Cleaning Carburetors

Reprinted from Wheel Spin *Newsletter, Southeast Michigan Austin-Healey Club*

by Brian Thornton
Southeastern Michigan AHC

I was trying to find a method that would clean the carburetor bodies without damaging the surface. As you may or may not know, I'm in the process of restoring my '60 Bugeye for concours. One of the requirements is that the carburetor casting be natural or "as cast" in finish. In the past I have glass-bead blasted the carburetor casting to obtain a nice satin finish. This looks great. However, in concours this would be considered a non-original finish, thus resulting in point deductions.

Here's the process:

1. Completely strip the carburetor of all parts and hardware. Please note where everything goes. I assume that you may want to put it together again. You need to have a bare casting before you begin this process. Clean the aluminum casting with engine degreaser. Do not use abrasive devices like wire brushes or steel wool. These items will scratch the surface that you are trying to resurrect. I recommend using old toothbrushes and toothpicks for removing stubborn grease and dirt from those hard to reach nooks and crannies.

2. Once the part is clean of all grease and grime, I place the part in my dishwasher for a good steam cleaning. This step is easier if you're single like myself; you won't have to explain how the car parts were mixed in with the dishes. I use dishwasher soap for this step.

3. After steam cleaning you may have some areas that need to be tended to before proceeding to step #4. The continued use of toothbrushes, toothpicks, and regular dish soap should remove whatever is left.

4. Now you are ready for the trick. Take the parts and soak them in the following solution for 2-3 minutes. **One part PPG Chemfil Aluminum Cleaner, DX 533,** available at all Painter's Supply stores in Southeast Michigan, or any other automotive finish store that carries PPG products, (I'm sure that DuPont, ACME and the like have a similar product.) and **three parts water**, available on tap at a house near you.

This solution contains a small concentration of acid, so **wear proper protection**. This product is normally used for metal prepping bare aluminum prior to painting. Note, this works well on Big Healey shrouds. The intent of the metal prep is to remove all oxidation from the surface of the material prior to coating.

After soaking for 2-3 minutes, remove the parts from the solution and rinse with water. Dry the part with a rag and behold your new casting. This stuff works wonders on aluminum castings like: carburetors, distributor bodies, etc. You may want to coat the part with a clear coat to preserve your new casting. Note, be careful selecting your clear coat, because some are not compatible with gasoline. They may yellow when they come in contact.

Piston Freed By Molasses!

by Howard Morrison

(As seen in British Marque*)*

A few years ago, a friend of mine gave me a 1955 Elgin outboard motor. For good reason, the piston was seized! Ample amounts of penetrating oils over a period of time were applied with gentle tapping as well as heat. This failed to release the recalcitrant piston.

Then, remembering an old British formula, I mixed 5 lbs. of molasses with 5 gal. of warm water. The bad boy was then submerged in the solution and a lid placed on top.

Once a week, for three weeks, the solution is stirred. Subject matter is then removed, and much to my astonishment, the piston was free with all rust dissolved, leaving clean metal.

The solution does not attack paint and contents can be disposed of without environmental concern. It seems this formula would have many automotive applications.

Replate and Save That Cloisonné

By Barry Lau
Bluegrass Region

You can replate the front badge of your Healey and retain the original cloisonné (hardened colored glass). Because the glass does not conduct an electrical current, it will not accept the electro-plating process. Triple plating consists of first plating with copper, then nickel, and finally chromium.

So, if your Healey's front badge isn't as bright as you would like, there are no dim effects from replating it. Any local plating source should be able to do this. I've done it and the results are *cold*!

British Fastening Systems – Whitworth Thread History

By Graham White

Reprinted with permission from Warbirds, *March 1998, the magazine of EAA Warbirds of America*

Understandably, many people are confused by British screw threads and fastening systems. How many times, when working on a piece of British hardware, have you fussed and cussed over these crazy thread systems, wrenches that don't fit and busted knuckles?

Whitworth threads are now a thing of the past, which is really too bad, because this fastening system has a lot to offer. The death knell for Whitworth threads was rung during WWII when it became apparent that a common thread system was desperately required. The British chose to embrace the US SAE thread system, but this transition took many years to complete. Just as British industry had completed this transition, the European Common Market had other ideas, so they then changed, yet again, to the metric system! However, that is getting well beyond the purpose of this article.

