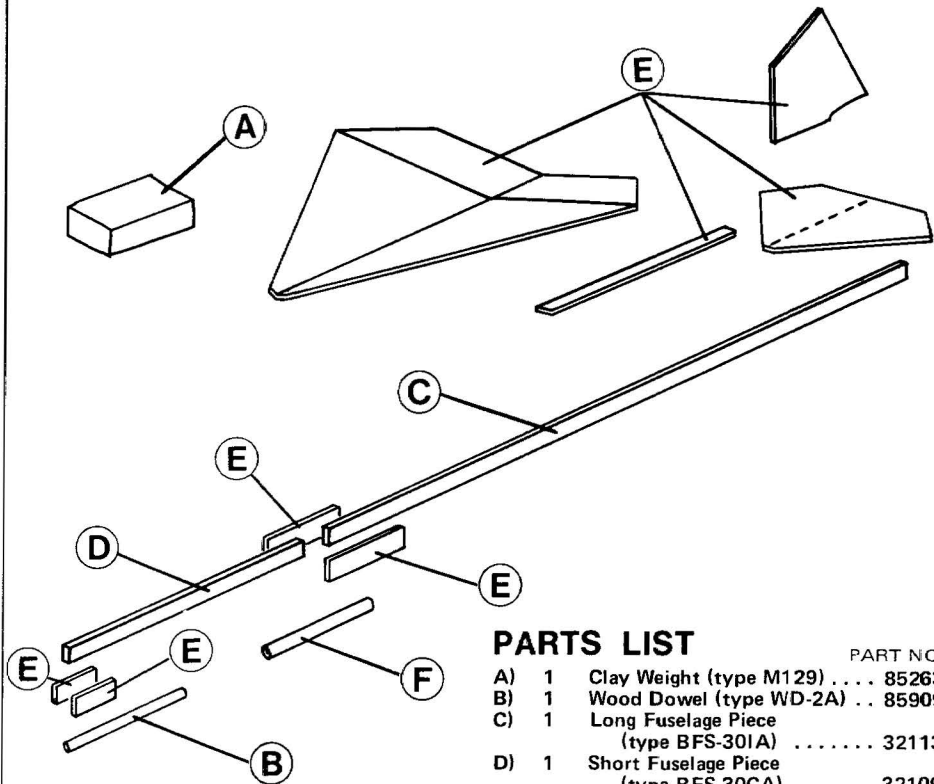




# FIREFLY

PARASITE GLIDER

KIT NO. 1280



## PARTS LIST

	PART NO.
A) 1 Clay Weight (type M129) . . . .	85263
B) 1 Wood Dowel (type WD-2A) . . .	85909
C) 1 Long Fuselage Piece (type BFS-30IA) . . . . .	32113
D) 1 Short Fuselage Piece (type BFS-30CA) . . . . .	32109
E) 1 Die-Cut Balsa Sheet (type BF-TK5) . . . . .	32248
F) 1 Launch Lug (type LL-2A) . . .	38175

Your Firefly is a "parasite" glider. It is designed to "hitch-hike" on a conventional large model rocket on the upward flight, then glide back separately. A launch lug, taped to the side of the launch vehicle in the appropriate location, is generally the only modification required to adapt the launch vehicle to parasite operation.

The parasite technique is ideal for testing a wide variety of glider designs. Because the launch vehicle is large in relation to the glider, changes in glider design and trim have little effect on the upward flight, yet the results of these changes in glide performance can be easily observed.

In addition to the parts included in this kit you will need white glue, a sharp model knife (or single edge razor blade), sandpaper, sanding sealer, and paint for assembly.

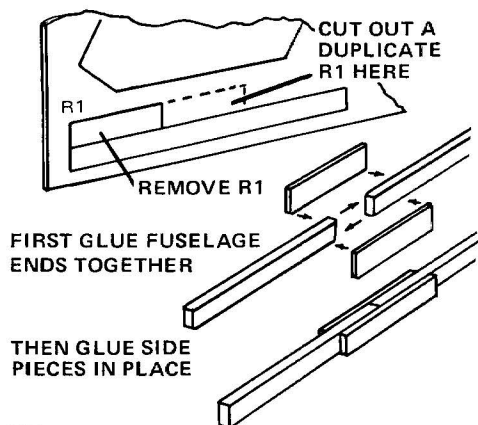
## IMPORTANT:

Read all instructions before beginning work on your model. Make sure you have all parts and materials. When you are thoroughly familiar with the assembly procedure, begin construction. Check off each step as you complete it. Precision assembly is essential for good glide performance. Make sure all parts are aligned as accurately as possible in each step as you build your model.

