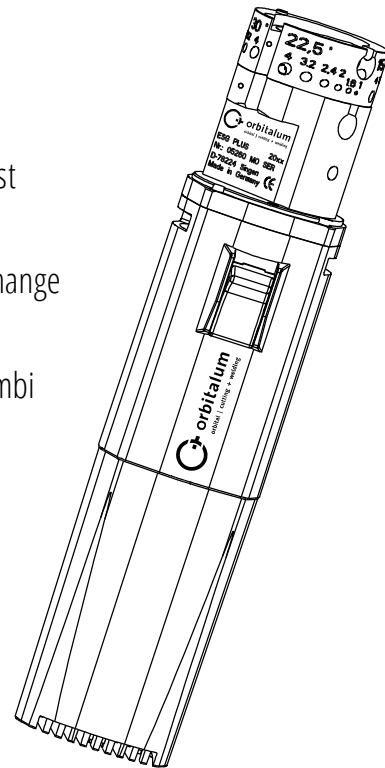


ESG Plus ESG Plus²

- de Elektroden-Schleifgerät**
Originalbetriebsanleitung und Ersatzteilliste
- en Tungsten grinder**
Translation of original operating instructions and spare parts list
- fr Affûteuse d'électrodes**
Traduction du mode d'emploi original et liste de pièces de rechange
- it Affilaelettrodi**
Traduzione del manuale d'istruzioni originale e elenco dei ricambi
- es Rectificadoras de tungstenos**
Traducción del manual de instrucciones original y lista de piezas de repuesto
- nl Elektrodeslijpmachine**
Vertaling van de originele gebruiksaanwijzing en reserveonderdelenlijst
- ru Прибор для шлифовки электродов**
Перевод оригинального руководства по эксплуатации и перечень запасных частей
- cn 钨极磨削器**
原操作指导书和备件清单翻译
- cz Bruska na elektrody**
Překlad originálu návodu k obsluze a seznam náhradních dílů
- sk Prístroj na brúsenie elektród**
Preklad originálneho návodu na obsluhu zoznam náhradných dielov



790 052 773



ENGLISH

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1. ABOUT THESE INSTRUCTIONS

1.1 Warning messages



The warning messages used in these instructions warn you of injuries or damage to property.

► Always read and observe these warning messages!

WARNING SYMBOL		This is a warning symbol. It warns you of the danger of injury. In order to avoid injuries or death observe the measures marked with a safety sign.
-----------------------	---	---

WARNING LEVEL	SYMBOL	MEANING
DANGER!		Imminently hazardous situation that results in death or serious injuries if the safety measures are not observed.
WARNING!		Potentially hazardous situation that may result in death or serious injuries if the safety measures are not observed.
ATTENTION!		Potentially hazardous situation that may result in slight injuries if the safety measures are not observed.
NOTE!		Potentially hazardous situation that may result in material damage if the safety measures are not observed.

1.2 Further symbols and displays

CATEGORY	SYMBOL	MEANING
INSTRUCTION		You must take notice of this symbol.
INFO		Important information for comprehension.
ACTION	1. 2. ... ►	Request for action in a sequence of actions: Action is required here. Single request for action: You have to do something here: Action is required here.

1.3 Abbreviations

ABBREVIATION	MEANING
ESG Plus	Tungsten grinder
ESG Plus ²	Tungsten grinder with 2 grinding heads

2. INFORMATION AND SAFETY INSTRUCTIONS FOR THE RESPONSIBLE BODY

2.1 Requirements for the responsible body

Workshop/outdoor/field application: The responsible body is responsible for safety in the danger zone around the machine, and should allow only qualified personnel to enter the zone or operate the machine in the danger zone.

Employee safety: The operator has to observe the safety regulations described in this chapter as well as has to work safety-consciously and with all prescribed safety equipment.

2.2 Safety notes

Warning: When using power tools, be sure to adhere to the following safety measures to prevent danger of shock, injury and fire. Read all instructions and notes before using this electrical tool and keep the notes on safety properly stored.

The Tungsten Grinder (called ESG Plus in this document) is state of the art. Any other use than that described in these instructions can lead to injury to the user or other persons. In addition the device or other objects can be damaged.

Therefore:

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

2.2.1 Proper use

- The ESG Plus is intended only to be used to process welding electrodes.

