



Model Rocket Safety Code

- 1. Materials.** I will use only lightweight, non-metal parts for the nose, body, and fins of my rocket.
- 2. Motors.** I will use only certified, commercially-made model rocket motors, and will not tamper with these motors or use them for any purposes except those recommended by the manufacturer.
- 3. Ignition System.** I will launch my rockets with an electrical launch system and electrical motor igniters. My launch system will have a safety interlock in series with the launch switch, and will use a launch switch that returns to the "off" position when released.
- 4. Misfires.** If my rocket does not launch when I press the button of my electrical launch system, I will remove the launcher's safety interlock or disconnect its battery, and will wait 60 seconds after the last launch attempt before allowing anyone to approach the rocket.
- 5. Launch Safety.** I will use a countdown before launch, and will ensure that everyone is paying attention and is a safe distance of at least 15 feet away when I launch rockets with D motors or smaller, and 30 feet when I launch larger rockets. If I am uncertain about the safety or stability of an untested rocket, I will check the stability before flight and will fly it only after warning spectators and clearing them away to a safe distance.
- 6. Launcher.** I will launch my rocket from a launch rod, tower, or rail that is pointed to within 30 degrees of the vertical to ensure that the rocket flies nearly straight up, and I will use a blast deflector to prevent the motor's exhaust from hitting the ground. To prevent accidental eye injury, I will place launchers so that the end of the launch rod is above eye level or will cap the end of the rod when it is not in use.
- 7. Size.** My model rocket will not weigh more than 1,500 grams (53 ounces) at liftoff and will not contain more than 125 grams (4.4 ounces) of propellant or 320 N-sec (71.9 pound-seconds) of total impulse. If my model rocket weighs more than one pound (453 grams) at liftoff or has more than four ounces (113 grams) of propellant, I will check and comply with Federal Aviation Administration regulations before flying.
- 8. Flight Safety.** I will not launch my rocket at targets, into clouds, or near airplanes, and will not put any flammable or explosive payload in my rocket.
- 9. Launch Site.** I will launch my rocket outdoors, in an open area at least as large as shown in the accompanying table, and in safe weather conditions with wind speeds no greater than 20 miles per hour. I will ensure that there is no dry grass close to the launch pad, and that the launch site does not present risk of grass fires.
- 10. Recovery System.** I will use a recovery system such as a streamer or parachute in my rocket so that it returns safely and undamaged and can be flown again, and I will use only flame-resistant or fireproof recovery system wadding in my rocket.
- 11. Recovery Safety.** I will not attempt to recover my rocket from power lines, tall trees, or other dangerous places.

LAUNCH SITE DIMENSIONS

Installed Total Impulse (N-sec)	Equivalent Motor Type	Minimum Site Dimensions (ft.)
0.00 — 1.25	1/4A	50
1.26 — 2.50	A	100
2.51 — 5.00	B	200
5.01 — 10.00	C	400
10.01 — 20.00	D	500
20.01 — 40.00	E	1000
40.01 — 80.00	F	1000
80.01 — 160.00	G	1000
160.01 — 320.00	2 Gs	1500

TEXAS FIREFLY

FUN TO BUILD AND FLY

USES STANDARD ENGINES

TWO STAGE

BALSA FINS & NOSE CONE

LAZER CUT FINS

FLYING MODEL ROCKET KIT

SEMROC

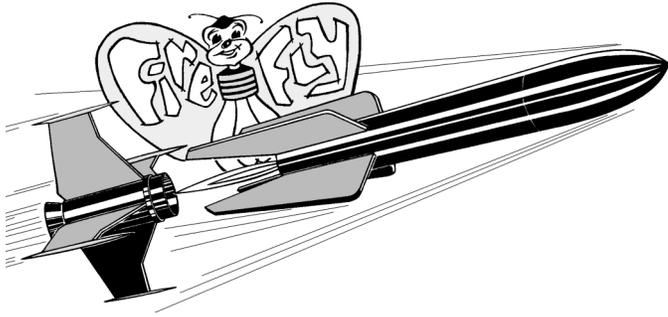
Made in the U.S.A by Semroc Astronautics Corporation - Knightdale, N.C. 27545

