some manoeuvrability
  - o For drilling: 180 degrees clockwise, with narrow part of both ratcheting action handles pointing to the marking "FULL"

If you are not able to rotate the handles to "FULL" position easily and fully, not enough magnet force is generated and the machine is unsafe to use. Check above mentioned possible factors and fix the cause of insufficient magnetic force before proceeding.

The two handles on the Magswitch arrays need to be rotated the full 180 degrees to be considered fully ON or OFF.

- Connect the machine to the mains

## Deactivating the magnets

To deactivate the magnets:

- Gently press the release lever beneath the ratcheting action handle about 1,5 cm (9/16") towards the machine body to release the ratcheting action handles

While keeping the release lever pressed, return the ratcheting action handle to the position where the narrow part points to the marking "OFF"

## 4.5 Switching motor on and off

Once the machine is plugged into the mains, it is automatically put in standby-mode and the motor can be started without any additional steps.

To switch the motor ON, press the green button with marking "I". To switch the motor OFF, press the red button with marking "O".

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

Always allow the motor to run at least 3 seconds after starting the motor, before starting any type of operation.

## 4.6 Motor rotation

The rotational direction of the motor can be changed.

- Switch in up position (R) will make the motor rotate clockwise
- Switch in down position (L) will make the motor rotate anticlockwise

Before switching the rotational direction of the motor and spindle, make sure the motor is switched off first to prevent machine and tool damage.

## 4.7 Motor speed control

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

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

The electronic motor speed control works for both mechanical gears.

Be careful not to overturn the knob.

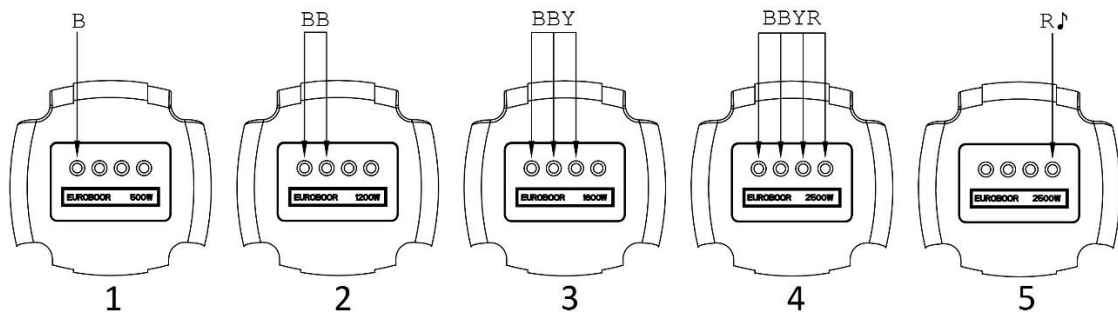
## 4.8 LED display & torque control

This machine is equipped with an electronic display, showing:

- Used motor power
- LED indicators

1. Switch on the electromagnet. All LED indicators shortly light up and a beep sounds
2. Switch on the motor and start drilling. When the tool first touches the workpiece the used motor power shown in the display increases, and can be increased or decreased by raising or reducing the pressure on the feed handles.

The LED indicators will help you drill at optimum load:



[image 2-7]

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
1 blue light	+ 1 blue light	+ 1 yellow light	+ 1 red light	Flashing red light + beep sound
Load	Optimum load	Acceptable overload	Close to overload	Overload limit exceeded, motor stops
Slightly increase feed pressure when possible	Maintain feed pressure	Slightly reduce feed pressure when possible	Reduce feed pressure	Reduce feed pressure

When the motor is in overload (phase 5), the Smart Restart torque control technology ensures trouble-free continuation of your drilling job. When the feed pressure is reduced, the machines electronics recognize the reduction and the motor continues within a few seconds.



**WARNING:** The displayed motor power usage and LED indicators are only an indication of correct cutting performance. Always keep an eye on the workpiece, tool and machine and check if the cutting performance is as it should be.



**WARNING:** Never touch any potentially moving parts as long as the motor switch is still switched on!

## 4.9 GYRO-TEC safety

This Euroboor magnetic drilling machine is equipped with GYRO-TEC safety functionality. It features a gyroscopic sensor which detects acceleration and displacement in any direction. Whenever the machine recognizes a sudden, unwanted movement the motor will be shut down automatically by the machine electronics. This safety functionality offers protection to the user in various circumstances, such as:

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

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

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

It is very important to note that this functionality raises the safety level, but does not prevent the operator from using the machine incorrectly.

The operator should always follow instructions described in this manual and take all necessary safety precautions.

