About Centuri Engineering Company

Centuri Engineering Company was started in 1961 by Leroy (Lee) Piester in his garage while he was still in college in Phoenix, Arizona. With his wife, Betty, they built Centuri into one of the largest model rocket companies ever.

Centuri was known for its unusual and innovative designs, producing over 140 different kits with something for every model rocketeer. They also produced model rocket engines and pioneered the modern composite high powered engines with their Enerjet line.

Centuri Engineering was sold to Damon in the late 1960's and shared the same parent corporation with Estes Industries, the largest model rocket company in the world. The Centuri product line was kept separate from the Estes line until 1983. A few of the old kits have been reissued by Estes since then, but for the most part, Centuri Engineering Company lives today only in the dreams of the senior members of the model rocket community.

About the Egg Crate™

The original Egg Crate was released by Centuri Engineering Company in 1970. It used a paper shroud instead of a balsa reducer. It included parts for either a two engine mount or three engine mount version. Separate parts could be purchased to make the two mounts interchangeable. The original Centuri Egg Crate had a very short run of only two years. It was replaced with a totally different design based on the ST-13 and a plastic payload section using 29mm engines and sold under the Enerjet brand. The original version was Catalog #KC-11 and retailed for $4.50.

The Semroc Retro-Repro™ Egg Crate™ is close to the original design. It substitutes a balsa reducer for the paper version. It also includes all the parts for a dual 18mm mount and a single 24mm mount that are interchangeable. The Egg Crate™ features waterslide decals and an ejection baffle.

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 15, 2013, June 9, 2015

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

Egg Crate™
Kit No. KV-39

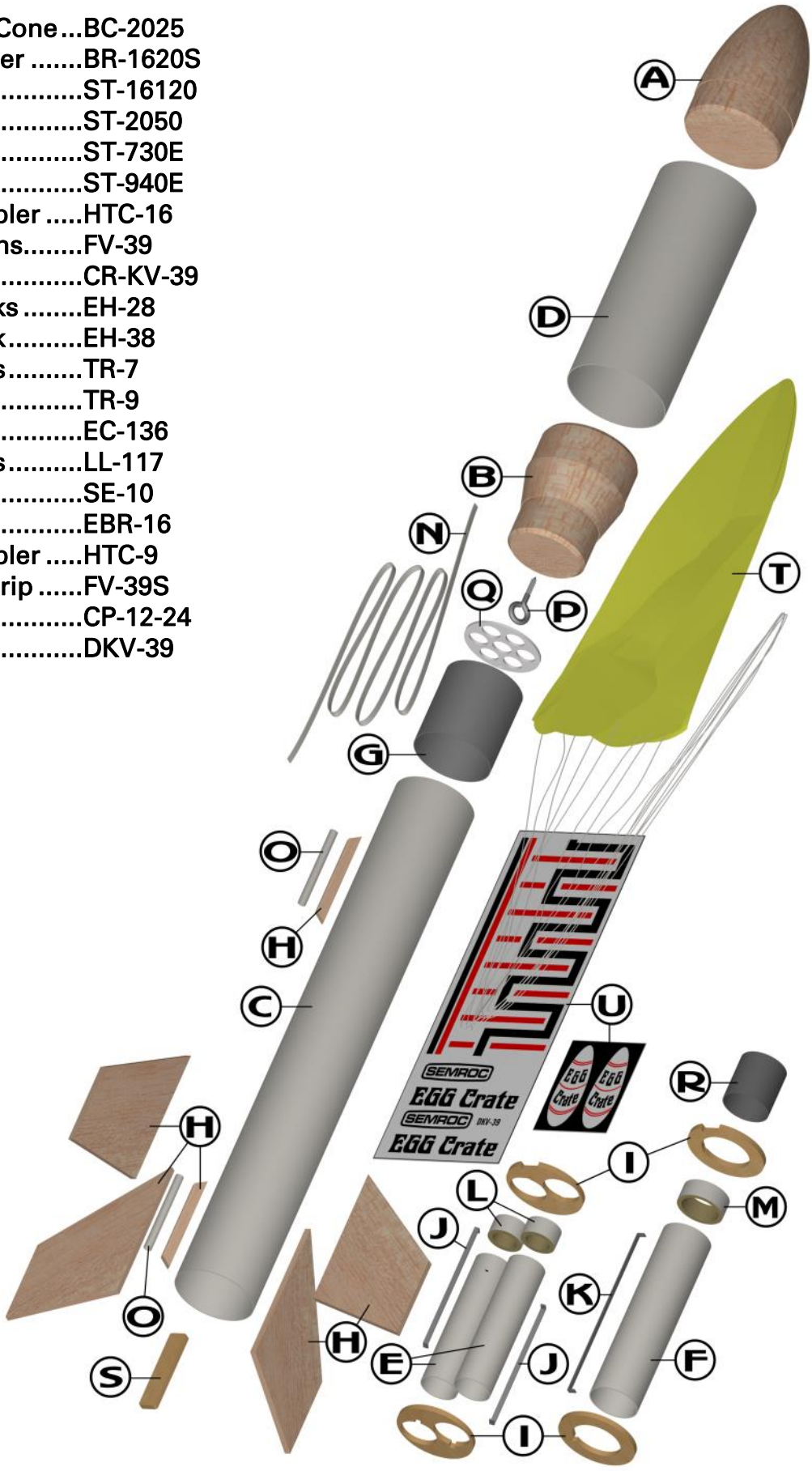
Specifications		Engine	Approx. Altitude
Body Diameter	2.04" (5.2 cm)	Dual B6-4	500'
Length	21.1" (53.6 cm)	Dual C6-5	1100'
Fin Span	6.1" (15.5 cm)	D12-5	1050'
Net Weight	2.9 oz. (82.3 g)	E12-6	1700'

