

# Operating instructions with spare parts list

Tungsten Grinder

## ESG Plus ESG Plus<sup>2</sup>



Machine-no.:

.....  
.....

Translation of original  
operating instructions  
Code 790 052 774 | EN



# TABLE OF CONTENTS

1.	About these instructions .....	4
1.1	Warning messages .....	4
1.2	Further symbols and displays .....	4
1.3	Abbreviations .....	5
2.	Safety notes .....	6
2.1	Proper use .....	6
2.2	Safety regulations .....	6
2.3	Work safely .....	6
2.4	Waste disposal / environmental protection .....	7
2.5	Further safety regulations .....	7
3.	Construction of the product .....	8
3.1	Accessories (optional) .....	8
3.1.1	Diamond grinding wheels .....	8
3.1.2	Cutting device .....	8
3.1.3	Electrode holder .....	9
3.1.4	Clamping collet .....	9
3.1.5	Wall/table/vice-mounting plate .....	9
3.1.6	Protective cover .....	9
3.1.7	Double-Decker Kit ESG Plus <sup>2</sup> .....	9
4.	Characteristics and range of applications .....	10
4.1	Characteristics .....	10
4.2	Range of applications .....	10
4.2.1	Electrode material .....	10
5.	Technical data .....	11
6.	Commissioning .....	12
6.1	Included with the machine .....	12
6.1.1	Parts of delivery (subject to alterations) .....	12
6.2	Transportation .....	12
7.	Operation .....	13
7.1	Switching on the ESG Plus .....	13
7.2	Grinding the electrodes .....	13
7.2.1	Sharpening electrodes .....	13
7.2.2	Surface-grinding the electrode tip .....	14
7.2.3	Cutting the electrodes to length .....	14
7.3	Switching off the ESG Plus .....	14
7.4	Replacing grinding wheels .....	14
7.4.1	Disassembly of the ESG Plus head .....	15
8.	Assembly of the Double-decker Kit ESG Plus <sup>2</sup> .....	16
8.1	Disassembly of the ESG Plus head .....	16
8.2	Fastening the Double-Decker Kit .....	17
9.	Maintenance .....	18
10.	What to do if...? .....	19
10.1	Fault elimination .....	19
10.2	Servicing/customer service .....	19
11.	Spare parts list .....	20
12.	EU declaration of conformity .....	21

# 1. 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.

## 1.1 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	<p>Direct danger!</p> <p>Non-observance could result in death or critical injury.</p> <ul style="list-style-type: none"> <li>⊘ Restrictions (if applicable).</li> <li>▶ Measures to prevent danger.</li> </ul>
 WARNING	<p>Possible danger!</p> <p>Non-observance could result in serious injury.</p> <ul style="list-style-type: none"> <li>⊘ Restrictions (if applicable).</li> <li>▶ Measures to prevent danger.</li> </ul>
 ATTENTION	<p>Dangerous situation!</p> <ul style="list-style-type: none"> <li>▶ Non-observance could result in minor injuries.</li> </ul>
 ATTENTION	<p>Dangerous situation!</p> <ul style="list-style-type: none"> <li>▶ Non-observance could result in material damage.</li> </ul>





## 1.2 Further symbols and displays

Symbol	Meaning
Important Note	Notes: Contain particularly important information for comprehension.
 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.



### 1.3 Abbreviations

<b>Abbr.</b>	<b>Meaning</b>
ESG Plus	Tungsten Grinder
ESG Plus <sup>2</sup>	Tungsten Grinder with 2 grinding heads

## 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.

### 2.1 Proper use

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

### 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.

### 2.3 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!

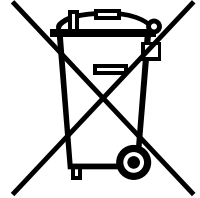
- ⊘ Keep hands away from the tool during processing.
- ▶ Wear safety gloves.

## 2.4 Waste disposal / environmental protection

- 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 re-use, 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 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.



