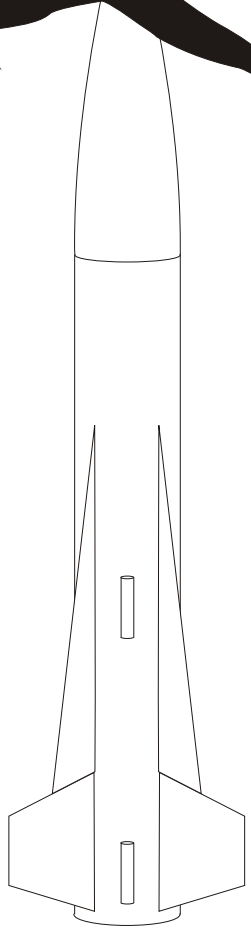
pterodactyl



The pterodactyl kit contains all the parts necessary* to build a giant, flying high power rocket:

1) Pre-slotted airframe
1) Nose cone w/ bulk plate
3) Lower fins
3) Upper fins
1) Piston ejection kit including:
    1) Piston body
    1) Piston strap
    1) Slotted bulk plate
    1) Metal "Kwik-Link"
1) 72" Parachute
1) Motor mount tube (54mm)
2) Centering rings
1) Notched centering ring
1) 1.5" x 144" Elastic shock cord
2) 3/4" launch lugs
1) Decal Sheet
1) Instruction sheet (this one!)

*Epoxy, paint, and motors not included.

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The center of pressure (CP) of this rocket is 52 inches from nose tip. After finishing your rocket, permanently mark the center of pressure on the airframe. Calculations made using RockSim 4.0 program for subsonic flights. After loading the rocket with a motor, make sure that the center of gravity (balancing point) is 7.5" forward of the center of pressure mark. The center of gravity can be moved forward by adding weight to the nose cone. It is impossible to test every rocket with every motor configuration therefore, if you are unsure about motor selection for any rocket consult the motor manufacturer.

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Assembly instructions

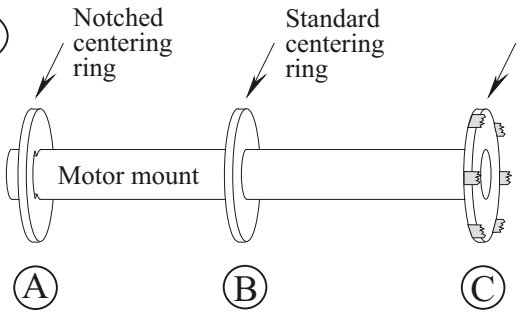
Please read and understand all instructions before continuing!

Stuff you will need:

One set of each 5 and 15 minute epoxy
One sheet of each fine and medium sand paper
Ruler and pencil
Cellophane tape

NOTE: Be sure to scuff all parts to be bonded using medium sand paper.

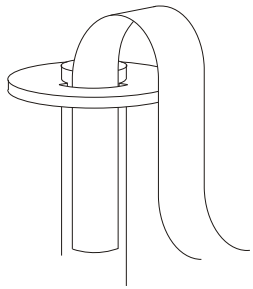
Step 1



A) Epoxy the notched centering ring 1/2" from the end of the motor mount tube. Apply an epoxy fillet to each side if the ring. Leave the notch free of epoxy at this time.
B) Epoxy a standard centering ring 12-1/2" from the notched centering ring. Apply an epoxy fillet to each side if the ring.
C) Apply a few cellophane tape strips to the circumference of the remaining ring to use as handles for removing the ring in a subsiquent step. Slip this ring into position flush with the end of the motor mount tube. Do not epoxy this ring in place at this time.

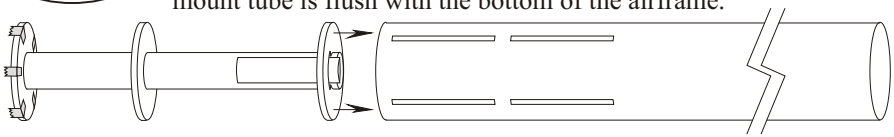
Step 2

Epoxy one end (approx. 5-6") of the 2" wide piston strap to the outside of the motor mount tube. Use masking tape to hold the strap in place while the epoxy cures. Do not cut the strap. When the epoxy has cured, stuff the free end of the strap into the motor tube to keep it out of the way for the next few steps. Fill any gaps in the notch with epoxy.

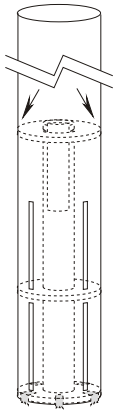


Step 3

Without using any epoxy, slide the entire motor mount assembly into the aft end of the main airframe until the bottom of the motor mount tube is flush with the bottom of the airframe.



