Instruction Manual *Magnetic Core Drill* *English* *14*

MAGPRO TP 2000

Index

1 EG-Conformity Declaration

(according to Appendix IIA of the machine Directive)

We,

Routexport Agencies SA
Visserijstraat 25, rue de la Pêcherie
1180 Brüssel
Belgien

as the manufacturer declare herewith under our responsibility that the product:

Name:	MAGPRO TP2000
Serial No. :	
Manufacturing Date:	2009

complies with the following standards, directives and referenced standard documents:

2006/42/EC	Machinery
2014/30/EU	Low Voltage
2006/95/EC	Electromagnetic Compatibility

EN 61029-1:2009+A11:2010
EN 62233:2008
EN 55014-1:2006+A1:2009+A2:2011
EN 55014-2:1997+A1:2001+A2:2008
EN 61000-3-2:2014
EN 61000-3-3:2013

Pierre Michiels, Managing Director
Name, Position

Brussels, 01.01.2019

2 User Instructions

Notes for the customer

The instruction manual includes important instructions as to how to operate the plant safely, correctly and economically. Observing these instructions helps to avoid risks, repair costs and downtimes and to increase the reliability and lifetime of the machine.

The instruction manual must be read and used by each person who works with the electrical equipment. This applies in particular to the "Safety Instructions" chapter. It is too late to read the manual and safety instructions when work is actually being carried out at the machine.

Always keep one copy of this manual next to the machine so that it is at hand ready to be consulted!

In case of any doubt or questions, always contact the machine manufacturer.

In addition to the instruction manual, the accident prevention regulations which apply in the country of use and the user location must be adhered to. In addition, the recognised technical rules regarding accident prevention must be observed.

Liability and warranty

All the information contained in this instruction manual has been drawn up to the best of our knowledge and belief, taking our experience to date into consideration.

The original version of this instruction manual was drawn up in the German language and was checked by us for accuracy of content. The translation into the respective national/contractual language was carried out by a recognised translation agency.

This instruction manual has been put together with the greatest of care. However, if you should discover any incomplete items or mistakes, please inform us in writing. Your suggestions for improvement will help us to create a user-friendly manual.

Subsequent Orders and Copyright

Further copies of this instruction manual can be ordered from the address below. We ask for your understanding that further copies are subject to charge.

Jepson Elektrowerkzeuge

Ernst-Abbe-Straße 5

D-52249 Eschweiler

Phone: +49 (0)2403 – 6455-0

Fax: +49 (0)2403 – 6455-15

Mail: info@jepson.de

Abbreviations

V	Volt
Hz	Hertz
W	Watt
~	AC
/min	Revolutions per minute rpm
N	Newton

3 Safety Instructions

The basic prerequisite for safe handling and disturbance-free operation of this electric tool is knowledge of the basic safety instructions. In addition, the accident prevention rules and regulations which apply in the user location must be adhered to, as well as the recognised rules of the trade with regard to safety and correct working methods.

It is not permitted to use the electric tool for other purposes than those intended by the manufacturer. Such use could give rise to unforeseeable risks.

Local working and safety rules and laws must always be followed. The same applies to regulations which apply to the environment.

Safety equipment must never by removed or bridged over.

When using oils, greases and other chemical substances, the safety regulations which apply to the particular product must always be observed! Contact with chemicals should be avoided as far as possible. Before it is permissible to work with these substances the instructions for use on the packaging must be read and followed. This applies for all chemicals, therefore also for cleaning media.

All notes and signs regarding safety and possible risks must be kept in a fully legible condition.

3.1 Illustration of Safety Instructions

The following symbols are used in the instruction manual:

Warning against possible danger of injury or danger to life for persons

Warning

Warning against possible damage to property or the environment

Caution

Warning against dangerous electrical voltage

Warning against hot surfaces

Ignoring these instructions can lead to serious damage to health, up to life-threatening injuries!

This symbol indicates important information

Hazardous to the environment

3.2 General Safety Instructions

This electric tool fulfils the basic EC safety and health regulations. Nevertheless, dangerous situations can arise.

Warning

All safety equipment must be maintained in perfect condition.

