

OPERATOR'S MANUAL

BM-16

BEVELLING MACHINE



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1. GENERAL INFORMATION

1.1. Application

The BM-16 is a bevelling machine designed to mill edges of plates and pipes made of steel, aluminum alloys, brass, or plastics.

Depending on the milling head used the machine allows bevelling workpieces with a thickness of at least 1.5 mm (0.06") at the angle of 22.5°, 30°, 37.5°, 45°, 50°, 55°, 60°, or 65° to the maximum bevel width of 16 mm (0.63"). A radius milling head allows bevelling with a radius of 2, 3, 4, or 5 mm. The minimum diameter of a hole to be machined is 40 mm (1.57").

An optional guide allows bevelling pipes, sticker protects aluminum workpieces against scratches, and worktable fixture allows bevelling flat bars.

1.2. Technical data

Voltage	1~ 220–240 V, 50–60 Hz 1~ 110–120 V, 50–60 Hz
Power	2200 W
Rotational speed (without load)	1800–5850 rpm
Protection level	IP 20
Protection class	II
Maximum bevel width (<i>b</i>)	16 mm (0.63", Fig. 1)
Bevel angle (β , depends on the milling head used)	22.5°, 30°, 37.5°, 45°, 50°, 55°, 60°, 65° (Fig. 1)
Minimum workpiece thickness for bevelling	1.5 mm (0.06")
Minimum hole diameter	40 mm (1.57")
Edge radius	2 mm, 3 mm, 4 mm, 5 mm (Fig. 1)
Noise level	More than 70 dB
Vibration level	2.3 m/s ² (7.5 ft/s ²) Machine harmful for health. Take periodic breaks during work.
Required ambient temperature	0–40°C (34–104°F)
Weight (without milling head)	10 kg (22 lbs)

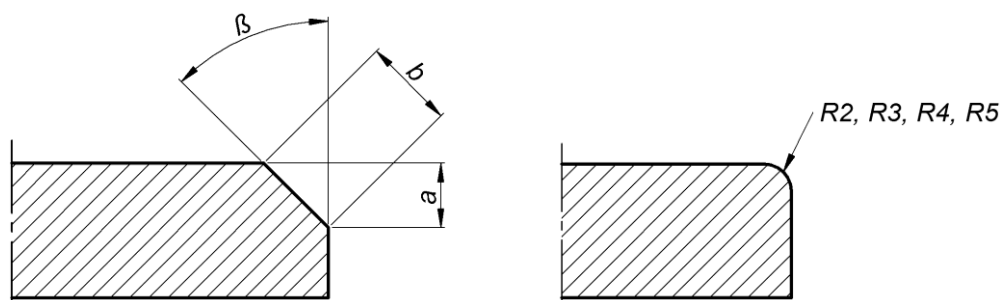
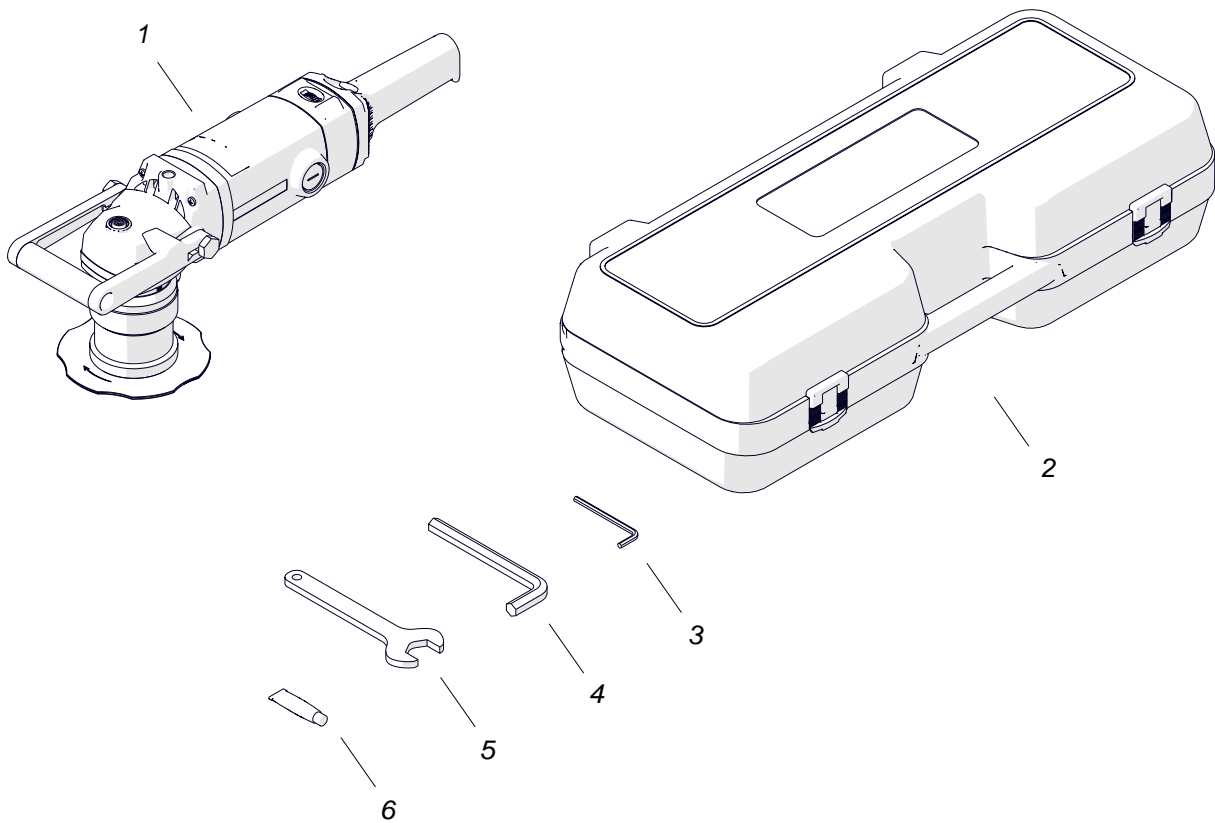


Fig. 1. Bevel dimensions

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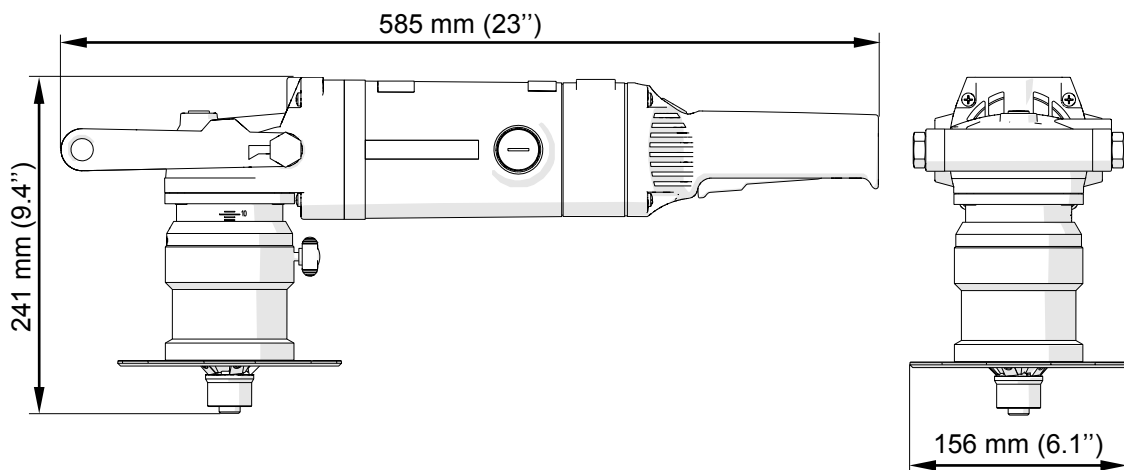
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1.3. Equipment included



