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.

About the ThunderStrike™

The ThunderStrike™ is the fifth largest member of the Thunder-kit series. It is based on a design produced by Centuri Engineering in the early 1980's. Each member in the family of seven is about 1.25 times the size of the previous member. All of the Thunder-kits are designed for the same long-and-lean look providing slow, realistic liftoffs. The ThunderStrike™ is great kit for entry into mid-power.

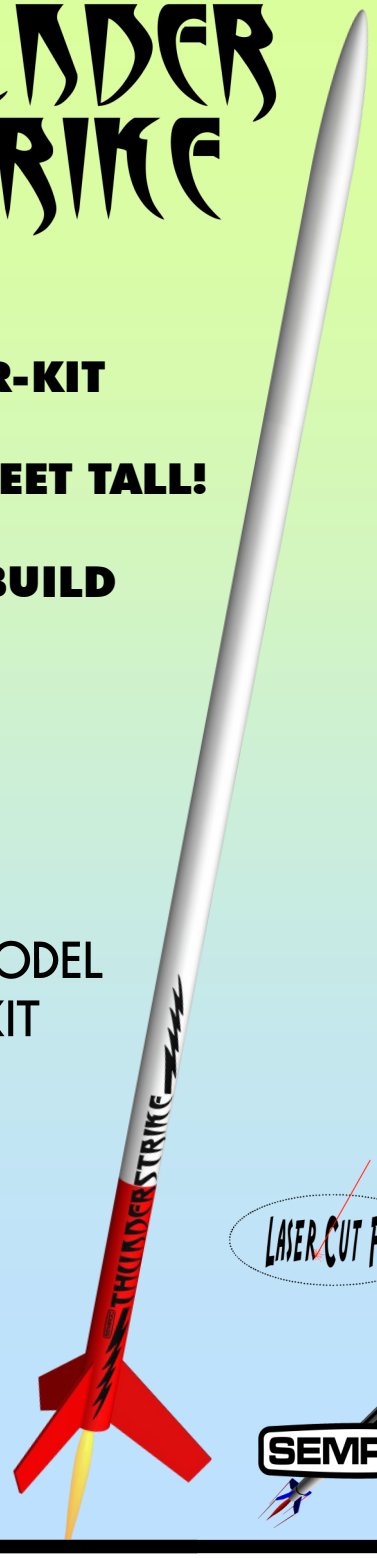
THUNDER STRIKE

FIFTH THUNDER-KIT

OVER 4 FEET TALL!

FUN TO BUILD AND FLY

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

THUNDERSTRIKE™
Kit No. KA-16

Specifications		Engine	Approx. Altitude
Body Diameter	1.34" (3.4 cm)		
Length	50.7" (128.8 cm)	D12-5	750'
Fin Span	8.9" (22.6 cm)	D15T-4	850'
Net Weight	3.4 oz. (96.5 g)	E9-6	1200'

