

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 Omega™

The original Astron Omega was released by Estes Industries in 1970. It was designed by Mike Dorffler as a launch vehicle for his world famous Cineroc, the first commercially available 8mm camera designed for a model rocket. The Omega was sold in a standalone version without the Cineroc as Cat. No. 701-K-52 initially for \$3.50. A version with a standard payload was sold as 701-K-52P for \$5.00 and it was sold along with the Cineroc as 701-RC-8 for a special combo price of \$22.95.

The Semroc Retro-Repro™ Omega™ is close to the original design. The simulated Cineroc payload is included. The standard payload section is offered as an option. Both stages have slotted tubes for perfect fin alignment. The Omega features a waterslide decal. The shock mount is replaced with a Kevlar® cord for greater reliability.

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 14, 2012

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

OMEGA™

CLASSIC DESIGN

**WITH SIMULATED
CINEROC PAYLOAD**

**SLOTTED TUBES FOR
STRAIGHT FLIGHTS**

EASY TO BUILD

**BALSA FINS,
NOSE CONE &
REDUCER**

Design by
Mike Dorffler

FLYING MODEL
ROCKET KIT



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

Omega™ Kit No. KV-64

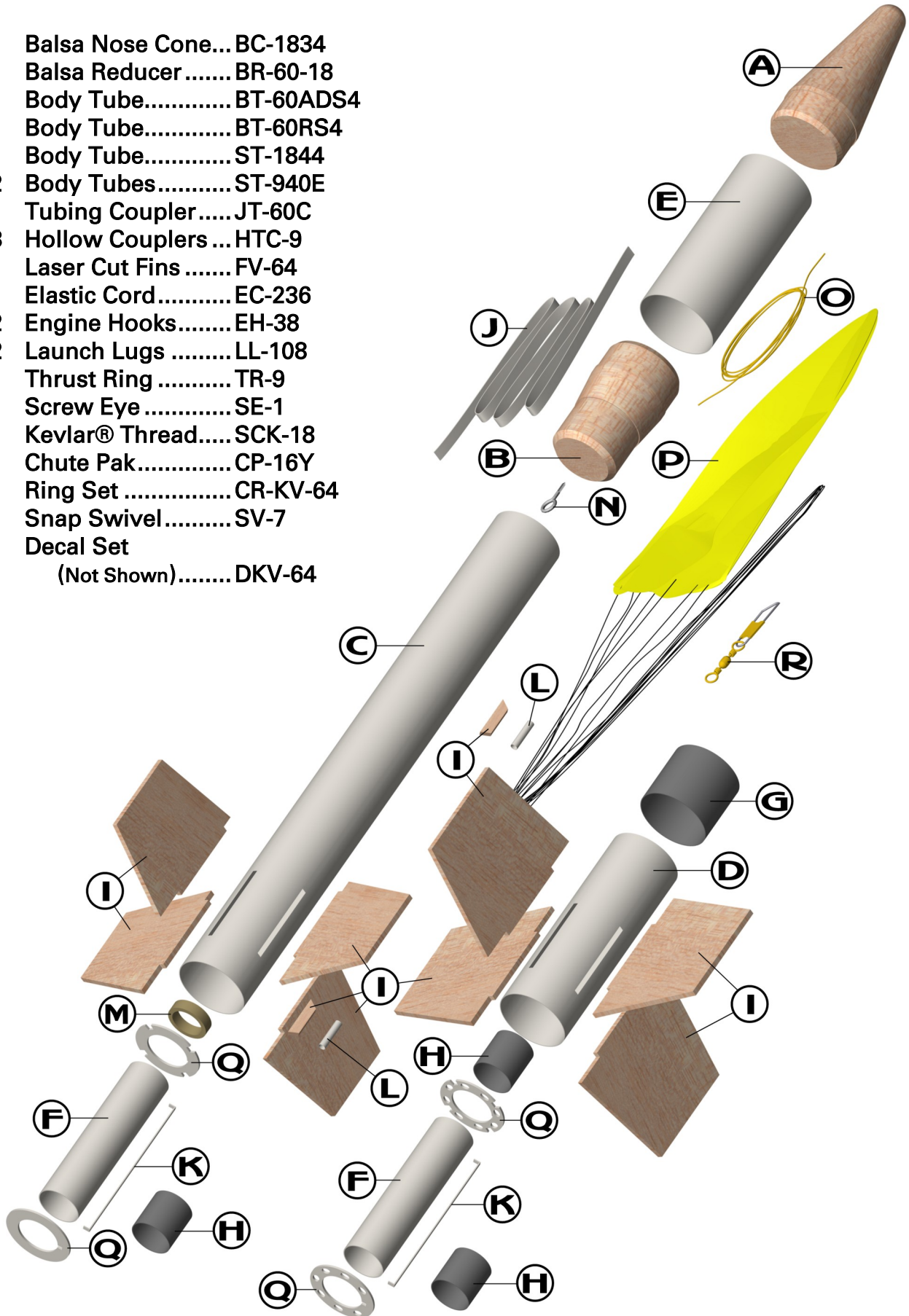
Specifications	Engine	Approx. Altitude
Body Diameter 1.84" (4.7 cm)	C11-0,C11-5	950'
Length 27.8" (70.6 cm)	D12-0,D12-5	1650'
Fin Span 7.2" (18.3 cm)	D12-0,E9-6	2200'
Net Weight 3.2 oz. (90.8 g)		

