

About Estes Industries, Inc.

In July 1958, G. Harry Stine of Model Missiles, Inc. in Denver, Colorado approached Vern Estes about making model rocket engines for them. On January 15, 1959, Vern's automated model rocket engine fabricating machine, "Mabel", produced the first of many millions of Estes model rocket engines. In 1960, Estes was producing more engines than Model Missiles could sell. Vern and his wife Gleda opened a mail order rocket company and introduced the Astron Scout and Astron Mark.

In 1961, a catalog was mimeographed and hand stitched on Gleda's sewing machine. Later that year, Estes Industries had outgrown the confined space in Denver. In December 1961, the entire operation was moved to an old farm in Penrose, Colorado quickly establishing the small town as the "Model Rocket Capital of the World."

Estes Industries was sold to Damon in September 1969. The name Estes is synonymous with model rocketry. Almost everyone remembers growing up firing Estes rockets or knowing someone that did. Estes Industries has introduced millions of youngsters of all ages to model rocketry for almost half a century.

About the Shrike™

The Astron Shrike was released by Estes Industries in the 1970. It was designed by John Simmance and was one of the first new kits after the Damon purchase of Estes. Featuring the new "pop-and-go" staging that eliminated taping engines together, it made prepping a two stage model much faster. The embossed nozzle parts and body wrap added to the charm of the kit. The clear payload and multitude of decal parts also added to the distinctiveness of the design. It was released as Catalog No. 701-K-46 and retailed for \$3.00.

The Semroc Retro-Repro™ Shrike™ is very close to the original design. A Kevlar® cord is added for a more reliable attachment point for the shock cord. The original CAB clear plastic payload tube is used along with laser-cut fins and a precision balsa nose cone and nose block.

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.

July 17, 2011

Copyright © 2011 Semroc Astronautics Corporation
Box 1271 Knightdale, NC 27545 (919) 266-1977

