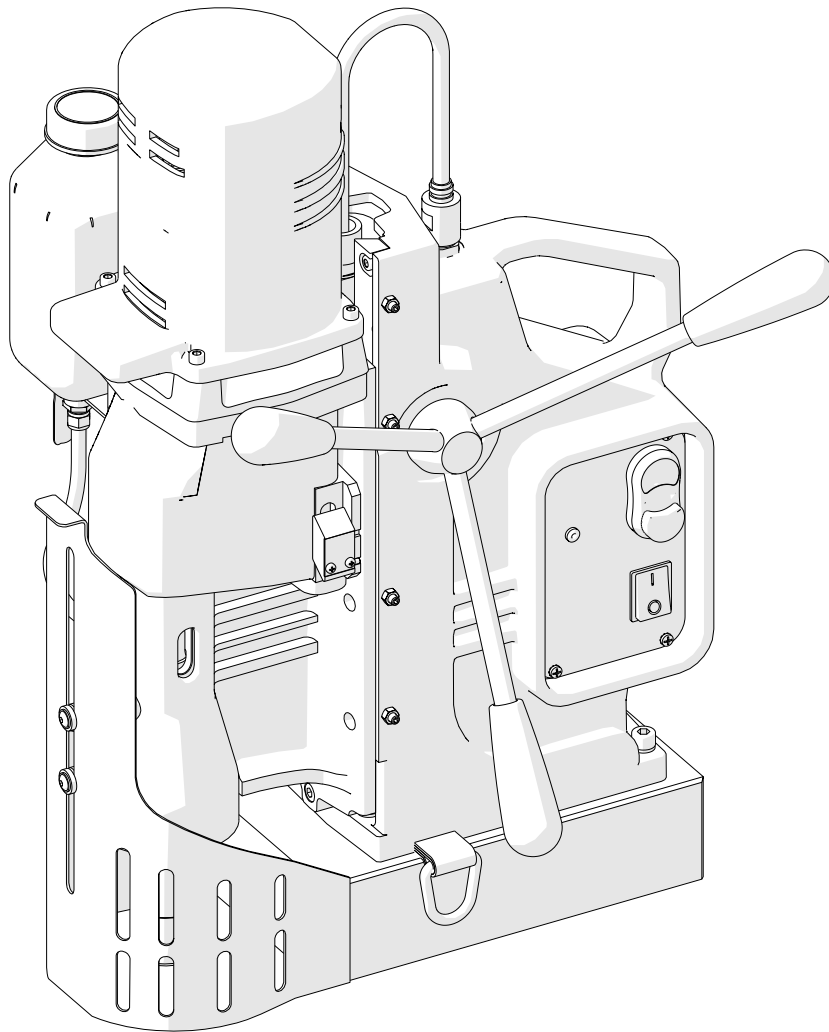


The tools of innovation.

OPERATOR'S MANUAL

D4X

DRILLING MACHINE WITH ELECTROMAGNETIC BASE



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1. GENERAL INFORMATION

1.1. Application

The D4X is a drilling machine with electromagnetic base, designed to drill holes either with diameters of 12–111 mm (1/2 – 4-3/8”) to a depth of up to 76 mm (3”) by using HSS and TCT annular cutters or with diameters of 16–47 mm (5/8 – 1-7/8”) to a depth up to 76 mm (3”) by using twist drill bits.

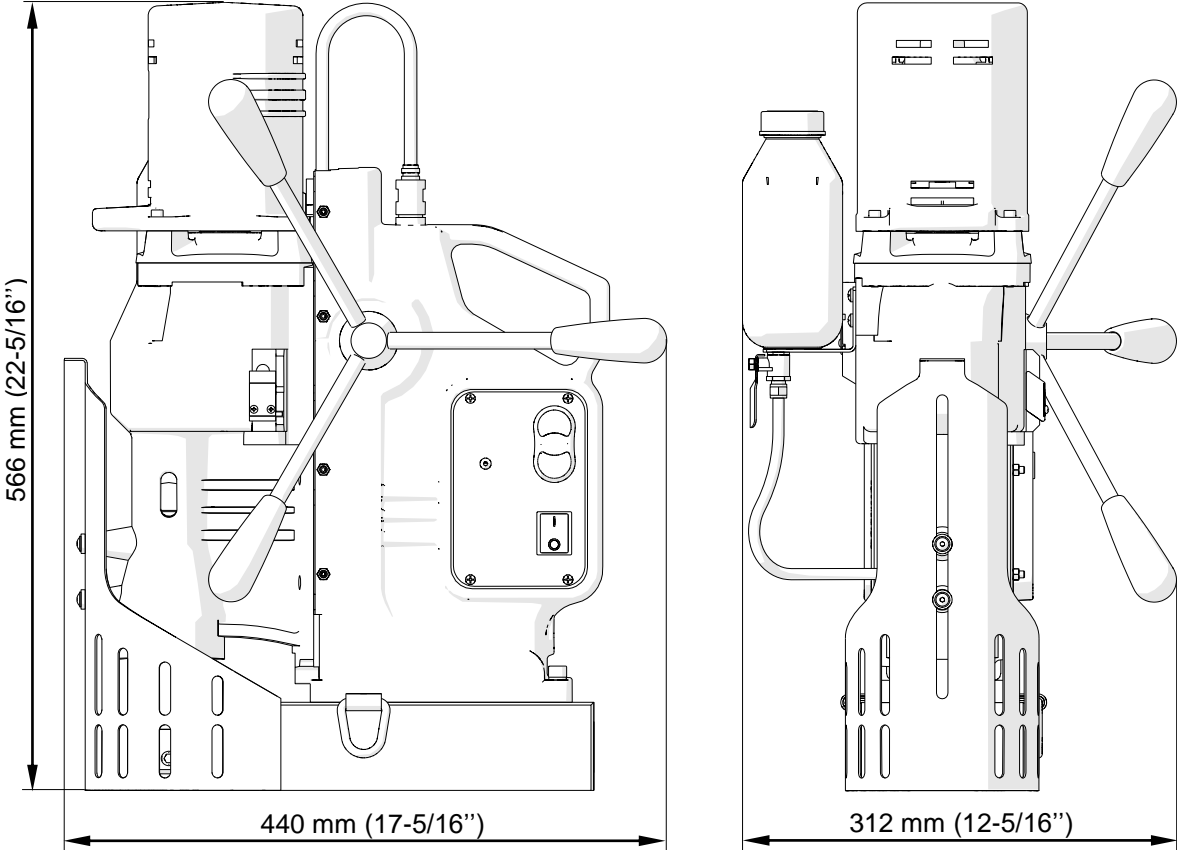
The electromagnetic base allows the drilling machine to be fixed to ferromagnetic surfaces with a force that ensures operator safety and proper machine operation. A safety chain protects the machine from falling in case of a power loss.

An optional attachment allows you to drill in pipes.