Skill Level 2

Parts List

A	1	Balsa Nose Cone	BC-2025
B	1	Balsa Reducer	BR-1620S
C	1	Body Tube	ST-16120
D	1	Body Tube	ST-2050
E	2	Body Tubes	ST-730E
F	1	Body Tube	ST-940E
G	1	Hollow Coupler	HTC-16
H	1	Laser Cut Fins	FV-39
I	1	Ring Set	CR-KV-39
J	2	Engine Hooks	EH-28
K	1	Engine Hook	EH-38
L	2	Thrust Rings	TR-7
M	1	Thrust Ring	TR-9
N	1	Elastic Cord	EC-136
O	2	Launch Lugs	LL-117
P	1	Screw Eye	SE-10
Q	1	Baffle Ring	EBR-16
R	1	Tubing Coupler	HTC-9
S	1	Laser-Cut Strip	FV-39S
T	1	Chute Pak	CP-12-24
U	1	Decal Set	DKV-39

EXPLODED VIEW

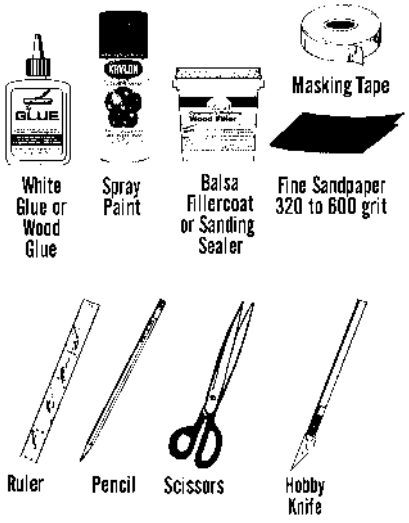


BEFORE YOU START!

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.



ASSEMBLY

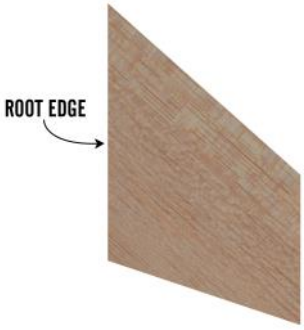
❑ **1.** These instructions are presented in a logical order to help you put your Egg Crate™ together quickly and efficiently. Check off each step as you complete it and we hope you enjoy putting this kit together.

