STEP 9 Sand all fins smooth and round off the leading and trailing edges of them using medium, then fine sandpaper. ***For extreme flights, seal or fiberglass the fins with epoxy to add strength.***

STEP 10 Rail guide installation. Install the guides in a straight line down the length of the booster spaced between the fins. Use the centering rings as the backing. Using a door frame, or other right angle, mark straight line down the booster on the highest point. Drill a small hole (the screws are #8 sized) where the forward ring sits. Drill a hole for the bottom guide in the middle centering ring on the high spot you have marked. If you wish to FWD or AFT of the rings, machine screws and nuts have been provided.

STEP 11 For extreme altitudes it is recommended that (2) 1/16" holes be drilled into the main airframe 180 degrees apart about 15" from AFT. These holes are necessary to vent out excess pressure inside airframe, which could prematurely pop nose cone after motor burn out.

Step 12 Lightly sand plastic nose cone with fine sandpaper to remove molding seam line. Also sand airframe and fins to produce a smooth finish. Paint with your choice of color! Spray rocket with primer, sand and repeat until smooth finish is obtained. Spray rocket with paint of choice, let dry. For OEM color and finish, refer to Laser LOC product page on our website.

FINISH

A good practice is to dab all tube ends with a thin CA glue before paint. This helps strengthen, resist water, and add longevity to your finished kit.

CP - 55.5" from nose tip. +/- .5"

Sim!

This rocket is recommended for high power rocket motors H through J impulse. Depending on your flying field and finished weight, this is a very versatile kit. The Rocksim simulation file is available on the **LASER LOC** product page on our website. Always check stability to ensure stable flight; the Center of Gravity (CG) must be forward of the Center of Pressure (CP) in flight ready condition.

If you have any questions or concerns please contact us directly and not the vendor!

info@locprecision.com - 920-892-0557

Model Rocket Safety Code

1. **Materials.** I will use only lightweight, non-metal parts for the nose, body, and fins of my rocket.
2. **Motors.** I will use only certified, commercially-made model rocket motors, and will not tamper with these motors or use them for any purposes except those recommended by the manufacturer.
3. **Ignition System.** I will launch my rockets with an electrical launch system and electrical motor igniters. My launch system will have a safety interlock in series with the launch switch, and will use a launch switch that returns to the "off" position when released.
4. **Misfires.** If my rocket does not launch when I press the button of my electrical launch system, I will remove the launcher's safety interlock or disconnect its battery, and will wait 60 seconds after the last launch attempt before allowing anyone to approach the rocket.
5. **Launch Safety.** I will use a countdown before launch, and will ensure that everyone is paying attention and is a safe distance of at least 15 feet away when I launch rockets with D motors or smaller, and 30 feet when I launch larger rockets. If I am uncertain about the safety or stability of an untested rocket, I will check the stability before flight and will fly it only after warning spectators and clearing them away to a safe distance. When conducting a simultaneous launch of more than ten rockets I will observe a safe distance of 1.5 times the maximum expected altitude of any launched rocket.
6. **Launcher.** I will launch my rocket from a launch rod, tower, or rail that is pointed to within 30 degrees of the vertical to ensure that the rocket flies nearly straight up, and I will use a blast deflector to prevent the motor's exhaust from hitting the ground. To prevent accidental eye injury, I will place launchers so that the end of the launch rod is above eye level or will cap the end of the rod when it is not in use.
7. **Size.** My model rocket will not weigh more than 1,500 grams (53 ounces) at liftoff and will not contain more than 125 grams (4.4 ounces) of propellant or 320 N-sec (71.9 pound-seconds) of total impulse.
8. **Flight Safety.** I will not launch my rocket at targets, into clouds, or near airplanes, and will not put any flammable or explosive payload in my rocket.
9. **Launch Site.** I will launch my rocket outdoors, in an open area at least as large as shown in the accompanying table, and in safe weather conditions with wind speeds no greater than 20 miles per hour. I will ensure that there is no dry grass close to the launch pad, and that the launch site does not present risk of grass fires.
10. **Recovery System.** I will use a recovery system such as a streamer or parachute in my rocket so that it returns safely and undamaged and can be flown again, and I will use only flame-resistant or fireproof recovery system wadding in my rocket.
11. **Recovery Safety.** I will not attempt to recover my rocket from power lines, tall trees, or other dangerous places.

Revision of August, 2012.

Installed Total Impulse (N-sec)	Equivalent Motor Type	Minimum Site Dimensions (ft.)
0.00–1.25	1/4A, 1/2A	50
1.26–2.50	A	100
2.51–5.00	B	200
5.01–10.00	C	400
10.01–20.00	D	500
20.01–40.00	E	1,000
40.01–80.00	F	1,000
80.01–160.00	G	1,000
160.01–320.00	Two Gs	1,500

LAUNCH SITE DIMENSIONS

LASER LOC 3.1.3

-34” Slotted Booster
-54mm Motor Mount
-15”/42” Parachutes
-2 Fire Blankets
-2 Quick Links
-MMA-4

-Polypropylene Nose Cone
-Electronics Bay
-2X20’ Nylon Shock Cord
-RB-1000 Rail Guides
-Full Decal Set

-10” & 14” Payload Sections
-Boat Tail
-1/4” Fin Set
-CR-300-54mm
-1 Coupler+Stiffy

Due to the high thrust motors that can be flown in this rocket, epoxy is recommended!

