JEI Drilling & Cutting Solutions Ltd

OPERATOR'S MANUAL

ABM-14

BEVELLING MACHINE

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1. GENERAL INFORMATION

1.1. Application

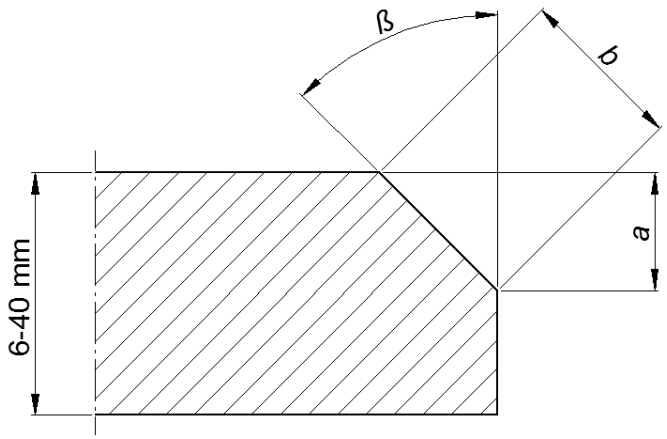
The ABM-14 is a bevelling machine designed to mill plates and pipes made of carbon steel, alloy steel, stainless steel, or aluminum alloys. The machine can bevel plates and pipes at the angle of 30°. The minimum plate width is 55 mm (2-3/16″) and the minimum inner diameter of the pipe is 100 mm (4″). The maximum bevel width is 14 mm (9/16″). The machine can bevel plates from the top and bottom.

Optional guides allow bevelling at the angle of 22.5°, 25°, 35°, 37.5°, or 45°.

1.2. Technical data

Voltage	3~ 400 V + PE, 50–60 Hz
Power	2.2 kW
Rotational speed	9 rpm (for 50 Hz) 11 rpm (for 60 Hz)
Milling speed	2.6 m/min (8.5 ft/min, for 50 Hz) 3.1 m/min (10.2 ft/min, for 60 Hz)
Bevel angle (*ß*, Fig. 1)	30° 22.5°* 25°* 35°* 37.5°* 45°*
Maximum bevel width (*b*, Fig. 1)	14 mm (9/16″)
Workpiece thickness	6–40 mm (1/4–1-9/16″)
Minimum plate width	55 mm (2-3/16″)
Minimum pipe inner diameter	100 mm (4″)
Protection level	IP 44
Protection class	I
Required ambient temperature	0–40 °C (34–104°F)
Weight	65 kg (144 lbs)

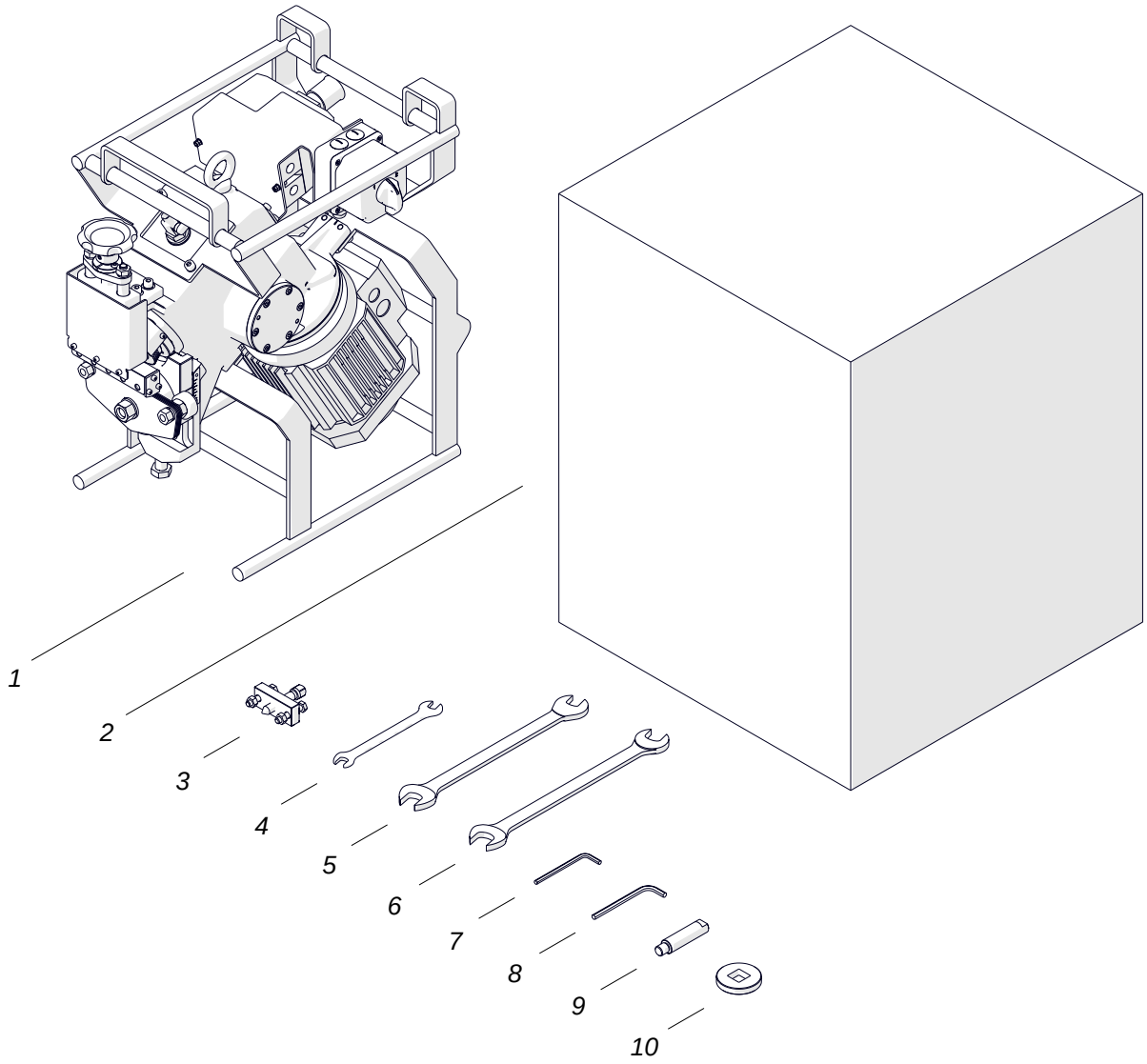
* When used with an optional guide.



	Maximum bevel width/height in one pass					
	Carbon steel					
	R_m ≤ 392 MPa (57,000 psi)		R_m = 392–490 MPa (57,000–71,000 psi)		R_m = 490–588 MPa (71,000–85,000 psi)	
β	**b** [mm]	**a** [mm]	**b** [mm]	**a** [mm]	**b** [mm]	**a** [mm]
22.5°	12	11	10	9	8	7.5
30°	12	10	10	8.5	8	7
35°	12	9.5	10	8	8	6.5
37.5°	12	9	10	7.5	8	6
45°	12	8.5	10	7	8	5.5
	Stainless/alloy steel					
	R_m ≤ 490 MPa (71,000 psi)		R_m = 490–588 MPa (71,000–85,000 psi)		R_m = 588–686 MPa (85,000–100,000 psi)	
22.5°	6	5.5	5	4.5	4.2	3.8
30°	6	5	5	4.3	4.2	3.6
35°	6	5	5	4	4.2	3.5
37.5°	6	4.5	5	4	4.2	3.3
45°	6	4	5	3.5	4.2	3