Sir Joseph Whitworth was born in 1803 in Stockport, a grimy area of the industrial northwest region of England. After leaving school at the age of 14, Whitworth pursued various engineering opportunities until 1833, when he started his own tool-making business. In 1841, he presented a paper before the Institute of Civil Engineers, where he introduced his revolutionary thread system. Up to this time, no conventions existed for screw threads. During this presentation, Whitworth also introduced a standard system of gauges, which was widely accepted.

Whitworth's talents did not go unnoticed by the British military. In the mid-1850s, rifling of gun barrels was in its infancy, at least for the British. Rifling of gun barrels

Mechanicals

(continued from page 10)

was known since the 1520 to 1525 time frame. Interestingly, rifling became accepted in small arms long before it was for larger guns, and the result in the Whitworth period was that rifle-equipped sharpshooters could pick off artillery crews from beyond the effective range of that artillery! Consequently, there was something of a panic to shrink the artillery's circular error.

In the US, rifling came in during the Civil War. Not only was it a very tricky machining operation, but much experimentation was required to arrive at the ideal helix angle and depth of rifling in order to optimize these new design features. After optimizing these design features, Whitworth developed the tooling required to mass produce rifled gun barrels.

Being the consummate engineer, Whitworth made many other engineering advances, including the art of casting and forging. After starting from very humble beginnings, he died in Monte Carlo in 1887 a very wealthy man. His legacy lived on for the best part of a century in the form of the screw thread that bore his name and various scholarships.

Like US threads, three families of threads were developed: a miniature series known as BA, or British Association; a course thread series known as BSW, or British Standard Whitworth; and a fine thread series known as BSF, or British Standard Fine. The US equivalents would be the Unified Thread System, formally known as the American Standard, but renamed in 1949. The number series would be equivalent to the BA series. UNC, or Unified National Course, is the counterpart to BSW and UNF. Unified National Fine is equivalent to BSF. Just to confuse things even more is the fact that the miniature thread sizes are in reverse. In other words, with the SAE convention, the larger the number, the larger the bolt size. Naturally, the British go in reverse – the lower the number, the larger the bolt size, so "0 BA" is the largest and "16 BA" is the smallest. (Yeah, I know, go figure!)

Whitworth wrench sizes can cause considerable confusion. With the more familiar UNF, UNC, etc., the number stamped on the wrench or socket is the dimension of the hexagonal bolt head measured across the flats. Whitworth wrench sizes indicate the size of the bolt, (i.e., a wrench required for a ¼ BSW bolt will have "¼W" stamped on it.) The wrench required for the equivalent ¼ UNC has "7/16" stamped on it, this being the dimension across the flats of the hexagonal bolt-head. To further confuse things, Whitworth hexes are not the same size as the equivalent UNC/UNF – they are larger. For this reason, it is imperative that a set of Whitworth wrenches be purchased before working on any antique British machinery. Otherwise, expect rounded-off hex's and busted knuckles, trademarks of the careless craftsman.

Another area that causes confusion is the fact that some BSW or BSF nuts can be screwed on UNF or UNC bolts and vice-versa. Under no circumstances should this practice even be considered. Most of the course threads share the same threads per inch, which means BSW nuts can be screwed onto UNC bolts and vice-versa. The exception to this being ½ inch – ½ inch BSW is 12 threads per inch and ½ inch UNC is 13 threads per inch. Again, it must be emphasized that this practice should not be a consideration.

Whitworth and UNC/UNF thread forms differ greatly, the primary one being the thread angle. BSW and BSF feature a 55 degree thread angle (47½ degrees for BA) and UNC/UNF threads feature a 60 degree thread angle. Consequently, if these fasteners are interchanged, considerable loss of holding force and fatigue resistance and strength will result. Unfortunately, this author has seen examples of mechanics, unaware that these subtleties mixing fasteners at will – gee, if it screws on it must be okay! (Scary thought.)

The standard tapered pipe thread in the US is the NPT or National Pipe Thread. The British use the BSP or British Standard Pipe thread. Although similar, again, they should not, *under any circumstances*, be interchanged. The sad part of this thread confusion is the fact so many classic British cars, motorcycles and yes, even airplanes, have been butchered over the years by those not conversant with these thread systems.

