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 SAM-3™

The Centuri Russian SAM-3 was first advertised in the Centuri 1878 catalog with an availability date of May 15, 1978. It was one of the four models in the new Strike Force line. It was loosely based on the actual Russian SA-3 surface-to-air missile of the Cold War era. Photos of early prototypes were closer to scale than the final released version. It was released as Catalog No. 5332 and retailed for $3.75.

The Semroc Retro-Repro™ SAM-3™ is very faithful to the released version. It is a semi-scale model that preserves the flavor of the Strike Force series. We released it as a special kit for our SAM members. The decals do not reflect either the original Russian or Centuri version, but feature the SAM mascot. Added nose weight is provided for better stability.

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.

March 28, 2011

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

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

SAM-3™
Kit No. KV-79

Specifications	
Body Diameter	1.04" (2.6 cm)
Length	13.4" (34.0 cm)
Fin Span	4.6" (11.7 cm)
Net Weight	0.8 oz. (22.7 g)

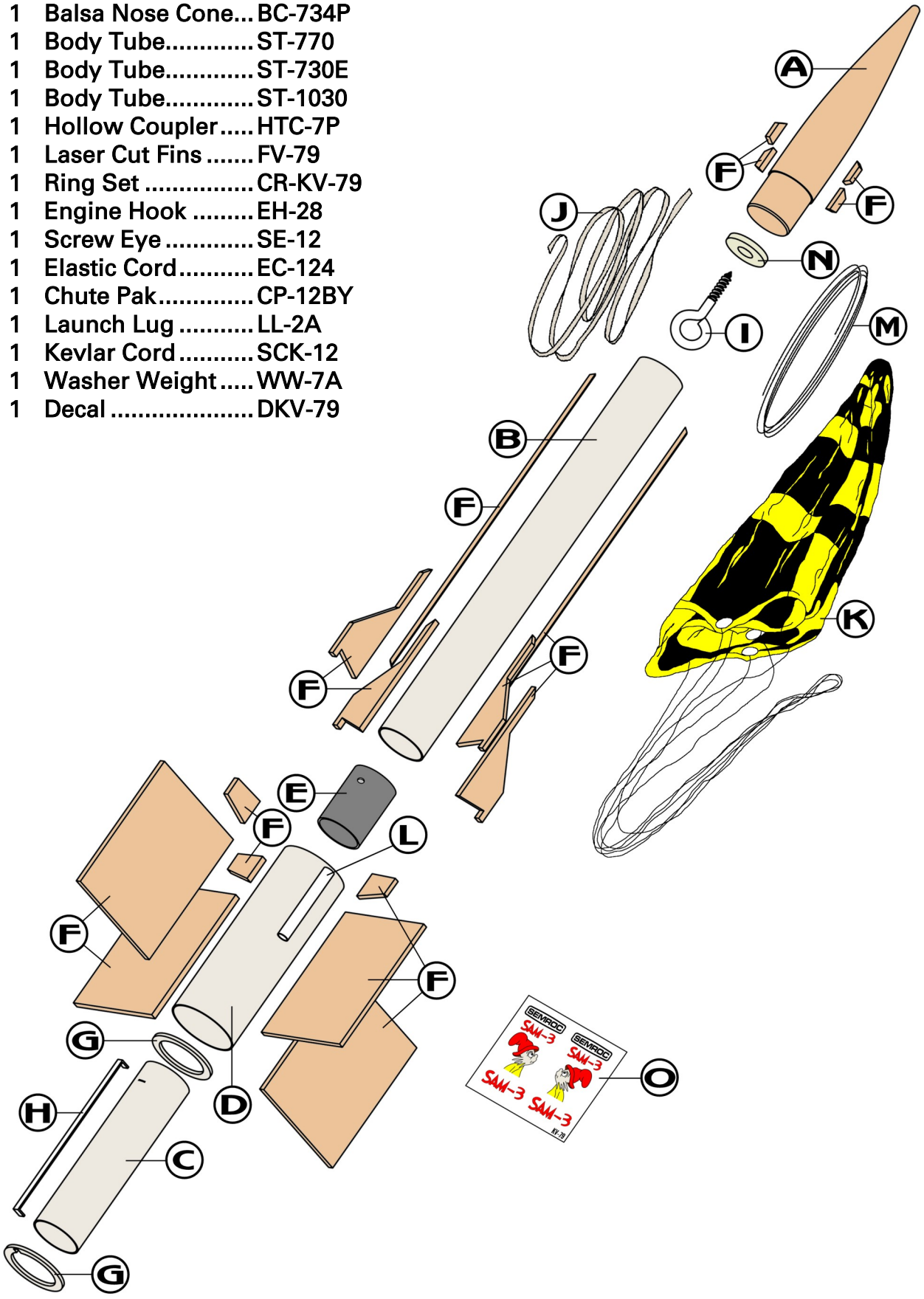
Engine	Approx. Altitude
A8-3	250'
B6-4	500'
C6-5	950'