#### **4.11 Temperature control**

The TUBE.55S/T is equipped with an all-time electronic temperature protection. If the temperature of the motor unit runs up to 70 Degree Celsius the motor unit will stop. After a few minutes it can be started again.

When it is possible to start the motor again, let the motor run idle at full speed for a couple of minutes to let the motor cool down more in an efficient way.

## 4.12 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 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.

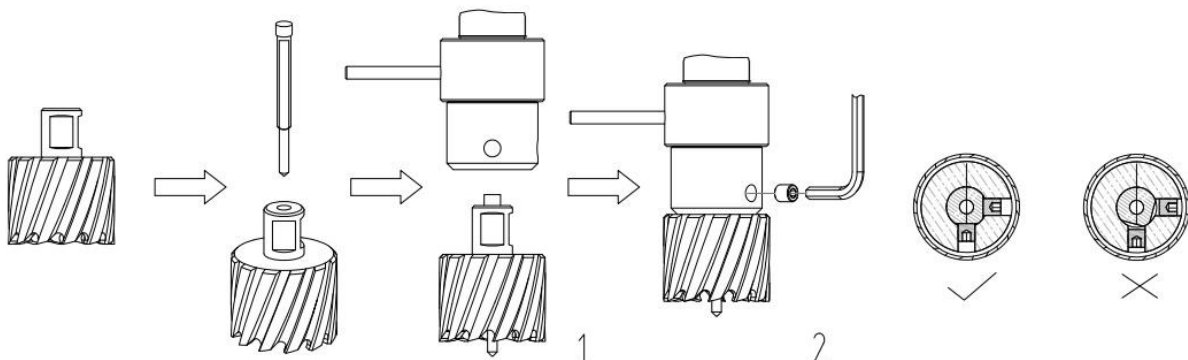
Some materials of low hardness contain abrasive substances leading to rapid cutting edge wear at high speeds. Feed rates are governed by rigidity of set-up, volume of material to be removed, surface finish and available machine power.

FOR SIZES  $\varnothing$  27-55 MM THE USAGE OF TCT ANNULAR CUTTERS IS RECOMMENDED (gear 1, **o**)

### 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]

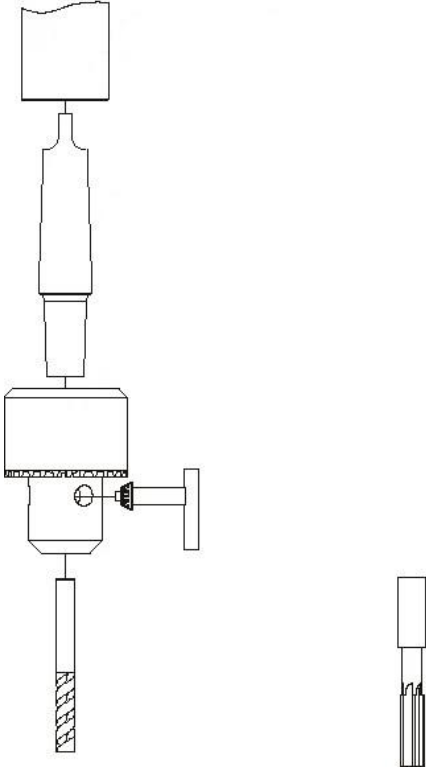
2. Precisely mark the centre of the hole
3. Use the pilot pin to position the machine and in the correct position, with the tip of the pilot pin to meet the marked center of the hole.
4. Switch on the magnet and verify that the drill is in the right position and that the machine is pushed tight against the work piece.
5. 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 the required 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!!!***
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!!



