

Chassis Plate Fabrication

Written by Administrator
Monday, 06 August 2012 19:33

The chassis plate of my car had been lost at some point during the life of the car. I have found out that some Singer clubs have manufactured reproductions at some point but now they are not available anymore. Therefore I decided to try fabricating the plate myself. The plate is brass and it has the texts etched to the surface. First I needed a good photograph from an original chassis plate to create the graphics. When I collected photographs from the plates from different sources I noticed that there are different versions of the plate. This is described more in another article [here](#).

After selecting the photograph I would use, I corrected its perspective and scaled the photo to correct chassis plate size. Then I created the chassis plate geometry with a vector graphics program by using the scaled picture in the background as a reference. This way I could get the geometry very close to the original. Then I printed the graphics onto transparent slide as a mirror image to be used as an exposure screen. This is because when you use the screen upside down, the ink side is against the exposed surface and creates more accurate edges.

I cut brass plates that are slightly larger than the final plate dimensions to allow some tolerance on the exposure screen placement. Then I protected the backside with wide plastic tape so that it will not be etched later. The front side of the brass plate is then painted with photo sensitive paint (I used Positiv 20 that is widely used in printed circuit board fabrication and is available from electronics stores)

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When the photo sensitive paint is fully dried the screen transparency is placed on the surface and supported with a glass plate. This combination is then exposed to ultraviolet light (The exposure time depends on the light used, I used an old alpine sun lamp and a two and a half minute exposure). The exposed plate is then developed by placing it into a solution of mild lye (NaOH) where the exposed paint dissolves and the unexposed is hardened so that it will protect the surface from etching.

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The developed sheet is then placed into etching solution (I used ferric chloride FeCl_3 which is also available from electronics hobby stores). The etching time depends on the solution strength and temperature. When the etching is deep enough the plate is taken out of the solution, washed and the remaining protective paint is removed with acetone. Below is a plate in developing solution and a developed plate showing the geometry on protective paint. On the right are two developed plates on the left and two etched plates on the right.

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The etched plate is then painted black and let to dry. The high portions are then sanded to bare brass while the etched recesses retain the black paint. I still do not master the process throughly but the result seems somewhat decent already, as seen below right.

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