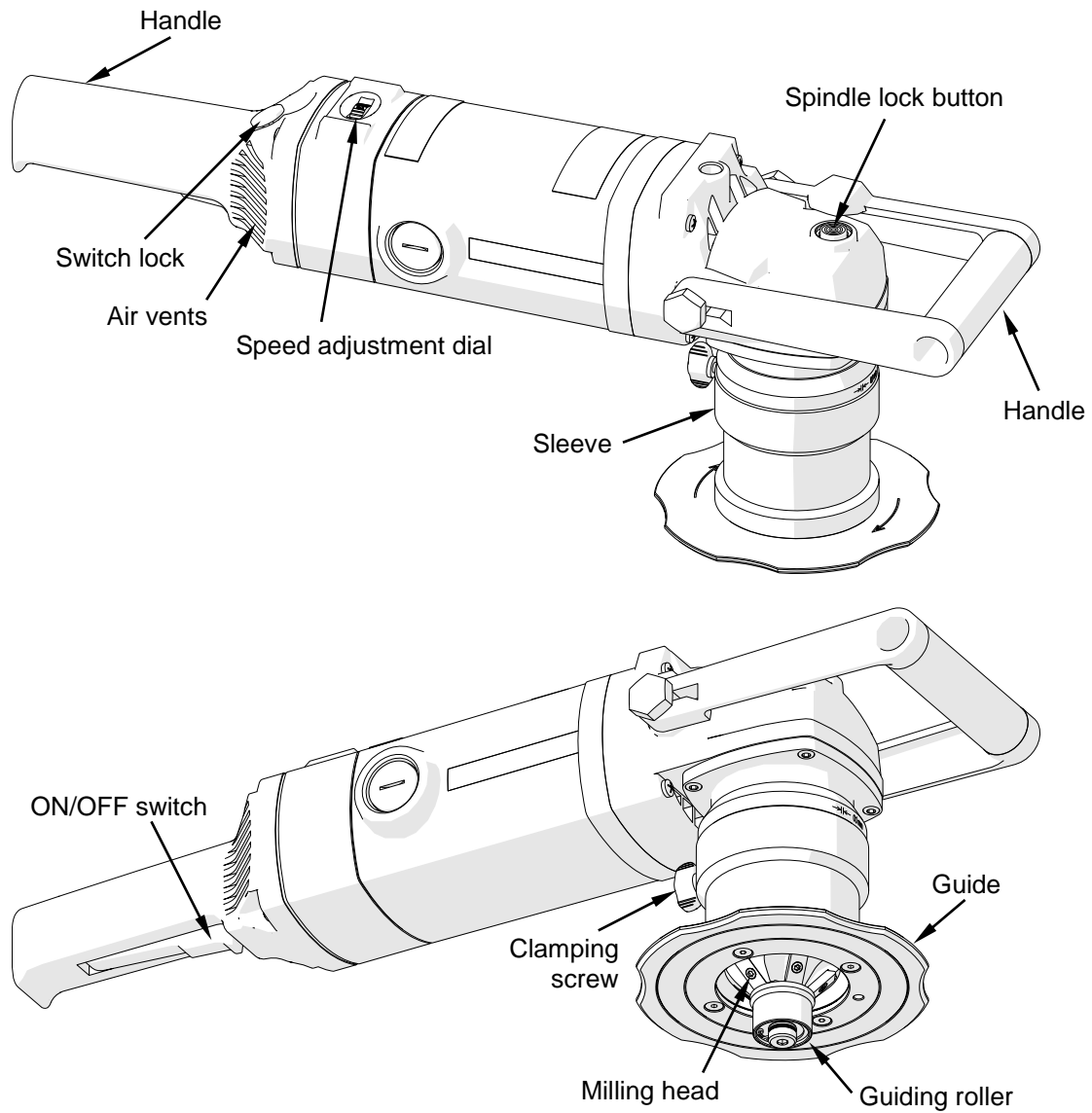
1	Beveling machine (without milling head)	1 unit
2	Plastic box	1 unit
3	5 mm hex wrench	1 unit
4	14 mm hex wrench	1 unit
5	32 mm flat wrench	1 unit
6	Grease for screws (5 g, 0.17 oz)	1 unit
-	Operator's Manual	1 unit

1.4. Dimensions



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1.5. Design



2. SAFETY PRECAUTIONS

1. Before starting, 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 functional.
4. The specifications of the power source must conform to those specified on the rating plate.
5. Never carry the machine by the cord and never pull the cord because this may damage it and result in electric shock.
6. Untrained bystanders must not be present near the machine.
7. Before starting, ensure the correct condition of the machine, power source, power cord, plug, control components, and milling tools.
8. Keep the machine dry, and never expose it to rain, snow, or frost.
9. Keep the work area well lit, clean, and free of obstacles.
10. Never use near flammable liquids or gases, or in explosive environments.
11. Use only tools specified in this Operator's Manual.
12. Never use tools that are dull or damaged.
13. Install the cutting inserts and milling head securely. Remove adjusting keys and wrenches from the work area before connecting the machine to the power source.
14. Never use the machine in upside down position with the milling head facing up.
15. If the cutting edge of the insert is worn, rotate the insert in the socket by 90° or 180° or, if all possible to use 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, non-skid footwear, and protective clothing during work. Do not wear loose clothing.
18. Never use the spindle lock button when operating the machine or removing the milling head because this may damage the machine.
19. Do not touch moving parts or metal chips formed during milling. Prevent objects from being caught in moving parts.

20. After every use, remove metal chips from the machine, especially from the milling head. Never remove chips with bare hands. Clean the machine with a cotton cloth without using any agents.
21. Cover steel parts with a thin anti-corrosion coating to protect them from rust when not in use for any extended period.
22. Maintain the machine and install/remove parts and tools only when the machine is unplugged from the power source.
23. Repair only in a service center appointed by the seller.
24. 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 work and promptly send the machine to the service center for inspection and repair.
25. Remove from the worksite and store in a secure and dry place when not in use.

3. STARTUP AND OPERATION

3.1. Installing and removing the milling head

Unplug the machine from the power source. To install the milling head, place it on the spindle (1, Fig. 2), and then press and hold the spindle lock button (2) and tighten the head with the 14 mm hex wrench (3). Next, remove the nut (4) and assemble the roller with the pivot pin by using washers (5), and then place the roller on the milling head (6), press and hold the button (2), and tighten the roller with the 5 mm hex wrench (7). Use such a number of 0.5-mm and 0.1-mm washers to keep a little gap between the roller and cutting inserts (8). The number of washers needed depends on the milling head used.

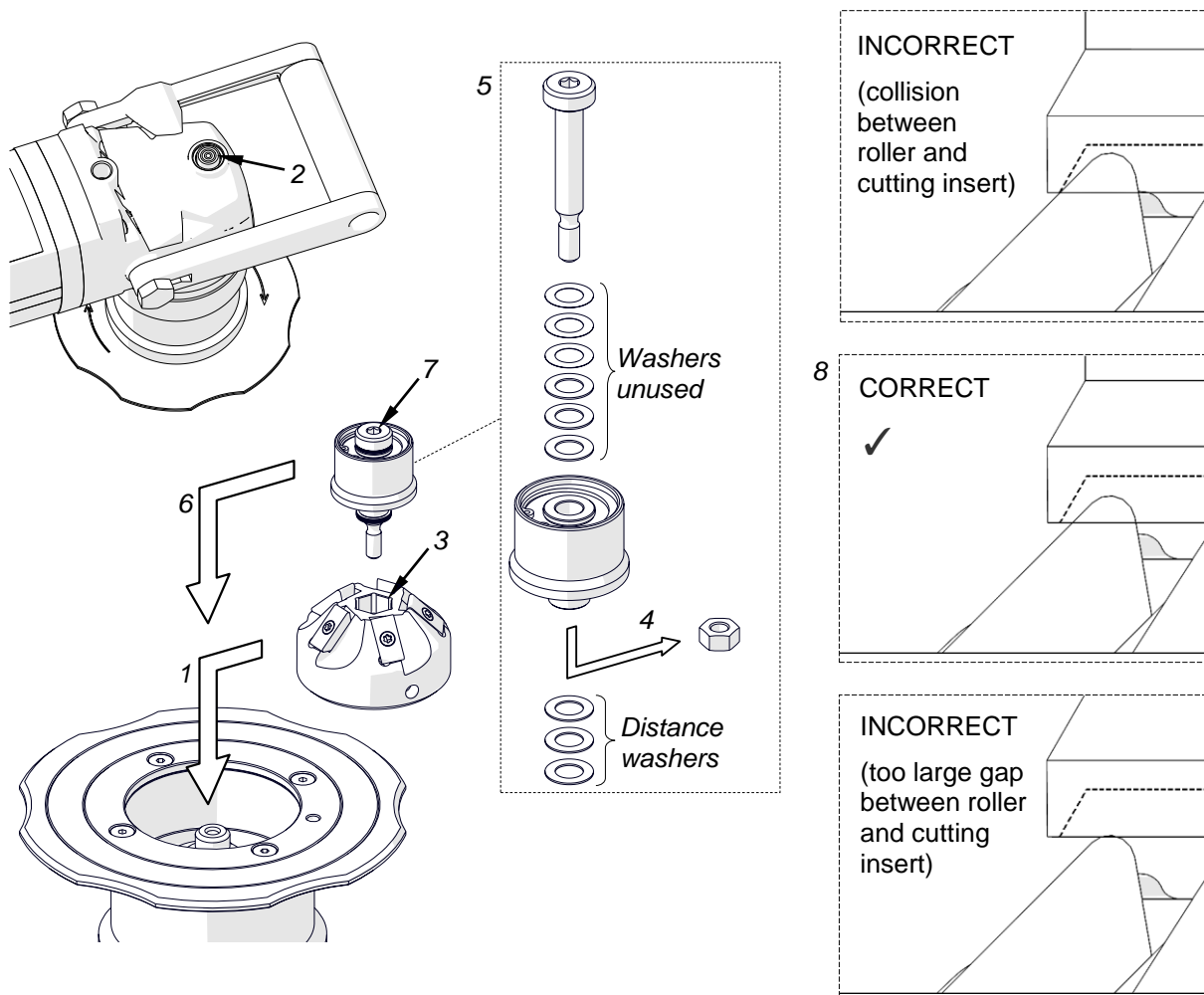


Fig. 2. Installing the milling head

Adjust the gap between the roller and the cutting inserts every time you replace the milling head. Place all unused washers between the pivot pin and the roller.

