

SPORT FLOAT KIT

For R/C Aircraft



INSTRUCTION MANUAL

WARRANTY

Great Planes Model Manufacturing Co. guarantees this kit to be free from defects in both material and workmanship at the date of purchase. This warranty does not cover any component parts damaged by use or modification. **In no case shall Great Planes' liability exceed the original cost of the purchased kit.** Further, Great Planes reserves the right to change or modify this warranty without notice.

In that Great Planes has no control over the final assembly or material used for final assembly, no liability shall be assumed nor accepted for any damage resulting from the use by the user of the final user-assembled product. By the act of using the user-assembled product, the user accepts all resulting liability.

If the buyers are not prepared to accept the liability associated with the use of this product, they are advised to return this kit immediately in new and unused condition to the place of purchase.

READ THROUGH THIS INSTRUCTION MANUAL FIRST. IT CONTAINS IMPORTANT INSTRUCTIONS AND WARNINGS CONCERNING THE ASSEMBLY AND USE OF THIS MODEL.



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TABLE OF CONTENTS

INTRODUCTION	2
PRECAUTIONS	2
PREPARATIONS	2
Covering method	2
Suggested tools and supplies	3
Other suggested items	3
Get ready to build	3
Parts identification	3
Die-cut patterns	4 & 5
60 FLOATS PREASSEMBLY	6
Spine	6
Forward keel	6
Sides and deck	6
CONSTRUCTION OF 20, 40, 60 SPORT FLOATS	6
Framing	6
Aft stringers	8
Forward stringers	8
Prepare for sheeting	9
Aft bottom sheeting	9
Forward bottom sheeting	9
Nose block and finishing	10
COVERING	11
Covering method	11
MonoKote film	11
Glass cloth & resin	11
POSITIONING OF FLOATS	12
Prepare your airplane to accept the floats	13
60 FLOATS ONLY	14
Notes about soldering	14
Solder the cross braces	14
Mount the struts to the floats and solder the diagonal braces	15
Mounting the 60 floats	16
20 AND 40 FLOATS ONLY	16
Mount the struts to the floats	16
Mount the floats to the airplane	16
ALL MODELS	17
Build the rudder	17
Pushrod hookup	17
Connect the rudder	18
(20 and 40 floats)	18
(60 floats)	19
VENTRAL FIN	19
BEFORE GOING TO THE LAKE	20
WATERPROOFING	20
FLYING	20

INTRODUCTION

Thank you for purchasing the Great Planes Sport Floats. During our first flight tests with our Piper Cub 60 and Cub 20 on floats, we were amazed by the superb handling characteristics on the water and ultra-smooth, realistic takeoffs. Of course, the Great Planes Sport Floats will work well with other models too.

The 20, 40 or 60 Sport Floats may be properly assembled from this single manual. Although the Great Planes Piper Cubs are used as examples, the same procedures and guidelines apply if you are installing your floats on a different model.

PRECAUTIONS

Please inspect all parts carefully before starting to build! If any parts are missing, broken or defective, or if you have any questions about building or flying these floats, please call us at (217) 398-8970. If you are calling for replacement parts, please look up the part numbers and the kit identification number (stamped on the end of the carton) and have them ready when calling.

Remember: Take your time and follow directions to end up with a sturdy, well-built set of floats that are straight and true.

PREPARATIONS

Covering Method

After the floats are built, you will have to decide how you will finish them. Iron-on film such as Top Flite® MonoKote® covering is our recommended method. The alternative is 3/4 oz. fiberglass cloth and epoxy resin, then paint. You do not have to make this decision immediately, but refer to the **Finishing** section in this instruction manual for more information. This is something you can ponder during construction.

Suggested Tools & Building Supplies

- 1/2 oz. Medium CA Adhesive - (GPMR6007)*
- 1/2 oz. Thin CA Adhesive - (GPMR6001)
- 1/2 oz. Thick CA Adhesive - (GPMR6013)
- CA accelerator (optional) - (GPMR6035)
- CA applicator tips (optional) - (HCAR3780)
- T-Pins - (HCAR5150)
- Waxed Paper
- 6-Minute Epoxy - (GPMR6045)
- 30-Minute Epoxy - (GPMR6047)
- Small building square or draftsman's triangle
- Reinforced cut-off wheel - (GPMR8200)
- Hand or Electric Drill
- Drill Bits: 1/16", 1/8", 13/64" or #12
- Razor Saw
- #1 Hobby knife handle
- #11 Blades - (HCAR0311, box of 100)
- Common pliers
- Screwdrivers (Phillips and flat)
- Sandpaper (coarse, medium, fine grit)
- T-Bar or sanding block
- Soldering iron
- Silver Solder - (GPMR8070 w/flux)
- Lightweight Balsa Filler - (HCAR3401)
- Propane torch or heavy-duty soldering iron (for 60 floats only)

Other Suggested Items

- Double-sided foam tape - (GPMQ4442)
- RTV silicone rubber
- Lead weights - (GPMQ4485)

Finishing Supplies

For iron-on covering:

- Top Flite MonoKote® film (recommended)
- Sealing Iron - (TOPR2100)

For "glassing":

- Finishing resin (GPMR6049)
- 3/4 oz. fiberglass cloth - (HCAR5000)
- Mixing cups
- 1" wide paint brush
- Mixing sticks - (GPMR8055)

- Epoxy brushes - (GPMR8060)
- Fuelproof primer and paint (Top Flite LustreKote® recommended)

*Items in parentheses (GPMR6007) are suggested part numbers recognized by distributors and hobby shops and are listed for your convenience. Our own brand has been provided where possible: **GPM** is the Great Planes brand, **HCA** is the Hobbico® brand, **TOP** is Top Flite.

Get Ready to Build

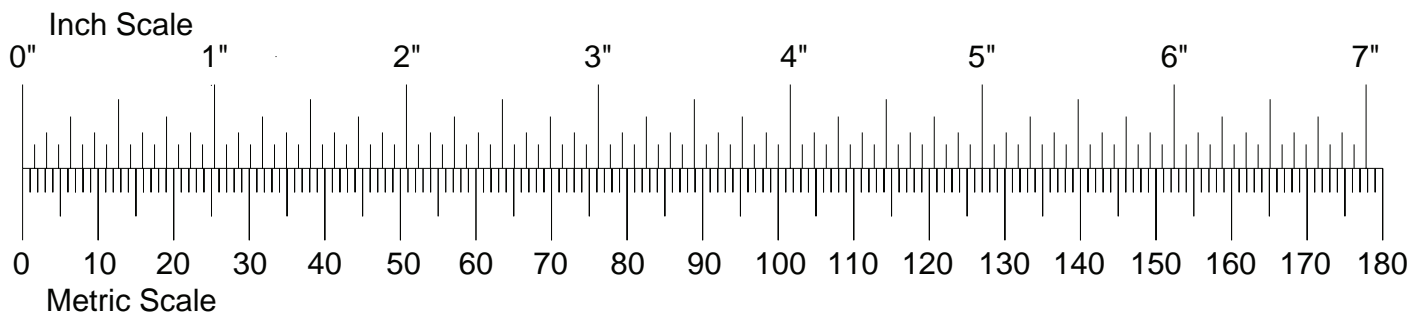
IMPORTANT: For your model to handle properly on the water and in the air, the Sport Floats must be built on a **flat** surface. Also, a relatively soft, **flat** building board that you can stick "T" pins into is required. This is for pinning down individual parts that make up the completed assembly. A suitable building board is a sheet of ceiling tile or "Celotex" used in home construction. This material may be found at hardware or home improvement stores. If the building board is not **flat**, it must be clamped to your **flat** building table. Now we're ready to begin!

During construction of the floats, most of the procedures will have to be performed two times as there are two floats. You may build each float individually to completion or simultaneously build one float alongside the other.

Parts Identification

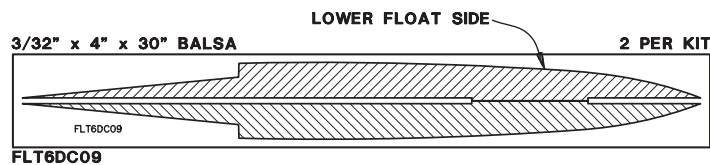
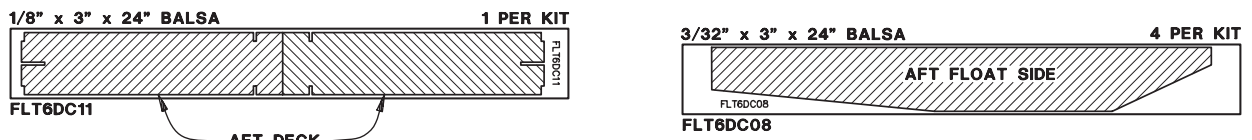
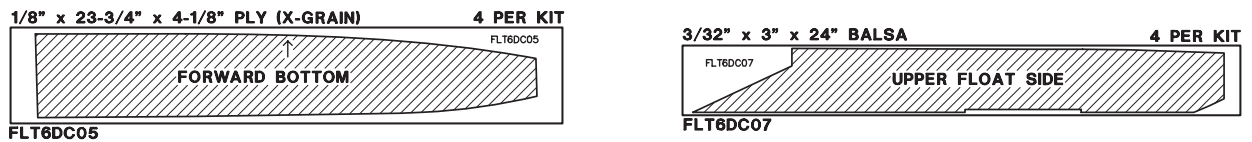
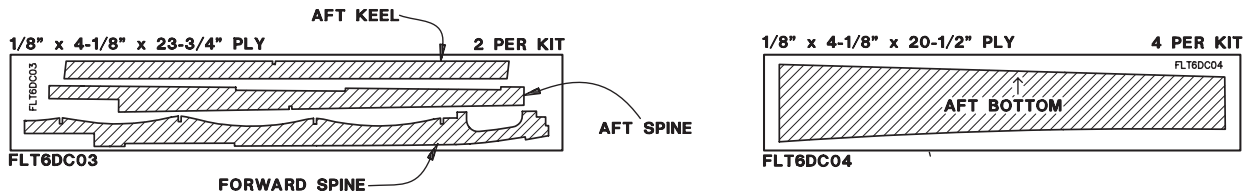
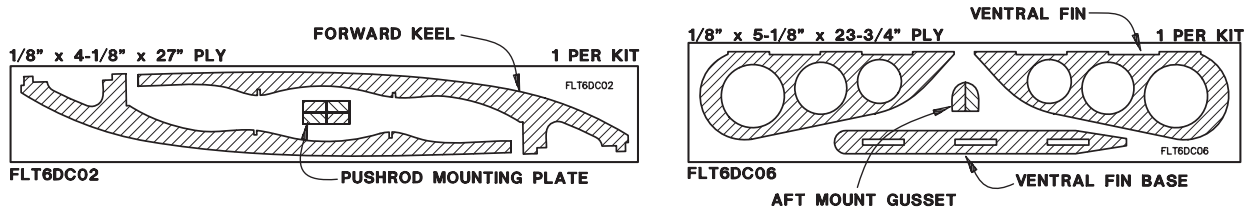
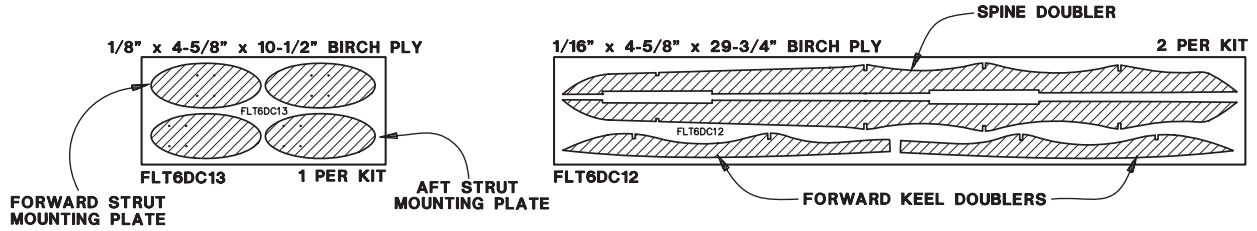
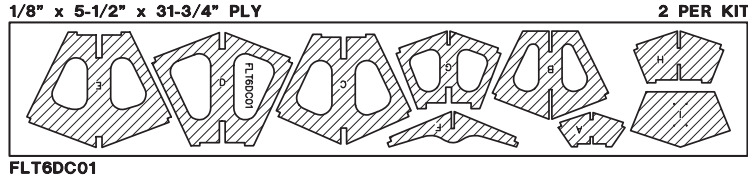
Remove all parts from the box. As you do, determine the name of each part by comparing it with the instructions and the parts list included with this kit. Using a ball point pen, lightly write the part **name** on each piece to avoid confusion later. Use the die-cut patterns shown on pages 4 and 5 to identify the die-cut parts and mark them **before** removing them from the sheet. Save all scraps. If any of the die-cut parts are difficult to punch out, do not force them! Instead, cut around the parts with a hobby knife. After punching out the die-cut parts, use your T-Bar or sanding block to **lightly** sand the edges to remove any die-cutting irregularities.

