

Makita[®]

A GUIDE TO GOOD DRILLING PRACTICE

To get the best possible performance from your new Magnetic Drilling Machine, please read this carefully BEFORE using the drill.

DE	Ursprüngliche Anweisungen
FR	Instructions originales
NL	Originele instructies
ES	Instrucciones originales
PT	INSTRUÇÕES ORIGINAIS
CH	原版说明书
VN	HƯỚNG DẪN CƠ BẢN
FA	دستورالعملهای کلی
AR	الإرشادات الأصلية



HB350
Magnetic Drill

WARNING:

For your personal safety, READ and UNDERSTAND before using.
SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE.



BEFORE YOU START

To help you get the best possible performance from your new Magnetic Drilling Machine, this guide contains simple, sensible pointers for the safe, effective, and long-term use of the equipment.

Please read it carefully before using the drill.

- Ensure that you have observed all the general and specific safety procedures.

Explanation of the pictograms on the specification plate of the Makita HB350



DANGER!

Indicates an imminent danger or risk to life and health of a general nature.



ELECTRICAL DANGER!

This means a direct pending danger or risk to life due to electricity.



CAUTION!

Indicates a possible danger or risk of slight injury or damage to property.



WEAR EYE & EAR PROTECTORS



USE SAFETY STRAP!

to attach the tool to the workpiece.



READ THE MANUAL

Read the manual before operating the machine.

WEEE compliance certificate:- on request

All magnetic drilling systems are fully compliant with RoHS regulations.

Due to the presence of hazardous components in the equipment, used electrical and electronic equipment may have a negative impact on the environment and human health.

Do not dispose of electrical and electronic appliances with household waste.

In accordance with the European Directive on waste Electrical and electronic equipment should be collected separately and delivered to a separate collection point for municipal waste, operating in accordance with the environmental protection regulations.

this is indicated by the symbol of the crossed out wheeled bin placed on the equipment.

CONTENTS

- HB350 Specification
- The Broach Cutting Concept
- Intended Use
- General Safety Instructions
- Material and Cutting speeds
- Feeds and Speeds
- Fitting Safety Guard & Strap and Oil Bottle
- Fitting Cutters
- Panel Operation
- Motor diagram & parts list
- Stand diagram & parts list
- EC Declaration



HB350 SPECIFICATION

Cutter capacity	- 35mm
Chuck Capacity	- 13mm
No load speed	- 850 rpm
Power consumption	- 1050w
Clamping force	- 8000N (815kg)
L x H x W (mm)	- 225 x 490 x 195
Weight	- 11.
Voltage	- 110/230v
Sound pressure level	- 89.13 dB(A)
Sound Power level	- 100.12 dB(A)

INCLUDES: Integral coolant system, Warranty, Carrying case, Allen keys, Safety strap & Guard

- Due to our continuing programme of research and development, these specifications are subject to change without notice.



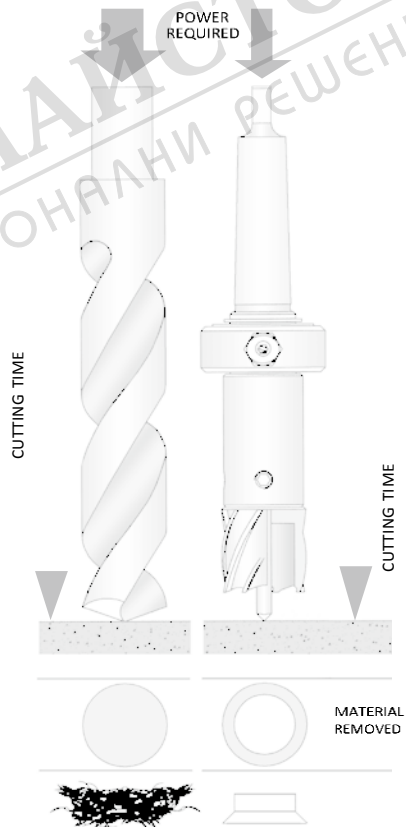
THE BROACH CUTTING CONCEPT

If you are unfamiliar with the use of annular (or broaching) cutters, take a few minutes to read this guide - you will benefit from the better performance and longer life of the tool if you understand the concept.

Annular cutters only cut material at the periphery of the hole, rather than converting the entire hole to shavings. As a result, the time and energy required to make the hole is lower than for a traditional twist drill.

The broaching capacity of a machine is therefore, greater than the twist drill capacity.

The slug ejected after the cut also has a higher scrap value than shavings.



Optional Accessories

For details of options, either refer to the catalog or inquire at the store of purchase or a Makita sales office.

⚠ CAUTION: These accessories or attachments are recommended for use with your Makita tool specified in this manual. The use of any other accessories or attachments might present a risk of injury to persons. Only use accessory or attachment for its stated purpose.

If you need any assistance for more details regarding these accessories, ask your local Makita Service Center.

