

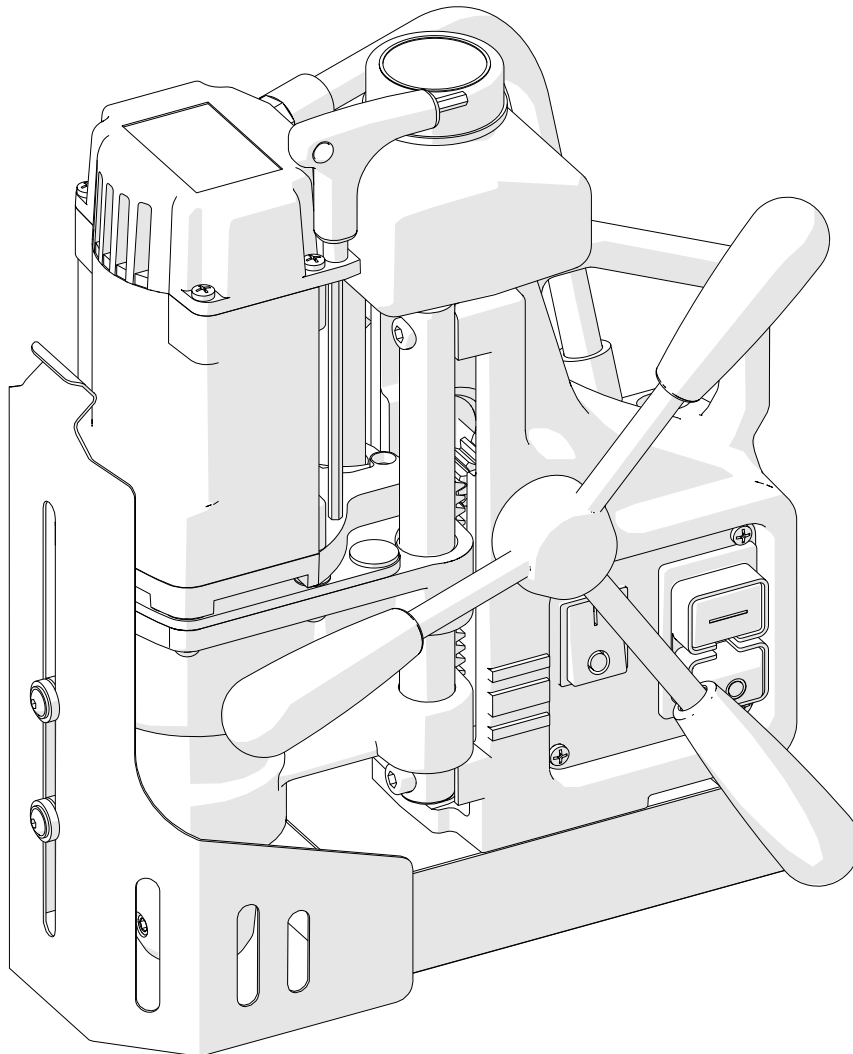


The tools of innovation.

OPERATOR'S MANUAL

D1

DRILLING MACHINE WITH ELECTROMAGNETIC BASE



15335 E. Fremont Drive, Centennial, CO 80112

1-87STEELMAX, FAX 303-690-9172

www.steelmax.com sales@steelmax.com

Contents

1. GENERAL INFORMATION	3
1.1. Application	3
1.2. Technical data.....	3
1.3. Equipment included	4
1.4. Dimensions	5
1.5. Design	5
2. SAFETY PRECAUTIONS.....	6
3. STARTUP AND OPERATION	8
3.1. Installing, removing, and operating the annular cutter	8
3.2. Installing and removing the cooling system bottle	10
3.3. Control system of the electromagnetic base holding force	11
3.4. Preparing	11
3.5. Drilling.....	13
3.6. Replacing the motor brushes	14
4. ACCESSORIES	15
4.1. Pressure cooling system	15
4.2. Pipe attachment DMP 251	15
5. WIRING DIAGRAM	16
6. EXPLODED DRAWINGS AND PARTS LIST.....	17
7. DECLARATION OF CONFORMITY	21
8. QUALITY CERTIFICATE.....	22
9. WARRANTY CARD.....	23

1. GENERAL INFORMATION

1.1. Application

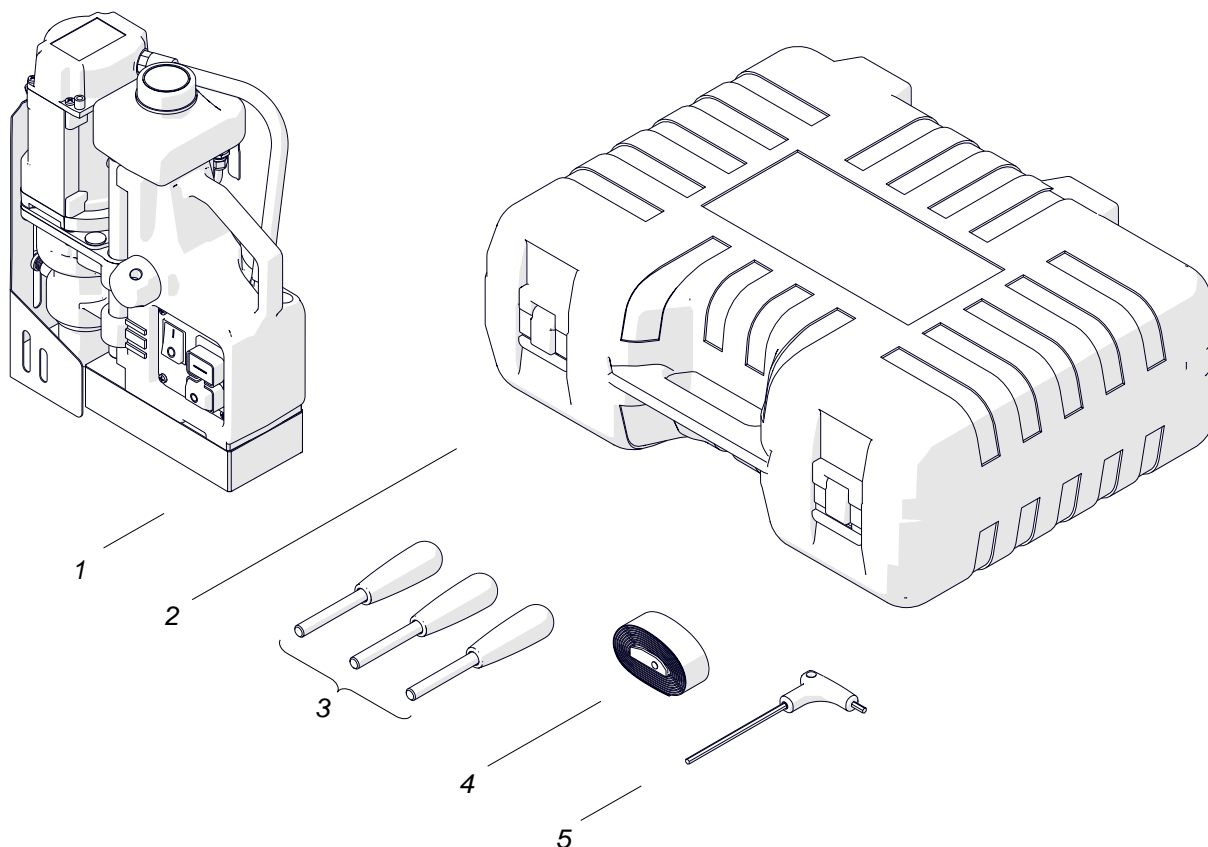
The D1 is a drilling machine with electromagnetic base, designed to drill holes with diameters of up to 36 mm (1-7/16") to a depth of up to 51 mm (2") by using annular cutters.