PARACHUTE RECOVERY

July 27, 2009

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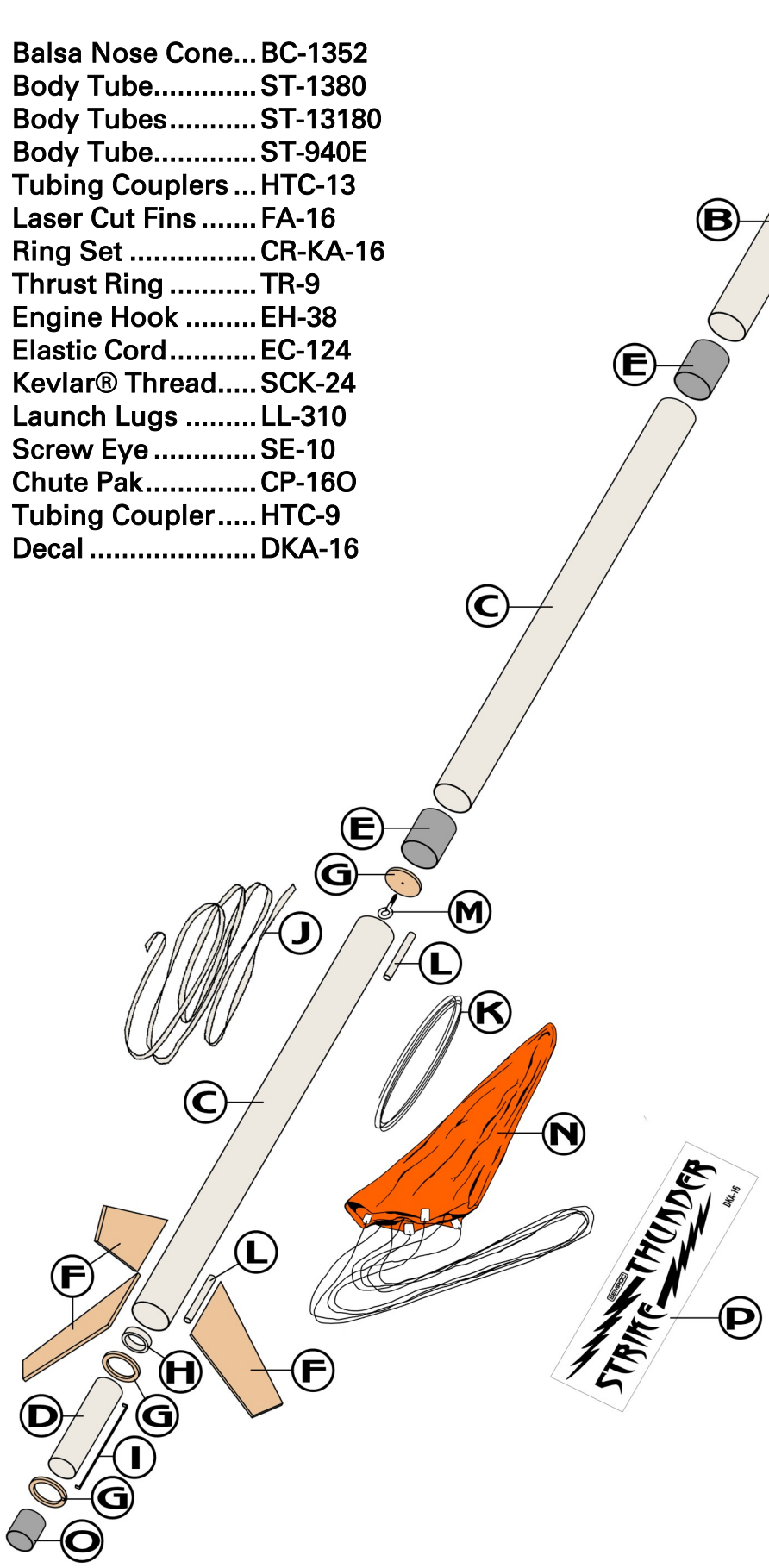
Box 1271 Knightdale, NC 27545 (919) 266-1977

Parts List

A	1	Balsa Nose Cone...	BC-1352
B	1	Body Tube.....	ST-1380
C	2	Body Tubes.....	ST-13180
D	1	Body Tube.....	ST-940E
E	2	Tubing Couplers ...	HTC-13
F	1	Laser Cut Fins	FA-16
G	1	Ring Set	CR-KA-16
H	1	Thrust Ring	TR-9
I	1	Engine Hook	EH-38
J	1	Elastic Cord.....	EC-124
K	1	Kevlar® Thread.....	SCK-24
L	2	Launch Lugs	LL-310
M	1	Screw Eye	SE-10
N	1	Chute Pak.....	CP-16O
O	1	Tubing Coupler.....	HTC-9
P	1	Decal	DKA-16

EXPLODED VIEW



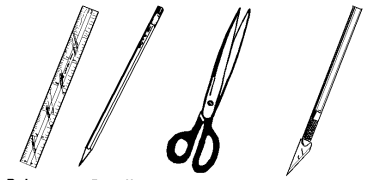
BEFORE YOU START!

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 on the back of the cover sheet 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. Masking tape is also needed.

White Glue or Wood Glue | Spray Paint | Balsa Fillercoat or Sanding Sealer | Fine Sandpaper 320 to 600 grit



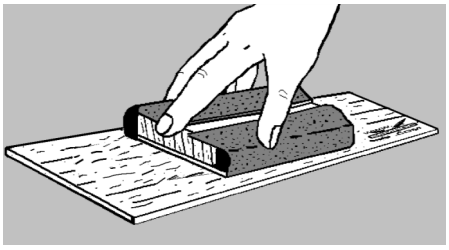
Ruler | Pencil | Scissors | Hobby Knife

ASSEMBLY

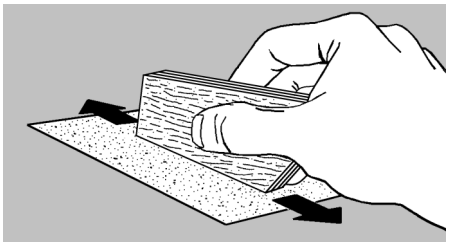
❑ **1.** These instructions are presented in a logical order to help you put your Thunder-Strike™ together quickly and efficiently. Check off each step as you complete it and we hope you enjoy putting this kit together.

