

Holemaker[®]

QUALITY EUROPEAN MADE MAGNETIC DRILLING MACHINES

PRO 35 AUTO DRILLING MACHINE

OPERATOR'S MANUAL



PART# HMPRO35AUTO

BEFORE USE, ENSURE EVERYONE USING THIS MACHINE READS AND UNDERSTANDS ALL SAFETY AND OPERATING INSTRUCTIONS IN THIS MANUAL .

Serial #.....

Date of Purchase.....

Ver: 1.1 07/10/2015

HOLEMAKER PRO 35 AUTO DRILLING MACHINE

PRODUCTS IMPORTED AND DISTRIBUTED NATIONALLY BY:



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- The machine or tool has not been subject to misuse, neglect or damage by accident.
- The fault is not a result of normal "wear and tear".
- Written permission has been received from ITM prior to commencement of repair.
- Repairs, tampering or modification carried out by unauthorised personnel will void all warranty.
- Consumable items such as cutting tools, pilot pins, saw blades, grinding wheels etc. are NOT covered by warranty.

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1. GENERAL INFORMATION

1.1. Application

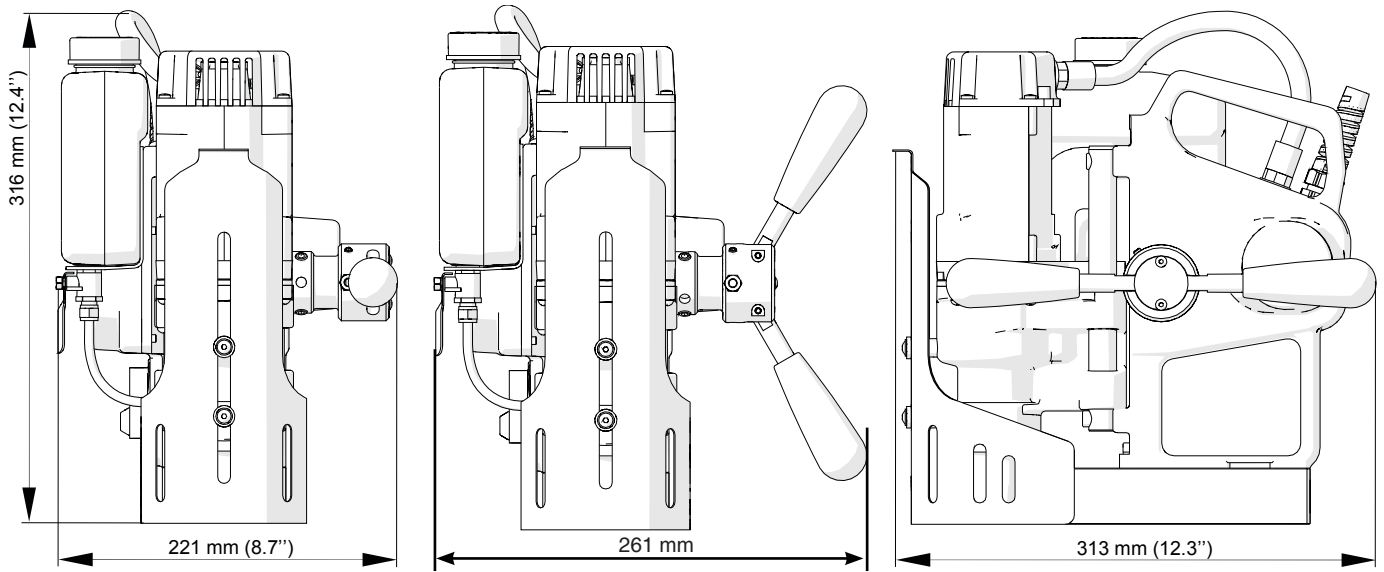
The PRO 35 AUTO is a drilling machine with electromagnetic base designed to drill holes with diameters of 12–36 mm (0.47”–1.42”) to the maximum depth of 51 mm (2”) through the use of annular cutters.