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

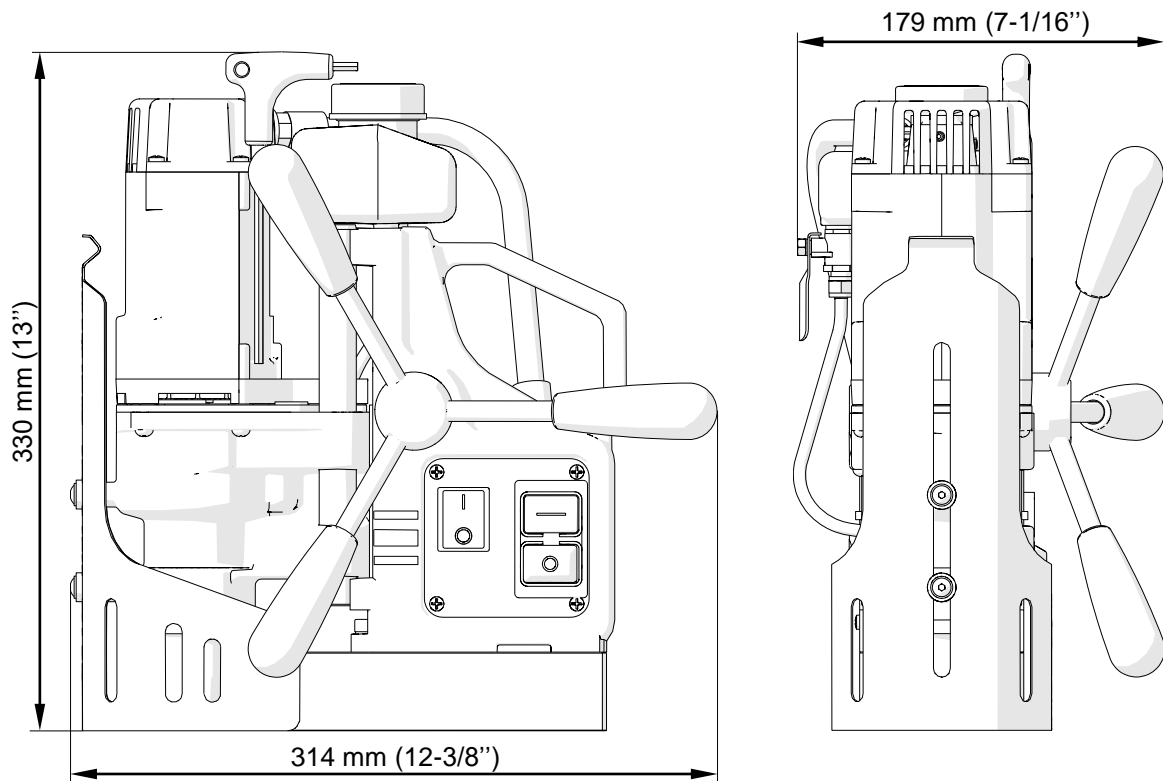
Voltage	1~ 110–120 V, 50–60 Hz 1~ 220–240 V, 50–60 Hz
Total power	1000 W
Motor power	920 W
Tool holder	19 mm Weldon (3/4")
Maximum drilling diameter	36 mm (1-7/16")
Maximum drilling depth	51 mm (2")
Electromagnetic base holding force (surface with the thickness of 22 mm and roughness $R_a = 1.25$)	9 000 N (2000 lbs)
Electromagnetic base dimensions	80 mm × 160 mm × 38 mm 3-1/8" × 6-5/16" × 1-1/2"
Stroke	70 mm (2-3/4")
Rotational speed under load	350 rpm
Minimum workpiece thickness	6 mm (1/4")
Protection class	I
Noise level	More than 85 dB
Required ambient temperature	0–40°C (32–104°F)
Weight	10 kg (22 lbs)

