

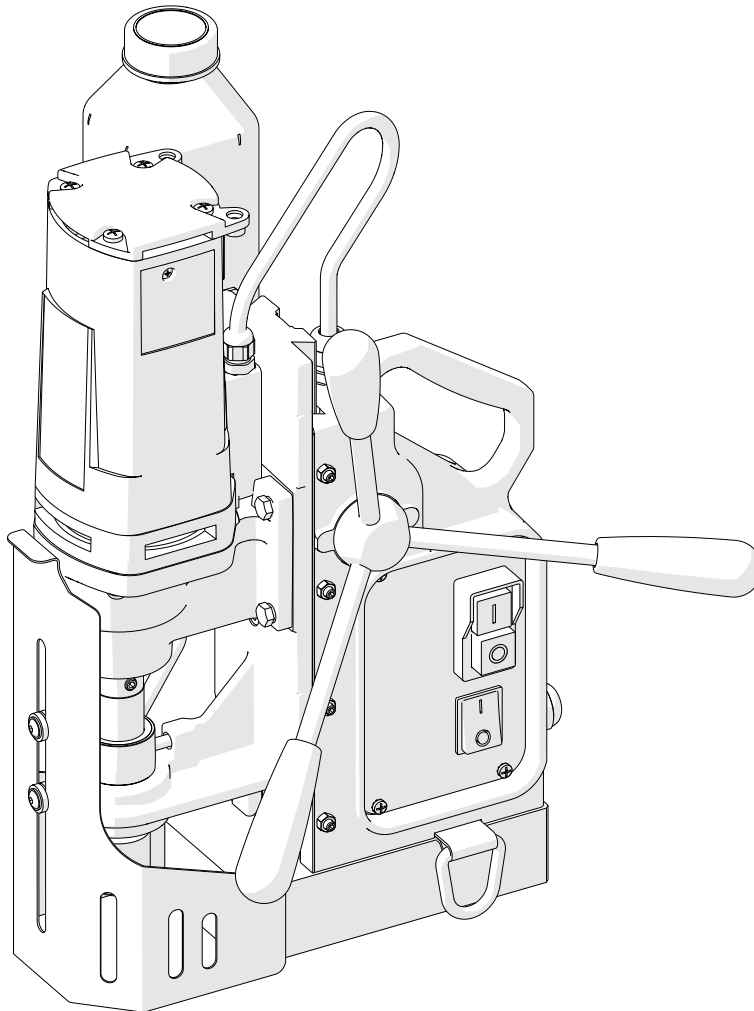


The tools of innovation.

## OPERATOR'S MANUAL

### D1 PRO

### DRILLING MACHINE WITH ELECTROMAGNETIC BASE



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## 1. GENERAL INFORMATION

### 1.1. Application

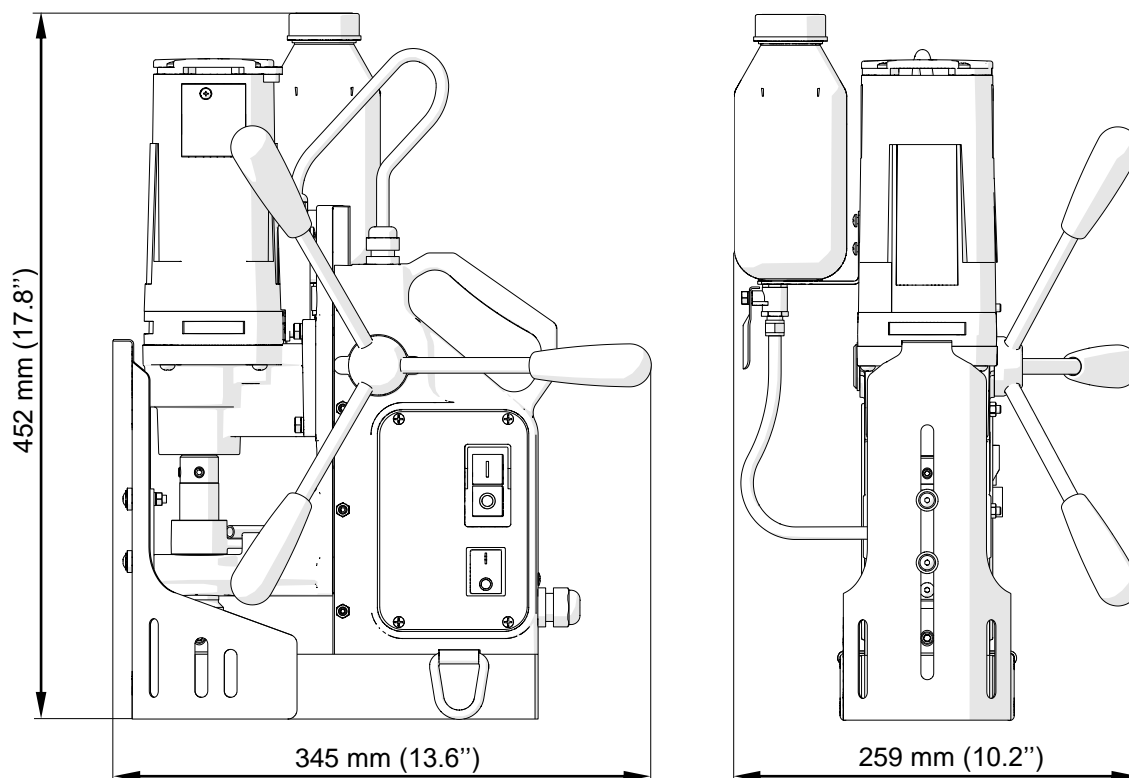
The D1 PRO is a drilling machine with electromagnetic base, designed to drill holes either with diameters of up to 40 mm (1.57") to a depth of up to 51 mm (2") using annular cutters or with diameters of up to 16 mm (0.63") to a depth of up to 51 mm (2") using twist drill bits.

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 chain protects the machine from dropping in case of a power loss.

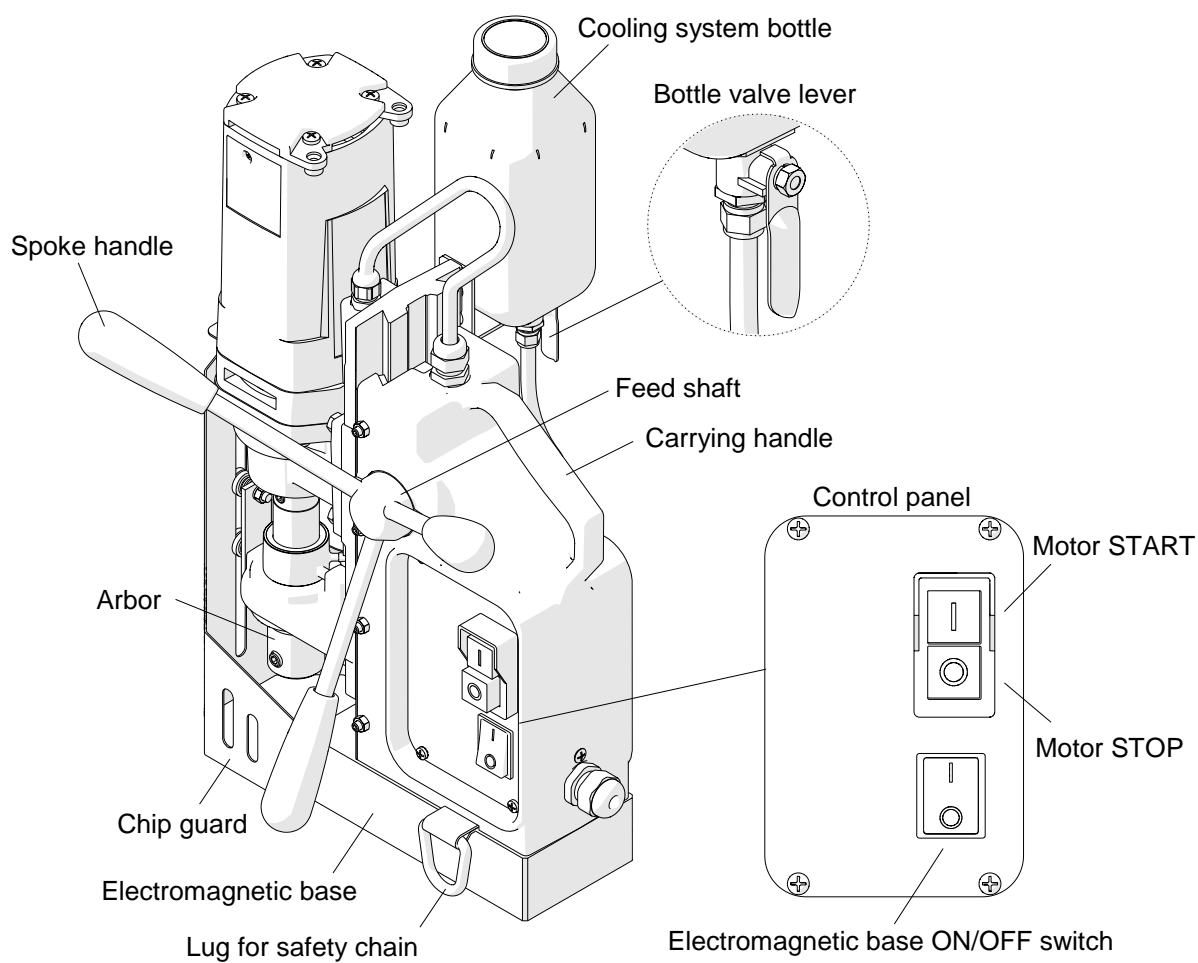
Accessories allow, for instance, quick changing of tools, using twist drill bits, or drilling in pipes.