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TEXAS FIREFLY Kit No. KA-8

Specifications	Engine	Approx. Altitude
Body Diameter	1.34" (3.4 cm)	C6-5 (Single Stage) 700'
Length	14.3" (36.3 cm)	B6-0, B6-6 850'
Fin Span	7.2" (18.3 cm)	C6-0, C6-7 1650'
Net Weight	2.1 oz. (59.5 g)	

PARACHUTE RECOVERY



About Semroc Astronautics Corporation

Semroc Astronautics Corporation was started by Carl McLawhorn in his college dorm at North Carolina State University in November, 1967. Convincing a small group of investors in his home town of Ayden, North Carolina to invest in a small corporation, the company was re-incorporated as Semroc Astronautics Corporation on December 31, 1969.

Semroc produced a full line of model rocket kits and engines. At its peak, Semroc had twenty-five full time employees working at two facilities. One was for research and development, printing, shipping, and administration. The other was outside town and handled all production and model rocket engine manufacturing. For several years, Semroc was successful selling model rocket kits, supplies, and engines by mail-order and in hobby shops. In early 1971, Semroc became insolvent and had to close its doors.

After 31 years of dreams and preparations, Semroc Astronautics Corporation was reincorporated on April 2, 2002 with a strong commitment to helping put the fun back into model rocketry.

July 27, 2005

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Box 1271 Knightdale, NC 27545 (919) 266-1977

LIMITATION OF LIABILITY

Model rockets are not toys, but are functional rockets made of lightweight materials and are launched with NAR or Tripoli safety certified model rocket motors, electrically ignited and flown in accordance with the NAR Model Rocket Safety Code. If misused, model rockets can cause serious injury and property damage. Semroc certifies that it has exercised reasonable diligence in the design and manufacture of its products. Semroc cannot assume any liability for the storage, transportation, or usage of its products. Semroc shall not be held responsible for any personal injury or property damage whatsoever arising out of the handling, storage, use, or misuse of our products. The buyer assumes all risks and liabilities therefrom and accepts and uses Semroc products on these conditions.

Your purchase and use of any Semroc products is construed as your agreement to and acceptance of these terms. If you do not agree to these terms and conditions, you must return the product, unused, for refund or credit.

100% SATISFACTION GUARANTEE

If you are not 100% satisfied with your Semroc product, we will make it right by providing whatever you consider fair, from refund to replacement.

Contact us at:

Semroc Astronautics Corporation

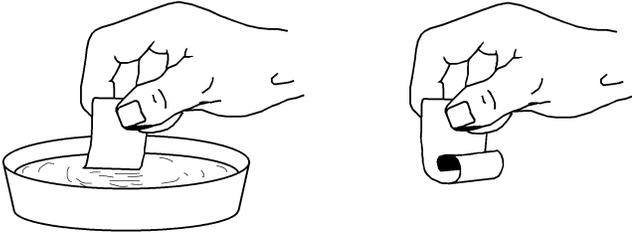
Customer Service Department
P.O. Box 1271
Knightdale, North Carolina 27545

JOIN THE NAR!

Sign up online at www.nar.org to join the premier model rocketry organization. Semroc fully supports the National Association of Rocketry and recognizes it as the sport's official voice. The NAR is the oldest and largest sport rocketry organization in the world. Since 1957 over 80,000 serious sport rocket modelers have joined the NAR to take advantage of the fun and excitement of organized rocketry. It is always more fun if you fly with friends. The *Sport Rocketry* magazine is one of the best ways to keep informed of new developments in the hobby. Check online at www.semroc.com/nar for promotions just for NAR members.