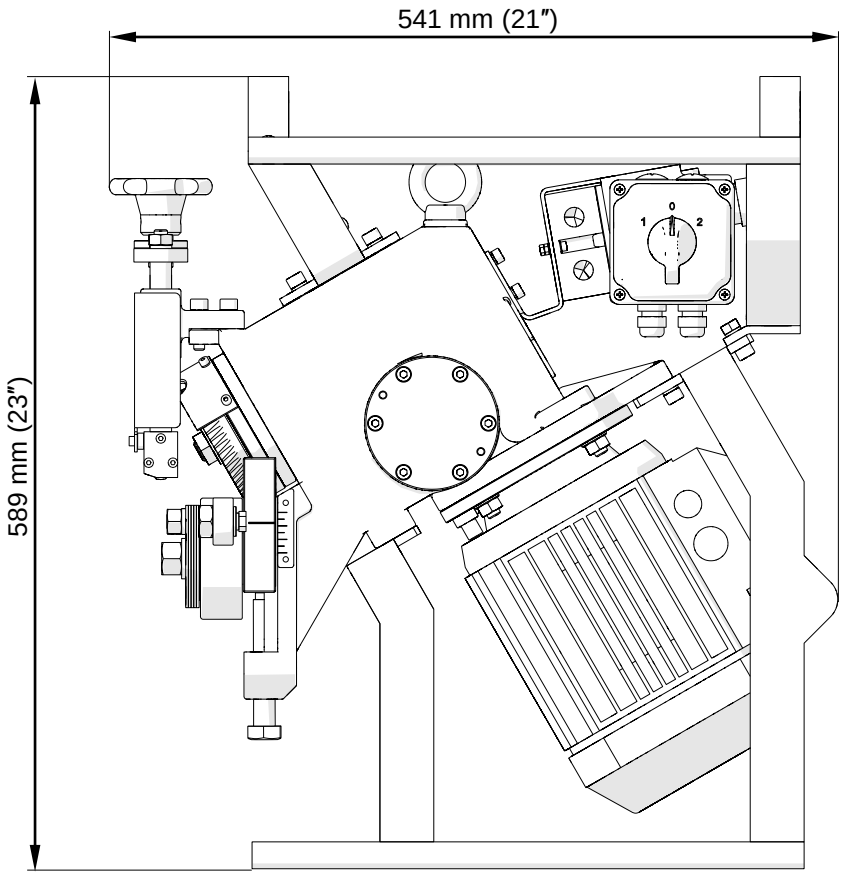
Fig. 1. Bevel dimensions; maximum bevel width/height in one pass depending on the angle and type/hardness of the material

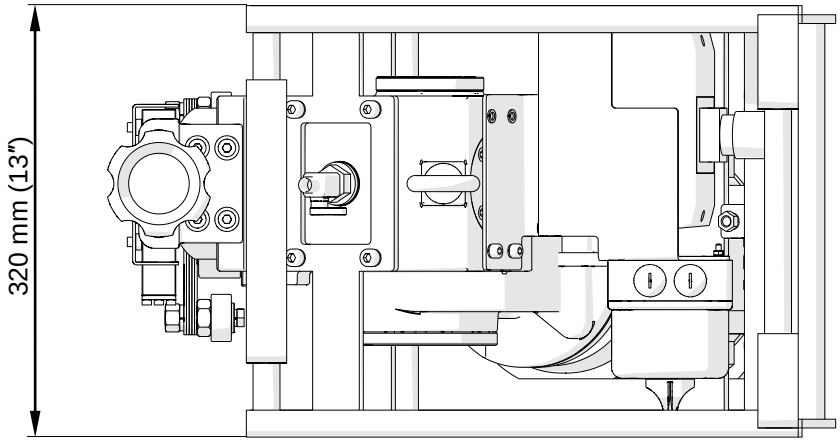
1.3. Equipment included



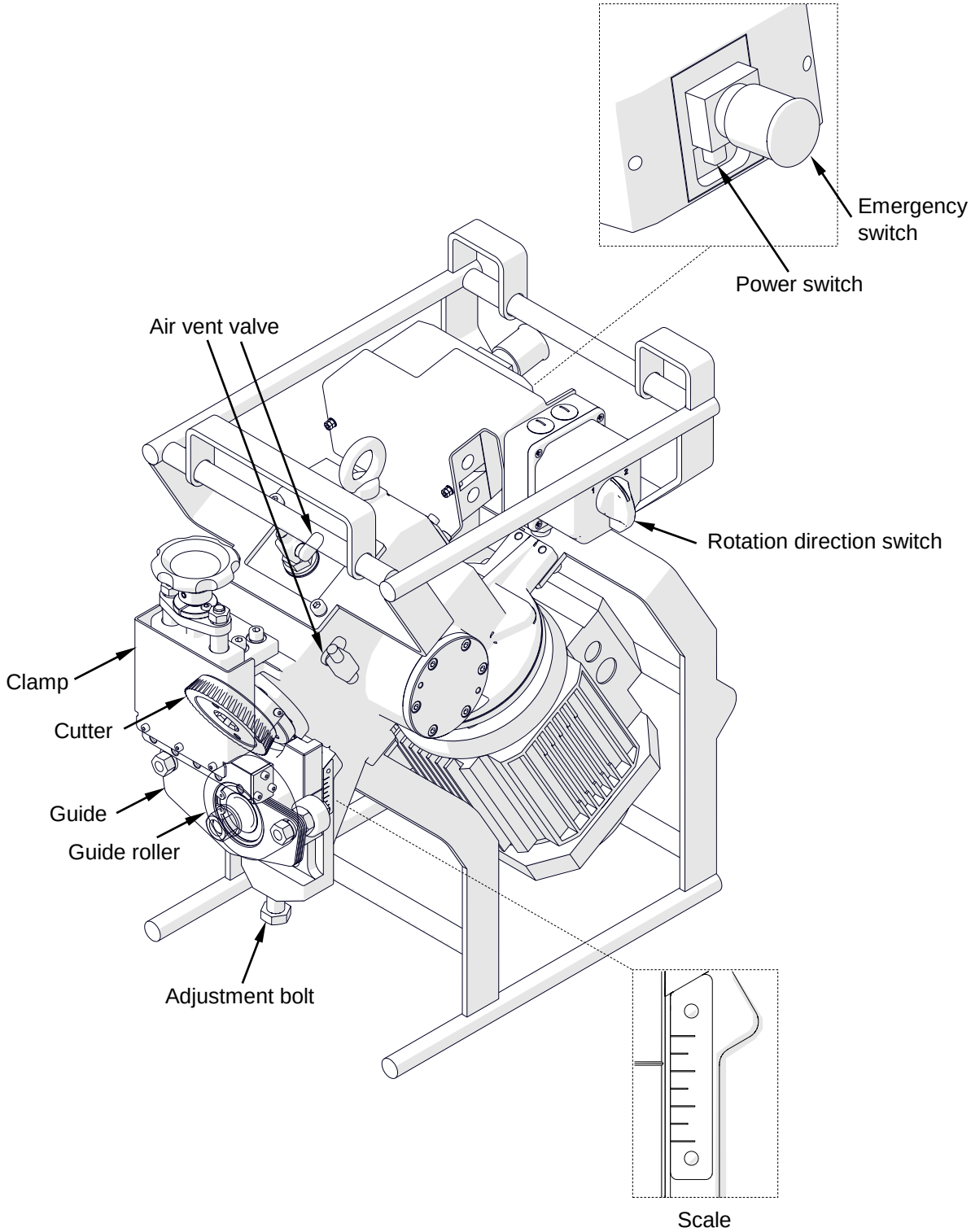
1	Bevelling machine with cutter for stainless steel	1 unit
2	Wooden box	1 unit
3	Cutter extraction tool	1 unit
4	12–13 mm flat wrench	1 unit
5	18–19 mm flat wrench	1 unit
6	24–26 mm flat wrench	1 unit
7	5 mm hex wrench	1 unit
8	6 mm hex wrench	1 unit
9	Shaft	1 unit
10	Washer	1 unit
–	Operator’s Manual	1 unit

