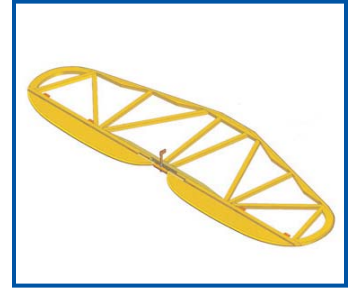


Trixter Beam Stabilizer & Fin Assy. # TB24-1A & TB28-1A



These instructions are not complete and represents work in progress as of 4/26/09

These are the instructions for the stabilizer and vertical fin. The elevator and rudder are not actual assemblies, but information on fabricating these parts are also included in the instructions. 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.)*
5, 15 or 30 Minute epoxy glue. *(Available at hobby shops.)*
Wax paper *(Available at grocery stores)*
T-pins. (package) *(Different sizes available at hobby shops.)*
Spackle *(Filler material available at hardware stores.)*
Particleboard Board Shelving 3/4" x 11 1/2" x 24' *(Available at hardware stores.)*
Stay Brite Silver Solder *(Available at hobby shops, welding supply stores and some hardware stores.)*

TOOLS REQUIRED:

X-Acto knife with #11 blade *(need extra blades)*
Razor saw or fine hack saw blade
Sanding blocks assorted sizes with attached sand paper
Razor plane
12 inch precision scale *(ruler)* with fractions and decimals
Dubro hinge slotting tool.

DRAWINGS REQUIRED FOR ASSEMBLY:

Wing /Stabilizer/Fin Assembly Drawing
Pattern Drawing
Part List

PART NUMBERING SYSTEM:

Parts have a coding system. This is required for our computer generated drawings. All part references are printed in bold print. Description for part number **#TB24-2**, the Beams stabilizer tip, is as follows.



Computer generated illustration of our completed Beam ready for covering.

symbol indicates a part number.

TB indicates the name of the model, Trixter Beam.

24 is a reference for the part number of the stabilizer assembly.

- is a dash to further break down the description of the part.

2 is an individual part number. In this case the **2** is the number of the stabilizer's tip.

There can also be additional parts that are sub-part of the original part. These would be indicated with another dash number.

There also can be an **A** after the part. The **A** indicates that the part is an assembly of other parts. There also can be a **L** or **R** that would indicate a left or right hand part.

Note that after the first reference of the formal part number is given in these instructions, the first two letters and two numbers will not be used. This is done to simplify the instructions. Part number #TB24-2 will later be referenced as # -2.

BUILDING JIG:

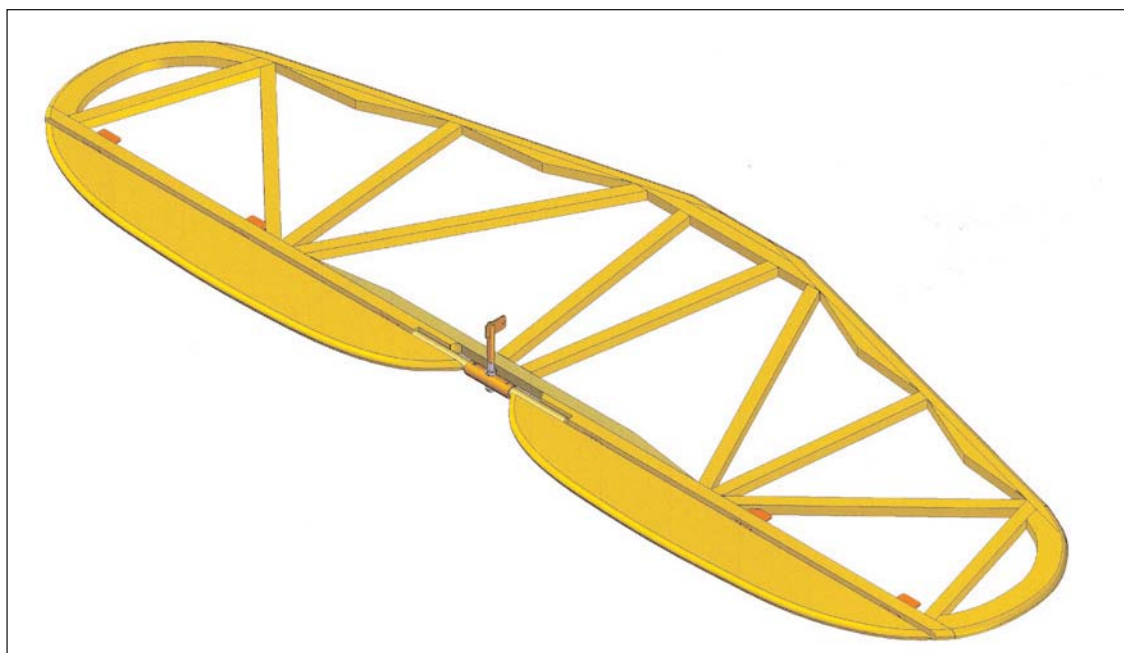
A simple to build wing jig made from a piece of particleboard shelving is recommended. The cost and time to make the jig is minimal. As with any flying model, it is critical that the left and right hand wing panels are identical as possible. A means of holding the various parts in alignment is required. Our jig system can be made in less than a hour. It also can be modified or used as is for future projects. Complete instructions are provided.

ADHESIVES AND GLUES:

Several types of adhesives are used in the construction of the Beam. The three basic types are, white glue, CA glue, and epoxy glue. There are advantages of using of each of these adhesives. Shown is our choice of what adhesive to use for various steps in the construction. There are many adhesives to glue the parts together. The builder should use personal preferences and or recommendations from others for what type of adhesive to use for any given assembly. We prefer the use of white glue for most parts and especially when joining plywood and hardwood parts.

BASIC PROCESS OF CONSTRUCTION:

The assembly of the stabilizer and 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.



View showing the top of the completed stabilizer and elevator assembly

GENERAL ASSEMBLY SEQUENCE FOR THE STABILIZER AND ELEVATOR



View #1 showing parts used in the first step of the assembly process.

STEP ONE

[] **See View #1.** The various parts of the stabilizer are assembled on a piece of particleboard shelving 3/4 x 11 1/2 x 24 inches. Place the drawing of the stabilizer over the particleboard and attach with a couple pieces of masking tape to keep it in place. Then put a piece of wax paper over the stabilizer drawing. The wax paper needs to be big enough to cover the stabilizer drawing. Hold the various parts in position using T-Pins.

[] First thing to do is to cut out the openings for the six Dubro XXXX nylon hinges. Suggest using a Dubro hinge slotting tool to make the slots. Accuracy of the distance between the hinges is not critical, but the hinge slot must be in the center of the trailing edge. Advantage of making the hinge slots at this time is in case an error is made, you can simply make another trailing edge.

[] Start the assembly by placing the 3/16 x 1/4 trailing edge (TBXXX) over the stabilizer drawing and attaching it with T-Pins every 3 to 4 inches. Note that the trailing edge at this point in the construction is one long piece. The cut outs for the elevator control horn assembly will be made later on.