1.3. Equipment included

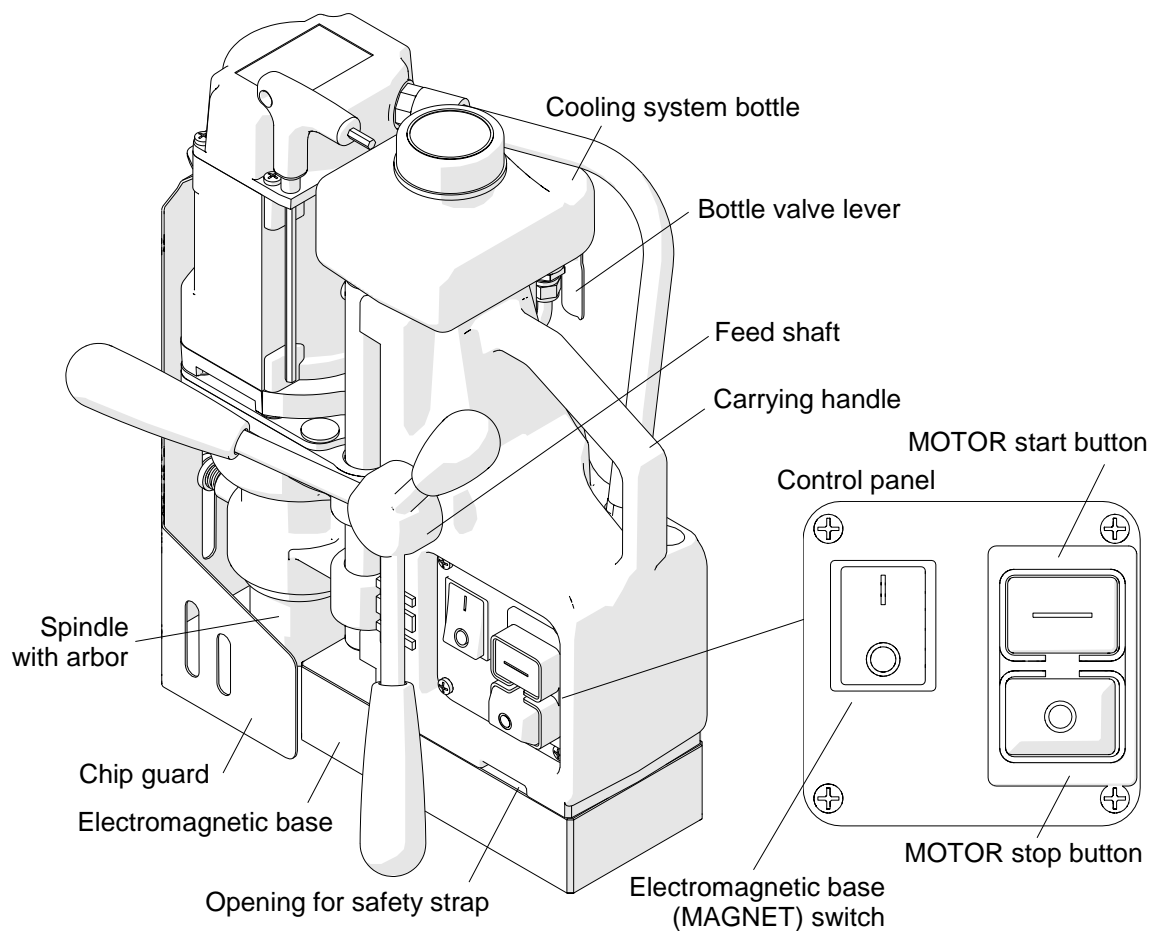


1	Drilling machine with cooling system bottle and chip guard	1 unit
2	Plastic box	1 unit
3	Handle	3 units
4	Safety strap	1 unit
5	4 mm hex wrench with handle	1 unit
–	Operator's Manual	1 unit

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 because this may damage it 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 components, and cutters.
10. Keep the machine dry, and 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 tools 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 make holes which 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 rusty, covered with paint, uneven, or not rigid.

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 or to the carrying handle when working in horizontal position. 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 work. Do not wear loose clothing.
23. Proceed with caution when drilling in plates with a thickness less than 10 mm (3/8") because the holding force depends on material thickness and is much lower for thin plates.
24. The whole bottom of the electromagnetic base 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. Prevent anything from being caught in moving parts.
26. After every use, remove chips and excess coolant from the machine and tool. 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 tools 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 that could affect the technical state of the machine, stop the work and promptly send the machine to the service center for inspection and repair.
31. Never leave the machine unattended during work.
32. Remove from the worksite and store in a secure and dry place when not in use, previously removing the cutter and pilot pin from the arbor.

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, insert the proper pilot pin into the annular cutter (2), and 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, and 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.

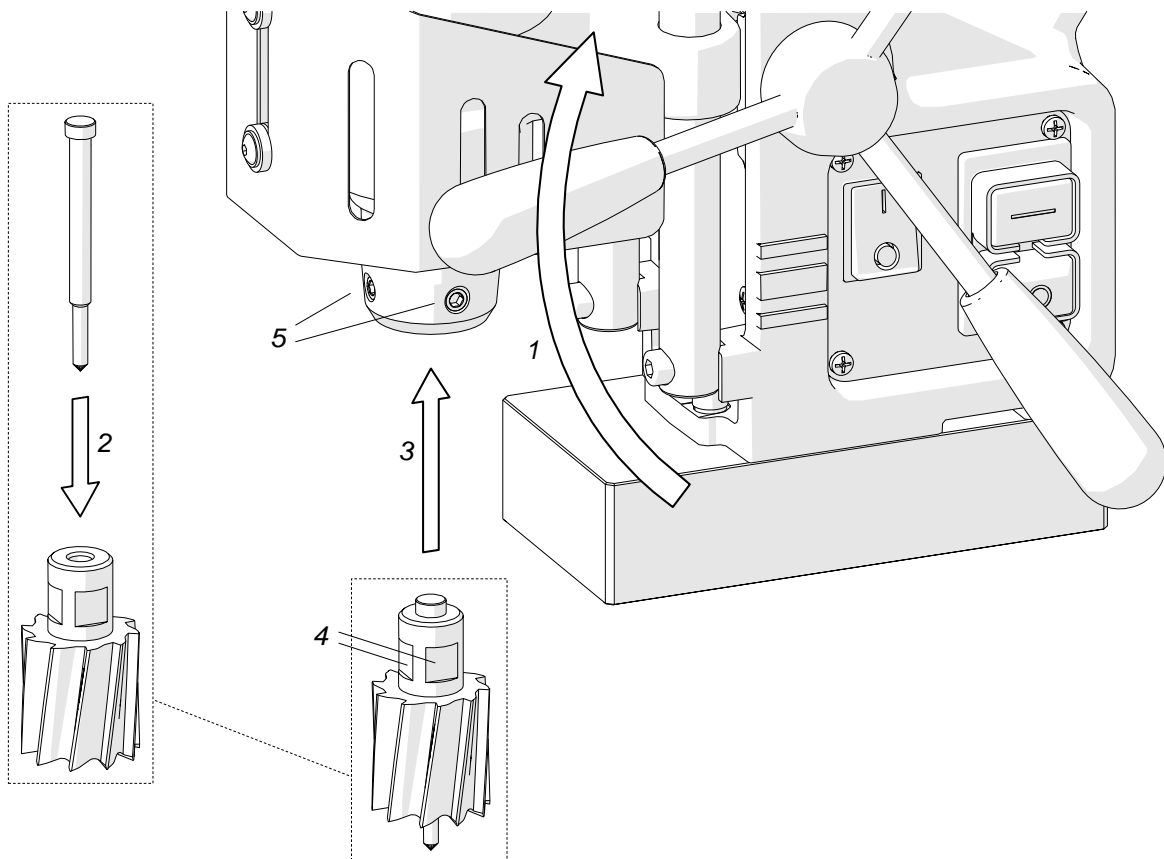


Fig. 1. Installing the annular cutter

Fig. 2 shows how annular cutters work. As the cutter drills into the workpiece, the pilot pin retracts and tightens the spring. As a result, after the cutter drills through the material, the slug core is expelled from the cutter. Also, when pressed, the pilot pin allows application of coolant to the inside of the cutter.

