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

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

TAURUS™
Kit No. KV-42

Specifications		Engine	Approx. Altitude
Body Diameter	1.34" (3.4cm)	A8-3	125'
Length	23.5" (59.7cm)	B6-4	350'
Fin Span	6.6" (16.8cm)	C6-5	850'
Net Weight	1.8 oz. (51.0g)		

PARACHUTE RECOVERY

What is a Retro-Repro?

A Retro-Repro™ is a retro reproduction of an out-of-production model rocket kit. It is a close approximation of a full scale model of an early historically significant model rocket kit from one of the many companies that pioneered the hobby over the past half century. A Retro-Repro™ is not a true clone or identical copy of the original. It incorporates improvements using modern technology, while keeping the flavor and build appeal of the early kits.

About Centuri Engineering Company

Centuri Engineering Company was started in 1961 by Leroy (Lee) Piester in his garage while he was still in college in Phoenix, Arizona. With his wife, Betty, they built Centuri into one of the largest model rocket companies ever.

Centuri was known for its unusual and innovative designs, producing over 140 different kits with something for every model rocketeer. They also produced model rocket engines and pioneered the modern composite high powered engines with their Enerjet line.

Centuri Engineering was sold to Damon in the late 1960's and shared the same parent corporation with Estes Industries, the largest model rocket company in the world. The Centuri product line was kept separate from the Estes line until 1983. A few of the old kits have been reissued by Estes since then, but for the most part, Centuri Engineering Company lives today only in the dreams of the senior members of the model rocket community.

July 15, 2006

Copyright © 2006 Semroc Astronautics Corporation
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.

About the Taurus™

The Centuri Taurus Fleet Ship was initially released in 1972. It was designed to look like an alien planetary cruiser from the far away planet of Taurus. A short science fiction history was provided with the kit. Using six plastic cones and reducers, the Taurus was one of the first entries taking advantage of the less expensive balsa replacements in the transition from balsa to plastic in the early 1970's. The Centuri Taurus was introduced as catalog #KB-3 and had an initial price of $2.75.

The Semroc Retro-Repro™ Taurus™ is a modern recreation of the original. It uses all balsa parts instead of the plastic parts provided in the early model. Laser-cut balsa fins are included instead of the original die-cut parts. A slightly smaller chute is provided since the model is much lighter due to the use of balsa instead of plastic. A Kevlar® cord is provided for better shock cord retention.

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. You will also need masking tape for finishing.

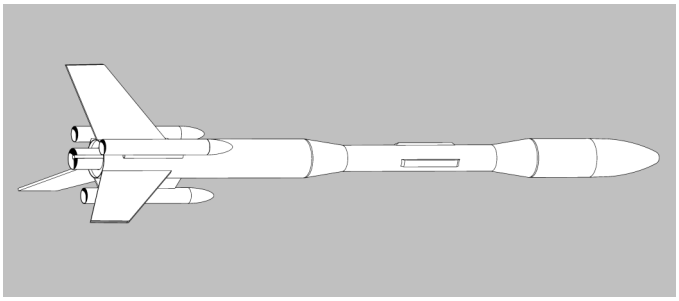
White Glue or Wood Glue | Spray Paint | Fill 'N Finish or Sanding Sealer | Fine Sandpaper 320 to 600 grit | Hobby Knife | Ruler | Pencil | Scissors

PAINTING YOUR TAURUS

Before beginning your Taurus™, it is worth taking a few minutes to decide on your paint scheme. Although you may skip to the assembly section, the Taurus was designed to be easier to paint before gluing the various sections together. There are several paint possibilities for your model:

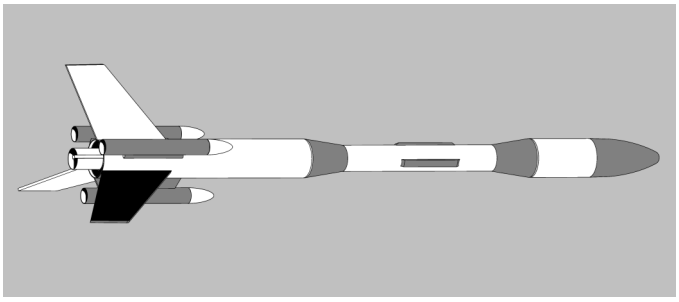
SINGLE COLOR

The easiest choice is to paint the entire model with one color, usually white or grey. This is the simplest method and you can assemble the entire model before starting to paint. The end result will not be as impressive, but it will still fly great. Perfect if you are not as interested in looks or if you just want to get it in the air as soon as possible!



