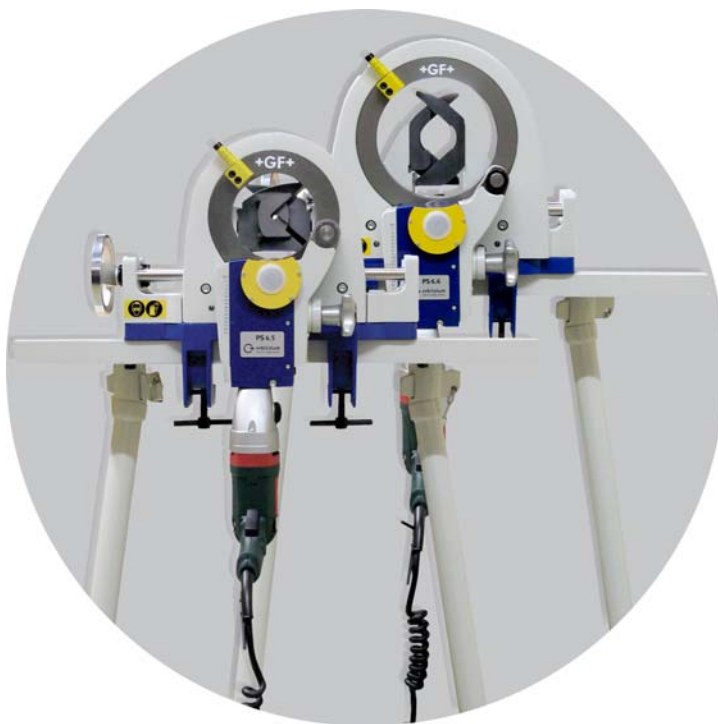


Operating instructions

Portable Tube Saws

PS 4.5, PS 6.6



Code 790 048 762

Machine-no.:

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0 About these instructions

To allow quick understanding of these instructions and safe handling of the machine, all the warning messages, notes and symbols used in these instructions are presented here along with their meaning.

0.1 Warning messages

In these instructions, warning messages are used to warn you against the dangers of injury or material damage. Always read and observe these warning messages!




This is a warning symbol. It should warn you against dangers of injury.

Follow all instructions which are identified with this safety symbol in order to avoid injuries or death.

Warning symbol	Meaning
 DANGER	Direct danger! Non-observance could result in death or critical injury. ☉ Restrictions (if applicable). ► Measures to prevent danger.
 WARNING	Possible danger! Non-observance could result in serious injury. ☉ Restrictions (if applicable). ► Measures to prevent danger.
 ATTENTION	Dangerous situation! Non-observance could result in minor injuries.
ATTENTION	Dangerous situation! Non-observance could result in material damage.

0.2 Further symbols and displays

Symbol	Meaning
Important Note	Notes: Contain particularly important information for comprehension.
	Instruction: You must take notice of this symbol.
1.	Request for action in a sequence of actions: You have to do something here.
▶	Single request for action: You have to do something here.
▷	Conditional request for action: You have to do something here if the specified condition is met.

0.3 Abbreviations

Abbr.	Meaning
PS 4.5	Portable Tube Saw for cutting tubes with an outer diameter of up to 4.5 inches
PS 6.6	Portable Tube Saw for cutting tubes with an outer diameter of up to 6.6 inches

1 Notes on safety

The Portable Tube Saw (in the following referred to as PS) is a state-of-the-art machine. Using it for purposes other than those described in this manual may cause injury to the user or to others. The machine or other equipment may also be damaged.

Therefore:

- Always ensure that the machine is in good working condition, and always comply with these notes on safety.
- Keep the complete documentation close by the machine.
- Generally valid regulations for the prevention of accidents must be observed.

1.1 Proper use

- Use the PS only for cutting tubes and elbows (see “Scope of application”, chapter 3.2, p. 9).
- The user will be the only person liable for damages caused by improper use.

1.2 Safety regulations

- Only use the dimensions and materials specified in this manual. Always consult Orbitalum Tools after-sales service personnel before using other materials.
- Read the enclosed safety notes completely and carefully before working with the electric tool Metabo SBE 1010 Plus.
- Only use original Orbitalum Tools spare parts and auxiliaries.
- Inspect the PS every day for visible signs of damage or defects. Any damage or defect must be repaired immediately.
- Work on the electrical equipment may only be performed by a qualified electrician.
- Disconnect the PS from power supply before changing the tools or carrying out maintenance and repair work and allow the machine to come to a stop.
- Do not use the PS unless all safety devices (restart inhibitor, saw blade guard) are working properly and the fixtures are fitted securely on the work bench.

1.3 Working with safety in mind

"Make your contribution to safety in the workplace."



- Report any unusual behavior of the machine to the person in charge immediately.
- Always work with safety in mind.
- Wear safety goggles, safety gloves and ear protection when working with the PS.
- Tie up long hair (snood-type cap); do not wear any wide clothing.
Attention: jewelry and ties can get caught by rotating parts.
- Switch off the PS after each working cycle and allow the machine to come to a stop.
- Disconnect the PS from power supply before performing any cleaning, maintenance or repair work and allow the machine to come to a stop.
- Keep hands away from the tools during processing.
- Keep the PS dry, do not use it in the rain.
- Do not use the PS in areas subject to explosion hazards.
- Do not carry the electric tool holding it at the cable and do not use it to pull the plug out of the socket. Protect the cable against heat, oil and sharp edges (chips).
- Read the enclosed safety notes on the driving motor Metabo 1010 Plus carefully.



DANGER

Danger of death by electric shock

If the mains cable is damaged, live parts may cause death when being touched directly.

- ⊗ Keep the mains cable of the tube saw motor away from the saw blade.
 - ▶ Secure the falling tube piece.
 - ⊗ Do **not** let the cut-off tube piece drop in an uncontrolled way.
 - ⊗ Do **not** run the machine unattended.
 - ▶ While processing the tube, always keep an eye on the position of the mains cable.
-



WARNING

Danger of being injured by sharp cutting edges

- ⊗ Keep hands away from the tools during cutting.
 - ⊗ **Never** equip both sawing positions with saw blades at the same time.
 - ▶ Wear safety gloves.
-



Danger of being injured by the rotating slide housing

- ▶ Make sure that the slide housing starts from its home position.
- ▶ Clamp the tube to be processed into the vice.