1.4. Dimensions





1.5. Design



2. SAFETY PRECAUTIONS

1. Before use, read this Operator's Manual and complete a training in occupational safety and health.
2. Use only in applications specified in this Operator's Manual.
3. Make sure that the machine has all parts and they are genuine and not damaged.
4. Make sure that the specifications of the power source are the same as those specified on the rating plate.
5. Let only qualified electrician do the connection to the power source.
6. Do not pull the cord. This can cause damage and electric shock.
7. Put the machine on a stable surface. An incorrectly prepared surface can cause damage, incorrect machine work, and injuries to persons nearby.
8. Keep untrained bystanders away from the machine.
9. Before each use, ensure the correct condition of the machine, power source, power cord, plug, and tools.
10. Before each use, make sure that no part is cracked or loose. Make sure to maintain correct conditions that can have an effect on the operation of the machine.
11. Keep the machine dry. Do not expose the machine to rain, snow, or frost.
12. Keep the worksite well lit, clean, and free of obstacles.
13. Make sure that the cutter is correctly attached by using the washer and the nut. Remove wrenches and tools from the work area before you connect the machine to the power source.
14. Do not use cutters that are dull or damaged.
15. If the cutter is dull or damaged, replace it with a new cutter specified in this Operator's Manual.
16. Do not make bevels or use workpieces which parameters differ from those specified in the technical data.
17. Do not use near flammable materials, or in explosive environments.
18. Use eye protection, gloves, and protective clothing. Do not use loose clothing.
19. Do not touch chips, moving parts, or hot parts. Do not let anything catch in moving parts. Some parts of the machine are hot during work.
20. After each use, clean the machine and the cutter with a cotton cloth and no chemical agents. Do not remove chips with bare hands.

21. Maintain the machine and install/remove parts and tools only after you unplug the machine from the power source.
22. Repair only in a service center appointed by the seller.
23. If the machine falls, is wet, or has any damage, stop the work and promptly send the machine to the service center for check and repair.
24. Do not leave the machine when it operates.
25. If you are not going to use the machine for an extended period, put anti-corrosion material on the steel parts.

3. STARTUP AND OPERATION

3.1. Preparing for bevelling plates

Use the 24 mm flat wrench to loosen the nut (*1*, Fig. 2). Rotate the bolt (*2*) so that the scale is set to the value of the plate thickness (*3*), and then tighten the nut. Next, put the plate on the support roller (*4*), and then use the knob (*5*) so that the clamp rollers are on the plate (*6*, *7*).

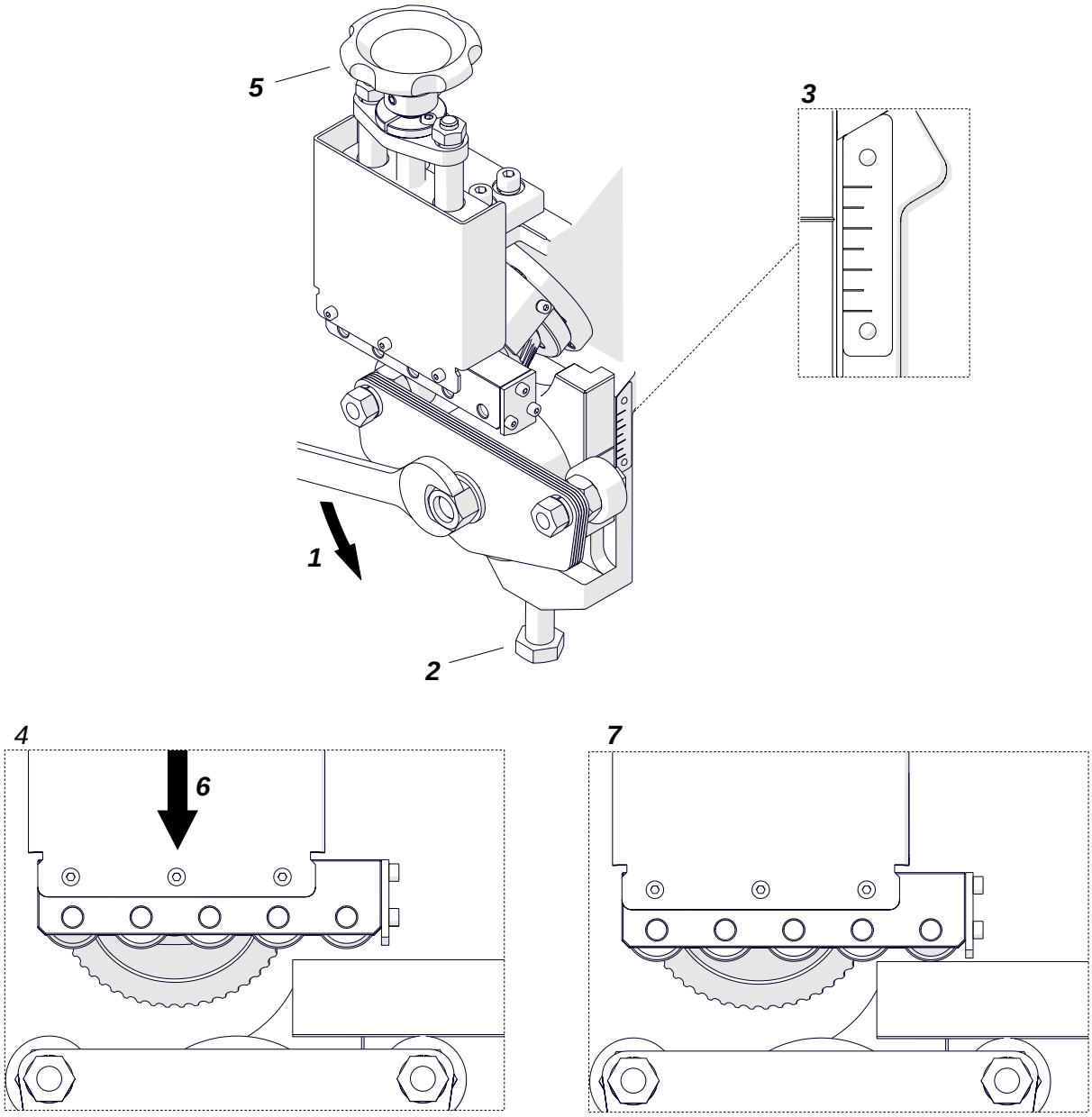


Fig. 2. Adjusting the bevel height and the clamp

3.2. Preparing for bevelling pipes

Use the 24 mm flat wrench to remove the nut (*1*, Fig. 3) and remove the guide (*2*). Install the washer (*3*) to the position where the guide was, and lightly tighten the nut (*4*). Rotate the bolt (*5*) so that the scale is set to the value of the pipe wall thickness (*6*), and then tighten the nut (*4*) as much as possible. Next, attach the shaft (*7*) and put the pipe onto the guide roller (*8*). Use the knob (*9*) so that the clamp rollers are on the pipe (*10*, *11*). Make sure that the rollers do not press the pipe firmly.

