Operating instructions

MKB-60RL

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Operating instructions

WARNING

The magnetic drilling machine MKB-60RL is intended for professional use and may only be operated by instructed persons. Strictly adhere to the instructions in the operating manual to avoid electric shock or fire.
In the event of violations of the operating instructions which may result in injury or machine damage, our company declines all responsibility.
In conjunction with the appropriate core drills, the machine is intended for drilling in all magnetic metals.
The machine may only be serviced by persons who have the appropriate qualification and certification.

THANKS TO THE BUYER

Thank you for purchasing the magnetic drilling machine MKB-60RL from Kernlochbohrer GmbH. Please read the operating instructions and observe the safety instructions. By operating it correctly, you will fully appreciate the excellent performance of our products. Keep this manual in a safe place for future reference. If you have any questions about the operation of the magnetic drilling machine, contact Kernlochbohrer GmbH directly. We are always available to answer your questions.

ABOUT THIS GUIDE

These operating instructions are for the models

MKB-60RL

Check the machine model against the type plate.

SAFETY REGULATIONS

- ❖ Read all precautions before commissioning and keep the operating instructions.
- ❖ Please follow the operating instructions carefully, as failure to observe these safety precautions and instructions may cause electric shock, fire and/or serious injury.

1. Keep your work area clean and well lit. Disorder or unlit work areas can lead to accidents.

2. Do not work with the power tool in potentially explosive atmospheres if flammable liquids, gases or dust are present. Power tools produce sparks that can ignite dust or fumes.

3. Keep children and other people away from the power tool during use. If you are distracted, you may lose control of the tool.

4. Be attentive, work with concentration and pay attention to what you are doing. Do not use a power tool when you are tired or under the influence of drugs, alcohol or medicines. A moment of carelessness when using a power tool can result in serious injury.

5. Wear suitable protective equipment and always safety glasses. Wearing suitable protective equipment such as a dust mask, non-slip safety shoes, gloves, hard hat or hearing protection reduces the risk of injury.

6. Avoid unintentional starting of the machine. Make sure that the power tool is switched off before connecting it to the power supply.

7. Remove adjusting tools or Allen keys before switching on the power tool. A tool or Allen key that is on the drill spindle can cause injury.

8. Avoid unusual postures. Make sure you stand securely and keep your balance at all times. Do not work on a ladder. This will help you control the power tool in unexpected situations.

9. Wear appropriate clothing. Do not wear loose clothing or jewellery. Keep hair, clothing and gloves away from moving parts. Loose clothing, jewellery or long hair can be caught by moving parts.

10. Do not overload the appliance. Use the appropriate power tool for your work. With the appropriate power tool, you will work better and more gently in the specified power range.

11. Do not use a power tool whose switch is damaged. A power tool that cannot be switched on and off is dangerous and must be repaired.

12. Unplug the appliance from the mains before making any adjustments, replacing accessories or putting the appliance aside. This safety measure prevents the power tool from starting unintentionally.

13. Keep unused power tools out of reach of children. Do not allow persons to use the tool who are not familiar with it or have not read these instructions. Power tools are dangerous when used by inexperienced persons.

14. Note that the voltage must not exceed ±5% of the nominal voltage. Higher voltages can cause irreparable damage. Note that higher voltage peaks are not generated when operating the machine via a generator.

DESCRIPTION OF THE PRODUCT

The magnetic drilling machine is an electric tool for attaching and drilling on a horizontal and vertical plane. Ideal for use in steel construction, industrial construction, mechanical engineering, plant construction, shipbuilding, bridge construction, crane construction and for assembly work in locksmith's shops. With our magnetic drill you can drill large steel workpieces and all magnetic metals. The handling is very comfortable and the machine can be used flexibly. By using the MKB-60RL, the amount of work can be reduced, machining precision and work efficiency can be improved.

