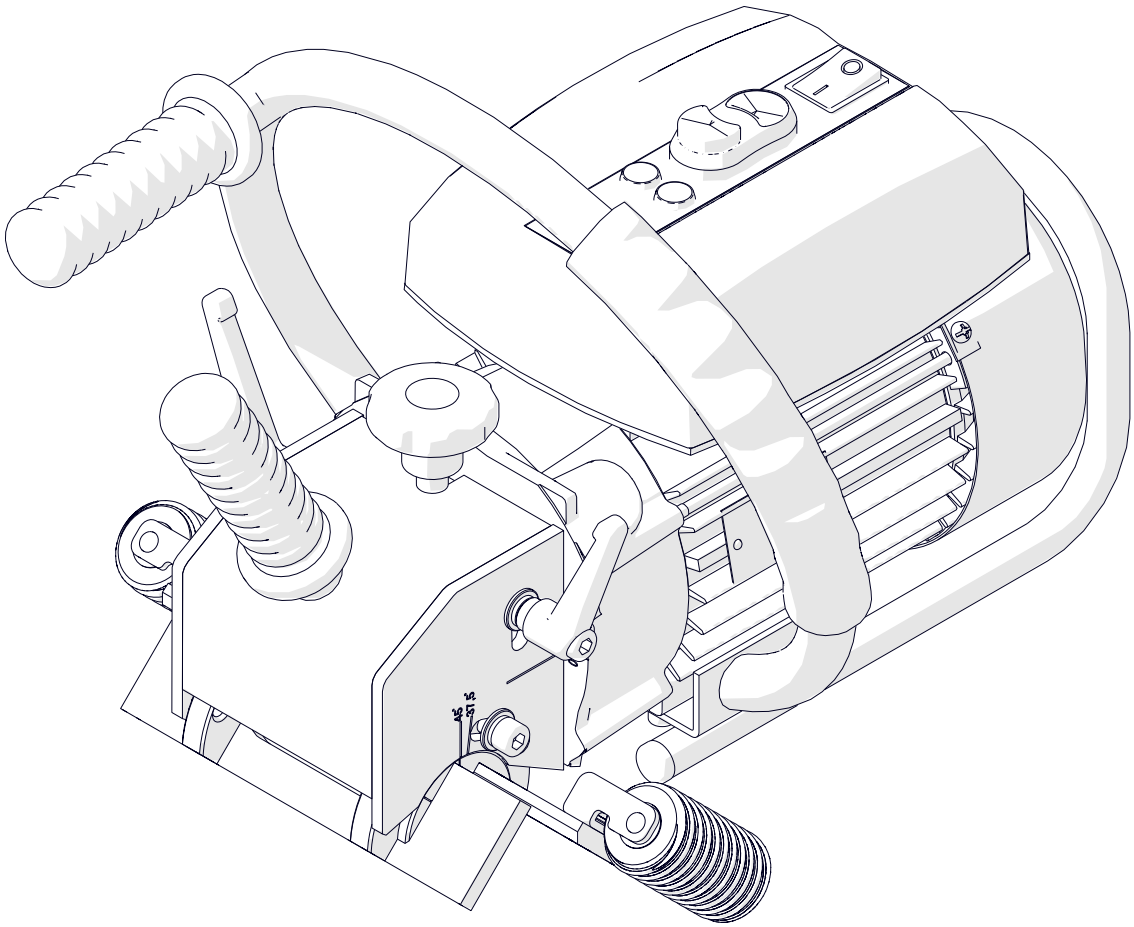
The tools of innovation.

OPERATOR'S MANUAL

BM-20 plus

BEVELING MACHINE



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Contents

1. GENERAL INFORMATION

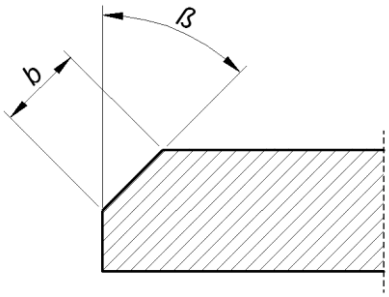
1.1. Application

The BM-20 plus is a beveling machine designed to bevel materials made of carbon steel. The machine can bevel plates at an angle of 15–60° and with the bevel width of up to 21 mm (13/16'').

When equipped with accessories, the machine can face plates as well as bevel pipes with outer diameters of 150–300 mm (6–12'') or 300–600 mm (12–24'').

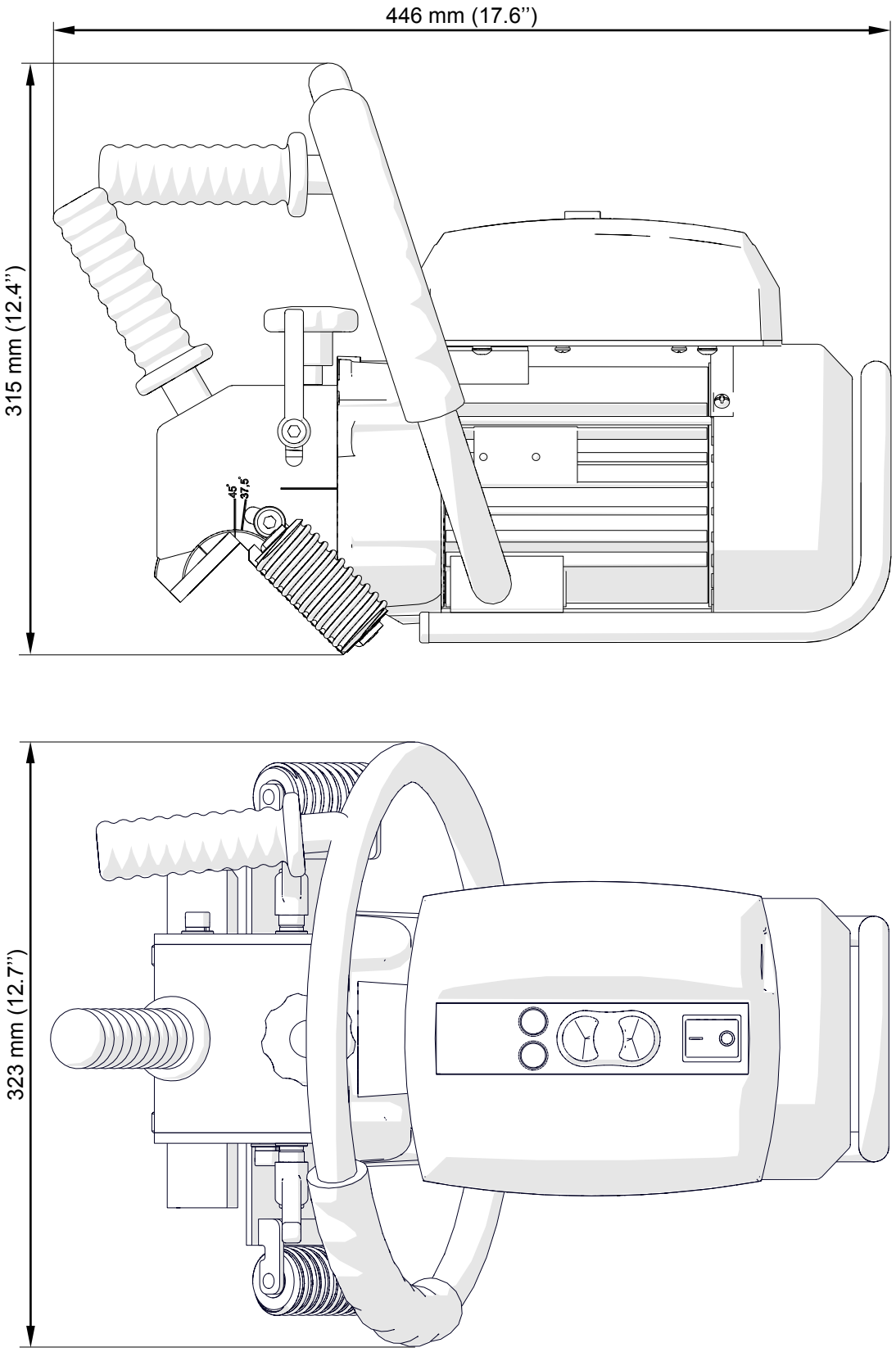
1.2. Technical data

Voltage	1~ 220–240 V, 50–60 Hz 1~ 110–120 V, 50–60 Hz
Power	1600 W (for 50 Hz) 1800 W (for 60 Hz)
Rotational speed	2780–3340 rpm (at 230 V) 2740–3290 rpm (at 115 V)
Protection level	IP 20
Protection class	I
Milling speed	550 m/min (1800 ft/min, for 50 Hz) 650 m/min (2200 ft/min, for 60 Hz)
Maximum bevel width (*b*)	21 mm (13/16'', Fig. 1)
Bevel angle (ß)	15–60° (Fig. 1)
Vibration level	Take periodic breaks during operation.
Weight	20.5 kg (45 lbs)



