miniBEAST

OPERATOR'S MANUAL

MINIBEAST "THIN"

DRILLING MACHINE
WITH ELECTROMAGNETIC BASE

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1. GENERAL INFORMATION

1.1. Application

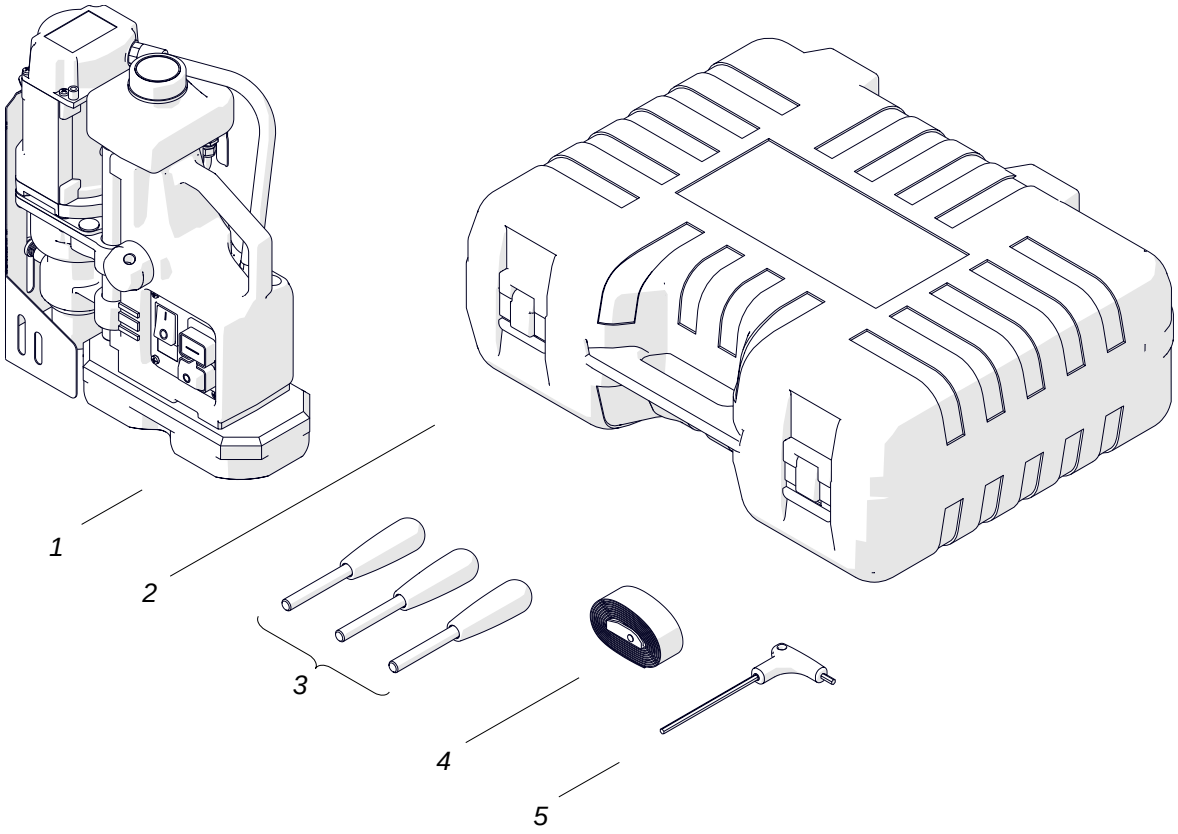
The MINIBEAST "THIN" is a drilling machine designed to drill holes with diameters of up to 36 mm (1-7/16'') to a depth of up to 51 mm (2'') by using annular cutters.

The electromagnetic base allows the drilling machine to be fixed to ferromagnetic surfaces with a force that ensures operator safety and proper machine operation. A safety strap protects the machine from falling in case of a power loss.