SECTIONAL COLORS

The second easiest possibility is to paint the different sections with different colors. Use contrasting colors like red and white, or orange and grey to get a different look. The decals work best on white or another light color, so think about where you want to apply the decals before you paint. The Taurus™ lends itself to section painting since each piece can be masked and painted separately. With good color choices, this method can be made quite impressive. It has the beginnings of the final color choice, Admiralty Colors.



FLIGHT PREPPING

❑ **30.** Insert an engine in the Taurus™, making sure the engine hook captures the base of the engine.

❑ **31.** Pack the recovery wadding from the top of the body tube. Use a sufficient quantity to protect the parachute, but not too much that it will interfere with the proper deployment of the parachute. For best results, only push the recovery wadding down far enough to allow room for the chute and cords.

❑ **32.** Fold the parachute and pack it and the shock cord on top of the recovery wadding. Slide the payload section into place, making sure it does not pinch the shock cord or parachute.

❑ **33.** 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.

❑ **34.** Carefully check all parts of your rocket before each flight as a part of your pre-flight checklist. Launch the Taurus™ from a 1/8" diameter by 36" long or longer launch rod.

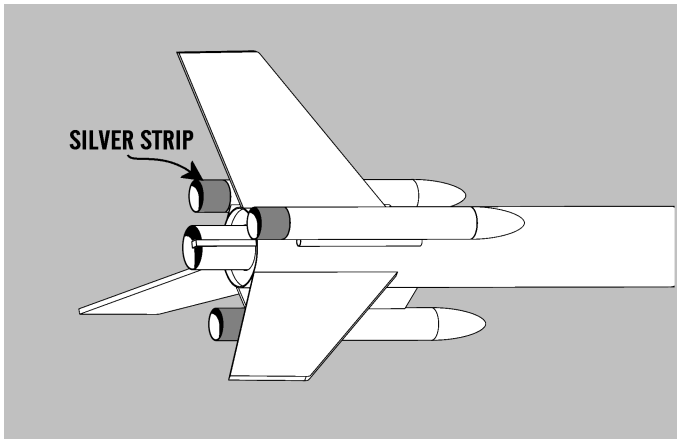
❑ **35.** After each flight, remove the spent engine casing and clean the model thoroughly for many hours of fun flying with your Taurus™!

FINISHING

❑ **27.** If you have been painting as you were assembling your Taurus™, you are probably almost through now. If not, go back to the beginning for tips on painting your model.

❑ **28.** Refer to the photo on the front of the instructions for decal placement. The decals supplied 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. Soak each decal in water for about 30 seconds or until it slides easily off the backing paper. Slide the decal off the paper and onto the model surface. Blot dry using the backing paper.

❑ **29.** Three pressure sensitive metallic silver strips are supplied. They should be cut to fit the end of the pod tubes. The length is correct, but the width may have to be cut smaller to fit.