SHRIKE™

TWO STAGE ACTION

CLEAR PAYLOAD SECTION

HIGH PERFORMANCE

BALSA FINS, NOSE CONE & NOSE BLOCK

*Designed by
John Simmance*

FLYING MODEL ROCKET KIT



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

SHRIKE™
Kit No. KV-37

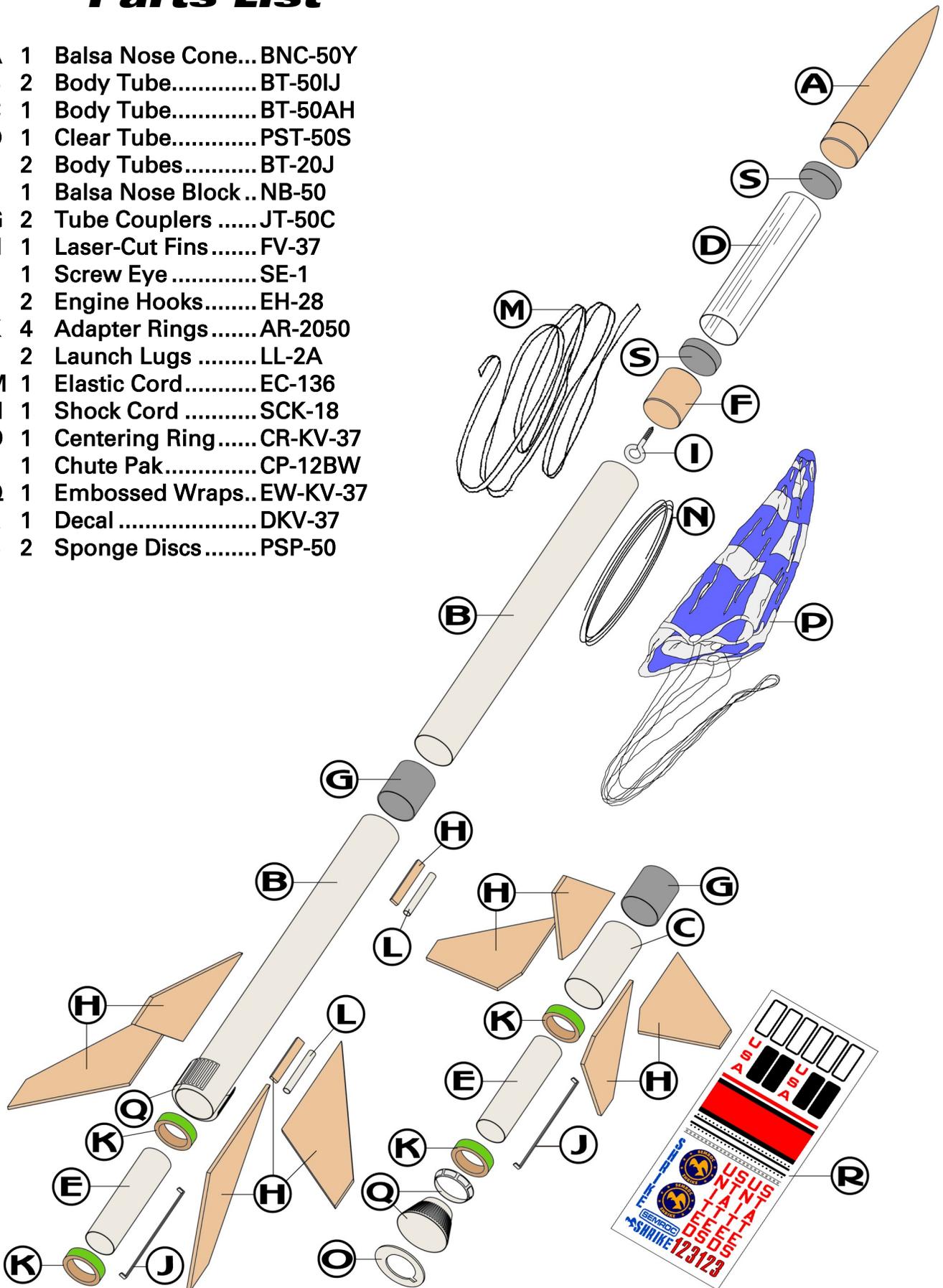
Specifications	Engines	Approx. Altitude
Body Diameter 0.976" (2.5 cm)	A8-0, A8-5	400'
Length 29.2" (74.2 cm)	B6-0, B6-6	900'
Fin Span 5.5" (14.0 cm)	C6-0, C6-7	1700'
Net Weight 1.8 oz. (51.1 g)		

PARACHUTE RECOVERY

Parts List

EXPLODED VIEW

- A 1 Balsa Nose Cone... BNC-50Y
- B 2 Body Tube..... BT-50IJ
- C 1 Body Tube..... BT-50AH
- D 1 Clear Tube..... PST-50S
- E 2 Body Tubes..... BT-20J
- F 1 Balsa Nose Block.. NB-50
- G 2 Tube Couplers JT-50C
- H 1 Laser-Cut Fins FV-37
- I 1 Screw Eye SE-1
- J 2 Engine Hooks..... EH-28
- K 4 Adapter Rings..... AR-2050
- L 2 Launch Lugs LL-2A
- M 1 Elastic Cord..... EC-136
- N 1 Shock Cord SCK-18
- O 1 Centering Ring..... CR-KV-37
- P 1 Chute Pak..... CP-12BW
- Q 1 Embossed Wraps.. EW-KV-37
- R 1 Decal DKV-37
- S 2 Sponge Discs..... PSP-50



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 is also needed.

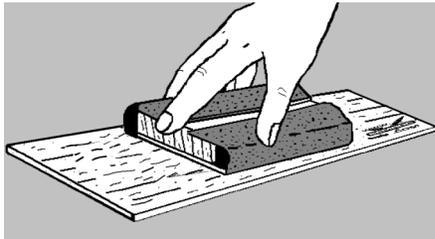


ASSEMBLY

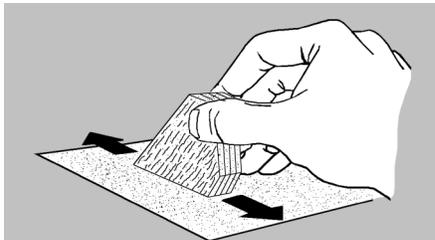
1. These instructions are presented in a logical order to help you put your Shrike™ together quickly and efficiently. Check off each step as you complete it and we hope you enjoy putting this kit together.