Metric Conversions



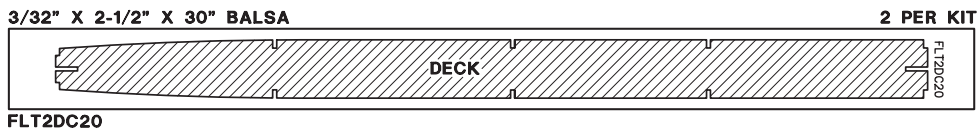
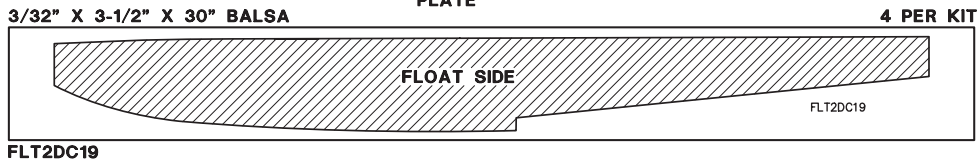
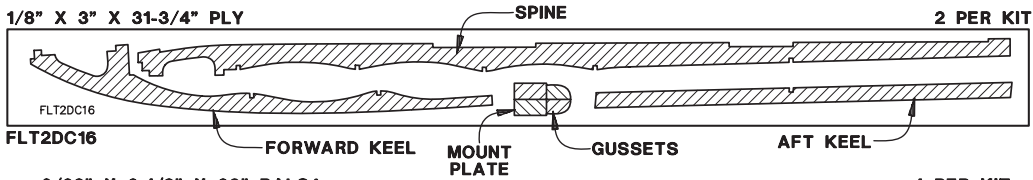
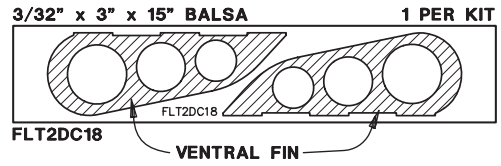
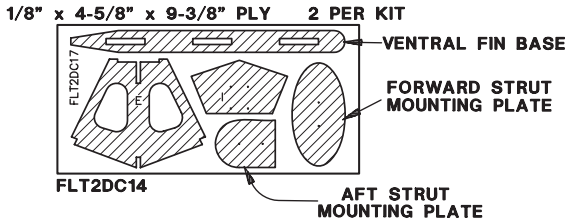
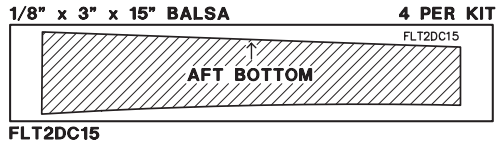
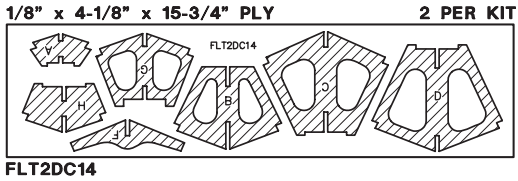
DIE-CUT PATTERNS

60 – SIZE

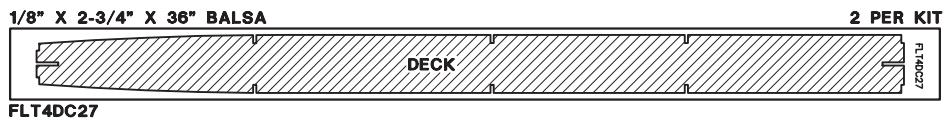
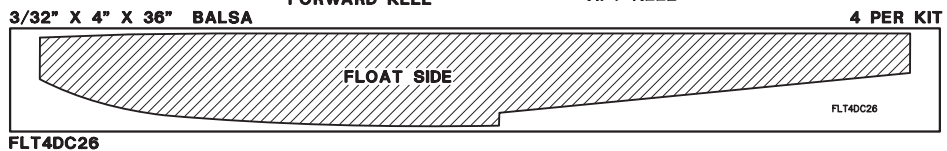
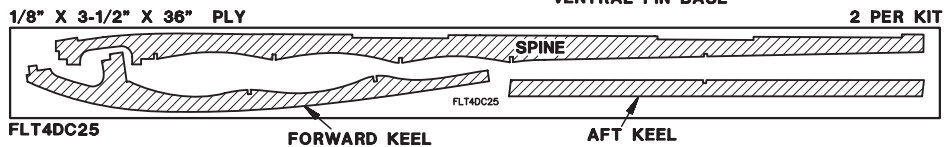
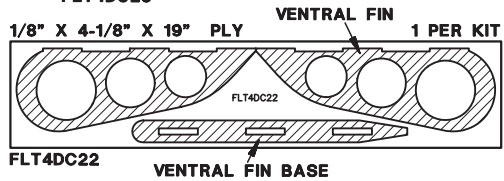
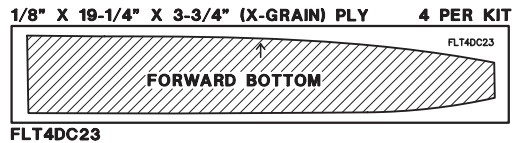
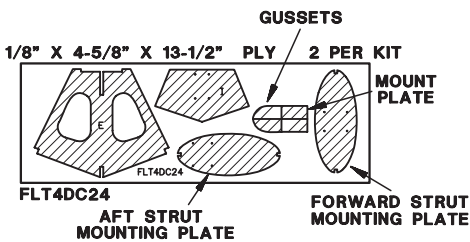
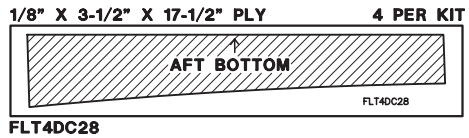
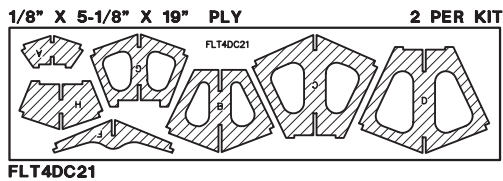


DIE-CUT PATTERNS

20 - SIZE



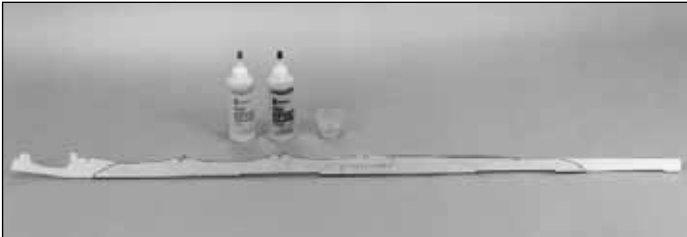
40 - SIZE



60 FLOATS PREASSEMBLY

If you are building the 20 or 40 Sports Floats, skip to “Construction of 20, 40, 60 Floats” in the next column on this page.

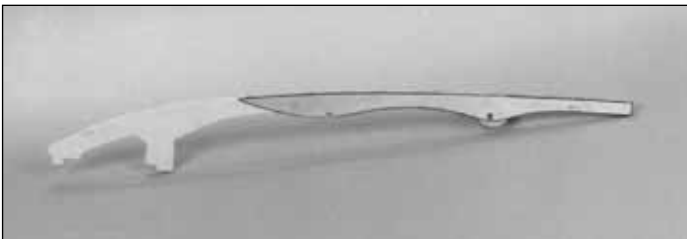
Spine



❑ 1. On a flat surface covered with wax paper, laminate the die-cut 1/8" plywood **forward** and **aft spine** to one 1/16" die-cut plywood **spine doubler** with 6-minute epoxy. Use weights to hold the pieces together. **Hint:** Before the epoxy **fully** cures, use a #11 blade to remove excess epoxy that gets into the notches or oozes out from between the laminated pieces. With Great Planes 6-minute Pro™ Epoxy, this can be done about 10 to 15 minutes after the epoxy has been mixed.

❑ 2. Glue the other doubler to the **other side** of the assembly with 6-minute epoxy.

Forward Keel

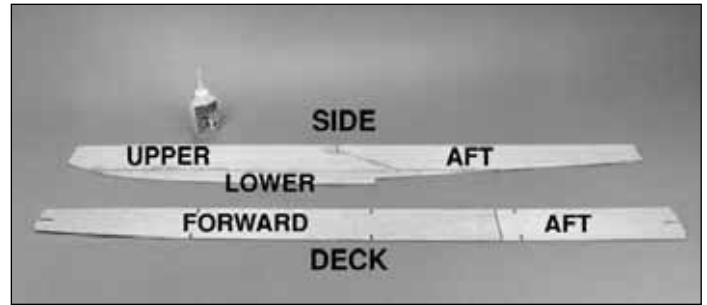


❑ 1. Since the parts are smaller, both forward keel doublers may be laminated to the forward keel at the same time. Mix up some 6-minute epoxy and apply to one side of both die-cut 1/16" plywood **forward keel doublers**. Then position a doubler on each side of the die-cut 1/8" plywood **forward keel**. Hold the pieces together with weights. Remove the excess epoxy before it fully cures.

Sides and Deck

❑ 1. Trial fit the die-cut 3/32" balsa **upper float side**, **lower float side** and **aft float side**. Make adjustments if necessary. When satisfied with the fit, use thin CA to glue the three pieces together over a building table covered with

waxed paper. After the CA has cured, use 150-grit sandpaper and a sanding block to sand both sides of the float side flat and smooth. Make another float side, identical to the first.



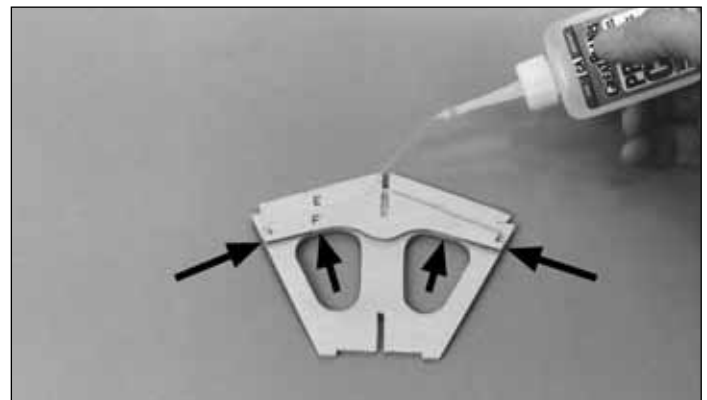
❑ 2. Use thin CA to glue the die-cut balsa **forward deck** to the **aft deck**. After the CA has cured, sand both sides of the deck flat and smooth.