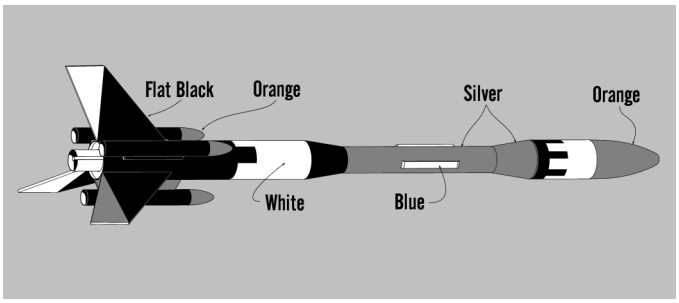


This completes the assembly of your

TAURUS FLEET SHIP

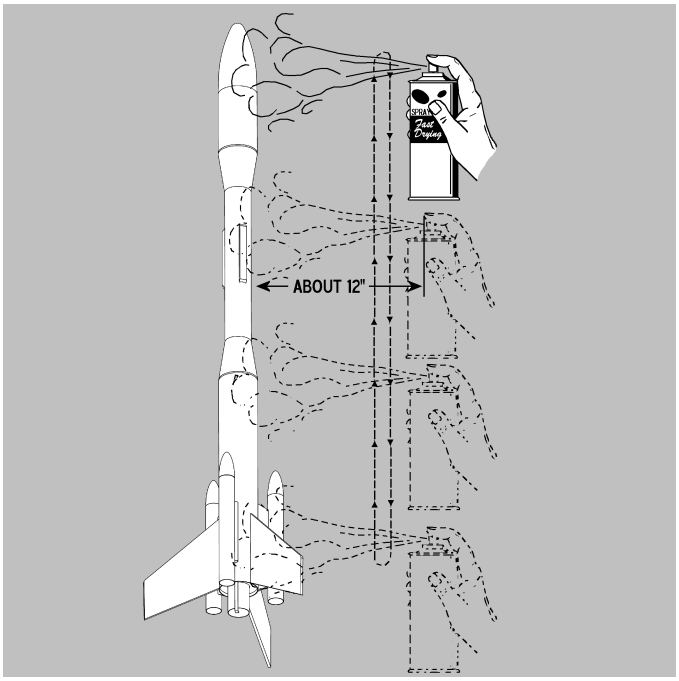
ADMIRALTY COLORS

The Taurus™ on the cover is painted in Taurian Admiralty Colors. This is the most challenging method and makes your model closer to a scale model of an actual Taurus™ Command Fleet Ship. You will need masking tape to mask off the fins, and roll patterns. You will also need to mask off all the shoulders on the balsa parts so they will still fit after painting. If you decide to go with Admiralty Colors, you can still make your own modifications to the paint scheme to individualize your ship.



SPRAY PAINTING

Whether you paint small pieces or the entire rocket, keep the following suggestions in mind as you complete your model: 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.

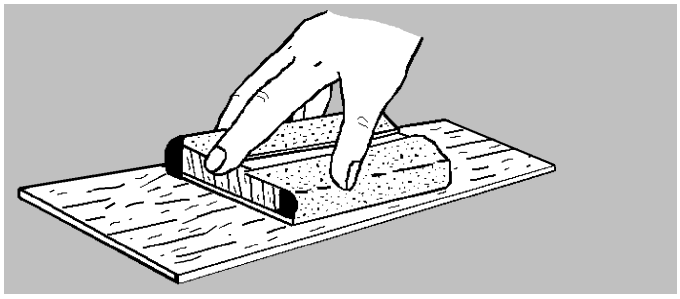


ASSEMBLY

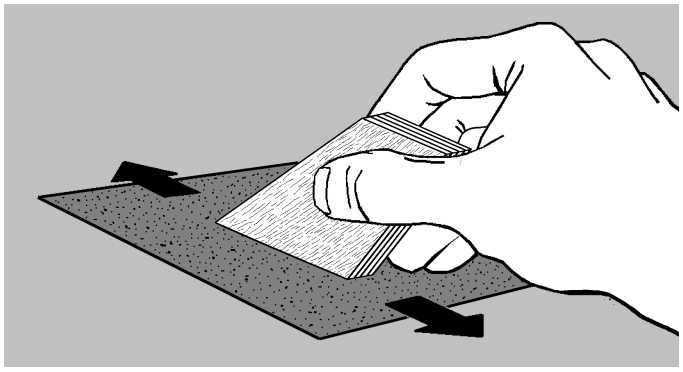
❑ **1.** These instructions are presented in a logical order to help you put your Taurus™ together quickly and efficiently. Check off each step as you complete it and we hope you enjoy putting this kit together.

BALSA PREPARATIONS

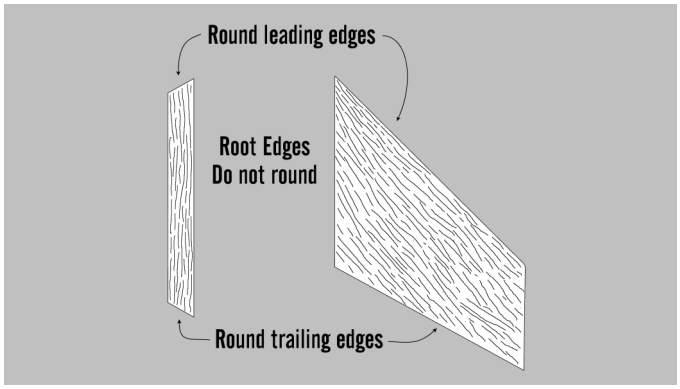
❑ **2.** Lightly sand each side of the laser-cut balsa fin sheet.

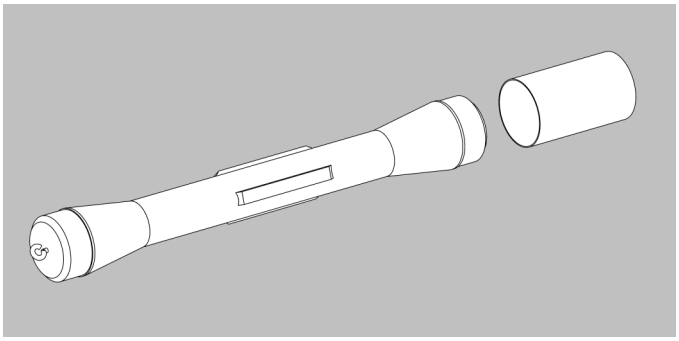


❑ **3.** Carefully remove the laser-cut fins from the balsa fin sheet. Stack the fins together and sand off the holding tabs as shown in the illustration below. Remove the pod mounts and balsa strips and sand them in groups as you did the fins. The balsa strips will require some additional sanding later.