1.2. Technical data

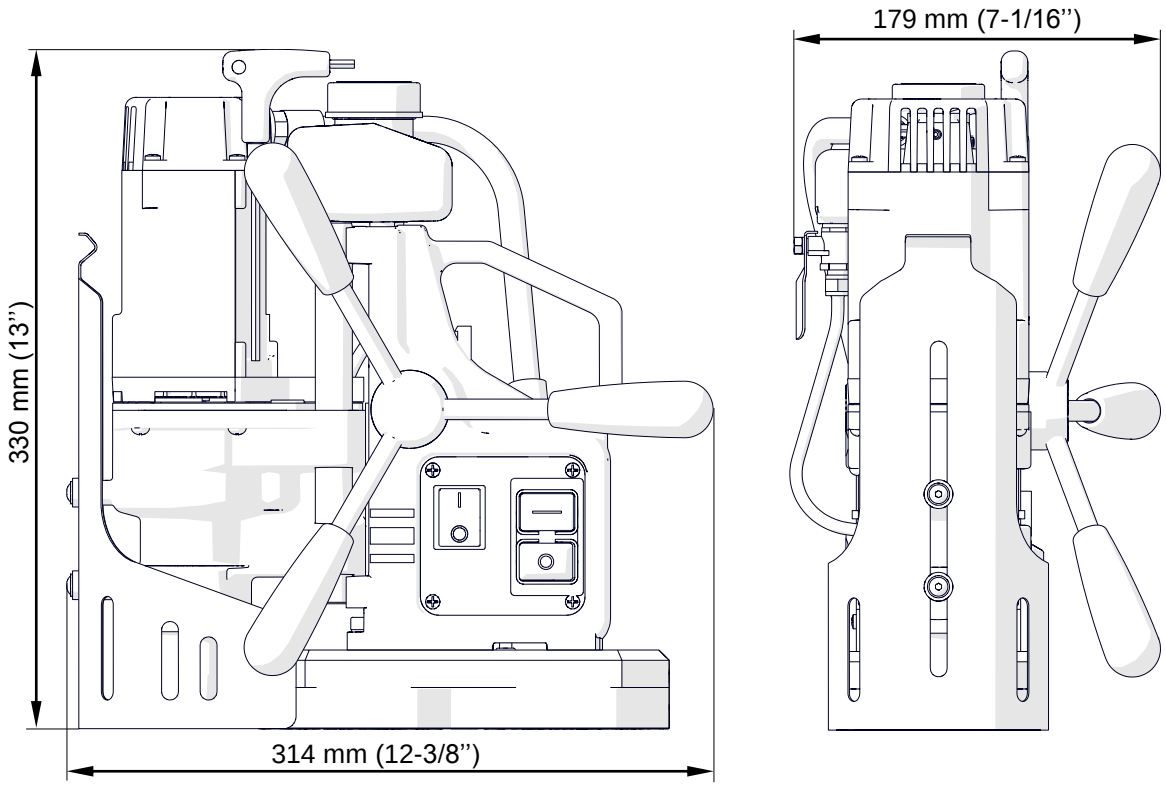
Voltage	1~ 110–120 V, 50–60 Hz 1~ 220–240 V, 50–60 Hz
Total power	1000 W
Motor power	920 W
Tool holder	19 mm Weldon (3/4'')
Maximum drilling diameter	36 mm (1-7/16'')
Maximum drilling depth	51 mm (2'')
Electromagnetic base holding force (surface with the thickness of 25 mm and roughness R_a = 1.25)	9 000 N
Electromagnetic base dimensions	100 mm × 200 mm × 38 mm 3-15/16'' × 7-7/8'' × 1-1/2''
Stroke	70 mm (2-3/4'')
Rotational speed under load	350 rpm
Minimum workpiece thickness	3 mm (1/8'')
Protection class	I
Noise level	More than 85 dB
Required ambient temperature	0–40°C (32–104°F)
Weight	11 kg (24 lbs)