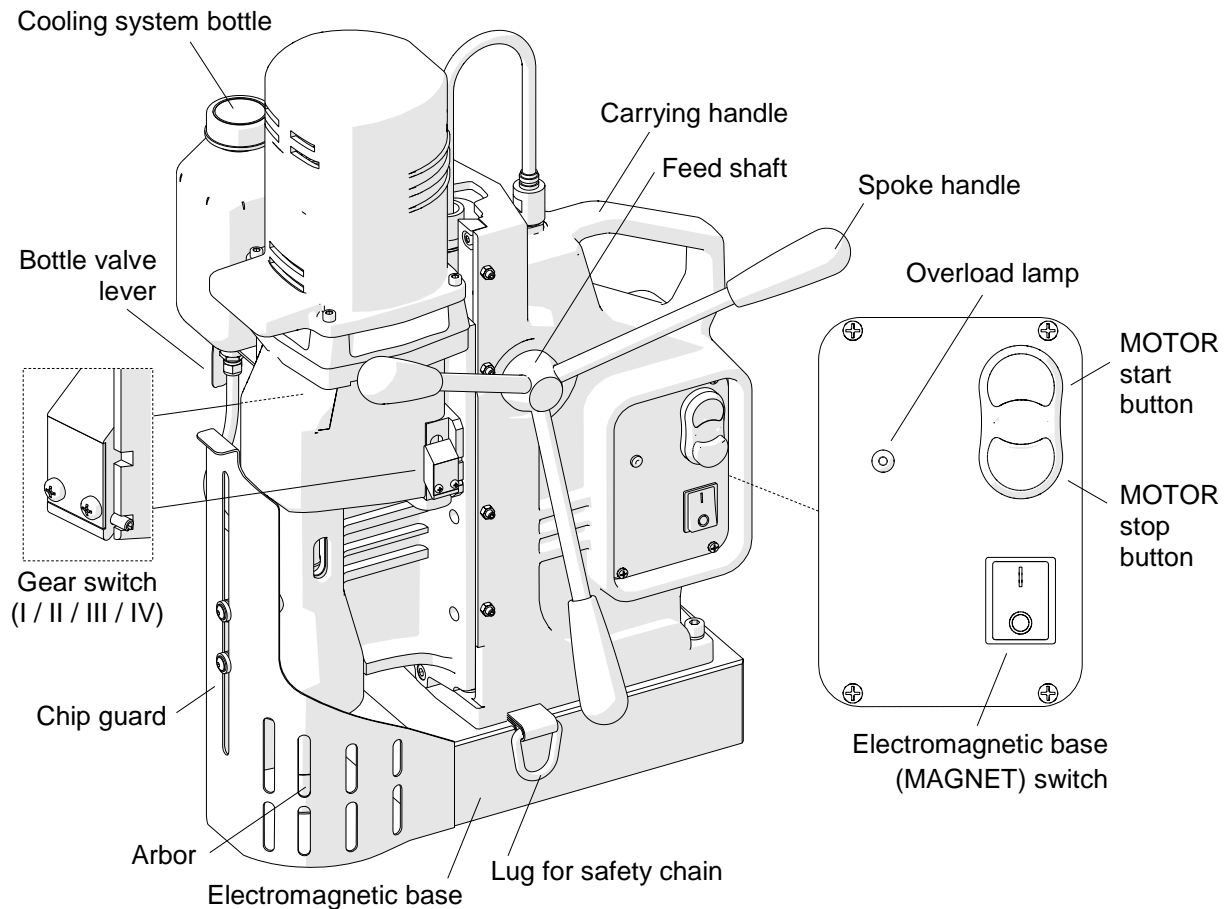
1.2. Technical data

Voltage	1~ 110–120 V, 50–60 Hz 1~ 220–240 V, 50–60 Hz
Total power	1800 W
Motor power	1650 W
Spindle shank	MT4
Tool holder	19 mm Weldon (3/4”)
Drilling diameter with annular cutter	12–111 mm (1/2 – 4-3/8”)*
Drilling diameter with twist drill bit	16–47 mm (5/8 – 1-7/8”)
Maximum drilling depth	76 mm (3”)
Electromagnetic base holding force (surface with the thickness of 22 mm and roughness $R_a = 1.25$)	22 000 N (4800 lbs)
Electromagnetic base dimensions	120 mm × 240 mm × 63 mm 4-3/4” × 9-7/16” × 2-1/2”
Stroke	230 mm (9”)
Rotational speed under load	85 rpm (gear I) 135 rpm (gear II) 160 rpm (gear III) 250 rpm (gear IV)
Minimum workpiece thickness	10 mm (3/8”)
Protection class	I
Noise level	More than 85 dB
Required ambient temperature	0–40°C (32–104°F)
Weight	31 kg (68 lbs)

* If more than 60 mm (2-3/8”), MT4 arbor with 32 mm Weldon tool holder (UCW-0191-02-00-00-0) is required



1.3. Design



1.4. Equipment included

The drilling machine is supplied including the following elements.

Drilling machine	1 unit
Metal box	1 unit
Spoke handle	3 units
MT4 arbor with 19 mm (3/4") Weldon tool holder	1 unit
Cooling system bottle	1 unit
1.5 m (5 ft) safety chain	1 unit
MT3 drift	1 unit
2.5 mm hex wrench	1 unit
4 mm hex wrench	1 unit
5 mm hex wrench with handle	1 unit
6 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 by 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, and do not 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 tools securely. Tighten the annular cutter by using the set screws, and hammer in the drill bit into the spindle. 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 by 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. Never use the machine on surfaces that are rusty, covered with a thick paint layer, uneven, or not rigid.

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. Drilling in plates with a thickness less than 10 mm (3/8") is not recommended 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 and tool. 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 or MT4 twist drill bit

Unplug the machine from the power source, raise the chip guard as high as possible (1, Fig. 1), and then rotate the spoke handles to the right (2) to raise the motor. Wear protective gloves and use a clean and dry cloth to wipe the spindle and arbor (drill bit). Next, insert the arbor (drill bit) into the spindle (3), and then rotate the arbor (drill bit) to the right (4) until it slips into place, and hammer it in (5).

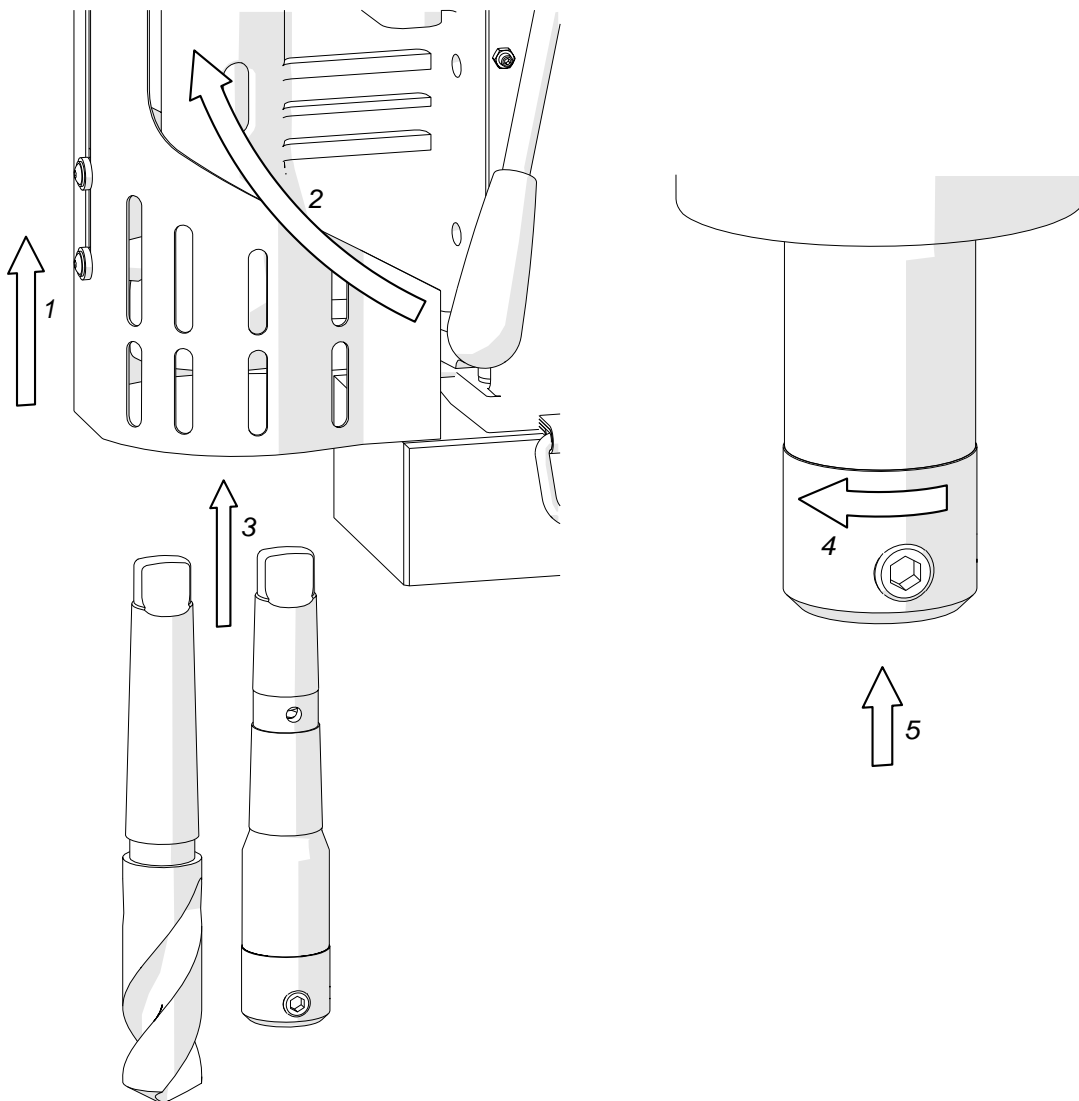


Fig. 1. Installing the arbor or the drill bit

To remove the arbor (drill bit), raise the motor, and then rotate the spindle (1, Fig. 2) in such a way to align the openings in the spindle and gearbox (2). Next, insert the MT3 drift (3) into the opening above the arbor (drill bit), hold the carrying handle with one hand, and then tap the drift using a mallet (4).

