

TRADEMASTER[®]
INDUSTRIAL TOOLS

OPERATOR'S MANUAL
BM-21
BEVELLING MACHINE



IMPORTED & DISTRIBUTED 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.

Our goods come with guarantees which cannot be excluded under the Australian Consumer Law. You are entitled to replacement or refund for a major failure and to compensation for other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.



**Read Operator's Manual
before you start to work with the machine**

CONTENTS

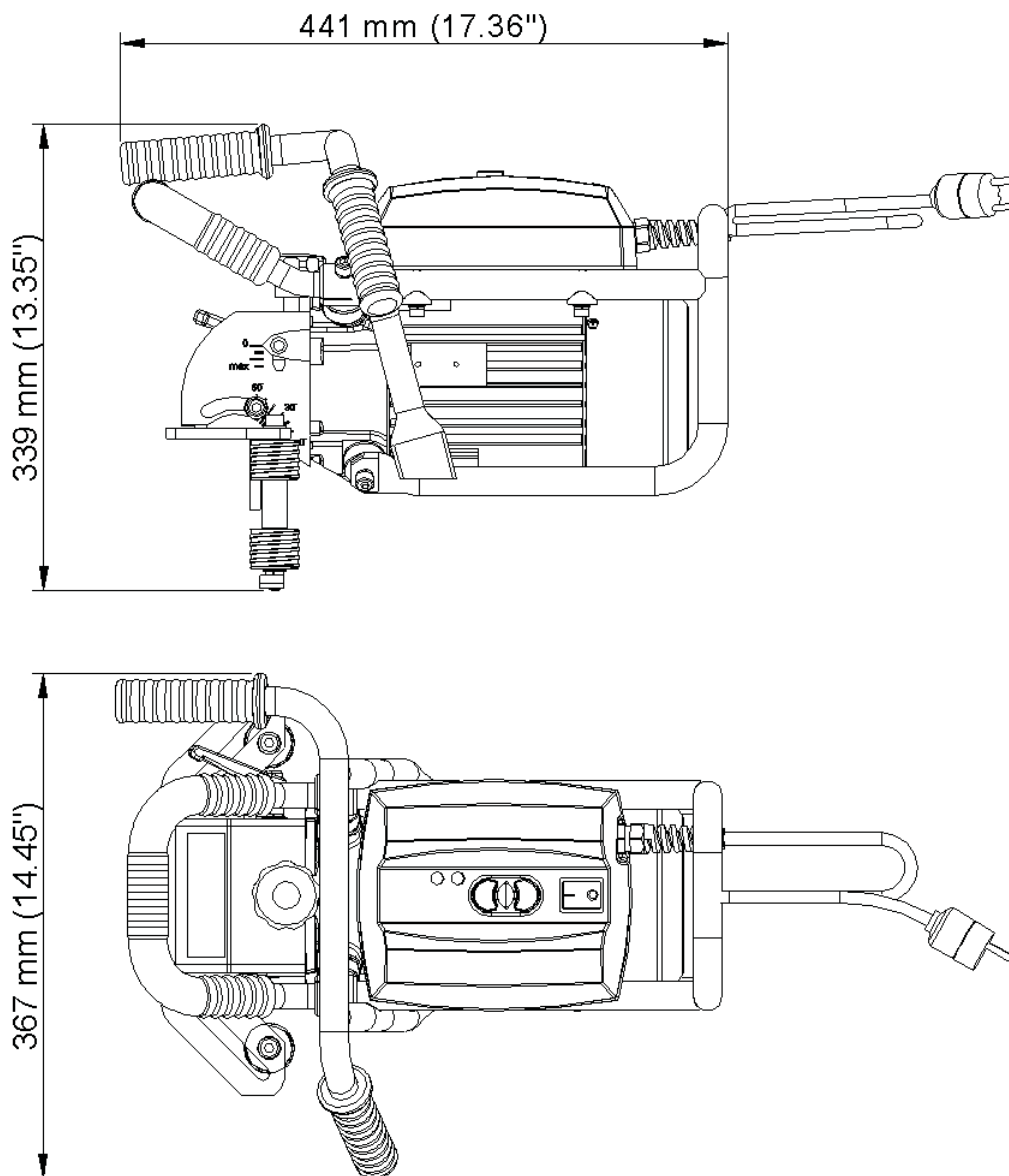
1.	GENERAL INFORMATION.....	4
	1.1. Application.....	4
	1.2. Technical data.....	4
	1.3. Equipment included	5
2.	SAFETY PRECAUTIONS.....	6
3.	STARTUP AND OPERATION.....	8
	3.1. Preparing to operation.....	8
	3.2. Adjusting bevel width and angle.....	9
	3.3. Bevelling metal plates.....	10
	3.4. Bevelling pipes.....	10
	3.5. Bevelling larger pipes (only for optional equipment).....	13
	3.6. Replacing cutting inserts.....	14
	3.7. Replacing milling head.....	15
4.	WIRING DIAGRAM.....	16

1. GENERAL INFORMATION

1.1. Application

The BM-21 Beveling Machine is designed for milling edges of plates and pipes made of carbon steel. The machine enables the beveling of sheet steel edges and pipe edges with diameters from 150 mm (6") to 300 mm (12") in 0–60° angular range with maximum bevel width of 21 mm (13/16"). When equipped with the optional guide available on request, it can also work on pipes with diameters above 300 mm (12"). The machine contains dampers that enable more comfortable operation, reducing unwanted vibrations.

1.2. Technical data



Voltage	~ 220–240 V, 50–60 Hz
Electric motor	Single-phase induction motor with run capacitor; 1100 W
Power	1600–1800 W
Rotational speed	2780–3340 rpm
Protection level	IP 20
Milling speed	550–650 m/min (1800–2200 ft/min)
Maximum bevel width	$b \approx 21$ mm (13/16", Figure 1)
Bevel angle range	$0^\circ \leq \beta \leq 60^\circ$ (Figure 1)
Weight	Approx. 23 kg (51 lbs)

Milling tool is equipped with 10 removable multi-edge cutting inserts made of carbide.

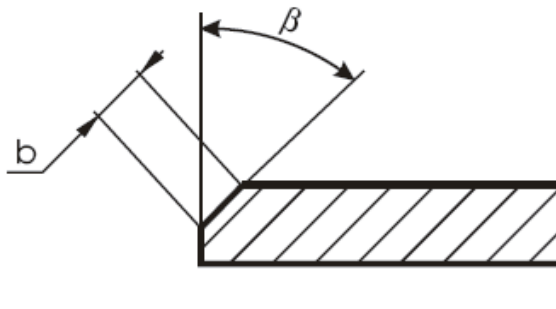


Figure 1. Bevel dimensions

1.3. Equipment included

BM-21 Beveling Machine is supplied in metal box with complete standard equipment.

