JEI Drilling & Cutting Solutions Ltd

OPERATOR'S MANUAL

PB40-PBS

STATIONARY
PIPE BEVELLING MACHINE

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Contents

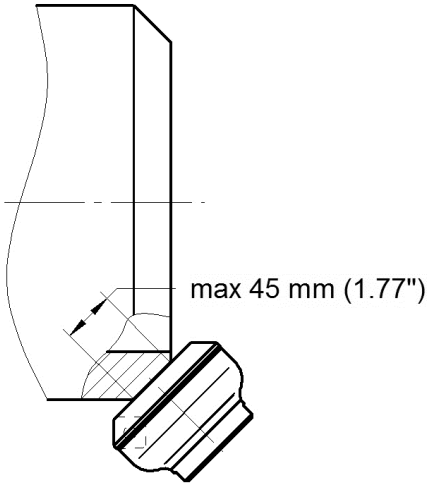
1. GENERAL INFORMATION

1.1. Application

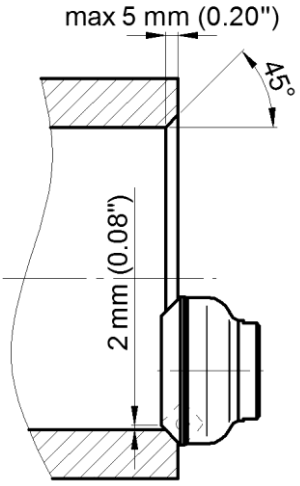
The PB40-PBS is a stationary pipe bevelling machine designed to bevel pipes made of carbon or stainless steel. The machine can bevel edges of pipes with outer diameters of 200–1016 mm (8–40'') at an angle of 0–60°, can bevel internal edges at 45° with the bevel depth of up to 5 mm (0.20''), and can perform facing.

The machine must be connected either to a 3-phase power source with phase-to--phase voltage of 208–230 V or to a 1-phase source with phase voltage of 208-230 V (see point 3.1 for the wiring diagram).

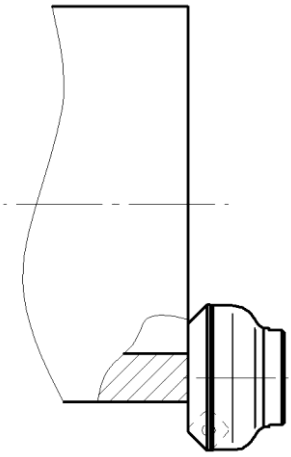
Optional milling heads allow the machine to establish J-bevels with the radius of 6 mm (0.24'') or 8 mm (0.31'') and to bevel internal edges at 0–60° with the bevel width of up to 20 mm (0.79''). Using optional steel rollers increases carrying capacity to 5000 kg (11 000 lbs) per support, while an attachment allows for machining oval pipes.



Bevelling at 0–60º

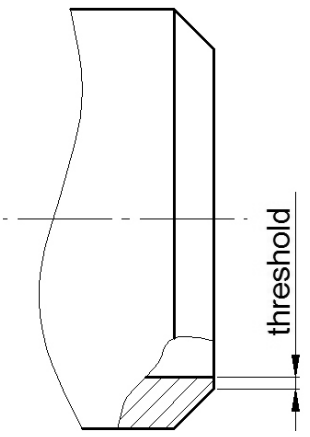


Internal bevelling at 45º



Facing

The value of the obtained threshold will be variable for pipes of variable wall thickness.



1.2. Technical data

Voltage	1~ 208–230 V, 50/60 Hz 3~ 208–230 V, 50/60 Hz
Total power	2000 W
Spindle power	1500 W
Permitted outer pipe diameter of pipes 400–830 mm long (15.7–32.7'')	200–600 mm (7.87–23.62'')
Permitted outer pipe diameter of pipes longer than 830 mm (32.7'')	200–1016 mm (7.87–40'')
Peripheral speed	0.1–1.1 m/min
Rotator speed	0.1–1.2 rpm
Spindle rotational speed	1400 rpm (for 50 Hz) 1680 rpm (for 60 Hz)
Protection level	IP 20
Protection class	I
Milling speed (for standard milling head)	197 m/min (650 ft/min, for 50 Hz) 237 m/min (800 ft/min, for 60 Hz)
Maximum bevel width (*b*)	45 mm (1.77'', Fig. 1)
Bevel angle (*ß*)	0–60° (Fig. 1)
Minimum pipe wall thickness	5 mm (0.20'')
Active support carrying capacity	5000 kg (11 000 lbs)*
Passive support carrying capacity	5000 kg (11 000 lbs)*
Maximum allowed pipe weight	10 000 kg (22 000 lbs)*
Machine weight	1100 kg (2400 lbs)
* For steel rollers of the active support (not included in standard equipment). For plastic rollers (standard) of the active support, the carrying capacity of each support is 3000 kg (6600 lbs) and the maximum allowed pipe weight equals 6000 kg (13 200 lbs).	