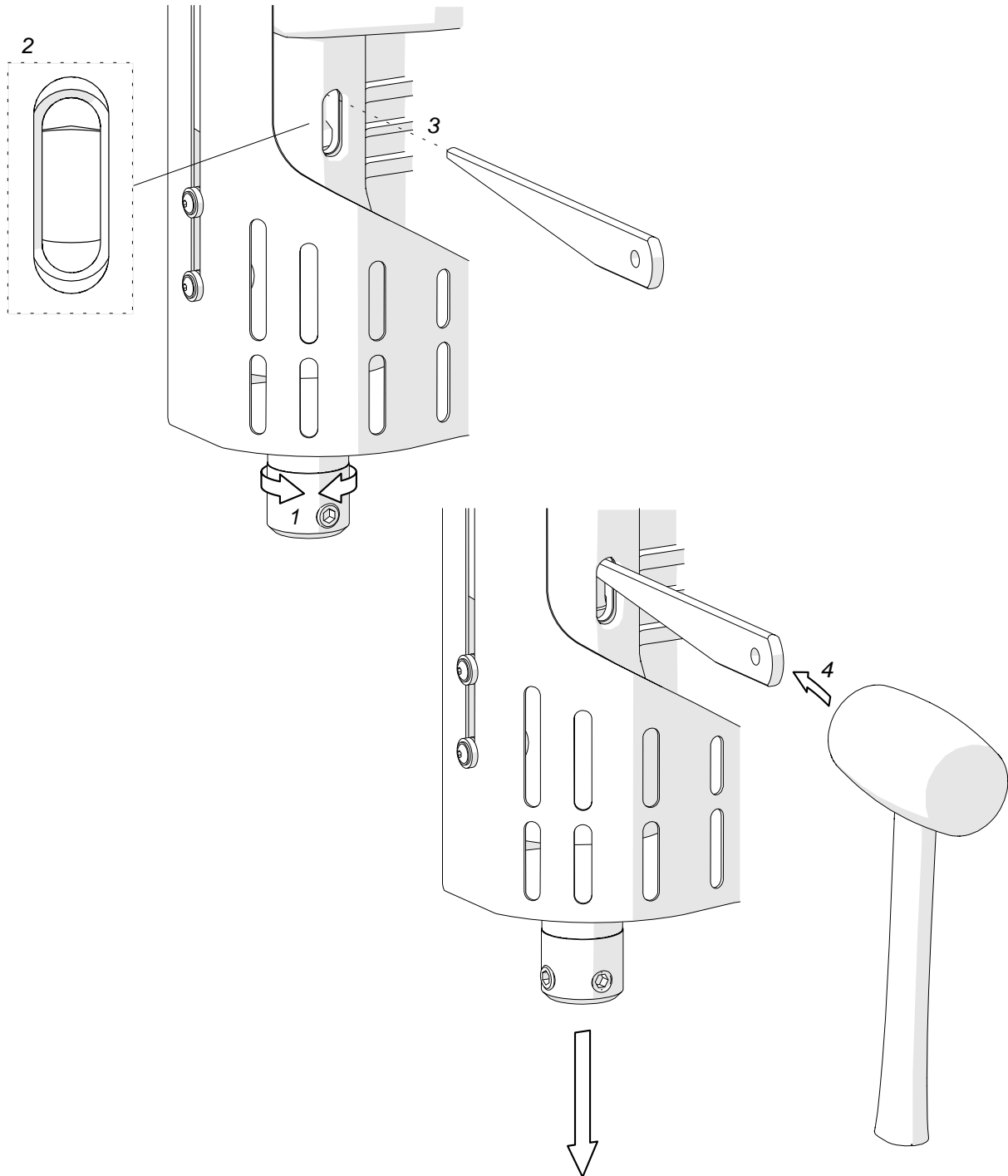


Fig. 2. Removing the arbor or the drill bit

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 arbor and 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 5 mm hex wrench to tighten both set screws.

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

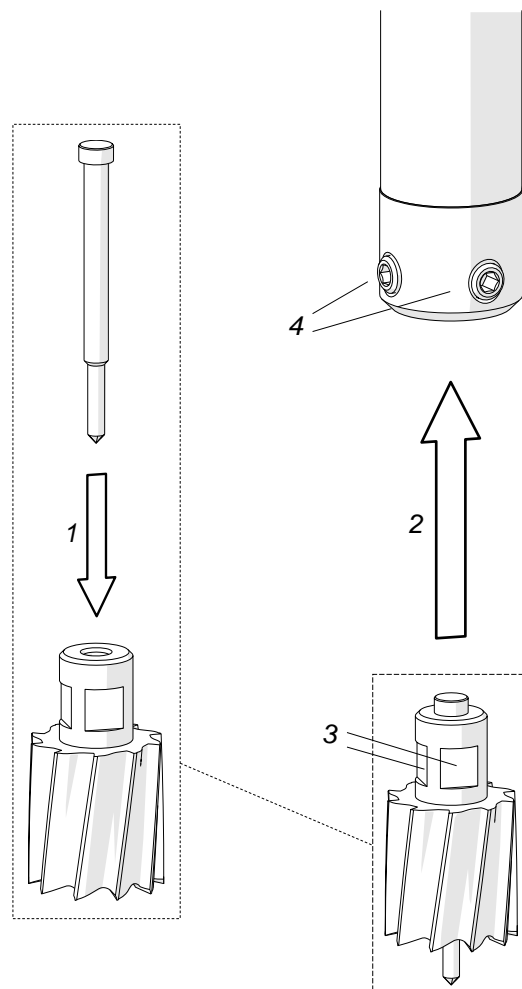


Fig. 3. Installing the annular cutter

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.

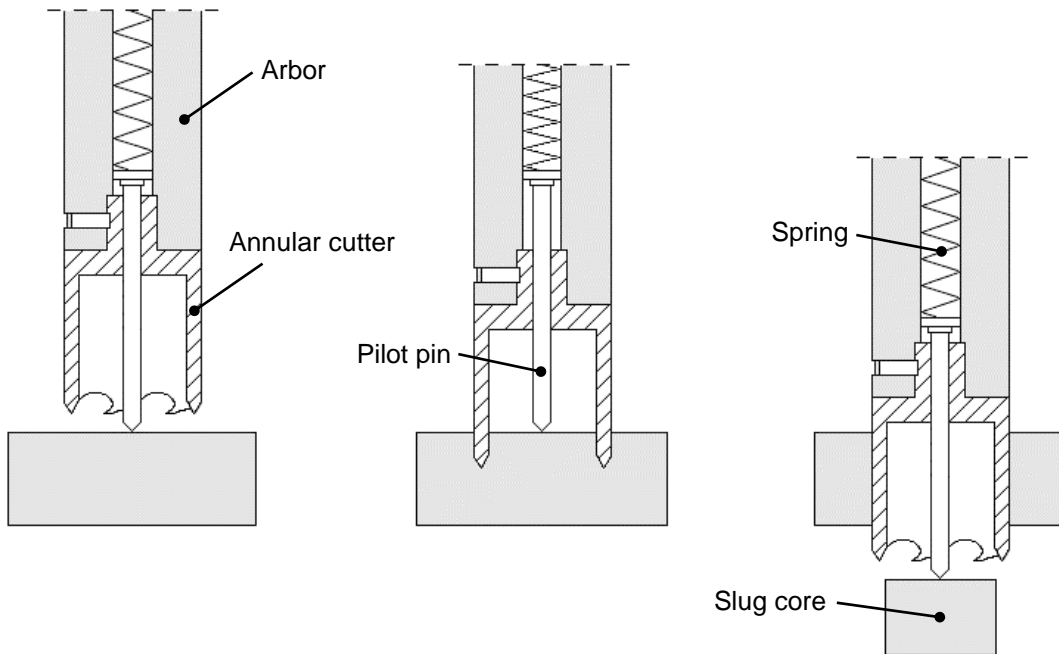


Fig. 4. Annular cutters operation

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.

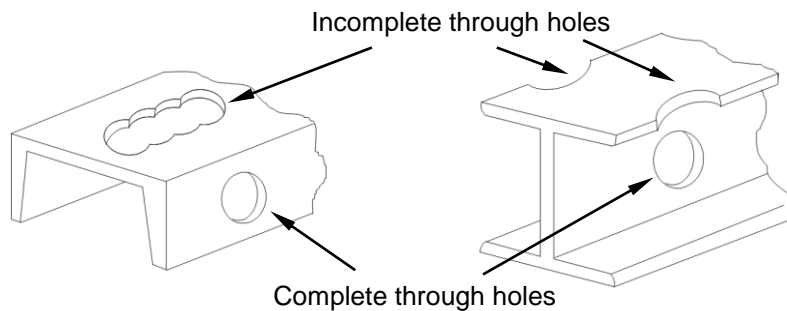


Fig. 5. Types of holes to make with annular cutters

3.3. Installing and removing the cooling system bottle

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, first detach the bottle hose from the fitting.

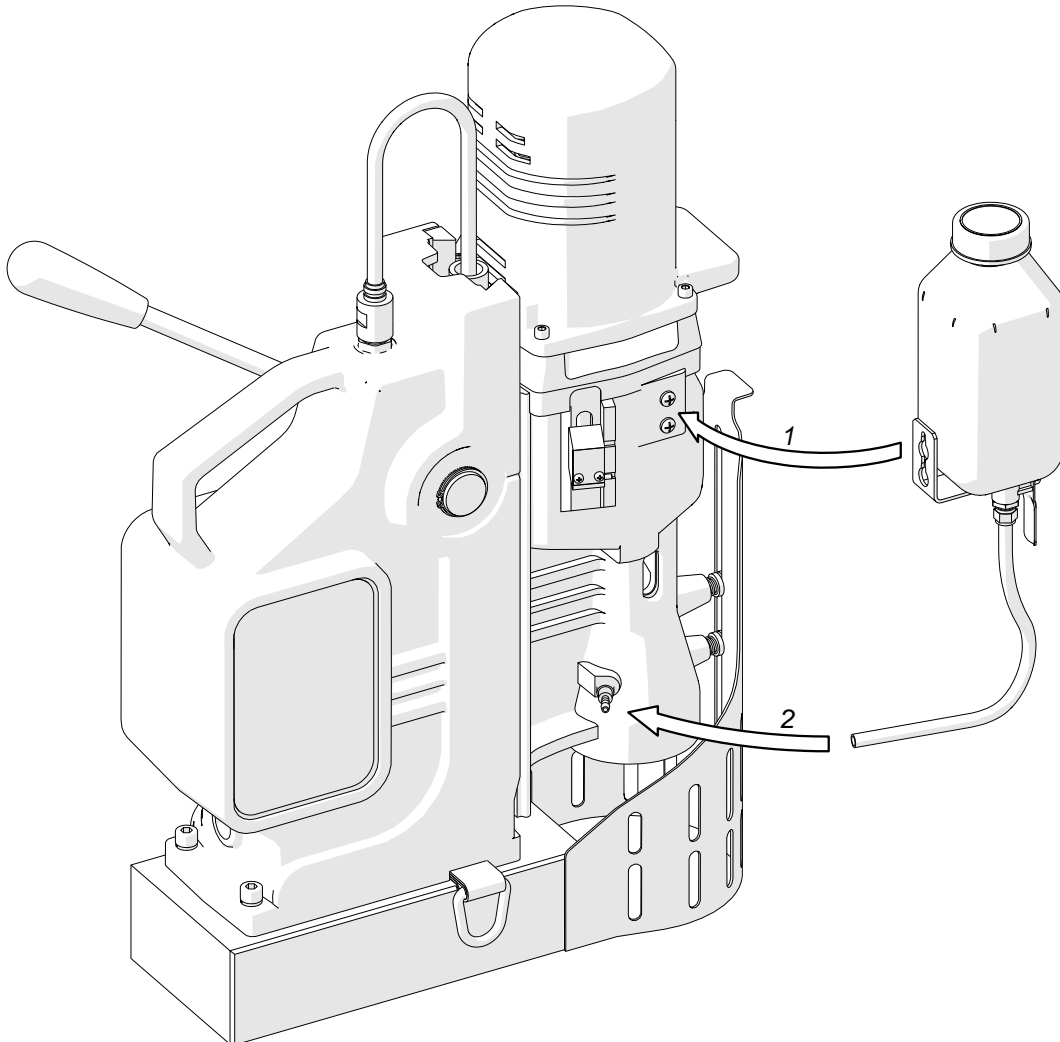


Fig. 6. Installing the cooling system bottle

3.4. Control system of the electromagnetic base holding force

The 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 (3/16") 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 (7/8") 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 spindle, 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 from 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 or drill bit based on the hole size desired. Next, use a clean and dry cloth to wipe the spindle, arbor (drill bit), and cutter, and then install the arbor (and then the cutter) or the drill bit as described before.