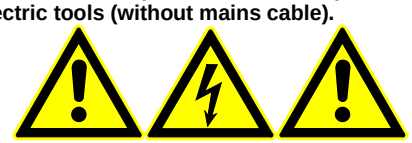
Warning

Always pay attention to moving parts. These can cause injury because of their movement or by sudden movement.

Warning

Only use the electric tool when it is in perfect condition from the technical point of view, and only use it for intended purpose while being aware of safety issues and risks, and paying attention to the instruction manual! In particular, have any disturbances which could have a negative effect on safety corrected immediately!

WARNING! It is essential to read all the instructions. Mistakes which are made while attempting to follow the below instructions can cause electric shock, fire and/or serious injury. The following term "Electric tool", refers to mains-powered electric tools (with mains cable) and battery-powered electric tools (without mains cable).



Warning Caution

KEEP THESE INSTRUCTIONS IN A SAFE PLACE.

3.2.1 Work Area Safety

Keep your work area clean and well lit. Cluttered benches and dark areas invite accidents.

Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquid, gases, or dust. Power tools create sparks, which may ignite the dust or fumes.

Keep bystanders, children, and visitors away while operating a power tool. Distractions can cause you to lose control**.**

3.2.2 Electrical Safety

Warning Caution

Earthed tools must be plugged into an outlet properly installed and earthed in accordance with all codes and ordinances. Never remove the earthing prong or modify the plug in any way. Do not use any adaptor plugs. Check with a qualified electrician if you are in doubt as to whether the outlet is properly earthed. If the tools should electrically malfunction or break down, earthing provides a low resistance path to carry electricity away from the user.

Avoid body contact with earthed or grounded surfaces such as pipes, radiators, ranges and refrigerators. There is an increased risk of electric shock if your body is earthed or grounded.

Don't expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.

Don't abuse the cord. Never use the cord to carry the tools or pull the plug from an outlet. Keep cord away from heat, oil, sharp edges or moving parts. Replace damaged cords immediately. Damaged or entangled cords increase the risk of electric shock.

When operating a power tool outside, only use authorized cords for out door work. These cords are rated for outdoor use and reduce the risk of electric shock.

3.2.3 Personal Safety

Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use tool while tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating power tools may result in serious personal injury.

Use safety equipment. Always wear eye protection. Safety equipment such as dust mask, non-skid safety shoes, hardhat, or hearing protection used for appropriate conditions will reduce personal injuries**.**

Avoid accidental starting. Be sure switch is off before plugging in. Carrying tools with your finger on the switch or plugging in tools that have the switch on invites accidents..

Warning Caution

Remove any adjusting key or wrenches before turning the tool on. A wrench or a key that is left attached to a rotating part of the tool may result in personal injury.

Do not overreach. Keep a proper footing and balance at all times. Proper footing and balance enables better control of the tool in unexpected situations.

Dress properly. Do not wear loose clothing or jewellery. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewellery or long hair can be caught in moving parts.

3.2.4 Tool use and care

Do not force tool. Use the correct tool for your application. The correct tool will do the job better and safer at the rate for which it is designed.

Do not use tool if switch does not turn it on and off. Any tool that cannot be controlled with the switch is dangerous and must be repaired.

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.

Store idle tools out of reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool. Tools are dangerous in the hands of untrained users.

Maintain tools 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.

Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the tools operation. If damaged, have the tool serviced before using. Poorly maintained tools cause many accidents.

Use the power tool, accessories and blades etc., in accordance with these instructions and in the manner intended for the particular type of power tool, taking into account the working conditions and the work to be performed. Use of the power tool for operations different from those intended could result in a hazardous situation.

Use clamps or other practical way to secure and support the work piece to a stable platform. Holding the work by hand r against your body is unstable and may lead to loss of control.

Use only accessories that are recommended by the manufacturer for your model. Accessories that may be suitable for one tool may become hazardous when used on another tool.

Warning Caution

3.2.5 Service

Only qualified repair personnel must perform tool service. Service or maintenance performed by unqualified personnel could result in a risk of injury.

When servicing tool, use only identical replacement parts. Follow instructions in the Maintenance section of this manual. Use of unauthorized parts or failure to follow Maintenance Instructions may create a risk of electric shock or injury.