To remove the milling head, loosen the clamping screw (1, Fig. 3), and then unscrew the sleeve (2) and remove it (3). Next, press and hold the button (4), and then use the 5 mm hex wrench (5) to unscrew the roller, and remove it (6). Lock the spindle with the 32 mm flat wrench (7, do not use the spindle lock button 4 because this may damage the machine), and then use the 14 mm hex wrench to unscrew the head (8), and remove it (9).

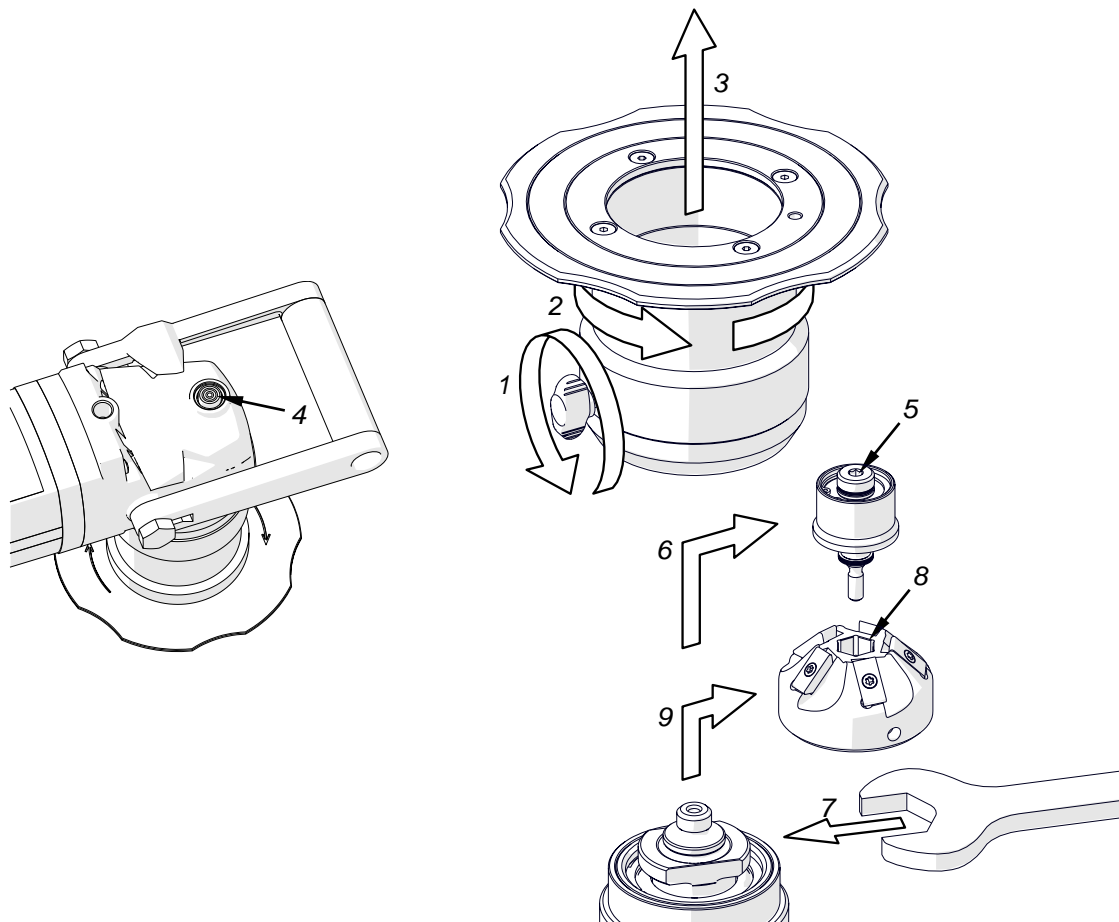


Fig. 3. Removing the milling head

3.2. Adjusting the bevel parameters

Unplug the machine from the power source. Next, loosen the clamping screw (1, Fig. 4), rotate the sleeve (2) so that the scale (3) shows the required bevel height 'a' (Tab. 1), and then re-tighten the screw.

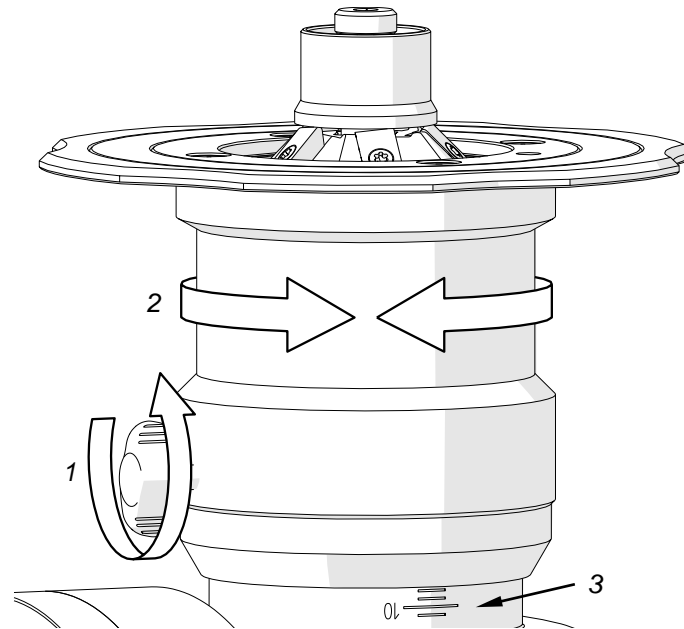
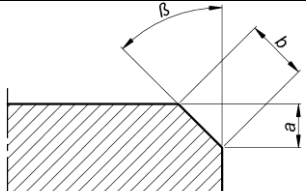


Fig. 4. Adjusting the bevel parameters

	Milling head							
	22.5°	30°	37.5°	45°	50°	55°	60°	65°
Height 'a' [mm]	Width 'b' [mm]							
1			0.7	1.4	1.6	2.3	2.9	3.7
2		1.2	2.0	2.8	3.1	4.0	4.9	6.1
3	1.1	2.3	3.2	4.2	4.7	5.8	6.9	8.5
4	2.3	3.5	4.5	5.7	6.2	7.5	8.9	10.8
5	3.4	4.6	5.7	7.1	7.8	9.3	10.9	13.2
6	4.5	5.8	7.0	8.5	9.3	11.0	12.9	15.5
7	5.6	6.9	8.3	9.9	10.9	12.8	14.9	
8	6.7	8.1	9.5	11.3	12.4	14.5		
9	7.7	9.3	10.8	12.7	14.0	16.3		
10	8.8	10.4	12.1	14.1	15.6			
11	9.9	11.6	13.3	15.6				
11.5	10.4	12.2	13.9	16.3				
12	11.0	12.7	14.6					
13	12.1	13.9	15.8					

Tab. 1. Relation between bevel width and height of the available milling heads

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3.3. Adjusting the guide for bevelling with radius

Unplug the machine from the power source, and then in the manner described before loosen the clamping screw and rotate the sleeve to set the surface (1, Fig. 5) on the same level as the radial cutting edge (2). You can also use an optional radius insert positioner to set the guide properly. Next, re-tighten the clamping screw, and then bevel a test edge and readjust the position of the guide if necessary.

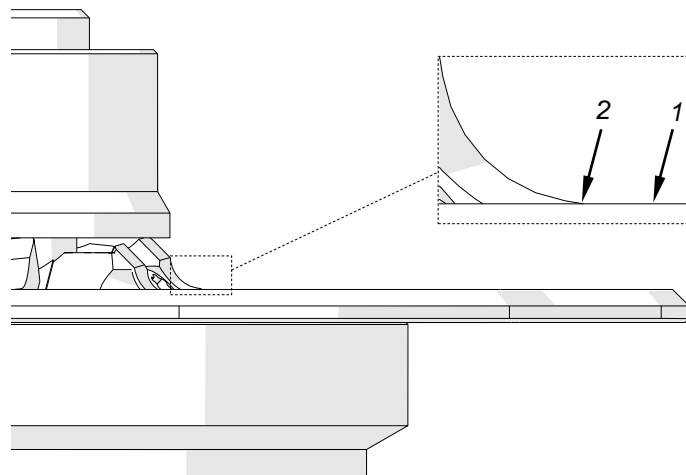


Fig. 5. Guide adjusted for bevelling with radius

3.4. Preparing

Install a milling head with cutting inserts, and set the required bevel parameters. Then, use the speed adjustment dial to set the speed matching to the type of the workpiece (Tab. 2).

Material type	Rotational speed
Aluminum, brass, plastics	Setting 6 (5850 rpm)
Structural steel of standard quality, quality steel	Settings 3–5 (3100–4500 rpm)

Tab. 2. Recommended rotational speeds

The speed adjustment dial allows continuous control of the rotational speed in the range of 1800–5850 rpm (settings 1–6). The relations between the setting and speed are as follows: setting 1 – 1800 rpm, 2 – 2400 rpm, 3 – 3100 rpm, 4 – 3800 rpm, 5 – 4500 rpm, 6 – 5850 rpm.

When using structural steel of standard quality or quality steel, set the speed to setting 4 and decrease the speed if intensive sparking occurs during work.

3.5. Operating

Connect the machine to the power source and place the machine on the left side of the workpiece in the manner shown in Fig. 6. The milling head must not be in contact with the workpiece. The workpiece must be balanced and well fixed.

