

## 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 ThunderChief™

The ThunderChief™ is the third 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 ThunderChief is great for small field demonstration flights.

# THUNDERCHIEF™

**THIRD  
THUNDER-KIT**

**GREAT DEMO  
BIRD**

**FUN TO BUILD  
AND FLY**

**FLYING MODEL  
ROCKET KIT**



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

## THUNDERCHIEF™ Kit No. KA-7

	Specifications	Engine	Approx. Altitude
Body Diameter	0.908" (23.1 cm)	A8-3	150'
Length	31.9" (81.0 cm)	B6-6	450'
Fin Span	6.1" (15.5 cm)	C6-7	950'
Net Weight	2.1 oz. (59.6 g)		

**PARACHUTE RECOVERY**

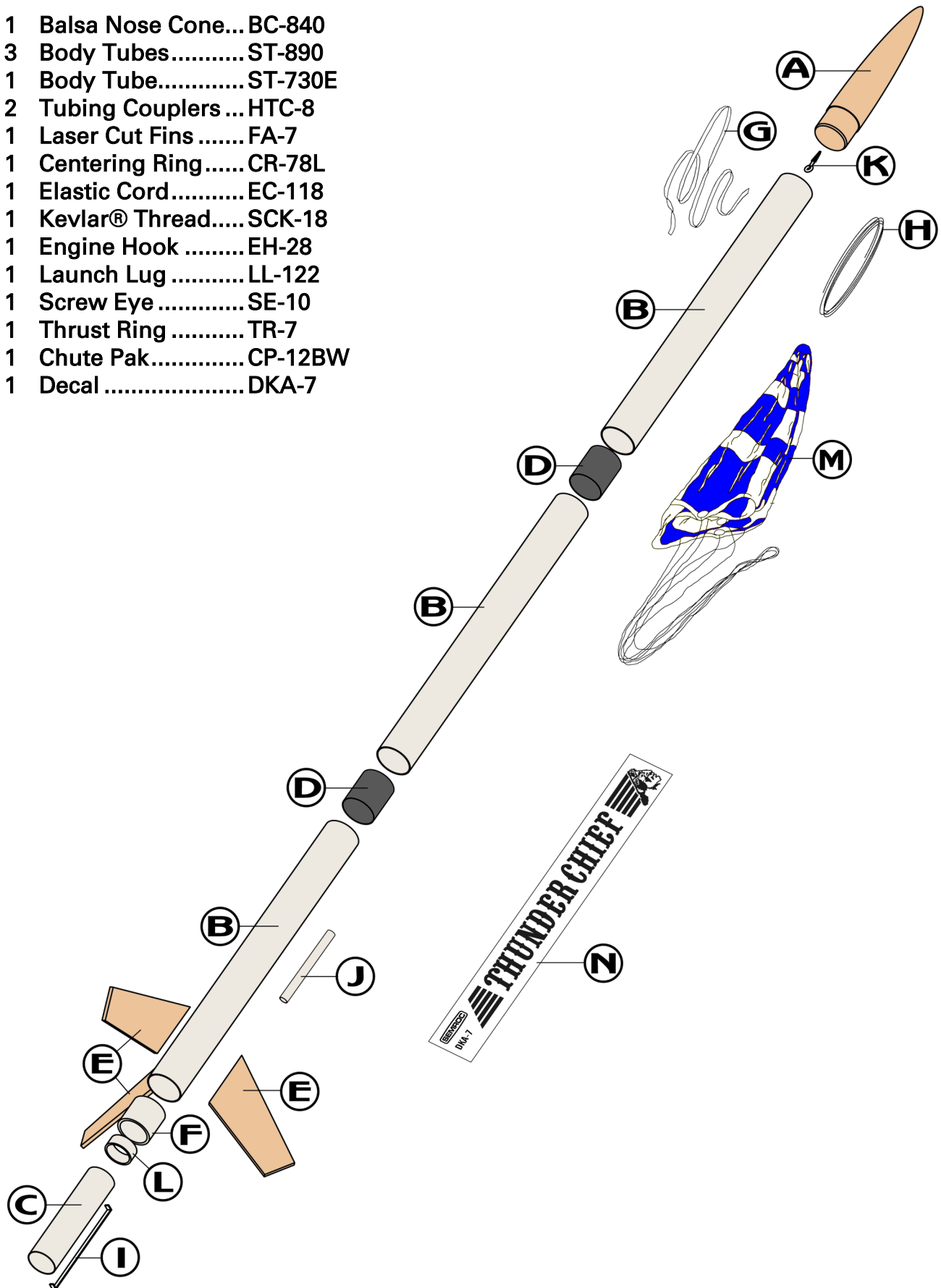
July 17, 2009

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

# Parts List

# EXPLODED VIEW

- A 1 Balsa Nose Cone... BC-840
- B 3 Body Tubes..... ST-890
- C 1 Body Tube..... ST-730E
- D 2 Tubing Couplers ... HTC-8
- E 1 Laser Cut Fins ..... FA-7
- F 1 Centering Ring..... CR-78L
- G 1 Elastic Cord..... EC-118
- H 1 Kevlar® Thread..... SCK-18
- I 1 Engine Hook ..... EH-28
- J 1 Launch Lug ..... LL-122
- K 1 Screw Eye ..... SE-10
- L 1 Thrust Ring ..... TR-7
- M 1 Chute Pak..... CP-12BW
- N 1 Decal ..... DKA-7