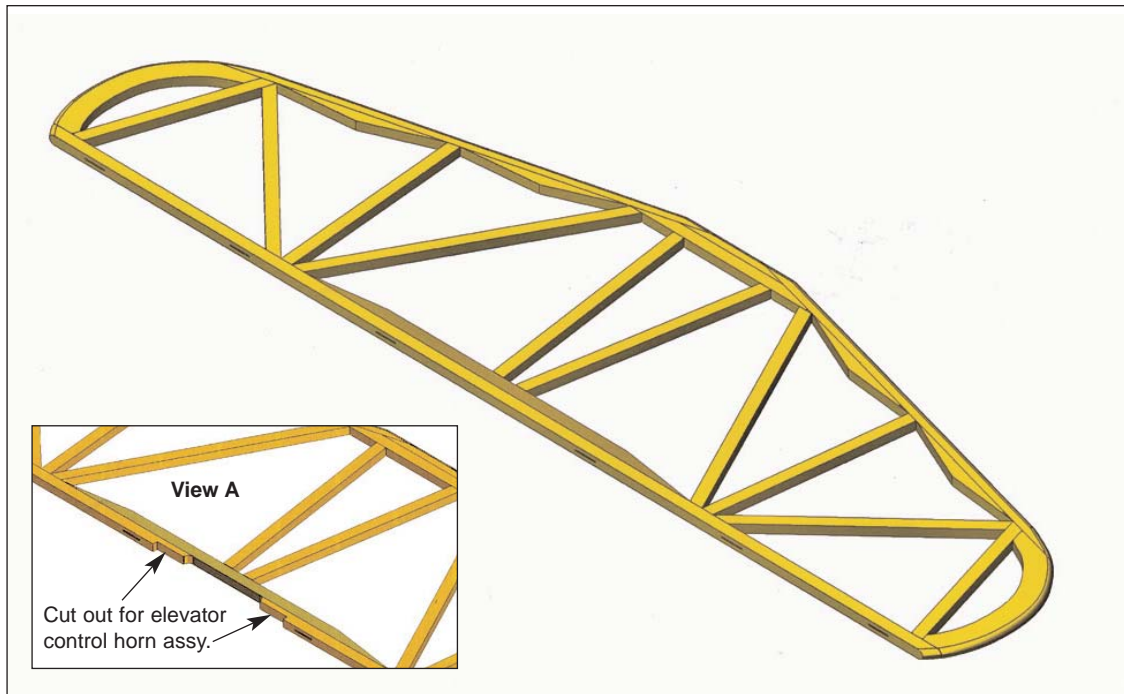
[] The 3/16 x 1/4 spruce enforcing brace is cut to shape and glued in place as shown on the drawing.

[] Next attach the two stabilizer tips (TBXXX). Glue the rear part in place with CA or white glue.

[] Cut the two 3/16 x 1/4 strip leading edges (TBXXX) to shape and place in position over the stabilizer drawing.

[] Cut the center leading edge (TBXXX) and the rear leading edge brace (TBXXX) to shape and glue in place with CA or white glue.

[] The six 3/16 x 1/4 leading edge braces TBxxx are used on the original Beam. They can be omitted.



View #2 showing parts used in the second step of the assembly process.

STEP TWO

[] **See View #2.** Cut to shape and install the 3/16 x 1/4 strip stabilizer ribs #TB24-4, -5, -6, -7 & -17. Use CA or white glue.

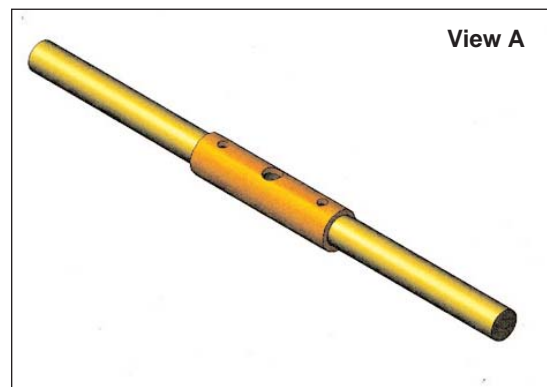
[] Now cut out the notch in the trailing edge TB -XX for the elevator horn assembly. See **View A above** and the stabilizer drawing for more details.

[] The final step is to round the leading edge and tips. Use a sanding block to shape the leading edge. See stabilizer drawing for more details.

STEP THREE

The elevator control horn assembly #TBxxxxx needs to be made. The assembly will be attached to the two elevators before attaching the elevators to the stabilizer.

