

About Centuri Engineering

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.

About the Excalibur™

The Excalibur™ was released in the 1972 Centuri Catalog. Introduced as a low cost big bird, the Excalibur™ was one of the longest of the smaller models. It was one of the Series 8 diameter models that would work with the #8 Booster to convert a single stage rocket to a two-stage. The Excalibur 2 was released later that combined the Excalibur with the Booster kit in one package. It was released as Catalog No. KA-8 and retailed for \$1.85.

The Semroc Retro-Repro™ Excalibur™ is very close to the original. Balsa parts are included instead of the original plastic. Fiber fins are still used, but they are laser-cut for better precision than the original die-cut parts. The shock cord mount is replaced with a Kevlar mount.

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.

June 23, 2010

Copyright © 2010 Semroc Astronautics Corporation
Box 1271 Knightdale, NC 27545 (919) 266-1977

EXCALIBUR

OVER TWO FEET TALL

SCALE-LIKE

SINGLE STAGE

EASY TO BUILD

BALSA NOSE CONE & FIBER FINS

FLYING MODEL ROCKET KIT

LASER CUT FINS

MADE IN THE USA

SEMROC

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

Excalibur™ Kit No. KV-43

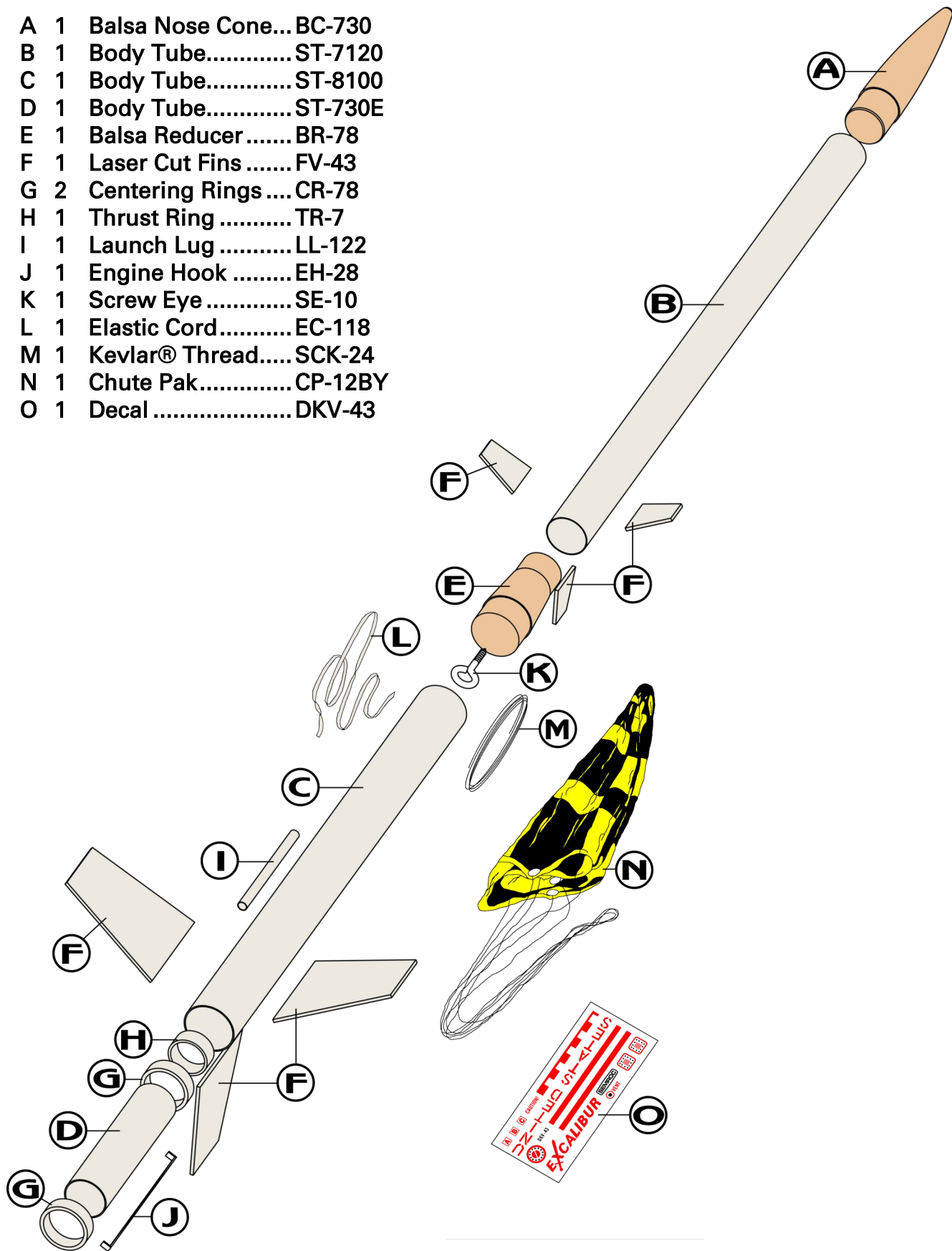
Specifications	Engine	Approx. Altitude
Body Diameter	A8-3	200'
Length	B6-4	500'
Fin Span	C6-5	1050'
Net Weight		