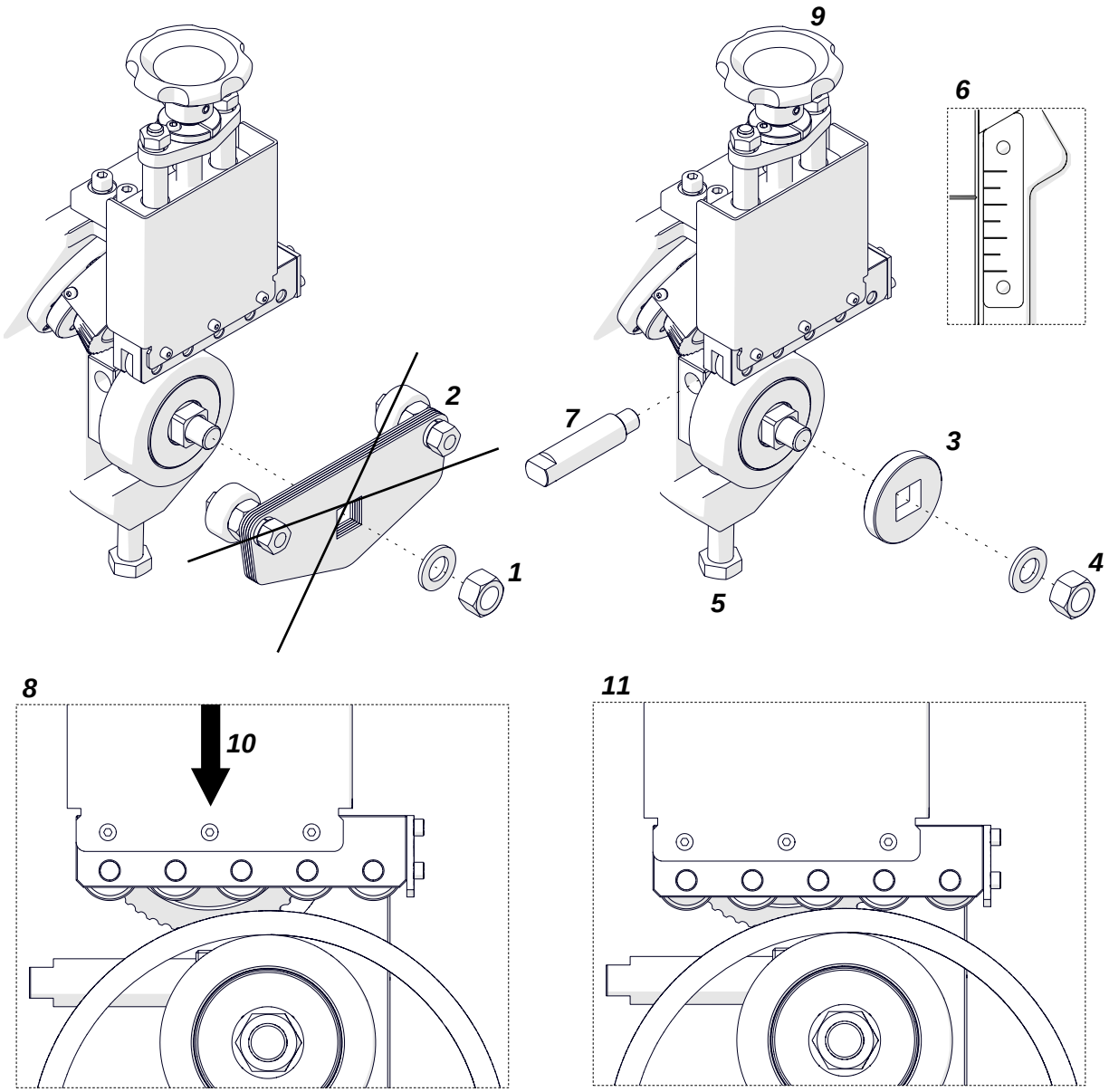


Fig. 3. Installing the washer and adjusting the bevel height and the clamp

3.3. Operating

Connect the machine to the power source and use the power switch to turn on the power. Open the top air vent valve. Set the rotation direction switch to “1” and make sure that the cutter rotates in direction (*1*, Fig. 4). If it rotates in the opposite direction, set the switch to “2”. Next, put the plate (*2*) so that it is on the slide and the support rollers (*3*). To bevel a pipe, put it on the guide roller, move it to the slide (*4*, *5*), and keep the pipe in this position.

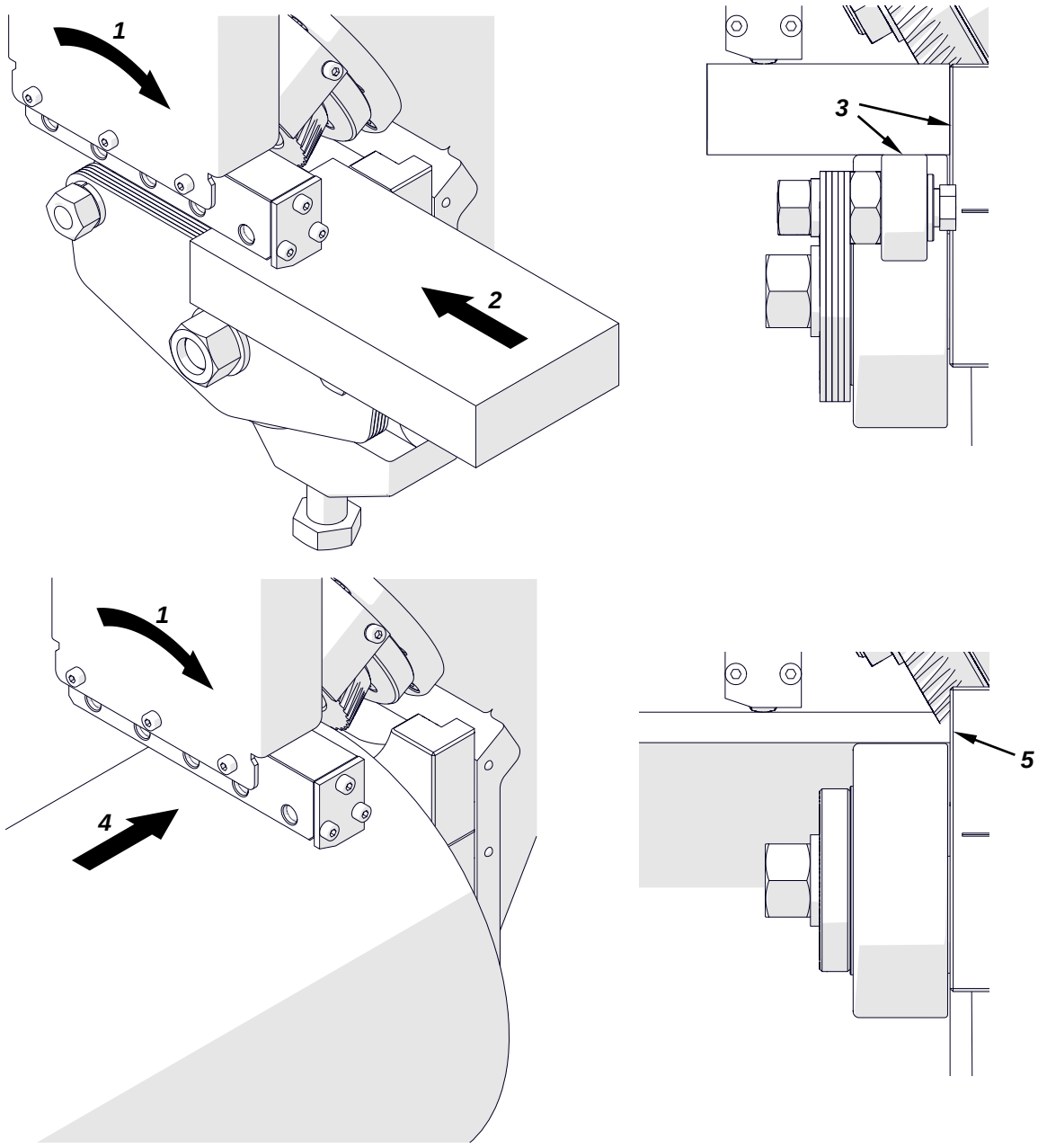


Fig. 4. Bevelling plates or pipes

After you start the milling, the workpiece moves automatically. To bevel the plate from the bottom, put the machine upside down and move the plate to the direction opposite to (*2*, Fig. 4).

Some parts of the machine are hot during work. Do not touch hot parts.

When you mill workpieces not made of carbon steel, that have larger hardness ($R_m \geq 392$ MPa), or at an angle larger than 30° (Fig. 1), set the scale to a value larger than the workpiece thickness.