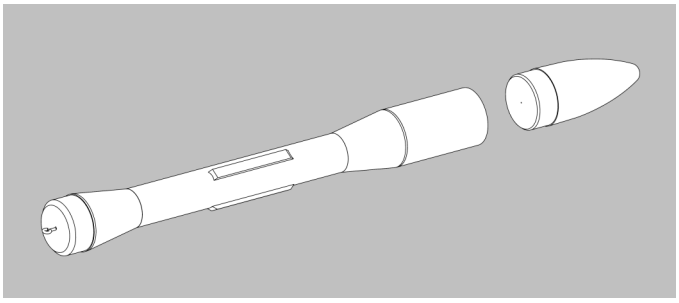


❑ **4.** You may round the leading and trailing edges of the fins but make sure not to round the root edge of the fins or pods.



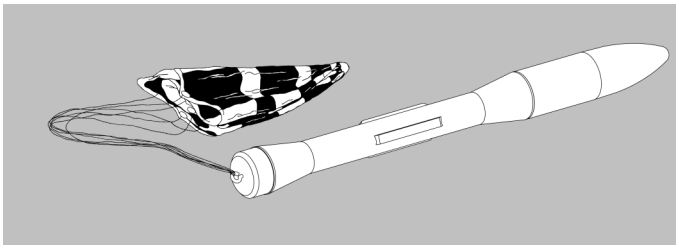


❑ **24.** Glue the nosecone to the top of the payload tube.

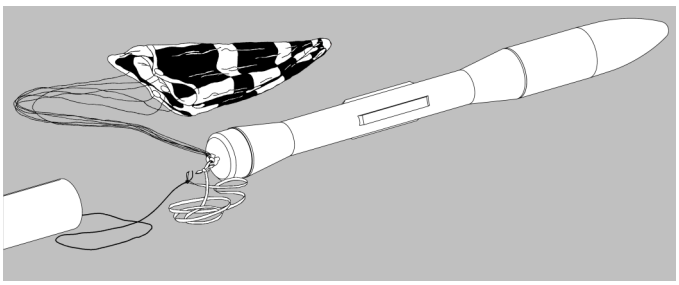


RECOVERY SYSTEM

❑ **25.** Assemble chute using instructions printed on canopy. Tie the chute to the screw eye on the payload sections. Put a drop of glue on the joint to keep the lines from moving.

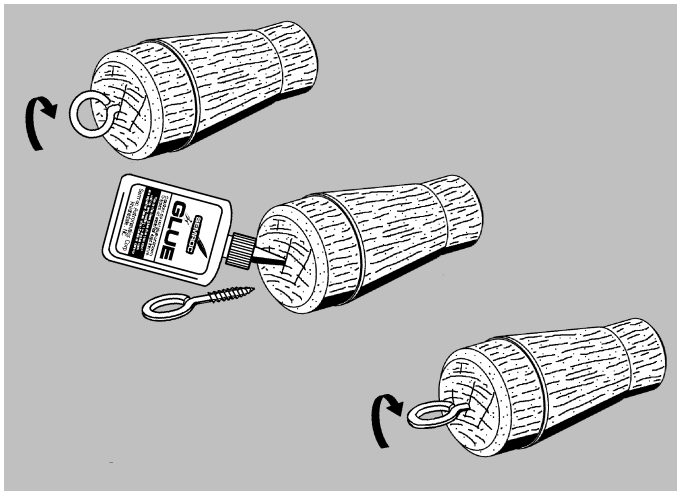


❑ **26.** Prepare the shock cord as follows. Line up one end of the elastic shock cord with the free end of the Kevlar cord extending from the top of the body tube. Tie an overhand knot at the end of the two cords. Pull the knot tight and place a small drop of white glue on the knot to prevent it from loosening. Tie the loose end of the elastic to the screw eye on the payload section.