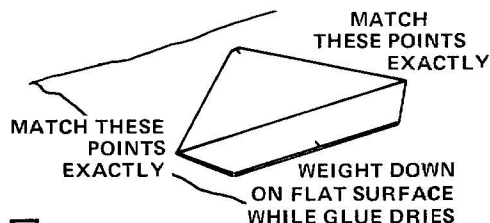


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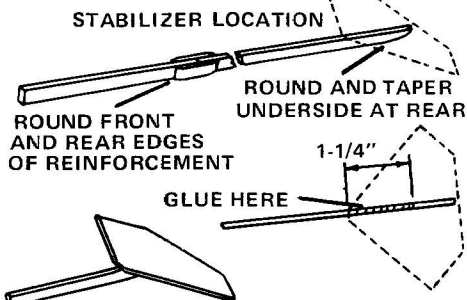
# ASSEMBLY INSTRUCTIONS



**1** Sand both sides of the die-cut balsa sheet until smooth. Lightly sand the sides and edges of the fuselage pieces so they are smooth and square. Remove piece R1 from the die-cut sheet and, using it as a pattern, cut an identical piece from the space on the sheet next to it. Use these pieces as side reinforcements and glue the two fuselage pieces together as shown.

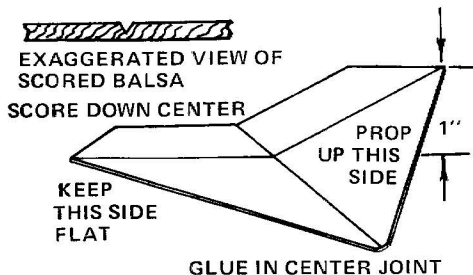


**2** Use a sharp knife or razor blade to free pieces W1 and W2 from the sheet. Pass the wide edge of each piece across a flat piece of fine sandpaper to make sure these edges are perfectly straight. Glue the two pieces together as shown. Lay the wing assembly flat on a piece of waxed paper and weight down to hold in position while the glue sets.



**3** When the joint made in step 1 is dry, sand the fuselage piece to the shape shown. Carefully remove the horizontal stabilizer (E1)

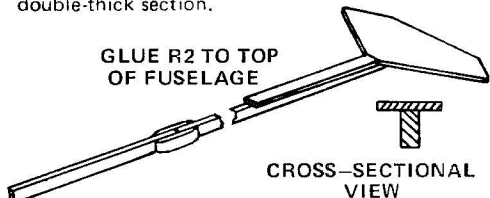
from the die-cut sheet and sand its edges round. Position the stabilizer of the fuselage and mark the fuselage where the front of the stabilizer touches. Apply a line of glue to the fuselage, extending 1-1/4" back from the mark. Again, put the stabilizer in place, using the small cuts at front and rear to center it.



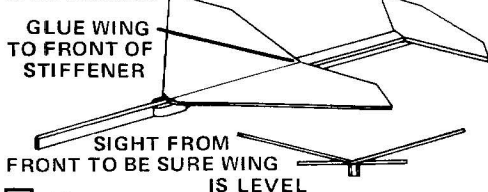
**4** When the joint in the wing is dry, set the dihedral angle in the wing. To do this, score (cut partly through) the wing on a perfectly straight line from the front alignment mark to the rear mark. Bend the wing on this line (it will crack as it bends) and set the angle so the tip of one wing is 1" above the table when the other wing half is flat. Work glue into the score line and hold the wing in position until the glue dries.



**5** Separate a pylon piece (P-1) from the balsa sheet. Cut two 5/8" lengths from the piece and glue together as shown to form a double-thick section.



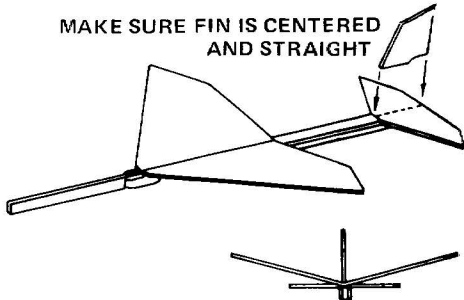
**6** Glue the fuselage stiffener (R-2) to the top of the fuselage against the front of the stabilizer. Make sure the piece is centered on the fuselage and glued to both the fuselage and to the stabilizer.