Thanks to Baird Foster, contributing editor to Healey Marque, for submitting this informative article —Ed.

Plating Parts

by Rich Chrysler, Southern Ontario AHC

As seen in *Healey Hi-Lites*, a publication of the Bluegrass AHC.

A few weeks ago I posted a computer message asking if anyone had thoughts or sources for where one could go for zinc plating all the miscellaneous little parts, screws, clips and so on for a restoration project.

I'd like to follow up on the results of all this, hopefully, to benefit others who need the same info. My good friend, Blair Harber (remember all aluminum BJ1 preproduction #14 at Conclave this year), loaned me a plating kit he purchased from Eastwood's. The kit contains all the things required to do zinc plating, including the jug of electrolyte, sacrificial zinc strip, battery pack to hold 4 "D" series batteries with clips, plastic containers, funnels, goggles, rubber gloves and instruction book.

I began by cleaning the parts with a brass wire wheel, rinsed them thoroughly in a 4 to 1 water/muriatic acid to remove all traces of oils, etc. They were rinsed again in clean water, dried and plated immediately. Larger parts such as brackets, levers, etc. were plated by clipping the one lead straight onto the part and immersing into the electrolyte, agitating gently for 3 to 4 minutes until adequate light grey looking zinc was deposited onto the part, then it was immediately rinsed in clean water and set out to air dry.

The small bits such as screws, clips, special washers, etc. were set into a fine wire metal sieve, the electrode clip was fastened to the handle and the contents were immersed for 3 to 4 minutes, again agitating gently until the plating was sufficient. This was rinsed with clean water, and the bits were laid out to dry.

The final step, with the parts air dried, was to go over everything with either a paste polish (provided) or a very fine steel wool, and the parts became bright zinc right away.

This process is really easy. Great care must be taken to use the acids with respect, always using the rubber gloves, long sleeves and the goggles provided, and of course, don't stand directly over things to avoid breathing the slight fumes.

I did this procedure in my garage with both 9-foot doors open and a shop floor fan running to circulate lots of fresh air. The actual plating process itself took about three hours to plate everything needed for the BN2 I am currently restoring.

I encourage anyone to give this home plating kit a try.

It's All in the Little Details

By Richard Gordon
Rocky Mountain AHC

While restoring a 1955 Healey Hundred under the strict supervision of Roger Moment, we found that the original glass of the windscreen was a little pitted and should be replaced. Roger, as many of you know, is a stickler for details and likes to be as accurate as humanly possible when rebuilding or replacing parts. We had each purchased new windscreens that had come in with new markings from different manufacturers. One of them had "Triplex" logo that was approximately four times the size of the period logos, and it was black and baked onto the windscreen. The originals are $^{7}/_{16}$-inches wide by $1\,^{1}/_{8}$ inches tall and etched into the windscreens. I suggested, half as a joke and half seriously, that we remove the new ugly logos and recreate the original markings. Of course, Roger thought this was an excellent idea.

Neither of us had a clue how to get this done. I knew of a machine that could be used to hand etch glass, and had my sister send me one, since she had one that she'd never used. These machines take an artistic hand and the logos are very small and intricate. Neither of us could use it and it would cost a small fortune to hire someone with the talent to etch the logo into the glass. Roger knew of a process that would chemically etch the logos onto the glass. It comes in liquid or paste, and we would need some way to apply the liquid.

"He blasted the new logo into the windscreen in the correct place and viola, perfection."

I took scans and photos of my original logo to Jerry Belver to see if he could enhance the images. Jerry is a fellow club member who professionally alters and corrects photographs. He recreated the logo image in black and white for us. I thought that we could have a stamp made to apply the liquid to the glass, in order to recreate the logo. We had the stamp made and the process worked, but not very well. The etching was not as clear as the original logos. Back to the drawing board.

We have all seen fine art glass etched by artists. I went to a local stained glass artist for some expert advice. He had some wonderful examples of etched glass, and suggested that we have a mask made, which he could then use to blast the image into the glass using a special pot-blasting machine. Sand blasting at a low pressure can also be used with fine silica as the media. Roger recalled that Ron Brown, from Dallas, had used just such a process on his 100-6 which earned a Gold Concours award at the 1992 meet in Breckenridge, Colo.

