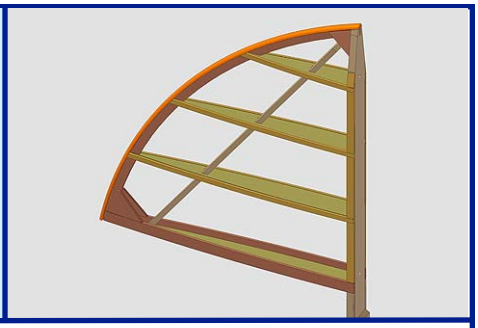
Scale Built R/C

Fury II Fin Assembly General Information



These are the instructions for the vertical fin. Note that there are several computer generated illustrations located in the instructions. The use of these detailed, almost photo quality, illustrations makes it easy to understand the location of the various parts and sub assemblies used in the construction of the stabilizer and vertical fin assemblies.

These instructions are written with the understanding that all of the parts for assembly have been made or were purchased as a short kit. A separate information sheet is provided for tips on cutting out the parts by hand.

CONSTRUCTION MATERIALS REQUIRED TO BE PURCHASED:

Elmer's white glue (Small 2 oz. bottle. Use Pint size to refill 2 oz bottle) *(Available most everywhere.)*
CA Glue. (Pacer ZAP Recommended) *(Available at hobby shops.)*
100, 150, 220, and 320 grit sandpaper. *(Available at hardware stores.)*
Pacer 5, 15 or 30 Minute epoxy glue. *(Available at hobby shops.)*
T-88 Epoxy. *(Available at homebuilt aircraft part suppliers and Scale Built R/C.)*
Wax paper. *(Available at grocery stores)*
Spackle. *(Filler material available at hardware stores.)*
Particleboard Board Shelving. 3/4" x 11 3/4" x18" *(Available at home supply stores. Stores will usually cut the particle board shelving to your dimensions at no charage.)*
1/2" X 11/16" Pine Molding Strips. (apx. 36") *(Available at home supply stores. This is a standard size.)*

WOOD PRODUCTS TO BE PURCHASED: (Does not include wood for laser parts)

1/16" x 6" x 12" Birch Plywood (1 Reqd.) *Leading Edge Brace.*
3/32" x 3/16"x 36" Spruce (or Bass) (1 Reqd.) *Leading Edge.*
1/8" x 1/4" x 36" Spruce (1Reqd.) *Cross Brace-Laminate to make .05" Wide Part.*
3/16" x 3/16" x 36" Spruce (1 Read.) *Support Block-Laminate to make .600" Wide Part.*
1/4" x 1/4" x 36" Spruce (1 Reqd.) *Laminate to make .600" Wide Spar.*
1/16" x 3" x 24" Basswood (1 Reqd.) *Cut into 1/8" and 1/4" wide strips.*

OTHER MATERIAL ITEMS TO BE PURCHASED:

none

FASTENERS REQUIRED:

#2 x 1/4" Pan Head Sheet Metal Screw. (3 Reqd.)
#4 x 3/4" Pan Head Sheet Metal Scrfew. (6 Reqd.)
#4 x 1" Pan Head Sheet Metal Screw. (21 Reqd.)
#2 Steel Washers. (2 Reqd.)
2-56 Miniature Elastic Stop Nuts. (2 Reqd.)
6-32 Blind Nuts (6 Reqd.)
6-32 x 1 1/4" Socket or Round Head Screws (6 Reqd.)

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TOOLS REQUIRED FOR ASSEMBLY:

X-Acto knife with #11 blade. *(need extra blades)*
Razor saw or fine hack saw blade.
Sanding blocks assorted sizes with attached sand paper.
Miscellaneous common hand tools.

DRAWINGS REQUIRED FOR ASSEMBLY:

Fin Assembly Drawing.
Pattern Drawing.