PARACHUTE RECOVERY

Parts List

EXPLODED VIEW

- A 1 Balsa Nose Cone... BC-730
- B 1 Body Tube..... ST-7120
- C 1 Body Tube..... ST-8100
- D 1 Body Tube..... ST-730E
- E 1 Balsa Reducer BR-78
- F 1 Laser Cut Fins FV-43
- G 2 Centering Rings CR-78
- H 1 Thrust Ring TR-7
- I 1 Launch Lug LL-122
- J 1 Engine Hook EH-28
- K 1 Screw Eye SE-10
- L 1 Elastic Cord..... EC-118
- M 1 Kevlar® Thread..... SCK-24
- N 1 Chute Pak..... CP-12BY
- O 1 Decal DKV-43



BEFORE YOU START!

Make sure you have all the parts included in this kit that are listed in the Parts List to the left 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 to the left. 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.

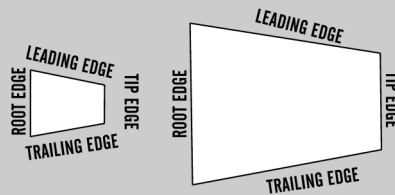


ASSEMBLY

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

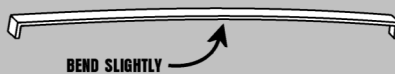
FIN PREPARATION

2. Carefully remove the six laser-cut fiber fins from the fin sheet (FV-43). For best results, lightly sand each edge and apply a thin coat of cyanoacrylate (CA) glue along each edge to seal the laminations. Identify the root edge from the drawing below.

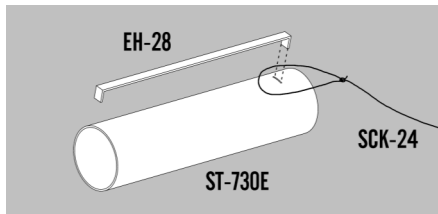


ENGINE MOUNT

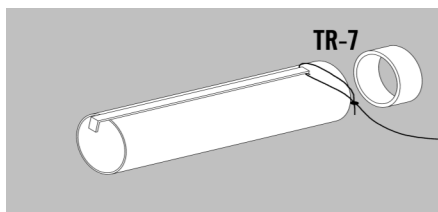
3. Bend the engine hook (EH-28) slightly so it forms a slight bow in the direction shown.



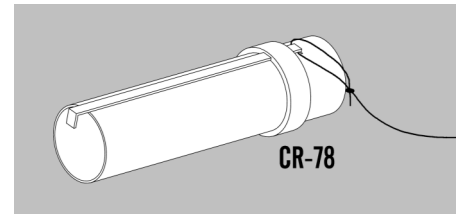
4. Tie a loop in one end of the yellow Kevlar® cord (SCK-24). Insert one end of the engine hook through the loop and into the pre-punched engine tube (ST-730E).



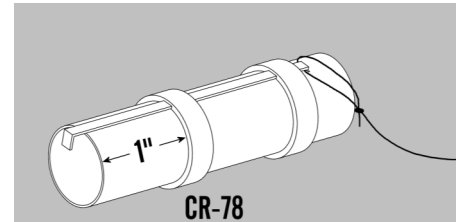
5. Glue the thrust ring (TR-7) against the top of the engine hook. After the ring is in place, run a bead of glue around the inside of the ring to protect it from the ejection gases.