FIN PREPARATION

❑ **2.** Lightly sand each side of the laser-cut fin sheet (**FV-39**). 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 four 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.

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

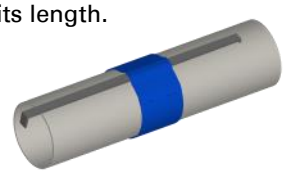


18mm MOUNT

❑ **5.** Bend both short engine hooks (**EH-28**) slightly so they form a slight bow in the direction shown.

❑ **6.** Insert one end of one of the engine hooks (**EH-28**) into one of the small pre-punched engine tubes (**ST-730E**).

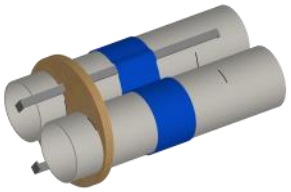
❑ **7.** Wrap masking tape around the center of the engine tube to hold the engine hook in place and centered along its length.



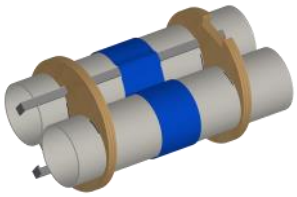
❑ **8.** Glue one of the small thrust rings (**TR-7**) in place inside the top of the engine tube and against the top of the engine hook.

❑ **9.** Place two marks on the side of the engine mount, one mark 3/8" from the bottom of the tube and one mark 2-1/4" from the bottom of the tube. Place identical marks on the opposite side of the tube. Make another engine mount identical to this one.

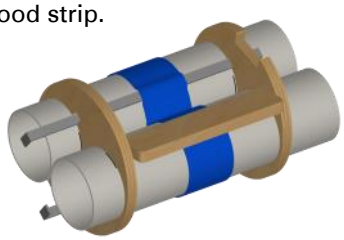
❑ **10.** Carefully remove the four centering rings from the laser-cut plywood sheet (**CR-KV-39**). Select the one with two engine mount holes and no slot on the outer edge. Insert the bottom of one of the mounts in one of the small openings. Align the small notch over the engine hook. Slide it from the bottom of the engine tube until the mark at 3/8" is just showing. Add the second engine mount tube in the second hole in a similar manner. Do not glue yet!



❑ **11.** Select the other dual engine mount ring and slide it over both engine mounts lining up the engine hook notches with the engine hooks until the second mark at 2-1/4" is just showing. Do not glue yet.



❑ **12.** Using the small basswood strip (**FV-39S**) as a gauge, test the spacing between the rings. They should almost touch both ends of the strip all around the mount. Adjust the rings, if necessary, and apply glue at the intersection of the tubes and rings, keeping glue away from the outer surfaces of the rings and away from the engine hook slot on the bottom ring. Apply a bead of glue over the masking tape at the area over each engine hook. Allow to dry, while checking the fit with the basswood strip.

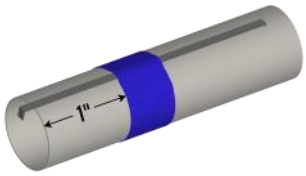


24mm MOUNT

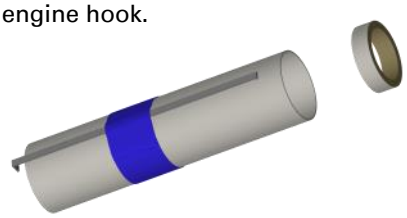
❑ **13.** Bend the long engine hook (**EH-38**) slightly so it forms a slight bow in the direction shown.

❑ **14.** Insert one end of the long engine hook (**EH-38**) into the large prepunched engine tube (**ST-940E**).

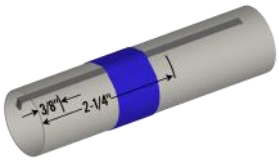
❑ **15.** Wrap masking tape around the engine tube about 1" from the bottom to hold the engine hook in place and centered along its length.



