

ALL FIBERGLASS HONEST JOHN STYLE M31

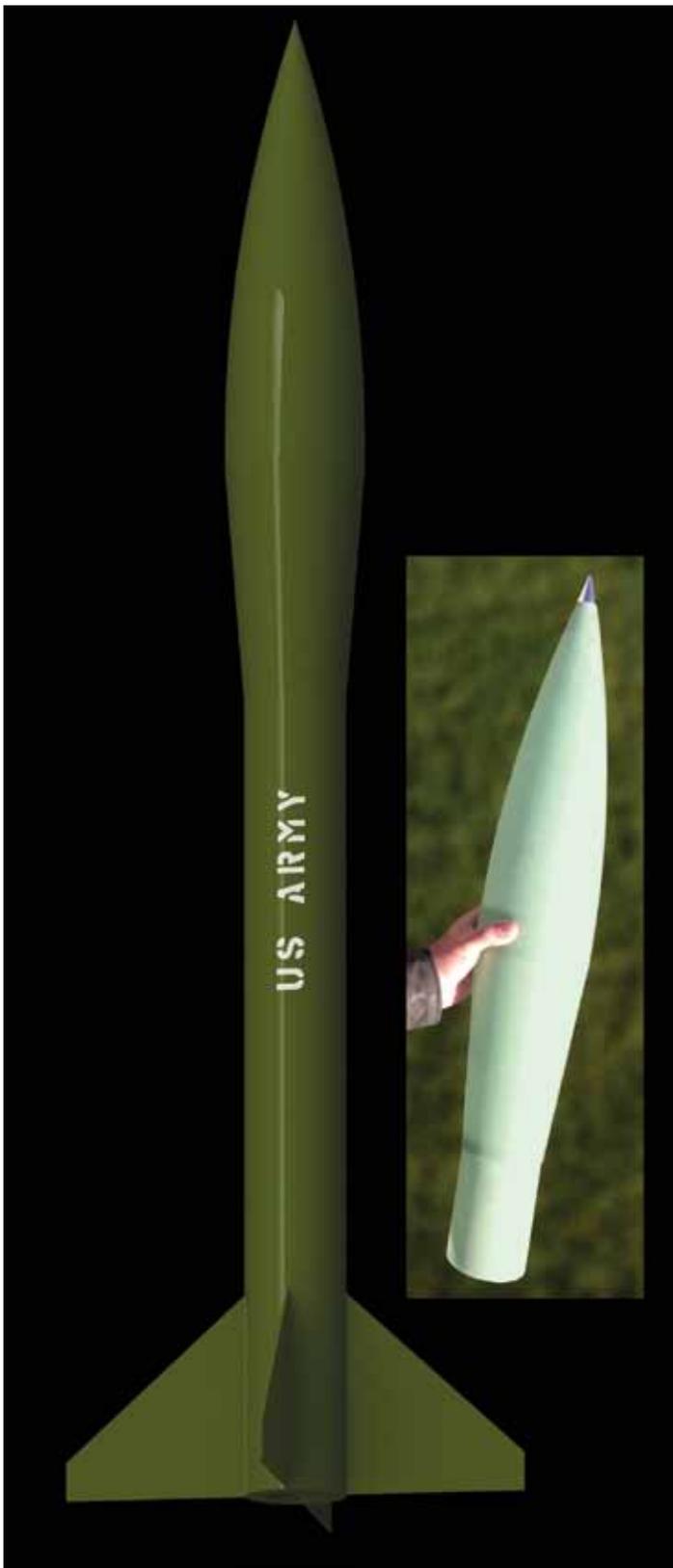
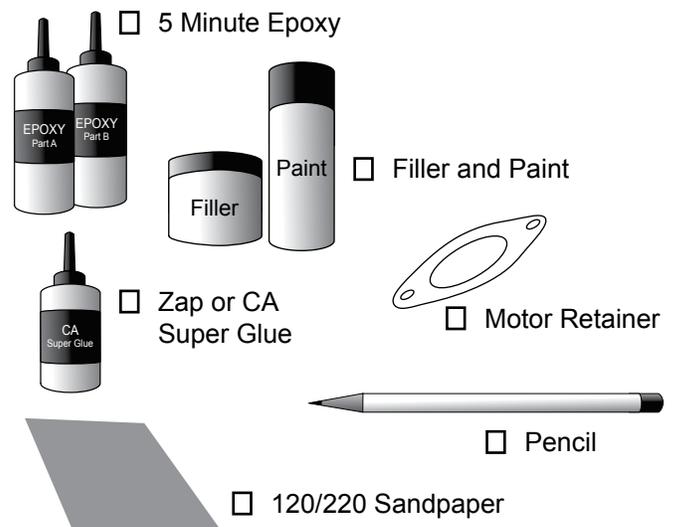
Specifications