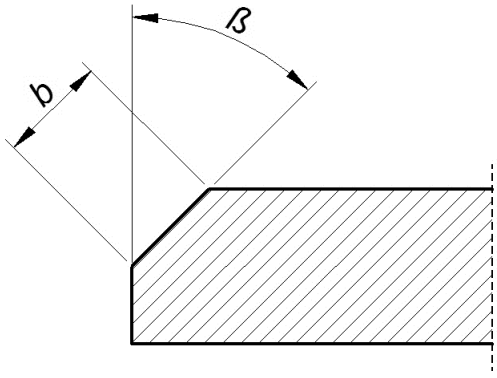


Fig. 1. Bevel dimensions

1.3. Design

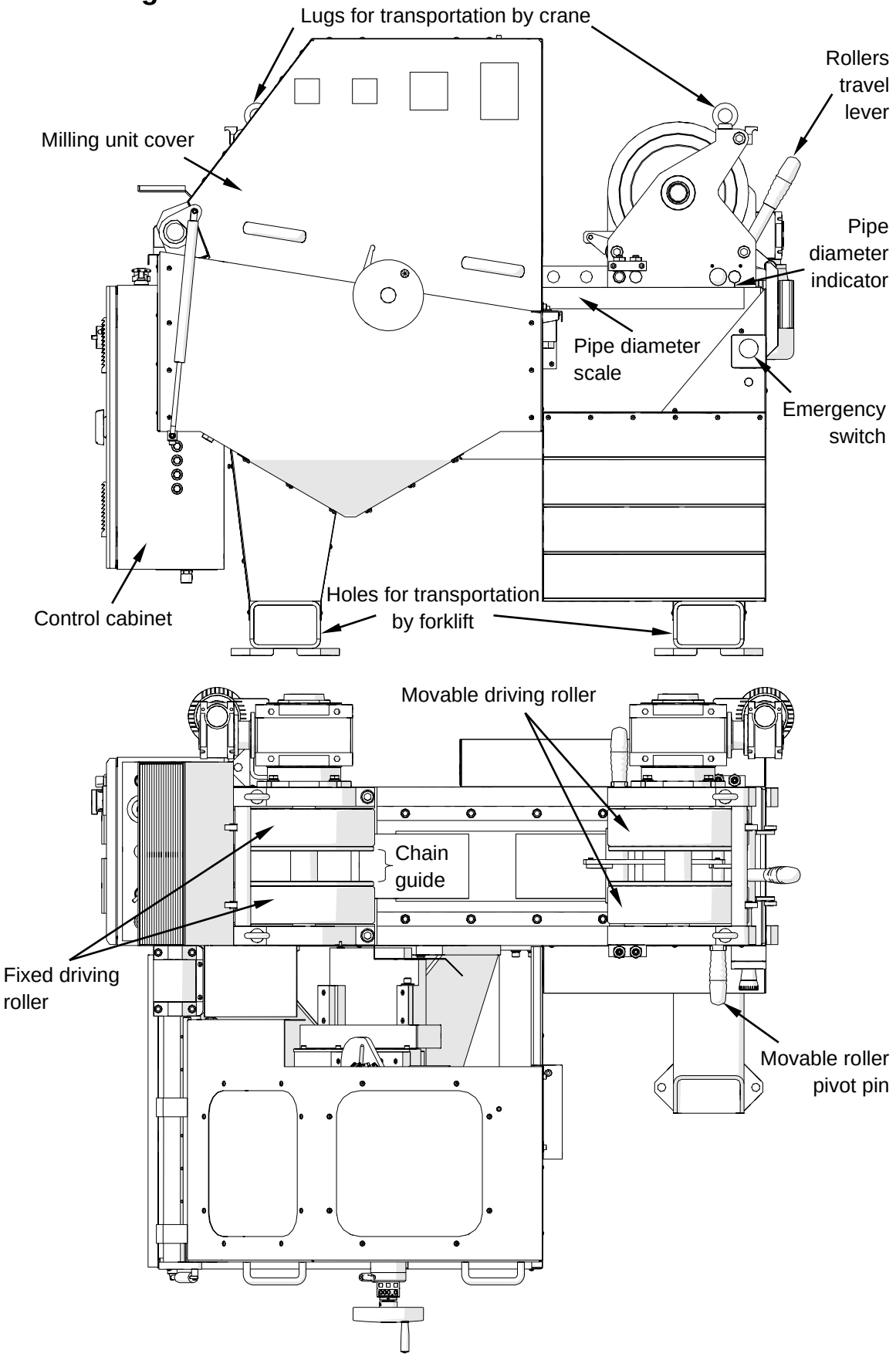


Fig. 2. View of the active support

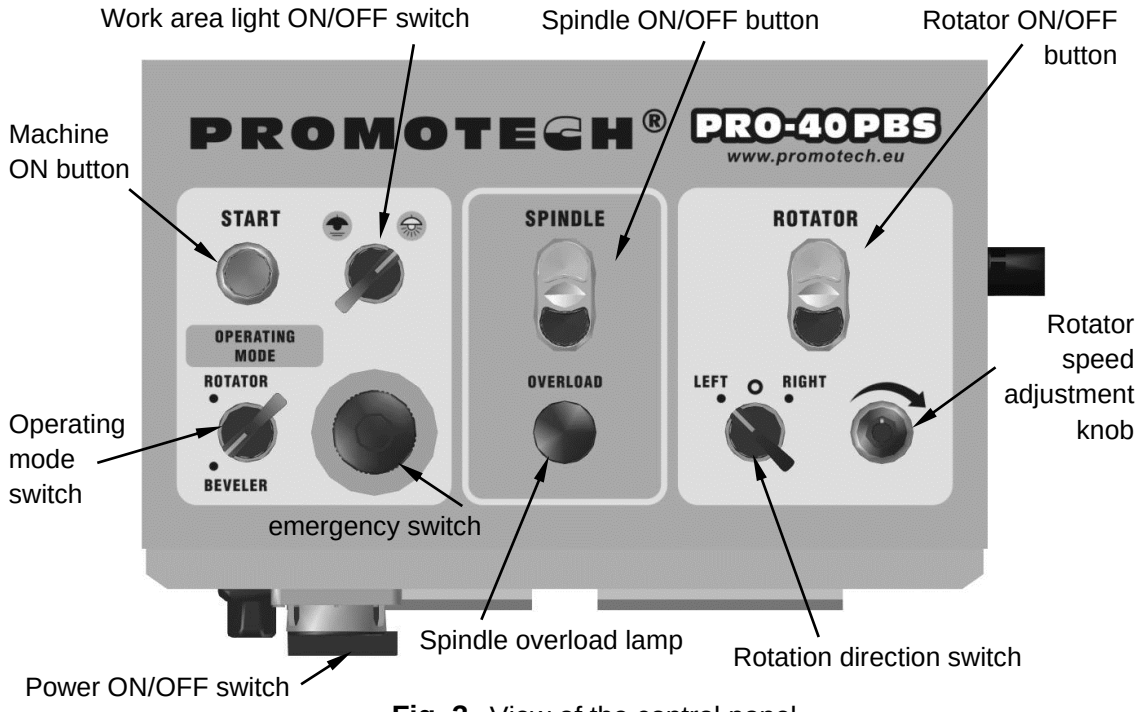


Fig. 3. View of the control panel

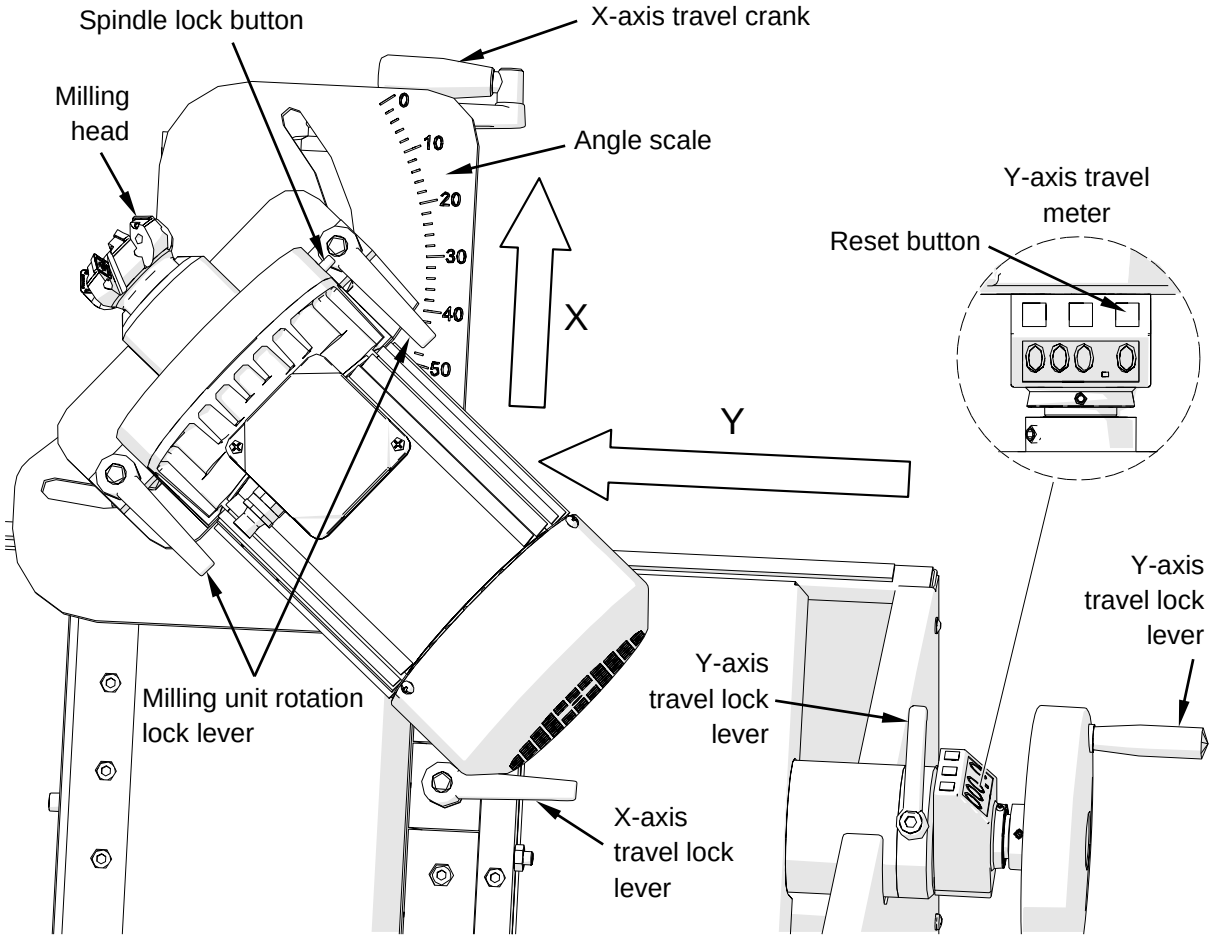


Fig. 4. View of the milling unit

1.4. Equipment included

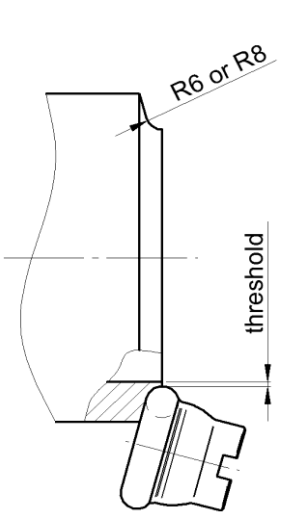
The PB40-PBS is supplied including the following equipment.

	PB40-PBS standard	PB40-PBS with tracking
Stationary pipe bevelling machine	1 unit	1 unit
• Active support (with plastic rollers)		
• Passive support (with steel rollers)		
Wooden box	1 unit	1 unit
Standard milling head with 7 cutting inserts	1 unit	1 unit
Guiding chain	1 unit	1 unit
10 mm hex wrench	1 unit	1 unit
8 mm hex wrench	1 unit	1 unit
5 mm hex wrench	1 unit	1 unit
T15P torx screwdriver	1 unit	1 unit
Support with oval attachment	–	1 unit
Operator's Manual	1 unit	1 unit

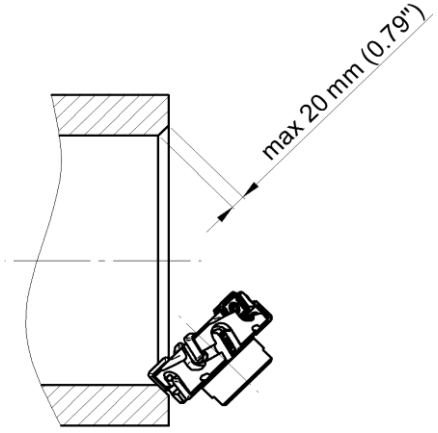
1.5. Accessories

Also available are milling heads to establish J-bevels with the radius of 6 mm (0.24'') or 8 mm (0.31'') and a head to bevel internal edges at 0–60° with the bevel width up to 20 mm (0.79''). Steel rollers provide carrying capacity of 5000 kg (11 000 lbs) per support, while a clamp is designed to balance short pipes. Additionally, it is possible to machine oval pipes and stainless steel. The optional equipment is as follows.