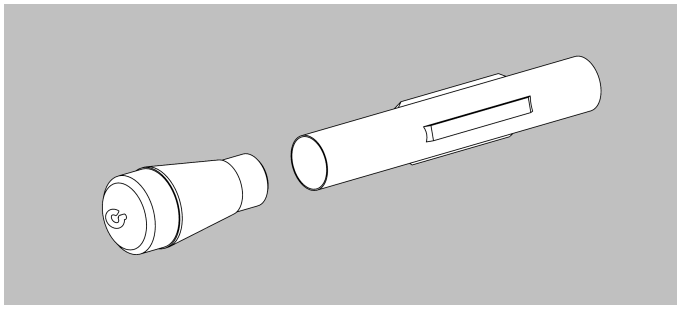


PAYLOAD SECTION

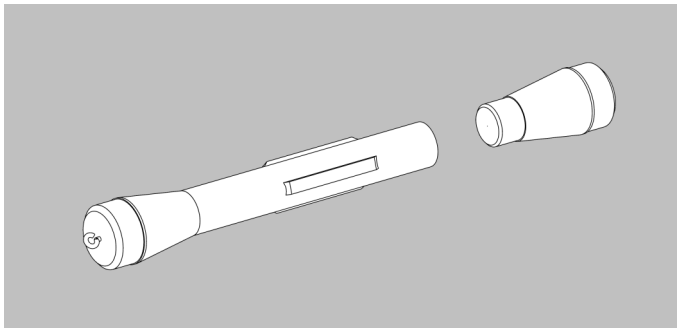
❑ **20.** Twist the screw eye into the center of the largest end of one of the balsa reducers.. Unscrew it and squirt glue into the hole. Reinstall the screw eye and wipe off any excess glue.



❑ **21.** Insert the small end of the transition with the screw eye into the middle body tube. Once you check it for fit apply an ample amount of glue to the inside of the body tube and glue the reducer in place.

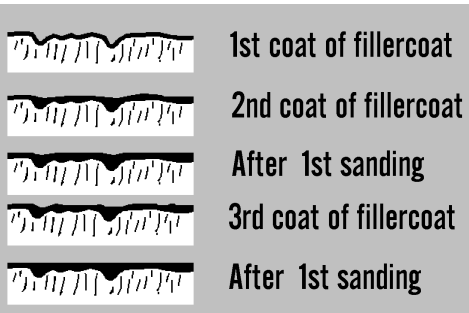


❑ **22.** Glue the other transition into the top of the middle tube.



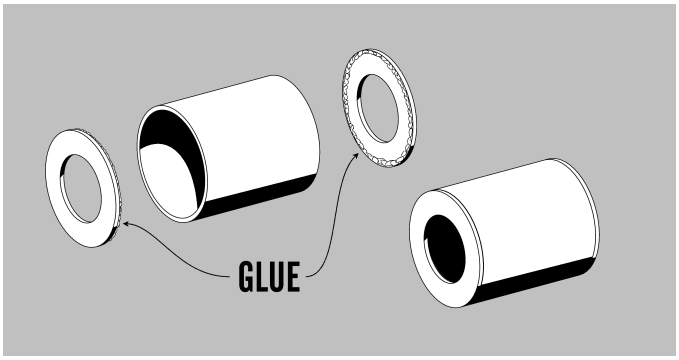
❑ **23.** Now glue the top payload tube (ST-1322) onto the top reducer.

❑ **5.** Prepare all balsa surfaces for a smooth professional looking finish. Fill the wood grain with diluted Fill n' Finish or sanding sealer. When dry, sand with fine sandpaper. Repeat until smooth.

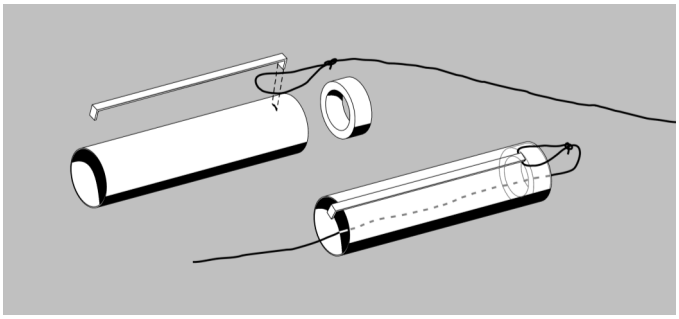


ENGINE MOUNT

❑ **6.** Apply glue around the edge of one centering ring and apply to one end of the hollow tube coupler. Repeat with the other ring on the opposite end of the tube coupler. Refer to the illustration below. Wipe any glue from the outside of the rings. Set this assembly aside to dry.

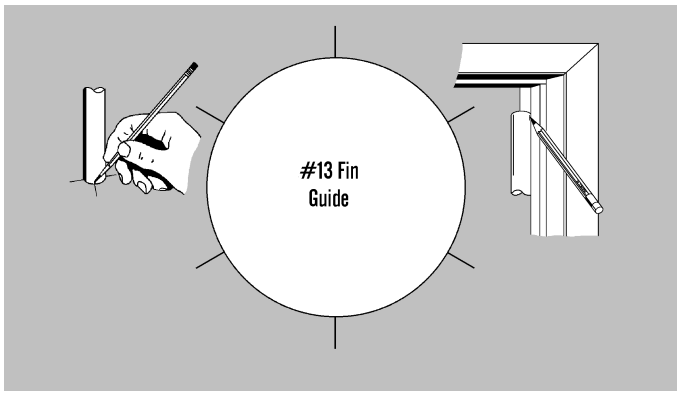


❑ **7.** Tie an overhand knot in one end of the Kevlar® cord. Insert one end of the engine hook through the knot and into the precut slot in the engine mount tube (ST-730E). Apply glue to the inside of the end closest to the precut slot and slide the thrust ring into the tube. Push the thrust ring in until it is flush with the end of the engine tube. Apply a drop of glue over the end of the hook where it enters the tube. Run the cord back through the engine tube and set this assembly aside to dry.

