

STAINLESS STEEL CLEANING,
ELECTROPOLISHING, PASSIVATING
SYSTEM

OPERATORS MANUAL



WELD CLEANING
SYSTEMS

WCS1200

Contents

Terms & Conditions.....
Routine Maintenance.....
Warranty statement.....
Safety Protection.....
Specifications..... WCS1200
Systems kit contents.....
Operating instructions.....
Brush range.....
Brush info.....
Important note.....
Troubleshooting.....
Electropolishing, Passivation info.....
MSDS....PHOSPHORIC ACID, CARBON FIBRE, SODA ASH
NEUTRALISING CHEMICALS, other chemical information.
Parts List
Registration Form



DISCLAIMER

Whilst all reasonable efforts have been made to ensure the accuracy of the information contained in this handbook at the time of going to press, WCS gives no warranty with regard to its accuracy or completeness. It is the responsibility of the reader to check the accuracy of the information contained in this handbook, read product labels and equipment instructions and comply with current regulations. If the reader is in any doubt with regard to the proper use of any technology they should contact the manufacturer or obtain alternative expert advice. WCS accepts no responsibility or liability for any injury, loss or damage incurred as a result of any use or reliance upon the information contained in this handbook.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the manufacturer. Information given in this manual may be subject to alteration without notice. Care has been taken to ensure that the contents of this publication are accurate but the manufacturer does not accept responsibility for errors or for information which is found to be misleading. Suggestions for or descriptions of the end use or application of products or method of working are for information only and the manufacturer accepts no liability in respect thereof. Before using products supplied or manufactured the customer should satisfy themselves of their suitability.

Meanings... WCS (WELD CLEANING SYSTEMS).

WARNING - Genuine WCS parts are the recommended replacement parts for your WCS system. Any damage caused by the use of other than genuine WCS parts may not be covered by the WCS warranty.

WARNING

You are responsible for the safe use of the Product. WCS does not and cannot make any guarantee or warranty regarding the safe use of the Product in your environment.

GENERAL

WCS warrants that its Products shall be free from defects in materials and workmanship, if WCS is notified of a defect (i) with respect to the power supply within a period of one (1) year from the date of its delivery to you, and (ii) with respect to the leads within a period of three (3) months from its date of delivery to you. This warranty shall not apply to any Product which has been incorrectly installed, modified, or otherwise damaged. WCS, at its sole option, shall repair, replace, or adjust, free of charge, any defective Products covered by this warranty which shall be returned with WCS's prior authorization (which shall not be unreasonably withheld), properly packed, to WCS's place of business in ADELAIDE, SOUTH AUSTRALIA, AUSTRALIA or to an authorized WP repairer, all costs, insurance and freight prepaid. WCS shall not be liable for any repairs, replacement, or adjustments of Products covered by this warranty, except those made pursuant to this paragraph or with WCS's prior written consent.

The warranty above is exclusive and is in lieu of all other warranties, express, implied, statutory, or otherwise with respect to the Products or as to the results which may be obtained there from, and all implied warranties or conditions of quality or of merchantability or fitness for a particular purpose or against infringement. The foregoing shall constitute the sole and exclusive remedy for any breach by WCS of its warranty.

Distributors/OEMs may offer different or additional warranties, but Distributors/OEMs are not authorized to give any additional warranty protection to you or make any representation to you purporting to be binding upon WCS.

LIMITATION OF LIABILITY - In no event shall WCS be liable to any person or entity for any incidental, consequential, indirect, or punitive damages (including but not limited to lost profits) regardless of whether such liability is based on breach of contract, tort, strict liability, breach of warranties, failure of essential purpose or otherwise and even if advised of the possibility of such damages.

LIABILITY CAP - In no event shall WCS's liability, whether such liability is based on breach of contract, tort, strict liability, breach of warranties, failure of essential purpose or otherwise, for any claim action suit or proceeding arising out of or relating to the use of the Products exceed in the aggregate the amount paid for the Products that gave rise to such claim.

