

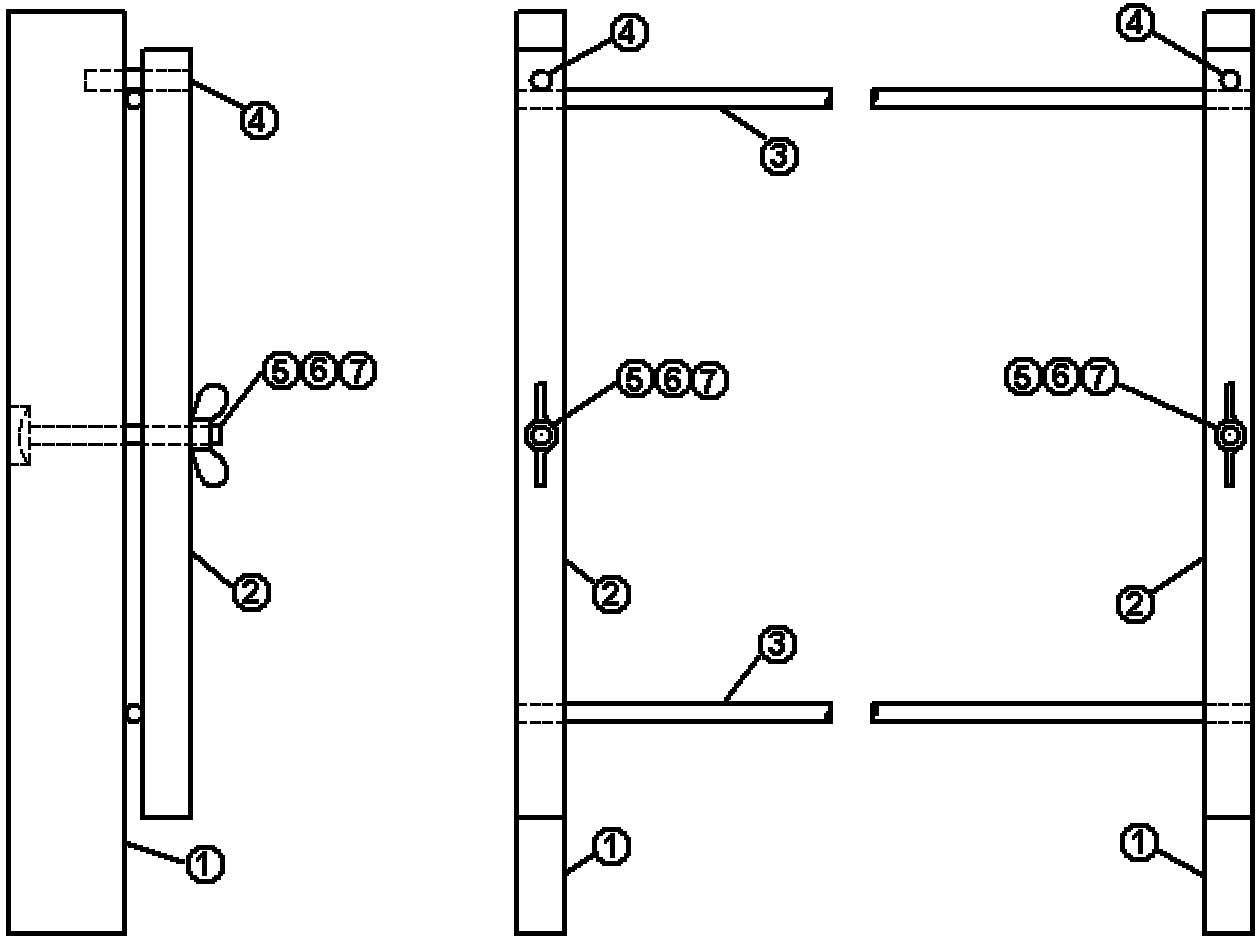
Wing Assembly Jig

The performance of a model is directly dependent the accuracy of the construction of the wing. Alignment of the wing components during construction is critical to the stability of the finished model. Many kits provide tabs on the ribs to maintain the correct alignment during assembly over the plans. This is an effort by the kit manufacturers to help modelers but this is not always the best solution. If a modeler is scratch building from plans, he needs a way of keeping everything straight. There are fixtures that are commercially available that do a very good job. Every modeler should have a fixture, which helps in construction of a wide variety of wing styles and sizes.

The wing jig that is shown here is easy to build from readily available materials using common tools. The skills required to construct this wing jig are well within those of many beginners. It is easy to assemble and use and works with straight, tapered, swept, and delta wings. It can be permanently mounted to a workbench, a building board, or taken apart for storage.

Bill of Materials		
Materials listed are for one (1) complete assembly		
ITEM	QTY.	DESCRIPTION
1	2	1" x 2" x 12" S4S Stock
2	2	1" x 1" x 10" S4S Stock
3	2	1/4" Dia. Alum. Arrow Shaft x 36" Lg.
4	6	1/4" Dia. Hardwood dowel x 2" Lg.
5	2	1/4-20 X 2 3/4" Stove Bolt
6	2	1/4-20 Wing nut
7	2	1/4" Flat Washer

Construction begins with obtaining the materials required. There is nothing critical about the items listed. The S4S (surfaced four sides) stock can be pine, fir, spruce or whatever is readily available. The actual dimensions of the stock are less than the designated size. For instance, the 1" x 2" stock is closer to 5/8" x 1 1/2" but this is taken into account in the design. A 1 x 6 board can be ripped to make the stock pieces. Hardwood dowel can be used in place of the arrow shafts but the assembly will not be as stiff and may not work as well. The dimensions can be increased to accommodate larger wings.



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The stock pieces are first cut to length. The 1/4" holes for the alignment dowels and the stove bolts are drilled by stacking Item 1 on Item 2 and drilling both pieces at the same time. The recess for the head of the stove bolt is cut next. If the fixture will be permanently mounted to a workbench, two (2) pilot holes for #10 wood screws should be drilled and countersunk in Item 2. Two (2) of the dowels, Item 4 are glued into the hole in Item 2. The four (4) remaining dowels are inserted into the ends of the arrow shafts. This prevents the tubing from being crushed when the locking bar is clamped down. Inserting the stove bolts through the appropriate holes completes the construction.

The wing jig is relatively simple to use. The ribs are first cut to shape and finish sanded. If the wing that is being build is not a straight type, the ribs should be numbered from the root to the tip. The ribs are stacked so that the spar notches are all in alignment. A drill press is used to drill 1/4" holes through the stack. One of the holes should be located on the centerline of the ribs about 1" from the

leading edge. The other is located on the centerline about 1" from the trailing edge.

Next, the stack of ribs for one wing is slid onto the support rods. If gear blocks will be installed, the wing must be built upside down. The support rods are placed on the fixture bases with the forward support rod firmly against the alignment dowels. Finally, the locking bars are placed over the alignment dowels and the stove bolts and the washer and wing nuts are tightened.

The wing is now ready for assembly. The ribs are slid into position over the plans or by measuring between the ribs to get the proper location. The spars, leading edge, trailing edge and sheeting are attached to the ribs. After the glue sets, the entire assembly can be flipped over and the sheeting for the opposite side can be installed. After sufficient time has been allowed for the glue to set and the assembly to become rigid, the wing can be removed from the support rods. The next wing is done in the same manner but care must be taken to assure that the ribs are stacked in the opposite direction to produce a rib for the opposite side.

That is all that is required to produce a wing jig for trouble free operation. It is inexpensive, easy to build, easy to use, and easy to store. Using the wing jig properly, a modeler can produce a wing that is free of warps.

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