Part name	Part number
Milling head for bevelling (with mounting screws; 7 inserts required)	GLW-000013
Cutting insert for bevelling (sold 10 per box)	PLY-000282
Mounting screw for inserts of the milling head for bevelling	SRB-000311
J-bevelling milling head for R6 round cutting inserts (with mounting screws; 6 inserts required)	GLW-000014
R6 round cutting insert (sold 10 per box)	PLY-000198
Mounting screw for inserts of the J-bevelling R6 milling head	SRB-000297
J-bevelling milling head for R8 round cutting inserts (with mounting screws; 5 inserts required)	GLW-000015
R8 round cutting insert (sold 10 per box)	PLY-000201
Mounting screw for inserts of the J-bevelling R8 milling head	SRB-000367
Milling head for internal bevelling (with mounting screws, and a screw and a retaining ring for the milling head; 10 inserts required)	GLW-0436-19-00-00-0
Cutting insert for internal bevelling (sold 10 per box)	PLY-000282
Mounting screw for inserts of the milling head for internal bevelling	SRB-000311
T15P torx screwdriver for mounting screws	WKT-000005
Steel roller (4 required)	KOL-0436-23-00-00-0
Pipe clamp	DCS-0436-12-00-00-0
Support with oval attachment	WSP-0436-24-00-00-0
Set for stainless steel	ZST-0436-25-00-00-0



J-bevelling



Internal bevelling at 0–60°

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. Plug the machine into a properly grounded power source.
6. Never pull the power cord as this may damage it and result in electric shock.
7. Place the machine in vertical position during transportation and operation.
8. Place the machine on flat foundations with a deviation not more than 5 mm (0.2'') from level over length. An improperly prepared surface may lead to damage, incorrect operation of the machine and may cause injuries to persons in close proximity.
9. Untrained bystanders must not be present near the machine.
10. Before beginning, make sure that the correct is the condition of the machine, power source, power cord, plug, control panel components, and milling tools.
11. 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.
12. Wait at least 3 minutes before you do work near inverters in the control cabinet. Make sure that there is no voltage on the connections of the inverters.
13. After the power is off, always wait 60 seconds before you turn the power on.
14. Keep the machine dry. Exposure to rain, snow, or frost is prohibited.
15. Keep the work area well lit, clean, and free of obstacles.
16. Never use the machine near flammable liquids or gases, or in explosive environments.
17. Always use safety goggles, hearing protection, gloves, and protective clothing during operation. Do not wear loose clothing.
18. Using the spindle lock button during operation is prohibited.
19. Use only tools specified in this Operator's Manual.
20. Never use tools that are dull or damaged.
21. Do not touch moving parts or metal chips formed during milling. Prevent objects from being caught in moving parts.

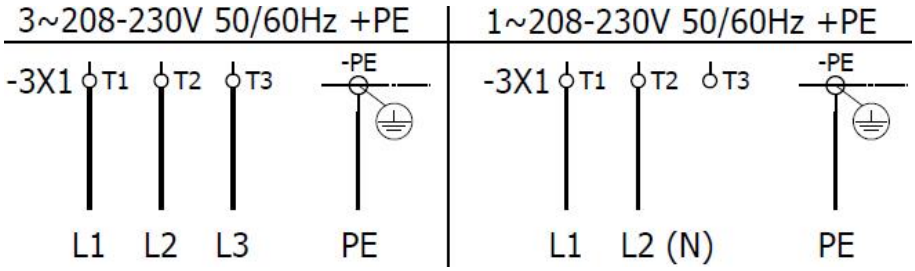
22. Install the cutting inserts and milling head securely. Remove adjusting keys and wrenches from the work area before connecting the plug to the power source.
23. If the cutting edge of an insert is worn, rotate the insert in the socket by 90° or, if all edges are worn, replace with new insert specified in this Operator's Manual.
24. 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.
25. Cover steel parts with a thin anti-corrosion coating to protect them against rust when not in use for any extended period.
26. Maintain the machine and install/remove parts and tools only when the power cord is unplugged from the power source.
27. Repair only in a service center appointed by the seller.
28. If the machine is wet or has any 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

All safety precautions must be closely observed.

3.1. Connecting the machine and positioning the supports

Connect the machine using 3G2.5 mm^2 power cord either to a 3-phase power source with phase-to-phase voltage of 208–230 V (left scheme) or to a 1-phase source with phase voltage of 208-230 V (right scheme).



Place the machine on foundations that ensure balance and can transmit loads exerted by the machine and pipe. Machine pipes with length of 400–830 mm (15.7–32.7'') using the active support. For pipes longer than 830 mm (32.7'') use also the passive support, positioning it in relation to the active support in such a manner that will prevent the pipe from moving during rotation. This can be done by ensuring the equality of diagonals between the active and passive support using a 50×15 mm drawing flat bar (Fig. 5). Fasten the machine to the foundations through the holes in both supports.

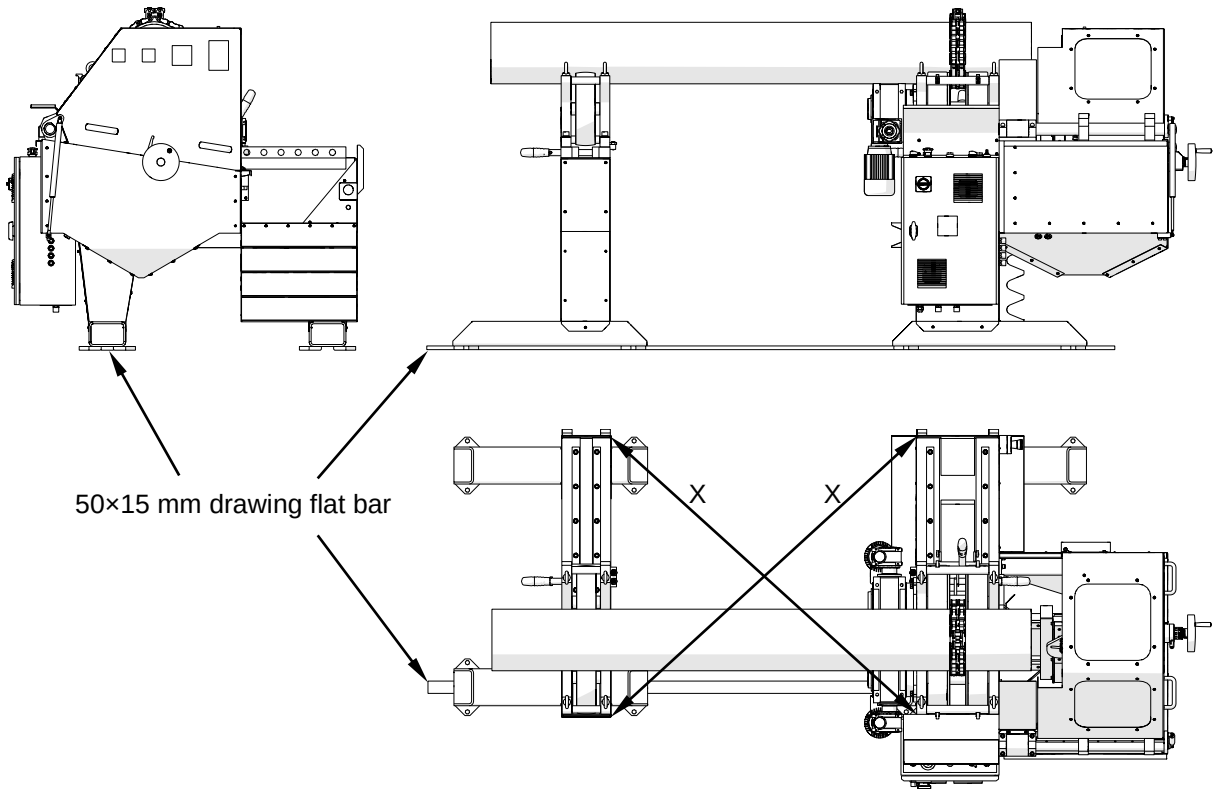


Fig. 5. Positioning the supports for bevelling pipes longer than 830 mm (32.7'')

3.2. Operating modes

The machine can operate in “rotator” or “beveler” mode, set by the switch located on the control panel (Fig. 3). The “rotator” mode enables you to start the rotator and to adjust its rotational speed using the speed adjusting knob. The rotation of the spindle is inactive in this mode.

The “beveller” mode enables you, with the milling head cover closed (Fig. 2), to start the spindle and then the rollers. If the spindle becomes overloaded during operation, the red overload lamp will illuminate. In such a case, immediately decrease either the milling head penetration in the workpiece (using the Y-axis travel crank) or the rotational speed of the rollers (using the rotator speed adjusting knob). Further increasing of the spindle load will trigger the safety circuit and turn off the rotator (spindle rotation will not stop). In this case, before restarting the rollers, retract the milling unit along the Y-axis and press the rotator OFF button. This will turn off the overload lamp and allow for starting the rotator with the ON button. If the cover becomes open during bevelling, the spindle and rotator will immediately stop.

3.3. Placing the pipe

Set the movable driving rollers in such a way to match the pipe diameter indicator (red line) with the value of diameter shown on the scale. To do this, remove the pivot pins, lower the rollers travel lever as far as possible, and use the lever to manually move the rollers to a proper position. Then, raise the lever and reinsert pins. Proceed as described also for the passive support if this is required for the pipe length.

Before placing the pipe, open the cover and use the X-axis travel crank to lower the milling unit to prevent damage that may occur because of a possible collision with the pipe.

Place the pipe on the rotator in such a way to maintain a distance of 160–260 mm (6–10’’) between the pipe face and the side surface of the rollers on the active support, as in Fig. 6 and 7. Because the position of the working edge differs from the position of the pipe support, any pipe shape deviation will cause inconsistency of the bevel or threshold. To diminish such errors, place the pipe as close to the rollers as permitted (160 mm, 6’’). Additionally, you may need to use the clamp, guiding chain, or both.