FIN PREPARATION

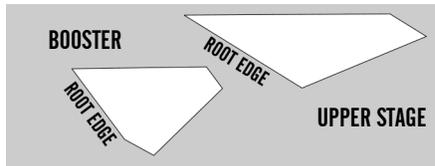
2. Lightly sand each side of both laser-cut balsa sheets (FV-37). Carefully push the laser-cut fins from the sheet. Start at one point on each fin and slowly and gently work around the fin.



3. Stack all like fins in groups. Line each 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.

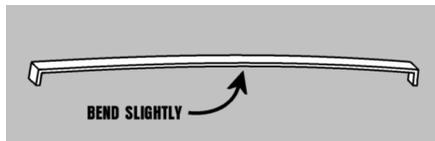


4. Sand all edges, except the root edge, on each fin to a round shape.



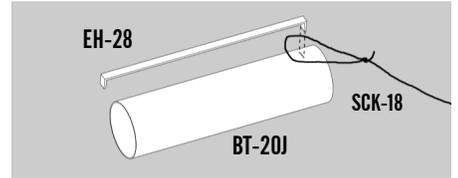
ENGINE MOUNTS

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

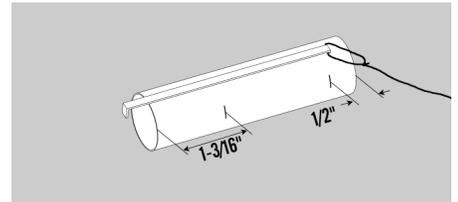


6. Mark one of the engine tubes (BT-20J) 1/4" from one end and place a small slit 1/8" wide at the mark

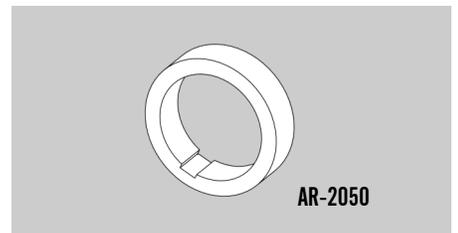
with your hobby knife. This will be the top of the mount. Tie a loop in one end of the yellow Kevlar® cord (SCK-18). Insert one end of the engine hook (EH-28) through the loop and into the slit in the engine tube (BT-20J).



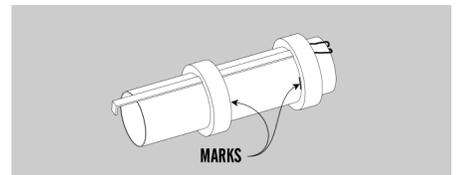
7. Place a mark on the engine tube 1/2" from the top end. Place a second mark exactly 1-3/16" from the bottom of the engine tube.



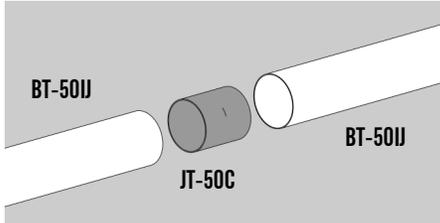
8. Using your hobby knife, cut a small groove 3/32" wide by 1/32" deep on the inside edge of one of the adapter rings (AR-2050). Test fit the groove with an engine hook to make sure it is flush with the inside diameter of the ring. Repeat with the other three rings.