2.2.2 Safety regulations

- Only use the dimensions and materials quoted in these instructions. Other materials should only be used after consulting Orbitalum Tools customer service department.
- Only use authentic Orbitalum Tools spare parts and materials.
- Check the ESG Plus daily for any externally visible damage or defects. Have any damage or defects repaired immediately.
- Work on the electrical equipment should only be carried out by a qualified electrician.
- Only operate the ESG Plus if the electrical protective devices function.
- The tapped holes at the ESG Plus must always be free of dust, clean if necessary.
- Pull out the power plug before carrying out repair and maintenance work.

2.2.3 Work safely

“Play your part in ensuring safety at work.”

- Report any changes in operating performance to the responsible person immediately.
- Carry out all work with an awareness of safety.
- When working with the ESG Plus, wear protective goggles, safety gloves and breathing mask.
- Turn the device off at the end of each operating cycle.
- Before cleaning pull out the ESG Plus power plug and let the device coast.



WARNING!



Danger of being injured!

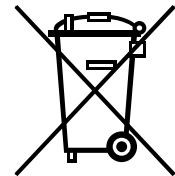
- ▶ Keep hands away from the tool during processing.
- ▶ Wear safety gloves.

2.3 Environmental protection/disposal

- Use a suction unit or an industrial-type vacuum cleaner to collect the grinding dust.

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 environmentfriendly 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 send 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.




(as per RL 2012/19/EU)

2.3.1 REACH (Registration, Evaluation, Authorization and Restriction of Chemicals)

Regulation (EC) 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) regulates the manufacture, placing on the market and use of chemical substances and mixtures made from them.

In terms of the REACH regulation, our products are products. According to article 33 of the REACH regulation, suppliers of articles must inform their customers if the delivered article contains a substance of the REACH candidate list (SVHC list) in contents greater than 0.1 mass percent. On 27.06.2018 lead (CAS: 7439-92-1 / EINECS: 231-100-4) was added to the candidate list SVHC. This inclusion triggers an information obligation in the supply chain.

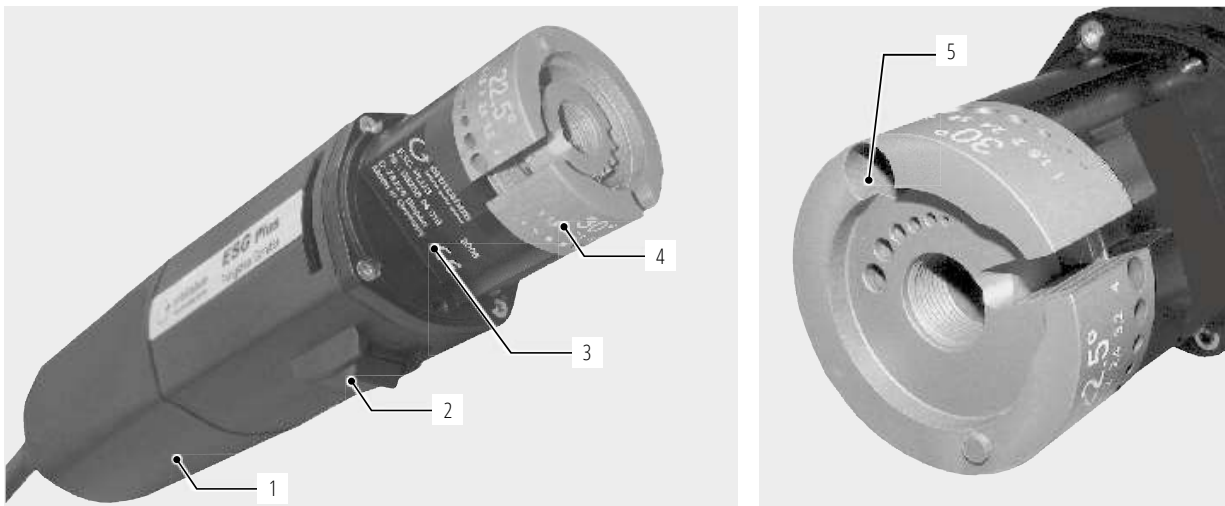
We hereby inform you that individual components of our products contain lead in contents of more than 0.1% by weight as an alloy component in steel, aluminium and copper alloys as well as in solders and capacitors of electronic components. The lead contents are within the defined exceptions of the RoHS directive.