FIN PREPARATION

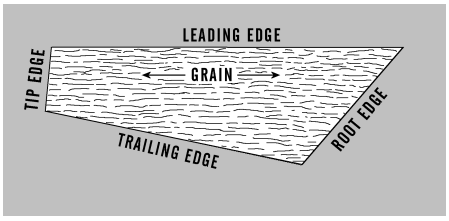
❑ **2.** Lightly sand each side of the laser-cut fin sheet **(FA-16).** Carefully push the laser-cut fins from the sheet. Start at one point on each fin and slowly and gently work around the fin.



❑ **3.** Stack all three fins in a group. Line the 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.

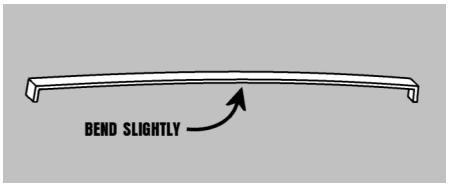


❑ **4.** Round all leading edges and round or taper all trailing edges. Leave the tip and root edges flat.

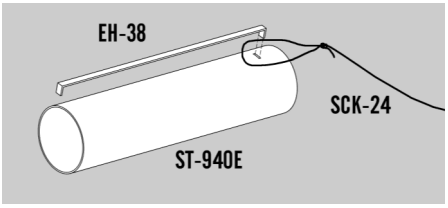


ENGINE MOUNT

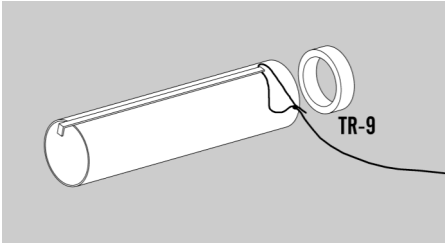
❑ **5.** Bend the engine hook **(EH-38)** slightly so it forms a slight bow in the direction shown.



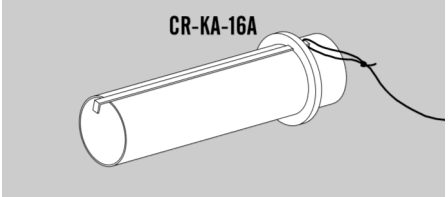
❑ **6.** Tie a loop in one end of the yellow Kevlar® cord **(SCK-24)**. Insert one end of the engine hook **(EH-38)** through the loop and into the pre-punched engine tube **(ST-940E).**



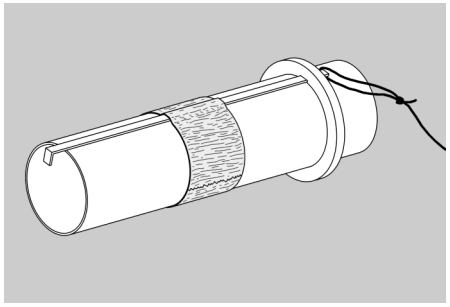
❑ **7.** Apply a small bead of glue around the inside of the engine tube nearest the punched end. Slide the thrust ring (**TR-9**) into the tube and against the engine hook.



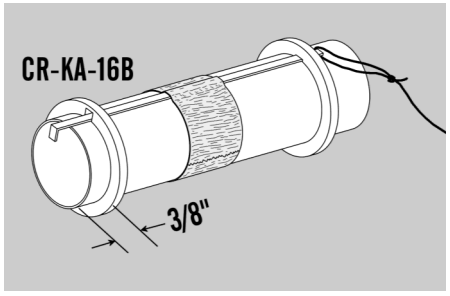
❑ **8.** Slide the centering ring with the small notch **(CR-KA-16A)** over the engine tube until it is against the Kevlar cord. Apply a bead of glue around each end of the joint between the ring and engine tube, keeping glue off the outside surface of the centering ring. Allow to dry.



❑ **9.** Add one wrap of masking tape around the center of the assembly to hold the engine hook in place. Apply a bead of glue over the masking tape and along the edges of the engine hook between the tape and the centering ring. Keep glue off the free end of the engine hook.