(RL 2002/96/EC)

## 2.5 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 inch) electrodes we recommend the fine grinding wheel. For 2.0 mm (0.078 inch) 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 inch).  
 Fixed cutting lengths: 12; 13; 15 and 17 mm selectable (0.470; 0.500; 0.600 and 0.670 inch).  
 Other cutting lengths possible.



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 inch),  
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 inch)	790 052 481

### 3.1.5 Wall/table/vice-mounting plate

Incl. 2 cylinder head screws (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 <sup>2</sup>	790 052 596

### 3.1.7 Double-Decker Kit ESG Plus<sup>2</sup>

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, page 16).

Including:

- 1 Grinding head
- 1 Diamond grinding wheel, rough
- 1 Cylinder head screw with collar (M4x34)
- 1 Shaft elongation



Article	Grinding angles	Code
Double-Decker Kit ESG Plus <sup>2</sup>	15°; 18°; 22.5°; 30°	790 052 490
Double-Decker Kit ESG Plus <sup>2</sup>	15°; 30°; 45°; 60°	790 052 590

## 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 <sup>2</sup>
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 2.560 x 13.780 inch
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 <sup>*)</sup>	Idle running approx. 83 dB (A)
Vibration level according to EN 28662, Part 1	2.5 m/s <sup>2</sup>
Idle running of temperature development	10 min running time + 30 °C over running temperatur

<sup>\*)</sup> 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 Plus<sup>2</sup>
- 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 Plus<sup>2</sup>

- 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.

#### Important

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

Precision ground point. Although able to grind flat land on tip.

- ▶ 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, page 8).



## 7.3 Switching off the ESG Plus

- ▶ Press the ON/OFF switch (1).

The ESG Plus stops.

## 7.4 Replacing grinding wheels



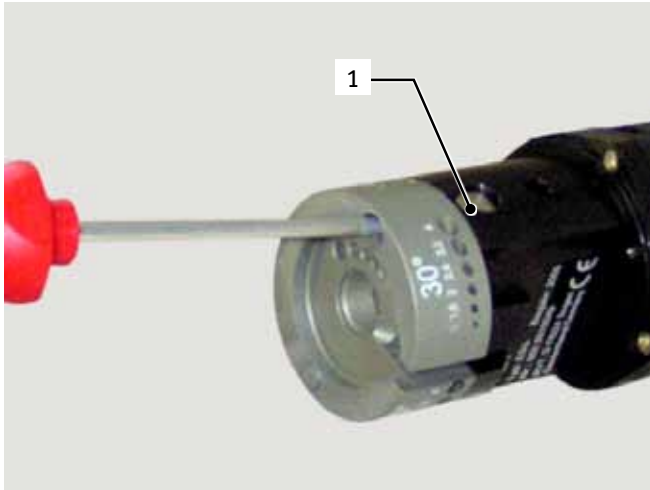
WARNING

**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.

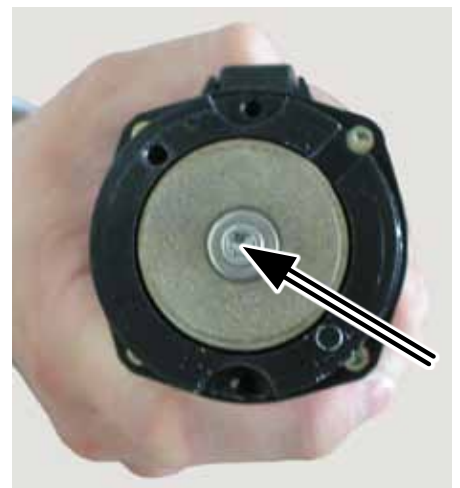
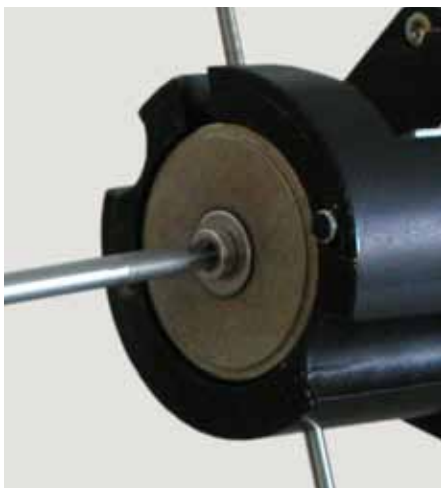
### 7.4.1 Disassembly of the ESG Plus head

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<sup>2</sup>

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, page 9).