### 1.2. Technical data

Voltage	1~ 110–120 V, 50–60 Hz 1~ 220–240 V, 50–60 Hz
Total power	1100 W
Motor power	1020 W
Spindle shank	14.28 mm Weldon (9/16")
Tool holder	19 mm Weldon (3/4")
Maximum drilling diameter with annular cutter	40 mm (1.57")
Maximum drilling diameter with twist drill bit	16 mm (0.63")
Maximum drilling depth	51 mm (2")
Electromagnetic base holding force (surface with the thickness of 22 mm and roughness $R_a = 1.25$ )	9 800 N
Electromagnetic base dimensions	84 mm × 168 mm × 41.5 mm 3.3" × 6.6" × 1.6"
Stroke	124 mm (4.9")
Rotational speed under load	440 rpm
Minimum workpiece thickness	3/8" (9.5 mm)
Protection class	I
Noise level	More than 85 dB
Required ambient temperature	0–40°C (32–104°F)
Weight	12 kg (26 lbs)



### 1.3. Design



**Fig. 1.** View of the D1 PRO

## 1.4. Equipment included

The D1 PRO is supplied including the following elements.

Drilling machine (including arbor with 19 mm Weldon tool holder)	1 unit
Metal box	1 unit
Spoke handle	3 unit
Cooling system	1 unit
1 m (3 ft) safety chain	1 unit
2.5 mm hex wrench	1 unit
3 mm hex wrench	1 unit
4 mm hex wrench	1 unit
8 mm combination wrench	1 unit
Tool can	1 unit
Operator's Manual	1 unit

## **2. SAFETY PRECAUTIONS**

1. Before beginning, 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 operational.
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 using the carrying handle and only when the magnet switch is set to the position 'O'.
8. Untrained bystanders must not be present near the machine.
9. Before beginning, make sure that the correct is the condition of the machine, power source, power cord, plug, control panel components, and tools.
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. Install the tools securely by tightening them using set screws. Remove adjusting keys and wrenches from the work area before connecting the machine to the power source.
14. Never use cutters that are dull or damaged.
15. Do not make holes whose diameter or depth differ from those specified in the technical data.
16. Install and remove tools using protective gloves and only when the power cord is unplugged from the power source.
17. Never use annular cutters without a pilot pin except when drilling incomplete through holes. Never use arbors without a spring.
18. Never use near 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.

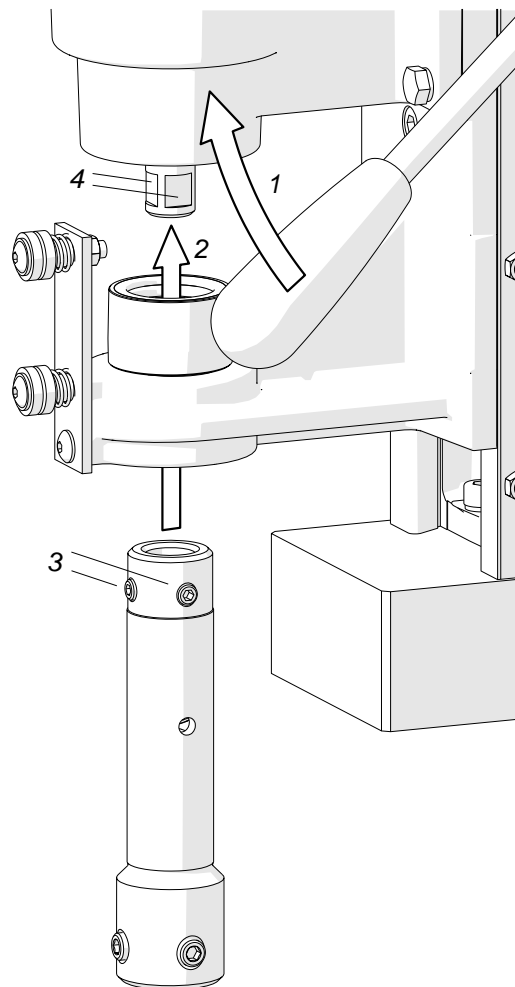
20. Do not start operation if the gib clearance is excessive.
21. Use the safety chain in all operating positions. Attach the machine to a fixed structure by fastening the chain to the lugs or the carrying handle. The chain must not be loose. Wrap the chain around the workpiece if possible.
22. Before 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.
23. Always use eye and hearing protection and protective clothing during operation. Do not wear loose clothing.
24. Proceed with caution when drilling plates with a thickness less than 10 mm (0.4") because the holding force depends on material thickness and is significantly lower for thin plates.
25. The entire bottom of the electromagnetic base must be in full contact with the workpiece. Before every positioning, wipe the workpiece with coarse-grained sandpaper.
26. Do not touch moving parts or chips formed during milling. Prevent objects from being caught in moving parts.
27. After every use, remove metal chips and excess coolant from the machine. Do not remove chips with bare hands.
28. Cover steel parts with a thin anti-corrosion coating to protect the machine from rust when not in use for any extended period.
29. Maintain the machine and install/remove parts and tools only when the machine is unplugged from the power source.
30. Repair only in a service center appointed by the seller.
31. 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 operation and immediately send the machine to the service center for inspection and repair.
32. Never leave the machine unattended during operation.
33. Remove from the worksite and store in a secure and dry location when not in use, previously removing the tool from the holder.

### 3. STARTUP AND OPERATION

#### 3.1. Installing and removing the arbor

Unplug the machine from the power source, and then rotate the spoke handles to the right (1, Fig. 2) to raise the motor. Use a clean and dry cloth to wipe the spindle and arbor. Next, place the arbor onto the spindle in such a way (2) to align the set screws 3 with the flats 4, and then use the 3 mm hex wrench to tighten both set screws.

To remove the arbor, loosen the screws 3 using the 3 mm hex wrench.



