

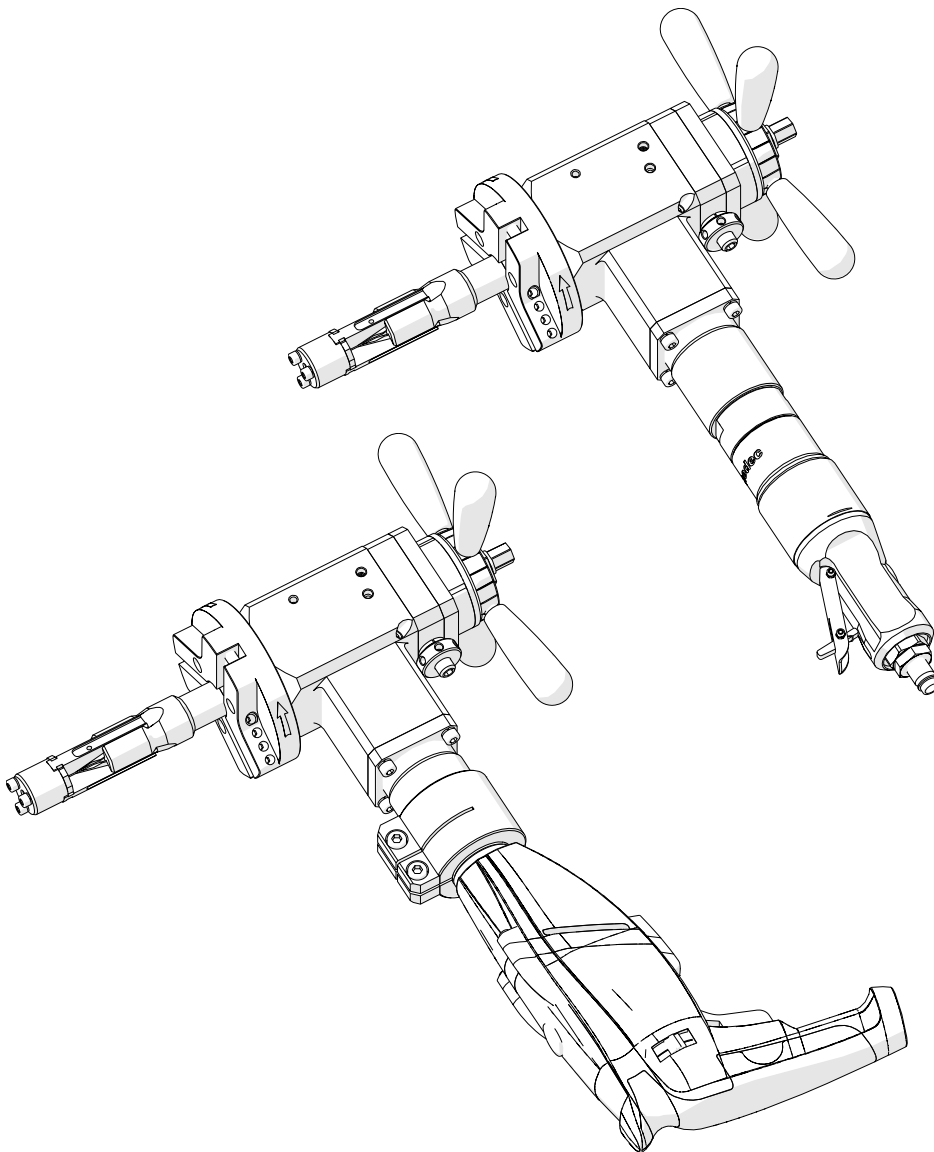


The tools of innovation.

## OPERATOR'S MANUAL

### **PB-5 (PBE-5)**

### PIPE BEVELING MACHINE



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## 1. GENERAL INFORMATION

### 1.1. Application

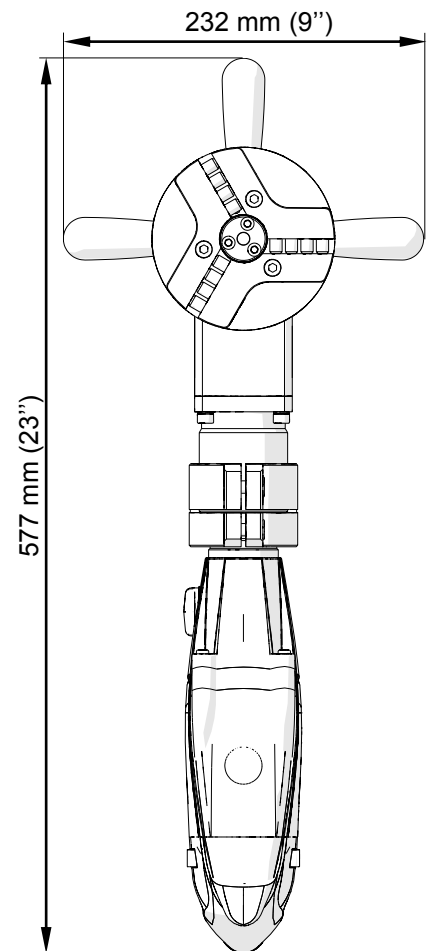
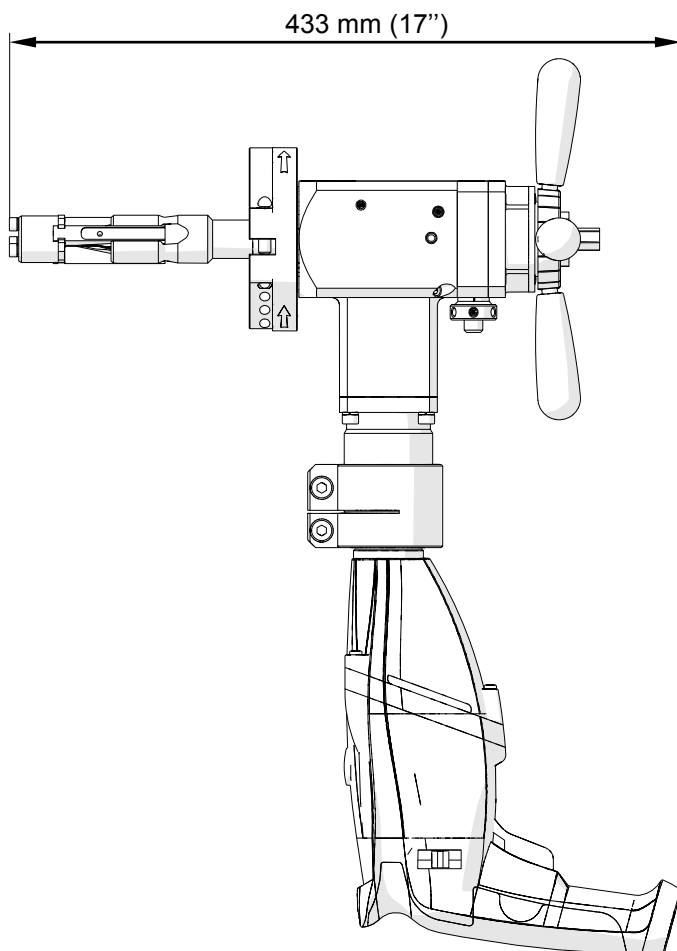
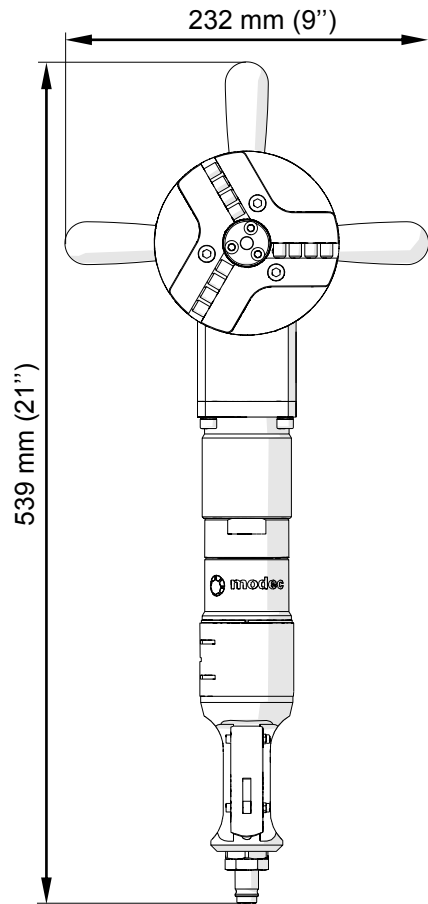
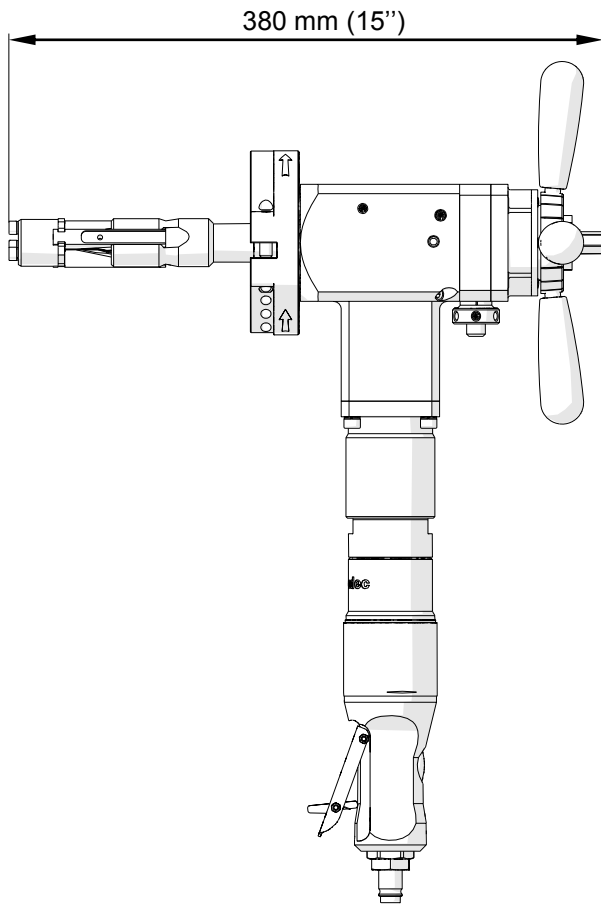
The PB-5 (PBE-5) is a pipe beveling machine designed to mill edges of pipes made of carbon and stainless steel, aluminum alloys, and copper-nickels. Depending on the tool bit used, the machine can perform external beveling, J-beveling, internal calibration, and facing pipes from inside diameters of 32 mm (1.26") to outside diameters of 114 mm (4.49"). Up to three tool bits can be installed at the same time.