As lead is firmly bound as an alloy component and therefore no exposure is to be expected when used as intended, no additional information on safe use is necessary.

2.4 Further safety regulations

Observe country-specific regulations, norms and guidelines.

3. CONSTRUCTION OF THE PRODUCT



1. Motor
2. ON/OFF switch
3. Identification plate
4. ESG Plus grinding head
5. Fastening bolt head to motor

3.1 Accessories (optional)

3.1.1 Diamond grinding wheels

Exchangeable grinding wheel diamond-coated on both sides for optimal performance.
 For 1.0 and 1.6 mm (0.039" and 0.063") electrodes we recommend the fine grinding wheel.
 For 2.0 mm (0.078") and larger electrodes, a medium to coarse grained grinding wheel is advisable.



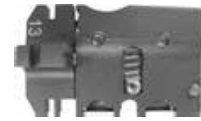
ARTICLE	VERSION	GRINDING WHEEL Ø		S		CODE
		[MM]	[INCH]	[MM]	[INCH]	
Diamond grinding wheel	Fine	33.5	1.319	2.2	0.087	790 052 487
Diamond grinding wheel	Medium	33.5	1.319	2.2	0.087	790 052 488
Diamond grinding wheel	Coarse	33.5	1.319	2.2	0.087	790 052 550

3.1.2 Cutting device

To cut tungsten electrodes to fixed length.

For electrode diameters 1.0; 1.6, 2.0 and 2.4 mm (0.040"; 0.060"; 0.079" and 0.095").

Fixed cutting lengths: 12; 13; 15 and 17 mm selectable (0.470"; 0.500"; 0.600" and 0.670").



ARTICLE	CODE
Cutting device	790 052 513

3.1.3 Electrode holder

With clamping collet for clamping range 1.0 - 3.2 mm (0.039" - 0.126"),
Code 790 052 481.



ARTICLE	CODE
Electrode holder	790 052 457

3.1.4 Clamping collet

For clamping the electrode into the holder. For easy grinding of smaller electrodes.



ARTICLE	CLAMPING RANGE	CODE
Clamping collet	1.0 - 3.2 mm (0.039" - 0.126")	790 052 481

3.1.5 Wall/table/vice-mounting plate

Incl. 2 cylinder head screws (Code 790 052 495).



ARTICLE	CODE
Wall/table/vice-mounting plate	790 052 483

3.1.6 Protective cover

Easy to adapt on the ESG Plus head.

With integrated retainer for suction units.

For use on electrodes with thorium.



ARTICLE	CODE
Protective cover for ESG Plus	790 052 496
Protective cover for ESG Plus ²	790 052 596

3.1.7 Double-Decker Kit ESG Plus

Easy to mount to the ESG Plus.

This attachment makes it possible to use 2 different grinding wheels at the same time.

The kit contains a head and a diamond grinding wheel (Code 790 052 550) with an extension shaft. Easy and fast assembly to the ESG Plus (Assembly, see chap. 8, p. 35).



Including:

- 1 Grinding head
- 1 Diamond grinding wheel, rough
- 1 Cylinder head screw (M4x15)
- 1 Shaft elongation
- 1 Nut M4 DIN 934

ARTICLE	GRINDING ANGLES	CODE
Double-Decker Kit ESG Plus	15°; 18°; 22,5°; 30°	790 052 490
Double-Decker Kit ESG Plus	15°; 30°; 45°; 60°	790 052 390

4. CHARACTERISTICS AND RANGE OF APPLICATIONS

4.1 Characteristics

The ESG Plus is the perfect hand-held grinder for cutting, grinding and planing electrodes which are used in WIG or TIG welding machines.*)

The ESG Plus has the following characteristics:

- Electrodes and tips are sharpened to conform to recognized standards
- Replaceable grinding wheel diamond coated on both sides
- ESG Plus head for different electrode angles and electrode diameter
- Machine: Hand-operated; optionally wall/table/vice mounting plate possible
- Working instruction: The electrode is inserted by hand into the corresponding opening and is ground round by a manual circular movement
- Drive: A/C motor with the R.P.M. controlled electronically

*) Consider country-specific regulations, standards and guidelines when using tungsten electrodes with thorium.