PARACHUTE RECOVERY

Parts List

EXPLODED VIEW

- A 1 Balsa Nose Cone... BC-1834
- B 1 Balsa Reducer BR-60-18
- C 1 Body Tube..... BT-60ADS4
- D 1 Body Tube..... BT-60RS4
- E 1 Body Tube..... ST-1844
- F 2 Body Tubes..... ST-940E
- G 1 Tubing Coupler..... JT-60C
- H 3 Hollow Couplers... HTC-9
- I 1 Laser Cut Fins FV-64
- J 1 Elastic Cord..... EC-236
- K 2 Engine Hooks..... EH-38
- L 2 Launch Lugs LL-108
- M 1 Thrust Ring TR-9
- N 1 Screw Eye SE-1
- O 1 Kevlar® Thread..... SCK-18
- P 1 Chute Pak..... CP-16Y
- Q 1 Ring Set CR-KV-64
- R 1 Snap Swivel..... SV-7
- S 1 Decal Set
(Not Shown)..... DKV-64



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.



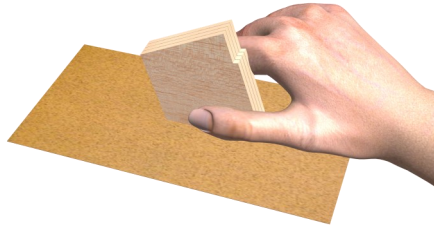
ASSEMBLY

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

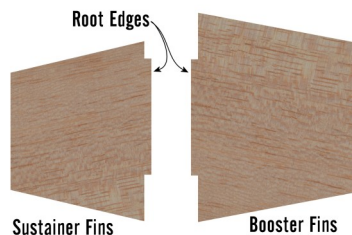
FIN PREPARATION

2. Lightly sand each side of the two laser-cut fin sheets (FV-64). Carefully push the laser-cut fins from their sheet. Start at one point on each fin and slowly and gently work around the fin.

3. Stack all the like fins in sets. Line each 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.



4. Round all the edges of each fin, except leave the root edges flat. Repeat for all eight fins. The root edges will be glued to the body tube.



ENGINE MOUNTS

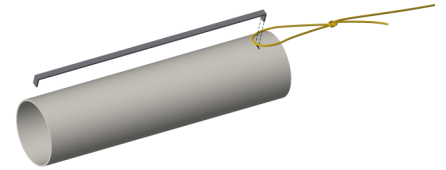
5. Bend both engine hooks (EH-38) slightly so they form a slight bow in the direction shown.



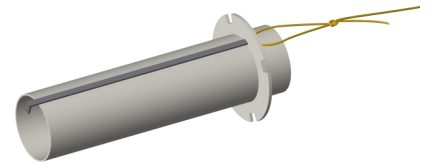
6. Tie a loop in one end of the yellow Kevlar® cord (SCK-18). Pull knot tight.



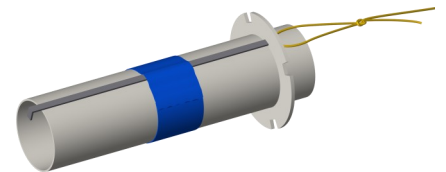
7. Insert one end of one of the engine hooks (EH-38) through the loop in the Kevlar cord and into one of the pre-punched engine tubes (ST-940E).