- HSS Cutter
- TCT Cutter
- Drill chuck

INTENDED USE

The intended use of this magnetic drill is to drill holes in ferrous metals. The magnet is used to hold the drill in place whilst the drill is functioning. It is designed for use in fabrication, construction, railways, petrochemical, and any other applications when drilling ferrous metal.

Any deviation from its intended use will not be covered by warranty.

GENERAL POWER TOOL SAFETY INSTRUCTIONS

General power tool safety warnings

⚠ WARNING Read all safety warnings, instructions, illustrations, and specifications provided with this power tool. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury.

Save all warnings and instructions for future reference.

The term "power tool" in the warnings refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.

1) Work area safety

- Keep work area clean and well lit.** Cluttered or dark areas invite accidents.
- Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust.** Power tools create sparks which may ignite the dust or fumes.
- Keep children and bystanders away while operating a power tool.** Distractions can cause you to lose control.

2) Electrical safety

- Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools.** Unmodified plugs and matching outlets will reduce risk of electric shock.
- 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.
- Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
- Do not abuse the cord. Never use the cord for carrying, pulling, or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts.** Damaged or entangled cords increase.

the risk of electric shock.

e) **When operating a power tool outdoors, use an extension cord suitable for outdoor use.** Use of a cord suitable for outdoor use reduces the risk of electric shock.

f) **If operating a power tool in a damp location is unavoidable, use a residual current device (RCD) protected supply.** Use of an RCD reduces the risk of electric shock.

NOTE The term “residual current device (RCD)” can be replaced by the term “ground fault circuit interrupter (GFCI)” or “earth leakage circuit breaker (ELCB)”.

3) Personal safety

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

b) **Use personal protective equipment. Always wear eye protection.** Protective equipment such as a dust mask, non-skid safety shoes, hard hat or hearing protection used for appropriate conditions will reduce personal injuries.

c) **Prevent unintentional starting. Ensure the switch is in the off position before connecting to power source and/or battery pack, picking up or carrying the tool.**

Carrying power tools with your finger on the switch or energizing power tools that have the switch on invites accidents.

d) **Remove any adjusting key or wrench before turning the power tool on.** A wrench or a key left attached to a rotating part of the power tool may result in personal injury.

e) **Do not overreach. Always keep proper footing and balance.** This enables better control of the power tool in unexpected situations.

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

g) **If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used.** Use of dust collection can reduce dust-related hazards.

h) **Do not let familiarity gained from frequent use of tools allow you to become complacent and ignore tool safety principles.** A careless action can cause severe injury within a fraction of a second.

4) Power tool use and care

a) **Do not force the power tool. Use the correct power tool for your application.** The correct power tool will do the job better and safer at the rate for which it was designed.

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

c) **Disconnect the plug from the power source and/or remove the battery pack, if detachable, from the power tool before making any adjustments, changing accessories, or storing power tools.** Such preventive safety measures reduce the risk of starting the power tool accidentally.

d) **Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tools or these instructions for power tools.**

Power tools are dangerous in the hands of untrained users.

e) **Maintain power tools and accessories. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use.**

Many accidents are caused by poorly maintained power tools.

f) **Keep cutting tools sharp and clean.** Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.

g) **Use the power tool, accessories, and tool bits etc. in accordance with these instructions, 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.

h) **Keep handles and grasping surfaces dry, clean, and free from oil and grease.**

Slippery handles and grasping surfaces do not allow for safe handling and control of the tool in unexpected situations.

5) Service

a) **Have your power tool serviced by a qualified repair person using only identical replacement parts.** This will ensure that the safety of the power tool is maintained.

MAGNETIC DRILL SAFETY

INSTRUCTIONS

- Always inspect the whole unit before use.
- Regular maintenance is essential - check nuts, screws etc. for tightness before each use.
- Check cable and plug for damage.
- Never use blunt or damaged cutters.
- Never use a larger diameter cutter than specified for the machine.
- Always use the safety guards where fitted and ensure they are operating correctly.
- Always wear goggles and gloves
- Remove rings, watches, ties etc. that could tangle in the moving parts.
- Secure the unit with the safety strap before drilling.
- The machine is for use on steel from 6 mm thick with no air gap between the magnet core and the workpiece. Curvature, paint, and surface irregularities create an air gap. Keep the air gap to a minimum.
- Keep the magnet and workpiece clean & free of debris and swarf.
- Do not start the motor before ensuring that the magnetic stand is clamped firmly to the workpiece.
- Only use a general oil-based metal cutting oil.
- While drilling horizontally or overhead, use a cutting paste or an appropriate coolant spray.
- Always disconnect from the power source before changing cutter or working on the machine.
- In the event of a jammed cutter, disconnect from the power supply and free the jam before reconnecting the tool.
- On swivel machines, ensure that the swivel base is locked in the required position.
- Do not attempt to change speed while the drill is running.
- Only use accessories recommended by the manufacturer.
- Never lift or carry the unit by the power cord, always use the handle.
- Never modify the tool in any way.

IMPORTANT! – TO PREVENT DAMAGE TO THE CIRCUITRY, NEVER USE ELECTROMAGNETIC DRILLING MACHINES AND WELDING EQUIPMENT ON THE SAME WORKPIECE SIMULTANEOUSLY.