INSURANCE - At all times you will have and maintain insurance in such quantities and types, and with coverage sufficient and appropriate to defend and to hold WCS harmless in the event of any cause of action arising from the use of the Products.

NATIONAL AND LOCAL CODES - National and Local codes governing electrical installation shall take precedent over any instructions contained in this manual. In no event shall WCS be liable for injury to persons or property damage by reason of any code violation or poor work practices.

Routine Maintenance - WARNING - ELECTRIC SHOCK CAN KILL

Disconnect electrical power before performing any maintenance. All work requiring removal of the power supply cover must be performed by a qualified technician.

Additional limitations, exclusions and requirements -

This warranty does not extend to:

- consumables such as the brush, cables and brush holder ;
- any defect caused by normal wear and tear or incidental or inconsequential damage;
- any defect caused by misuse, negligence or other abuse of the goods;
- any defect caused by accidents or alterations;
- goods that have not been cleaned and maintained in accordance with the user's manual supplied with the goods;
- loss or damage, including consequential loss or damage, to your work or facilities arising out of or in connection with the use of the WP1200 power unit; or
- unless otherwise expressly stated, any right to be reimbursed or compensated for physical or financial injury, loss, damage, expense, time or inconvenience (whether direct or indirect) arising out of the occurrence of the defect in the product or your inability to use the product.

Replace damaged power cord or plug.

USER RESPONSIBILITY

This equipment will perform in conformity with the description thereof contained in this manual and accompanying labels and/or inserts when installed, operated, maintained and repaired in accordance with the instructions provided. This equipment must be checked periodically. Malfunctioning or poorly maintained equipment should not be used. Parts that are broken, missing, worn, distorted or contaminated should be replaced immediately. Should such repair or replacement become necessary, the manufacturer recommends that a telephone or written request for service advice be made to from whom it was purchased. This equipment or any of its parts should not be altered without the prior written approval of the manufacturer. The user of this equipment shall have the sole responsibility for any malfunction which results from improper use, faulty maintenance, damage, improper repair or alteration by anyone other than the manufacturer or a service facility designated by the manufacturer.

READ AND UNDERSTAND THE INSTRUCTION MANUAL BEFORE INSTALLING OR OPERATING.

PROTECT YOURSELF AND OTHERS!

Warranty statement.....

Manufactured by.....WELD CLEANING SYSTEMS

Please take the time to fill in the warranty registration form and email it to.....

..... as this will ensure that we both have the same product and purchase information.

The warranty period is 1 year from the date of purchase as per purchase invoice. The conditions conferred by this warranty are in addition to all other conditions and warranties in respect to this product which the consumer may have under the Trade Practice Act 1974 of the Commonwealth of Australia and/or similar State, Territory or Country Laws. The warranty will cover freight, parts and labour at (WCS)'s option subject to warranty conditions listed.

WARRANTY VOID.....

- . if the serial number is removed or rendered illegible.
- . if the power source has been opened or tampered with.
- . if the machine has been used in a way other than it is recommended by (WCS).
- . if safety instruction have not been adhered to.
- . if the power source has been subject to excessive heat, liquids, grit.

ITEMS NOT COVERED BY THE WARRANTY.....1. BRUSHES 2. WORK CLAMP 3. LEADS . WCS accepts no liability pursuant to this warranty for any cost or consequential damage or economic loss whether direct or indirect to any person or property, arising from breakdown of or failure of this machine or any part thereof, and no responsibility is to be implied or accepted over and above the replacement value of the machine. This warranty is given by WCS and no other person or organisation is authorised to vary its provision and conditions.

Please take special note of safety requirements when using the WCS 1200 .

SAFETY INFORMATION

AS/NZS 1716 Respirators and Gas Mask

SAFETY: Personal protection can usually be maintained at a safe level by using a local exhaust ventilation system. Also wearing full-body protective clothing, acid-resistance gloves and boots, chemical worker goggles and a face shield can reduce your chances of harm.