BUILDING JIG:

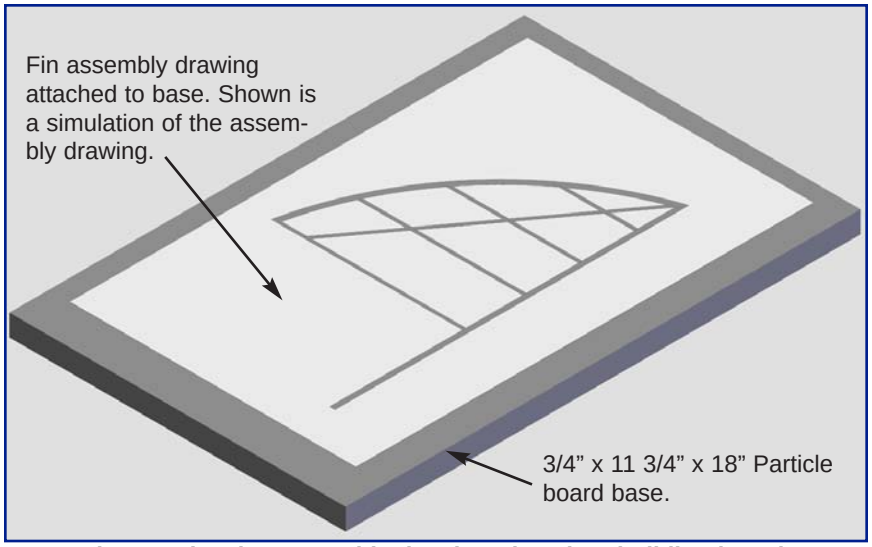
A simple to build jig made from a piece of particle board shelving is recommended. The cost and time to make the jig is minimal. A means of holding the various parts in alignment is required. Our jig system can be made in less than a hour. Complete instructions are provided to make the jig.

BASIC PROCESS OF CONSTRUCTION:

The assembly of the vertical fin is depicted in a series of illustrations. Each illustration provides a visual explanation of the step by step process to assemble the components. Note that each illustration only describes and identifies the parts or components that are to be assembled in that illustration or step in the building process.

VERTICAL FIN ASSEMBLY INSTRUCTIONS

STEP 1



View #1 showing assembly drawing placed on building board.

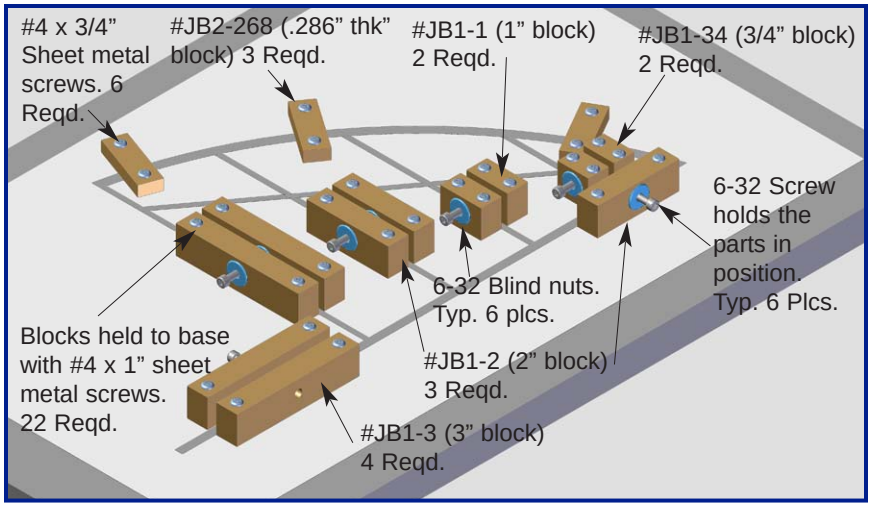
[ ] **See View #1**.Using hardware store 3/4" x 11 3/4" particle board shelving, cut a piece about 18 inches long.

[ ] Cut out the Fin Assembly drawing from the tail group assembly drawing **#E2.** Suggested outline where to cut is shown on the drawing.

