

# Operating instructions

## Cleanox 3.0

### Electrochemical cleaning



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## **1 Foreword**

This instruction manual is intended to teach you how to handle and operate the Cleanox 3.0 safely as well as general instructions for cleaning.

The user is taught the basic concepts, possible applications and practical information in order to avoid operating errors.

Please read this instruction manual carefully before commissioning.

We wish you a lot of fun and successful work with our devices.

### **1.1 Validity of these instructions**

These instructions refer to the following device:

- Cleanox 3.0

### **1.2 Target group of this manual**

These operating instructions are intended for the operator and the operating personnel of the cleaning device.

Before using the device, familiarize yourself with the contents of these operating instructions. In this way, you achieve better work results and work safely.

We reserve the right to make technical changes that contribute to the improvement of our electrochemical cleaning equipment.

### **1.3 Intended use**

The Cleanox 3.0 is a device for electrochemical cleaning / polishing of stainless steel welds. In addition, it is possible to sign metals dark / light.

### **1.4 Observance of the operating instructions**

The operating instructions are part of the device and can be downloaded from our homepage under the "Download" menu.

The instructions must be available to the operating personnel at all times.

The operating instructions must be read by the operator before commissioning the equipment.

The operator must have understood the content of the instructions before putting the equipment into service.

When passing on or reselling the device, all operating instructions and documentation belonging to the device must be handed over to the new owner.

## 1.5 EC and VDE directives



The electrochemical processing equipment complies with the CE certificate of conformity:

- 2014/35/EU Low Voltage Directive
- 2014/30/EU EMC Directive
- 2011/65/EU RoHS Directive

## 1.6 Accident prevention (UVV)

- **Hazards can occur due to:**
  - Electricity
  - Pollutants
  - Gases
  - Electrolytes
  - Carelessness
- Read our safety data sheets on the electrolytes we use.
- Observe the hazard warnings.
- Please observe the following UVV regulations and information:
  - DGUV 1 Principles of prevention
  - DGUV 3 Electrical installations and equipment
  - DGUV 4 Electrical installations and equipment
  - DGUV 6 Occupational health care
  - DGUV 9 Safety and health labelling in the workplace
  - DGVU 209-074 Industrial robots
  - DGVU 109-602 Electroplating industry
  - DGVU 209-009 electroplating
  - DGUV 209-073 Workplace ventilation-decision support for operational practice
  - DGUV 204-007 First aid manual
  - DGUV 204-022 First aid at work
  - DGUV 251-003 Up-to-date occupational safety and health
  - SDB's Safety Data Sheets
  - ChemG Act on Protection against Hazardous Substances  
(Chemicals Act)
- TRGS528 Technical rules for hazardous substances



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### Hint

As of 1.05.2014, all UVV regulations and regulations have been renumbered and named.

Abbreviations such as: BGV/GUV-V, BGR/GUV-R, BGI/GUV-I/BGG/GUV-G or GUV-SI no longer exist.

The fonts are consistently divided into four categories.

- DGUV regulations
- DGUV Rules
- DGUV Information
- DGUV Principles

Detailed information can be found e.g. Under [www.dguv.de](http://www.dguv.de)

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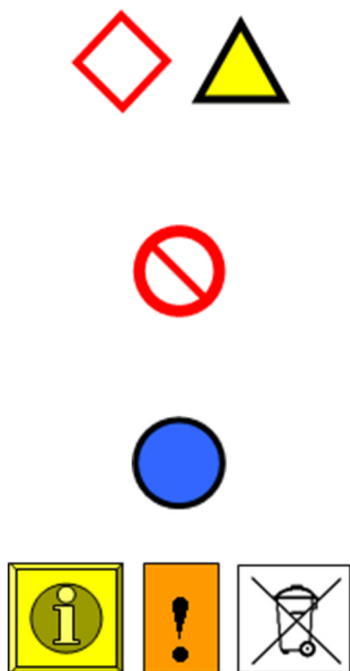
## 2 For your safety

Read this instruction manual carefully.  
The following chapter explains the pictograms used in this manual.

### 2.1 Convention

#### 2.1.1 Pictograms

The pictograms used in these instructions shall have the following meanings:



#### Warning signs

- Information on possible dangers when handling the device and accessories.
- Warning signs are marked by a yellow triangle with a black border or a white square with a red border and a symbol in the middle, which indicates a special dangerous situation.

#### Prohibitions signs

- References to prohibitions in the handling of the device and accessories
- Warning signs are marked by a white circle with a red border and a symbol in the middle, which indicates a special prohibition.

#### Mandatory signs

- Indications for the use of protective equipment.
- Mandatory signs are characterized by a blue circle with a thin black border and a symbol in the middle, which indicates a special commandment, e.g.: Wearing protective clothing

#### Information signs

- References to sections of these operating instructions to be observed in particular.

#### 2.1.2 Darstellungsarten

All normal descriptions in the owner's manual are displayed in the default font size " Arial 10.5".

- Special safety instructions to be observed are shown as shown in the following example:



#### Security

Here is the corresponding text...

- Tips that make it easier to work with or handle the device or accessory are shown as shown in the following example:



#### Tip

Here is the corresponding text...

#### 2.1.3 Warning sign



Electromagnetic field warning

Hot surface warning

Warning of explosive substances



Warning against harmful substances



Warning of dangerous electrical voltage



Warning of danger to life and limb



"Warning" warning about corrosive chemicals

#### 2.1.4 Prohibition signs



Ban on people with pacemakers

#### 2.1.5 Mandatory signs



Use eye protection



Use protective gloves



Unplug before opening



Use protective clothing

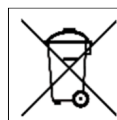
#### 2.1.6 Notice



Indication of general sources of danger. Be sure to read this section!



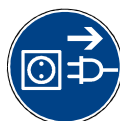
Reference to tips or important information about working with the device and accessories. Be sure to read this section!



Disposal of old electrical and electronic equipment (valid in the European Union and other European countries with separate collection system).

This symbol on the product or on the packaging means that this product must not be treated as household waste. This product must be disposed of properly.

#### 2.2 Safety measures in the event of a malfunction



Turn off the device immediately and unplug it.



Secure and mark the device against turning it back on.

- Restore the device to full functionality after each repair.
- Inspect cables for damage.
- Check all safety devices for function.





If electrolyte fluid gets into the eyes, rinse the eyes immediately with plenty of water.

- Consult the ophthalmologist immediately.



Secure heated workpieces from unauthorized access.

## 2.2.1 Safety-relevant environmental conditions



- **The use of the device is:**

- limited to closed industrial and commercial areas.
- expressly prohibited in fire and explosion hazard environments.
- expressly prohibited in humid environments.

- Cover stone and concrete floors well.

- Acids react with alkaline soil coverings such as:
  - Granite
  - Marble
  - Limestone sandstone
  - Stoneware
  - Tile
  - Screed
  - ...



- Wash electrolyte splashes or stains immediately with plenty of Water and/or neutralyte.

- The device may:

- can only be operated in well-ventilated rooms.

- Chlorine-containing solvents must be removed from the workspace.

- When operating the device, chemical

Reactions harmful vapours are produced.

- For details, please refer to our SDS's of the respective electrolytes.




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### Security

The operator is obliged to ensure sufficient ventilation of the work area.

It is the responsibility of the operator to remove the corresponding vapours from the work area with a suitable extraction system if necessary. Suction is not mandatory!