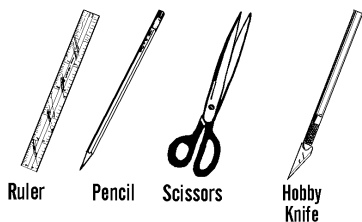


## BEFORE YOU START!

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.

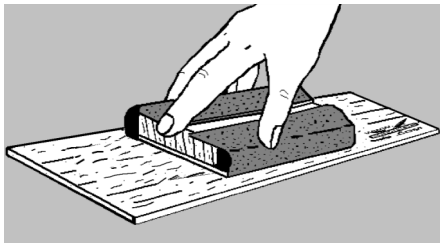


## ASSEMBLY

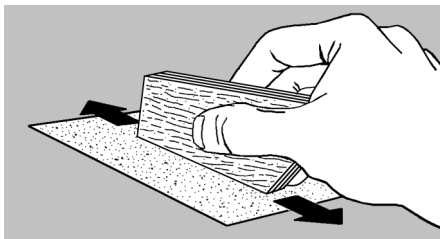
**1.** These instructions are presented in a logical order to help you put your ThunderChief™ together quickly and efficiently. Check off each step as you complete it and we hope you enjoy putting this kit together.

## FIN PREPARATION

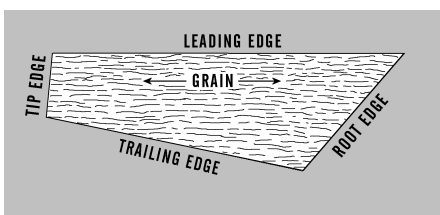
**2.** Lightly sand each side of the laser-cut fin sheet (FA-7). Carefully push the laser-cut fins from the sheet. Start at one point on each fin and slowly and gently work around the fin.



**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.

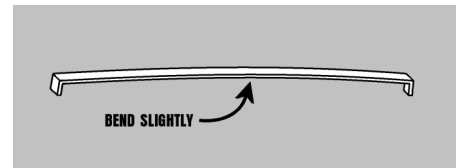


**4.** Round all leading edges and round or taper all trailing edges. Leave the tip and root edges flat.

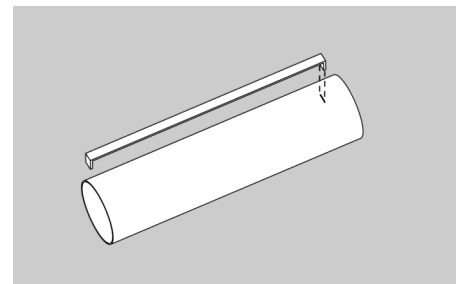


## ENGINE MOUNT

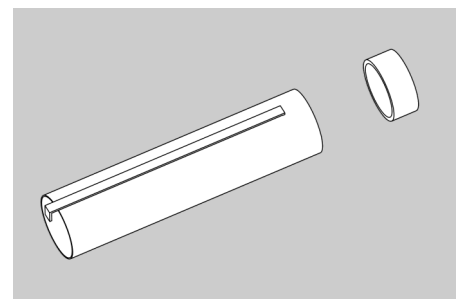
**5.** Bend the engine hook (EH-28) slightly so it forms a slight bow in the direction shown.



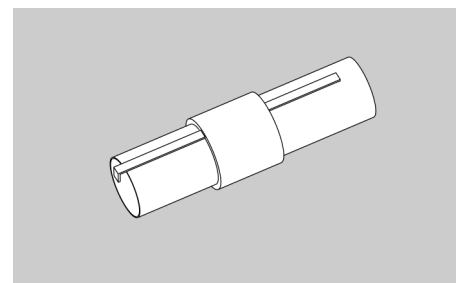
**6.** Insert one end of the engine hook (EH-28) into the pre-punched slit in the engine tube (ST-730E).