[] **See View A.** First step is to install the 7/32" dia. x xx" long brass coupler #TBxxx over the 3/16" dia. x xx hardwood dowel #TBxxx. The coupler is centered over the dowel. Using a #xx drill, drill a hole through the center hole in the coupler.

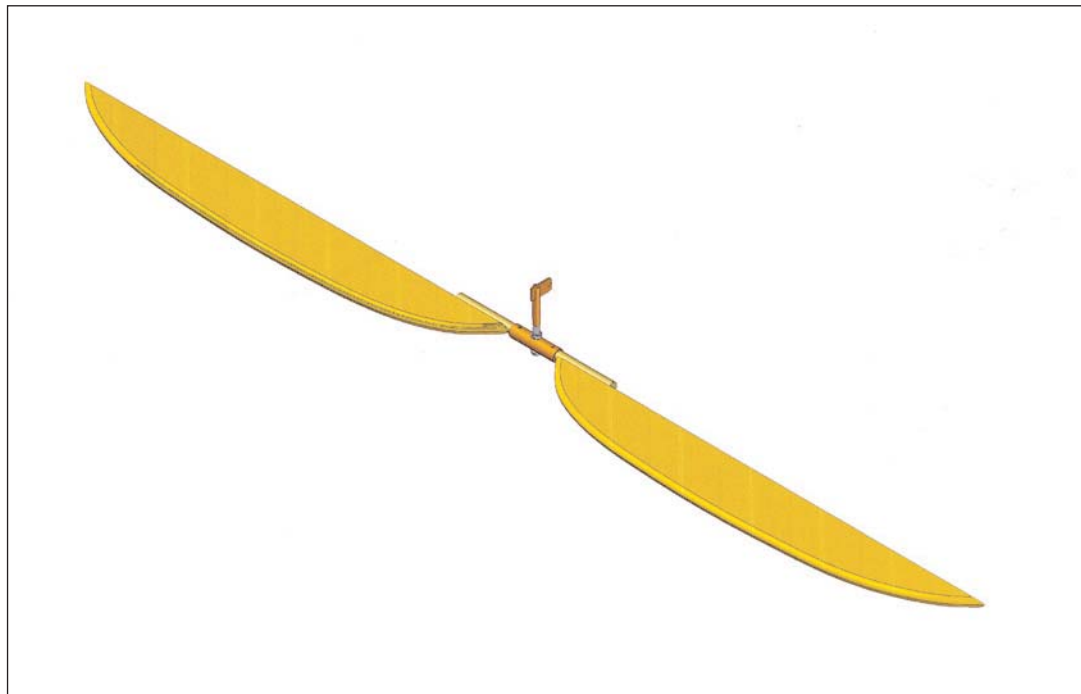
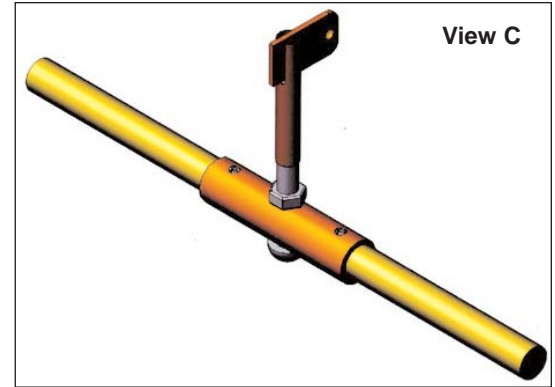
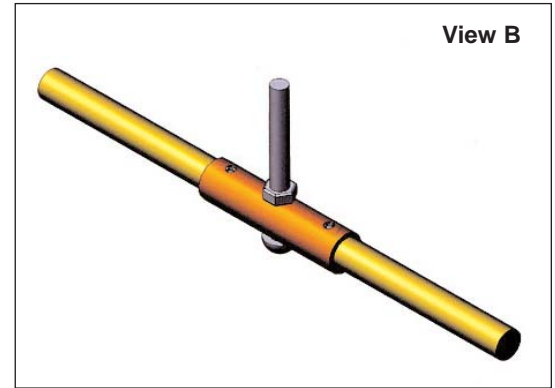


[] **See View B.** Install the 4-40 x 1 machine screw and nut as shown in View B. With Stay Brite silver solder solder the areas of the head of the screw and the nut were it is attached.