1.4 Waste disposal / environmental protection

- Dispose of chips and used gear lubricant oil according to the regulations.

Discarded electric tools and accessories contain a large share of valuable raw and synthetic materials which can be recycled.

Therefore:

- Electrical (electronic) devices which are marked with the symbol to the left, may not be disposed of with household waste in accordance to the EU directive 2002/96/EC.
- By actively using the offered return and collection systems, you actively contribute to the reuse, recycling and utilization of electrical (electronic) devices.
- Electrical (electronic) used devices contain parts which must be handled selectively according to the EU directive. Separate collection and selective treatment is the basis for environment-friendly disposal and the protection of human health.
- Our products that were sold to you after August 13th, 2005 are taken back and treated according to legal standards. These products have to be sent free of charge.
- The return of used devices which pose a health or safety risk for human beings due to soiling during use may be refused.
- The legally compliant disposal of electrical (electronic) devices that were placed on the market before August 13th, 2005 are in the responsibility of the end-user.

1.5 Returning of batteries



Some of our products work with batteries.

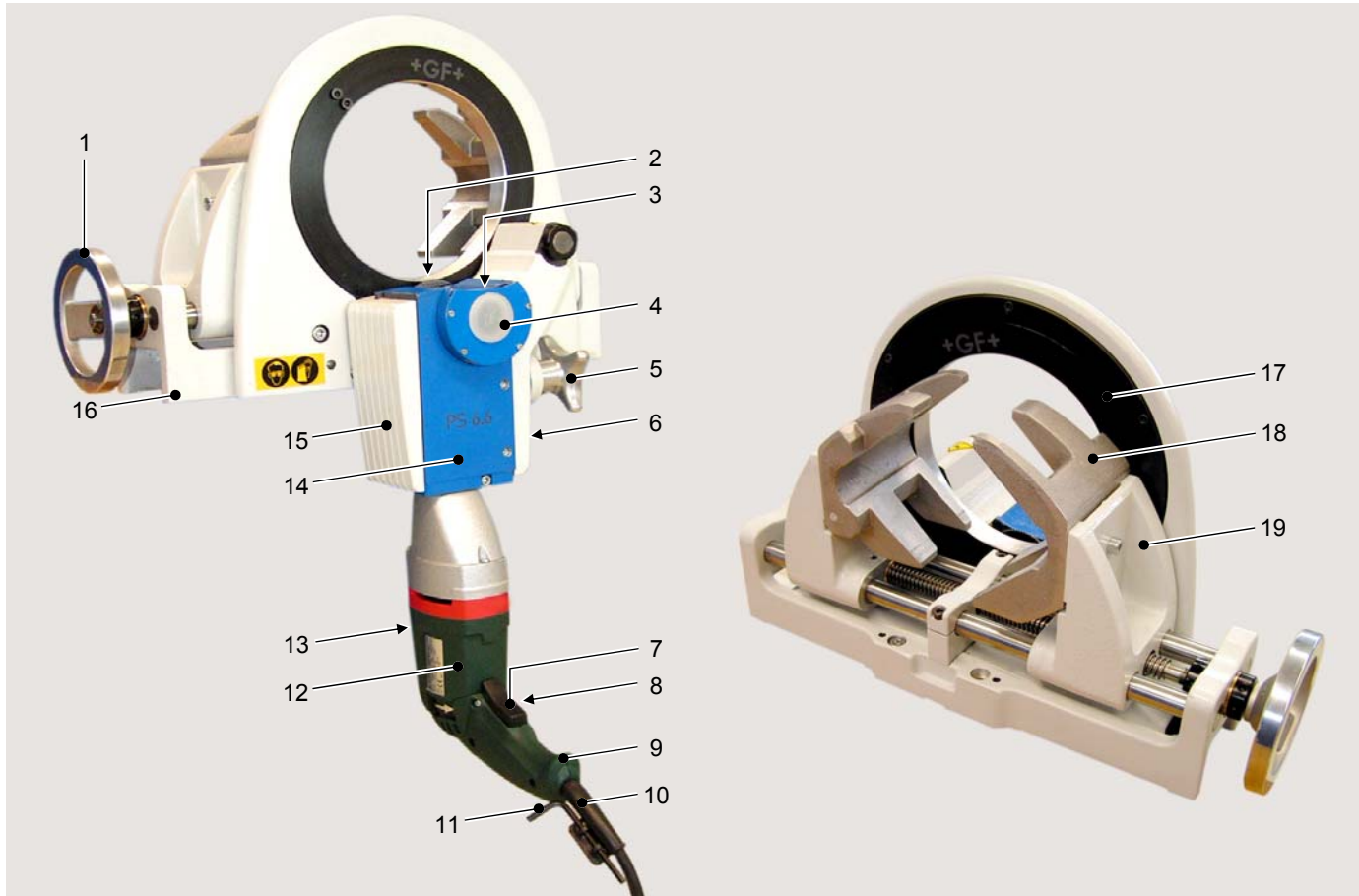
- Batteries which are marked with one of the symbols on the left may not be disposed of together with household waste according to the applicable EU directive 91/157/EEC.
- With batteries containing hazardous substances, the chemical symbol for the heavy metal content is indicated below the waste bin.
Cd = Cadmium Hg = Mercury Pb = Lead

1.6 Further safety regulations

Observe the regulations, standards and guidelines applicable in your country.

2 Design of the product

2.1 Standard



- | | |
|---|---|
| 1 Turning handle for clamping jaws | 11 Allen wrench |
| 2 Saw blade position 1 | (to loosen the clamping screw of the motor) |
| 3 Saw blade position 2 | 12 Electric motor |
| 4 Saw blade guard | 13 Speed setting |
| 5 Hand wheel | 14 Slide |
| 6 Type plate | 15 Slide housing |
| 7 ON/OFF switch | 16 Vice |
| 8 Arrest button | 17 Swivel ring |
| 9 Motor grip | 18 Aluminum clamping jaws |
| 10 Connecting cable with rotary contact | 19 Slide jaws |

2.2 Accessories

Not included in the standard scope of supply.



2.2.1 Quick mounting plate with screw clamps

Easy and fast assembly. Including 4 hexagon socket screws for mounting the PS on the quick mounting plate.