β	15°	30°	45°	60°
b	21 mm	20.5 mm	21 mm	20.5 mm

Fig. 1. Bevel dimensions; maximum bevel width depending on the angle


446 mm (17.6")
315 mm (12.4")
45°
37.5°
323 mm (12.7")

1.3. Design

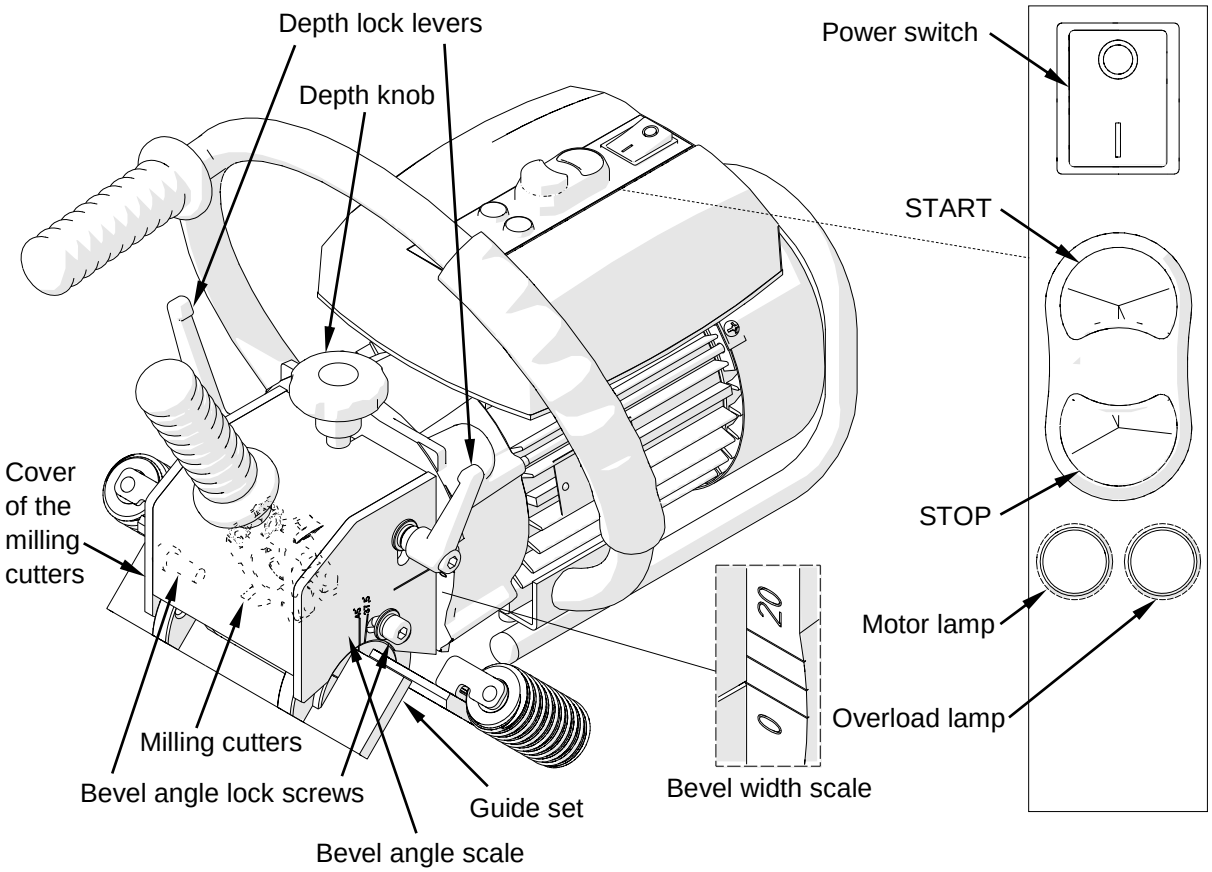


Fig. 2. View of the machine and the control panel

1.4. Equipment included

The BM-20 plus is supplied including the following equipment.

Beveling machine	1 unit
Cutting insert	10 units
Metal box	1 unit
Tool container	1 unit
6 mm hex wrench	1 unit
T15P torx screwdriver	1 unit
Grease for screws	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. The machine must be plugged into a properly grounded power source.
6. Never pull the power cord because this may damage it and result in electric shock.
7. Untrained bystanders must not be present near the machine.
8. Before beginning, check the condition of the machine, power source, power cord, plug, control panel components, and milling tools.
9. Keep the machine dry. Exposure to rain, snow, or frost is prohibited.
10. Keep the work area well lit, clean, and free of obstacles.
11. Never use machine near flammable liquids or gases, or in explosive environments.
12. Use only tools specified in this Operator's Manual.
13. Never use tools that are dull or damaged.
14. Install the cutting inserts and the milling cutters securely. Remove adjusting keys and wrenches from the work area before connecting the machine to the power source.
15. If the cutting edge of an insert is worn, rotate the insert in the socket by 90° or, if all edges are worn, replace with a new insert specified in this Operator's Manual. Always replace or rotate all inserts at the same time.
16. 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.
17. Always use eye and hearing protection, non-skid footwear, gloves, and protective clothing during operation. Do not wear loose clothing.
18. Do not touch moving parts or metal chips formed during milling. Prevent objects from being caught in moving parts.
19. After every use, remove metal chips from the machine, especially from the milling cutters. Never remove metal chips with bare hands. Clean the machine with a cotton cloth without using any agents.

20. Cover steel parts with a thin anti-corrosion coating to protect the machine from rust when not in use for any extended period.
21. Maintain the machine and install/remove parts and tools only when the machine is unplugged from the power source.
22. Repair only in a service center appointed by the seller.
23. If the machine falls from any height, is wet, or has 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.

3. STARTUP AND OPERATION

Adhere to all safety precautions.

3.1. Adjusting the bevel angle and width

Unplug the machine from the power source. Begin with setting the bevel width to zero. To do this, loosen two lock levers (Fig. 3), rotate the knob to set the indication '0' on the bevel width scale, and tighten the levers.

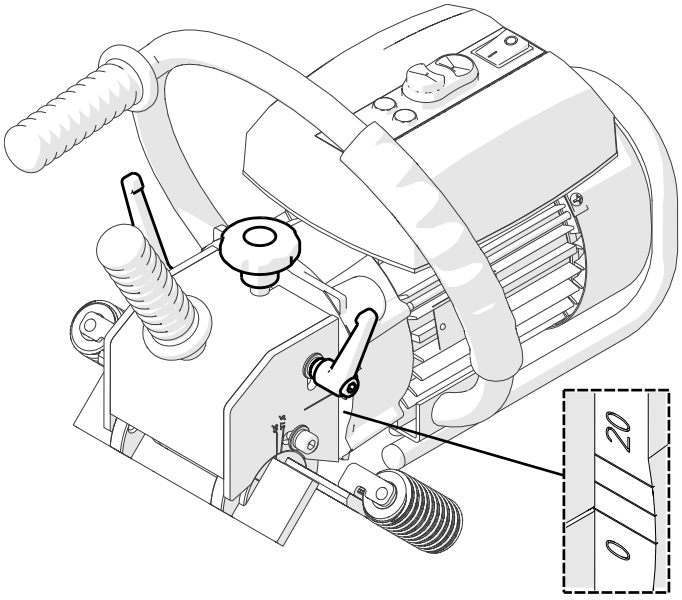


Fig. 3. Initial setting the bevel width to zero

To set the required bevel angle (Fig. 4), use the 6 mm hex wrench to loosen two side screws, rotate the guide set to obtain the required angle on the scale, and tighten the screws in this new position.