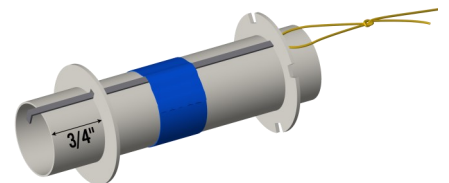
8. Carefully remove the four centering rings from the laser-cut sheet (CR-KV-64). Select the one with four notches and no smaller holes and align the notch over the engine hook. Slide it from the bottom of the engine tube until it is against the end of the engine hook and against the yellow Kevlar® cord.



9. 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.

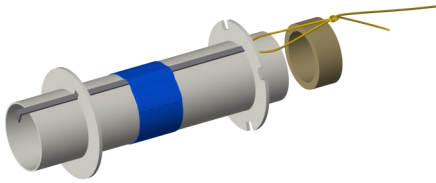


10. Select the plain centering ring that has no smaller holes. Align the notch over the engine hook and slide it from the bottom of the engine tube until it is 3/4" from the bottom of the engine tube. Apply a bead of glue around both sides of both centering rings and against the engine tube. Keep glue 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.

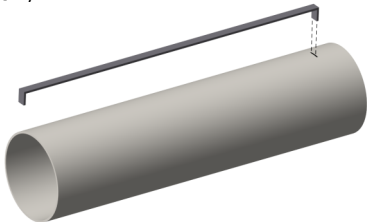


BOOSTER

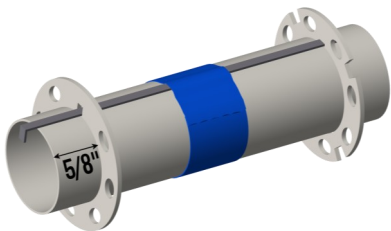
❑ 11. Glue the thrust ring (TR-9) in place inside the top of the engine tube and against on top of the engine hook. When completely dry, pull the yellow shock cord back through the engine tube and out the back of the engine mount.



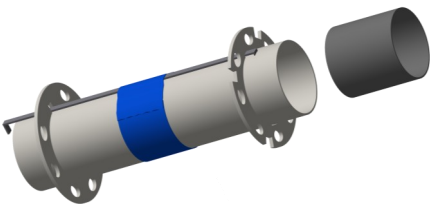
❑ 12. Insert one end of the remaining engine hook (EH-38) into the other pre-punched engine tube (ST-940E).



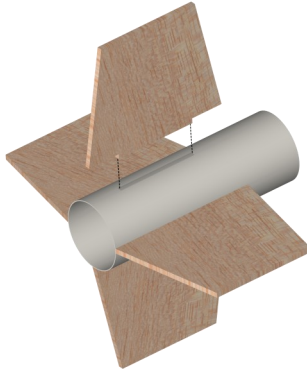
❑ 13. Select the centering ring with four large notches and elliptical holes and slide it over the top of the engine tube until it just covers the top of the engine hook. Wrap a layer of masking tape around the center of the tube and glue as before. Slide the remaining centering ring from the bottom until it is 5/8" from the bottom of the engine tube. Apply a bead of glue around all joints, keeping the glue away from the elliptical vent holes and the lower notch. Allow to dry in an upright position.



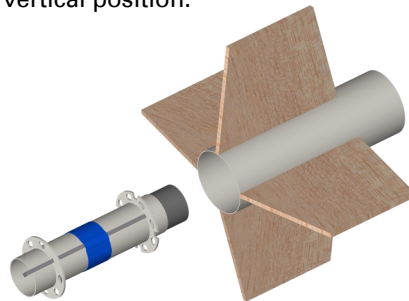
❑ 14. Glue one of the small couplers (HTC-9) in place inside the top of the engine tube and against on top of the engine hook.



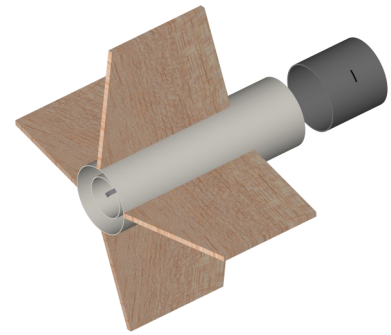
❑ 15. Apply glue to the root edge and tab of one of the large (booster) fins and insert into one of the slots in the shorter slotted booster tube (BT-60RS4). The slots are near the bottom of the tube. Align the leading edge (that follows the wood grain) toward the top of the tube. Remove the fin, set it aside and allow it to almost dry, apply additional glue, and reposition. Repeat for the other three booster 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 form right angles with the booster body tube. Sight from the top to make sure alternate fins are parallel with each other.