CONSTRUCTION OF 20, 40 & 60

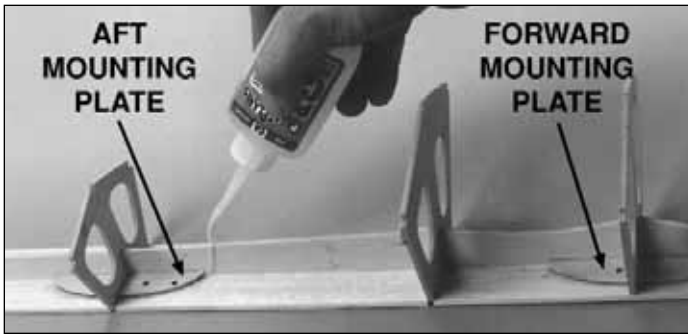
Framing

NOTE: If your float parts do not match each photo exactly, it is because these instructions are written for all three sizes. Regardless of which size Sport Float you are building, the **forward end of the float deck is the end that tapers slightly**.

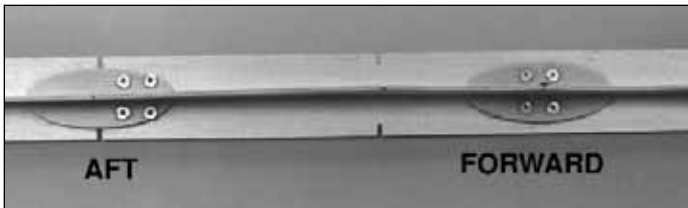
❑ 1. Drill 1/8" holes through the punch marks in the die-cut 1/8" plywood **forward** and **aft strut mounting plates**.



❑ 2. With the die-cut 1/8" plywood **former doubler F** centered on the die-cut 1/8" plywood **former E**, align the **bottom edge** of the doubler F with the lightening holes in former E. Glue the pieces together with thin CA.

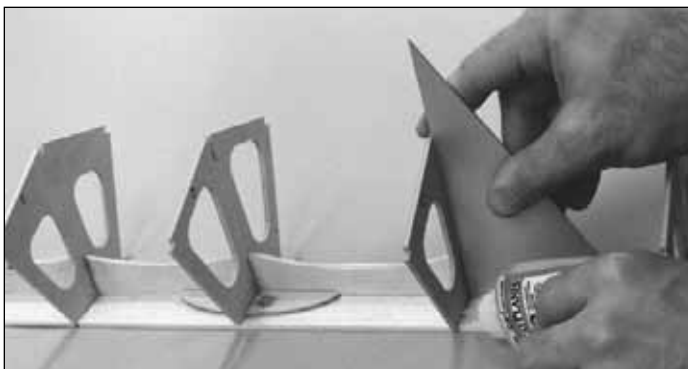


3. Trial fit the 1/8" plywood forward and aft strut mounting plates, **spine** and **formers C, D, E, and G** to the balsa deck. The formers are positioned in descending order with former A in the front(see the photo to the right). **NOTE:** The aft strut mounting plate for the .40 and .60 Sport Float has the holes towards the front. The aft strut mount plate for the .20 Sport Float has a flat edge. Make sure all parts contact the deck, then use thin CA to glue **only the mounting plates to the deck**.

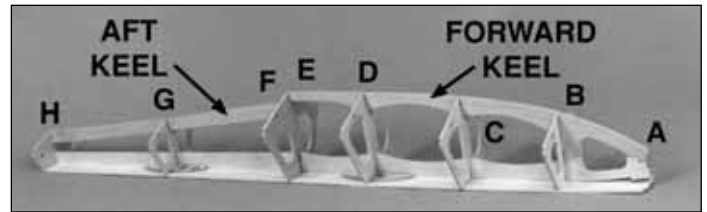


4. Remove the formers and spine from the deck. Place a scrap piece of wood under the deck, then using the holes in the strut mounting plates as a guide, drill 1/8" holes through the deck. Run a 4-40 x 1/2" bolt in and out of eight 4-40 blind nuts to make sure the threads are "cleaned out." Use a hammer to lightly tap the 4-40 blind nuts into the plates, then add a few drops of thin CA to the flange of each blind nut to secure them in place. Do not get glue in the threads of the blind nuts. Reinstall the spine and formers. Make sure all parts contact the deck, then use thin CA to glue the spine to the deck. **NOTE:** Do not glue the spine to the deck from former C forward.

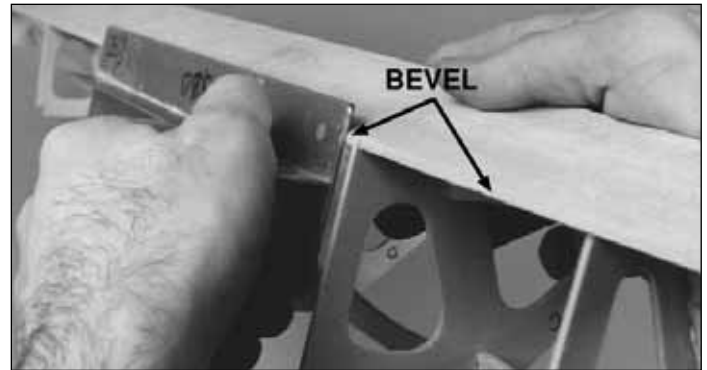
5. Lay waxed paper over your flat building board and position all the formers **except A and I** on the deck. Make sure the notches in the formers fit all the way down to the deck and make adjustments if necessary. **Doubler F** faces the rear of the float.



6. Using a carpenter's square or a draftsman's triangle, make sure each former is perpendicular to the deck and use medium CA to glue them to the deck and spine.

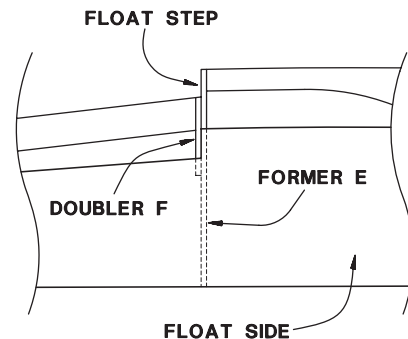


7. Making sure the formers remain perpendicular to the deck, trial fit, then use medium CA to glue the **forward and aft keel** into the notches in the formers and the spine.



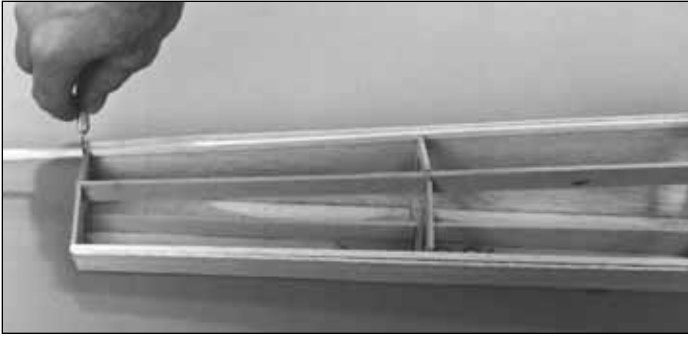
8. Remove the structure from the building board and use a T-bar or flat sanding block with 150-grit sandpaper to bevel the edges of the deck sheeting to match the formers.

9. Pin the assembly to your waxed paper-covered flat building board. Trial fit, then sand a bevel to the top edge of both die-cut balsa **float sides** to match the deck. **Be sure to make a right and a left side.**

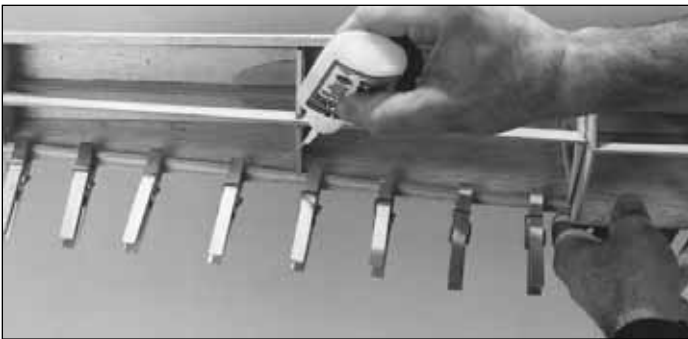


10. Align the **step** of one of the float sides with the **aft edge** of **former E**. Use medium CA to glue the side to all formers and the deck from **former B** to **former H**. **Do not glue the side to the deck forward of former B**. Glue the other side in the same manner. **NOTE:** The float side will bow inward slightly at former G. This slight bow is intentional.

Aft Stringers

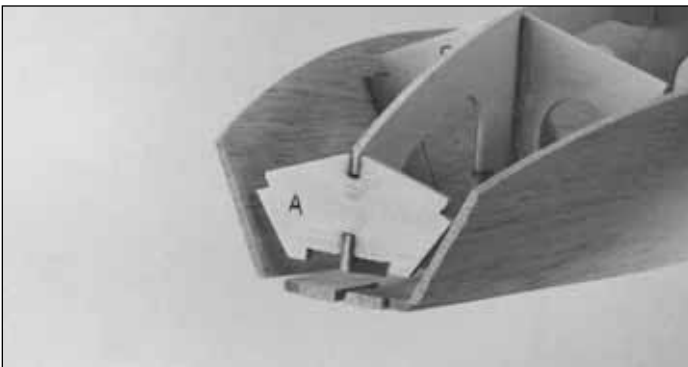


1. Cut the 3/16" x 3/16" **aft stringers** to length. Then use thick CA to glue them to the **formers only** in the notches of formers E, G, and H.



2. Remove the float from the building board once and for all, then glue the sides to the aft stringers with thin CA. **Hint:** hold the stringer to the sides with clothespins and apply the thin CA from the **inside**.

Forward Stringers

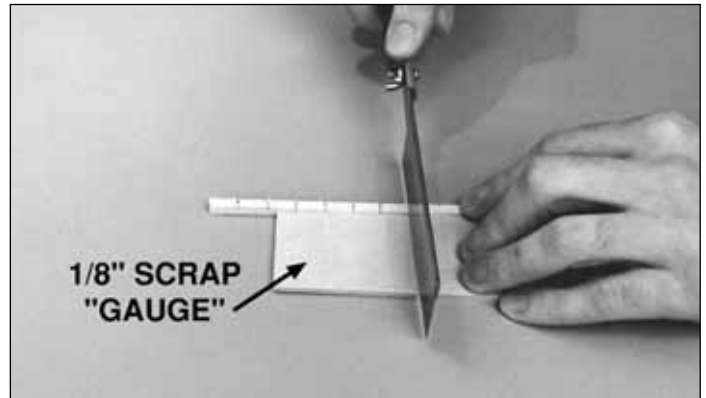


1. Install **former A** to the forward keel and spine, making sure it is perpendicular. Then glue it in position with medium CA.

2. Use medium CA to securely glue the deck to **former A**, then the sides to the deck between **formers A and B**. Inspect all glue joints and add CA where necessary. See the following photo.



3. Cut a 3/16" x 3/16" **forward stringer** to fit in the notches of **formers E to A** (do not attempt to bend the stringer down to the notches in former A at this time). Use a pen to make marks every 1/2" between formers C and A.



4. Take the stringer out of the notches in the float and use a razor saw to cut a 1/16" deep notch at every mark you just made. **Hint:** use a piece of 1/8" thick scrap plywood as a gauge so the saw will cut every notch the same depth.

5. With the notches in the forward stringer facing the deck, first glue the stringer to the **formers only** with medium CA. Then glue the side to the forward stringer in the same manner that you glued the side to the rear stringer.