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

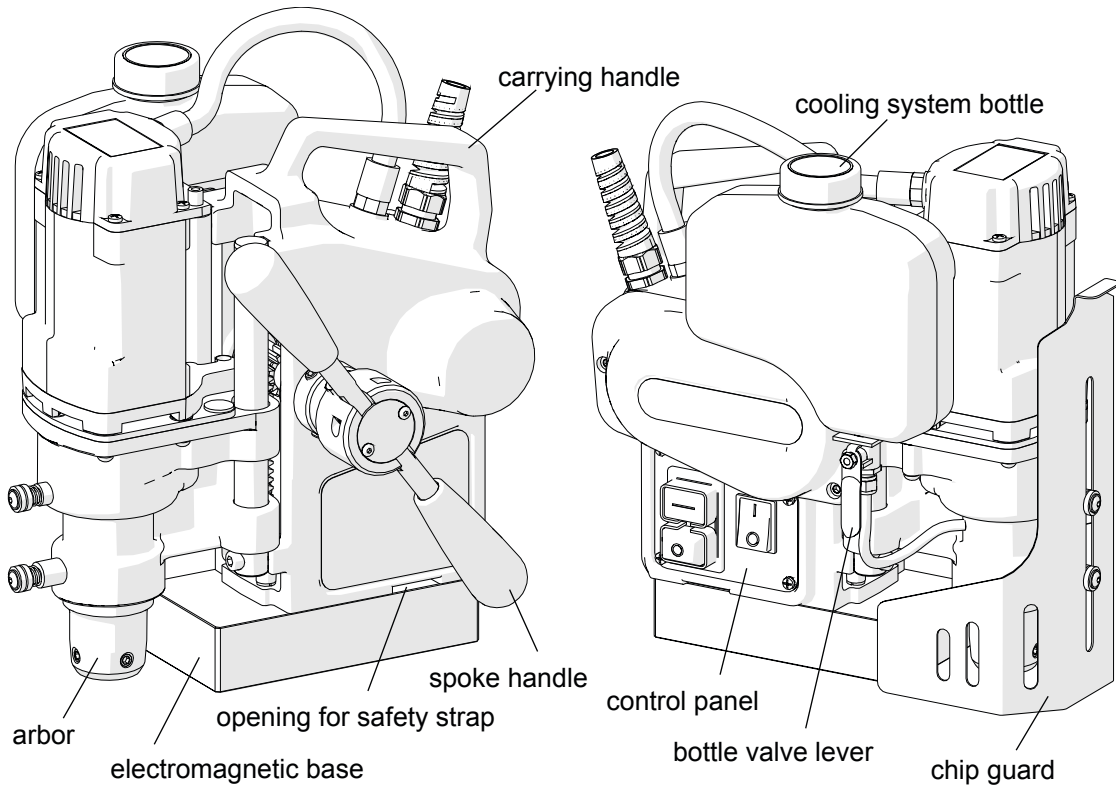
1.2. Technical data

Voltage	1~ 110–120 V, 50–60 Hz 1~ 220–240 V, 50–60 Hz
Total power	1000 W
Motor power	920 W
Cutter holder	19 mm Weldon (0.75”)
Maximum drilling diameter	36 mm (1.42”)
Maximum drilling depth	51 mm (2”)
Electromagnetic base holding force (surface with the thickness of 22 mm and roughness $R_a = 1.25$)	9 300 N
Electromagnetic base dimensions	80 mm × 160 mm × 36.5 mm 3.1” × 6.3” × 1.4”
Slider stroke	70 mm (2.8”)
Rotational speed under load	350 rpm
Rotational speed without load	580 rpm
Minimum workpiece thickness	6 mm (0.23”)
Protection class	I
Noise level	over 85 dB
Vibration level	under 2.5 m/s ² (≤ 8.2 ft/s ²)
Required ambient temperature	0–40 °C (32–104 °F)
Weight	13.5 kg (30 lbs)

GENERAL INFORMATION



1.3. Design



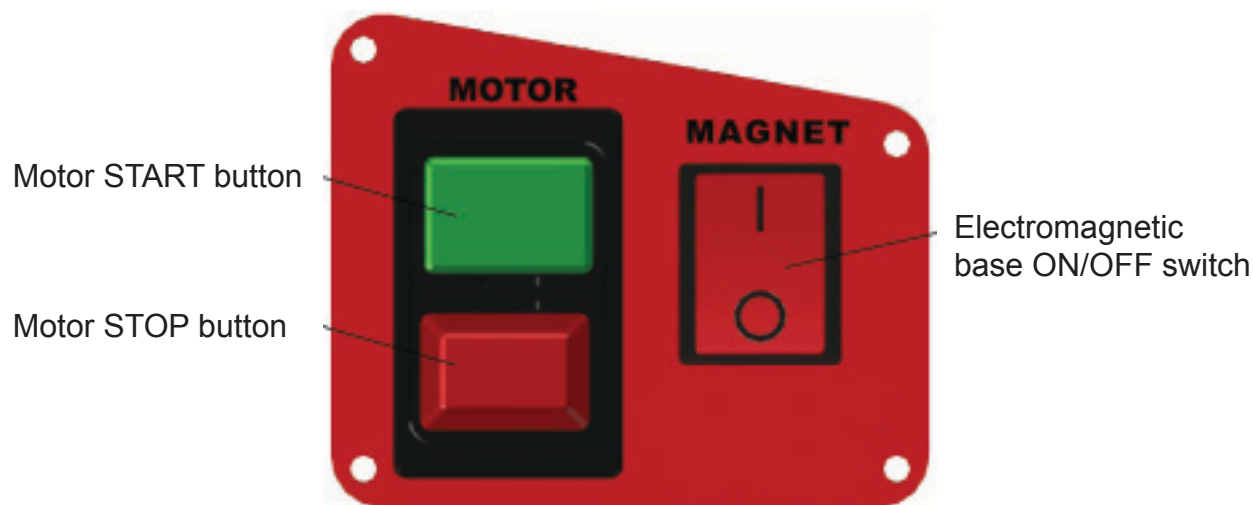


Figure 2. Control panel design

1.4. Equipemnt included

The PRO 35 AUTO is supplied in a metal box with complete standard equipment. The included equipment consists of:

- 1x Drilling machine
- 1x Metal box
- 2x Spoke handle
- 1x Cooling system bottle
- 1x Chip guard
- 1x Safety strap
- 1x 4mm hex wrench
- 1x Operator's manual

2. Safety instructions

1. Before beginning, read this Operator's Manual and complete proper occupational health and safety training.
2. The machine must be used only in applications specified in this Operator's Manual.
3. The machine must be complete and all parts must be genuine and fully operational.
4. The electrical supply specifications must conform to those specified on the rating plate.
5. The machine must be plugged into a properly grounded (earthed) socket-outlet. The electrical supply must be protected with a 16 A fuse for 230 V. When used on building sites, supply the machine through an isolation transformer made with class II protection only.
6. Never carry the machine by the cord or pull it to disconnect the plug from the power outlet as this may damage the power cord and result in electric shock.
7. Transport and position the machine using the carrying handle, with the magnet switch set to position 'O' (off).