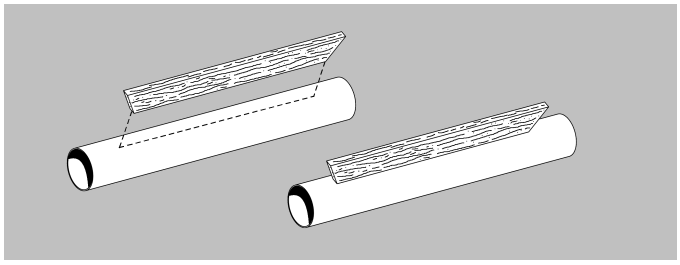


FINS AND PODS

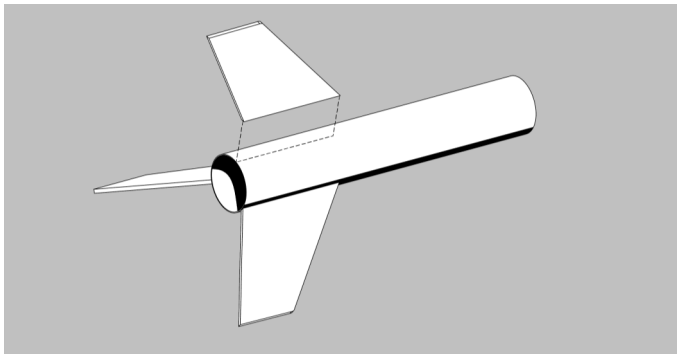
❑ **8.** Using the fin marking guide mark the locations of the fins and the pods on the longest body tube. Using a drawer, angle strip, or door jam to extend all six lines for the length of the tube.



❑ **9.** Next glue the balsa pod mounts onto the smaller pod tubes. Apply a fillet around the base of the balsa to glue it into place. Repeat for the other two pods.

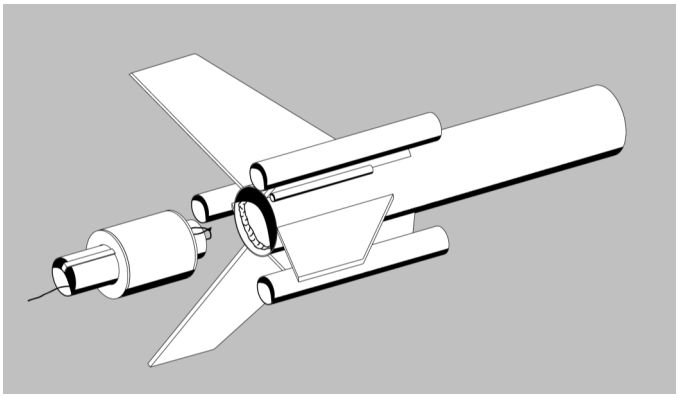


❑ **10.** Glue the three fins to the tube along every other mark and make sure they are lined up with your marks and the root edge is flush with the end of the tube. Check to make sure that the fins are at a 120 degree angle as shown in the drawing below.

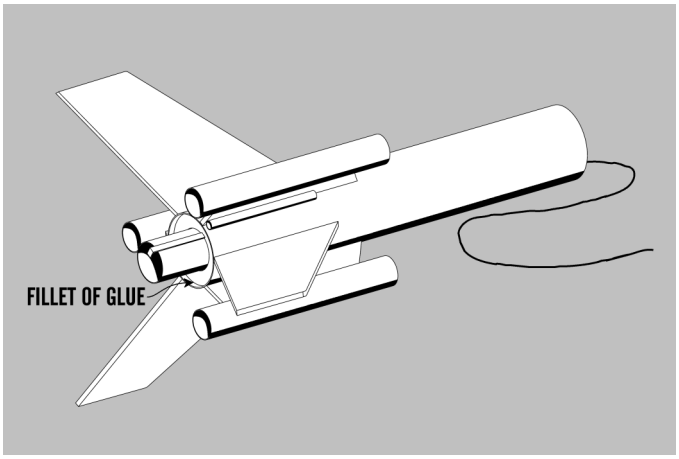


❑ **11.** After the pods have dried glue the complete assemblies in between each of the fins making sure that they are aligned properly. They need to be parallel to the long axis of the rocket.

