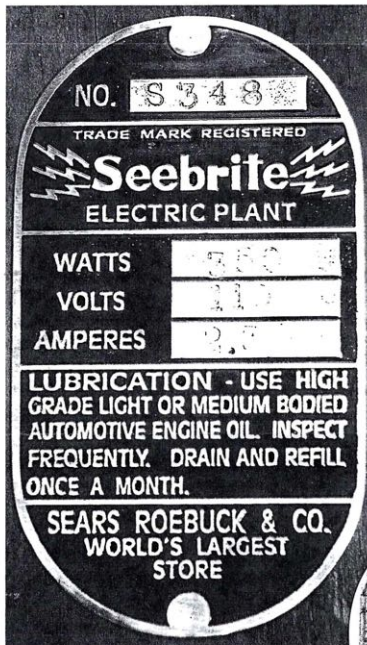


DIY Brass Nameplates

*Can't Find a Replacement Nameplate? Make Your Own —
It's Easier Than You Think*

By Jeff Conner



It's hard to believe the brass nameplate shown above started out as the simple rubbing at right. The end product is almost impossible to tell from an original nameplate.



Finding an original brass nameplate isn't always easy, and while reproduction nameplates are available for many of the more popular engines, those of us with less common equipment are often left empty handed. If you're missing the original nameplate, or your original is badly damaged, there is a fairly straightforward process for making your own reproduction nameplate, and one that looks identical to the original. Called photo etching or chemical milling, the process involves chemically removing metal around an image mask to leave raised letters and images.

The Etching Process

In commercial photo etching, transferring the image to the metal requires photo-sensitive chemicals, ultraviolet light and chemical developing of the image prior to etching. I was not going to get into another \$300 project to produce a \$10 part, so I searched for an easier method.

The hobby electronics field provided the answer with a product called Press-n-Peel Blue (PnP) toner transfer paper, an emulsion coated mylar film that you copy your artwork to using any laser copier. This material is used for making intricate printed circuit boards, which are etched the same way as a nameplate. The toner from a laser copier transfers to the PnP film, and the emulsion on the PnP Blue lets the toner easily transfer to a metal plate using a simple clothes iron. The laser toner bonds to the brass, becoming a mask for etching with a solution of ferric chloride. There are other paper transfer methods (and I tried many of them), but in my experience PnP Blue provided the best results.

Making the Art

The first step is to find an original nameplate to use as a pattern, since an original will give you the best results. Barring that, a good pencil rubbing taken from a nameplate is second best, and a good close-up



photo (with a ruler placed next to it to give scale) will do.

Simple artwork can be done with plastic tape and rub off lettering, permanent marking pen or, as I did it, with computer-generated artwork. It is not necessary to be computer literate, or even own a computer, but it makes it a bit more fun. A computer helps with the more difficult work of reproducing shapes, logos and special lettering, and inexpensive programs enable even a novice like me to produce outstanding results. You can also try your local high school or community college graphics art instructors, who often need special projects for students.

Making the Mask

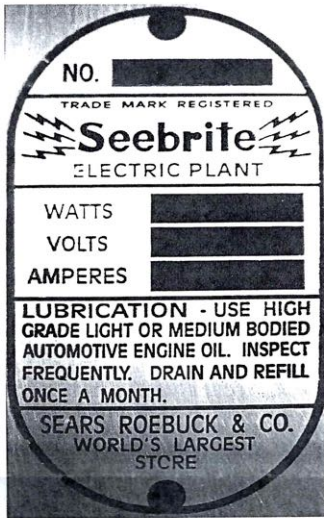
Once your artwork is done you have to make a mirror image of it before copying it to the PnP Blue since the PnP Blue image is applied face down on the metal. Most software programs will let you reverse an image, or you can copy your artwork onto clear acetate, flip it over, and copy the mirror image onto the dull side of the PnP Blue film – remember, always copy to the dull side of the PnP Blue. Be careful with PnP Blue when copying an image to it; PnP Blue film is thin and slippery and will jam in some copiers. It is better to tape it to a sheet of copy paper using removable, double-sided tape. Also, set the copier on its darkest setting to ensure a good mask.

For nameplate stock I sourced some 0.025-inch brass sheet from a hobby shop. The stock I found is nice and flat, which it must be for ironing. And don't get in a rush and trim the stock down yet – if you trim the brass before you transfer the image the brass will curl and won't be flat, and the transfer process for etching won't work.