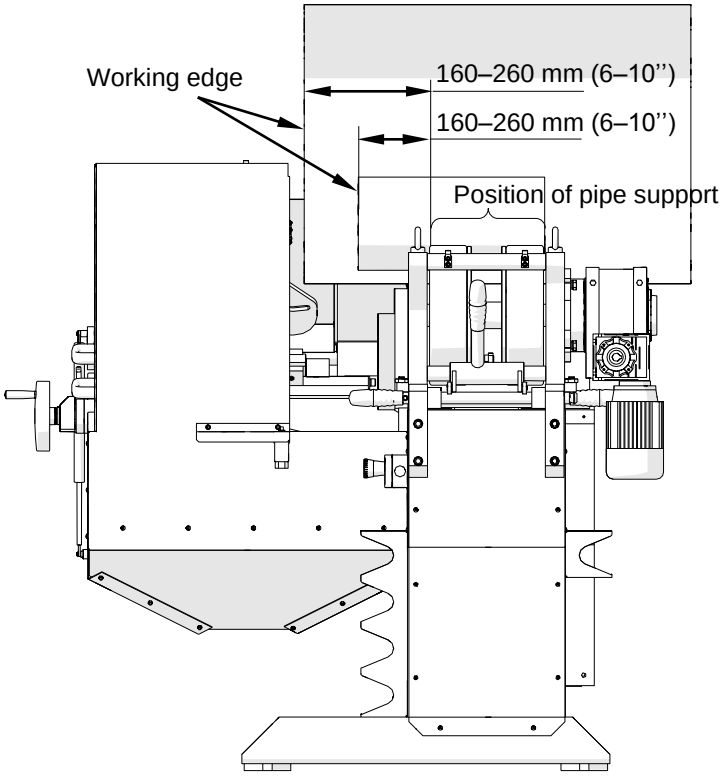


Fig. 6. Placing a pipe shorter than 830 mm

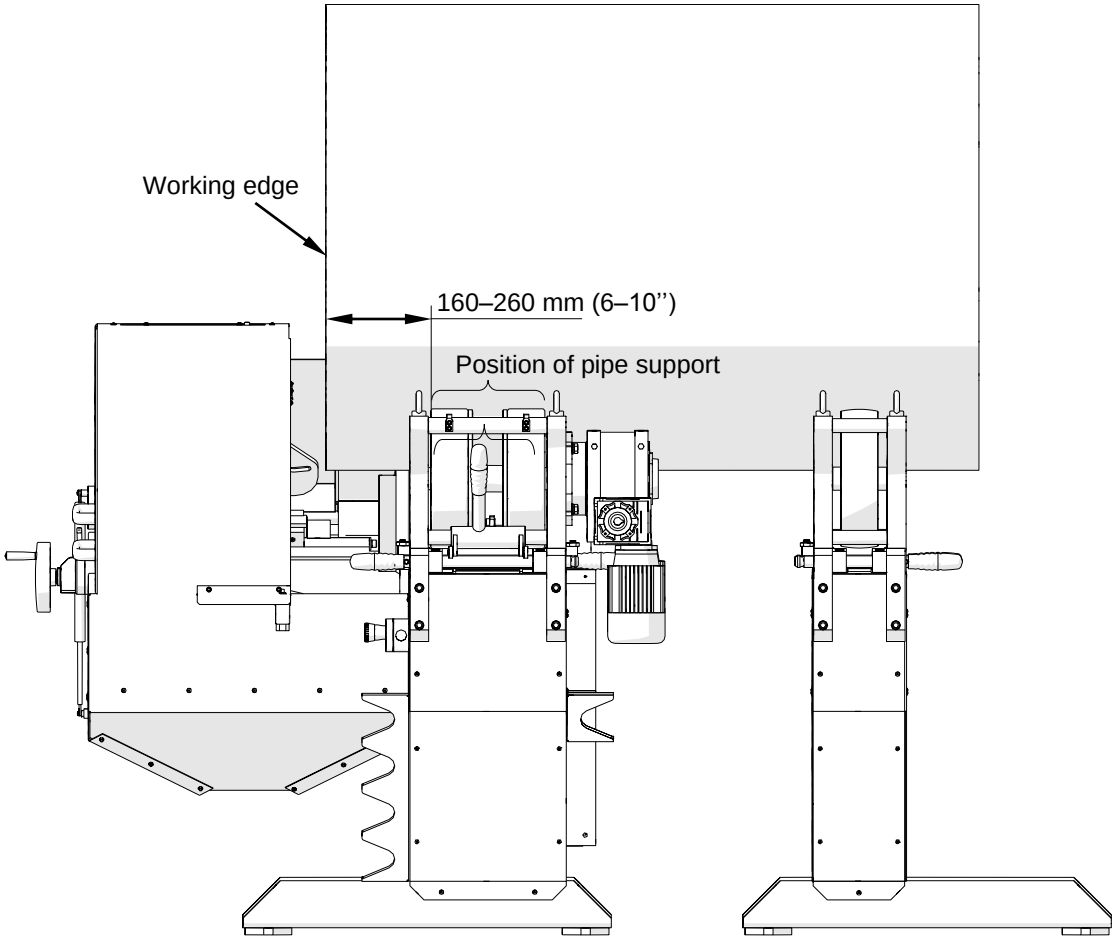


Fig. 7. Placing a pipe longer than 830 mm

3.3.1. Using the clamp (optional)

Use clamp (Fig. 8) if the pipe is short and light or not balanced during machining. To do this, place the pipe on the machine and install the clamp, catching it by the hooks located at both sides of the machine. Then, slightly tighten the nut manually.

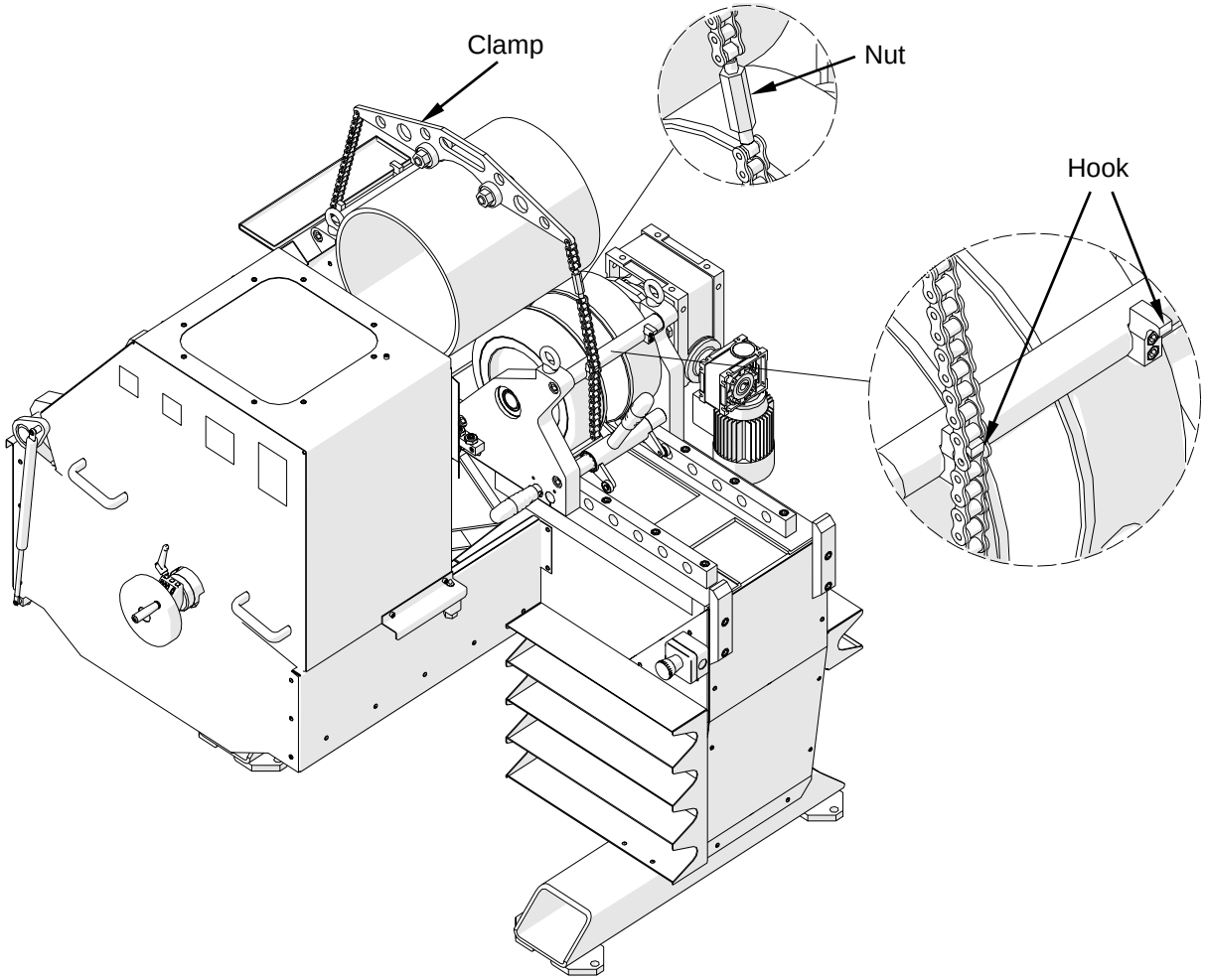


Fig. 8. Using the pipe clamp

3.3.2. Using the guiding chain

If the pipe moves along its axis during milling, use a guiding chain to provide balance. To assemble the chain for a pipe of an outer diameter, use the basic segment “B” and a combination of 3-, 6-, 9-, 18-, 36-, 72-link additional segments (Fig. 9a). Their proper interconnection sequence to assemble the chain is shown in Tab. 1 (columns from left to right), while the basic “B” segment must be first and is required in all cases. Because the 3-link segment must not be last, for pipes with diameter of 223–251 mm (8.78–9.88’’) place the 3-link segment within the segment “B” after removing links from the connector using the 5 mm hex wrench (Fig. 9b).

