4” HyperLOC 835

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.

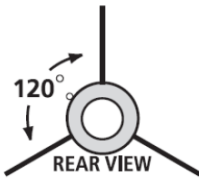
PARTS LIST

* Polyethylene Nose Cone
* Slotted Booster/Coupler
* 11” & 17” Payload Sections
* Electronics Bay
* 1/8” Fin Set
* 3 X Centering Rings/ZClipMR
* 2x20’ Nylon Shock Cord
* Ripstop Nylon Parachutes 18” Drogue/50” Main
* 1000 Series Rail Guides
* 2 Quick Links

STEP 1 Rough sand the motor tube to ensure proper adhesion OR remove the outer glassine wrap. Install T-Nuts into ring labeled CR-390x54RET (AFT ring with retention). Press T-Nuts into lasered hole in the AFT ring. The flange side of the T-Nuts should be FWD. Slide ring onto the motor tube so the tube is 1/4” exposed from the ring. Install eye bolt into FWD ring (has 1/4” lasered hole for eye bolt) and tighten. Slide MID ring onto the motor tube, then FWD ring leaving 1/2” of motor tube exposed. Insert the fins between AFT and MID rings to obtain proper alignment. Remove test fin. Ensure rings are perpendicular to the motor tubes and tack into place with epoxy. Once cured, make an epoxy fillet to the joint where the motor tubes meet the rings. Also dab epoxy on the FWD flange of T-Nuts and eye bolt nut for added strength. Allow to cure.

STEP 2 Attach shock cord to forward ring eye bolt. Pass loop through eye bolt, then pass shock cord through it’s own loop as shown. Don’t get any epoxy on the shock cord! Stuff shock cord in motor tube to keep it clear for next steps. Slather epoxy up the AFT of the booster (the end with fin slots) FWD of the fin slots. Insert motor mount assembly until AFT ring is 1/4” recessed. Stand airframe AFT down to cure. You may always add more epoxy to the FWD ring by drizzling epoxy onto the ring from the FWD end of the booster. **DO NOT** get any epoxy in the motor tube!

STEP 3 Flip airframe over so AFT is upright. Apply an epoxy fillet to the intersection where the AFT ring meets the airframe. **DO NOT** get any epoxy in the motor tube or the T-nuts! Allow to cure.



STEP 4 Reposition airframe laying down. 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 fin. When all fins are epoxied in place, apply an external fillet to each fin to airframe joint.

STEP 5 With airframe standing on AFT, slather epoxy in the FWD end 2” wide, the circumference. Insert coupler 4” down. Allow to cure. Take the 11” payload section, slather epoxy in 2” wide and insert epoxy end onto top of coupler in booster. Wipe off excess epoxy around tube joint. Allow to cure.

STEP 6 Assemble electronics bay with instructions included in sub bag.

STEP 7 Take other shock cord and pass through eye bolt on the FWD or MAIN deployment side of the electronics bay. Pass loop through eye bolt, then pass shock cord through it’s own loop.

STEP 8 Modify the nose cone as shown. Drill 1/2” or so holes on opposite sides and feed shock cord through. Connect an quick link to the sewn end, then back over the shock cord. This will be your main parachute deployment. You can also attach the main 50” parachute shroud lines to the quick link. Knot the shrouds to the quick link.

STEP 9 Attach quick link to end of shock cord from the booster section. Attach quick link to the AFT or APOGEE deployment side of electronics bay. Attach the 18” drogue chute to the quick link. Knot the shroud lines to the quick link.

STEP 8 Install the rail guides into the booster with provided screws. Try to aim for the aft and forward rings centered between the fins. Drill a hole smaller than the screw so the screw threads into it. Drop a small amount of epoxy in drilled hole, thread the rail guide and screw in the hole, rotate rocket 180 degrees & allow to cure. Repeat for the forward rail guide.

Dual Deployment Notes—This rocket can be flown single stage deployment as well with FWD payload and cone secured properly.

-On dual deployment flights, please ensure the proper steps are taken for success. The 17" payload should be attached to the FWD side of the electronics bay. You can use plastic rivets or screws. Predrill appropriate size pilot holes through the airframe/coupler/stiffy coupler making sure the alignment of the electronics will not be in the way. Rule of thumb is 1 screw/rivet per fin. SO on this HyperLOC we recommend 3 screws in line with each fin. 2" FWD of where switch band and payload meet.

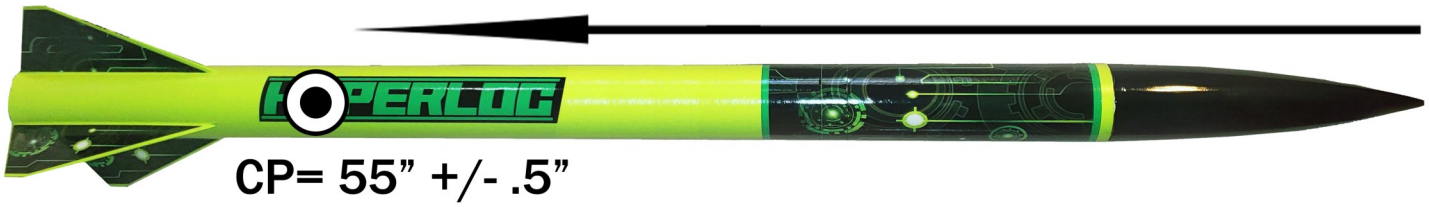
-The nose cone needs to be shear pinned or friction fit ensuring your main parachute does not come out at apogee. There are 2 bands horizontally on the cone shoulder allowing you to sand them down if needed. Use vertical strips of masking tape on the nose cone shoulder if needed to acquire desired friction fit. Use the shake test by picking up the rocket by the cone, if it comes out, you need a better fit!

-Ground test your ejection charges. You need to figure out how much of an ejection charge is needed for the booster and nose cone to successfully separate. There are online calculators you can use to figure out volume and black powder charge.

-Drill vent hole(s) in the switch band of the electronics bay. Without these your electronics will not function properly!

FINISH

CA ends of couplers/airframes and sand to fit. This will increase the lifespan of your rocket! Spray rocket with primer, sand and repeat until smooth finish is obtained. Spray rocket with paint of choice, let dry. Apply protective clear coat.



Sim!

This rocket is recommended for high power rocket motors I through J impulse. Depending on your flying field and finished weight, this is a very versatile kit. The Rocksim file is available on the 4" HyperLOC 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.

MODEL ROCKET SAFETY CODE

Materials. I will use only lightweight, non-metal parts for the nose, body, and fins of my rocket.

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.

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.

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.

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.

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.

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.

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.

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.

Installed Total Im-	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

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.