[] Drill 1/16" dia. holes through each end of the coupler. Then install two 1/16" dia roll (spring) pins. The roll pin further attach the coupler to the dowel. These are used incase there is clearance between the machine screw and the dowel. This clearance could allow play or slop that would not be satisfactory for proper elevator control position.

If roll pins are not available, can use #1 sheet metal screws or a 1/16" dia. hardwood dowel.

[] **See View C.** The 1/8" dia. support tube #TBxxx and the attachment bracket #TBxxx. The support tube slot should be squeezed together slightly so that the attachment bracket is firmly held in position. Then the support tube and bracket are Stay Brite silver soldered onto the machine screw.



View #3 showing parts used in the third step of the assembly process.

STEP THREE

[] The elevators #TB26-1 trailing edges are sanded to round shape. The leading edge of the elevators are sanded to a bevel shape. See side view of the stabilizer and elevator in the wing, stabilizer, & fin drawing for details.

[] The cut outs for the elevator hinges need to be made in the elevators. **The cutouts must line up both the cut outs in the stabilizer.** Temporarily insert the six Dubro 119A hinges into the stabilizer trailing edge.

[] Using 320 sand paper, sand smooth the stabilizer and elevators. Fill any nicks or dings with Spackel filler material.

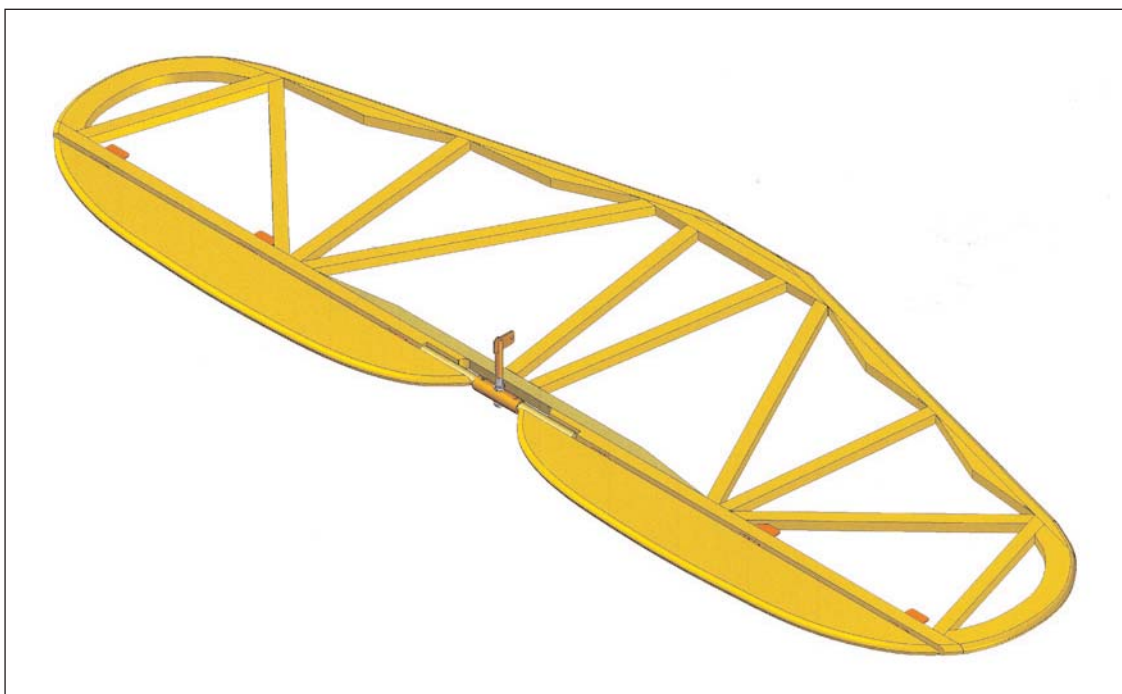
[] The elevator control horn assembly is attached to the elevators. Before doing this, there must be a cut out for half of the joining dowel #TB -13. See the top view of the stabilizer in the wing, stabilizer, & fin drawing. **Note that there is no wood just behind the stabilizer trailing edge brace #TB -8. This open area is for the stabilizer hold down rubber bands to pass through.** Place the two elevators onto the hinges that are attached to the stabilizer. With the elevators in place, place the elevator control horn in position to make certain that it fits properly. Correct elevator cut outs as necessary. Note that the elevator joiner dowel is on the same center line as the hinges.