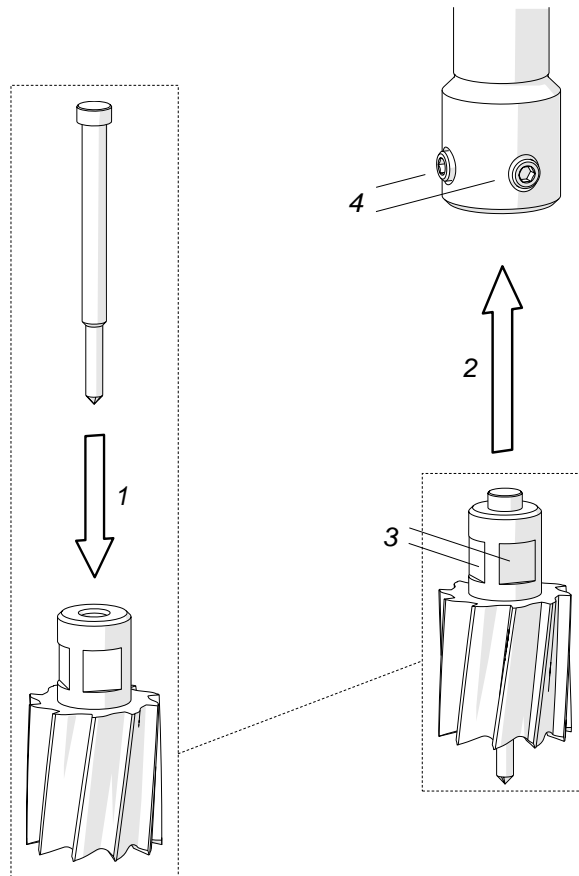
**Fig. 2.** Installing the arbor



### 3.2. Installing, removing, and operating the annular cutter

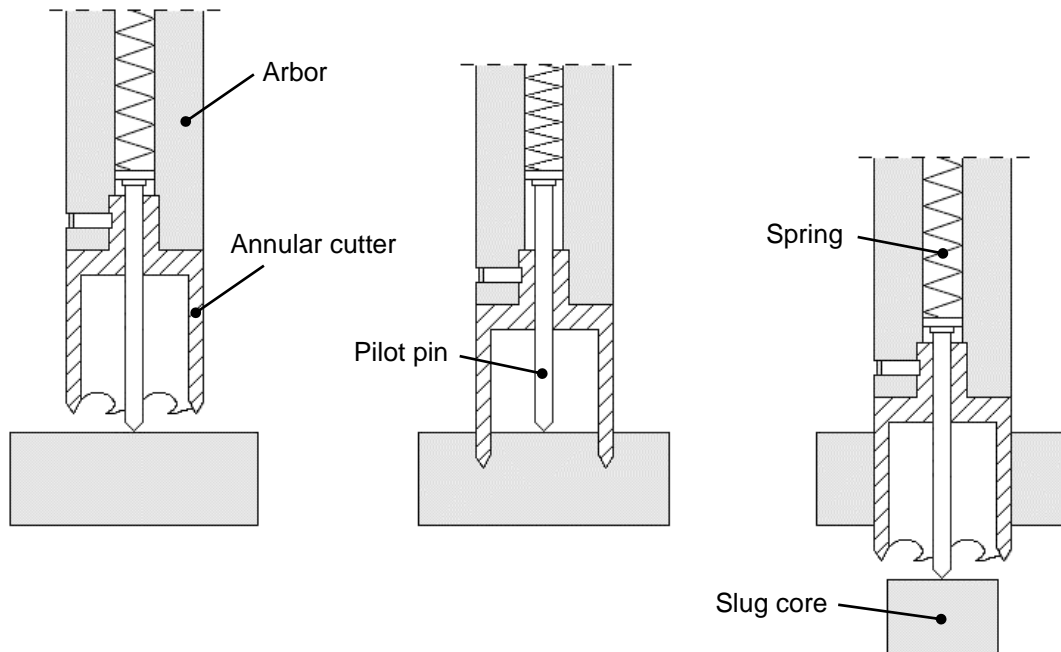
Install the arbor as described before, wear protective gloves, and then insert the proper pilot pin into the annular cutter (1, Fig. 3). Use a clean and dry cloth to wipe the cutter. Next, place the cutter into the arbor (2) in such a way to align the flats 3 with the set screws 4, and then use the 4 mm hex wrench to tighten both set screws.

To remove the cutter, loosen the screws 4 using the 4 mm hex wrench.



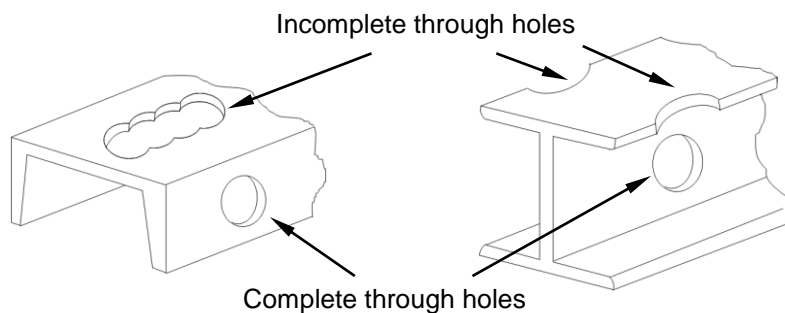
**Fig. 3.** Installing the annular cutter

Fig. 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. When pressed, the pilot pin also allows application of coolant to the inner surface of the annular cutter.



**Fig. 4.** Annular cutters operation

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

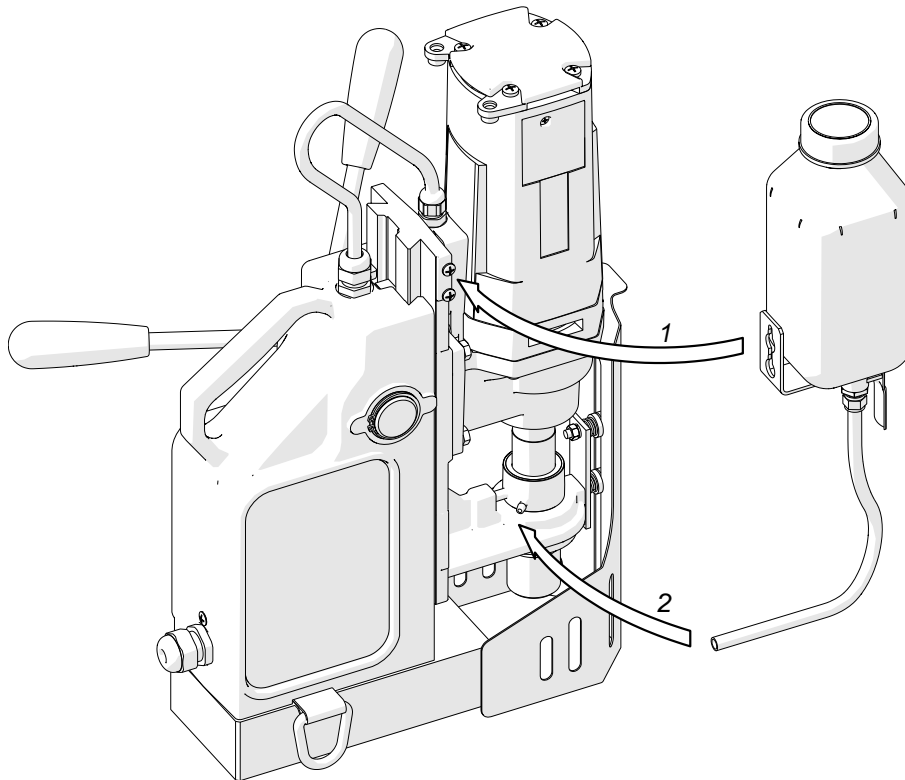


**Fig. 5.** Types of holes to make with annular cutters

### 3.3. Installing and removing the cooling system

Hang the cooling system bottle on the screws (1, Fig. 6), and then attach the bottle hose to the hose fitting (2).

To remove the bottle, proceed in reverse order.



**Fig. 6.** Installing the cooling system

### **3.4. Control system of the electromagnetic base holding force**

The D1 PRO drilling machine incorporates 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 other contaminants, fluctuations of supply voltage, and the wear of the electromagnetic base bottom.

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 on a surface thinner than 5 mm (0.2") because such thickness does not provide sufficient holding force. In such a case, the holding 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 pressed and released, it means that the control circuit is operating properly and preventing further drilling because the holding force is too low.

### **3.5. Preparing**

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

Screw the spoke handles into the feed shaft. The feed shaft can be installed at the opposite side of the drilling machine to allow working in places hard to reach or using the machine by a left-handed person.

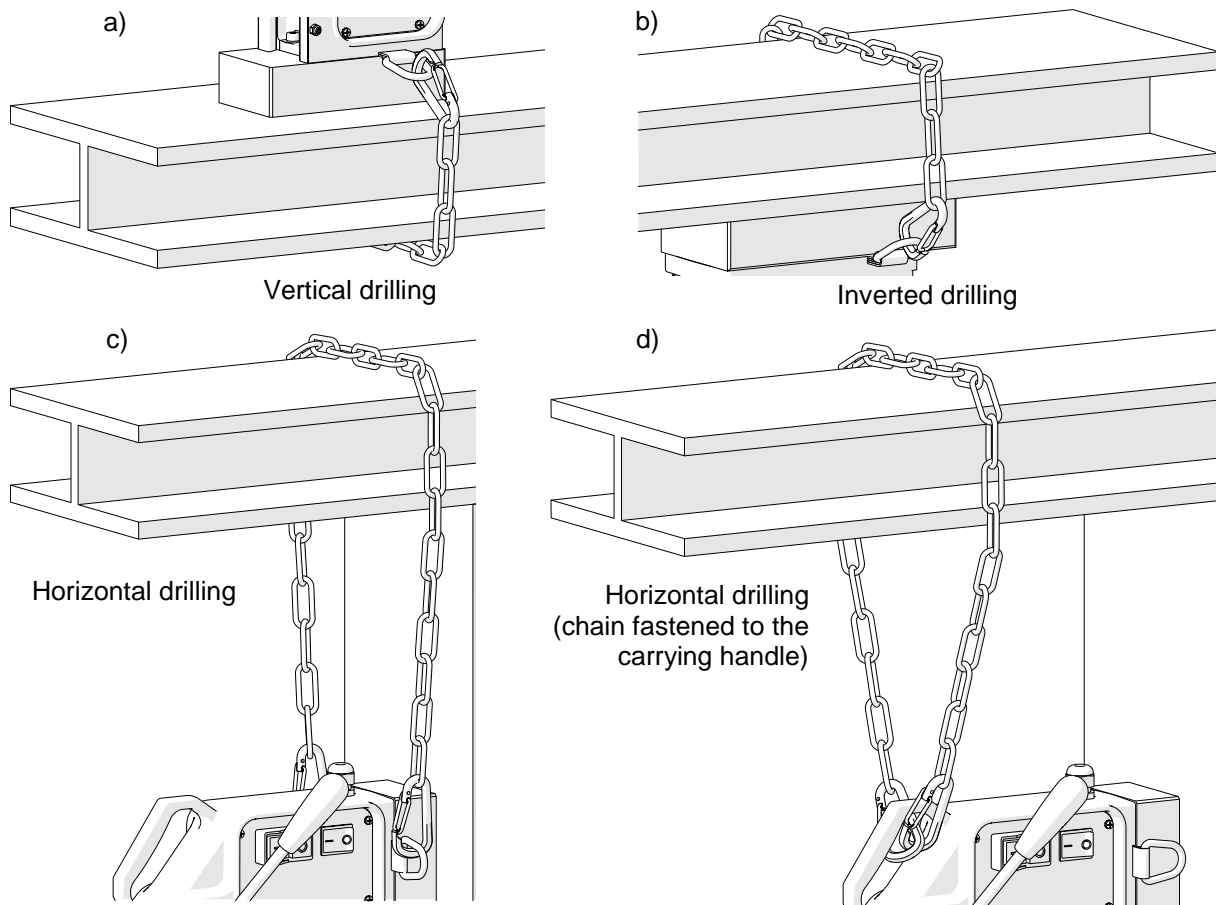
Select the proper annular cutter based on the hole size desired. Next, use a clean and dry cloth to wipe the spindle, arbor, and cutter, and then as described before install the arbor into the spindle and install the cutter into the arbor.