The magnetic drill MKB-60RL combines numerous advantages in one machine: The magnetic drills have a built-in cooling system, a soft start, an electronic, infinitely variable speed control, a right-left run and an overload protection. All this makes the MKB-60RL magnetic drills a machine with constant and superior performance as well as maximum safety for the user. The use of a magnetic drill reduces the workload on the one hand and increases precision and work efficiency on the other.

TECHNICAL DATA

Max. Drill diameter for twist drill with morse taper MK3	28 mm
Max. Drill diameter for cylindrical twist drills	16 mm
Max. Diameter for thread sheaths	M24
Max. Drill diameter for Weldon drill	60 mm
Mains voltage	230 V
Power consumption	1780 W
Nominal frequency	50-60 Hz
Max. Attraction force	14800 N
Jogging speed	100-340 1/min
Weight	28 kg

In order to constantly improve the product, our company reserves the right to change the technical data without prior notice.

PRODUCT STRUCTURE - MKB-60RL

1. Air inlet cover
2. Motor housing
3. Drilling lever
4. Gearbox
5. Drilling spindle
6. Cable routing
7. Coolant tank
8. Carrying handle
9. Speed controller
10. On/Off switch machine
11. On/off switch Magnet
12. Switch right/left rotation
13. Power connection
15. Magnetic base/magnet

PRECAUTIONS

1. Read the manual carefully before use to understand the structure and handling of the magnetic drilling machine (electromagnetic attitude, drilling machine itself and the gear function).

2. Before installing or removing a magnetic drill, ensure that the motor switch is turned off and the mains plug is disconnected.

3. After mounting and tightening the drill, the key must be removed.

4. Make sure to use a sharp and suitable drill bit.

5. Make sure that the work surface is level and at least corresponds to the base area of the magnet. The base surface must be made of a material that is at least 10mm thick, magnetisable and clean.

6. Make sure that the mains cable is not close to the drill.

7. Make sure that both the motor switch and the magnetic switch are switched off.

8. The magnetic drilling machines are equipped with a coolant tank. The coolant tank is attached to the frame of the magnetic drilling machine with two screws. Only use an oil-water mixture that is available from specialist dealers. After use, it is imperative to clean the drill spindle to prevent subsequent corrosion. In order for the coolant to flow through the machine, the centring pin must be inserted in the crown drill.

9. The use of the magnetic drilling machine in the equipment with electromagnet or permanent magnet in an inclined or vertical position on steel components is only permitted if the magnetic drilling machine has been secured with the safety belt included in the scope of delivery. In the event of a power failure or excessive load, the magnetic holding force is not maintained. The magnetic drilling machine may fall down and cause accidents.

10. Non-magnetic materials cannot be drilled with the magnetic drill. To drill non-magnetic material, a drill with a vacuum foot must be selected.

11. You cannot use an electric welder and a magnetic drill at the same time on the same piece of sheet steel, otherwise there is a risk of electric shock.

12. Continuous operation of the magnetic drilling machine for more than 2 to 3 hours is not permitted.

WARNING!

Strong magnet!

Persons with pacemakers or other medical implants must not use the magnetic drill. Carrying metal parts and watches is prohibited.

WARNING!

Danger of falling due to sudden pendulum movement of the magnetic drilling machine!

When working on a scaffold, the magnetic drilling machine can perform a sudden pendulum movement when starting up or in the event of a power failure. Secure the magnetic drilling machine with the enclosed safety belt.

CAUTION!

Pull the plug out of the socket before making adjustments to the magnetic drill or changing accessories. Unintentional starting of the drill can lead to accidents.

CAUTION!

Observe the inspection interval for load slinging equipment of your trade association! The safety belt supplied with the magnetic drilling machine is a load sling and must be checked regularly.

SAFETY CHECK

Check the magnetic drilling machine before each switch-on or at least once per shift. Report any damage or defects and changes in operating behaviour immediately to the responsible manager.
Check all safety devices

- at the beginning of each shift (in case of interrupted operation),
- once a week (for continuous operation),
- after each maintenance and repair.

Check that the prohibition, warning and instruction signs as well as the markings on the magnetic drilling machine are

- are legible (clean if necessary),
- are complete (replace if necessary).