When handling and storing phosphoric acid individuals should avoid breathing sprays or mists, ingesting, getting in eyes, on skin or on clothing. Phosphoric acid should also be stored in a cool, dry, well-ventilated place away from incompatible material.

Phosphoric acid is corrosive to numerous materials. Just like it attacks the material it is used on, if given the chance it will attack you (e.g. your eyes, skin, mouth, throat, clothing,...). A safety shower and eyewash should be made available to individuals working with and/or around phosphoric acid in order to minimize injury in case an accident does occur. Always treat phosphoric acid with care and respect.

REFER to the listed AUSTRALIAN SAFETY STANDARDS

Respiratory protection should comply with **AS 1716** - Respiratory Protective Devices and be selected in accordance with **AS 1715** - Selection, Use and Maintenance of Respiratory Protective Devices.

The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards **AS 1337** and be selected and used in accordance with **AS 1336**.

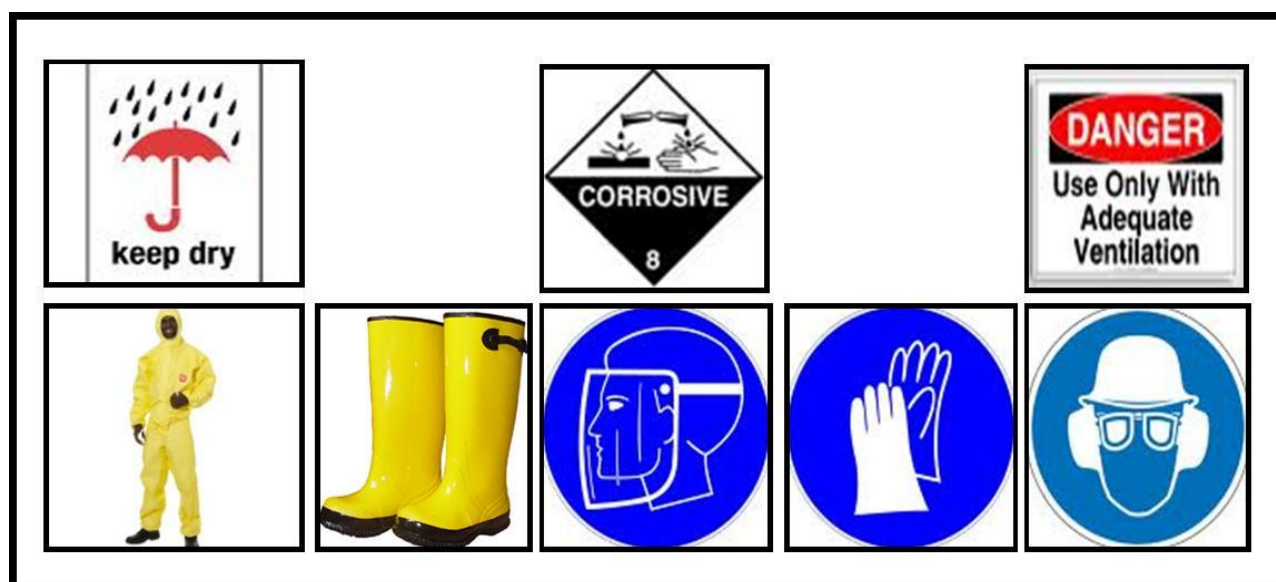
Hand protection should comply with **AS 2161**, Occupational protective gloves.

Foot protection should comply with **AS 2210**, Occupational protective footwear.

Clothing for protection against chemicals should comply with **AS 3765**.

Storage Regulations. Refer Australian Standard **AS 3780 - 1994** 'The storage and handling of corrosive substances'.