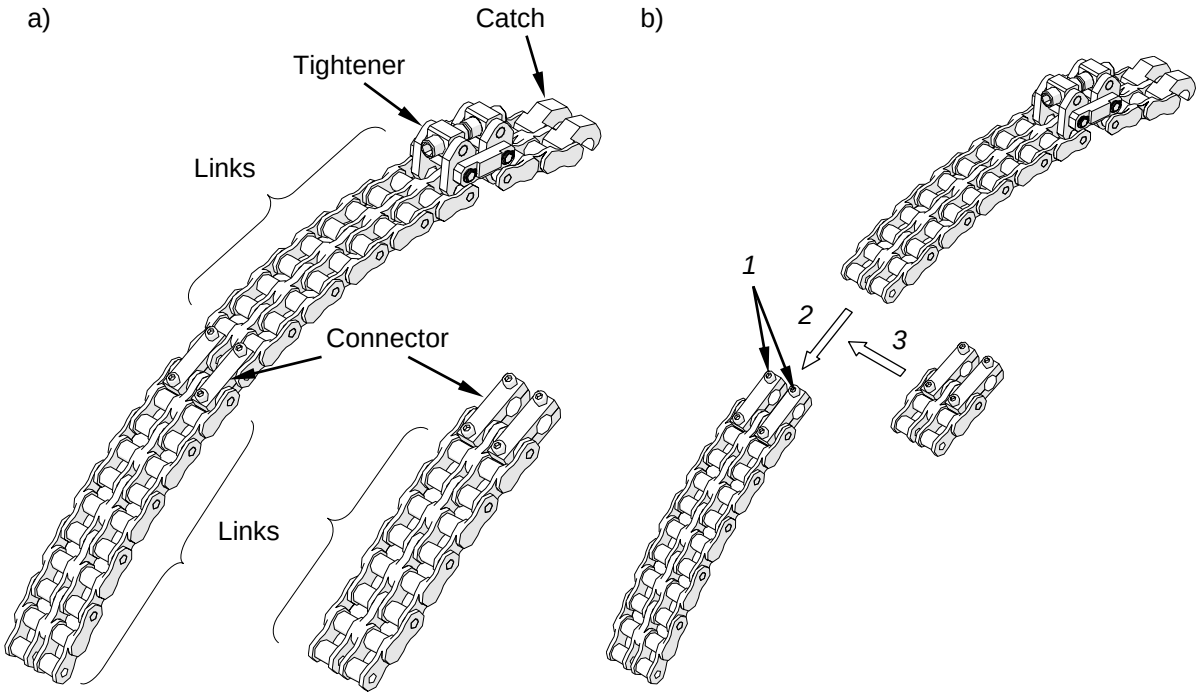


Fig. 9. View of the basic and the 9-link segment (a); assembling the chain for a pipe with the outer diameter of 223–251 mm (b)

3.3.3. Using the guiding chain (example)

To create a guiding chain for a pipe with the outer diameter of 390 mm (15.35’’), connect the basic segment “B” to the additional segments “18” and “3” using connectors (Fig. 9a) and the 5 mm hex wrench. The proper interconnection sequence in this case is: “B”, “3”, and “18” (Fig. 10).

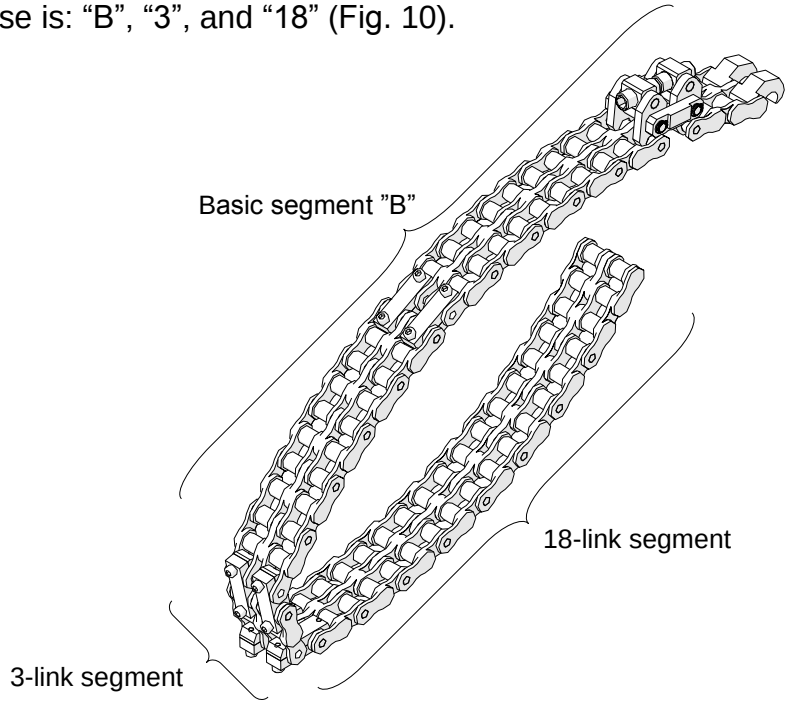


Fig. 10. Design of the guiding chain for pipe with the outer diameter of 390 mm (15.35’’)

Basic segment	Additional segments				Outer diameter	
					[mm]	[in]
B	–	–	–	–	199–227	7.83–8.94
B	3	–	–	–	223–251	8.78–9.88
B	6	–	–	–	248–275	9.76–10.83
B	9	–	–	–	272–300	10.71–11.81
B	3	9	–	–	296–324	11.65–12.76
B	6	9	–	–	320–348	12.60–13.70
B	18	–	–	–	345–372	13.58–14.65
B	3	18	–	–	369–397	14.53–15.63
B	6	18	–	–	393–421	15.47–16.57
B	9	18	–	–	417–445	16.42–17.52
B	3	9	18	–	442–469	17.40–18.46
B	6	9	18	–	466–494	18.35–19.45
B	36	–	–	–	490–518	19.29–20.39
B	3	36	–	–	514–542	20.24–21.34
B	6	36	–	–	539–566	21.22–22.28
B	9	36	–	–	563–591	22.17–23.27
B	3	9	36	–	587–615	23.11–24.21
B	6	9	36	–	611–639	24.06–25.16
B	18	36	–	–	636–663	25.04–26.10
B	3	18	36	–	660–688	25.98–27.09
B	6	18	36	–	684–712	26.93–28.03
B	9	18	36	–	708–736	27.87–28.98
B	3	9	18	36	733–760	28.86–29.92
B	6	9	18	36	757–785	29.80–30.91
B	72	–	–	–	781–809	30.75–31.85
B	3	72	–	–	805–833	31.69–32.80
B	6	72	–	–	830–858	32.68–33.78
B	9	72	–	–	854–882	33.62–34.72
B	3	9	72	–	878–906	34.57–35.67
B	6	9	72	–	903–930	35.55–36.61
B	18	72	–	–	927–955	36.50–37.60
B	3	18	72	–	951–979	37.44–38.54
B	6	18	72	–	975–1003	38.39–39.49
B	9	18	72	–	1000–1027	39.37–40.43

Tab. 1. Proper segments interconnecting sequence for specific pipe diameters

Place the guiding chain between the driving rollers, and then place the pipe and hook up the chain on the pipe perimeter as shown in Fig. 11. Hook the catch on the last link, second, or third from the end, and put the free links upward (Fig. 12). Use the tightener and the 10 mm hex wrench to slightly tighten the guiding chain to maintain a small clearance. Then, turn on the power using the power switch and start the machine using START button, which will illuminate the button after about 5 seconds.

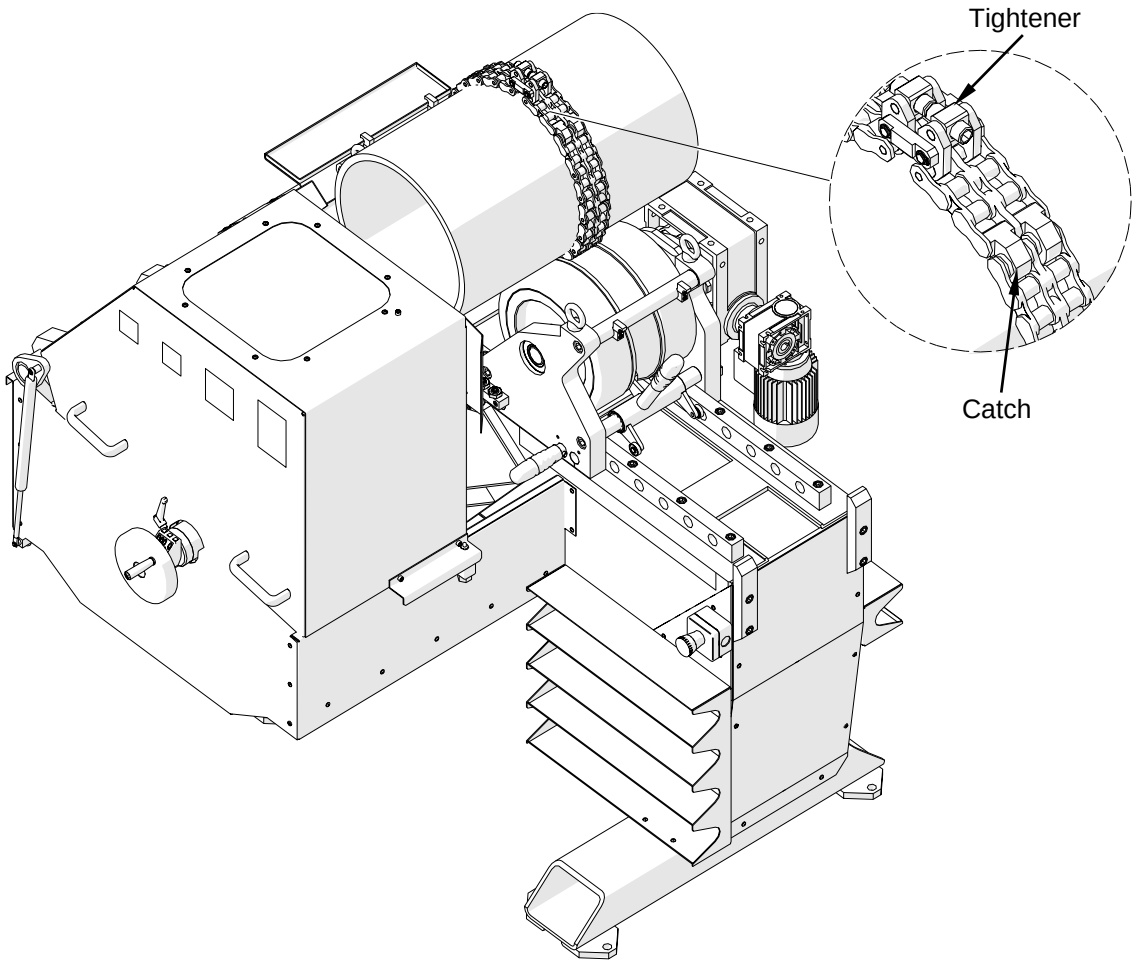


Fig. 11. Installing the guiding chain

Set the operating mode switch to the “rotator” position, start the rotation of the rollers using the rotator ON button, and perform one complete rotation to ensure good alignment of the guiding chain. Then, stop the rotator with the rotator OFF button, and tighten the guiding chain completely.

