

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 launching Estes rockets or knowing someone that did. Estes Industries has introduced millions of youngsters of all ages to model rocketry for over half a century.

About the Bandit™

The original Bandit was designed by Mark Kellner at Estes Industries. It was one of the first models using the ducted ejection system of baffles to eliminate the need for recovery wadding. The elegant design of the internal baffles is hidden as the model is built, but teaches the principles of cooling the gases before the chute is deployed. It was released in the Late Fall 1971 Catalog as Catalog Number K-48 and retailed for \$4.25.

The Semroc Retro-Repro™ Bandit™ is very similar in design to the original. The laser-cut internal tubes are thicker and the holes are slightly larger to accommodate modern engines. The die-cut fins are replaced with more accurate laser-cut fins.

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.

April 17, 2015

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SEMROC
BANDIT™

Ejection Ducting System no recovery wadding needed

Classic 1971 Retro Reproduction

Laser Cut Balsa Fins

Precision Turned Balsa Nose Cone

Water Slide Decals

15" Parachute Recovery

*Design by
Mark Kellner*

MADE IN THE USA

FLYING MODEL ROCKET KIT

Made in the U.S.A by Semroc - Dayton, Ohio

Bandit™ Kit No. KV-81

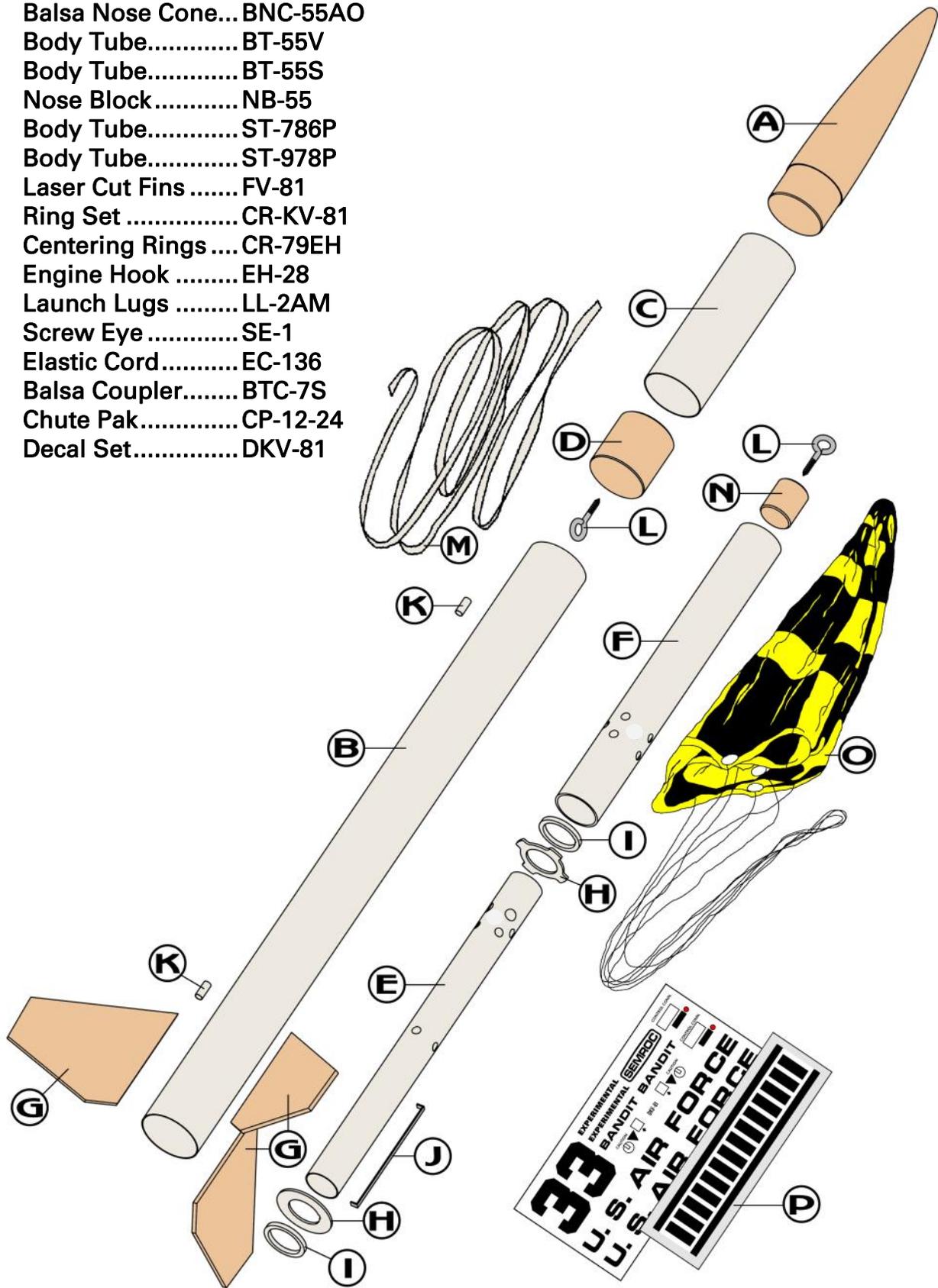
Specifications	Engine	Approx. Altitude
Body Diameter 1.325" (3.4 cm)	B6-4	250'
Length 25.7" (65.3 cm)	C6-5	700'
Fin Span 6.8" (17.3 cm)		
Net Weight 2.4 oz. (68.1 g)		