A company was found to produce the masks. Before working on the windscreen, our expert made a sample for our approval (see photo at right).

He then was able to grind off the old logo (not an easy task to accomplish without destroying the windscreen), and polish the glass. The removal of the old logo took special equipment and skill. A large water-cooled cork grinding wheel was used to remove the black logo and took about an hour of patient skill. The removal was as expensive as making the masks and etching the logos. He blasted the new logo into the windscreen in the correct place and viola, perfection.

The original logos were placed in

The Triplex logo on the windshield – this glass was made in fourth quarter of 1955.

different positions on the windscreens. On my BN1, it was on the passenger side (LHD) in the upper right hand corner. On most of the BJ8s it was placed in the top center. If your car still has its original windscreen, you will be able to find the logo and see its specific details.

A little research taught us that these logos are specific to the quarter-year that the windscreens were produced. I found a Web site that discusses this dating. *(See box, below.)* There is some controversy about the precise dating with the dots and the use of the terms "Laminated" and "Toughened." Take a look at these two Web sites as examples: First one from MG: http://www.mgcars.org.uk/news/news492.html or http://mgaguru.com/mgtech/windscrn/wt_103.htm. Second one from Triumph: http://www.triumphspitfire.nl/identification.html

This entire process was rather expensive. To help recoup some of the costs and share what we learned, I put together kits of the masks, with instructions, and offered them for sale. Of course, the masks we had were for 1955 cars, and I was able to sell a few of the kits. One other Healey enthusiast asked if we could get a mask for his 1961 windscreen. I altered the image for the correct year and quarter and had some more masks made. There are some of the 1955 and the 1961 masks available, and masks can be made for most years and quarters.

If you are interested in more details please contact me by e-mail: GordonAHCUSA@comcast.net, or phone: 303-756-7427.

Is this hobby fun or what?

A Side Issue of Potential Interest:

Dating Your Car by its Windows – based on the original compiled by Neil Cairns

"MG's made in the 1950s to the late 1970s can be dated by the 'TRIPLEX CODE' etched into the toughened glass. My '75 GT has Sicursive side glass, but a Triplex heated backlight with a code that fits the date of build of the car. This also works for any other make using TRIPLEX glass. Note that it dates the GLASS, so is only an indication of the cars age, assuming the glass is original. If you are not quite sure of the year of your car, but the decade is known, just look for two dots in the TRIPLEX logo on the glass.

One dot above T, R, E, or X gives the quarter of the year the glass was manufactured:

T = Jan, Feb, March
R = April, May, June
E = July Aug, Sept
X = Oct, Nov, Dec

The year is designated on the logo between the L and the V in the middle of the image. Some Triplex logos differ from this design. There is some disagreement on this dating technique and there may have been other dating techniques used by Triplex.

Here is one found on a Triumph Web page:

Here's an obscure little trick to determine the approximate production date of a Spitfire, or at least its windscreen.

Find the etched logo on the windscreen, most probably in one of the bottom corners, that says "Triplex Toughened" or "Triplex Laminated." Firstly, determine the year of manufacture by checking which letter in the printed logo on the glass has a dot under it. (You need to know the decade as this can't be determined):

TOUGHENED	OR	LAMINATED
. . . . .		. . . . .
1 234567890		1 234567890

Next find the month of manufacture by looking at the dots over word "Triplex":

Jan TRIPLEX (dot over the T)

Feb TRIPLEX (dot over the R)

Mar TRIPLEX

Apr TRIPLEX

May TRIPLEX (double dot over T)

Jun TRIPLEX

Jul TRIPLEX

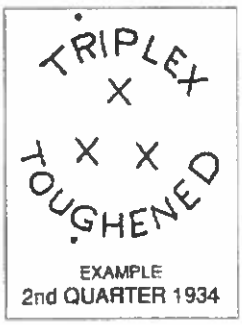
Aug TRIPLEX

Sep TRIPLEX

Oct TRIPLEX

Nov TRIPLEX

Dec TRIPLEX



Q: I've used rust converters but still see new rust in about one year. Converters leave a porous substrate under the new paint. Converters have no grip. POR-15 interlocks with the metal structure. Result: No new rust, ever. No new rust if done right: scrape, degrease, phosphatize, dry, apply three coats, final paint. I have used it for decades and it works. Rust cannot blister it even with porous perforated metal. I do not have any financial interest in POR-15.