To decrease the bevel width/height, increase the value on the scale. To increase the bevel width/height, decrease the value on the scale.

If needed, do multiple passes to get the required bevel width.

When the bevel width is too large for the type/hardness of material or when the cutter is dull, the cutter can jam in the workpiece and the feed can stop. Then, do not push the workpiece because this can cause damage to the machine. In such a case, set the rotation direction switch to the opposite position to retract the workpiece. However, do not let the cutter jam in the workpiece. Thus, machine hard materials in multiple passes and replace the cutter before it becomes dull.

In an emergency, press the emergency switch. To restart the machine, remove the cause of the emergency. Then, unlock the emergency switch and press the power switch.

After the work is finished, turn off the machine and close the top air vent valve. Clean the machine with a cotton cloth and no chemical agents.

3.4. Replacing the cutter

Use the 6 mm hex wrench to remove the screws and remove the clamp assembly (Fig. 5). Use the 24 mm flat wrench to remove the nut, and then remove the cutter. If needed, use the cutter extraction tool.

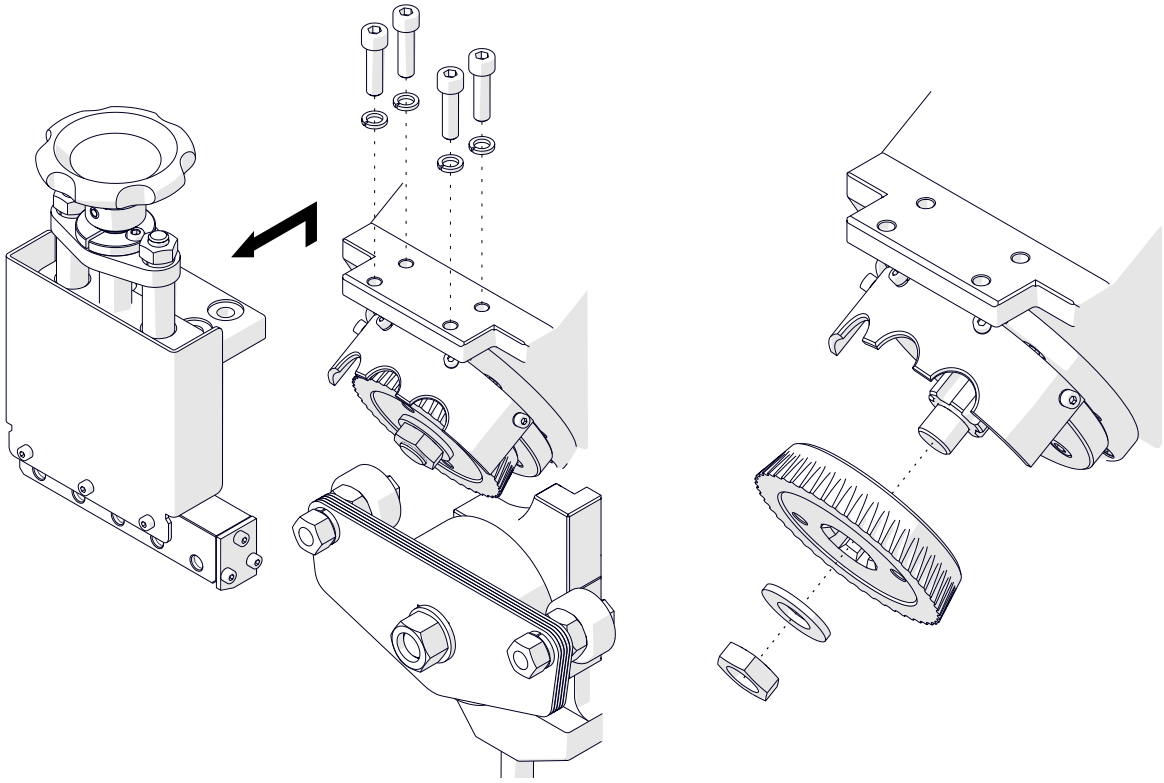


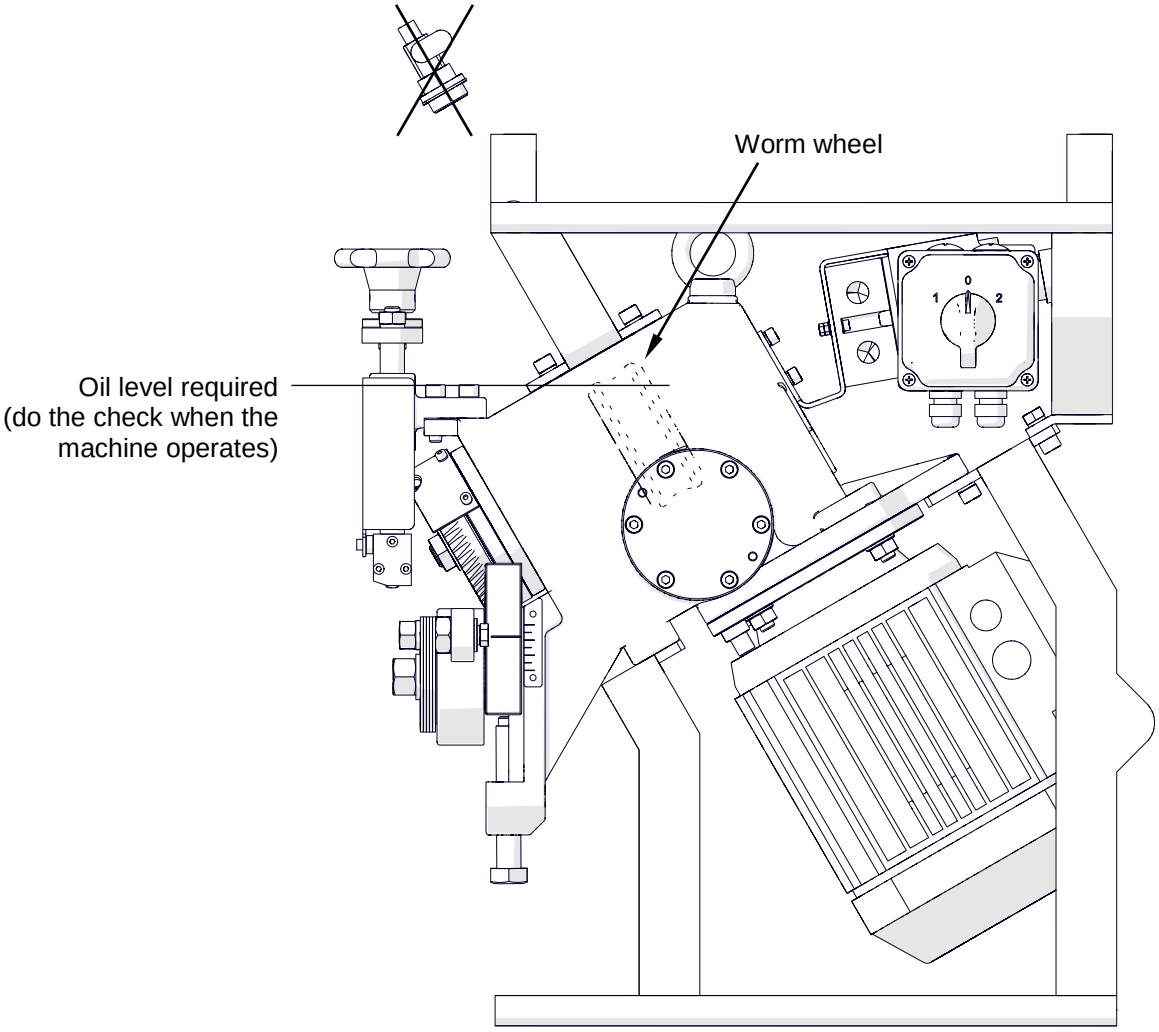
Fig. 5. Replacing the cutter

Install in reverse sequence, and then attach the clamp assembly.