Article	Code-no.
Quick mounting plate with screw clamps	790 048 334



2.2.2 Saw blades

Orbitalum Tools Performance Range.

Tube wall thickness [mm]	Tube wall thickness [inch]	Saw blade Ø [mm]	Saw blade Ø [inch]	Code-no.
1.0 - 3.0	0.039 - 0.118	63	2.480	790 048 072
1.2 - 2.5	0.047 - 0.098	63	2.480	790 041 035
0.6 - 1.2	0.024 - 0.047	63	2.480	790 041 036



2.2.3 Tripod

Made of stainless steel. Easy assembly of the PS saw on the Tripod.

- Space saving
- Fast application
- Easy handling

Article	Code-no.
Tripod for PS	790 048 335

2.2.4 Clamping jaws for PS 6.6

It is possible to cut tubes with a outer diameter min. 30 mm (1.181 inch) by using additional clamping jaws (accessory, Code 790 048 380). These clamping jaws are delivered as a standard with the PS 4.5. Made from coated aluminum-cast.



Article	Code-no.
Clamping jaw set PS 4.5	790 048 380

3 Features and scope of application

3.1 Features

The Portable Tube Saws PS are distinguished by the following main features:

- Increased safety due to stationary tube and rotating tool
- Self-centering vice with all-purpose aluminum-coated clamping jaws
- Low-maintenance gearing
- Variable-speed electric motor with restart inhibitor
- Right-angled, burr-free and deformation-free cut
- Cold machining process
- Quick cutting process
- Easy and space-saving assembly
- Quick tool change
- Saw blade position 1: Cutting of tubes
Saw blade and clamping jaws are close to one another to absorb vibrations when sawing
- Saw blade position 2: Cutting of elbows

3.2 Scope of application

Working range

Machine	Material	Saw position	Tube OD [mm]	Tube OD [inch]	Wall thickness [mm]	Wall thickness [inch]
PS 4.5	Tube	1	6 - 120	0.236 - 4.724	< 3	< 0.118
	Elbow	2	30 - 120	1.181 - 4.724		
PS 6.6	Tube	1	50* - 170	1.969* - 6.693		
	Elbow	2	50* - 170	1.969* - 6.693		

*) It is possible to cut tubes with a outer diameter min. 30 mm (1.181 inch) by using additional clamping jaws. These clamping jaws are delivered as a standard with the PS 4.5 (see „Accessories“, chapter 2.2.4, p. 7).

Tube materials

- Stainless steel with the following mass fractions:
 - $\text{Cr} \leq 12\%$; $\text{Mo} < 2\%$; $\text{Ni} < 26\%$
 - $\text{Cr} \leq 20\%$; $\text{Mo} = 0\%$; $\text{Ni} < 13\%$
 - $\text{Cr} \leq 28\%$; $\text{Mo} < 8\%$; $\text{Ni} < 30\%$
- High-alloy steel (stainless steel, material no. 1.40... – 1.45... in accordance with DIN 17455 and 17456)
- Unalloyed and low-alloy steel
- High-temperature steels
- Aluminum
- Copper
- CuNi-materials

Consult Orbitalum Tools before using for other applications or materials.

4 Technical specifications

Characteristics	PS 4.5	PS 6.6
Dimensions (l x b x h)	480 x 230 x 600 mm 20.9 x 9.1 x 23.6 inches	480 x 230 x 660 mm 20.9 x 9.1 x 26 inches
Weight	19 kg / 41.9 lbs	22 kg / 48.5 lbs
Power	1010 W	1010 W
Protection class	Totally insulated in accordance with class II, DIN VDE 0740	Totally insulated in accordance with class II, DIN VDE 0740
Speed	30 – 160 rpm	30 – 160 rpm
Versions	110 V, 50/60 Hz 120 V, 50/60 Hz 230 V, 50/60 Hz	110 V, 50/60 Hz 120 V, 50/60 Hz 230 V, 50/60 Hz
Vibration level in accordance with EN 28662, part 1	< 2.5 m/s ²	< 2.5 m/s ²
Sound pressure level at workplace ^{*)}	approx. 78 dB (A)	approx. 78 dB (A)

^{*)} The sound pressure level was measured under normal operating conditions in accordance with EN 50144-1. As the noise level may also exceed 85 dB (A) under unfavorable operating conditions, we recommend the **use of a suitable ear protection** when the machine is used for extended periods.

5 Commissioning

Checking the scope of delivery

- ▶ Check all parts of the delivery for completeness and transportation damage.
- ▶ Report any missing parts or transportation damage to your supplier immediately.

5.1.1 Scope of delivery*

- 1 Portable Tube Saw PS 4.5 or PS 6.6
- 1 Set of clamping jaws made from coated aluminum-cast
- 1 Durable storage and shipping case
- 1 Saw blade (already mounted to the tube saw)
- 1 Ring spanner (SW22)
- 4 Allen screws (M8 x 80) for mounting the machine on the work bench
- 3 Allen keys (SW5, SW6, SW8)
- 1 Brush
- 1 Tube of GF TOP saw blade lubricating compound
- 1 Tool bag
- 1 Set of operating instructions and spare parts list

*) Subject to modifications

6 Transport and assembly

6.1 Transport

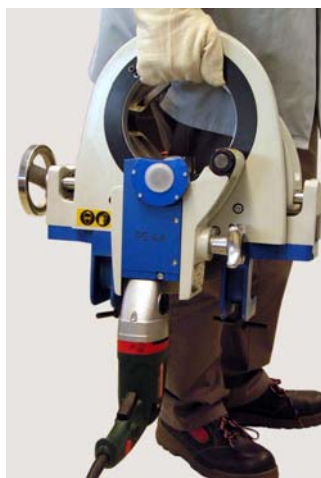


DANGER

Danger of death caused by electric shock and restart of the machine

During transportation, the ON/OFF switch could be actuated inadvertently so that the machine is started.

- ▶ Cut off the power supply before carrying out the transportation or a workplace change and allow the machine to come to a stop.