[ ] With 3M Spray Mount Adhesive, glue on the Fin Assembly pattern drawing located in drawing #**E3** to the particle board. *Using Spray Mount allows one to remove the drawing and reposition it if necessary. Also the drawing could be removed and replaced with a revised one.*

NOTE:
Due to computer software limitations we cannot (or don't know how!) to place the actual assembly drawing on the surface of the building jig. We have drawn a representation of the drawing to give the builder a general idea of where the assembly drawing is placed.

STEP 2



View #2: Jig blocks are placed in position using the assembly drawing.

[ ] **See View #2.** There are two types of blocks used in the Fin jig. One block type **(JB1 series)** is used to hold the leading edge brace, **Item #4** at the proper distance from the base of the jig. #2 sheet metal screws hold the brace in position. The other type are the Fin blocks which have a clamping system to hold the ribs in position using a 6-32 screw to provide the clamping force. Drawings for the jig blocks are in **Drawing A1.**

The jig blocks are placed in the locations as shown in the assembly drawing. The for and aft positions of the Fin blocks are not critical, but the orientation of the blocks over the thickness of the parts is. The blocks must not interfer with the Fin's parts. Note there are different sizes and shapes of the rib blocks. The bottom blocks are 3"wide, then going upward they are 2", 1", and 3/4" in length. The top block is cut so it doesn't interfere with the structure. Part numbers for the jig blocks are noted in the illustration.

There are two kinds of **JB1 series** jig blocks, the primary and the secondary. The primary blocks have a 6-32 blind nut with a 6-32 x 3/4" screw. When the screw is turned inward, it will be pressed against the part holding it securely in place in the jig block. *The secondary block doesn't have a blind nut. The hole isn't used, but the same block could be used with a blind nut if another primary block is needed.*

[ ] First place a sheet of wax paper is placed over the drawing. Use masking tape to hold the corners of wax paper in place. **Must use the wax paper to keep any glue from running down onto the assembly drawing.** The instructions on the making of the blocks is located in the preassembly instructions. *The blocks in the Fin assembly jig are attached with #4 sheet metal or wood screws. If the blocks are glued in position, they can easily be knocked off because the paper drawing will pull loose from the jig base.*

[ ] Install the 6-32 blind nuts into half of the primary jig blocks. The blind nuts must be a tight fit and will require a small hammer to force them into position. *Properly done, no adhesive is necessary to hold them in place.*

[ ] The blocks with the blind nut is installed first. **Note that the placment of the blind nuts are not centered. Install the blocks with the blind nuts 3/8" from the base of the jig.** We want the clamping point to be as high as possible above the surface of the jig base. The blocks must just touch the drawn line of the part location and also be parallel to that part line. Holding the block in position, with a #XX drill, drill through each hole in the block and into the base to a depth of about 1/16". With the 1/16" deep hole as a guide, drill through the base with a # XX drill.

Attach the block with #4 x 1" sheet metal or wood screws. Install the other blocks with the blind nuts in a similar manner.

