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 Snake Jumper™

The Snake Jumper™ is the fifth of the Semroc Groonies™. This is what happens when a "Mad man" tries to replicate the infamous jump over the Snake River years ago. Based on the licensed model produced by Centuri Engineering in 1975, this version has a little more power to jump slightly bigger rivers that you might have in your backyard.

ABOUT THE GROONIES™

In 1973, Estes® Industries introduced a new line of six of "the zaniest flying freaks in the universe" called the Goonybirds. Wayne Kellner and Mike Dorffler have been attributed as the primary creators of the line. All six kits featured a plastic nose cone, die-cut fins, quick-change mini-engine mount, parachute recovery, stick-on decals, and, of course, a unique, goofy design. Although they only had a two year run in production, they have been re-created by many as a tribute to the original designs,

That led to the Semroc Groonies™; Goonybirds that grew up. If they really "grew up," not only would they need more grown-up themes, they would also have to be slightly bigger to fly reliably with available standard size engines, since the original mini-engine line selection has been reduced over the years. Returning to balsa nose cones and water-slide decals, along with upgrading to laser-cut balsa fins and Kevlar® shock cord mounts has improved the original line to make it even better.

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

SNAKE JUMPER™
Kit No. KA-14

Specifications		Engine	Approx. Altitude
Body Diameter	1.84" (4.7 cm)	A8-3	125'
Length	9.4" (23.91 cm)	B6-4	325'
Fin Span	7.1" (18.0 cm)	C6-5	750'
Net Weight	2.0 oz. (50.4 g)		