When equipped with an optional 140 mm spindle disk set the machine can bevel pipes with outside diameters up to 140 mm. Using an optional 75 mm spindle disk, ratchet wrench, or both, will facilitate working in places hard to reach.

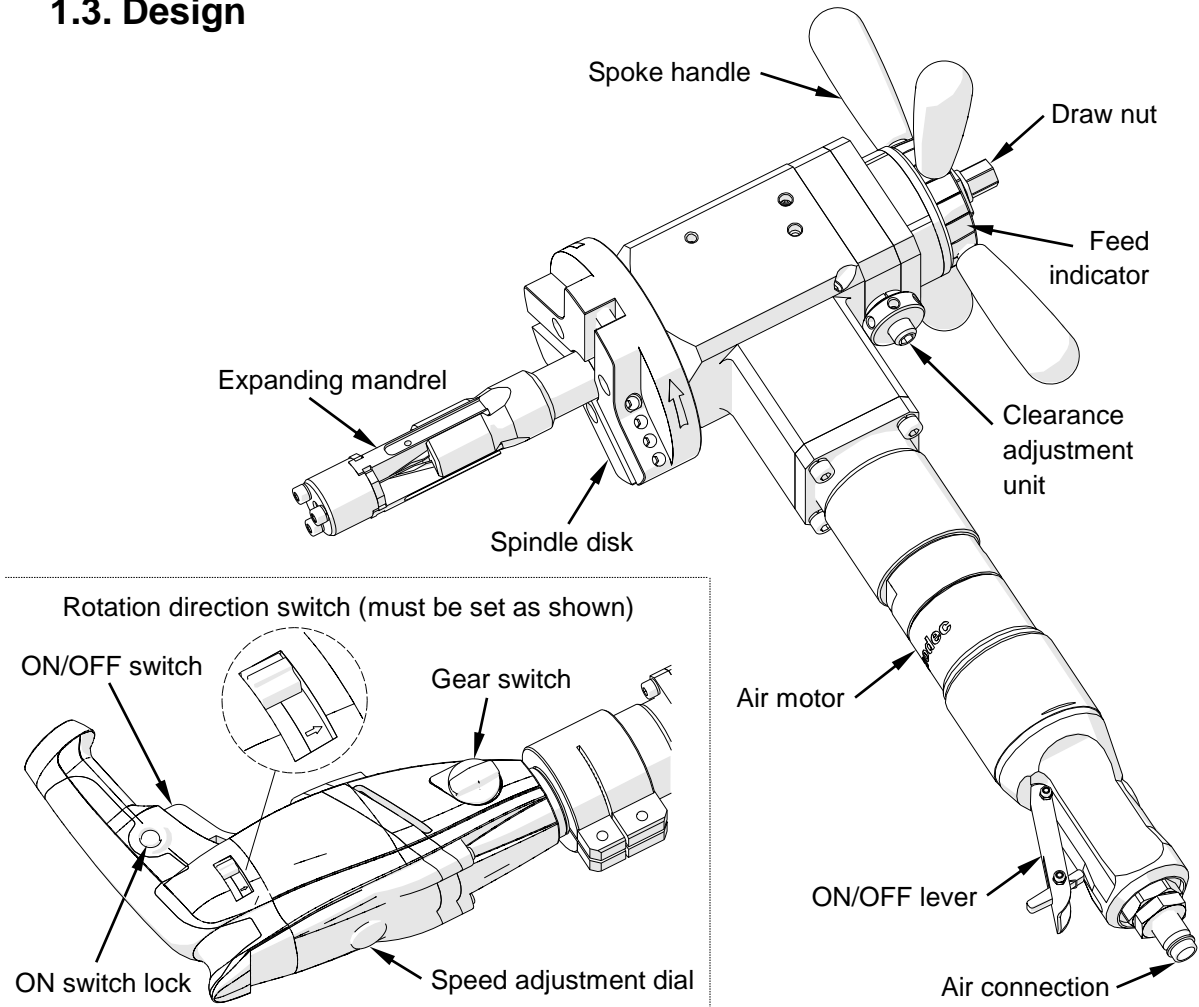
### 1.2. Technical data

		<b>PB-5</b>	<b>PBE-5</b>
Pressure		0.6 MPa (87 psi)	–
Voltage		–	1~ 110–120 V, 50–60 Hz 1~ 220–240 V, 50–60 Hz
Air motor		Modec NT10RT0851FCA1F-CO	–
Electric motor		–	Metabo BE1100
Connection		CEJN 410 DN 10.4 GZ 1/2" BSPT coupling	electrical plug
Air consumption		1400 NI/min (50 CFM)	–
Power		800 W	1100 W
Pipe diameter		32 mm ID to 114 mm OD (1.26–4.49")	32 mm ID to 114 mm OD (1.26–4.49")
Maximum pipe wall thickness	for outside diameter	up to 114 mm	12 mm (0.47")
		114–124 mm*	10 mm (0.39")
		124–132 mm*	8 mm (0.31")
		132–140 mm*	6 mm (0.24")
Rotational speed without load		180 rpm	–
Nominal rotational speed		90 rpm	0–90 rpm (gear 1) 0–300 rpm (gear 2)
Protection class		–	II
Required ambient temperature		0–40°C (34–104°F)	0–40°C (34–104°F)
Weight (with motor)		10 kg (22 lbs)	11 kg (24 lbs)

\* Available with the optional 140 mm spindle disk set.



**1.3. Design**



**Fig. 1.** View of PB-5 and of PBE-5 electric motor

**1.4. Equipment included**

The PB-5 (PBE-5) is supplied including the following elements.

Beveling machine (without tool bits)	1 unit
Metal box	1 unit
Expanding mandrel	1 unit
118 mm spindle disk	1 unit
Jaw blocks (number 1, 2, 3, 4, 5, 6)	3 sets
Coolant container	1 unit
Tool container	1 unit
13 mm socket wrench	1 unit
6 mm hex wrench	1 unit
5 mm hex wrench	1 unit
4 mm hex wrench with handle	1 unit
3 mm hex wrench	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 only the air (electric) motor specified in the technical data.
3. The machine must be used only in applications specified in this Operator's Manual.
4. The machine must be complete and all parts must be genuine and fully operational.
5. The specifications of the air (power) source must conform to those specified on the rating plate.
6. Supply the machine with air motor only with clean and lubricated air. The air source must be equipped with a filter, regulator, and lubricator.
7. Never pull the hose (cord) as this may cause its damage and result in serious injury.
8. Untrained bystanders must not be present near the machine.
9. Before beginning, check the condition of the machine and the air (power) source, including the supply hose (cord), coupling (plug), control components, and tool bits.
10. Avoid unintentional starts. Do not lay the machine in such a manner that will start the motor and never carry the machine with air motor using the ON/OFF lever.
11. Keep the machine dry. Exposure to rain, snow, or frost is prohibited.
12. Keep the work area well lit, clean, and free of obstacles.
13. Never use machine near flammable liquids or gases, or in explosive environments.
14. Secure the pipe to prevent it from dropping or rolling.
15. Use only tool bits specified in this Operator's Manual.
16. Never use tool bits that are dull or damaged.
17. Install tool bits securely. Remove adjusting keys and wrenches from the work area before connecting the machine to the air (power) source.
18. 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.
19. Always use eye and hearing protection, protective footwear, and protective clothing during operation. Do not wear loose clothing.
20. Operate the machine with electric motor only when the rotation direction switch is set to the position shown in Fig. 1. Using left rotation (rotation direction switch set to the opposite position) may damage the machine.

21. Do not touch moving parts or metal chips formed during milling. Prevent objects from being caught in moving parts.
22. After every use, remove metal chips and excess coolant from the machine. Never remove chips with bare hands. Clean the machine with a cotton cloth without using any agents.
23. Cover steel parts with a thin anti-corrosion coating to protect the machine from rust when not in use for any extended period.
24. Maintain the machine and install/remove parts and tool bits only when the machine is unplugged from the air (power) source.
25. Repair only in a service center appointed by the seller.
26. 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 operation and immediately send the machine to the service center for inspection and repair.
27. Never leave the machine unattended during operation.
28. Remove from the worksite and store in a secure and dry location when not in use, previously removing the tool bits from sockets.