MAINTENANCE INSTRUCTIONS

- Occasionally apply a few drops of oil to the rack toothing.
- The bearings of the feed shaft are self-lubricating and must not be greased
- Grease the sliding surface of the carriage with MOLYCOTE grease.
- When not in use or being transported the unit should be kept in the case supplied.
- After use ensure unit is clean of swarf and dirt.
- Parts that are worn or damaged should be replaced immediately with genuine manufacturer's replacements.
- Ensure all cutting edges are sharp when in operation. Using blunt cutting tools may lead to an overload of the motor.
- After every 30 minutes running, it is recommended that the machine is laid on its side to permit grease to run across the gear train.
- After repeated use, the cradle may become loose. This is remedied by adjusting the tension screws on the side of the body. Put 2.5mm hex wrench into head of cradle retaining nuts, using 8mm Spanner undo the locking nuts anti-clockwise, holding the hex wrench without moving grub screws. Using the hex wrench gently tighten screws in series until the cradle moves freely in the slide but does not allow the motor to wobble. When an adjustment is complete re-tighten locking nuts clockwise, ensuring the grub screws do not move from their new positions.

MATERIAL AND CUTTING SPEEDS

- The ease with which material can be drilled is dependent 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 cutting conditions can be dependent upon requirements for tool life and surface finish and further restricted by the rigidity of the tool and work piece, lubrication, and machine power available.

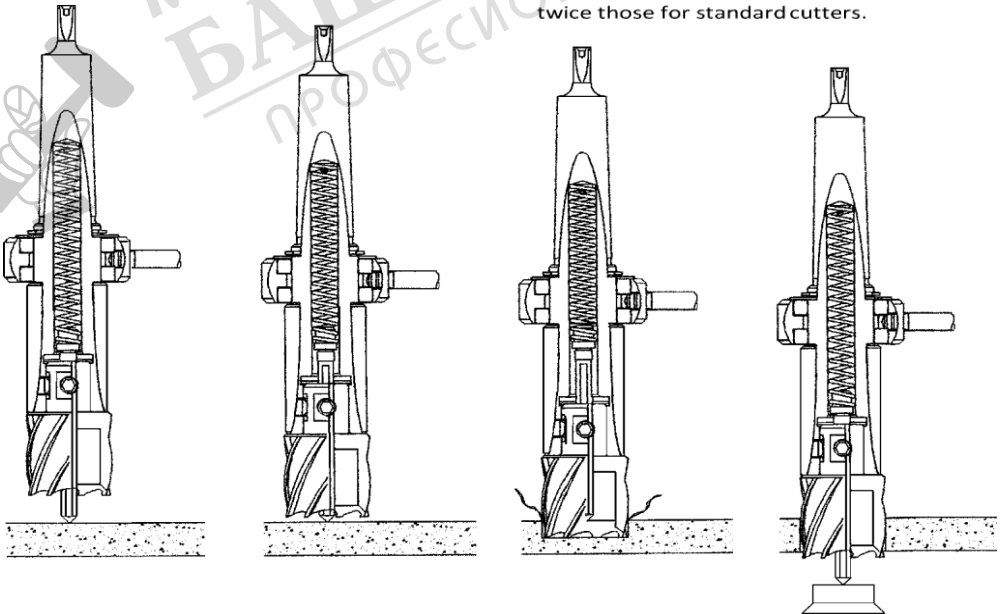
- The harder the material the lower the cutting speed. Some materials of low hardness contain abrasive constituents leading to rapid cutting-edge wear at high speeds. Feed rates are governed by rigidity of set up, volume of material to be removed, surface finish and available machine power.

- It is preferable to set and maintain a constant surface speed (RPM) for a given material and vary the feed rate within defined limits.