The included equipment consists of:

- bevelling machine with a set of cutting inserts – 1 unit
- metal box – 1 unit
- size 8 Allen key – 1 unit
- size 6 Allen key – 1 unit
- size 4 Allen key – 1 unit
- size 12 flat key – 1 unit
- torx T15 screwdriver – 1 unit
- Operator's Manual – 1 unit

2. SAFETY PRECAUTIONS

Using the machine is not allowed if:

1. Operator has not read Operator's Manual or has not completed proper occupational safety and health training.
2. Machine is to be used in applications not stated in Operator's Manual.
3. Machine is not complete or parts used for repair are not genuine.
4. Power supply specifications do not conform to those stated on rating plate.
5. Operator has not checked condition of machine, including power cord, control panel components and milling tools.
6. Power supply socket is not equipped with earthing pin.
7. Bystanders are present in immediate vicinity of machine.

Detailed safety rules:

- 1) Before you start to work with machine, check condition of electrical installation, including power cord and plug.
- 2) Connect machine only to power sockets equipped with a safety circuit (earthing) protected with 16A fuse for 230 V supply. When used on building sites, supply power to machine through a separation transformer with a class 2 power supply.
- 3) Never carry machine by cord or pull it to disconnect plug from socket. It may cause power cord to break and result in electric shock.
- 4) Keep machine dry. Exposing it to rain or snow is prohibited.
- 5) Ensure proper lighting on your worksite.
- 6) Never use machine in vicinity of combustible fluids or gases or in explosive environments.
- 7) Always use safety goggles, hearing protection, gloves and protective clothing during operation. Do not wear loose clothing!
- 8) Never use blunt or damaged tools.
- 9) Never remove hot and sharp metal chips with bare hands.
- 10) Securely fasten cutting inserts in milling head using fastening screws.



WARNING! Do not hold rotating parts of the machine or metal chips formed during milling!

- 11) If cutting edge of insert is worn out, rotate insert in socket by 90° or, if all edges are worn out, replace with new insert specified in Operator's Manual.
- 12) Before every use, inspect machine to ensure it is not damaged. Check whether any part is cracked and whether all parts are properly fitted. Make sure to maintain proper conditions that may affect machine operation.
- 13) Maintain machine and tools with care. Cover steel parts with thin grease layer to protect them against rust when not in use for a long period.
- 14) After every use, remove metal chips from machine, particularly from milling head, ensuring that power cord is unplugged from power socket.
- 15) Use only parts recommended by manufacturer and specified in Operator's Manual.
- 16) Perform all maintenance work and repairs only with power cord disconnected from power socket.
- 17) Replace damaged parts of machine only with genuine parts.
- 18) Perform all mechanical and electrical repairs only in service centre appointed by seller.
- 19) If machine falls on a hard surface, from a height, is wet or has other damage that could affect technical state of machine, stop operation and immediately send machine to service centre for inspection.



**WARNING! Do not hold rotating parts.
Safety rules must be closely observed.**

START UP AND OPERATION



WARNING! Read safety precautions before you start to work with the machine.

3.1. Preparing for operation

Before performing any work, set required bevel width and angle (see “Adjusting bevel width and angle” pg 9).

After setting proper values, plug the machine into an earthed power socket. Place machine vertically on the right edge of workpiece in a way that milling head does not touch working edge. Then, turn on the power by pressing main switch located on the motor housing (Figure 2, Item 1) to “I” position, what will be indicated by amber light. The green button marked “I” (Figure 2, Item 2) is used to start the machine, pressing red button marked “0” (Figure 2, Item 3) stops the machine. To turn off the power, press main switch back to “0” position. The yellow lamp (Figure 2, Item 4) indicates operation of the tool. Pressing vertical guide to the working edge, slowly slide machine until the tool starts to cut steel. Beveling is performed according to counter-rotation. The proper feed direction is shown in Figure 2; direction of milling head rotation is indicated on the motor disc under milling head cover.

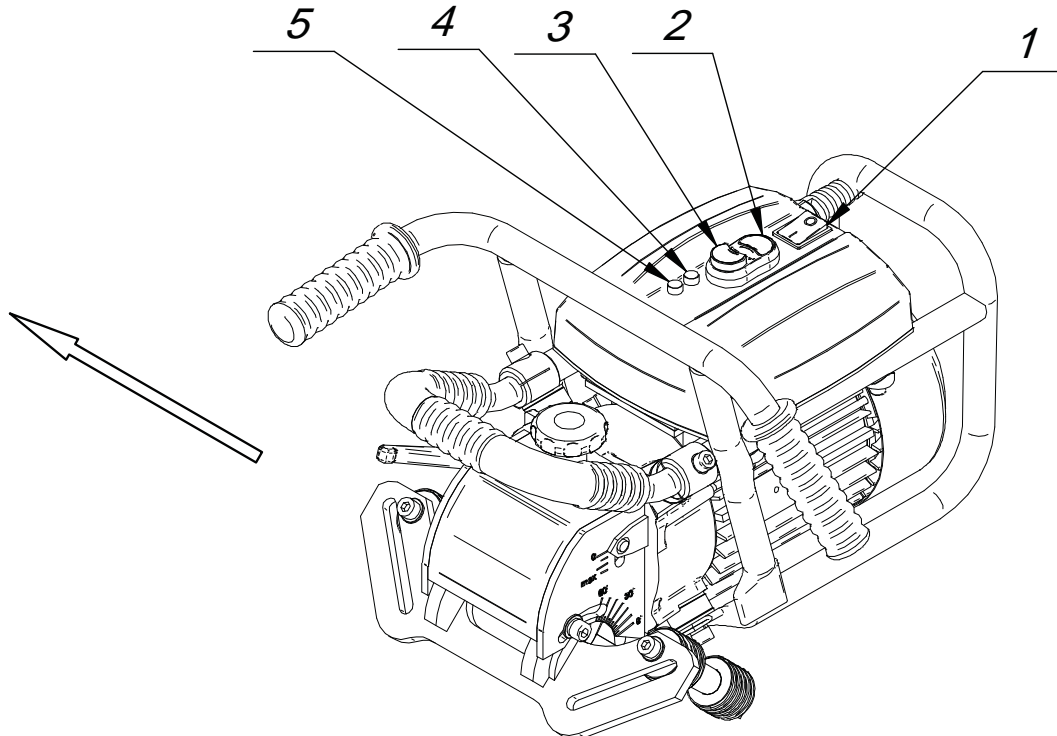


Figure 2. Control panel design and proper machine feed direction

3.2. Adjusting bevel width and angle

The machine enables easy and quick adjustment of bevel parameters. Before performing adjustments, ensure that the power cord is unplugged from power socket. Adjustment of the bevel angle starts with milling head penetration set to zero (indication “0” on the milling head cover side wall).

To change bevel angle, use size 6 Allen key and loosen two M8 bolts (Figure 3, Item 1) that lock machine guide. Then, turn the guide, setting required angle on the scale located on milling head cover side wall (Figure 3, Item 3) and secure the bolts afterwards.

To adjust bevel width, change penetration of the milling head: loosen M8 lever (Figure 3, Item 2) and turn adjusting knob (Figure 3, Item 5) to obtain required width.

The pitch that indicates milling head penetration (Figure 3, Item 4) is only an estimate, because bevel width varies with angle. For example, for the angle of 10° the maximum width “b” (Figure 1) is approximately equal 18 mm (11/16”), while the scale indicates 9 mm (6/16”). Increasing penetration at this angle will distort the bevel. You can obtain maximum bevel width ($b \approx 21$ mm, 13/16”) for the angle of 45° . Experimentally determine the required bevel width for individual angles, by gradually increasing milling head penetration into the working piece.