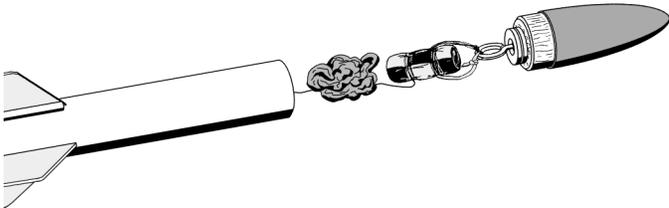


- ❑ **32.** After the paint has dried, decals should be applied. The decals supplied with the Texas Firefly are waterslide decals. Each decal should be cut separately from the sheet. Apply each decal before starting the next. Think about where you want to apply each decal and check for fit before wetting the decal. Use the cover photo as a guide for applying decals.



FLIGHT PREPPING

- ❑ **33.** Mounting the engine: Mount an engine in each stage using the engine hook to secure it. Engines used in the lower stage should always be booster engines with 0 seconds delay such as B6-0 or C6-0. Upper stage engines should be long delay. The upper stage may be flown as a single stage.
- ❑ **34.** Pack the recovery wadding from the top of the body tube. Use a sufficient quantity to protect the chute, but not too much that there is no room left.
- ❑ **35.** Roll the parachute and pack it and the shock cord on top of the recovery wadding. Slide the nose cone into place, making sure it does not pinch the shock cord or chute.



- ❑ **36.** Refer to the model rocket engine manufacturer's instructions to complete the engine prepping. Different engines have different igniters and methods of hooking them up to the launch controllers.
- ❑ **37.** Carefully check all parts of your rocket before each flight as a part of your pre-flight checklist. Launch the Texas Firefly from a 1/8" diameter by 36" long launch rod.

About the Texas Firefly™

The Semroc Texas Firefly™ is a 175% upscale of the Centuri Firefly that was released in 1968. Billed as "the world's smallest two-stage rocket" the Centuri Firefly used the new "Shorty" engines that were one inch shorter than standard engines allowing a shorter than usual two-stage design. The short engines are long out-of-production, so flying the original Firefly is almost impossible. However, the Texas Firefly uses standard 18mm engines and is "Texas-sized" for more fun. The Centuri Firefly was catalog #KA-6 and was introduced with a price of \$1.50.

The Semroc Texas Firefly uses laser-cut balsa fins, balsa nose cone, and parachute recovery. Dual engine hooks are provided for ease of engine mounting. A unique venting system releases pressure out of the back of the booster stage to ensure more reliable upper stage ignition. Kevlar® thread and elastic cord provide an improved recovery system. A 12" two-color parachute is provided. Full-color water-slide decals make the Texas Firefly look sharp!

BEFORE YOU START!

Make sure you have all the parts included in this kit that are listed in the Parts List in the center of these instructions. In addition to the parts included in this kit, you will also need the tools and materials listed below. Read the entire instructions before beginning to assemble your rocket. When you are thoroughly familiar with these instructions, begin construction. Read each step and study the accompanying drawings. Check off each step as it is completed. In each step, test-fit the parts together before applying any glue. It is sometimes necessary to sand lightly or build-up some parts to obtain a precision fit. If you are uncertain of the location of some parts, refer to the exploded view in the center of these instructions. It is important that you always ensure that you have adequate glue joints.

TOOLS: In addition to the parts supplied, you will need the following tools to assemble and finish this kit.

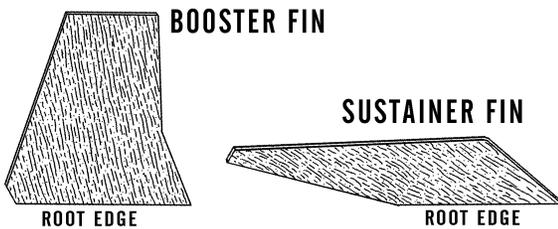


ASSEMBLY

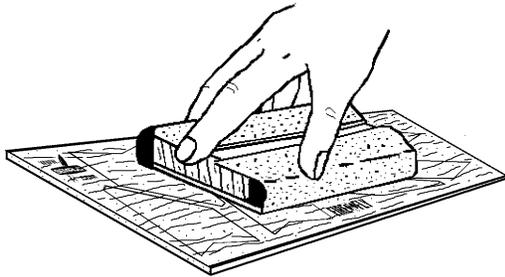
1. These instructions are presented in a logical order to help you put your Texas Firefly™ together quickly and efficiently. Check off each step as you complete it and enjoy putting this kit together.