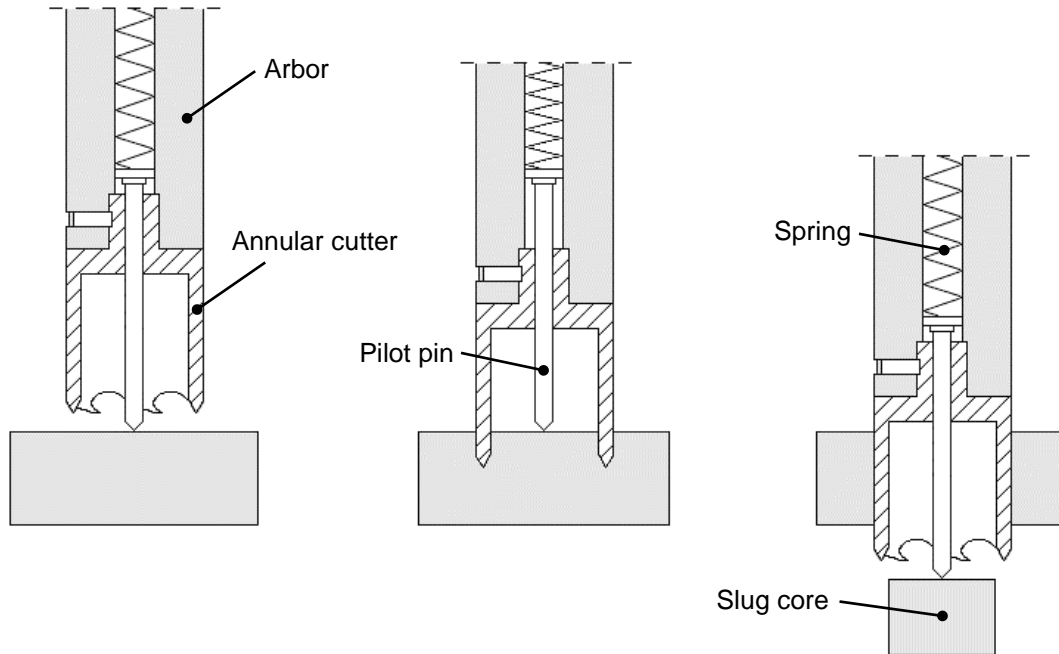


Fig. 2. Annular cutters work

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.

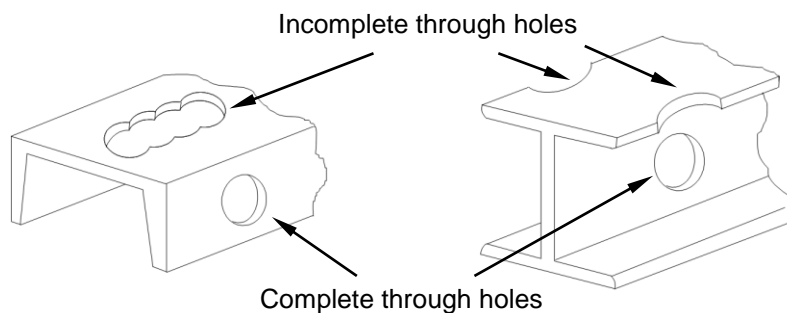


Fig. 3. Types of holes to drill with annular cutters

3.2. Installing and removing the cooling system bottle

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

Before removing the bottle, detach the hose from the fitting, and raise the motor.

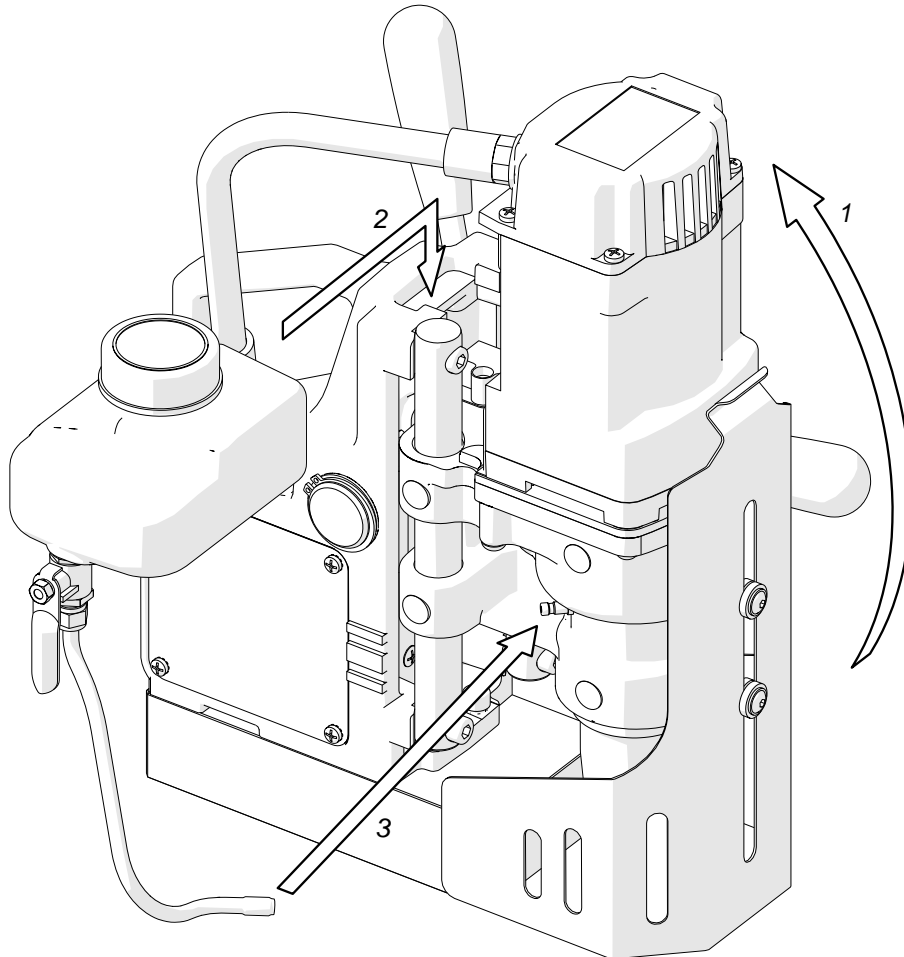


Fig. 4. Installing the cooling system bottle

3.3. Control system of the electromagnetic base holding force

The drilling machine includes a holding force control system to monitor the clamping 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 dirt, fluctuations of supply voltage, and the wear of the electromagnetic base bottom.

If the holding force falls below a safe work value, the control system will not allow the machine to work. Also, the system will prevent the startup of the motor on a surface thinner than 5 mm (3/16") because such thickness does not provide enough holding force. In such a case, the holding force will be only about 25% of the force attained on a standard 22-mm (7/8") flat plate.

If the motor does not continue work after the green MOTOR button is pressed and released, it means that the control circuit is working properly and preventing further drilling because the holding force is too low. Drilling on thin plates is possible, but in such cases the green MOTOR button must be continuously held.

3.4. 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. To allow working in places hard to reach or using the machine by a left-handed person, the feed shaft can be installed so that the handles are on the opposite side of the machine.

Select the proper annular cutter based on the hole size desired. Next, use a clean and dry cloth to wipe the arbor and cutter, and 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 clean, without rust, paint, or chips that decrease the holding force. 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 is not able to 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) or to the carrying handle when working in horizontal position (Fig. 5c). 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 (Fig. 5d).