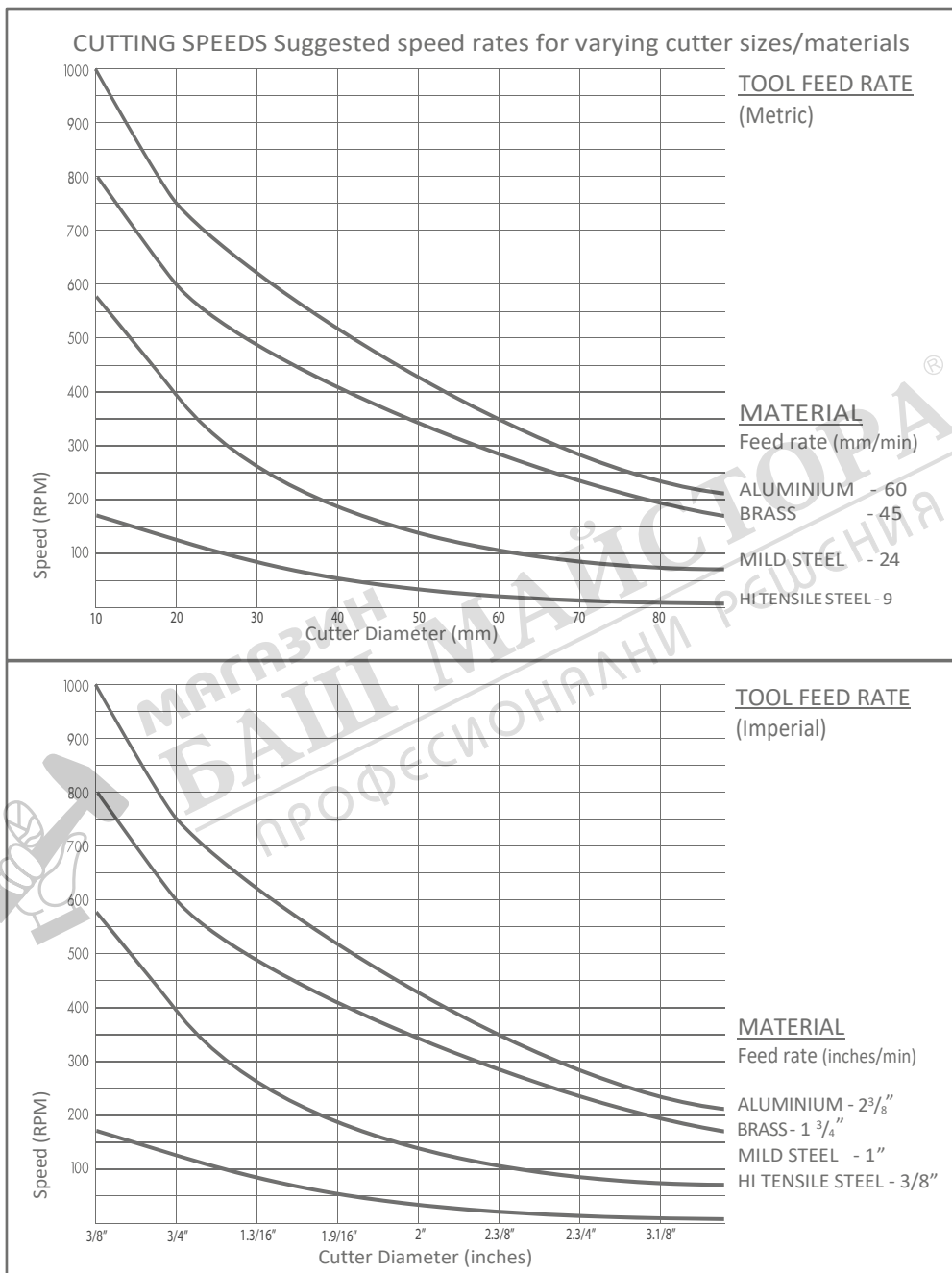
- Machine feed is measured in inches or millimeters per minute and is the product of $\text{RPM} \times \text{number of teeth in the cutter} \times \text{feed per tooth}$. Too light or excessively high feed rates will both cause premature cutter failure. Heavy feeds on hard materials will cause chipping of the cutting edge and excessive heat generation.

- Slender and long shank ed cutters are restricted in feed rate due to deflection, and wherever possible the largest and most robust tool must be used. This is important for harder materials. Steel up to 400 HB is the potential limit for conventional M2 HSS tools.

Above 300 HB, cobalt alloy cutters should be considered for increased tool life. In softer grades of material, cobalt alloy cutters may give increased output by increasing speeds and feed rates by up to 50%. Tungsten Carbide cutters permit surface speeds and feed rates up to twice those for standard cutters.



FEEDS AND SPEEDS



PLEASE NOTE: These figures are quoted as a starting point. Actual performance will be dictated by material type, thickness and hardness, application, and cutter condition.

FITTING THE SAFETY GUARD

DRILL GUARD INSTRUCTIONS

Ensure drill unit is isolated from power supply.

Fit guard to drill as shown.

When drilling, the guard should always be in contact with the surface being drilled. As the drill is lowered, the guard will rise in relation to the drill.



FITTING THE OIL BOTTLE

The cutting oil bottle is held in a sprung bracket attached to the top of the drill body. Fit the bracket by removing one of the cap screws from the top plate and replace the bolt through the fixing lug on the bottle bracket, tightening the bolt enough to allow some radial movement of the bracket. The coolant tube is a push fit into the self-seal gland at the base of the tap and a similar fitting on the lower arbor bracket.