Position the machine on a flat ferromagnetic surface (some types of stainless and acid-proof steel do not conduct magnetic flux) with a thickness of at least 6 mm (0.24"). The workpiece must be clean, without rust or paint that decrease the holding force of the electromagnetic base.

Connect the drilling machine to the power source, and set the MAGNET switch to the position 'I' to turn on the clamping of the electromagnetic base.

Use the safety chain to prevent the machine from dropping and avoid possible injury to the operator if the machine loses magnetic clamping in case of a power loss. To protect the machine, attach it to a fixed structure by fastening the chain to the lugs

or the carrying handle (Fig. 7). The chain must not be loose. Wrap the chain around the workpiece if possible.



**Fig. 7.** Protecting the machine from dropping using the safety chain

Rotate the spoke handles to the left to place the tool above the workpiece.

When using the annular cutter and working in the position from Fig. 7a, install the cooling system 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 then rotate the spoke handles to the left to initially apply pressure on the pilot pin. The fluid should fill the system and begin flowing from the inside of the cutter.

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

### 3.6. Drilling

Start the motor using the green MOTOR button, and then slowly rotate the spoke handles to the left to lower the tool to the workpiece, and begin drilling.

When using annular cutters, drill holes in one pass.



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

When the drilling depth exceeds 40 mm (1.6"), apply the cutting fluid manually into the drilling area.

After the hole is made, retract the tool 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 the position 'O' to turn off the electromagnetic base.

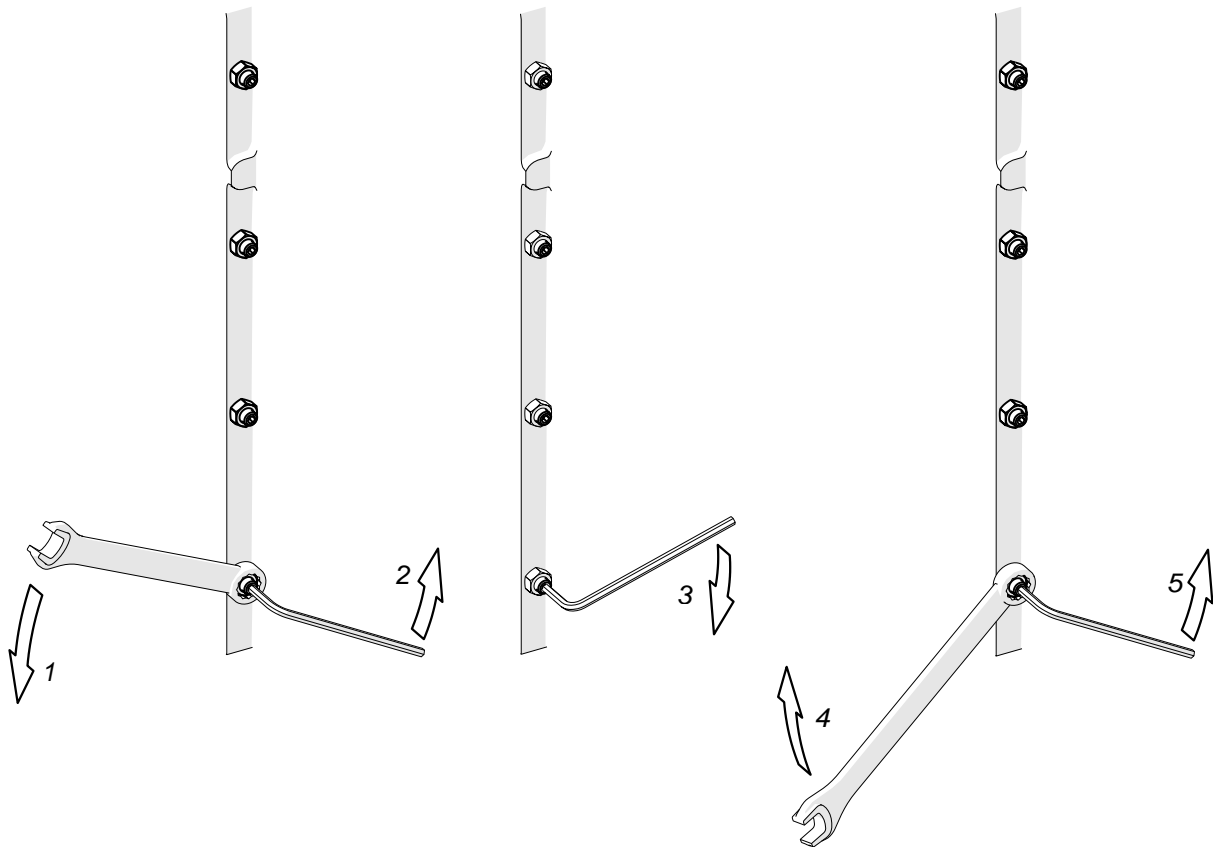
After the work is finished, unplug the machine from the power source, clean chips and excess coolant from the machine and tool, and then remove the machine from the worksite.

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 tool box, remove the bottle, and then wear gloves to remove the tool from the holder.

### 3.7. Adjusting the gib clearance

Every 50 operation hours, or more often, check the gib clearance because it greatly influences the quality of drilled holes. The clearance is appropriate if the motor slides smoothly and not drops under its own weight.

To remove the excessive clearance, use the 8 mm combination wrench to loosen the nuts located on the side (1, Fig. 8), and then use the 2.5 mm hex wrench to loosen the set screws (2). Next, tighten the set screws (3) to such an extent that the motor moves smoothly through the entire stroke and not drops under its own weight. Then, use the 8 mm combination wrench to tighten the nuts (4), while countering the set screws using the 2.5 mm hex wrench (5).