SAFETY EQUIPMENT RECOMENDED



SPECIFICATIONS

Voltage: 240V +5%/-10% 50/60Hz (10A Plug)

Input Current: 1 – 6 amps

Output Current Range: 10 - 120 Amps

Protection Class: IP21S

Duty Cycle: 100%

No-Load Power: 62W

- **Generator Recommended:** MIN ...8kVA
- **Power cord length:** 1.8m
- **Power Plug:** 10A

SIZE & WEIGHT

Product Dimensions (W x D x H): 13 x 25 x 36cm

Product Weight: 5kg

Automatic shutdown system prevents overload and overheating

WCS KIT

WCS-1200

POWER SUPPLY - LEAD SET - BRUSH HANDLE – KIT STORAGE CONTAINER -
INSTRUCTIONS - BUCKET SET – 1 litre PHOSPHORIC ACID – 700g of SODA
ASH - STAINLESS SHEARS - 1 of MEDIUM BRUSH - 1 of LARGE BRUSH
1 X BRUSH STORAGE CONTAINER – LEAD SET TRAY



OPERATING INSTRUCTIONS :

DIAL SETTINGS to BRUSH SIZE

SMALL / MEDIUM BRUSH.....THIN MATERIAL THICKNESS CLEANING (PASSIVATING)

THIN MATERIAL POLISHING.

MEDIUM MATERIAL THICKNESS (PASSIVATING)

MEDIUM / LARGE BRUSH.....MEDIUM MATERIAL THICKNESS (PASSIVATING)

MEDIUM MATERIAL POLISHING.

HEAVY MATERIAL THICKNESS (PASSIVATING)

LARGE / EXT. LG BRUSH.....HEAVY MATERIAL THICKNESS CLEANING and POLISHING

NOTE :

USING a SMALL, MEDIUM and LARGE BRUSH SET TO A LOW CURRENT SETTING.....

It is POSSIBLE to ONLY CLEAN the WELD STAINING.

THIS GIVES a CONTINUOUS EFFECT between WELD & MATERIAL.

OPERATING INSTRUCTIONS :

- 1/ **ADJUST CURRENT DIAL to REQUIRED RANGE.**
- 2/ **ATTACH WORK CLAMP to JOB.**
- 3/ **SOAK BRUSH into CLEANING FLUID.**
- 4/ **PLACE BRUSH ONTO JOB and OBSERVE a CONSTANT FIZZING.**
- 5/ **ONLY a LIGHT CONTACT of the BRUSH onto the METAL SURFACE is REQUIRED to OBTAIN the MAXIMUM HEAT into CLEANING the WELD.**
- 6/ **WIPE WELD JOIN WITH WET RAG.
(OBSERVE to see if WELD REQUIRES ADDITIONAL CLEANING)**
- 7/ **KEEP the BRUSH VERY WET at ALL TIMES.**
- 8/ **COOL BRUSH DOWN IN WATER AT INTERVALS to PROLONG BRUSH LIFE.**
- 9/ **A DRY BRUSH WILL ERRODE the BRUSH QUICKER and POSSIBLY MARK the JOB.**
- 10/ **WATER RINSE CLEANED AREA WITH a SOAKING WET RAG or HAND SPRAY.**
- 11/ **NEUTRALISE THE ACID WITH the NEUTRALISING SOLUTION.**
- 12/ **PRESSURE CLEANING of PANEL MAY be REQUIRED to REMOVE all RESIDUE from the CLEANING PROCESS.**

NOTE :

INSPECT UNIT for DAMAGE PRIOR to USE.

**ONLY USE ON a GENERATOR 8KVA and GREATER for POWER.
(STABLE POWER SOURCE)**

WCS BRUSH HANDLE

The brush handle has a dinse plug on one end that connects to the brush cable dinse socket.

Push brush handle plug firmly into the cable socket and twist to lock into position.



WCS BRUSH RANGE INFO

O' RING STYLE

Brush connection : Stainless steel tube twist and push on.

Brush design : Use of high temperature Nitrol rubber "O" rings to stiffen brush.

Composite carbon fibre conductor.