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

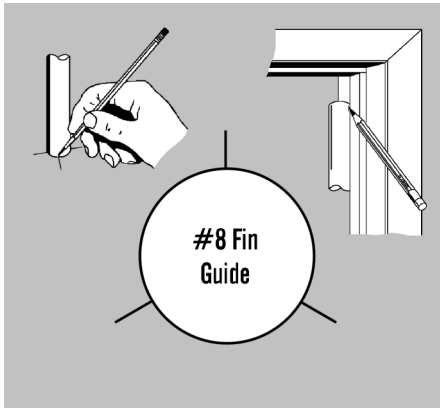


**8.** Slide the centering ring (CR-78L) over the engine tube until it is centered between the two ends. Apply a bead of glue around each end of the joint between the two tubes, keeping glue off the outside surface of the centering ring. Allow to dry completely.

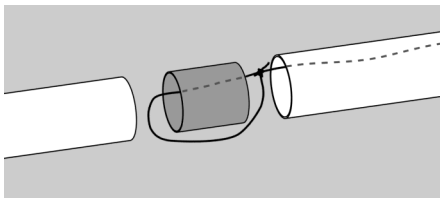


## BODY TUBE

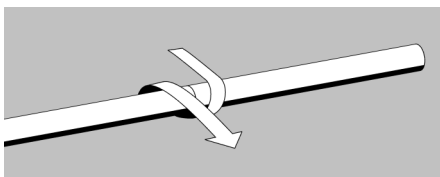
9. Stand one of the body tubes on the fin guide below and make the fin position marks on the sides of the tube. Find a convenient channel or groove such as a partially open drawer, a door jamb (as shown,) or a piece of molding. Using the channel, extend the marks the full length of the tube to provide lines for aligning the fins.



10. Tie one end of the Kevlar® cord (SCK-18) around one of the tubing couplers (HTC-8). Using the two unmarked body tubes (ST-890) thread one end of the shock cord into the top tube as shown. Keep the knot to the inside of the coupler. Apply a bead of glue inside each end of the body tubes closest to the tubing coupler. Slide the coupler into each tube an equal amount, capturing the shock cord on the inside of both tubes.

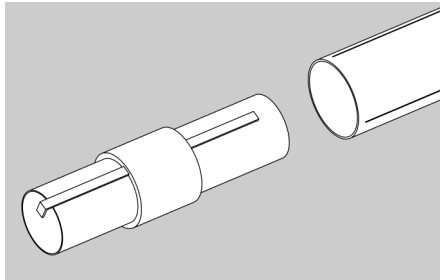


11. Roll the assembly on a smooth flat surface while the glue sets to get the tubes aligned. Add the third body tube that was previously marked to this assembly using the remaining tubing coupler (HTC-8).



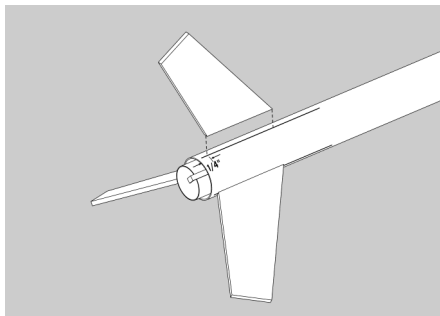
## INSERT MOUNT

12. 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 motor mount into the tube until about 1/4" of the end of the motor mount tube is protruding from the body tube.

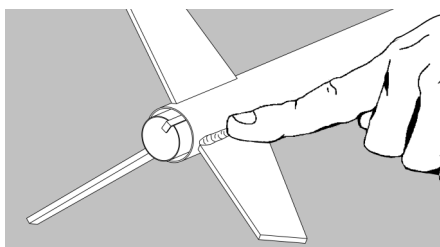


## ATTACH FINS

13. Apply glue to the root edge of a fin and position it along one of the lines drawn for the fins on the side of the body tube and 1/4" from the end of the tube. Remove, allow to almost dry, apply additional glue, and reposition. Repeat for the other two fins.

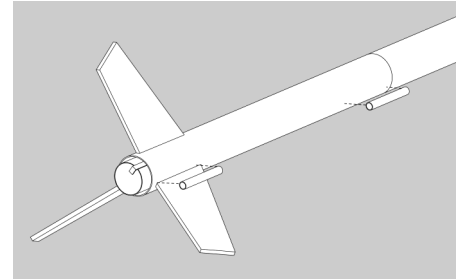


14. After the fin assembly is completely dry, run a small bead of glue along both sides of each fin-body tube joint. Using your forefinger, smooth the glue into fillets.