4.2 Range of applications

Without refitting of the equipment.

APPLICATION RANGE	ESG PLUS, ESG PLUS ²
Electrode Ø [mm]	1.0 / 1.6 / 2.0 / 2.4 / 3.2 / 4.0
Electrode Ø [inch]	0.040 / 1/16 / 0.080 / 3/32 / 1/8 / 5/32
Grinding angles [°]	15 / 18 / 22.5 / 30 or 15 / 30 / 45 / 60

4.2.1 Electrode material

Tungsten electrodes alloyed with zirconium, lanthanum and cerium.

Important: Not to be used without suction for tungsten electrodes with thorium.

5. TECHNICAL DATA

Dimensions	Ø 65 x 350 mm / Ø 2.56" x 13.78"
Weight complete with grinding wheel	approx. 1.4 kg / 3.09 lbs
Power consumption	500 W
Voltage	230 V, 50/60 Hz / 110 V, 50/60 Hz
Main supply cable (length)	3 m
Rotary speed	30.000 rpm
Power-on time	100 %
Noise level in the workplace*)	Idle running approx. 83 dB (A)
Vibration level according to EN 28662, Part 1	2.5 m/s ²
Idle running of temperature development	10 min running time / + 30 °C over running temperatur

*) Sound pressure level measurement was carried out under normal operating conditions according to EN 23741.

6. COMMISSIONING

6.1 Included with the machine

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

6.1.1 Parts of delivery (subject to alterations)

- 1 Tungsten Grinder ESG Plus or ESG Plus²
- 1 Powder-coated carrying steel case
- 1 Housing upper part with holes for electrodes Ø 1.0 mm (0.04"), 1.6 mm (0.06"), 2.0 mm (0.08"), 2.4 mm (0.09"), 3.2 mm (0.13"), 4.0 mm (0.16")
- Depending on the machine version holes for electrode grinding angles 15° / 18° / 22,5° / 30° or for grinding angles 15° / 30° / 45° / 60°
- 1 Diamond grinding wheel (medium, Code 790 052 488)
- 1 Tool to replace the grinding wheel
- 1 Operating instructions with spare parts list

Optional for the ESG Plus²

- 1 Diamond grinding wheel (coarse, Code 790 052 550)

6.2 Transportation

The ESG Plus is a portable, hand-operated machine. Special transportation aids are not required.

DANGER!



Danger of death by electric shock!

Non-observance could result in death or critical injury.

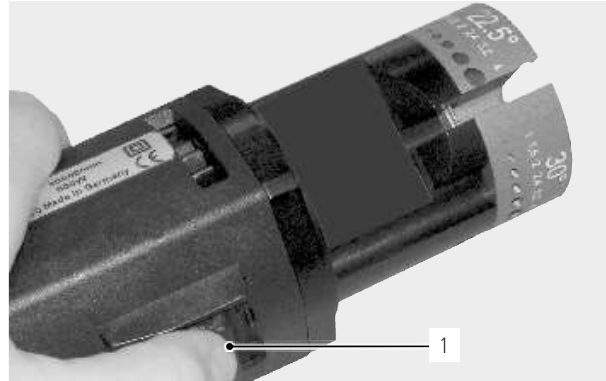
- ▶ Cut off the power supply before transportation.

7. OPERATION

7.1 Switching on the ESG Plus

1. Connect the ESG Plus (consider main voltage).
2. Press the ON/OFF switch (1).

The ESG Plus starts.



7.2 Grinding the electrodes

DANGER!



Hot dust!

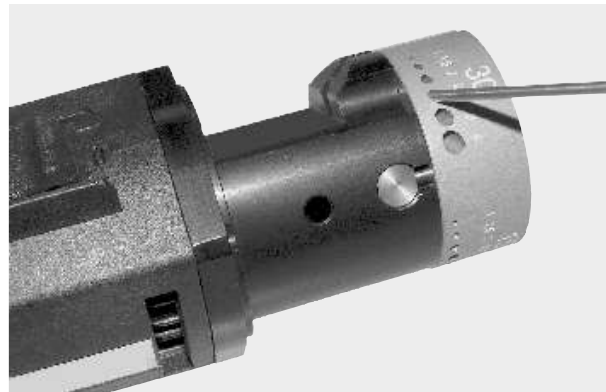
Danger of injury to eyes!