Before beginning construction, read over instructions to become familiar with the proper construction steps. **TEST FIT ALL PARTS!** Light sanding may be necessary to obtain proper fit.

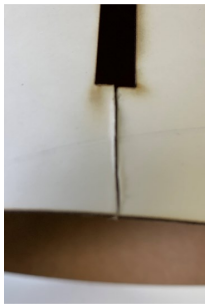
Step 1 Rough sand the motor tube to ensure proper adhesion. Slide the FWD ring (with notches for the shock cord) onto the motor tube so it is 1/8” exposed from the ring. From the other end take the MID ring and slide up the motor tube. Slide the AFT ring on leaving about 4” of motor tube exposed, to accommodate boat tail. If using an aluminum motor retainer (recommended), you would need to adjust the length of the motor tube exposed. Insert the fins into the AFT and MID ring slots to obtain proper alignment. When satisfied with alignment, remove fins. Epoxy each ring into place and fillet the intersection where the rings meet the motor tube. DO NOT get any epoxy directly below the ring slots as this will interfere with the fin root alignment.

Step 2 Insert the motor tube into the FWD ring recessed 1/4” from the end of motor tube. Pass shock cord sewn loop through the other end. Feed end of shock cord through one of the slots in the motor tube and pull through until you have a circle around the motor tube at the other end. Apply epoxy fillet to both sides of the ring.

STEP 3 Your choice! *Lightly sand airframe/fill spirals if desired.*

IF constructing by inserting the assembled motor tube assembly into the airframe THEN epoxying the fins in place...cool. Apply nominal bead of epoxy forward of the slots inside the airframe. Push the assembly forward until the MID and AFT ring slots are visible and aligned properly through the slot. Check your alignment by inserting the fins in the slots before it cures!! Remove test fin. Set upright to cure. At this point you may drizzle epoxy from the forward end of the booster onto the forward ring to adhere the ring to the airframe; being careful **NOT** to get epoxy in the motor tube. Next turn the booster upside down so the AFT section is up. Apply a nice epoxy fillet to the aft ring where the ring meets the airframe. Allow to cure. Reposition airframe laying down. Finally apply a generous bead of epoxy to the root edge of one fin and insert in the fin slot. Allow to cure before moving onto the next. You can now apply internal fillets. Epoxy fillet where the fin meets the motor tube. Then where the fins meet the airframe. Be sure to keep epoxy clear of where the boat tail will slide in.

Slather epoxy in the AFT of the airframe the circumference of the tube. Slide in boat tail. Allow to cure.



IF building the fin can outside the airframe to obtain **MAXIMUM** strength...let’s do it! Insert a fin into the ring slot, slather epoxy to adhere the joints from the motor tube to the rings. Allow to cure and move onto the next. When all fins are secured, use a hobby knife to cut the AFT of the slots, cut the width of the hobby knife, in the center of the slot, all the way to the aft of the airframe. Test fit the fin can separating/expanding the aft of the airframe to allow room for the fins to meet and nest in the slots. Sand the rings as needed. When satisfied with the fit, remove the fin can. Apply nominal bead of epoxy forward of the slots inside the airframe. Slide fin can up the airframe until the fins meet the forward end of the slots and nests properly. Leave upright to cure. Feel free to drizzle epoxy from the forward end of the booster onto the forward ring to adhere the ring to the airframe; being careful **NOT** to get epoxy in the motor tube. Next turn the booster upside down so the AFT section is up. Apply a nice epoxy fillet to the aft ring where the ring meets the airframe, squeezing the airframe to bring back together. Allow to cure. Slather epoxy in the AFT of the airframe the circumference of the tube. Slide in boat tail. Allow to cure. Next epoxy fillet each fin joint externally to the airframe.

STEP 4 Assemble Electronics Bay per included instructions.

STEP 5 Epoxy stiffy coupler in coupler. Allow to cure. This will be used to join payload sections together.

STEP 6 The Electronics Bay can be placed on the FWD end of the booster. Followed by 10” payload, coupled to the 14” payload followed by nose cone. If for whatever reason the motor of choice you use makes the rocket unstable….you may move the Electronics Bay between the payloads. Simulate out your flights and appropriately plan Ebay placement.

STEP 7 Most dual deployment rockets are setup like so…

M2 shear pins are recommended for separation points to keep things together until the charges fire for separation. For example: FWD of booster to Ebay would be shear pinned. FWD end of Ebay would be screwed into coupler/stiffy of the Ebay. Coupler/stiffy would be epoxied into 10” and 14” payloads making a 24” solid section. M2 shear pins would hold the nose cone on until the main charge blows.

STEP 8 Modify the nosecone as shown. Drill 2—3/8” holes opposite of each other. Use a piece of wire for a guide. Feed shock cord through both holes so you have 3’exposed. Tie your favorite knot to secure cone in place. Attach quick link to sewn loop end. **DO NOT** depend on the plastic loop for securing nose cone! Make a knot at the center end point of the main parachute shroud line ends. Attach to quick link.