WELD CLEANING SYSTEM FOR STAINLESS STEEL | SURFOX™

The safest & most efficient way to clean stainless steel welds

“Only the best”
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The SURFOX electrochemical weld cleaning system is a highly effective method of removing heat tint in the heat affected zone of welded stainless steel (TIG, spot, and pulsed MIG), without altering the surface of the parent material. SURFOX also promotes the formation of a uniform and durable chromium oxide passive layer to protect stainless steel against further corrosion.

SURFOX is safer, faster, and a more cost effective alternative to very hazardous pickling pastes and abrasive weld cleaning processes like wire brushing and grinding.

SAFE  SURFOX cleaning electrolytes are NSF registered to be used in food plants and pose no health hazards to operators.

FAST  Uniform cleaning and passivation at a rate of 3 to 5 feet per minute.

EASY TO USE  The integrated reservoir and dispensing pump automatically delivers the cleaning electrolyte to the tip of the SURFOX machine to ensure no interruption in the cleaning process.
Why is passivation important?

Stainless steel is generally able to resist corrosion thanks to a passive chromium oxide layer that forms on its surface. The formation of this protective layer is called passivation. However, abrasion or excessive heat - usually caused during welding - will destroy this protective layer and expose the area to corrosion.

Passivation occurs when the chromium contained in the stainless steel comes in contact with the oxygen in the air. This chemical reaction forms a passive chromium oxide layer, which will protect the surface of stainless steel. To form a thick and uniform chromium oxide passive layer, the surface of the parent material must be perfectly clean and free of any contaminants.

Mechanical abrasion, thermal treatment, welding, salt, strong acids and galvanic contamination will damage the chromium oxide layer and lead to unwanted oxidation. In order to fully restore the corrosion resistance of stainless steel and avoid any interference in the passivation process, the heat tint as well as other surface contaminants must be removed.

SURFOX is a safe, effective and fast electrochemical cleaning system. The rate of cleaning welds with this system is between 3-5 feet per minute.

The SURFOX system combines both the cleaning power of electrical current and the passivation properties of electrolyte cleaning solutions.

Passivation instantaneously begins after the SURFOX electrochemical cleaning process is completed. It usually takes between 24 to 48 hours for passivation to be completed and stabilized.

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**Beginning of passivation process**

![Diagram of passivation process](image)

**End of passivation process**

![Diagram of passivation process](image)
Electrochemical cleaning
Using SURFOX-G and SURFOX-T electrolyte solutions

**AC mode**
Using SURFOX-G and SURFOX-T electrolyte solutions

The electrochemical cleaning process uses the power of electrical current and the electrolyte cleaning solution to remove heat tint in heat affected zones without altering or damaging the surface of the parent material. It will leave a clean surface, free of residue and promote the formation of a uniform and stable chromium oxide passive layer that will protect the surface of stainless steel from oxidation. The electrochemical cleaning should always be done on AC (Alternate Current) mode available on all SURFOX machine models.

**DC mode**
Using SURFOX-T electrolyte solution

Electrochemical polishing is a process which removes parent material from the work piece and brightens the weld. This process will alter the surface and is mostly used to clean welds on mirror finished material. Electrochemical polishing is done on DC (Direct Current) mode available on the SURFOX MINI and SURFOX 204 models and can only be performed with SURFOX-T.
SURFOX 204 is an industrial, self-contained weld cleaning system with an integrated electrolyte solution tank, a low level indicator and an automatic dispensing pump. A variable speed pump (manual or automatic) continuously delivers the desired amount of electrolyte to the work piece.

This system is equipped with a self-regulating inverter board which automatically monitors and adjusts the current to ensure maximum cleaning effectiveness without loss of productivity.

The unit comes with:

› Variable current output knob, allowing the end user to pre-set the desired current level.
› Wand with on/off pump cycling controls.
› Electrical outlet for optional marking hand piece (hand piece not included)
› Switchable output: AC mode for cleaning and marking, DC mode for polishing and etching.
› Built in vapor elimination system (for confined work areas).

Also available as a kit with the carbon fiber brush with mini-wand kit (54-B 133) for small narrow areas. Order no. 54-D 264.