At this point you want to clean the brass surface with fine steel wool, then flush the surface with brake

Left: After a dipping in ferric chloride, areas of the brass plate masked with toner end up raised. The etching process described here removes the metal around the masked image and words so they stand out on the finished plate.

Below: The PnP Blue transfer on brass plate stock. This is what it looks like before it's dipped in the ferric chloride solution, which removes the metal around the black toner mask.



cleaner followed by a wash with soap and water. Don't touch the cleaned surface.

With the photo copied reverse image on the PnP Blue film, tape the film dull side down to the clean brass plate. With a twice-folded paper towel under the brass plate, put the plate on a flat piece of wood. Place a thin paper towel on top of the PnP Blue film (the paper towel allows the iron to glide over the PnP Blue without sticking to it). With the iron set on its second highest setting, iron the PnP Blue and brass plate until the brass plate reaches the temperature of the iron – about two or three minutes. Move the iron around over the plate but don't press down on it – the copy toner melts as you iron the plate and you don't want it to smear.

Once the brass plate reaches temperature (I measured the temperature at about 250-270 degrees F, so be careful, it's hot) quench the plate under cold running water until cool. Gently peel the PnP Blue film a way from the brass plate. Your artwork should now be a bright blue, readable image on the brass plate. You may have to try this a few times to get it right, so put as many of your artwork images as you can on a single piece of PnP Blue. The blue image washes off easily with brake cleaner for another try if necessary. Clean again as before. You can also fill in small gaps or light areas in the artwork with a permanent marking pen before you etch the plate. This will ensure you have a clean, continuous image after dipping the plate in the etching solution.

Etching

Now for the fun part. Cut the brass nameplate and artwork to near finished size. Coat the reverse side of the plate with clear lacquer, electrical tape, or mailing tape to protect it from being etched. Attach a non-metallic handle to the plate so you can easily remove it from the ferric chloride etching solution. Place the plate in a small glass or plastic tray. The etching solution works much faster at about 125 degrees F, so I floated the etching tray in a larger pan of hot water to warm the etching solution.

Pour the etching solution into the tray with the plate to a depth of about 1/4 inch and gently agitate the solution for 20-40 minutes. The depth of etching varies with temperature, agitation and time. On my nameplate it took about 20 minutes to get nice raised lettering and an etching depth of about 0.004-inch to 0.005-inch. Rinse the plate in running water when finished, trim it to size and sand/file the edges smooth. The etching solution can be reused, but it will be slower each successive time as more of the chemical becomes tied up with dissolved metal.

If you want the background of the finished plate to be dark, instant gun bluing solution or paint works well. Gun bluing can produce a very nice patina, depending on how it is used. Finally, polish the raised portions of the plate with brass polish or 1,500-grit sandpaper, stamp in your serial number and other desired data and clear coat. That's it. It might take a

SAFETY NOTE

The etching solution used in the process described here is ferric chloride. It is readily available at Radio Shack and other electronics stores in a ready-to-use solution. It is strongly acidic and as such deserves attention. Always wear eye protection and rubber gloves when handling this or any other chemical.

Ferric chloride does not produce noxious gases when it reacts with brass. It can be safely used indoors, but I suggest staying out of the kitchen since ferric chloride stains badly. It will not attack plastic, glass or rubber. Read and follow all cautions on the packaged product.

SOURCING PnP BLUE

I found PnP Blue at Electronics Express, 365 Blair Road, Avenel, NJ 07011. The Techniks Inc. Web site at www.techniks.com has more information on PnP Blue, plus listings of other distributors in the U.S. and Europe. PnP Blue is currently listed on the Web site at \$30 for 20 sheets.

— Jeff Conner

bit of time to get your artwork the way you want it, but once you have a pattern to work from the rest is just following a process, working it until you get it right. And once you get comfortable with the process you can be creative with the etching, making thin spots, nicks and scratches in the PnP Blue mask to produce a used look that duplicates the wear and tear of use. I guarantee you will be impressed — and you'll have done it yourself.

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Schoenner Engine

Three-cycle, Non-compression Flame-ignition Engine

By Dale Nickerson

I found this engine at a local antique shop in the early 1960s, priced at \$10. I did some talking and got it for \$7. Did I pay too much? It was missing quite a few pieces, but I understand engines and I made the following missing parts: the sideshaft and its gear; the

head; intake and exhaust valve cams; and the rocker arm. It's still missing its burner tube, but we'll come back to that. It has a 1-3/8-inch bore, a 2-3/4-inch stroke and the flywheel is 6-1/2-inch in diameter. It has most of its original paint and pin striping. It is, it