1/ THE 'O' RINGS CAN BE PUSHED OFF THE BRUSH AS IT WEARS TO EXPOSE MORE BRUSH.

2/ THE BRUSH THEN CAN BE USED UNTIL IT HAS WORN BACK TO THE BRUSH SILICON INSULATOR.

BRUSH RANGE

MEDIUM BRUSH (WCSMED)

LARGE BRUSH (WCSLG)



8mm THREAD LARGE BRUSH (WCS8MM)



8mm THREAD LARGE BRUSH – WIDE HI POWER BRUSH

The brushes have a 316SS 8mm thread which is screwed into the 2-way and 3-way brush holders to make a wide and hi power brush.

The brushes can be used for heavy weld bead cleaning and wide multipass welds. Also for cleaning stained large surfaces.

2-WAY, 3-WAY 8mm THREAD BRUSH HOLDERS



2-WAY, 3-WAY 8mm THREAD BRUSHES



LARGE ROUND 30mm DIA. BRUSH (WCSXLB)

1/ THE BAKELITE RINGS CAN BE PUSHED OFF THE BRUSH AS IT WEARS TO EXPOSE MORE BRUSH.

2/ THE BRUSH THEN CAN BE USED UNTIL IT HAS WORN BACK TO THE BRUSH BAKELITE INSULATOR.



IMPORTANT NOTE

WITH the 'O' RING STYLE BRUSHES WHEN BEING USED in THEIR **HIGHER RANGE SETTINGS** there is a **LOT** of **HEAT GENERATED** through the **BRUSH FIBRES**.

THIS **HEAT** NEEDS to be **COOLED DOWN** to **INCREASE** the **LIFE** of the **BRUSH**.

THIS is **ACHIEVED** by **COOLING** the **BRUSH** in **WATER**.

MAINTAIN a **COOLED BRUSH BY DIPPING** the **BRUSH INTO** the **WATER** at **REGULAR INTERVALS** DURING the **CLEANING PROCESS**.

BRUSH and LEAD MAINTENANCE

Looking after brush and leads.

On completion of job wash down leads and brushes.

The acid if not washed off leads will become tacky to touch on leads.

The work clamp has a steel spring that will corrode and stop creating pressure between faces. Also the faces of the two parts of brass clamping get corrosion and prevent correct operation.

Wash clamp and spray with WD40 or similar to maintain spring and brass faces for correct operation.

ELECTROPOLISHING

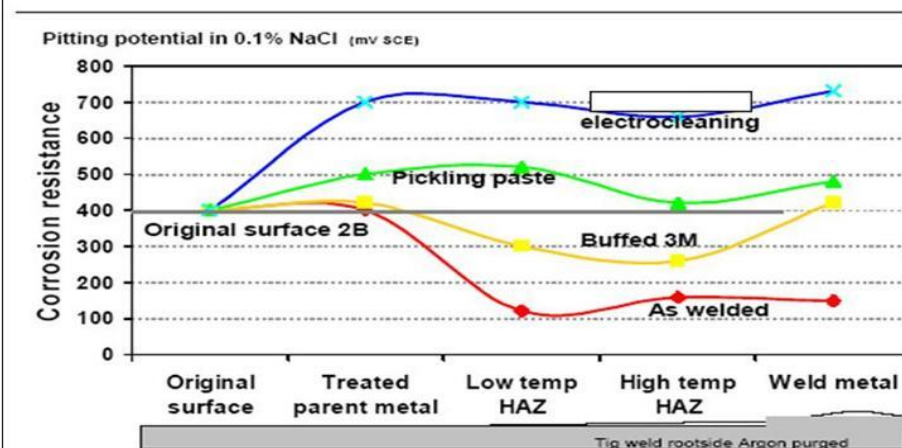
The electropolishing process smooths and streamlines the microscopic surface of a metal object. As a result, the surface of the metal is microscopically featureless, with not even the smallest speck of a torn surface remaining.