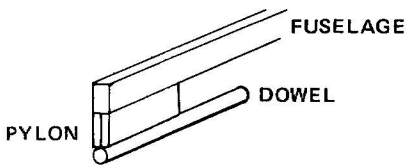
**7** When the glue on the dihedral joint is dry, glue the wing to the fuselage. Apply glue

to the bottom of the wing along the dihedral joint and to the front of the stiffener. Press the wing into position, making sure it is perfectly centered. Turn the assembly upside down on a flat table top while the glue dries, making sure the stabilizer's rear end is flat on the table.

**MAKE SURE FIN IS CENTERED AND STRAIGHT**

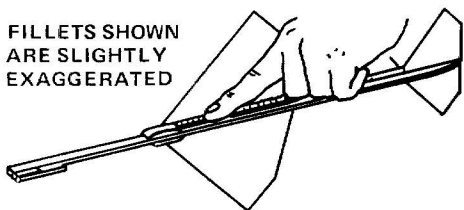


**8** When the glue on the wing-fuselage joint is dry, glue the fin (F-1) in place. Use the small cuts in the front and rear of the stabilizer as a guide to make sure the fin is centered and perfectly straight.



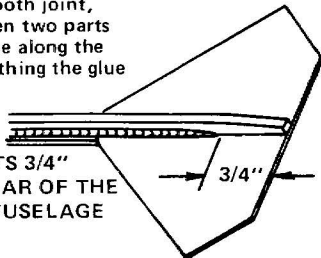
**9** Glue the dowel to one long edge of the pylon (from step 5). Glue the other edge of the pylon to the bottom of the fuselage at the front as shown.

**FILLETS SHOWN ARE SLIGHTLY EXAGGERATED**

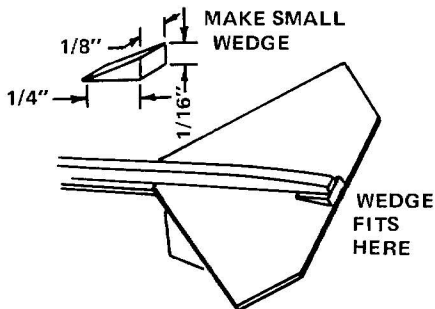


A fillet is a smooth joint, built up between two parts by applying glue along the joint and smoothing the glue with a finger.

**DO NOT APPLY FILLETS 3/4" FROM THE REAR OF THE STABILIZER/FUSELAGE JOINT**



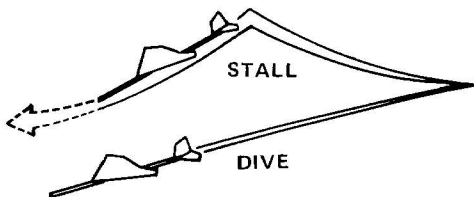
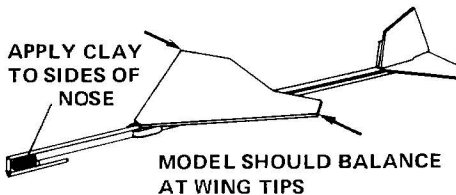
**10** Apply a glue "fillet" to all joints. First apply a line of glue to a joint, then smooth it out with your finger to make a strong, smooth joint. Be careful to not glue the last 3/4" at the rear of the stabilizer/fuselage joint.



**11** From a scrap piece of the balsa sheet, form a 1/4" long wedge approximately 1/8" wide. Slide the wedge in part way between the fuselage and the horizontal stabilizer to provide the trim angle (see illustration). Do not glue the wedge into place yet.

**12** Paint your glider. A light-weight finish is important, so use just barely enough paint to get the color you want, and no more. Generally a fluorescent color (bright orange or red) is best for the top surface to make the glider easy to spot on the ground, while black on the underside makes the glider contrast with the sky in flight.

Sand the entire model carefully before painting, then apply a coat of sanding sealer, let dry and sand some more. A coat of white paint on the top before applying the fluorescent paint will give a much brighter model.



