

ALL FIBERGLASS

V2

Specifications

Length: 22.25"

Diameter 2.6"

Weight 16 oz

Motor Mount: 29mm

Fins: 4 - 1/16" G10

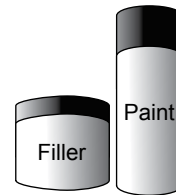
Estimated CP: 15" from nose tip

Parts List

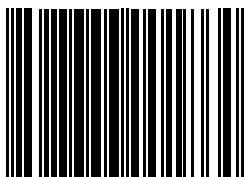
- (1) Nose Cone
- (1) Nose Cone Coupler
- (1) Bulkhead
- (1) Pre-slotted Tail Cone
- (1) Body Tube
- (1) Body Tube Coupler
- (2) Centering rings
- (1) 29mm motor tube
- (4) G10 fins
- (2) Eye-Bolts, Nuts and Washers
- (1) Nylon shock cord
- (2) Rail buttons and screws

You'll need these items to complete this kit

- 5 Minute Epoxy
- Filler and Paint
- Zap or CA Super Glue
- Motor Retainer
- Pencil
- 120/220 Sandpaper



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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.

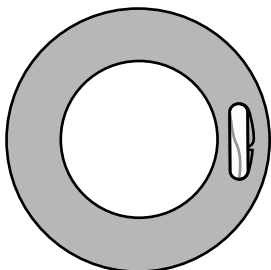
Use only a high quality epoxy like Aeropoxy or West System to bond parts together. You can use a colloidal silica filler like West System 404 or 406 to thicken epoxy when making fillets. When using a filler for fillets a consistency like peanut butter or syrup is best. For extra strength you can add 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 tangs 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 2.6" diameter centering ring in the body tube and sand if necessary. **NOTE:** the centering ring will go into the tail cone, not the body tube, but you can use the body tube to check the fit.
- Step 3 - Drop the smaller centering ring in the tail cone and tack it into place. If you are using a retainer, it is a good idea to mount the retainer on one end of the motor tube at this point.
- Step 4 - Mount one of the Eye-Bolts to the 2.6" diameter centering ring. Epoxy the nuts on the back so they will not fall off later.



- Step 5 - Insert the motor tube into the centering ring you epoxied in the tail cone. If you attached a retainer, you will need to insert from the aft end. Epoxy the motor tube to the aft centering ring and temporarily place the 2.6" centering ring on the top of the motor tube to hold it in alignment while the epoxy dries. **IMPORTANT: DO NOT glue the 2.6" centering ring because you will remove it later.** Make sure the motor tube is clear of epoxy where the fin tangs will meet the motor tube.

Fin Assembly

- Step 6 - While the forward centering ring is still in place, use CA Glue on the root of the fin and tack each of the 4 fins in place. With the 4 fins, it is easier to do the two opposite fins at the same time and use a ruler to align them as show in the picture. **BE CAREFULL** not to get CA on the forward centering ring or you will not be able to remove it later.



- Step 7 - Tack the tail cone/fin joint with CA glue to hold the fins in alignment while you do the fillets later. When the CA glue is set, remove the forward centering ring.



- Step 8 - Apply internal and external fillets. It is a good idea to use masking tape on the external fillets to get a straight line.



- ❑ Step 9 - When the fillets are complete, replace the forward centering ring and epoxy it in place. **IMPORTANT:** Make sure the centering ring is in far enough so that the shorter body tube coupler can go into the tail cone at least 1/2 way.

Body Tube Assembly

- ❑ Step 10 - Epoxy the body tube coupler into the tail cone so that half the coupler is exposed. Tape the coupler in place while the epoxy dries so it doesn't slide down.
- ❑ Step 11 - Epoxy the forward body tube to the body tube coupler.

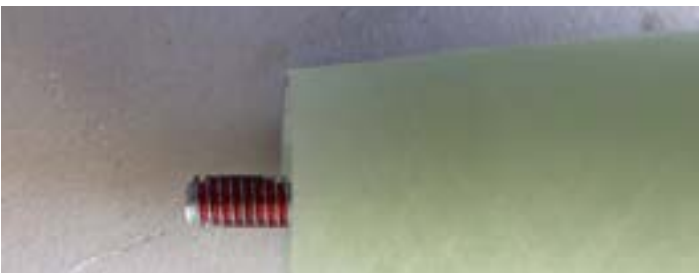


- ❑ Step 12 - Using a section of angle stock, pencil a line halfway between two of the fins that extends from the front to the back of the body tube. This line will be used to align the rail buttons. Mark the aft rail button location just above where the tail cone starts to curve and behind the 2.6" centering ring. Mark the forward button position behind where the nose cone coupler extends inside the body tube - **IMPORTANT** make sure the forward rail button will not interfere with the nose cone coupler.
- ❑ Step 13 - Drill a 5/64" hole on the rail button line where you marked the forward and aft rail button positions. 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. Epoxy over the screw to provide a smooth surface. The screw can also be cut shorter.

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 - Attach the Eye-Bolt with a nut and washer to the bulkplate. Secure with epoxy so it will not come apart later.

- ❑ Step 16 - Sand the outside end of the nose cone coupler and the inside of the nose cone where the coupler and nose cone parts will bond together.



- ❑ Step 17 - 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 18 - When you are satisfied with the balance of your model, drop the nose cone bulkplate inside the nose cone with the Eye-Bolt facing out. Epoxy the coupler into the base of the nose cone and make sure you leave at least 2.5" of the coupler exposed. Pull the bulkplate against the forward edge of the coupler so it seats flush against the coupler. Also ensure you get epoxy on the whole area where the coupler and nose cone will contact to ensure a good bond. It is best to put epoxy inside the nose cone and not the outside of the coupler. Make sure you have a clean coupler so as to not interfere with the body tube later. Make sure the bulkplate stays seated against the coupler until the epoxy sets.
- ❑ Step 19 - Your model is now ready to paint and 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.

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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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