

OPERATOR'S MANUAL

BM-21S

BEVELING MACHINE



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1. GENERAL INFORMATION

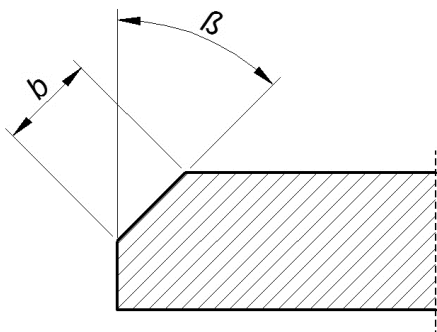
1.1. Application

The BM-21S is a bevelling machine designed to bevel materials made of stainless steel. The machine can bevel plates, as well as pipes with outer diameters of 150–300 mm (6–12”), at an angle of 0–60° and with the bevel width of up to 21 mm (13/16”). Additionally, the machine contains dampers to reduce vibrations.

When equipped with an optional guide, the machine can bevel pipes with outer diameters of 300–600 mm (12–24”).

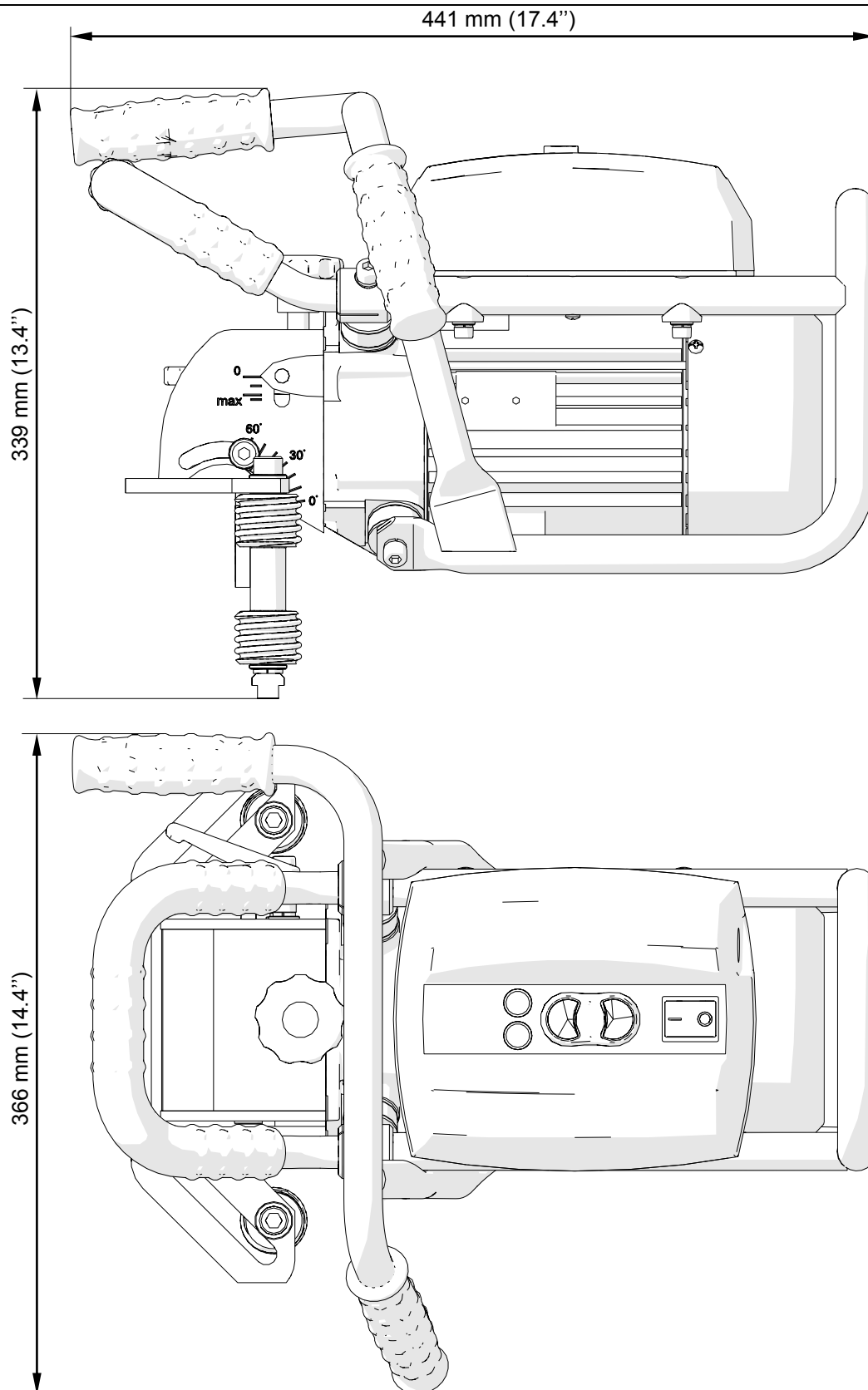
1.2. Technical data

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	1360–1630 rpm (at 230 V) 1300–1560 rpm (at 115 V)
Protection level	IP 20
Protection class	I
Milling speed	270 m/min (900 ft/min, for 50 Hz) 320 m/min (1050 ft/min, for 60 Hz)
Maximum bevel width (<i>b</i>)	21 mm (13/16”, Fig. 1)
Bevel angle (β)	0–60° (Fig. 1)
Weight	23 kg (51 lbs)