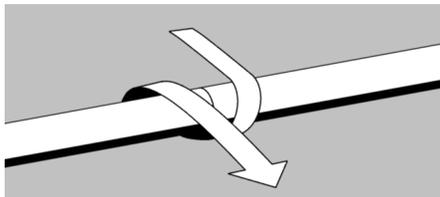
9. Slide an adapter ring from each end until they just touch the marks drawn in a previous step. Apply a bead of glue around each end of the joint between the ring and engine tube, keeping glue off the outside surface of the centering ring. Allow to dry. Tuck the Kevlar® cord inside the engine tube. Set this aside for later. This will be the upper stage mount (with Kevlar). **Make an identical mount for the booster without the Kevlar shock cord.**



- ❑ 10. Mark one of the tubing couplers (JT-50C) in the center, 1/2" from each end. Apply a bead of glue inside one of the main body tubes (BT-50IJ) and insert the coupler halfway into the tube. Apply a bead of glue inside the other main body tube (BT-50IJ) and insert the other half of the coupler inside it. **Do not wait for it to dry!**

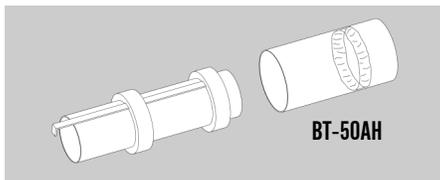


- ❑ 11. Roll the assembly on a smooth flat surface while the glue sets to get the tubes aligned. Make sure the joint is smooth and the two tubes are touching. Wipe any excess glue and wait for the joint to dry completely.

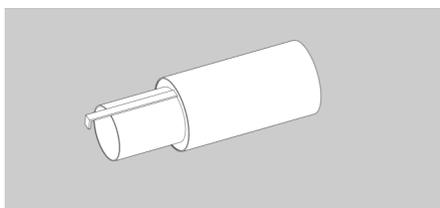


BOOSTER MOUNT

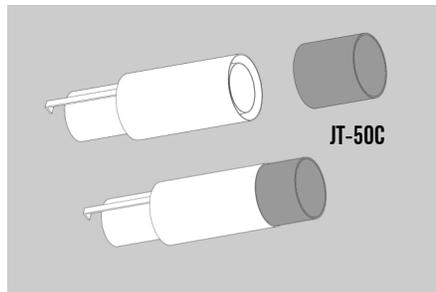
- ❑ 12. Apply a bead of glue inside the booster body tube (BT-50AH) about 1/2" from the top. Align the booster mount (with Kevlar) as shown.



- ❑ 13. Quickly and smoothly push the engine mount into the body tube until the bottom adapter ring is even with the booster body tube. Do not stop once you start inserting the mount or it might freeze in place too soon.



- ❑ 14. Before the booster assembly is dry, apply a bead around the inside of the booster body tube, keeping glue off the engine tube. Insert the remaining tube coupler (JT-50C) inside the booster body tube until it rests against the top adapter ring.

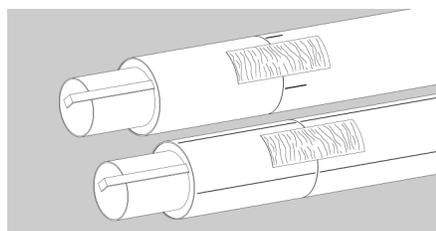


MARK TUBE

- ❑ 15. Stand the main body tube assembly on the fin guide below and make the fin position marks on the sides of the tube. Mark the launch lug "LL" line and mark it as LL.

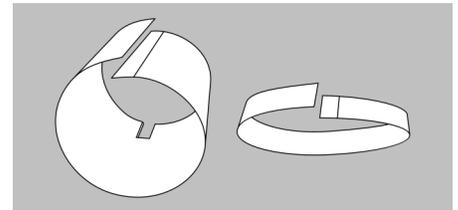


- ❑ 16. Insert the booster assembly into the marked end of the main body tube. Apply a piece of masking tape to hold the two sections together. Find a convenient channel or groove such as a partially open drawer, a door jamb (as shown,) or a piece of molding. Using the channel, extend the marks the full length of the booster tube and halfway up the main body tube to provide lines for aligning the fins and launch lugs.