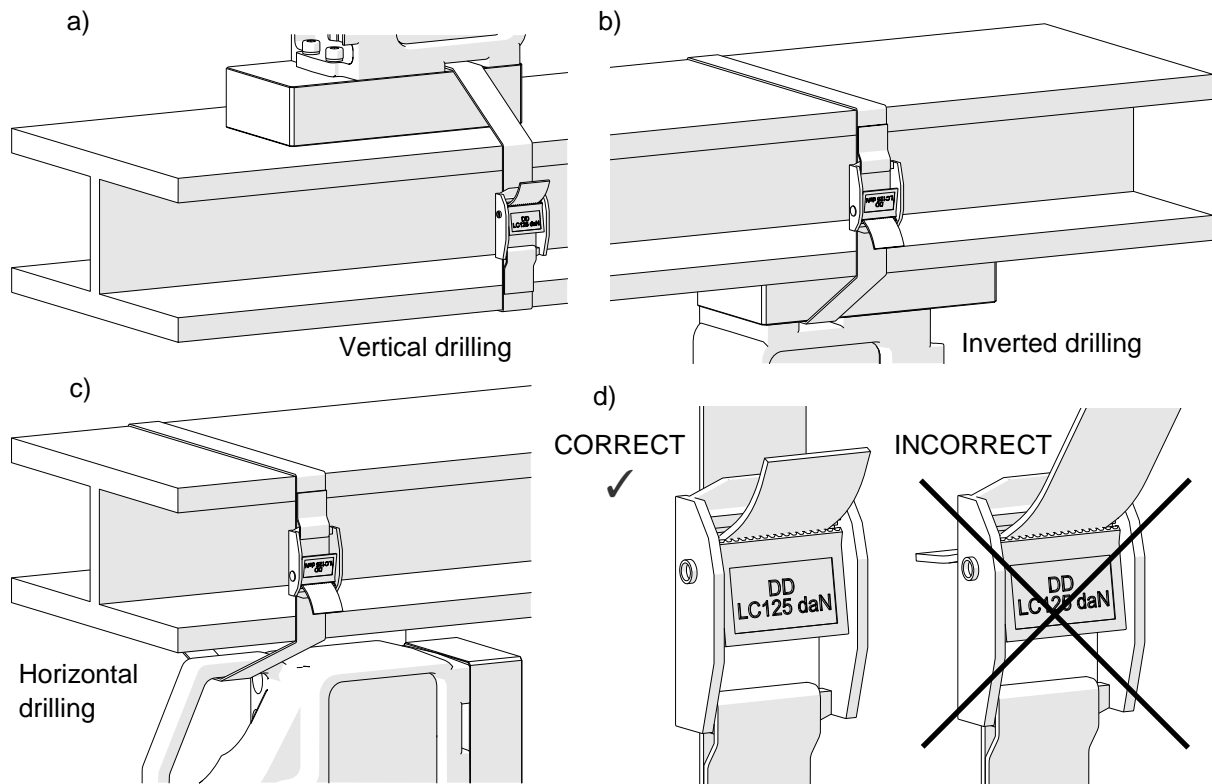


Fig. 5. Protecting the machine from falling by using the safety strap

Rotate the handles to the left to place the tool 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 from water and drilling oil is adequate. To check the operation of the cooling system, slightly loosen the bottle cap, use the lever to open the valve, and then 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 inside of the cutter.

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

3.5. Drilling

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



After the annular cutter drills through the material, the slug core is expelled with a large force.

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 automatically stop. In such a case, to restart the machine, retract the cutter from the workpiece, and then press the green MOTOR button (the electromagnetic base must remain powered).

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 drilling spot, set the MAGNET switch to 'O' to turn off the electromagnetic base.

After the work is finished, unplug the machine from the power source, 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 expel the coolant remaining within the cooling system. Before inserting the machine into the box, wear gloves to remove the cutter from the arbor.

3.6. 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. After the replacement, run the motor without load for 20 minutes.