PREPARE FINS

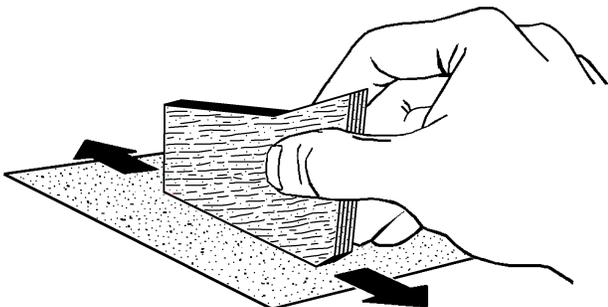
2. There are two different fin sets on the laser-cut sheets for the booster and upper stages. Use the guide below to identify the parts that are called out in these instructions.



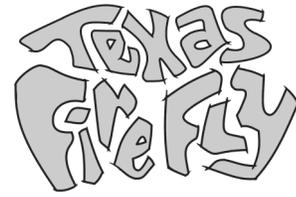
3. Lightly sand each side of each of the laser-cut fin sheets. Carefully push the laser-cut fins from their sheet. Start at one point on each fin and slowly and gently work around the fin.



4. Stack all the fins in groups of four fins each. Line each group up squarely and sand the fins back and forth over some fine sandpaper to get rid of the hold-in tabs as shown below. Round all edges except the root edges which will be glued to the body tubes.

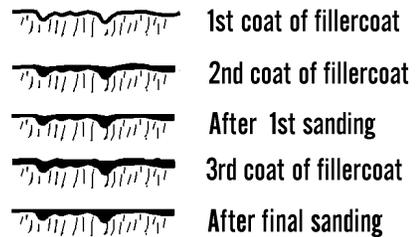


This completes the assembly of your



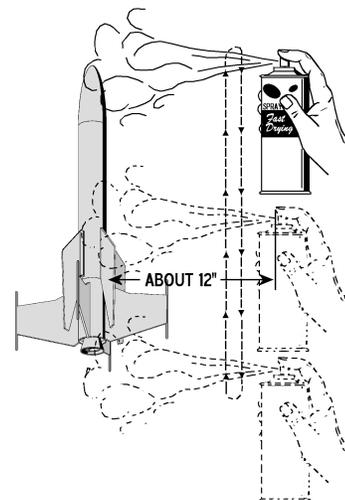
FINISHING

29. When the fillets have dried, prepare balsa surfaces for a smooth professional looking finish. Fill the wood grain with balsa fillercoat or sanding sealer. When dry, sand with fine sandpaper. Repeat until smooth.

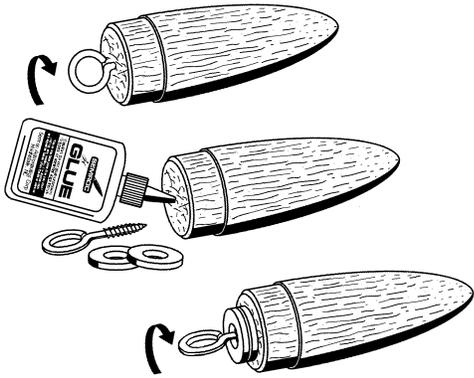


30. After all balsa surfaces have been prepared, wipe off all balsa dust with a dry cloth. First spray the model with an enamel primer. Choose a high visibility color combination like white, red, and yellow for the final color.

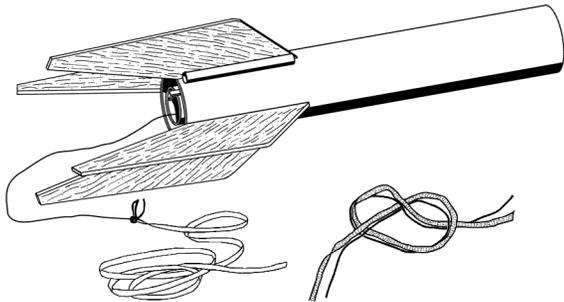
31. Spray painting your model with a fast-drying enamel will produce the best results. PATIENCE...is the most important ingredient. Use several thin coats, allowing each coat to completely dry before the next coat. Start each spray a few inches above the model and end a few inches below the model. Keep the can about 12" away and use quick light coats. The final coat can be a little heavier to give the model a glossy wet-looking finish.