SAFETY DURING OPERATION

WARNING!

Before switching on the magnetic drilling machine, make sure that this will

- there is no danger to persons,
- no things are damaged.

Refrain from any working method that may compromise safety:

- Make sure that no one is endangered by your work.
- It is essential to follow the instructions in this operating manual during installation, operation, maintenance and repair.
- Do not work on the magnetic drill if your ability to concentrate is reduced for any reason - such as the influence of medication.
- Observe the accident prevention regulations of the employers' liability insurance association responsible for your company or other supervisory authorities.
- Remain at the magnetic drilling machine until a complete standstill has been reached.
- Do not leave magnetic drilling machines with electromagnet unattended magnetised at the place of work.
- Use the prescribed body protection equipment. Wear close-fitting clothing and a hair net if necessary.

ELECTRICAL SAFETY

Have the electrical machine/equipment checked regularly. Have any defects such as loose connections, damaged cables, etc. repaired immediately.
A second person must be present when working on live parts and switch off the voltage in an emergency. Switch off the magnetic drilling machine immediately in the event of faults in the electrical supply!

Observe the required inspection intervals according to the Ordinance on Industrial Safety and Health and the inspection of operating equipment.

The operator of the machine must ensure that the electrical installations and equipment are checked for proper condition, namely,

- before initial commissioning, before recommissioning and after modification or repair by a trained electrician in accordance with VDE or under the direction and supervision of a trained electrician in accordance with VDE.
- and at specified intervals.

The deadlines shall be set in such a way that any defects that arise and are to be expected are detected in good time.

Bei der Prüfung sind die sich hierauf beziehenden elektrotechnischen Regeln zu beachten.
Testing prior to initial commissioning is not required if the manufacturer or installer confirms to the operator that the electrical systems and equipment are in compliance with the provisions of the accident prevention regulation.

COMMISSIONING

Pay attention to the mains voltage! The voltage of the power source must match the specifications on the type plate of the magnetic drilling machine. Your power source must be equipped with a protective earth connection.
Permissible voltage fluctuations in normal cases: ±5% volts.
Permissible frequency fluctuations: ± 1Hz (50/60 Hz)

BEDIENUNG

- Continuous operation of the magnetic drilling machine for more than 2 to 3 hours is not permitted. There is a risk of fire if the load is too high! The magnetic drilling machine must first cool down before continuous operation can be resumed.
- If the drill gets jammed, the magnetic drill must be switched off immediately.
- Operation of the magnetic drilling machine outdoors is not permitted.
- Drilling into non-magnetisable surfaces is only possible if a sufficiently large steel plate has been fixed to the non-magnetisable surface.
- Plug in the mains plug. Position the machine so that the drill bit is aimed at the spot to be drilled.
- Make sure that there is an oil-water mixture in the coolant tank. First switch on the electromagnet and then the drill spindle. When switching off, first switch off the drill spindle and then the electromagnet.
- Bei Bohrarbeiten in vertikaler Lage müssen zwei Personen zugegen sein.
- The safety belt should also be used during horizontal drilling work to secure the magnetic drill against falling from elevated work locations.
- The manually operated drill feed should not exceed 0.05mm per revolution.
- If the drill suddenly stops, switch off the machine immediately.
- The gear oil should be changed after 300 hours of operation.
- Only use suitable drills for the intended machining task.

Tools that can be used:

- Weldon drill up to Ø 60mm
- taps up to M24
- cylindrical twist drills up to 16mm
- Twist drills with morse taper MK3 up to 28mm

WARNING!

Make sure that the coolant system is completely drained and cleaned after finishing work. Afterwards, the stopcock must be closed again.

OVERLOAD PROTECTION

The magnetic drilling machine MKB-60RL is equipped with an overload protection. If the machine suddenly stops working during use because it has been overloaded, disconnect the machine from the power supply and wait a few minutes.

FASTENING THE TOOL IN THE HOLDER

Standard
Insert the tool and clamp it with the screw on the side.