- ▶ Do **not** use thorium-coated tungsten electrodes without a suitable suction devices or a suitable breathing mask.
- ▶ Only work with safety goggles.
- ▶ Always wear a breather mask.

NOTE!



Do not exert too much pressure on the grinding wheel, since otherwise the service life of the diamond wheel is shortened. The strength of the contact pressure, but even rotation of the electrode around its own axle and a small contact pressure of the electrode to the grinding produce a high sharpening achievement.



NOTE!



Use a rough diamond wheel during larger sharpening achievement.

7.2.1 Sharpening electrodes

1. Insert the electrode with the corresponding hole diameter and the desired angle until the grinding wheel is touched.
2. The electrode tip is sharpened evenly by turning the electrode slowly.

NOTE!

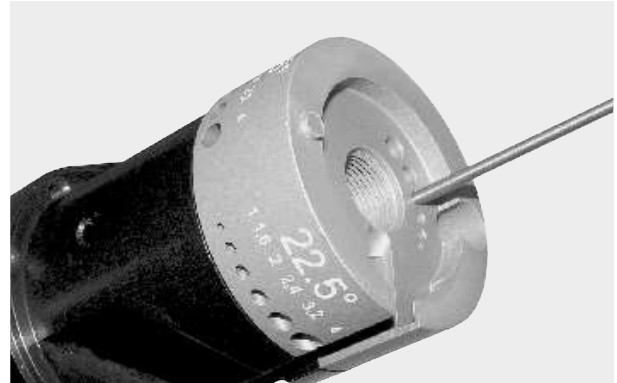


Slow and even rotating motion results in a good and exact sharpening result (longitudinal grind). If the electrode is not turned, then it is flat ground to the selected angle.

7.2.2 Surface-grinding the electrode tip

The electrode is sharpened with the ESG Plus. The tip can be squared to influence the arc during welding positively.

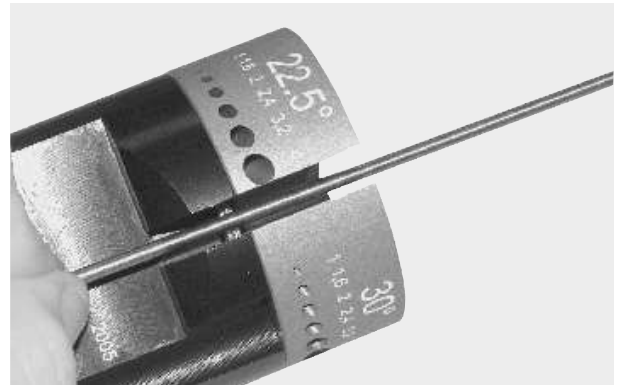
- ▶ Insert the electrode (1.0/1.6/2.0/2.4/3.2 or 4.0 mm) through the openings at the front end onto the grinding wheel and square the electrode tip.



7.2.3 Cutting the electrodes to length

In order for the electrode rods to be used for e.g. orbital welding, or for manual welding, they have to be cut to length.

1. Insert the electrode into the lateral slot.
2. The electrode is cut evenly by turning the electrode slowly (optional cutting device for 12, 13, 15 and 17 mm, see chap. 3.1.2, p. 28).



7.3 Switching off the ESG Plus

- ▶ Press the ON/OFF switch (1).

The ESG Plus stops.

7.4 Replacing grinding wheels

WARNING!