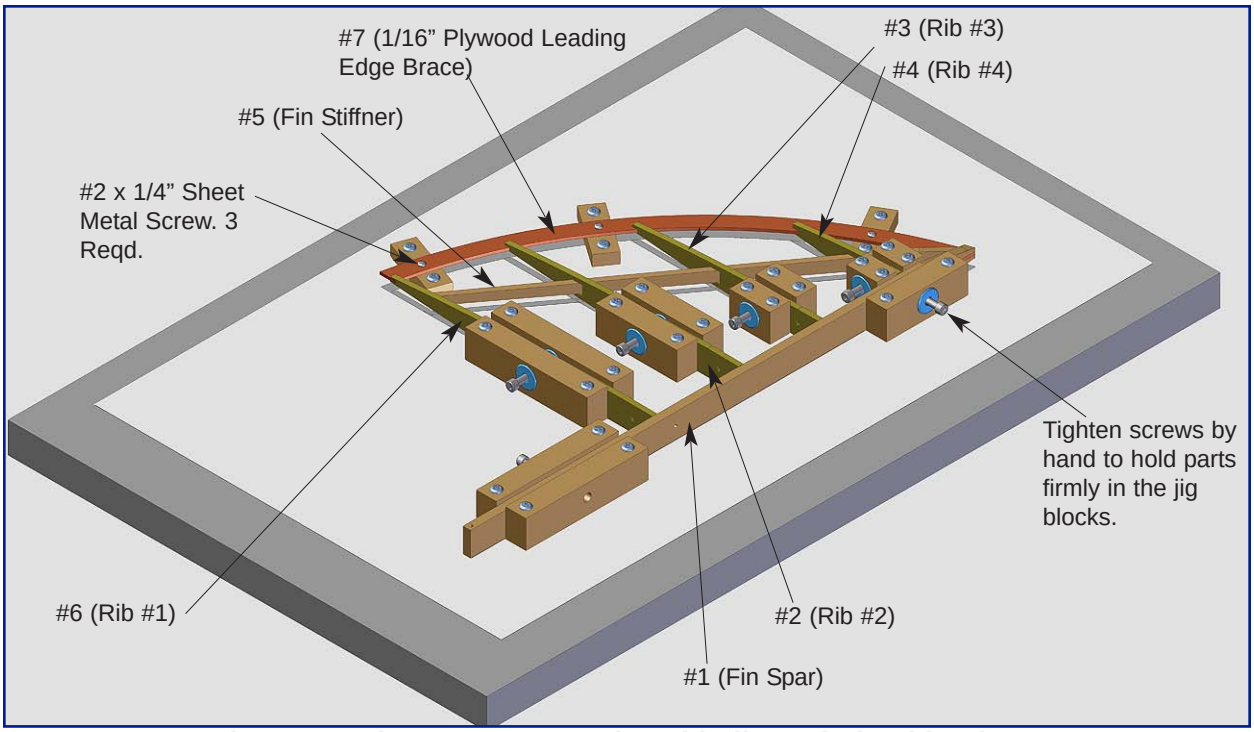
STEP 2-2

[ ] To place the secondary rib blocks in position, use the part associated with the bock as a guide to determine the correct distance from the primary block. Place a small piece of standard 18 or 20 pound paper next to the primary block. Then place the part to be used with that block into position. The paper when removed will provide clearance for variations of wood thickness. Hold the secondary block in position and drill the holes for the #4 screws as previously done with the primary blocks.

[ ] The three leading edge brace blocks **#JB2-268** are basically shims to hold the 1/16" plywood leading edge brace **Item #7** (see Step #3) at the proper height above the jig base. The blocks are .268" high. The leading edge brace is held in position with three #2 x 1/4" sheet metal screws. There are three holes in the leading edge brace where the #2 screws are placed.

The locations for the leading edge brace blocks have to be such that the three holes in the brace are placed somewhere over the near center of the blocks. The blocks are held in with #4 x 3/4" or 1" sheet metal screws.

STEP 3



View #3: Primary parts are placed in jig and glued in place.

[ ] **See View #3.** The first part to be assembled in the jig is **Item #1**, the Fin spar. Then **Item #2**, and then **Items #3** and **#4**. **We suggest that the parts are put in the sequence order suggested.** An example for the importance of a particular sequencing of parts is the installing of the fin stiffiner, **Item #5**. If the #1 rib is placed in the jig first, the diagonal brace cannot be inserted through the cut outs in the ribs.

Using the 6-32 screws in the jig blocks, clamp the parts firmly in position. *Don't have to tighten the screws very much, just enough so that the parts won't move.* **Do not glue any of the parts in position until all parts on in place and fit properly.** *We want to check to see if everything fits OK. Trim or sand any parts so that they fit properly.*

[ ] Place item fin stiffner **Item #5** in place. *Where the brace goes through the opening in the ribs, the openings may required trimming so the brace fits properly.*

[ ] Place **Item #6**, the #1 rib, into place and clamp it to the jig block.

