



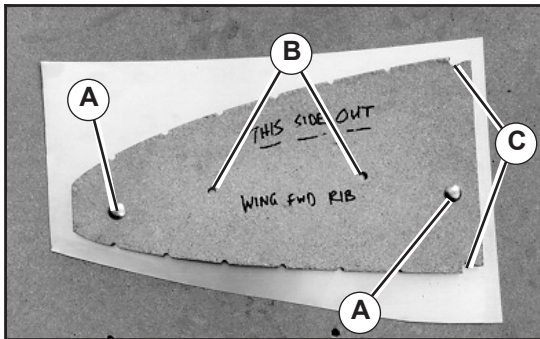
Forming Wing Ribs

2 pages, Revision A, 05/09/2013

These instructions illustrate the process of laying and forming a typical Sonex Aircraft wing rib. This is necessary only for builders who choose to scratchbuild a Sonex. Airframe kits purchased from Sonex Aircraft include pre-formed ribs.

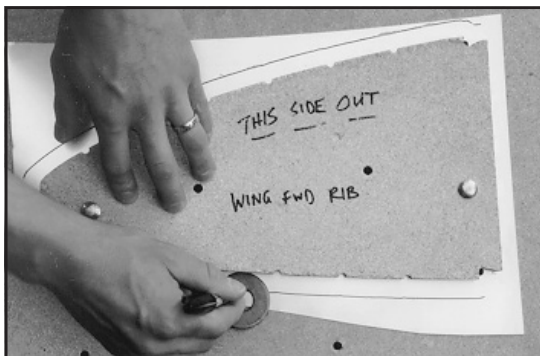
Note: A video depicting this process can be viewed on the Sonex Aircraft website.

1. Lay the rib form block on the aluminum with at least 1/2" of aluminum extending out from the form block in all directions.

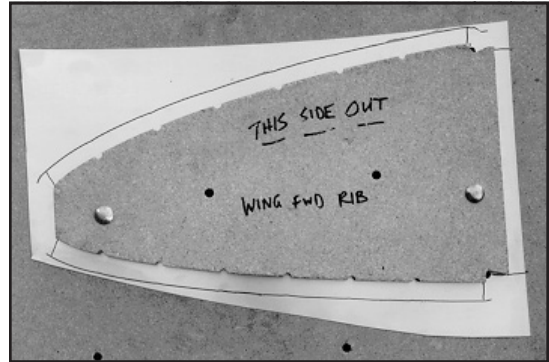


This photo illustrates seteps 1 through 4.

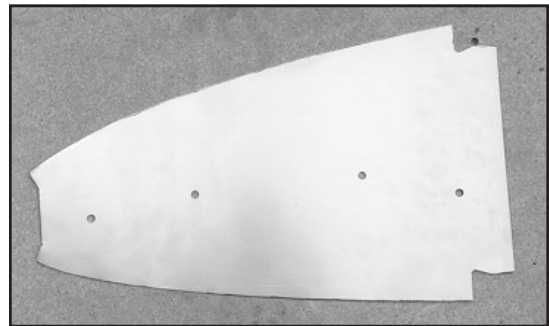
2. Hold the form block firmly in place and, using the two outer tooling holes (A) as guides, drill through the aluminum sheet and into your workbench with a 1/4" drill bit. After each hole is drilled, insert a 1/4 bolt (A) to hold the form block in position on the aluminum.
3. Using the two inner tooling holes (B) as guides, drill through the aluminum sheet with a 1/4" drill bit.
4. Using the two corner notches (C) as guides, drill through the aluminum sheet with a 1/4" drill bit.
5. Trace around the form block with a washer that measures 1/2" from its outside edge to its inside edge.



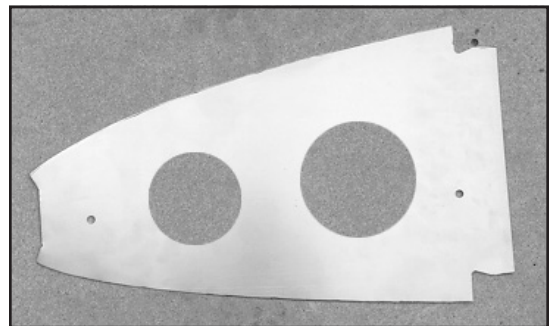
6. Complete the outline of the rib blank as shown on the plans and in the accompanying photograph.