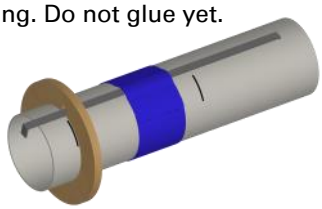
❑ **16.** Glue the large thrust ring (**TR-9**) in place inside the top of the engine tube and against on top of the engine hook.



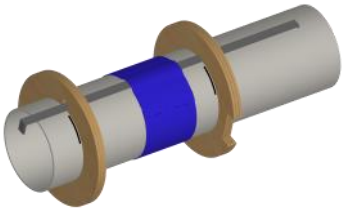
❑ **17.** Place two marks on the side of the engine mount, one mark 3/8" from the bottom of the tube and one mark 2-1/4" from the bottom of the tube.



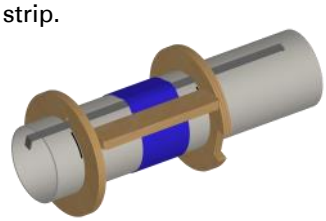
❑ **18.** Select the remaining ring with no slot on the outer edge. Align the small notch over the engine hook. Slide it from the bottom of the engine tube until the mark at 3/8" is just showing. Do not glue yet.



❑ **19.** Select the last ring and slide it over the top of the engine mount with the small notch aligned over the engine hook until the second mark at 2-1/4" is just showing. Do not glue yet.

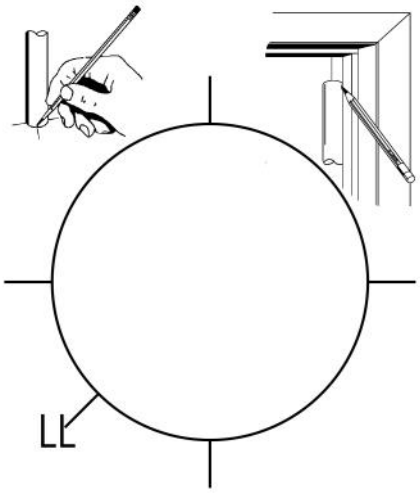


❑ **20.** Using the small basswood strip again, test the spacing between the rings. They should almost touch both ends of the strip all around the mount. Adjust the rings, if necessary, and apply glue at the intersection of the tube and rings, keeping glue away from the outer surfaces of the rings and away from the engine hook slot on the bottom ring. Apply a bead of glue over the masking tape at the area over the engine hook. Allow to dry, checking the fit with the basswood strip.



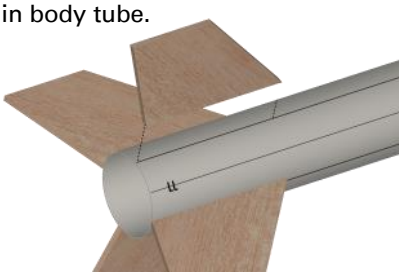
MARK THE TUBE

❑ **21.** Stand the large body tube (**ST-16120**) on the fin guide below. Place five marks on the tube at the positions indicated. Place a mark LL on the line that will be used for the launch lug. 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 the marks the full length of the tube.

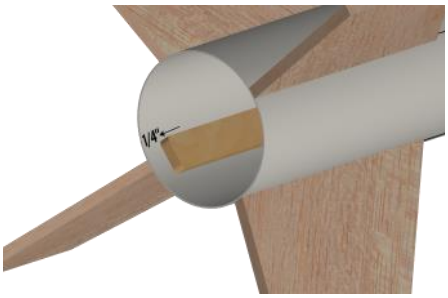


FINS

❑ **22.** Apply glue to the root edge of one of the fins and position it along one of the lines drawn for the fins on the side of the body tube and even with the bottom. Do not use the LL line. Remove the fin, set it aside and allow it to almost dry, apply additional glue, and reposition. Repeat for the other three 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.