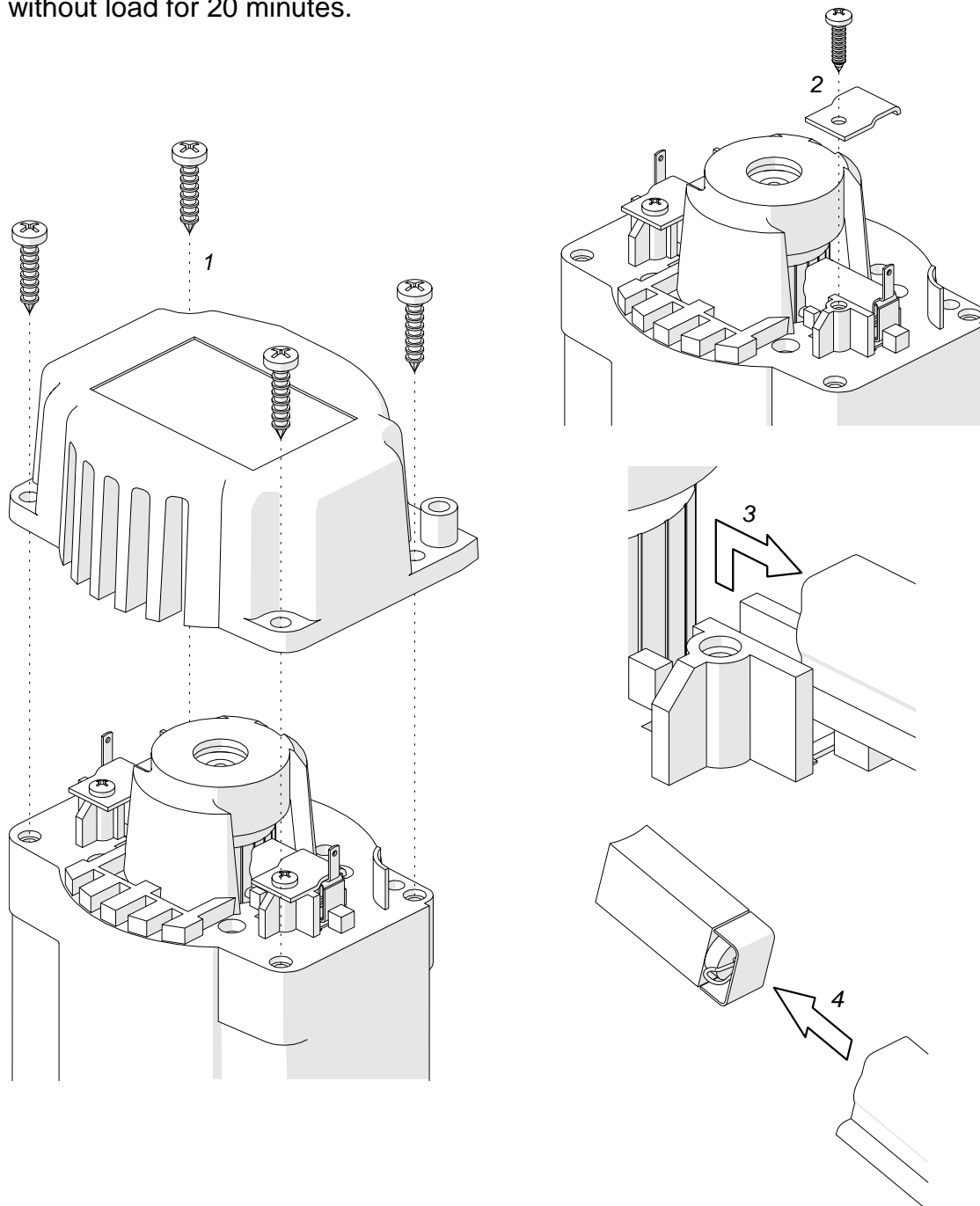


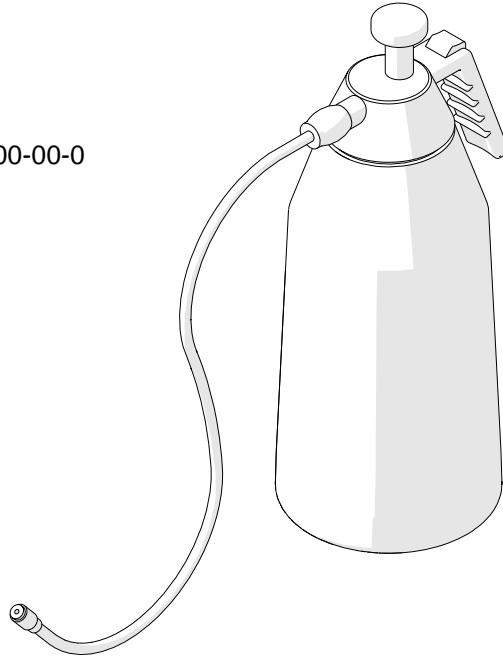
Fig. 6. Replacing the brushes

4. ACCESSORIES

4.1. Pressure cooling system

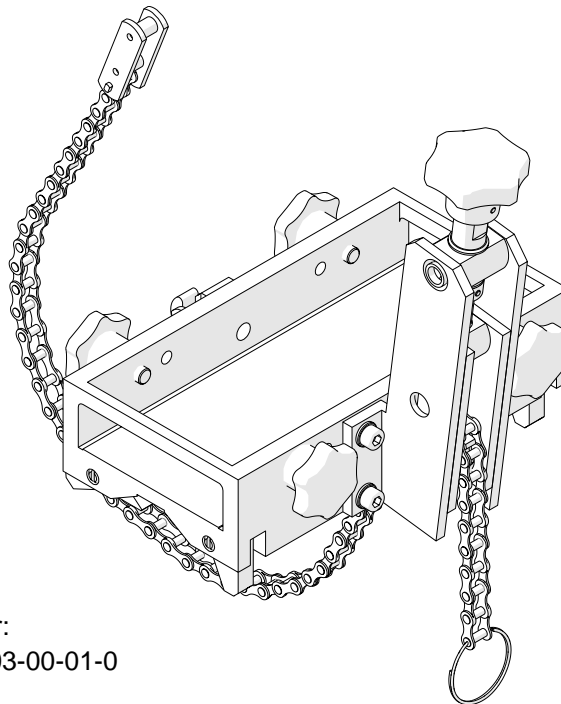
Capacity of 2 liters.

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



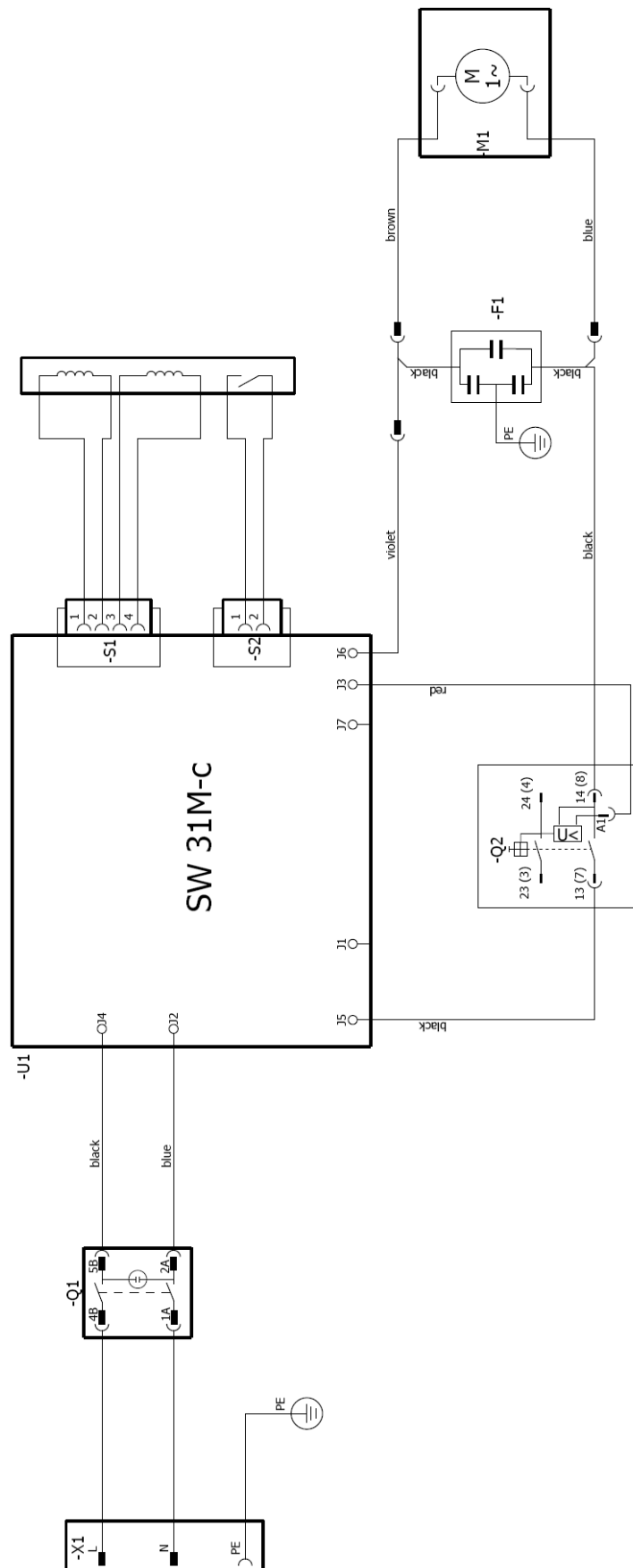
4.2. Pipe attachment DMP 251

Designed for pipes with diameters of 80–250 mm (3–10"). Internal dimensions: 95 mm × 211 mm (3-3/4" × 8-5/16").