PARACHUTE RECOVERY

Parts List

A	1	Balsa Nose Cone...	BC-734P
B	1	Body Tube.....	ST-770
C	1	Body Tube.....	ST-730E
D	1	Body Tube.....	ST-1030
E	1	Hollow Coupler.....	HTC-7P
F	1	Laser Cut Fins	FV-79
G	1	Ring Set	CR-KV-79
H	1	Engine Hook	EH-28
I	1	Screw Eye	SE-12
J	1	Elastic Cord.....	EC-124
K	1	Chute Pak.....	CP-12BY
L	1	Launch Lug	LL-2A
M	1	Kevlar Cord	SCK-12
N	1	Washer Weight.....	WW-7A
O	1	Decal	DKV-79

EXPLODED VIEW



BEFORE YOU START!

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

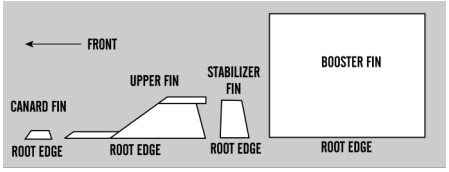
In addition to the parts supplied, you will need the following tools to assemble and finish this kit. Masking tape and wax paper are also needed.

ASSEMBLY

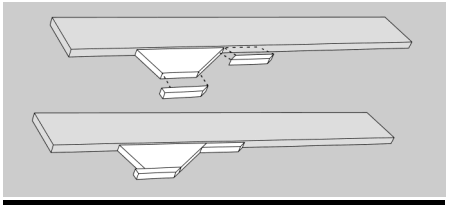
❑ **1.** These instructions are presented in a logical order to help you put your SAM-3™ together quickly and efficiently. Check off each step as you complete it and we hope you enjoy putting this kit together.

FIN PREPARATION

❑ **2.** Sand both sides of the fin sheet (**FV-79**). Remove all the parts and stack in like groups. It is easier for some modelers to round the small parts after they are glued to the body tube due to their size. Identify the various fins from the diagram below. Keep all root edges flat. Round the other edges of the booster, stabilizer, and canard fins. Wait until all the parts of the upper fin are assembled before sanding.

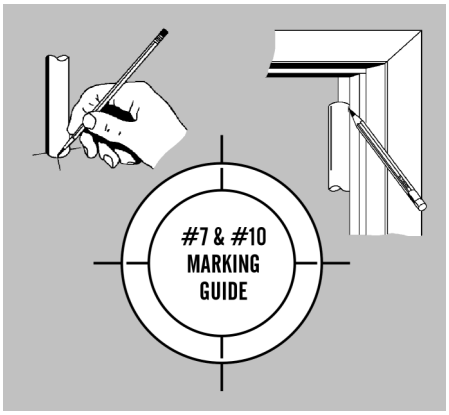


❑ **3.** Assemble the three parts for the upper fins as shown. Align them with a straightedge on a flat surface covered with wax paper. Glue the parts together as shown and allow to dry. After they are completely dry, round all the edges except the root edge.



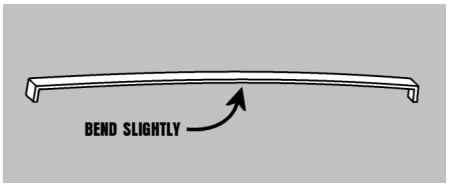
MARK TUBES

❑ **4.** Stand the long body tube (**ST-770**) on the inner circle of fin guide below. Place four marks on the tube at the positions indicated. 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 four marks about 4" from the bottom of the tube to provide lines for aligning the fins. Stand the booster tube (**ST-1030**) on the outer ring and place four marks on it. Using the channel, extend those marks the length of the tube.