1.3. Equipment included

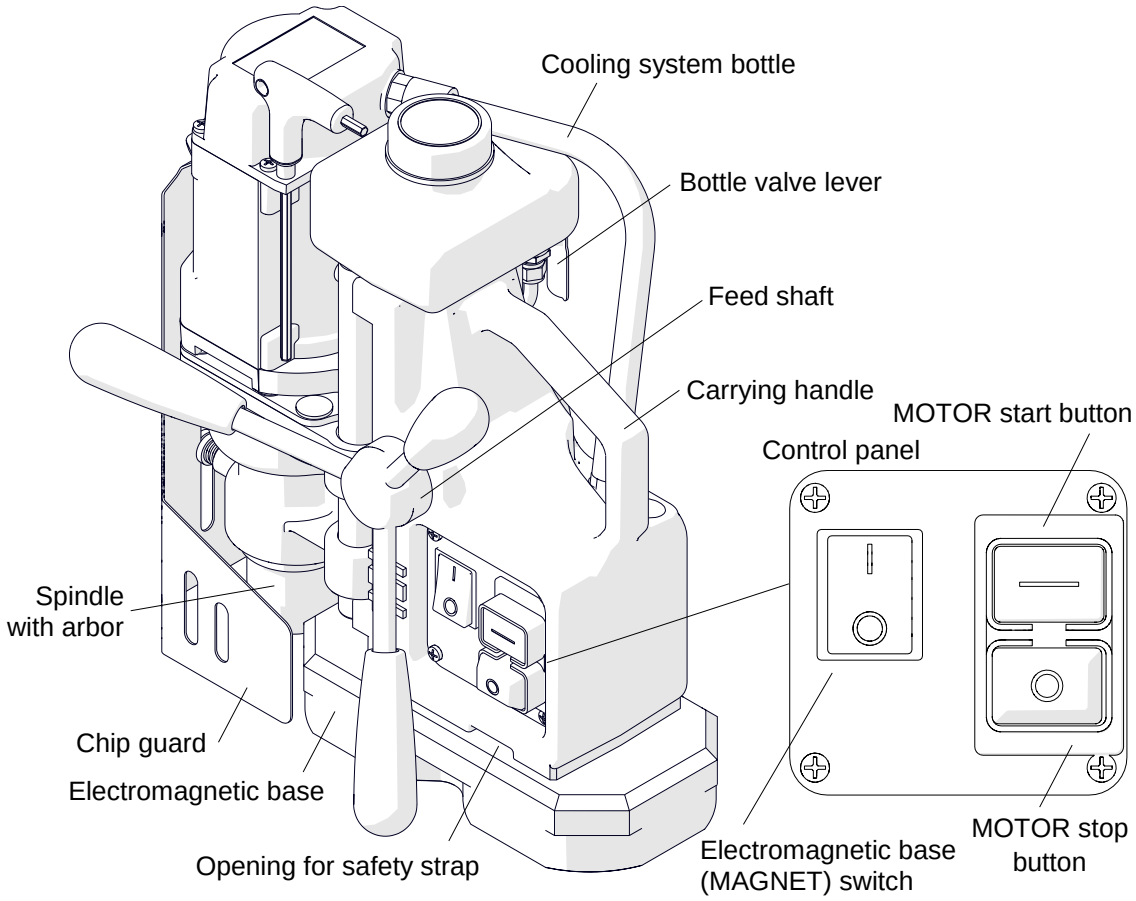


1	Drilling machine with cooling system bottle and chip guard	1 unit
2	Plastic box	1 unit
3	Handle	3 units
4	Safety strap	1 unit
5	4 mm hex wrench with handle	1 unit
–	Operator's Manual	1 unit

1.4. Dimensions



1.5. Design



2. SAFETY PRECAUTIONS

1. Before starting, read this Operator's Manual and complete proper occupational safety and health training.
2. Use the machine only in applications specified in this Operator's Manual.
3. The machine must be complete and all parts must be genuine and fully functional.
4. The specifications of the power source must conform to those specified on the rating plate.
5. Connect the machine to a properly grounded power source. The power source must be protected with a 16 A fuse for 230 V or a 32 A fuse for 115 V. When used on building sites, supply the machine through an isolation transformer with class II protection only.
6. Never carry the machine by the power cord and never pull the cord. This may damage the cord and result in electric shock.
7. Transport and position the machine by using the carrying handle and only when the MAGNET switch is set to 'O'.
8. Untrained bystanders must not be present near the machine.
9. Before starting, ensure the correct condition of the machine, power source, power cord, plug, control panel, and cutters.
10. Keep the machine dry. Never expose it to rain, snow, or frost.
11. Never stay below the machine placed at heights.
12. Keep the work area well lit, clean, and free of obstacles.
13. Install the annular cutter securely by tightening the set screws. Remove wrenches from the work area before connecting the machine to the power source.
14. Never use cutters that are dull or damaged.
15. Install and remove cutters by using protective gloves and only when the machine is unplugged from the power source.
16. Never use annular cutters without the pilot pin except when drilling incomplete through holes.
17. Do not drill holes whose diameter or depth differ from those specified in the technical data.
18. Never use near flammable liquids or gases, or in explosive environments.
19. Never use the machine on surfaces that are uneven, not rigid, covered with rust, paint, chips, or dirt.

20. Use the safety strap in all work positions. Attach the machine to a fixed structure by fastening the strap through the opening in the machine body. When working in horizontal position fasten the strap to the carrying handle. Never insert the strap into the buckle from the front.
21. Before every use, inspect the machine to ensure it is not damaged. Make sure that no part is cracked or loose. Make sure to maintain proper conditions that may affect the operation of the machine.
22. Always use eye and hearing protection and protective clothing during work. Do not wear loose clothing.
23. Proceed with caution when drilling in plates with a thickness less than 6 mm (1/4''). The holding force depends on workpiece thickness and is much lower for thin plates.
24. The whole bottom of the base must be in full contact with the workpiece. Before every positioning, wipe the workpiece with coarse-grained sandpaper.
25. Do not touch chips or moving parts. Prevent anything from being caught in moving parts.
26. After every use, remove chips and excess coolant from the machine and cutter. Do not remove chips with bare hands.
27. Cover steel parts with a thin anti-corrosion coating to protect the machine from rust when not in use for any extended period.
28. Maintain the machine and install/remove parts and cutters only when the machine is unplugged from the power source.
29. Repair only in a service center appointed by the seller.
30. If the machine falls from any height, is wet, or has any other damage, stop the work and promptly send the machine to the service center for check and repair.
31. Never leave the machine unattended during work.
32. When not in use, remove the cutter and pilot pin, and then remove the machine from the worksite. Store in a secure and dry place.

3. STARTUP AND OPERATION

3.1. Installing, removing, and operating the annular cutter

Unplug the machine from the power source, and then rotate the handles to the right (*1*, Fig. 1) to raise the motor. Wear protective gloves and insert the proper pilot pin into the annular cutter (*2*). Then, use a clean and dry cloth to wipe the arbor and cutter. Next, insert the cutter into the arbor (*3*) so that the flats (*4*) are aligned with the set screws (*5*). Then, use the 4 mm hex wrench to tighten both set screws.

To remove the cutter, loosen the screws (*5*) with the 4 mm hex wrench.