❑ **10.** Slide the centering ring with the long slot (**CR-KA-16B**) over the end of the engine tube. Space it 3/8" from the bottom of the engine tube. Apply a bead of glue around both sides of the centering ring, keeping glue away from the engine hook and the notch.

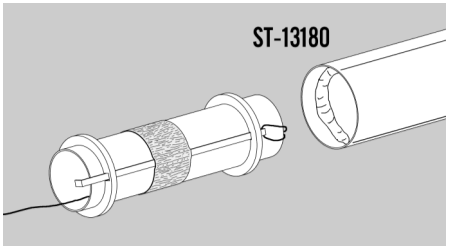


BODY TUBE

❑ **11.** Stand one of the long body tubes (ST-13180) on the fin guide above 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.

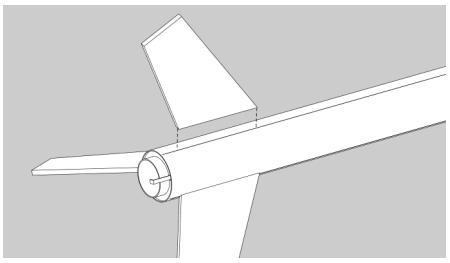
INSERT MOUNT

❑ **12.** Stuff the Kevlar cord back through the engine tube. Check the engine mount for fit in the lower (marked) body tube. If it has rough edges or excessive glue, sand lightly until it fits into the body tube. Apply a heavy bead around the inside of the body tube. Then quickly and smoothly push the engine mount into the tube until about the centering ring is about 1/16" inside the body tube and the engine hook is centered between two of the lines. Do not stop once you start inserting the mount of it might freeze in place too soon.

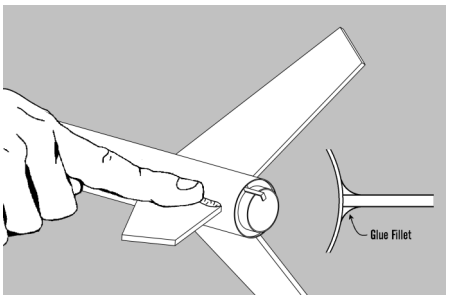


ATTACH FINS

❑ **13.** Apply glue to the root edge of one of the fins and position it along one of the lines drawn for the fins on the side of the body tube and 3/8" from the end of the tube. Remove, allow to almost dry, apply additional glue, and reposition. Repeat for the other two fins. Allow to dry in an upright position, checking frequently to make sure they remain aligned.

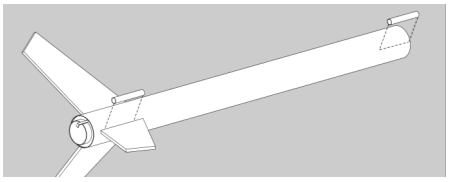


❑ **14.** After the fin assembly is completely dry, run a small bead of glue along both sides of each fin-body tube joint. Using your forefinger, smooth the glue into fillets.



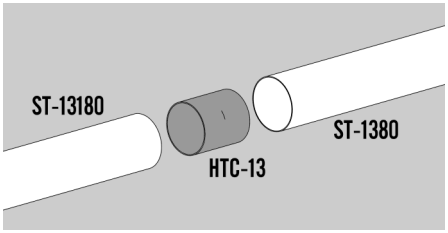
LAUNCH LUGS

❑ **15.** Glue one of the launch lugs along the side of one of the fins as shown. Align the second launch lug even with the top of the tube and in line with the first launch lug. Sight through the launch lugs from the end to make sure they are aligned.

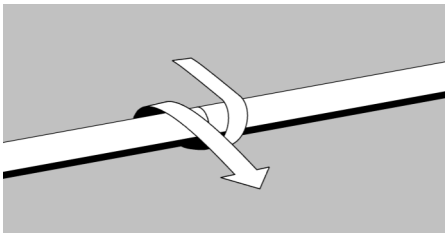


PAYLOAD SECTION

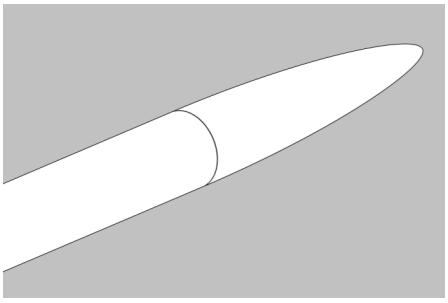
❑ **16.** Locate the two unmarked body tubes (**ST-1380**) and (**ST-13180**) that will form the payload section. Mark one of the two large tubing couplers (**HTC-13**) in the center, 3/4" from each end. Apply a bead of glue just inside each end of the body tubes. Slide the coupler into each tube an equal amount using the mark as a guide. Do not wait for it to dry!