### 3. STARTUP AND OPERATION



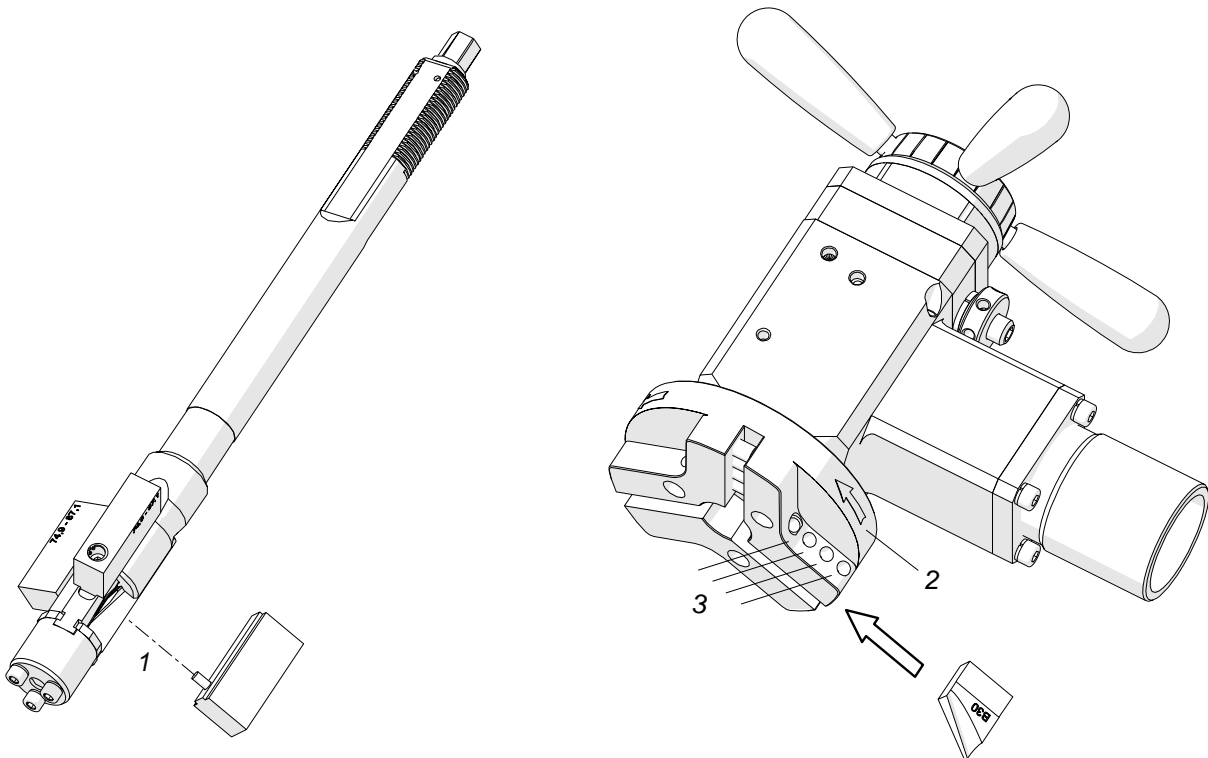
Adhere to all safety precautions.

#### 3.1. Installing the jaw blocks and tool bits

Use the following table to select jaw blocks suitable to the diameter of the pipe to be machined.

Pipe inside diameter		Jaw blocks number
[mm]	[inch]	
32–43.5	1.26–1.71	–
43–55	1.69–2.17	1
54–66.2	2.13–2.61	2
64.7–76.9	2.55–3.03	3
74.9–87.1	2.95–3.43	4
85.2–97.4	3.35–3.83	5
94.8–107	3.73–4.21	6

Use the 3 mm hex wrench to join the jaw blocks to the expanding mandrel (1, Fig. 2). Then, select up to three tool bits suitable to planned use, and place them in the sockets, with blades directed according to the rotation direction 2. Next, tighten each tool bit with two of the screws 3 using the 4 mm hex wrench. The entire pressing surface of the screw must be in full contact with the tool bit.

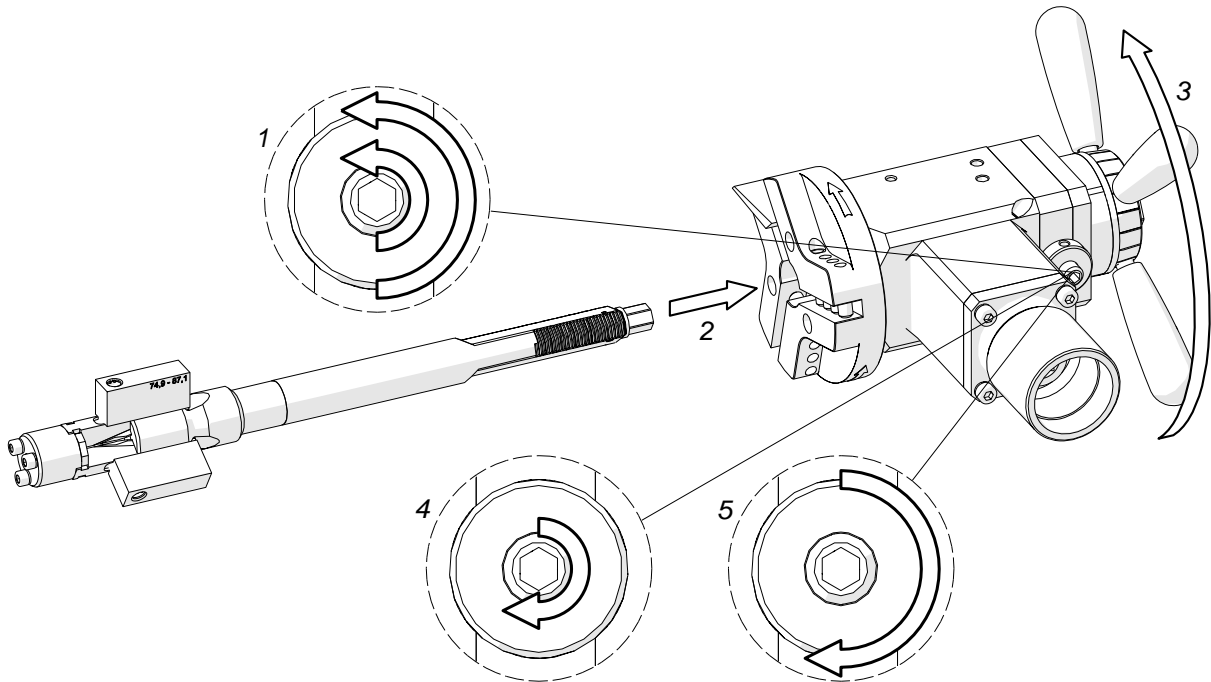


**Fig. 2.** Installing the jaw blocks and tool bits



### 3.2. Installing (removing) the mandrel and adjusting the clearance

Loosen the nut and use the 6 mm hex wrench to loosen the set screw (1, Fig. 3), and insert the mandrel into the machine (2). Make sure that tool bits installed are not in contact with the mandrel. Next, rotate the spoke handles to the right (3) by at least 10 turns until the mandrel engages with the machine completely. Then, tighten the set screw (4) and check whether the spoke handles can be rotated in both directions easily. If the screw is too tight, readjust it. Finally, tighten the lock nut (5).



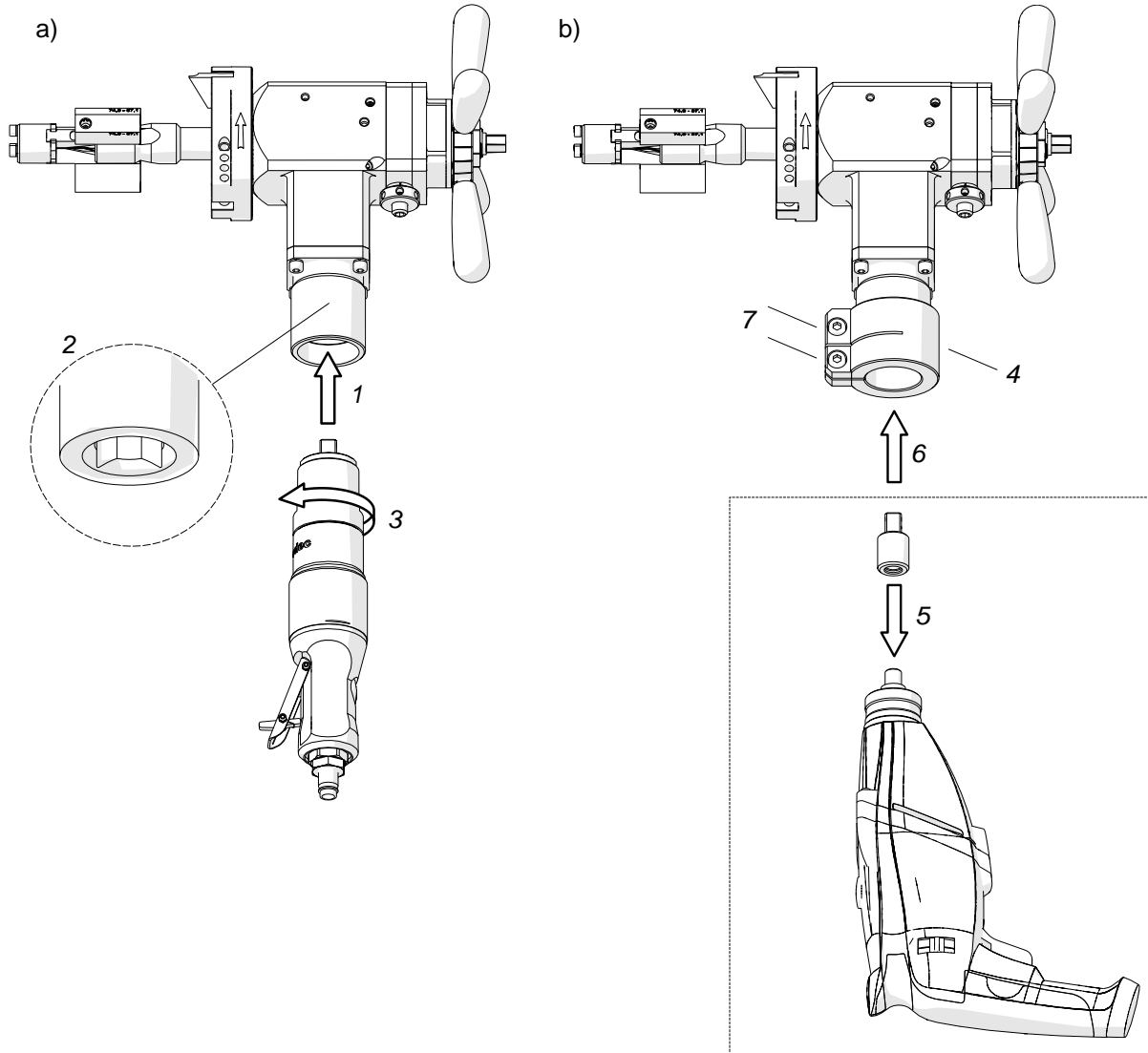
**Fig. 3.** Installing the mandrel into the machine