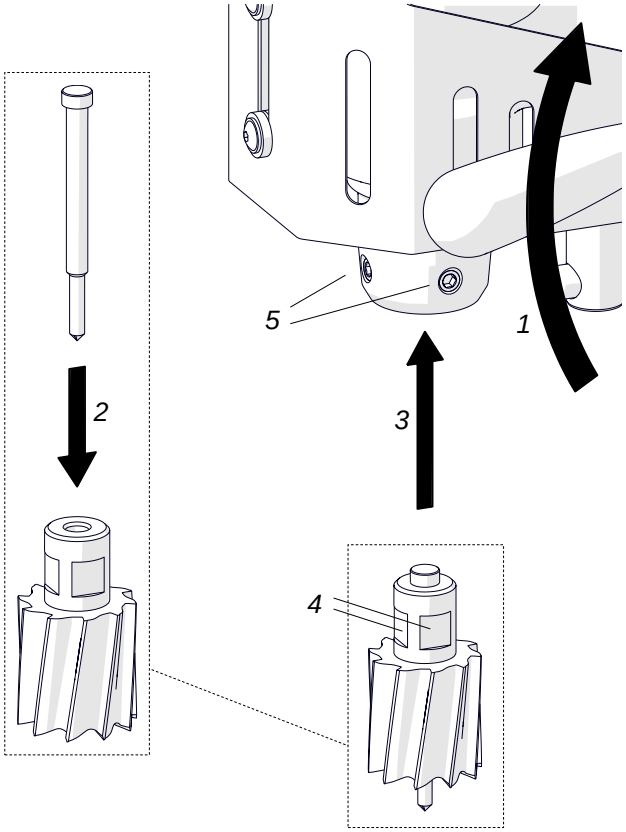


Fig. 1. Installing the annular cutter

Fig. 2 shows how annular cutters work. As the cutter drills into the workpiece, the pilot pin retracts and the coolant gets into the cutter. After the drilling, the tightened spring causes the slug core to be pushed out.

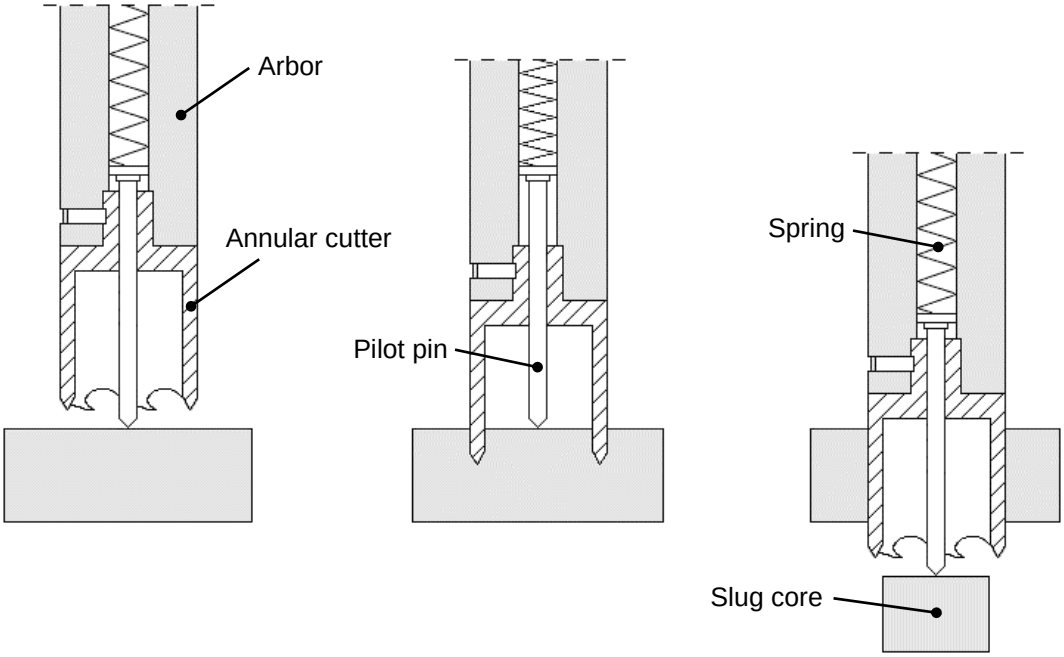


Fig. 2. Annular cutters work

Annular cutters are designed to drill only through holes shown in Fig. 3. When drilling incomplete through holes the pilot pin must not be used.

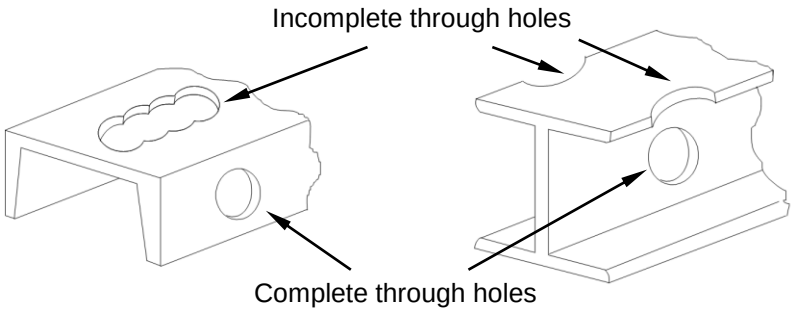


Fig. 3. Types of holes to drill with annular cutters

3.2. Installing and removing the cooling system bottle

Rotate the handles (*1*, Fig. 4) to raise the motor. Next, place the cooling system bottle on the machine (*2*), and then attach the bottle hose to the hose fitting (*3*).