Skill level 2

Parts List

EXPLODED VIEW

- A 1 Balsa Nose Cone... BNC-55AO
- B 1 Body Tube..... BT-55V
- C 1 Body Tube..... BT-55S
- D 1 Nose Block..... NB-55
- E 1 Body Tube..... ST-786P
- F 1 Body Tube..... ST-978P
- G 1 Laser Cut Fins FV-81
- H 1 Ring Set CR-KV-81
- I 2 Centering Rings CR-79EH
- J 1 Engine Hook EH-28
- K 2 Launch Lugs LL-2AM
- L 2 Screw Eye SE-1
- M 1 Elastic Cord..... EC-136
- N 1 Balsa Coupler..... BTC-7S
- O 1 Chute Pak..... CP-12-24
- P 1 Decal Set..... DKV-81



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.

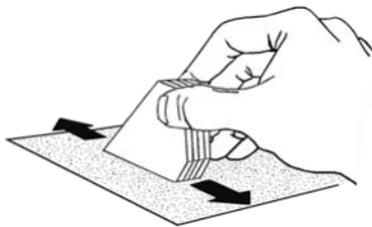


ASSEMBLY

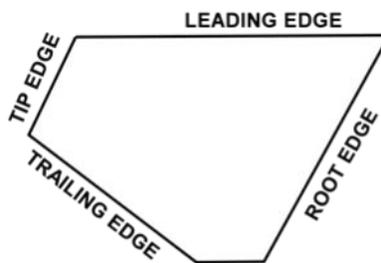
1. These instructions are presented in a logical order to help you put your Bandit™ together quickly and efficiently. Check off each step as you complete it and we hope you enjoy putting this kit together.

FIN PREPARATION

2. Lightly sand each side of the laser-cut fins (FV-81). Stack all the fins in a set. Line the set of fins up squarely and sand the fins back and forth over some fine sandpaper to get rid of the hold-in tabs as shown below.



3. Round the leading and trailing edges of each fin. Leave the tip and root edges flat. Repeat for all three fins. The trailing edge can be sanded to a bevel for a more aerodynamic shape. The root edge will be glued to the body tube.

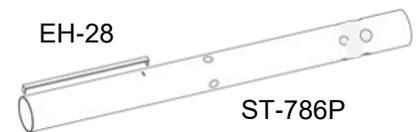


ENGINE MOUNT

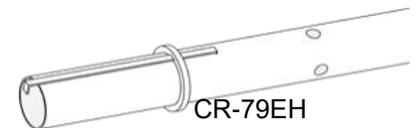
4. Bend the engine hook (EH-28) slightly so it forms a slight bow in the direction shown.



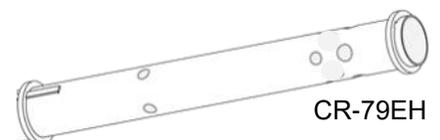
5. Insert the engine hook into the small slot in the smallest punched tube (ST-786P).



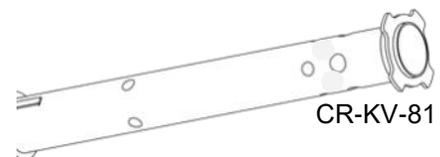
6. Slide one of the small centering rings (CR-79EH) over the engine hook until it is about 2" from the bottom of the punched tube. Apply a thin bead of glue around both sides of the joint formed by the ring and tube, keeping glue off the outside edge of the ring.



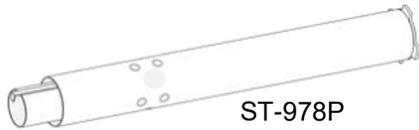
7. Slide the second small centering ring (CR-79EH) over the top end of the punched tube until it is 1/8" from the top of the tube. Apply a thin bead of glue around both sides of the joint formed by the ring and tube, keeping glue off the outside edge of the ring.