3.3 Specific Safety Rules

Warning Caution

Take care to avoid the magnet releasing. Ensure that the magnet has properly adhered to the work piece before beginning drilling.

Metal swart and other debris will dangerously lower magnets adhesion force. Always ensure that the magnet is clean and free of rust or other foreign matter**.**

Employ safety chain at all times. Magnet can release unexpectedly at any time- especially due to power failure.

Power supply socket must be kept easily accessible. In an emergency you may need to quickly unplug the machine.

Never exceed an angle of 90 degrees. Overhead (upside down) drilling is very dangerous and should never be attempted.

The magnets adhesion depends on the thickness of the work piece. Always ensure that the work piece is a minimum of 12mm (7/16 in.) thick. If not, then a minimum 10mm thick piece of iron or steel must be placed under the workpiece to ensure adequate adhesion.

Other electric machines used on the same receptacle will cause uneven voltage, which could lead to the magnet releasing. Always use this machine alone on the receptacle.

Avoid operating annular cutters without coolant fluid*. Always check coolant level before operating.*

Do not operate with blunt or damaged cutting tools. This will easily overload the motor.

Protect the motor. Never allow cutting fluid, water, or other foreign contaminants enter the motor.

Metal swarf are often very sharp and hot. Never touch them with bare hands. Clean up with a magnetic swarf collector and a chip hook or other appropriate tool**.**

CAUTION: NEVER position machine on a workpiece between the electrode and the earth an arc type welder. Damage to the machine will result, as the welder will earth through the machines earthing cable.

Warning Caution

WARNING: NEVER attempt to use machine with incorrect current or abnormally low voltage. Check machine nameplate to ensure that correct voltage and Hz are used.

Extension cable should be selected after ensuring the diameter is sufficient for the length. Follow the chart below:

Max length:

10m (32 ft.) 1.25 square mm (16 ga.)

15m (50 ft.). 2.0 square mm (14 ga.)

30m (100 ft.) 3.50 square mm (12 ga.)

(Over 30m NOT RECOMMENDED)

Never touch the rotating cutter or swarf with your bare hands, body, gloves, hair or clothing.

When replacing cutters never touch the sharp cutting surfaces with bare hands

Use a pilot pin, which matches the cutter. A mismatched cutter and pilot pin will cause a dangerous situation.

Non-ferrous metals and other materials may not be used, since the magnet will not be able to adhere to it magnetically.

Do not use excessive feed pressure when drilling.

3.4 Symbols on the Electric Tool

Warning against dangerous electrical voltage

Warning against high surface temperature

4 Machine Description

4.1 Identification Data

The following information is shown on the Identification/Type plate:

Model

Serial number

Maximum power

Weight

Connected load

4.2 Intended Use

The magnetic drill may only be used as intended by the manufacturer, as described in this instruction manual. Any other use than the use described is not the intended or proper use. The manufacturer shall not be responsible for any damage resulting from such unintended or improper use.

The magnetic drill is constructed according to the latest state of technology and is operationally safe if the instructions contained in this manual and the relevant and valid national safety rules and regulations are followed.

Nevertheless, danger for life and limb of the user or third parties can arise during use, along with damage to machine and other property.

Only use the magnetic drill when it is technically perfect condition and only use it for its intended use! Be aware of safety factors and possible risks and always following the instructions in the instruction manual! Have any disturbances or faults which could have a negative effect on safety repaired immediately by our customer service department!

The manufacturer shall not be responsible in any way whatsoever for:

Non-observance or insufficient observance of the information in this instruction manual;

Use of replacement parts or parts which are not approved by the manufacturer;

Incorrect operation;

Removal, manipulation or non-use of safety or protective equipment;

Change of function;

Changes to the magnetic drill;

Incorrect repair or maintenance;

Unintended or improper use.

Foreseeable incorrect operation

The magnetic drill can be dangerous if it not used correctly or not used for its intended purpose.

The instruction manual must be available at all times when the machine is use and over the entire period of operation of the machine. Keep this instruction manual together with the magnetic drill!

The magnetic drill is only guaranteed safe to use if used correctly and for its intended purpose. The limit values which are stated may not be exceeded under any circumstances whatsoever.

The information and instructions in the operating manual must be followed without fail! The manufacturer shall not be responsible and the warranty of the manufacturer shall lapse if the magnetic drill is used in any other way than described in the manual.