To remove the bottle, first detach the hose from the fitting and raise the motor.

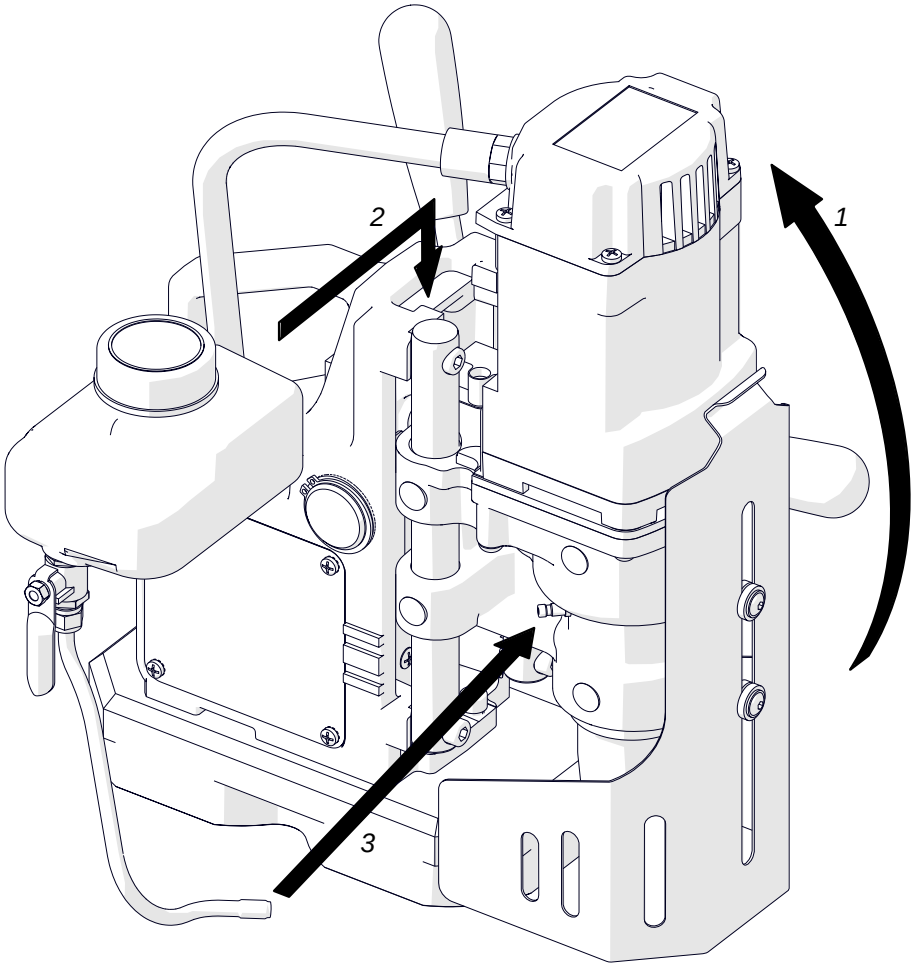


Fig. 4. Installing the cooling system bottle

3.3. Preparing

Before starting, clean steel parts, including the arbor, from anti-corrosion coating used to preserve the machine for storage and transport.

Screw the handles into the feed shaft. The machine can allow use by a left-handed person or in places hard to reach. To do this, install the feed shaft so that the handles are on the opposite side of the machine.

Select the proper annular cutter based on the hole size desired. Use a clean and dry cloth to wipe the arbor and cutter. Then, install the cutter into the arbor as described before.

Place the machine on a flat ferromagnetic workpiece with the thickness of at least 6 mm (1/4''). The workpiece must be free of rust, paint, chips, or dirt that decrease the holding force. The force value depends also on the type, thickness, flatness, and roughness of the surface, fluctuations of the supply voltage, and the wear of the base bottom. Then, connect the machine to the power source, and set the MAGNET switch to 'I' to turn on the clamping. Some types of steel are non-ferromagnetic (do not conduct magnetic flux) and the machine cannot clamp onto them.

Use the safety strap to prevent the machine from falling and avoid possible injury to the operator if the machine loses the clamping. To protect the machine, attach it to a fixed structure by fastening the strap through the opening (Fig. 5a, 5b). When working in horizontal position fasten the strap to the carrying handle (Fig. 5c). The strap must be tight, not twisted, and must be replaced every single time the machine comes loose from steel and hangs on the strap. Never insert the strap into the buckle from the front (Fig. 5d).

