BY LOREN KNUTSEN

DIE CAST TRIM PARTS

Some of the parts of old cars that take an awful beating over the years are the small die cast trim items like hood ornaments and door handles that are normally ignored and not properly taken care of. Pits are the major problem since the material they are made of is primarily zinc (commonly called pot metal), and zinc does not lend itself to soldering. These parts are either nickel or chrome plated, and over the years water and other contaminants have worked their way through the plating and corroded pits into the part.

Many of these pitted parts are salvageable, but that can be very expensive unless you can do much of the work yourself. Let's say you have a decorative part that is highly detailed, but it is full of pits, and a replacement is not available. These pits are at the heart of the problem. If they are not completely removed they will show up as tiny stars when the part is plated. Once in a while this will be a brass part, but usually it is zinc, and in each case the process of restoration is a bit different. The first step is to determine which metal you have, and that is best done by having a reputable plating shop strip the part. By stripping all the original plating off the base metal can be identified. Stripping is done by an electro/chemical process that is essentially the reverse of the plating process. It is usually not expensive, but it does require care as it can also cause additional pitting, so do have a professional do this step.

After the part is stripped of the plating, the real work begins. It depends on whether the base metal is zinc or brass as to what you can do next. Of course you can have the plating shop do all this for you, but the price will be very high, if you want a first class job in order to save all the detail originally cast into the part.

Let's consider the process for brass first. At the bottom of all those pits there will be some contamination, and that must be completely removed. A good glass bead blasting will take care of most of that contamination, but maybe not all of it. Since the pits must be either filled or removed the easiest way to determine how to proceed is to sand the part with fine emery cloth as this may remove enough brass to eliminate the very small pits. Those that remain can be taken care of in one of two different ways. Here is where the hard work begins. Small files and scraping tools can often be used to remove a small amount of the surface of the casting to remove the large pits. This takes time and careful handwork to retain the basic shape of the part. Using power tools like a die grinder is risky, so hand tools are the best for this work.

Scrapers can be made from old files, and properly shaped scrapers can get into the fine details of a part but always take care to follow the original contours of the part. (*Editor's note: we have advocated asking your dentist for his old picks. Those tools are perfect for this job.*) Remove pits by reducing the entire surface of the part to retain the original shape and appearance. As a last resort if some pits are too deep to be removed in this way, some filling may be required. If you are an experienced welder and

have TIG (Tungsten Inert Gas) welding equipment, you can fill large pits with brass or Silver Solder. Do not take out the gas welding equipment you use on frame parts and try this. It is delicate and probably is best done by an expert, so plan to have it done by someone with experience in this field. Those large pits should first be drilled just enough to get a clean new pit. Do not use solder to fill these pits as heating the part enough to accept the solder will heat the whole part, and that will melt the solder in neighboring pits. The best material to fill those pits is silver brazing alloy. Once those pits are filled go back to the files, scrapers and emery cloth to restore the original contour of the part.

Now let's see what can be done for a Zinc casting with the same pitting problems as the brass part. With rare exceptions filling pits in Zinc parts is not an option. Zinc is a low melting metal that can easily be destroyed or melted by overheating. It is not easily welded and can't be silver soldered or soft soldered successfully. That leaves only one good option and that is to use the hand tools like files and scrapers to remove all the pits. To get the feel of doing this find an old die cast part that is basically just scrap and try the filing and scraping on that rather than starting to learn the technique on your prize hood ornament. Do not be in a hurry with this as you want to remove as little metal as possible to remove the pits. Once you have restored the part to its original shape, and removed the pits, it can be polished and then sent to the plating shop. Do inform the plating shop that you want to retain all the detail. If you restore the part and polish it to near perfection, the plating should be fairly inexpensive, and the fear of losing much of the detail will be gone.

The scrapers you will need will have to be custom made to get into the areas you need to scrape. There are files available that are shaped in many different ways - flat, round, oval, triangular, etcetera. But always use files that are sharp, as dull files work poorly and make the work much harder. It is best to keep files used for this purpose separate from files used for general purposes. Remember that files cut only in one direction. Holding pressure on a file when on the return stroke is the best way to dull it, and files aren't cheap. Take care of the ones used for this purpose. Files will also collect metal filings and become clogged with them. Clean the files as you work, and remove any of the filings stuck in the teeth. The little filings stuck in the teeth of the file will add additional scratches that also have to be removed. A fine stainless steel brush about the size of a toothbrush is available in most auto supply stores, and it is great for cleaning small files.