PARACHUTE RECOVERY

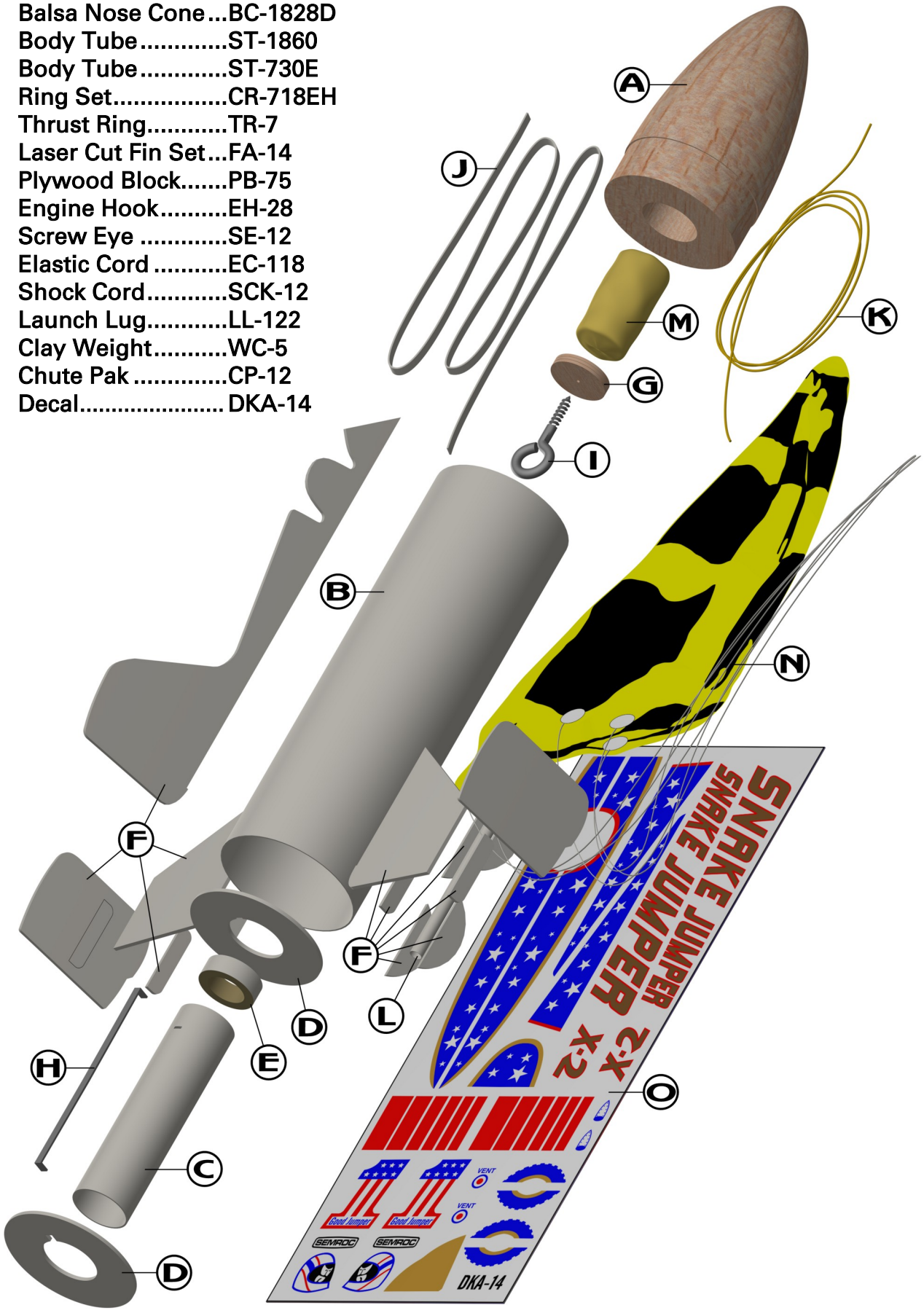
July 9, 2013

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

Parts List

A	1	Balsa Nose Cone	BC-1828D
B	1	Body Tube	ST-1860
C	1	Body Tube	ST-730E
D	1	Ring Set	CR-718EH
E	1	Thrust Ring	TR-7
F	1	Laser Cut Fin Set	FA-14
G	1	Plywood Block	PB-75
H	1	Engine Hook	EH-28
I	1	Screw Eye	SE-12
J	1	Elastic Cord	EC-118
K	1	Shock Cord	SCK-12
L	1	Launch Lug	LL-122
M	1	Clay Weight	WC-5
N	1	Chute Pak	CP-12
O	1	Decal	DKA-14

EXPLODED VIEW



BEFORE YOU START!

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

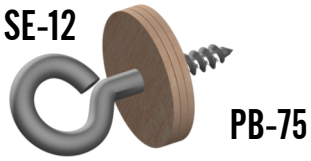
In addition to the parts supplied, you will need the following tools to assemble and finish this kit. Masking tape is also needed.

ASSEMBLY

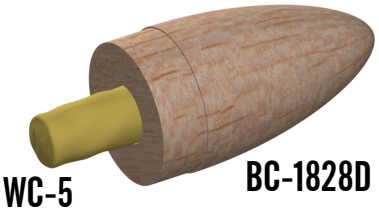
❑ **1.** These instructions are presented in a logical order to help you put your Snake Jumper™ together quickly and efficiently. Check off each step as you complete it and we hope you enjoy putting this kit together.

NOSE CONE

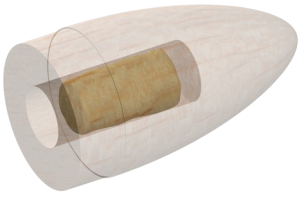
❑ **2.** Twist the screw eye (**SE-12**) into the center of the plywood disc (**PB-75**). Only screw it in until the threads just disappear into the plywood. Apply glue to the thread side and set this assembly aside to dry.



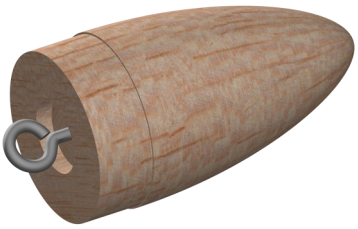
❑ **3.** Roll the clay weight (**WC-5**) into a cylinder about 5/8″ in diameter. Insert into the drilled hole in the nose cone (**BC-1828D**).