FITTING THE SAFETY STRAP

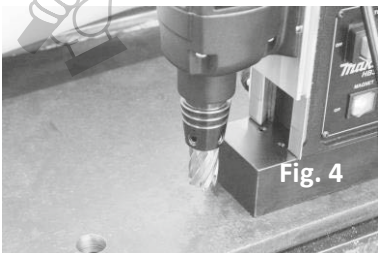
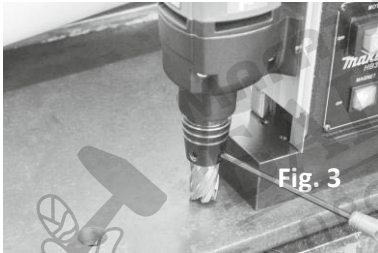
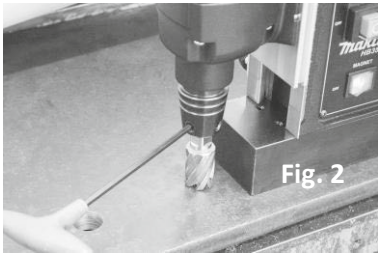
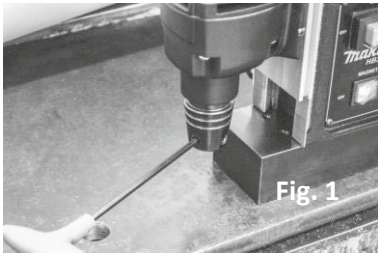
The supplied safety strap should be used wherever possible as a safety precaution in the event of a power failure releasing the magnet; particularly in situations where the machine is clamped onto a vertical surface or in an inverted position.

SAFETY STRAP INSTRUCTIONS

When the machine has been clamped to the workpiece in the correct position for drilling, the strap should be fed through the channel between the body of the drill and the magnet, then passed around a substantial part of the workpiece. The free end should then be passed through the buckle, pulled tight and locked.

Once the cut is complete, the strap should be released, and the machine supported before the magnet is disengaged.

FITTING THE CUTTER



Ensure power is off before working on the machine
Insertion of pilot pin

- The pilot pin is used to both center the cutter and to eject the slug on completion of the cut. It has a flat side. to allow coolant to run down to reach the center of the cut where the heat is greatest. Slide the pin through the hole in the center of the cutter shank.

FITTING THE CUTTER

Fig 1.

To insert the cutter in the arbor, first loosen the grub screws, using an M5 hexagonal wrench. Ensure the grub screws are sufficiently loose enough to allow the shank of the cutter to enter freely.

Fig 2.

Ensure the drive flats on the cutter shank are fully aligned with the two grub screws in the machine arbor.

Fig 3.

Ensuring the shank of the cutter is fully inserted inside the arbor, tighten the grub screws fully to give the cutter a secure fitting inside the arbor.

Fig 4.

The cutter is now ready for use.

FIT THE SAFETY STRAP

APPLYING COOLANT

- Cutting oil ensures longer cutter life and enables the slug to be ejected cleanly.
- Oil will be automatically delivered to the cutter when the cut commences
- When cutting on vertical surfaces or upside down, cutting paste, gel or foam is recommended. It is best applied inside the cutter before drilling.

N.B. Safety strap and guards have been omitted from the photo's for clarity.

OPERATION



1) Power

Ensure power to the drill and the drill is safe to operate.



2) Magnet ON

To turn the magnet ON or OFF, use the magnet switch as pictured.



3) Motor ON

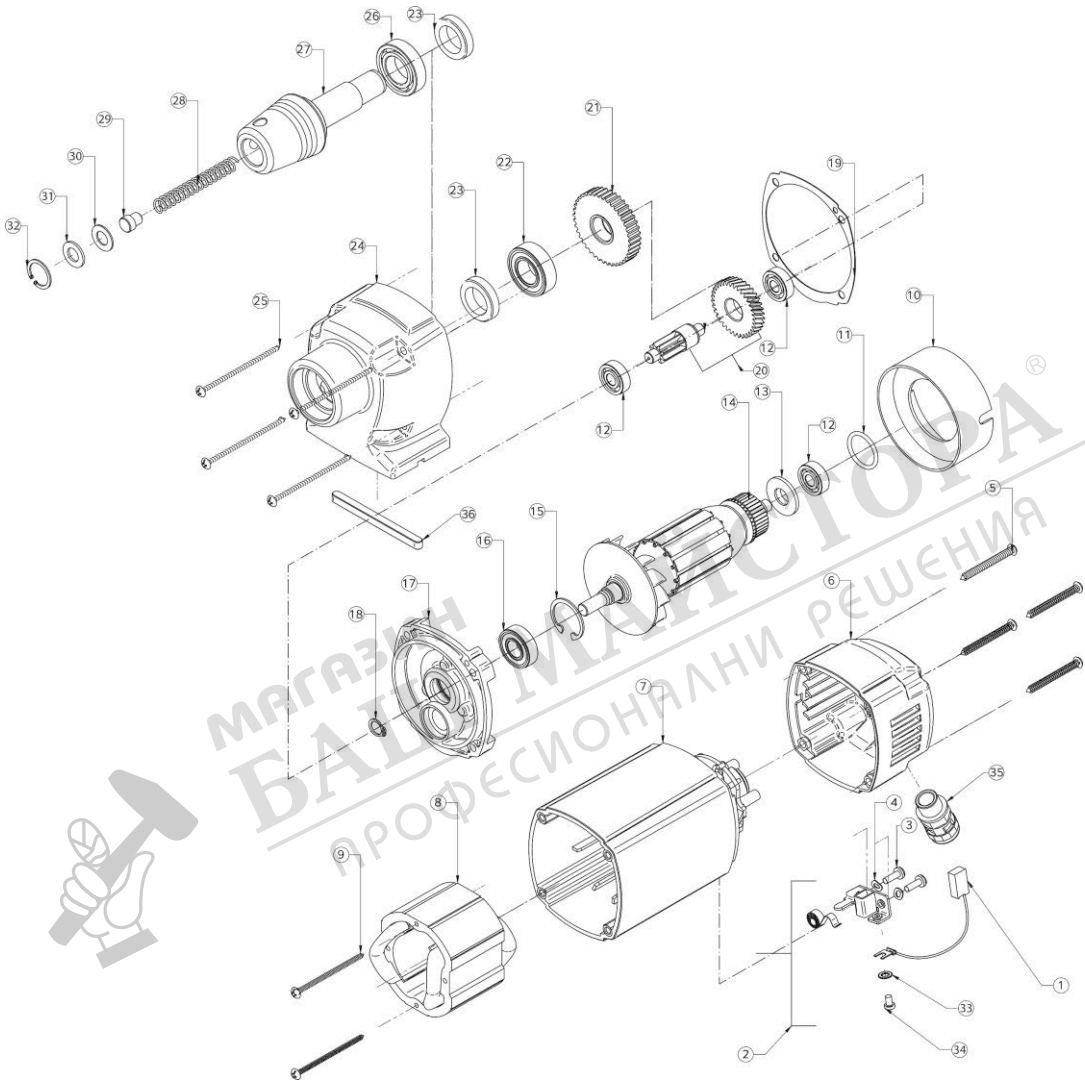
Press the GREEN Switch to turn the motor on. Proceed with cutting - following all safety guidelines...