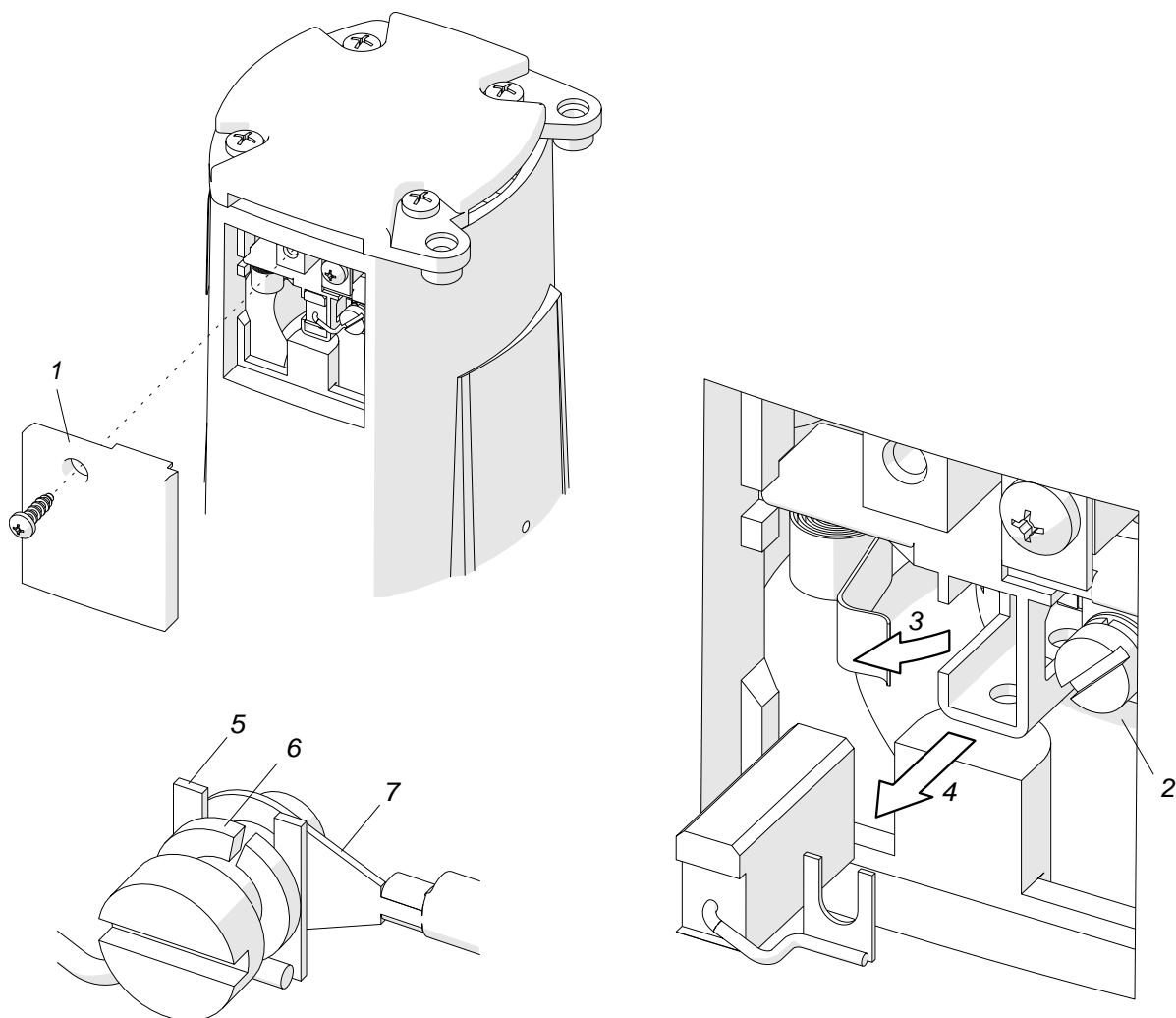


**Fig. 8.** Adjusting the gib clearance

### 3.8. Replacing the motor brushes

Check the condition of the carbon brushes every 100 operation hours. To do this, unplug the machine from the power source, and then use a screwdriver to unscrew the cover (1, Fig. 9). Next, loosen the screw 2, pry off the spring that holds the brush (3), and then remove the brush (4). If the length of the brush is less than 5 mm (0.2"), replace both brushes with new ones.

To install brushes, proceed in reverse order. Place the terminal of the brush wire 5 between the washer 6 and the terminal of the motor wire 7. After the replacement, run the motor without load for 20 minutes.



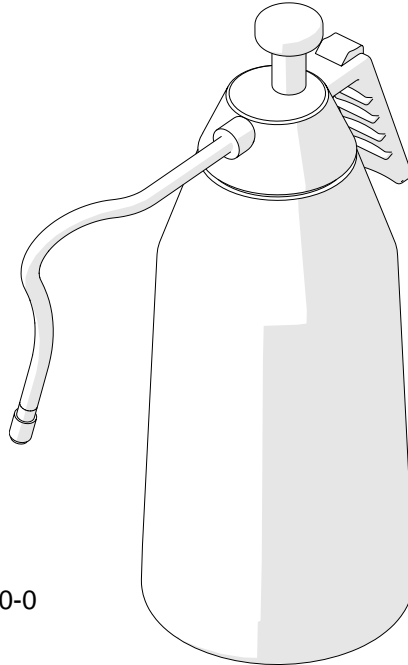
**Fig. 9.** Replacing the brushes



## 4. ACCESSORIES

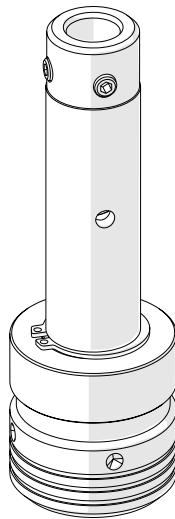
### 4.1. Pressure cooling system

Capacity of 2 liters.



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

### 4.2. Quick change arbor 14.28 mm Weldon x 19 mm Weldon



Part number:  
UCW-0260-13-00-00-0

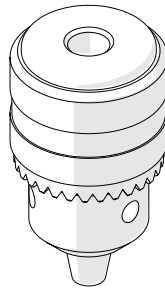
#### 4.3. Drilling chuck adapter 14.28 mm Weldon x 1/2" 20 UNF

Part number:  
TLJ-0197-10-00-03-0



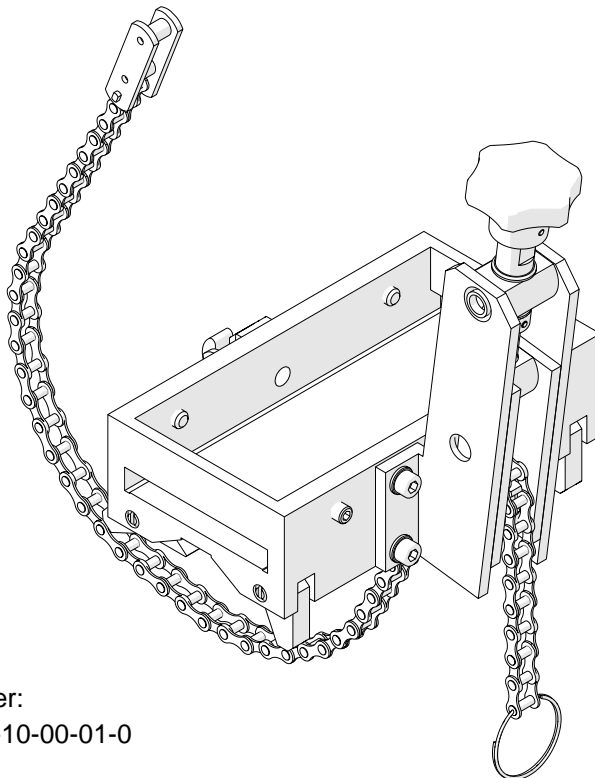
#### 4.4. Drilling chuck 1/2" 20 UNF x 1.5–13 mm

Part number:  
UCW-000059



#### 4.5. Pipe attachment DMP 250

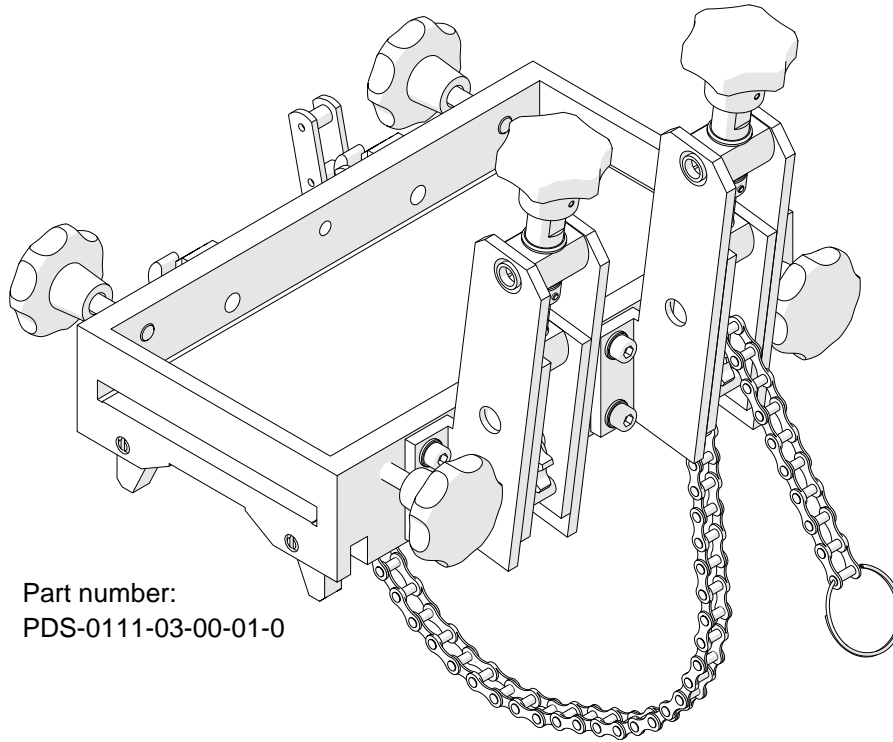
Designed for pipes with diameters of 80–250 mm (3–10").