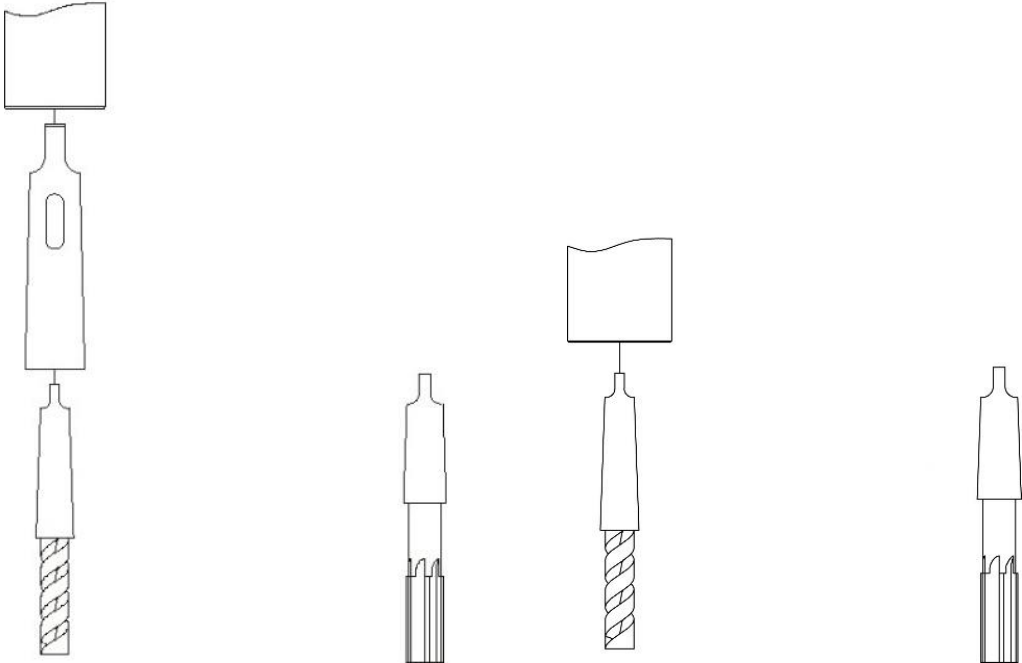
# 5.2 Twist drills

- 1. Remove the Morse Taper arbor (see chapter Gearbox)
- 2. Fit the twist drill
  - a. Straight shank twist drills



[image 3-2]

- b. Morse Taper shank twist drills



[image 3-3] Morse Taper 2

[image 3-4] Morse Taper 3

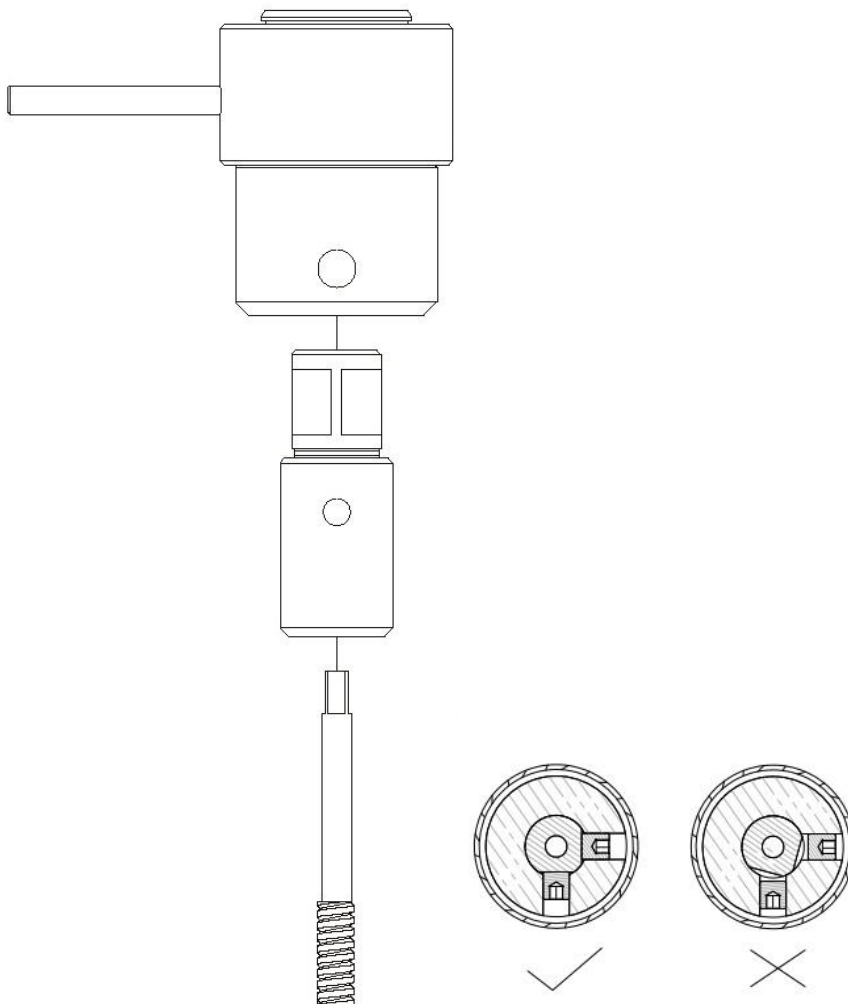
3. Precisely mark the center of the hole, and use the tip of the twist drill to position the machine and in the correct position, with the tip of the twist drill to meet the marked center of the hole.

Steps 4-12: see chapter Annular cutters. Make sure the machine runs at maximum speed for twist drills!