Caution

Hazardous substances must be disposed of so that there is no risk to persons or the environment. Leakage of hazardous substances leads to hazard to the environment. The relevant legal regulations must be observed.

4.3 Transport and Storage

Dispose of packaging and insulation in a proper and environmentally-friendly fashion. Observe the relevant national rules and regulations.

Store the magnetic drill in such a way that damage is avoided.


Caution

Store the magnetic drill complete with all individual parts and accessories, as otherwise important parts could be missing when the machine is recommissioned.


Caution

Use the transport box for transportation and storage.

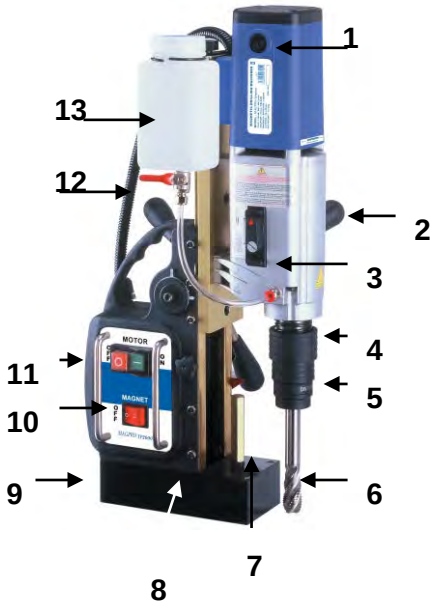
4.4 Functional Description

The magnetic drill adheres to mild non-alloy steel and works with a drill motor which is attached to a stand.

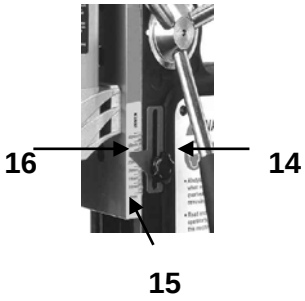
Either a core drill or a twist drill is used (accessories).

5 Installation, Commissioning and Transport

5.1 Assembling and Components



1. Brush cap
2. Crank handle
3. Mode selector for shifting to Auto-reverse tapping mode or standard drilling mode)
4. Quick release collar
5. Tap collet arbor
6. Tap (not included)
7. Travel limiter stop
8. Gib adjuster screw
9. Magnet
10. Magnet switch
11. Motor Swich
12. Coolant feed tap
13. Coolant tank
14. Lock Knob
15. Adjustable pointer
16. Depth meter scale



5.2 Technical Data

Drill motor unit	230V 50Hz
Power input	1100 W
Drilling Mode (No / Full load speed)	550 / 330 rpm
Tapping Mode (No / Full load speed)	150 / 190 rpm
Total Stroke	150 mm
Magnetic Adhesion	15.000 N
Net weight	13,7 kg
Generation of noise (Lpa)	89 +/- 0,5 db (A)
Generation of noise (Lwa)	100 +/- 0,5 db (A)
Hand-Arm-Vibration	2,4 +/- 0,5 m/s^2
Cut. max. diameter x depth	35 x 55 mm
Core Drills	Up to Ø 35 mm
Core Drill adapter	Weldon shank , set screw type
Taps	M12 to M20

5.3 Assembly / Mounting

We recommend inspecting all the items delivered for completeness and any transport damage. Complaints are generally only accepted if they are registered on the day they are received.

Assembly of coolant tank

First attach clear tube to the bottom of the coolant tank. To do this, first loosen the nut and slide nut onto the tube. Then slide tube onto the nipple. Then tighten the nut.

Slide tank hanger over the screw on the upper right hand side of slide and tighten.

Finally insert the other end of the tube into the connector in the gearbox. Just directly push in to install. (To remove, first firmly push the collar of the connector and pull the tube out.)

Cutting coolant fluid is always required when using annular cutters. Open tank cover and fill. Check coolant fluid level often. Keep coolant tap closed when not in use. Empty coolant tank when returning the machine to the carry case.

Chip guard must be used. To attach the chip guard, use the sup-plied butterfly bolts to bolt to the magnet. It is not necessary to remove guard to clean chips. Simply raise guard to its upper position.