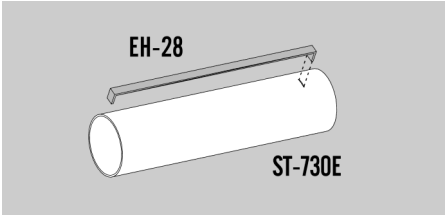


ENGINE MOUNT

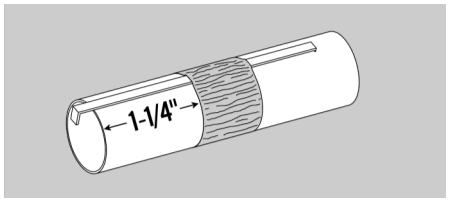
❑ **5.** Bend the engine hook (**EH-28**) slightly so it forms a slight bow in the direction shown.



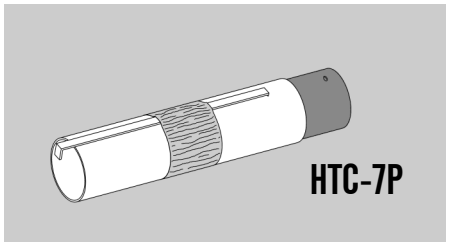
❑ **6.** Insert one end of the engine hook into the pre-punched engine tube (**ST-730E**).



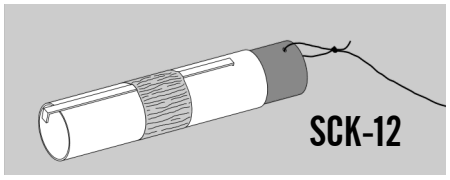
❑ **7.** Wrap a few turns of masking tape around the engine tube and engine hook about 1-1/4" from the bottom of the engine tube. Apply glue to the engine hook at the end that is inserted into the engine tube. Strengthen the tape by smearing a film of glue over the tape.



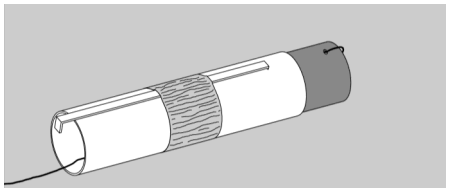
❑ **8.** Apply a bead of glue just inside the top of the engine tube no lower than the top of the engine hook. Insert the tube coupler (**HTC-7P**) with the punched end to the top until it touches the hook.



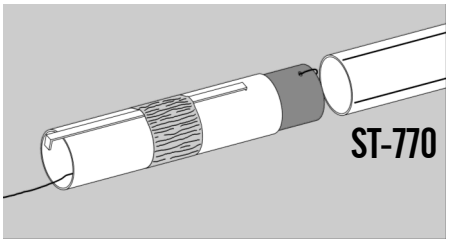
❑ **9.** Thread one end of the Kevlar® cord (**SCK-12**) into the punched hole in the coupler and securely tie it using an overhand knot.



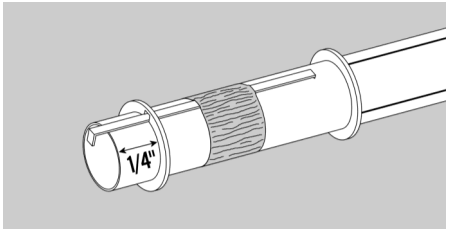
❑ **10.** Pull the free end of the Kevlar® cord back through the engine tube tightly. Depress the coupler slightly where the cord is exposed on the outside of the coupler. This will prevent a bulge where the cord is.



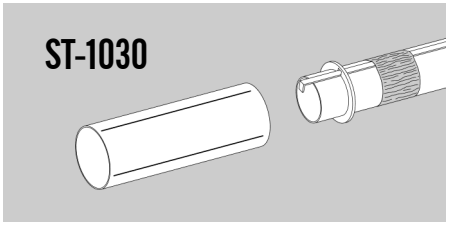
❑ **11.** Apply a bead of glue just inside one end of the long body tube (**ST-770**) and insert the tube over the coupler. Sight the assembly from the end to make sure the engine tube and the long body tube are aligned with one of the marked lines lined up with the engine hook. Allow to dry in a horizontal position to prevent glue from running into the engine tube. Turn often to prevent pooling of the glue.