If the expanding mandrel becomes loose causing vibrations of the tool bits during machining, perform the above actions without removing the mandrel from the machine.

To remove the mandrel, loosen the nut and use the 6 mm hex wrench to loosen the set screw (1, Fig. 3) to at least one turn. Then, rotate the spoke handles to the left to disengage the mandrel from the machine.

### 3.3. Installing the motor

Insert the air motor into the machine (1, Fig. 4a) in such a way to place the arbor in the socket 2, and tighten the motor by rotating it to the left (3).



**Fig. 4.** Installing the air motor (a) and the electric motor (b)

To install the electric motor, slide the clamping ring 4 onto the machine. Then, screw the driver (5) into the motor and insert the motor into the machine (6) by placing the arbor in the socket 2, and tighten the clamping ring using the 6 mm hex wrench (7). Finally, set the rotation direction switch to the position shown in Fig. 1.

### 3.4. Clamping the machine into the pipe

Insert the assembled machine into the pipe (1, Fig. 5) in such a way to place the tool bit(s) at the distance of at least 3 mm (0.12") from the pipe end. Then, expand the jaw blocks to the inside diameter of the pipe by rotating the draw nut 2 to the right using the 13 mm socket wrench. The jaw blocks must be installed beyond the end preparation location 3.

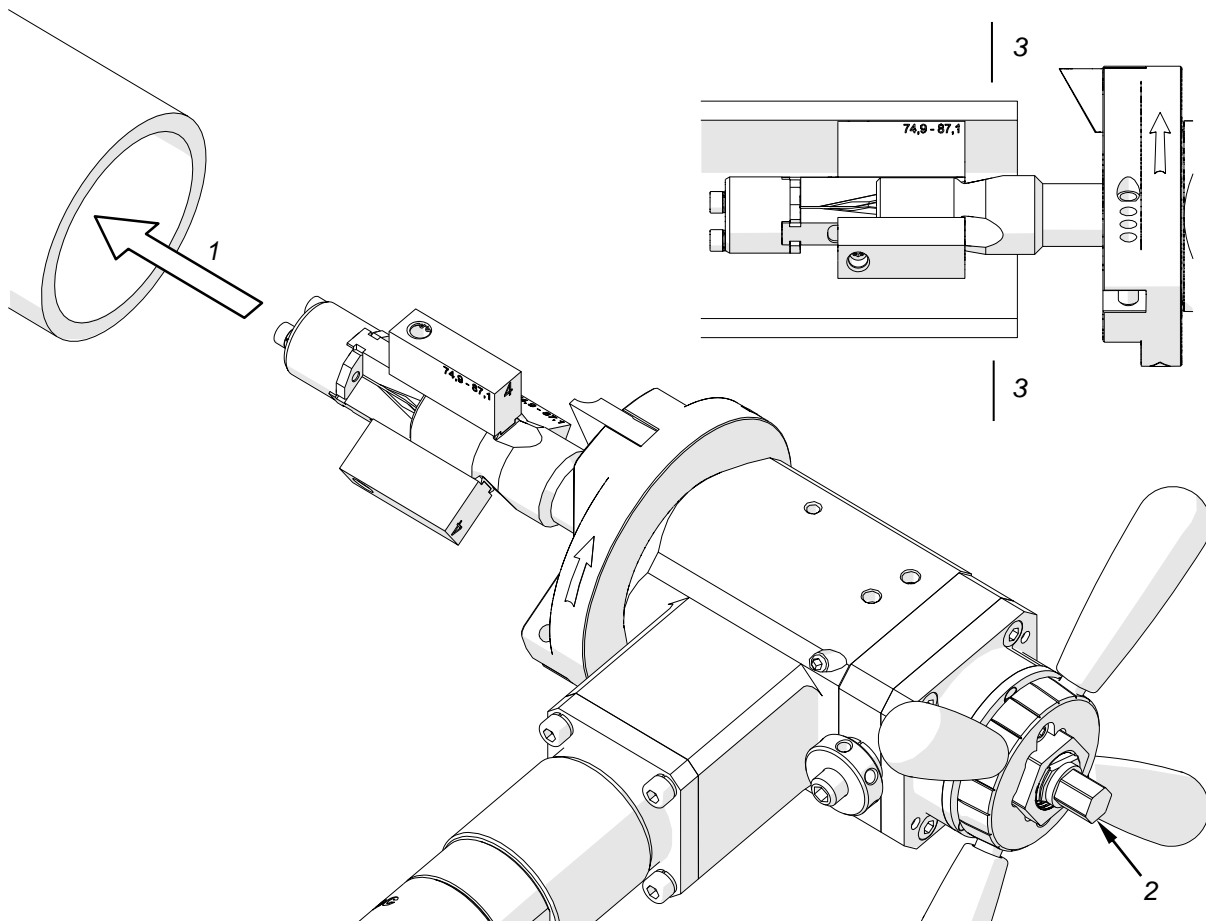


Fig. 5. Clamping the machine into the pipe

### 3.5. Preparing the air (for machine with air motor)

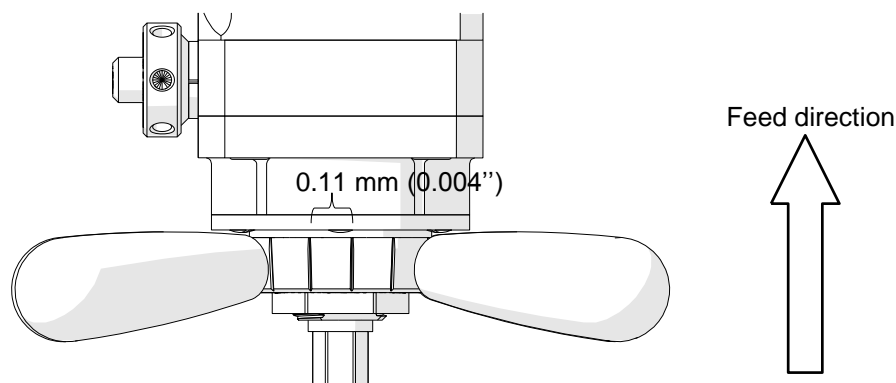
Connect the machine to a correctly prepared air source of sufficient purity using a hose with the internal diameter of at least 12 mm (0.5"). The air source must be equipped with an air preparation unit: filter, regulator, and lubricator (FRL). To achieve full power of the air motor, all internal diameters of the air source must be at least 10 mm (0.4").

Maintain the FRL unit as required to keep the water trap drained, filter cleaned, and the lubricator oil reservoir filled so that there is a drop of oil every 2–5 seconds. Use only oil whose ignition temperature is more than 260°C (500°F). If the machine is to be left idle for at least 24 hours, increase the delivery of oil and run the motor for 2–3 seconds, which will prevent rusting and degrading of the rotor vanes.

### 3.6. Operating

Once the machine is connected to a proper supply, start the operation by pressing the ON/OFF lever. For the machine with electric motor, select gear 1, set the maximum speed, and then hold the ON/OFF switch. To lock the switch in position ON, press the ON switch lock before releasing the ON/OFF switch.

Spread the coolant on the working edge. Then, bring the tool bit(s) close to the pipe by rotating the spoke handles to the right. If the pipe face is not perpendicular to the pipe axis, the tool bit will machine only a small segment of the pipe during initial rotations. Thus, the feed rate should be chosen slow until the tool bit is contacting the pipe continually during at least one rotation. The axial feed is 0.11 mm (0.004") per graduation (Fig. 6) or 2 mm (0.08") per one complete turn of the spoke handles.