**Specifications:**

**Order no.**  54-D 214

**Electrical**

Input: 120V, 50/60 Hz, 4.0 A  
Output: 12-30 V AC/DC, 15 A

**Dimensions**

Length: 18.5" (47 cm)  
Width: 9 ¾" (25 cm)  
Height: 15" (38 cm)  
Tank capacity: 64.2 oz (1.9 liter)  
Length of hose: 13’ (4 meter)  
Weight: 38 lbs.(17.3 Kg)

**Features:**

› Electrochemical cleaning with AC mode: settings low, medium, high (6-12 A)  
› Electrochemical polishing in DC mode  
› Marking and etching options  
› Vapor elimination system

**Standard Equipment:**

› 3 standard cleaning pads (54-B 026)  
› 1 tungsten insert 90° (48-R 133)  
› 1 clamp ring (54-B 002)  
› 1 protective carry case
The SURFOX 104 is an industrial, self-contained weld cleaning system with an integrated electrolyte solution tank and an automatic dispensing pump. A variable speed pump (manual or automatic) continuously delivers the desired amount of electrolyte to the work piece.

This system is equipped with a self-regulating inverter board, which automatically monitors and adjusts the current to ensure maximum cleaning effectiveness without loss of productivity.

The unit comes with:
- Wand with on/off pump cycling controls
- Electrical outlet for optional marking hand piece (hand piece not included)

Also available as a kit with the carbon fiber brush with mini-wand kit (54-B 133) for small narrow areas. Order no. 54-D 164.

**Specifications:**

**Order no.** 54-D 114

**Electrical**
- Input: 120V, 50/60 Hz, 4.0 A
- Output: 12-30 V AC, 12 A

**Dimensions**
- Length: 18.5" (47 cm)
- Width: 9 ¾" (25 cm)
- Height: 15" (38 cm)
- Tank capacity: 64.2 oz (1.9 liter)
- Length of hose: 13’ (4 meter)
- Weight: 36.4 lbs. (16.5 Kg)

**Features:**
- Electrochemical cleaning in AC mode
- Marking option

**Standard Equipment:**
- 3 standard cleaning pads (54-B 026)
- 1 tungsten insert 90° (48-R 133)
- 1 clamp ring (54-B 002)
- 1 protective carry case
The ergonomically designed SURFOX MINI is the most compact member of the SURFOX family. The system has many important features built into a light and portable package which utilizes easy to carry liquid cartridges for dispensing the electrolyte solution. The SURFOX MINI is ideal for repairs, touch ups and small jobs.

### Specifications:

**Order no.** 54-D 054

**Electrical**
- Input: 120V, 50/60 Hz, 2.0 A
- Output: 10-30 V AC/DC, 1.5 A

**Dimensions**
- Length: 11” (28 cm)
- Width: 4 ½” (11 cm)
- Height: 6 ½” (17 cm)
- Weight: 7 lbs. (3.2 Kg)

### Features:

- Electrochemical cleaning in AC mode
- Electrochemical polishing in DC mode
- Marking and etching options
- Current output adjustment

### Standard Equipment:

- 3 standard cleaning pads (54-B 026)
- 1 tungsten insert 90° (54-B 036)
- 1 clamp ring (54-B 002)
- 1 protective carry case
- 1 wand stand
- 1 shoulder carry strap
SURFOX™ liquids

CLEANING & POLISHING ELECTROLYTES

SURFOX-G
pH Neutral Formulation

Apply with high conductivity SURFOX pads: 54-B 026, 54-B 027 or 54-B 028.

Features
› Great TIG and Spot weld cleaning on stainless or steel
› pH neutral
› Less fumes
› Safe alternative to pickling paste and strong acids
› Non-corrosive

SURFOX-T
Heavy duty formula

Apply with high conductivity SURFOX pads: 54-B 026, 54-B 027 or 54-B 028.

Features
› Formulated for the most demanding TIG, spot and pulsed MIG weld cleaning applications
› Safe alternative to pickling pastes and harsh acids
› Free from hydrofluoric acid and nitric acid
› Will remove light scaling

This heavy-duty electrolyte solution is composed of phosphoric acid and other additives which makes it ideal for the most demanding weld cleaning applications. SURFOX-T is formulated for cleaning TIG, spot and pulsed MIG welds.

Electrochemical polishing (DC mode)
When SURFOX-T is used in DC mode, it will electropolish the weld. SURFOX-T is formulated with built-in additives to promote polishing while cleaning heat tint and other contaminants from the weld.

Neutralization
Neutralizes SURFOX-G and SURFOX-T solutions. Apply to work surface after the electrochemical cleaning process.

Neutralization is necessary to stop the action of the acid used during electrochemical and electro polishing processes. If the acid is not completely neutralized, it will continue to interact with the surface of the stainless steel. Rinsing with water is not enough to properly neutralize. Rinsing with water will only dilute the acid.