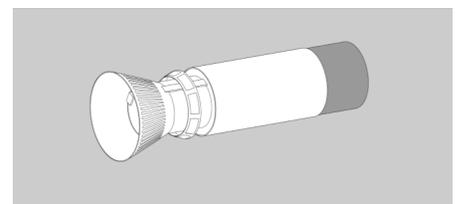


WRAPS

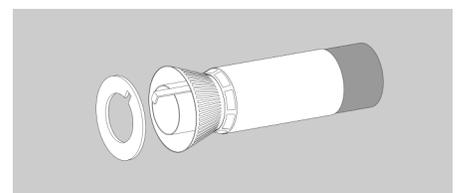
- ❑ 17. Carefully remove the embossed wraps from their sheet (EW-KV-37). Roll the two curved wraps carefully, forming each into a cone with the glossy side outward. Form this carefully to avoid creasing the paper. Apply glue on the flat areas, line up the edge on the depress section and press together on a flat surface. Set the shrouds aside to dry.



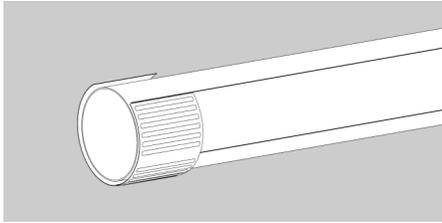
- ❑ 18. Slide the smaller cone over the engine tube on the booster section large end first. Then slide the large cone small end first over the engine tube and against the small cone. Check for fit making sure the engine hook is in the slot in the large shroud. Pull the rings back and apply a bead of glue around the base of the centering ring and the engine tube just below the centering ring. Slide the cones back into place. The large cone fits inside the small cone. Let the assembly set for a few minutes, but not completely dry.



- ❑ 19. Apply a small bead of glue just inside the large end of the bottom wrap. Slide the large centering ring over the end of the engine tube with the engine hook inside the slot and fit it just inside the end of the large wrap. Apply a thin bead of glue around the joint against the wrap and the engine tube, keeping glue away from the engine hook. Allow to dry in an upright position.

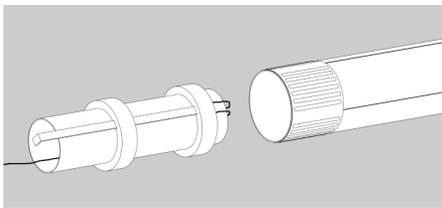


❑ 20. Apply the body wrap to the bottom of the main body tube (glossy side outward) with a thin bead of glue spread on the underside of the wrap. Align one end of the wrap on one of the fin lines and even with the bottom of the body tube ring.

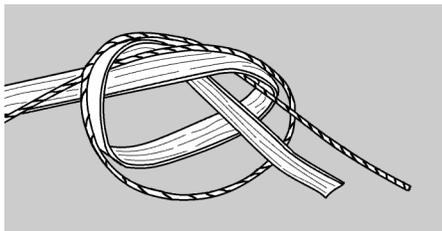


GLUE MOUNT

❑ 21. Apply a bead of glue inside the main body tube assembly in the marked end. Quickly and smoothly push the engine mount into the body tube until the end of the engine tube is even with the main body tube.

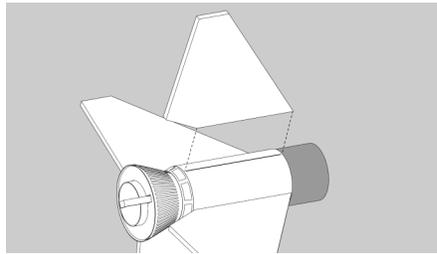


❑ 22. Tie the free end of the Kevlar® cord to one end of the elastic cord (EC-136) using an overhand knot. Pull the free end of the elastic cord back through the engine tube and out the top of the main body tube assembly.

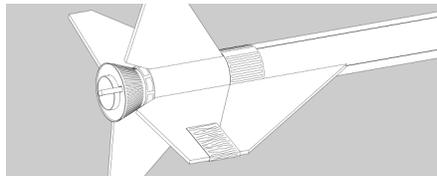


ATTACH FINS

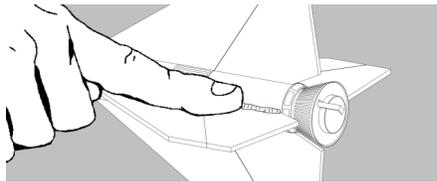
❑ 23. Apply glue to the root edge of one of the booster fins and position it along one of the lines drawn on the side of the booster body tube and even with the top end of the tube. Remove, allow to almost dry, apply additional glue, and reposition. Repeat for the other three fins. Allow to dry in an upright position, checking frequently to make sure they remain aligned.