**Fig. 6.** View of the feed indicator

Continue machining by rotating the spoke handles to the right. Use adequate feed rate to establish a continuous chip cut. If the feed rate is too slow, only light stringer chips will be removed, while too fast feed will make machining difficult and the chip will start to have a rough or torn appearance. Never allow the tool bit to burnish the surface. If chatter problems occur, reduce the feed rate and speed, and make sure the type of tool bits corresponds to the material and the tool bits are sharp. Stainless steel, which work hardens, must be worked with a fast enough feed, 0.08–0.15 mm (0.003–0.006”) per rotation, to stay under the work hardened surface.

If the machine with electric motor becomes overloaded, the motor will be shut off automatically. However, prevent the motor from overloading by machining hard materials with not too fast feed rate and rotational speed, if possible.

Once the pipe end is machined completely, discontinue rotating the spoke handles and allow the spindle to rotate several more turns to improve the finish of the surface. Then, turn off the motor by releasing the ON/OFF lever, or press the ON/OFF switch in the machine with electric motor, and wait until the rotation stops. Separate the tool bit(s) from the pipe end to at least 3 mm (0.12”) by rotating the spoke handles to the left. Finally, loosen the draw nut using the 13 mm socket wrench to release the clamping, and then remove the machine from the pipe. Use petroleum ether to clean the pipe from excess coolant.

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

### **3.7. Troubleshooting (for machine with electric motor)**

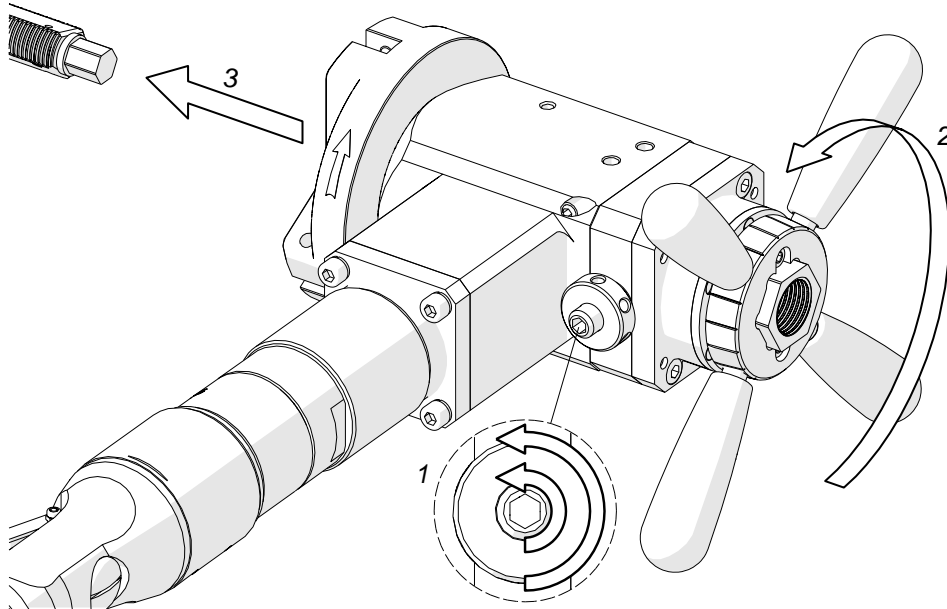
The machine with electric motor has a diode for troubleshooting. The diode permanently lit means that the machine power is limited to prevent the motor from overheating as a result of continuous overloading for extended periods.

Rapid flashing means that the safety circuit prevents the machine from starting automatically when electrical power is restored after a power failure. To start the machine in such a case, switch the motor off and on again.

Slow flashing means that the carbon brushes are almost completely worn, which results in the motor shutting off automatically. The brushes must be replaced with new ones by the manufacturer of the electric motor.

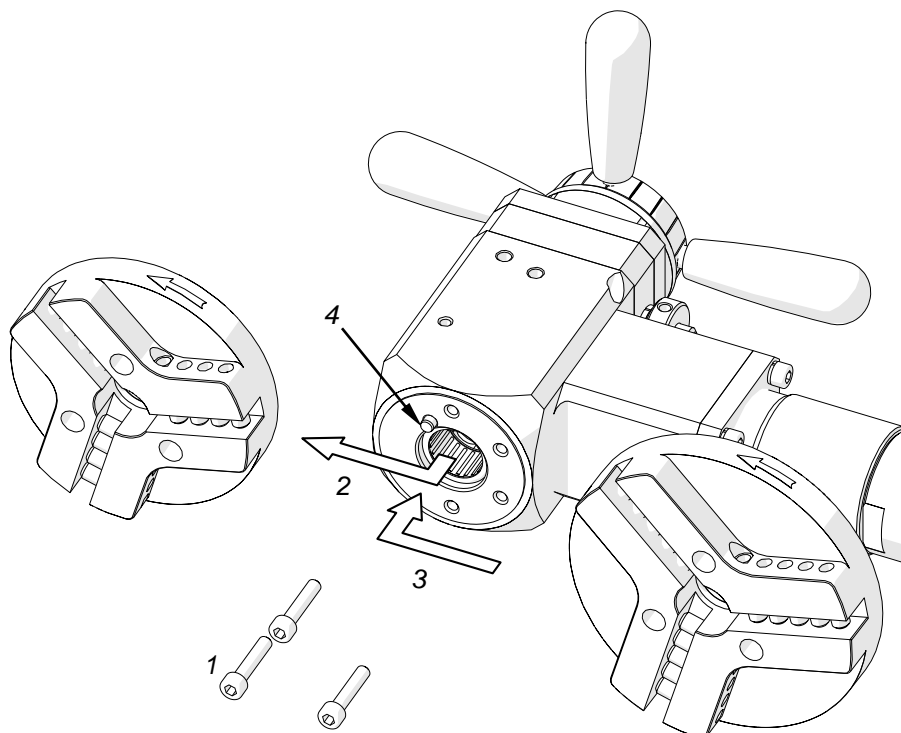
### 3.8. Replacing the spindle disk

Loosen the nut and use the 6 mm hex wrench to loosen the set screw (1, Fig. 7) to at least one turn. Then, rotate the spoke handles to the left (2) to disengage the mandrel from the machine (3).



**Fig. 7.** Removing the mandrel from the machine

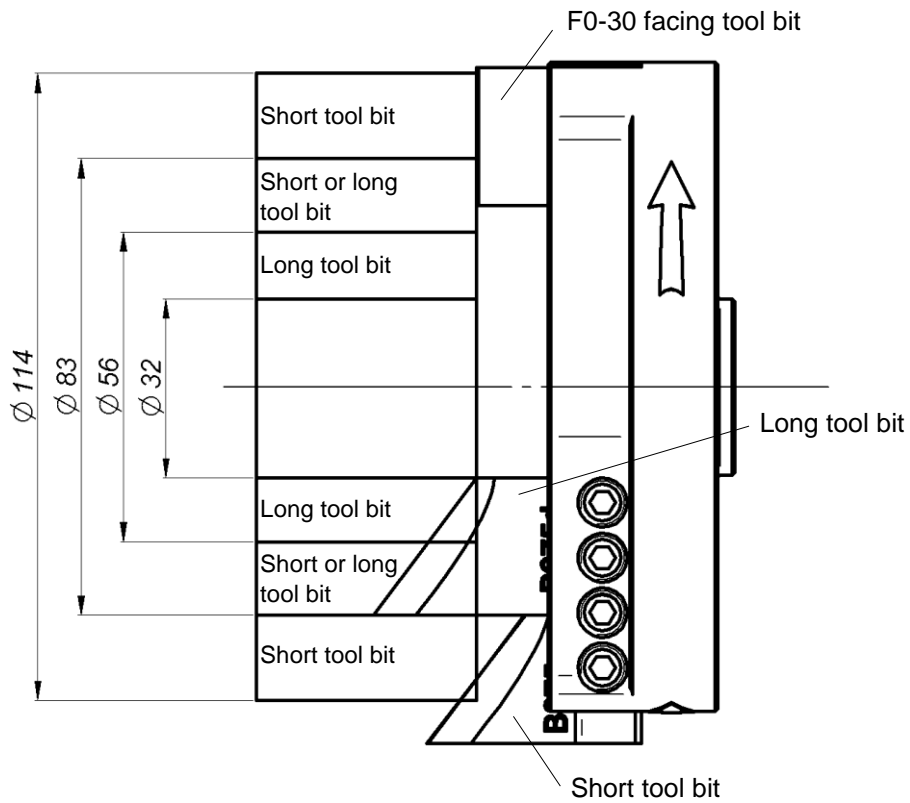
Use the 5 mm hex wrench (1, Fig. 8) and remove the spindle disk (2). Then, install the new disk (3) onto the pin 4 and tighten with the same screws.