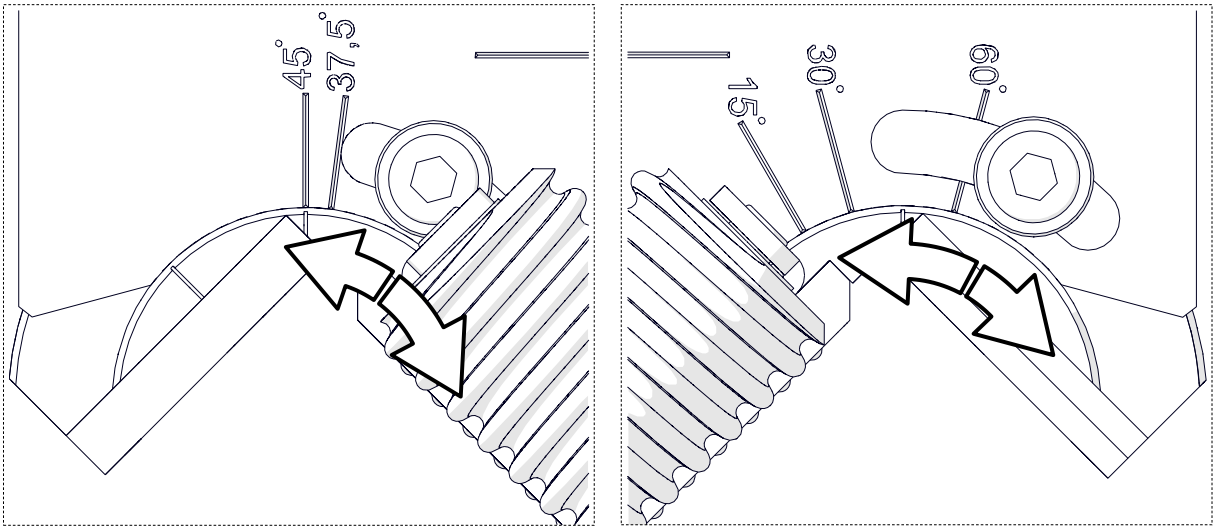


Fig. 4. Setting the bevel angle (45° is set on the drawing)

After setting the bevel angle, adjust the bevel width using the depth knob. The width scale provides only a rough value because the bevel width varies with the angle. The maximum bevel width (*b* = 21 mm, 13/16") is obtained for 45°. The demanded bevel width for the required angle must be determined experimentally by gradually increasing the penetration of the milling cutters into the workpiece.

3.2. Operating

After setting the bevel angle and width, connect the machine to a properly grounded power source. Then, place the machine vertically on the right to rest the rollers on the plate and maintain a gap between the milling cutters and the plate (Fig. 5).

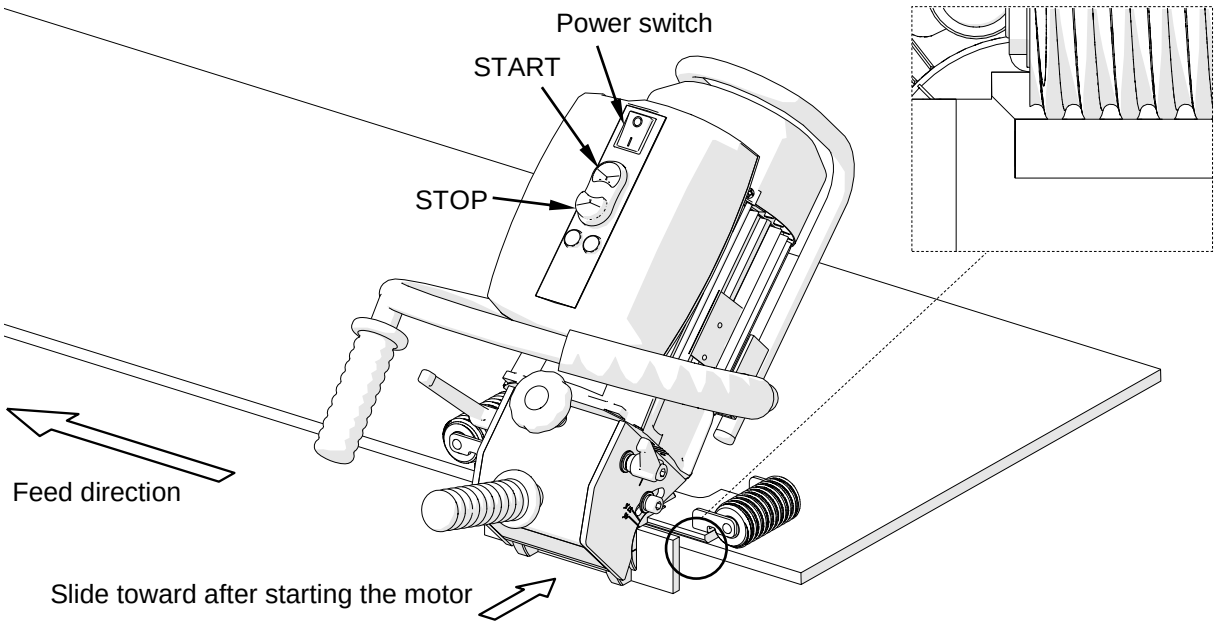


Fig. 5. Machine properly positioned on the workpiece

Power on the machine by setting the power switch to position 'I', and start the motor using the green START button. Slide the machine toward the plate face and bevel by sliding the machine to the left, constantly pressing the machine against the workpiece.

Beveling is performed according to the counter-rotation. The rotation direction of the milling cutters is marked on the motor disk under the cover of the milling cutters.

The feed rate will depend on the profile and composition of the workpiece.

Most steels capable of being welded can be beveled in one pass. However, make bevels wider than 12 mm (1/2") in at least two or three passes because this will require less effort and total time than for beveling in a single pass.

To obtain the maximum bevel width (21 mm, 13/16'') in two passes, the bevel after the first pass should be about 14 mm (9/16'') wide, while for three passes about 12 mm (1/2'') wide after the first pass and about 16 mm (5/8'') after the second one.

If the maximum permitted motor load is exceeded because of, for instance, too fast feed, the red overload lamp will light. Continuing the operation in such a case will trigger the safety circuit and shut down the motor. If as a result of an overload the motor will shut down, separate the machine from the working edge, turn off the power by setting the power switch in position 'O', and after the red overload lamp turns off, power on the machine again.

Operating near the overload (with the red lamp flashing) is allowed; however, never allow the motor temperature to exceed 85°C (185°F) because this can lead to damage of the motor windings. After every hour of operating under full load, stop the motor for 10–15 minutes. Never cool the motor by running without load because it will become heated even faster than when working with load.

After the work is finished, stop the motor using the STOP button and set the power switch to the position 'O'.

Clean the machine with a cotton cloth without using any agents.

3.3. Replacing the cutting inserts

Unplug the machine from the power source, unscrew the levers (Fig. 6), and then remove the cover of the milling cutters.