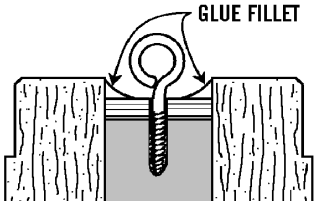
❑ **4.** Using a wood dowel, pencil eraser, or your finger, push the clay weight as far into the nose cone as possible.



❑ **5.** Insert the plywood disc and screw eye assembly into the hole in the nose cone and press it firmly against the clay weight.

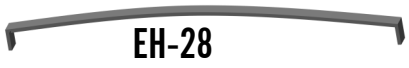


❑ **6.** Make sure there is no clay showing. **The glue will not stick to the clay.** Apply a glue fillet around the plywood disc-nose cone joint. Leave the nose cone in a vertical position with the screw eye facing upwards until the glue is completely dry.



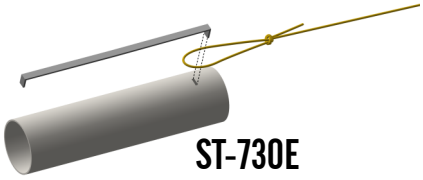
ENGINE MOUNT

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

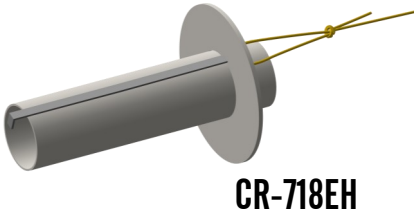


❑ **8.** Tie a loop in one end of the yellow Kevlar® cord (**SCK-12**). Pull knot tight.

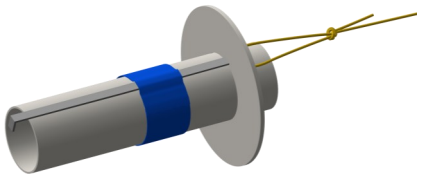
❑ **9.** Insert one end of the engine hook (**EH-28**) through the loop in the Kevlar cord and into the pre-punched engine tube (**ST-730E**).



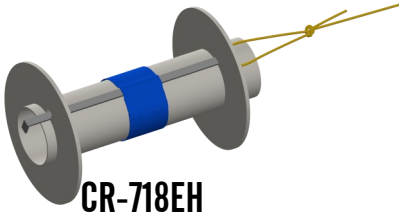
❑ **10.** Carefully remove the two centering rings from the laser-cut set (**CR-718EH**). Select the one with the small notch and align the notch over the engine hook. Slide it from the bottom of the engine tube until it is against the end of the engine hook and against the yellow Kevlar® cord.



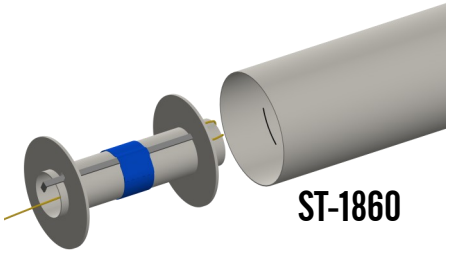
❑ **11.** Wrap masking tape around the center of the engine tube to hold the engine hook in place and centered along its length. Run a bead of glue over the masking tape and along the engine hook between the tape and the ring. Allow to dry.



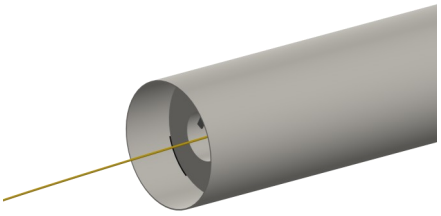
❑ **12.** Select the remaining centering ring that has the wider notch. Align the notch over the engine hook and slide it from the bottom of the engine tube until it is 1/4" from the bottom of the engine tube. Apply a bead of glue around both sides of both centering rings and against the engine tube. Keep glue away from the outer edges of both rings and from the notch in the lower ring. Make sure the engine hook moves freely. Allow to dry in an upright position.