β	0°	30°	45°	60°
<i>b</i>	21 mm	18.5 mm	21 mm	18.5 mm

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



1.3. Design

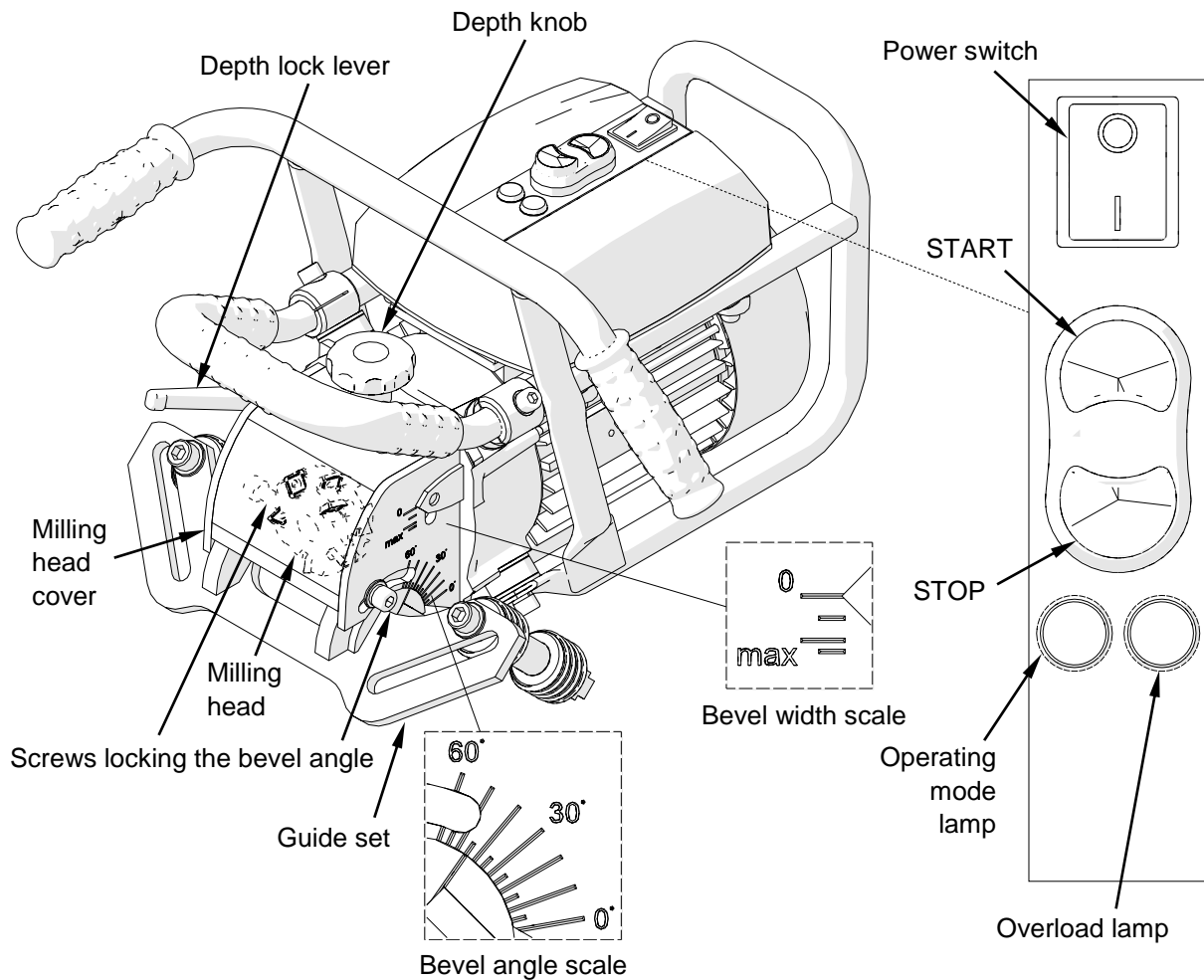


Fig. 2. View of the machine and the control panel

1.4. Equipment included

1.5. The BM-21S is supplied in a metal box with complete standard equipment. The included equipment consists of:

Bevelling machine	1 unit
Cutting insert	10 units
Metal box	1 unit
8 mm hex wrench	1 unit
6 mm hex wrench	1 unit
4 mm hex wrench	1 unit
12 mm flat wrench	1 unit
T15P torx screwdriver	1 unit
Oil for stainless steel	1 unit
Grease for screws	1 unit
Operator's Manual	1 unit

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2. SAFETY PRECAUTIONS

1. Before beginning, read this Operator's Manual and complete proper occupational safety and health training.
2. The machine must be used 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 electrical supply specifications must conform to those specified on the rating plate.
5. The machine must be plugged into a properly grounded (earthed) socket-outlet.
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 and electrical supply, including the 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 dull or damaged tools.
14. Mount the cutting inserts and the milling head securely. Remove adjusting keys and wrenches from the work area before connecting the plug to the power outlet.
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.
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, respiratory protective devices, 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 head. 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 mount/dismount parts and tools only with the power cord unplugged from the power outlet.
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. Preparing

3.1.1. Adjusting the bevel angle and width

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

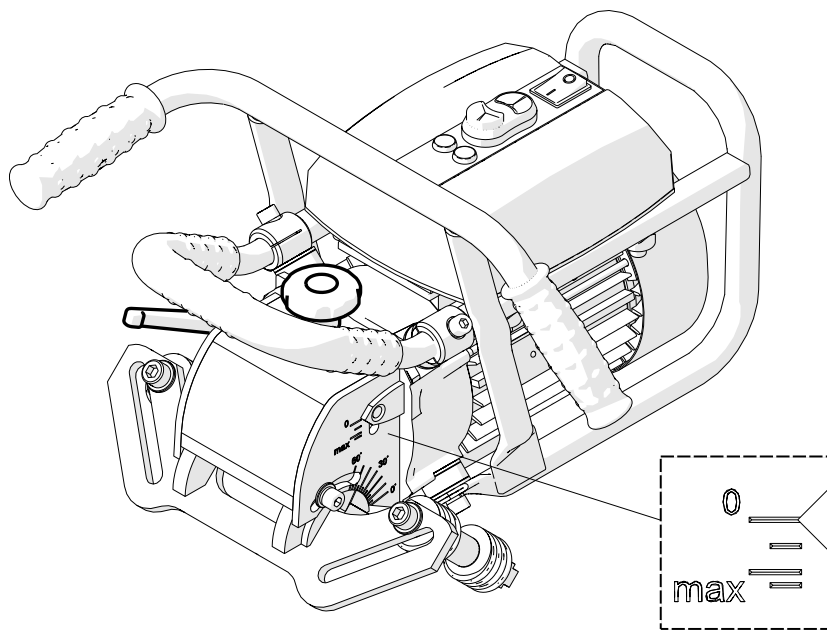


Fig. 3. Initial setting the bevel width to zero

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.