Length: 58.5"
Diameter 4.0" / 5.5" Widest Point
Weight 7.5 lbs
Motor Mount: 54mm
Fins: 4 - 1/8" G10
Estimated CP: 49" from nose tip

Parts List

- (1) Nose Cone (4 parts)
- (1) Pre-slotted body tube
- (1) Bulkhead
- (2) Centering rings
- (1) 54mm motor tube
- (4) G10 fins
- (2) Eyebolts
- (2) Nuts
- (2) Washers
- (1) Nylon shock cord
- (2) Rail buttons and screws
- (2) Rail guide spacers
- (4) Nose jet façades
- (1) Vinyl Decal

You'll need these items to complete this kit



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madcow Rocketry
put some fun in your rockets!

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.

Fiberglass parts still contain small amounts of mold release and other materials on the surface that will inhibit adhesives and/or paint. It is important to clean each part prior to assembly with a solution of 1 part rubbing alcohol, 3 parts water and a drop of dish washing soap. **IMPORTANT:** do not sand any parts until after you have cleaned them - you will embed the materials you are trying to clean making it difficult to clean.

Some G10 parts may have holding tabs left over from the CNC machine. These small tabs will need to be sanded off before assembly.

Use only a high quality epoxy like Aeropoxy or West System to bond parts together. You can use a colloidal silica filler like West System 404 or 406 to thicken epoxy when making fillets. When using a filler for fillets a consistency like peanut butter or syrup is best. For extra strength you can add 1/16" or 1/32" milled glass fiber.

IMPORTANT: Before assembling any part with epoxy, rough up the surface to be epoxied using 60-80 sandpaper. The scratches in the fiberglass surface will give the epoxy something to grab onto. Epoxy will not soak into the fiberglass like wood or cardboard - epoxy will not grip very well to fiberglass without this rough surface. You can use Zap or CA glue to tack parts into place before you apply epoxy.



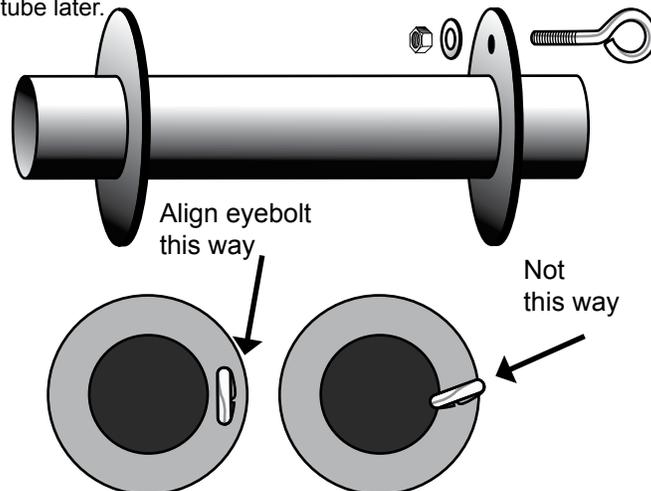
Motor Mount Assembly

- Step 1 - Rough the surface of the motor tube where the centering rings will contact it - also rough the surface where the fin tabs will contact the motor tube.