❑ **13.** Mark a line inside the large body tube (**ST-1860**) at a depth of 3/4". Apply a bead of glue around the inside of the tube at about the depth of the mark.

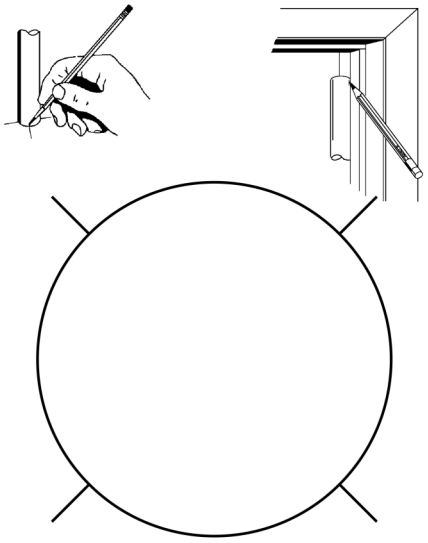


❑ **14.** In one quick motion, slide the engine mount into the large body tube until the pencil mark just shows, Apply a bead of glue around the bottom joint. As that joint sets, apply an additional bead of glue on the top of the mount from the top of the large tube. Spread a thin film of cyanoacrylate glue (CA) around the inside area of the large body tube to help it resist the exhaust heat. Allow to dry.



MARK TUBES

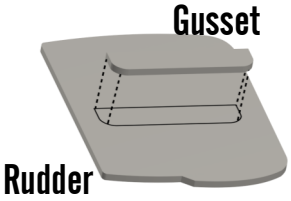
❑ **15.** Stand the main body tube assembly on the circle of the fin guide below and make the fin position marks on the sides of the tube. Find a convenient channel or groove such as a partially open drawer, a door jamb (as shown,) or a piece of molding. Using the channel, extend all four marks the length of the tube.



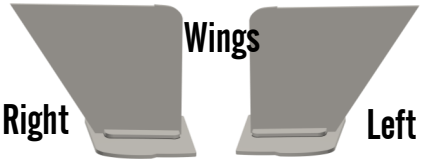
ATTACH FINS

❑ **16.** Carefully remove all the laser-cut fiber parts from the fin sheet (**FA-14**). For best results, lightly sand each edge and apply a thin coat of cyanoacrylate (CA) glue along each edge to seal the laminations. Allow to dry.

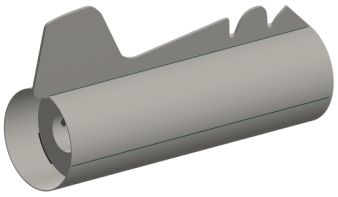
❑ **17.** Glue one of the gussets on one of the rudders aligned with the etched lines. Repeat with the other rudder. Allow to dry.



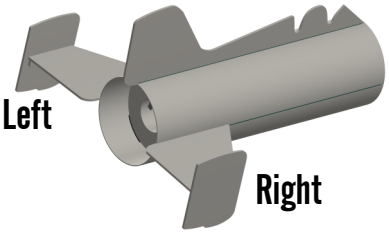
❑ **18.** Orient one of the wing tips centered on one of the rudder assemblies against the top edge of a gusset. Make two mirror image assemblies as shown. Make sure the wing and rudder form a right angle. Allow both assemblies to dry.



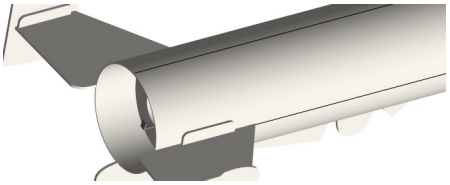
❑ **19.** Apply glue to the root edge of the long main fin (cockpit) and position it along one of the lines drawn for the fins on the body tube and hooked around the bottom. Remove the fin, set it aside and allow it to almost dry, apply additional glue, and reposition. If you follow these instructions, the fins will not require much additional work to keep them aligned. Allow to completely dry, checking carefully to make sure it is parallel with the main body tube.



