

Raven 3”

The Raven 3” is a sleek looking rocket with a unique nose and fin design. Capable of flying well on G motors, it makes a great entry level rocket. The Raven 3” can be used for L1 and L2 certifications. It has a 38mm motor mount and will support motors up to J. The Raven is a very tough and fun rocket designed with both the beginner and expert in mind.

This kit features:

- Through the wall fin mounting
- Fiberglass molded nose cone
- Pre-fiberglassed and pre-slotted body tube
- Baltic Birch fins and centering rings
- 38mm motor mount
- Tubular nylon shock cords
- Shock cord mounting hardware

This kit is designed to fly on motors ranging from G through J impulse. You will need a 30” to 45” parachute, depending on motor selection and landing site conditions.

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List of Materials:

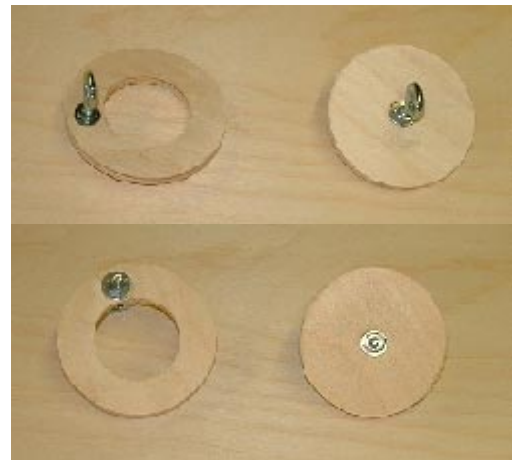
- (1) Fiberglass nosecone
- (1) Nosecone bulkhead
- (1) Body tube - slotted
- (4) Fins
- (2) Centering rings
- (1) 38mm motor tube
- (2) Eye-bolts
- (4) Nuts
- (4) Washers
- (1) Shock cord
- (2) Rail Guides
- (2) 8-32 screws for Rail Guides

Construction

Please read and understand each step. The construction methods used in this kit differ from others in many ways. It is important to follow the instructions to ensure you get the most out of your kit.

Assembly

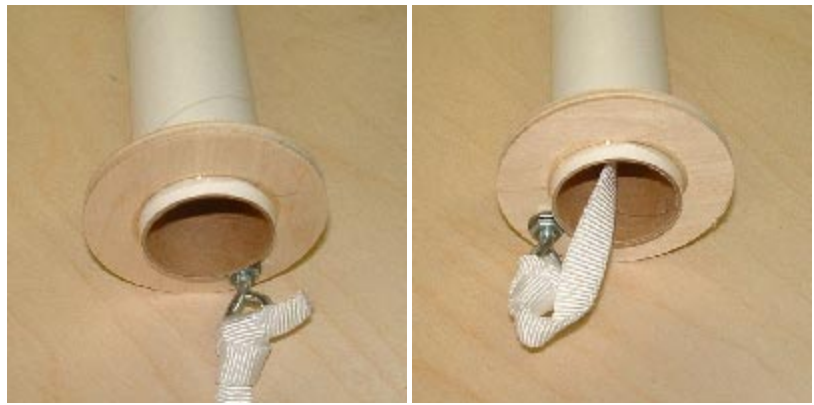
Install the Eye-Bolt and hardware into the forward centering ring and nose cone bulkhead as shown. Secure the threads with thread lock or epoxy to prevent them from loosening up over time.



Epoxy the lower centering ring onto the motor tube 1/2" in from the end. Allow to cure. Using a fin as a guide, mark the position of the upper centering ring as shown. Remove the fin before you epoxy the ring into place. Ensure the fin will fit between the two rings all the way around the motor tube. Make sure the Eye-Bolt is facing toward the top (left in the picture). Epoxy the upper ring into place. Allow to cure completely.



Securely tie the shock cord to the Eye-Bolt as shown. Use CA or epoxy on the know to keep it from coming undone over time. Wrap the remaining shock cord up and tuck it inside the motor tube. This will allow you to assemble the rocket without getting epoxy onto the shock cord.



Test fit the motor tube assembly into the body tube as shown. It should be a snug fit. The lower centering ring should be flush with the end of the body tube. Remove the assembly. Apply epoxy to the inside of the body tube and slide the motor mount assembly into the body tube as shown. The upper centering ring should just be visible at the forward edge of the fin slot. The fins will rest between the centering ring. Stand the body tube vertically and allow the epoxy to cure completely.



Test fit all four fins into their slots. Make sure the root of the fins makes solid contact with the motor tube. Epoxy the fins into place by spreading epoxy on the fin root and along the sides of the fin that will touch the body tube. It is easiest to do two opposing fins at the same time, as it is easy to line them up with each other. Allow the epoxy to cure completely on each fin or set of fins you glue. A weak glue joint here is not desirable. **Excess glue is not needed, and fillets (either internal or external) are not recommended. This joint is designed to fail in the event of a crash or extra hard landing.** The joint is plenty strong for any flight situation, but if you overbuild the joint the plywood fin will break rather than popping, making a repair very difficult.



Test fit this bulkhead into the nose cone as shown. The bulkhead should be slid into the nose sideways, then turned after it passes the shoulder. Sand if necessary. Once a good fit is achieved, securely epoxy the bulkhead into place. Apply a generous bead of epoxy around the bulkhead to prevent it from ripping out. Securely tie the shock cord to the nose cone Eye-Bolt and secure the knot with epoxy or CA. Tie a loop in the shock cord about one foot back from the nose cone. This is where the parachute is attached.



Mark the position of the rail guides on the body tube. The rail guides are screwed into the upper and lower centering rings. You can use a dowel to measure the distance from the upper end of the body tube to the upper centering ring. Ensure the guides are straight along the body. Drill a 1/8" hole for the upper and lower rail guides. The rail guides are secured with 8-32 screws. The guides should be able to rotate on their screws after you install them.



Drill a pressure hole in the body tube appx. half way between the upper rail guide and the top of the body tube. The hole should be a 3/16" hole.

The rocket will not need any nose weight, regardless of the motor used.

We hope you enjoy your Raven kit and would appreciate any feedback you have.

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