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## 2.3 Possible sources of danger and protective measures

### 2.3.1 Possible sources of danger

Improper handling of the device and its components.

- The handle lies on the workpiece or work surface in such a way that the carbon fiber brush comes into contact with the metal surface. In this case, electricity continues to flow.



If the components are connected incorrectly, stray currents can lead to the destruction of electrical protective conductors.

- Defective live cables.
- Damaged or defective switching elements.
- Defective connectors.



- Non-existent or damaged Teflon insulation.
- Wrong work environment.



Do not use protective clothing.

- Goggles
- Apron or overalls
- Gloves



The carbon fiber brush or the electrode and the workpiece can be heated to approx. 200°C. **Risk of burns!**



Improper handling of chemicals.

- Electrolyte splashes can cause burns to the eyes.
- Electrolyte splashes can lead to skin burns.
- Spilled electrolyte liquid can be found on stone floors or cause chemical burns to other materials.



Electromagnetic fields may affect pacemakers.



### 2.3.2 Protective measures

Repairs to electrical parts of the equipment or to power lines may only be carried out by qualified electricians.



- Have the device checked immediately by a qualified electrician after a short circuit or malfunction.
- Use the device and accessories only as intended.
- Use the device only in the designated working environment.

Avoid wandering currents.



- Connect the ground cable directly to the workpiece or to the holder intended for the workpiece.
- Place the cleaning electrode or handle on the workpiece or work surface so that the electrode does not come into contact with the metal surface. Otherwise, electricity will continue to flow, which can lead to damage or hazards.



In the event of an accident, disconnect the device immediately. Always unplug during maintenance.



Only use appropriate personal, acid-resistant protective equipment [protective gloves, apron and goggles].



Always turn off the device before changing the editing tools (brushes).



Secure hot objects against accidental touching.



Never eat or drink at work! It is forbidden!



After working with electrolytes, always wash your hands thoroughly with soap and plenty of water.

- Wipe away any spilled electrolyte fluid immediately with plenty of water.



Please note the detailed instructions of our EC safety data sheet for the electrolytes used.

- Store the device, accessories or chemicals in such a way that neither accessories nor chemicals can get into children's hands.



Wearers of pacemakers may:

- do not work with the device and do not be in the immediate vicinity of the device!

### 2.3.3 Check before each start of work



- All live cables and wires for damage to the insulation.
- All live cables and wires on breaks and kinks of the strands within the insulation.
- All Plugs and connectors for damage.
- All switches for damage, e.g. chipped housing parts.
- The ground clamp for external damage.
- Whether all accessible insulation is present and undamaged.
- Make sure that you do not draw or lay electrical wiring over sharp edges.
- Your workplace must be freely accessible
- Make sure that there are no tripping hazards.

### 2.4 Possible misuse



- Connecting to an incorrect mains voltage can lead to the destruction of the device.
- The connection of foreign components that are not released may be:
  - the destruction of the device.
  - to danger to persons.
- The use of chemicals that are not approved by Reuter GmbH & Co. KG may:
  - lead to damage to health,
  - the work result
  - Endangering persons
  - Destruction of components by the wrong chemicals

### 2.5 Restrisiken

Possible risk	Effect	Remedy
Electrolytes get into the hands of children or people who are inexperienced in handling chemicals.	Depending on the misuse <ul style="list-style-type: none"> <li>– Skin burns</li> <li>– Burns of clothing</li> <li>– Burns of other objects</li> <li>– Severe internal injuries when ingesting the chemicals</li> </ul>	Store electrolytes and other chemicals in such a way that the substances are only accessible to authorized persons.
Device is used by unauthorized persons (curiosity, play instinct)	<ul style="list-style-type: none"> <li>– Burns of the skin due to excessive heat generation of the electrode or workpiece</li> <li>– Inhalation of vapours with corresponding health damage</li> </ul>	Make sure that the device can only be used by authorized persons. Secure the device against improper use after use.

Table 1 Residual risks

### 3 Requirements for personnel and operators

#### 3.1 Operator



- The following knowledge is required:
  - Read and understand the user manual.
  - Safety instruction about the dangers of handling electrical equipment.
  - Safety instruction on the dangers of handling chemicals.
- The following activities may be carried out:
  - Operating the device.
  - Selection and use of electrolytes for appropriate applications. (Only electrolytes from Reuter GmbH & Co. KG)
  - Change of carbon fiber brush and wear parts.
  - Turn the device on and off.
  - Correction of slight disturbances after instruction.

This knowledge is imparted either by this operating manual, Reuter GmbH & Co. KG or other authorized persons or institutions.

#### 3.2 Operator



- The operator must regularly instruct the personnel in accordance with the legal requirements.
- Untrained personnel or unauthorized persons may not use the device.

### 4 Warranty and liability

Warranty and liability claims for personal injury and property damage are excluded if the damage is due to one or more of the following causes:



- **Improper use**
  - of the device.
  - the components belonging to the device.
  - the chemicals belonging to the electrochemical processing equipment.
  - Use of unsuitable chemicals.
  - Use of non-releasing accessories.
- **Failure to comply with the**
  - Work and safety instructions in this manual.
  - Operating instructions of the device or components.
- **Improper**
  - Commissioning of the device.
  - Putting the equipment into service in the event of improperly fitted protective devices.
  - Operation of the device
  - Maintenance of the device.
  - repairs carried out on the device.
  - Repair by unqualified personnel.
- **Use**
  - of the device in residential and office premises.
  - of the equipment in a fire and explosion hazard environment.
  - of the device in a humid environment.
  - Unauthorized structural changes to the device
- **Noncompliance**
  - the prescribed maintenance intervals



### Hint

For damages and disturbances caused by the operation of the device with components and chemicals from other manufacturers, no claims whatsoever can be made against Reuter GmbH & Co. KG. Unless it is clearly proven that the damage was clearly caused by negligent design or production by Reuter GmbH & Co. KG and was foreseeable at the time of construction.

## 4.1 Material defects



- The customer must notify the supplier of material defects immediately within 14 days in writing.
- If no limitation periods for claims for material defects have been agreed by the supplier and consumer, the statutory provisions shall apply.
- In the case of a claim for material defects, submit a certificate showing that the limitation period has not been exceeded.

## 5 Terms

### Distilled water

Distilled water contains no minerals and is therefore very "soft". It is obtained by distillation.

### Demineralized water

Demineralized water is obtained by filtration. It contains hardly any minerals and is also very "soft".

### Electrolyte

Electrolytes are electrically conductive chemicals used to clean welds.

### Carbon fiber brushes

Carbon fiber brushes consist of up to 1.5 million individual carbon fibers. In the cleaning process, the current is distributed over the individual fibers.

A small arc (~3 - 7µm in size) forms on each fiber that comes into contact with the workpiece surface.

### Passivation

Passivation is the inactivation of oxidation processes on the workpiece surface by chemical treatment.

### Water hardness

The mineral content in the water determines the degree of hardness. The higher the concentration of certain minerals in the water, the higher the degree of hardness. The degree of hardness is given in "degree of German hardness" [°dH].

## 6 Delivery, internal transport, unpacking

The complete device set is delivered in a sturdy Euro plastic box. This box is closed with two plastic cable ties and a metal cable tie before shipment in our factory. The lid can only be opened by destroying and removing the cable ties.



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### Security

In principle, all activities required for delivery, transport, unpacking and storage must be carried out with the utmost care and all rules and regulations required for safety must be complied with. Failure to comply with safety rules and regulations can lead to severe cuts, bruises and bone fractures.