❑ 16. Apply a thick bead of glue inside the bottom end of the booster body tube. Insert the booster engine mount assembly (the one without the shock cord) with the coupler end first into the booster body tube. Align the four notches with the extended fin tabs and insert until the bottom ring comes in contact with the fin tabs. Do not stop until it is in the correct place. Allow to dry completely in a vertical position.

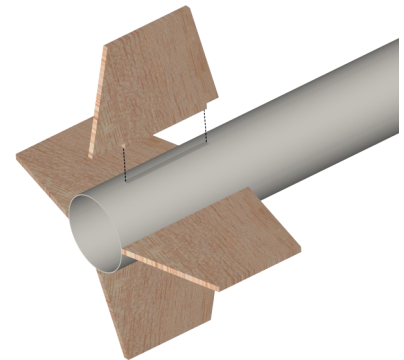


❑ 17. Mark the large coupler (JT-60C) at its halfway point, 3/4" from either end. Apply a thick bead of glue inside the top end of the booster body tube. Insert the coupler until the mark is even with the top of the booster body tube. Allow to dry completely in a vertical position.

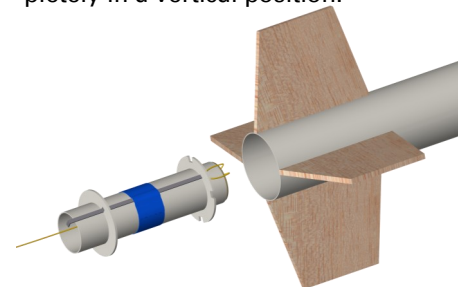


SUSTAINER

❑ 18. Apply glue to the root edge and tab of one of the remaining fins and insert into one of the slots in the long slotted sustainer tube (BT-60ADS4). The slots are near the bottom of the tube. Align the leading edge (that follows the wood grain) toward the top of the tube. Remove the fin, set it aside and allow it to almost dry, apply additional glue, and reposition. Repeat for the other three sustainer fins. Allow the fins to completely dry, checking carefully to make sure they form right angles with the main body tube. Sight from the top to make sure alternate fins are parallel with each other.



❑ 19. Apply a thick bead of glue inside the bottom end of the sustainer body tube. Insert the sustainer engine mount assembly with the thrust ring end first into the sustainer body tube. Align the four notches with the extended fin tabs and insert until the bottom ring comes in contact with the fin tabs. Do not stop until it is in the correct place. Allow to dry completely in a vertical position.

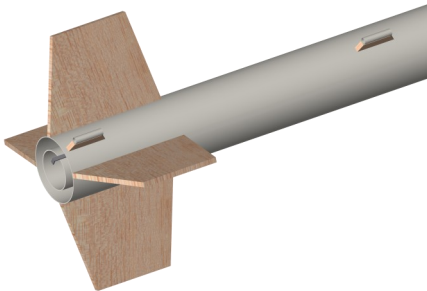


LAUNCH LUGS

❑ 20. Glue one of the launch lugs (LL-108) to the next to the longest edge on one of the fin standoffs as shown. Allow to dry. Repeat for the other launch lug and standoff.



❑ 21. Apply a bead of glue to one of the launch lug assemblies opposite the lug and apply it to the sustainer body tube centered between two fins and even with the bottom of the tube. Attach the second launch lug assembly about 8" from the bottom assembly and parallel with it. Sight from one end to make sure they are parallel with the body tube and aligned with each other. Allow to dry.

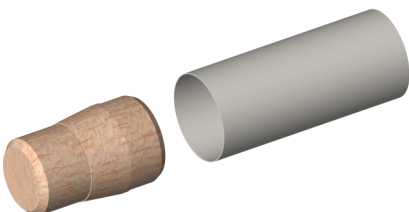


APPLY FILLETS

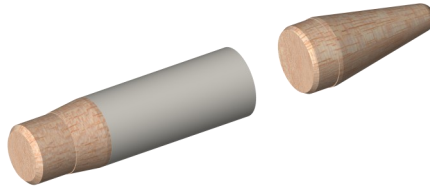
❑ 22. After the fins and launch lug standoffs are completely dry, run a small bead of glue along both sides of each fin-body tube joint and standoff. Using your forefinger, smooth the glue into fillets. Apply a fillet of glue on each side of the launch lugs. Allow this assembly to dry in a vertical position.