Part number:  
PDS-0110-10-00-01-0

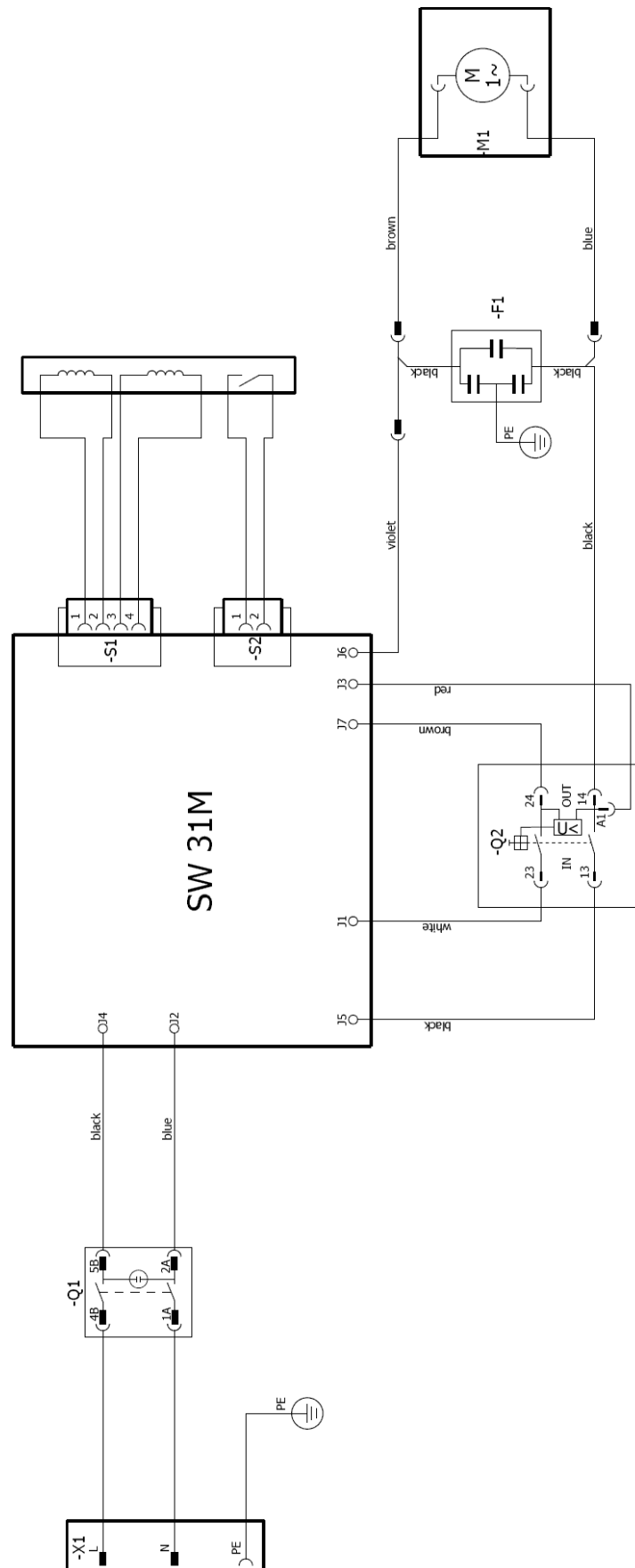
#### 4.6. Pipe attachment DMP 501

Designed for pipes with diameters of 150–500 mm (6–20").