6. Slide fit one of the centering rings (CR-78) over the bottom of the engine tube and against the Kevlar® cord.

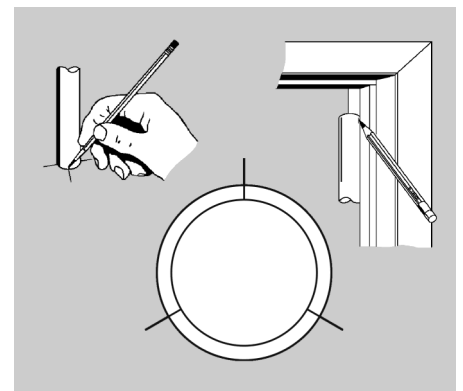


7. Slide the remaining centering ring (CR-78) over the engine hook and engine tube until it is 1" from the bottom of the engine tube. Run a fillet of glue around each side of both of the rings. Keep glue off the outside of each ring. Allow the glue to dry while checking for runs.



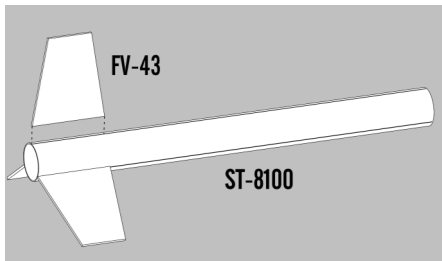
MARK TUBE

8. Stand the largest body tube (ST-8100) on the fin guide below and make the fin position marks on the sides of each 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 with the longest tube (ST-7120).

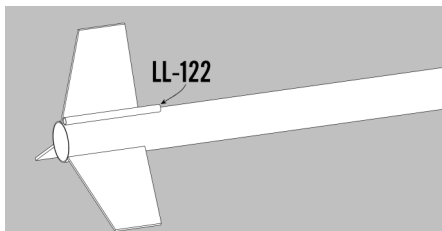


ATTACH FINS

❑ 9. Apply glue to the root edge of one of the three large fins and position it along one of the lines drawn on the side of the largest body tube (ST-8100). Remove the fin, set it aside and allow it to almost dry, apply additional glue, and reposition. Repeat for the other two fins. If you follow these instructions, the fins will not require much additional work to keep them aligned. Allow the fins to completely dry, checking carefully to make sure they are aligned properly.

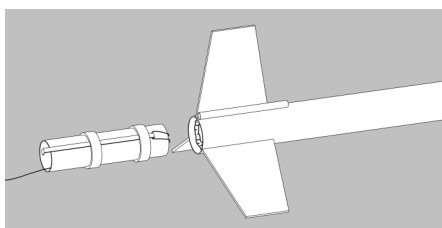


❑ 10. Apply a bead of glue to the launch lug (LL-122) and glue it against one of the fins and even with the end of the body tube. Allow to dry.

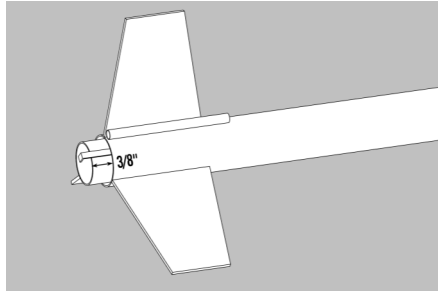


ATTACH MOUNT

❑ 11. Apply a thick bead of glue inside the aft end of the main body tube. Tuck the Kevlar cord back through the engine mount to keep it out of the way during the next step.

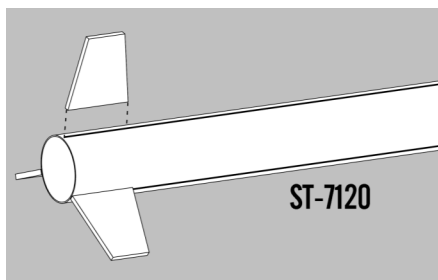


❑ 12. Insert the engine mount assembly with the thrust ring end first into the main body tube until the bottom of the engine mount tube is 3/8" from the bottom of the main body tube. **Do not stop until it is in the correct place.**