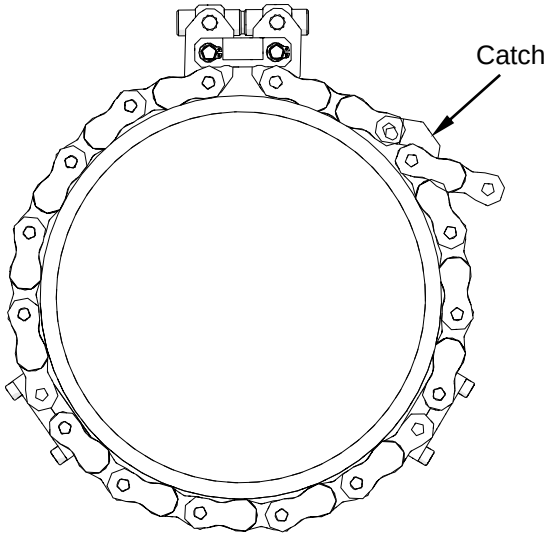


Fig. 12. View of the chain wrapped around a sample pipe

3.4. Preparing

Before starting, loosen the rotation lock levers, set the milling unit at the required angle on the scale, and lock the rotation again using the levers. Unlock the X-axis travel lever, move the milling unit to the specific height using the X-axis travel crank and lock again. Set the crank in the horizontal position and fold its handle to prevent a collision with the cover. Then, close the cover and slide it toward the pipe to the distance of 5 mm (0.2’’) from the pipe face.

3.5. Bevelling the pipes

Use the rotation direction switch to select left (recommended) or right direction of the rotator and set the required speed using the speed adjustment knob. Then, use the ON buttons to start the spindle and the rotator. Unlock the milling unit using the Y-axis travel lock lever. Rotate the Y-axis travel crank to bring the tool close to the workpiece, start milling, and lock the Y-axis travel lock lever again. The bevel will be established after one complete rotation. To increase the bevel width, use the Y-axis travel crank to increase the tool penetration in the workpiece.

In an emergency, press one of the emergency switches. To restart the machine, remove the cause of the emergency. Then, wait 60 seconds, unlock the switch, and press START.

After the power is off, always wait 60 seconds before you turn the power on.

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

3.6. Bevelling the oval pipes

To install the oval attachment, unscrew the handles (*1*, Fig. 13) from the nuts *2* and remove the motor. Unlock the lever *3*, use the 8 mm hex wrench to undo the screw *4*, and rotate the crank *5* to slide out the standard support. Then, screw in the support with the oval attachment by rotating the crank *6*, and then screw in the screw *7* and lock the lever *8*. Finally, screw the handles *1* into the nuts *2*.

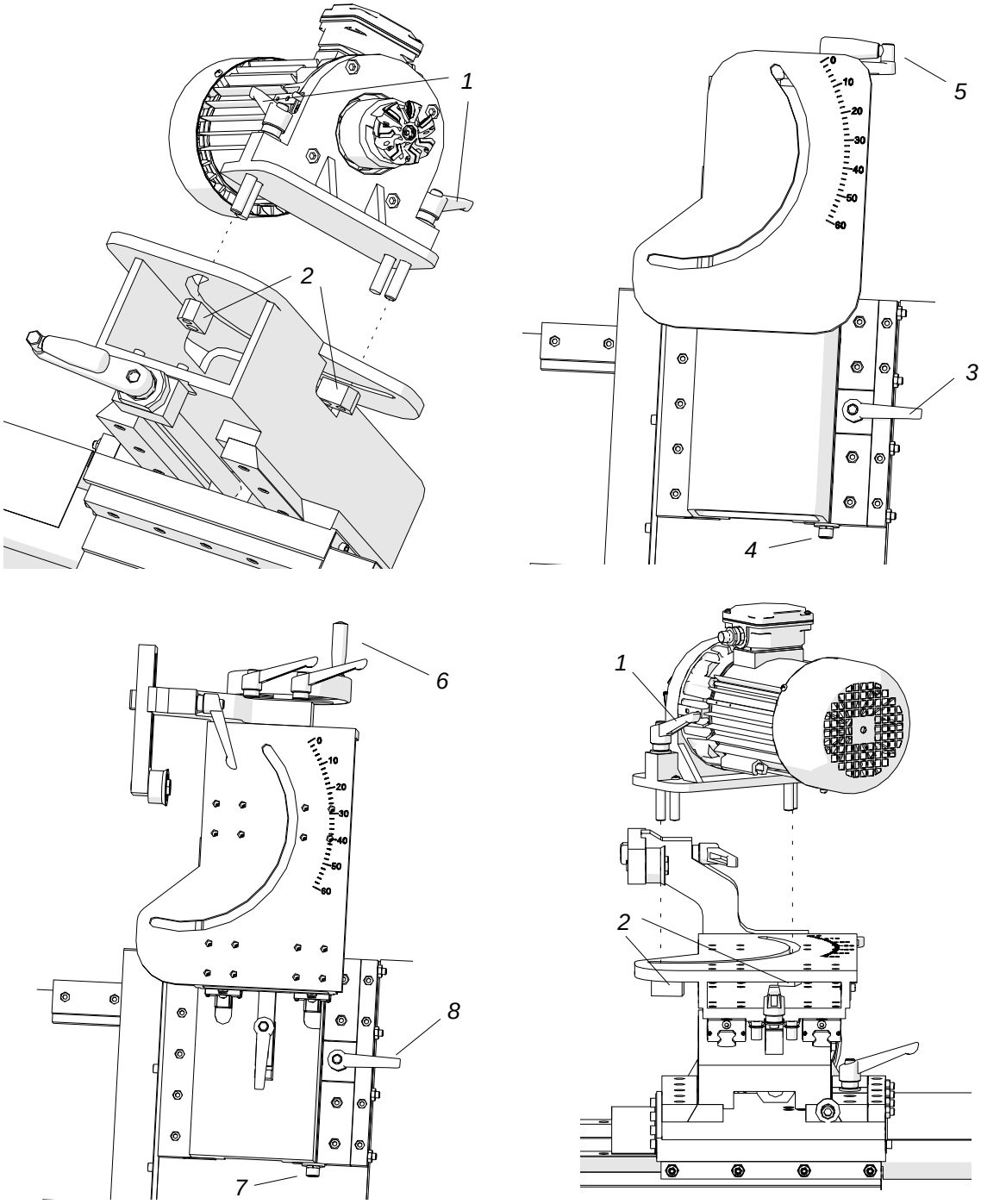


Fig. 13. Removing the standard support and installing the support with oval attachment

Position the milling unit at the required angle and height in the manner described before.

Unlock the levers *1, 2*, and *3* (Fig. 14), and then rotate the crank *4* to bring the milling unit closer to the pipe. Adjust the roller arm position and lock the levers *5*. Next, rest the roller on the smallest inside diameter of the pipe (*6*) and lock the lever *7*. Finally, rotate the crank *8* in such a way to align the arrows (*9*) and lock the lever *2*.