4) Motor OFF

To stop the motor press the RED switch. The motor will stop and the magnet will remain on.

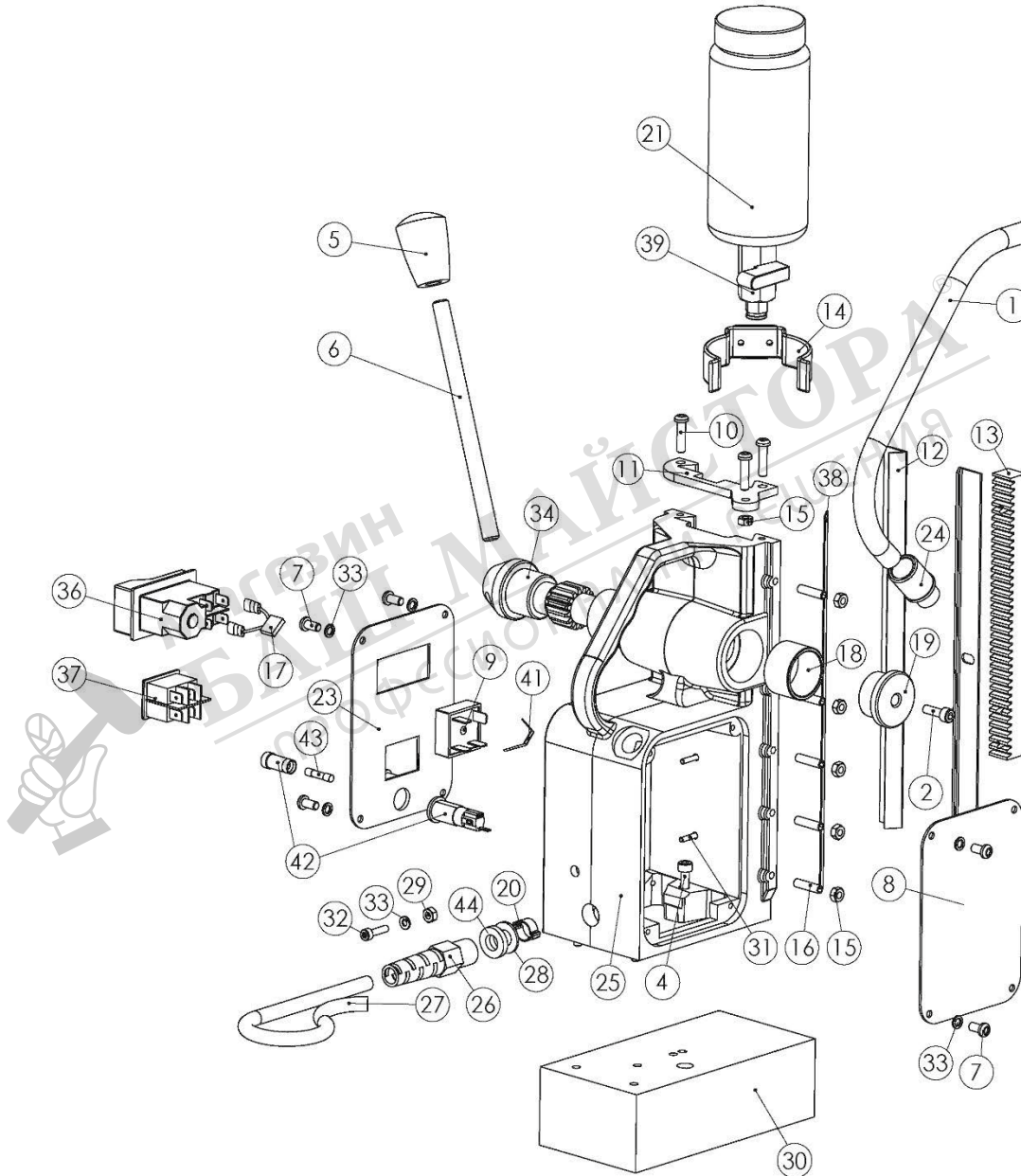
Go back to step 3 to start over.