❑ **20.** Apply glue to the root edge of the left wing assembly and position it along the line drawn to the left of the main fin (looking from the back) and hooked around the bottom. Remove the fin, set it aside and allow it to almost dry, apply additional glue, and reposition. Allow to completely dry, checking carefully to make sure it is parallel with the main body tube. Repeat with the right wing assembly. Allow to dry.



❑ **21.** Glue the remaining gussets to the bottom of each main fin and against the main body tube as shown to provide additional support. Allow to dry.

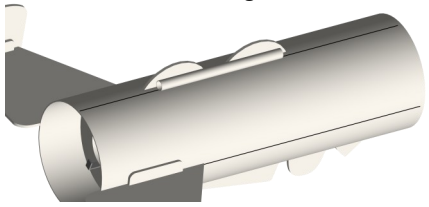


LAUNCH LUG

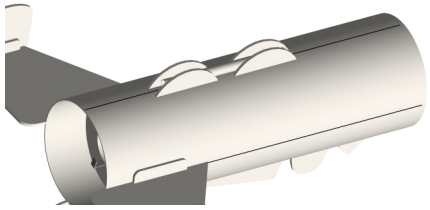
❑ **22.** Apply a bead of glue to the launch lug (**LL-122**) and apply it to the main body tube along the remaining line and 1-1/2" from the bottom of the main tube.

LL-122

❑ **23.** Glue two of the wheels to one side of the launch lug as shown.



❑ **24.** Glue the other two wheels to opposite side of the launch lug as shown.



APPLY FILLETS

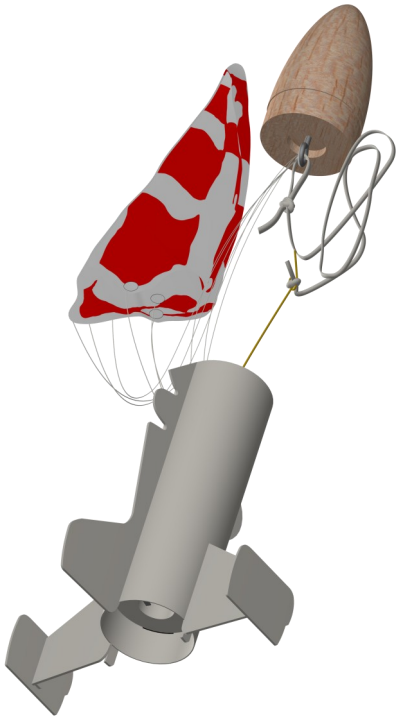
❑ **25.** After the fins are completely dry, run a small bead of glue along both sides of each fin-body tube joint. Using your forefinger, smooth the glue into fillets. Apply a fillet of glue on each side of the launch lugs. Allow this assembly to dry in a vertical position.

FINAL ASSEMBLY

❑ **26.** Tie the free end of the Kevlar® cord to one end of the elastic cord (**EC-118**) using an overhand knot. Pull the elastic cord and Kevlar cord back through the main body tube and out the top of the tube.

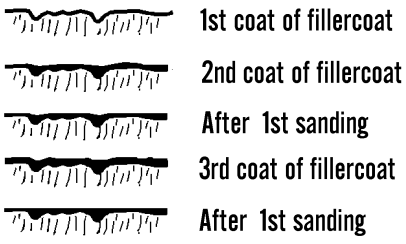
EC-118

❑ **27.** Assemble the chute (**CP-12**) using the instructions provided with it. 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

❑ **28.** When all 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.



❑ **29.** 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 black for the final colors. 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.

❑ **30.** After the paint has dried, decals should be applied. The decals supplied with the Snake Jumper™ are waterslide decals. Each decal should be cut separately from the sheet. 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. Slide the decal in place and use the paper backing to work the bubbles out. Repeat for all the decals.

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 chute 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 chute.

❑ **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 Snake Jumper™ from a 1/8" diameter by 36" long launch rod.

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