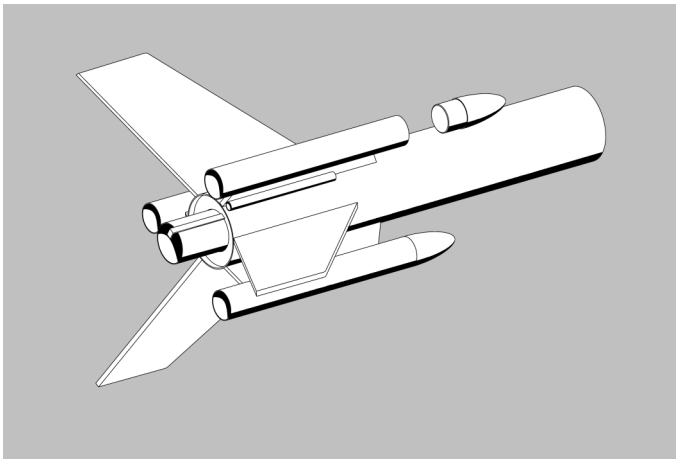
❑ **17.** Sand the outside of the engine tube assembly so it will fit easily in the main body tube. Apply an ample amount of glue to the inside of the main body tube as shown. Insert the engine mount assembly until the bottom centering ring is about 1/16" into the main body tube. Don't stop until the assembly is in place or the glue may set in the wrong place.



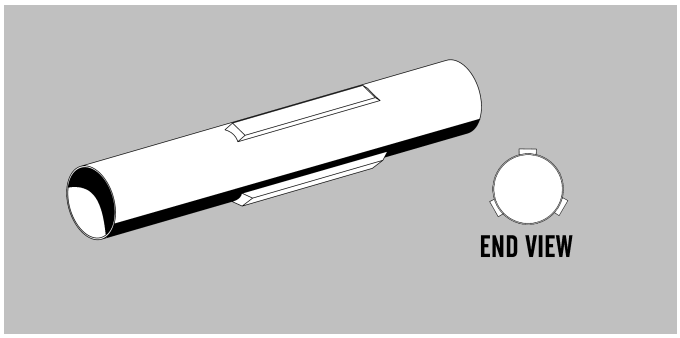
❑ **18.** Apply a bead of glue around the bottom joint. Shake the Kevlar cord back through the top of the main tube.



❑ **19.** Glue the small nosecones into the tops of the pods with the nosecones pointing towards the top of the rocket.

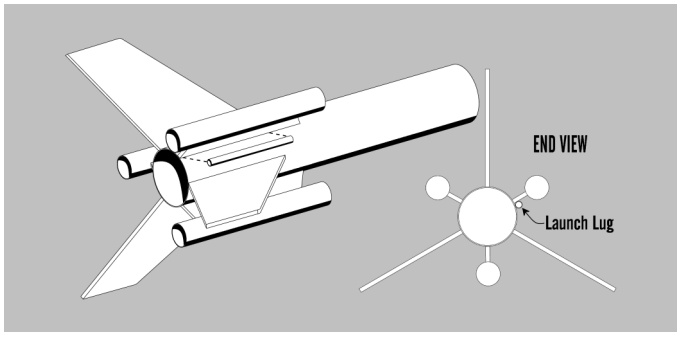


❑ **14.** Unwrap the sandpaper from the middle body tube and glue the three instrument tunnels on the sides, spaced evenly around the center of the tube.