SAFETY INSTRUCTIONS

8. Untrained bystanders must not be present in the vicinity of the machine.
9. Before beginning, check the condition of the machine and electrical supply, including the power cord, plug, control panel components, and cutters.
10. Keep the machine dry. Exposure to rain, snow, or frost is prohibited.
11. Never stay below the machine placed at heights.
12. Keep the work area well lit, clean, and free of obstacles.
13. Mount the annular cutter securely using the set screws. Remove adjusting keys and wrenches from the work area before connecting the plug to the power outlet.
14. Never use dull or damaged cutters.
15. Mount and dismount cutters using protective gloves and with the power cord unplugged from the power outlet.
16. Never use annular cutters without the pilot pin except when drilling incomplete through holes.
17. Mount only annular cutters with the maximum drilling diameter of 36 mm (1.42") and the maximum drilling depth of 55 mm (2.17").
18. Never use the machine in the vicinity of flammable liquids or gases, or in explosive environments.
19. Using the machine on surfaces that are rusty, covered with a thick paint layer, uneven, or not rigid is prohibited.
20. Use the safety strap in all operating positions. The strap must be tight and fastened to a securely fixed element either through the opening in the machine body or by catching the strap on 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. Check whether any part is cracked or improperly fitted. 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 operation. Do not wear loose clothing.
23. Proceed with caution when drilling plate with a thickness less than 10 mm (0.4") as the adhesion force depends on material thickness and is significantly lower for thin plate.
24. The entire surface of the electromagnetic base bottom must be in full contact with the workpiece. Before every positioning, wipe the workpiece with coarse-grained sandpaper.
25. Do not touch moving parts or chips formed during milling. Prevent objects from being caught in moving parts.
26. After every use, remove metal chips and excess coolant from the machine. Do not remove chips with bare hands.
27. Maintain the machine and tools with care. Cover steel parts with a thin grease layer to protect them against rust when not in use for any extended period.
28. Perform maintenance only with the machine unplugged from the power outlet.
29. All repairs must only be performed by an ITM approved repairer or service agent.
30. If the machine falls on from any height, is wet, or has any other damage that could affect the safe operation of the machine, stop the operation and immediately send the machine to the service centre for inspection and repair.
31. Never leave the machine unattended during operation.
32. Remove from the worksite and store in a secure and dry location, when not in use remove the cutter and pin from the arbor.

3. START UP AND OPERATION



All safety precautions must be adhered to.

3.1. Mounting and operating the annular cutter

Unplug the power cord from the power outlet and raise the motor by rotating the spoke handles clockwise (1, Figure 3). Insert the proper pilot pin into the annular cutter (2), then wear protective gloves and place the cutter into the arbor (3) in such a way to align the flats 4 with the set screws 5. Finally, tighten both set screws with the supplied 4 mm hex wrench. To remove the cutter, proceed in reverse order.