### 5.3 Machine taps

This TUBE.55S/T model is equipped with a reversible direction of rotation and can also be used for cutting threads. Proceed as follows for cutting threads:

1. Install the tap



[image 3-5]

2. Drill the hole for the thread on the recommended size of the tap
3. Switch off the machine and change the cutter for the tap collet and the machine tap. **DO NOT MOVE THE MACHINE**
4. Select the lowest gear and lowest speed and set the direction of rotation to clockwise (right = R)
5. Switch on the machine and set the machine tap onto the drilled hole
6. Guide the machine slide down at the handle without exerting

7. Switch off the machine (just before the tap is completely through the hole) and set the direction of rotation to anti-clockwise (left = L) at switch  
Switch on the machine again and allow the machine tap to come completely out of the work piece. Then guide the motor unit slide upwards at handles to avoid damaging the start of the thread.  
**DO NOT LET YOUR TAP PUSH UP THE MOTOR UNIT BY ITSELF!!**

Make sure the properly lubricate while performing tapping work, see chapter Annular cutters

## 5.4 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.

### **CHECK MACHINE OIL**

The gearbox oil should be checked and replaced at least once a year to ensure maximum lubrication and cooling, and thus the best performance 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 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 2.5 until slight resistance is encountered. Follow your way down adjusting all setting nuts and screws
3. Operate the slide up and down a few times to test the movement and make any further necessary adjustments. Try to ensure that all the screws are exerting a uniform pressure on the slide from top to bottom. A perfectly adjusted slide will operate freely up and down without any sideways movement

### **LUBRICATING THE FEED TRAVEL**

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

- Raise the motor unit to the highest position possible
- Lubricate the dove-tail 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.

