



## Technical Report

## CORSA Chapter 982

Summer 2008

### North Cascades Corvairs Officers

#### President

Bill Chellis

#### Vice-President

Andy Clark

#### Secretary

Fred Croyden

#### Treasurer

Beverly Kaufman

#### Web Master

Jeff Lee

## Vairious Thoughts

Hope everyone's summer is going well.

As some of you may recall, I mentioned in our last newsletter that in order to give the editorial staff some time off, no August newsletter would be published. However, in lieu of a newsletter, NCC will be distributing a technical report this month. It is the first technical article published by the group in much too long a time. The subject is cleaning parts at home using electrolysis.

An interesting feature of this report is that all the links are active. Clicking on them takes you back to the online article for more information. Clicking on the thumbnails on the last page will open a full size picture.

The club thanks John Barnes for bringing this article to our attention and to Mike Rowand for permission to publish it.

I encourage all members to submit or offer suggestions on articles on Corvairs, automobile history or vintage car restoration. Your editorial staff will endeavor to incorporate them in some format for publishing to the club.

Hope to see all of you on the 17<sup>th</sup> at the Hintz's. The only agenda item I have is reconsidering/confirming the location for our future meetings.

Bill

This will be **THE Catalog** until 2013

Includes → All our **NEW** parts, **KITS**, many improvements and updates.

**Over 6** solid months in the making! updates on 80% of pgs!

**Over** 670 pages  
1900 photos  
1100 sketches

**Over** 500 exploded diagrams  
15,000 parts listed  
11,000 index entries

**M - O - R - E**  
*Clark Multi Kit choices*

**You need THIS Catalog!**

► **HOW TO GET ONE?**  
**Rush Order - JUST THE CATALOG** order over the internet or by any of our regular methods  
\$6.00 USA, \$8.00 Canada Foreign contact us

**WITH a PARTS ORDER** - order CAT-O \$4.00 3 Lbs.

**Clark's Corvair Parts, Inc.**  
400 Mohawk Trail, Shelburne Falls, Ma. 01370  
413-625-9776 [www.corvair.com](http://www.corvair.com)



**jtekUSA, Inc.**

Providing web development  
& computing security  
solutions for your home, club,  
and/or business.

[jtekusa@gmail.com](mailto:jtekusa@gmail.com)

**SIGNS & GRAPHICS**  
BY VINYL SIGNS & BANNERS

**360-653-0960**  
1208 6th St. Marysville  
[vsbsigns.com](http://vsbsigns.com)

**All kinds of custom  
signage, banners,  
and vehicle wraps.**



# *Technical Report*

---

This issue's topic:

*Removing Rust using Electrolysis*

*(Compliments of Mike Rowand)*

---

## Electrolysis - Rust Removal

This page is all about how to remove rust and clean parts using electricity, a bucket, water, and some laundry soda. All of my information comes from finding the information at <http://antique-engines.com/electrol.asp> and trying it out myself. The information on Bill's site is extensive and informative - I've condensed some of it here and incorporated some details I think are helpful to call out, but his site is still an excellent resource that you should read before doing this. I can tell you first hand that this really does work, and it really is safe, eco-friendly, easy, cheap, and fun.

### The Details

What do you need to make this work? Not much, really:

- A large non-conductive container that will hold the part in water - A Rubbermaid tub, a plastic bucket, or a large non-metal trash can all work great as long as they don't leak.
- A battery charger or other source of 12V DC power.
- Wires or cables to connect the electrodes together.
- Sacrificial electrodes - iron re-bar works great, stainless steel is very bad (and the result is illegal and dangerous).
- Arm & Hammer LAUNDRY Soda, also known as washing soda.
- Some chains or steel wire to suspend the part in the solution - copper wire is bad and messy.
- Water

The basics are pretty simple.

1. Find a container big enough to hold your part, plus some room to spare for the electrodes - they must not touch the part for this to work.
2. Fill the container with water and add 1/3 to 1/2 cup laundry soda per every 5 gallons of water. Mix thoroughly.
3. Position the sacrificial electrodes around the edge of the container and clamp them in place so that you have at least 4" of electrode above the water to connect to. The more the merrier - this is essentially a "line of sight" process between the part and the electrodes.
4. Wire all of the electrodes together so they are, electrically speaking, one big electrode. Make sure all connections are on clean metal and sufficiently tight to work.
5. Suspend your part in the solution using the wire/chains so it is not touching the bottom and is not touching any electrodes. The part must be electrically connected to the support mechanism and not connected to the electrodes for this to work.
6. Attach the battery charger **NEGATIVE** lead to the part and the **POSITIVE** lead to the electrodes. **Do not get this backwards!** If you do, you'll use metal from your part to de-rust your electrodes instead of the other way around -the positive electrodes are sacrificial and will erode over time. That's how the water becomes iron-rich.
7. Double check everything to be sure the right things are touching, the wrong things are not touching, and the cables are hooked up correctly.
8. Turn on the power - plug in the charger and turn it on.