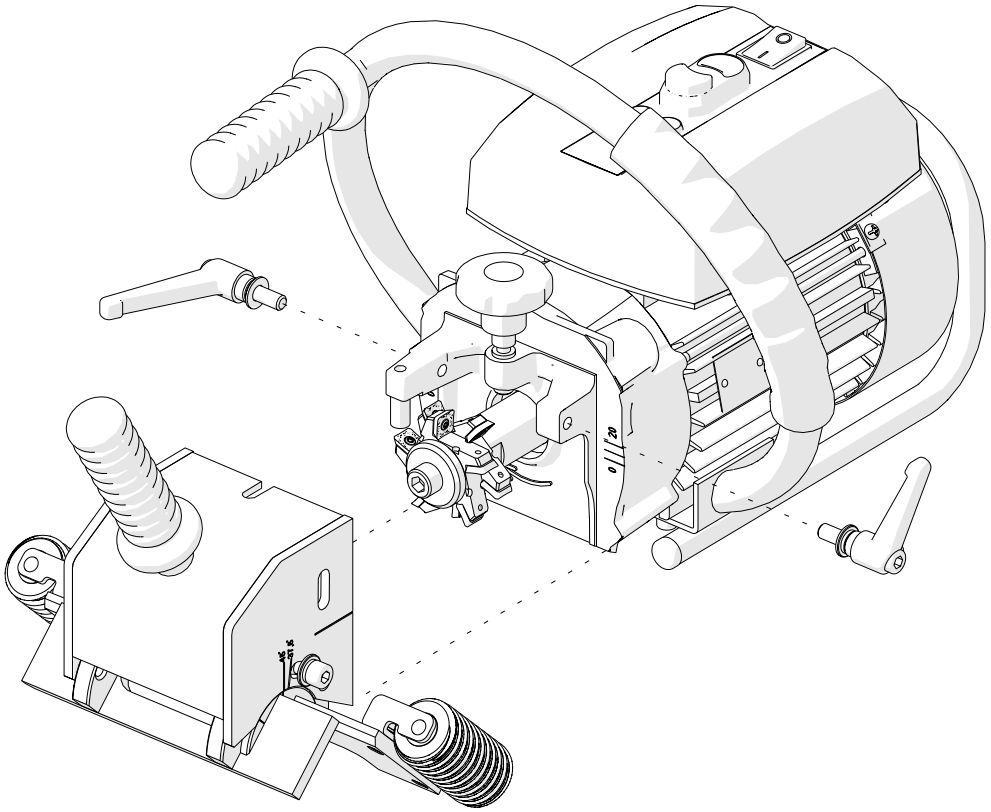


Fig. 6. Removing the cover of the milling cutters

Use the supplied T15P screwdriver to unscrew the fixing screw (Fig. 7), and then remove the insert and clean the socket. Next, rotate the insert by 90° and install again or replace to a new one if all four edges are worn.

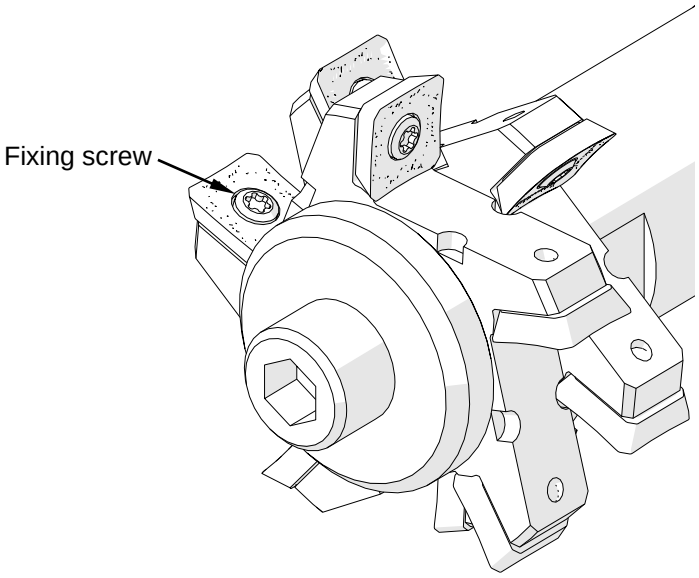


Fig. 7. Replacing the cutting inserts

When making bevels of low width, the cutting inserts wear only on one, internal corner. Then, the good action is to change the inserts between the milling cutters (Fig. 8), which will extend the life of the inserts.

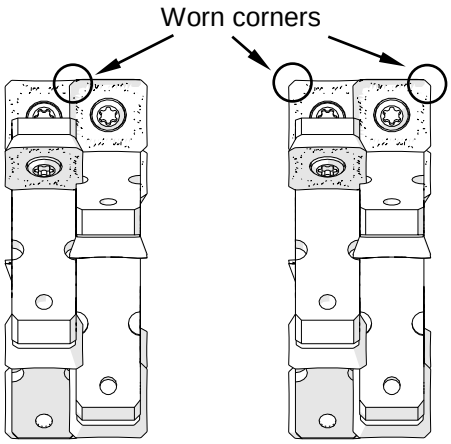


Fig. 8. Changing the cutting inserts between the milling cutters

3.4. Replacing the milling cutters

Remove the cover of the milling cutters as shown in Fig. 6. Next, lock the rotation of the spindle using the 26 mm flat wrench, use the 8 mm hex wrench to unscrew the screw, and then remove the milling cutters as shown in Fig. 9. To install, position the cutters on the key.

The 26 mm flat wrench and the 8 mm hex wrench are not included in standard equipment.

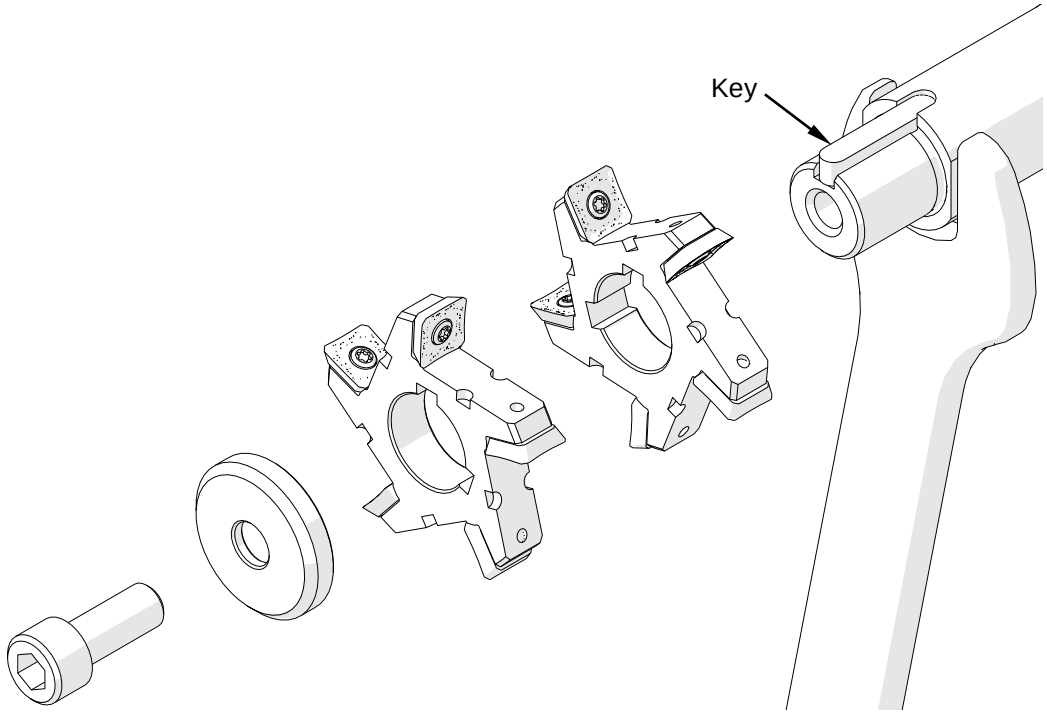


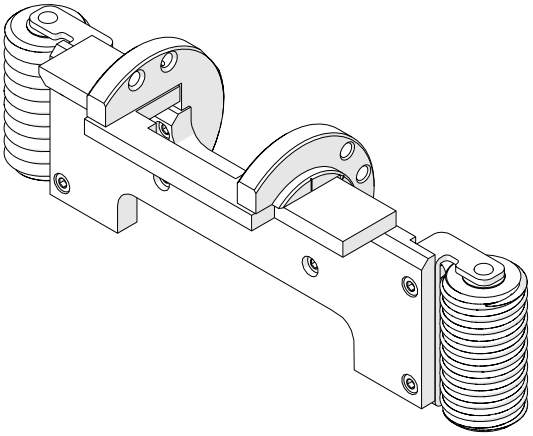
Fig. 9. Replacing the milling cutters

4. ACCESSORIES

4.1. 0° guide set for facing plates

Allows facing plates.