❑ 24. Insert the booster assembly into the bottom of the main body tube. Align the fins on the booster with the lines drawn on the main body tube using the LL line to orient the tubes correctly. Apply glue to the root edge of one of the upper stage fins and position it along one of the lines drawn on the side of the booster body tube and even with the bottom of the tube. Remove, allow to almost dry, apply additional glue, and reposition. Apply a small piece of masking tape to hold the upper stage fin against the corresponding booster fin. Repeat for the other three fins. Allow to dry in an upright position, checking frequently to make sure they remain aligned. When dry, remove the masking tape.

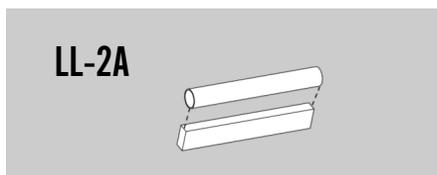


❑ 25. After the fin assembly is completely dry, run a very small bead of glue along both sides of each fin-body tube joint. Using your forefinger, smooth the glue into fillets. Separate the two sections. Wipe any excess glue and allow to dry.

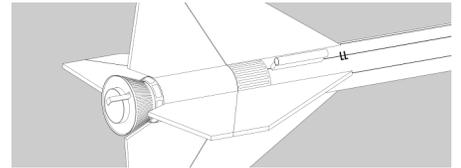


LAUNCH LUGS

❑ 26. Glue one launch lug (LL-2A) to one of the standoffs from the fin sheets. After it is dry, apply a heavy fillet of glue on both sides. Allow to completely dry. Repeat with the second assembly.

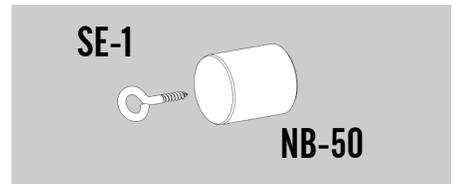


❑ 27. Glue one launch lug assembly along the marked line "LL" drawn earlier on the main body tube. Offset it just above the body wrap. Glue the second launch lug assembly along the marked line and even with the joint between the two main body tubes. Sight down the tube to insure the launch lugs are parallel with the drawn line. Apply a bead of glue along the sides of each launch lug assembly.

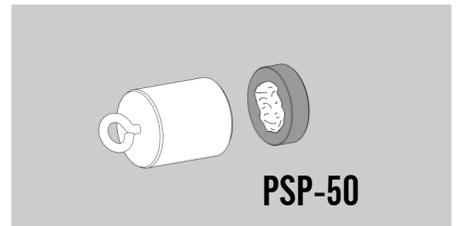


PAYLOAD SECTION

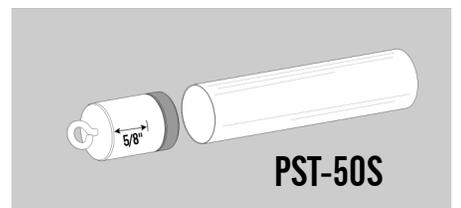
❑ 28. Twist the screw eye (SE-1) into the center of the base of the nose block (NB-50). Remove it and squirt a drop of glue into the hole. Reinsert the screw eye and run a bead of glue around the shaft against the nose block.



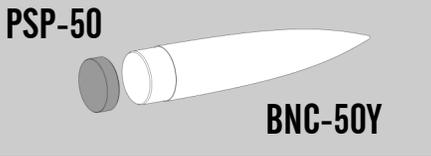
❑ 29. Apply a bead of glue to one side on one of the payload sponges (PSP-50). Center it on the top of the nose block and hold in place until the glue sets.