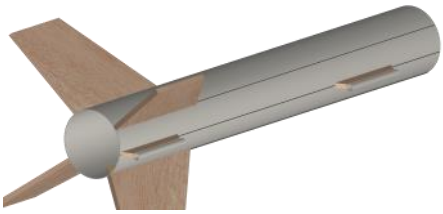
❑ **23.** Apply a thick bead of glue on one side of the basswood strip (**FV-39S**). Glue it on the inside of the main body tube over one of the fins and 1/4" from the bottom of the tube. Make sure it is parallel with the main body tube. Wipe any excess glue from the exposed edges.



LAUNCH LUGS

❑ **24.** Glue one of the launch lugs (**LL-117**) to the next to the longest edge on one of the fin standoffs on the fins sheet (**FV-39**) as shown. Allow to dry. Repeat for the other launch lug and standoff.

❑ **25.** Apply a bead of glue to one of the launch lug assemblies opposite the lug and apply it to the main body tube along the LL line and even with the bottom of the tube. Attach the second launch lug assembly about 8″ from the bottom of the tube along the LL line. Sight from one end to make sure they are parallel with the body tube and aligned with each other. Allow to dry.

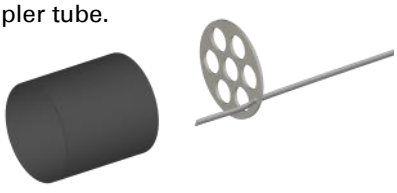


APPLY FILLETS

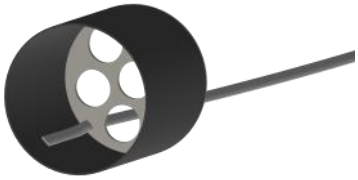
❑ **26.** After the fins and launch lug standoffs are completely dry, run a small bead of glue along both sides of each fin-body tube joint and standoff. Using your forefinger, smooth the glue into fillets. Apply a fillet of glue on each side of the launch lugs. Allow this assembly to dry in a vertical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

EJECTION BAFFLE

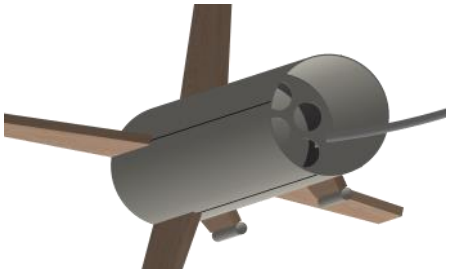
❑ **27.** Punch out all the holes from the baffle ring (**EBR-16**). Insert one end of the elastic shock cord (**EC-136**) into the small slot near the edge of the ring. Pull about 1″ of the elastic cord through the slot. Align the ring on one end of the coupler tube (**HTC-16**) and glue it in place so the outer edge of the baffle is even with the coupler tube.



❑ **28.** Apply a generous bead of glue inside the coupler tube against the joint between the baffle ring and the coupler tube. Glue the end of the elastic cord to the coupler tube.



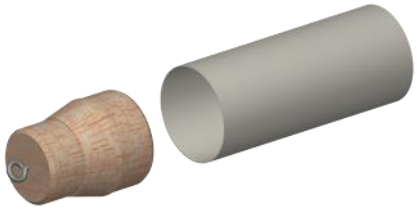
❑ **29.** Test fit the ejection baffle in the main tube. Sand the edges so it will slide freely in the tube. Apply a bead of glue about 4″ inside the top of the main tube. Orient the baffle assembly so the baffle and elastic cord are at the top end. Slide the ejection baffle in the tube past the bead of glue until the top of the baffle is about 4″ from the top of the tube. Rotate the main tube as the glue is drying so it does not pool in one place. Allow to dry completely.



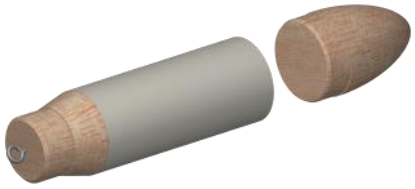
PAYLOAD SECTION

❑ **30.** Twist the screw eye (**SE-10**) 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.