6. Add the other forward stringer in the same manner. The photo at step 2 (next page) shows the stringers glued to the sides.

Prepare for Sheeting

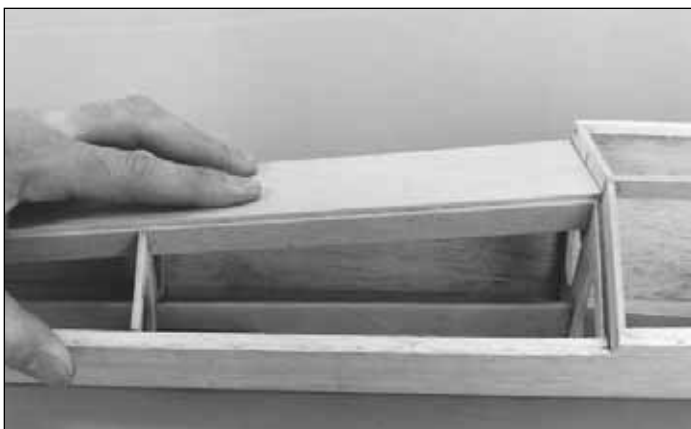


❑ 1. To provide a good glue joint for the bottom sheeting, use a sanding block and 150-grit sandpaper to trim the side sheeting down to the side stringers and to bevel the forward and aft keel to the same angle as the formers. Be sure to maintain a smooth curve in the float sides when sanding. Use the stringers as a guide.



❑ 2. It has been our experience that **ballast** is required in order to move the center of gravity forward when the floats are mounted on the airplane. This can easily be accomplished by using 6-minute epoxy to glue the weight inside the floats just behind the front **former A**. Spread epoxy over and around the lead weights to prevent them from coming loose. We suggest 1 oz. inside **each** 20 float, 1-1/2 oz. inside each 40 float and 2 oz. inside each 60 float.

Aft Bottom Sheeting



❑ 1. Trial fit the die-cut 1/8" plywood **aft bottom sheets**. **Note:** The 20 floats use die-cut 1/8" **balsa** aft bottom sheets. The straight edge goes toward the center and

should be placed so it covers **half** of the keel. Make adjustments if necessary and bevel the edges of the aft bottom sheets that contact each other in the center.

Note: An embossed arrow is provided on the .40 and .60 aft float bottoms as an aid to alignment.

❑ 2. Working on your **flat** building board, use thick CA to glue one aft bottom sheet to the aft side stringer and formers only. **Do not apply CA to the aft keel at this time.**

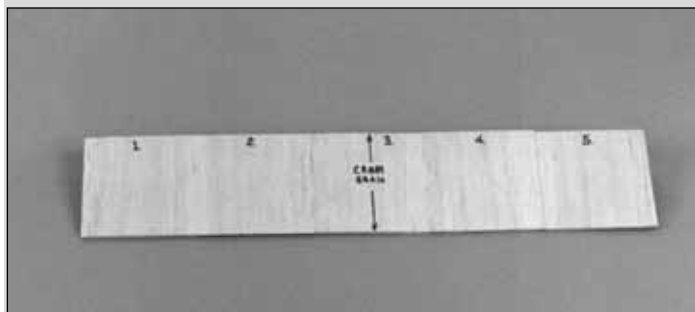


❑ 3. Glue the other aft bottom sheet in position, applying thick CA to the side stringers, formers **and** aft keel, gluing both aft sheets to the keel and each other simultaneously.

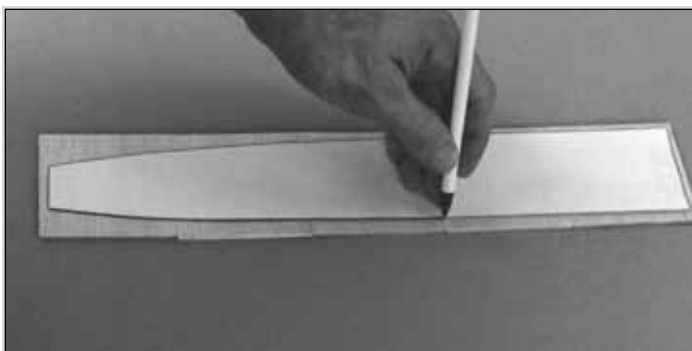
Forward Bottom Sheeting

20 Floats Only

If you are building the 20 Sport Floats, follow these steps first to make the bottom forward sheeting. Otherwise, skip these three steps and add the bottom forward sheeting now.



❑ 1. To prepare the forward bottom sheets for one float, cut ten 3-1/2" pieces from a 1/8" x 3" x 30" balsa sheet, then make two **cross-grain** sheets by gluing 5 pieces together. *Carefully* sand the sheets flat using a sanding block and 150-grit sandpaper.



- 2. Accurately cut out the **20 float forward bottom sheeting template** from the center sheet in the manual, then trace the outline on each sheet. **Hint:** Tape the template to the sheet at the front and the rear.



- 3. Carefully cut the strips along the line. Mark the inboard edge of each bottom sheet.

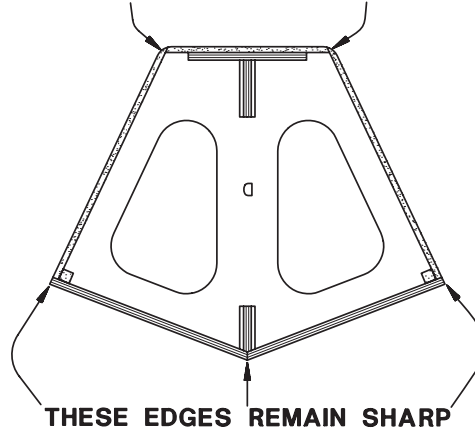
Add the forward bottom sheeting in the same manner as the aft bottom sheeting:

- 1. On the 40 and 60 die-cut 1/8" plywood **forward bottom sheets**, there is an arrow indicating the inboard edge of each sheet (although one of the sheets on each float will have to be flipped over). Trial fit the two sheets and bevel the inboard edges that contact each other for a good glue joint.

- 2. Use thick CA to glue one of the sheets to the side stringer and formers only – **do not apply CA to the forward keel**.

- 3. Apply thick CA to the side stringer, formers and keel to glue the second sheet in position and **both sheets** to the keel and each other simultaneously. Use the embossed arrows to aid in final alignment.

ROUND THESE CORNERS SLIGHTLY



- 4. Referring to the sketch, "rough sand" the entire float with a sanding block and 150-grit sandpaper, blending the sides to the deck and the bottoms to the side. Sand all sheeting and stringers flush with **formers A and H**.

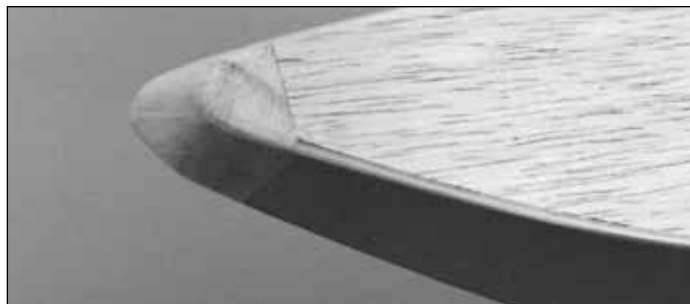
Nose Block and Finishing



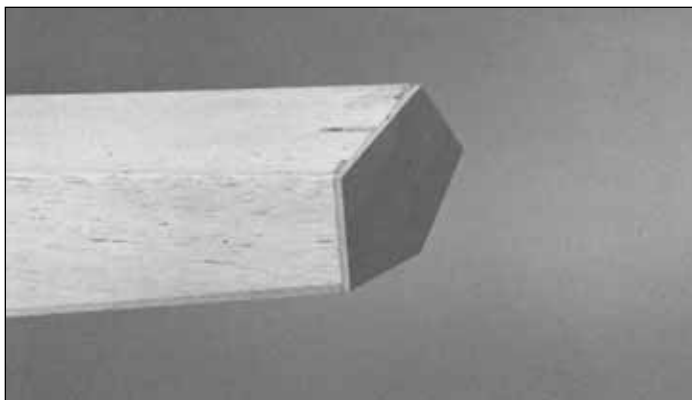
- 1. Glue the balsa **nose block** to **former A** with thick CA.



- 2. Carve the nose block to the approximate shape, then use a sanding block and 150-grit sandpaper to blend the block to the sides, deck and bottom.



- 3. Finish sand the nose block by rounding the front and **slightly** rounding the corners.



❑ 4. Use thick CA to glue on the die-cut 1/8" plywood **transom plate I** so the punch marks are visible. Sand the edges to blend with the sides, top and bottom.

❑ 5. Drill a 1/16" hole through each punch mark in the transom plate on **only one of the floats**. This is now the **right** float to which the rudder will be mounted.

❑ 6. Fill any nicks, scratches, or seams with HobbyLite™ filler. After the filler has cured, final sand the entire float with a sanding block and 220-grit, then 320-grit, then 400-grit sandpaper.

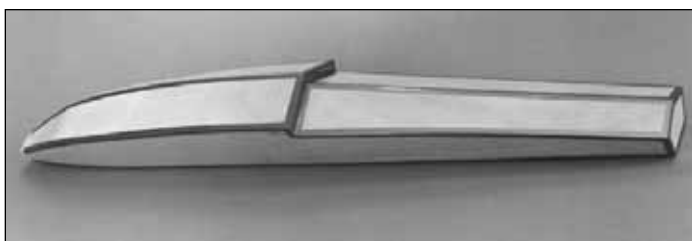
COVERING

Covering Method

There are two ways you can cover your floats. You can use Top Flite® MonoKote® covering or fiberglass cloth and resin with paint. "Glassing" seals the wood grain and is required if you wish to paint the floats. This can be an involved, messy project but yields a highly durable finish. MonoKote covering is the quicker, easier method and provides a surprisingly durable finish as well. In fact, our prototype 60 floats mounted on our Great Planes J-3 Cub 60 are covered with MonoKote film and were really put to the test!

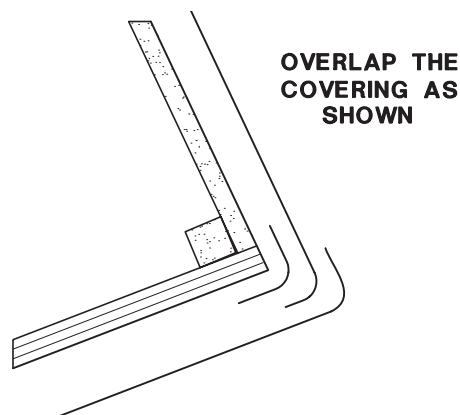
Following are instructions for both covering methods.

MonoKote® Covering

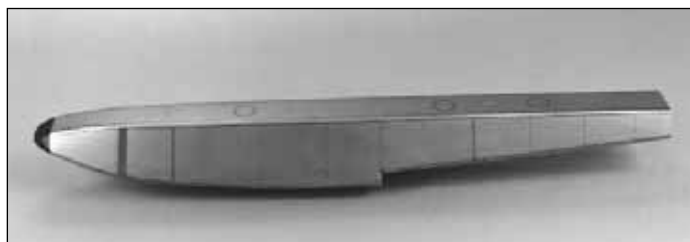


❑ 1. Seal all seams (except around the nose block) with 1/2" wide strips of MonoKote film. Iron these strips down with a **hot** iron for a good seal.

- ❑ 2. Continue to cover the float, in the following sequence:
- A. Transom
 - B. Deck
 - C. Sides
 - D. Aft bottom
 - E. Forward bottom



All pieces should overlap at the nose. Iron the large pieces of covering down by starting in the center, pulling and working out to the edges.