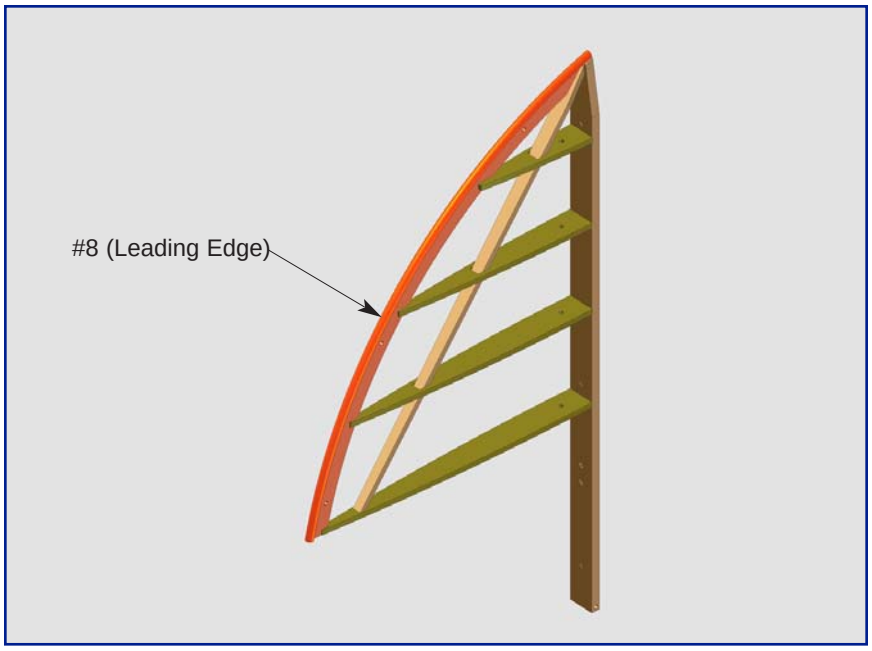
[ ] The leading edge brace, **Item #7**, is placed into position. It is held in place with three #2 x 1/4" sheet metal screws.

[ ] Check to see if all the parts are fitted in place properly. Trim parts as necessary.

[ ] Using a glue of the builders choice, glue all the parts in place. Suggest that whatever glue that is used, put a thin coat of glue on the end grain of any part that the end grain portion of the part where it is glued to another part. We suggest T-88 epoxy.

[ ] After the glue has cured or dried, remove the assembly from the jig. The jig will not be required to finish the