3.5. Checking the oil level

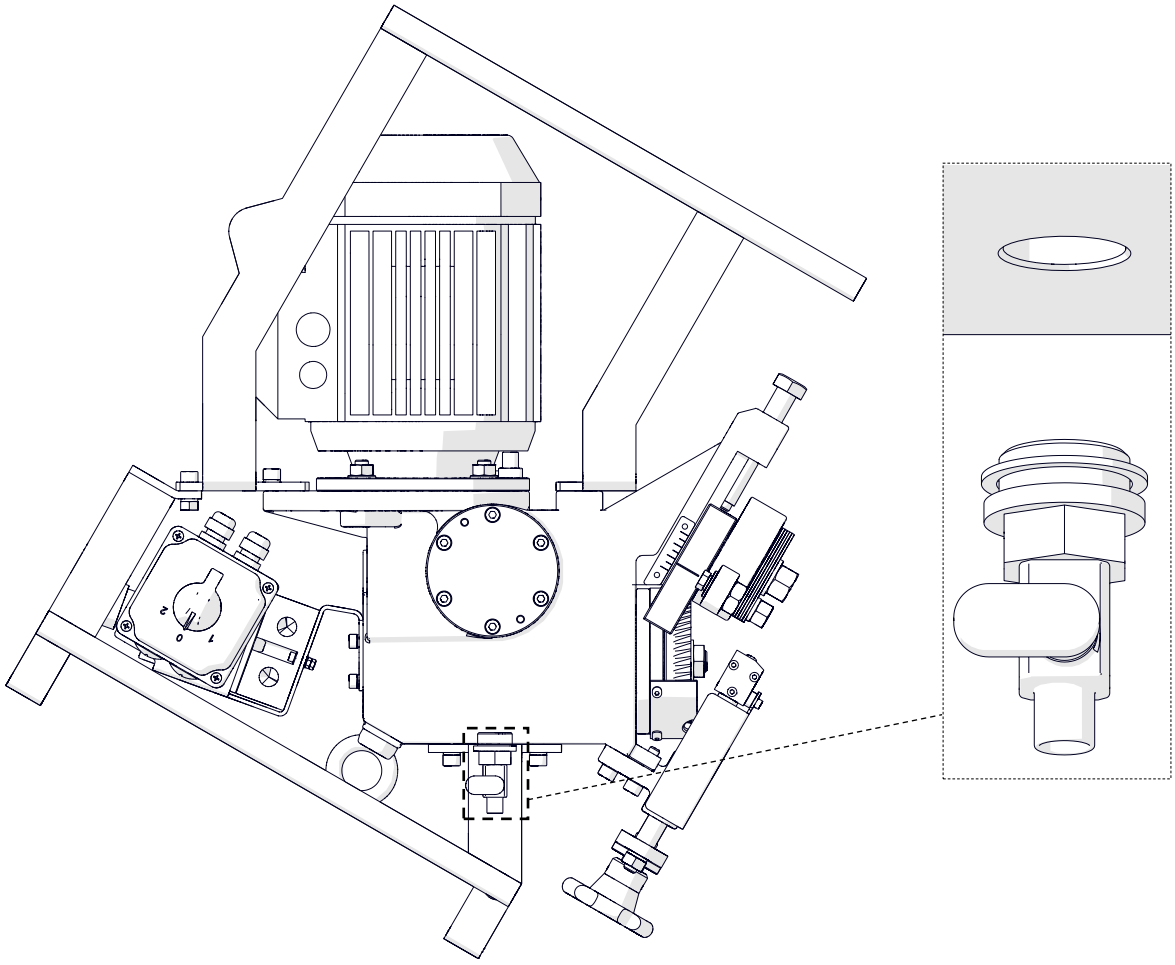
Use the 24 mm flat wrench to remove the oil plug. Then, start the machine and make sure that oil flows through the top of the worm wheel.

If you cannot see the oil near the top of the worm wheel when the machine operates, turn off the machine. Then, fill with some VERKOL WG oil and do the oil level check again. Fill the oil up to 75% of the full volume.



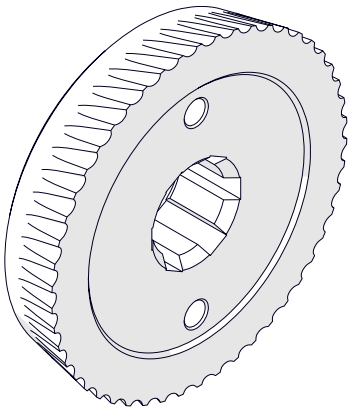
3.6. Replacing the oil

Replace oil every 10,000 work hours. To do this, put the machine upside down and tilt it so that the body is level. Then, use the 24 mm flat wrench to remove the oil plug and wait until the oil flows out. Put the machine the right way up and put 1.5 kg (3.3 lbs) of VERKOL WG oil into the machine, and then attach the oil plug.



4. ACCESSORIES

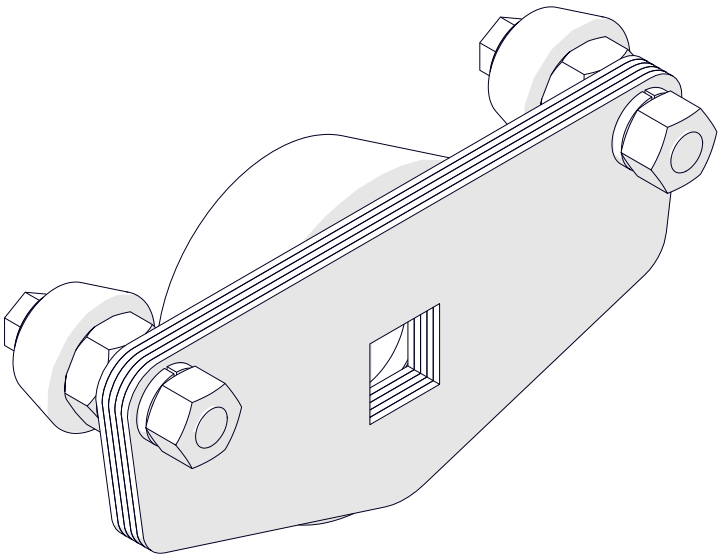
4.1. Cutters



Part number	Part name
ABM14-IS	Cutter for carbon steel
ABM14-IA	Cutter for aluminum
ABM14-ISS	Cutter for stainless steel

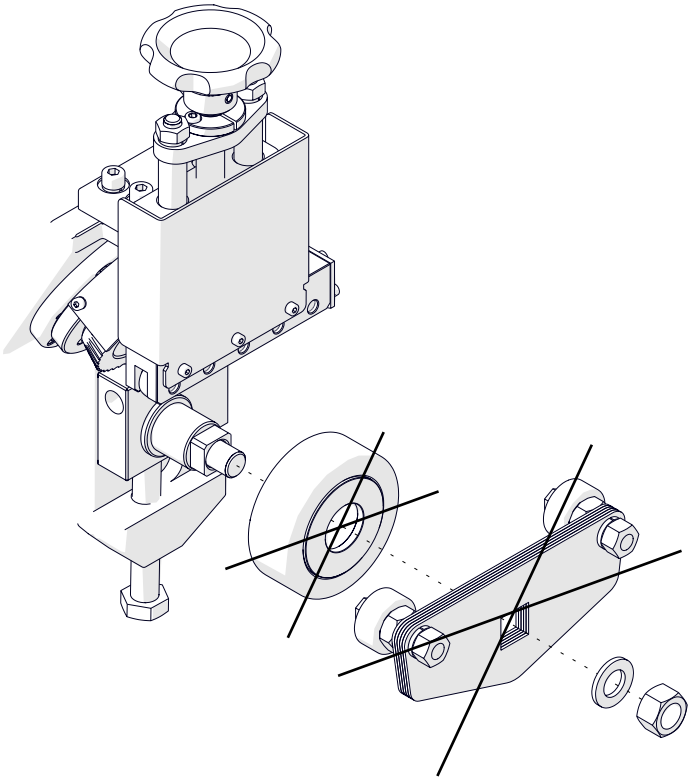
4.2. Guides

Allow you to bevel at the angle of 22.5°, 25°, 35°, 37.5°, or 45°. Each guide includes a guide roller.