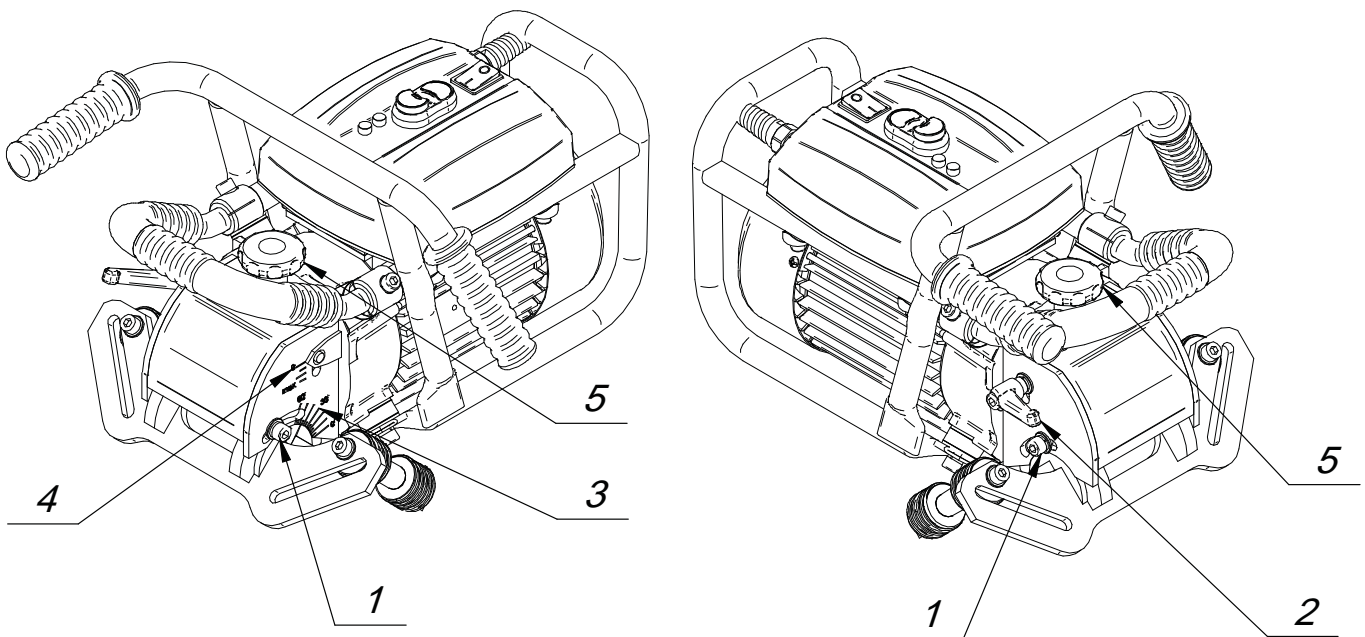


Figure 3. Adjusting bevel width and angle

3.3. Beveling metal plates

Slide the beveling machine to the left. Note that the feed rate depends on the profile and composition of the working material. You can bevel the majority of weldable steels in just one pass.

It is recommended to perform bevels wider than 12 mm (1/2") in at least two or three passes. To obtain maximum bevel width (21 mm, 13/16") in two passes, first pass should be 14 mm wide (9/16"), whereas for three passes the first one should be 12 mm wide (1/2") and the second one should be 16 mm wide (5/8").

If the feed is too fast, a red signal lamp illuminates, indicating motor overload (Figure 2, Item 5). Further load increasing triggers safety circuit and shuts down the motor. In this case, move the tool away from bevelled edge, press main switch to "0" position and after red signal lamp turns off press main switch back to "I" position. Operation with the maximum permitted load (with flashing red signal lamp) is technically possible, but motor temperature should not exceed 85°C (185°F). The motor can work under high temperatures, but long overheating may permanently damage the windings. Therefore, after every hour of working under full load, stop the motor to cool it down for 10–15 minutes. Do not cool the motor down by leaving it in the idle state, because it will become heated even faster than when working with load.

3.4. Beveling pipes

The guide with rollers supplied as a part of standard equipment enables to bevel pipes with diameters 150–300 mm (6–12").

To prepare the machine for work on pipes, unscrew two M8 bolts (Figure 4a, Item 2) using size 6 Allen key. Then, take out the guide set (Figure 4a, Item 1, 5), rotate it by 180° around the axis indicated in Figure 4a, mount as shown in Figure 4b and secure again with M8 bolts. Using size 8 Allen key and size 12 flat key, unscrew bolts (Figure 4a, Item 4) that secure the rollers. Then, move rollers (Figure 4a, 4b, Item 3) from opening (Figure 4a) to slot (Figure 4b), placing T-nut (Figure 4a, 4b, Item 6) into the slot.

Using adjusting knob (Figure 3, Item 5), set "0" position on the pitch (Figure 3, Item 4). Move rollers away from each other and place the machine as shown in Figure 5, with horizontal guide (Figure 4b, Item 5) touching the pipe. Then, move rollers (Figure 4a, 4b, Item 3) symmetrically to touch the pipe and secure with bolts (Figure 4b, Item 4) in this position. Adjust required bevel width and angle (see "Adjusting bevel width and angle") and start to work with beveling machine.