STEP 4



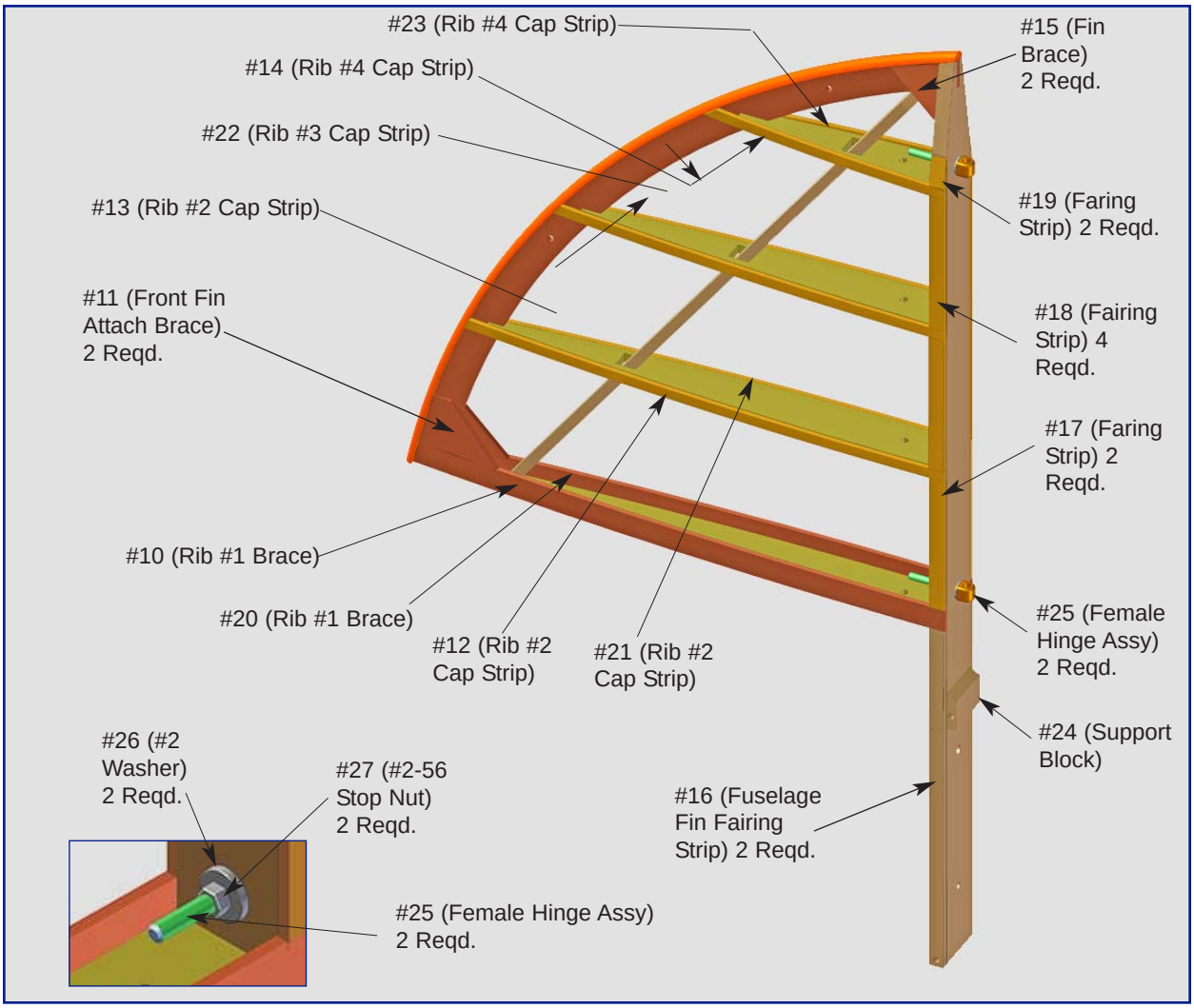
View 4: Leading edge Installed

[ ] **See View #4.** If the fin assembly hasn't been removed from the jig, remove it now. The leading edge **Item #8** is next to be attached to the assembly. The leading edge is made from a piece of spruce 3/32" x 3/16". *This is not a common size. It is made from a piece of 3/16" sq. spruce that has been cut to the 3/32" thickness in a band saw. A rip fence or a clamped piece of wood is attached to the band saw cutting surface is used to properly cut the 3/16" sq. spruce to the proper size.*

[ ] Suggest using T-88 to glue the leading edge **Item #8** in place. Use masking tape is to clamp it against the edge of the 1/16" plywood leading edge brace **Item #17**.

[ ] Sand the leading edge to a 1/2 round shape. *One can use a razor plane to knock off the corners, but don't remove too much material with the razor plane so you can sand to the 1/2 round shape. Use 150 grit sandpaper held in your hand to form the 1/2 round shape.*

STEP 5



View #5: Completed fin assembly.

[ ] **See View #5.** Support block and the cap strips and faring strips are added to complete the assembly. Elmer's white glue is good for the gluing of these parts. Use masking tape to hold the parts in position while the glue dries.

[ ] Fill the area where the bottom of the leading brace **Item #7**. Rib #1 **Item #6**, and the Front Fin Brace **Item #11** come together with epoxy. Use masking tape to keep the epoxy in place until it cures. *Locate the position of the assembly so that the brace is level this will help keep the epoxy from running out.*

AD's and Comments

AD's:

There are no AD's at the time of this printing. They will be added as necessary.

COMMENTS:

1. Suggest that both the Fin Spar Assembly and the Rudder spar assembly be made prior to assembling the Fin, and also the Rudder. Then temporarily install the male and female hinges in place in both spars. Make certain that the spars move freely with no bind. Also that they line up OK and the brass retaining fitting can be installed and held in with the cotter pin. fin/rudder spar drill jig should be used to drill the holes in the fin and rudder spars. This will assure that the hinges will line up properly. If for some reason the hinge(s) are not located properly, you can drill out the hole(s) in the spar(s) with a 3/16" dia. drill. Then glue in a piece of 3/16" dia. hardwood dowel. Then drill out the dowel to the properly location for the hinge.