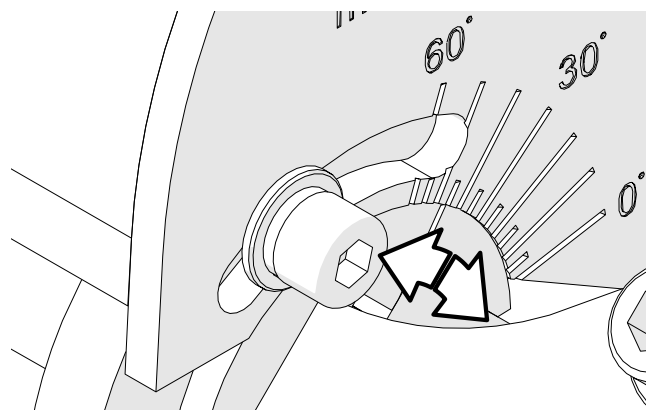


Fig. 4. Setting the bevel angle (45° is set on the drawing)

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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. For example, for 10° the maximum width b (Fig. 1) is equal about 18 mm (11/16"), while the width scale indicates about 9 mm (6/16"). Increasing the depth at this angle will distort the bevel. 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 head into the workpiece.

3.1.2. Using the cutting fluid

Before bevelling stainless steel, cover the edges of the workpiece with the supplied oil in the manner shown in Fig. 5.

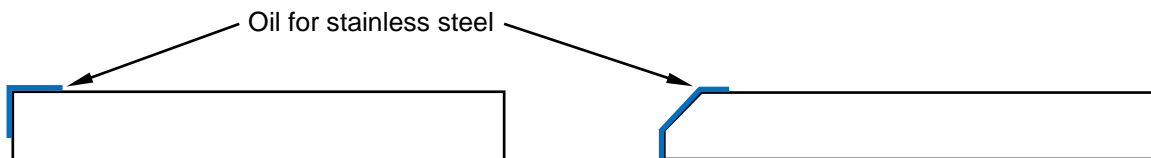


Fig. 5. Preparing the edges for bevelling stainless steel

3.2. Adapting for 150–300 mm pipes

To bevel pipes with diameters of 150–300 mm (6–12”), use the standard guide set after assembling it in a different way. To do this, use the 6 mm hex wrench to unscrew two side screws (1, Fig. 6), then remove the guide set (2), rotate it by 180° around the vertical axis (3), mount again (4), and secure with the screws (1).