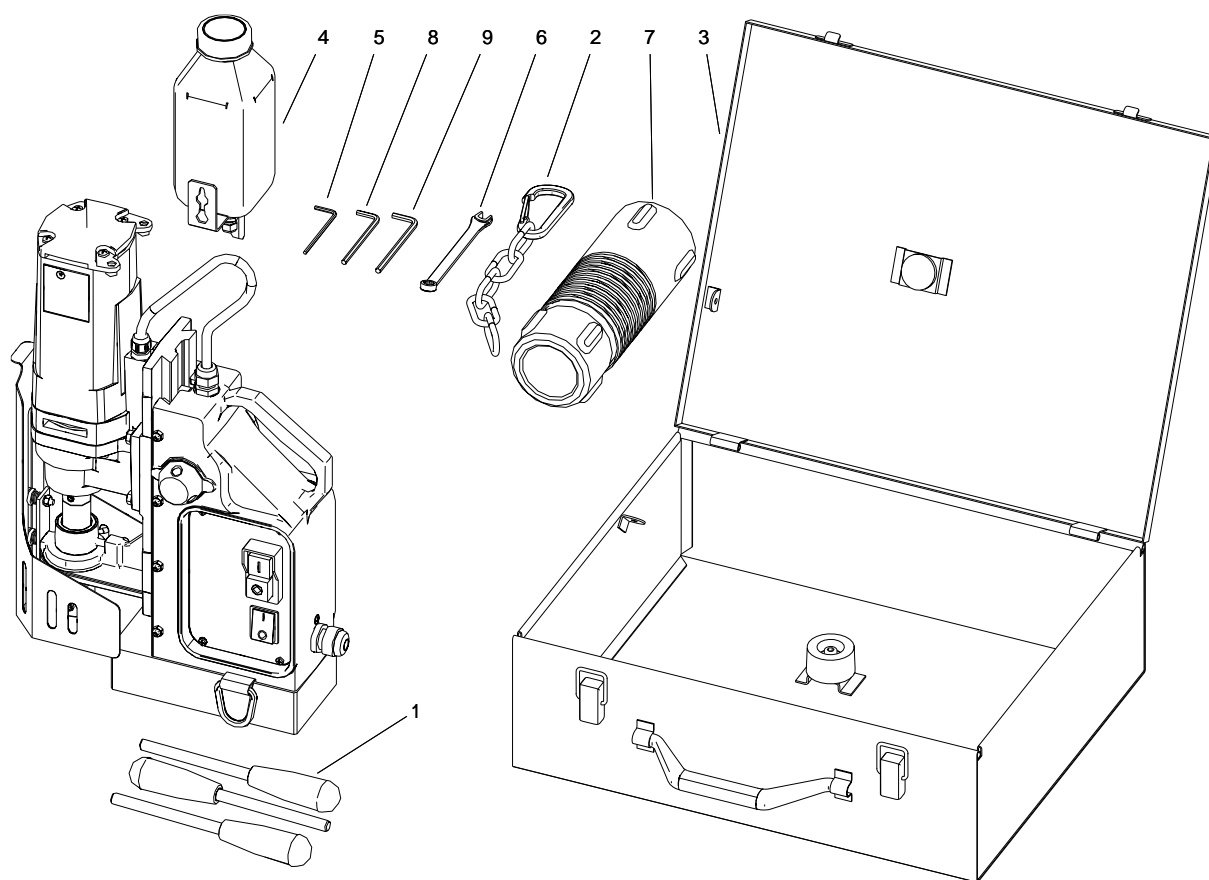


Part number:  
PDS-0111-03-00-01-0

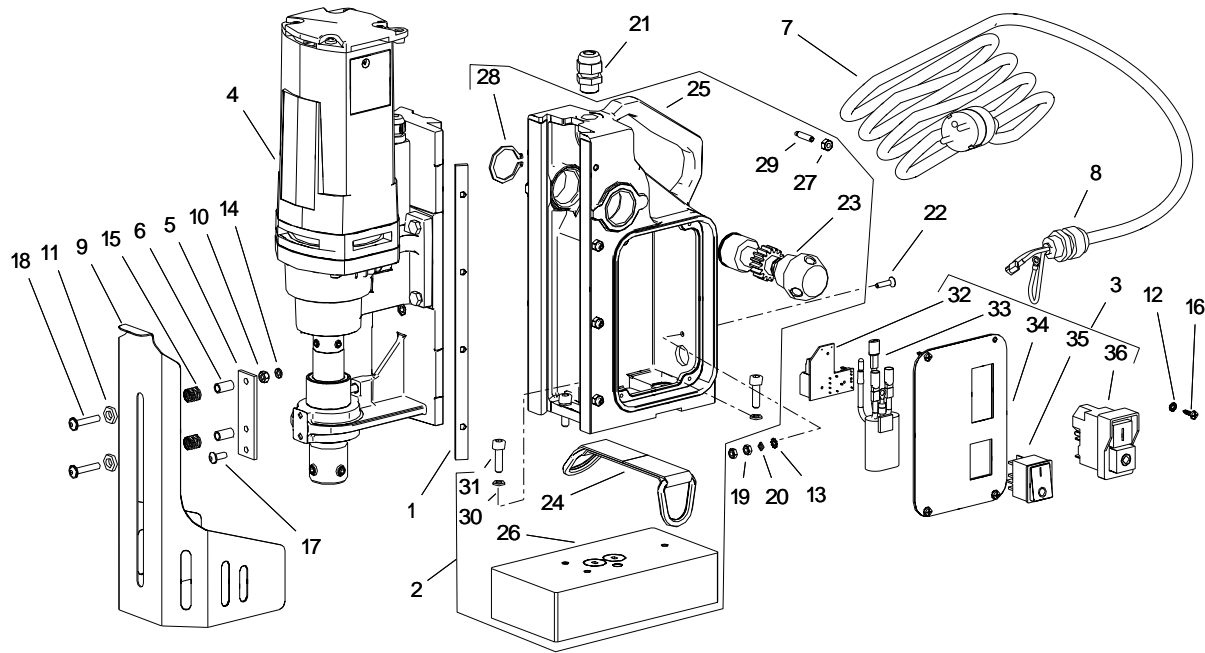
## 5. WIRING DIAGRAM



## 6. EXPLODED DRAWINGS AND PARTS LIST

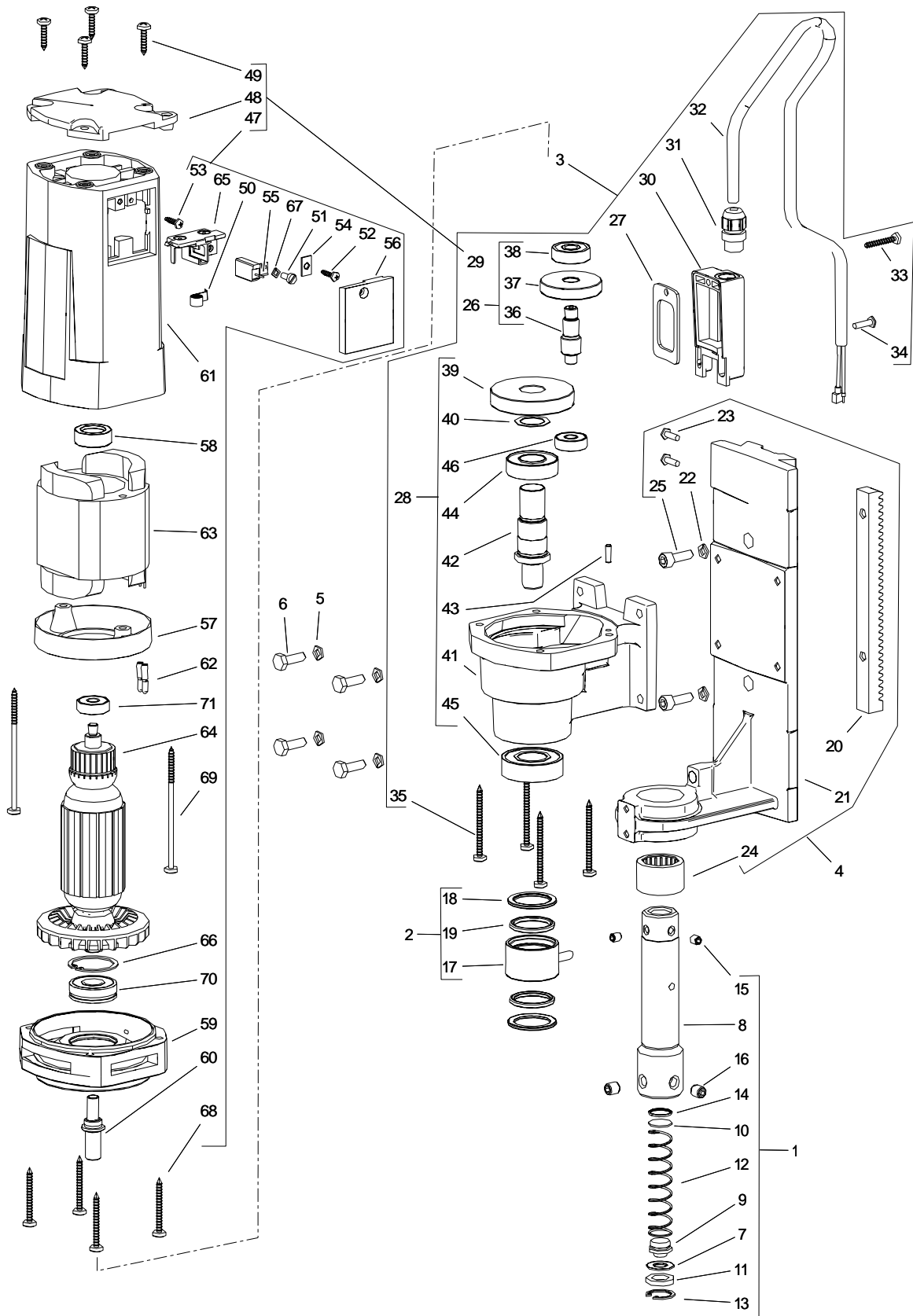


ITEM	PART NUMBER	DESCRIPTION	Q-TY
1	DZW-0140-04-00-00-0	SPOKE HANDLE ASSY	3
2	LNC-0129-80-01-00-0	SAFETY CHAIN	1
3	SKR-0264-00-00-00-0	METAL BOX	1
4	UKL-0399-11-00-00-0	COOLING SYSTEM	1
5	KLC-000005	2.5 MM HEX WRENCH	1
6	KLC-000003	8 MM COMBINATION WRENCH	1
7	OPK-000001	TOOL CAN	1
8	KLC-000006	3 MM HEX WRENCH	1
9	KLC-000007	4 MM HEX WRENCH	1



ITEM	PART NUMBER	DESCRIPTION	Q-TY
1	LST-0260-00-03-00-0	ADJUSTABLE GIB	1
2	STJ-0291-01-00-00-0	FRAME ASSY	1
3	PNL-0291-04-00-00-0	PANEL ASSY 230V	1
3	PNL-0291-04-00-00-1	PANEL ASSY 120V	1
4	ZSP-0291-06-00-00-2	SLIDE ASSY 230V	1
4	ZSP-0291-06-00-00-3	SLIDE ASSY 120V	1
5	WSP-0291-08-00-00-0	BRACKET	1
6	TLJ-0399-06-00-00-0	BOTTOM SLEEVE	2
7	SZN-0212-10-02-00-0	POWER CORD 230V	1
7	SZN-0075-00-51-00-1	POWER CORD 120V (US)	1
7	SZN-0212-10-02-00-3	POWER CORD 230V (AU)	1
8	DLW-000002	STRAIN RELIEF PG11	1
9	OSL-0440-04-00-00-0	SWARF SHIELD ASSY	1
10	NKR-000044	CAP NUT M5	1
11	PDK-000151	NYLON WASHER SR1940	4
12	PDK-000161	EXTERNAL TOOTH LOCK WASHER 3.7	4
13	PDK-000060	EXTERNAL TOOTH LOCK WASHER 4.3	1
14	PDK-000044	SPRING WASHER M5	1
15	SPR-000030	PUSH SPRING	2
16	WKR-000415	CROSS RECESSED PAN HEAD SELF-TAPPING SCREW 3.5x13	4
17	WKR-000097	HEX SOCKET BUTTON HEAD SCREW M5x12	1
18	WKR-000394	HEX SOCKET ROUND HEAD SCREW WITH FLANGE M5x25	2
19	NKR-000013	HEX NUT M4	2
20	PDK-000043	SPRING WASHER 4.1	1
21	DLW-000005	SNAP BUSHING	1
22	WKR-000113	CROSS RECESSED OVAL COUNTERSUNK HEAD SCREW M4x16	1
23	WLK-0140-04-01-00-1	PINION SHAFT	1
24	PAS-0212-00-23-00-1	D-RING STRAP	1
25	KRP-0260-05-00-00-0	BODY ASSY	1
26	PDS-0293-00-00-00-0	ELECTROMAGNETIC BASE	1

ITEM	PART NUMBER	DESCRIPTION	Q-TY
27	NKR-000015	HEX NUT M5	4
28	PRS-000019	EXTERNAL RETAINING RING 28z	1
29	WKR-000016	HEX SOCKET SET SCREW WITH DOG POINT M5x20	4
30	PDK-000048	SPRING WASHER 6.1	3
31	SRB-000113	HEX SOCKET HEAD CAP SCREW M6x20	3
32	STR-0257-04-03-00-2	ELECTRONIC CONTROLLER SW-30M 230V	1
32	STR-0257-04-03-00-3	ELECTRONIC CONTROLLER SW-30M 120V	1
33	FLT-0257-04-12-00-1	INTERFERENCE ELIMINATOR	1
34	MSK-0291-04-01-00-0	PANEL PLATE ASSY	1
35	PNK-000013	MAGNET SWITCH	1
36	WLC-000007	SWITCH START-STOP 230V	1
36	WLC-000005	SWITCH START-STOP 120V	1





ZSP-0291-06-00-00-2		SLIDE ASSEMBLY 230V	
ZSP-0291-06-00-00-3		SLIDE ASSEMBLY 120V	
ITEM	PART NUMBER	DESCRIPTION	Q-TY
1	UCW-0140-05-00-00-0	ARBOR ASSY	1
2	PRS-0260-16-00-00-0	COOLANT RING ASSY	1
3	NPD-0291-02-00-00-0	DRIVE ASSY 230V	1
3	NPD-0291-02-00-00-1	DRIVE ASSY 120V	1
4	SWK-0291-06-01-00-0	SLIDE ASSY	1
5	PDK-000048	SPRING WASHER 6.1	4
6	SRB-000245	FULL THREAD HEX HEAD BOLT M6x18	4
7	PDK-0139-00-04-00-0	WASHER 18.8x10x1	1
8	KRP-0140-05-01-00-0	ARBOR BODY	1
9	WYP-0140-05-02-00-0	PLUNGER	1
10	PDK-0140-05-06-00-0	WASHER 16x1	1
11	USZ-0140-05-04-00-0	SEAL	1
12	SPR-0140-05-03-00-0	SPRING	1
13	PRS-000009	INTERNAL RETAINING RING 19w	1
14	PRS-000149	O-RING 14x1.25	1
15	WKR-000027	HEX SOCKET SET SCREW WITH CUP POINT M6x0.75x6	2
16	WKR-000063	HEX SOCKET SET SCREW WITH FLAT POINT M8x8	2
17	PRS-0260-16-01-00-0	COOLANT RING	1
18	PRS-0260-16-02-00-0	STOP RING	2
19	PRS-000105	SEAL O-RING 25.2x3	2
20	LST-0260-00-04-00-1	GEAR RACK	1
21	SWK-0291-06-01-01-0	SLIDE	1
22	PDK-000048	SPRING WASHER 6.1	2
23	WKR-000184	CROSS RECESSED PAN HEAD SCREW M4x12	2
24	LOZ-000010	NEEDLE BEARING 25x32x20	1
25	SRB-000110	HEX SOCKET HEAD CAP SCREW M6x18	2
26	WLK-0279-02-02-00-0	PINION SHAFT ASSY	1
27	USZ-0279-02-07-00-0	SEAL	1
28	RDK-0291-02-01-00-0	GEARBOX ASSY	1
29	SLN-0291-02-03-00-3	MOTOR ASSY 230V	1
29	SLN-0291-02-03-00-2	MOTOR ASSY 120V	1
30	PSZ-0291-02-05-00-0	WIRE COVER	1
31	DLW-000004	STRAIN RELIEF PG7	1
32	WZK-0291-03-00-00-0	MOTOR WIRE	1
33	WKR-000421	CROSS RECESSED OVAL PAN HEAD SCREW FOR PLASTIC 4x25	1
34	WKR-000186	CROSS RECESSED PAN HEAD SCREW M4x14	1
35	WKR-000422	PAN HEAD SHEET METAL SCREW 4.8x60	4
36	WLK-0271-02-03-01-1	PINION SHAFT z=9	1
37	KOL-0279-02-02-02-0	GEAR z=33	1
38	LOZ-000072	BALL BEARING 9x26x8	1
39	KOL-0279-02-01-03-0	GEAR z=47	1
40	PDK-0279-02-01-04-0	GEAR WASHER 17x24x0.5	1
41	KRP-0291-02-01-01-1	GEAR BOX	1
42	WLK-0291-02-01-05-0	SPINDLE SHAFT	1
43	KLK-000033	DOWEL PIN 4n6x12	1
44	LOZ-000027	BALL BEARING 17x35x10	1
45	LOZ-000046	BALL BEARING 20x42x12	1

