



# Squat™

## Specifications:

- Length: 28.5"
- Diameter 4.0"
- Weight: 30oz
- Motor Mount: 54mm
- Fins: 3 - 1/4" Plywood
- CG: 19" from nose tip
- Estimated CP: 23" from nose tip

## Parts List

1. (1) Nose Cone
2. (1) pre-slotted body tube
3. (2) Centering rings
4. (1) 54mm motor tube
5. (3) laser-cut fins
6. (1) Eyebolt, nut and washer
7. (1) Nylon shock cord
8. (2) Rail Buttons and Screws

**Required to complete:** 5 minute epoxy, 120/220 sandpaper, masking tape, finishing filler/paint, nose weight.

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Please make sure you read all directions and understand how to assemble your model before you start construction. It is also a good idea to test fit each part before assembly – some manufacturing tolerances may require light sanding before final assembly.

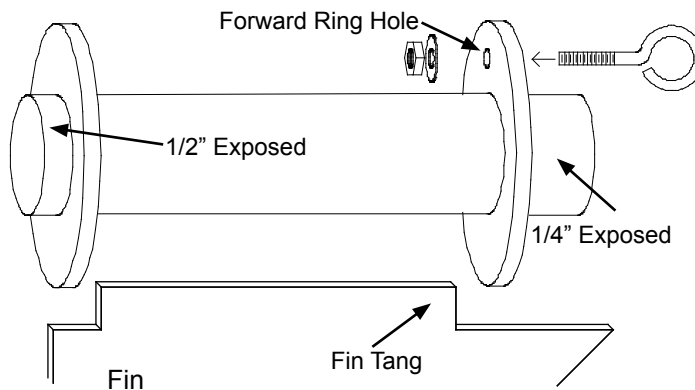
Laser cut parts will exhibit varying amounts of charring on the edges depending on the density of the plywood. The charred edges do not interfere with bonding and do not need to be cleaned before assembly. In most cases the charring will be cleaned up during sanding for finishing and painting.

## Step 1 – Motor Mount Assembly

Test fit the centering rings over the motor mount tube and sand if necessary. Also test fit the centering rings in the body tube and sand if necessary. One of the rings will have a hole for an eyebolt to attach the shock cord - this will be the forward ring. Spread some epoxy on the outside of one end of the motor tube and slide the ring (without the hole) until there is approximately 1/2" of motor tube exposed. Make sure you clean the motor tube of any epoxy so as not to interfere with the fin tangs later. After the aft ring is dry, make a mark 1/4" from the other end of the motor tube. Spread some epoxy on the motor tube and slide the forward ring until it aligns with the mark.

**VERY IMPORTANT: make sure there is not any epoxy on the motor tube that would interfere with the fin tangs later on. Also make sure the fin tangs will fit between the two centering rings.**

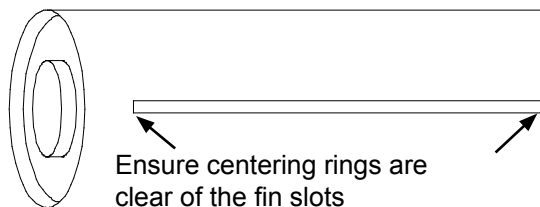
Mount the eyebolt using the nut and washer in the forward ring hole. Apply some epoxy to the nut to ensure it will not come loose later. Attach one end of the shock cord to the eyebolt using an overhand knot.



## Step 2 – Insert Motor Tube Assembly into Body Tube

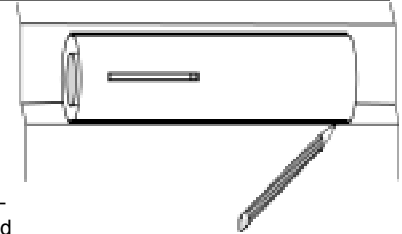
Wrap the shock chord into a small bundle and stuff it inside the motor tube for this next step. Test fit the motor tube assembly into the body tube to ensure a snug fit. Sand the centering rings if necessary.

When you are satisfied with the fit, spread some epoxy on the inside of the body tube and slide the forward centering ring of the motor assembly into the body tube. **Make sure you have the motor assembly facing the right way!** Spread some more epoxy on the inside edge of the body tube before sliding the rear centering ring into the body tube. Continue sliding the assembly inside the body tube until the aft end of the motor tube is even with the aft end of the body tube. It's a good idea to test fit a fin in each slot here before the epoxy sets. Hold the body tube with the motor tube assembly down until the epoxy sets. Make sure the weight of the motor assembly doesn't cause it to slide out of alignment.



## Step 3 – Fin Assembly

Using a door jam or small section of angle stock, pencil a line halfway between two of the fins that extends from the front to the back of the body tube. This line will be used later to align the rail buttons.



Test fit each of the fins into the pre cut fin slots. The fin should seat firmly against the motor tube - sand each fin if necessary. When you are satisfied with the fit, apply some epoxy to the end of the fin tang that will contact the motor tube as well as the fin root that will contact the body tube. Also, spread a thin layer of epoxy on each side of the fin tang.

Slide the fin into place and check the alignment. Continue rechecking the fin alignment until you are sure the epoxy has set. Clean any excess epoxy from around the fin joint. Repeat for the remaining fins.

Next, apply epoxy fillets to both sides of each fin. Carefully smooth the epoxy fillets with your finger before the epoxy sets. Allow each fillet to set before rotating the airframe for the next fillet.

## Step 4 – Rail Button Attachment

Drill a 5/64" hole on the rail button line for the forward and aft rail buttons. These holes should go into the centering rings. Apply a small amount of epoxy in the holes and attach the rail buttons using the supplied #6 wood screws. Make sure the screw is loose enough for the rail button to spin freely - this ensures the button is not compressed to the point it will hang on the rail guide.

## Step 5 – Balancing Your Model

At this point, pack the chute and assemble the rocket. Insert the largest motor that you intend to fly (or simulate the weight with an appropriate substitute) and ensure that the CG is forward of the point defined in the specifications on the first page. The CG should be measured from the tip of the nose cone. If the CG is behind the specified point, add weight inside the nose cone by pouring lead shot into the nose cone and adding some epoxy. Hold the nose cone with the tip down so the weight will be as far forward as possible. **IMPORTANT: Screw in several screws through the plastic nose cone into the lead to hold it in place. Grind or cut off the screw head before filling and applying the nose cone finish. The epoxy will not stick to the inside of the nose cone and if you do not anchor with screws, the liftoff force will cause the weight to become dislodged causing an unstable model.**

**IMPORTANT: Proper CG is critical to the stability of this model. This model will require some ballast in the nose - the amount will depend on how you build and the size motor you use to fly. Do not fly without balancing this model properly as a dangerous unstable flight will result.**

## Step 6 – Flying Your Model

Attach the end of the shock cord and the parachute to the nose cone. You can also attach the chute protector to the shock cord just below the nose cone. When packing your chute, wrap the chute protector around the chute with the opening in the chute protector facing forward. Always make sure your chute is well protected as the hot ejection motor gasses will melt the nylon chute.

**IMPORTANT:** always use positive motor retention to secure the motor. Failure to use motor retention will cause the motor to be ejected instead of the parachute making for a dangerous ballistic reentry.

**IMPORTANT:** always remember to check your balance point and ensure your CG is forward of the specified CG point.

**IMPORTANT:** Always follow the NAR safety code and remember that rockets are not toys and can be dangerous if not prepared and used properly. If you are a beginner, it is a good idea to fly with a club or other group of experienced rocketeers until you have gained some experience.

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**IMPORTANT:** Please contact us via phone or email if you have any questions about constructing or flying your model.



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