Part number:
ZSP-0075-32-00-00-1



To install the set, use the 6 mm hex wrench to unscrew two side screws (Fig. 10), and remove the standard guide set. Then, install the 0° guide set in a way to obtain the indication of 45° on the right scale, and secure with the same screws.

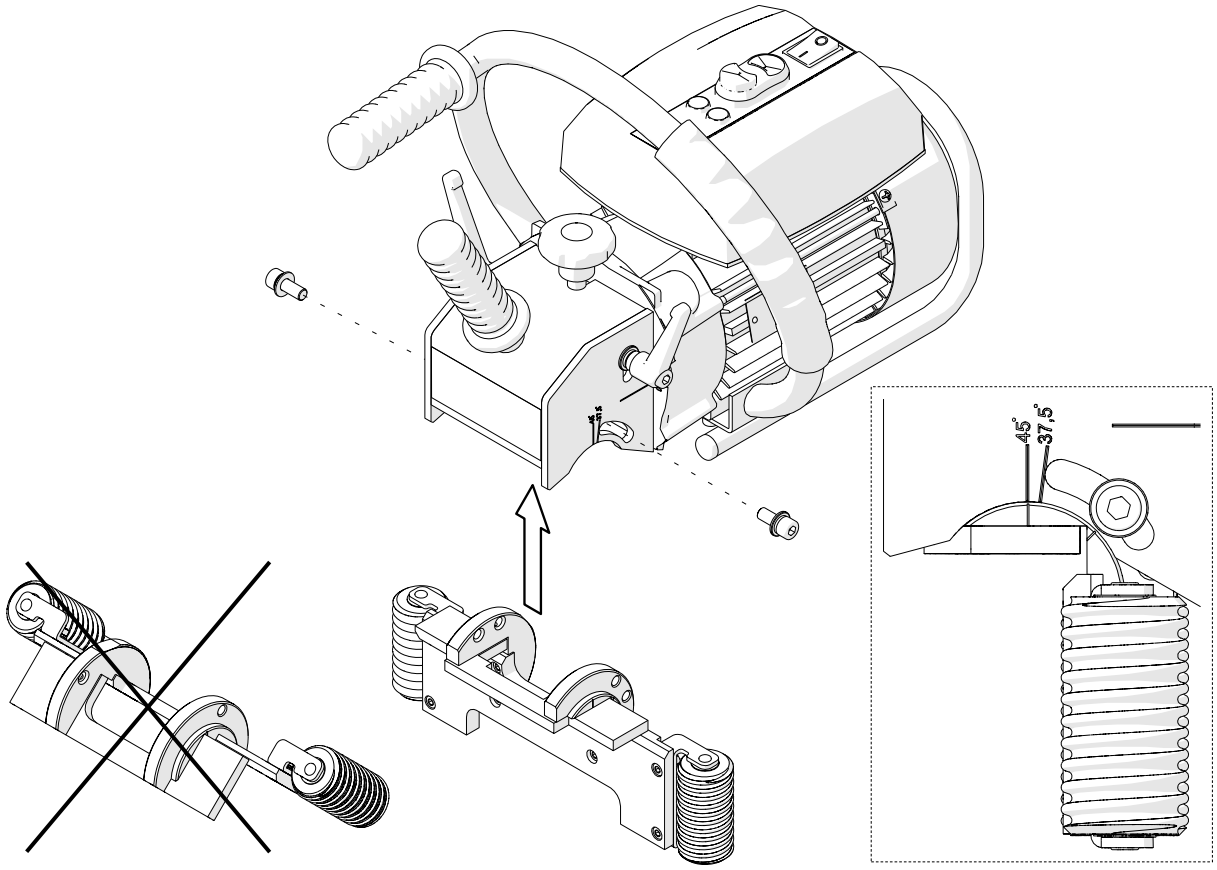
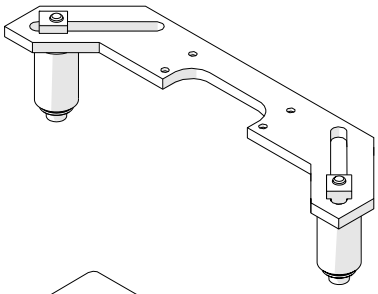


Fig. 10. Removing the standard guide set and installing the 0° guide set

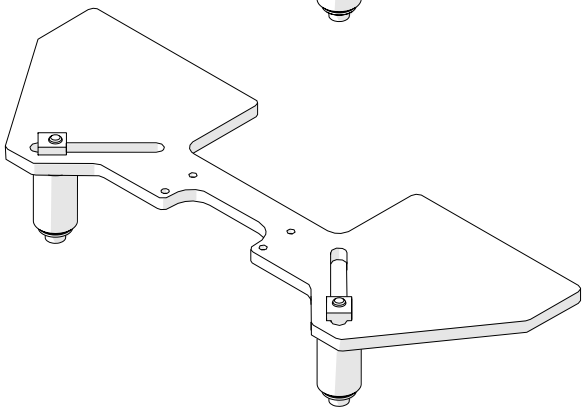
4.2. Guides for beveling pipes

Allow beveling pipes with outer diameters of 150–300 mm (6–12'') or 300–600 mm (12–24'').

Part number:
ZSP-0075-31-00-00-0
(for pipes with diameters of 150–300 mm)



Pat number:
ZSP-0075-31-00-00-1
(for pipes with diameters of 300–600 mm)



To adapt the machine for work on pipes, first remove the standard guide set as shown in Fig. 10. Then, use the 4 mm hex wrench to unscrew four screws from the removed guide set, and assemble the guide set for pipes as indicated (Fig. 11).

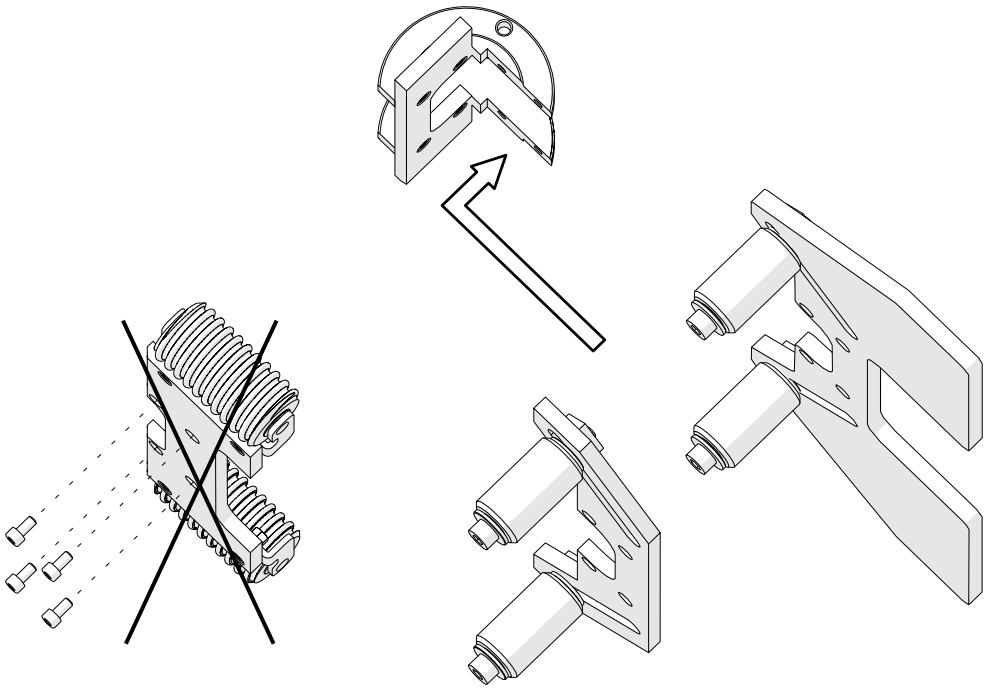


Fig. 11. Assembling the guide set for pipes

Install the assembled guide set to the machine, securing with the side screws as shown in Fig. 10.