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

#### Note

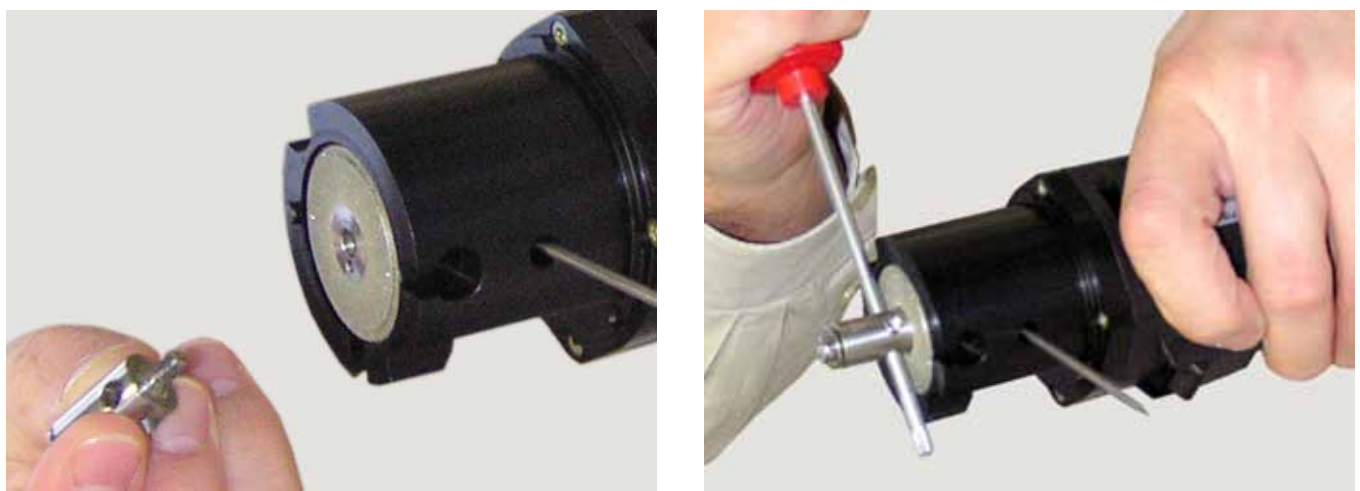
Die Schleifscheibe lässt sich besser lösen, indem ein 2,4 mm-Stift durch die Querbohrung und Motorwelle geschoben wird (Drehung der Schleifscheibe wird dadurch verhindert).



4. Loosen and remove the grinding wheel screw (cylinder head screw with washer M4x6).
5. Attach the shaft elongation and fasten.

#### Note

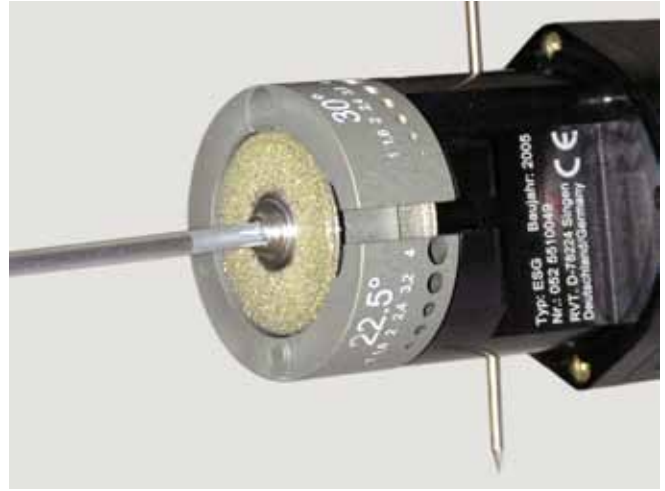
For easier fastening of the shaft elongation we recommend to slide a screw driver through the cross hole of the shaft elongation.