**13** Press clay onto the front of the fuselage until the model hangs level when supported by the wing tips. With the model balanced at this point, test glide it. If it dives, push the wedge in a little farther. If it dips and then rises in a stall, add weight to the nose. Once you have found the proper balance point, secure the wedge by applying a drop of glue on each side to hold it to the stabilizer.

# FLYING YOUR GLIDER

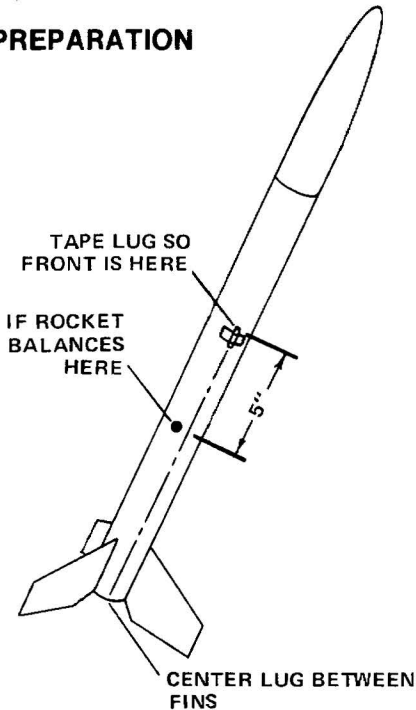
## LAUNCH VEHICLE SELECTION

It is important that you use a launch vehicle that is suitable for this glider. Suggested models are:

Big Bertha  
 Renegade  
 Andromeda  
 Orbital Transport  
 Vigilante  
 Patriot  
 Bandit  
 Cineroc/Omega  
 Sandhawk  
 Cherokee-D  
 A-20 Demon  
 Shrike  
 Maxi Honest John

Other large models may also be used. We recommend that you try any new launch vehicle with the smallest engine recommended for that rocket. Use larger engines only when the combination has been proven with flights using smaller engines.

## PREPARATION



Locate the flight-ready balance point of your launch vehicle (with engine, parachute, wadding, etc.). Tape the launch lug provided with this kit to the model, centered between two fins, so the front of the lug is 5" ahead of the balance

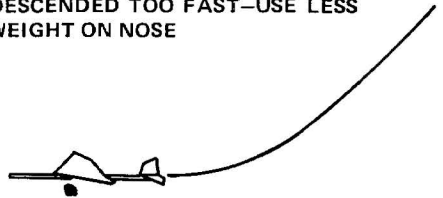
point. The glider hooks onto this lug for launch. (Note: On the Big Bertha the front of the lug should be 4" from the front of the body.)

Make sure the glider hangs free when on the launch vehicle. If it binds, aerodynamic forces on the glider in flight can force the launch vehicle off course. In addition, the glider must be free to come loose immediately at ejection. If the model's fins interfere with the glider, move the lug forward slightly.

## FLIGHT

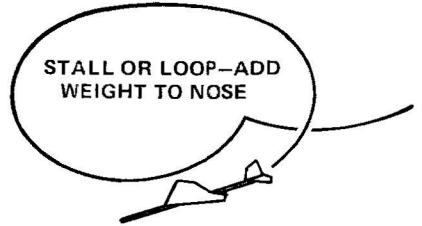
Pick a calm day to launch your glider. Use the type of engine recommended for the launch vehicle's first flight. Be sure to follow the countdown checklist featured at the end of your rocket's instructions and have at least one extra person along to help keep the glider in sight. Observe the flight carefully.

### DESCENDED TOO FAST—USE LESS WEIGHT ON NOSE



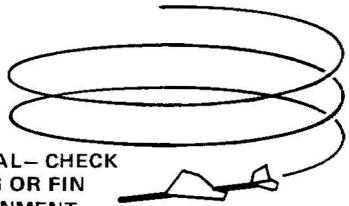
Did the glider seem to descend too fast? Try less weight on the nose.

### STALL OR LOOP—ADD WEIGHT TO NOSE



Did it stall repeatedly or, worse, loop several times? Add weight to the nose.