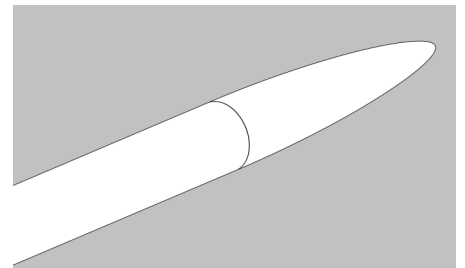
## LAUNCH LUGS

15. Cut the launch lug into two equal pieces. 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 bottom tube and in line with the first launch lug. Sight through the launch lugs from the end to make sure they are aligned.

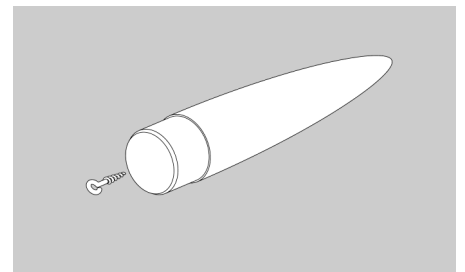


## NOSE CONE

16. Insert the nose cone (BC-840) in the body tube and check for proper fit. The nose cone should be snug enough to hold itself in alignment. If it is too loose, add masking tape. If it is too tight, sand the shoulder slightly.

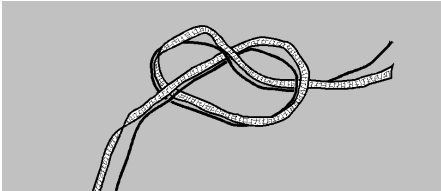


17. Twist the screw eye into the center of the base of the nose cone. Unscrew it and squirt glue into the hole. Reinstall the screw eye and wipe off any excess glue.



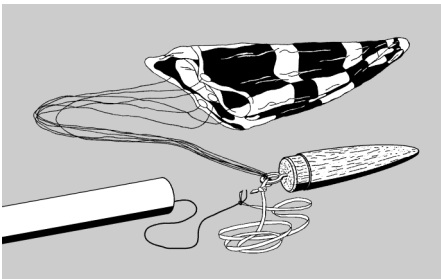
## SHOCK CORD

❑ 18. Prepare the shock cord as follows. Shake the Kevlar cord out of the top of the body tube. Line up one end of the elastic shock cord (EC-118) 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.



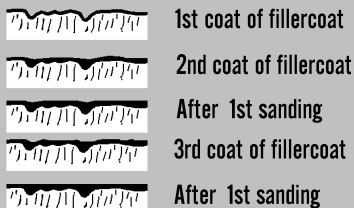
## FINAL ASSEMBLY

❑ 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.



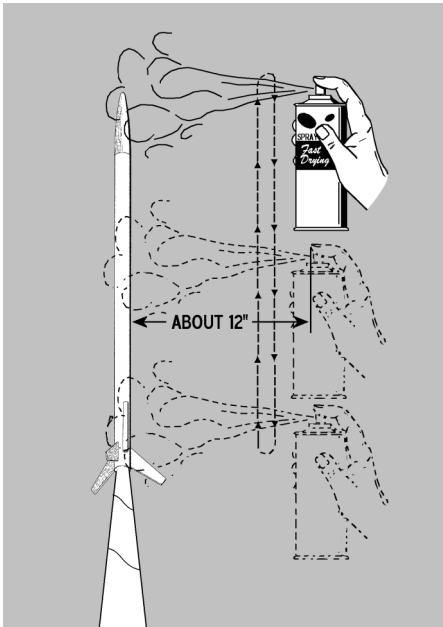
## FINISHING

❑ 20. For a smooth professional looking finish, fill the wood grain with Fill-n-Finish, 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.

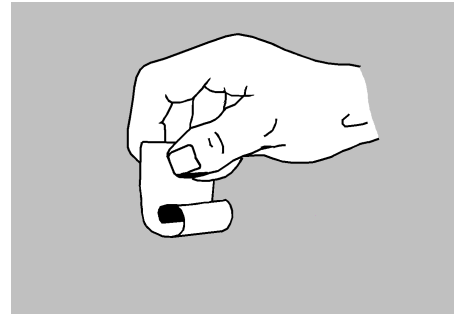
❑ 22. Spray painting your model with a fast-drying enamel will produce the best results. PATIENCE...is the most important ingredient. Use several thin coats, allowing each coat to completely dry before the next coat. Start each spray a few inches above the model and end a few inches below the model.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



## FLIGHT PREPPING

❑ 25. Mounting the engine: Insert the engine and make sure the engine hook keeps the engine 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 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.

❑ 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 ThunderChief™ from a 1/8" diameter by 36" long launch rod.

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