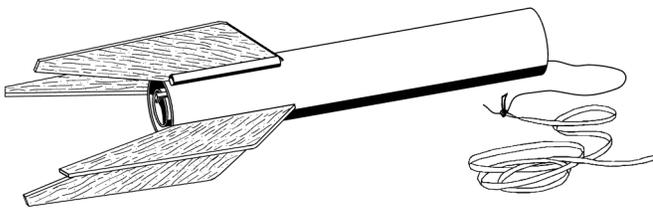
SUSTAINER ENGINE MOUNT



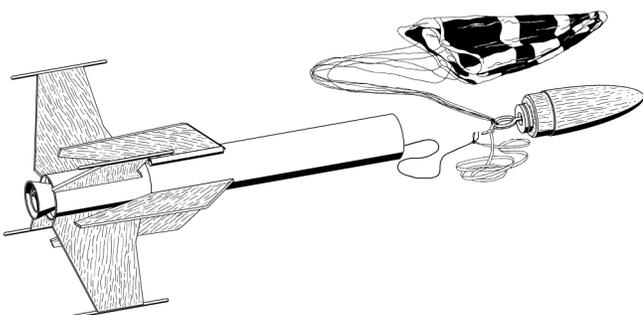
- ❑ **26.** Prepare the shock cord as follows. Line up one end of the elastic shock cord with the free end of the Kevlar® cord and tie an overhand knot at the end of the two cords. Pull the knot tight and place a small drop of white glue on the knot to prevent it from loosening.



- ❑ **27.** Feed the shock cord and yellow Kevlar® cord back through the engine mount tube and sustainer body tube until they come out the opposite end. It may be necessary to shake the tube or pull the shock cord through with a coat hanger or small wood dowel.



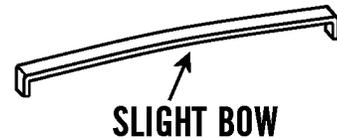
- ❑ **28.** Tie the free end of the shock cord to the screw eye in the nose cone. Assemble the chute using the instructions printed on the canopy and attach to the screw eye, as shown.



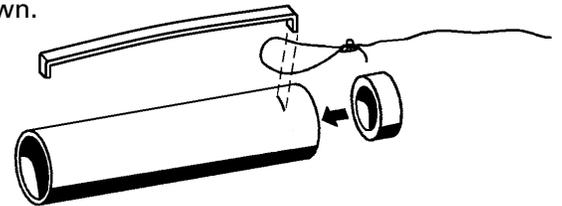
- ❑ **5.** Tie a loop in one end of the yellow Kevlar® cord using an overhand knot.



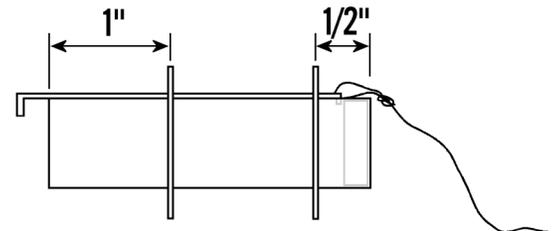
- ❑ **6.** Bend the engine hook slightly so it forms a slight bow in the direction shown.



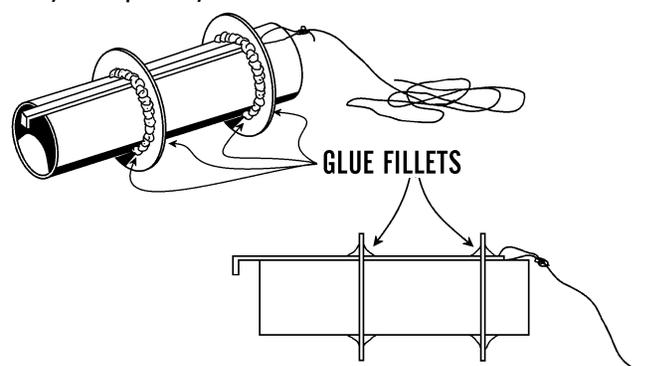
- ❑ **7.** Insert one end of the engine hook through the loop in the yellow Kevlar® cord and into the pre-punched engine tube slot. Glue the thrust ring in the top of the engine tube against the engine hook as shown.