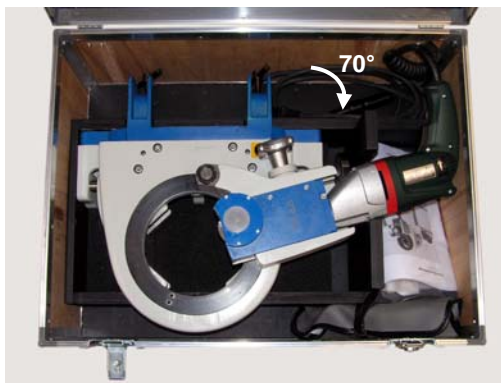


The PS is a portable machine. Special transportation aids are not required. For a safe transport, hold the machine as shown in the illustration on the left.

6.1.1 Positioning the PS in the durable storage and shipping case

For a safe transport, the PS 4.5 of PS 6.6 should be positioned in the durable storage and shipping case as shown in the two pictures below:

- ▶ The vice (with or without quick mounting plate) should lie parallel to the length side of the case in the wooden enclosure.
- ▶ The slide housing with motor then should be rotated approx. 70° sideways, so that it fits into the case enclosure.



PS with quick mounting plate



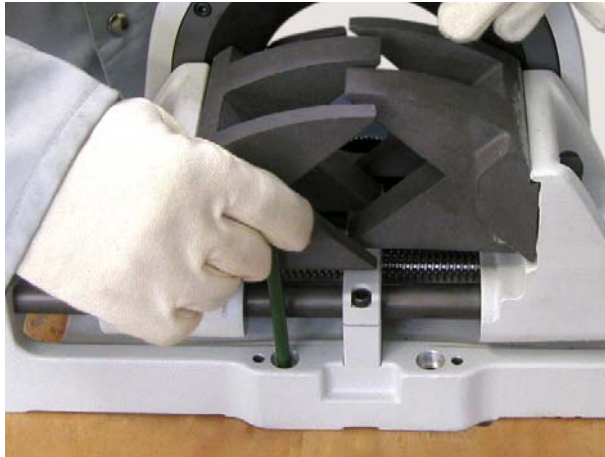
PS without quick mounting plate

6.2 Mounting the on the work bench

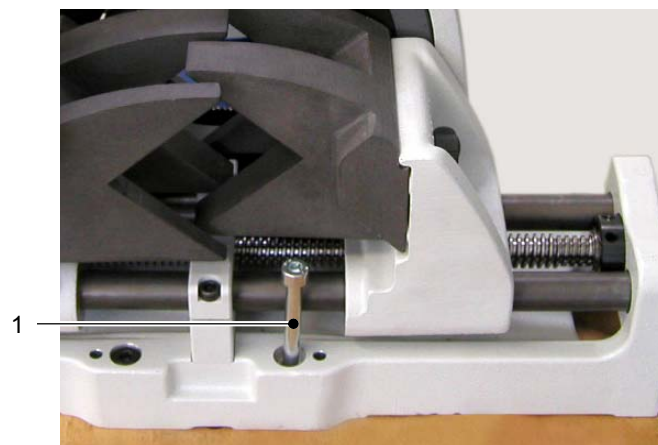
6.2.1 Mounting the PS on the work bench without quick mounting plate

Fit the Portable Tube Saw together with the vice on the work bench:

1. Use the PS as a template to punch holes in the work bench.



2. Drill 4 holes of 9 mm Ø.
3. Fasten the PS 4.5 to the work bench using 4 hexagon socket screws (1).



6.2.2 Mounting the PS on the work bench with quick mounting plate

The quick mounting plate with screw clamps is not included in the scope of supply but is obtainable as extra accessory (see chapter 2.2.1, p. 7).

Fit the Portable Tube Saw together with the vice to the quick mounting plate:

1. Screw the quick mounting plate to the work bench by means of the 2 screw clamps.



2. Mount the PS to the quick mounting plate with 4 Allen screws.



6.2.3 Mounting the PS on the Tripod

The Tripod is not included in the scope of supply but also obtainable as extra accessory (see chapter 2.2.3, p. 7).

To mount the Portable Tube Saw on the Tripod:

- Mount the PS to the Tripod with 4 Allen screws.

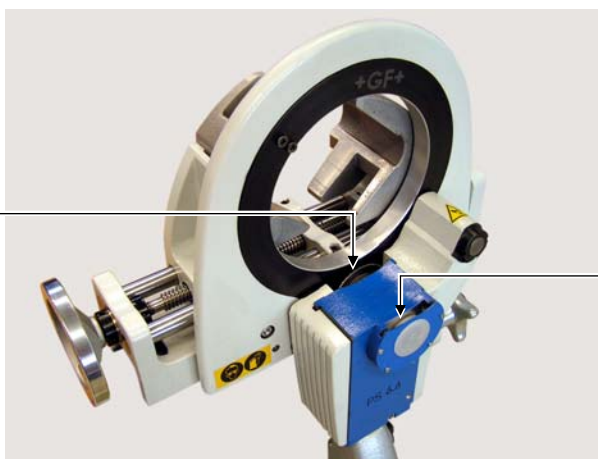
7 Operation

Note Use the Portable Tube Saw PS for cutting tubes and elbows only.
The user will be the only person liable for damages caused by improper use.

**Which saw position
for which application?**

Saw position 1	Saw position 2
Cutting tubes	Cutting elbows

Saw position 1



Saw position 2

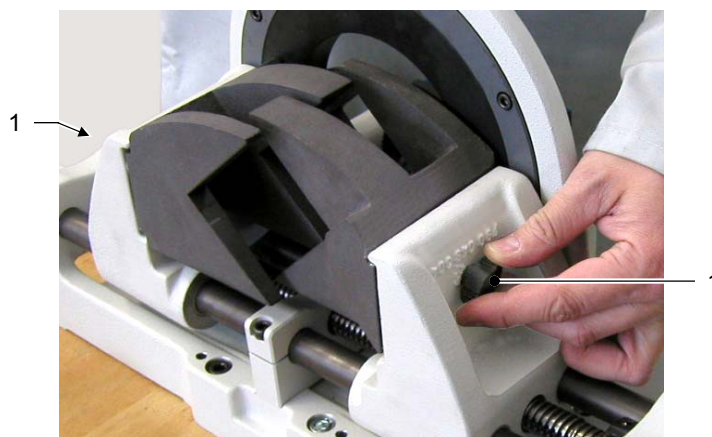
7.1 Mounting the clamping jaws to the vice

Note The **PS 4.5** is equipped with rotatable clamping jaws made from coated aluminum cast. By rotating of the clamping jaws it is possible to process small (< 45 mm/1.772 inch) or large (> 45 mm/1.772 inch) tube diameters (see „Scope of application“, chapter 3.2, p. 9).
When delivery of the PS 4.5 the clamping jaws are already mounted on the PS 4.5, so that it can be started with processing of tubes > 45 mm/1.772 inch.