Warning

Safety chain must be used. Loop chain around the work piece and feed through the machines handle and clip in place. MOUNTING ANNULAR CUTTERS: CAUTION: Never use a cutting tool, which is larger than the maximum rated capacity of the machine.


Warning

5.4 SPECIAL INSTRUCTIONS FOR AUTO-REVERSE TAPPING MODELS

THIS MACHINE IS THE FIRST OF ITS KIND SO SPECIAL CARE MUST BE PAID TO THE OPERATING INSTRUCTIONS BELOW TO UNDERSTAND ITS TAPPING FUNCTION.

CAUTION: Before beginning tapping ensure that the hole is the correct size for the tap. An undersize hole will cause the tap to jam causing a hazardous situation.

CAUTION: When tapping a blind hole always correctly use the travel limiter stop to ensure that there is enough clearance so that you do not bottom-out the tap. Bottoming will cause the tap to jam, causing a hazardous situation.

CAUTION: Never attempt to tap with the gearbox selector in standard drilling mode.

The much higher speed of the standard drilling mode will damage the tap and cause a hazardous situation .

COOLING: The automatic through the spindle cooling function is only effective when using annular cutters. When tapping or using twist drills, cutting oil must be added manually.

5.4.1 Setting up for tapping

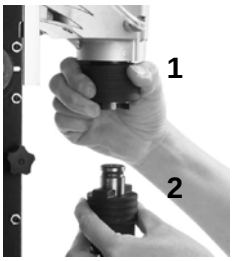

Caution

CAUTION: Never use a cutting tool which is larger than the maximum rated capacity of the machine.

CAUTION:: Always follow the tap manufacturer ' s recommendation for selecting the correct size hole for tapping.

CAUTION: Never attempt to change gears on a running machine! Only change gears when the machine is at rest.

1. Select the correct sized Tap Collet Arbor for the tap which you intend to use. If there is already another arbor in the machine, simply push up on the Quick-Release Collar and remove.
2. To insert the Arbor, push up on the Quick-Release Collar (1) and insert the Arbor (2). Turn the Arbor until the tangs line up and the Collar is able to close. Ensure that it is securely in place.
3. Insert the tap into the Tap Collet Arbor. Push up on the tap and turn it until it snaps in place. When it is time to remove the tap from the Arbor, depress the Release Ring (3) on the Arbor. (Catch the tap so that it does not fall on the floor when it releases.)



4. If it is in drilling mode, shift the gearbox to tapping mode by swinging the gear selector tab out of the detent slot then shifting downwards into tapping mode. Then pop the selector tab back into the detent . It will sometimes be necessary to turn the spindle by hand a little to get it to shift all the way. Only grab the arbor when turning the spindle, never the quick-release collar. Otherwise, it will be easy to accidentally release the arbor and it will fall out. Follow the "TAP" symbol on the gear case. (The small arrow on the tab will be pointing upwards when it is shifted correctly).

5.4.2 Setting the depth meter

THE PROPER USE OF THE TAPPING DEPTH METER:

Whenever tapping blind holes, the Tapping Depth Meter in conjunction with the Travel Limiter Stop must be used for ensuring the prevention of possible damage to the gearbox and the tap.

ALWAYS ENSURE THAT THE HOLE ISN'T OVER TAPPED. THE HOLE'S DEPTH MUST BE MUST BE LONGER THAN THE NEEDED THREADING DEPTH!!

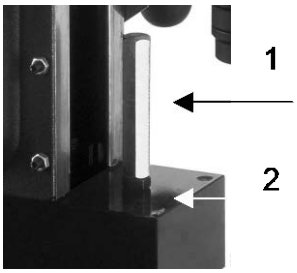
- Pre-place the tap against the work piece. To zero-in the needle.
- While keeping the tap against the workpiece, adjust the pointer to the 4mm datum position on the left-hand tapping scale. (The tapping function has an extra 4mm movement when the crank handle is released, a 4mm pre-adjustment has been made on the scale. Therefore, when "zeroing-in" the tapping scale, the 4mm mark is the effective datum point. A minimum depth of 5mm can be tapped and a maximum of 40mm). Now that you have the depth scal e calibrated, you may use the meter reading to set the Travel Limiter Stop.

