

HOW TO MAKE A STREAMLINE COVER PLATE

A simple introduction into bumping metal is found in making a streamline cover plate, Fig. I. It requires little material and the use of only a few tools and can easily be made from the instructions on this page.

Fig. I

MATERIAL: One piece of dead soft aluminum .040" x 3" x 6"; hardwood block at least 2" x 3-1/2" x 8"; a few 3/4" flat head nails, fine emery cloth, fine steel wool, sandpaper.

TOOLS: Plane, wood gouge, try square, tin snips, small ball peen hammer, dividers, 3/32" drill.

PROCEDURE:

1. Surface plane one face and the two edges of the hardwood block.

2. On the surfaced face, trace a 5" streamline shape, Fig. II.
 Note: By referring to the sheet on "Streamline Struts" a streamline shape can be drawn on paper and then transferred to the board. By skipping every other ordinate, the layout will be simplified.

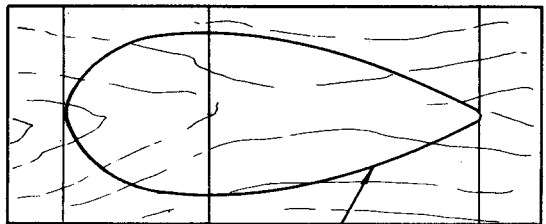
3. Square three lines across the face, as shown in Fig. II.
 Note: The middle line is drawn through the point of greatest width of the outline.

4. Square these lines across each surfaced edge.

5. Trace one-half of the streamline outline on each edge, as shown in Fig. III.

6. With the wood gouge, hollow out the face of the block to the depth indicated by the layout lines on the edges. The cross section should present a symmetrical curve at any point.

Note: A little judgment will have to be used in gouging out the block, but remember the block should be hollowed out so that the cover plate can be bumped into the hollow forming the streamline cover shown.

Fig. IIStreamline outlineHardwood blockFig. III

HOW TO MAKE A STREAMLINE COVER PLATE (continued)

7. After the block has been gouged out to the desired shape, sand the hollow to make sure that no dents or high spots remain. This is extremely important, as any defect in the block will show in the finished work.
 8. Place the aluminum over the hollow, making sure that at least 1/2" extends over all sides, and with a few 3/4" nails, nail the aluminum into place.
 9. Using the round end of the ball peen hammer, bump the aluminum into the hollow.
- Note: It must be remembered that in order to force the aluminum into the hollow, the metal must actually be stretched, therefore a number of light taps with the hammer are required, as a heavy blow would only tear the material. The bumping should be started by tapping the aluminum around the edges first and gradually working down into the center. Never attempt to work too fast, but rather stretch the material into the hollow by bumping it only as fast as it works against the sides of the cut.
10. After the bumping is completed, the hammer marks should be removed. This can be done by rubbing with the round end of the hammer. A better tool for this purpose can be made by soldering a large diameter ball bearing to a copper tube handle, as the ball bearing will have less tendency to scratch the aluminum, Fig. IV.
11. When all the hammer marks are removed from the material, the plate may be removed from the block.
 12. Make a 3/8" flange around the cover by scribing this distance with the dividers, as shown in Fig. I.
 13. Cut along the scribed line with the tin snips.
 14. Drill 3/32" holes spaced about 3/4" apart.
 15. Polish the streamline cover plate with fine emery cloth.

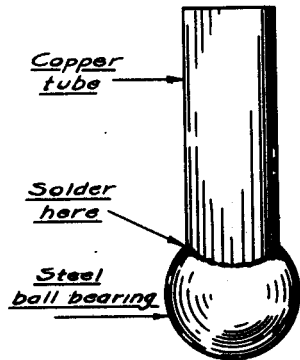


Fig. IV

After the cover plate has been finished and polished, it should be inspected for any possible dents or high spots. The flange should be inspected to see that it is perfectly flat and that the raised cover portion forms a definite angle with the flange. If any of these faults are apparent, smooth out the bumping block and try it again.