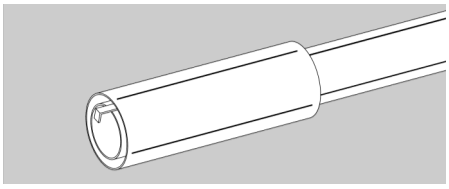
❑ **12.** Punch out the two centering rings from the laser-cut sheet (**CR-KV-79**). Align the ring with the wide slot 1/4" from the bottom of the engine mount assembly with the notch over the engine hook. Align the other ring over the joint between the two body tubes. Apply a bead of glue around each ring at the body tube joint, keeping glue away from the notch and engine hook. Allow to dry.



❑ **13.** Slide the booster body tube (**ST-1030**) over both rings until the top of the booster body tube is almost over the top ring.

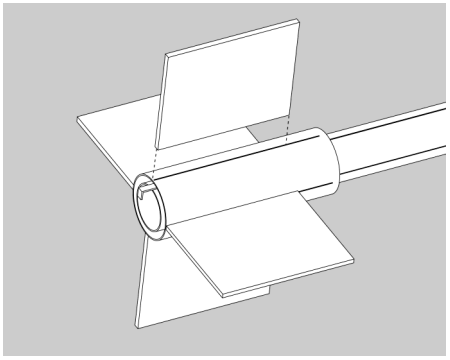


❑ **14.** Apply a bead of glue just inside the booster tube and slide the booster tube over the top ring until they are even. Make sure the marked lines on both tubes are aligned. Apply a bead of glue around the bottom ring using a scrap of balsa to spread the glue. Keep glue away from the engine hook and notch in the bottom ring. Allow the assembly to dry.

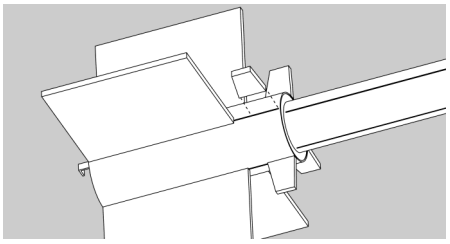


ATTACH FINS

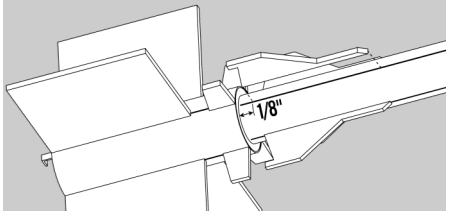
❑ **15.** Apply glue to one of the large booster fins on the root edge and position it along one of the lines drawn on the booster body tube and even with the bottom of the tube. Remove it, allow it to almost dry, re-apply glue and reposition it. Allow this fin to dry before proceeding, checking for perpendicular positioning with the main body tube. Repeat with the other three fins.



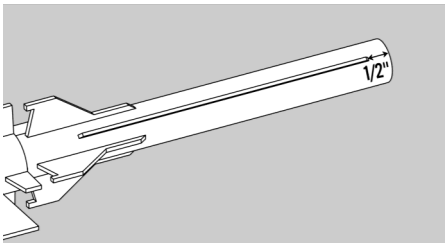
❑ **16.** Using the same procedure, glue one of the small stabilizer fins along one of the lines drawn on the booster body tube and even with the top of the tube. Make sure it is aligned with the large fin. Repeat with the other three stabilizer fins.



❑ **17.** Using the same procedure, glue one of the upper fins along one of the lines drawn on the upper body tube and 1/8" from the booster body tube. Make sure it is aligned with the two fins on the booster body tube. Repeat with the other three upper stage fins.

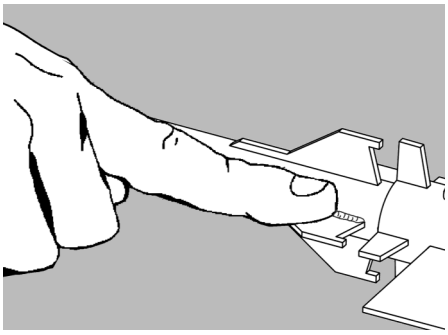


❑ **18.** Using the same procedure, glue one of the long conduits centered between two fins and 1/2″ from the top of the upper body tube. Repeat with the other conduit on the opposite side. After the conduits are dry, round the sides and ends of the balsa strips.