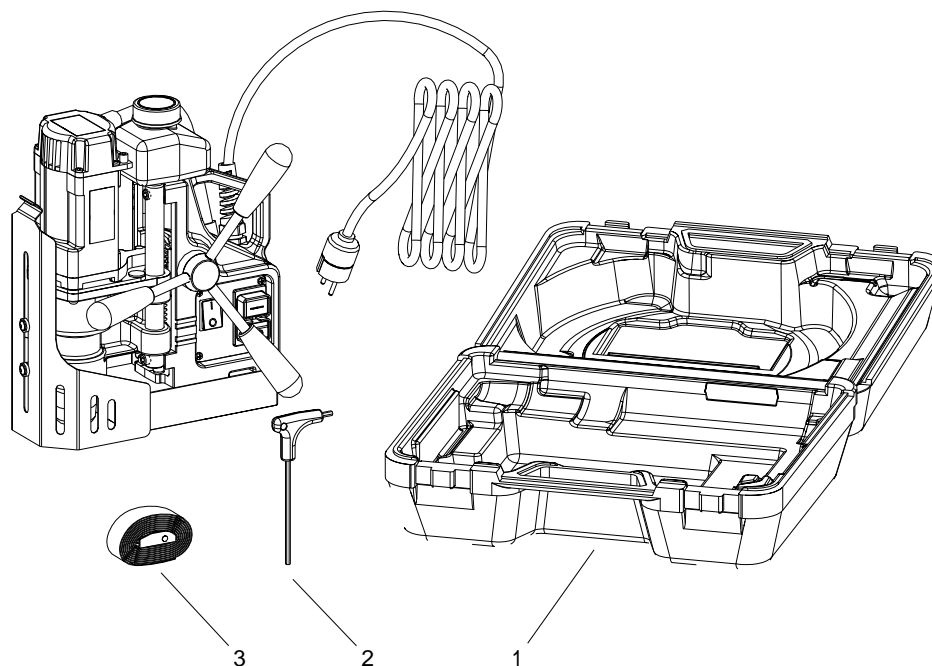


Part number:
PDS-0110-03-00-01-0

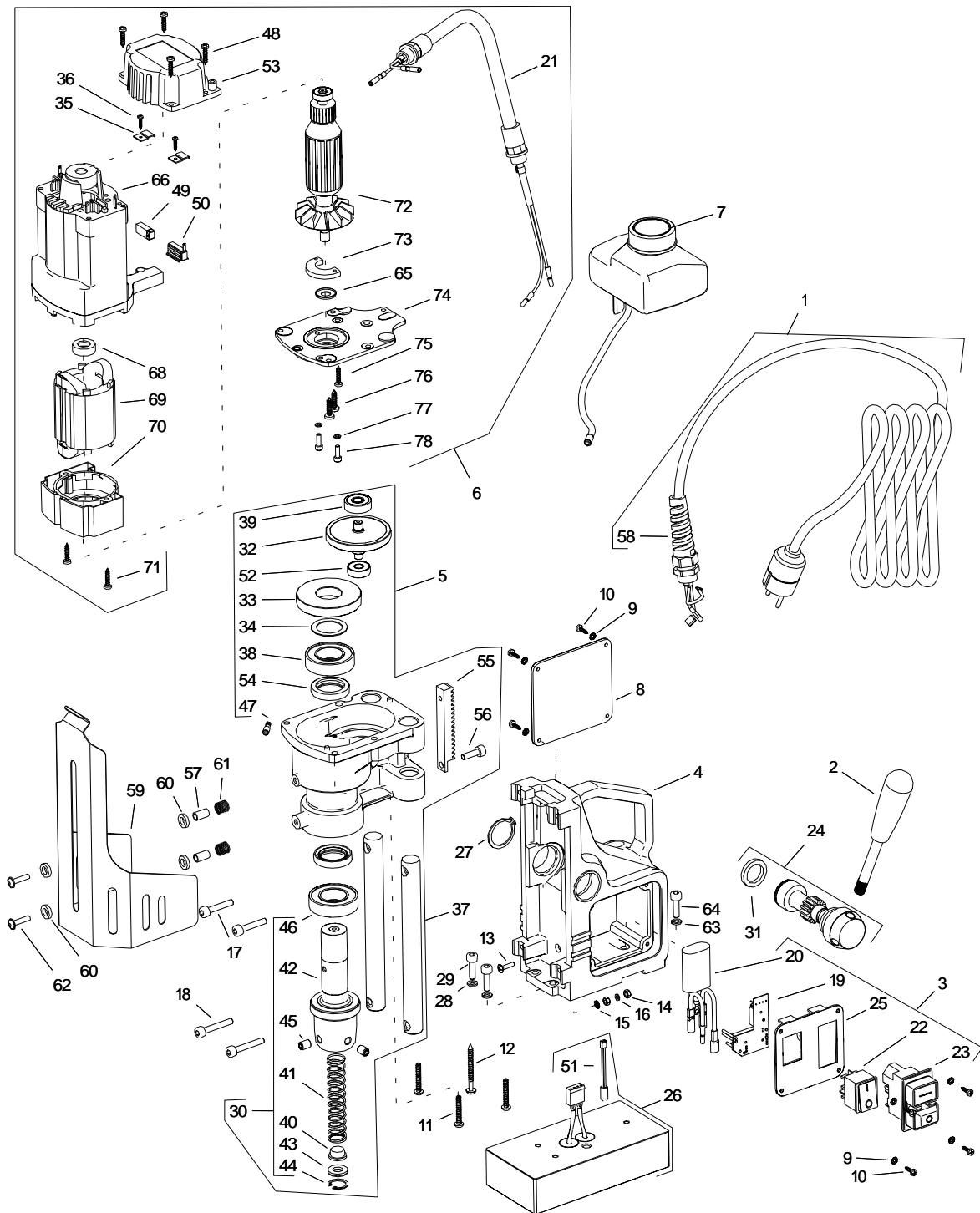
5. WIRING DIAGRAM



6. EXPLODED DRAWINGS AND PARTS LIST



ITEM	PART NUMBER	DESCRIPTION	Q-TY
1	SKR-000010	PLASTIC BOX	1
2	KLC-000036	4 MM HEX WRENCH WITH HANDLE	1
3	PAS-000007	SAFETY STRAP 250	1