❑ 3. You can enhance realism by adding panel lines and rivets with a fine-point indelible pen, creating a propeller arc warning line (red) from MonoKote covering, and making the flat black walkways (on right float only) from 400-grit wet/dry sandpaper.

Glass Cloth and Resin

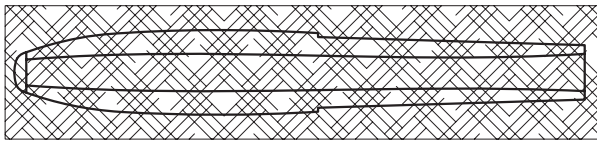
Apply the glass cloth in this order:

1. Transom
2. Deck and both sides in one piece
3. Aft bottom
4. Forward Bottom

❑ 1. Cut a piece of 3/4 oz. (Lightweight) glass cloth 1/2" larger than the transom all the way around.

□ 2. Mix up 1 oz. of finishing resin following the instructions provided in the Great Planes Pro™ Epoxy Finishing Resin kit. Use an epoxy brush to liberally coat the transom of the float.

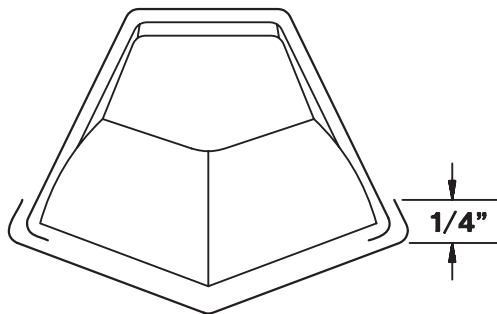
□ 3. Place the cloth on the resin-coated transom, then brush the resin through the cloth, removing excess resin from the center to the edges. Be sure to allow the excess glass cloth to wrap around the top, sides and bottom of the float. Some expert modelers squeegee the excess resin off with a business card or expired plastic credit card. Let the transom fully cure. Then with a sanding block and fresh 220 grit sandpaper, feather the glass cloth into the float top, sides and bottom.



APPLY THE GLASS CLOTH WITH THE WEAVE AT A 45 DEGREE ANGLE

□ 4. Apply glass cloth and resin to the deck and sides (one piece). The cloth should wrap around the bottom 1/4". **Hint:** If you cut and position the cloth with the weave running at 45 degrees to the float, the cloth will more readily go around the sharp bottom corners. Try it!

Another Hint: Build a simple stand to hold the float while you apply the resin and cloth to the deck and sides. Let the deck and sides fully cure. Then with a sanding block and fresh 220 grit sandpaper, feather the glass cloth into the bottoms.



OVERLAP THE GLASS CLOTH AS SHOWN

□ 5. Following the same procedure outlined above, apply glass cloth to the bottoms and step. The cloth needs to overlap the sides 1/4" as shown in the sketch.

□ 6. Lightly sand the entire float with 320-grit sandpaper **being careful not to cut into the glass cloth**. Mix up a 2 oz. batch of resin and use a regular camel hair or similar

1" wide paint brush to brush on another coat of resin over the entire float. For ease of handling, you may do the top and sides first, then the bottom. If you work quickly you can save the paint brush by cleaning it with alcohol before the resin begins to thicken.

□ 7. Carefully sand the entire float with 360-grit sandpaper and a sanding block, **being careful not to sand through to the cloth**. **Note:** See step 2 under **Pushrod Hookup** on page 17 and glue the 1/8" plywood mount block to the deck after you apply the glass cloth. It is not necessary to cover the mount block with glass cloth but you should apply resin over the bare wood. The float is now ready for a coat of primer. If you have sanded through the second coat of resin into the cloth, you will have to apply a third coat of resin in those areas.

□ 8. Apply a coat of primer to the floats. Many expert modelers have established their favorite brand of paint and painting methods, but our recommendation is Top Flite LustreKote Primer. Over glass cloth and resin, one coat of primer may be sufficient but two coats may be required. You may dry sand between coats of primer and paint but wet sanding is preferred – be sure to plug the holes in the deck for the strut mounts so water does not get inside and **do not sand through the glass cloth**.

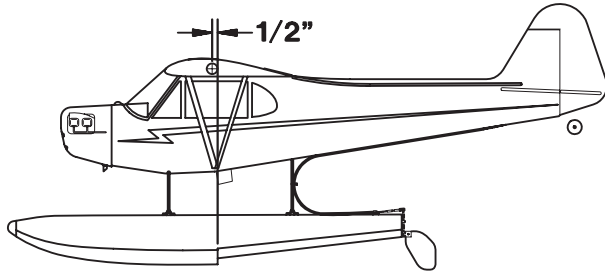
□ 9. Paint the floats. Again, our recommendation is Top Flite LustreKote. If you have a good base coat of primer you may need only one coat of color.

POSITIONING OF FLOATS

Before you continue, take a break from building and study the following information to be sure you understand the positioning of the floats in relation to the wing and fuselage.

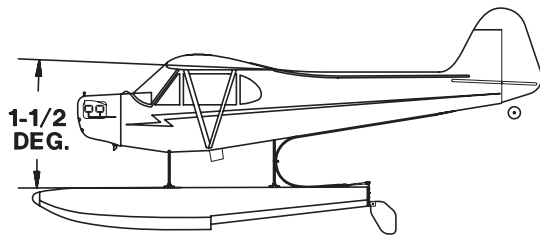
While the following instructions show the Sport Floats on Great Planes Piper Cubs, there are general tips and guidelines that apply to all models which will insure proper handling characteristics in the water and good landing and takeoff tendencies.

FLOAT STEP IS 1/2" BEHIND C.G.

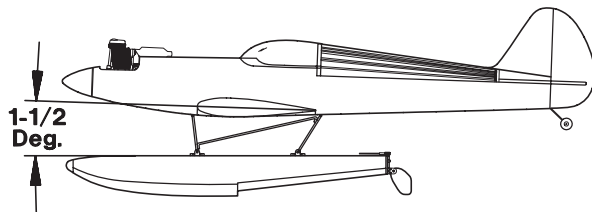


The relationship between the "step" on the floats and the center of gravity on the model is important. First, the floats should be mounted on the model so the step is positioned as detailed in the "Step Sketch" for your particular model. Then, when the floats are mounted on the model, move the C.G. slightly forward as listed below. Although you may have added the recommended ballast inside the front of the float, in some cases a little more ballast may be required on the model.

- For 60-size floats:** Move the CG (Balance point) 1/2" ahead of the manufacturers recommended CG.
- For 40-size floats:** Move the CG (Balance point) 3/8" ahead of the manufacturers recommended CG.
- For 20-size floats:** Move the CG (Balance point) 9/32" ahead of the manufacturers recommended CG.

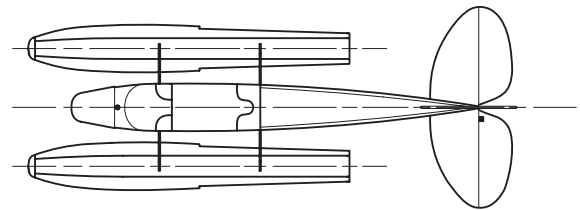


GREAT PLANES PIPER CUB .40 ON FLOATS



WHEN THE TOPS OF THE FLOATS ARE LEVEL, THE WING INCIDENCE SHOULD BE +1-1/2 deg.

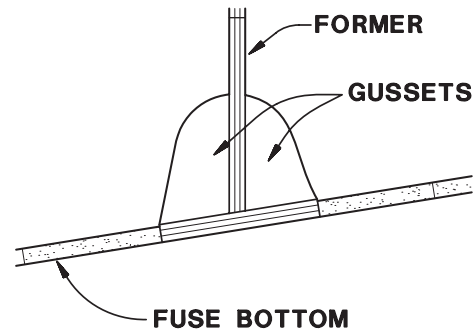
Another important relationship between the wing and the floats is the relative "angle of attack." With a virtually flat bottom wing such as a Piper Cub, the deck of the floats should be parallel to the bottom of the wing. Since the Cub does not have a truly flat wing, this yields a slight positive wing incidence in relation to the floats, and the airplane will tend to rise off the water at the correct time. If you have a model with a symmetrical wing, the wing incidence in relation to the float deck should be positive 1-1/2 degrees.



THE CENTERLINES OF THE FLOATS AND MODEL MUST BE PARALLEL

Finally, each float should be set so that it is parallel to the centerline of the fuselage.

Prepare Your Airplane to Accept the Floats



1. You must have a solid mounting location on the fuselage bottom for the **aft float strut**. If you have not previously built in the **aft float mount plate** to the bottom of your fuselage, follow the instructions below.

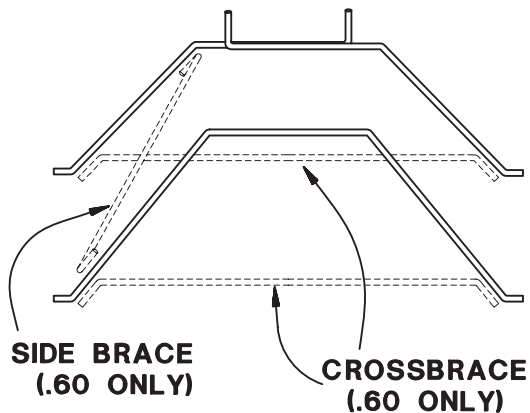


A. For greatest strength, it is preferred that the 1/8" plywood **aft float mount plate** (included with the float kit) be positioned under a former. The location of the aft float mount plate is determined by the aft strut (included with the float kit) which can be custom bent. On the Great Planes Cub 60 and Cub 20, the location of the aft float mount plate is shown on the plan included with the model. To locate the former, push a pin through the bottom of the fuselage until you find it.

B. Remove a section of the bottom sheeting, centered over the former, wide enough to accept the aft float mount plate.

C. Use 30-minute epoxy to glue the die-cut 1/8" plywood **float mount plate gussets** to the fuselage side and former. **Note:** The bottom of the gussets may have to be beveled so they are flush with the bottom of the fuselage side.

D. Trial fit the aft float mount plate, cut it to the correct length, then use 30-minute epoxy to securely glue it in position. When the epoxy has cured, use a sanding block and 150-grit sandpaper to blend the aft float mount plate to match the contour of the fuselage bottom. Cover the bare wood to match your model.



2. Use the landing gear included with your airplane for the **front struts** unless you are building a Great Planes Cub 60. For the Cub 60, you will use the front landing gear strut and cross brace provided with the floats. For some models, the front landing gear mounting location on the fuselage may have to be moved to allow the step in the float to be placed according to the recommendations.

60 FLOATS ONLY

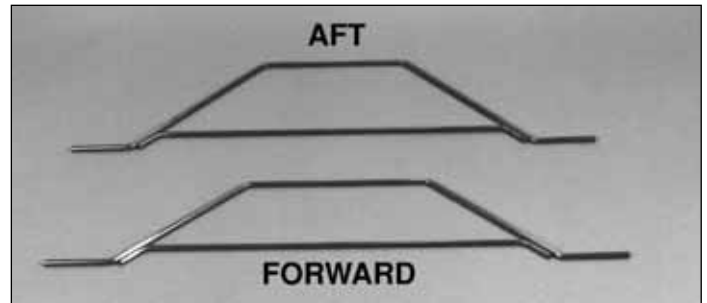
60 FLOATS ONLY

This section pertains to the 60 Sport Floats only. If you are building the 20 or 40 Sport Floats, skip to the "20 And 40 Floats Only" section now.