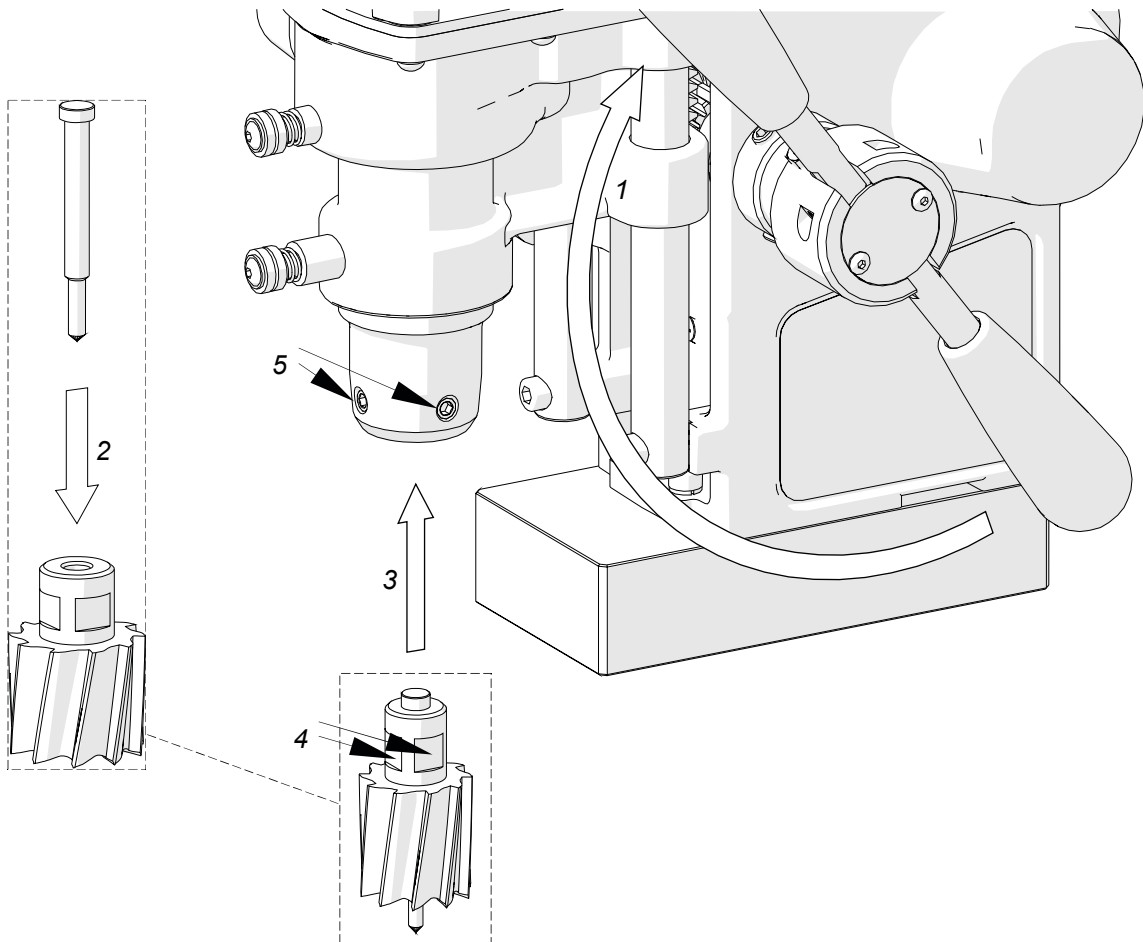


Figure 3. Mounting the annular cutter

START UP AND OPERATION

Figure 4 shows how annular cutters operate. As the cutter penetrates the workpiece, the pilot pin recesses into the arbor and tightens the spring. As a result, after the cutter goes through the entire thickness, the slug core is expelled from the cutter. The pilot pin also allows application of coolant to the inner surface of the annular cutter as it is depressed.

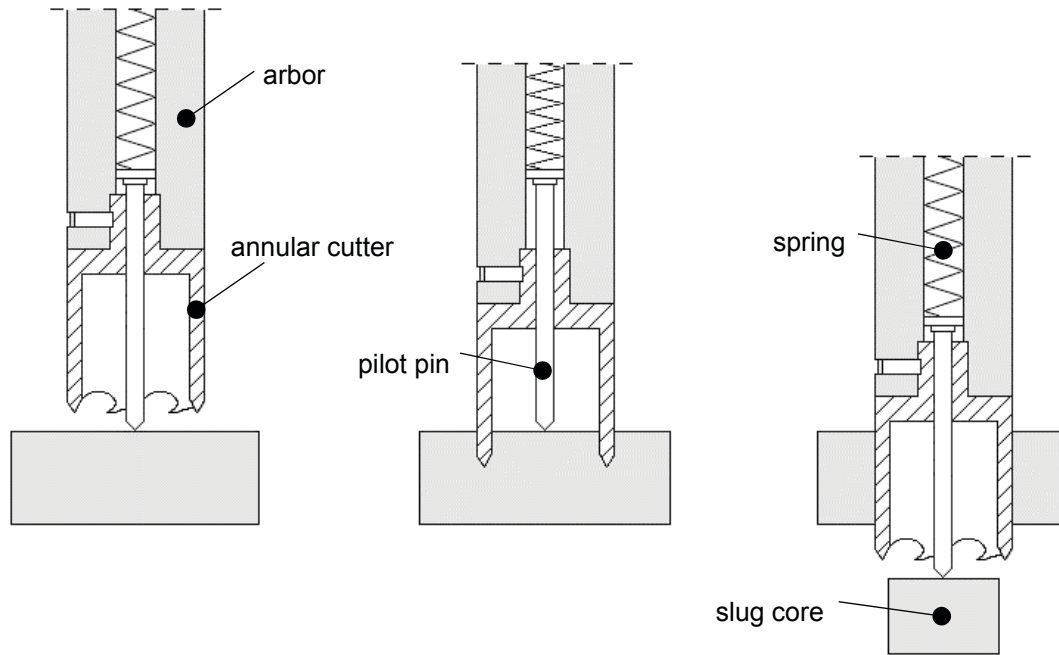


Figure 4. Annular cutters operation

Annular cutters are designed to establish only through holes shown in Figure 5. When drilling incomplete through holes the pilot pin must not be used.

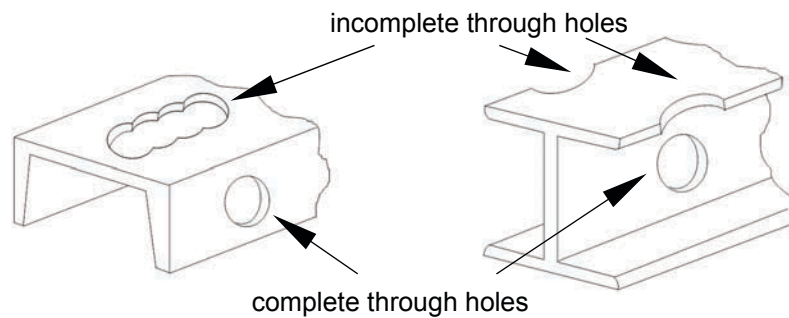


Figure 5. Types of holes drilled with annular cutters

3.2. Mounting and dismounting the cooling system bottle

Hang the cooling system bottle on the screws (1), (Figure 6) and attach the bottle hose to the coupling (2). Dismount in reverse order.