Loosen the depth lock levers (Fig. 12) and rotate the depth knob to set the indication ‘0’ on the bevel width scale. Then, use the 6 mm hex wrench to loosen the rollers, and separate the rollers from each other as far as possible.

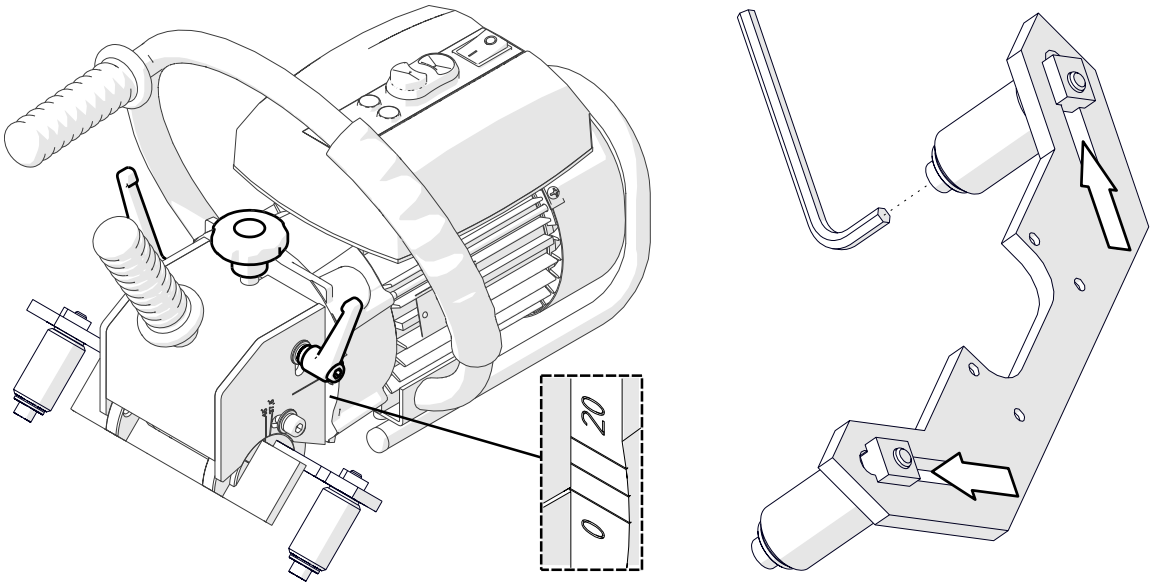


Fig. 12. Initial setting the bevel width to zero and separating the rollers before using the machine on the pipe

Place the machine on a vertically positioned pipe, joining the surfaces of the guide set to the face and side of the pipe. Then, move the rollers symmetrically to join them to the pipe (Fig. 13) and tighten using the 6 mm hex wrench in this position. Set the required bevel angle and width as described before.

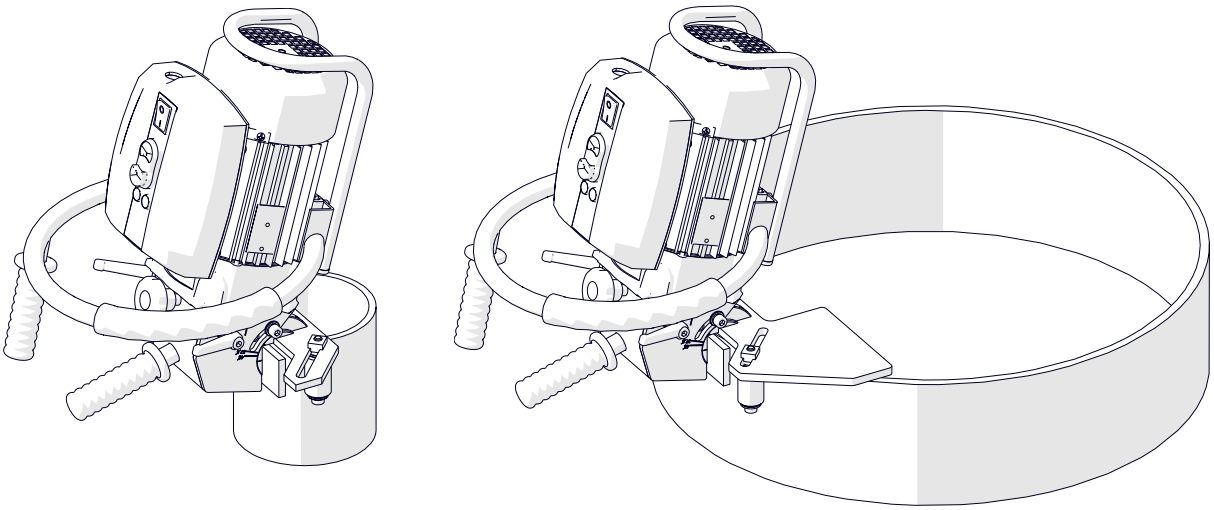
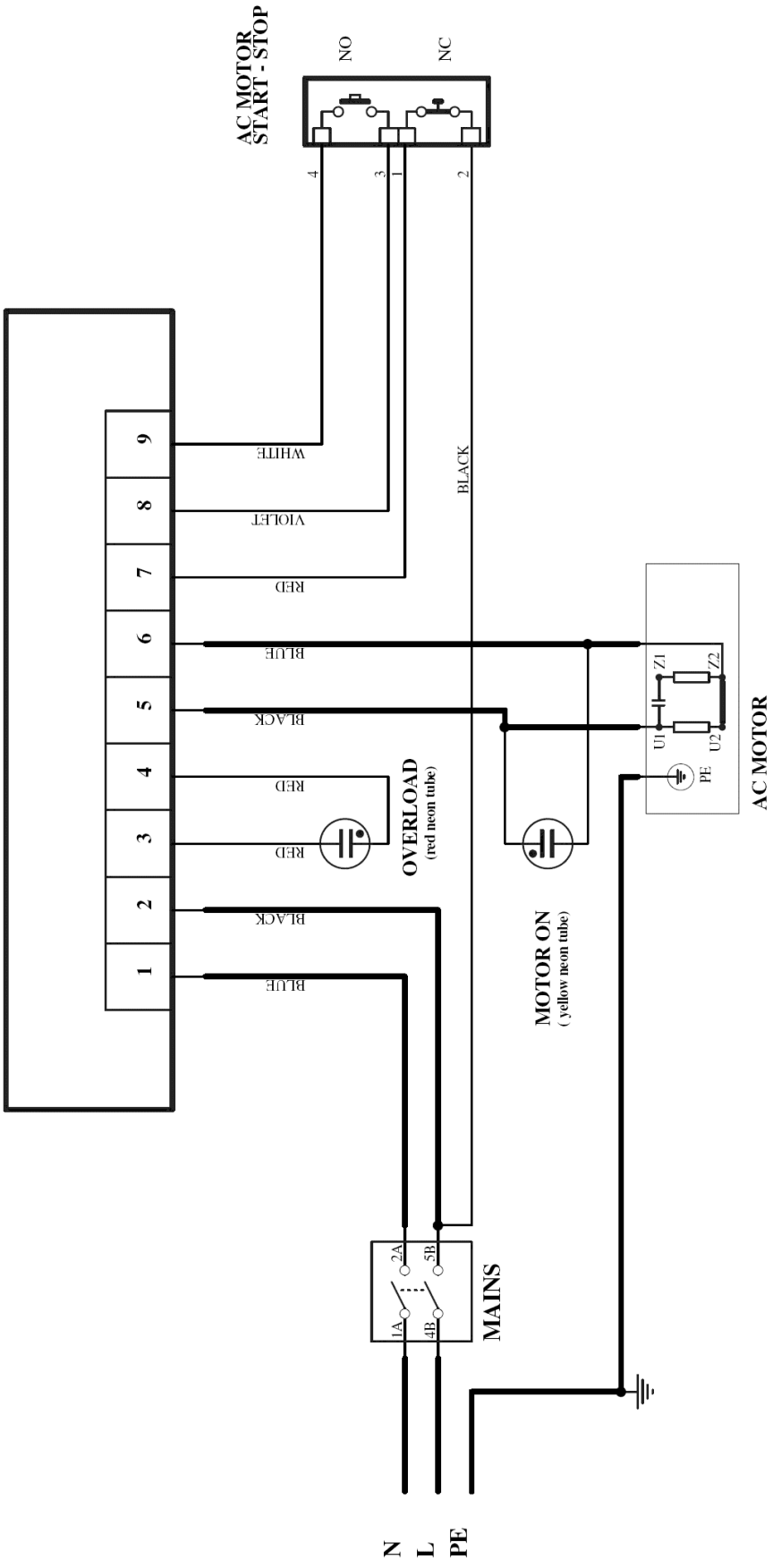