Notes about Soldering

1. Remove any oily residue from the wire struts by wiping them with alcohol. Roughen the area to be soldered with 150-grit sandpaper.
2. Silver solder, such as Great Planes Silver Solder (GPMR8070), is highly recommended.
3. For soldering the heavy gauge wire struts, higher heat is required than for normal electrical soldering. A torch is recommended but some heavy duty soldering irons may work as well. The higher the temperature of the heating source applied to the joint, the quicker the solder will flow and the less time the wire will have to draw heat away from the area.
4. Avoid a "cold" solder joint which will not have the shiny appearance of a proper solder joint. A cold joint may be caused by disturbing the pieces before the molten solder has solidified or by a joint that never had enough heat to let the solder flow.
5. Read the instructions provided by the manufacturer of the solder.

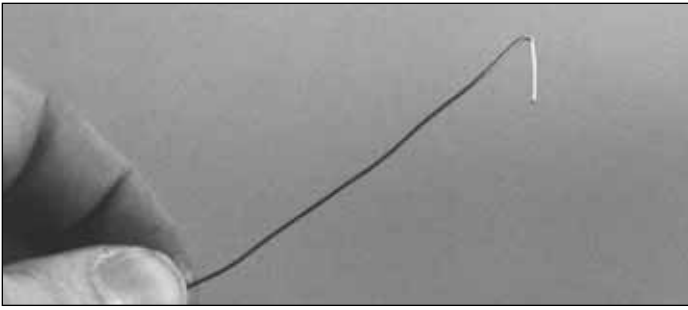
Solder the Cross-Braces



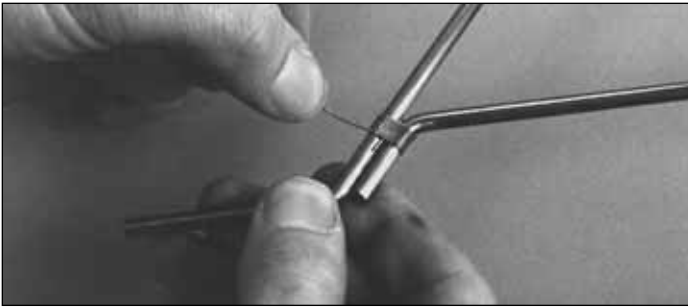
1. Match the shorter **front strut** with the **front cross brace** and the taller **rear strut** with the **rear cross-brace**. The matching struts and cross-braces are the ones that fit together the best. **Note:** If you are mounting the floats on a model other than the Great Planes Cub 60, you may use the main landing gear included with your model to mount the front of the floats, and the rear struts included with this kit to mount the rear of the floats. You may have to relocate your main landing gear in order to place the step on the floats at the required position.
2. Wrap each joint **neatly** and **tightly** with the reinforcement wire.

A. For ease of handling, apply thin CA to the joint to temporarily hold the pieces together.

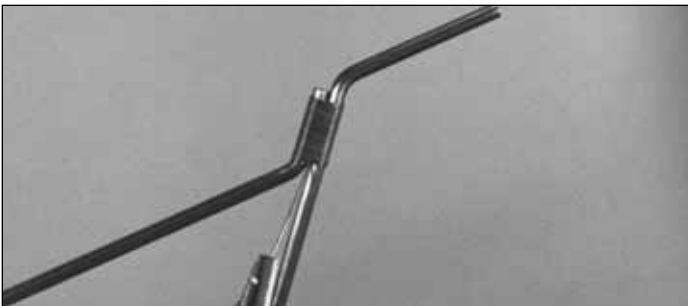
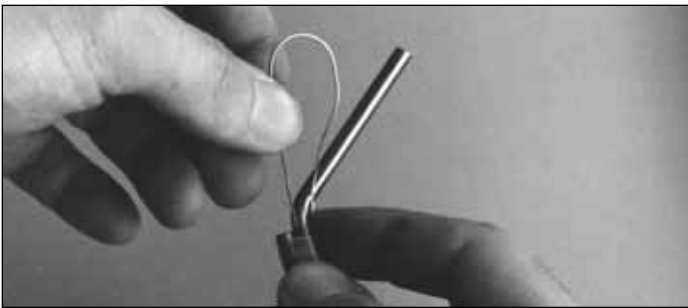
Mount the Struts to the Floats and Solder the Diagonal Braces



B. Cut a 26" piece of wire and make a sharp bend about 3/8" from the end.



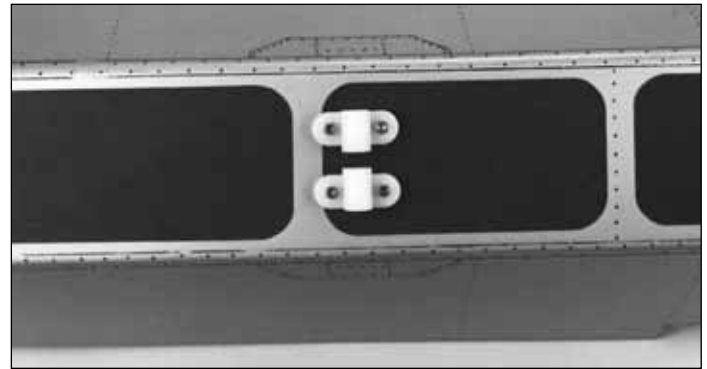
C. Place the wire between the braces and begin tightly wrapping the wire.



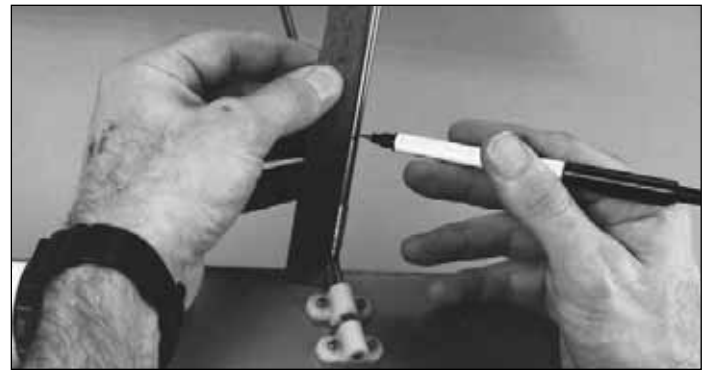
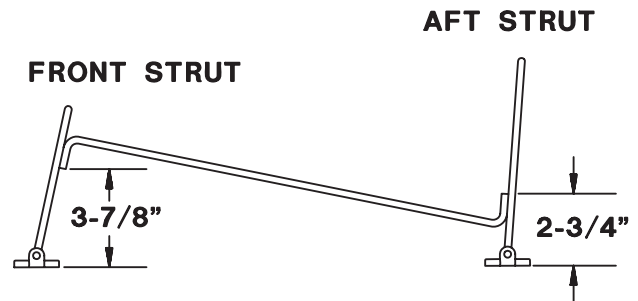
D. When complete, route the excess wire through the wire wrap and pull it tight. Cut off the excess wire.



3. Heat the joint, apply a few drops of acid flux, then feed in the silver solder. A proper solder joint looks like the one in the photo – not a “dry” solder joint nor a big hideous glob. Solder all four joints.



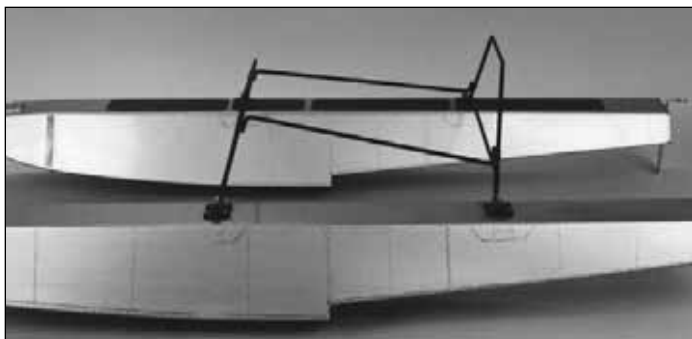
1. Cut the nylon bearing mounts into two pieces, then enlarge them with a #12 (or 13/64") drill bit. Mount the bearings to the floats with 4-40 x 1/2" screws.



2. Temporarily join the floats to the struts by inserting them into the bearing mounts. Use a felt tip pen to mark the location of the diagonal braces as indicated in the sketch.

3. Trial fit the floats and struts on your model before soldering the diagonal braces. The spacing and angle of the struts is determined by placement of the diagonal braces.

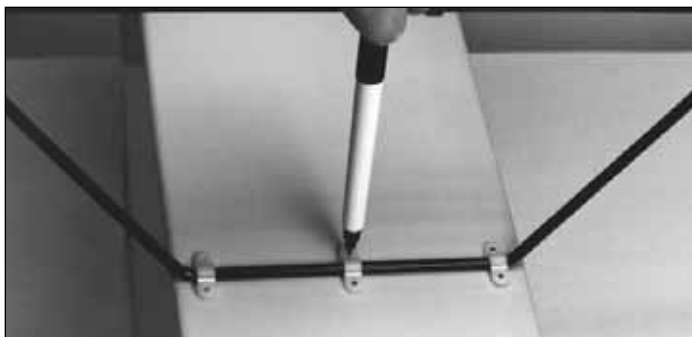
4. Wrap, then solder the diagonal braces to the struts. Lay a damp cloth under each solder joint as you proceed to avoid damaging your finish. Test fit the floats to your model and make adjustments if necessary.



❑ 5. The completed struts may be painted. First remove all residue with alcohol, thoroughly sand with 400-grit sandpaper, then clean again with alcohol or thinner before painting.

Mount the 60 Floats to the Airplane

❑ 1. Mount the struts to the floats with **3/16" wheel collars** and **6-32 machine screws**. Then turn the fuselage upside-down and place the struts on the model with the "step" in the floats positioned according to the recommendations.



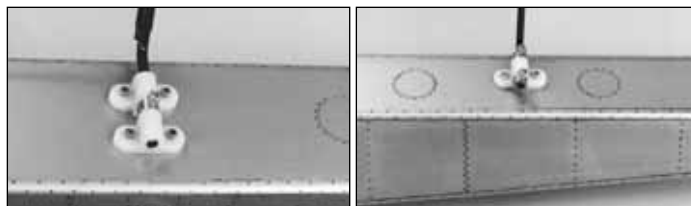
❑ 2. Place three **5/32" nylon hump straps**, evenly spaced, on each strut and mark the screw hole locations. Drill a **3/32"** hole at each mark, then fasten the floats to the fuselage with **12 #4 x 1/2" sheet metal screws**.

If you are building the 60 floats, skip to "Build the water rudder" on page 17.

20 AND 40 FLOATS ONLY

Mount the Struts to the Floats

❑ 1. Cut the nylon **bearing mounts** into two pieces and mount them to the floats with **4-40 x 1/2" screws**. If your front landing gear is **3/16"** diameter wire, you will have to drill out the front bearing mounts with a **13/64"** or **#12** drill bit. See the following photo for proper bearing mount placement.



❑ 2. Temporarily join the floats to the struts with the **5/32" wheel collars**.

Mount the Floats to the Airplane

The following instructions show the Great Planes J-3 Cub 20 and 40. Use the instructions, sketches and photographs as a general guide if you are mounting the 20 or 40 Sport Floats to a different model.

❑ 1. Turn the fuselage upside-down and place the front struts in the torque blocks in the fuselage and the lay rear struts on the aft strut mount plate.