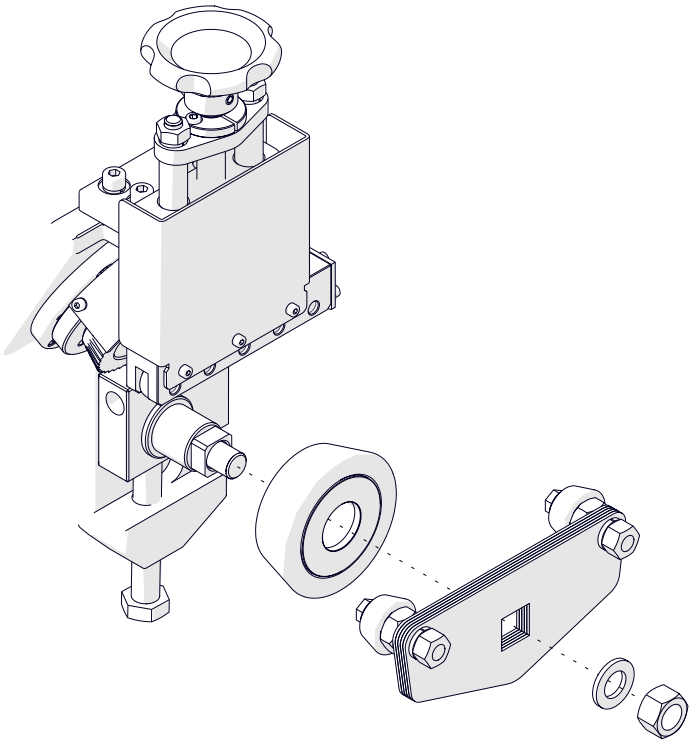


Part number	Part name
ABM14-AVD22.5	Guide 22.5°
ABM14-AVD25	Guide 25°
ABM14-AVD35	Guide 35°
ABM14-AVD37.5	Guide 37.5°
ABM14-AVD45	Guide 45°
ABM14-AVD30	Guide 30° (standard)

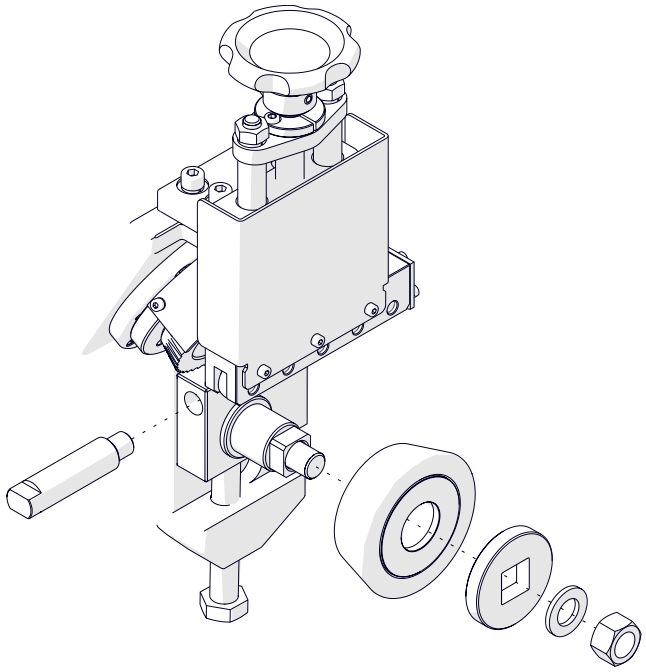
Use the 24 mm flat wrench to remove the nut, and then remove the guide and the guide roller.



To bevel plates, install the guide roller and the guide, and then tighten the nut.



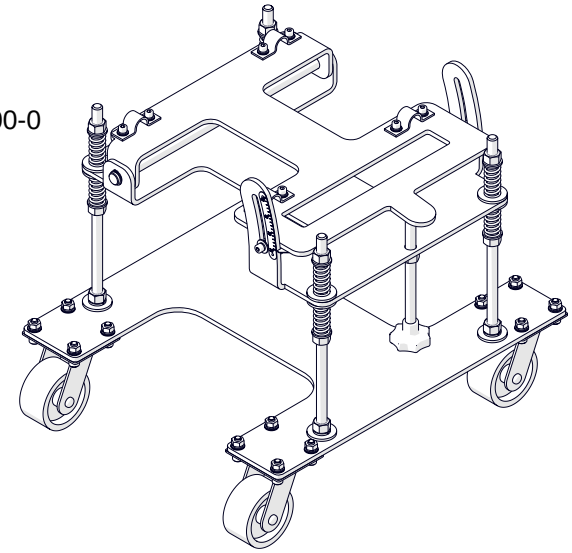
To bevel pipes, install the guide roller and the washer, and then tighten the nut and attach the shaft.



4.3. Carriage

Allows you to move the machine and gives support when milling plates with large dimensions.