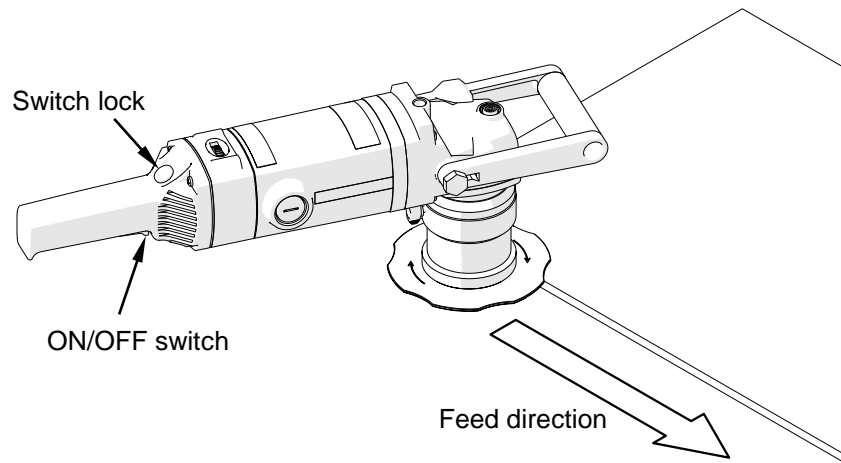


Fig. 6. Machine placed on a plate and proper feed direction

To start the motor, press and hold the switch lock and the ON/OFF switch, and then release the lock. Wait a few seconds until the machine reaches the required rotational speed, press the machine to the workpiece with both hands, and slowly slide toward the edge until the tool starts cutting into the metal. Operate according to the counter-rotation, by sliding the machine from left to right. The rotation direction of the milling head is indicated by the arrow on the guide.

Start with making small bevels (3–4 mm, 0.12–0.16”) and increase the bevel width with experience. Bevel in at least two or three passes. The bevel width should be set to a value that will allow the feed of one meter per minute without much effort.

If the machine becomes overloaded, for instance when the bevel width is too large for the material being machined or when the cutting inserts are dull, the motor will automatically stop. However, prevent the motor from overloading by machining hard materials in multiple passes and replacing the inserts before they become dull. Additionally, take periodic breaks during work, and keep the air vents unclogged to prevent the motor from overheating as this may lead to damage of the windings.

After the work is finished, turn off the motor by releasing the ON/OFF switch, wait until the rotation stops, and unplug the machine from the power source.

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

3.6. Replacing the cutting inserts

Unplug the machine from the power source, and place the machine upside down. Next, loosen the clamping screw (1, Fig. 7) to access the milling head, and lower the sleeve as far as possible by rotating it to the right (2). Then, use the screwdriver supplied with the milling head to unscrew the screw (3), and remove the cutting insert (4). Clean the socket, and then rotate the insert and install again or replace with a new one if all possible to use edges are worn. Next, push and tighten the insert. The entire bottom of the insert must be in full contact with the surface of the socket (5).

Before replacing the cutting inserts of the radius milling head, press and hold the spindle lock button 6 and loosen the guiding roller with the 5 mm hex wrench (7).

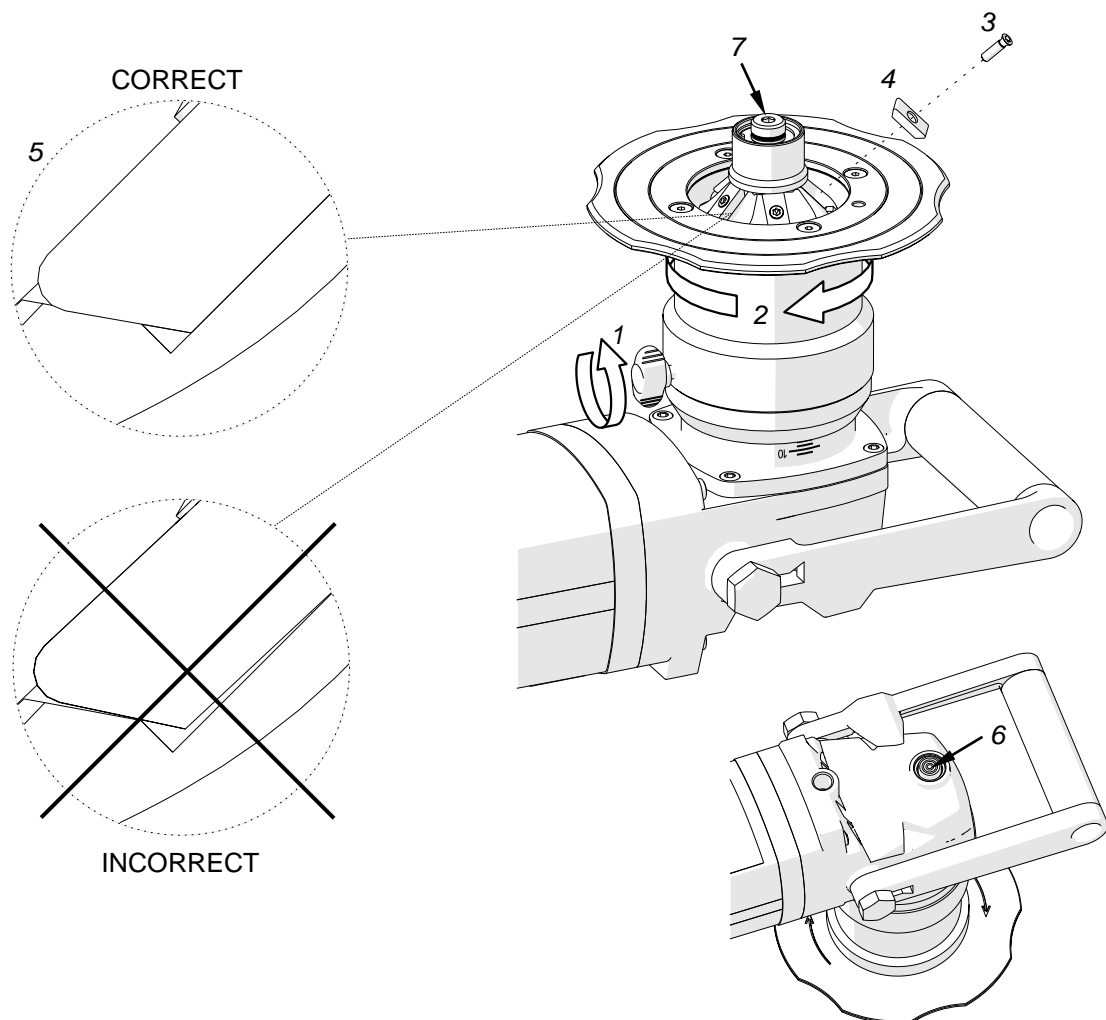


Fig. 7. Replacing the cutting inserts

Clean the threads once a week and, if necessary, grease the fixing screws for inserts with an agent (for instance copper paste) that will prevent the screws from blocking.

3.7. Replacing the roller

Unplug the machine from the power source, and place the machine upside down. Next, press the spindle lock button (1, Fig. 8), and then use the 5 mm hex wrench to unscrew the roller (2).

Remove the nut (3) and assemble the roller with the pivot pin by using washers (4), and then place the roller on the milling head, press and hold the button (1), and tighten the roller with the 5 mm hex wrench (2). Use such a number of washers to keep a little gap between the roller and the cutting inserts (5). The number of 0.5-mm and 0.1-mm washers needed depends on the milling head used. Place all unused washers between the pivot pin and the roller.