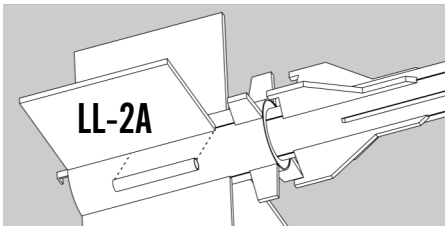
APPLY FILLETS

❑ **19.** After all the fins 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. Allow the entire assembly to dry in a vertical position.



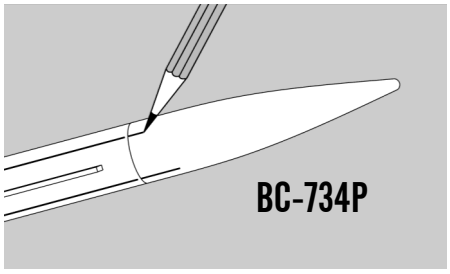
LAUNCH LUG

❑ **20.** Glue the launch lug (**LL-2A**) along the joint between one of the large booster fins and the booster body tube with the top of the launch lug even with the top of the booster fin. Apply a fillet of glue on each side of the launch lug and allow to completely dry.

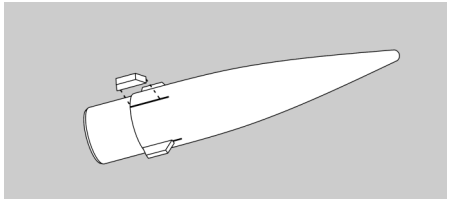


NOSE CONE

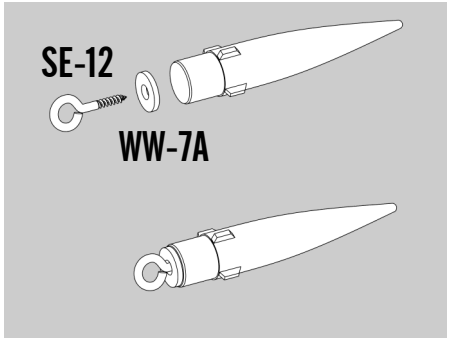
❑ **21.** Check the nose cone (**BC-734P**) for fit in the upper body tube. A small amount of sanding may be necessary if the fit is too tight. If it is loose, a wrap of masking tape may be necessary to achieve a snug fit. Apply a mark on the nose cone in line with each of the four lines drawn on the upper body tube. Extend each line about 3/8″.



❑ **22.** Remove the nose cone and glue one of the nose cone canard fins along one of the lines drawn on the nose cone and even with the shoulder of the nose cone. Repeat for the other three canard fins. Keep glue away from the shoulder of the nose cone. When all are dry, apply a small fillet of glue along each joint.

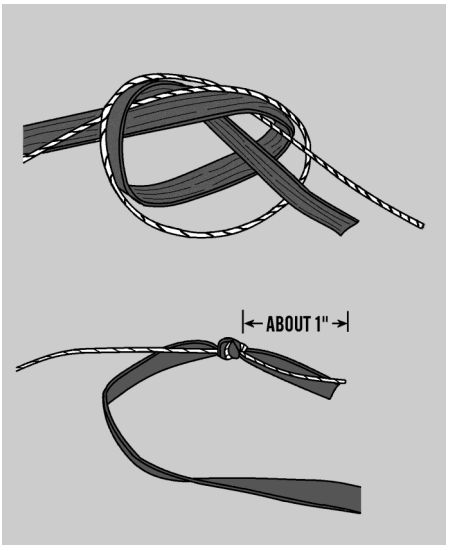


❑ **23.** Turn the screw eye (**SE-12**) into the center of the nose cone. Unscrew it and squirt glue into the hole. Insert the screw eye into the washer weight (**WW-7A**) and reinstall the screw eye into the nose cone. Wipe off any excess glue. Allow to dry.