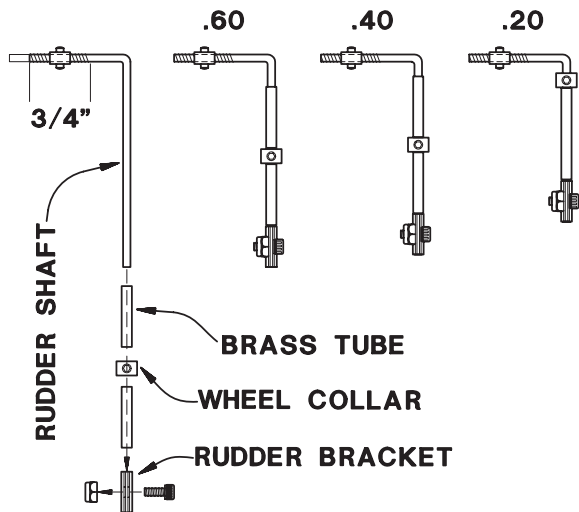
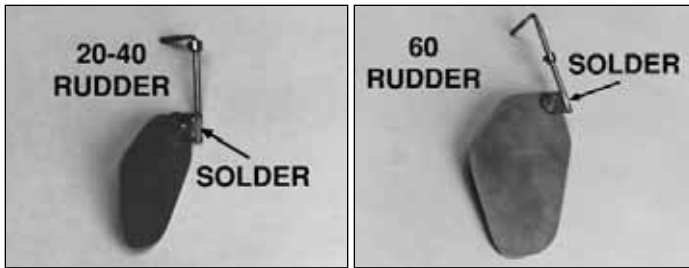
❑ 2. Mount the **front** struts to the fuselage as they were with the conventional landing gear, then place two nylon **5/32" hump straps** on the **rear** strut **3/8"** from the fuselage side. Mark the strap locations. **Note:** The 40 Sport Floats require a third hump strap in the center of the rear strut.

❑ 3. Drill **1/16"** holes at each mark. Then fasten the float struts to the fuselage with **#2 x 3/8" sheet metal screws**.

❑ 4. The completed struts may be painted. First remove all residue with alcohol, thoroughly sand with 400-grit sandpaper, then clean again with alcohol or thinner before painting.

ALL MODELS

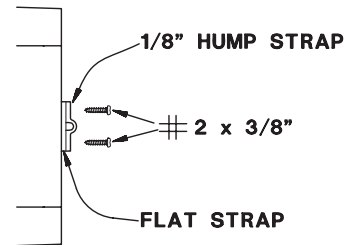
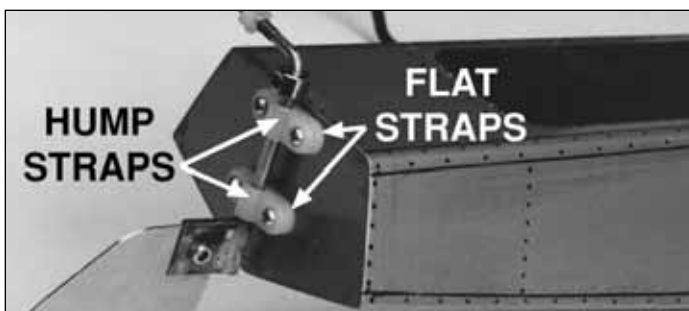
Build the Water Rudder



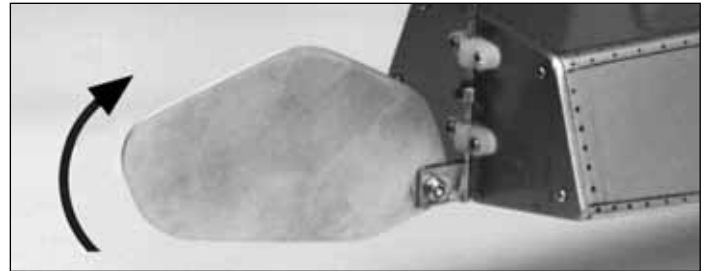
1. Install the **wheel collar** and the brass tube bearing on the **rudder shaft**. Use the **4-40 x 1/4" socket head cap screw** and **4-40 lock nut** to mount the **rudder** to the **rudder bracket**, then silver solder the rudder bracket to the rudder shaft. **Do not solder the brass tube to the rudder shaft.** **Note:** The 60 and 40 floats require a brass tube, wheel collar, then another brass tube. Refer to the sketch for each assembly.

2. Lock the wheel collar so the rudder shaft cannot slide up and down in the brass tube. **Note:** on the 60 and 40 rudder, lock the wheel collar so the rudder shaft cannot slide up and down on the **bottom** brass tube.

3. Cut the threaded portion of the rudder shaft so 3/4" of the thread remains, then screw on the **nylon swivel 1/8"** past the end.

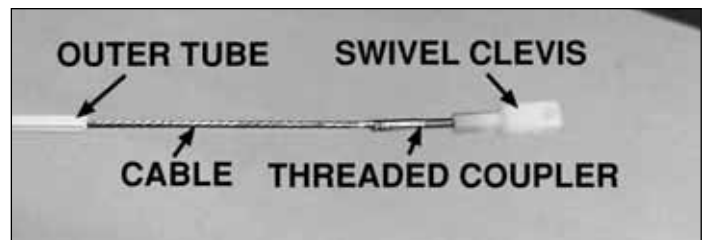


4. Loosely install the rudder on the right float with two flat straps, two **1/8" hump straps** and four **#2 x 3/8" sheet metal screws**. Adjust the bottom of the rudder bracket so it is even with the bottom of the transom, then tighten the screws.

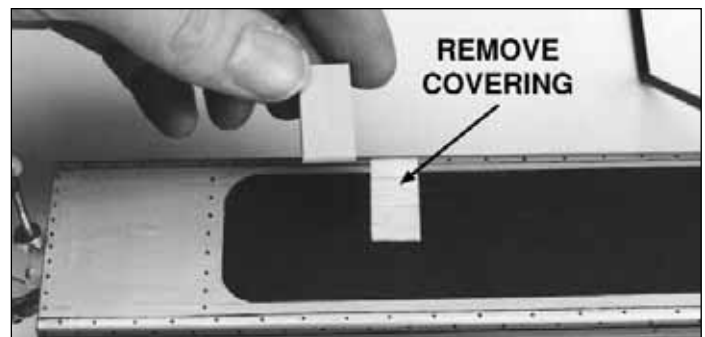


Note: Do not overtighten the 4-40 screw and nut that secures the rudder to the bracket. The rudder must be able to pivot upward in case it hits a foreign object in the water – or the shore.

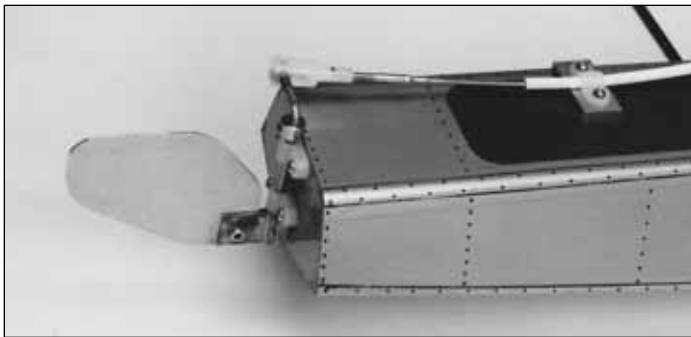
Pushrod Hookup



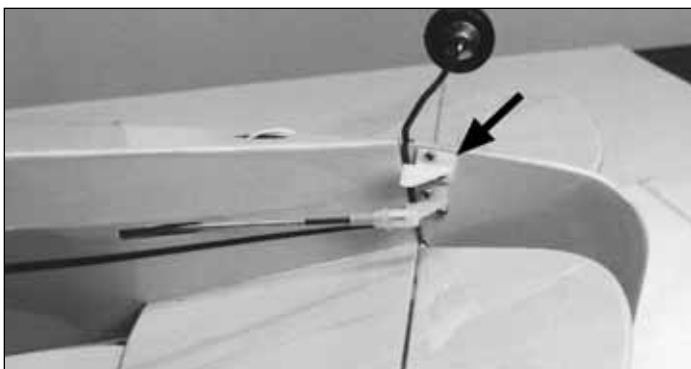
1. With the floats mounted to the model, solder a **threaded coupler** to one end of the **braided cable**, then thread on the nylon **swivel clevis**. Slide the cable into the **pushrod guide tube**.



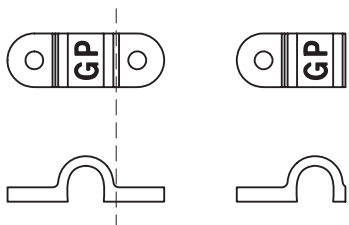
2. Position a die-cut **1/8" mount plate** on the deck of the float 3" from the rear. Remove the covering from underneath, then glue it in position. **Hint:** Cover the mount plate to match your floats before you glue it in place.



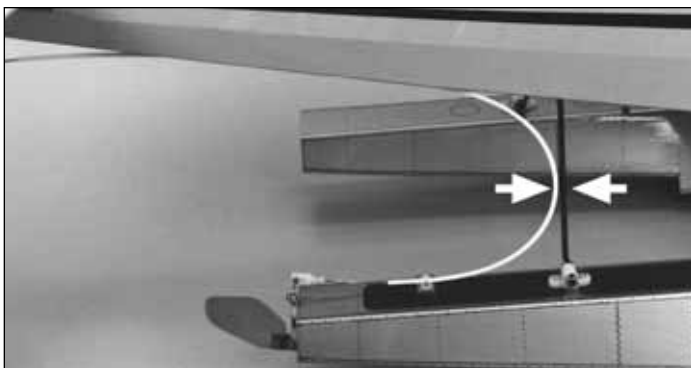
3. Drill 1/16" holes in the mount plate. Then use #2 x 3/8" sheet metal screws to fasten a 1/8" hump strap and outer pushrod tube with pushrod. Connect the swivel clevis to the swivel on the rudder shaft.



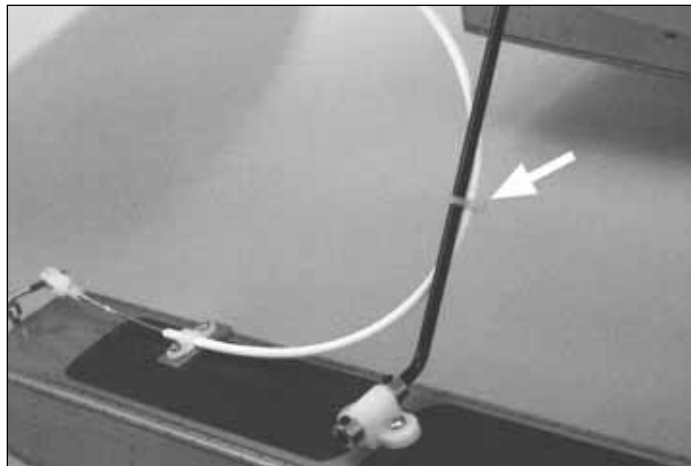
4. Mount an additional **control horn** (included with float kit) on the right side of the rudder.



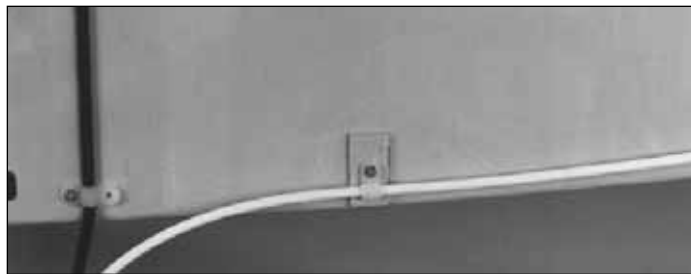
5. Cut off one side of the *base* from two 1/8" nylon hump straps as shown in the sketch.



6. Hold the outer pushrod tube and cable along the bottom of the fuselage in a position that will provide a gentle loop from the float to the rudder as shown in the photo. Where the pushrod tube meets the fuselage, remove a section of covering and install another die-cut plate.