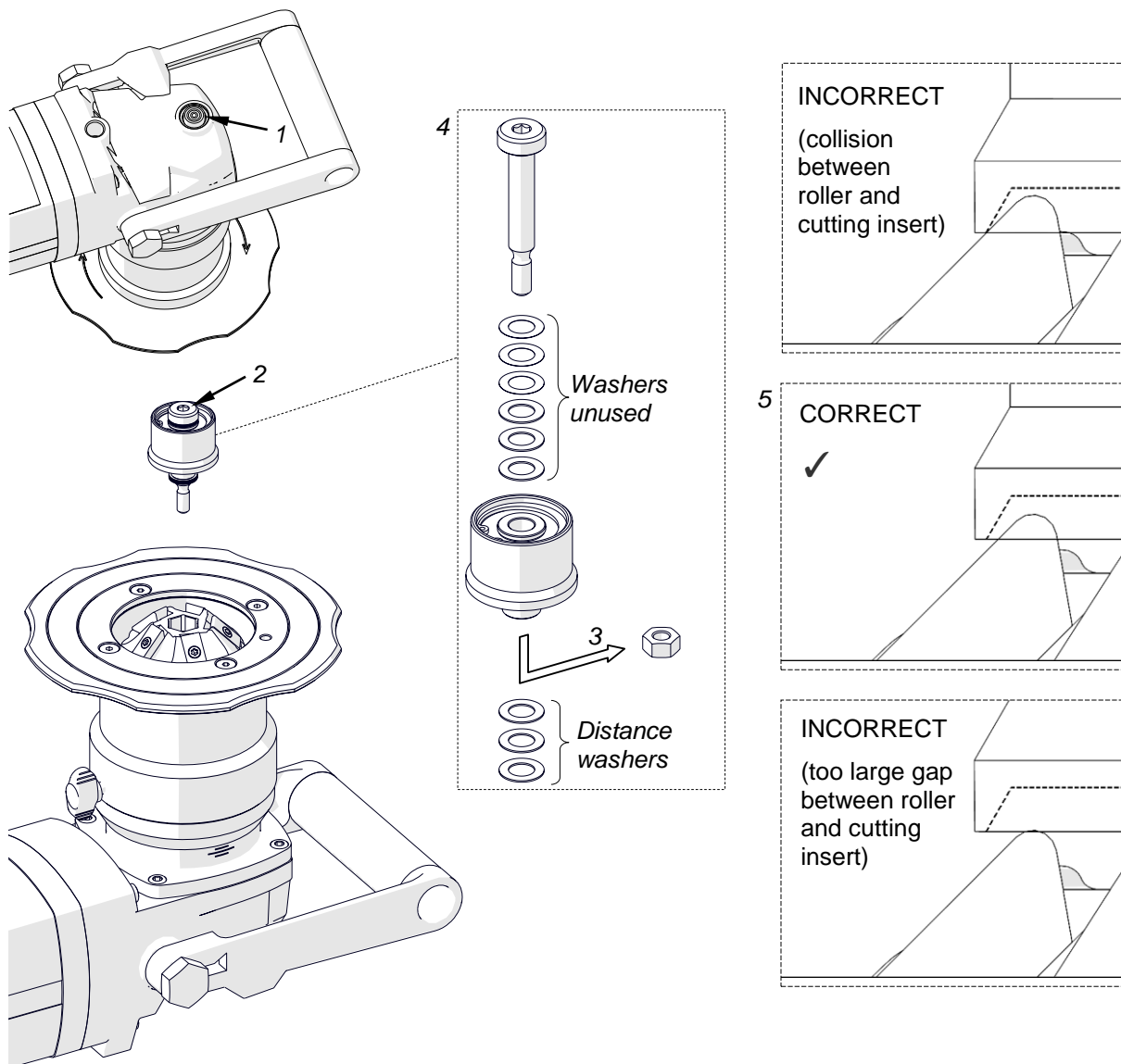


Fig. 8. Replacing the roller

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3.8. Replacing the brushes

Check the condition of the carbon brushes every 200 work hours. To do this, unplug the machine from the power source, unscrew the cap, and remove the brush (Fig. 9). If the length of the brush is less than 10 mm (0.4"), replace both brushes with new ones. To install brushes, proceed in reverse order. After the replacement, run the motor without load for 20 minutes.

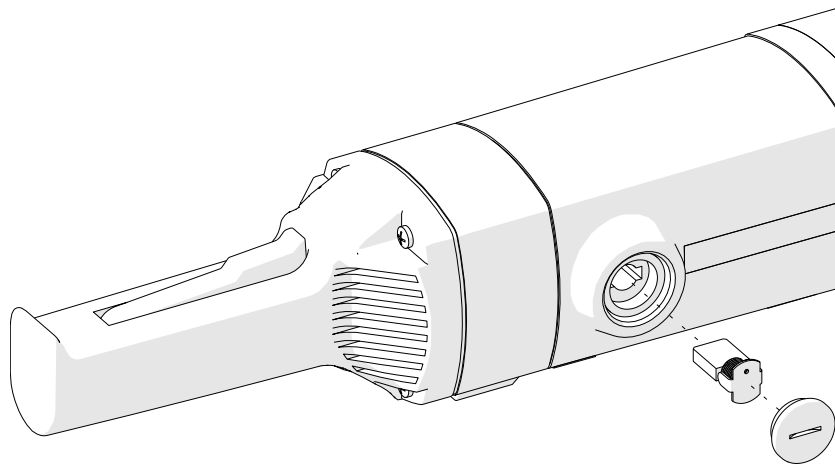


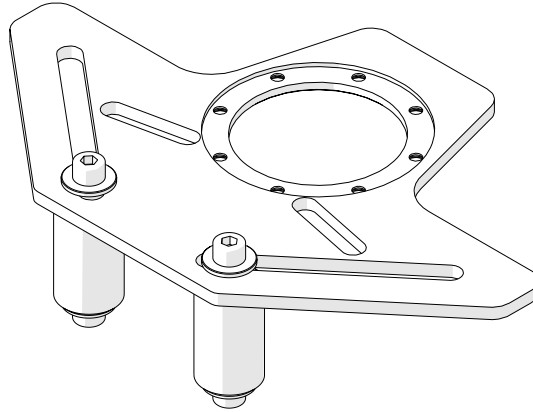
Fig. 9. Replacing the brushes

4. ACCESSORIES

4.1. Guide for bevelling pipes

Allows external bevelling of pipes with a diameter of at least 150 mm (5.9") and internal bevelling of pipes with a diameter of at least 110 mm (4.3").

Part number:
BM16-PA
(includes: four M5x12 screws,
3 mm hex wrench, 6 mm hex wrench)



To install, unplug the machine from the power source, and place the machine upside down (Fig. 10). Heat the screws, and then use the 3 mm hex wrench to unscrew the standard guide and screw in the guide for pipes.

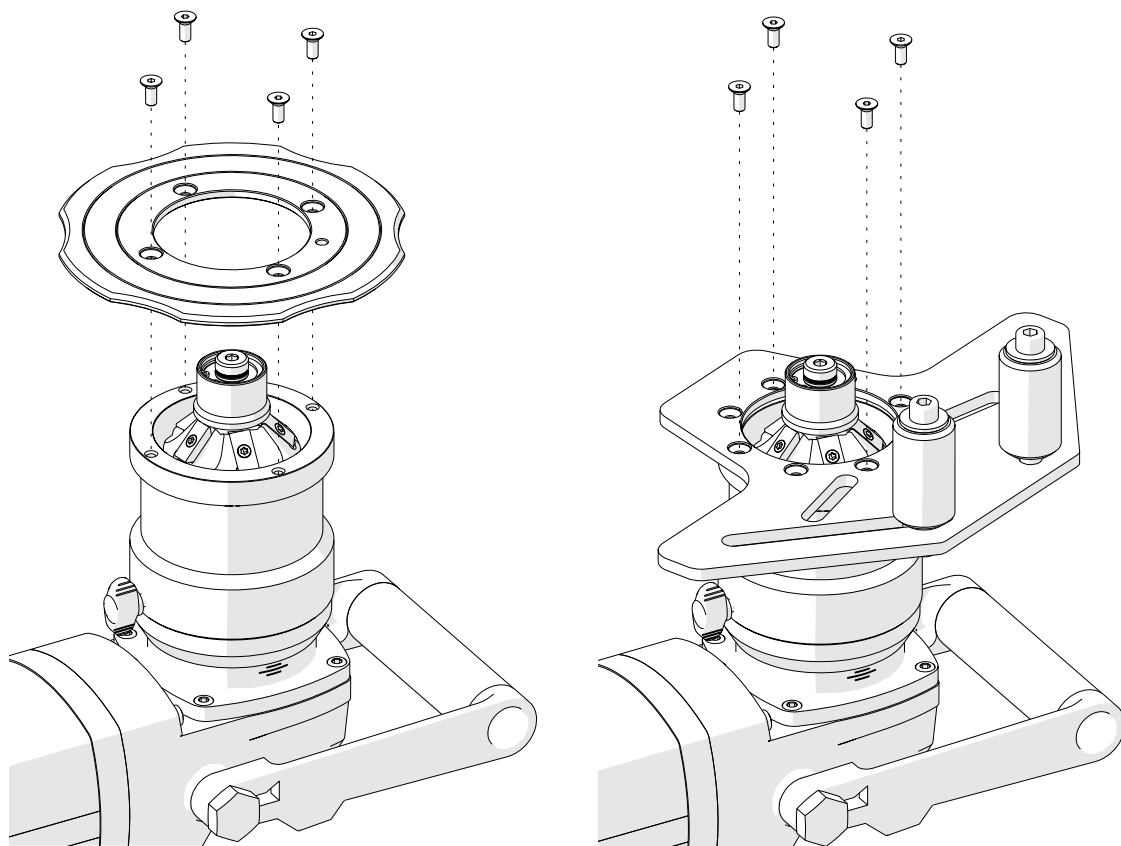


Fig. 10. Installing the guide for pipes

Rotate the sleeve to set '0' on the pitch (1, Fig. 11), and then use the 6mm hex wrench to loosen the guide rollers (2) and separate them from each other as far as possible. Place the machine on a vertically positioned pipe, pressing the roller (3) to the pipe, and then move the rollers (4) evenly to join them to the pipe and tighten in this position. Next, separate the machine from the pipe, and set the required parameters (5). Then, start the machine, slowly slide it toward the edge, and bevel according to the direction 6.