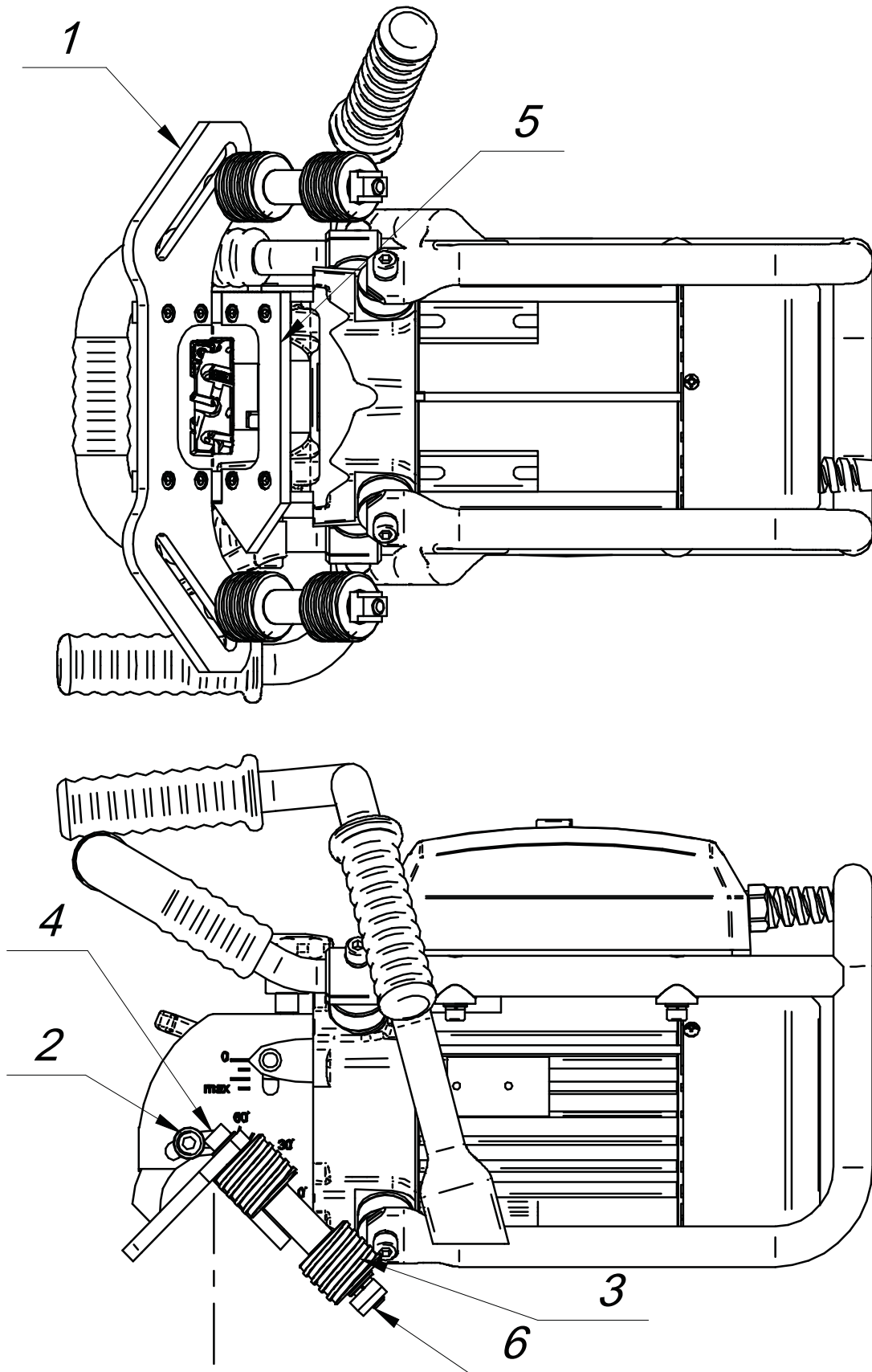


Figure 4a. Machine prepared for work on metal plates

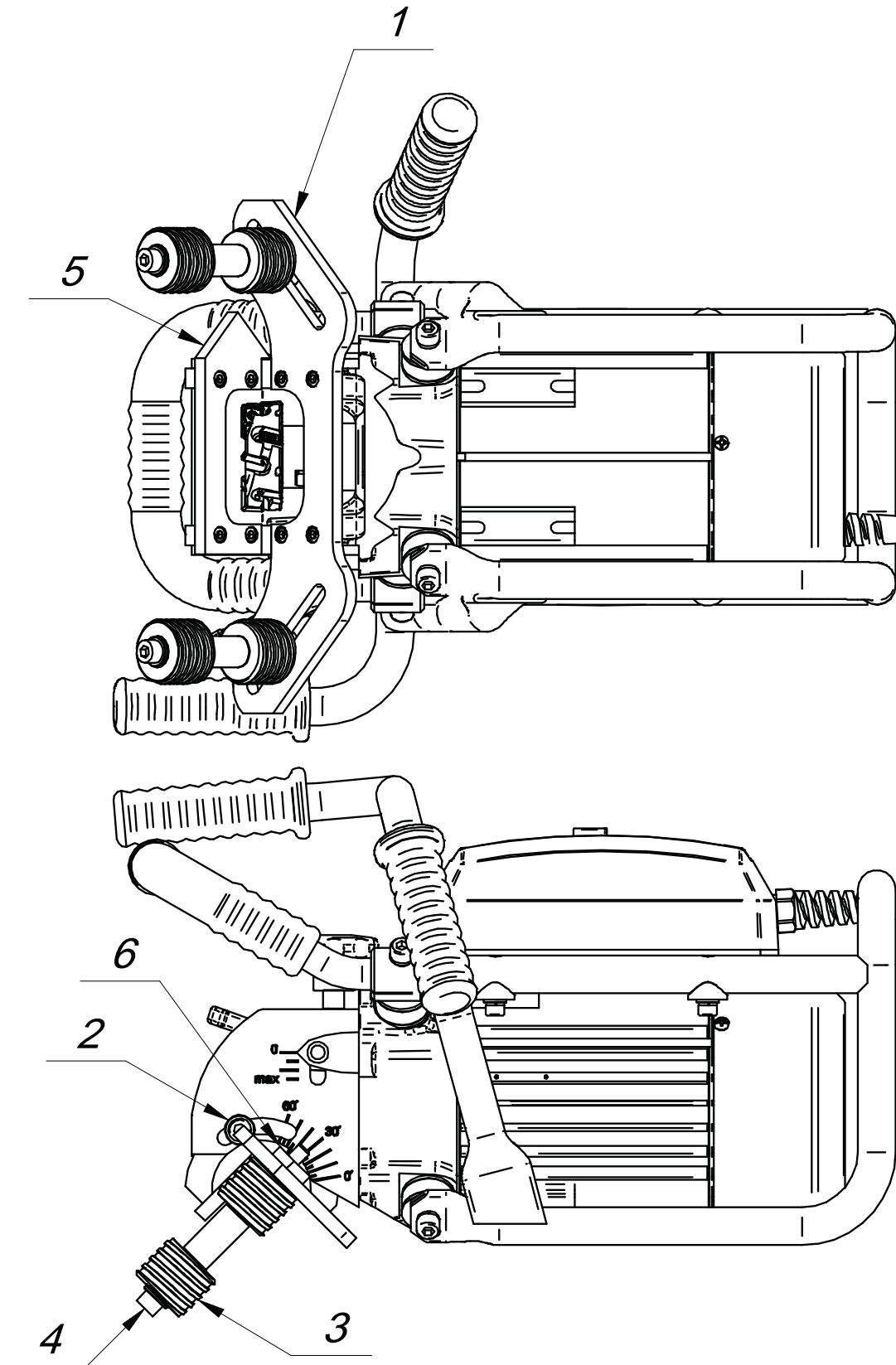


Figure 4b. Machine prepared for work on pipes

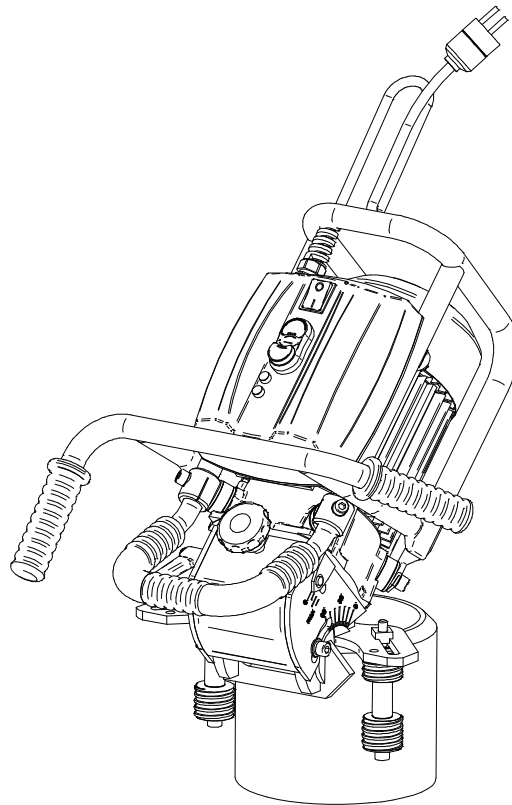


Figure 5. Machine prepared for work on smaller pipes (\varnothing 150–300 mm, \varnothing 6–12”)

3.5. Beveling larger pipes (only for optional equipment)

You can optionally order the guide for beveling larger pipes with diameters 260–600 mm (10–24” ~~Figure 6~~). To prepare the machine for work on larger pipes, proceed as described in previous section.

