

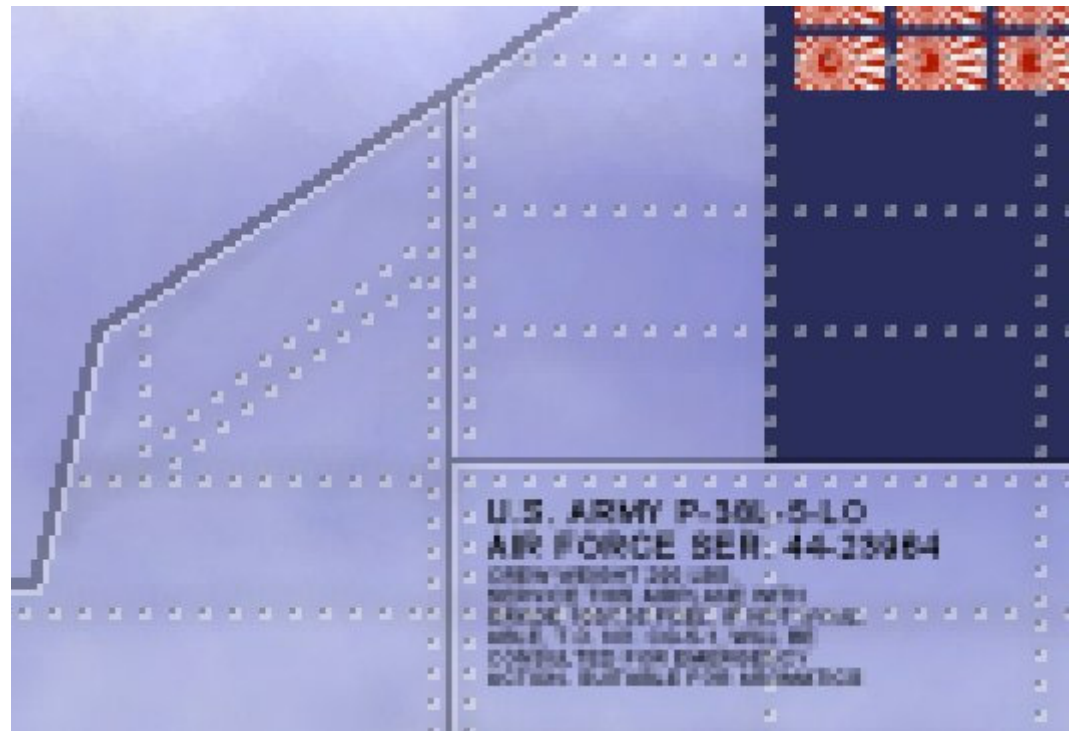
# Drawing Rivets and Lines with Paint Shop Pro