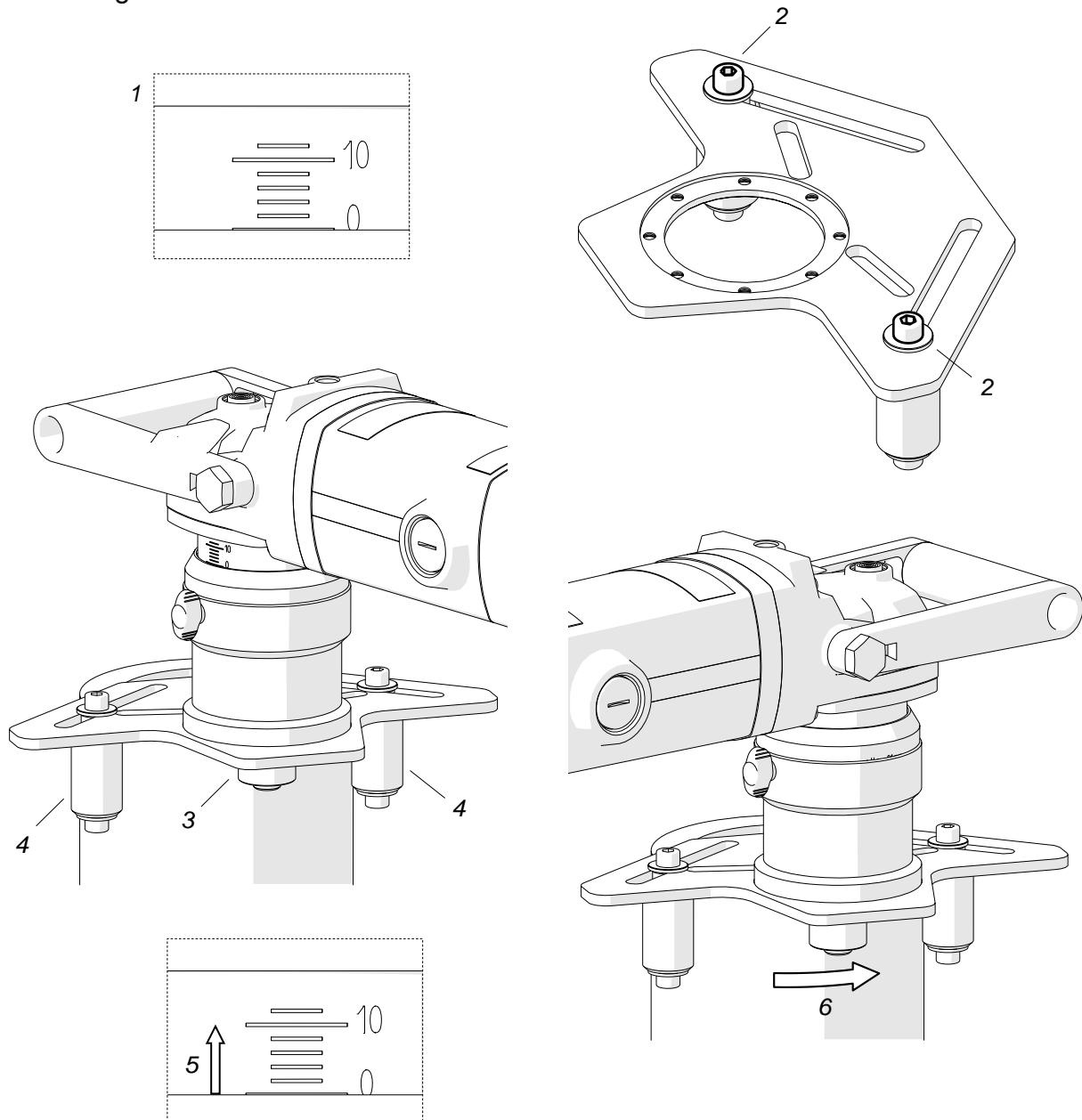
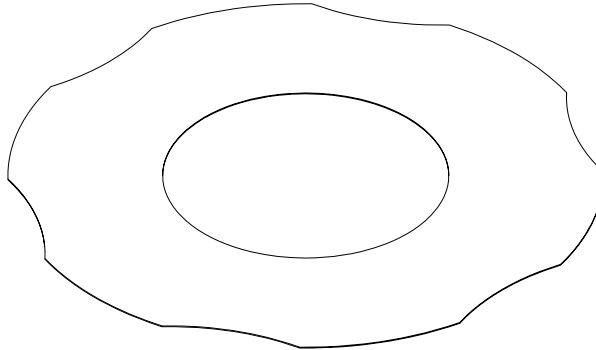


Fig. 11. Using the machine on a pipe

4.2. Anti-scratch guide sticker

Self-adhesive guide sticker against scratches is dedicated for aluminum bevelling. If the sticker is removed, clean excess glue from the guide with petroleum ether.

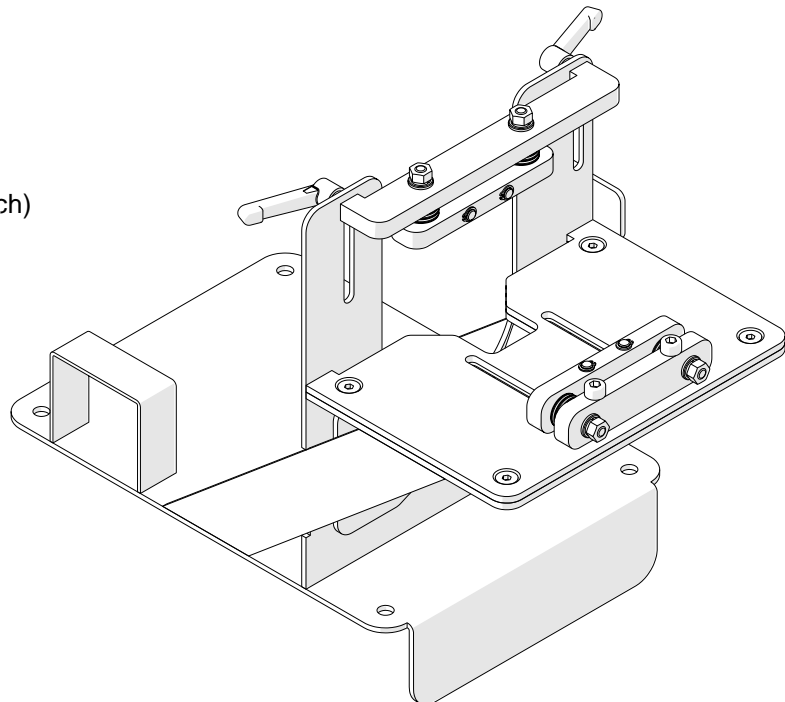
Part number:
BM16-ASG



4.3. Worktable fixture

Designed to bevel workpieces with cross section of at least 15x25 mm (0.6x1") and length of at least 400 mm (16"). The width of the workpiece can be up to 100 mm (4"), and height up to 65 mm (2.5"). The maximum bevel width is 14 mm (0.55").

Part number:
BM16-WT
(includes 5 mm hex wrench)



Install the worktable fixture by using holes in the base (1, Fig. 12). Then, unscrew the levers and remove the vertical clamp (2). Unplug the machine from the power source, and rotate the sleeve to set '0' on the pitch. Next, place the machine with a bevelling milling head into the worktable fixture (3) so that the motor rests on the support (4).