7. Fasten the guide tube to the aft strut with a nylon tie.

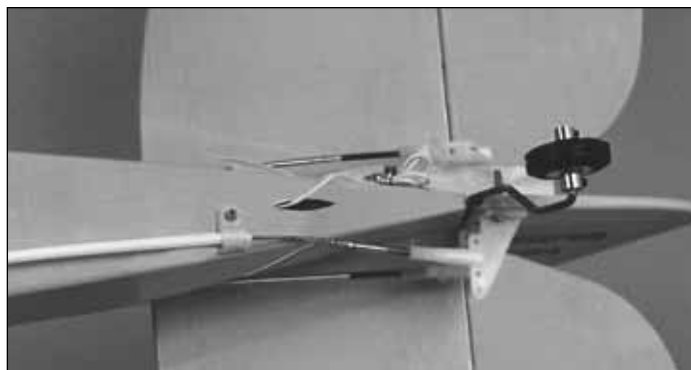


8. Drill a 1/16" hole and secure the cable guide tube to the mount plate with one of the cut-off hump straps and #2 x 3/8" sheet metal screws.

Connect the Rudder

20 - 40 Floats only

After performing steps A and B, continue with step 8.



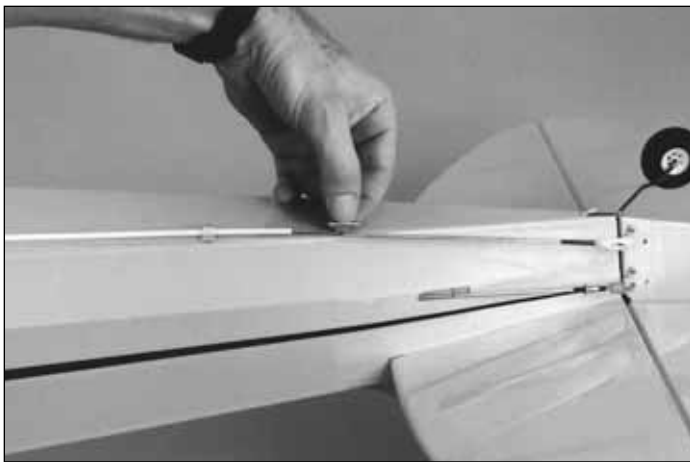
A. Screw a **threaded coupler** to a **nylon clevis**. Then temporarily fasten the clevis and coupler to the rudder horn. Holding both the water rudder on the float and the rudder on the model in a neutral position, determine the length of the pushrod cable, remove it from the guide tube, then cut it to length. **Hint:** A Great Planes cut-off wheel (GPMR8200) works great for cutting cable like this without fraying the end. Cut the guide tube to a length so that it will not interfere with the threaded coupler when it is soldered onto the cable. There must be enough clearance to allow the cable to slide freely.

Note: Before reinstalling the cable into the guide, apply a light coat of oil or petroleum jelly to the cable to prevent future corrosion.

B. Remove the threaded coupler from the nylon clevis, slide the cable back into the outer pushrod tube, then solder the cable to the coupler. Thread the clevis back onto the coupler. Then attach it to the rudder horn. Make final adjustments by screwing or unscrewing the nylon clevis at either end of the cable.

60 Floats Only

After performing steps A and B, continue with step 8.



A. Screw a **nylon clevis** to the .074" x 12" **threaded rod**. Then temporarily fasten the clevis to the rudder horn. Holding the water rudder on the float and the rudder on the airplane in a neutral position, determine where the threaded rod and the cable will be joined with the **coupling sleeve**. Then cut the rod to length. Remove the cable from the guide tube, and then cut the cable to length. **Hint:** A Great Planes cut-off wheel (GPMR8200) works well for cutting cable like this without fraying the end. Cut the guide tube to a length that will not interfere with the split coupler when it is soldered onto the cable and the cable moves in and out.

Note: Before reinstalling the cable into the guide, apply a light coat of oil or petroleum jelly to the cable to prevent future corrosion.

B. Slide the cable back into the guide tube. Then join the threaded rod to the cable by soldering the coupling sleeve to both pieces. Make final adjustments by screwing or unscrewing the nylon clevis at either end of the cable.

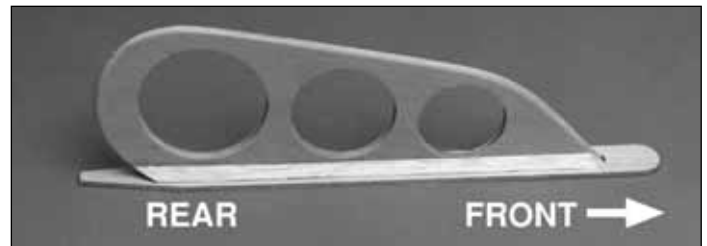
□ 8. Mount another 1/8" plywood mount plate and the other cut hump strap near the rear of the guide tube.

□ 9. Test the actuation of the water rudder on the floats. The water rudder and the rudder on the model must both be neutral and **move in the same direction**.

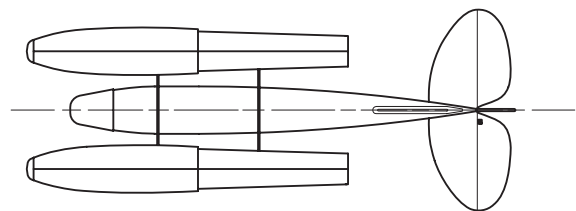
VENTRAL FIN

The purpose of the ventral fin is to increase yaw stability. Some models may be flown successfully without the ventral fin, but we strongly recommend that you add the ventral fin to your airplane when flying with Great Planes Sport Floats.

□ 1. Laminate the die-cut 3/32" balsa **ventral fins** with 6-minute epoxy. **Note:** The 60 ventral fin is two pieces of die-cut 1/8" plywood. **Hint:** Clamp the ventral fins together while the epoxy cures by laying weights on top of them over a flat work surface covered with wax paper. After the glue has cured, use a sanding block and 150-grit sandpaper to sand the ventral fin flat, remove any excess glue, and round the edges. Final sand with 320 to 400-grit sandpaper.



□ 2. Making sure the ventral fin is perpendicular to the die-cut 1/8" plywood **ventral fin base**, glue the pieces together with medium CA. Then glue the 1/4" balsa triangle stock to the fin and base.



VENTRAL FIN MUST BE PARALLEL TO FUSE CENTERLINE

□ 3. Cover the assembled ventral fin to match your model. Then mount it to the bottom of the fuselage right on the centerline of the fuselage. The suggested mounting method is double-sided foam mounting tape. An alternate mounting method would be to use #2 x 3/8" sheet metal screws. If you use screws, 1/8" plywood blocks should be glued to the inside of the bottom sheeting where the screws are located.

□ 4. Balance your airplane again, after adding the ventral fin.

BEFORE GOING TO THE LAKE

- ❑ 1. The set screws on the wheel collars should be secured with liquid thread-locking compound. On the 60 floats, it is recommended that a small flat spot be filed on each strut where the set screw locks.



- ❑ 2. Plastic "splash strips" that protrude below each inner float side by 1/2" may be added if too much water gets splashed up onto the propeller – you'll be surprised at the damage water can do to the propeller. This is highly recommended for the 20 floats and can be fastened directly to the covering with double-sided foam tape or Pacer brand ZAP-A-DAP-A-GOO cement. A template is provided in the middle of the manual for the float splash strips. They may be cut from .06" ABS, styrene or other plastic sheet.

WATERPROOFING

Salt water flyers should pay special attention to these instructions.

- ❑ 1. Where possible, seal pushrod exits and the receiver switch or other openings with petroleum jelly or similar.
- ❑ 2. Seal screw holes with clear RTV silicone. This includes screws on the floats that hold on the water rudder, strut mount bearings, and hump straps, as well as the screw holes that hold the straps on the fuselage, etc.
- ❑ 3. Lightly oil the moving parts of the rudder and the cable inside the outer pushrod tube.
- ❑ 4. Make sure you have a good seal between the wing and the fuselage. If not, make a "gasket" out of RTV silicone or foam wing tape.
- ❑ 5. Enclose the receiver and battery in plastic bags, then wrap with rubber bands.

FLYING

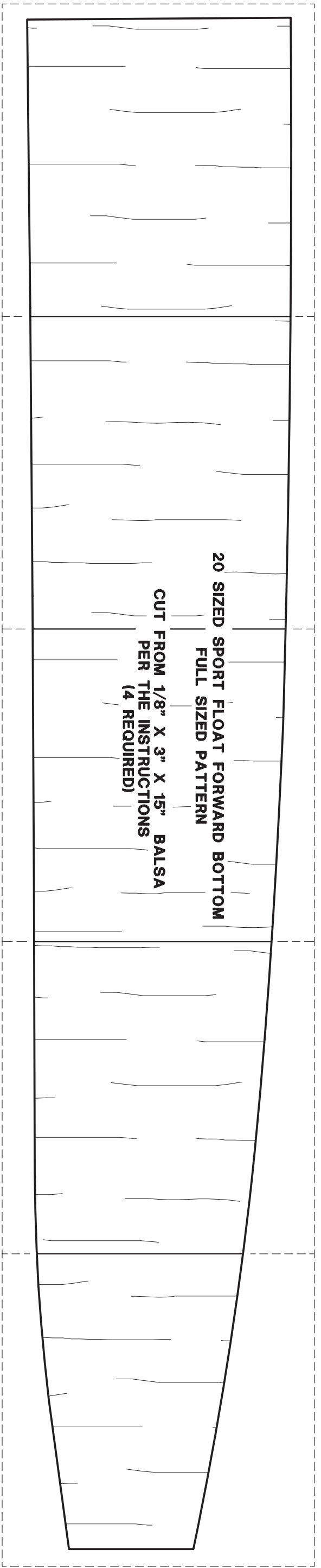
Before setting the model in the water, be sure the water rudder on the float is extended. A **reliable**, slow idle is a must – unless you can swim well! First flight attempts with floats should be reserved for relatively calm days when the water is not so choppy. Practice taxiing around in the water to learn the handling characteristics and see if you have built in enough throw on the water rudder. Make adjustments if required. During taxiing, hold "up" elevator to keep the nose of the airplane high and the propeller out of the water. Always takeoff into the wind. Gently add throttle and gradually release some of the up elevator as the speed increases. Just like the model takes off the ground, when it has enough speed it will lift into the air – don't force it off. Continue a gradual, conservative climbout until you are at an altitude where you are comfortable making the downwind turn.

Learn the flight characteristics of the model with the added weight and drag of the floats. A model that was not marginal on power to begin with will do fine – you'll probably be surprised. Our Cub 60 with the O.S. 91 Surpass while not overpowered, does have plenty of reserve and is perfectly capable of loops, rolls, stall turns and inverted flight with the Sport Floats.

Landing approach is the same on water as it is on land. Touch down slow to avoid bouncing the airplane off the water back into the air. "Crabbing" is a great technique used to bleed off airspeed during approach of "floater" models like a Cub. This is done by applying a balance of rudder and opposite aileron to make the airplane fly "sideways." The path of the model is "down the runway" while the nose is pointing off to one side. Just before the floats contact the water, release the rudder and opposite aileron.

Although it is difficult to do, the model can contact the water at such an angle as to allow the tips of the floats to "catch," thus flipping the model immediately. Avoid letting the floats contact the water at anything but a level or slightly positive attitude.

Be considerate to others at the lake and enjoy your Great Planes Sport Floats!



OPTIONAL SPRAY RAILS

CUT FROM .060" ABS OR SIMILAR PLASTIC
2 RAILS REQUIRED

.20 SIZED SPORT FLOAT SPRAY RAIL (OPTIONAL)
FULL SIZED PATTERN

.40 SIZED SPORT FLOAT SPRAY RAIL (OPTIONAL)
FULL SIZED PATTERN

.60 SIZED SPORT FLOAT SPRAY RAIL (OPTIONAL)
FULL SIZED PATTERN