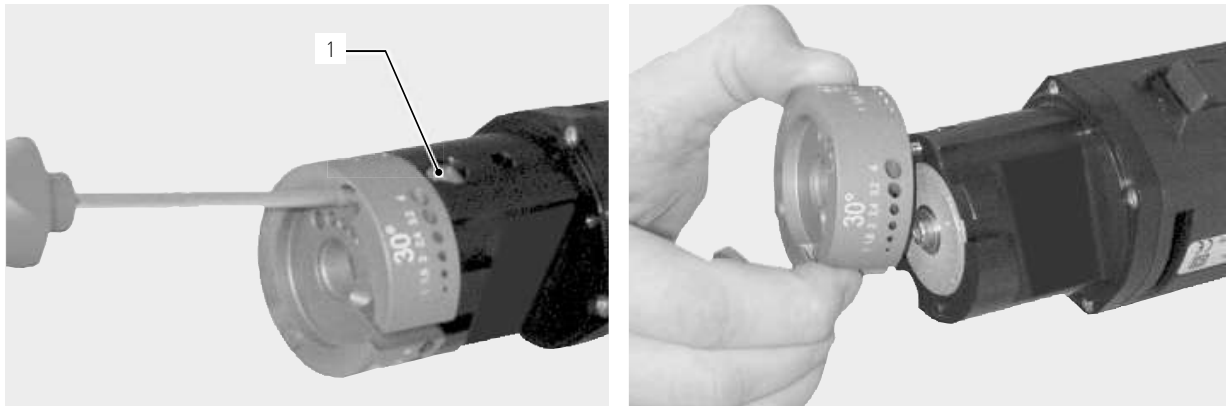


Danger to injury to hands though unintentional activation of the ESG Plus!

- ▶ Do not switch on the ESG Plus while changing the grinding wheel.
- ▶ Pull out the power plug.

7.4.1 Disassembly of the ESG Plus head

1. Dismantle and remove the cylinder head screw with collar (M4x15) at the ESG Plus head. Do not remove the arrest nut (1).
2. Remove the ESG Plus head.



3. Slide a 2.4 mm pin through cross hole and motor shaft (rotation of the grinding wheel is prevented).
4. Loosen and remove the grinding wheel screw (cylinder head screw with washer M4x6).
5. Turn the diamond grinding wheel or insert a new grinding wheel.
6. Insert the grinding wheel on the shaft.

- ▶ The hole of the diamond grinding wheel has to be inserted centrally on the motor shaft.



7. Tighten the Torx screw and assemble the ESG Plus grinding head to the motor.

8. ASSEMBLY OF THE DOUBLE-DECKER KIT ESG PLUS

The Double-Decker Kit ESG² is not included in the standard scope of supply but is obtainable as extra accessory (see chap. 3.1.7, p. 29).

8.1 Disassembly of the ESG Plus head

1. Dismantle and remove the cylinder head screw with collar (M4x15) at the ESG Plus grinding head. Do not remove the arrest nut (1).
2. Remove the ESG Plus grinding head.
3. Loosen and remove the grinding wheel screw (cylinder head screw with washer M4x6).

NOTE!

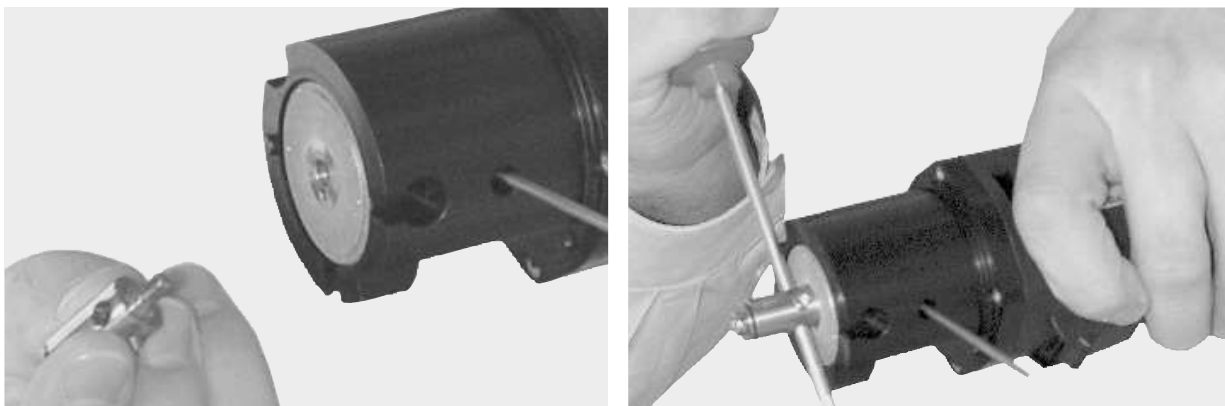
Slide a 2.4 mm pin through cross hole and motor shaft (rotation of the grinding wheel is prevented).