Quick change
Push the sleeve upwards and insert the tool. Release the sleeve again and check that it is securely fastened.

Standard

Quick change

Place the magnetic drilling machine on the workpiece.

Note:
A sensor controls the possible magnetic holding force. If the magnetic holding force on the component is not sufficient, the magnetic drilling machine cannot be switched on.

The magnetic drilling machine will only adhere properly to the material to be drilled into if the surface of the material is clean and smooth. Loose rust, dirt and grease must be removed before setting up the magnetic drill, and any welding beads or unevenness must be smoothed out. A thin layer of paint does not impair the adhesive effect. If necessary, also clean the magnet base. After switching on the magnet, shake the magnet drill vigorously to make sure that it adheres properly to the material. If this is not the case, check the material surface and the underside of the magnet base, clean if necessary and switch the magnet on again.

STEEL WITH LOW THICKNESS

Optimum adhesion is achieved on low-carbon steel with a minimum thickness of 12mm. For drilling in steel with less thickness, you can place a 12mm steel plate under the material (at the point where the magnetic foot is placed).

NON-FERROUS METALS

For drilling in non-ferrous metals, fix a steel plate to the material to be worked on and place the magnetic drill stand on it. Insert the mains plug into the socket. Position the machine on the position to be machined and switch on the magnet. Make sure that there is no contamination on the surface and that the holding force of the magnet is sufficient. The material thickness of the steel plate should be more than 10mm.

MACHINING OF ROUND OR STRONGLY CURVED MATERIAL

When working on round or strongly curved material, the magnetic foot is placed on the material so that its longitudinal axis is parallel to the longitudinal axis of the round material. Fill the free space between the magnet foot and the material on both sides over the entire length of the magnet foot with wedges made of steel. After switching on the magnet, the holding force via the wedges placed underneath should be so high that the machine has a secure and firm hold.

The steel wedges must be distributed on both sides of the magnetic foot in such a way that the axis of the drill is aligned directly with the highest point of the curved material. The drill may otherwise run sideways. Make sure by shaking the magnetic drill that the holding force of the magnetic foot is fully and sufficiently given.

CARE AND MAINTENANCE

Before starting maintenance or repair work, be sure to pull out the mains plug!

Repairs may only be carried out by qualified personnel who are suitable on the basis of their training and experience. The tool must be checked by a trained electrician according to VDE after each repair. The power tool is designed to require a minimum of care and maintenance.

However, the following points must always be observed:

- After completing the drilling work, clean the magnetic drilling machine. Then grease the drill spindle thread. The ventilation slots must always be clean and open. Make sure that no water gets into the magnetic drilling machine during the cleaning process.
- After approx. 300 hours of operation, the carbon brushes must be checked by a trained electrician in accordance with VDE and replaced if necessary (only use original carbon brushes).
- Have switches, cables and plugs checked quarterly by a trained electrician in accordance with VDE.

ENVIRONMENTAL PROTECTION

Raw material recovery instead of waste disposal!

To avoid transport damage, the unit must be delivered in sturdy packaging. Packaging as well as the unit and accessories are made of recyclable materials.

The plastic parts of the unit are labelled according to the material. This enables environmentally friendly, sorted disposal via the collection facilities offered.

Only for EU countries
Do not throw power tools in the household waste! According to the European Directive 2012/19/EU on waste electrical and electronic equipment and its implementation in national law, used power tools must be collected separately and recycled in an environmentally sound manner.

NOISE/VIBRATION

The noise of this power tool is measured according to DIN 45 635, part 21. The sound pressure level at the workplace may exceed 85 dB (A); in this case, sound protection measures for the operator are required.

Wear hearing protection! 

Hand/arm vibration is typically lower than 2.5m/s². Measured values determined according to EN 61 029.
The indicated vibration level represents the actual applications of the power tool. However, if the power tool is used for other applications, with deviating application tools or insufficient maintenance, the vibration level may deviate. This can significantly increase the vibration load over the entire working period.