For full neutralization first remove any excess electrolyte solution from the base material using a cleaning rag or a paper towel. Then neutralize by spraying SURFOX-N onto the surface and subsequently wiping the surface thoroughly with another clean cloth.

SURFOX-N
Neutralizing formula

Features
› Neutralizes SURFOX-G and SURFOX-T solutions. Apply to work surface after the electrochemical cleaning process.

Both SURFOX-G and SURFOX-T electrolyte cleaning solutions are NSF registered for food plant applications

The SURFOX system is ASTM A967 (ASTM A380) certified for passivation

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SURFOX™ accessories

**SURFOX™ MINI**

- **Tungsten insert 90°**
  - Order No.: 54-B 036
  - Use with cleaning pads 54-B 026 or 54-B 040 and clamp ring 54-B 002, or boots 54-B 005 or 54-B 055

- **Tungsten insert 60°**
  - Order No.: 54-B 037
  - Use with cleaning pad 54-B 027 and clamp ring 54-B 002 or boots 54-B 006 or 54-B 056

- **Large graphite insert for Micro-Wand**
  - Order No.: 54-B 048
  - 1.4" W - Ideal for surface renewing or restoring, and to clean the back of MIG welds

- **Narrow tungsten insert 90°**
  - Order No.: 54-B 038
  - Use with cleaning pads 54-B 028 or 54-B 041 and clamp ring 54-B 002, or boots 54-B 007 or 54-B 057

- **Narrow tungsten insert 60°**
  - Order No.: 54-B 039
  - Use with cleaning pad 54-B 028 and clamp ring 54-B 020 or boots 54-B 008 or 54-B 058

**SURFOX™ 104 & SURFOX™ 204**

- **Tungsten insert 90°**
  - Order No.: 48-R 133
  - Use with cleaning pads 54-B 026 or 54-B 040 and clamp ring 54-B 002, or boots 54-B 005 or 54-B 055

- **Narrow tungsten insert 90°**
  - Order No.: 54-B 017
  - Use with cleaning pads 54-B 028 or 54-B 041 and clamp ring 54-B 020, or boots 54-B 007 or 54-B 057

- **Large graphite insert for SURFOX 204**
  - Order No.: 54-B 009
  - 1.8" W - Ideal for surface renewing or restoring, and to clean the back of MIG welds

- **Tungsten insert 60°**
  - Order No.: 54-B 016
  - Use with cleaning pad 54-B 027 and clamp ring 54-B 002 or boot 54-B 006 or 54-B 056

- **Narrow tungsten insert 60°**
  - Order No.: 54-B 018
  - Use with cleaning pad 54-B 028 and clamp ring 54-B 020 or boot 54-B 008 or 54-B 058

- **Large pads for large graphite insert**
  - Order No.: 54-B 043
  - 3.5" L x 2" W x 0.8" T
  - Pack of 10 with O-ring

**FOR ALL MODELS**

- **Narrow clamp ring for narrow pads**
  - Order No.: 54-B 020
  - Use with narrow inserts 54-B 017, 54-B 018, 54-B 038 and 54-B 039
  - 10 per package

- **Carbon fiber brush for micro-wand**
  - Order No.: 54-B 029
  - Ideal for tight corners and intricate areas.
  - Pack of 5

- **Clamp ring for cleaning pads**
  - Order No.: 54-B 002
  - Use with inserts 48-R 133, 54-B 016, 54-B 036 and 54-B 037
  - 10 per package

- **SURFOX POWERCLOTH**
  - Order No.: 54-B 090
  - Pack of 10

**SURFOX station**

Order No: 54-B 050

Increased Efficiency for Production Units

This sturdy, portable workstation was designed from the ground up to offer convenient storage and handling for all things SURFOX. Keep your work area neat and organized while increasing the portability of your SURFOX 104 or 204 unit with the new SURFOX STATION.
## HIGH CONDUCTIVITY CLEANING PADS

Designed to be used with SURFOX-G and SURFOX-T

<table>
<thead>
<tr>
<th>Description</th>
<th>Order No.</th>
<th>Dimensions</th>
<th>Use with inserts</th>
<th>Package Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard cleaning pad</td>
<td>54-B 026</td>
<td>1.8” L x .9” W x .15” T</td>
<td>46 mm L x 24 mm W x 4 mm T</td>
<td>10 per package plus 1 clamp ring</td>
</tr>
<tr>
<td>Inside corners cleaning pad</td>
<td>54-B 027</td>
<td>2.3” L x 1.4” W x .07” T</td>
<td>60 mm L x 38 mm W x 2 mm T</td>
<td>10 per package plus 1 clamp ring</td>
</tr>
<tr>
<td>Narrow cleaning pad</td>
<td>54-B 028</td>
<td>1.8” L x .9” W x .07” T</td>
<td>46 mm L x 24 mm W x 2 mm T</td>
<td>10 per package plus 1 clamp ring</td>
</tr>
</tbody>
</table>