❑ **31.** Check the balsa reducer (**BR-1620S**) for fit in the payload tube (**ST-2050**) and the top of the main 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.

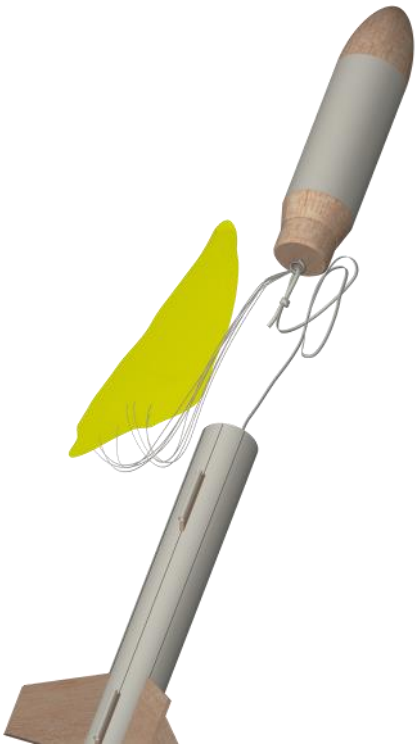


❑ **32.** Insert the nose cone (**BC-2025**) into the payload tube and check for fit. A small amount of sanding may be necessary. Make sure it is tightly fitted, using masking tape if necessary. If a payload is added, screws or external tape may be required to secure the nose cone in flight.



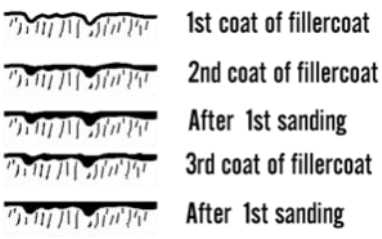
FINAL ASSEMBLY

❑ **33.** Assemble the chute (**CP-12-24**) using instructions provided to make 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.



FINISHING

❑ **34.** 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.



❑ **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 high visibility colors like white and black for the final color.

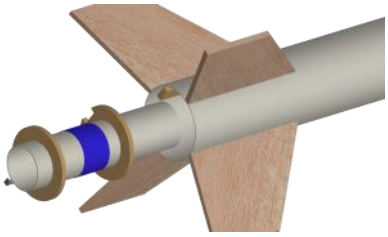
❑ **36.** Spray painting your model with a fast-drying enamel will produce the best results. PATIENCE…is the most important ingredient. Use several thin coats, allowing each coat to completely dry before the next coat. Start each spray a few inches above the model and end a few inches below the model. 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 Egg Crate™ 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. The egg shaped decals have a white background and should be cut just inside the outside black border.

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

FLIGHT PREPPING

❑ **39.** The Egg Crate™ has two interchangeable engine mounts. If you are flying with 24mm engines, insert the 24mm mount as shown. Align the slot in the top ring and align it with the basswood strip. Push forward until the bottom ring touches the basswood strip, then rotate the mount 180 degrees. If it is tight, check for excess glue or the plywood rings being less than 1-3/4" from each other. The dual 18mm mount inserts in a similar fashion.



❑ **40.** Mounting the engines: When flying with the 24mm adapter and 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. When flying with the dual 18mm engines, make sure both engines are the same impulse and delay and the engine hooks capture the engines snugly.

❑ **41.** Although a baffle is used, it is always good to apply a few sheets of recovery wadding in the top of the main body tube. If you are flying a payload, the included parachute may not be large enough. Adding a second parachute chute will slow the recovery. 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.

❑ **42.** 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. Always use at least a 12-volt system in top condition when launching with the dual mount. The lead wire should be at least 16 gauge or less and no more than 20 feet in length. Make sure all connections are tight and the electrical system is in perfect order. A full tutorial on clustering is outside the scope of these instructions. If you are not experienced with clustering, a search online will yield many tutorials to get you started on one of the most challenging propulsion methods for model rocketry.

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

❑ **44.** After each flight, promptly remove the spent engine casing or casings and dispose of properly. Remove the interchangeable mount and clean any residue.