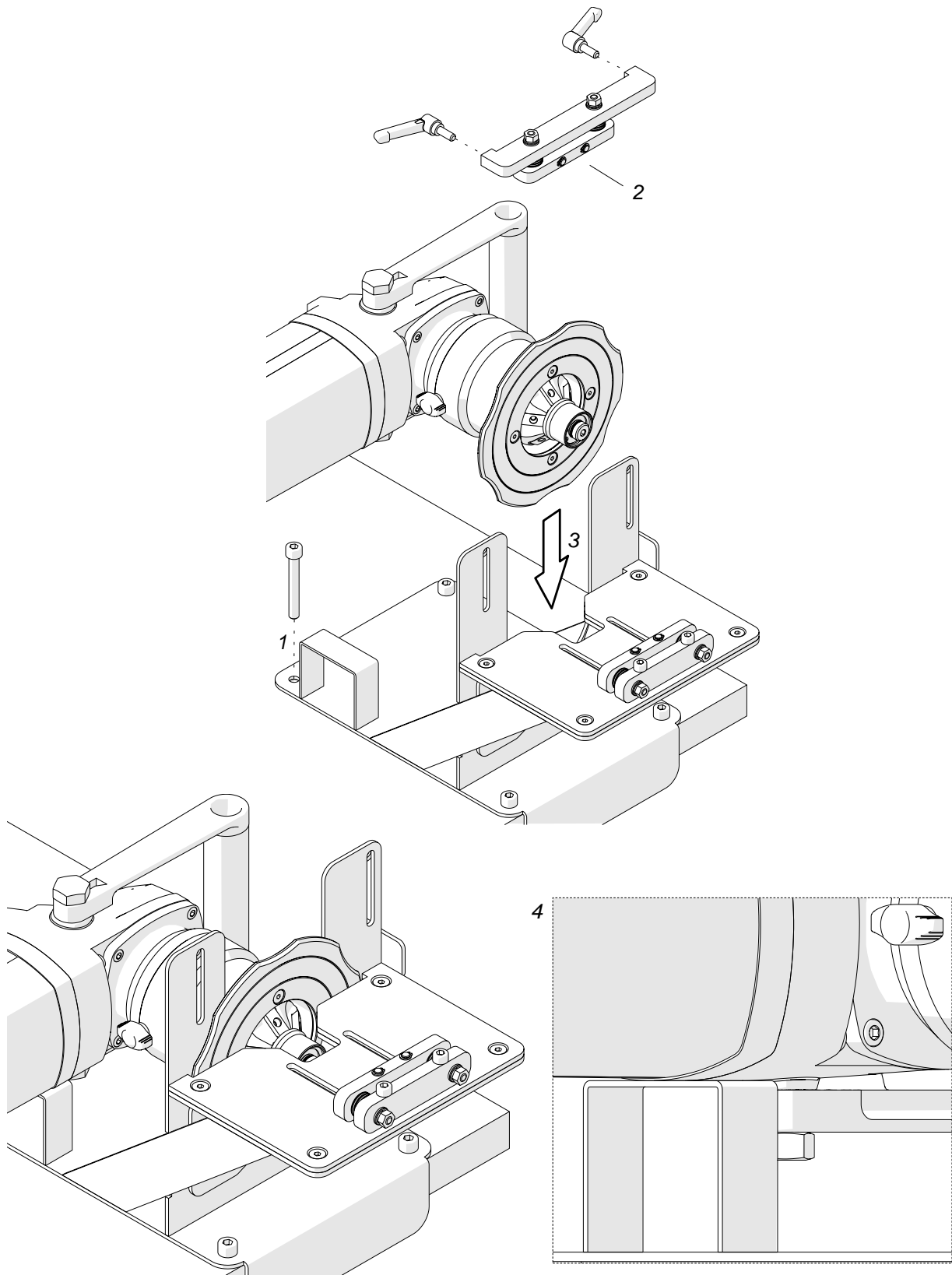


Fig. 12. Installing the machine into the worktable fixture

Use the 5mm hex wrench to loosen the horizontal clamp (1, Fig. 13), and then place the workpiece (2) so that it makes contact with the guide (3). Next, move the horizontal clamp toward the workpiece (4) and tighten the screws in this position (5).

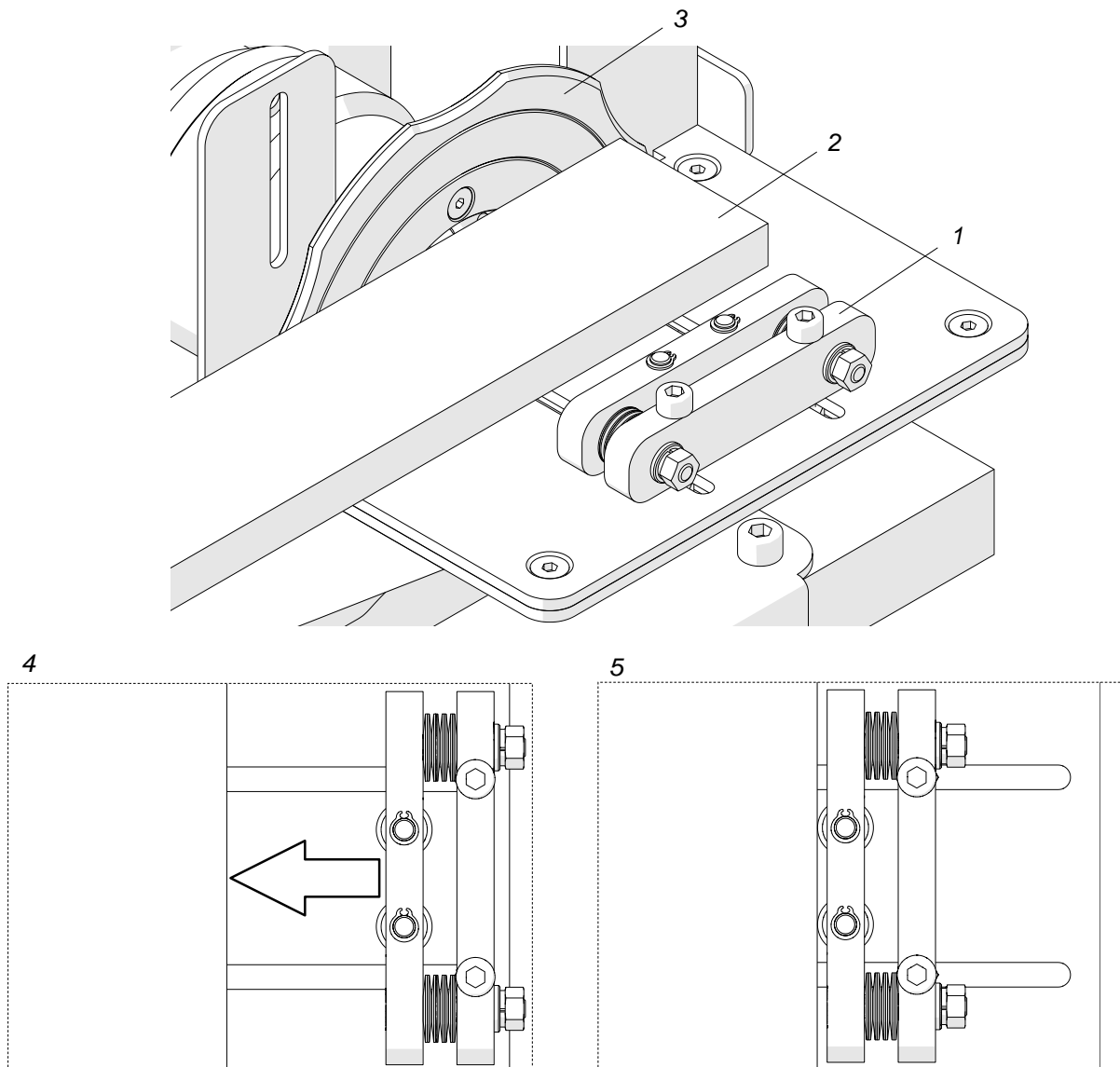


Fig. 13. Adjusting the horizontal clamp

Install the vertical clamp (1, Fig. 14) by lightly tightening the levers (2), move the clamp to the workpiece (3), and then tighten the levers in this position (4). Next, remove the workpiece, set the required bevel parameters, and then use the 5mm hex wrench to tighten the screws (5) to fix the machine.

Start the machine and set the required rotational speed. Then, place the workpiece on the left and bevel according to the direction 6.

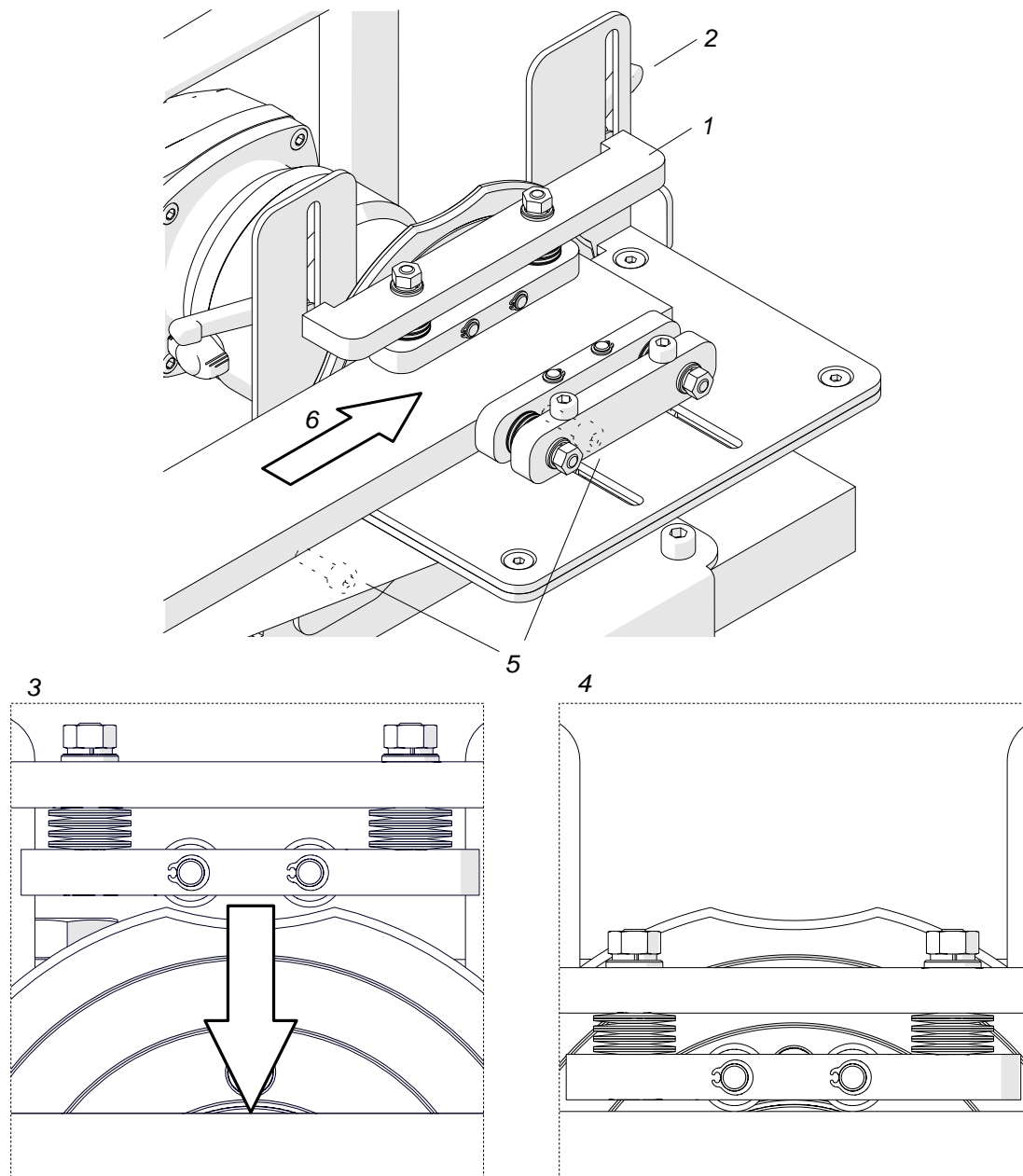
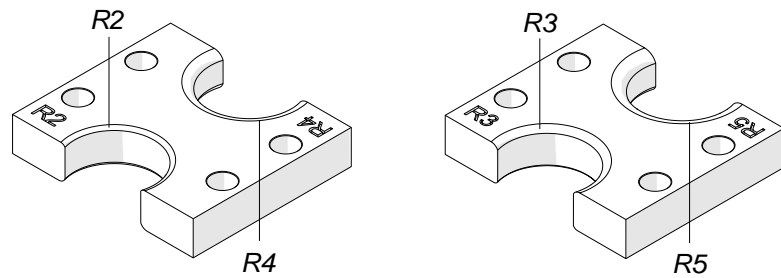