## HIGH CONDUCTIVITY CLEANING BOOTS

Designed to be used with SURFOX-G and SURFOX-T

<table>
<thead>
<tr>
<th>Description</th>
<th>Order No.</th>
<th>Dimensions</th>
<th>Use with inserts</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaning boots kit</td>
<td>54-B 059</td>
<td>1.8” L x .9” W x .15” T</td>
<td>46 mm L x 24 mm W x 4 mm T</td>
<td>10 per package plus 1 clamp ring</td>
</tr>
<tr>
<td>Cleaning boot for inside corners 90°</td>
<td>54-B 055</td>
<td>2.3” L x 1.4” W x .07” T</td>
<td>60 mm L x 38 mm W x 2 mm T</td>
<td>10 per package</td>
</tr>
<tr>
<td>Narrow cleaning boot 90°</td>
<td>54-B 056</td>
<td>1.8” L x .9” W x .15” T</td>
<td>46 mm L x 24 mm W x 2 mm T</td>
<td>10 per package plus 1 clamp ring</td>
</tr>
<tr>
<td>Narrow cleaning boot 60°</td>
<td>54-B 057</td>
<td>1.8” L x .9” W x .07” T</td>
<td>46 mm L x 24 mm W x 2 mm T</td>
<td>10 per package plus 1 clamp ring</td>
</tr>
<tr>
<td>Cleaning boot narrow 90°</td>
<td>54-B 058</td>
<td>1.8” L x .9” W x .07” T</td>
<td>46 mm L x 24 mm W x 2 mm T</td>
<td>10 per package plus 1 clamp ring</td>
</tr>
</tbody>
</table>

## CLASSIC CLEANING PADS

Designed to be used with SURFOX-T liquid.

<table>
<thead>
<tr>
<th>Description</th>
<th>Order No.</th>
<th>Dimensions</th>
<th>Use with inserts</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard cleaning pad</td>
<td>54-B 040</td>
<td>1.8” L x .9” W x .15” T</td>
<td>46 mm L x 24 mm W x 4 mm T</td>
<td>10 per package plus 1 clamp ring</td>
</tr>
<tr>
<td>Narrow cleaning pad</td>
<td>54-B 041</td>
<td>1.8” L x .45” W x .15” T</td>
<td>46 mm L x 12 mm W x 4 mm T</td>
<td>10 per package plus 1 clamp ring</td>
</tr>
<tr>
<td>Cleaning boot 90°</td>
<td>54-B 005</td>
<td>1.8” L x .9” W x .15” T</td>
<td>46 mm L x 24 mm W x 4 mm T</td>
<td>5 per package</td>
</tr>
<tr>
<td>Cleaning boot narrow 90°</td>
<td>54-B 007</td>
<td>1.8” L x .9” W x .15” T</td>
<td>46 mm L x 24 mm W x 4 mm T</td>
<td>5 per package plus 1 clamp ring</td>
</tr>
<tr>
<td>Cleaning boot 60°</td>
<td>54-B 006</td>
<td>1.8” L x .9” W x .15” T</td>
<td>46 mm L x 24 mm W x 4 mm T</td>
<td>5 per package plus 1 clamp ring</td>
</tr>
<tr>
<td>Cleaning boot narrow 60°</td>
<td>54-B 008</td>
<td>1.8” L x .9” W x .15” T</td>
<td>46 mm L x 24 mm W x 4 mm T</td>
<td>5 per package plus 1 clamp ring</td>
</tr>
</tbody>
</table>

## Application of a cleaning pad

1. Insert the clamp ring into the bracket.
2. Place the cleaning pad.*
3. Push insert through the pad & into the clamp ring.
4. The cleaning pad has been applied successfully.

* Classic pads: Ensure the \( \Omega \) sign is facing up.
The importance of recording your data! More and more, for quality purposes, it will become key to record and store all the information related to your stainless steel production and transformation processes. To help you achieve this objective, the passivation tester is equipped with built-in memory to allow end-users to keep secure records of their passivation data. Over time, this will enable you to monitor the quality of your work and make sure it always meets your customers’ standards.

Use the SURFOX passivation tester and see how you can easily record your passivation data for future access and reference!
SURFOX Marking and Etching Kits make company logos, part numbers, serial numbers, lot and batch numbers, model numbers, barcodes, QR codes and more easy to achieve.