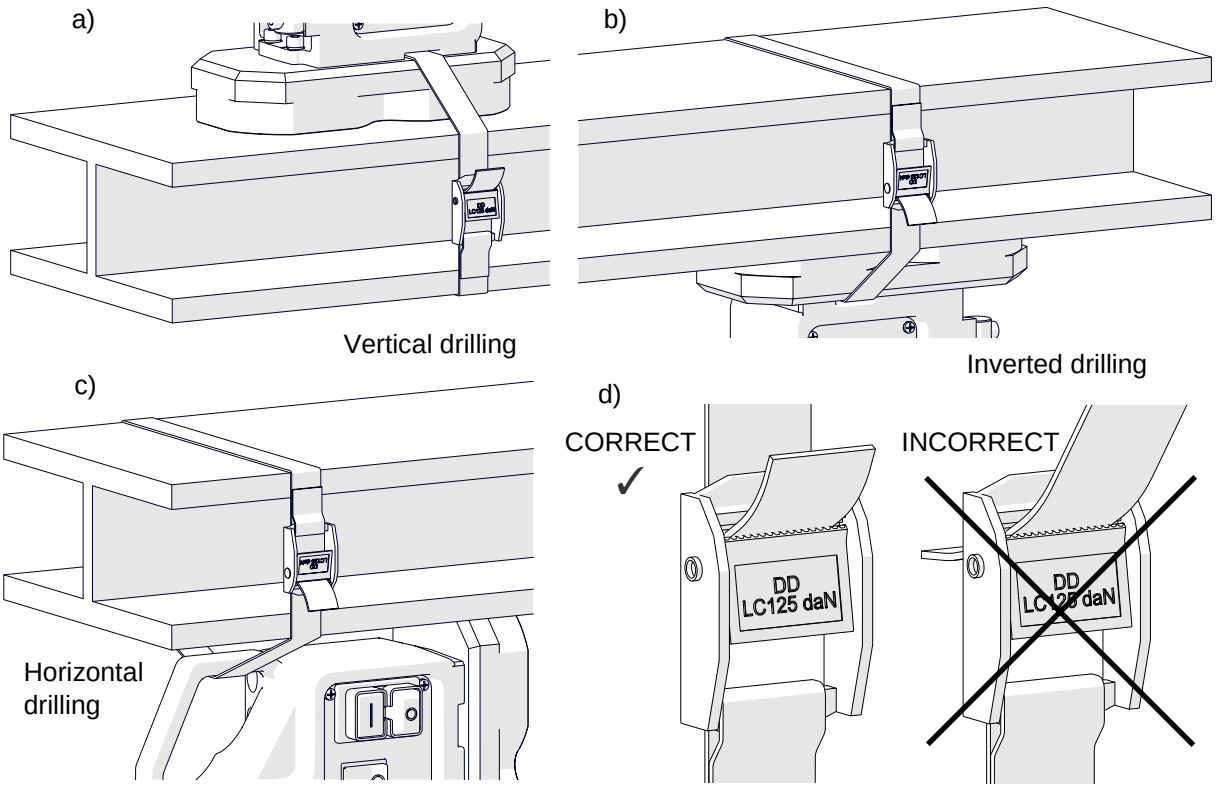


Fig. 5. Protecting the machine from falling by using the safety strap

Rotate the handles to the left to place the cutter above the workpiece.

When working in the position from Fig. 5a, fill the cooling system bottle with coolant. Do not use only water as the coolant. However, using emulsions made from water and drilling oil is adequate. Make sure that the cooling system works properly. To do this, slightly loosen the bottle cap and use the lever to open the valve. Next, rotate the handles to the left to initially apply pressure on the pilot pin. The coolant should fill the system and start flowing from the cutter.

The cooling system works by gravity. Thus, when working in inverted or horizontal positions (Fig. 5b, 5c) use coolants under pressure or in the form of spray or paste.

3.4. Drilling

Start the motor with the green MOTOR button. Then, slowly rotate the handles to the left to lower the cutter to the workpiece, and start drilling. Drill the hole in one pass.

After the annular cutter drills through the workpiece, the slug core is pushed out with a large force.

Proceed with caution when drilling in plates with a thickness less than 6 mm (1/4''). The holding force depends on workpiece thickness and is much lower for thin plates.

If the machine loses contact with the workpiece, the motor will still be running. Then, promptly press the red MOTOR button to turn off the motor.

After the drilling depth exceeds 40 mm (1-9/16''), retract the cutter above the workpiece as often as possible. Then, apply the coolant manually (from the bottle) into the drilling area

If the work results in an overload caused by not enough cooling, dull cutter, or too fast feed in relation to the cutter diameter, the machine will stop. Then, to restart the machine, retract the cutter from the workpiece, and then press the green MOTOR button.

After the hole is made, retract the cutter from the workpiece and press the red MOTOR button to stop the motor. Before moving the machine to another place, set the MAGNET switch to 'O' to turn off the base.

After the work is finished, turn off the motor and base, and then unplug the machine from the power source. Next, clean chips and excess coolant from the machine and cutter, and then remove the machine from the worksite.

Tighten the bottle cap, close the valve, and then press the pilot pin to remove the coolant remaining within the cooling system. Before inserting the machine into the box, wear gloves to remove the cutter from the arbor.

3.5. Replacing the motor brushes

Check the condition of the carbon brushes every 100 work hours. To do this, unplug the machine from the power source, and unscrew the cover (*1*, Fig. 6). Next, unscrew the pressing plate (*2*), and then remove the brush holder (*3*) and the brush (*4*). If the length of the brush is less than 5 mm (3/16''), replace both brushes with new ones.

To install brushes, proceed in reverse order. Then, run the motor without load for 20 minutes.