Position the machine on a flat ferromagnetic surface with a thickness of at least 10 mm (3/8"). The workpiece must be clean, without rust or paint that decrease the holding force. Some types of steel are non-ferromagnetic (do not conduct magnetic flux) and the machine is not capable to clamp onto them.

Connect the 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 falling 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

(Fig. 7a, 7b, 7c) or to the carrying handle (Fig. 7d). The chain must not be loose. Wrap the chain around the workpiece if possible.

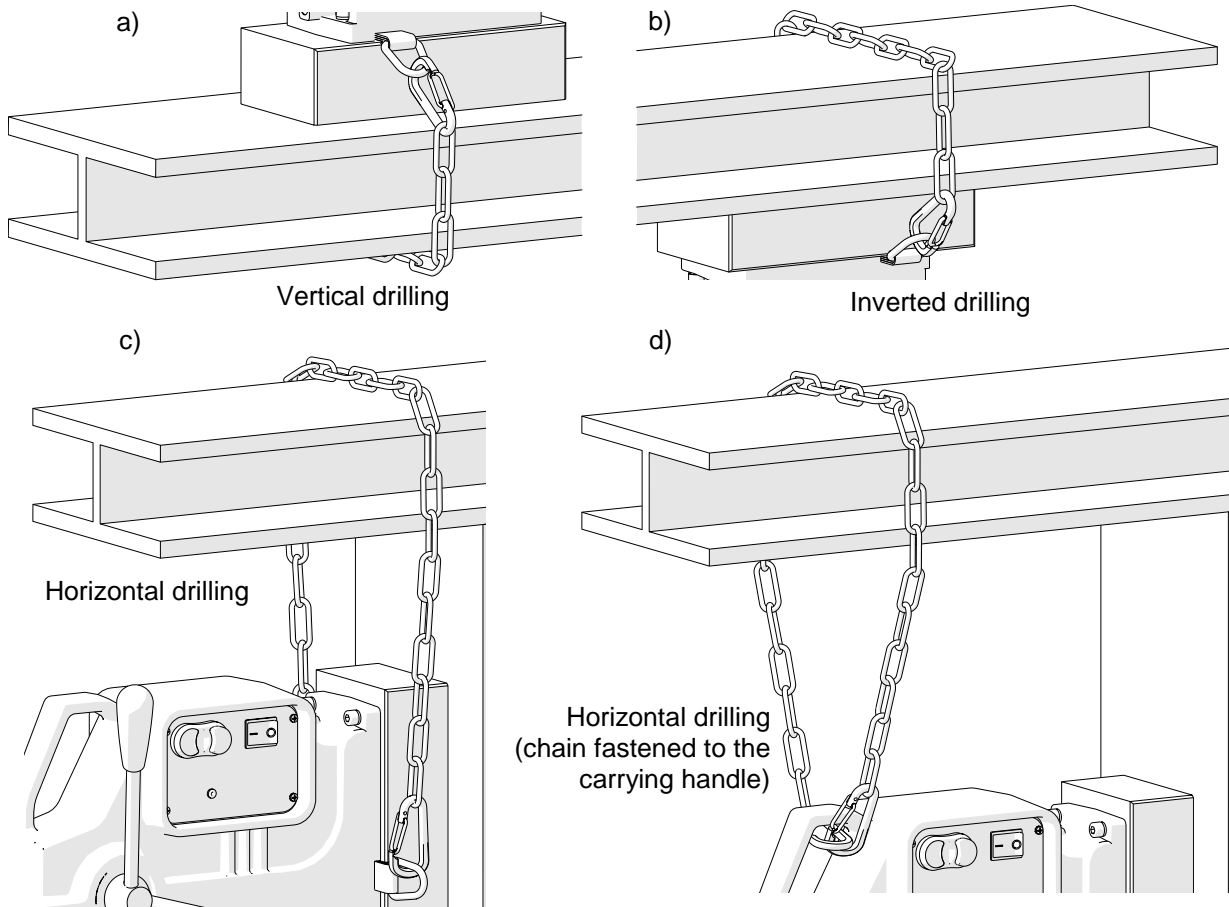


Fig. 7. Protecting the machine from falling by using the safety chain

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

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

Because the cooling system works by gravity, when working in inverted or horizontal positions (Fig. 7b, 7c, 7d) use coolants under pressure or in the form of spray or paste.

3.6. Drilling

Use the gear switches to set the speed based on the following table.

Tool	Hole diameter		Rotational speed* [rpm]
	[mm]	[in]	
HSS annular cutter	12–25	1/2 – 1	250
	25–44	1 – 1-3/4	160
	44–64	1-3/4 – 2-1/2	135
	64–111	2-1/2 – 4-3/8	85
TCT annular cutter	12–30	1/2 – 1-3/16	250
	30–50	1-3/16 – 2	160
	50–76	2 – 3	135
	76–111	3 – 4-3/8	85
Twist drill bit	16–22	5/8 – 7/8	250
	19–25	3/4 – 1	160
	22–30	7/8 – 1-3/16	135
	30–47	1-3/16 – 1-7/8	85

* for sharp tool and mild steel with a shear strength $R_m < 500 \text{ N/mm}^2$ (70,000 psi), such as for example St0 (S185), St3S (S235JR), or St4W (S275JO)

Steel with a shear strength $R_m = 500\text{--}700 \text{ N/mm}^2$ (70,000–100,000 psi), such as for example St5 (E295), 18G2A (S355N), or 45 (C45), requires lower rotational speed. If the speed is selected too high or too low for the shear strength and the type/diameter of the tool, the tool will wear faster or be unable to drill the hole.

Start the motor with the green MOTOR button, and slowly rotate the spoke handles to the left to lower the tool to the workpiece, and begin drilling. Next, use the speed adjustment knob to set a speed suitable for given process conditions.

When using annular cutters, drill holes in one pass.



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

When using drill bits, drill holes with diameters of 18–32 mm (11/16 – 1-1/4”) in two passes. Drill a first hole by using a drill bit with the 70% diameter of the hole size desired, and then drill again by using a bit with diameter equal to the hole size desired. Drill holes with diameters of 21–47 mm (13/16 – 1-7/8”) in three passes. Drill a first hole by using a drill bit with diameter of 18 mm (11/16”), drill again by using a bit with the 80% diameter of the hole size desired, and then drill again by using a bit with diameter equal to the hole size desired.

When drilling holes deeper than 50 mm (2"), retract the tool above the workpiece as often as possible to allow chips to be removed from the hole. If the grooves of the tool are clogged, stop the motor and use a brush to clean them. After the drilling depth exceeds 40 mm (1-9/16"), apply the cutting fluid manually into the drilling area.

If the operation results in an overload, caused by insufficient cooling, dull tool, or too fast feed in relation to the tool diameter, the machine will automatically stop. In such a case, to restart the machine, press the red MOTOR button, retract the tool from the workpiece, and then press the green MOTOR button (the electromagnetic base must remain powered).

Operating near the overload (with the lamp flashing) is allowed; however, if the lamp is lit continually and you increase the load, the motor will be shut off.

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 and the motor is stopped, switch the gear switches to the opposite position (for example from 250 rpm to 85 rpm or from 160 to 135), and then run the machine for a while without load, which will improve lubricity. Next, turn off the motor and the electromagnetic base, 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 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 falls under its own weight.

To remove the excessive clearance, use the 8 mm combination wrench to loosen the nuts (1, Fig. 8), and then use the 2.5 mm hex wrench to loosen the set screws (2). Next, rotate the spoke handles to set the motor on such a level to access the gib screws through the holes, use the 4 mm hex wrench to loosen these screws (3), and then tighten (4) with a force enough to prevent the gib from being pushed out by the springs located inside.

Use the 2.5 mm hex wrench to tighten the set screws (5) to such an extent that the motor moves smoothly through the entire stroke and not falls under its own weight. Next, use the 4 mm hex wrench to tighten the gib screws: central screw (6), adjacent screws, and then top and bottom screws. Finally, use the 8 mm combination wrench to tighten the nuts (7), while countering the set screws with the 2.5 mm hex wrench (8).