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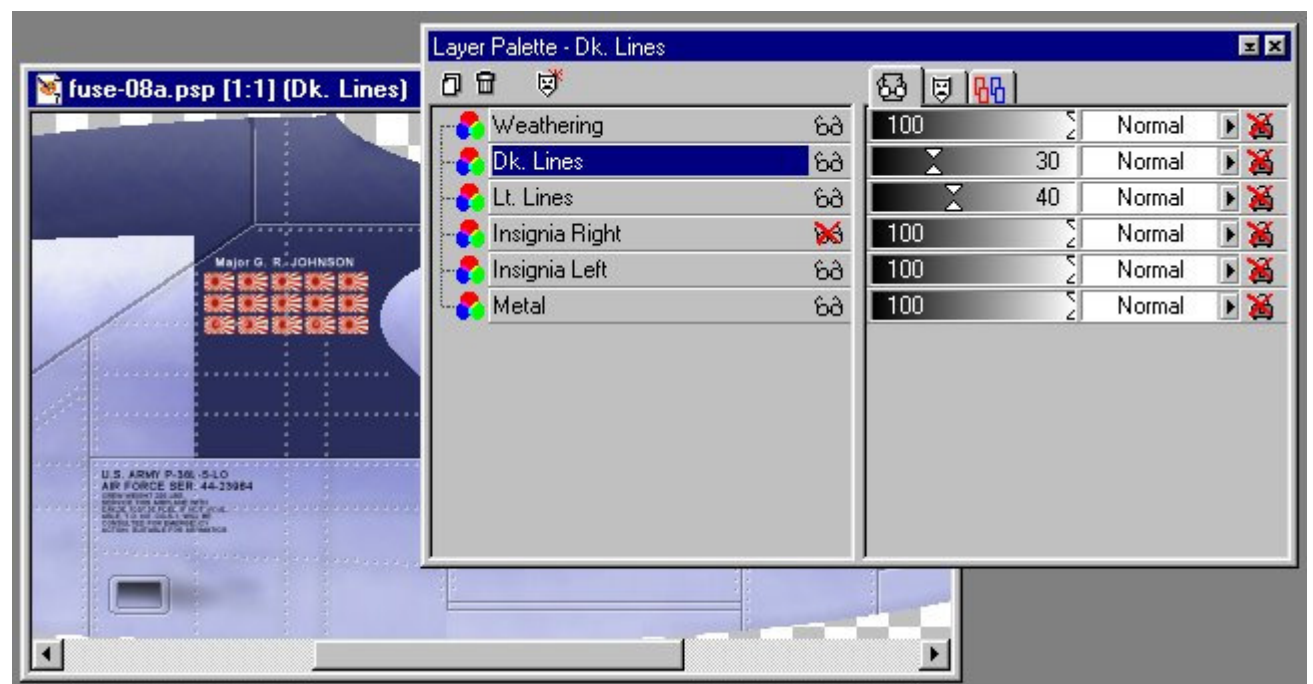
## 1. Rivets and Lines

I use shading to highlight the rivets. In this case, the aircraft uses flush riveting. As the aircraft aged and flexed, the rivets were usually sunk into the aircraft skin a little. So the point of the rivet is dark, while the surrounding area on one side (away from the light source) is lighter. If we were modeling an aircraft with non-flush riveting we would make the point of the rivet dark and the side away from the light source darker.



I use several layers for each PSP file. Here is an example:

We are going to use transparent layers to do this (more on the transparency later). One layer will be "Dark Lines" and will use Black (RGB 0,0,0). The other layer will be "Light Lines" and will use white (RGB 255,255,255). Once these layer have been set with transparency, then they will show up regardless of the color of the layer under them (see above. Note the color on the "bare metal" and where the side is painted).



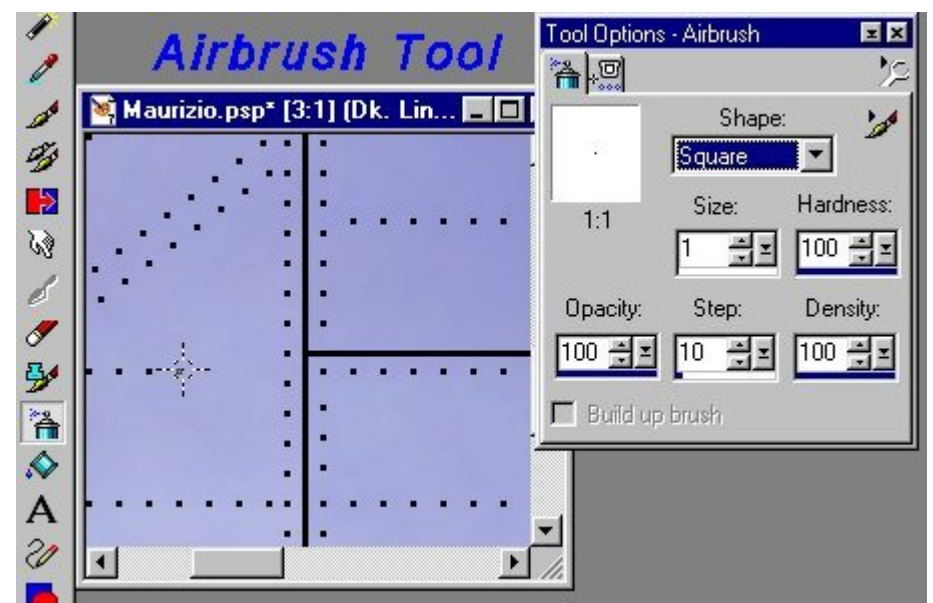
## Determining size of rivets

To figure out how many rivet, space between them, etc., I look at photos and such to count the number of rivets between two pane edges, and then decide on a standard distance between them and a size for the rives. In this case I chose (for the "dark lines") a rivet size of one (1) pixel, and a space of four (4) pixels between rivets.