Fig. 14. Adjusting the vertical clamp

4.4. Radius insert positioner

Allows the guide to be set properly for bevelling with a radius of 2, 3, 4, or 5 mm.

Part number:
UST-0509-16-00-00-0



Unplug the machine from the power source, place the machine upside down, and then lower the sleeve to access the cutting inserts. Next, place the positioner from the top (1, Fig. 15) so that the edge marked with a given radius is aligned with the edges of three cutting inserts with the same radius (2). Finally, rotate the sleeve (3) so that the guide makes contact with the positioner (4).

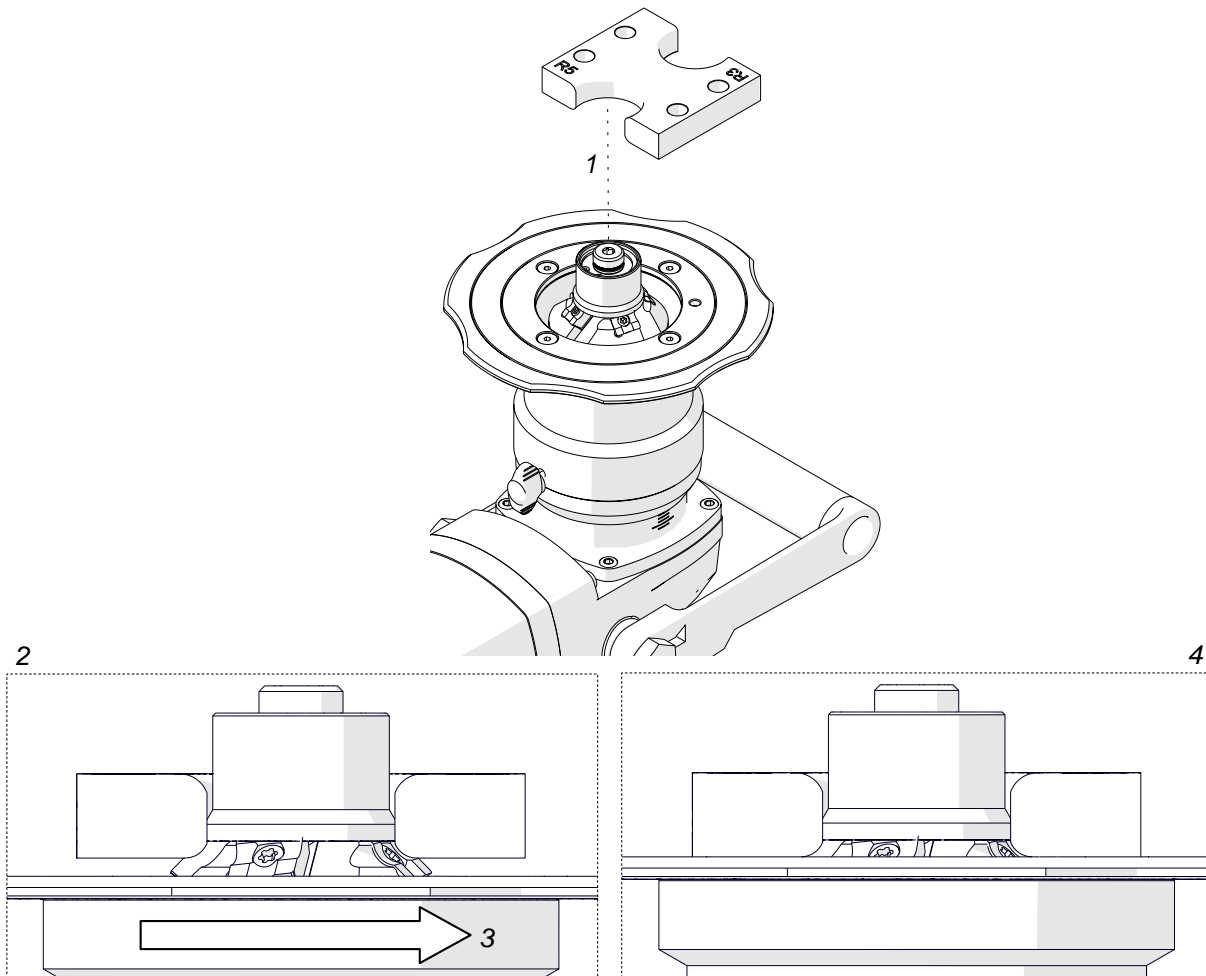


Fig. 15. Adjusting the guide for bevelling with radius

4.5. Milling tools

Part number	Part name
BM16CMH22.5	Bevelling milling head 22.5°
BM16CMH30	Bevelling milling head 30°
BM16CMH37.5	Bevelling milling head 37.5°
BM16CMH45	Bevelling milling head 45°
BM16CMH50	Bevelling milling head 50°
BM16CMH55	Bevelling milling head 55°
BM16CMH60	Bevelling milling head 60°
BM16CMH65	Bevelling milling head 65°
BM16IS	Bevelling insert for steel (5 required)
BM16IA	Bevelling insert for aluminum (5 required)
BM16SMHS	Fixing screw for bevelling insert
BM16RMH	Radius milling head
BM16IR2	Radius insert R2 (4 required)
BM16IR3	Radius insert R3 (4 required)
BM16IR4	Radius insert R4 (4 required)
BM16IR5	Radius insert R5 (4 required)
BM16RMHS	Fixing screw for radius insert

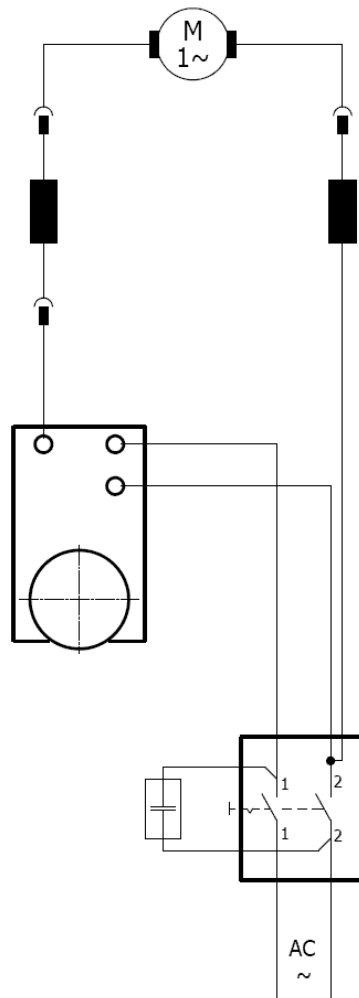
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5. SPARE AND WEARING PARTS

Part number	Part name
BM16-12	Guiding roller
BM16-24.32	Carbon brush for 110 V
BM16-24.32	Carbon brush for 230 V
KLC-0509-13-00-00-0	32 mm flat wrench
KLC-000008	5 mm hex wrench
KLC-000029	14 mm hex wrench
KLC-000028	T15 torx screwdriver
SMR-000005	Grease for screws (5 g, 0.17 oz)

6. WIRING DIAGRAM



7. DECLARATION OF CONFORMITY

EC Declaration of Conformity

We

**JEI GROUP LTD
UNIT 21, EMPIRE BUSINESS PARK
ENTERPRISE WAY
BURNLEY, LANCS, BB12 6LT**

declare with full responsibility that:

BM-16 BEVELLING MACHINE

is manufactured in accordance with the following standards:

- EN 60745-1
- EN 55014
- EN ISO 12100-1
- EN ISO 12100-2

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

Person authorized to compile the technical file:
David McFadden, Burnley, Lancs



Burnley, 1 December 2017

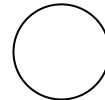
David McFadden
Managing Director

8. QUALITY CERTIFICATE

**Machine control card
BM-16 BEVELLING MACHINE**

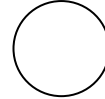
Serial number

Quality control



Adjustments, inspections

Quality control



9. WARRANTY CARD

WARRANTY CARD No.....

..... in the name of Manufacturer warrants the BM-16 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.....

1.19 / 3 March 2017

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