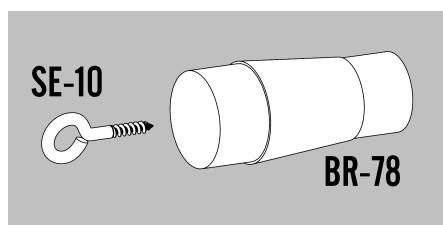


PAYLOAD SECTION

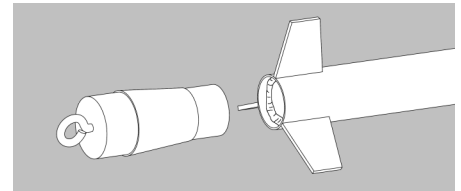
❑ 13. Apply glue to the root edge of one of the three small fins and position it along one of the lines drawn on the side of the longest body tube (ST-7120). Remove the fin, set it aside and allow it to almost dry, apply additional glue, and reposition. Repeat for the other two fins. Allow the fins to completely dry, checking carefully to make sure they are aligned properly.



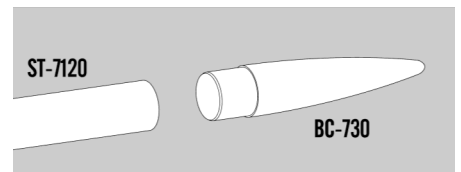
❑ 14. Turn the screw eye (SE-10) into the center of the base (largest end) of the balsa reducer (BR-78). Unscrew it and squirt glue into the hole. Reinstall the screw eye and wipe off any excess glue.



❑ 15. Check the reducer for fit in the payload tube (ST-7120). It may be necessary to sand it gently if the fit is too tight. Apply glue to the inside of the payload tube at a distance of 1/4" from the fin end. Slide the reducer into the payload tube without stopping until it is in place.

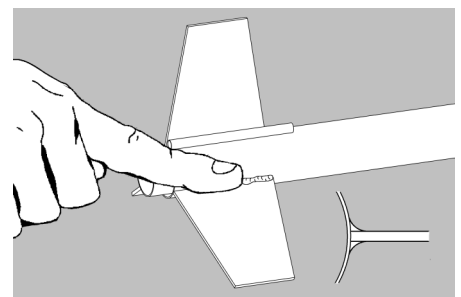


❑ 16. Insert the nose cone in the payload tube and check for proper fit. The nose cone should be snug to hold itself in alignment. If it is too loose, add masking tape. If it is too tight, sand the shoulder slightly. Do not glue the nose cone so you can access the payload area. If you will not be adding a payload, the nose cone can be glued in place.



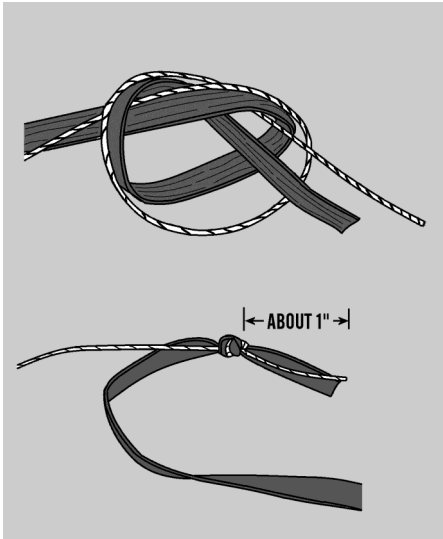
APPLY FILLETS

❑ 17. After the fin assemblies are completely dry, run a small bead of glue along both sides of each fin-body tube joint on both tubes. Using your forefinger, smooth the glue into fillets. Apply a fillet of glue on each side of the launch lug. Allow this assembly to dry in a vertical position.

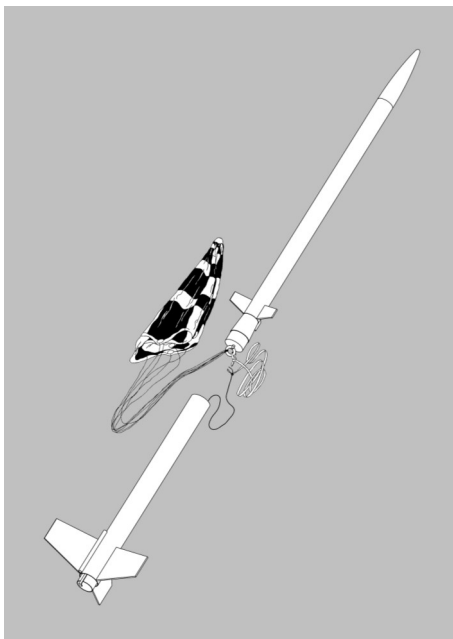


FINAL ASSEMBLY

❑ 18. Using a pencil or dowel, push the Kevlar® cord out through the top of the main body tube. Tie the free end of the Kevlar® cord to one end of the elastic cord (EC-118) using an over-hand knot.