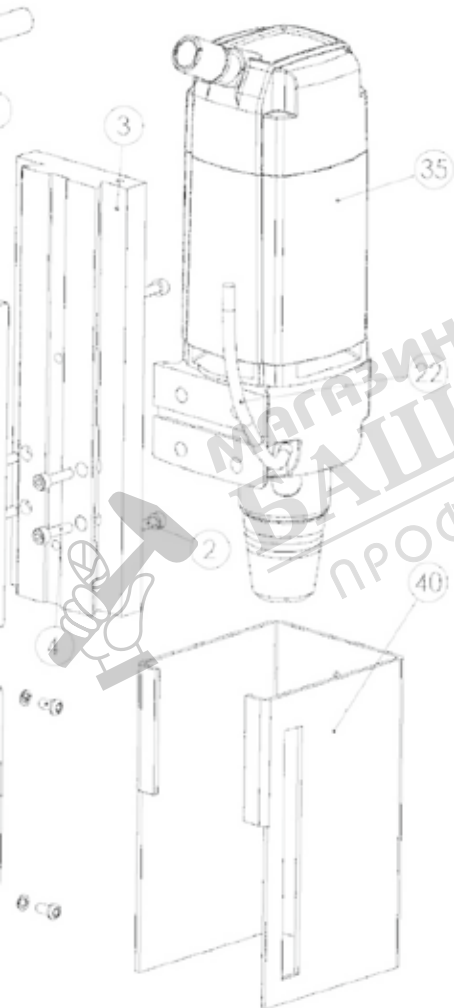


Nr.	Description	Qty	Part No
1	CARBON BRUSH ASSY. 6.3X10X18	2	EBD002
2	BRUSH HOLDER ASSY.	2	EBD001
3	SCREW M4 X 12	2	EBD003
4	SPRING WASHER M4	2	EBD004
5	PHILIPS HEAD SELF-TAP SCREW 4.8X45	4	EBD005
6	BACK COVER	1	EIB527
7	FIELD COIL CASING	1	EIB526
8	FIELD COIL ASSY 110V	1	EBD008-A
	FIELD COIL ASSY 230V	1	EBD008-B
9	PHILIPS HEAD SELF - TAP SCREW 3.9X60	2	EBD009
10	BAFFE	1	EBD010
11	O RING	1	EBD011
12	BALL BEARING (8-22-7) 608 2Z	3	UDC022
13	DUST WASHER	1	EBD012
14	ARMATURE ASSY 110V	1	EBD013-A
	ARMATURE ASSY 230V	1	EBD013-B
15	CIRCLIP 28MM X 1.2 B TYPE	1	EBD014
16	BALL BEARING (12-28-8) 6001 2Z	1	UDC023
17	GEAR CASE COVER	1	EBD015
18	CIRCLIP 10MM X 1 A TYPE	1	EBD016
19	GASKET	1	EBD017
20	INTER SHAFT ASSY.	1	EBD018
21	SPINDLE GEAR	1	EBD019
22	BALL BEARING (17-35-10) 6003 2RS	1	UDC004
23	OIL SEAL 20-30-7 B TYPE	2	EBD020
24	GEAR CASE	1	EBD021
25	PHILIPS HEAD SELF-TAP SCREW 4.8 X 60	4	EBD022
26	BALL BEARING 6904 2RS	1	EBD025
27	ARBOR BODY.	1	EIB528
28	ARBOR SPRING	1	EBD026
29	ARBOR EJECTION PLUG	1	EBD027
30	ARBOR WASHER	1	EBD028
31	ARBOR RUBBER WASHER	1	EBD029
32	ARBOR CIRCLIP	1	EBD030
33	CARBON BRUSH WASHER	2	EBD031
34	CARBON BRUSH FIXING SCREW	2	EBD032
35	PG9 PUSH FIT GLAND	1	40025
36	MOTOR LOCATING KEY	1	M1019