With the standard clamping jaws of the **PS 6.6** made from coated aluminum cast it is possible to process tubes with a outer diameter of > 50 mm/1.969 inch. They are included in the standard scope of supply and are on delivery already mounted on the PS 6.6. To cut tubes with a smaller outer diameter (min. 30 mm / 1.181 inch), special clamping jaws are necessary (see “Accessories”, chapter 2.2.4, p. 7).

7.1.1 Disassembling clamping jaws from PS 4.5

1. Detach 2 wing screws (1) sideways of the vice.

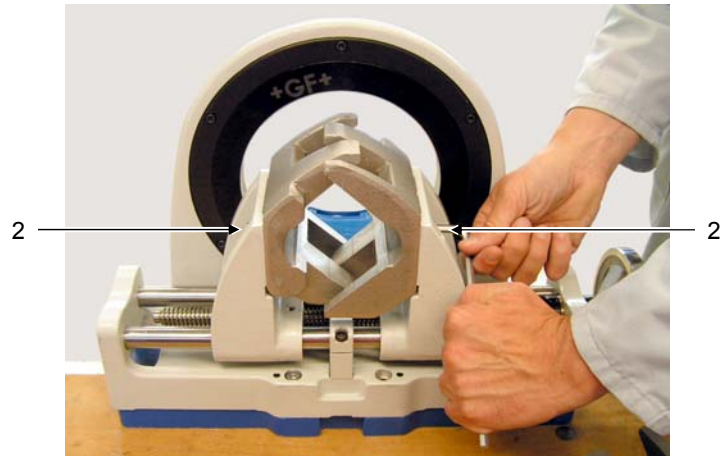


2. Remove the clamping jaws and turn by 180°.
3. Fasten the clamping jaws with 2 wing screws.



7.1.2 Disassembling clamping jaws from PS 6.6

1. Detach 2 screws (1) sideways of the vice by means of the allen key.



2. Remove the clamping jaws and replace with new clamping jaws if necessary.
3. Fasten the clamping jaws with 2 screws.

7.2 Mounting the saw blade on saw position 1

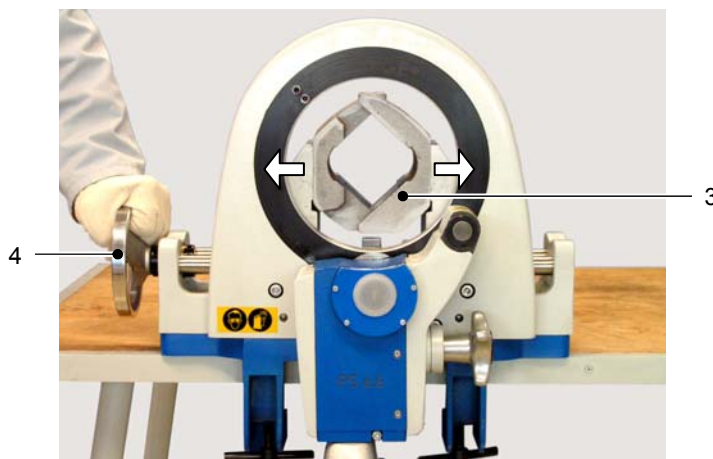


Danger of being injured by sharp cutting edges or electric shock

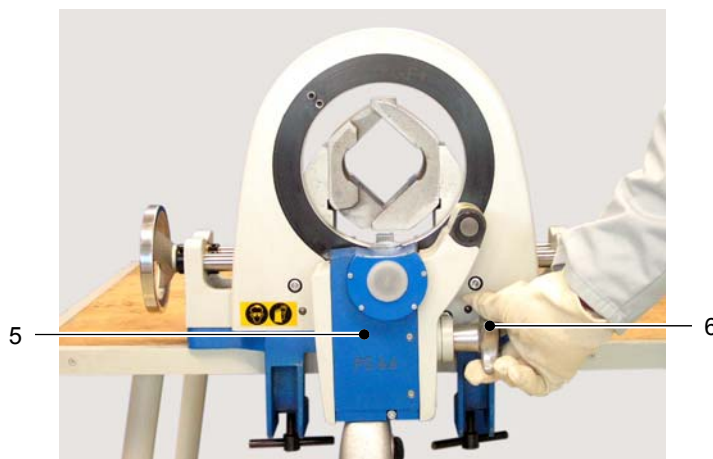
- ⊗ Keep hands away from the saw blade when inserting or changing the tool.
- ⊗ **Never** equip both saw positions with saw blades at the same time!
- ▶ Wear safety gloves.
- ▶ Disconnect the mains plug before mounting or dismounting or performing maintenance or adjustment work and allow the machine to come to a stop.

Note It is only possible to mount or replace the saw blades if **no** tube has been clamped into the vice before.

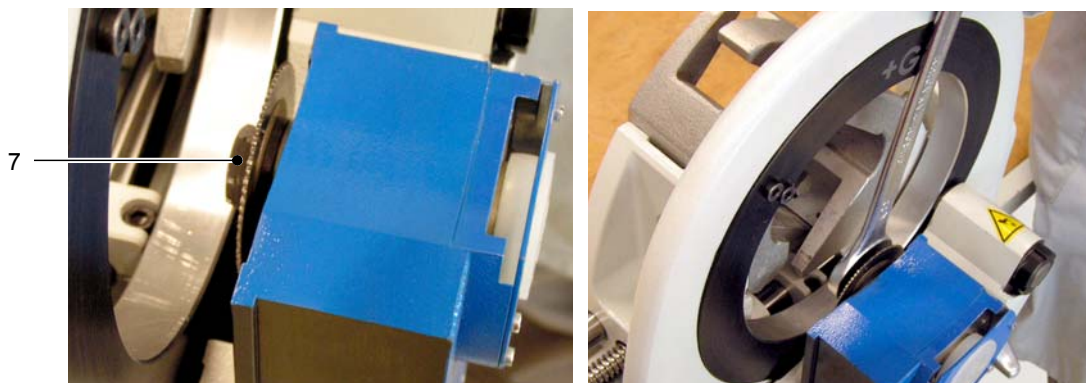
- ▶ If necessary, remove the tube before mounting the saw blade (see chapter 7.4, p. 23).
1. For a better access to the saw blade, open the clamping jaws (3) by turning the turning handle (4) counterclockwise to the limit stop.