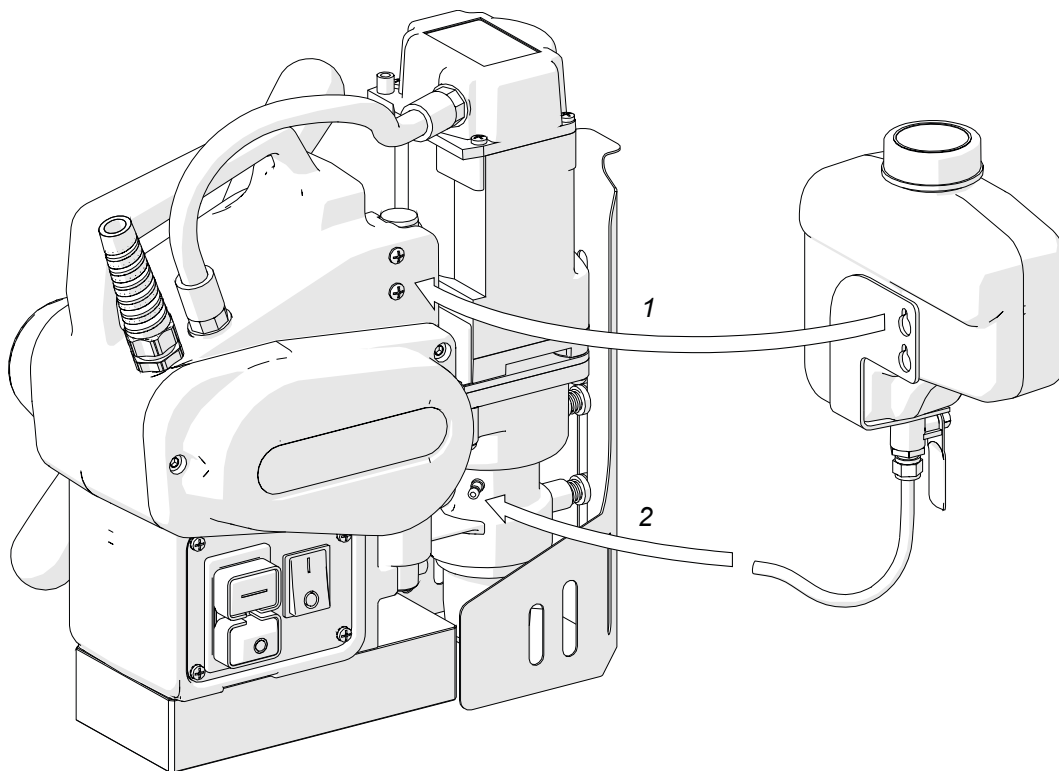


Figure 6. Mounting the cooling system bottle

3.3. Control system of the electromagnetic base holding force

The PRO 35 AUTO drilling machine incorporates a holding force control system to monitor the adhesion force of the electromagnetic base to the surface. The force value depends on several factors; such as type, thickness, flatness, and roughness of the surface, presence of paint, rust or other contaminants, supply voltage fluctuations, and the wear of the electromagnetic base bottom. With the motor off, the base provides a fraction of the maximum holding force. Once the motor is started, the holding force rises to the maximum.

If the holding force falls below a safe operating value, the control system will not allow the machine to operate. Additionally, the system will prevent the startup of the motor if the machine is placed on a surface thinner than 6 mm (0.23") as such thickness does not provide sufficient holding force. In such case, the adhesion force will be only about 25 % of the force attained on a standard 22 mm (0.87") flat plate.

If the motor does not continue operation after the green MOTOR button is pushed and released, it means that the control system is operating properly and preventing further drilling because of too low adhesion force.

Always ensure the entire surface of the magnet base is in contact with the steel workpiece.

3.4. Preparing

Before beginning, clean steel parts, especially the Weldon shank, from grease used to preserve the machine for storage and transport.

Mount the annular cutter into the arbor in the manner described in (3.1).

Position the machine on a flat ferromagnetic surface (some types of stainless and acid-proof steel do not conduct magnetic flux) with the thickness of at least 6 mm (0.23"). The workpiece must be clean, without rust or paint that decrease the holding force of the electromagnetic base.

Then, connect the drilling machine to the power outlet and enable the holding force of the electromagnetic base by toggling the MAGNET switch to position 'I' (on).

Protect the machine using the safety strap to prevent possible injury if the machine loses magnetic adhesion in case of a power loss. In order to do this, either mount the strap through the opening in the machine body (Figure 7a, 7b) or catch the strap on the carrying handle when working in horizontal position (Figure 7c). The strap must be tight, not twisted, and must be replaced every single time the machine hangs on the strap as a result of coming loose from steel. Never insert the strap into the buckle from the front (Figure 7d).