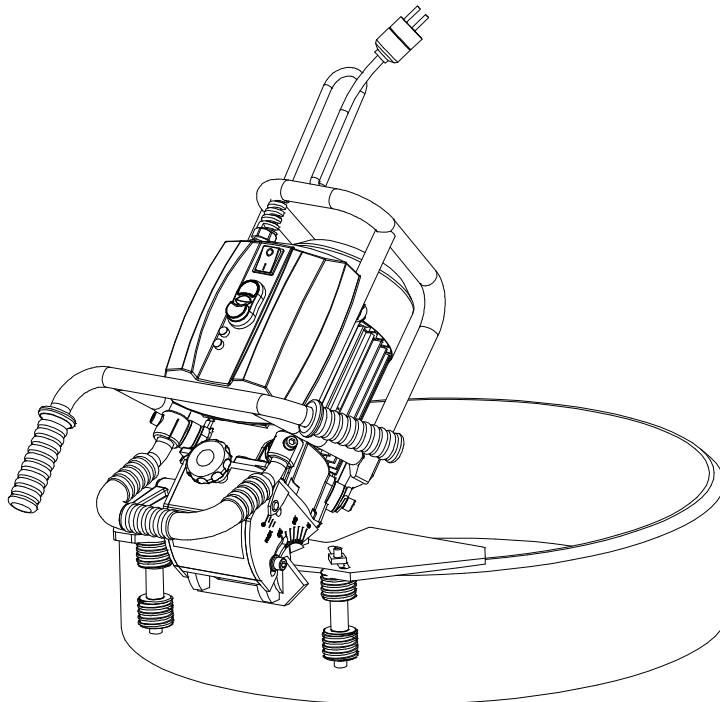


Figure 6. Machine prepared for work on larges pipes (\varnothing 260–600 mm, \varnothing 10–24”)

3.6. Replacing cutting inserts

BM-21 Bevelling Machine is equipped with uniform milling head (Figure 8, Item 1), containing two insert rings, each holding five cutting inserts, for a total of 10 inserts. The inserts can be replaced or rotated. **Perform this work only with power cord unplugged from power socket.** To replace or rotate the insert, unscrew lever (Figure 7, Item 1), remove pitch (Figure 7, Item 2) and remove milling head cover (Figure 7, Item 3).

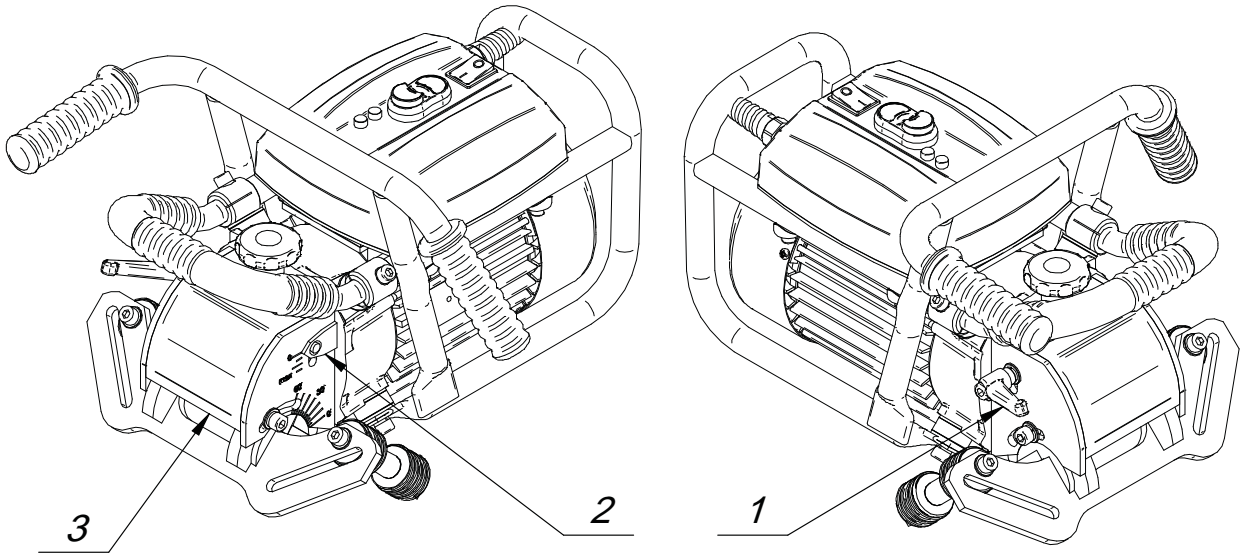


Figure 7. Dismantling milling head cover Using torx T15 screwdriver, unscrew bolt (Figure 8, Item 3), remove external insert (Figure 8, Item 2) and clean the socket. Then, place rotated insert again or replace with new one if all four edges are worn out. To replace insert from internal ring, remove external insert first.

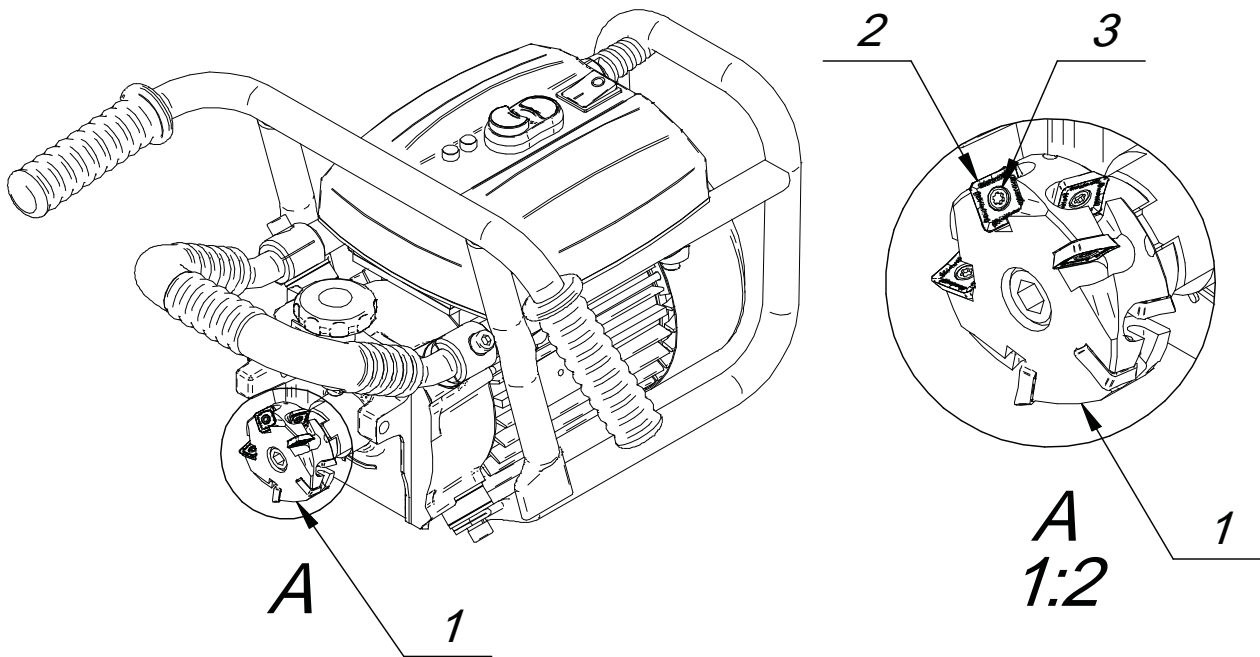


Figure 8. Milling Tool

When performing small width bevels, cutting inserts wear only on one, internal corner. Rotate inserts between rings (Figure 9), to extend the life of inserts.