**Fig. 8.** Replacing the spindle disk

### 3.9. Facing and beveling at the same time

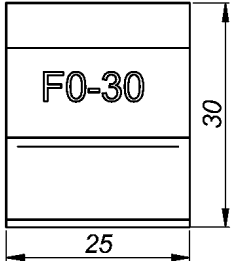
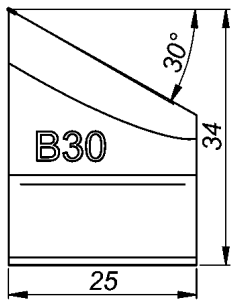
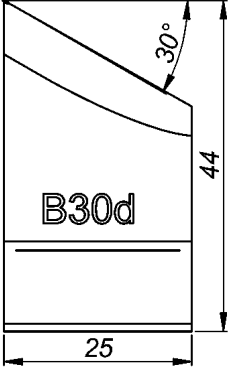
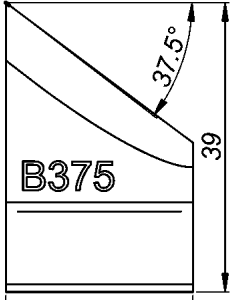
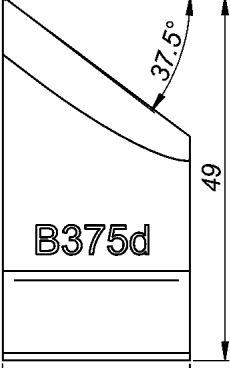
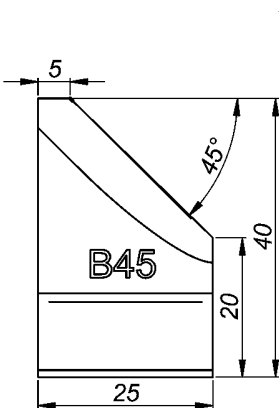
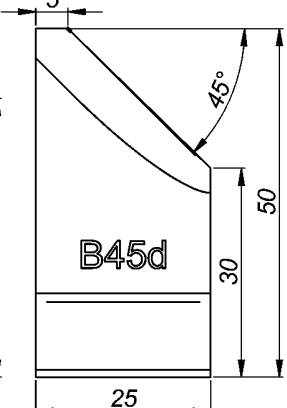
When facing and beveling is performed at the same time, use either short or long beveling tool bit depending on the pipe diameter (Fig. 9).



**Fig. 9.** Positioning the facing tool bit and a short or long beveling tool bit

**4. ACCESSORIES**

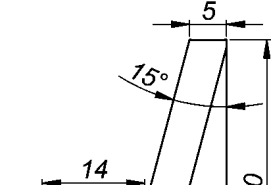
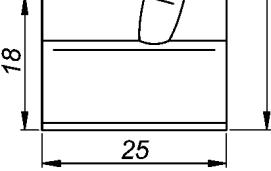
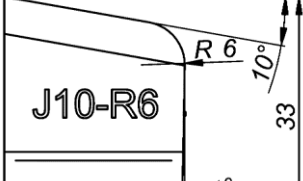
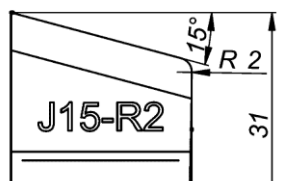
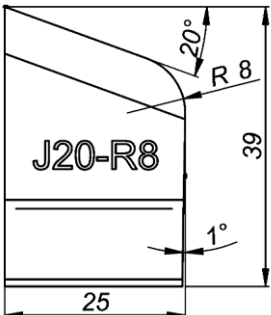
**4.1. Tool bits**

<p>NOZ-000031</p>	<p>F0-30 0° facing tool bit</p>	
<p>NOZ-000032</p>	<p>B30 30° beveling tool bit*</p>	
<p>NOZ-000033</p>	<p>B30d 30° beveling tool bit**</p>	
<p>NOZ-000036</p>	<p>B375 37.5° beveling tool bit*</p>	
<p>NOZ-000037</p>	<p>B375d 37.5° beveling tool bit**</p>	
<p>NOZ-000040</p>	<p>B45 45° beveling tool bit*</p>	
<p>NOZ-000041</p>	<p>B45d 45° beveling tool bit**</p>	

\* for diameters over 56 mm, if works together with 0° facing tool bit

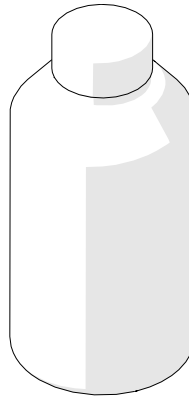
\*\* for diameters under 83 mm, if works together with 0° facing tool bit



<p>NOZ-000052</p>	<p>IC15-40 15° internal calibration tool bit</p>	
<p>NOZ-000053</p>	<p>IC15-40 (for diameters over 56 mm) 15° internal calibration tool bit</p>	
<p>NOZ-000058</p>	<p>J10-R6 10° J-beveling tool bit</p>	
<p>NOZ-000057</p>	<p>J15-R2 15° J-beveling tool bit</p>	
<p>NOZ-000059</p>	<p>J20-R8 20° J-beveling tool bit</p>	

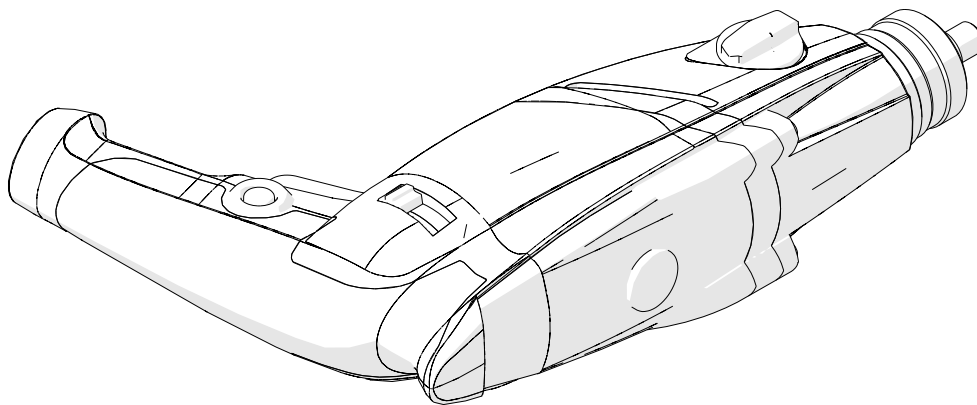
## 4.2. Cutting fluid

Part number:  
OLJ-000004 (0.5 kg, 1.1 lbs)



## 4.3. Electric motor

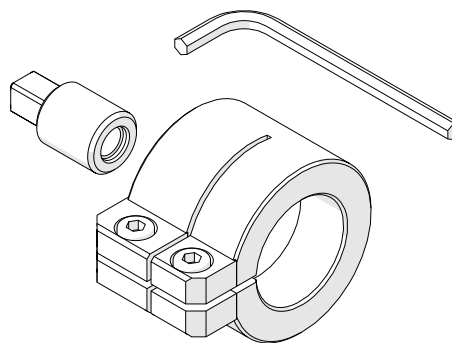
Part number:  
SLN-000176 (230 V)



## 4.4. Electric motor attachment set

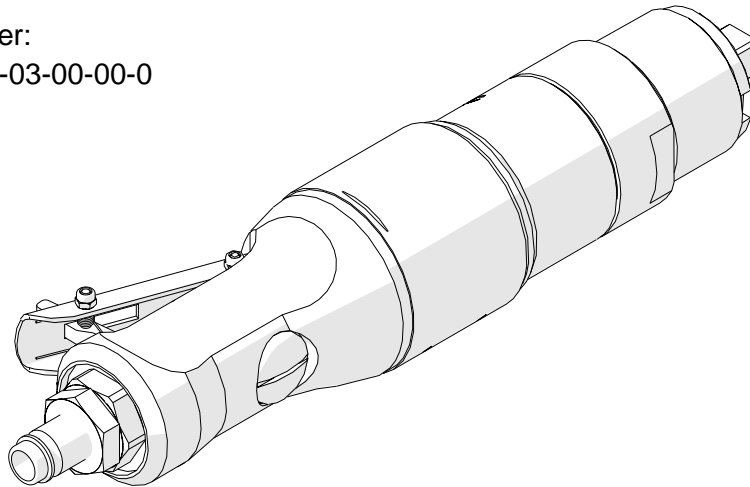
Required for connecting the electric motor with the machine.

Part number:  
ZST-0472-11-00-00-1



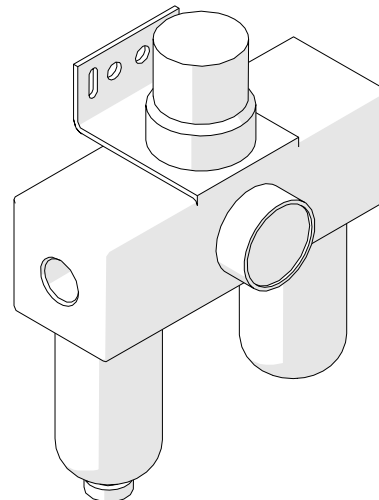
#### 4.5. Air motor

Part number:  
NPD-0472-03-00-00-0



#### 4.6. Air preparation unit

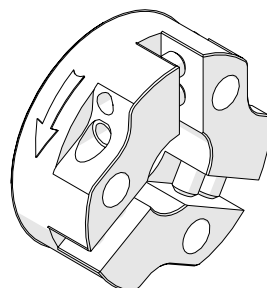
Part number (filter, regulator, lubricator):  
ZST-000021



#### 4.7. 75 mm spindle disk

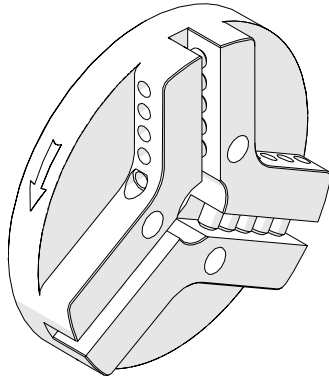
Facilitates working in places hard to reach.