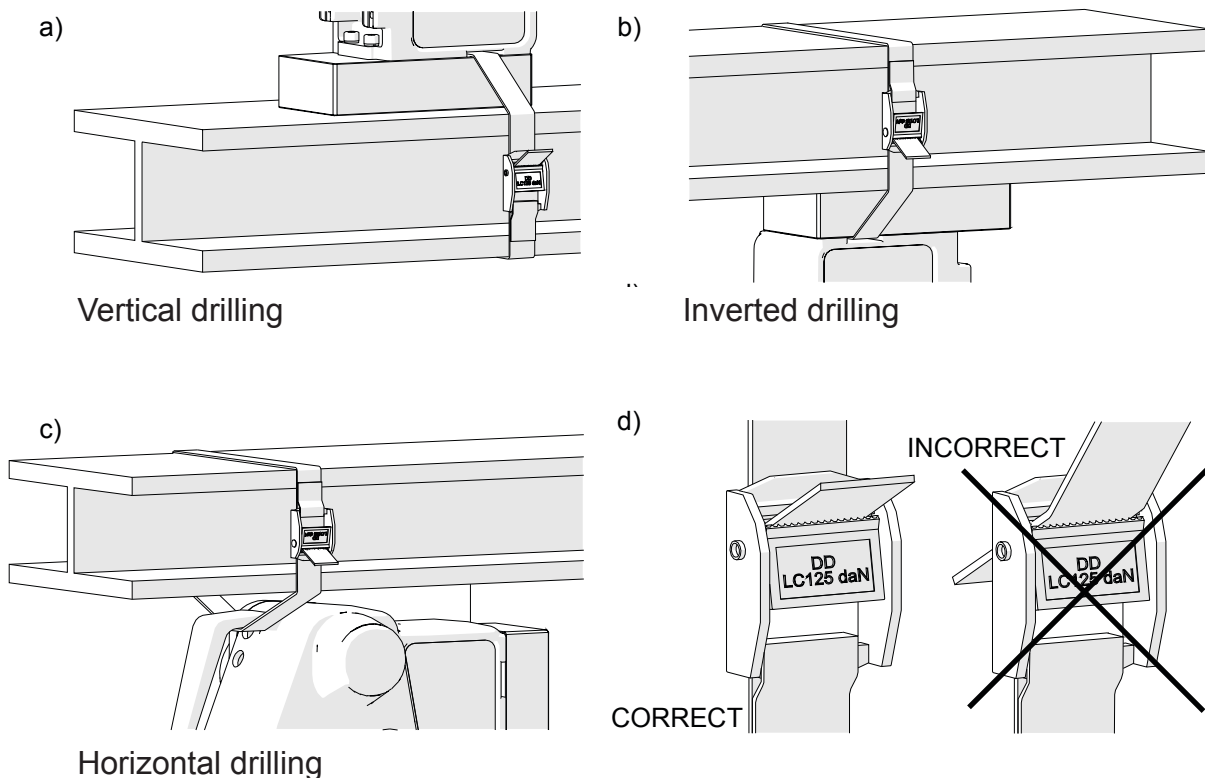


Figure 7. Securing the drilling machine using the safety strap

START UP AND OPERATION

When working in the position from Figure 7a, mount the cooling system bottle as described before and fill it with a cutting fluid. Do not use pure water as the cutting fluid. However, using emulsions formed from mixing water and drilling oil is satisfactory. To check the operation of the cooling system, slightly loosen the bottle cap, open the valve using the lever, and initially apply pressure on the pilot pin by rotating the spoke handles counterclockwise. The fluid should fill the system and should begin flowing from the inside of the cutter.



The cooling system works by means of gravitation, therefore use a cooling paste when working in horizontal or inverted positions.

Enter into manual feed mode by positioning the spoke handles as shown in Figure 8a, and rotate them counterclockwise to place the tip of the pilot pin above the drilling point.