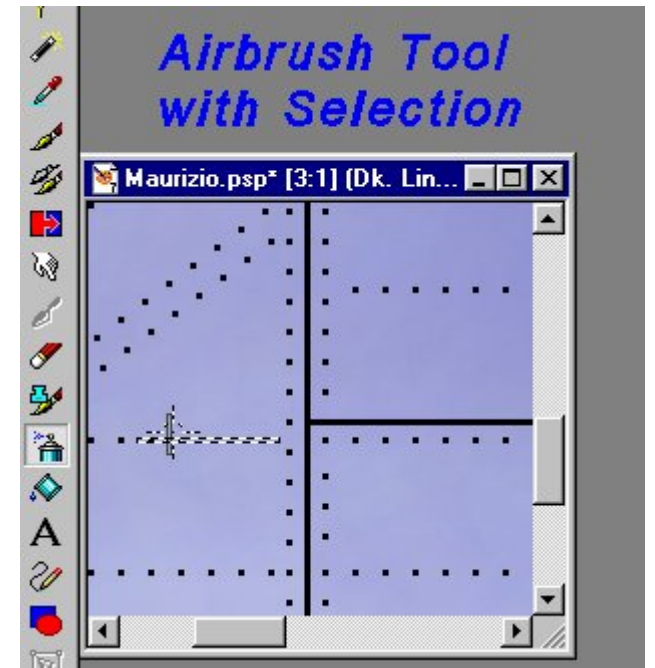
## Drawing Rivets and Lines

Start with the dark (or black) lines. These are (depending on the size of your texture) usually about one pixel wide for a fuselage that's 2000 or pixels in length (of course this'll be reduced in size before being added to your aircraft). There's a lot of discussion on this over at <http://www.aluminumcloud.com/>, but they use Photo Shop, and I haven't had much luck using some of their methods. However, there's a lot of other good info over there. I use several ways of making the rivets, and here they are:

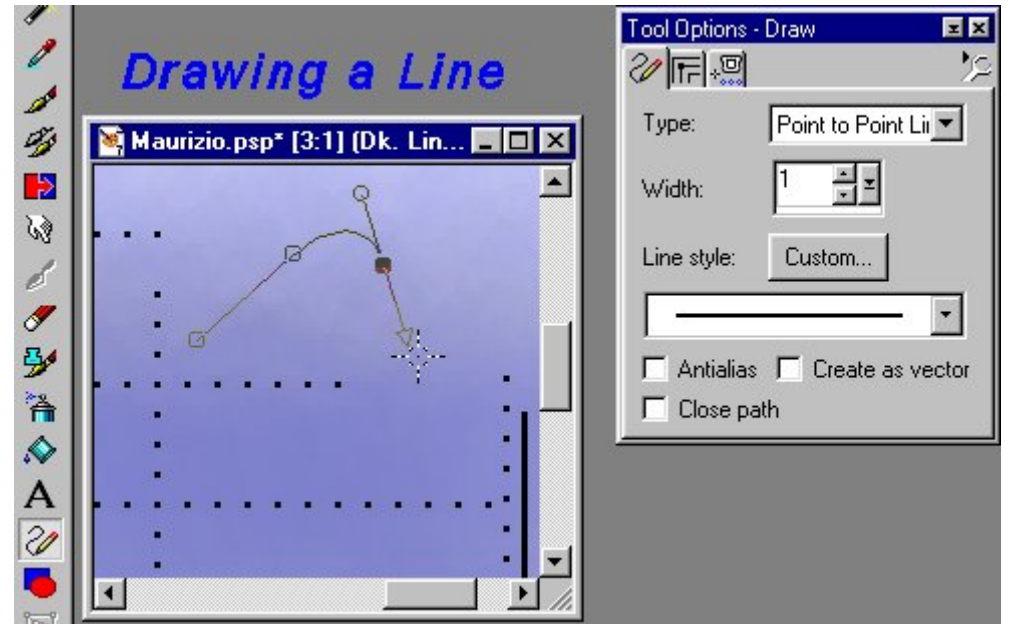
**Airbrush Tool:** The simplest but most time consuming. I set the size to 1 pixel and click to add the lines.