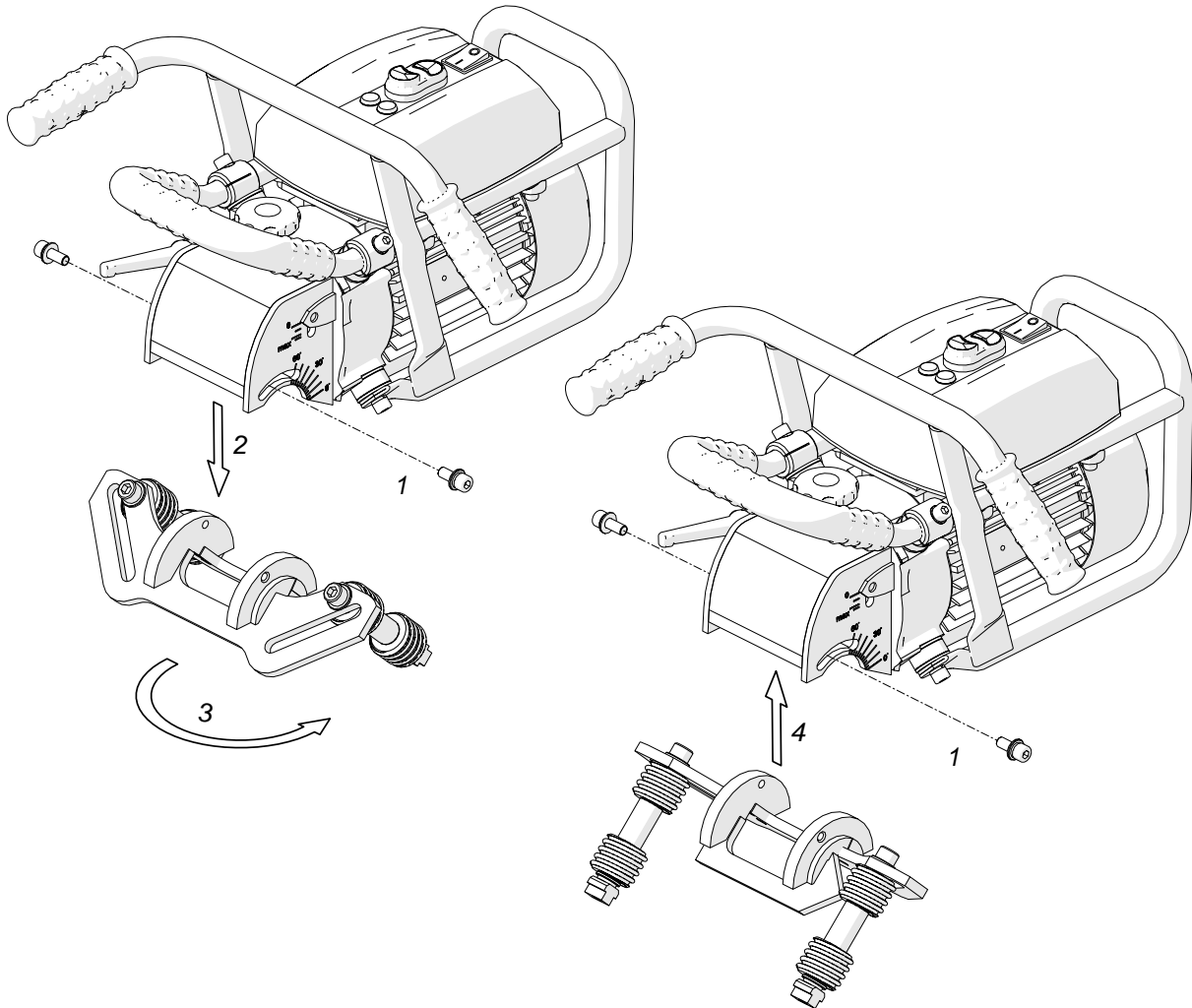


Fig. 6. Rotating and mounting the guide set

Lock the turn of the T-nut with the 12 mm flat wrench and use the 8 mm hex wrench to unscrew the roller screw. Next, move the rollers from the opening (Fig. 7a) to the slot by mounting them as shown in Fig. 7b, placing the T-nut into the slot.

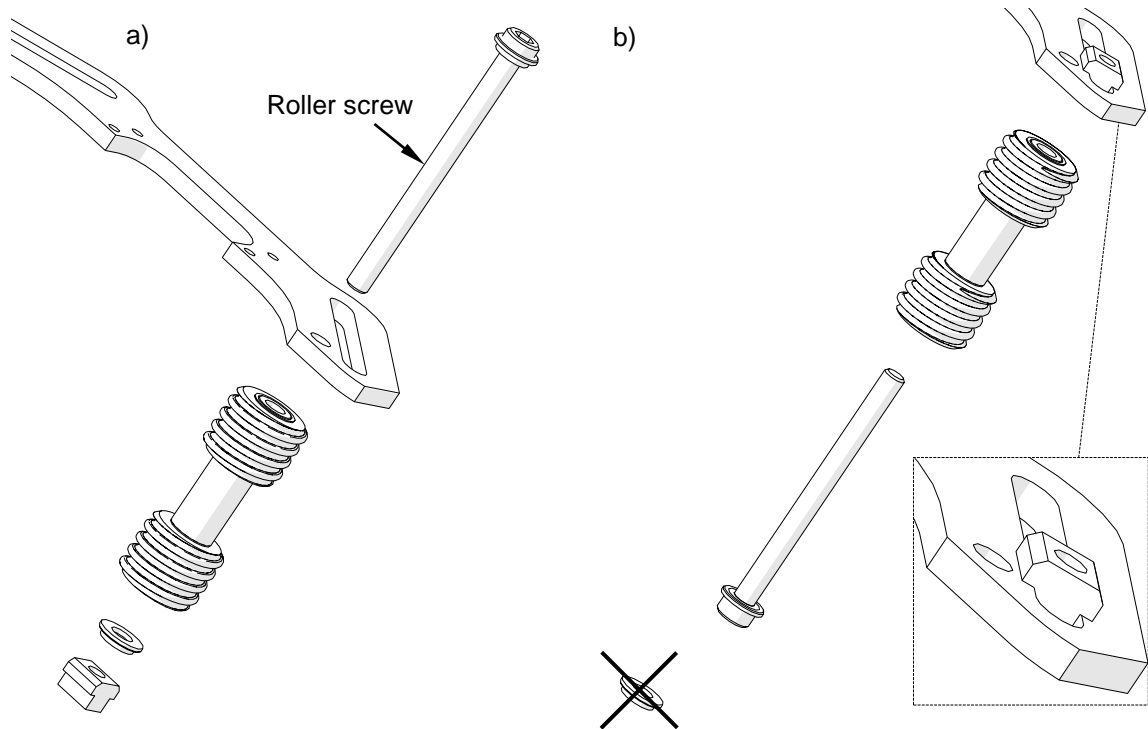


Fig. 7. Moving the rollers from the opening to the slot

Loosen the depth lock lever (Fig. 8) and rotate the depth knob to set the indication '0' on the bevel width scale. Then, separate the rollers from each other as far as possible.