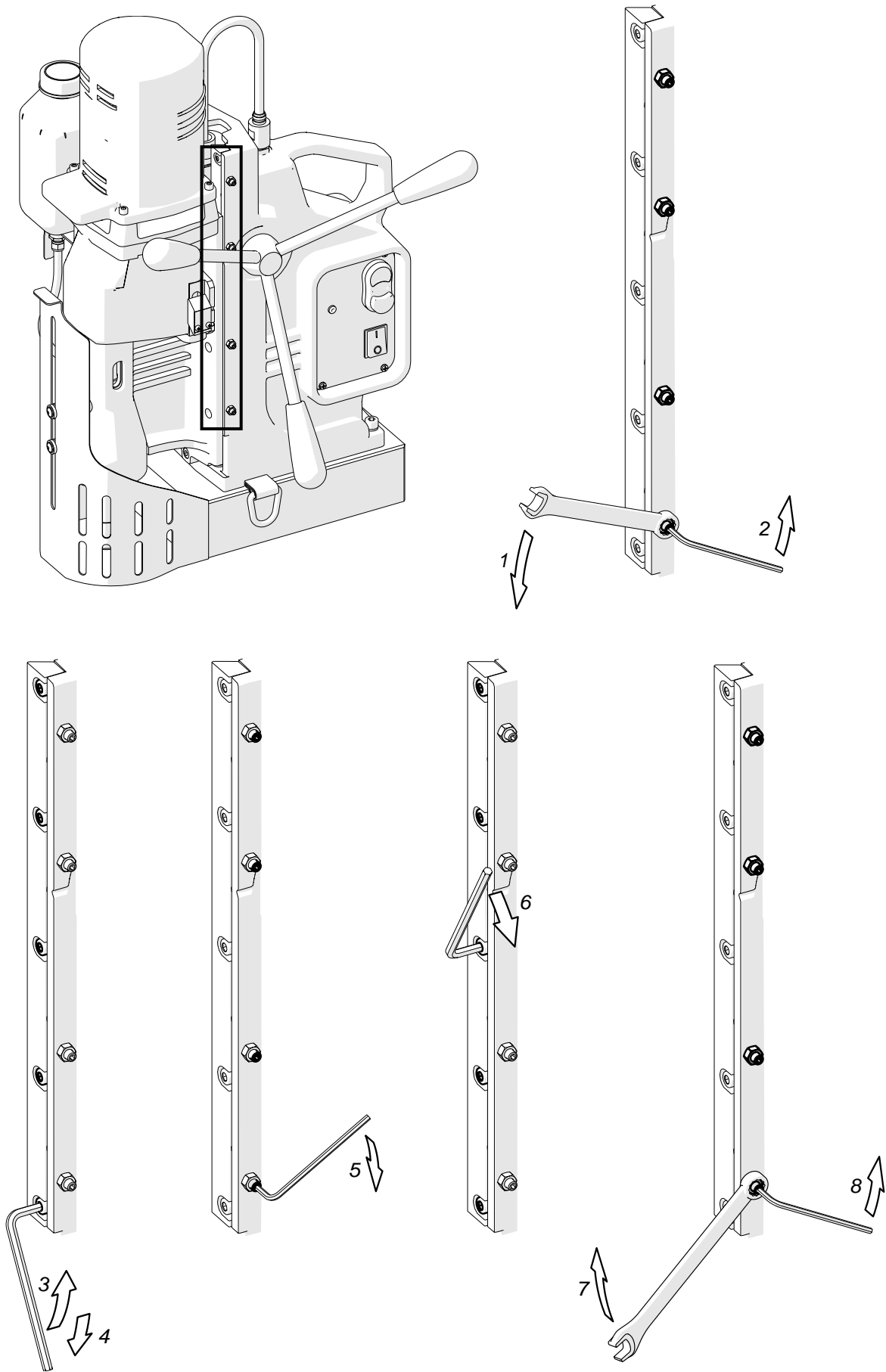


Fig. 8. Adjusting the gib clearance

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, use the 4 mm hex wrench to unscrew four screws (1, Fig. 9), and then remove the motor cover (2), paying attention to the ground wire 3 attached. Next, pry off the spring that holds the brush and rest the spring on the top of the brush holder (4). Unlock the connector by pressing it in the center (5), and then remove the connector (6) and the brush (7). 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.

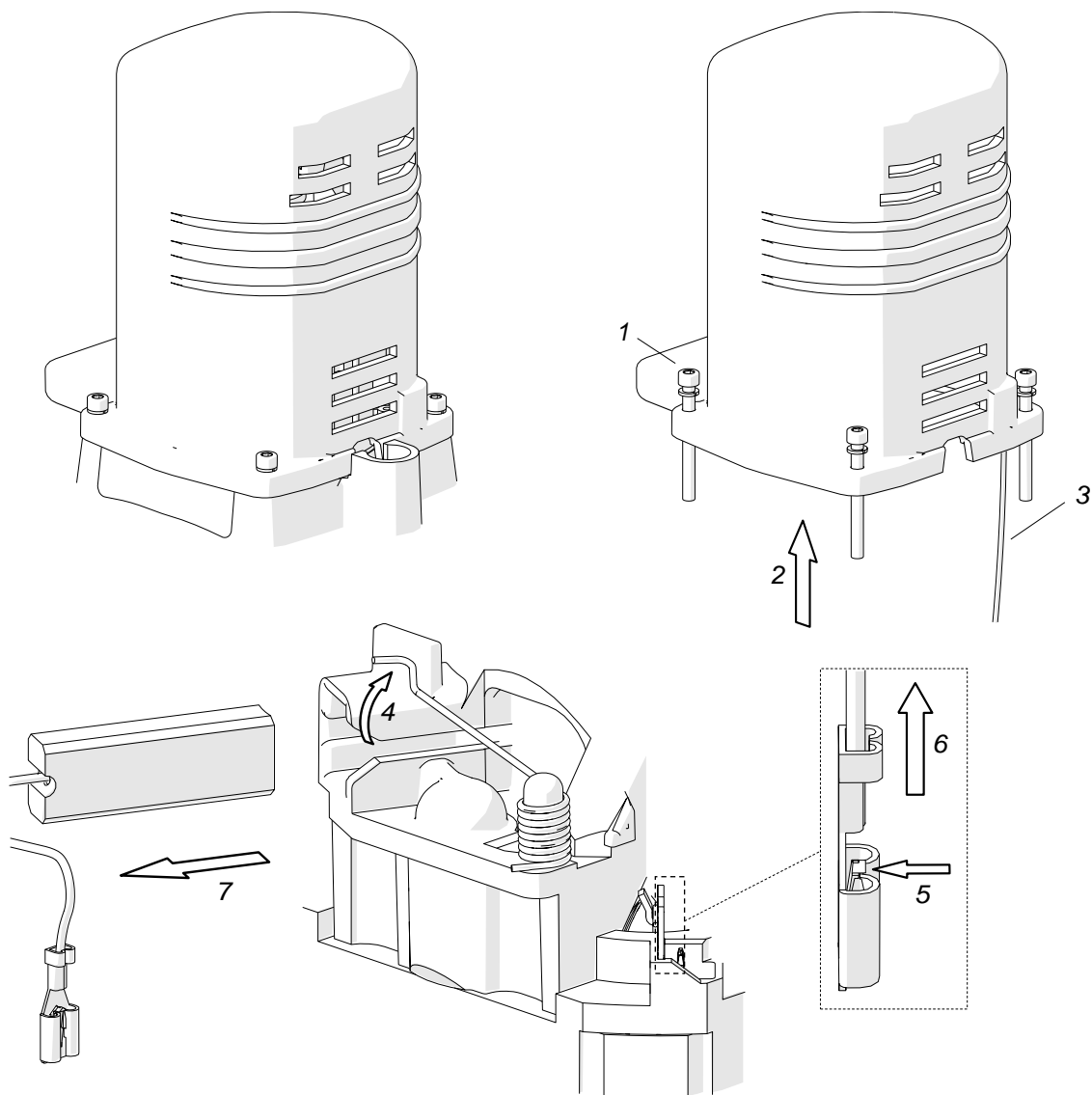


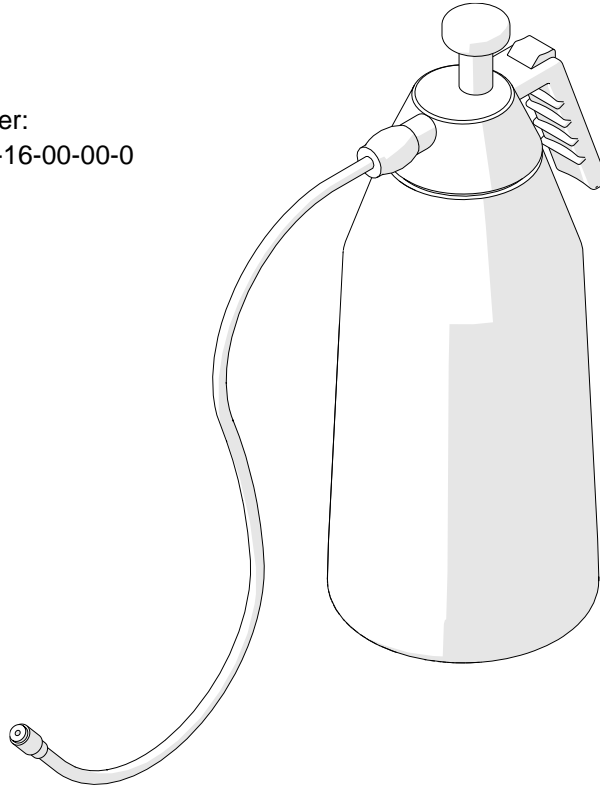
Fig. 9. Replacing the brushes

4. ACCESSORIES

4.1. Pressure cooling system

Capacity of 2 liters.