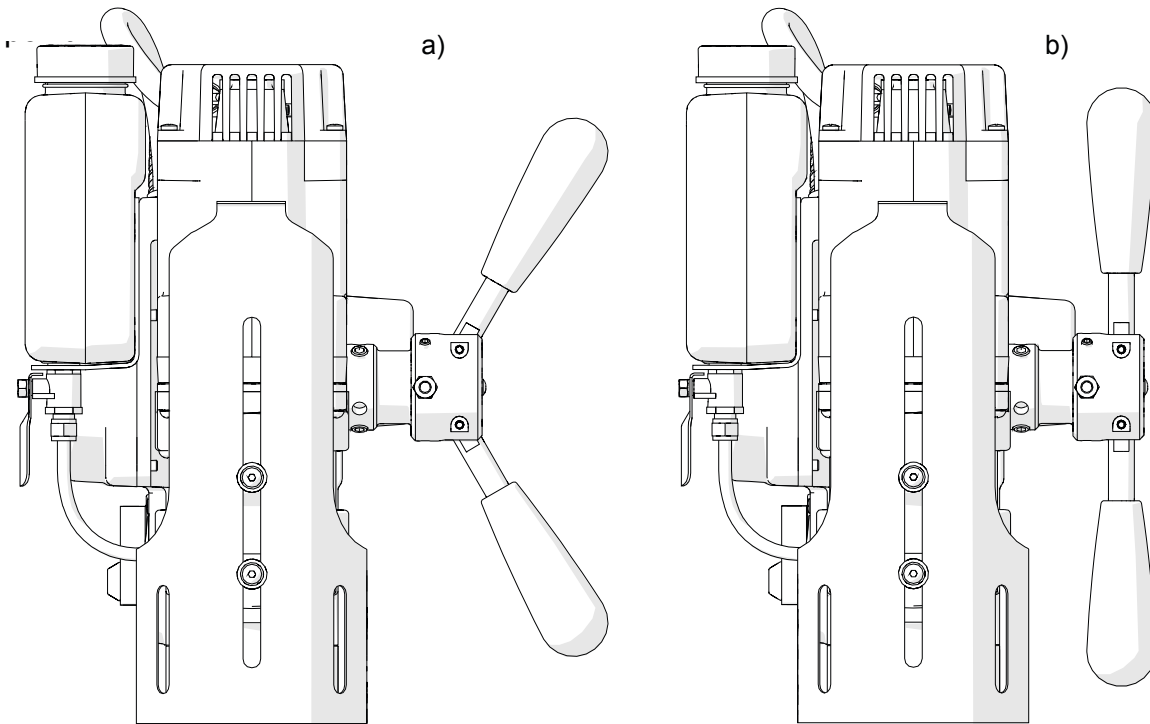


Figure 8. Configuration of the spoke handles: manual feed (a), automatic feed (b)

3.5. Drilling

Start the motor by pressing the green MOTOR button. Slowly rotate the spoke handles counterclockwise to bring the cutter close to the workpiece. Then, gently begin drilling and enter into the automatic feed mode by setting the spoke handles in the position shown in Figure 8b. The drilling machine will automatically detect the end of the drilling, which will stop the feed after the hole is accomplished, however, the motor will still be rotating.



When the cutter goes through the material, the slug core is expelled from the tool with a significant force.

Once the hole is accomplished, toggle the spoke handles into the manual feed mode (Figure 8a). Then, retract the cutter from the workpiece and stop the motor using the red MOTOR button. To move the machine to another drilling spot, first disable the electromagnetic base by toggling the MAGNET switch to position 'O' (off).

Once the work is finished, unplug the machine from the power outlet, clean chips and excess coolant from the machine and cutter, and remove the machine from the worksite.

Tighten the cap of the cooling system bottle, close the valve, and press the pilot pin to expel the coolant remaining within the system. Before inserting the drilling machine into the toolbox, disassemble the cooling system bottle and remove the cutter and pilot pin from the arbor using protective gloves.

3.6. Replacing the motor brushes

Check the condition of the carbon brushes every 100 operational hours. If the length of the brushes is less than 5 mm (0.2"), replace them with new ones. To do this, unplug the power cord from the power outlet, and unscrew four mounting screws (1), (Figure 9) to remove the motor cover (2). Then, unscrew the pressing plate (3), remove the brush holder (4) and the brush (5). Proceed as described also for the second brush located at the opposite side of the motor. To mount brushes, proceed in reverse order. After the replacement, run the motor without load for 20 minutes.