[] When the elevator control horn assembly is ready to be attached to the elevators. using masking pieces of masking tape, hold the elevators to the stabilizer. Put the control horn assembly in position. Use masking tape only on the bottom of the elevator to hold the control horn assembly in place. Use a **small amount** of 15-30 minute epoxy to glue the control horn assembly to the elevators. Note that only a small amount of epoxy is used at this step. After the first application of epoxy has cured, remove the elevator/control assembly. Then apply a liberal amount of 15-30 minute epoxy around the elevator joiner dowel #TB -13. **Wrap masking tape around the top, front, and bottom areas of the epoxy joint. The masking tape will form and will make the epoxy contour to the shape generated by the masking tape.**

[] When the last application of epoxy has cured, remove the elevator/control horn assembly from the stabilizer. Remove the masking tape from around the attachment of the control horn assembly. If necessary, fill in the area with Spackle filler to provide a smooth contour around the control horn assembly and elevators. Check to make certain that the elevators are easily moved. This is very important when using micro servos. There is ample power in the servos to operate the flight controls, but if the friction of the hinges is too high, there may not be enough power left for the servos to work the controls.

[] Suggest that the hinges be installed on the stabilizer and elevators after the covering process is completed. It is easier to cover the surfaces without the hinges in place. If the hinges are to be installed at this time, suggest using white glue to attach them. White glue sticks very well to nylon.

The stabilizer and elevator assembly is now complete.



View 4 showing major components in the stabilizer and elevator assemblies.

GENERAL ASSEMBLY SEQUENCE FOR THE VERTICAL FIN



View #5 showing parts used in the fifth step of the assembly process.

STEP ONE

[] **See View #5.** The various parts of the fin are assembled on the same piece of particleboard shelving used for the stabilizer. Place the drawing of the fin over the particleboard and attach with a couple pieces of masking tape to keep it in place. Then put a piece of wax paper over the fin portion of the drawing. The wax paper needs to be big enough to cover the fin drawing. Hold the various parts in position using T-Pins.

[] First thing to do is to cut out the openings in the fin's spar for the two Dubro 119A nylon hinges. Suggest using a Dubro hinge slotting tool to make the slots. Accuracy of the distance between the hinges is not critical, but the hinge slot must be in the center of the spar. Advantage of making the hinge slots at this time is in case an error is made, you can simply make another spar.

[] Start the assembly by placing the 3/16 x 1/4 spar (TBXXX) over the fin drawing and attaching it with T-Pins every 3 to 4 inches.

[] Place the leading edge #TBxxx in position and hold in place with T-Pins.

[] Install and glue in place the tip #TBxx and bottom rib #TBxx. Use CA or white glue. *Adjust the leading edge position if necessary for a good fit for the tip and bottom rib.*

[] Install and glue in place the middle rib #TBxxx. Use CA or white glue

[] Sand the leading edge and tip to a round shape in a similar manner as the stabilizer. Sand the assembly with 320 sandpaper. Fill any nicks and dings with Spackle filler.

The construction of the vertical fin is now complete.

BILL OF MATERIALS