Part number:  
TRC-0472-12-00-00-0

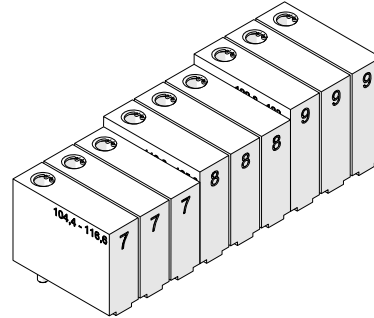


### 4.8. 140 mm spindle disk set

Allows machining pipes from inside diameters of 105 mm (4.13”) to outside diameters of 140 mm (5.51”).



Part number:  
ZST-0472-15-00-00-0



Included equipment consists of the following elements.

140 mm spindle disk	1 unit
Jaw blocks (number 7, 8, 9)	3 sets

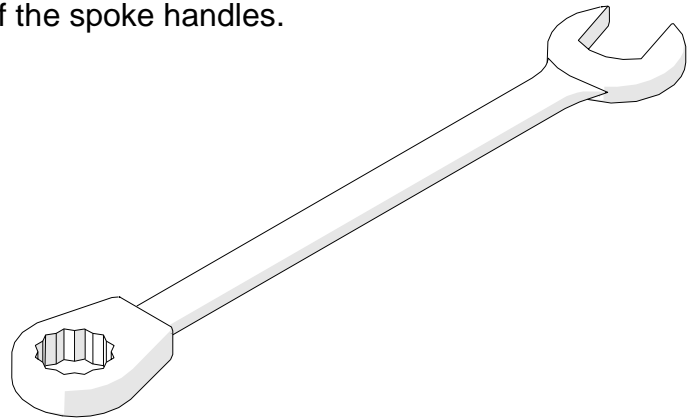
Install the spindle disk after previously removing the existing spindle disk (Fig. 7, Fig. 8). Then, use the following table to select jaw blocks of the set suitable to the inside diameter of the pipe to be machined, and use the 3 mm hex wrench to tighten them to the expanding mandrel (1, Fig. 2). Install the tool bits in the sockets and tighten the screws (3, Fig. 2) using the 4 mm hex wrench.

Pipe inside diameter with 140 mm spindle disk set		Jaw block number
[mm]	[inch]	
104.4–116.6	4.11–4.59	7
113.6–125.8	4.47–4.95	8
122.8–133	4.83–5.24	9

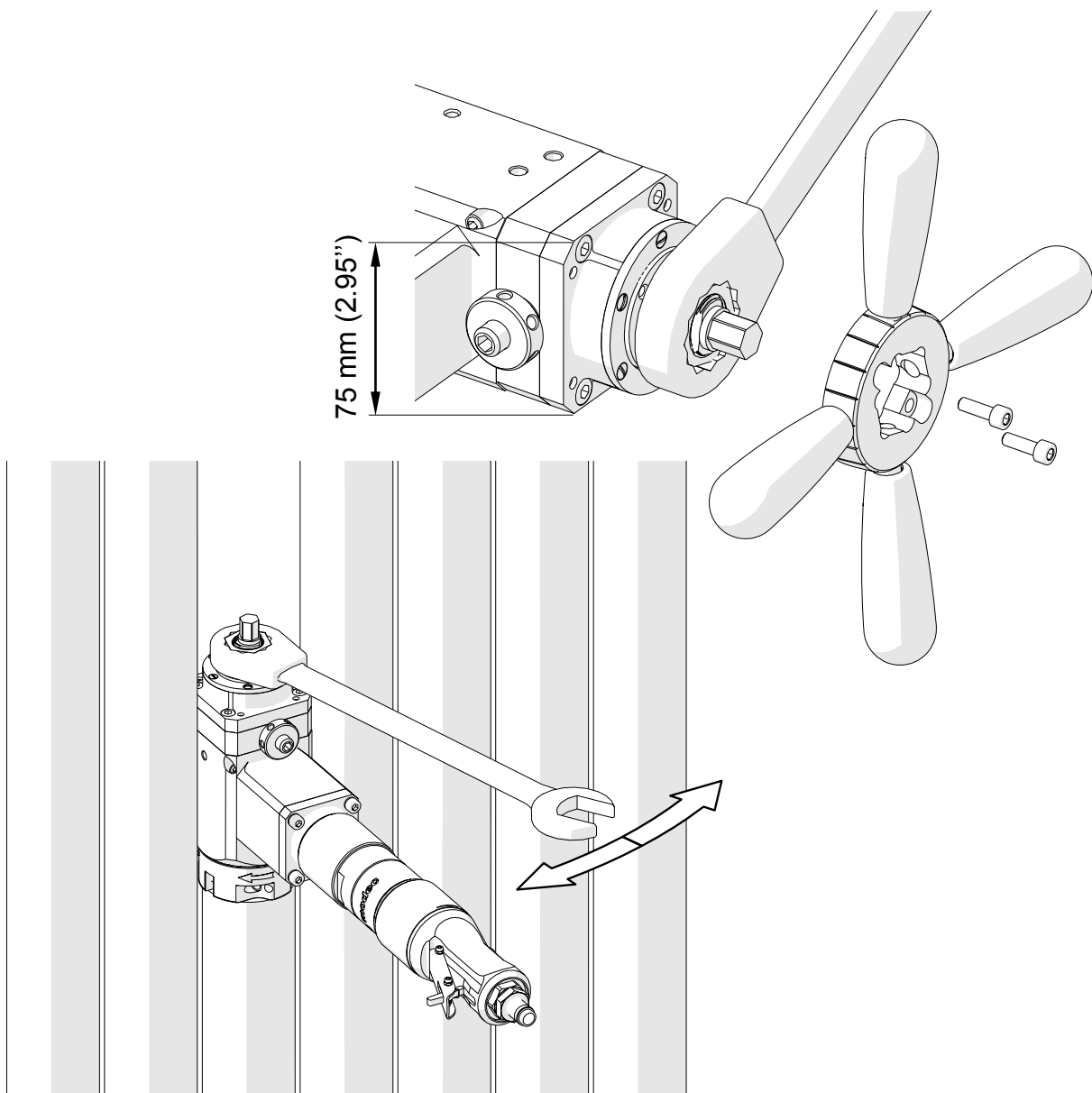
### 4.9. Ratchet wrench

Allows performing the feed instead of the spoke handles.