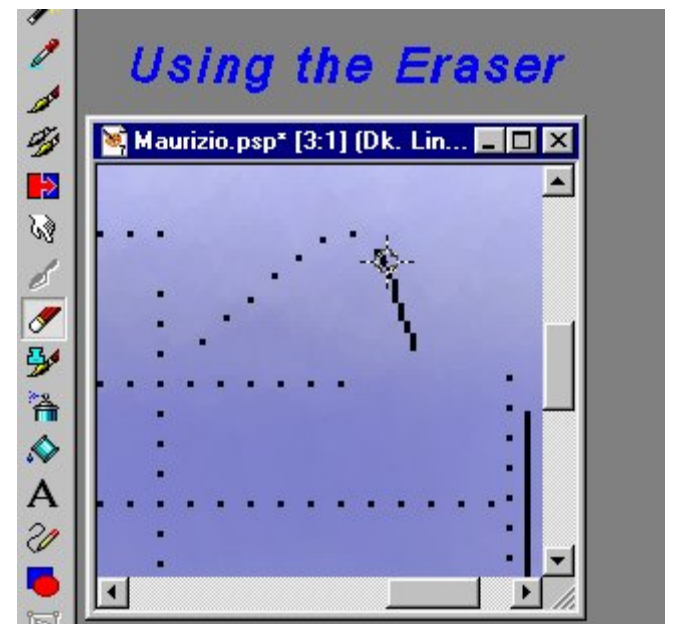
**Airbrush tool with selection:** Using the selection tool, I select an area 1 pixel wide and as long as my rivet series. Then I select the airbrush tool and (in this case) the vertical brush at a size 7. This is still only one pixel wide, so I can just click on the spot I want the pixel.



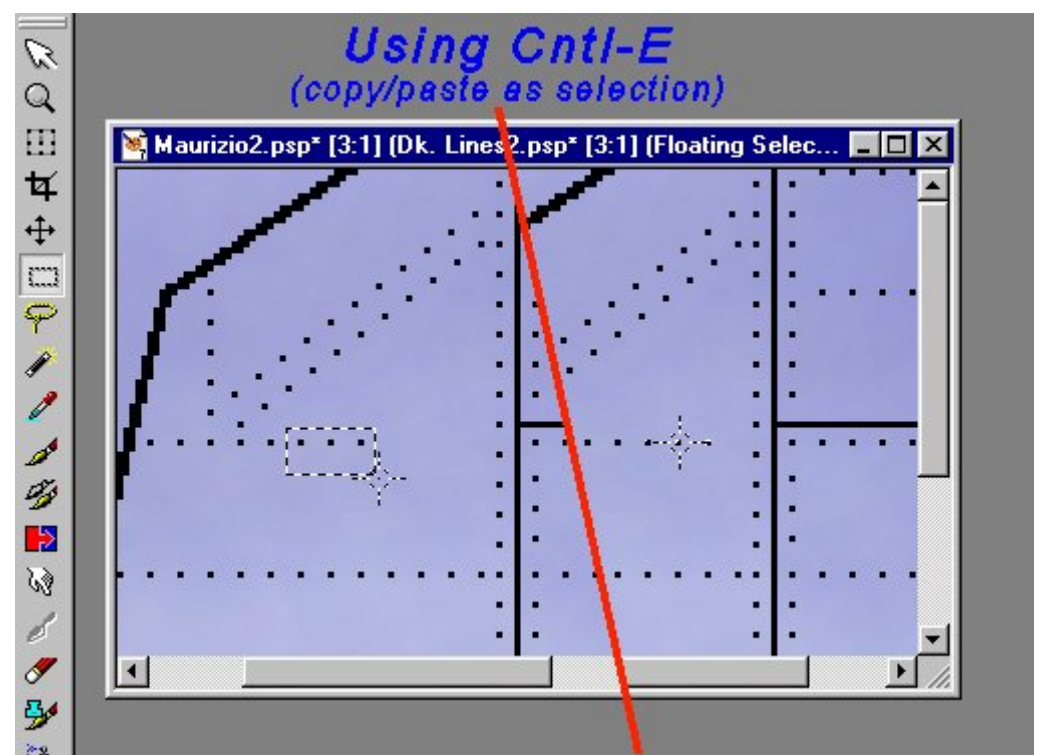
**Line Method:** This is the best way to do it if you're making a curved line of rivets. Using the line tool set to "point to point" line, without the "Vector object" box checked, draw your line. If you click, hold, and drag you can curve the line:



Now you can use the **Erasure Tool**, set to size 4, to erase the areas between the rivets.