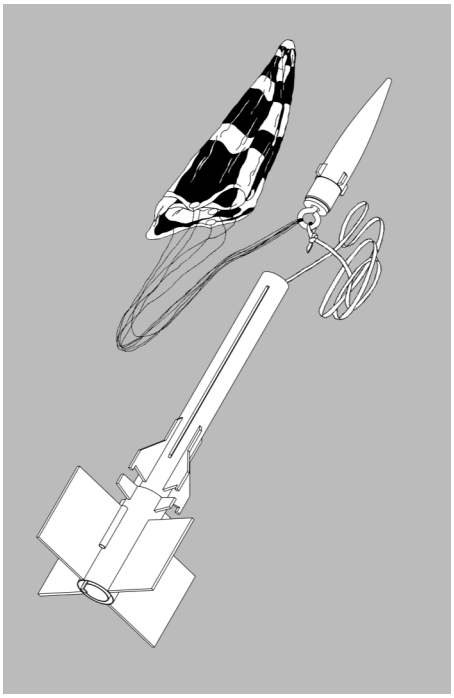


FINAL ASSEMBLY

❑ **24.** 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-124**) using an overhand knot.

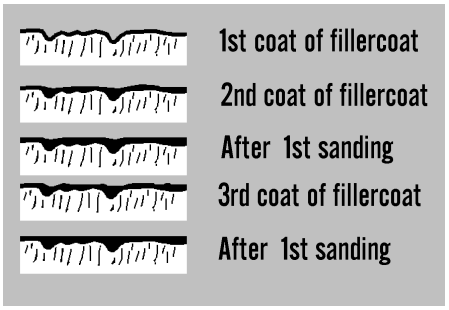


❑ **25.** Assemble the chute (**CP-12**) using instructions included with the chute. Pull the lines tight on the chute and make sure they are all of equal length. Attach the chute to the screw eye in the nose cone. Tie the lose end of the elastic cord to the screw eye.



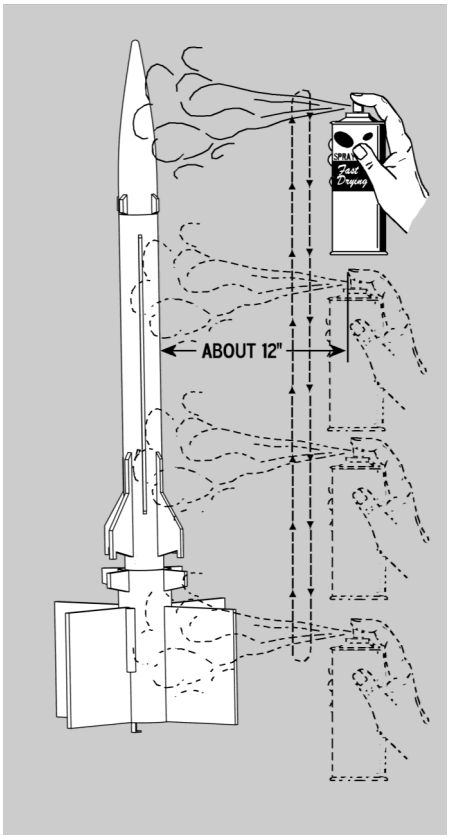
FINISHING

❑ **26.** 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.

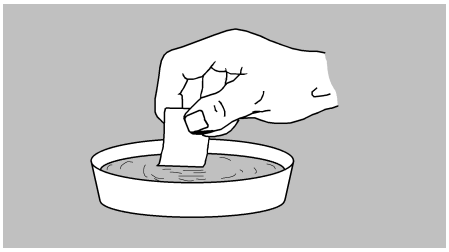


❑ **27.** After all balsa surfaces have been prepared, wipe off all balsa dust with a dry cloth. First spray the model with an enamel primer. Choose high visibility colors like white and purple for the final colors.

❑ **28.** 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.



❑ **29.** After the paint has dried, decals may be applied. The decals supplied with the SAM-3™ 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.



❑ **30.** Slide the decal in place and use the paper backing to work the bubble out. Repeat for all the decals. Be careful with covering decals with a clear coat. Many of the new sprays are not compatible. Future floor polish is suggested.

FLIGHT PREPPING

❑ **31.** 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.

❑ **32.** 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 nose cone 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 SAM-3™ from a 1/8" diameter by 36" long launch rod.

❑ **35.** After each flight, promptly remove the spent engine casing and dispose of properly. Clean any residue from your model for many flights.