Electropolishing selectively removes microscopic high points or "peaks" faster than the rate of attack on the corresponding micro-depressions or "valleys."

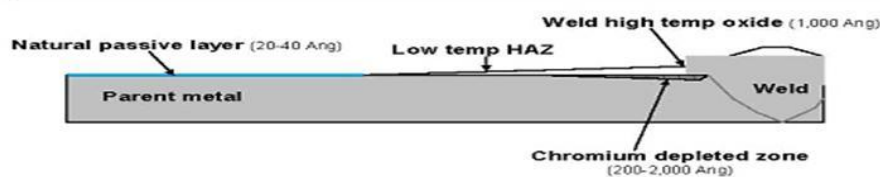
The basic metal surface is subsequently revealed — bright, clean and microscopically smooth.

Passivation also is accomplished by Electropolishing.

Post weld cleaning 316L



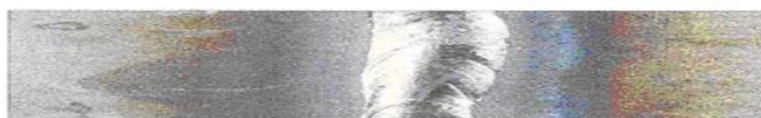
Weld oxidation



Interference colours of the high temperature oxide



Tig weld rootside Argon purged



Electropolishing

Electropolishing selectively removes microscopic high points or "peaks" faster than the rate of attack on the corresponding micro-depressions or "valleys." The basic metal surface is subsequently revealed — bright, clean and microscopically smooth. By contrast, even a very fine mechanically finished surface will continue to show smears and other directionally oriented patterns or effects.

What is Stainless Steel Passivation ?

Steels containing more than 11% Chromium are capable of forming an invisible, inert or passive, self-repairing oxide film on their surface. It is this passive layer that gives stainless steels their corrosion resistance.

Passivation remains a critical step in maximizing the essential corrosion resistance of parts and components machined from stainless steels. It can make the difference between satisfactory performance and premature failure. Incorrectly performed, passivation can actually induce corrosion.

Reasons for Passivating in Welding

- Increase corrosion resistance of fabricated parts.
 - Removal of weld colouration.
 - Restoration of protective oxide layer.

Contaminants are potential corrosion sites which, if not removed, result in premature corrosion and ultimately result in deterioration of the component.
- Especially in welded areas

Passivation is a post-fabrication method of maximizing the inherent corrosion resistance of the stainless alloy from which the workpiece was produced. It is not a scale removal treatment, nor is it like a coat of paint.

There is no universal agreement on the precise mechanics of how passivation works. But it is certain that a protective oxide film is present on the surface of passive stainless steel. This invisible film is considered to be extremely thin, less than 0.0000001 inch thick, which is about 1/100,000 the thickness of a human hair!

A clean, freshly machined, polished or pickled stainless steel part automatically acquires this oxide film from exposure to oxygen in the atmosphere. Under ideal conditions, this protective oxide film completely covers all surfaces of the part.

Similarly, small particles of iron-containing shop dirt may adhere to the part surface. Although the metal may appear shiny in the as-machined condition, the invisible particles of free iron can lead to rusting on the surface after exposure to air.

TROUBLESHOOTING

1: NO POWER , DISPLAY NOT LIT.

Check to see if mains cord is connected.

Check power to 240vac socket.

Check circuit breaker on back panel. Push button in.

If the above check ok contact service provider.

2: NO POWER GENERATED AT BRUSH.

Check brush and work connections.

Remove brush and quickly TOUCH WORK CLAMP and BRUSH CONNECTION together to determine if the cables are good.

If still no power generated at brush contact service provider.