For an accurate estimation of vibration exposure, the times when the unit is switched off or running but not actually in use should also be taken into account. This can significantly reduce the vibration load over the entire working period.

Establish additional safety measures to protect the operator from the effects of vibration such as: Maintenance of power tool and insert tools, keeping hands warm, organisation of work procedures.

SHUTDOWN CARBONS

The power tool is equipped with a self-shutting carbon brush to protect the motor. If the brushes are worn, the machine switches off automatically. In this case, both carbon brushes must be replaced simultaneously with original carbon brushes by a trained electrician according to VDE.

MISSING SEARCH

Error	Cause	Remedy
Magnetic base without function	Switching contact faulty	Replace switch
	Power supply is defective, plug loose	Replace cable and plug
	Overload, the fuse has blown	Replace fuse
	Short circuit in the electromagnet or defective electromagnet	Replace or repair electromagnet
	Magnetisability of the substrate too low	Check the thickness of the substrate, check the material properties of the substrate.
	Circuit board defective	Replace printed circuit board
Drilling spindle does not switch on	Electromagnet not switched on	Before switching on the drill spindle, first switch on the electromagnet
	The sensor detects insufficient magnetic holding force on the component	See operating instructions "Steel with low thickness
	Switching contact faulty	Replace switch
	Defective rotor or stator winding	Replace defective component completely
Drive motor problems	The spark colour on the electric motor turns orange-red	Reduce the drill feed rate
	Sparks fly out	Replace the carbon brushes
	Sparks fly out in a ring of fire	Check for defective rotor or stator winding, motor burnt out
Drill tip runs away, drilled hole is out-of-round	Hard spot in workpiece Length of cutting spirals/or angle on drill unequal	Use new drill
	Drill bent	Use new drill
Drill or core hole drill "burns out	Feed rate too high	Reduce feed rate
	Chips do not come out of the borehole	Retract drill more often
	Drill blunt	Sharpen drill/use new drill
	No or too little cooling	Use coolant
The drill chuck or the taper mandrel cannot be inserted	Dirt, grease or oil on the tapered inside of the drill chuck or on the tapered surface of the drill spindle Position of the driver in the drill spindle not observed	Clean surfaces carefully, keep surfaces free of grease
Coolant does not run	Centring pin in the crown drill is missing	Insert centring pin