### 6.1 Delivery

- 
- The delivery of the device set takes place in a Euro plastic box.

### 6.2 Unwrap



- Cut the cable ties
- Make sure you don't cut yourself on the metal cable tie!
- Open the Euro box carefully.

#### 6.2.1 Opening the Euro plastic box






- Remove the three cable ties.
- Open the transport box.
- Check the scope of delivery for completeness on the basis of the delivery note.
- Complain about missing, damaged or undelivered goods immediately.

## 7 Scope of delivery Cleanox 3.0 device set



- When unpacking the delivery, check the completeness of the device set.
- Complain about missing or damaged parts immediately.

**7.1 Delivery list cleaning set Cleanox 3.0**

Description		Quantity	Order-No.	Illustration
<b>Cleaning Cleanox 3.0 Set</b>	✓	1	EP-01-013	
<b>Single parts cleaning set</b>		Quantity	Order-No.	Illustration
<b>Solo Device Cleanox 3.0 only</b>	✓	1	EP-01-113	
<b>Teflon handles with 4m cable 10mm<sup>2</sup></b>	✓	1	EP-07-600	
<b>Ground cable 4m, with 200A pliers</b>	✓	1	EP-07-605	
<b>Performance-Brush Adapter M10 auf M10</b>	✓	1	EP-02-930	
<b>Performance-Brush Carbon Brush XL – 5er Set</b>	✓	1/5	EP-02-929	
<b>Performance-Brush - Teflonsleeve XL</b>	✓	1	EP-02-928	
<b>Cleaner 1l bottle</b>	✓	1	EP-04-130	
<b>Polisher 1l bottle</b>	✓	1	EP-04-132	








Wide neck container with blue lid	✓	1	EP-07-100	
Spray for water	✓	1	EP-07-002	
Wrench SW 10	✓	1	EP-B-02-932	
Mountingpin 5x100	✓	2	EP-07-223	
Euro plastic box	✓	1	EP-07-017	

Table 2 Delivery list

## 8 Storage

For safe and gentle storage of the device and accessories, observe the following measures:

- Leave the device set in the closed transport box.
- Protection against moisture and dust.
- Ambient temperature 5°C to 40°C.
- Do not store outdoors.
- Protect against the effects of acids and alkalis.
- Store only in a normal position.
- Do not expose to ionising or non-ionising radiation.
- The equipment set must not be subjected to vibration, shock or continuous shock.



### Security

Chemicals must not get into the hands of children!  
**Keep the chemicals under lock and key!**

## 9 Installation conditions

### 9.1 Safety



The device and accessories may only be installed and operated in one place corresponding to the installation conditions.

All electrical connections must comply with the applicable safety regulations and standards.

## 10 Decommissioning / Storage

- Decommissioning
- Turn off the device.
- Wipe the cables with a damp cloth.
- Clean the device and accessories thoroughly. Have maintenance work carried out by a specialist.
- Detailed instructions for cleaning the device and accessories can be found below.
- Dry all items
- Close the electrolyte containers carefully so that no electrolyte can leak. Store the device and accessories in the transport box.
- Close the transport box and secure it with a cable tie against accidental opening

## 11 Storage

- Store the sealed transport box dry and frost-free.
- Make sure that the locked transport box cannot get into the hands of children or unauthorized persons.

## 12 Equipment technology

The device is a compact electrochemical weld cleaning device. It was developed for commercial use in trade and industry. The simple operation makes the device ideal for construction site and installation in pipeline construction.

- It is suitable for cleaning/polishing TIG and MAG welds.
- Toxic hydrofluoric, sulfuric or nitric acids as in conventional pickling processes are not used here.
- The electrochemical processing equipment works with low alternating voltages that are harmless to humans.



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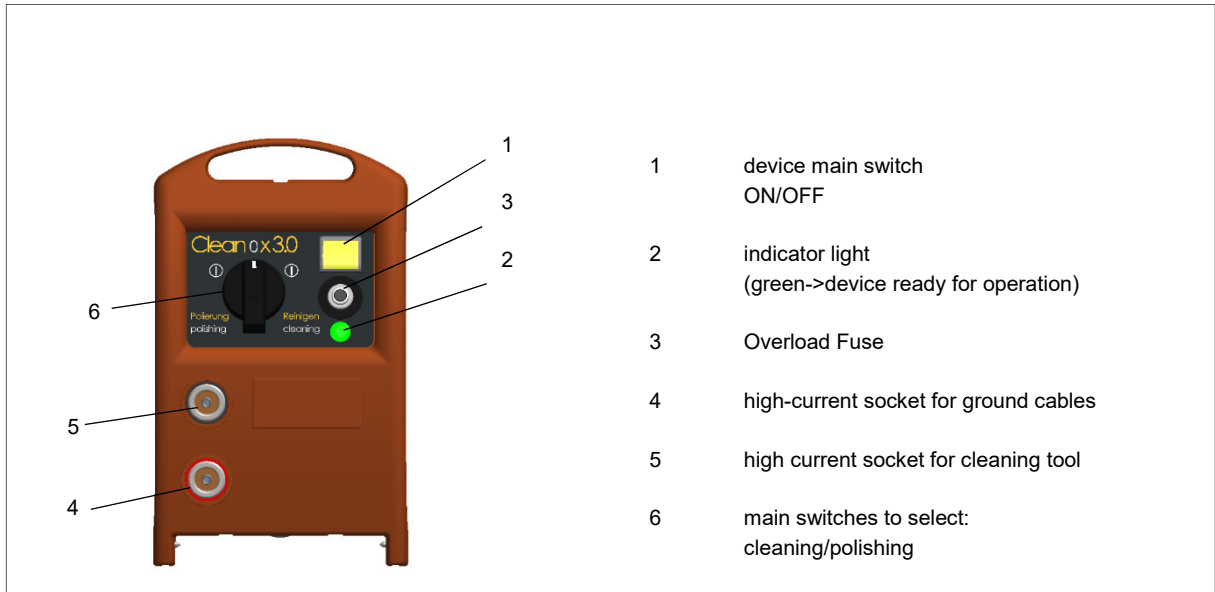
### Hint

Our cleaning electrolytes are guaranteed to be non toxic!

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### 13 Control and operating elements

#### 13.1 Elements on the front panel

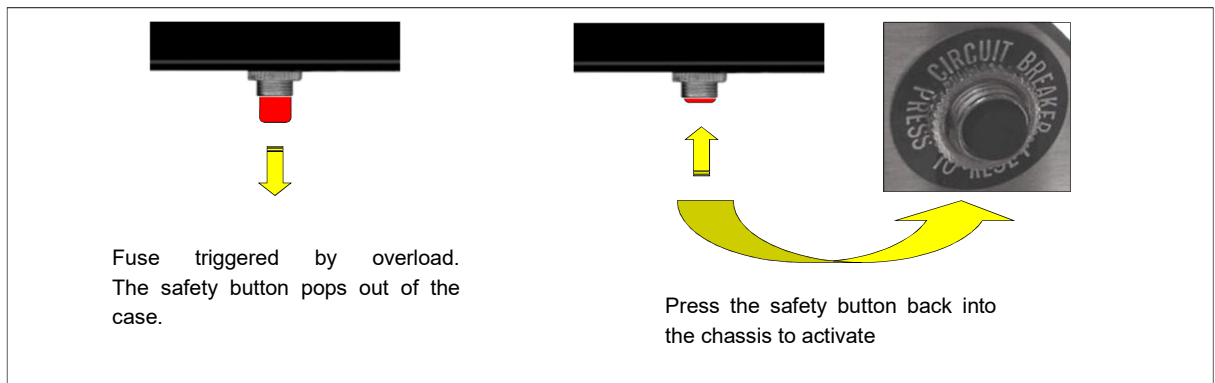


#### 13.2 Overload FUSE



The device is equipped with a circuit breaker.

