



3" ATHENA

PARTS LIST

- * Polyethylene Nose Cone
- * 34" Slotted Booster
- * 10" Payload Section
- * 29mm Motor Tube
- * Tube Coupler / Bulkhead
- * 4X Centering Rings/ZClipMR
- * Finset
- * 15' Nylon Shock Cord
- * 36" Ripstop Nylon Parachute
- * Recovery Fire Blanket
- * 1000 Series Rail Guides
- * Quick Link
- * Vinyl Decal

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 OR remove the outer glassine wrap. Install T-Nuts into AFT ring (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 all rings onto the motor tube. The AFT and FWD rings should be recessed onto motor tube $\sim 1/8"$. Install eye bolt into FWD ring (has 1 lasered hole for eye bolt) and tighten.



Good practice is to sandwich the fins between the rings. Align rings on motor tube as shown. Insert the fins between AFT/MID—MID/FWD rings to obtain proper alignment. Remove test fins. 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.



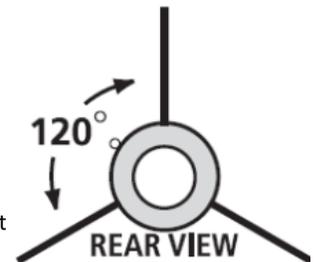
STEP 2 Attach shock cord to forward ring eye bolt. Pass loop through eye bolt, then pass shock cord through it's own loop as shown. Don't get any epoxy on the shock cord! Stuff shock cord in motor tube to keep it clear for next steps. Slather epoxy up the AFT of the booster (the end with fin slots) between fin slots. Insert motor mount assembly up AFT of airframe gaining proper alignment with fin slots. Quickly insert AFT/FWD fins to be sure and remove test fins when satisfied with alignment. 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!



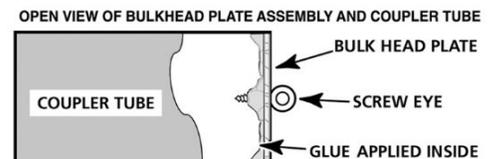
STEP 3 Flip airframe over so AFT is upright. Apply an epoxy fillet to the intersection where the AFT ring meets the airframe. **DO NOT** get any epoxy in the motor tube or the T-nuts! Allow to cure.

STEP 4 Fill spirals in the airframe if desired.

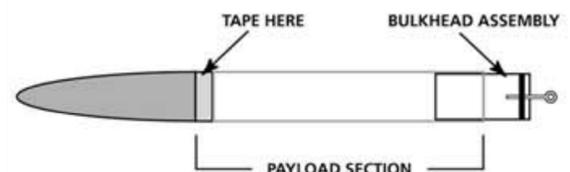
STEP 5 Reposition airframe laying down. Apply generous bead of epoxy to the root edge of one fin and insert in the fin slot. Allow to cure before moving onto the next fin. When all fins are epoxied in place, apply an external fillet to each fin to airframe joint.



STEP 6 Attach eye bolt to bulkhead plate. Test fit of bulkhead plate assembly into either end of coupler. It may be necessary to sand the inside edge of the coupler and the outside edge of the bulkhead plate assembly to obtain a smooth fit. When this is done, place a large continuous bead of glue around the inside of the coupler's edge. Carefully, push the bulkhead plate assembly straight into the coupler so that the bulkhead plate assembly is even with the edge of the coupler. Set the entire assembly upright immediately, making sure it is not disturbed while drying. For MAXIMUM STRENGTH, when dry, place another layer of epoxy around the inside of the bulkhead plate and eye bolt thread and nut. Allow to cure.



STEP 7 Slather epoxy 1" into the payload tube. Insert half the bulkhead assembly (3") into payload section. Allow to cure. Either use tape to friction fit nosecone snug onto the FWD end of the payload. Others use epoxy for a permanent bond, or machine screws to have it removable.



STEP 8 Install the rail guides into the booster with provided screws. Try to aim for just FWD of the AFT ring and just AFT of the FWD ring. Centered between the fins. Drill a hole smaller than the wood 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.



STEP 9 Attach recovery. Remove shock cord from motor tube. Feed end through slit in fire blanket and slide down. Insert shock cord end into bulkhead eyebolt 2' and make a knot. Attach parachute to sewn loop. Insert shroud lines through sewn loop. Pass parachute through the shroud lines, pull tight forming a knot.



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 vinyl decal. Apply protective clear coat.

Sim!

This rocket is recommended for high power rocket motors F through I impulse. Depending on your flying field and finished weight, this is a very versatile kit. The Rocksim file is available on the 3" ATHENA 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.

ALWAYS FOLLOW MOTOR MANUFACTURERS' INSTRUCTIONS FOR MOTOR USE / IGNITION!

LAUNCH THIS VEHICLE ON CALM, WINDLESS DAYS TO INSURE SAFE FLIGHT AND RECOVERY.

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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.

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.

Recovery Safety. I will not attempt to recover my rocket from power lines, tall trees, or other dangerous places.

<u>Installed Total Impulse (N-sec)</u>	<u>Equivalent Motor Type</u>	<u>Minimum Site Dimensions (ft.)</u>
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