THE ELECTROLYTE and NEUTRALISER



<p>RISK CAUSES BURNS</p> <p>SAFETY KEEP OUT OF REACH OF CHILDREN IN CASE OF CONTACT WITH EYES RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE)</p> <p>HAZCHEM IN EMERGENCY DIAL 000, POLICE or FIRE BRIGADE</p>	<p>WARNING S5 KEEP OUT OF REACH OF CHILDREN</p> <p>PHOSPHORIC ACID 81.85%w/w ANALYTICAL GRADE Density 1.7g/mL approx. H₃PO₄ = 98.00g/mol</p> <p>HAZARDOUS IN A TRANSPORT EMERGENCY DIAL 000, POLICE OR FIRE BRIGADE</p> <p>ADDITIONAL INFORMATION IS LISTED IN THE MATERIAL SAFETY DATA SHEET</p> <p>ALL PERSONS HANDLING THIS CONTAINER DO SO AT THEIR OWN RISK</p>	<p>SHIPPING NAME PHOSPHORIC ACID UN No : 1805 HAZCHEM : 2R CLASS : 8 PACK GROUP : III SCHEDULE No : S5</p> <p>CORROSIVE 8</p>
---	---	--

MSDS of PHOSPHORIC ACID

<https://shop.chemsupply.com.au/documents/PL4423CHAR.pdf>

MSDS of SODA ASH

<https://shop.chemsupply.com.au/documents/SL099.pdf>

<https://shop.chemsupply.com.au/documents/SA0991CH68.pdf>

MSDS of CARBON FIBRE

<https://www.opchealth.com.au/Content/Images/uploaded/PDFs/Carbon%20Fibre%20MSDS.pdf>

NEUTRALISING the JOB

SODA ASH

Product Function: pH increaser

Recommended Use of the Chemical: Water treatment and pH control.

Soda Ash (Sodium Carbonate) is one the most economical phosphoric acid neutralisers available. (maximum pH is approx 11)

Sodium carbonate causes a unique reaction with acids.

Upon contact with an acid - no matter the strength - it produces carbon dioxide.

The bubbling when neutralizing is the carbon dioxide.

MIXING the SODA ASH

ADD 1 (one) cap full of soda ash to 2 litres of water and mix to dissolve.

Can use the neutraliser in a hand spray bottle or garden pressure spray container to neutralise the job.

DILUTING PHOSPHORIC ACID CONC. (85%)

If you need to dilute phosphoric acid to a less concentrated level take note of the following information. Dilute to 50% acid to 50% water.

To dilute from a 1 litre of 85% acid to a 50:50 mix place 1.7 litres of water in a 5 litre container then add the 1 litre 85% mix to the water slowly.

DILUTING ACIDS

If you add acid to water, the solution that forms is very dilute and the small amount of heat released is not enough to vaporize and spatter it.



PARTS LIST

ITEM	PARTS	PART #
1	POWER SUPPLY	WCS1200PS
2	BRUSH LEAD - 6 metre	WCS1200BL
3	BRUSH HANDLE	WCS1200BH
4	WORK LEAD - 4 metre	WCS1200WL
5	BUCKET SET (1 litre, 2 litre)	WCS1200BS
6	PHOSPHORIC ACID – 1 litre	WCS1200PHA
7	SODA ASH – 700g	WCS1200SA
8	STAINLESS SHEARS	WCS1200SS
9		
10	MEDIUM BRUSH	WCS1200MB
11	LARGE BRUSH	WCS1200LB
12		
13	BRUSH CONTAINER	WCS1200BC
14	OPERATORS MANUAL	WCS1200OM
15	STORAGE CONTAINER	WCSSC
16	STORAGE TRAY	WCSST
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		

WELD CLEANING SYSTEMS WARRANTY / REGISTRATION FORM

WARRANTY

**This warranty is provided by WELD CLEANING SYSTEMS and no other company,
organisation has authority to vary it's conditions.**

REGISTRATION

Email this warranty / registration to

WELD CLEANING SYSTEMS

weldcleaningsystems@yahoo.com

NAME of BUSINESS.....
.....

ADDRESS.....
.....

UNIT SERIAL #.....

PHONE #

EMAIL