2. Move the slide (5) upwards by turning the hand wheel (6) clockwise to the limit stop.



3. Loosen the saw blade nut (7) using the ring spanner SW 22 (left-handed thread).

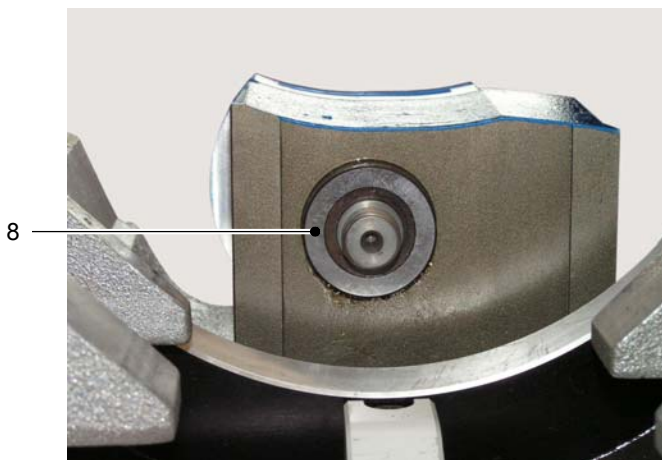


4. Remove the saw blade nut and the saw blade (if mounted) from the shaft.

Cleaning the saw blade surrounding

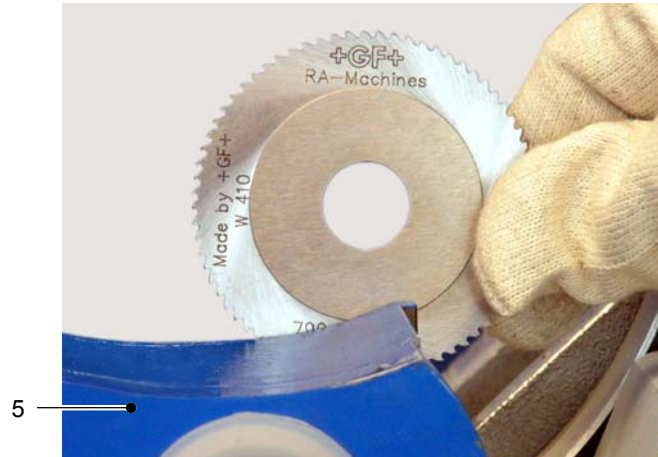
5. Clean the saw blade shaft, the contact surface of the clamp and the surrounding using a brush.

Note The clamping plate (8) must not be removed.

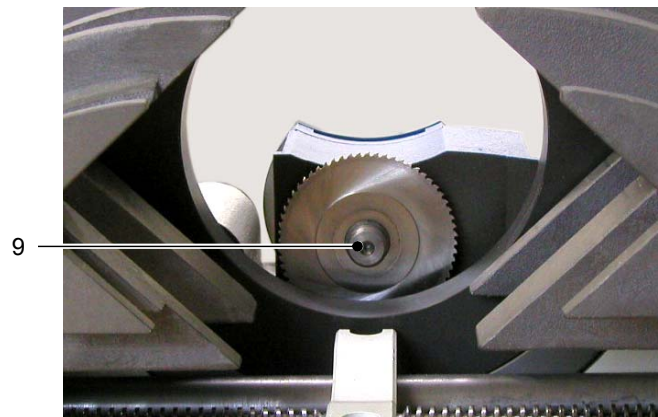


ATTENTION Damage to material

- ▶ The saw blade must be free from chips and dirt.
- ▶ Only use Orbitalum Tools saw blades.
- ▶ Mount the saw blade on the shaft with the inscription pointing to the slide (5).
The teeth are now arranged in the correct direction.



6. Mount the saw blade on the shaft (9) with the inscription pointing to the fixed clamping plate.



7. Remount the saw blade nut on the shaft and fix it using the ring spanner SW 22 (left-handed thread).

7.3 Mounting the saw blade on saw position 2



WARNING

Danger of being injured by sharp cutting edges or electric shock

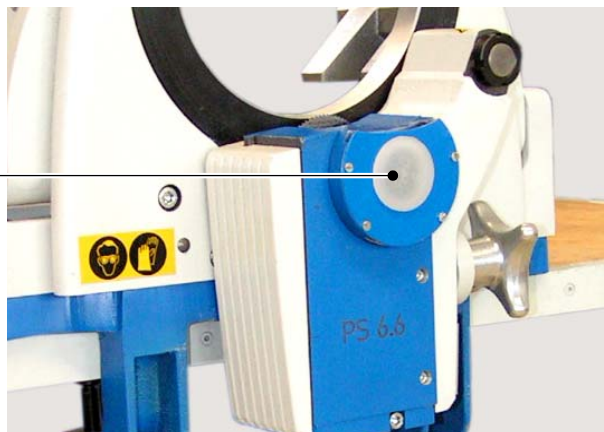
- ⊗ Keep hands away from the saw blade when inserting or changing the tool.
- ⊗ **Never** equip both saw positions with saw blades at the same time!
- ▶ Wear safety gloves.
- ▶ Disconnect the mains plug before mounting or dismounting or performing maintenance or adjustment work and allow the machine to come to a stop.

Note It is only possible to mount or replace the saw blades if no tube has been clamped into the vice before.

- ▶ If necessary, remove the tube before mounting the saw blade (see chapter 7.4, p. 23).