- In the event of overload or electrical short circuit, the circuit breaker interrupts the circuit.



#### Security

Wait a moment for the fuse to cool down. Before activating the safety button:

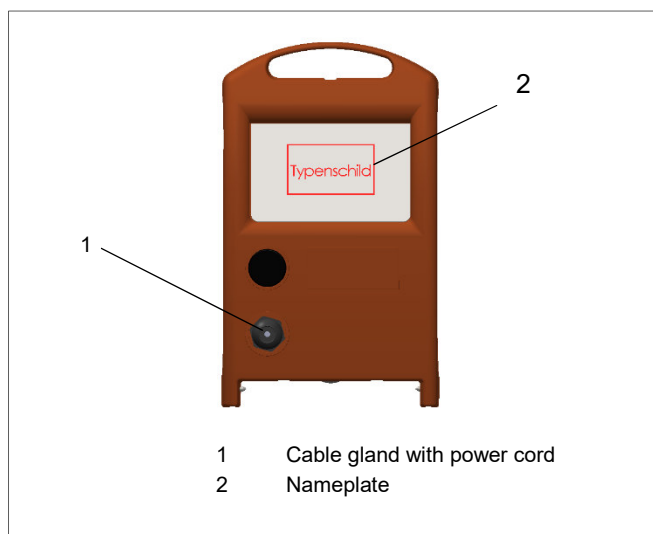
- the device should be turned off.
- The brush must not be in contact with the workpiece or mass.

If the backup is triggered again, check your way of working!


- Dip and dig brushes more often and longer!
- Do not press brush too the workpiece!



### 13.3 Elements on the back wall

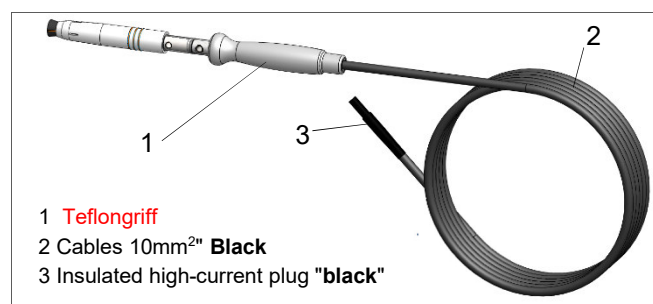


- Mains voltage 230V/50Hz
- Type plate:

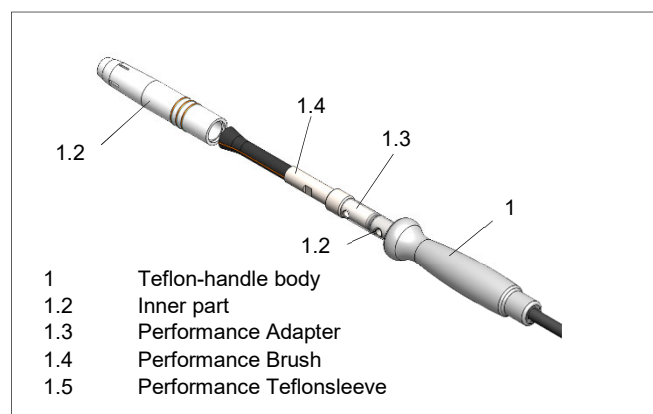
<b>Cleanox 3.0</b>		Serien-Nr. XXX/XX.XX-XXX Mehr Infos unter:
Elektrochemisches Reinigungsgerät		
Sicherheitsrats VDE 0670 EN 61558 U1=230V 50Hz U2=9.5VAC/16.5VDC	P1=1250VA IP 21	
Reuter GmbH & Co. KG Schimmelbuschstr. 9e 40699 Erkrath MADE in Germany	Tel.: +49-211-17177456 Fax: +49-211-17177458 www.reuter.de	

## 14 Accessories

### 14.1 Handle with cable



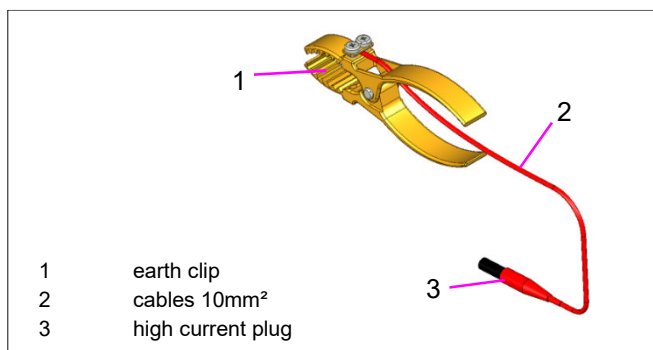
- The PTFE- Handle (1) is fixed with the **blacks** 10mm<sup>2</sup> Cable (2) and the **blacks** High current plug (3).
- **Always** plug the black high-current plug (3) into the **black** high-current socket.
- Tool connections are always **black**.



The Teflon handle consists of the following components:

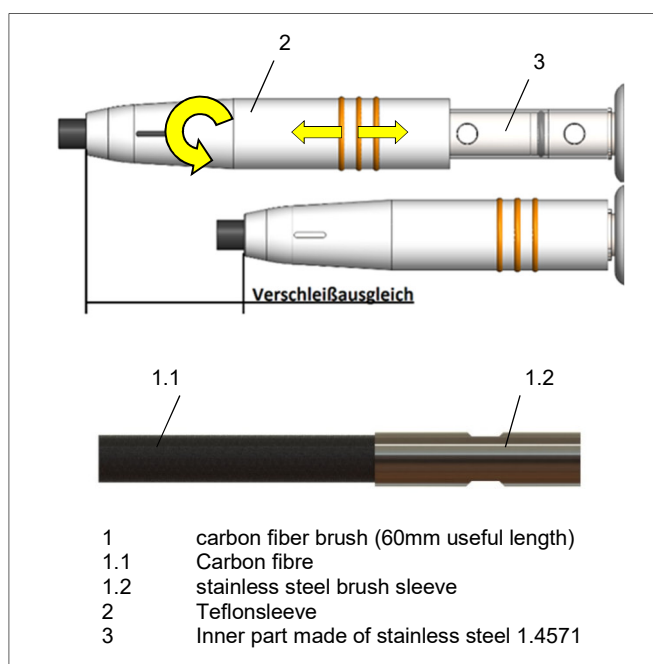
- PTFE handle body (1)
  - Electrical insulation
  - Thermal insulation
- Inner part (1.2)
  - Electrical transmission
  - Wärmeabführung
- Performance Adapter(1.3)
  - Electrical transmission
  - Connection handle ↔ brush
  - Protection of the inner part
- Performance Brush (1.4)
  - Electrical transmission
  - Cleaning tool
- Performance Teflonsleeve (1.5)
  - Wear compensation

### 14.2 Ground terminal with cable



- The ground terminal (1) can be connected to the device like the handle by a high-current plug (3).
  - A cable with a cross-section of 10mm<sup>2</sup> is used for power transmission.
  - The mass pliers are made of cast brass, therefore very stable and do not scratch the workpiece surface.