Within seconds you should see a large volume of tiny bubbles in the solution - these bubbles are oxygen and hydrogen (**very flammable!**). The rust and gunk will bubble up to the top and form a gunky layer there. More gunk will form on the electrodes - after some amount of use, they will need to be cleaned and/or replaced - the electrodes give up metal over time. That's why re-bar is such a nice choice - it's cheap and easy to get in pre-cut lengths.

The process is self-halting - when there is no more rust to remove, the reaction stops. This is handy because you don't have to monitor it, and because you can do large parts where they are not totally submersed at one time (aka, by rotating them and doing half at a time) without worrying about "lines" in the final part.

Once you are done, the part should immediately be final cleaned and painted - the part is very susceptible to surface rust after being removed from the solution. There will be a fine layer of black on the part that can be easily removed, and once it is removed, the part can be primed/painted as needed.

### Safety Precautions

You're playing with serious stuff here, so stay safe. It's not rocket science, but if you're new to this, you might not know all of this - so read up *before* you do any of this.

- This process produces highly flammable and explosive hydrogen gas (remember the Hindenburg?), so do it outside, or in some other well ventilated area. Hydrogen is lighter than air (like natural gas), so it will collect near the ceiling - *not* sink to the floor like some other flammable vapors will (like propane and gasoline). If you have open flames near this (Hint: gas appliances like water heaters and furnaces have pilot lights!) you will most likely severely injure or kill yourself (and others near you) and become a contender for the Darwin Awards in the process.
- Assuming you used re-bar and steel wire/chain like you were told to, the waste water resulting from this is iron-rich - it's perfectly safe to pour it out onto the grass and your lawn will love it. Beware of ornamental shrubs that don't like iron-rich soil though, unless you *like* making your wife mad at you.
- Make sure the battery charger (or whatever source of power you use) stays dry. All of the usual cautions about any electrical device in a wet environment apply here.
- The solution is electrically "live" - it is a conductor in this system. Turn off the power before making adjustments or sticking your hands into the solution. You can get a mild shock if you stick your hands into the water with the power on.
- The solution is fairly alkaline and will irritate your skin and eyes. Use gloves and eye protection. Immediately wash off any part of your body the solution comes into contact with with plenty of fresh water.
- Don't use stainless steel for the electrodes. The results are toxic and illegal to dump out.
- Don't use copper for the electrodes and anything else in the water - the results are messy.



If you are unsure of any of this or unsure about your safety - **STOP!** Get help before you do something stupid. Use common sense, be smart about what you're doing, and stay safe so you can finish your restoration project and enjoy it.

## The Examples

Here are some pictures of the Rubbermaid 30 gallon tub we're using to clean a valve cover for a [1964 Plymouth Valiant](#). You can see the two electrodes on each side of the part (2' lengths of 1/2" re-bar bought from Home Depot for \$0.56 each), the flat bar across the top that the part is suspended from, the battery chargers hooked up to the rebar on each side, and the wire that connects the two pieces of rebar on each side. You can also see some of the "spooge" that is collecting near each electrode as the process operates. Looking at the later photos, you can see the amount of goo that collects directly on the electrodes (the re-bar). Compare the photos of them fresh out of the tank with the ones where they have been scraped and hosed off. Yuck! Also check out some of the photos of the valve cover after the first round of cleaning, and then after coming out of the tank and being just hosed off, and then after a quick scrub-down with a "scotch-bright" pad. Wow! The rusty sheet metal is off of the front of my [1958 Buick Special](#) - once I have some after pictures, that should be pretty fun to see and compare.



---

Distribution and printing is allowed by author Mike Rowand, but modification of any text is prohibited without prior consent of said author. All material contained in this article is copyright 2008 by Mike Rowand.

---

Copied from site <http://www.rowand.net/Shop/Tools/Electrolysis.htm> with author's permission.

---

The club wishes to thank John Barnes for bringing this article to our attention.

---