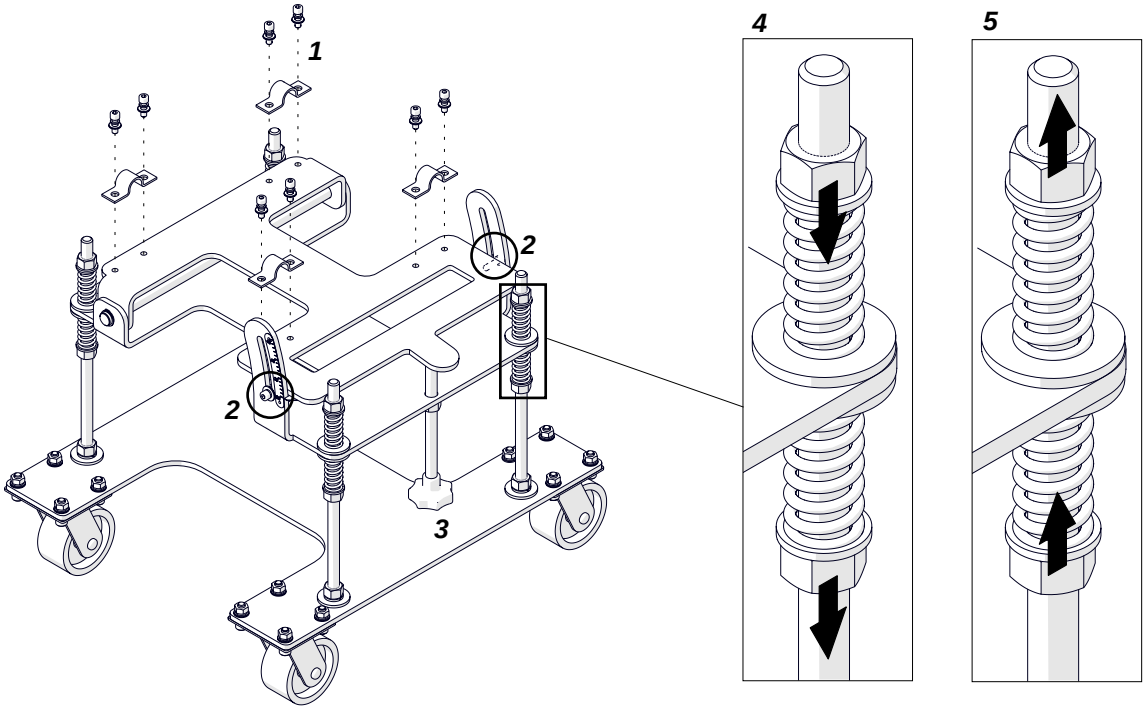
Part number:
WOZ-0639-01-00-00-0



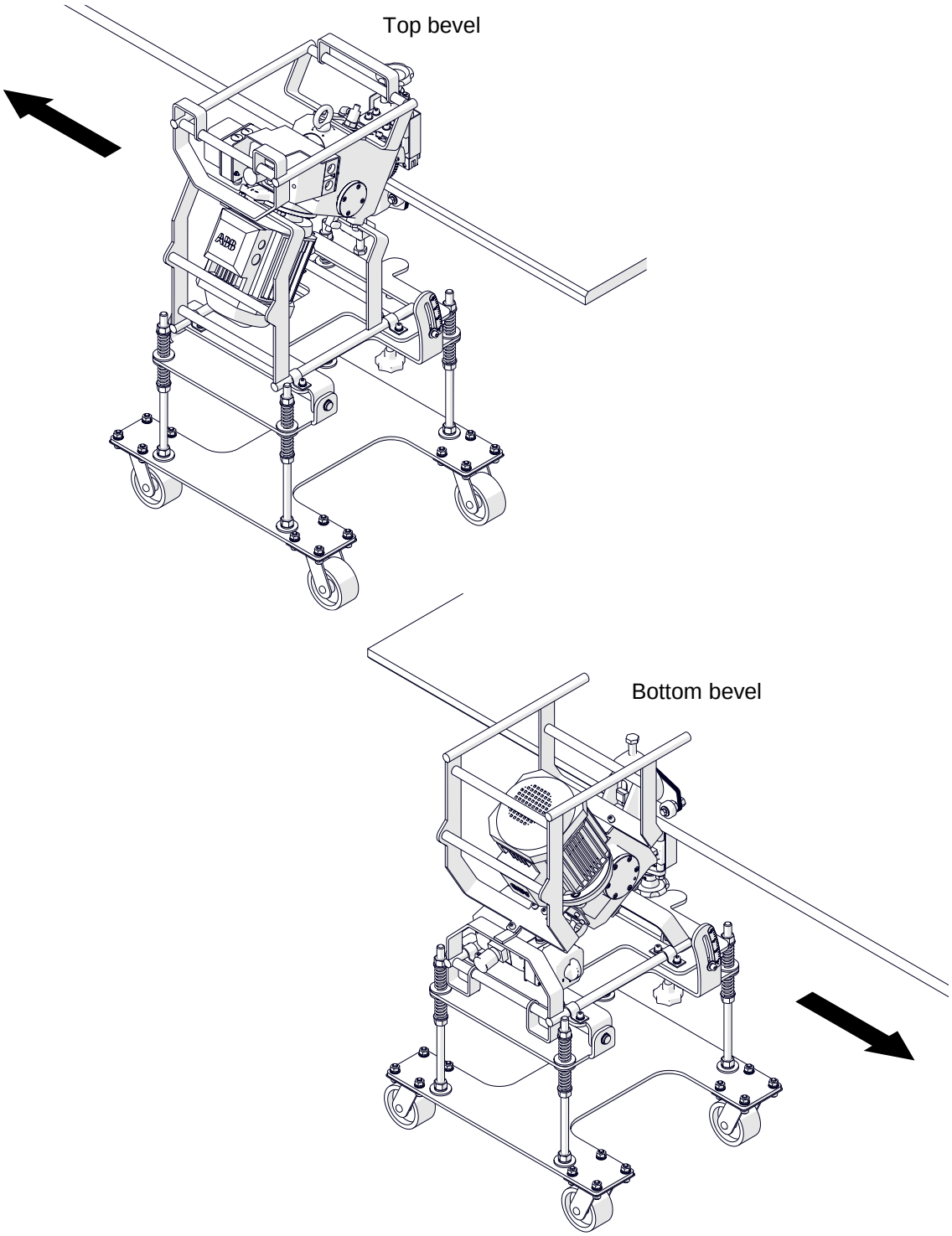
Use the 6 mm hex wrench to attach the machine to the carriage with four clamps (*1*). To bevel the plate from the bottom, attach the machine upside down.

Use the 6 mm hex wrench to loosen two side screws (*2*). Then, use the knob (*3*) to set the required angle, and then tighten the screws.

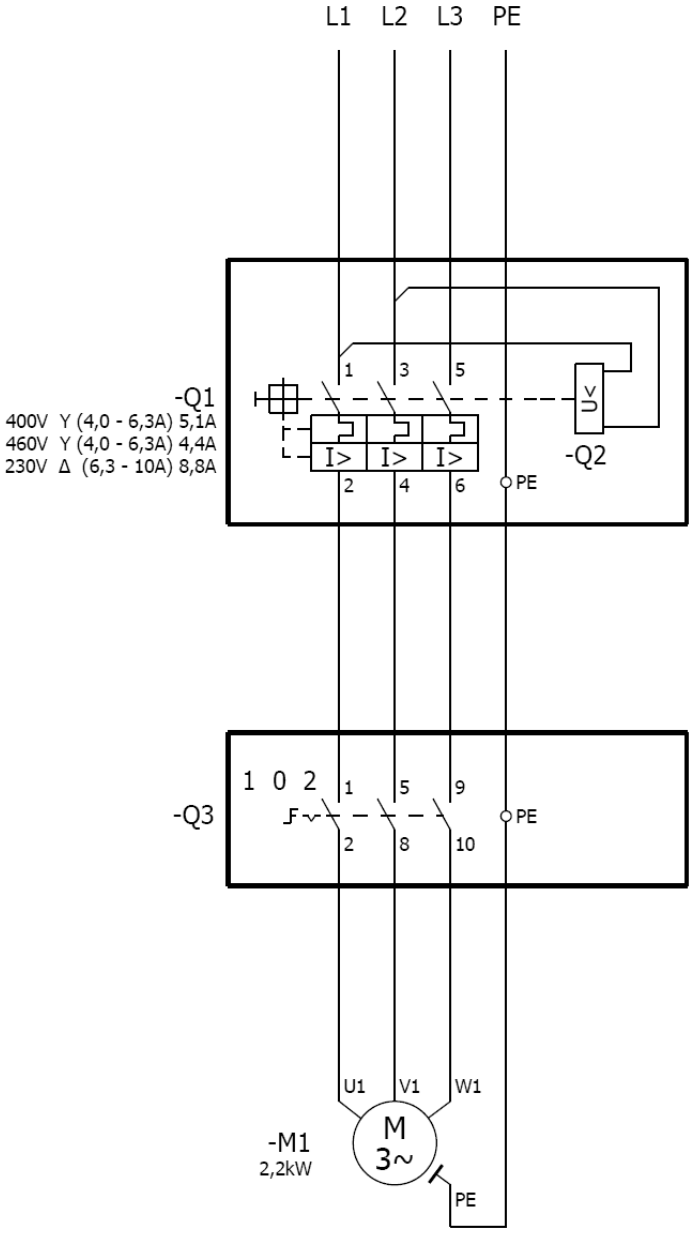
To decrease the height, use the 24 mm flat wrench and lower the two nuts on each column (*4*). To increase the height, lift the nuts (*5*).



Bevel in the directions shown in the figure. After you start the milling, the machine moves automatically.



5. WIRING DIAGRAM



6. DECLARATION OF CONFORMITY

Declaration of Conformity

JEI GROUP LTD
Unit 21 Empire Business Park
Enterprise Way, Burnley
Lancashire, BB12 6LT

We declare with full responsibility that:

ABM-14 Bevelling Machine

is manufactured in accordance with the following standards:

- EN 60204-1
- EN ISO 12100
- EN ISO 13849-1

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

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

Burnley, 9 May 2017

David McFadden
Managing Director

7. WARRANTY CARD

WARRANTY CARD No.....

..... in the name of Manufacturer warrants the ABM-14 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 cutters 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.....

1.05 / 14 March 2019

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