### 14.3 Cleaning Tool



Use the included Carbon fiber brush for cleaning welds.

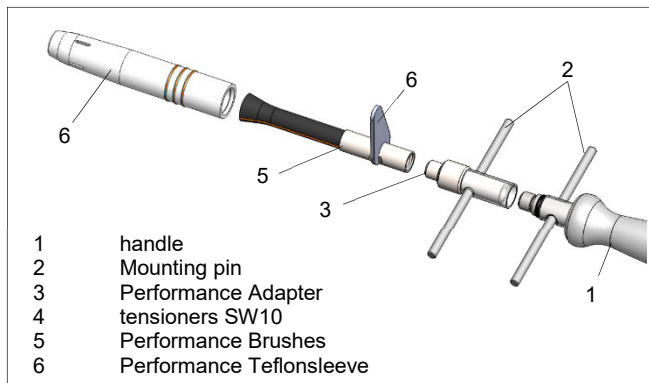
The carbon fiber brush consists of the following components:

- individual carbon fibres (1.1)
  - at the ends of which the arcs important for cleaning are created
- stainless steel brush sleeve

To work, you will also need:

- Threaded inner part (3)
  - Attachment of the brush to the handle and power transmission: handle ↔ carbon fibres
- Teflonsleeve (2)
  - Wear compensation
  - The burning of the carbon fibres is compensated by turning

## 14.4 Assembly carbon fiber brush / handle



To mount a brush correctly on the handle, follow these steps:

- Connect the adapter to the handle
- Use the mounting pins
- Tighten the adapter so that the pins bend slightly
- The pins are soft-annealed so you can create the right tightening torque
- Connect the brush to the adapter
- Use a SW 10 spanner and a mounting pin
- Tighten the brush properly
- Thread the Teflon sleeve over the brush and gently screw it onto the adapter



### Hint:

Only loosen the screw connections when replacing the components! It is not necessary to clean the individual parts. With each loosening there is the possibility to drag electrolyte into one of the threads. This leads to oxidation and contact problems! Always make sure that the components are mounted correctly.



### Security:

Make sure that the carbon fiber brush is firmly screwed on. A loose screw connection can stew and damage the thread.

- The Teflon insulation must be present on the inner part, otherwise the high currents could lead to shunts with the workpiece.

### Indication of possible malfunction

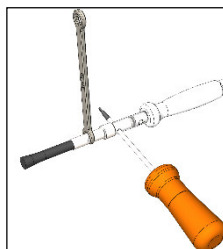
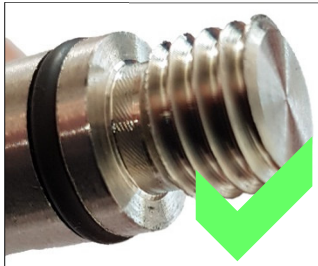
At the front of the brush there is no or insufficient power and the green LED on the front of the case lights up.

- Cause: There is a 99% probability that there is not enough contact between the threaded piece and the brush.

### Remedy:

Check threads for:

- Oxidation, damage, loose fit.
- Clean threads with wire brush.
- Some copper paste or molykote grease on thread.
- Screw the threaded piece and brush tightly.
- To do this, use suitable SW10 spanners.
- When replacing brushes, tighten the new brush with two SW10 spanners each time

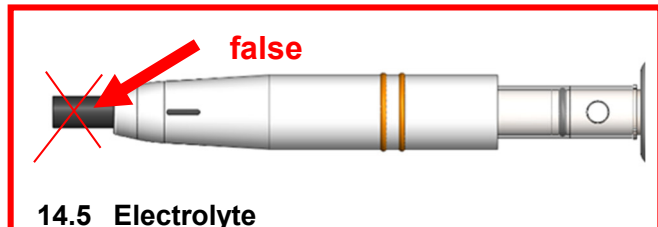
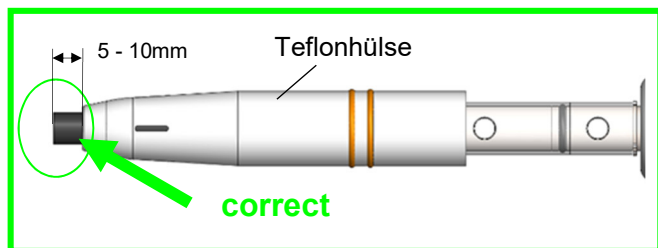


### Hint:

To loosen the brush you can use a normal spanner SW10 and e.g. a Phillips screwdriver or 4 Allen wrench, as the mounting pins may be too soft to loosen the screw connections.

**Attention:** Never transmit force with the hardened tip in the transverse bore, please plug through far enough!

### 14.4.1 Adjusting the Teflon sleeve



- Use during the cleaning process the carbon fiber tips of the carbon fiber brush.
- With the Teflon sleeve you resemble the Wear of carbon fibers.
  - Adjust the Teflon sleeve on the carbon fiber brush so that the carbon fiber tips protrude about **5-10 mm**.
  - This is the only way to form as many arcs as possible between the carbon fiber ends and the workpiece! This guarantees an optimal cleaning effect.

### 14.5 Electrolyte



#### 14.5.1 Using the electrolyte

#### Hint

When using the electrolytes, follow our operating instructions exactly. Observe all safety regulations.

- Use only the supplied electrolyte.
- Unscrew the cap of the electrolyte bottle.
- Fill the supplied wide-neck container with electrolyte until the first mark
- Close the storage bottle before continuing to work!



#### Security

The wide-neck container or bottle can tip over due to the weight of the handle or accidentally pulling on the supply line. Electrolyte can leak! Never fill the wide-neck container completely. Be careful not to leave the brush in the container.

#### 14.5.2 Information on non-toxicity



We only use non-toxic mineral acid as cleaning electrolytes.

- Our electrolytes are also used as acidifiers and preservatives in food in low concentrations, for example in cola as acidifier E338.



**We hereby confirm that our cleaning electrolytes Cleaner, SuperCleaner and Polisher are non-toxic!**

#### 14.5.3 Scope of delivery information

- We supply cleaning electrolyte in 1000 ml UN approved dangerous goods bottles.
- Our containers are provided with safety locks and thus leak-proof sealed until opening.

## 15 Commissioning



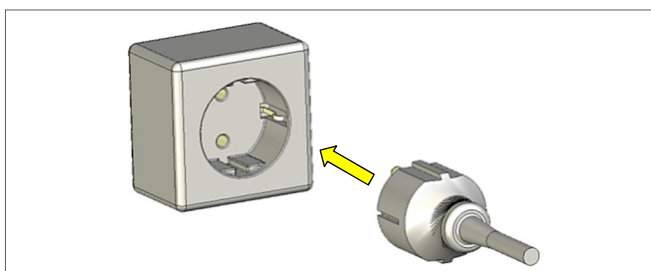
### Security

The power switch must be switched off and the cable disconnected from the mains when working on the device.

- Power switch off
- Unplugged the power cord from the wall outlet

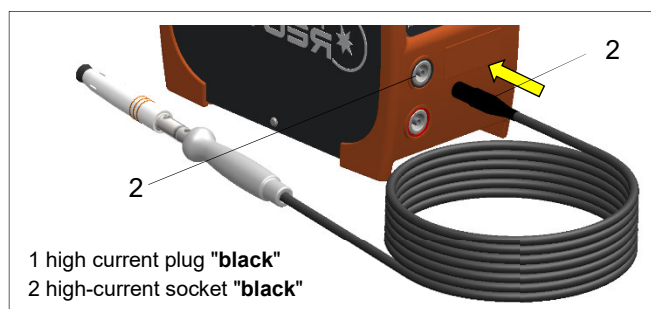
The device is equipped for single-phase connection to 230V/50Hz Schuko sockets and is equipped with a standard Schuko plug.