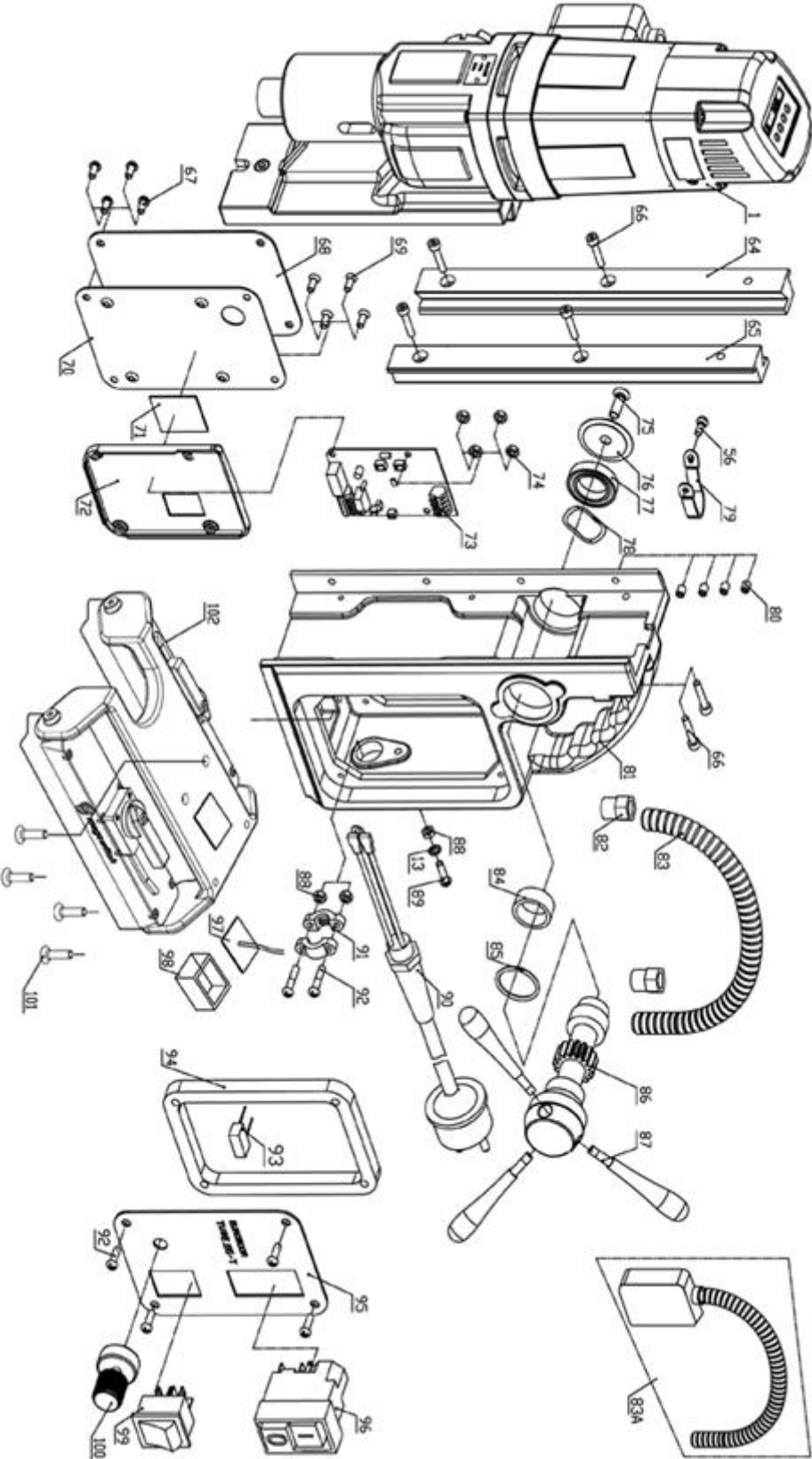
## 7. Trouble shooting

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>
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>- Bent spindle</li> <li>- Shaft extending from the motor is bent</li> <li>- Triangular guide not mounted straight</li> <li>- Dirt between spindle and triangular guide</li> </ul>
Motor starts running when machine is plugged into mains	<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>- Insufficient oil 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>- Damaged or defective (sensor) speed control unit</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>- Guide is set too tight</li> <li>- Guide is dry, needs to be greased</li> <li>- Guide/gear- rack/rotation system dirty or damaged</li> </ul>
Insufficient magnetic force	<ul style="list-style-type: none"> <li>- Bottom of magnet not clean and dry</li> <li>- Bottom of magnet not suitable for workpiece</li> <li>- Work piece is not bare metal</li> <li>- Work piece is not clean or flat</li> <li>- Work piece too thin</li> <li>- Defective magnet</li> </ul>
Frame under voltage	<ul style="list-style-type: none"> <li>- Damaged / defective wiring</li> <li>- Motor seriously dirty or damaged</li> </ul>
Fuse blows when machine is plugged into mains	<ul style="list-style-type: none"> <li>- Damaged or defective wiring</li> <li>- Wrong value fuse</li> <li>- Defective switch</li> <li>- Defective control unit</li> </ul>