- ❑ **8.** Punch out the two centering rings that do not have the four vent holes. Slide the two centering rings onto the engine tube. Position them to the approximate locations as shown.

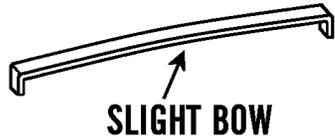


- ❑ **9.** Apply a heavy fillet of glue around both sides of each centering ring at the joints with the engine mount tube. Continue turning the assembly until the glue does not run. Set the assembly aside to dry completely.

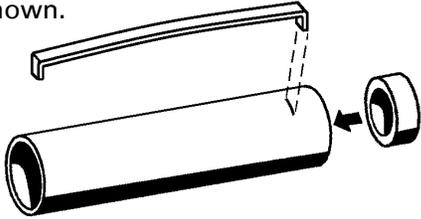


BOOSTER ENGINE MOUNT

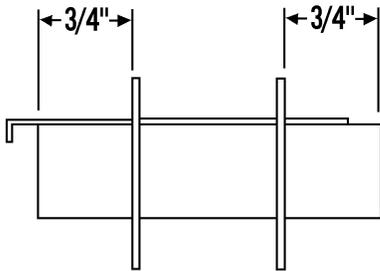
- ❑ **10.** Bend the remaining engine hook slightly so it forms a slight bow in the direction shown.



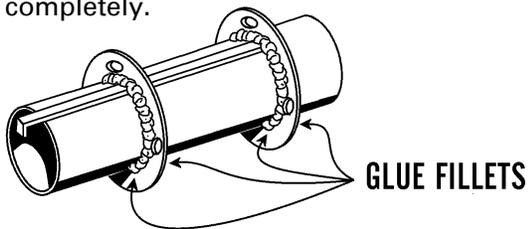
- ❑ **11.** Insert one end of the engine hook into the pre-punched engine tube slot. Glue the thrust ring in the top of the engine tube against the engine hook as shown.



- ❑ **12.** Punch out the two remaining centering rings with the four vent holes. Slide the two centering rings onto the second engine tube. Position them to the approximate locations as shown.



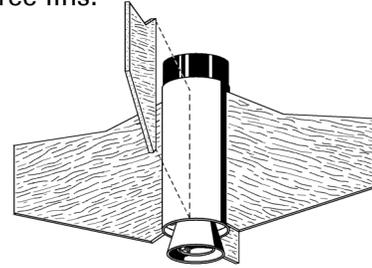
- ❑ **13.** Apply a heavy fillet of glue around both sides of each centering ring at the joints with the engine mount tube. Continue turning the assembly until the glue does not run. Set the assembly aside to dry completely.



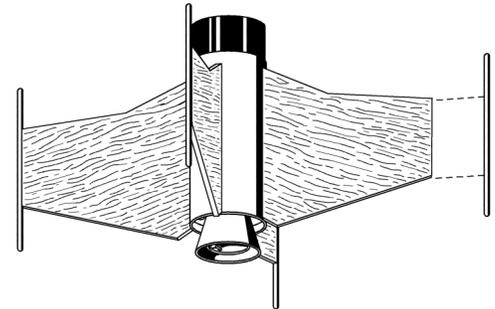
SUSTAINER FINS

- ❑ **14.** Stand the longer sustainer body tube on the fin guide at the top of the next page and make the fin position marks on the sides of the tube. Find a convenient channel or groove such as a partially open drawer, a door jamb (as shown,) or a piece of molding. Using the channel, extend the marks the full length of the tube to provide lines for aligning the fins. Repeat for the shorter booster body tube.