PAYLOAD SECTION

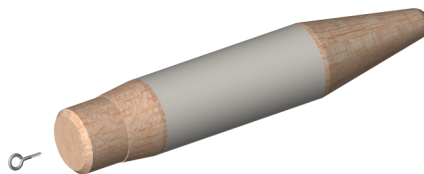
❑ 23. Check the balsa reducer (BR-60-18) for fit in the payload tube (ST-1844) and the top of the sustainer body tube. A small amount of sanding may be necessary. Apply a thin bead of glue just inside one end of the payload tube. Insert the balsa reducer until its shoulder is flush with the payload tube. Allow to dry.



❑ 24. Insert the nose cone (BC-1834) into the payload tube and check for fit. A small amount of sanding may be necessary. Make sure it is tightly fitted, using masking tape if necessary. If a payload is added, screws or external tape may be required to secure the nose cone in flight.

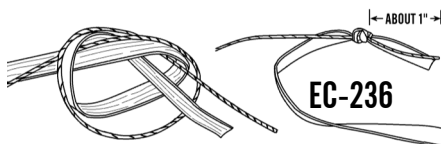


❑ 25. Twist the screw eye (SE-1) into the center of the balsa reducer. Unscrew it and squirt glue into the hole. Reinstall the screw eye and wipe off any excess glue.

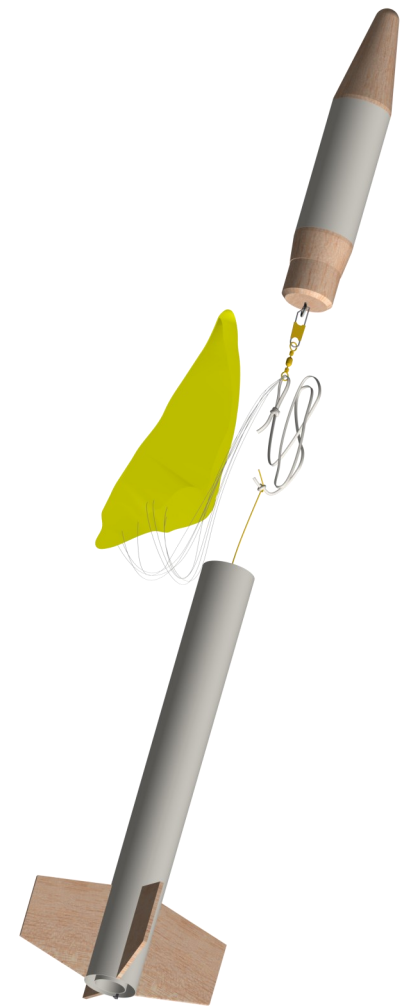


FINAL ASSEMBLY

❑ 26. Tie the free end of the Kevlar® cord to one end of the elastic cord (EC-236) using an overhand knot. Pull the elastic cord and Kevlar cord back through the sustainer body tube and out the top of the tube.

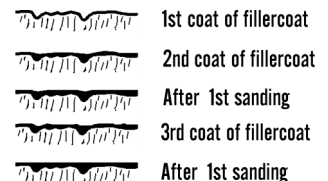


❑ 27. Assemble the chute (CP-16Y) using instructions provided with it. Pull the lines tight on the chute and make sure they are all of equal length. Attach the chute by tying them to eye in the snap swivel (SV-7). Put a drop of glue on the joint to keep the lines from moving. Attach the free end of the elastic cord to the same eye in the snap swivel. Put a drop of glue on that joint as well. Attach the hook of the snap swivel to the screw eye in the payload section.



FINISHING

❑ 28. 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.



❑ 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 for the final color.

❑ **30.** 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.

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

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

FLIGHT PREPPING

❑ **33.** Mounting the engines: To fly the Omega as a two-stage model, select a 24mm booster engine for the bottom stage. This should have zero delay, such as a D12-0 or E12-0. If the length of the engine is 3.75", it will work directly. If the engine is the shorter 2.75" length, you must insert a spacer (**HTC-9**) ahead of 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. Select an upper stage 24mm engine for the sustainer stage, such as a D12-5 or an E12-6. Again, if the engine is short, use a spacer to make it fit properly. Insert the booster coupler into the sustainer and align the fins.

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

❑ **35.** 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.

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

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