2. When checking the installation of the hinges, use regular 2-56 nuts, not the miniature elastic stop nuts. If the stop nuts are used over several times, they loose some of their locking characteristics.

3. Before covering the Fin with fabric, we suggest that the hinge assemblies be temporarily removed. Then cover the rear of the spar assembly with the fabric that will be used. Let the fabric overlap the top and bottom of the spar assembly. If the silver dope finish will be used, as most of the Fury II's use, put on two coats of silver just around the area of the hinge attachment points. If another color is used, apply that color. Cut the fabric flush with the rear edge of the spar. When the rest of the fabric is applied , it too will not overlap onto the face of the spar. Then a piece of 5/8" wide pinking tape will be applied over each seam of the fabric. Half of the pinking tape on each side of the fabric seam. The pinking tape will join the pieces of fabric together and be exact scale besides.

Reinstall the hinges using the miniature elastic stop nuts and washers. Tighten the nuts firmly. This process will provide a nice looking appearance where the area of the hinges go into the fabric and spar.

VERTICAL FIN ASSEMBLY
BILL OF MATERIALS

IF28-1					
Item #	Part #	Description	Qty	Material	Dwg. #
1	IF28-1-1-1	Fin Spar	1	1/4" Spruce	E1
2	IF28-1-19	Rib #2	1	1/8" LitePly	
3	IF28-1-20	Rib #3	1	1/8" LitePly	
4	IF28-1-21	Rib #4	1	1/8" LitePly	
5	**IF28-1-31**	Fin Stiffner	1	1/8" Spruce	E1
6	IF28-1-14	Rib #1	1	1/8" LitePly	
7	**IF28-1-2-1**	Leading Edge Brace	1	1/16" Birch Plywood	E1
8	IF28-1-15	Leading Edge	1	3/32" x 3/16" Spruce or Bass	
9	n.a.	*Part no longer used.*			
10	IF28-1-16L	Rib #1 Brace	1	1/16" Birch Plywood	
11	IF28-1-18	Front Fin Attach Brace	1	1/16" Birch Plywood	
12	IF28-1-29L	Rib #2 Cap Strip **	1	1/16" x 1/8" Basswood Strip	
13	IF28-1-30L	Rib #3 Cap Strip **	1	1/16" x 1/8" Basswood Strip	
14	IF28-1-23L	Rib #4 Cap Strip **	1	1/16" x 1/8" Basswood Strip	
15	IF28-1-32	Fin Brace	2	1/16" Birch Plywood	
16	IF28-1-1-3	Fuselage Fin Fairing Strip	1	1/8" x 1/4" Spruce	
17	IF28-1-27	Fairing Strip **	2	1/16" X 1/4" Basswood Strip	
18	IF28-1-25	Fairing Strip **	4	1/16" x 1/8" Basswood Strip	
19	IF28-1-24	Fairing Strip **	2	1/16" x 1/8" Basswood Strip	
20	IF28-1-16R	Rib #1 Brace	1	1/16" Birch Plywood	
21	IF28-1-29R	Rib #2 Cap Strip **	1	1/16" x 1/4" Basswood Strip	
22	IF28-1-30R	Rib #3 Cap Strip **	1	1/16" x 1/8" Basswood Strip	
23	IF28-1-23R	Rib #4 Cap Strip **	1	1/16" x 1/4" Basswood Strip	
24	IF28-1-36	Support Block	1	3/16" Spruce	
25	**IF3-700A**	**Female Hinge Assembly**	2		3
[26]	WA256	#2 Washer	2	Steel Plated	
[27]	MSN2-56SP	Miniature Elastic Stop Nut 2-56	2	Brass Cad Plated	

NOTE:
See general assembly instructions page 4 for the terminology used in the bill of materials.