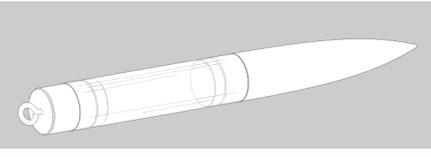
❑ 30. Mark the nose block 5/8" from the screw eye end. Apply a bead of cyanoacrylate (CA) glue inside the clear payload tube and insert the nose block until the line is even with the end of the tube.



- ❑ 31. Apply a bead of glue to one side the remaining payload sponge (PSP-50). Center it on the base of the nose cone (BNC-50Y) and hold in place until the glue sets.

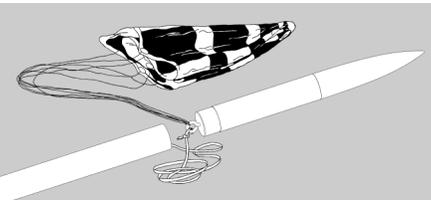


- ❑ 32. Insert the nose cone (BNC-50Y) in the top of the payload tube and check for proper fit. The nose cone should be snug to hold itself in alignment. If it is too loose, add some masking tape.



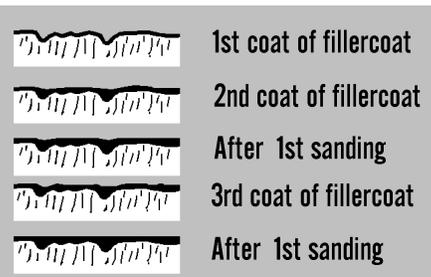
FINAL ASSEMBLY

- ❑ 33. Assemble the chute (CP-12BW) using the instructions that came 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. Attach the free end of the elastic cord to the screw eye. Put a drop of glue on that joint as well.



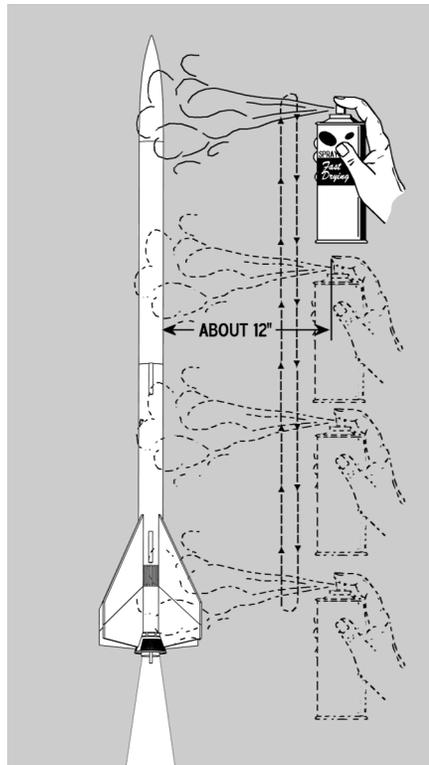
FINISHING

- ❑ 34. 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.

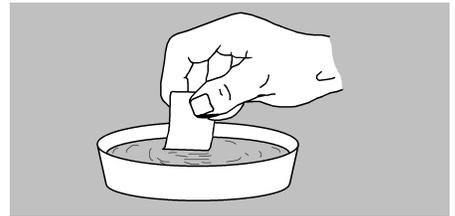


- ❑ 35. After all balsa surfaces have been prepared, wipe off all balsa dust with a dry cloth. First spray the model with an enamel primer. Choose a high visibility color like white for the final color. Refer to the front for suggested painting.

- ❑ 36. Before painting, either mask off the clear payload section or remove it and just replace it with just the nose cone. 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.



- ❑ 37. After the paint has dried, decals should be applied. The decals supplied with the Shrike™ are water-slide 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.



FLIGHT PREPPING

- ❑ 38. Mounting the engines: Mount an engine in each stage using the engine hook to secure it. Engines used in the lower stage should always be booster engines with 0 seconds delay such as B6-0 or C6-0. Upper stage engines should be long delay. The upper stage may be flown as a single stage. Align the booster into the upper stage making sure the fins are aligned.

- ❑ 39. 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.

- ❑ 40. 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.

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

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