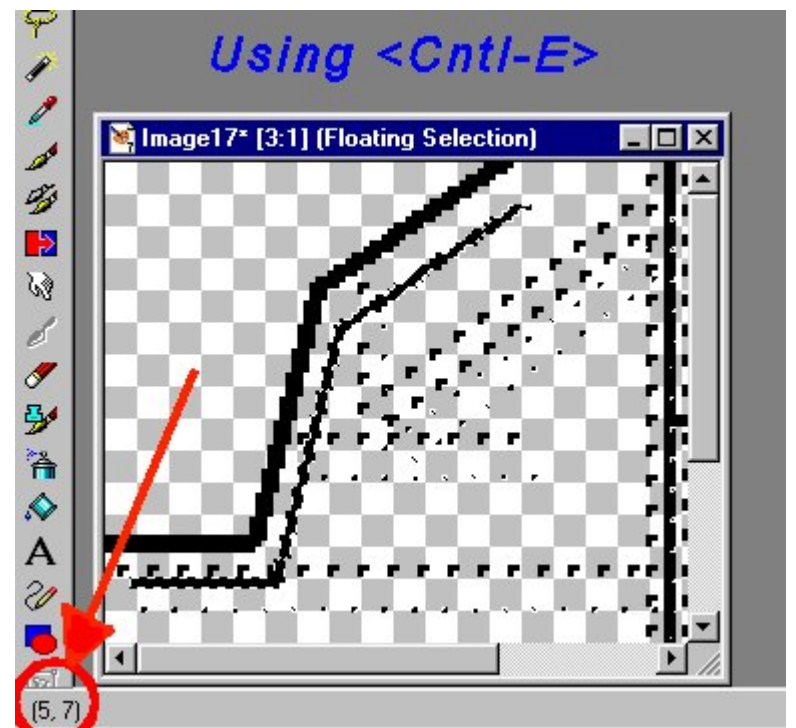
**Copy/Paste ("Control+E") method:** This is a simple and quicker way to add the rivets on to the airplane. Once you've created several rivets, you can use the selection tool to select several, then "**Ctrl-C**" (copy) to copy them, and "**Ctrl-E**" (paste as new selection). Position this selection and click to paste it. If you need to move it, you can use the **selection** tool to drag.