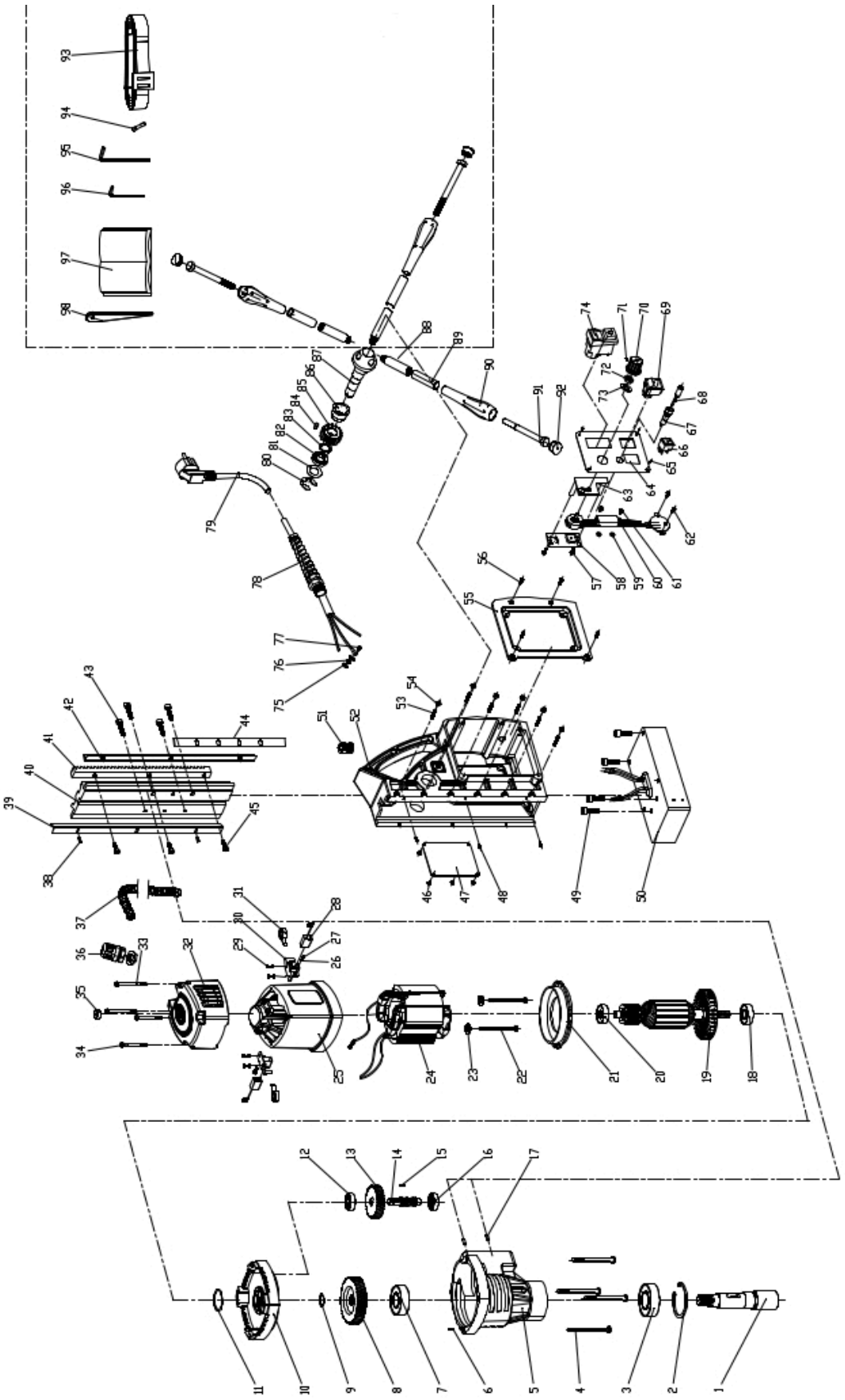
BEHAVIOUR IN THE EVENT OF DISRUPTIONS

Switch off the machine in case of malfunctions, disconnect it from the mains. Work on the machine's electrics may only be carried out by a trained electrician in accordance with VDE.

WARRANTY

In accordance with our general terms and conditions of delivery, a warranty period of 12 months applies for material defects in business transactions with companies (proof by invoice or delivery note). Damage caused by natural wear and tear, overloading or improper handling shall remain excluded from this. Damage caused by material or manufacturer defects shall be remedied free of charge by repair or replacement. Complaints can only be accepted if the device is sent to the supplier unassembled.

Exploded view



Parts list

N0.	Article description	Specification	Number	N0.	Article description	Specification	Number
1	Spindle		1	50	Magnet base		1
2	Circlip, inside	Ø52	1	51	Hose connector	M16*1.5	1
3	Camp	60/28	1	52	Stand		1
4	Phillips screw with round head	M5*55	4	53	Locking screw with hexagon socket and flat end	M5*25	6
5	Gearbox		1	54	Mother	M5	6
6	Round pen	4*12	1	55	Panel frame		1
7	Camp	6005	1	56	Hexagon socket screws	M4*10	4
8	Spindle gear		1	57	Phillips screw with round head	M4*8	2
9	Circlip, outside	Ø22	1	58	Printed circuit board		1
10	Gearbox cover		1	59	Mother	M4	2
11	O-Ring	Ø31.5*18	1	60	Speed controller		1
12	Camp	629	1	61	Phillips screw with round head	M4*12	2
13	Class 1 Gear		1	62	Round-head crosshead screw	M4*8	2
14	Class 1 Gear shaft		1	63	Board holder		1
15	Key	4*12	1	64	Button placket		1
16	Camp	629	1	65	Stainless screw	M3*6	4
17	Round key	Ø5*15	2	66	Switch		1
18	Camp	6201	1	67	Fuse base		1
19	Rotor		1	68	Fuse		1
20	Camp	6201	1	69	Switch		1
21	Baffle plate		1	70	Rotary knob		1
22	Phillips screw with round head	M5*70	2	71		M3*5	1
23	Seal	M5	2	72	Thin nut	M10	1
24	Stator		1	73	Seal	M10	1
25	Stator housing		1	74	Switch		1
26	Shaft seal	M4	6	75	Seal	M4	2
27	Phillips screw with round head	M4*8	2	76	Shaft seal	M4	1
28	Carbon brush		2	77	Phillips screw with round head	M4*8	1
29	Kreuzschlitzschraube mit rundem Kopf	M4*12	4	78	Anti-bending sleeve	M16*1.5	1
30	Carbon brush holder		2	79	Power cable	3*1.0*3.5m	1
31	Coil spring		2	80	E Circlip	Ø15	1
32	Top cover		1	81	17*30*0.5		1