### 15.1 Mains connection



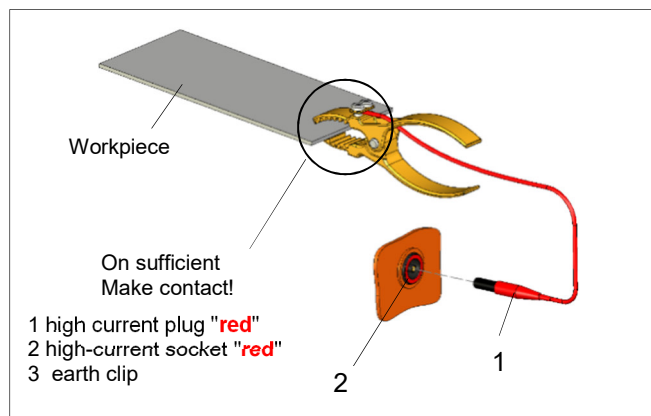
- Connect the power plug of the device to a suitable 230V wall socket.
- Observe the safety instructions.

### 15.2 Connection handle with carbon fiber brush



- Mount the carbon fiber brush
- Connect the black high-current plug to the **black** high-current connector on the device.

### 15.3 Connection ground terminal



- The ground terminal establishes the electrical contact between the workpiece and the electrochemical cleaning device.
- Ensure good electrical contact between the ground terminal and the workpiece.
- If necessary, clean the contact point.
- Connect the red high-current plug to the **red** high-current socket on the device.



### Security

Very high currents flow during cleaning.

- Connect the ground terminal directly to the workpiece, so you avoid bypass circuits.



## 15.4 Locking / unlocking high-current plugs



### Hint

The high-current plugs lock automatically when plugged into the high-current sockets and can only be unlocked by pressing again! Make sure you have correct connections.

- **Red high-current** plug into red high-current socket.
- **Black high-current** plug into black high-current socket.

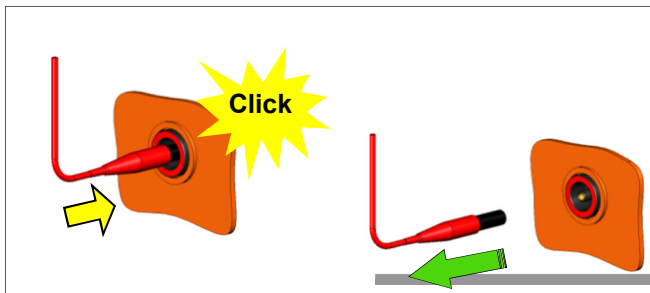
The procedure described below applies to **red** and **black** high-current connectors.

### 15.4.1 Locking high-current plugs



- Push the high-current plug as far into the high-current plug until you feel a clear snap.
- Check the correct fit of the high-current plug by pulling it back slightly.
  - The plug must not come loose.

### 15.4.2 Unlocking the high-current plug



- To unlock, lightly push the high-current plug into the high-current plug until you feel resistance (light clicking).
  - The latch is released.
  - Now unplug the high-current plug from the high-current socket.



### Security

- Never pull the plugs out of the socket by the cable!
- The cables may be damaged.
- Never load the plugs crosswise.

## 16 Cleaning with the carbon fiber brush

### 16.1 Preparation

Prepare your workplace. Provide the necessary components at the workplace:

- Cleaning equipment
- Handle with carbon fiber brush
- Earth Clip
- Cleaning Electrolyte: Cleaner, SuperCleaner or Polisher
- Distilled water for rinsing
- Clean Paper Towel



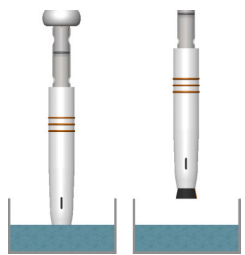


#### Security

Are all components installed and connected correctly?  
Do you wear your personal protective equipment?



### 16.2 Carbon Fiber Brush Cleaning Workflow

	Workflow - Cleaning -	Remark
1		<ul style="list-style-type: none"> <li>● Turn on the device. <ul style="list-style-type: none"> <li>➢ The power button is lit.</li> <li>➢ The green indicator light lights up as soon as the Power button is turned on.</li> </ul> </li> <li>● Set the main switch to Clean</li> </ul>
2		<p><b>Security</b></p> <ul style="list-style-type: none"> <li>➢ <b>Never</b> turn on the device via the power button several times in quick succession ON / OFF.</li> <li>➢ By switching on / off too quickly one after the other the electronics in the device can be damaged. Wait at least 30 seconds after switching off before turning the device back on.</li> </ul> <p>Use your personal protective equipment at work to protect yourself from the acid!</p> <p>Familiarize yourself with the safety data sheet of the electrolytes.</p>
4		<ul style="list-style-type: none"> <li>● Dip the carbon fiber brush into the electrolyte.</li> <li>● Pull the carbon fiber brush out again and drain excess electrolyte.</li> </ul>

5		<ul style="list-style-type: none"> <li>● Place the brush <b>vertically</b> .</li> <li>● Now lightly stroke the weld seam with the brush.</li> <li>● Never push the carbon fiber brush too hard. <ul style="list-style-type: none"> <li>➢ Let the brush slide over the workpiece in a circular (1-2cm diameter) motion.</li> </ul> </li> <li>● Maximum cleaning effect when the carbon fibers are perpendicular to the workpiece surface. <ul style="list-style-type: none"> <li>➢ This is the only way to create the arcs that are decisive for the cleaning process at the carbon fiber tips.</li> </ul> </li> <li>● Depending on the nature of the weld, you have to brush over it several times to achieve the desired cleaning effect. <ul style="list-style-type: none"> <li>➢ The darker the tarnish colors of the welds, the longer the cleaning phase.</li> </ul> </li> </ul>
6		<ul style="list-style-type: none"> <li>● Dip the carbon fiber brush into the container regularly. <ul style="list-style-type: none"> <li>➢ Move the carbon fiber brush back and forth in the container 2-3 times, squeezing the fibers at the bottom.</li> <li>➢ Dissolved oxides are removed.</li> <li>➢ The carbon fibres can absorb fresh electrolyte.</li> <li>➢ They achieve maximum cooling of the electrode and increase the service life.</li> </ul> </li> </ul>
7		<ul style="list-style-type: none"> <li>● Spray the surface with ultrapure water immediately after cleaning. <ul style="list-style-type: none"> <li>➢ It is best to use a spray bottle.</li> <li>➢ Use distilled or demineralized water.</li> <li>➢ This way you avoid unsightly white limescale edges.</li> <li>➢ The water hardness must be less than 10° dH.</li> <li>➢ The abruptly evaporating water carries away the dissolved impurities and electrolyte residues.</li> <li>➢ Alternatively, Neutralyt can be used.</li> </ul> </li> </ul>
8		<ul style="list-style-type: none"> <li>● Dry the surface. <ul style="list-style-type: none"> <li>➢ Use a clean paper towel every time.</li> <li>➢ This gives you a stain-free, dry surface.</li> </ul> </li> </ul>
9		<ul style="list-style-type: none"> <li>● After work: <ul style="list-style-type: none"> <li>➢ Gently brush off the excess electrolyte on the brush at the edge of the container.</li> <li>➢ Rinse the bulk tongs with water.</li> <li>➢ Close the wide-neck container.</li> <li>➢ Put the protective cap over the brush.</li> <li>➢ Store all components in the transport box.</li> </ul> </li> </ul>