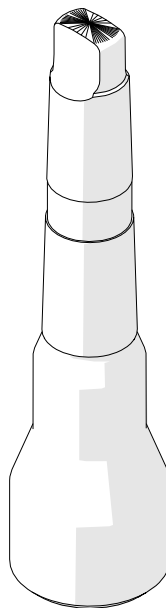
Part number:
UKL-0440-16-00-00-0



4.2. Arbor MT4 x 32 mm Weldon

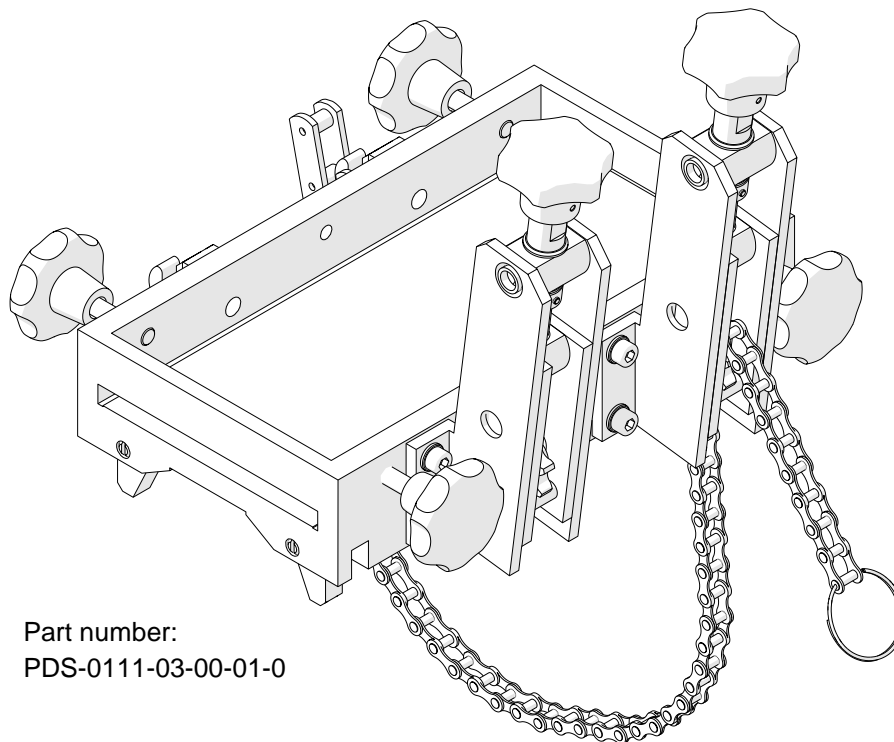
Required when drilling diameter is more than 60 mm (2-3/8").