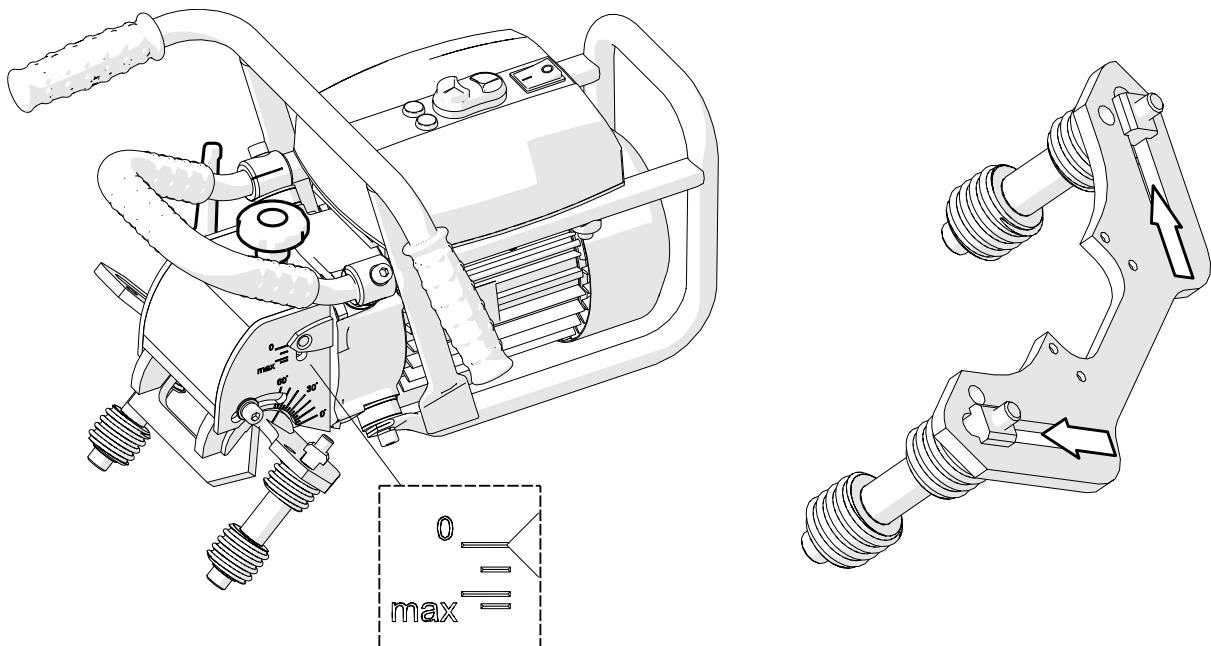


Fig. 8. Initial setting the bevel width to zero and separating the rollers before using the machine on the pipe

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. 9) and tighten using the 8 mm hex wrench in this position. Set the required bevel angle and width as described before.

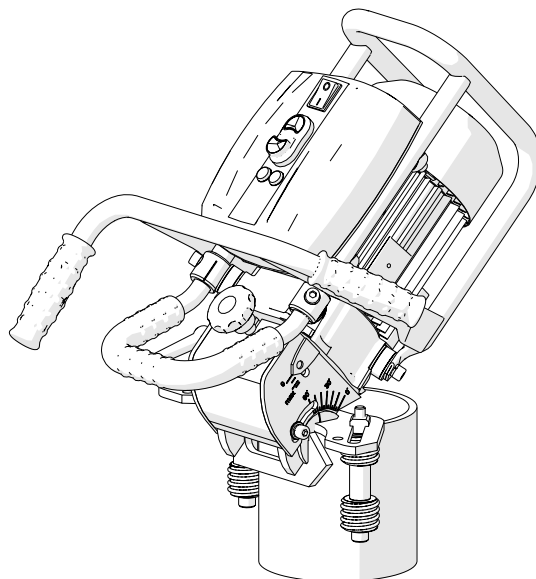


Fig. 9. Machine prepared for work on pipes with diameters of 150–300 mm (6–12")

3.3. Adapting for 300–600 mm pipes (requires optional equipment)

To bevel pipes with diameters of 300–600 mm (10–24”), assemble the guide set using an optional guide. To do this, remove the guide set (1, 2, Fig. 6), use the 4 mm hex wrench to unscrew the standard guide, and assemble the guide for 300–600 mm pipes (Fig. 10), tightening with the screws. Mount the rollers and adjust the required bevel angle and width as described before.