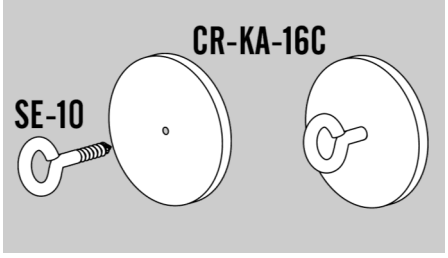
❑ **17.** Roll the assembly on a smooth flat surface while the glue sets to get the tubes aligned.



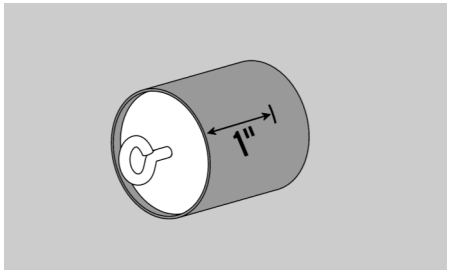
❑ **18.** Insert the nose cone **(BC-1352)** in the short body tube (**ST-1380**) at the top of the payload section and check for proper fit. The nose cone should be snug to hold itself in alignment. If it is too loose, add some masking tape. If it is too tight, sand the shoulder slightly.



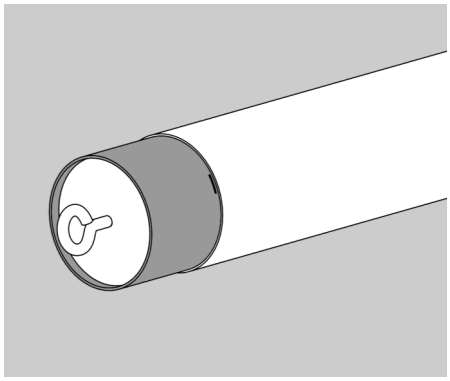
❑ **19.** Twist the screw eye (**SE-10**) into the remaining plywood ring (**CR-KA-16C**) until the threads seat completely in the ring. Apply a thick bead of glue around the shaft of the screw eye where it enters the plywood ring. Turn the ring over and apply a thick bead of glue on the threads of the screw eye where they touch the ring.



❑ **20.** Insert this bulkhead assembly into the remaining large tube coupler (**HTC-13**). Recess it about 1/8″ and apply a bead of glue around both side of the plywood ring. Allow to completely dry. Place a mark on the tube coupler 1″ from the screw eye end.

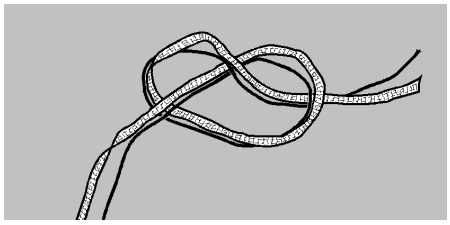


❑ **21.** Apply a bead of glue inside the long payload tube (**ST-13180**) opposite the nose cone. Insert the bulkhead assembly into the payload tube until the mark is even with the end of the payload tube. Allow to completely dry.



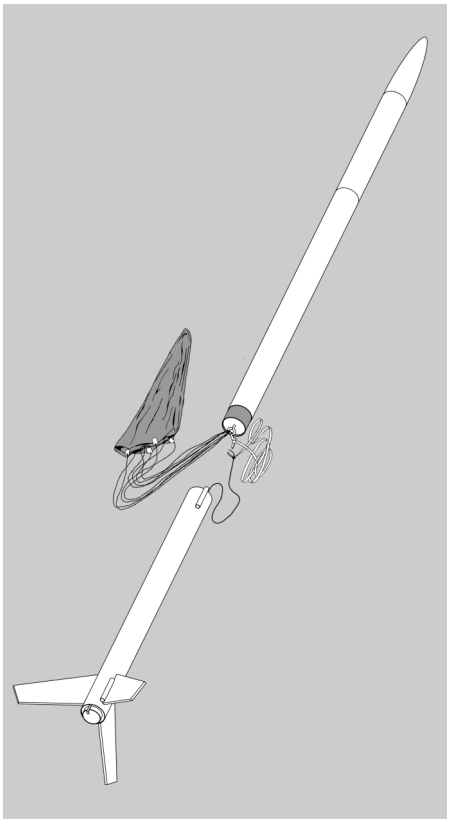
SHOCK CORD

❑ **22.** Prepare the shock cord as follows. Line up one end of the elastic shock cord (**EC-124**) with the free end of the Kevlar cord (**SCK-24**) 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.