4. Attach the shaft elongation and fasten.

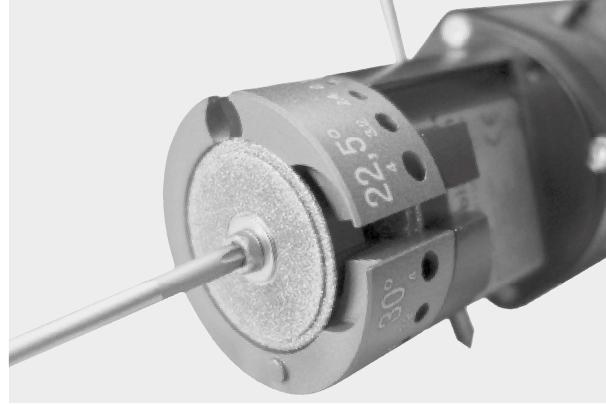
NOTE!

For easier fastening of the shaft elongation we recommend to slide a screw driver through the cross hole of the shaft elongation.

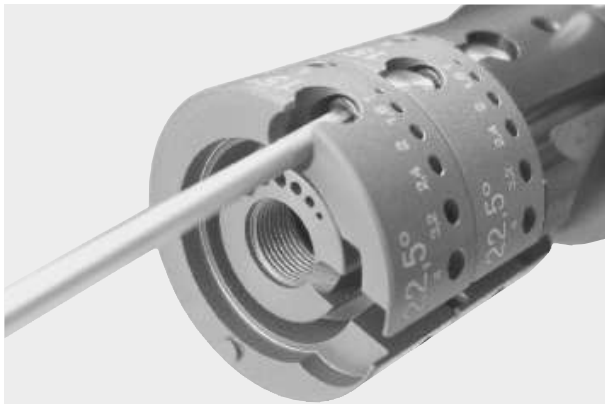


8.2 Fastening the Double-Decker Kit

1. Attach the first grinding head.
2. Attach the rough grinding wheel (Code 790 052 488) and fasten with the cylinder head screw with washer (M4x6).



3. Attach the second grinding head.
4. Attach the cylinder head screw (M4x15) to the arrest nut.



9. MAINTENANCE

DANGER!



Danger of death by electric shock!

Non-observance could result in death or critical injury.

- ▶ Before maintenance work remove the mains plug.

TIME

ACTIVITY

Before starting work

- ▶ The connection of the ESG Plus head to the motor has to be firm.
- ▶ The device may not be moist and may not be used in a humid environment.
- ▶ No unbalance in the grinding wheel may occur when the machine is switched on.
- ▶ Check whether ESG Plus head and/or the Torx screw sit firm, if necessary tighten.
- ▶ Check the power supply cable for damage.
- ▶ The tapped hole at the ESG Plus must always be free of dust, clean if necessary.

Weekly/daily

- ▶ Remove dust from the inside of the housing, clean.
- ▶ **When using the protective cover:**
To avoid bearing damage caused by fine dust particles, the inside of the housing of the ESG Plus should be thoroughly cleaned after each use.

10. WHAT TO DO IF?

10.1 Fault elimination

FAULT	POSSIBLE CAUSE	REMEDY
Motor of the ESG Plus does not run.	<ul style="list-style-type: none"> ▶ Power cable defective. ▶ Motor defective. 	<ul style="list-style-type: none"> ▶ Replace the power cable. ▶ Replace the motor.
The ESG Plus head does not stick.	<ul style="list-style-type: none"> ▶ ESG Plus head is not correctly fastened to the motor flange. 	<ul style="list-style-type: none"> ▶ Tighten the Torx screw.
The diamond wheel does not rotate.	<ul style="list-style-type: none"> ▶ No mains voltage. ▶ Motor defective. 	<ul style="list-style-type: none"> ▶ Check mains voltage. ▶ Replace the motor.
Unbalance of the grinding wheel when started up.	<ul style="list-style-type: none"> ▶ Grinding wheel mounted incorrectly. 	<ul style="list-style-type: none"> ▶ Tighten or replace the grinding wheel immediately.

10.2 Servicing/customer service

The following data are required to order spare parts:

- Machine model: (example: ESG Plus)
- Machine No.: see rating plate
- ▶ For ordering spare parts, see the separate spare part list.
- ▶ Contact your local branch directly in order to eliminate problematic situations.