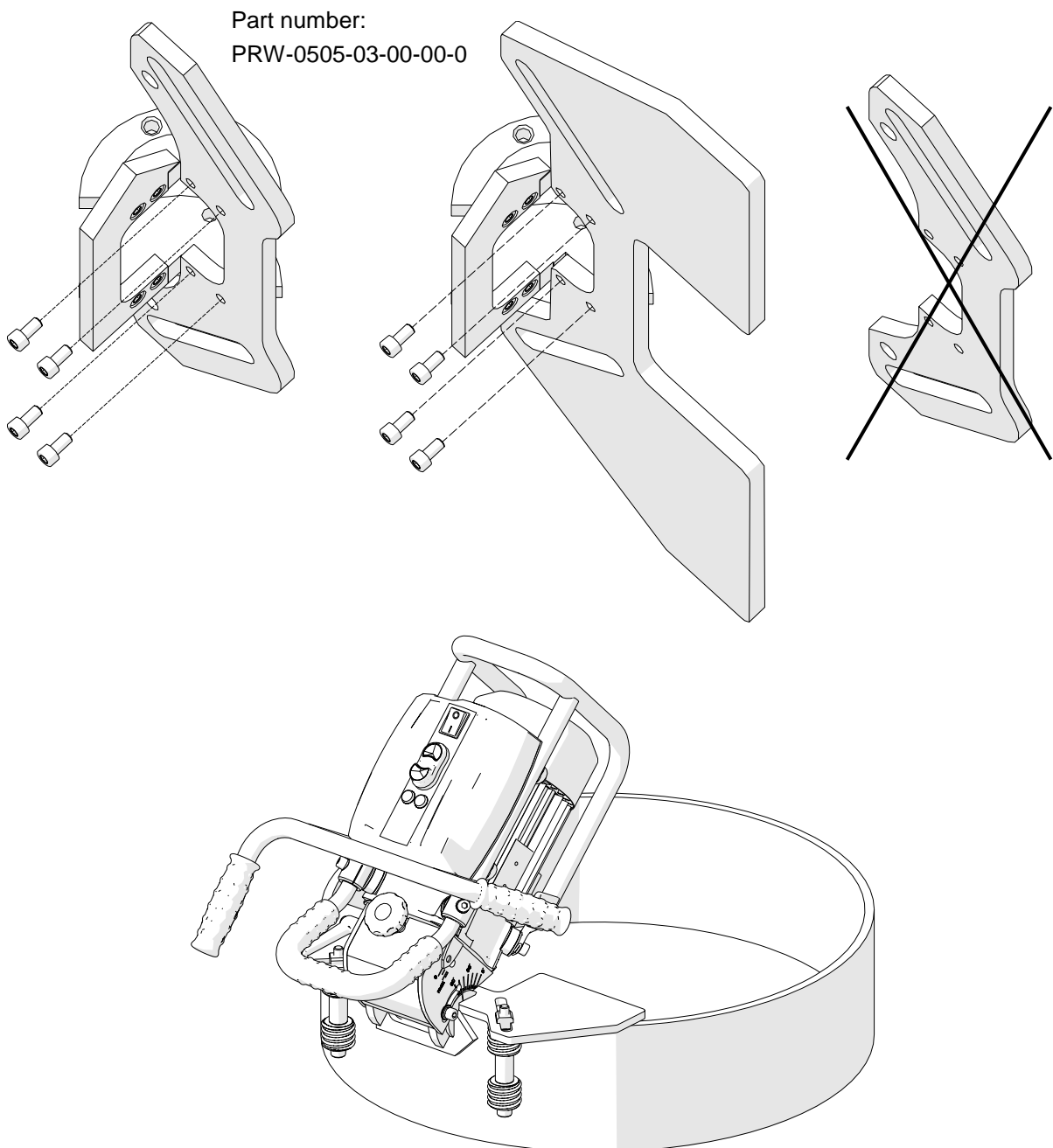


Fig. 10. Machine prepared for work on pipes with diameters 300–600 mm

3.4. Operating

After setting the bevel angle and width, connect the machine to a properly grounded power outlet. Then, place the machine vertically on the right to rest the rollers on the plate and maintain a gap between the milling head and the plate (Fig. 11).

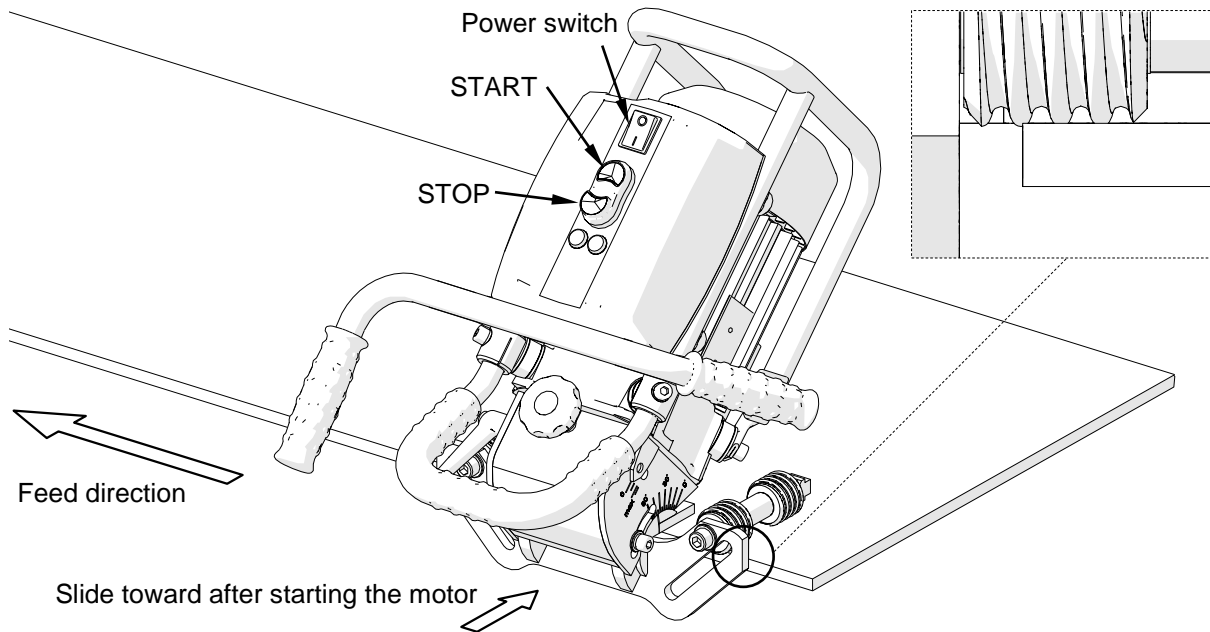


Fig. 11. Machine properly positioned on the workpiece

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.

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

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

Most steels capable of being welded can be bevelled 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 bevelling 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'. Use petroleum ether to clean oil from the workpiece.

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

3.5. Replacing the cutting inserts

Unplug the power cord from the power outlet, unscrew the lever (1, Fig. 12), and remove the indicator (2) and the milling head cover (3).