Fig. 13. Machine prepared for work on pipes with diameters of 150–300 mm and 300–600 mm

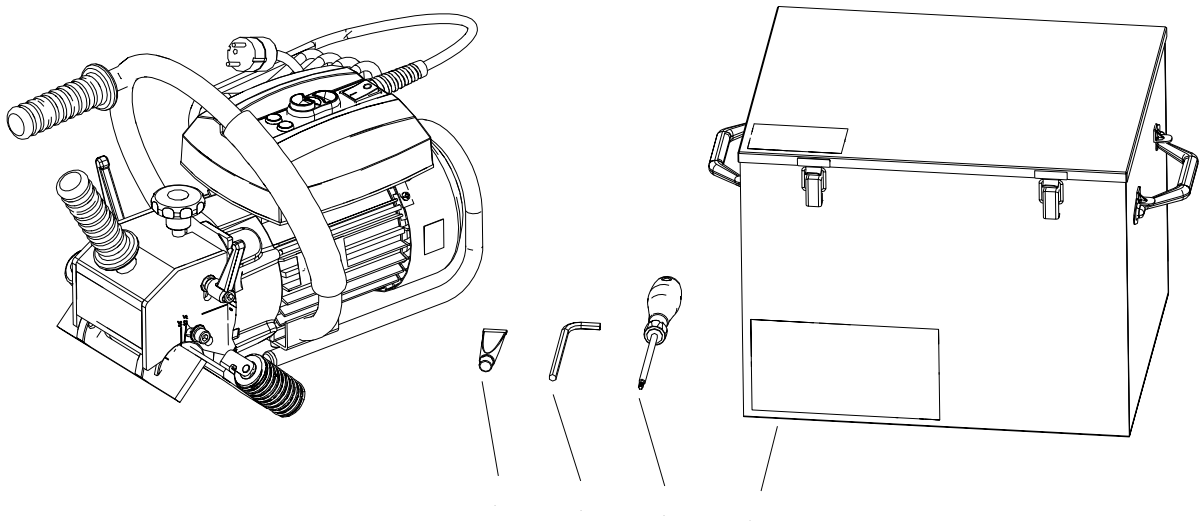
5. WIRING DIAGRAM



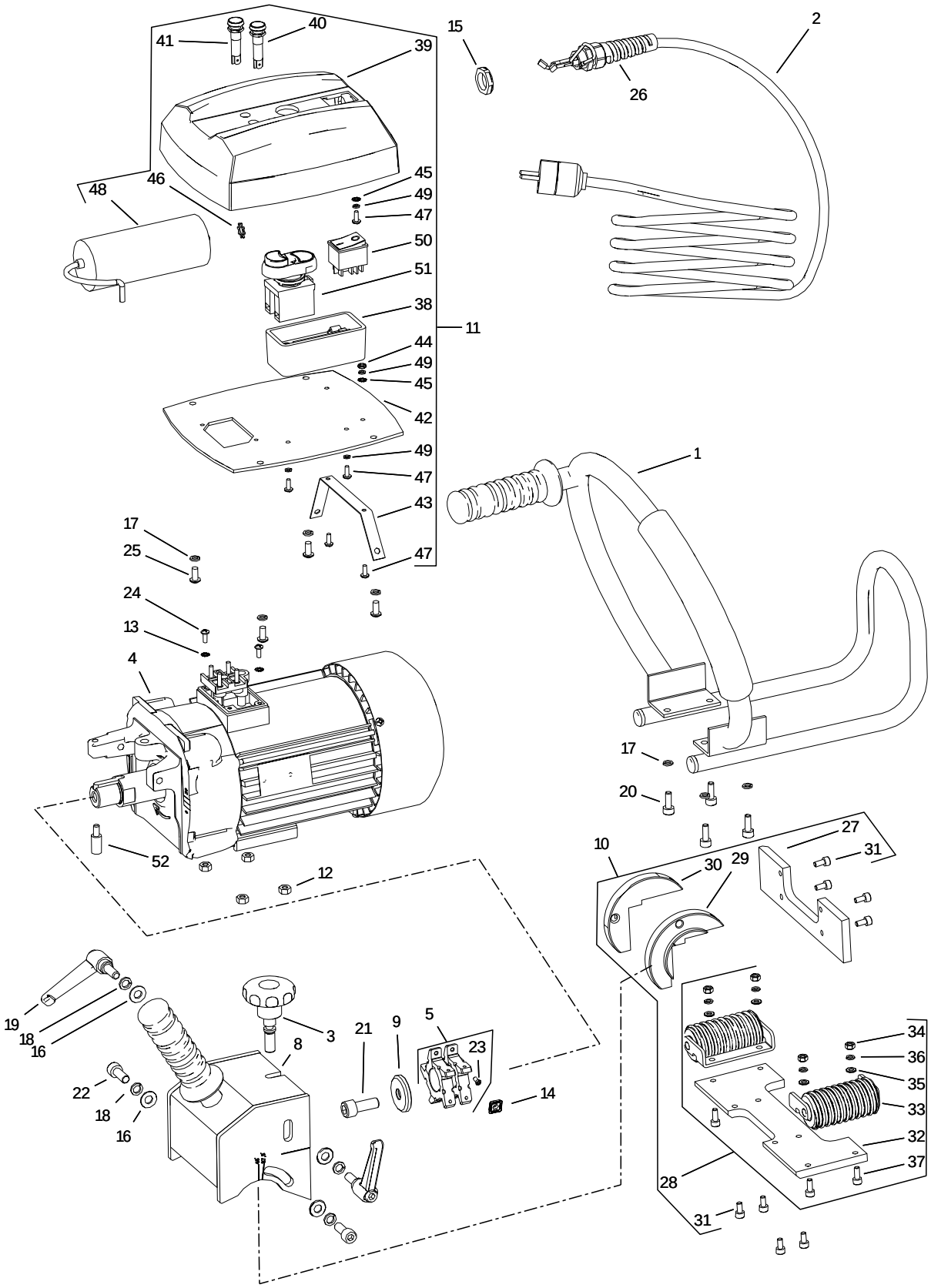
6. SPARE AND WEARING PARTS

Name	Number
Milling cutters set (2 cutters included, 10 inserts required)	KPL-0539-99-02-00-0
Cutting insert (sold 10 per box)	PLY-000282
Fixing screw for inserts	SRB-000311
T15P torx screwdriver for fixing screws	WKT-000005
Grease for screws (5 g, 0.17 oz)	SMR-000005