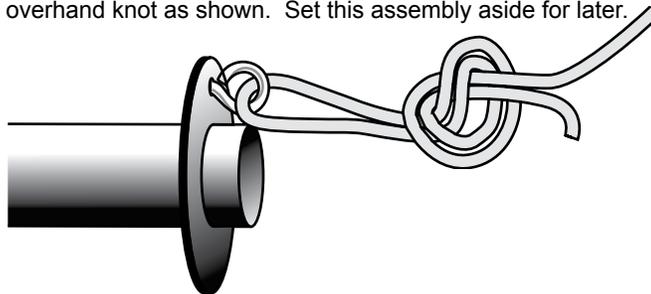


- Step 2 - Test fit the centering rings over the motor mount tube and sand if necessary. Also test fit the centering rings in the body tube and sand if necessary.
- Step 3 - Mark the motor tube 3/4" from the aft end of the motor tube. Spread some epoxy on the motor tube around the mark and slide the aft centering ring on the tube until it aligns with the mark.
- Step 4 - Drill a 1/4" hole in the forward centering ring for the eyebolt. Mark the motor tube 1" from the front of the motor tube. Spread some epoxy around the mark and slide the centering ring on the motor tube until it aligns with the mark.

- Step 5 - Mount the eyebolt using the nut and washer in the forward ring hole. Apply some epoxy to the threads of the eyebolt and nut to ensure it will not come loose later. Make sure the eyebolt is aligned so that it will not interfere with the body tube when the motor assembly is inserted into the body tube later.



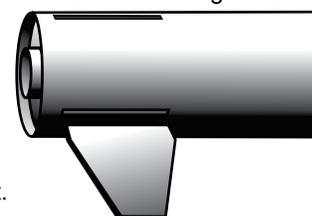
- Step 6 - Attach one end of the shock cord to the eyebolt using an overhand knot as shown. Set this assembly aside for later.



Body Tube Assembly

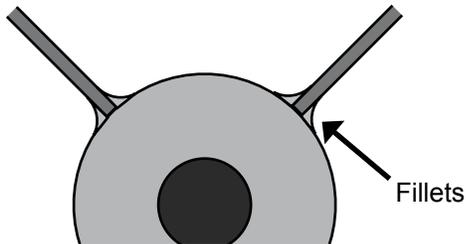
- Step 7 - Using the motor tube assembly, wrap the shock chord into a small bundle and stuff it inside the motor tube for this next step. Test fit the motor tube assembly into the aft end of the body tube to ensure a snug fit. Sand the centering rings if necessary. Make sure you rough up the inside of the body tube where the centering rings will attach.
- Step 8 - When you are satisfied with the fit, spread some epoxy on the inside of the body tube just in front of the fin slots 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 - the centering ring with the eyebolt should slide in first!**

Keep going by spreading some more epoxy on the inside of the body tube near the aft edge before sliding the aft centering ring into the body tube. Continue sliding the assembly inside the body tube until the aft centering ring is all the way in body tube, but doesn't yet interfere with the fin slot. 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.



Fin Assembly

- Step 9 - 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. Don't forget to rough up all surfaces. 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 any 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.
- Step 10 - 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.



Rail Button Attachment

- Step 11 - Using a door jam or small section of angle stock, pencil a line halfway between two of the fins on the main body tube that extends from the front to the back of the body tube.
- Step 12 - Using the 2 rail guide spacers and epoxy, attach the longer side of the spacer to the body tube on the line you just made approximately 1 1/2" from the aft end of the body tube and 7" from the forward end of the body tube. **IMPORTANT:** make sure you have the rail button spacers and not the spin jet façades. There are 2 rail button spacers and 4 nose jet façades.
- Step 13 - Drill a 5/64" hole in each of the rail guide spacers. 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.

IMPORTANT: Make sure the forward rail button screw protruding through the body tube doesn't snag the chute. Cut off the exposed screw inside the body tube and epoxy over the screw to provide a smooth surface.

Nose Cone Assembly

- Step 14 - Use lock-tite on the nose cone tip to make sure it does not come loose during transportation.