— *R.G., Northbrook, Ill.*

A: Thanks for the tip. We did some investigation that agrees with your assessment. The process is a bit time-consuming and somewhat expensive, but the word on the street is that it works. We will have to give it a try sometime.

Rust Inhibitors

by Lawrence All British Car Club (reprinted from the September Newsleak, *Ohio Valley)*

This was an experiment carried out to test rust preventative coatings designed for use in restoration and protection of older cars. A number of 22 gauge steel coupons were coated with the products and left out in the weather for over three years. To enhance the weathering process, salt and water sprays were applied for the first few weeks of exposure in wet, wild Wisconsin.

Products were in three categories:

1) Conversion coatings are systems that are applied over existing rust to convert and stabilize it so that paint can be applied over the treated surface.

2) Fortified Slow Dry enamels are designed to dry slowly and penetrate rust. They contain anti-corrosion additives to arrest the corrosion process.

3) Moisture Cure Urethane products work by penetrating rust and then curing into a hard impenetrable film. The trigger for the cure is absorption of atmospheric moisture and moisture in the coating.

The results were:

Excellent:	Coroless; POR15
Very Good:	Supra DeRust
Good:	Jenolite; Rust Ender
Average:	Extend
Poor:	Krylon Industrial Rust Control; Rust-1-Cide; Rust More; Rust Reformer; Rustoleum; Trustan 7
Terrible:	OPSHO; Rust Car; RCP (Rust Control Primer); Thick and Heavy Metal Conditioner; Zintex; Rust Eater

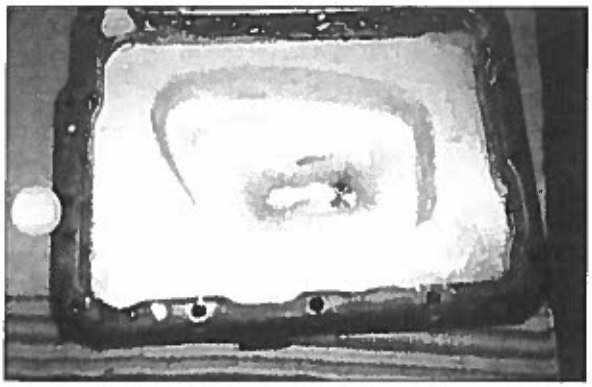
Fabrication

by Tom Mason

Minnesota AHC

Every time I fabricate a part I have a new respect for the people who make things. A part will look straight while you have it clamped for welding, and yet the minute you do the final weld, you look at it from a different angle, and it's off just this tiny little bit. Frustrating.

I welded some iron together and used 1.375" tubing on the ends for bearing carriers to make an alternator. Getting all this aligned and not binding was a major challenge. I covered the armature with layers of paper and then drilled the holes for the field coils to get it centered. This worked, and the running clearance on the coil/armature is only a few thousandths. This alternator I fabricated has a true magnetic center and hence is self-exciting. It may be part of a wind generator if I ever get more ambition.



I stockpiled rubber parts from the Healey many years ago as I though those would be the first parts to become unobtainable. As it turns out, I was wrong; they are still available and fairly inexpensive. It is easy to mold rubber parts from liquid rubber and plaster, or even wax can be used to make a mold.

I recently needed a plastic cover that has become unobtainable, and I used plaster of Paris to make a mold of the cover. I then used fiberglass resin and laid in thin pieces of fiberglass cloth in the resin. I ended up with a darn good replica of the plastic part. In fact, after painting, it is hard to tell it from an original.

I also molded an aluminum piece in plaster of Paris. I'm not sure if you can cast to that, but I will find out and let you know. I know most casting is done in sand that I believe has oil to hold it together. A fellow just never has enough tricks in his bag. It's always nice to be able to get a new part, but when you can't, fabricating your own is a real challenge. I think my Healey is low on gas; if it's not, I'm gonna fill it up anyway. Happy Healeying...

***Left:** Plaster of Paris mold for missing plastic part. **Top:** Part after coming out of mold. **Bottom, right:** Finished part after final painting*