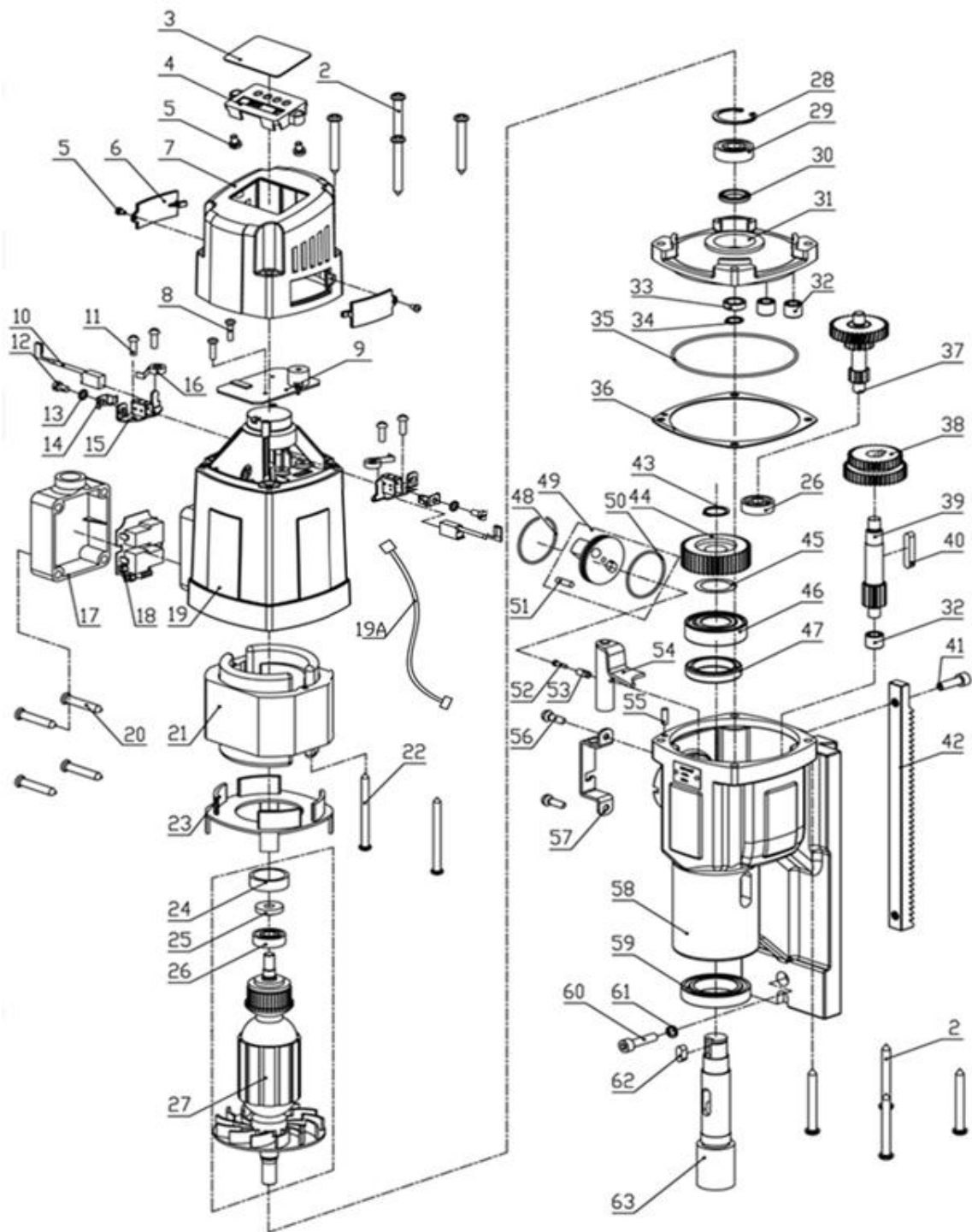
Fuse blows when motor is started	<ul style="list-style-type: none"> <li>- Damaged or defective wiring</li> <li>- Wrong value fuse</li> <li>- Motor running roughly</li> <li>- Defective armature and / or field</li> <li>- Carbon brushes worn out</li> <li>- Defective control unit</li> </ul>
Rotation system free stroke too long	<ul style="list-style-type: none"> <li>- Loose or defective gear-rack</li> <li>- Defective rotation system</li> </ul>
Red blinking light in top display with buzzer sound	<ul style="list-style-type: none"> <li>- Machine is in overload protection</li> </ul>
Red burning light in top display with buzzer sound	<ul style="list-style-type: none"> <li>- Machine is in overheat protection</li> </ul>
Motor suddenly stops	<ul style="list-style-type: none"> <li>- Components loose or missing, causing vibration</li> <li>- Machine shifting on workpiece (not attached)</li> <li>- Machine shifting with workpiece</li> <li>- Unstable cutter/arbor combination</li> <li>- Dull cutter</li> <li>- Cutter not suitable for workpiece</li> <li>- Machine set to incorrect spindle speed</li> <li>- Defective sensor or control unit</li> </ul>