**Further information on how to improve the cleaning result can be found in the "Tips".**

Table 3 Cleaning Workflow

## 17 Polishing with the carbon fiber brush

### 17.1 Preparation

Prepare your workplace. Provide the necessary components at the workplace:

- Cleaning equipment
- Handle with carbon fiber brush
- Earth Clip
- Cleaning Electrolyte: Polisher
- Distilled water for rinsing
- Clean Paper Towel



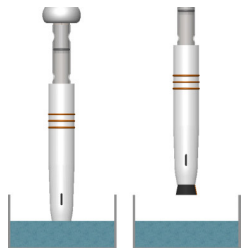


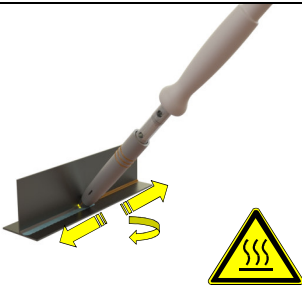
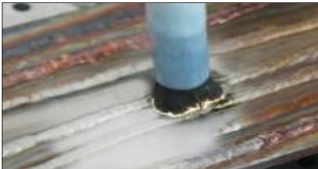

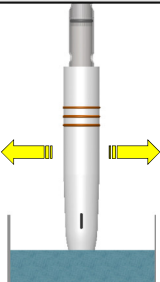
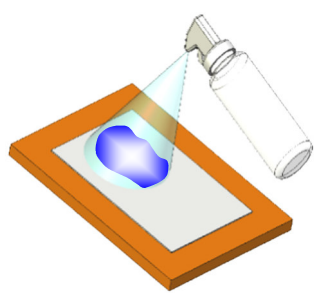
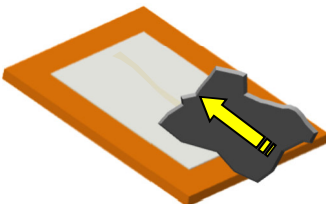
#### Security

Are all components installed and connected correctly?  
Do you wear your personal protective equipment?



### 17.2 Workflow Polishing with the Carbon Fiber Brush

	Workflow - Polishing -	Remark
1		<ul style="list-style-type: none"> <li>● Turn on the device. <ul style="list-style-type: none"> <li>➢ The power button is lit.</li> <li>➢ The green indicator light lights up as soon as the Power button is turned on.</li> </ul> </li> <li>● Set the main switch to polish</li> </ul>
2		<p><b>Security</b></p> <ul style="list-style-type: none"> <li>➢ <b>Never</b> turn on the device via the power button several times in quick succession ON / OFF.</li> <li>➢ By switching on / off too quickly one after the other the electronics in the device can be damaged. Wait at least 30 seconds after switching off before turning the device back on.</li> </ul> <p>Use your personal protective equipment at work to protect yourself from the acid!</p> <p>Familiarize yourself with the safety data sheet of the electrolytes.</p>
4		<ul style="list-style-type: none"> <li>● Dip the carbon fiber brush into the electrolyte.</li> <li>● Pull the carbon fiber brush out again and drain excess electrolyte.</li> </ul>

<p>5</p>	  	<ul style="list-style-type: none"> <li>● Place the brush <b>vertically</b> .</li> <li>● Now lightly stroke the weld seam with the brush.</li> <li>● Never push the carbon fiber brush too hard. <ul style="list-style-type: none"> <li>➢ Let the brush slide over the workpiece in a circular (1-2cm diameter) motion.</li> </ul> </li> <li>● Polishing takes more time than cleaning. (10 μm per minute and cm<sup>2</sup>) <ul style="list-style-type: none"> <li>➢ Slide the brush over the surface until you are satisfied with the result.</li> <li>➢ Dip the brush regularly into the electrolyte and rinse the workpiece with demineralized-water to prevent overheating of the components!</li> </ul> </li> <li>● Maximum polishing effect can be achieved when the carbon fibers are perpendicular to the workpiece surface. <ul style="list-style-type: none"> <li>➢ This is the only way to create the arcs that are decisive for the polishing process at the carbon fiber tips.</li> </ul> </li> <li>● Depending on the nature of the weld, you have to brush over it several times to achieve the desired cleaning effect.</li> </ul>
<p>6</p>		<ul style="list-style-type: none"> <li>● Dip the carbon fiber brush into the container regularly. <ul style="list-style-type: none"> <li>➢ Move the carbon fiber brush back and forth in the container 2-3 times, squeezing the fibers at the bottom.</li> <li>➢ Dissolved oxides are removed.</li> <li>➢ The carbon fibres can absorb fresh electrolyte.</li> <li>➢ They achieve maximum cooling of the electrode and increase the service life.</li> </ul> </li> </ul>
<p>7</p>		<ul style="list-style-type: none"> <li>● Spray the surface with ultrapure water immediately after polishing. <ul style="list-style-type: none"> <li>➢ It is best to use a spray bottle.</li> <li>➢ Use distilled or demineralized water.</li> <li>➢ This way you avoid unsightly white limescale edges.</li> <li>➢ The water hardness must be less than 10° dH.</li> <li>➢ The abruptly evaporating water carries away the dissolved impurities and electrolyte residues.</li> <li>➢ Alternatively, Neutralyte can be used.</li> </ul> </li> </ul>
<p>8</p>		<ul style="list-style-type: none"> <li>● Dry the surface. <ul style="list-style-type: none"> <li>➢ Use a clean paper towel every time.</li> <li>➢ This gives you a stain-free, dry surface.</li> </ul> </li> </ul>


9		<ul style="list-style-type: none"> <li>● After work: <ul style="list-style-type: none"> <li>➤ Gently brush off the excess electrolyte on the brush at the edge of the container.</li> <li>➤ Rinse the bulk tongs with water.</li> <li>➤ Close the wide-neck container.</li> <li>➤ Put the protective cap over the brush.</li> <li>➤ Store all components in the transport box.</li> </ul> </li> </ul>
<p><b>Further information on how to improve the polishing result can be found in the "Tips".</b></p>		

Table 4 Polishing Workflow

### Tips to improve the cleaning result

- Long-lasting cleaning/polishing without rewetting the carbon fiber brush with electrolyte leads to strong heating of the electrode and the workpiece.
  - This increases the wear of the carbon fiber brush and reduces the service life and cleaning effect!
  - Never clean on one spot for too long.
- Sometimes, after machining, matte spots remain to the right and left of the weld, in the area of the HAZ (heat-affected zone). The matte areas are caused by the welding process (chrome depletion).
  - This is process-related and can be reduced by more intensive cleaning or polishing!
- It is best to use demineralized water.
  - This is how you avoid white limescale edges.
  - The water hardness must be less than 10° dH.
- Clean the surface dry with clean paper towels.
  - Make sure that you always use a clean cloth, otherwise spread the applied electrolyte on the component.
- If necessary, finish your workpiece with a commercially available stainless steel care product.
  - This makes the surface less sensitive to renewed contamination such as fingerprints.