## 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 with collar (M4x34) to the arrest nut (1).



## 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.

<b>Time</b>	<b>Activity</b>
Before starting work	<ul style="list-style-type: none"> <li>▶ The connection of the ESG Plus head to the motor has to be firm.</li> <li>▶ The device may not be moist and may not be used in a humid environment.</li> <li>▶ No unbalance in the grinding wheel may occur when the machine is switched on.</li> <li>▶ Check whether ESG Plus head and/or the Torx screw sit firm, if necessary tighten.</li> <li>▶ Check the power supply cable for damage.</li> <li>▶ The tapped holes at the ESG Plus must always be free of dust, clean if necessary.</li> </ul>
Weekly/daily	<ul style="list-style-type: none"> <li>▶ Remove dust from the inside of the housing, clean.</li> </ul>

## 10. WHAT TO DO IF...?

### 10.1 Fault elimination

Fault	Possible cause	Remedy
Motor of the ESG Plus does not run.	▶ Power cable defective.	▶ Replace the power cable.
	▶ Motor defective.	▶ Replace the motor.
The ESG Plus head does not stick.	▶ ESG Plus head is not correctly fastened to the motor flange.	▶ Tighten the Torx screw.
The diamond wheel does not rotate.	▶ No tension.	▶ Examine tension.
	▶ Engine defectively.	▶ Replace the motor.
Unbalance of the grinding wheel when started up.	▶ Grinding wheel mounted incorrectly.	▶ Tighten or replace the grinding wheel immediately.

### 10.2 Servicing/customer service

For ordering spare parts, see chap. 11, page 20.

For the resolution of faults, please contact your branch office directly.  
You can also contact directly our customer service address in Singen:

#### Orbitalum Tools GmbH

Josef-Schuettler-Straße 17, 78224 Singen, Germany

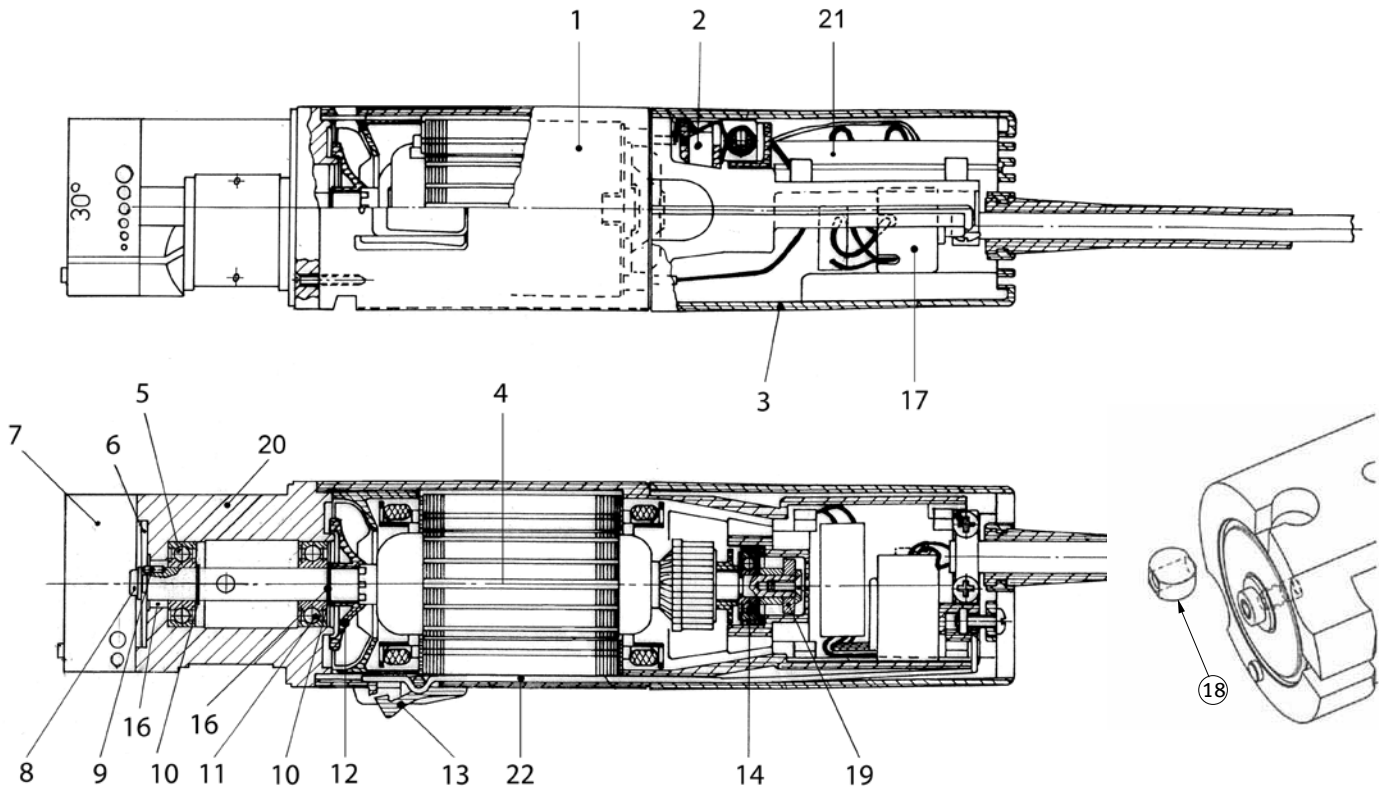
Phone: +49 (0) 77 31 / 792-764

Fax: +49 (0) 77 31 / 792-500

Please give the following details:

- Machine type: **ESG Plus** or **ESG Plus<sup>2</sup>**
- Machine number: (see identification plate)

# 11. SPARE PARTS LIST



Item No.	Part Number	Qty.	Description
1	790 052 526	1	Electric motor 230 V, 50/60 Hz (incl. motor flange)
	790 052 527	1	Electric motor 120 V, 50/60 Hz (incl. motor flange)
2	790 052 528	2	Carbon brush 230 V
	790 052 538	2	Carbon brush 120 V
3	790 052 633	1	Switch cap
4	790 052 549	1	Rotor 230 V with vent 230 V, comes with: 1 x Bearing (Part no. 790 093 264) 1 x Bearing underside (Part no. 790 052 630) 1 x Bearing upper side (Part no. 790 052 631) 2 x Retainer (Part no. 790 052 632)
	790 052 649	1	Rotor 230 V with vent 110 V, comes with: 1 x Bearing (Part no. 790 093 264) 1 x Bearing underside (Part no. 790 052 630) 1 x Bearing upper side (Part no. 790 052 631) 2 x Retainer (Part no. 790 052 632)
5	790 052 631	1	Bearing (upper side)
6	790 052 487	1	Diamond grinding wheel, fine
	790 052 488	1	Diamond grinding wheel, medium
	790 052 550	1	Diamond grinding wheel, coarse
7	790 052 530	1	Grinding head 15°; 18°; 22,5°; 30°
	790 052 540	1	Grinding head 15°; 30°; 45°; 60°
8	790 052 531	1	Cylinder head screw with washer M4x6
9	790 052 533	1	Cylinder pin Ø 2
10	790 052 632	2	Retainer
11	790 052 630	1	Bearing (underside)
12	790 052 541	1	Vent*
13	790 052 542	1	On/Off switch
14	790 093 264	1	Bearing
16	790 052 599	1	Protection
17	790 052 604	1	Switch
18	790 052 559	1	Nut M4 DIN 934

Item No.	Part Number	Qty.	Description
-	790 052 534	1	Cylinder head screw M4x15 with nut M4 DIN 934
19	790 052 634	1	Ring magnet
20	790 052 497	1	Motor flange ESG Plus
21	790 052 543	1	Electronic without Pot with PTC 230 V
	790 052 544	1	Electronic without Pot with PTC 120 V
22	790 052 560	1	Level arm for switch

\* Attention: The rotor shaft has to get balanced after exchanging the vent. Danger at 30,000 rpm.