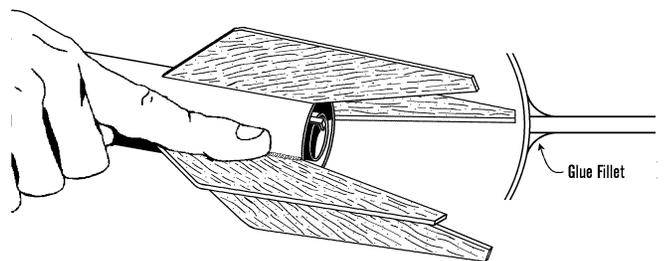
- ❑ **22.** Apply glue to the root edge of a booster fin and position it along one of the lines drawn on the side of the body tube. Remove, allow to dry, apply additional glue, and reposition. Repeat for the other three fins.



- ❑ **23.** CAUTION: If small children are likely to come in contact with the finished rocket, skip this step. Slightly round the ends of the fin spikes with sandpaper. Glue the spikes on the tips of each of the booster fins. Center each spike.



- ❑ **24.** After the fin assemblies are completely dry, run a small bead of glue along both sides of each fin-body tube joint. Using your forefinger, smooth the glue into fillets.



FINAL ASSEMBLY

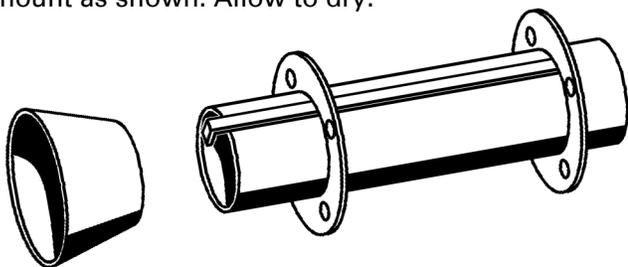
- ❑ **25.** Check the nose cone for fit. If it is too tight, it may be sanded slightly to fit. If it is too loose, masking tape may be used to make it tighter. Turn the screw eye into the center of the base of the nose cone. Unscrew it and squirt glue into the hole. Insert the screw eye into the two nose weights. Reinstall the screw eye snug against the nose weights and wipe off any excess glue.

BOOSTER FINS

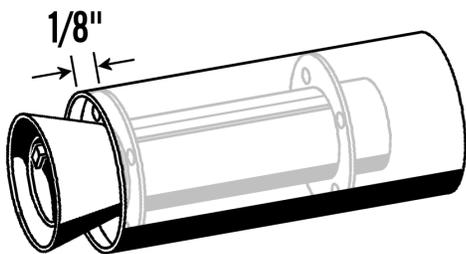
- ❑ **18.** Carefully cut out the paper shroud. Roll the shroud carefully forming it into a double thickness ring. Form this carefully to avoid creasing the paper. Apply glue on the overlapped portion and press together on a flat surface. Set the adapter nozzle cone aside to dry.



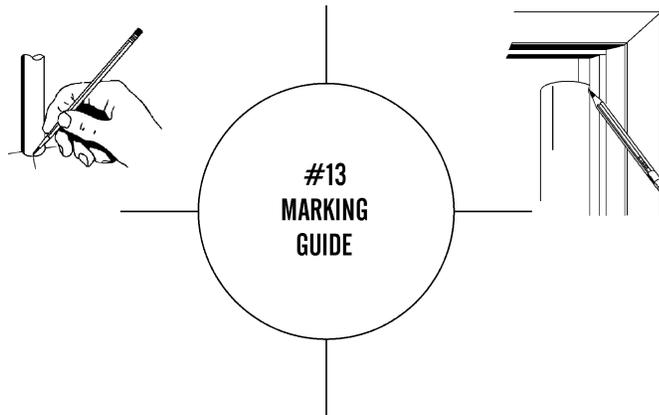
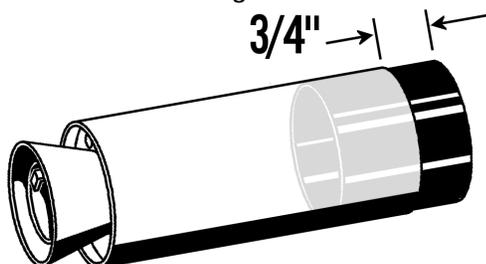
- ❑ **19.** Apply glue to the small end of the shroud and slide it over the end of the lower stage engine mount as shown. Allow to dry.