ZSP-0291-06-00-00-2		SLIDE ASSEMBLY 230V	
ZSP-0291-06-00-00-3		SLIDE ASSEMBLY 120V	
ITEM	PART NUMBER	DESCRIPTION	Q-TY
46	LOZ-000053	BALL BEARING 8x22x7	1
47	SLN-0279-02-03-00-1	MOTOR 230V	1
47	SLN-0279-02-03-00-2	MOTOR 120V	1
48	PKR-0279-02-06-00-0	STATOR COVER	1
49	WKR-000011	SELF-TAPPING SCREW 5x20	4
50	SPR-000032	SPRING 6X0.25	2
51	WKR-000360	SCREW M4x8	2
52	WKR-000359	SCREW Ph-TZ 3.5x13	2
53	WKR-000358	SCREW TW4X13 kb/1	2
54	PLY-000066	PLATE 8x13	2
55	SCZ-000009	BRUSH 6.4x12.5x19	2
56	PKR-000015	BRUSH COVER	2
57	PON-000001	STATOR GUARD	1
58	WKL-000008	BEARING INSERT 22x9	1
59	PKR-0279-02-03-01-3	GEARBOX COVER	1
60	KNC-0279-02-03-03-0	ROTOR END	1
61	OBD-0279-02-03-09-0	STATOR HOUSING	1
62	KNC-000007	TERMINAL	2
63	STN-000016	STATOR 230V	1
63	STN-000017	STATOR 120V	1
64	WRN-000019	ROTOR 230V	1
64	WRN-000020	ROTOR 120V	1
65	SCT-000005	BRUSH HOLDER 6.4x12.5 ASSY	2
66	PRS-000022	INTERNAL RETAINING RING 32w	1
67	PDK-000111	SPRING WASHER 4.2x0.5	2
68	WKR-000253	CROSS RECESSED PAN HEAD SELF-TAPPING SCREW 4.8x38	4
69	WKR-000423	PAN HEAD SHEET METAL SCREW 4.8x38	2
70	LOZ-000096	BALL BEARING 32x12x10	1
71	LOZ-000095	BALL BEARING 22x7x7	1
	SMR-000001	GREASE LUBRIPLATE BP1	0.045 kg

## 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 PRO 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.

Białystok, 20 August 2015



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Marek Siergiej  
Chair

## 8. QUALITY CERTIFICATE

### Machine control card

### D1 PRO Drilling Machine with Electromagnetic Base

☐ **120 V**
☐ **230 V**

Serial number .....

Spindle radial runout.....

Slide to base travel perpendicularity .....

Spindle axis to base perpendicularity .....

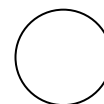
Base holding force .....

(surface with the thickness of 22 mm and roughness  $R_a \leq 1.25$ )

### Electric test

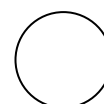
Type of test	Result	Name of tester
Test with sinusoidal voltage (voltage 1000 V, frequency 50 Hz)		..... Date
Resistance of the protective circuit	..... $\Omega$	..... Signature

Quality control .....



### Adjustments, inspections

Quality control .....



## **9. WARRANTY CARD**

**WARRANTY CARD No.....**

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

**1.00 / 1 September 2015**

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

3/4" SHANK M2AL ANNULAR CUTTERS			
		1" D.O.C.	2" D.O.C.
M2AL Cutter Diameter	DECIMAL EQUIVALENT	PART#	PART#
7/16"	0.4375	SM-AC-0438-1	SM-AC-0438-2
1/2"	0.5000	SM-AC-0500-1	SM-AC-0500-2
9/16"	0.5625	SM-AC-0563-1	SM-AC-0563-2
5/8"	0.6250	SM-AC-0625-1	SM-AC-0625-2
1 1/16"	0.6875	SM-AC-0688-1	SM-AC-0688-2
3/4"	0.7500	SM-AC-0750-1	SM-AC-0750-2
13/16"	0.8125	SM-AC-0813-1	SM-AC-0813-2
7/8"	0.8750	SM-AC-0875-1	SM-AC-0875-2
15/16"	0.9375	SM-AC-0938-1	SM-AC-0938-2
1"	1.0000	SM-AC-1000-1	SM-AC-1000-2
1-1/16"	1.0620	SM-AC-1063-1	SM-AC-1063-2
1-1/8"	1.1250	SM-AC-1125-1	SM-AC-1125-2
1-3/16"	1.1870	SM-AC-1188-1	SM-AC-1188-2
1-1/4"	1.2500	SM-AC-1250-1	SM-AC-1250-2
1-5/16"	1.3120	SM-AC-1313-1	SM-AC-1313-2
1-3/8"	1.3750	SM-AC-1375-1	SM-AC-1375-2
1-7/16"	1.4370	SM-AC-1438-1	SM-AC-1438-2
1-1/2"	1.5000	SM-AC-1500-1	SM-AC-1500-2
1-9/16"	1.5620	SM-AC-1563-1	SM-AC-1563-2
1-5/8"	1.6250	SM-AC-1625-1	SM-AC-1625-2
1-11/16"	1.6870	SM-AC-1688-1	SM-AC-1688-2
1-3/4"	1.7500	SM-AC-1750-1	SM-AC-1750-2
1-13/16"	1.8120	SM-AC-1813-1	SM-AC-1813-2
1-7/8"	1.8750	SM-AC-1875-1	SM-AC-1875-2
1-15/16"	1.9370	SM-AC-1938-1	SM-AC-1938-2
2"	2.0000	SM-AC-2000-1	SM-AC-2000-2
2-1/16"	2.0620	SM-AC-2063-1	SM-AC-2063-2
2-1/8"	2.1250	SM-AC-2125-1	SM-AC-2125-2
2-3/16"	2.1870	SM-AC-2188-1	SM-AC-2188-2
2-1/4"	2.2500	SM-AC-2250-1	SM-AC-2250-2
2-5/16"	2.3120	SM-AC-2313-1	SM-AC-2313-2
2-3/8"	2.3750	SM-AC-2375-1	SM-AC-2375-2
14mm	0.5512	SM-AC-14-M-1	SM-AC-14-M-2
15mm	0.5906	SM-AC-15-M-1	SM-AC-15-M-2
16mm	0.6299	SM-AC-16-M-1	SM-AC-16-M-2
17mm	0.6693	SM-AC-17-M-1	SM-AC-17-M-2
18mm	0.7087	SM-AC-18-M-1	SM-AC-18-M-2
19mm	0.7480	SM-AC-19-M-1	SM-AC-19-M-2
20mm	0.7874	SM-AC-20-M-1	SM-AC-20-M-2
21mm	0.8268	SM-AC-21-M-1	SM-AC-21-M-2
22mm	0.8661	SM-AC-22-M-1	SM-AC-22-M-2
23mm	0.9055	SM-AC-23-M-1	SM-AC-23-M-2
24mm	0.9449	SM-AC-24-M-1	SM-AC-24-M-2
25mm	0.9843	SM-AC-25-M-1	SM-AC-25-M-2
26mm	1.0230	SM-AC-26-M-1	SM-AC-26-M-2
28mm	1.1020	SM-AC-28-M-1	SM-AC-28-M-2
29mm	1.1410	SM-AC-29-M-1	SM-AC-29-M-2
31mm	1.2200	SM-AC-31-M-1	SM-AC-31-M-2