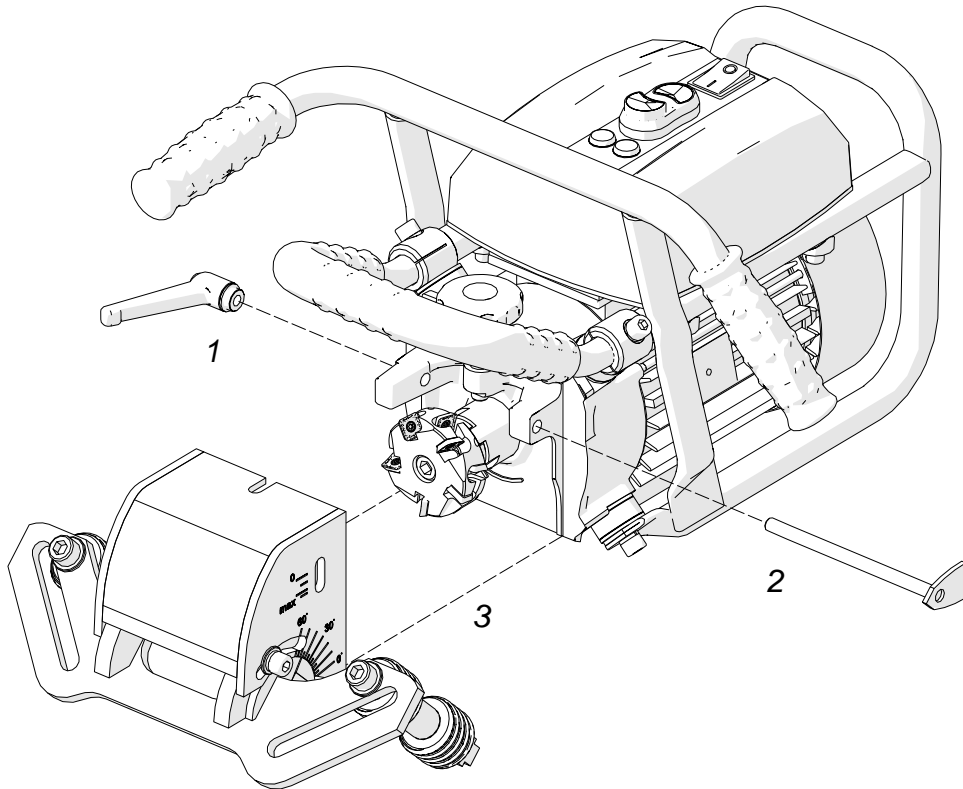


Fig. 12. Removing the milling head cover

Use the supplied T15P screwdriver to unscrew the mounting screw (Fig. 13), then remove the insert, and clean the socket. Next, rotate the insert by 90° and mount again or replace to a new one if all four edges are worn. To replace an insert from the internal ring, first remove the insert from the external ring.

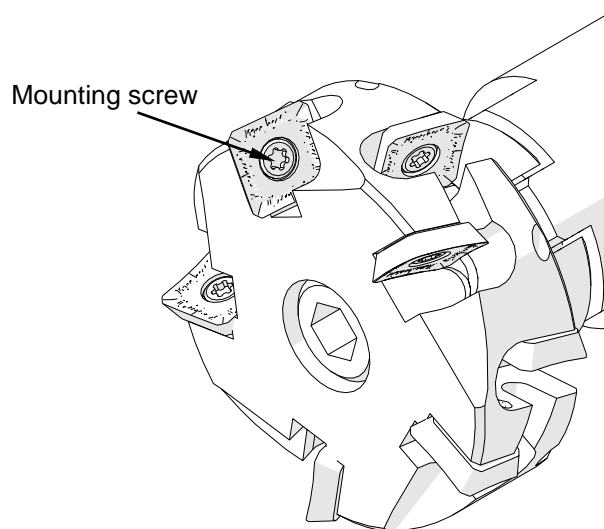


Fig. 13. Replacing the cutting inserts

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 rings of the milling head (Fig. 14), which will extend the life of the inserts.

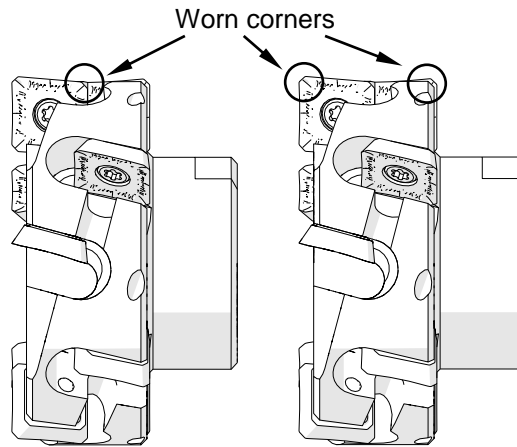


Fig. 14. Changing the cutting inserts between rings

3.6. Replacing the milling head

Remove the milling head cover as shown in Fig. 12. Next, lock the rotation of the spindle with the 32 mm flat wrench (Fig. 15), use the 8 mm hex wrench to unscrew the screw, and remove the milling head. The 32 mm flat wrench is not included in standard equipment.