Part number:
UCW-0191-02-00-00-0



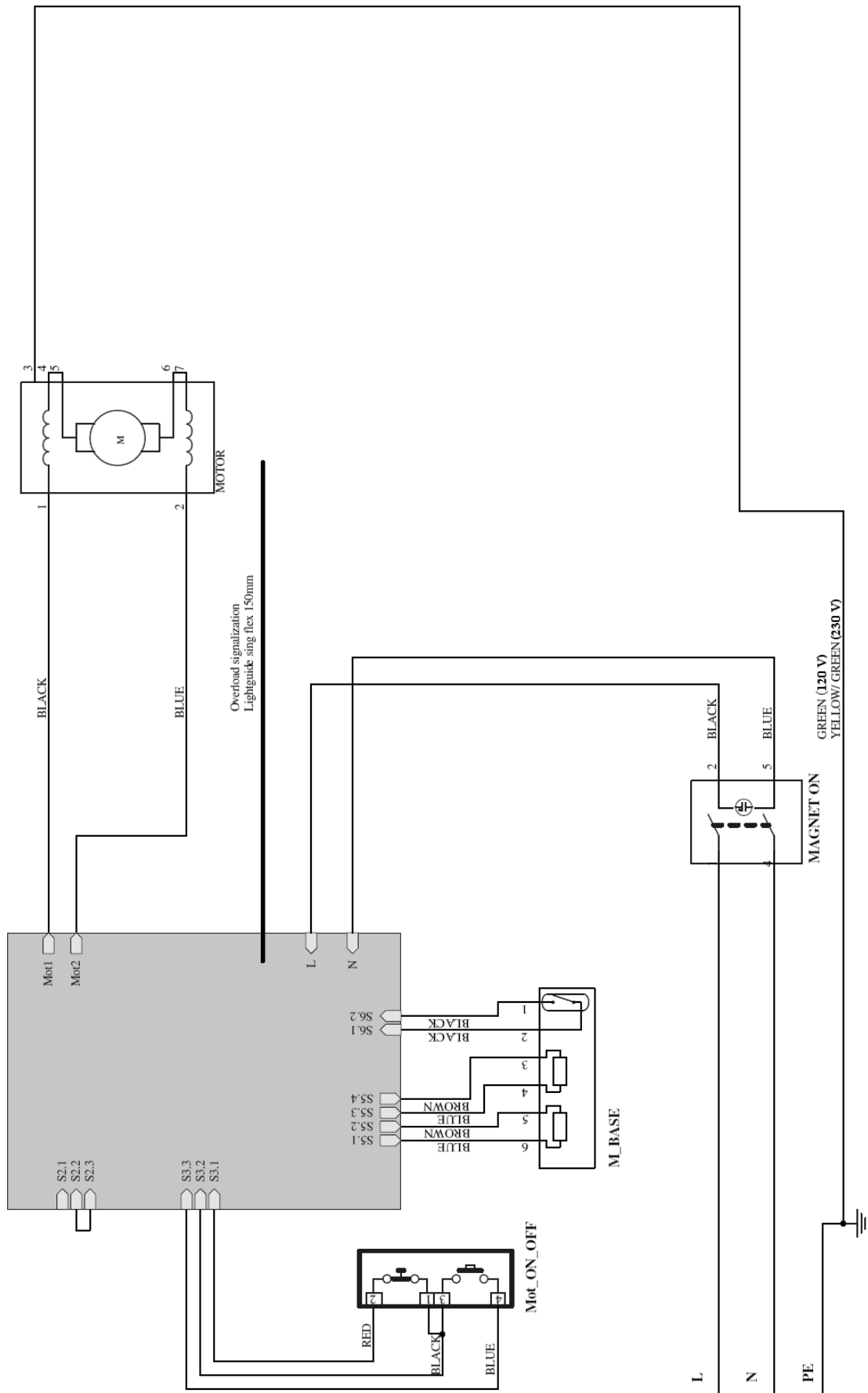
4.3. Pipe attachment DMP 501

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

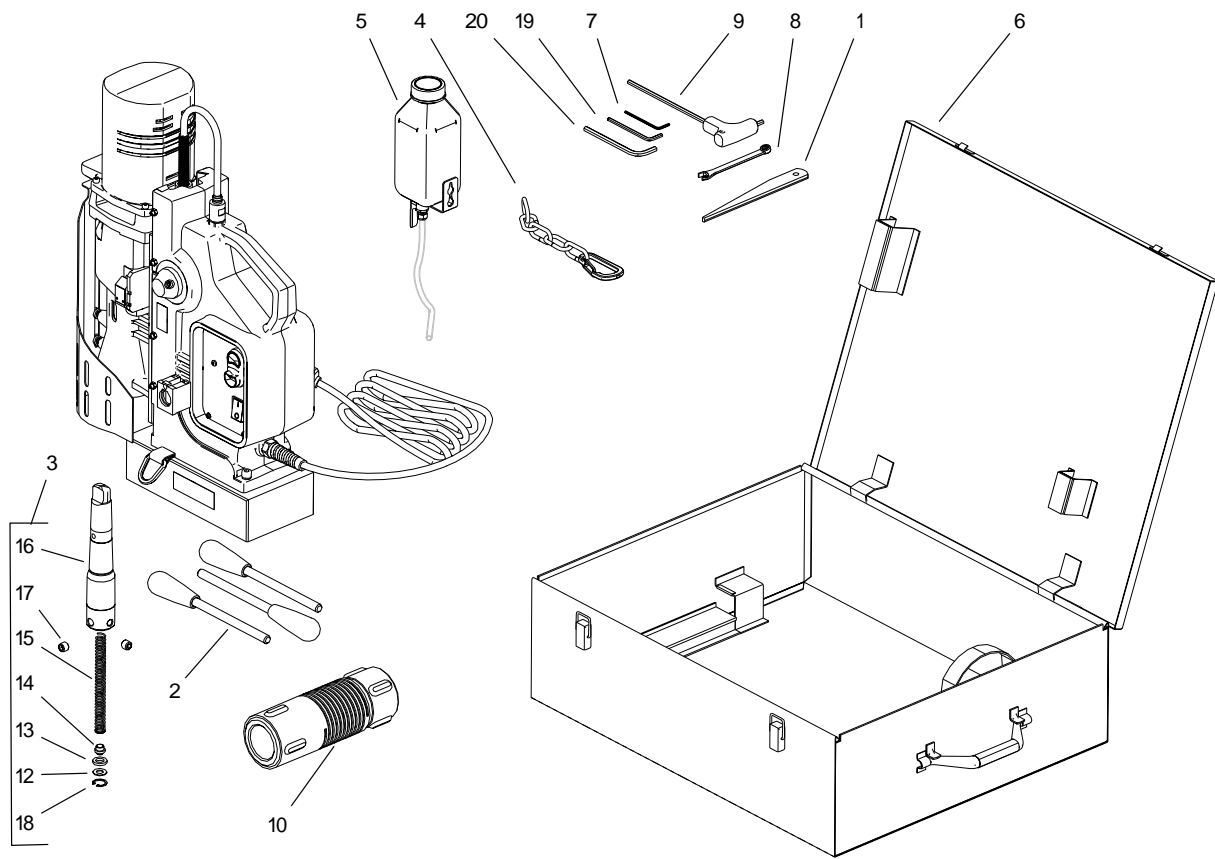


Part number:
PDS-0111-03-00-01-0

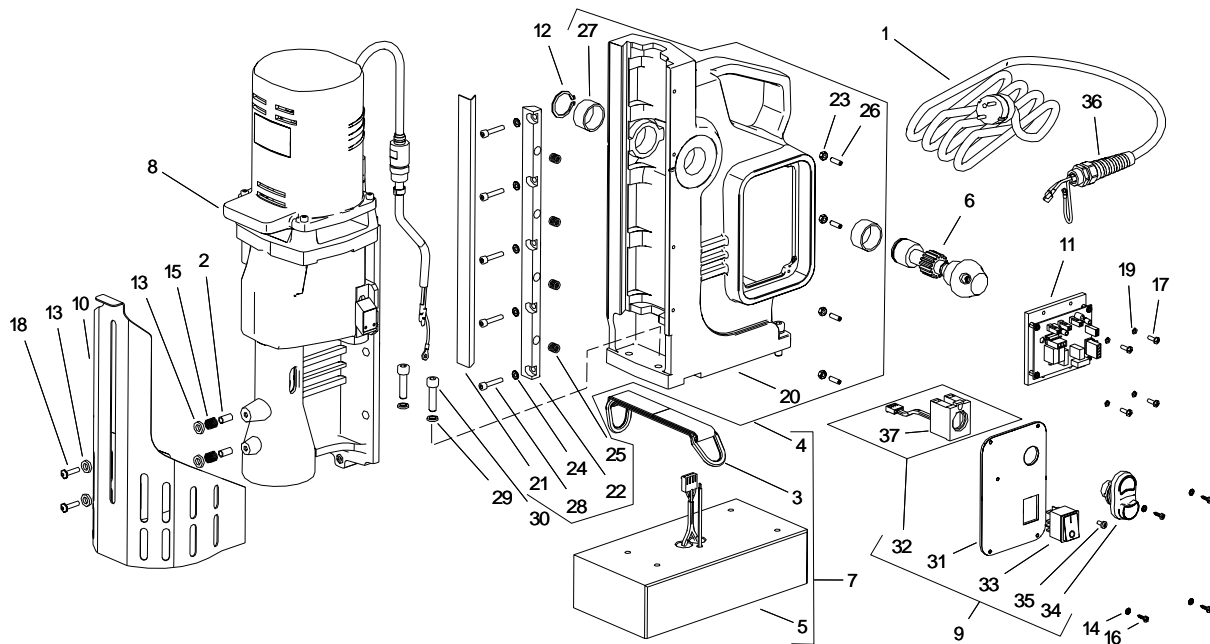
5. WIRING DIAGRAM



6. EXPLODED DRAWINGS AND PARTS LIST

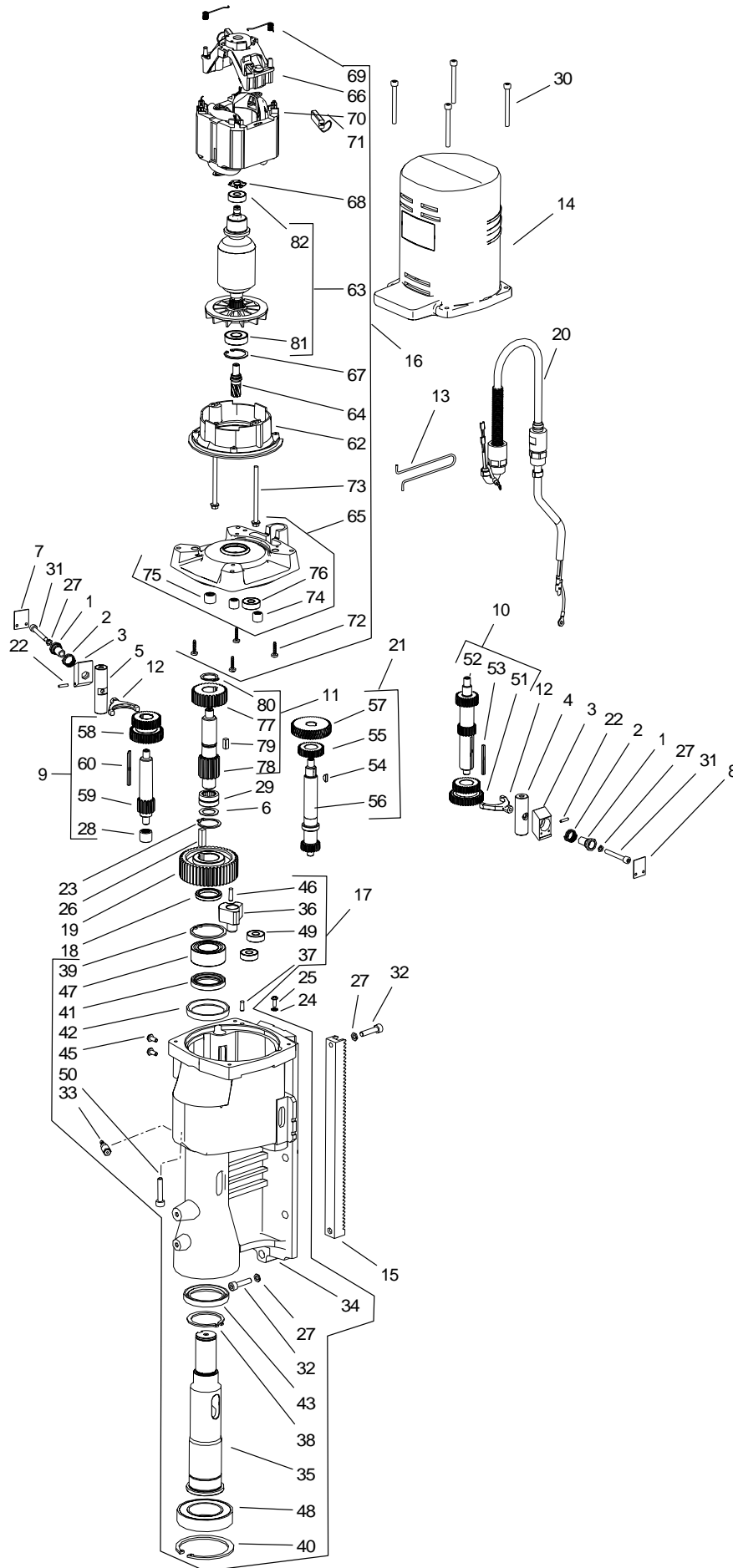


ITEM	PART NUMBER	DESCRIPTION	Q-TY
1	KLN-0103-00-00-00-0	WEDGE MT3	1
2	DZW-0400-07-00-00-0	SPOKE HANDLE WITH KNOB	3
3	UCW-0173-01-00-00-0	ARBOR ASSY AMT4-U19/4-3	1
4	LNC-0223-00-01-00-0	SAFETY CHAIN 1.5 M (5 FT)	1
5	UKL-0399-11-00-00-0	COOLING SYSTEM	1
6	SKR-0401-12-00-00-1	METAL BOX	1
7	KLC-000005	2.5 MM HEX WRENCH	1
8	KLC-000003	8 MM FLAT WRENCH	1
9	KLC-000037	5 MM HEX WRENCH	1
10	OPK-000001	TOOL CAN	1
12	PDK-0139-00-04-00-0	WASHER 18.8x10x1	1
13	USZ-0140-05-04-00-0	SEAL	1
14	WYP-0154-00-02-00-0	PLUNGER	1
15	SPR-0154-00-03-00-0	SPRING 1.6x12.4x159	1
16	KRP-0173-01-01-00-0	ARBOR BODY AMT4-U-19 /4-3	1
17	WKR-000036	HEX SOCKET SET SCREW WITH FLAT POINT M12x10	2
18	PRS-000009	INTERNAL RETAINING RING 19w	1
19	KLC-000007	4 MM HEX WRENCH	1
20	KLC-000009	6 MM HEX WRENCH	1