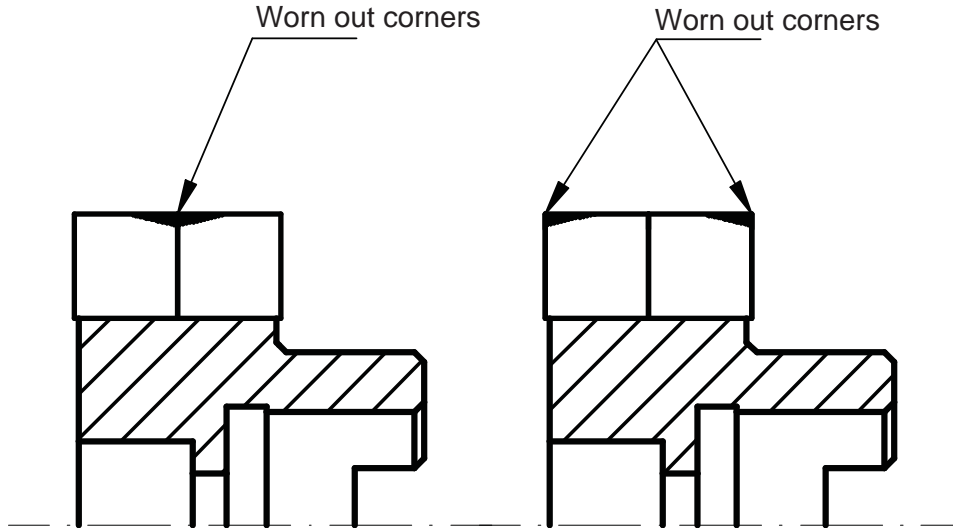


Figure 9. Changing cutting inserts between rings

3.7. Replacing milling head

To replace milling head, unscrew lever (Figure 7, Item 1), remove pitch (Figure 7, Item 2) and remove milling head cover (Figure 7, Item 3). Place size 32 flat key on driving ring (Figure 10, Item 1) to lock spindle rotation. Then, use size 8 Allen key to unscrew bolt (Figure 10, Item 2) and remove milling head. Size 32 flat key is not included in standard equipment.