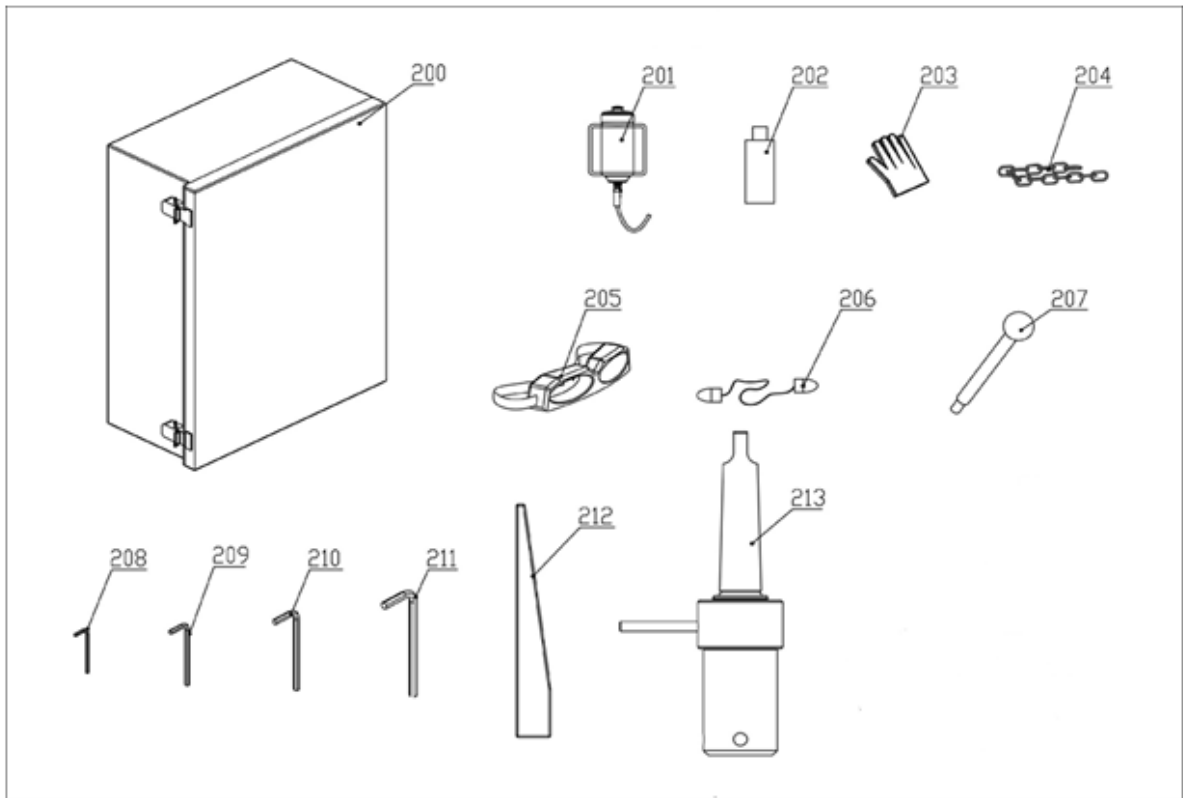
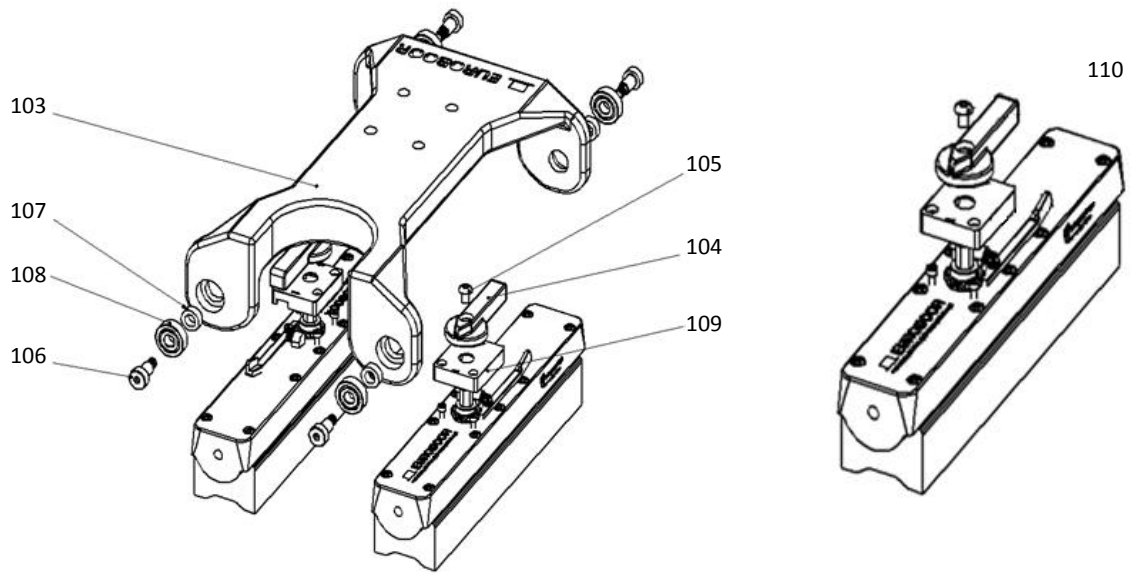
# 8. Exploded view & spare part list