### Additional spare parts for ESG Plus<sup>2</sup> (Double-Decker Kit):

Item No.	Part Number	Qty.	Description
-	790 052 530	1	Grinding head 15°; 18°; 22,5°; 30° (Standard)
-	790 052 540	1	Grinding head 15°; 30°; 45°; 60° (optional)
-	790 052 550	1	Diamond grinding wheel, rough
-	790 052 536	1	Cylinder head screw with collar M4x34
-	790 052 537	1	Shaft elongation

### Without illustration:

Item No.	Part Number	Qty.	Description
-	790 052 600	1	Foam insert for protective cover complete
-	790 052 598	1	Plexiglas for protective cover ESG Plus
-	790 052 597	1	Plexiglas for protective cover ESG Plus <sup>2</sup>

## 12. EU DECLARATION OF CONFORMITY



EG-Konformitätserklärung  
Declaration of conformity  
Dichiarazione di conformità  
Déclaration de conformité  
Declaración de conformidad

Orbitalum Tools GmbH  
Josef-Schuettler-Strasse 17  
78224 Singen, Germany  
Tel.: +49 (0) 77 31 792-0  
Fax: +49 (0) 77 31 792-524

According to the machine guideline 2006/42/EG, Appendix II A (MaschR).

Die Bauart der Maschine:  
The following product:  
Il seguente prodotto:  
Le produit suivant:  
El producto siguiente:

**ESG Plus Tungsten Grinder**

Seriennummer:  
Series number:  
Numero di serie:  
Nombre de série:  
Número de serie:

Baujahr / Year / Anno / Année / Año:

ist entwickelt, konstruiert und gefertigt in Übereinstimmung mit folgenden EG-Richtlinien:  
was designed, constructed and manufactured in accordance with the following EC guidelines:  
è stata progettato costruito e commercializzato in osservanza delle seguenti Direttive:  
a été dessiné, produit et commercialisé selon les Directives suivantes:  
ha sido proyectado construido y comercializado bajo observación de las siguientes Directivas:

Maschinen-Richtlinie (2006/42/EG)  
EMV-Richtlinie (2004/108/EG)  
Niederspannungsrichtlinie (2006/95/EG)

Folgende harmonisierte Normen sind angewandt:  
The following harmonized norms have been applied:  
Le seguenti norme armonizzate ove applicabili:  
Les normes suivantes harmonisées où applicables:  
Las siguientes normas armonizadas han sido aplicadas:

**DIN EN ISO 12100-1 (2003)**  
**DIN EN ISO 12100-2 (2003)**  
**DIN EN 294 (1992)**  
**DIN EN 50144-1 (1998)**  
**DIN EN 55014-1 (2003)**  
**DIN EN 55014-2 (2002)**  
**DIN EN 61000-3-2 (2001)**  
**DIN EN 61000-3-3 (2002)**

Authorised to compile the technical file is Mr. Gerd Riegraf, Orbitalum Tools GmbH, D-78224 Singen.

Singen, 22.01.2010

Markus Tamm  
Managing Director

Hasan Caglar  
Business Unit Manager Cutting + Beveling





**We value  
your opinion!**

Please send us  
your comments  
and queries.



**Orbitalum Tools GmbH**  
Josef-Schuettler-Str. 17  
78224 Singen, Germany  
Tel. +49 (0) 77 31 792-0  
Fax +49 (0) 77 31 792-524  
tools@orbitalum.com  
www.orbitalum.com

790 052 774\_10 | EN | 03.12  
© Orbitalum Tools GmbH  
78224 Singen  
Printed in Germany