33	Phillips screw with round head	M4*55	2	82	Camp	6903	1
34	Phillips screw with round head	M4*50	2	83	Circlip, outside	Ø18	1
35	Dragonfly		1	84	Square spanner	5*14	1
36	Hose connection	M16*1.5	1	85	Gearbox		1
37	PE pipe	550mm	1	86	Composite bearing		1
38	Pin for guide rail	3*8	2	87	Lifting shaft		1
39	Guide rail		1	88	Handle connection	M12-10	3
40	Guided tours		1	89	Extension sleeve		3
41	Frame	14*14*250(M2)	1	90	Feed handle		3
42	Flat stripe		1	91	Hexagon head screw	M10*150	3
43	Screws with hexagon socket	M6*25	1	92	Plug		3
44	Pressure strip		1	93	Safety belt		1
45	Hexagon socket screws	M6*18	1	94	Fuse	5*20.0-1A	2
46	Stainless screw	M3*6	4	95	Spanner	M6	1
47	Parameter panel		1	96	Spanner	M2.5	1
48	Phillips screws	M3*8	3	97	Manual		1
49	Hexagon socket screws	M8*22	4	98	Expulsion wedge	MT1-2	1

EC Declaration of Conformity

The manufacturer/marketer
Kernlochbohrer GmbH
Geigersbühlweg 52
72663 Großbettlingen

hereby declares that the following product

Product designation: Magnetic drilling machine
Type: MKB-60RL

complies with all relevant provisions of the applied legal regulations (hereinafter) - including their amendments in force at the time of the declaration. The sole responsibility for issuing this declaration of conformity lies with the manufacturer. This declaration relates only to the machine in the condition in which it was placed on the market; parts and/or interventions subsequently fitted by the end user are not taken into account.

The following legislation was applied:
Machinery Directive 2006/42/EC
EMC Directive 2014/30/EU

The protection goals of the following additional legal regulations were met:
Low Voltage Directive 2014/35/EU

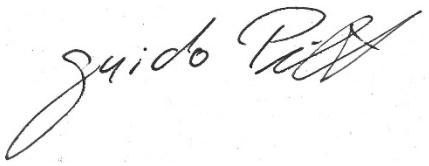
The following harmonised standards were applied:

EN 60204-1:2018	Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:2016 (Modified)
EN ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)
BS EN 62841-1:2015	Electric motor-driven hand-held tools, portable tools and lawn and garden machinery. Safety
EN 61000-6-1:2019	Electromagnetic compatibility (EMC) - Generic standards; Immunity for residential, commercial and light-industrial environments
BS EN 61000-6-3:2007+A1:2011	Electromagnetic compatibility (EMC). Basic technical standards. Interference emission for residential, business and commercial areas as well as small businesses.

Name and address of the person authorised to compile the technical file:

Kernlochbohrer GmbH
Geigersbühlweg 52
72663 Großbettlingen

Location: Frickenhausen
Date: 07.08.2022



Guido Pillat, Chief Executive Officer