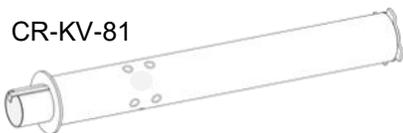
8. Carefully punch out the two fiber rings (CR-KV-81). Slide the cross shaped ring over the top of the small punched tube and against the centering ring just installed. Apply a bead of glue around the top of the ring where it contacts the tube. Keep glue off the outside edge of the small centering ring.



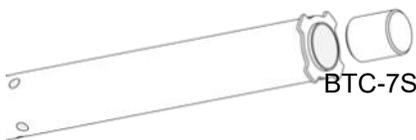
❑ 9. Check the large punched tube (ST-978P) for fit over the engine mount assembly. The punched end should be nearest the engine hook (bottom) end. Remove and apply a bead of glue around each of the small centering rings. Slide the large punched tube over the engine mount assembly until it is flush with the top cross ring.



❑ 10. Slide the remaining centering ring (CR-KV-81) over the engine hook and engine tube until it is touching the large punched tube. Run a fillet of glue around each side of the ring where it contacts the tubes. Allow to dry.



❑ 11. Apply a bead of glue inside the top of the engine mount assembly. Insert the nose block (BTC-7S) into the end of the tube until about 1/16" is showing. Run a bead of glue around the exposed edge of the nose block and tube junction. Allow to dry.

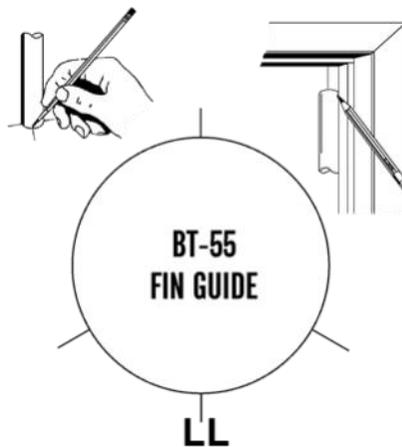


❑ 12. Screw one of the screw eyes (SE-1) into the center of the nose block, remove, and insert glue into the hole. Reinsert the screw eye and allow to dry.



MARK TUBE

❑ 13. Stand the large body tube (BT-55V) on the fin guide below and make the fin and launch lug position marks on the sides of the tube. Designate the launch lug line with an "LL". 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 at least 8 inches from the bottom of the tube to provide lines for aligning the fins and launch lugs.



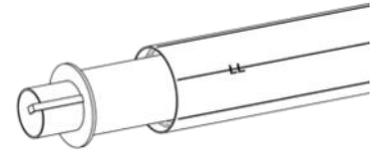
ATTACH MOUNT

❑ 14. Attach one end of the elastic cord (EC-136) to the screw eye in the engine mount. Apply a drop of glue to the knot. Insert the free end of the elastic cord through the main body tube starting in the marked end. Pull the elastic cord out of the top of the tube.



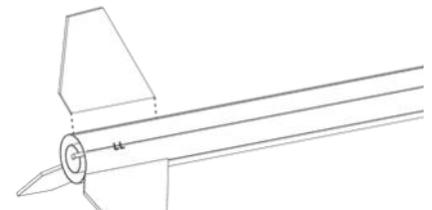
❑ 15. Continue pulling the elastic cord while inserting the top of the engine mount into the main tube. Push it into the main tube until about an inch remains outside the main tube. Run a thick bead of glue inside the main tube and push the engine mount into

the main tube until the bottom of the engine tube is even with the bottom of the main tube.



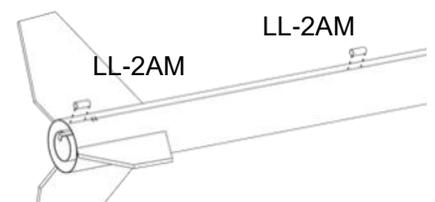
ATTACH FINS

❑ 16. Apply glue to the root edge of one of the fins and position it along one of the lines drawn for the fins (not the LL line) on the side of the body tube and even with the bottom of the main tube. Remove the fin, set it aside and allow it to almost dry, apply additional glue, and reposition. Repeat for the other two fins. If you follow these instructions, the fins will not require much additional work to keep them aligned. Allow the fins to completely dry, checking carefully to make sure they are parallel with the main body tube.



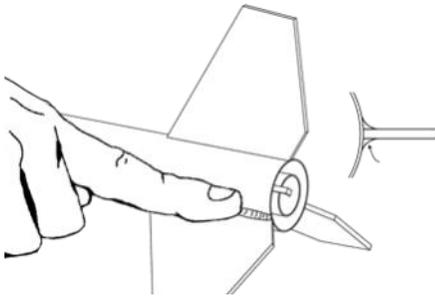
LAUNCH LUG

❑ 17. Apply a bead of glue to one of the launch lugs (LL-2AM) and apply it to the main body tube on the LL line and even with the bottom of the tube. Glue the other launch lug on the LL line and about 5" from the bottom of the tube. Sight from one end to make sure they are aligned with each other and parallel with the LL line.