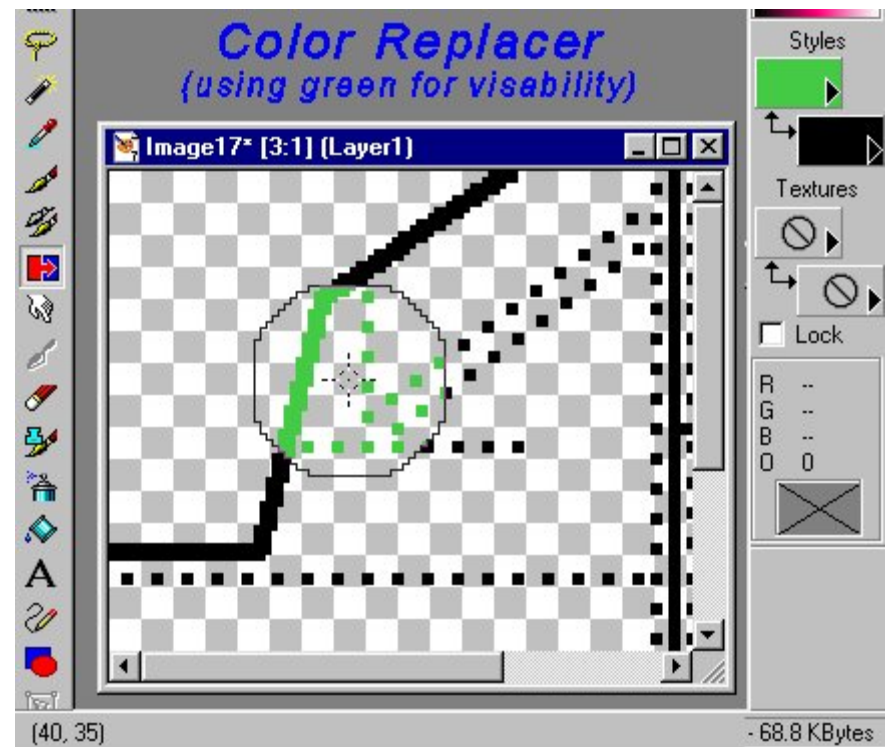
## Making the Light (white) lines layer

This can easily be done by copying the dark lines and changing their color. I find it best to copy and paste the "dark Lines" layer as a new file., "**Ctrl-A**" (select all) and "**Ctrl-V**" (paste as new object). Then, in the new file, "**Ctrl-E**" (paste as new selection) and move this new selection until it is at coordinates 0,1 (in the lower left corner). Do this again for 1,0 and 1,1, and you now have the same lines and rivets you had before, but they're all two (2) pixels thick, not one:

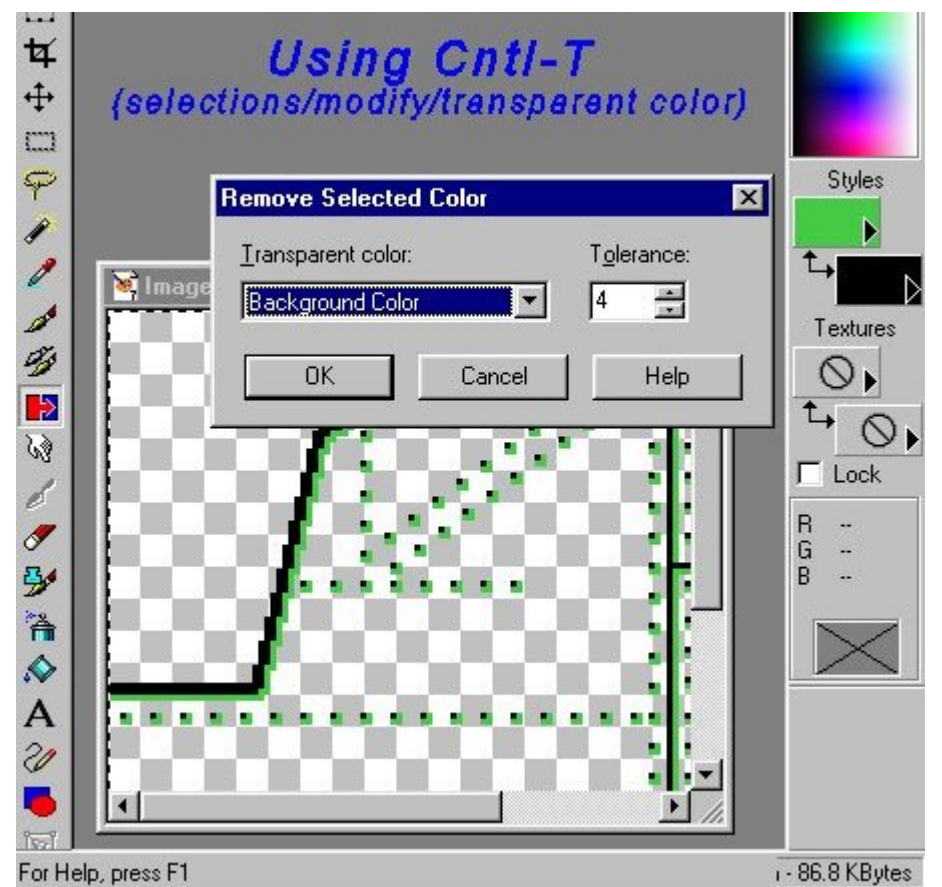


Once you've finished pasting the lines so that all the rivets are two (2) pixels wide, it's time to change the color to white (in the picture below, I used green for visibility). This can be done with the **color replacer**. Ensure your background color is black and your foreground color is white and click (double click to change all).