7. EXPLODED DRAWINGS AND PARTS LISTS



ITEM	PART NUMBER	DESCRIPTION	Q-TY
1	SKR-0075-70-00-00-0	METAL BOX	1
2	WKT-000005	T15P TORX SCREWDRIVER	1
3	KLC-000009	6 MM HEX WRENCH	1
4	SMR-000004	GREASE FOR SCREWS	1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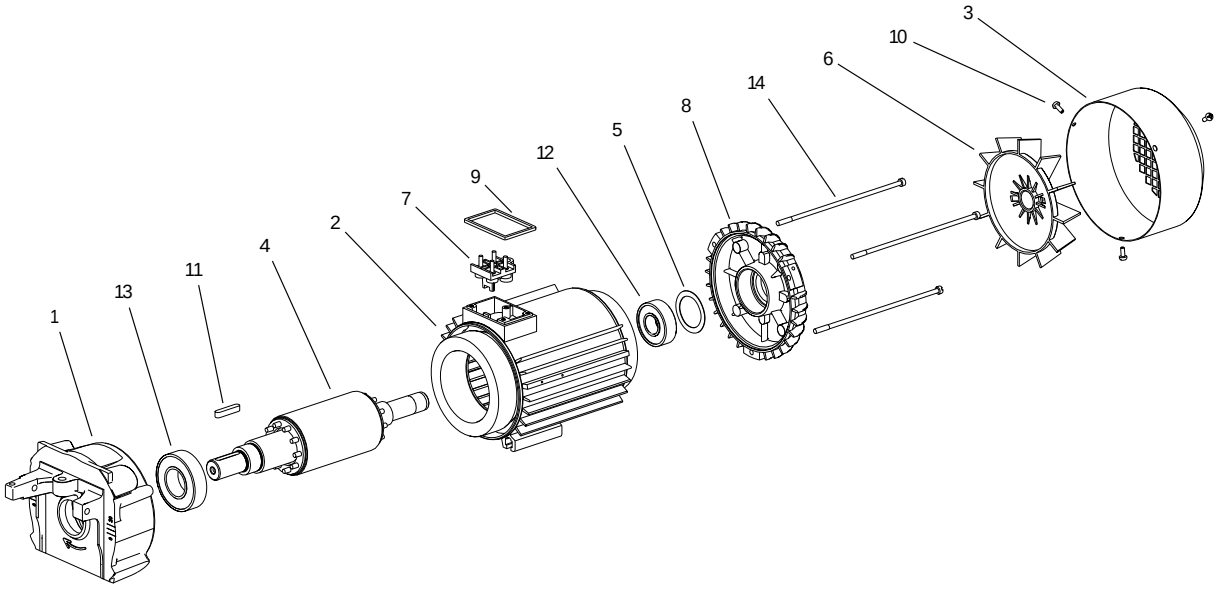
ITEM	PART NUMBER	DESCRIPTION	Q-TY
1	UCW-0075-10-90-00-3	CARRYING HANDLE	1
2	PWD-0461-17-00-00-0	POWER CORD 230V	1
2	PWD-0461-17-00-00-1	POWER CORD 115V	1
2	PWD-0461-17-00-00-2	POWER CORD 230V (AU)	1
3	PKT-0461-04-00-00-0	KNOB	1
4	SLN-0539-01-00-00-0	MOTOR 230V	1
4	SLN-0539-01-00-00-1	MOTOR 110V	1
5	KPL-0539-99-02-00-0	MILLING CUTTERS SET	1
8	OSL-0539-05-00-00-0	MILLING CUTTERS COVER	1
9	PDK-0539-06-00-00-0	WASHER	1
10	ZSP-0539-07-00-00-0	GUIDE SET 15-60°	1
11	ZSP-0539-08-00-00-0	CONTROLLER BOX ASSY 230V	1
11	ZSP-0539-08-00-00-1	CONTROLLER BOX ASSY 120V	1
12	NKR-000017	HEX NUT M6	4
13	PDK-000060	EXTERNAL TOOTH LOCK WASHER 4.3	2
14	PLY-000282	CUTTING INSERT	10
15	NKR-000040	STRAIN RELIEF NUT	1
16	PDK-000023	ROUND WASHER 8.4	4
17	PDK-000046	SPRING WASHER 6.1	8
18	PDK-000049	SPRING WASHER 8.2	4
19	RKJ-000061	HANDLEVER M8-20	2
20	SRB-000106	HEX SOCKET HEAD CAP SCREW M6x16	4
21	SRB-000046	HEX SOCKET HEAD CAP SCREW M10x25	1
22	SRB-000147	HEX SOCKET HEAD CAP SCREW M8x20	2
23	SRB-000311	FIXING SCREW	10
24	WKR-000183	CROSS RECESSED PAN HEAD SCREW M4x10	2
25	WKR-000290	HEX SOCKET BUTTON HEAD SCREW M6x12	4
26	DLW-000007	CABLE GLAND WITH STRAIN RELIEF PG11	1
27	PRW-0059-30-30-00-0	GUIDE I	1
28	ZSP-0075-30-00-00-1	GUIDE II WITH ROLLERS	1
29	OBS-0075-34-01-00-0	GUIDE MOUNTING I	1
30	OBS-0075-34-02-00-0	GUIDE MOUNTING II	1
31	SRB-000075	HEX SOCKET HEAD CAP SCREW M5x10	8
32	PRW-0075-30-70-00-1	GUIDE II	1
33	RLK-0075-30-73-00-1	ROLLER SET	2
34	NKR-000016	NUT M5	4
35	PDK-000017	ROUND WASHER 5.3	4
36	PDK-000045	SPRING WASHER 5.1	4
37	SRB-000078	HEX SOCKET HEAD CAP SCREW M5x12	4
38	MDL-0461-09-02-00-0	ELECTRONIC MODULE ASSY 230V	1
38	MDL-0461-09-02-00-1	ELECTRONIC MODULE ASSY 120V	1
39	PKR-0461-09-04-00-0	CONTROLLER HOUSING COVER	1
40	KON-0461-09-10-00-0	RED LAMP	1
41	KON-0461-09-11-00-0	YELLOW LAMP	1
42	PLY-0539-08-01-00-0	BOTTOM PLATE	1
43	WSP-0539-08-02-00-0	BRACKET	1
44	NKR-000031	NUT M4 SHORT	2
45	PDK-000060	EXTERNAL TOOTH LOCK WASHER 4.3	2
46	PDK-000065	EXTERNAL TOOTH LOCK WASHER 8.4	1
47	WKR-000183	CROSS RECESSED PAN HEAD SCREW M4x10	5
48	KND-000114	CAPACITOR 30uF 240V	1

ITEM	PART NUMBER	DESCRIPTION	Q-TY
48	KND-000115	CAPACITOR 80uF 110V	1
49	PDK-000043	SPRING WASHER 4.1	5
50	PNK-000013	POWER SWITCH	1
51	PRC-000007	START-STOP SWITCH	1
52	KLK-0075-25-80-00-0	STOP PIN	1



SLN-0539-01-00-00-0		MOTOR 230V	
SLN-0539-01-00-00-1		MOTOR 120V	
ITEM	**PART NUMBER**	**DESCRIPTION**	**Q-TY**
1	TRC-0075-10-00-01-2	MOTOR BEARING DISK H	1
2	KDL-000001	STATOR BODY 230V	1
2	KDL-000002	STATOR BODY 110V	1
3	OSL-000184	FAN COVER	1
4	WRN-000059	ROTOR	1
5	PDK-000040	CLEARANCE REMOVAL SPRING WASHER	1
6	WNT-000008	FAN	1
7	TBL-000032	4-TERMINAL PLATE	1
8	TRC-000003	MOTOR BEARING DISK P	1
9	USZ-000030	SEAL NO. 4	1
10	WKR-000466	SELF-TAPPING SCREW M4x8	3
11	WPS-000015	PRISMATIC PIN 6x6x32	1
12	LOZ-000139	BALL BEARING 20x47x14	1
13	LOZ-000140	BALL BEARING 30x62x16	1
14	SRB-000349	DRAWBOLT M5x165	3

8. DECLARATION OF CONFORMITY

EC Declaration of Conformity

We

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

declare with full responsibility that:

BM-20 plus Beveling Machine

is manufactured in accordance with the following standards:

- EN 60745-1
- EN ISO 12100-1
- EN ISO 12100-2

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

Bialystok, 23 July 2014

Marek Siergiej
Chair

9. QUALITY CERTIFICATE

Machine control card

BM-20 plus Beveling Machine

Serial number .....

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 .....

10. WARRANTY CARD

WARRANTY CARD No.....

..... in the name of Manufacturer warrants the BM-20 plus Beveling Machine 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 cutting inserts 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.....

1.02 / 29 June 2015

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