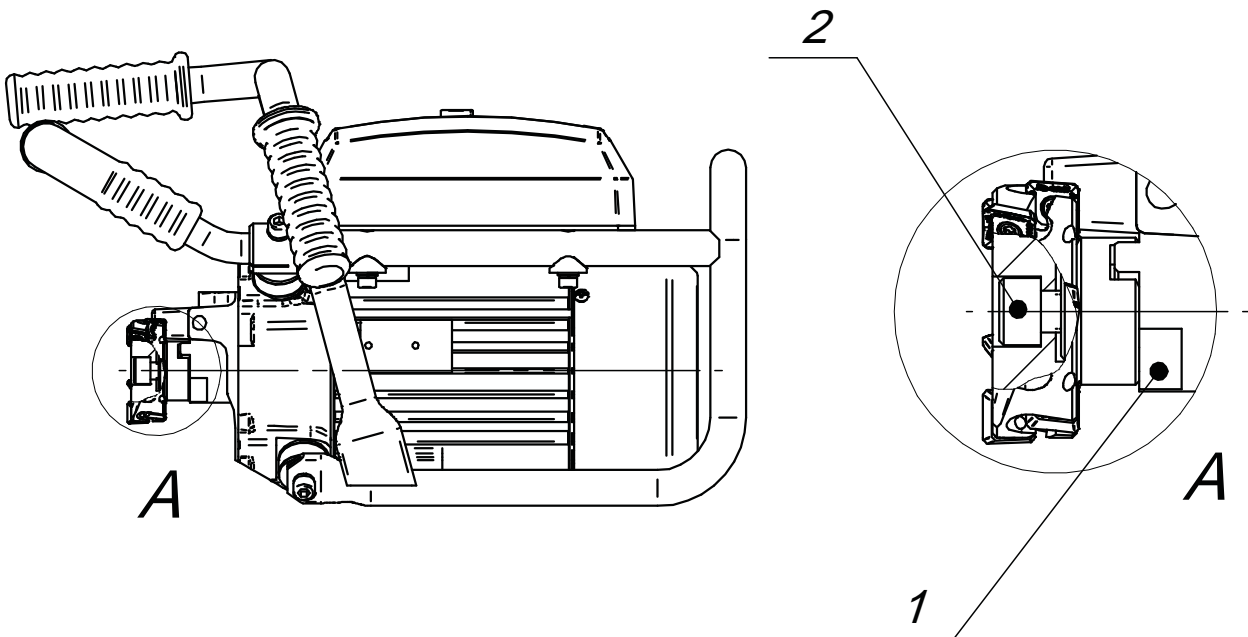
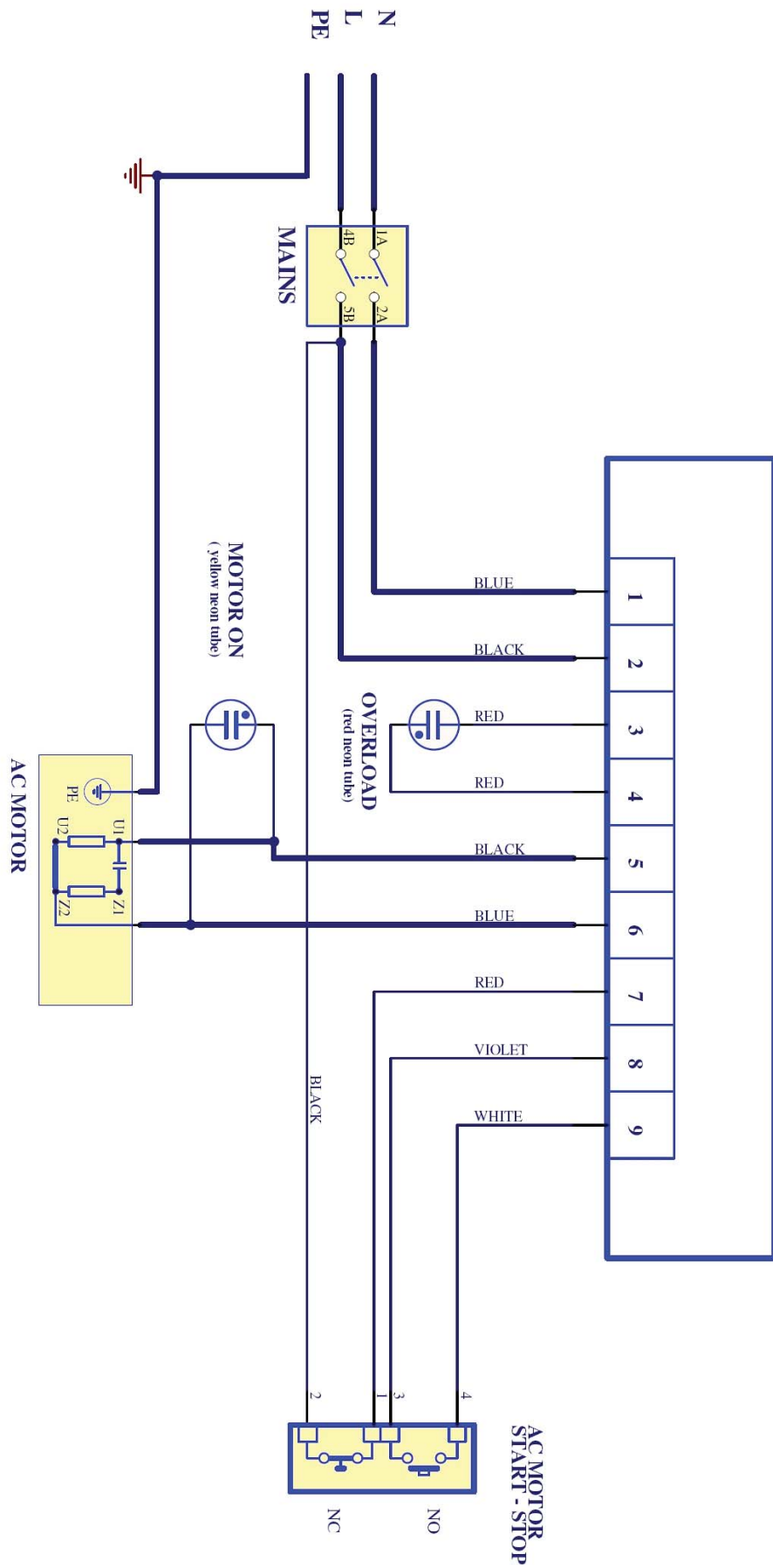
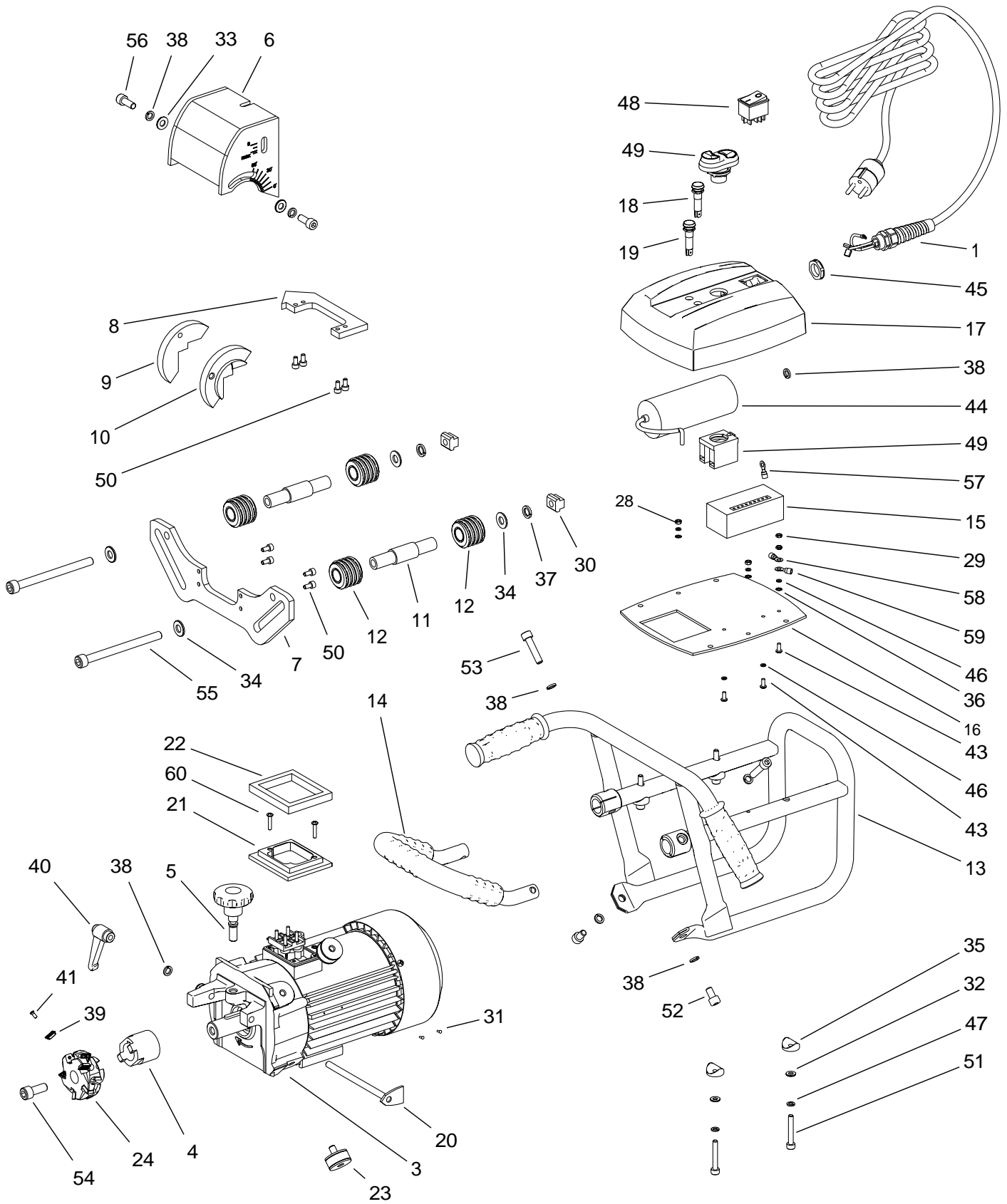