We're not done yet. If we were to use this layer as it is now for the "light line" layer, it would "wash out" the dark lines where they overlap. So, we'll paste the "dark lines" (still black) one more time onto this layer, position them, and now we'll remove them (and the white lines underneath).



To do this, hit "**Ctrl-A**" (select all) and "**Ctrl-T**" (select/modify/transparent color). This will bring up the "remove selected color" box. In this case we want to remove the back, which is still our background color. Hit OK, now, you must do a "**Ctrl-C**" (copy), then go to back to your original texture file and hit "**Ctrl-L**" (paste as a new layer). Rename this layer "Lt. Lines" or something similar. I always position this layer under my "Dk. Lines" layer.



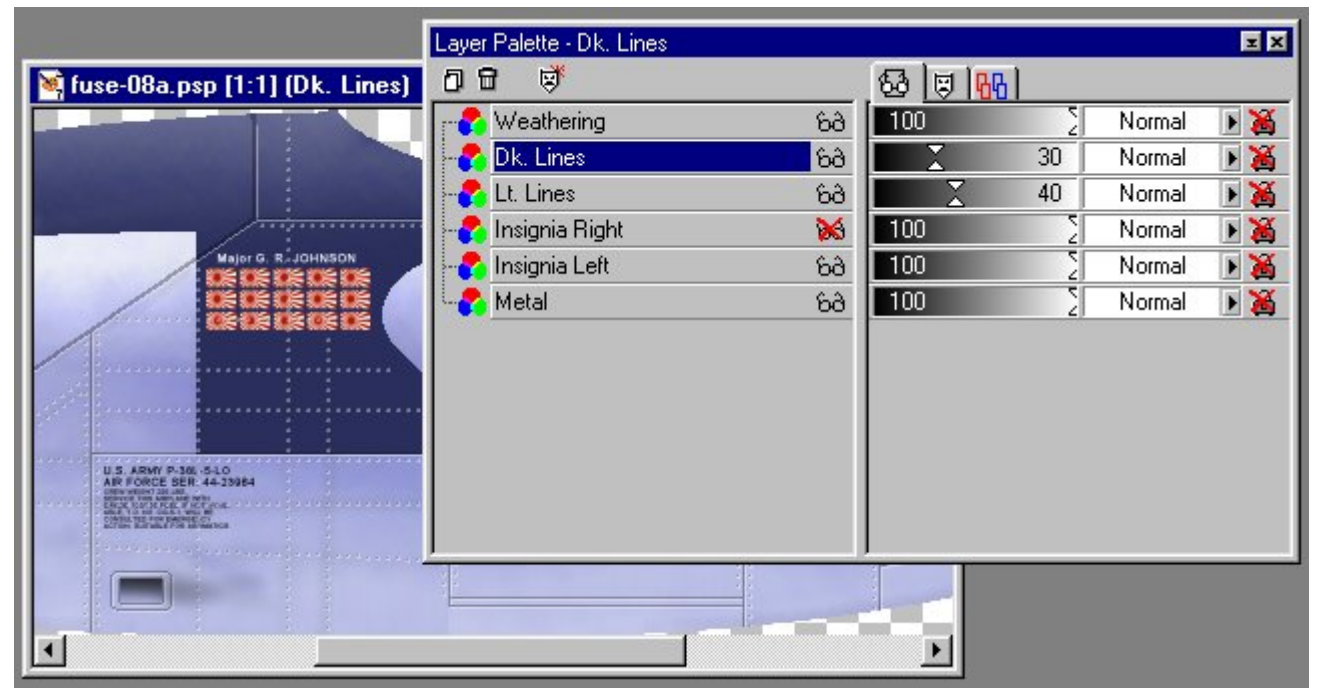
## Finishing

Now, the last thing we must do is add some transparency to the layers. One of the reasons you have made a separate layer for the Lt. Lines and the Dk. Lines is so you can set the transparency separately. Play with it to see what works. I find that something between 20 and 40 seems to work best, depending on the color of your aircraft.

And that's it! It'll be really easy to change color schemes after this and do repaints because you won't have to touch the lines. Have fun!

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