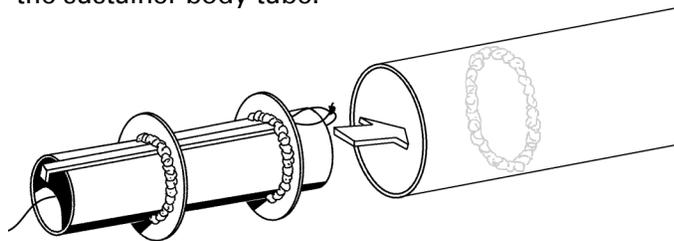
- ❑ **20.** Apply a bead of glue inside the bottom end of the booster body tube. Slide the lower engine mount into the body tube until it is recessed 1/8" from the end. Run a bead of glue around the bottom centering ring where it contacts the body tube. Allow to dry. Make sure the holes are not blocked with glue.



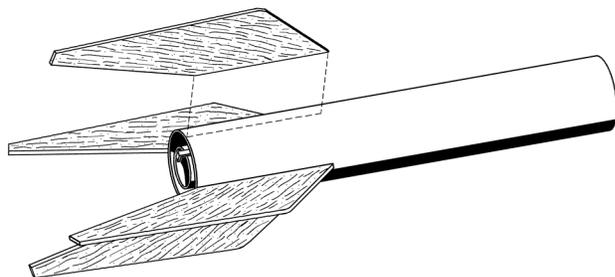
- ❑ **21.** Apply glue inside the top of the booster section. Insert the coupler into the booster tube until 3/4" protrudes out of the top of the booster section. Make sure there is no extra glue on the exposed surface or covering vent holes.



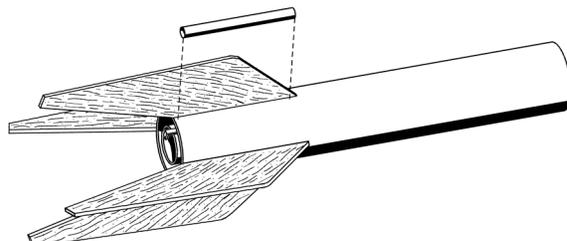
- ❑ **15.** Pull the Kevlar thread back through the sustainer engine mount as shown. Apply a bead of glue inside the sustainer body tube. Slide the sustainer engine mount in the body tube until the aft end of the mounting tube is even with the end of the sustainer body tube.



- ❑ **16.** Apply glue to the root edge of a sustainer fin and position it along one of the lines drawn on the side of the sustainer body tube. Remove, allow to dry, apply additional glue, and reposition. Repeat for the other three fins.



- ❑ **17.** Apply a bead of glue to one of the fin joints on the sustainer. Glue the launch lug even with the bottom of the sustainer.



Parts List

Exploded View

- A) 1 Body TubeST-1380
- B) 1 Body TubeST-1330
- C) 2 Body TubesST-730E
- D) 1 Balsa Nose ConeBC-1331
- E) 1 Tubing CouplerHTC-13
- F) 1 Centering Ring SetCR-KA-8
- G) 1 Laser Cut FinsFA-8
- H) 2 Thrust RingTR-7
- I) 1 Launch LugLL-122
- J) 2 Engine HookEH-28
- K) 1 Screw EyeSE-12
- L) 2 Washer WeightsWW-8
- M) 1 Elastic CordEC-124
- N) 1 Kevlar ThreadSCK-24
- O) 1 Plastic ParachuteRC-12
- P) 1 Tape DiscsTD-6
- Q) 1 Shroud LineSLT-6
- R) 1 ShroudIKA-8S
- S) 1 DowelWD-212
- T) 1 DecalDKA-8