5.4.3 Setting the travel limter stop

When at its lowest position, the travel limiter stop will not effect the stroke of the slide. When tapping blind holes the travel limiter s top mus t be used to avoid the tap bottoming. When tapping through holes or when drilling, the limiter stop is not needed.

To properly set:

- With the tap mounted on the machine, place the machine on the workpiece.
- Using the depth meter (1), carefully measure the furthest depth that the tap i s intended to go. With the tap over hanging the edge o f the workpiece, lower the slide to the intended depth.
- Loosen the lock nut (2) then adjust the stop to just meet the slide, retighten the lock nut.
- When no longer needed, lower the stop to its lowest position.



5.4.5 Tapping operation

NOTE: It is recommended to always use cutting oil on the tap to give longer tap life and better results. The automatic coolant system only works for annular cutters. Taps must be lubricated manually.

- Before tapping begins, there must be a proper sized hole. Make sure that the hole is the correct size for the tap.
- With the magnet switch s till off , manoeuvre the tap and machine to ensure that the tap is perfectly aligned with the hole. Actually insert the nose of the tap into the hole slightly to ensure perfect alignment, then switch on the magnet.
- If you are tapping a blind hole, please use the Travel Limiter Stop and the tapping depth meter see “THE PROPER USE OF THE TAPPING DEPTH METER” and "SETTING THE TRAVEL LIMITER STOP" above.
- To begin tapping, start the machine by turning on the motor switch and use the crank to feed the tap to the work. When there is no feed pressure from the crank, the spindle will be in neutral and will not spin. When there is forward feed pressure , the spindle will automatically spin in the forward (right hand) direction. Tap the hole, then simply back out the crank to reverse the spindle and remove the tap. When there is backward pressure from the crank, the spindle will automatically spin in the reverse (left hand) direction. (Note that it is not possible to tap left hand threads with this machine).

5.4.6 Settin gup for twist drilling

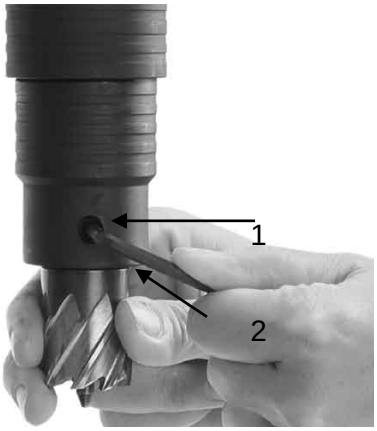
CAUTION: Never use a cutting tool which is larger than the maximum rated capacity of the machine.

NOTE: It is recommended to always use cutting oil on the twist drill to give longer drill life and better results. The automatic coolant system only works for annular cutters. Twist drills must be lubricated manually

- If it is not mounted, mount the chuck to the Drill Chuck Arbor.
- Push up on the Quick-Release Collar to mount the Drill Chuck Arbor to the machine. Double check to ensure that the arbor is locked in place.
- Insert the drill bit into the chuck and tighten with the chuck key.
- If it is in tapping mode, shift the gearbox to drilling mode by swinging the gear selector tab out of the detent slot then shifting upwards into drilling mode. Then pop the selector tab back into the detent. It will usually be necessary to grab the arbor and push the spindle upwards while turning a little by hand to get the selector to shift all the way up. Only grab the Arbor when turning the spindle, never the Quick-Release Collar. Otherwise, it will be easy to accidentally release the arbor and it will fall out. Follow the Twist drill & annular cutter” symbol on the gear case. (The small arrow on the tab will be pointing downwards when it is shifted correctly).
- Proceed to drill as described below titled: "OPERATION-GENERAL .