- Step 15 - Verify the alignment marks on the side of the nose cone - if they have faded or been removed, remark an alignment mark for later reassembly. Next, carefully pull apart the 4 parts of the nose cone. If the center section is stubborn, you can place the nose cone on a padded surface and softly tap one half of the cone with a rubber mallet while holding the other half firmly against the padded surface. **DO NOT** hit the cone too hard with the mallet as you can easily damage the surface if you hit it too hard. Work slowly and rotate the cone 180 degrees and tap again, repeat the process until the parts come apart. You only need to move the cone a very small amount before rotating to the other side.



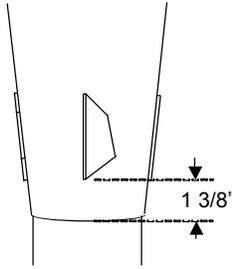
- Step 16 - Rough up the inside of the cone and outside of the coupler parts so the epoxy will grab on. Next apply some epoxy to the inside of the middle section of the nose cone and join the 2 halves with the small coupler. Carefully align the cone using the alignment marks. **NOTE:** the alignment marks put the cone back to the place where it was ground even. Not aligning to the marks may cause the edges not to line up. It is a good idea to practice this step before applying epoxy.
- Step 17 - Sand the outside end of the coupler and the inside of the nose cone where the coupler and nose cone parts will bond together. Also sand the inside of the opposite side of the coupler where the bulkplate will be bonded.



- Step 18 - Mount the eyebolt with a nut and washer and secure with epoxy so it will not come apart later.



- Step 19 - Next, attach the 4 spin motor façades. The four motors are attached at 90 degree intervals around the transition section of the nose cone. The base of the motor is 1 3/8" above the base of the nose cone and the left edge of the motor should be parallel to the centerline of the nose cone.



Final Assembly

- Step 20 - Pack the chutes 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 at least 1 body diameter in front of the estimated CP point specified on the first page. The estimated CP should be measured from the tip of the nose cone. If the CG is too far back, add weight inside the nose cone by pouring lead shot into the nose cone and adding some epoxy. **IMPORTANT: Make sure you rough up the inside of the nose cone to give the epoxy something to grip on to. The smooth surface of the filament wound nose cone may not hold the epoxy during a high G liftoff.**

IMPORTANT: Proper CG is critical to the stability of this model. This model may 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 21 - When you are satisfied with the balance of your model, Epoxy the bulkplate into the end of the coupler where you sanded the inside. Leave about 3/8" for a fillet. After the epoxy sets, apply a fillet around the inside edge.
- Step 22 - Using the same knot you used in step 6, attach the other end of the shock cord to the nose cone eyebolt. Attach the parachute to the shock cord near the nose cone. Also attach the chute protector to the shock cord near the nose cone.
- Step 23 - Drill a small 1/8" hold in the chute compartment to allow venting. Make sure you do this without the chute in the chute compartment.
- Step 24 - At this point install your positive motor retention device. The kit does not include a motor retention device and this will need to be purchased separately.
- Step 25 - Your model is now ready to paint and apply the decals. To apply the cut lettering decal, carefully remove the backing from the decal - the individual letters will remain stuck to the top carrier. Next, position the decal where you would like it and carefully smooth out the top carrier to ensure the letters are securely attached to the rocket body. Last, carefully remove the top carrier making sure the letters stay attached to the rocket body and are not lifted with the carrier.

At this point your model is ready to fly.

Now go have some fun!

Flying Your Model

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.

IMPORTANT: In no event shall Madcow Rocketry be liable for any direct, indirect, punitive, incidental, special consequential damages whatsoever arising out of or connected with the use or misuse of it's products. The buyer assumes all risk and liability resulting from ANY use of any and all products sold by Madcow Rocketry. Your purchase and use of any Madcow Rocketry product constitutes your agreement to and acceptance of these terms. If you do not agree to these terms and conditions, you must return the unused product in resaleable condition for a refund or credit.

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



24338 El Toro Rd #E-134

Laguna Woods, CA 92637

949.547.8847

www.madcowrocketry.com

support@madcowrocketry.com

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