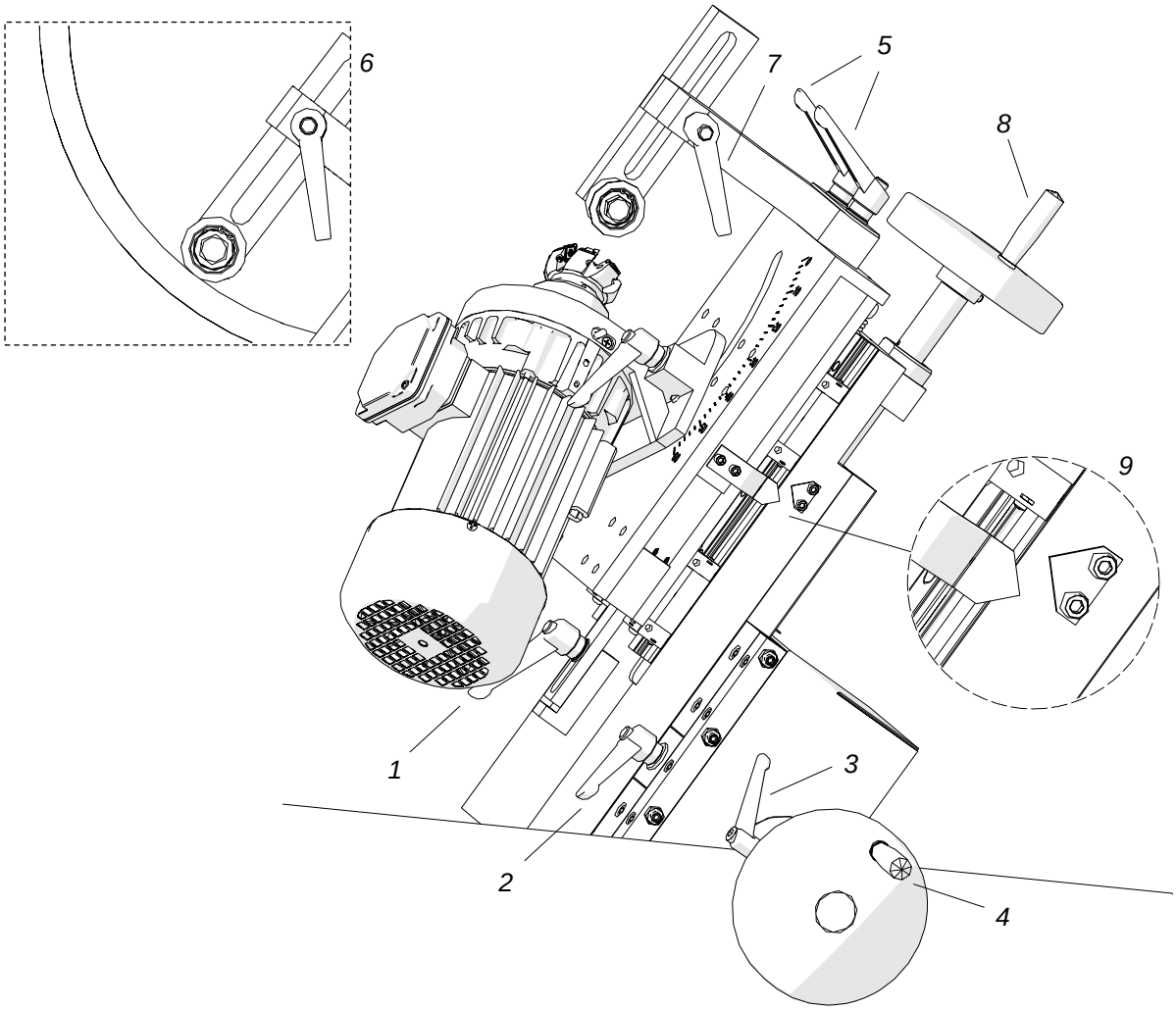


Fig. 14. Adjusting the support with oval attachment

Start milling, and lock the travel using the lever *3*.

After the work is finished, raise the milling unit using the crank *8*, and then retract the unit from the pipe. Lock the lever *1* if the attachment for oval pipes is not in use.

3.7. Bevelling the pipes made of stainless steel (optional)

To mill pipes made of stainless steel up to the weight of 6 000 kg (13 200 lbs), replace two standard rollers of the passive support (Fig. 15a, 15b) with their counterparts which are part of the set for stainless steel. In the machine with tracking also replace the guiding roller (Fig. 15c). Use only the chain and clamp included in the set.

To replace the rollers of the passive support, remove two pivot pins securing the movable roller unit (Fig. 15a) and unscrew four screws securing the fixed roller unit using the 14 mm hex wrench (not included in standard equipment). Then, remove both roller units from the support and position them as in Fig. 15b, after which unscrew the screws using the 14 mm hex wrench and install in reverse order the rollers of the set for stainless steel.

To replace the guiding roller from the attachment for oval pipes, remove the roller using the 18 mm hex wrench (not included in standard equipment) in order shown in Fig. 15c and install in reverse order the guiding roller of the set for stainless steel.

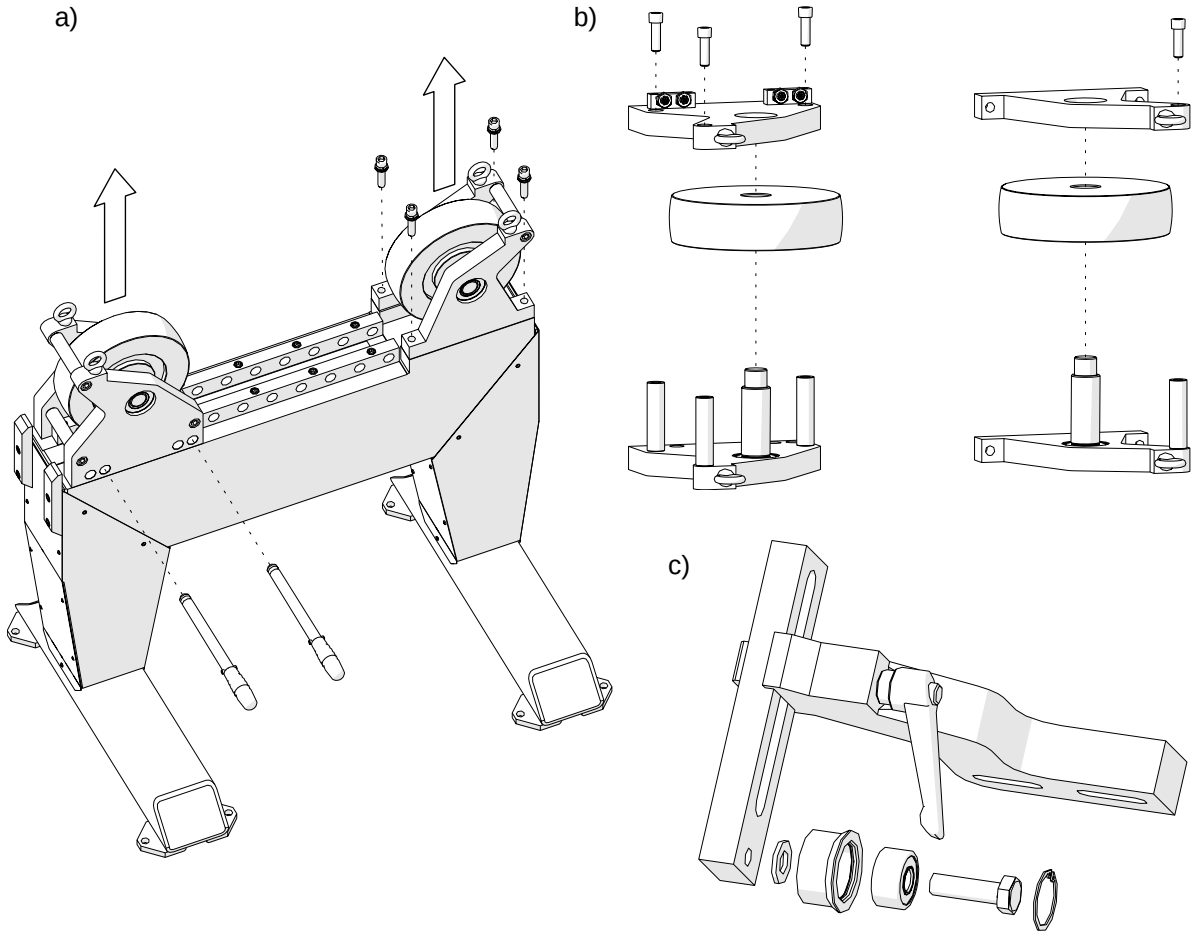


Fig. 15. Adapting the machine to work with stainless steel: removing the rollers of the passive support (a, b), removing of the guiding roller (c)

3.8. Replacing the cutting inserts

The inserts can be replaced or rotated. To replace or rotate an insert, unplug the power cord from the power source and use the supplied screwdriver to unscrew the screw in the manner shown in Fig. 16, remove the insert, and clean the socket. Then, place the rotated insert again or replace with a new one if all four edges are worn. Finally, secure with the screw.

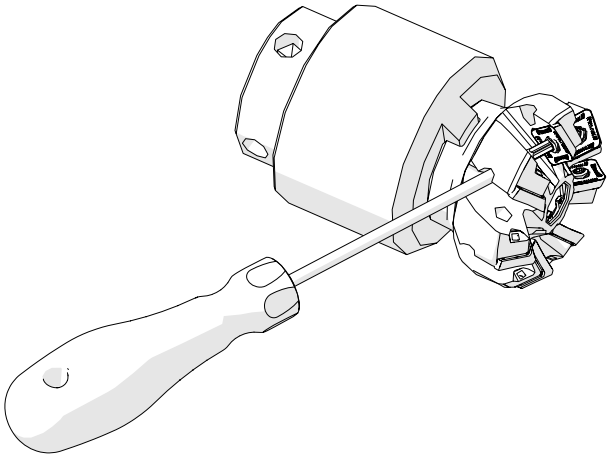


Fig. 16. Replacing the cutting inserts

3.9. Replacing the milling head

Unplug the power cord from the power source. Press and hold the spindle lock button (Fig. 17) and loosen the mounting screw using a hex wrench of the size dependent on the type of the installed head. Then, release the button and remove the head. Install in reverse order.

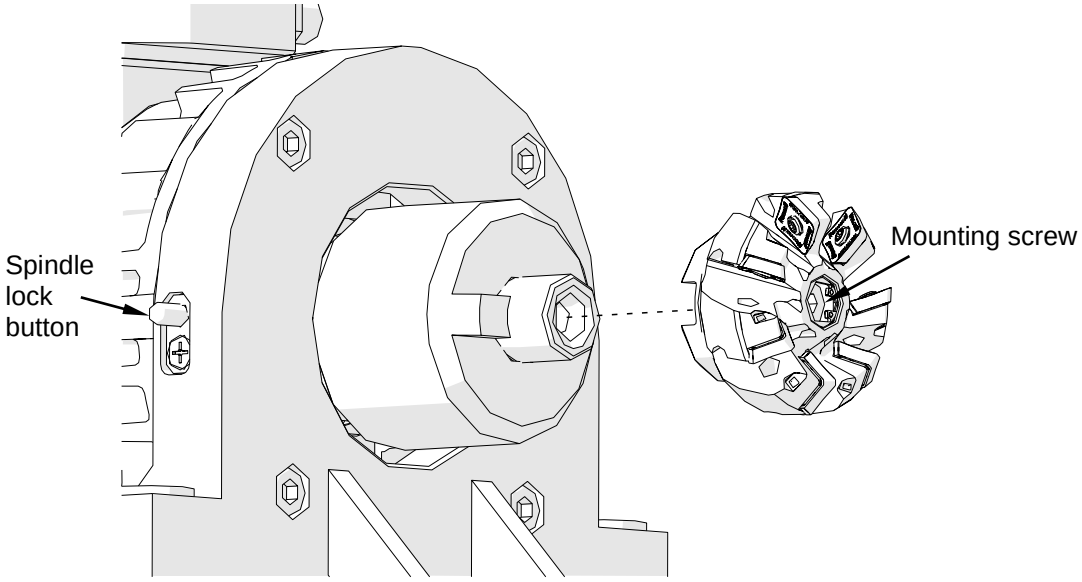


Fig. 17. Removing the milling head

3.10. Replacing the rollers of the active support

To increase carrying capacity of the machine, replace the plastic rollers of the active support with steel rollers. To do this, unplug the power cord from the power source and gently remove the gear motors (Fig. 18) by unscrewing eight screws using the 18 mm flat wrench (not included in standard equipment). Then, remove two pivot pins securing the movable roller unit, remove the console cover by unscrewing four screws with the 5 mm hex wrench, use the 14 mm hex wrench (not included in standard equipment) to unscrew four screws securing the fixed roller unit, and then remove both roller units from the support.