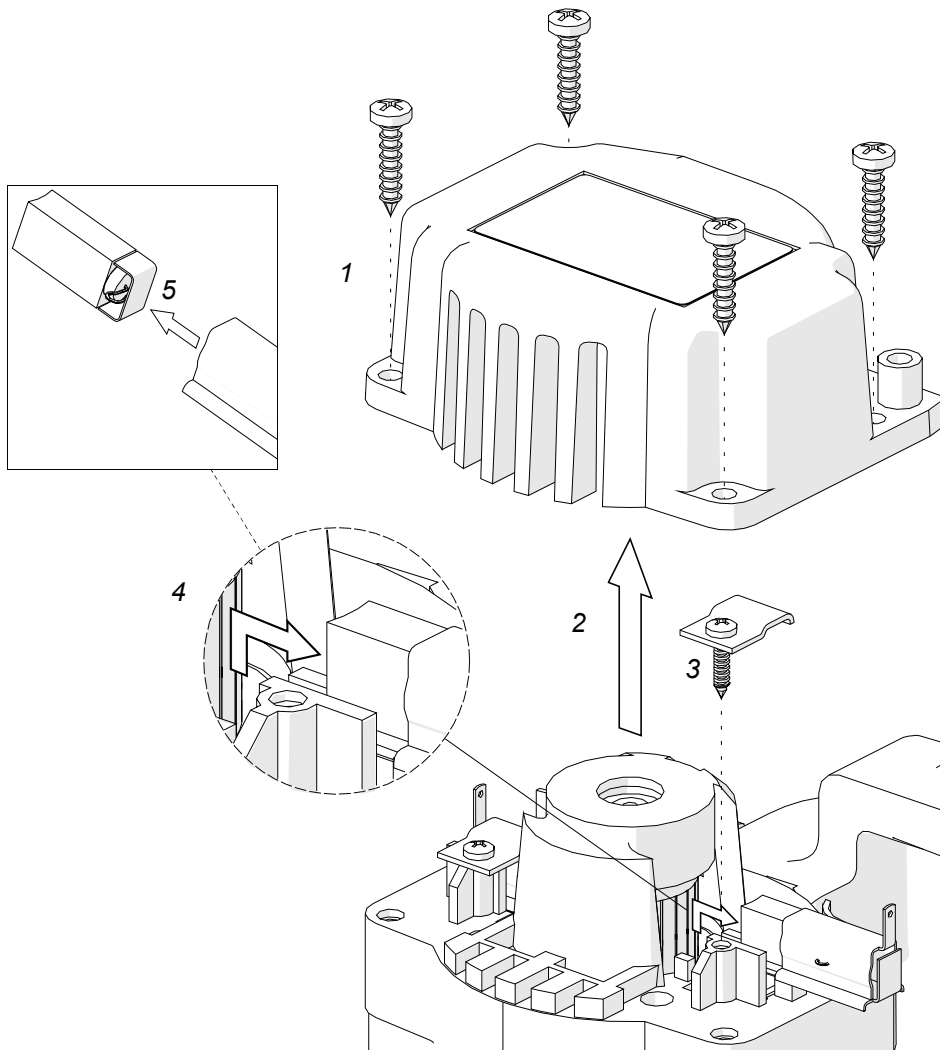


Figure 9. Replacing the brushes

HOLEMAKER ANNULAR CUTTER GUIDE

Cutter Type	Features	Diameter Available	Cut Depth Available	Applications
Silver Series Metric 	<ul style="list-style-type: none"> • M2AL High Speed Steel • Universal Shank • Multi-Cut Geometry • Step Hardened 	<ul style="list-style-type: none"> • 12 to 60mm Metric 	<ul style="list-style-type: none"> • 25mm & 50mm 	<ul style="list-style-type: none"> • General Purpose
Silver Series Imperial 	<ul style="list-style-type: none"> • M2AL High Speed Steel • Multi-Cut Geometry • Step Hardened 	<ul style="list-style-type: none"> • 7/16" to 2-1/4" Imperial 	<ul style="list-style-type: none"> • 1", 2" & 3" 	<ul style="list-style-type: none"> • General Purpose
Gold Series Metric 	<ul style="list-style-type: none"> • M2AL High Speed Steel • Titanium Nitride Coated • Universal Shank • Multi-Cut Geometry • Step Hardened 	<ul style="list-style-type: none"> • 12 to 60mm Metric 	<ul style="list-style-type: none"> • 25mm, 50mm & 75mm 	<ul style="list-style-type: none"> • General Purpose
Super-Cut 	<ul style="list-style-type: none"> • Made In U.S.A • Highest Quality • M2 High Speed Steel • Multi-Cut Geometry 	<ul style="list-style-type: none"> • 12 to 60mm Metric • 7/16" to 2-1/2" Imperial 	<ul style="list-style-type: none"> • 25mm, 50mm & 75mm • 1", 2" & 3" 	<ul style="list-style-type: none"> • General Purpose
Super-Cut TiCN 	<ul style="list-style-type: none"> • Titanium Carbon Nitride Coated • Made In U.S.A • M2 High Speed Steel • Multi-Cut Geometry 	<ul style="list-style-type: none"> • 12 to 32mm Metric 	<ul style="list-style-type: none"> • 25mm & 50mm 	<ul style="list-style-type: none"> • Stainless Steel • Cast Iron
Super-Cut M42 Cobalt 	<ul style="list-style-type: none"> • M42 High Speed Steel • 8% Cobalt • Titanium Nitride Coated • Made In U.S.A • Multi-Cut Geometry 	<ul style="list-style-type: none"> • 1/2" to 1" Imperial 	<ul style="list-style-type: none"> • 1" 	<ul style="list-style-type: none"> • Truck Chassis • Hardened Steels
Super-Cut M42 Chassis 	<ul style="list-style-type: none"> • Stack Ground Geometry • M42 High Speed Steel • 8% Cobalt • Titanium Nitride Coated • Made In U.S.A 	<ul style="list-style-type: none"> • 1/2" to 1" Imperial 	<ul style="list-style-type: none"> • 1" 	<ul style="list-style-type: none"> • Truck Chassis • Multi-Layered Steel
Pro-Cut 	<ul style="list-style-type: none"> • ASP Powder Steel • Multi-Cut Geometry • Incredible Performance 	<ul style="list-style-type: none"> • 12 to 22mm Metric 	<ul style="list-style-type: none"> • 25mm & 50mm 	<ul style="list-style-type: none"> • Rail Line • Hard Materials • Stainless Steel • Wear Plate
Maxi-Cut 	<ul style="list-style-type: none"> • Tungsten Carbide Tipped • Increased Resistance to Breakage • Multi-Cut Geometry 	<ul style="list-style-type: none"> • 14 to 150mm Metric • 5/8" to 2-3/8" Imperial 	<ul style="list-style-type: none"> • 50mm, 75mm & 100mm 	<ul style="list-style-type: none"> • Large Diameters • Stainless Steel • Hard Materials • Wear Plate
Maxi-Rail 	<ul style="list-style-type: none"> • Tungsten Carbide Tipped • Increased Resistance To Breakage • Multi-Cut Geometry 	<ul style="list-style-type: none"> • 18 to 35mm Metric 	<ul style="list-style-type: none"> • 25mm 	<ul style="list-style-type: none"> • Rail Line • Hard Materials • Wear Plate