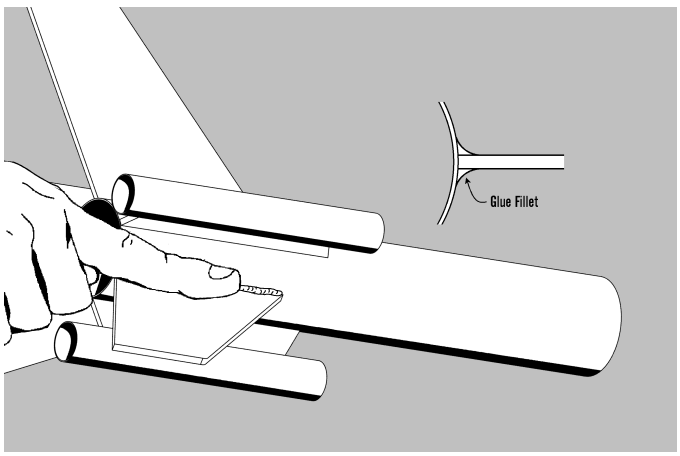
LAUNCH LUG

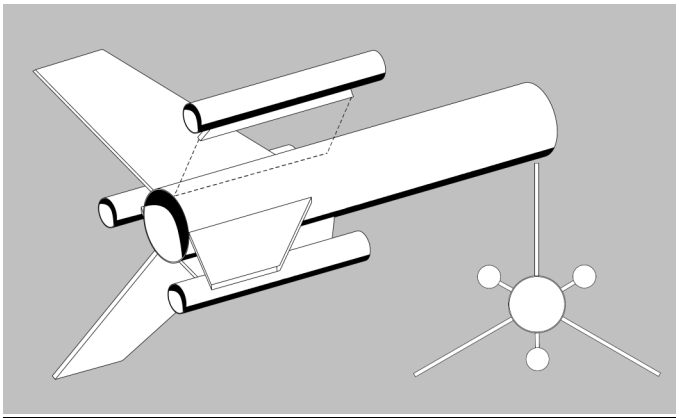
❑ **15.** Glue the launch lug along the side of one of the pods even with the bottom of the main body tube.



MAIN FINAL ASSEMBLY

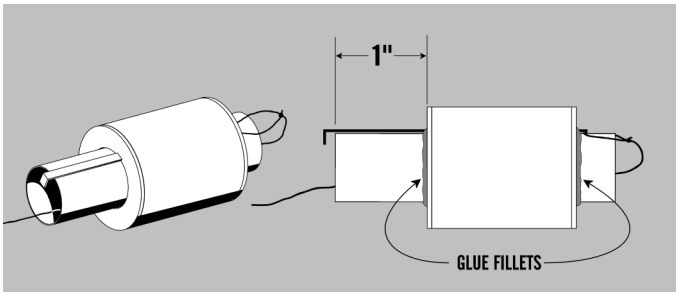
❑ **16.** Apply a fillet of glue along each fin and body tube joint. Use your finger to smooth the glue to the shape as shown. This adds much strength to the joint.





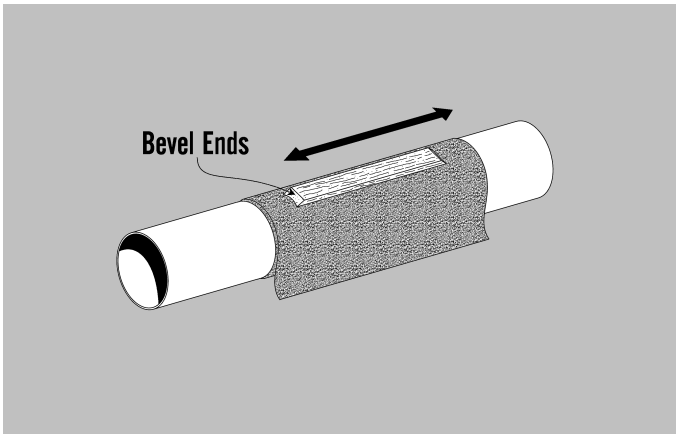
FINISH ENGINE MOUNT

❑ **12.** After the glue is completely dry on the two parts of the engine mount, slip the engine tube with hook into the sleeve tube assembly. You should have exactly one inch spacing from the end of the tube to the sleeve as shown below. Apply a good fillet of glue around each joint to secure the two pieces together. Make sure the engine hook is parallel to the engine tube. Allow to dry.



INSTRUMENT TUNNEL

❑ **13.** Locate the small rectangle strips from the laser cut sheet. These are the instrument tunnels and need to be sanded to the correct shape. Wrap a piece of sandpaper around the middle body tube (ST-857) and sand the bottoms to contour them to the shape of the tube as shown. Bevel each end at a 45 degree angle.



EXPLODED VIEW

Parts List

A	1	Body Tube	ST-1380
B	1	Body Tube	ST-857
C	1	Body Tube	ST-1322
D	3	Body Tubes	ST-540
E	1	Body Tube	ST-730E
F	1	Balsa Nose Cone	BC-1327
G	2	Balsa Reducers	BR-813P
H	3	Balsa Nose Cones	BC-510P
I	1	Laser Cut Fin Set	FV-42
J	1	Hollow Tube Coupler	HTC-13
K	1	Engine Hook	EH-28
L	1	Launch Lug	LL-122
M	1	Elastic Cord	EC-124
N	1	Kevlar® Cord	SCK-24
O	1	Screw Eye	SE-10
P	1	Thrust Ring	TR-7
Q	2	Centering Rings	CR-713
R	1	Plastic Parachute	RC-12
S	3	Shroud Lines	SLT-6
T	6	Tape Discs	TD-6
U	1	Decal	DKV-42
V	1	Pressure Sensitive Strip	DKV-42S