

Refurbishing RV8 wheels – a photo record from Hugh Boddington (RV8NOTE317)



Following the contributions to a V8BB thread on refurbishing RV8 wheels launched as a query by Hugh Boddington, he set about cleaning his wheels and replacing the removable studs. In this sequel he provides a photo record of how he refurbished his wheels. (Jan 10)

The centres of my wheels were as new, but there was a milky appearance around the ugly studs and air valves. My plan was to strip the rims having first removed the studs. I decided I would not re-lacquer the wheels as it is easy enough to clean them with 0000 grade wire wool and use a suitable wax. The problem is around the studs. I decided I would either leave them out or fit stainless steel slotted pan head bolts to make life easy for cleaning. In my opinion the slotted pan headed bolts look better. I am not certain whether they will react adversely with the alloy metal of the wheel? Fellow RV8 enthusiasts will probably think I am mad, as I do like to keep classic cars original, but I will obviously retain the studs. Without the studs then at least my sponges, leathers



Studs removed and stripped



Masking tape protecting centre section which is not to be stripped

and fingers will not be torn to ribbons!

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Socket Button Head stainless steel bolts (M6 thread x 20mm length) which I prefer to the original studs as I feel they are rather angular in shape and ugly. The problem is whether the alloy and stainless steel will mix without problems over a long period? Angus Munro suggests "this could be solved by the use of a nylon washer between each of the stainless bolts and the aluminum surface."



Completed job – Hugh says "the Nightfire Red colour has been adjusted to show off the wheels"

I am leaving the original studs out and not re-lacquering for the time being, hoping to be able to keep them clean with polish and/or the 0000 wire wool.

Having no studs makes it a very easy task after washing the wheels.

The work sequence and products used were:

- Remove tyre and air valve.
- Apply the Nitromors paint and varnish remover.
- Clean the wheel with Rustins grade 1 wire wool.
- Finish with wet and dry 400 through to finest 1200 paper.
- Polish up with Autosol chrome, aluminium and metal polish.
- Buff with electric drill and mop.

The job took two days for four wheels.

Need to know more about stainless steel in contact with aluminium alloys?

Angus Munro provides some useful information – see page 3.

Photos: Hugh Boddington



Left: stripped wheel without studs. Right: fitted with socket button head bolts.

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RV8NOTE317 sequel

Stainless steel in contact with aluminium alloys

Angus Munro says the problem of, visible to the eye, intermetallic corrosion could be solved by the use of a nylon washer between each of the stainless bolts and the aluminum surface.

Below is a simple guide to Intermetallic Corrosion, or the galvanic couple to put it romantically, as it applies to Stainless Steel and Aluminium. I had thought about my own explanation but this guide is more eloquent than my effort would have been and why re-invent the wheel, if you will excuse the pun. Note the part of the text that refers to a suitable electrolyte - that'd be road filth and damp in our case.

2 The principles of galvanic corrosion

For galvanic corrosion to occur, there must be:

- different corrosion potentials of the metals within a given system;
- a conductive connection between the two metals;
- an electrically conductive humidity film (electrolyte) connecting both metals

Figure 1 shows the three prerequisites in graphic form.

If galvanic corrosion occurs, the less noble material – the anode – is preferentially attacked whilst the more noble material – the cathode – is even protected against corrosion. In fact, the principle of cathodic protection is based on sacrificial anodes providing protection from corrosion.

The contact of two metals with different potentials in an electrically conductive solution leads to a flow of electrons from the anode to the cathode. The electro-chemical reactions are the same as those that would

naturally occur in the metal in isolation; however, the corrosive attack on the anode is greatly accelerated. In some cases, the formation of galvanic elements can lead to corrosion in materials that would otherwise be corrosion resistant in the environment in question. This can be the case for passive materials such as aluminium, which can be locally polarised in a certain environment. In such cases, localised corrosion phenomena such as crevice corrosion or pitting corrosion can be observed, which would not have occurred without the shift in potential caused by the formation of galvanic elements.

It is interesting to think that a protective anode, on a steel marine structure, can often be made of Aluminium or an Aluminium - Zinc Alloy. This material will allow electron flow to a more noble material which is why pitting will occur on an Aluminium surface with a stainless steel fastener. Of course the rate of decay of the anode will be slow but we are not dealing with the structural integrity of the RV8 wheel, rather the unsightly cosmetic appearance.

I assume that Hugh intends to use Nylock nuts to retain the Stainless Steel set screws. With the number of set screws and Nylock nuts involved this would be very expensive however with the use of plastic washers to the head of the screw and the face of the retaining nut the amount of force required to tighten the screw will have to be light or the washers will deform or crush. This is the ideal application for a Nylock nut as the screw and nut can be lightly nipped and yet be certain to remain connected.

Treatment of the cleaned wheels

For my part I will knock out the existing little studs and then I intend using a lacquer, Eastwoods Clear For Bare Metal, on my rims as it can only be a matter of time before the dreaded powdery surface corrosion reappears on untreated aluminium. I have already purchased this from www.frost.co.uk for the sum of £10. Finally I will tap the studs back. This should give a surface protection that will last my lifetime while retaining the original appearance of the wheels.

I do however agree that the Stainless screws that Hugh will use might well look more attractive than the original studs. I look forward to seeing the end result.

The website, and source, that explains the Intermetallic Corrosion problem so well is at:

www.cesa.org.uk/assets/downloads/contact_with_other_en-pdf.pdf