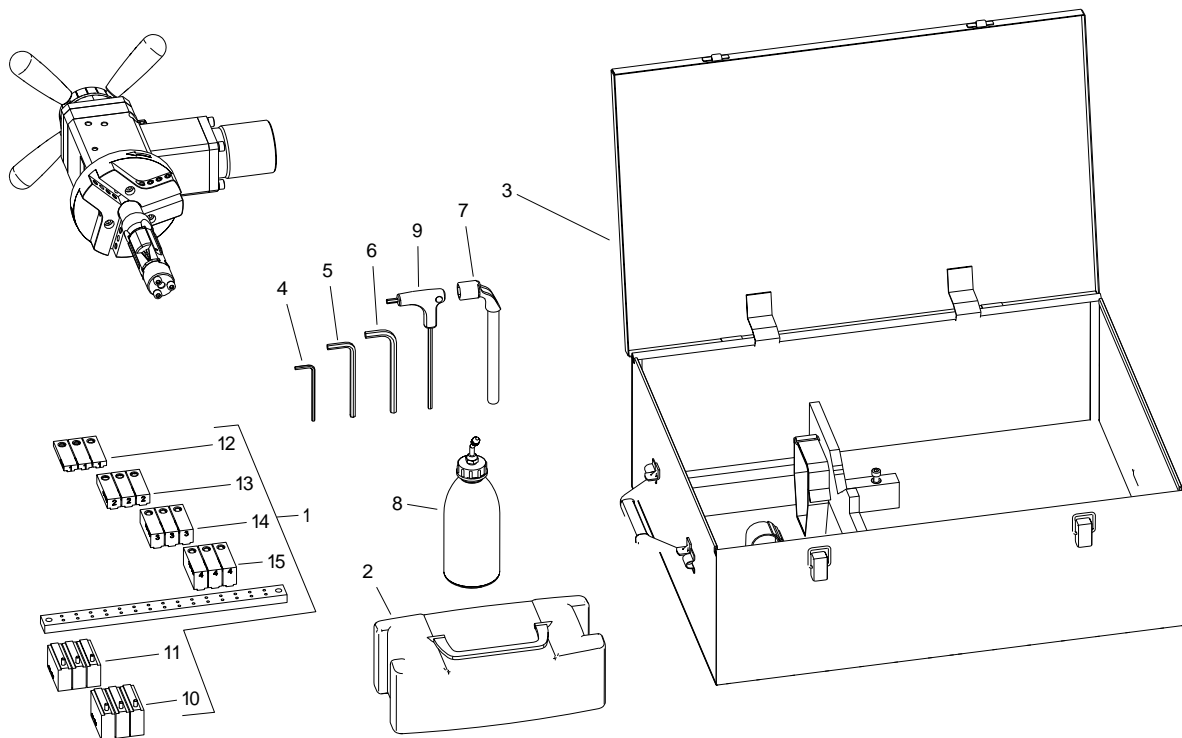
Part number:  
KLC-000045



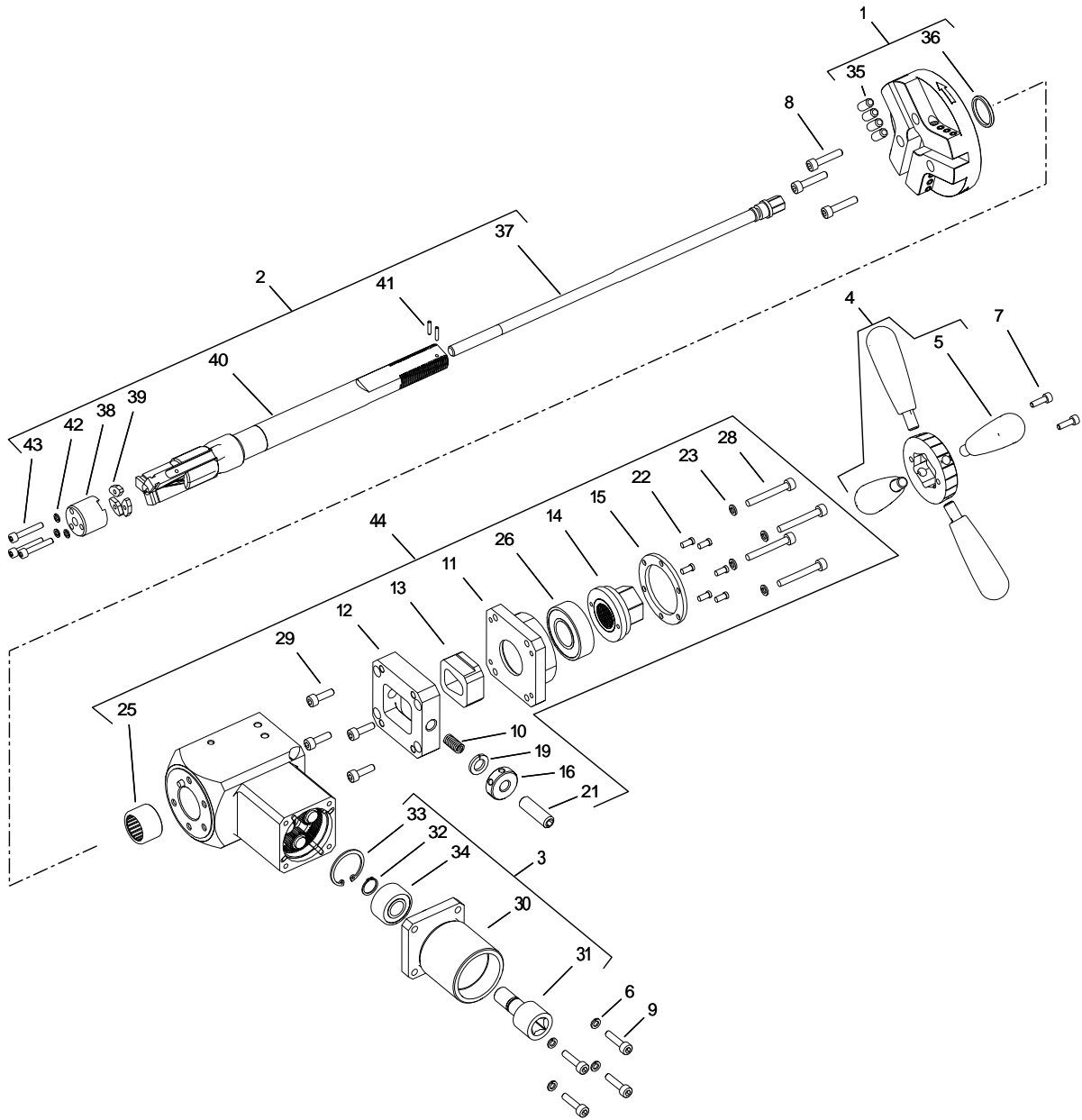
To remove the feed disk and use the ratchet wrench, unscrew two screws using the 4 mm hex wrench.



## 5. EXPLODED DRAWINGS AND PARTS LIST



ITEM	PART NUMBER	DESCRIPTION	Q-TY
1	ZST-0472-05-00-00-0	JAW BLOCKS SET	1
2	PJM-000010	TOOL CONTAINER	1
3	SKR-0472-20-00-00-0	METAL BOX	1
4	KLC-000006	3 MM HEX WRENCH	1
5	KLC-000008	5 MM HEX WRENCH	1
6	KLC-000009	6 MM HEX WRENCH	1
7	KLC-000036	4 MM HEX WRENCH WITH HANDLE	1
8	KLC-000041	13 MM SOCKET WRENCH	1
9	PJM-000003	COOLANT CONTAINER	1
10	KPL-0472-05-01-00-0	BLOCK SET L=7.4	1
11	KPL-0472-05-02-00-0	BLOCK SET L=13	1
12	KPL-0472-05-03-00-0	BLOCK SET L=18.4	1
13	KPL-0472-05-04-00-0	BLOCK SET L=23.5	1
14	KPL-0472-05-05-00-0	BLOCK SET L=28.6	1
15	KPL-0472-05-06-00-0	BLOCK SET L=33.4	1



ITEM	PART NUMBER	DESCRIPTION	Q-TY
1	TRC-0472-02-00-00-1	SPINDLE DISK ASSY	1
2	TRZ-0472-04-00-00-0	EXPANDING MANDREL ASSY	1
3	KRP-0472-07-00-00-0	DRIVER BODY ASSY	1
4	TRC-0472-13-00-00-0	FEED DISK ASSY	1
5	DZW-0472-01-03-00-1	LEVER	4
6	PDK-000046	SPRING WASHER 6.1	4
7	SRB-000083	HEX SOCKET HEAD CAP SCREW M5x16	2
8	SRB-000118	HEX SOCKET HEAD CAP SCREW M6x30	3
9	SRB-000115	HEX SOCKET HEAD CAP SCREW M6x25	4
10	SPR-0167-18-02-00-0	SPRING	1
11*	KRP-0472-01-05-00-1	FEED HOUSING	1
12*	OBJ-0472-01-06-00-0	LOCKING CLASP	1
13*	OBJ-0472-01-07-00-0	DRIVER CLASP	1
14*	NKR-0472-01-08-00-1	DRAW NUT	1
15*	PRS-0472-01-10-00-0	LOCKING RING	1
16	NKR-0472-01-11-00-0	KNURLED NUT	1
17	NKR-000114	BEARING NUT KM-7 M35x1.5	1
18	PRS-000035	INTERNAL RETAINING RING 62w	1
19	PDK-000053	SPRING WASHER 12.2	1
20	PDK-000184	BEARING TOOTHED WASHER MB-7	1
21	WKR-000460	HEX SOCKET SET SCREW WITH FLAT POINT M12x1.25x40	1
22*	WKR-000455	SLOTTED PAN HEAD SCREW WITH SMALL HEAD M5x10	6
23*	PDK-000046	SPRING WASHER 6.1	4
25	LOZ-000010	NEEDLE BEARING 25x32x20	1
26*	LOZ-000066	BALL BEARING 25x52x15	1
27	LOZ-000143	ANGULAR BALL BEARING 35x62x14	1
28*	SRB-000126	HEX SOCKET HEAD CAP SCREW M6x45	4
29*	SRB-000114	HEX SOCKET HEAD CAP SCREW M6x20	4
30	KRP-0472-07-01-00-0	DRIVER BODY	1
31	WLK-0472-07-02-00-0	DRIVER SHAFT	1
32	PRS-000005	EXTERNAL RETAINING RING 15z	1
33	PRS-000150	INTERNAL RETAINING RING 35w	1
34	LOZ-000092	DOUBLE-ROW ANGULAR BALL BEARING 15x35x15.9	1
35	WKR-000030	HEX SOCKET SET SCREW WITH FLAT POINT M8x20	12
36	PRS-000105	SEAL O-RING 25.2x3	1
37	SRB-0472-04-03-00-0	MANDREL SCREW	1
38	NKR-0472-04-04-00-0	NUT	1
39	PLY-0472-04-05-00-0	MANDREL PLATE	3
40	TRZ-0472-04-10-00-0	MANDREL WITH JAWS	1
41	KLK-000103	DOWEL PIN 3n6x14	2
42	PDK-000045	SPRING WASHER 5.1	3
43	SRB-000089	HEX SOCKET HEAD CAP SCREW M5x30	3
44	KRP-0472-01-00-00-0	BODY ASSY	

\* install only when the expanding mandrel (item 2) is already installed



## 6. DECLARATIONS 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:

### **PB-5 PIPE BEVELING MACHINE**

is manufactured in accordance with the following standard:

- EN ISO 12100

and satisfies safety regulations of the guideline 2006/42/EC.

Bialystok, 7 April 2014



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Marek Siergiej  
Chair

## ***EC Declaration of Conformity***

We

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

declare with full responsibility that:

### **PBE-5 PIPE BEVELING MACHINE**

is manufactured in accordance with the following standards:

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

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

Bialystok, 7 April 2014



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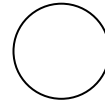
Marek Siergiej  
Chair

**7. QUALITY CERTIFICATE**

**Machine control card  
PB-5 (PBE-5) PIPE BEVELING MACHINE**

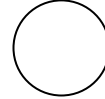
Serial number .....

Quality control .....



**Adjustments, inspections**

Quality control .....



**8. WARRANTY CARD**

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

..... in the name of Manufacturer warrants the PB-5 (PBE-5) Pipe 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 tool bits 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.....

**1.03 / 13 May 2015**

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