HB350 STAND PARTS





Nr.	Description	Qty	Part No
1	CONDUIT (large dia 12mm) - PMA-PCLT-10B-50	1	M0443
2	M6 X 16 CAP HEAD SCREW	3	SC616CAP
3	SLIDE HB350 MAKITA	1	M1000
4	M6 X 25 CAP HEAD SCREW	7	SC625CAP
5	HANDLE KNOB (10mm KNOCK ON)	3	M0841
6	10MM X 130MM HANDLE (SMALL)	3	B0043
7	M4 X 6 BUTTON HEAD SCREW	8	SC46BUT
8	WARNING PLATE MAKITA HB350 CE JAPAN		M1002
	WARNING PLATE MAKITA HB350 CE BELGIUM		M1003
	WARNING PLATE MAKITA HB350 CSA JAPAN		M1014
	WARNING PLATE MAKITA HB350 UKCA UK		M1018
	WARNING PLATE MAKITA HB350 RCM AUSTRALIA		M1021
9	25A - BRIDGE RECTIFIER (395-4310)	1	M0401
10	M5 X 16 CAP HEAD SCREW	3	SC516CAP
11	OILFEED TOP BRACKET - (MB30 BODY)	1	M0811A
12	BRASS RAIL (MB30)	2	M0101
13	RACK (MB30)	1	M0831
14	OIL CUP RETAINING CLIP COMPLETE	1	I0076C
15	M5 NYLOC	6	I0085B
16	M5X25 KNURLED POINT GRUB SCREW	5	I0085A
17	CAPACITOR	1	RD43118
18	BUSH (PINION) - 33 X 28 X 20 OILITE BUSH	2	M0081
19	PINION END CAP - DEEP	1	M0072
20	O CLIP 8-11 BOCLIP8/11	1	RD47179
21	D5000 OIL CUP ASSEMBLY	1	30046A
22	U-06040(30MC) 6MM X 4MM CLEAR POLYURETHANE TUBE	1	B0029
23	MAKITA HB350 CONTROL PANEL PLATE	1	M1001
24	M16 PUSH FIT GLAND - PMA BVND-M160GT	1	40026
25	MB30 BODY BLACK	1	M0001BLK
26	M16 PIGTAIL GLAND COMPLETE WITH LOCK NUT - BBSM 16	1	I0231
27	USA CABLE - 14 GAUGE - 3M - AB-CAB-870		CABL03
	EUROPEAN CABLE C/W MOULD PLUG - AB-CAB-876 - 3M		CABL04
	MAKITA BRAZIL CABLE C/W PLUG 220V - 3M		CABL05
	3MTR-110V MAINS LEAD BLACK C/W IND PLUG		CABL06
	ARGENTINA CABLE C/W PLUG - 230V - 3M		CABL08
	AUS/NZ-3M MAINS CABLE C/W MOULDED PLUG-AB-CAB-866		CABL09
28	M8 WASHER FOR ARBOR INTERNAL	1	RD47187
29	M4 BRASS NUT	1	NUT-M4-B
30	HB350 MAGNET BASE	1	M1020
31	M4 X 6 SLOTTED CSK MC SCREW - B2P	5	SC46CSK
32	M4 X 12 CSK MC SCREW - BRASS	1	SC412CSK-B
33	M4 SHAKE PROOF WASHER-B2P-WSH-227-004-ZC221	9	SPWR-M4
34	PINION - (SMALL)	1	M0041
35	EIBENSTOCK BHM35 DRILL UNIT - 110V MAKITA BLUE		EIB522
	EIBENSTOCK BHM35 DRILL UNIT - 230V MAKITA BLUE		EIB523
36	DRILL STOP/START SWITCH - 110V - KID17F/120V/50HZ -		NCP001
	DRILL STOP/START SWITCH - 230V - KID17F-230V-50HZ-		NCP002
37	MAGNET SWITCH - NCP PANEL - B418CG00000	1	NCP006
38	G.F.S. (MB30)	1	M0441
39	1/8 BSP-6MM BLACK PUSH FIT	1	50015
40	GUARD TO SUIT NEW UNI 1 MBQ35N/EQ35N/EBM35	1	VISO18
41	318-565 VARISTOR (V150LA10A)		W18XCS22
	VARISTOR HIGHSURGE 20MM 275 VRMS		W18XCS21
42	248-447 FUSE HOLDER	1	W18XCS11
43	2A FUSE (RAPID 26-2469)	1	W18XCS12
44	WASHER SMBK1869836HPU	1	UOD009



ORIGINAL

EC Declaration of Conformity

We as the manufacturers
Business address

**Makita Europe N.V.
Jan-Baptist Vinkstraat 2
3070 Kortenberg
BELGIUM**

Authorize **Hiroshi Tsujimura** for the compilation of the technical file and declare under our sole responsibility that the product(s);

Designation **Magnetic Drill**
Designation of Type(s) **HB350**

Fulfills all the relevant provisions of **2006/42/EC**
and also fulfills all the relevant provisions of the following EC/EU
Directives:

- **2014/30/EU**
- **2011/65/EU**

and are manufactured in accordance with the following Harmonised
Standards:

**EN 62841-1:2015, EN ISO 12100:2010, EN 61000-6-2:2005, EN 61000-6-4:2007+A1:2011,
EN 61000-3-2:2014, EN 61000-3-3:2013, EN IEC 63000:2018**

Place and date of declaration: **Kortenberg, Belgium, 12.2.2021**
Responsible person: **Hiroshi Tsujimura**

Director - Makita Europe N.V.