Cleaning the saw blade surrounding

1. Remove the cover (1).



2. Loosen the clamping screw (2) by using the Allen key.



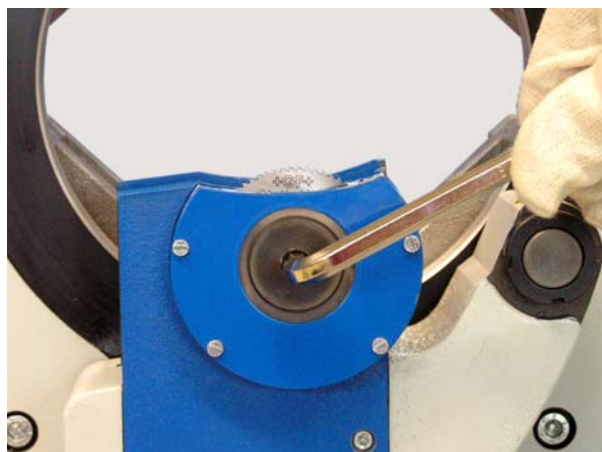
3. Remove the saw blade.
4. Clean the saw blade shaft and the surrounding by using a brush.

ATTENTION Damage to material

- ▶ The saw blade must be free from chips and dirt.
 - ▶ Only use Orbitalum Tools saw blades.
 - ▶ Mount the saw blade with the inscription pointing to the saw blade guard.
The teeth are now arranged in the correct direction.
5. Mount the saw blade on the saw blade shaft.



6. Tighten the clamping screw clockwise by using the Allen key.



7.4 Adjusting the tube dimension



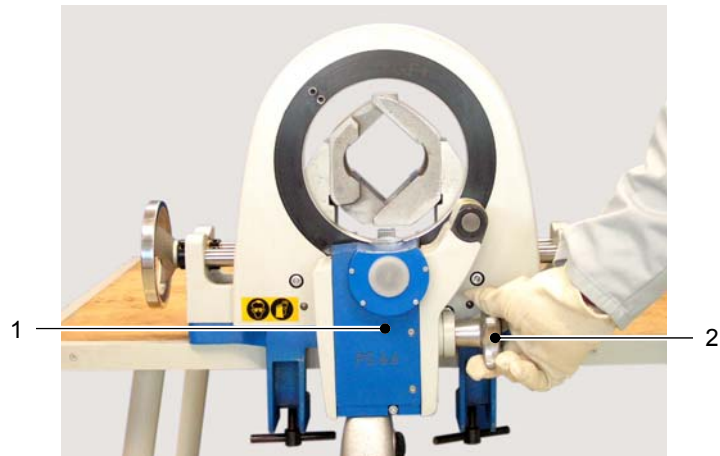
WARNING

Danger of being injured by the self-acting rotary element

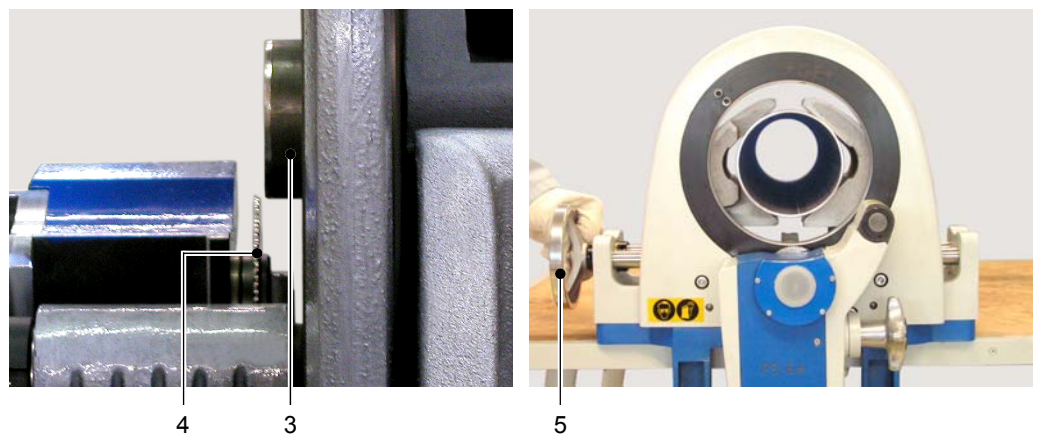
When the motor is switched on, the tube saw may revolve around the tube automatically.

- ⊙ The saw blade **must not** touch the tube when it is in its original position!
- ▶ Make sure that there is enough distance between the saw blade and the tube (use the hand wheel to adjust the largest tube dimension).

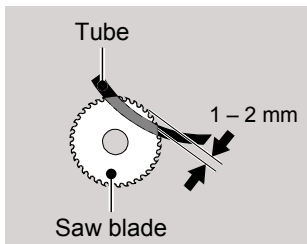
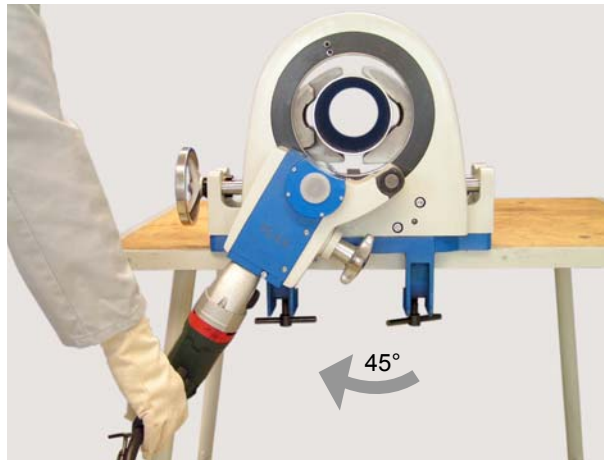
1. Use the hand wheel (2) to turn the slide (1) with saw blade down to the lowest position (to the largest tube dimension).



2. Move the tube (3) towards the saw blade (4) until it is just in front of the blade; clamp the tube by means of the turning handle (5).



3. Use the motor grip to swing the motor approx. 45° upwards in clockwise direction, until the saw blade reaches the cutting position.



4. To adjust the saw blade position, turn the hand wheel (6) until the teeth of the saw blade reach approx. 1 – 2 mm into the tube (see the diagram on the left).



5. Swing the motor back to its original position using the motor grip.
6. Move the tube forward until reaching the desired point of separation and fix it by means of the clamping jaw turning handle.

7.5 Selecting speed stages

Tube material	Controller setting (1)	Spindle speed (rpm)
Stainless steel (material no. 1.40... – 1.45...) with a wall thickness of 1 mm up to max. 3 mm	E – G	114 – 160
High-tech material (nickel chrome molybdenum alloy)	B – E	42 – 114

IMPORTANT Select low speed:

- for large tube diameters
- for thick-walled tubes



7.6 Cutting the tube (saw position 1)



Danger of being injured by chips flying around

- ⊗ **Never** work without the saw blade guard mounted.
- ▶ Wear protective goggles.