Scrapers can be made from small files by carefully grinding the tips to fit the areas you will want to scrape. The better job you do will result in a better part when it is plated. If you take the time to furnish a part that is ready to plate, all the plating shop has left to do is the copper, nickel and chrome plating, and that will save you a lot of money.

If you have parts that are too thin to file and scrape in order to remove blemishes, you can clean and blast the parts to remove any contamination, and have the plating shop plate them with a fairly heavy coat of copper. Be careful when blasting thin parts as the process can and will distort the part, if done too aggressively. If you got the pits clean enough, this copper will plate all the way to the bottom of the pits. Then file and scrape the copper to eliminate those pits. If you are into the base metal before the pits are gone, have more copper plated on and continue the process. I have a radiator shell that I have had coppered three times to get all the pits filled. Between each copper plating I have filed and sanded as needed. Now you may ask, why I did not have more copper plated on the first time around? The copper does not plate on that evenly so you may have much more in un-pitted areas than you need and too little where you need it.

Now, if all of this seems like too much trouble to do yourself, consider this. Many die cast parts cannot be purchased to replace your old ones. If reproductions are available, they will be expensive, and some may not be the same quality as the originals were. I have seen

some repro parts that I would not take the trouble to carry home, but others are very well done. Check the quality before spending your money on sub-standard parts.

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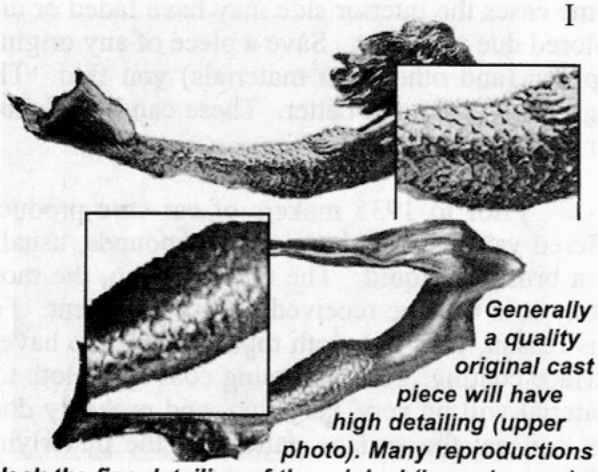

Generally a quality original cast piece will have high detailing (upper photo). Many reproductions lack the fine detailing of the original (lower images).

was able to salvage a very badly pitted 1934 Packard radiator cap and ornament that were original from my car. I have included a picture of this just to show what you can do if you are willing to spend the time and effort. I have about 60 hours invested in this. The value of doing this is partly pride and partly due to the fact that if I had not done it myself, the plating shop would have had to charge me (for the same amount of time) at a much higher rate than I was willing to pay. It is important to find a good plating shop that will work with you, if you do your own work. The right shop will advise you along the way and show you where you have done good or unsatisfactory prep work. The first part will be the hardest, but you will learn a lot from that. Make the first one simple, like a door handle rather than starting out with a hood ornament or some other highly detailed part

If you are inclined to do this kind of work, find some old scrap parts to practice on. Make or buy some tools and polishing equipment, and give it a try. There are no hard and fast rules to this process, but you will learn as you go. You may find different and better ways to do the particular work as each job is different, but it will be well worth your time and effort when it is done well.

S.K.

CAN PITTED METAL BE 'FILLED'?

It seems that the easiest way to repair pitted metal is to use one of the modern epoxy fillers or plastic body putty. The advantage of a filler is that, instead of sanding the part 'down' to the level of the bottom of the pit you are filling 'up' to the original surface. Tiny drops of the epoxy filler or putty can be applied to the cleaned metal surface and then sanded to match the contours of the original. BUT, you cannot effectively plate the part afterwards.

Electroplating requires an electrical current to be passed through the metal and a thin layer of plating metal - copper, nickel or chromium deposited on top of the electrified metal. The epoxy filler is not electro-conductive so it will not plate. Wherever the epoxy is on the surface of the metal piece, a void will occur. We have not been able to locate an epoxy material that is electrically conductible.

Powder coating, too, requires that a electrical current be passed through the part to make the powder paint pigment adhere. Same problem; the current will not pass through the epoxy or putty. Additionally, powder coating requires that the part be baked in an oven to melt the powdered pigment. The oven's temperature is higher than the melting point of many pot metals. You will end up with a glob of unidentifiable metal, and the part will be totally ruined.

Wet-painting will cover both the metal and the epoxy, but so far, no paint has suitably duplicated the reflective gloss, appearance and durability of real nickel or chrome plating.

S.K.