ITEM	PART NUMBER	DESCRIPTION	Q-TY
1	SZN-0075-00-51-00-5	POWER CORD 115V (US)	1
1	SZN-0212-10-02-00-2	POWER CORD 230V (EU)	1
1	SZN-0212-10-02-00-5	POWER CORD 230V (AU)	1
1	PWD-0212-10-02-00-6	POWER CORD 230V 3x1.5 WITH STRAIN RELIEF ASSY (INDIA)	1
2	TLJ-0399-06-00-00-0	BOTTOM SLEEVE	2
3	PAS-0205-00-20-00-1	D-RING STRAP – BLACK	1
4	KRP-0400-01-01-00-0	BODY ASSY	1
5	PDS-0402-00-00-00-0	ELECTROMAGNETIC BASE	1
6	WLK-0400-05-00-00-0	PINION SHAFT ASSY	1
7	STJ-0401-01-00-00-0	FRAME ASSY	1
8	NPD-0401-02-00-00-1	DRIVE ASSY 230V	1
8	NPD-0401-02-00-00-0	DRIVE ASSY 120V	1
9	MSK-0401-03-00-00-0	PANEL PLATE ASSY	1
10	OSL-0401-04-00-00-0	CHIP GUARD ASSY	1
11	ZSP-0401-05-00-00-1	ELECTRONIC CONTROLLER 230V	1
11	ZSP-0401-05-00-00-0	ELECTRONIC CONTROLLER 120V	1
12	PRS-000019	EXTERNAL RETAINING RING 28z	1
13	PDK-000151	NYLON WASHER 8.1x14x3	4
14	PDK-000161	EXTERNAL TOOTH LOCK WASHER 3.7	4
15	SPR-000030	PUSH SPRING 1x10x17.5	2
16	WKR-000415	CROSS RECESSED PAN HEAD SELF-TAPPING SCREW 3.5x13	4
17	WKR-000184	CROSS RECESSED PAN HEAD SCREW M4x12	4
18	WKR-000395	HEX SOCKET ROUND HEAD SCREW WITH FLANGE M5x20	2
19	PDK-000043	SPRING WASHER 4.1	5
20	KRP-0400-01-01-01-1	BODY	1
21	LST-0400-01-01-03-0	GIB	1
22	LST-0473-01-01-02-0	ADJUSTABLE GIB	1
23	NKR-000016	HEX NUT M5	4
24	PDK-000017	ROUND WASHER 5.3	5
25	SPR-000043	SPRING 1.6x8x14.5	4
26	WKR-000077	HEX SOCKET SET SCREW WITH FLAT POINT M5x16	4
27	TLJ-000010	SELF-LUBRICATING SLEEVE 28x32x16	2

ITEM	PART NUMBER	DESCRIPTION	Q-TY
28	SRB-000086	HEX SOCKET HEAD CAP SCREW M5x20	5
29	PDK-000051	SPRING WASHER 8.2	4
30	SRB-000155	HEX SOCKET HEAD CAP SCREW M8x30	4
31	MSK-0401-03-01-00-0	PANEL PLATE	1
32	WZK-0401-03-02-00-0	START-STOP WIRE SET	1
33	PNK-000013	MAGNET SWITCH	1
34	PRC-000007	START-STOP SWITCH	1
35	PEW-000002	LIGHT TUBE	1
36	DLW-000007	CABLE GLAND WITH STRAIN RELIEF PG11	1
37	BLO-000023	START-STOP CONTACT BLOCK	1



NPD-0401-02-00-00-1		MOTOR ASSY 230V	
NPD-0401-02-00-00-0		MOTOR ASSY 120V	
ITEM	PART NUMBER	DESCRIPTION	Q-TY
1	TLJ-0171-00-22-00-0	SWITCH SLEEVE	2
2	SPR-0171-00-23-00-0	SWITCH SPRING	2
3	DZW-0171-00-24-00-0	SHIFT LEVER	2
4	WLK-0202-00-16-00-1	SHIFT PIN SHORT	1
5	WLK-0202-00-17-00-1	SHIFT PIN LONG	1
6	PDK-0202-00-24-00-0	WASHER II	1
7	TBL-0202-00-30-00-1	GEAR PLATE I	1
8	TBL-0202-00-30-00-2	GEAR PLATE II	1
9	WLK-0202-02-01-00-0	PINION SHAFT ASSY z14	1
10	WLK-0202-02-02-00-0	PINION SHAFT ASSY z19, z25	1
11	WLK-0202-02-04-00-0	PINION SHAFT ASSY z14	1
12	WDL-0211-00-28-00-1	SHIFT FORK	2
13	PWD-0399-02-07-00-0	GROUND CONDUCTOR	1
14	OBD-0400-02-03-00-1	MOTOR HOUSING	1
15	LST-0400-02-06-00-0	GEAR RACK	1
16	SLN-0401-02-01-00-9	MOTOR ASSY 230V	1
16	SLN-0401-02-01-00-8	MOTOR ASSY 115V	1
17	KRP-0401-02-02-00-0	GEARBOX BODY ASSY	1
18	TLJ-0401-02-03-00-0	DISTANCE SLEEVE 25.1x31.8x4	1
19	KOL-0401-02-04-00-0	GEAR z46	1
20	WZK-0401-02-05-00-0	MOTOR WIRE ASSY	1
21	WLK-0401-02-06-00-0	PINION SHAFT z20 ASSY	1
22	KLK-000004	SPRING DOWEL PIN 3x12	2
23	PRS-000017	EXTERNAL RETAINING RING 25z	1
24	PDK-000060	EXTERNAL TOOTH LOCK WASHER 4.3	1
25	WKR-000183	CROSS RECESSED PAN HEAD SCREW M4x10	1
26	WPS-000052	KEY 6x6x22	1
27	PDK-000004	SPRING WASHER	4
28	LOZ-000007	NEEDLE BEARING 8x15x12	1
29	LOZ-000014	NEEDLE BEARING 16x24x13	1
30	SRB-000094	HEX SOCKET HEAD CAP SCREW M5x50	4
31	SRB-000091	HEX SOCKET HEAD CAP SCREW M5x35	2
32	SRB-000115	HEX SOCKET HEAD CAP SCREW M6x25	2
33	KNC-0234-00-10-00-0	HOSE FITTING	1
34	KRP-0401-02-02-01-1	GEARBOX BODY	1
35	WRZ-0401-02-02-02-0	SPINDLE MT4	1
36	WST-0401-02-02-03-0	METAL INSERT	1
37	KLK-000045	DOWEL PIN 5n6x12	1
38	PRS-000139	EXTERNAL RETAINING RING 40z	1
39	PRS-000026	INTERNAL RETAINING RING 42w	1
40	PRS-000244	INTERNAL RETAINING RING 68w	1
41	PRS-000245	SEAL 30x42x7	1
42	PRS-000246	SEAL 40x52x7	1
43	PRS-000247	SEAL 40x55x7	1
44	KNC-0234-00-10-00-0	COOLANT COUPLING	1
45	WKR-000450	CROSS RECESSED PAN HEAD SCREW M5x10	2
46	KLK-000049	DOWEL PIN 5n6x20	1
47	LOZ-000017	NEEDLE BEARING 30x42x17	1

NPD-0401-02-00-00-1		MOTOR ASSY 230V	
NPD-0401-02-00-00-0		MOTOR ASSY 120V	
ITEM	PART NUMBER	DESCRIPTION	Q-TY
48	LOZ-000107	BALL BEARING 40x68x15	1
49	LOZ-000055	BALL BEARING 8x22x7	2
50	SRB-000118	HEX SOCKET HEAD CAP SCREW M6x30	1
51	KOL-0202-00-08-00-0	GEAR z31, z42	1
52	WLK-0202-00-09-00-0	PINION SHAFT z19, z25	1
53	WPS-0202-00-21-00-1	KEY 3x3x38	1
54	WPS-0171-00-20-00-1	KEY	1
55	KOL-0202-00-06-00-0	GEAR z29	1
56	WLK-0202-00-07-00-0	PINION SHAFT z20	1
57	KOL-0401-02-06-01-1	HELICAL INPUT GEAR z45	1
58	KOL-0202-00-10-00-0	GEAR z33, z39	1
59	WLK-0202-00-11-00-0	PINION SHAFT z14	1
60	WPS-0202-00-20-00-1	KEY 3x3x45	1
62	KRW-0400-02-01-02-0	FAN GUIDE	1
63	WRN-0400-02-01-10-1	ROTOR ASSY 230V	1
63	WRN-0400-02-01-10-0	ROTOR ASSY 115V	1
64	KNC-0400-02-09-00-0	ROTOR TOOTH END z8	1
65	PKR-0401-02-01-01-4	MOTOR COVER ASSY	1
66	OBD-000024	UPPER HOUSING	1
67	PRS-000018	INTERNAL RETAINING RING 28w	1
68	PDK-000157	SPRING WASHER	1
69	SPR-000042	BRUSH SPRING	2
70	STN-000029	STATOR 230V	1
70	STN-000028	STATOR 120V	1
71	SCZ-000022	BRUSH 230V	2
71	SCZ-000023	BRUSH 115V	2
72	WKR-000407	CROSS RECESSED PAN HEAD TAPPING SCREW M4x20	4
73	SRB-000286	HEXAGON BOLT M5x76	2
74	LOZ-000006	NEEDLE BEARING 8x12x10	2
75	LOZ-000004	NEEDLE BEARING 101410	1
76	LOZ-000053	BALL BEARING 8x22x7	1
77	KOL-0202-00-12-00-0	GEAR z33	1
78	WLK-0202-00-13-00-0	PINION SHAFT z14	1
79	WPS-0202-00-19-00-1	KEY 5x5x12	1
80	PRS-000008	EXTERNAL RETAINING RING 18z	1
81	LOZ-000025	BALL BEARING 12x28x8	1
82	LOZ-000055	BALL BEARING 8x22x7	1
-	SMR-000001	GREASE LUBRIPLATE BP1	0.72 kg (25 oz)

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:

D4X Drilling Machine with Electromagnetic Base

is manufactured in accordance with the following standards:

- EN 50144-1
- EN 55014

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

Białystok, 15 October 2009



Marek Siergiej
CEO

8. QUALITY CERTIFICATE

Machine control card

Drilling Machine with Electromagnetic Base

D4X 120 V

D4X 230 V

Serial number

Spindle radial runout.....

Slide to base travel perpendicularity.....

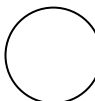
Spindle axis to base perpendicularity

Base holding force

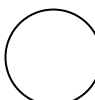
(surface with the thickness of 22 mm and roughness $R_a \leq 1.25$)

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 Ω Signature

Quality control 

Adjustments, inspections

Quality control 

9. WARRANTY CARD

WARRANTY CARD No.....

..... in the name of Manufacturer warrants the D4X 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.....

1.01 / 18 May 2016

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
11/16"	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