### SPIRAL—CHECK WING OR FIN ALIGNMENT

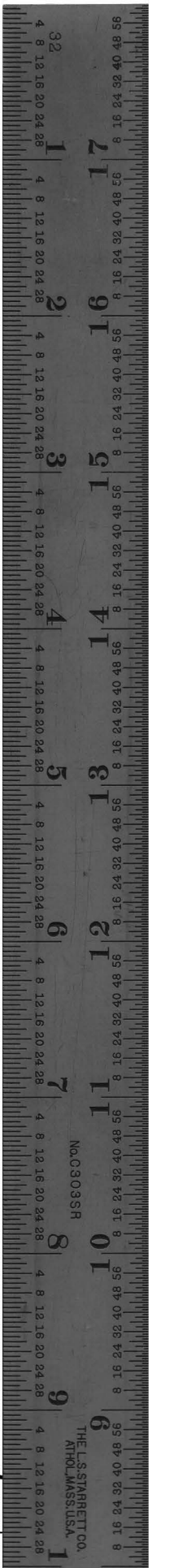
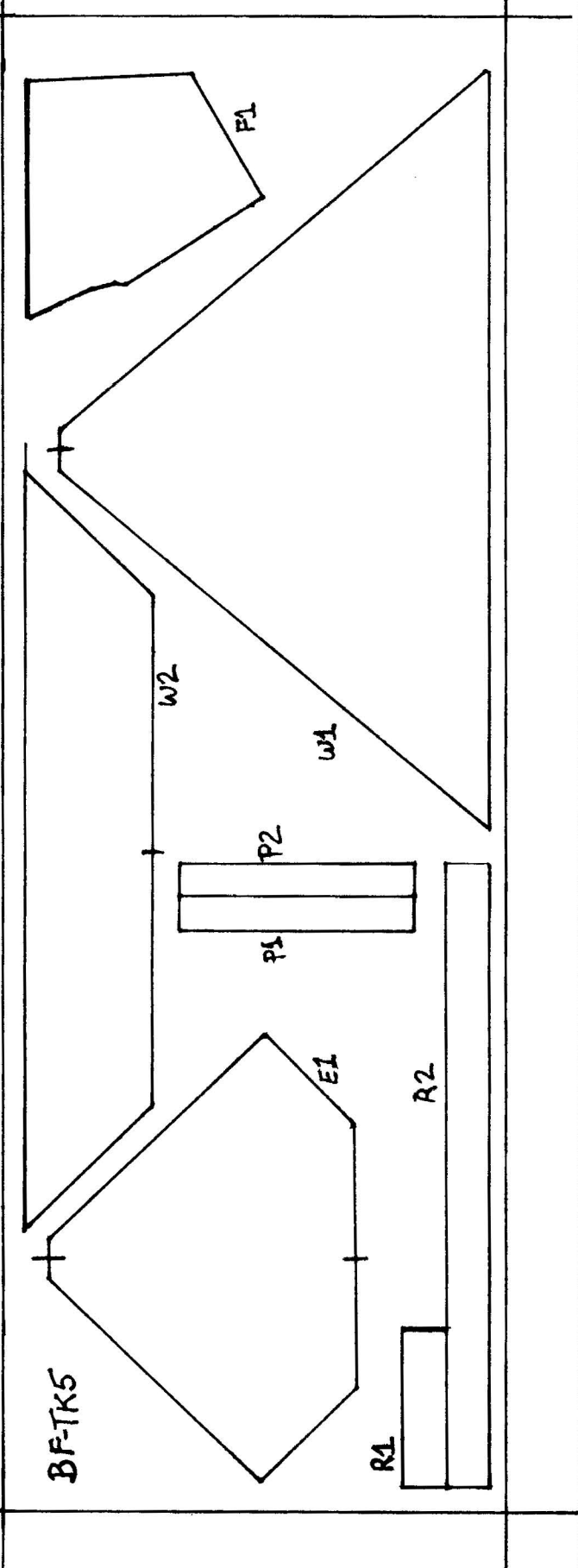


Did it spiral in? Check wing and fin alignment first. If these are perfect, trim 1/8" from the top of the tail fin and launch again. Trim up to 3/8" off in this manner.

BE SURE TO FOLLOW THE HIAA—NAR MODEL ROCKETRY SAFETY CODE WHEN CARRYING OUT ALL YOUR MODEL ROCKETRY ACTIVITIES.

E - BF-TK5  
 F - 1/16" x 3" x 9"

A - CLAY 1/2" x 1/2" x 3/8"  
 B - DOWEL 7/8" x 1" x 8/16"  
 C - 1/8" x 3/16" x 9"  
 D - 1/8" x 3/16" x 2 7/8"





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