## 18 Possible errors and their remedy

Fault / error message	Possible cause(s)	Remedy
No cleaning effect although the green control LED is lit	<ul style="list-style-type: none"> <li>- Ground terminal not connected</li> <li>- Thread on the cleaning handle oxidized or dirty</li> </ul>	<ul style="list-style-type: none"> <li>- Connecting the ground terminal</li> <li>- cleaning with wire brush</li> </ul>
Weld seam or surface becomes matt	<ul style="list-style-type: none"> <li>- Do not stay in one place for too long when cleaning</li> <li>- Surface too hot</li> <li>- Too little electrolyte</li> <li>- Electrolyte quality too poor or used</li> </ul>	<ul style="list-style-type: none"> <li>- Do not stay in one place for too long when cleaning</li> <li>- Cool the surface (spray water on the surface)</li> <li>- Increase the amount of electrolytes</li> <li>- Use unused electrolyte</li> </ul>
Carbon fiber brush burns and electrode gets hot	<ul style="list-style-type: none"> <li>- Too little electrolyte used</li> </ul>	<ul style="list-style-type: none"> <li>- more often dip the electrode into the wide-neck container and cool it</li> </ul>
Carbon fiber brushes wear out too quickly	<ul style="list-style-type: none"> <li>- too rough welds</li> <li>- too little cooled in the container</li> <li>- too high pressure when working</li> <li>- too little electrolyte used</li> </ul>	<ul style="list-style-type: none"> <li>- cool longer in the container</li> <li>- Work with less pressure</li> <li>- use more electrolyte</li> </ul>
Stains after rinsing (Occur partially after complete drying or about 48 hours)	<ul style="list-style-type: none"> <li>- not rinsed thoroughly enough with water</li> <li>- Limescale residues due to excessive water hardness</li> <li>- surface that is too hot</li> <li>- rests of electrolyte</li> </ul>	<ul style="list-style-type: none"> <li>- rinse thoroughly with water</li> <li>- Use lower hardness water</li> <li>- Edit shorter sections</li> <li>- use distilled water</li> <li>- rinse when the material surface is still hot</li> </ul>

Table 5 Possible errors and how to eliminate them



## 19 Specifications

<b>Product no.:</b>	<b>EP-01-113</b>
Power [VA]	1250
Weight [kg]	7,4
Set weight incl. accessories [kg]	11,8
Dimensions [mm]	250 x 150 x 330
Line voltage	230V / 50Hz / 6 A
Secondary voltage	9,5 / 12.5 V AC/DC
Protection	IP 21

Table 6 Technical data

## 20 Clean containers, handles and workstations



- If possible, clean all accessories with water after each use.
- In case of a short-term interruption of work < 1 week, it is sufficient to pack the brush with a protective cap. This protects the brush from dust or other dirt.
  - Loosen the connection between the brush and the handle only to replace the brush. Each loosening carries the risk of electrolyte carry-over into the thread and on the contact surfaces, this can lead to the destruction of these.
- Rinse the carbon fiber brush thoroughly under running water if you do not use it for a long time.
- If necessary, wipe the device housing with a light moistened cloth.
- Neutralize the diluted electrolyte residues.
- Clean the workplace thoroughly with plenty of water.
- Electrolyte residues can lead to skin or clothing burns.
- Electrolyte residues can cause damage to surfaces.
- Wipe the cables and the mass pliers wet with water and a cloth.
- Dispose of the neutralized electrolyte residues properly.
- Remove all electrolyte residues in the vicinity of the workplace, the workbench and the floor with plenty of water.
- Add commercial household cleaner or soap to the cleaning water.




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### Security

Always unplug the power before starting maintenance, servicing and repair work!

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## 21 Maintain



### Hint

The following maintenance operations may be carried out by the operator of the equipment himself:

- All cleaning work on the device housing
- all cleaning work on accessories
- Replacement of wear parts



### Security

The following maintenance work may only be carried out by a qualified electrician:

- A replacement of defective power plugs
- A replacement of defective power cords
- A exchange or separate all components in the device housing
- Repairing handle, mass pliers, cable

### 21.1 Inspection and maintenance plan

- The maintenance of the device consists of a thorough cleaning and inspection by a qualified electrician.
- The frequency depends on the degree of contamination.
- Follow the suggested maintenance intervals.
- Before starting inspection or maintenance, unplug the device.
- Remove dust deposits with a vacuum cleaner.
- Wipe the components with a dry cloth.
- Use only degreasers that are suitable for electrical equipment.
- Observe the instructions for cleaning the device and accessories.

### Inspection and maintenance plan

before start = before each start, t = daily, w = weekly, monthly = monthly, 1/4 yearly. = every 3 months, 1/2 yearly = every 6 months, yearly = every 12 months

Work to be carried out	before start	t	in	monthly.	1/4 year	1/2 year	Annual
Security review as described in Chapter 2 and below	X		X				
Check handle and brush for dirt and wear, clean or replace if necessary	X						
Cleaning ground terminals			X				
Check ground terminals for oxidation, clean if necessary		X					
Check electrolyte if consumed-->renew	X	X					
Cleaning power unit			X				
Maintenance of the device						X	
Retests according to VDE 0701-0 702							X

Table 7 Inspection and maintenance plan

## 22 Disposal

### 22.1 Disposing of contaminated electrolytes



- Dispose of **no** contaminated electrolytes undiluted into the Sewerage or environment.
- In the contaminated electrolytes, heavy metal residues from oxidized welds and metal surfaces may be dissolved.
- These must be filtered and disposed of properly.
- Before disposal, dilute electrolytes with plenty of water, lime or a neutralizing agent to a pH greater than 5.



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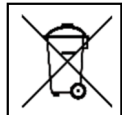
#### Hint

We are happy to provide you with a concept for professional water treatment.

Get in touch with us.

---

### 22.2 Disposal of e-waste



- Old appliances and batteries must not be disposed of with normal household waste.
- This device, as well as all components, must be disposed of in an orderly manner at the end of its service life.
- Return the old device and components to an electronic waste collection point.
- Contact your local waste management company or municipal administration for more information.

## 23 EC – Declaration of conformity

### Original declaration of conformity

Manufacturer

Reuter GmbH & Co. KG  
Schimmelbuschstr. 9E  
D-40699 Erkrath, Germany  
Germany



**Plenipotentiary  
for the compilation  
of the technical documentation**

Olaf Reuter

The general responsibility for drawing up this declaration of conformity lies with the manufacturer.

### Product

Description	Electrochemical weld cleaning device
Designation	Cleanox 3.0
Function	Device for cleaning, polishing, signing and passivation of welds.

The object of the declaration described above fulfils the relevant essential health and safety requirements of the EC directives mentioned below due to its design and construction in the version we have placed on the market. In the event of a change to the products not agreed with us, this declaration loses its validity.

**Relevant Harmonisation Directive  
Regulations of the EU**

2014/35/EU Low Voltage Directive  
2014/30/EU EMC Directive  
2011/65/EU RoHS Directive

**Applied harmonized  
Standards**

EN 61558-1; VDE 0570-1:2019-12  
EN 55014-1; VDE 0875:2018-08  
EN 61000-3-2; VDE 0838-2:2019-12  
EN 61000-3-3; VDE 0838-3:2020-07  
EN 61000-6-2; VDE 0839-6-2:2019-11  
IN 50581:2012-09  
IN 60974-1:2018-12  
IN 60974-10: 2016-10

Erkrath, 03 /03/2021

Dipl.-Ing. Olaf Reuter, Managing Director

## **24 Spare parts lists and circuit diagrams**

In the following appendix you will find the spare parts lists for the device and the handle as well as the circuit diagram.