FINAL ASSEMBLY

❑ **23.** Assemble the chute **(CP-16O)** using the instructions that come with the Chute Pak. 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. Shake the elastic cord free and out of the top of the main tube. Attach the free end of the elastic cord to the screw eye. Put a drop of glue on that joint as well.

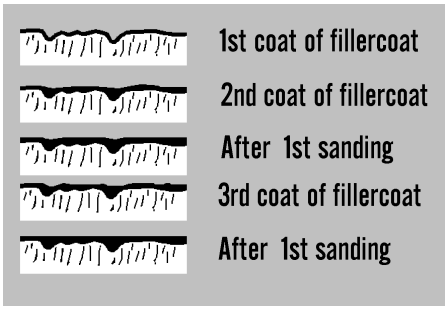


This completes the assembly of your

THUNDER STRIKE

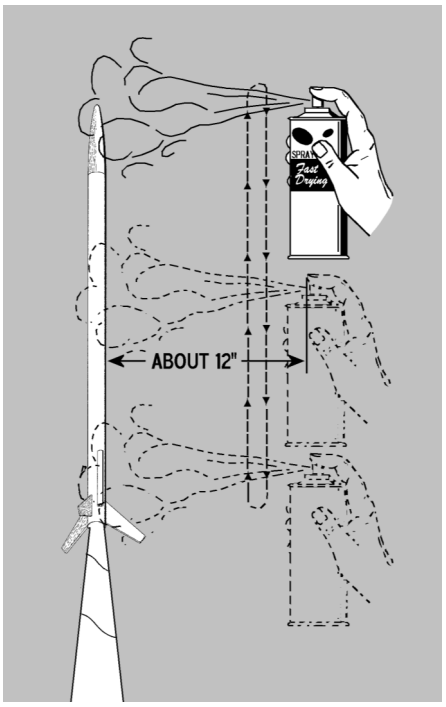
FINISHING

❑ **24.** 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.

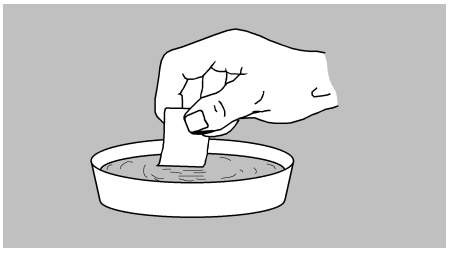


❑ **25.** After all balsa surfaces have been prepared, wipe off all balsa dust with a dry cloth. First spray the model with an enamel primer. Choose a high visibility color like white for the final color.

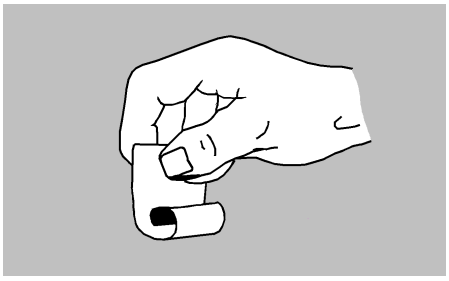
❑ **26.** Spray painting your model with a fast-drying enamel will produce the best results. PATIENCE...is the most important ingredient. Use several thin coats, allowing each coat to completely dry before the next coat. Start each spray a few inches above the model and end a few inches below the model.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



❑ **27.** After the paint has dried, decals should be applied. The decals supplied with the ThunderStrike™ 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.



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



FLIGHT PREPPING

❑ **29.** 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. When using a 2.75" long engine like the D12-5, use the HTC-9 as a spacer. Longer engines, like the E9-6 engines do not use the spacer.

❑ **30.** Apply a few sheets of recovery wadding in the top of the 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.

❑ **31.** 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.

❑ **32.** Carefully check all parts of your rocket before each flight as a part of your pre-flight checklist. Launch the ThunderStrike™ from a 3/16" diameter by 36" long launch rod. A longer rod may be required if it is not calm or engines with low thrust, like the E9, are used.

❑ **33.** After each flight, promptly remove the spent engine casing and dispose of properly.