## 8.1 Exploded view









## 8.2 Spare part list

No.	Part number	Description	Qty	No.	Part number	Description	Qty
1	055TM.1001	Motor 220V complete (incl. gearbox)	1	49-51	050.1016	Gear switch assembly	1
	055TM.1001A	Motor 110V complete (incl. gearbox)		52	020.0329	Screw	1
2	100.0306	Screw	8	53	050.0082	Screw holder	1
3	050.0059	Protective cover 53 x 35	1	54	050.1005A	Clutch shaft set	1
4	050.1013	LED screen	1	55	032.0211	Pin	1
5	050.0060	Screw M3 x 5	6	56	KSP.MS	Screw	3
6	050.0133	End plate	2	57	020.0289	Coolant hanger	1
7	050.0130	End cover	1	58	050.1015	Gear box 230V	1
8	050T.0332	Screw for speed control unit	2		050.1019	Gear box 110V	
9	055T.0010T	Top PCB 230V	1	59	050.0068	Bearing	1
	055T.0010TA	Top PCB 110V		60	020.0146	Screw	1
10	050.0147	Carbon brush set - 230V	1	61	020.0111	Washer	1
	050.0148	Carbon brush set - 110V		62	050.0077	Key	1
11-16	050.0371	Carbon brush holder	2	63	050.0461	Spindle drive shaft	1
17	050.0586	Cable housing	1	64-65	020.0086/Z	Rail set Alu (L+R) Z-profile	1
18	050T.0002-4	Control unit A 220V	1	66	020.0063	Screw	6
	050T.0003-4	Control unit A 110V		67	020.0101	Screw	4
19	050.0131	Housing	1	68	055.0002	Rear panel plate 230V	1
19A	CS055T.0341	Cable	1		055.0002A	Rear panel plate 110V	
20	050.0587	Screw	4	69-74	055T.1019	Speed control unit assembly 220V	1
21	050T.0278	Field 220V	1		055T.1019A	Speed control unit assembly 110V	
	050T.0278A	Field 110V		75	020.0081	Screw	1
22	020.0328	Screw M4 x 70	2	76	050.0030	End cover	1
23	050.0261	Baffle	1	77	050.0063	Bearing	1
24	050T.0346	Rubber ring	1	78	040.0023	Washer	1
25	050T.0180	Armature speed disk	1	79	020.0298	Motor cable clamp	1
26	032.0126	Bearing	1	80	020.0231	Screw	4
27	050T.0183	Armature 220V	1	81	020.0056/Z-TUBE	Frame	1
	050T.0183A	Armature 110V		82	020.0041	Coupling nut for motor cable	2
28	032.0166	Circlip	1	83	020.0046	Motor cable tube	1
29	032.0171	Bearing	1	83A	CS055T.1020	Motor cable complete (incl. 17 (1), 82 (2), 83 (1))	1
30	050.0064	Oil bearing	1	84	032.0127	Metal bearing	1
31	050.0236/Y	Inner gear plate	1	85	030.0027	Washer	1
32	040.0161	Bearing	3	86	020.0061/XB	Capstan hub	1
33	050.0065	Metal ring	1	87	020.0315	Arm for capstan	3
34	050.0176	Circlip	1	88-89	020.0182	Grounding screw/washer/nut	2
35	050.0071	O-ring	1	90A	020.0036	Main cable complete 220-240V	1
36	050.0207	Gasket	1		020.0036/AU	Main cable Australia	
37	050.0252	Gear set (assembly)	1		020.0036/UK	Main cable UK 220v	
38	050.0171	Gear 34/40Z	1		020.0036/UK 110-16A	Main cable UK 110v 16A	
39	050.0231	Gear	1		020.0036/USA	Main cable USA	
40	100.4496	Key 5x5x28	1	90B	020.0031	Coupling nut PG11 (main cable)	1
41	020.0156	Screw	1	91-92	032.1020-CK	Cable clamp	1
42	050.0074	Rack	1	93	050.1030-TM	Capacitance	1
43	050.0076	Circlip	1	94	032T.0009	Spacer	1
44	050.0463	Gear 1 x 45T	1	95	PP.F-TUBE.55-T	Front panel plate	1
45	050.0462	Washer	1	96	030E.0091/Y2	On/off switch 220V	1
46	030.0009	Bearing	1		030E.0092/Y2	On/off switch 110V	
47	050.0066	Oil bearing	1	97-98	055.1041	Gyro-scope PCB set	1
48	050.0078	Ring	1				
99	100.0152	Left/Right switch	1	200	CAS.TUBE55T	Case metal for TUBE.55S/T	1

100	032T.0057	Potentiometer	1
101	055T.0006	Screw	4
102	055T.1013	Magnet base TUBE.55S/T complete	1
		<i>Consisting of the following parts:</i>	
103	3001289	Magnetic Base Frame	1
104	3001395	Magnet Handle Kit	2
105	180165	M5x8 Button Head	2
106	1801027	Shoulder Bolt, Mounting	4
107	1801028	Bushing, Brass	4
108	180158	Bearing	4
109	600273	Ratchet cover RED	2
110	80001056	Magnet array complete (incl. 104 & 105)	2

201	KSP.Q2	Coolant tank Quick Connect 2015	1
202	IBO.10.200	Cutting oil IBO.10 0.2LTR	1
203	SAF.300	Protective gloves	1
204	SAF.400	Safety chain (1 mtr) with lock	1
205	SAF.100	Safety goggles	1
206	SAF.200	Ear plugs	1
207	KSP.P	Arm for capstan	1
208	IMB.US2.5	Allen key 2.5 mm	1
209	IMB.US3	Allen key 3.0 mm	1
210	IMB.US4	Allen key 4.0 mm	1
211	IMB.US5	Allen key 5.0 mm	1
212	drift3	Drift MT3	1
213	IMC.30/19-N-TUBE	Spindle set for TUBE.55S/T	1

### 8.3 Wiring diagram