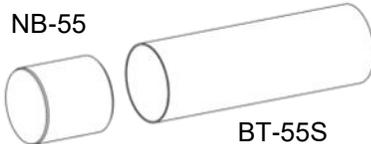
APPLY FILLETS

❑ 18. 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. Apply a fillet of glue on each side of both of the launch lugs. Allow this assembly to dry in a vertical position, checking often for runs.

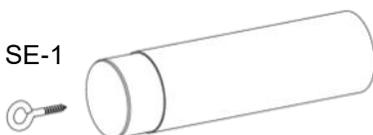


PAYLOAD SECTION

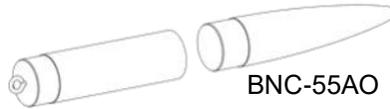
❑ 19. Insert the nose block (NB-55) in the payload tube (BT-55S) and check for proper fit. The nose block should be snug to hold itself in alignment. If it is too loose, masking tape may be needed later. If it is too tight, sand the shoulder slightly. Apply a bead of glue inside one end of the payload tube and insert the nose block into the payload tube leaving about 3/4" exposed.



❑ 20. Insert the remaining screw eye (SE-1) into the center of the nose block, remove, and insert glue into the hole. Reinsert the screw eye. Allow to dry.

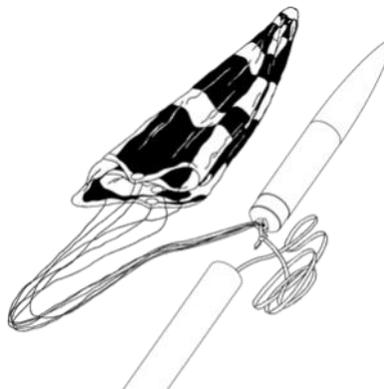


❑ 21. Insert the nose cone (BC-55AO) in the top of the payload tube and check for proper fit. The nose cone should be snug to hold itself in alignment. If it is too loose, add masking tape. If it is too tight, sand the shoulder slightly. If you are not using a payload, the nose cone can be glued in place.



FINAL ASSEMBLY

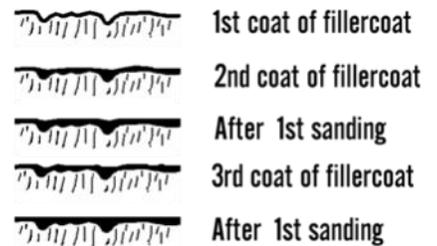
❑ 22. Assemble the chute (CP-12-24) using the instructions to build a 15" parachute. Pull the lines tight on the chute and make sure they are all of equal length. Attach the chute by tying them to the screw eye. Put a drop of glue on the joint to keep the lines from moving. Attach the free end of the elastic cord to the screw eye. Put a drop of glue on that joint as well.



This completes the assembly of your

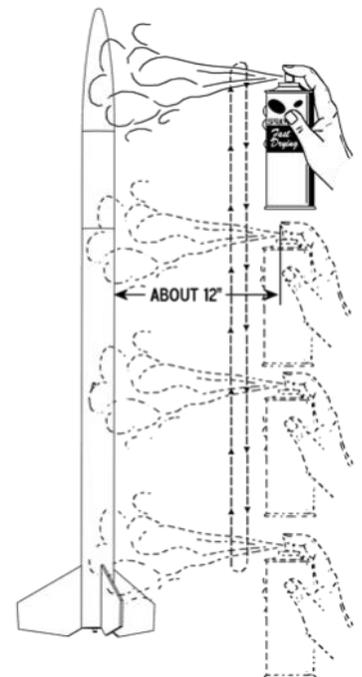
BANDIT FINISHING

❑ 23. 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.



❑ 24. 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, black and yellow for the final colors.

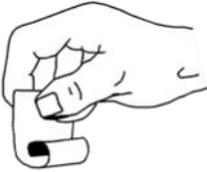
❑ 25. Spray painting your model with a fast-drying enamel will produce the best results. PATIENCE...is the most important ingredient. Use several thin coats, allowing each coat to completely dry before the next coat. Start each spray a few inches above the model and end a few inches below the model.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



❑ **26.** After the paint has dried, decals should be applied. The decals supplied with the Bandit™ are waterslide decals. Each decal should be cut separately from the sheet. All the gray should be removed around the borders of the roll pattern strip. 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.



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



FLIGHT PREPPING

❑ **28.** 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.

❑ **29.** Even though the baffle system provides much protection for the chute, it is recommended to add 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 payload section into place, making sure it does not pinch the shock cord or parachute.

❑ **30.** 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.

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

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