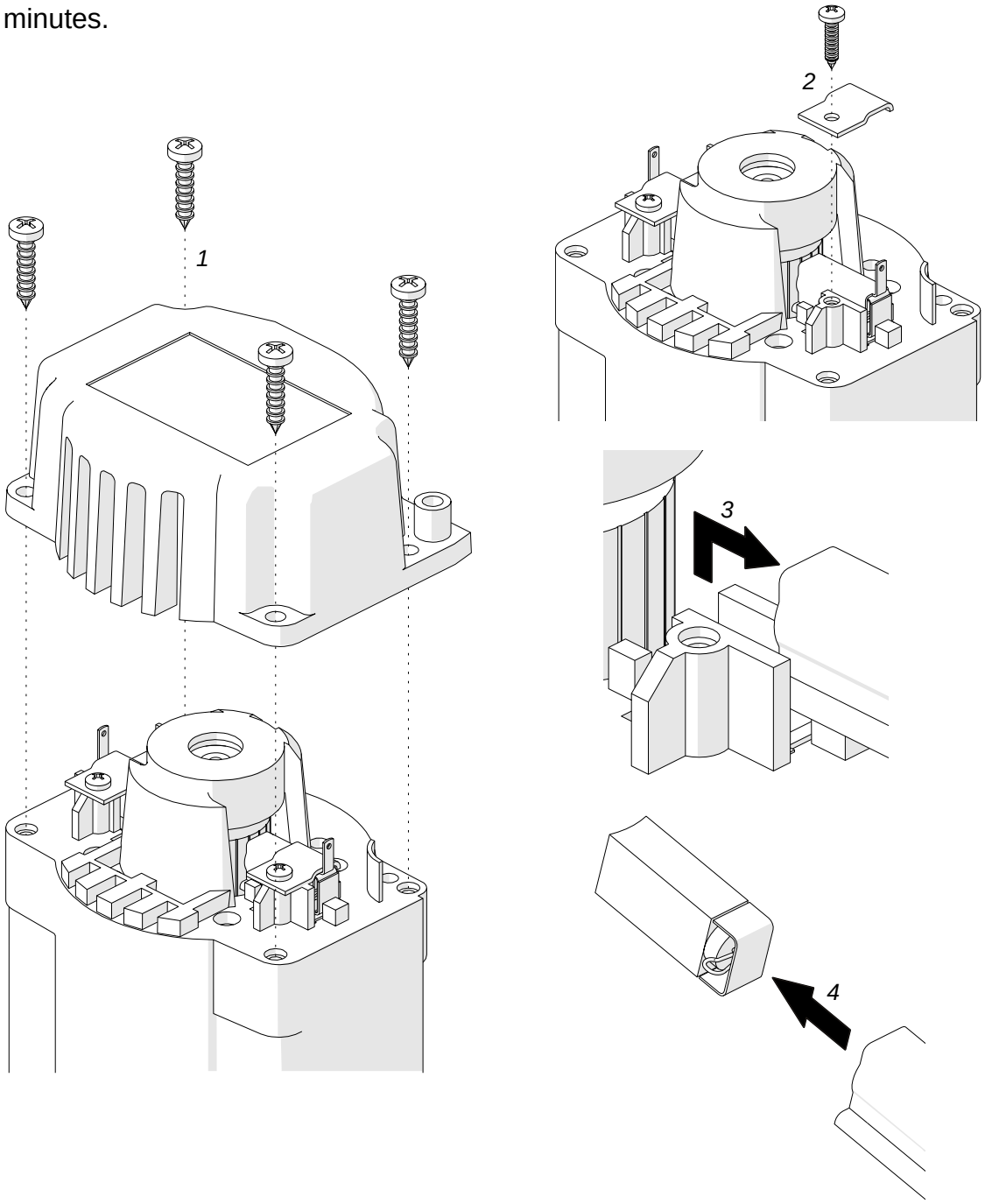


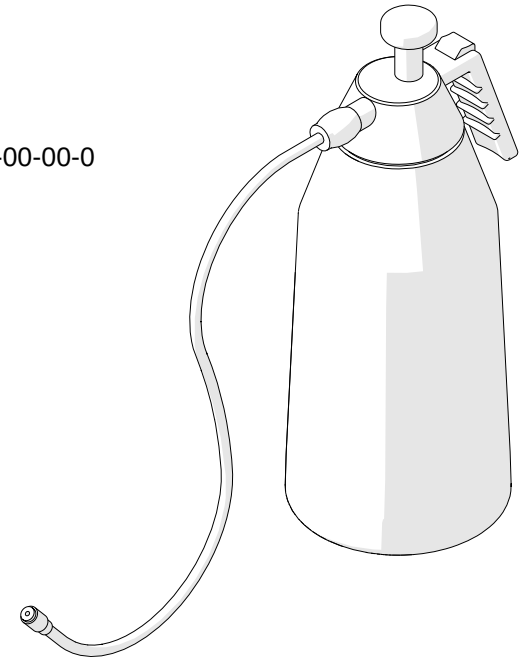
Fig. 6. Replacing the brushes

4. ACCESSORIES

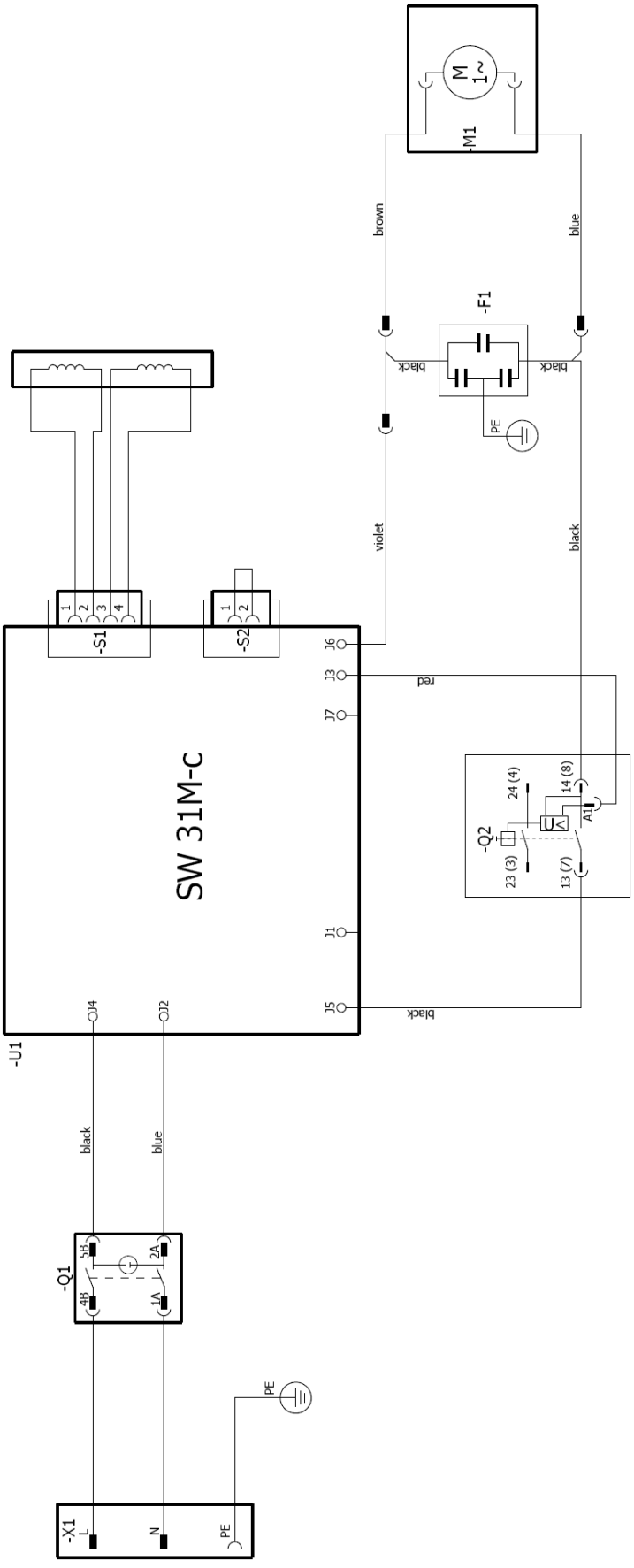
4.1. Pressure cooling system

Capacity of 2 liters.

Part number:
UKL-0440-16-00-00-0



5. WIRING DIAGRAM



6. DECLARATION OF CONFORMITY

EC Declaration of Conformity

We

JEI DRILLING & CUTTING SOLUTIONS LTD
Unit 21, Empire Business Park
Enterprise Way, Burnley
Lancashire, BB12 6LT

declare with full responsibility that:

MINIBEAST "THIN" Drilling Machine with Electromagnetic Base

is manufactured in accordance with the following standards:

- EN 60745-1
- EN 55014
- EN ISO 12100

and satisfies safety regulations of the guidelines: 2004/108/EC, 2006/95/EC, 2006/42/EC.

Person authorized to compile the technical file:
David McFadden, JEI Group Ltd

Burnley, 22 May 2017

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David McFadden
Managing Director

7. QUALITY CERTIFICATE

Machine control card

MINIBEAST "THIN" Drilling Machine with Electromagnetic Base

Serial number .....

Spindle radial runout.....

Slide to base travel perpendicularity.....

Spindle axis to base perpendicularity .....

Electromagnetic base holding force.....
(surface with the thickness of 25 mm and roughness $R_a \leq 1.25$)

Electric test

Type of test	Result	Name of tester
Insulation electrical strength test (1000 V, 50 Hz)		..... Date
Continuity test of the protective earth system	..... Ω	..... Signature

Quality control .....

Adjustments, inspections

Quality control .....

8. WARRANTY CARD

WARRANTY CARD No.....

..... in the name of Manufacturer warrants the MINIBEAST "THIN" Drilling Machine with Electromagnetic Base to be free of defects in material and workmanship under normal use for a period of 12 months from the date of sale.

This warranty does not cover cutters as well as damage or wear that arise from misuse, accident, tempering or any other causes not related to defects in workmanship or material.

Date of production .....

Serial number .....

Date of sale .....

Signature of seller.....

1.01 / 16 January 2018

WE RESERVE THE RIGHT TO MAKE CHANGES IN THIS MANUAL WITHOUT NOTICE