SURFOX marking kits use a fast and simple electrochemical process that permanently marks and etches stainless steel surfaces. The marking & etching wand plugs directly into the SURFOX machine and is used with permanent or disposable stencils.

**SURFOX Standard marking kit**
Order no.: 54-B 080
Standard equipment:
› Marking and etching wand with cable and graphite tip 1.4” x 0.4”
› 20 marking pads and 5 o-rings
› SURFOX-M 3.4 oz black marking electrolyte solution
› SURFOX-E 3.4 oz etching electrolyte solution

**SURFOX PRO marking kit**
Order no.: 54-B 081
Standard equipment:
› Marking and etching wand with cable and graphite tip 1.4” x 0.4”
› 20 marking pads and 5 o-rings
› SURFOX-M 3.4 oz black marking electrolyte solution
› SURFOX-E 3.4 oz etching electrolyte solution
› Stencil printer, software and a 65.6 ft roll of stencil paper

**SURFOX-M Marking solution**
3.4 oz (100 ml) squeeze bottle
Order no.: 54-A 031
SURFOX-M is an electrolyte solution specially formulated to permanently black mark stainless steel on AC (alternating current) mode. This oxidation process will leave a dark mark on the surface of stainless steel without altering it. Marking on stainless steel is resistant against chemical attacks.

**SURFOX-E Etching solution**
3.4 oz (100 ml) squeeze bottle
Order no.: 54-A 041
SURFOX-E is an electrolyte solution specially formulated to permanently etch stainless steel on DC (direct current) mode which is available on SURFOX MINI and SURFOX 204 machines. Similar to polishing, the etching of stainless steel will remove material and alter the surface.

**Marking kits accessories**
- **Marking pads**
  Pack of 20
  No. 54-B 083
- **Graphite marking insert**
  No. 54-B 088
- **O-rings**
  Pack of 5
  No. 54-B 089
- **Power cable**
  No. 54-B 063
- **Stencil paper roll**
  65.6’ x 4”
  No. 54-B 086
  164’ x 4”
  No. 54-B 087
- **Marking wand**
  No. 54-B 082
marking stencils

Permanent stencils
Custom made stencils from a .bmp, .jpg, .tiff, .dwg, .ai, .cdr, .doc, .pdf document. Many sizes are available. Permanent stencils are ideal for the marking of your company logo and address as well as other recurring information from one part to another.

Permanent stencils can be reused hundreds of times if well maintained. For increased durability, neutralize the stencil with SURFOX-N and rinse after use and store in a sealable jar of water.

Disposable stencils
Disposable stencils are ideal for serial numbers, lots and batch numbers, barcodes, QR codes and other information that require constant change and evolution. You may now print labels on which the data changes for each label, for example, counter, serial numbers, date, and time. Use it once and dispose of it. Printing disposable stencils has never been easier with the PRO marking kit that includes a thermal printer and stencil paper rolls to suit your needs.

Disposalstencils

Disposable stencils

Disposable stencils are ideal for serial numbers, lots and batch numbers, barcodes, QR codes and other information that require constant change and evolution. You may now print labels on which the data changes for each label, for example, counter, serial numbers, date, and time. Use it once and dispose of it. Printing disposable stencils has never been easier with the PRO marking kit that includes a thermal printer and stencil paper rolls to suit your needs.

Marking with permanent stencils.

Marking with disposable stencils.

Result of black marking with permanent stencils.

Result of black marking with disposable stencils.

Disposablen stencil
printer and software

The stencil printer is part of the PRO marking kit and is a user-friendly way of creating and printing disposable stencils to fit your needs.

Stencil printer and software (laptop not included).
There’s good, there’s better and there’s... “Only the best”

WALTER Surface Technologies has been a leader in the industry for more than 50 years, and has been providing high productivity abrasives, power tools, tooling, chemical tools and environmental solutions. Founded in 1952, WALTER Surface Technologies is now established in 7 countries in North America, South America and Europe.

Our purpose is to contribute to our customers success by helping them work better. Our products and solutions are known throughout the industry for their uncompromising performance and quality. As a company, we continuously design and develop new tools to increase productivity, innovation and safety. Our corporate taglines, ONLY THE BEST and MAKING GREEN WORK, reflect the quest for excellence and quality that is embedded in each product we develop, each service we provide, and each solution we bring forward.

WALTER Surface Technologies is proud to have its research, development and distribution quality system certified under the International Standard ISO 9001: 1994.
“Only the best”

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   (1-866-592-5837)

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