Figure 10. Replacing milling head

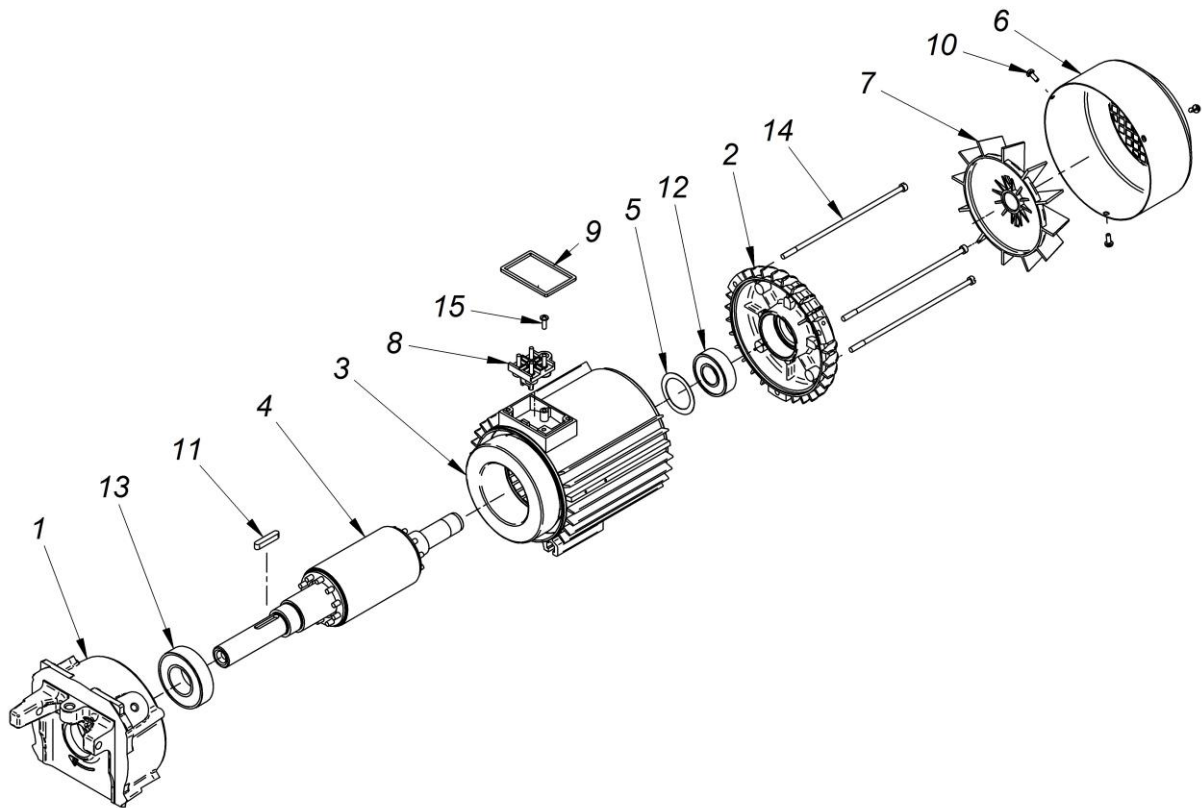
4. WIRING DIAGRAM





ITEM	PART NUMBER	DESCRIPTION	QTY
1	WAP-B21/3101	POWER CORD - 230V (AU)	1
3	WAP-B21/3103	MOTOR ASSY - 230V	1
4	WAP-B21/3104	DRIVING RING	1
5	WAP-B21/3105	KNOB	1
6	WAP-B21/3106	MILLING HEAD COVER	1
7	WAP-B21/3107	VERTICAL GUIDE	1
8	WAP-B21/3108	HORIZONTAL GUIDE	1
9	WAP-B21/3109	GUIDE HOLDER I	1
10	WAP-B21/3110	GUIDE HOLDER II	1
11	WAP-B21/3111	PIVOT	2
12	WAP-B21/3112	ROLLER	4
13	WAP-B21/3113	FRAME	1
14	WAP-B21/3114	FRONT HANDLE	1
15	WAP-B21/3115	ELECTRONIC MODULE COMPLETE - 230V	1
16	WAP-B21/3116	BOTTOM PLATE	1
17	WAP-B21/3117	CONTROLLER HOUSING COVER	1
18	WAP-B21/3118	RED LAMP	1
19	WAP-B21/3119	YELLOW LAMP	1
20	WAP-B21/3120	PENETRATION INDICATOR COMPLETE	1
21	WAP-B21/3121	LINK	1
22	WAP-B21/3122	RUBBER SEAL	1
23	WAP-B21/3123	DAMPER	4
24	WAP-B21/3124	MILLING HEAD WITH BOLTS	1
28	WAP-B21/3128	HEX. NUT M4	2
29	WAP-B21/3129	NUT SHORT M4	2
30	WAP-B21/3130	T-NUT	2
31	WAP-B21/3131	ROUND HEAD RIVET 2x6	2
32	WAP-B21/3132	ROUND WASHER 6,4	4
33	WAP-B21/3133	ROUND WASHER 8,4	3
34	WAP-B21/3134	ROUND WASHER 10,5	4
35	WAP-B21/3135	SADDLE WASHER	4
36	WAP-B21/3136	EXTERNAL TOOTH SPRING WASHER 4,3	6
37	WAP-B21/3137	SPRING WASHER 10,2	2
38	WAP-B21/3138	SPRING WASHER 8,2	8
39	WAP-B21/3139	CUTTING INSERT	10
40	WAP-B21/3140	HANDLEVER	1
41	WAP-B21/3141	MOUNTING BOLT	10
43	WAP-B21/3143	SCREW M4x10 PHCRMS	4
44	WAP-B21/3144	CAPACITOR 30uF - 240V	1
45	WAP-B21/3145	STRAIN RELIEF NUT	1
46	WAP-B21/3146	SPRING WASHER 4,1	6
47	WAP-B21/3147	SPRING WASHER 6,1	4
48	WAP-B21/3148	POWER SWITCH	1
49	WAP-B21/3149	MOTOR ON/OFF SWITCH	1
50	WAP-B21/3150	HEX. SOCKET BOLT M5x10	8

ITEM	PART NUMBER	DESCRIPTION	QTY
51	WAP-B21/3151	HEX. SOCKET BOLT M6x40	4
52	WAP-B21/3152	HEX. SOCKET BOLT M8x14	2
53	WAP-B21/3153	HEX. SOCKET BOLT M8x35	2
54	WAP-B21/3154	HEX. SOCKET BOLT M10x25	1
55	WAP-B21/3155	HEX. SOCKET BOLT M10x120	2
56	WAP-B21/3156	HEX. SOCKET BOLT M8x20	2
57	WAP-B21/3157	STOP BUTTON WIRE SET	1
58	WAP-B21/3158	CONTROLLER PLATE GROUNDING WIRE	1
59	WAP-B21/3159	MOTOR GROUNDING WIRE	1
60	WAP-B21/3160	CROSS RECESSED SCREW M4x20	2



WAP-B21/3290		MOTOR ASSY 230V	
ITEM	DESCRIPTION	PART NUMBER	QTY
1	WAP-B21/3201	BEARING DISK N	1
2	WAP-B21/3202	BEARING DISK P	1
3	WAP-B21/3203	STATOR BODY 230V	1
4	WAP-B21/3204	ROTOR	1
5	WAP-B21/3205	CLEARANCE REMOVAL SPRING WASHER	1
6	WAP-B21/3206	FAN COVER	1
7	WAP-B21/3207	FAN	1
8	WAP-B21/3208	4-TERMINAL PLATE	1
9	WAP-B21/3209	SEAL no.4	1
10	WAP-B21/3210	SELF-TAPPING SCREW M4x8	3
11	WAP-B21/3211	PIN A6x6x32	1
12	WAP-B21/3212	BALL BEARING 6204 2Z C3	1
13	WAP-B21/3213	BALL BEARING 6206 2Z CM	1
14	WAP-B21/3214	DRAWBOLT E/M5x168	3
15	WAP-B21/3215	SELF-TAPPING SCREW M4x12	1