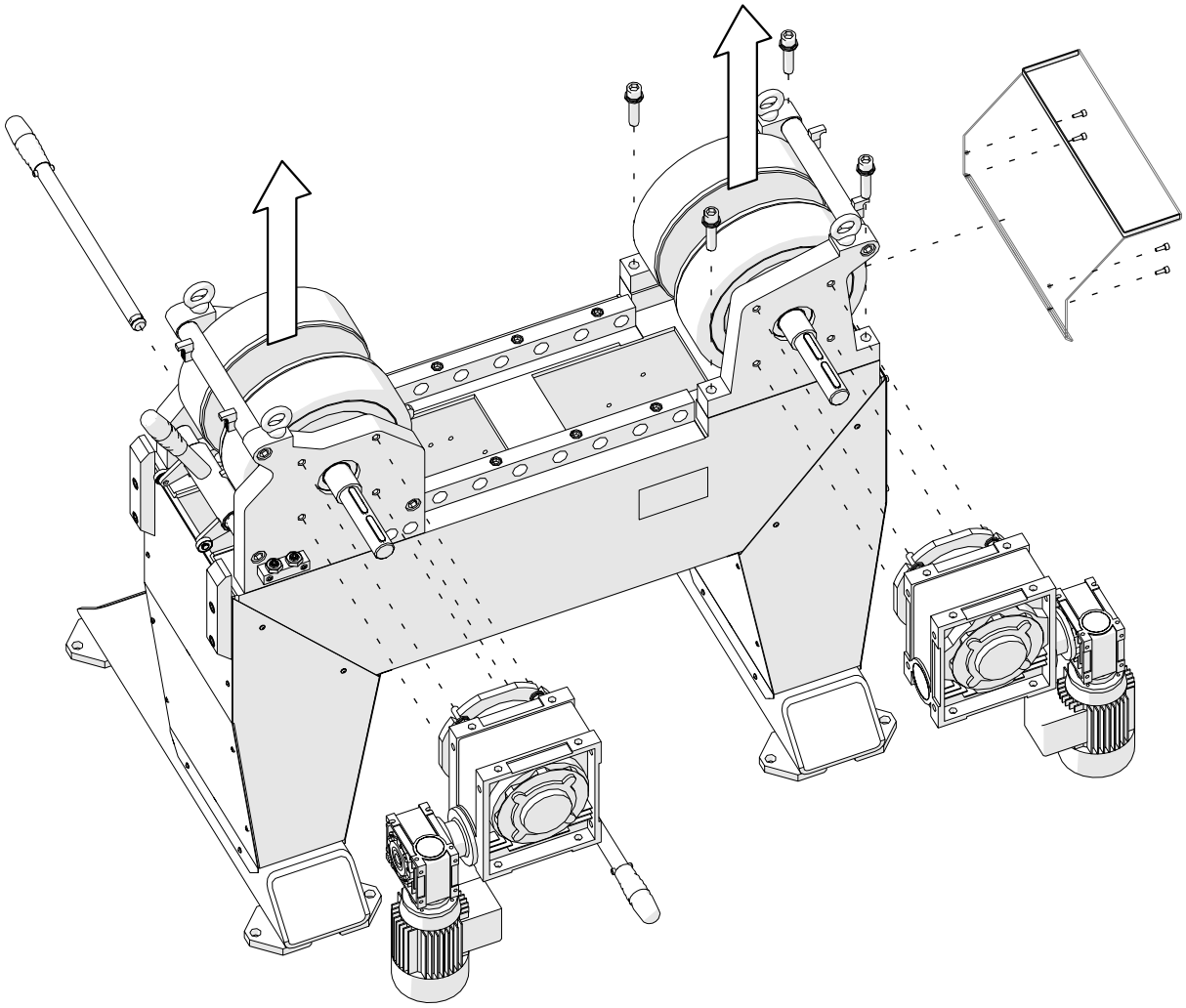


Fig. 18. Removing the roller units

Position the roller units as shown in Fig. 19 and remove the rollers in specified order. Unscrew the mounting screws using the 14 mm hex wrench. Replace with steel rollers and install in reverse order.

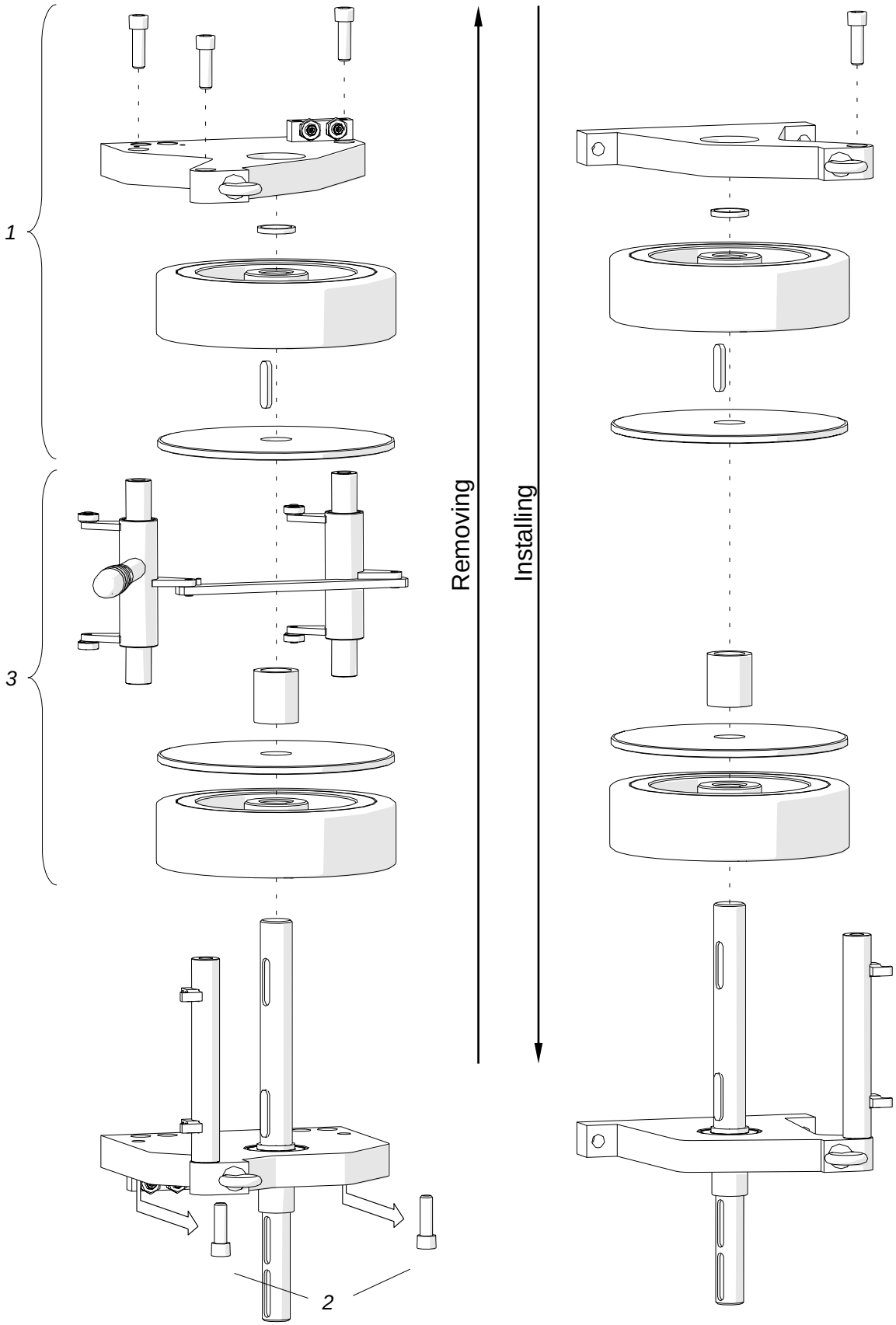


Fig. 19. Removing and installing the rollers of movable unit (left) and of fixed unit (right)

4. DECLARATION OF CONFORMITY

EC Declaration of Conformity

We

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

declare with full responsibility that:

PB40-PBS STATIONARY PIPE BEVELLING MACHINE

is manufactured in accordance with the following standard:

- EN 60204-1

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

Burnley, 21 October 2011

David McFadden
Managing Director

5. WARRANTY CARD

WARRANTY CARD No.....

..... in the name of Manufacturer warrants the PB40-PBS Stationary Pipe 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.

Serial number .....

Date of sale .....

Signature of seller.....

1.03 / 28 January 2019

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