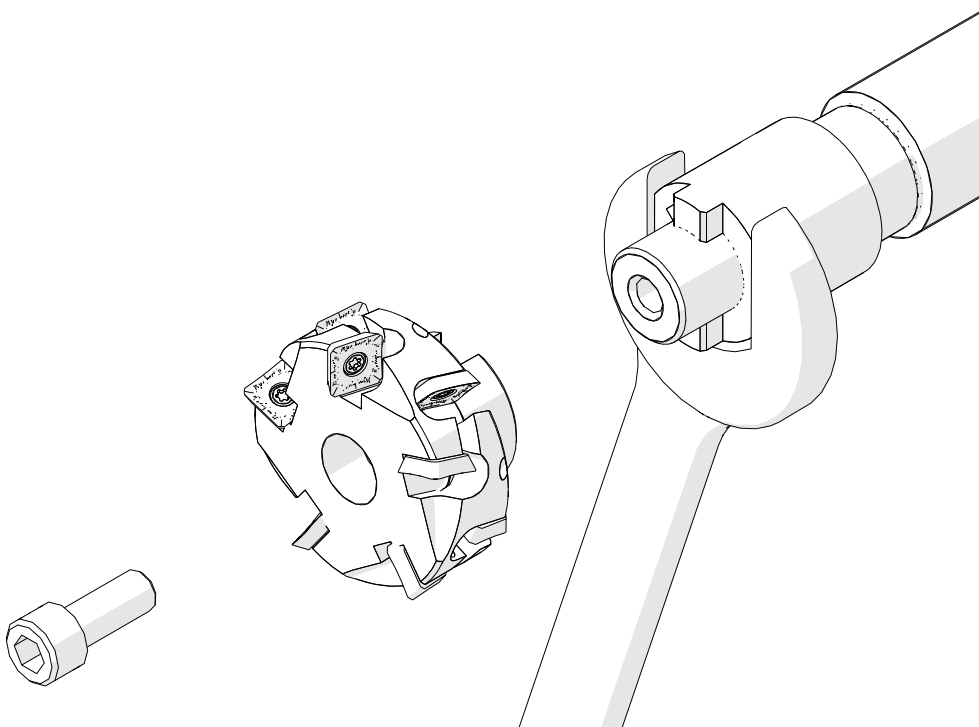
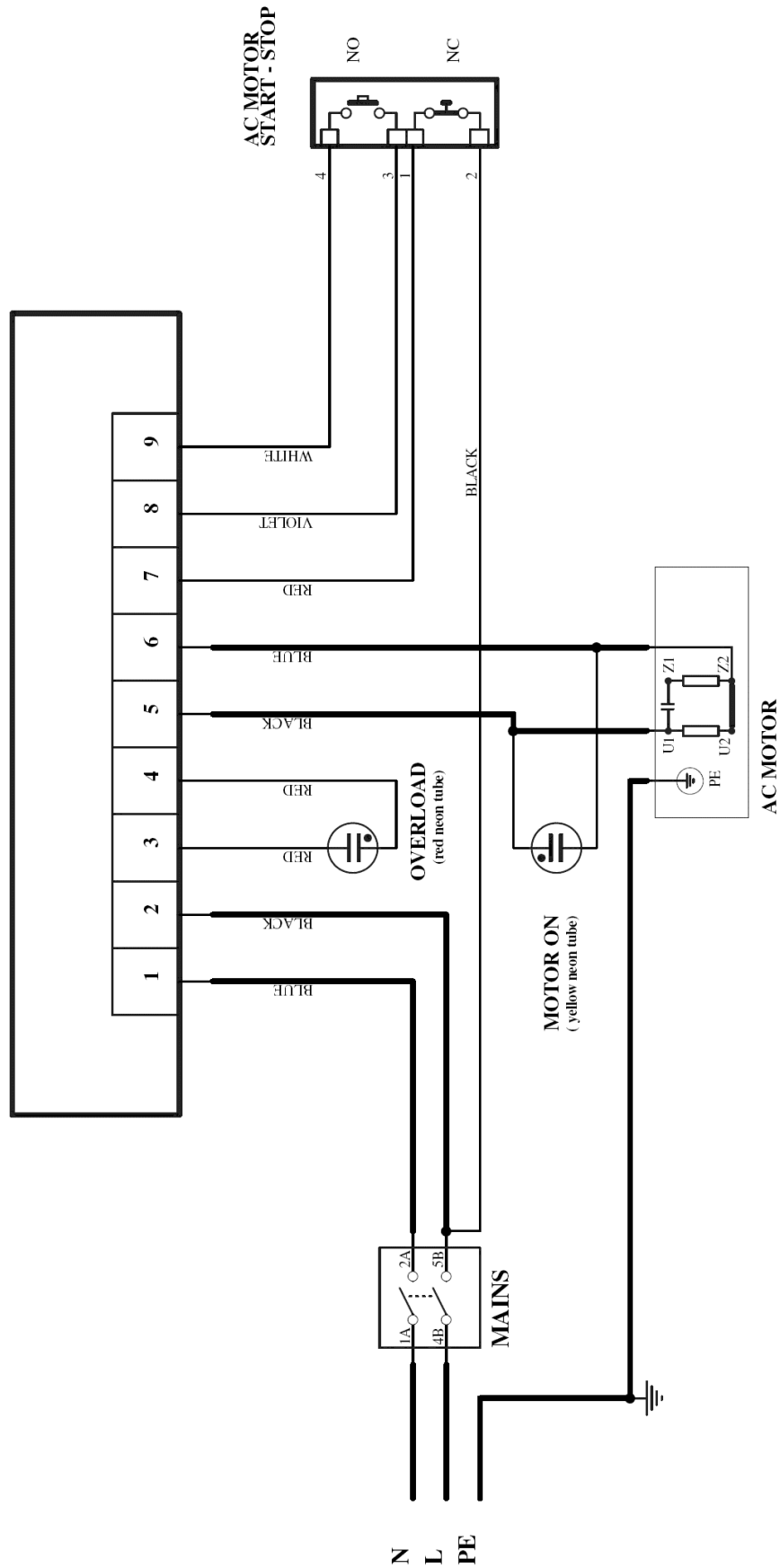


Fig. 15. Replacing the milling head

4. WIRING DIAGRAM



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5. SPARE AND WEARING PARTS

Name	Number
Milling head (including mounting screws, screwdriver, and grease; 10 inserts required)	GLW-0461-03-00-00-0
Cutting insert (sold 10 per box)	PLY-000282
Mounting screw for inserts	SRB-000311
T15P torx screwdriver for mounting screws	WKT-000005
Grease for screws (5 g, 0.17 oz)	SMR-000005
Oil for stainless steel (0.5 kg, 1.1 lbs)	OLJ-0505-09-00-00-0
Oil for stainless steel (1 kg, 2.2 lbs)	OLJ-0505-10-00-00-0
Oil for stainless steel (5 kg, 11 lbs)	OLJ-0505-11-00-00-0

6. DECLARATION OF CONFORMITY***EC Declaration of Conformity***

We

***JEI Group Ltd
Unit 21 Empire Business Park
Enterprise Way, Burnley
Lancashire, BB12 6LT***

declare with full responsibility that product:

BM-21S Beveling Machine

which the declaration applies to is in accordance with the following standard:

- EN 50144-1

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

Person authorized to compile the technical file:

David McFadden

Burnley, 8 November 2011

David McFadden
Managing Director

7. QUALITY CERTIFICATE

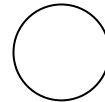
**Machine control card
BM-21S Bevelling Machine**

Serial number

Electric test

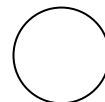
Type of test	Result	Name of tester
Insulation electrical strength test (1000 V, 50 Hz)	 Date
Continuity test of the protective earth system Ω Signature

Quality control



Adjustments, inspections

Quality control



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

..... in the name of Manufacturer warrants the BM-21S Bevelling 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.....

1.08 / 4 April 2017

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