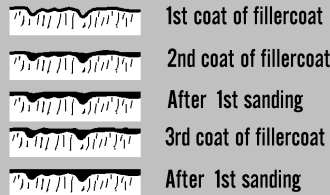


❑ 19. Assemble the chute (CP-12) using instructions printed on the canopy. Pull the lines tight on the chute and make sure they are all of equal length. Attach the chute by tying them to the screw eye. Put a drop of glue on the joint to keep the lines from moving. Attach the free end of the elastic cord to the screw eye. Put a drop of glue on that joint as well.



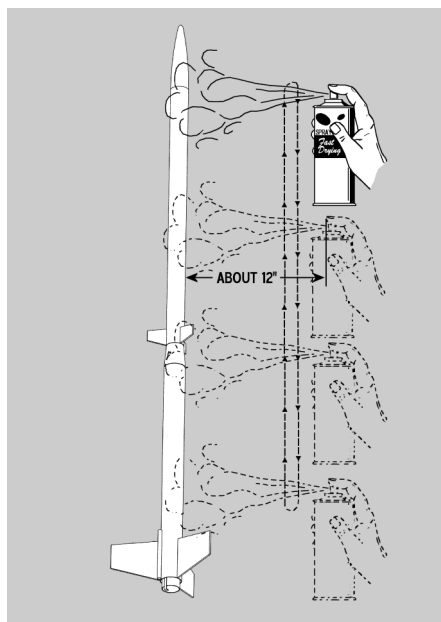
FINISHING

❑ 20. 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.

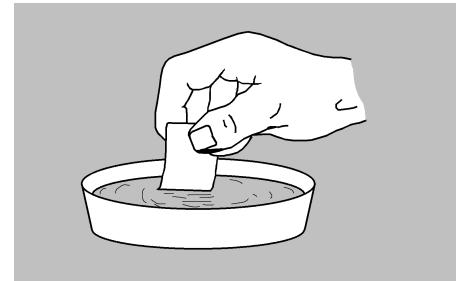


❑ 21. After all balsa surfaces have been prepared, wipe off all balsa dust with a dry cloth. First spray the model with an enamel primer. Choose a high visibility color like white for the final color.

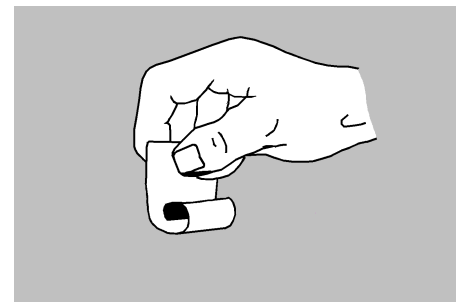
❑ 22. Spray painting your model with a fast-drying enamel will produce the best results. PATIENCE...is the most important ingredient. Use several thin coats, allowing each coat to completely dry before the next coat. Start each spray a few inches above the model and end a few inches below the model. 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.



❑ 23. After the paint has dried, decals should be applied. The decals supplied with the Excalibur™ are waterslide decals. Each decal should be cut separately from the sheet. Think about where you want to apply each decal and check for fit before wetting the decal. Use the cover photo for suggested placement. Dip each decal in a small dish of water that has a drop of detergent. It will take about 30 seconds before the decal is loose enough to apply.



❑ 24. Slide the decal in place and use the paper backing to work the bubble out. Repeat for all the decals.



This completes the
assembly of your
EXCALIBUR

FLIGHT PREPPING

25. Mounting the engine: Insert the engine and make sure the engine hook keeps the engine in snugly. The hook may be slightly bent to make sure the engine is retained.

26. Apply a few sheets of recovery wadding in the top of the main body tube. 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.

27. 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.

28. Carefully check all parts of your rocket before each flight as a part of your pre-flight checklist. Launch the Excalibur™ from a 1/8" diameter by 36" long launch rod.

29. After each flight, promptly remove the spent engine casing and dispose of properly.