7. Remove the form block and cut the rib blank from the aluminum sheet.



8. Use the two 1/4" holes in the center of the blank as pilot holes for fly-cutting the two lightning holes.

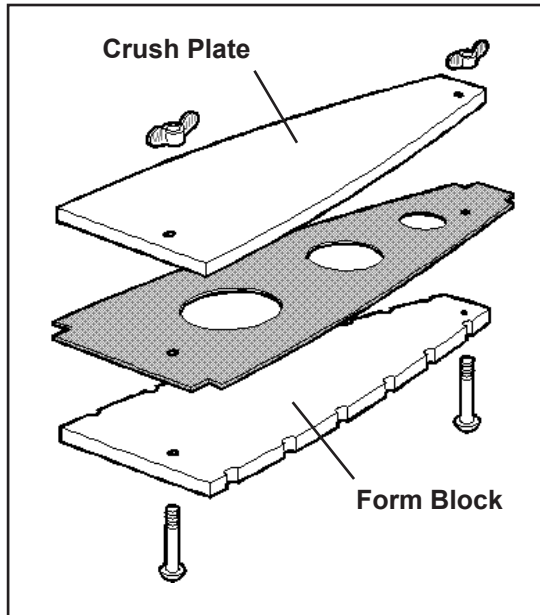


9. Deburr all of the edges of the rib blank.

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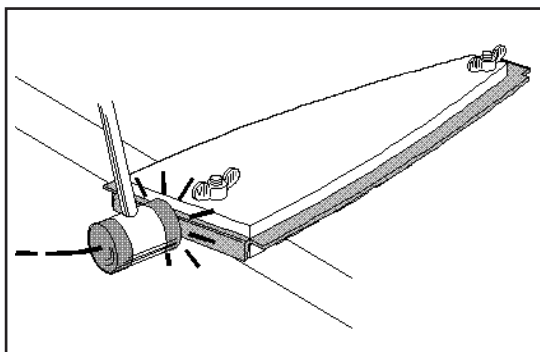
10. Assemble the form block, rib blank, and crush plate as shown in the following illustration.

Note: In the following steps a main wing rib is shown, however the same technique applies to leading edge ribs.



11. Bend the flanges of the rib blank to shape by striking them with a plastic or rubber tipped mallet until they conform to the outline of the form block as closely as possible.

Note: The flanges will not conform perfectly to the curves of the form blocks. The process of fluting the flanges in step 7 will make the flanges conform to the proper shape.



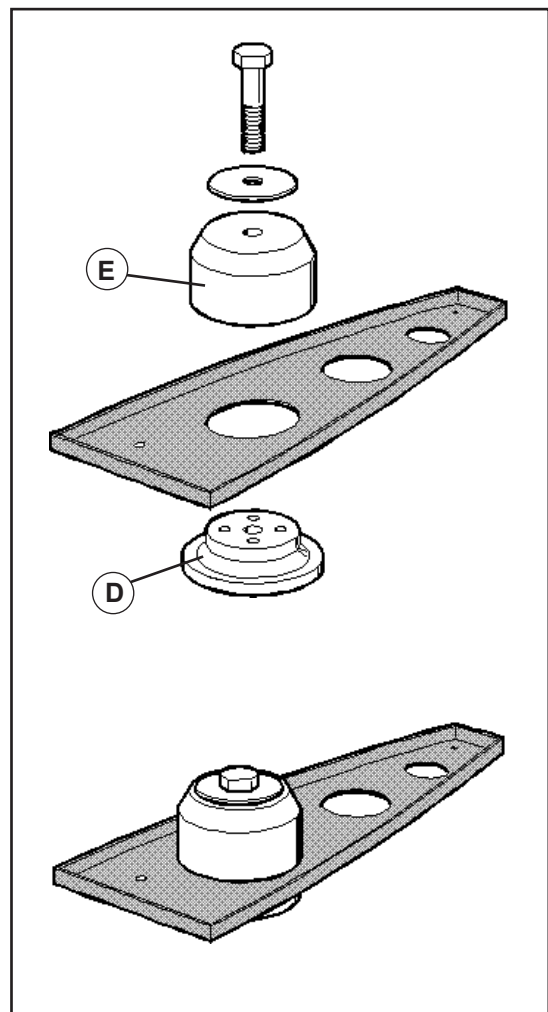
12. After the flanges have been formed, mark the location of each flute on the rib blank.

13. Remove the rib from the form block and flare each lightening hole by sliding the male half of the die (D, below) through the lightening hole and clamping the female half of the die (E) firmly against it. Refer to the illustration.

Important: There are two different sized lightening holes. Make sure you use the correct sized die for each hole.

Note: An alternate method of forming the flares is to:

- secure the male half of the die to the top of the workbench*
- place the rib over the die*
- place the female half of the die over the male half and strike the female half with the plastic tipped mallet or small arbor press.*



14. After the lightening holes have been flared, use a fluting pliers to form the flutes. You will also have to work the flanges with the rubber mallet to achieve the proper flange angle. Your goal in fluting each wing rib is to get it to lie perfectly flat on your workbench with the flanges bent to the proper angle.