5.4.7 Setting up for annular cutters

- If another arbor is in place, remove it from the machine.
- Insert the Coolant Feed Spring with the Seal facing downwards into the shaft of the Annular Cutter Arbor.
- Mount the arbor into the machine. Check to ensure that the arbor is fully locked in position.
- Insert the proper sized pilot pin in the annular cutter. Using the L-hex key, loosen the 2 set screws to allow the mounting of the annular cutter. Ensure that the flat of the cutter shank is facing the set screw and then tighten.
- If it is in tapping mode, shift the gearbox to drilling mode by swinging the gear selector tab out of the detent slot then shifting upwards into drilling mode. Then pop the selector tab back into the detent. It will usually be necessary to grab the arbor and push the spindle upwards while turning a little by hand to get the selector to shift all the way up. Only grab the Arbor when turning the spindle, never the Quick-Release Collar. Otherwise , it will be easy to accidentally release the arbor and it will fall out. Follow the Twist drill & annular cutter" symbol on the gear case. (The small arrow on the tab will be pointing downwards when it is shifted correctly).
- Proceed to drill as described below titled: "OPERATION-GENERAL



6 Maintenance and Repair

Regular maintenance and inspection of the magnetic drill is extremely important. It prevents disturbances and problems and increases operational reliability and safety.

Observe any national regulations when working in confined spaces!

If working above body height, use the ladders/access equipment and working platforms provided or otherwise available.

When working at great height, use fall prevention equipment!

Always keep the machine clean.

Warning

6.1 Cleaning

Avoid contact of live electrical parts with liquids, as this can lead to "short circuits".

Warning

Avoid contact with chemicals as far as possible. For example, if your hands should come into direct contact with chemicals, clean them immediately.

Warning

6.2 Maintenance

Keep the machine clean and free of debris. Check for loose fittings and tighten as needed
Keep the machine clean and free of chips.
Check for loose fittings and tighten as needed.

Warning

Ensure that the ventilation slots are clear so that motor can be cooled normally. Occasionally blow low-pressure compressed air through the ventilation slots with the motor running to keep motor clean. .

Warning

6.2.1 The arbor Shaft

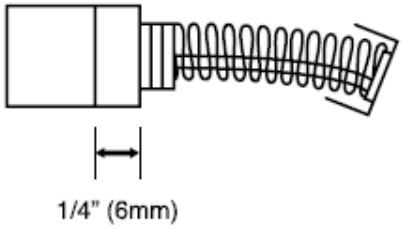
Keep the arbor shaft free of dirt and lightly grease as needed. If the arbor support bearing is noisy, it may be dirty or have a chip lodged in it. Remove the arbor shaft to clean and re-grease the arbor support bearing.

6.2.2 The Gibs (Dovetail slides)

The gibes require adjustment if too loose. To adjust, loosen the locknuts and adjust the adjustor screws evenly while moving the handle up and down. Adjust so that there is no free play, yet any binding anywhere in its range of travel. Then retighten the lock nuts.

Periodically check, lubricate, and adjust as needed.

6.2.3 Carbon Brushes



The carbon brushes are a normal wearing part and must be replaced when they reach their wear limit.

Caution: Always replace the brushes as a pair.

To replace: simply remove the brush caps and withdraw the old brushes. Replace with new brushes ensuring that they align properly and slide freely. Then replace the brush caps. (See figure)

Always entrust all repairs to an authorized service agent.

Always entrust all repairs to an authorized service agent.

6.3 Repairs

Repairs may only be carried out by our customer service department!

Repairs carried out by the operator can lead to accidents leading to death and serious damage to property for which the manufacturer is not liable!

Warning

6.4 Troubleshooting

Magnet is on, motor does not rotate despite switch operation

Cause: Defective motor switch

Solution: Replace switch

Magnet is not on despite operation of magnet switch

Cause: Rectifier defective

Solution: Replace rectifier

Unusual vibrations

Cause: Shaft guide seat loose

Solution: Tighten shaft guide seat

7 Decommissioning and Disposal

Ensure safe and environmentally-friendly disposal of the equipment. Any national rules and regulations must be observed!

Oil, grease and other liquids must be disposed of separately in accordance with local regulations.

8 Replacement and Wear Parts

Replacement parts must conform with our specified technical requirements. This is always the case with original replacement parts. Warranty is only maintained with our original replacement parts. Installation and/or use of replacement parts not originally supplied by ourselves can possibly change design characteristics in a negative way and can have a negative effect on active or passive safety. All liability and warranty for damage which is caused by use of other than original replacement parts or accessories is excluded on our side.

Please order replacement parts from the customer service department.

We require the following information in order to be able to process your replacement part order fast and easily:

- Customer
- Product identification data
- Name of desired replacement part
- Desired number of parts
- Desired mode of despatch