ITEM	PART NUMBER	DESCRIPTION	Q-TY
1	SZN-0212-10-02-00-2	POWER CORD 230V 3x1.5 WITH STRAIN RELIEF ASSY (EU)	1
1	SZN-0212-10-02-00-1	POWER CORD 230V 3x1 WITH STRAIN RELIEF ASSY (AU)	1
1	SZN-0075-00-51-00-5	POWER CORD 120V 3x2.08 WITH STRAIN RELIEF ASSY (US)	1
1	PWD-0212-10-02-00-6	POWER CORD 230V 3x1.5 WITH STRAIN RELIEF ASSY (INDIA)	1
2	DZW-0212-12-00-00-0	SPOKE HANDLE WITH KNOB ASSY	3
3	PNL-0300-04-00-08-1	CONTROL PANEL ASSY 230V	1
3	PNL-0300-04-00-08-0	CONTROL PANEL ASSY 120V	1
4	KRP-0440-01-01-00-3	BODY ASSY	1
5	RDK-0440-02-00-00-3	GEARBOX ASSY	1
6	SLN-0440-03-00-00-5	MOTOR ASSY 230V	1
6	SLN-0440-03-00-00-3	MOTOR ASSY 120V	1
7	UKL-0440-05-00-00-1	COOLANT BOTTLE ASSY	1
8	SCN-0440-07-00-00-0	BODY COVER	1
9	PDK-000161	EXTERNAL TOOTH LOCK WASHER 3.7	8
10	WKR-000415	CROSS RECESSED PAN HEAD SELF-TAPPING SCREW 3.5x13	8
11	WKR-000302	SELF-TAPPING SCREW 5x30	3
12	WKR-000237	SELF-TAPPING SCREW 5x50	1
13	WKR-000112	CROSS RECESSED OVAL COUNTERSUNK HEAD SCREW M4x16	1
14	NKR-000013	HEX NUT M4	2
15	PDK-000060	EXTERNAL TOOTH LOCK WASHER 4.3	1
16	PDK-000043	SPRING WASHER 4.1	1
17	SRB-000118	HEX SOCKET HEAD CAP SCREW M6x30	2
18	SRB-000123	HEX SOCKET HEAD CAP SCREW M6x35	2
19	STR-0257-04-10-00-5	ELECTRONIC CONTROLLER SW 31M-C 230V	1
19	STR-0257-04-10-00-4	ELECTRONIC CONTROLLER SW 31M-C 120V	1
20	FLT-0257-04-12-00-1	INTERFERENCE ELIMINATOR	1
21	PWD-0440-03-01-00-0	MOTOR CORD ASSY	1
22	PNK-000013	MAGNET SWITCH	1
23	WLC-000007	START-STOP SWITCH 230V	1
23	WLC-000005	START-STOP SWITCH 120V	1
24	WLK-0271-01-02-00-1	PINION SHAFT ASSY	1
25	MSK-0300-04-01-00-1	PANEL PLATE ASSY	1
26	PDS-0440-06-00-00-0	ELECTROMAGNETIC BASE	1
27	PRS-000019	EXTERNAL RETAINING RING 28z	1
28	PDK-000046	SPRING WASHER 6.1	2
29	SRB-000114	HEX SOCKET HEAD CAP SCREW M6x20	2
30*	WRZ-0272-02-02-00-0	SPINDLE ASSY	1
31	PRS-000259	SEAL	1
32	WLK-0271-02-03-00-1	PINION SHAFT ASSY	1
33*	KOL-0271-02-05-00-1	GEAR z52	1
34*	PRS-0271-02-06-00-0	DISTANCE RING	1
35	PLY-0271-03-07-00-0	BRUSH HOLDER PRESSURE PLATE	2
36	WKR-000326	CROSS RECESSED COUNTERSUNK HEAD SHEET METAL SCREW 2.9x13	2
37	PRT-0440-02-02-00-1	GUIDE	2
38*	LOZ-000047	BALL BEARING 25x47x12	1
39	LOZ-000072	BALL BEARING 9x26x8	1
40	WYP-0139-00-02-00-1	PLUNGER	1
41	SPR-0271-02-02-03-0	SPRING	1
42*	KRP-0272-02-02-01-0	SPINDLE BODY	1
43	USZ-0279-02-01-06-0	SEAL	1
44	PRS-000009	INTERNAL RETAINING RING 19w	1

ITEM	PART NUMBER	DESCRIPTION	Q-TY
45	WKR-000059	HEX SOCKET SET SCREW WITH FLAT POINT M8x10	2
46*	LOZ-000048	BALL BEARING 25x47x12	1
47	KNC-0234-00-10-00-0	HOSE FITTING	1
48	WKR-000241	SELF-TAPPING SCREW 4x20	4
49	SCZ-000008	MOTOR BRUSH 6x9x17	2
50	SCT-0271-03-06-00-0	BRUSH HOLDER	2
51	WZK-0242-04-00-00-0	REED RELAY WIRES SET ASSY	1
52	LOZ-000053	BALL BEARING 8x22x7	1
53	PKR-0440-03-02-00-1	MOTOR COVER	1
54*	PRS-000070	SEAL 25x37x7	2
55	LST-0271-02-01-02-1	GEAR RACK	1
56	SRB-000111	HEX SOCKET HEAD CAP SCREW M6x18	1
57	TLJ-0399-06-00-00-0	BOTTOM SLEEVE	2
58	DLW-000007	CABLE GLAND WITH STRAIN RELIEF PG11	1
59	OSL-0440-04-00-00-2	CHIP GUARD ASSY	1
60	PDK-000151	NYLON WASHER 8.1x14x3	4
61	SPR-000030	PUSH SPRING	2
62	WKR-000395	HEX SOCKET ROUND HEAD SCREW WITH FLANGE M5x20	2
63	PDK-000176	EXTERNAL TOOTH LOCK WASHER 6.3	1
64	SRB-000113	HEX SOCKET HEAD CAP SCREW M6x20	1
65	USZ-000055	SEAL	1
66	OBD-0272-03-01-01-1	FILED FRAME	1
68	WKL-000001	BEARING INSERT 19x7.5	1
69	STN-000004	STATOR 220V	1
69	STN-000002	STATOR 120V	1
70	OSL-0271-03-01-02-0	FAN GUARD	1
71	WKR-000241	SCREW FOR PLASTIC 4x20	1
72	WRN-000017	ROTOR 220V	1
72	WRN-000016	ROTOR 120V	1
73	PRS-0271-03-02-02-1	GEARBOX COVER RING	1
74	PKR-0272-03-02-01-2	GEARBOX COVER	1
75	WKR-000083	CROSS RECESSED PAN HEAD TAPPING SCREW	1
76	WKR-000081	CROSS RECESSED PAN HEAD SELF-TAPPING SCREW 4.8x19	2
77	PDK-000042	SPRING WASHER 4.1	2
78	SRB-000062	HEX SOCKET HEAD CAP SCREW M4x12	2
–	SMR-000001	GREASE	0.055 kg (2 oz)

* before you order read the service manual

7. DECLARATION OF CONFORMITY

EC Declaration of Conformity

We

***PROMOTECH sp. z o.o.
ul. Elewatorska 23/1
15-620 Białystok
Poland***

declare with full responsibility that:

D1 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:

Marek Siergiej, ul. Elewatorska 23/1, 15-620 Białystok, Poland



Białystok, 11 March 2016

Marek Siergiej
CEO

8. QUALITY CERTIFICATE

Machine control card

D1 Drilling Machine with Electromagnetic Base

Serial number

Spindle radial runout.....

Slide to base travel perpendicularity

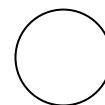
Spindle axis to base perpendicularity

Electromagnetic base holding force.....
(surface with the thickness of 22 mm and roughness $R_a \leq 1.25$)

Electric test

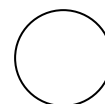
Type of test	Result	Name of tester
Insulation electrical strength test (1000 V, 50 Hz)	 Date
Continuity test of the protective earth system Ω Signature

Quality control



Adjustments, inspections

Quality control



9. WARRANTY CARD

WARRANTY CARD No.....

..... in the name of Manufacturer warrants the D1 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.....

1.03 / 17 May 2017

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