Danger of being injured by sharp cutting edges

- ⊗ Keep hands away from the tools during cutting.
- ⊗ **Never** equip both saw positions with saw blades at the same time.
- ▶ Wear safety gloves.

Danger of death by electric shock

- ▶ Disconnect the mains plug before mounting or dismounting or performing maintenance or adjustment work and allow the machine to come to a stop.

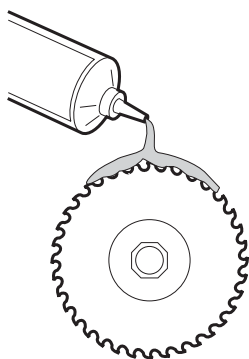
Danger of being injured by falling tube piece

- ⊗ Do **not** let the cut-off tube piece drop in an uncontrolled way.
- ▶ Secure the falling tube piece.

1. Fasten the saw blade (for saw position 1 see chapter 7.2, p. 18; for saw position 2 see chapter 7.3, p. 21).
2. Adjust the tube dimension (see chapter 7.4, p. 23).
3. Mark the point of separation on the tube.
4. Move the tube forward in the vice until reaching the desired tube length and clamp it (see chapter 7.4, p. 23).

IMPORTANT Apply saw blade lubricant to the saw blade **after each cut**.

Only use Orbitalum Tools lubricating gel for tubes which come into contact with drinking water or foodstuffs.



5. Connect the PS to power supply.
6. Switch the motor on by pressing the ON/OFF switch (1) and keep the switch pressed; lock it by means of the arrest button (2).



7. Select the speed stage (see chapter 7.5, p. 25).
8. Slowly turn the PS clockwise holding it at the grip until the tube wall is pierced.
9. Go on turning smoothly until the tube is cut off.
10. Turn the tube saw back counterclockwise to its original position.
11. Switch the motor off pressing the ON/OFF switch.

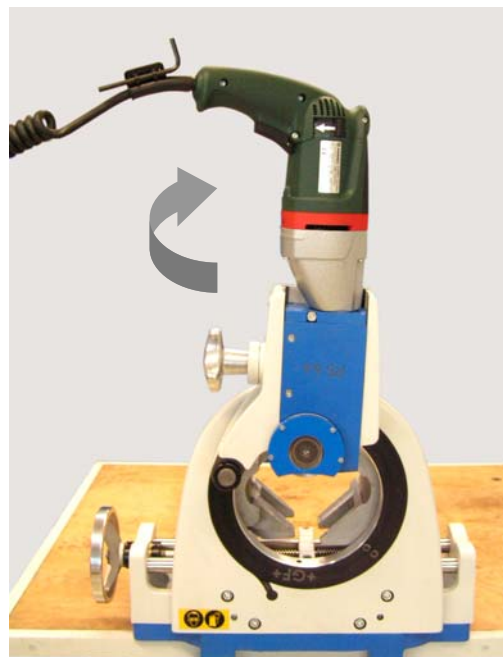
7.7 Cutting elbows (saw position 2)

- The working procedure is the same as described in chapter 7.6, p. 26.

7.8 Cutting tubes or elbows in a cramped workplace

7.8.1 Altering the swivel radius

1. Loosen the screw (1) using a Allen key (SW 5).
2. The motor may now be turned by 70°.



3. Tighten the screw (1).

8 Maintenance

The Portable Tube Saw PS is designed for a long service life and low maintenance.

Please follow the maintenance instructions below.



DANGER

Danger of death by electric shock

- ▶ Pull the mains plug before carrying out any maintenance work and allow the machine to come to a stop.
-

Time / Interval	Activity
Before starting work	<ul style="list-style-type: none"> ▶ Remove any chips and dirt from the saw blades. ▶ Remove any chips and dirt from the guiding blade and the threaded spindle of the vice.
Before starting work	<ul style="list-style-type: none"> ▶ Remove the saw blade and use the brush to brush off any chips.
Every time the cutter is cleaned.	<ul style="list-style-type: none"> ▶ Clean the shafts using a cloth or brush. Use a brush to remove any chips from between the slide and the slide housing. To do so, move the slide to the upper and lower position.

9 What to do if ...?

9.1 General trouble shooting

In the following table you will find possible causes of faults and the appropriate remedies.

Problem	Possible cause	Remedy
The motor of the PS is not running. (The electronic signal indicator of the motor lights up).	<u>Quickly flashing light:</u> Restart inhibitor. For safety reasons, the machine will not restart automatically after a power failure in case it was switched on before the voltage loss.	► Switch the PS off and on again.
	<u>Slowly flashing light:</u> The carbon brushes are worn out. The carbon brushes are worn out almost completely. If the carbon brushes are worn out completely, the machine will switch off automatically.	► Have the carbon brushes replaced by the after-sales service personnel.
	<u>Permanent light:</u> Overload If the machine is overloaded during a longer period of time, its power input will be reduced to prevent the motor from further heating.	► Disconnect the machine from power supply and let it cool down for some minutes.
The tube saw is not turning.	The tube dimension has not been set correctly.	► Set the correct tube dimension (see chapter 7.4, p. 23).
The saw blade is not cutting, but is slipping through.	The hexagon nut on the saw blade shaft has not been tightened.	► Tighten the hexagon nut.
The saw blade is not cutting.	The saw blade was mounted the wrong way round.	► Mount the saw blade correctly (see chapter 7.2, p. 18 or chapter 7.3, p. 21).
	The saw blade is worn out.	► Replace the saw blade.
The tube is not cut properly.	The tube dimension has not been set correctly.	► Set the correct tube dimension (see chapter 7.4, p. 23).
Poor machining quality on the cut surfaces.	The tool is blunt.	► Use new original Orbitalum Tools tool.
	Inadequate tool lubrication.	► Lubricate the saw blade.
	Wrong speed setting.	► Set the speed according to the table (see chapter 7.5, p. 25).

9.2 Servicing/after-sales service

For ordering spare parts, see the separate spare parts list. For trouble shooting, please contact your competent branch office directly.

Please state the following details:

- Machine type: Portable Tube Saw **PS 4.5** or **PS 6.6**
- Machine number: *(see identification plate)*

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