Be sure that the piston strap is centered between the slots, otherwise the fins will not fit properly.



Step 4

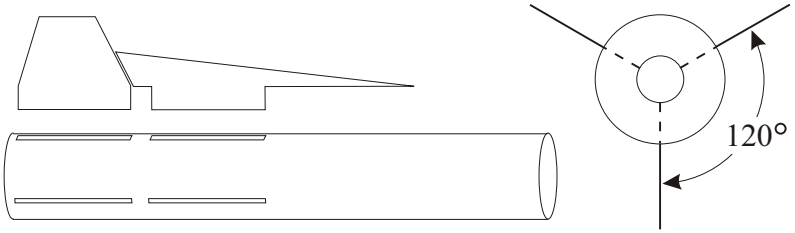
NOTE: Be sure to scuff all parts to be bonded using medium sand paper.

Prepare a one ounce batch of epoxy in a small cup. With the airframe standing upright, reach into the tube and pour the epoxy onto the upper centering ring. Do not allow any epoxy into the motor mount tube. Tip the airframe at about a 45 degree angle and rotate it slowly. This will allow the epoxy to spread evenly around the perimeter of the centering ring. Allow the epoxy to cure.

Step 5

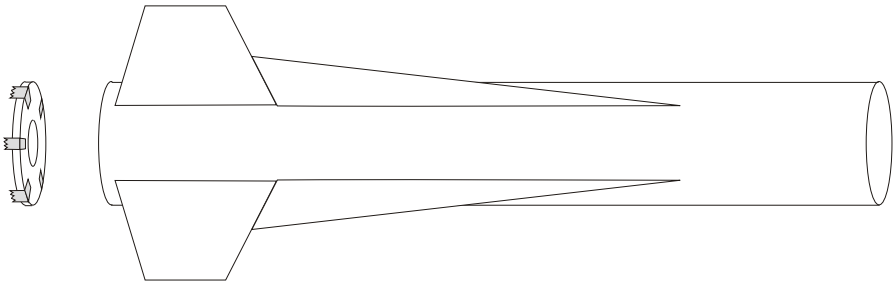
1) Apply a bead of epoxy to the root edge of a fin. Push the fin through the slot in the airframe and against the central motor mount tube. Make sure that the fin is perpendicular to the airframe. Use tape to hold the fin in position while the epoxy cures. Repeat this process for all fins.

2) Apply an epoxy fillet to both sides of each fin. Carefully smooth the epoxy with your finger before it begins to gel. Allow the epoxy to set-up before rotating the rocket to do the next set of fins. Once the epoxy has fully cured, you should sand the fillet smooth with 180 grit sandpaper. Sanding will help the primer hold better to the epoxy.



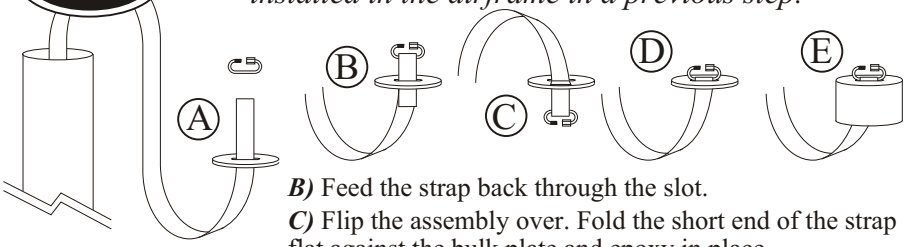
Step 6

Carefully remove the bottom centering rings using the cellophane tape strips as handles. Using a stick, apply epoxy fillets to the fins and centering ring where they meet the motor mount tube and airframe. Reinstall the bottom centering ring, this time using plenty of epoxy to secure it in place. Stand the rocket upright while the epoxy cures. Now stand the rocket upside down and apply an epoxy fillet to the bottom centering ring. Allow to cure.



Step 7

The strap referred to in this step is the strap you installed in the airframe in a previous step.



A) Pull the free end of the strap through the slot in the piston bulk plate. Slip the metal "Kwik-Link" over the strap.

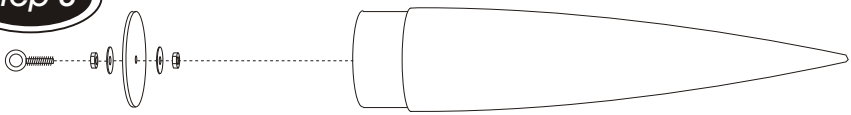
B) Feed the strap back through the slot.

C) Flip the assembly over. Fold the short end of the strap flat against the bulk plate and epoxy in place.

D) When the epoxy has cured, pull the strap until the "Kwik-Link" is wedged at the slot. Apply epoxy to the strap at the "Kwik-Link".

E) Epoxy the bulk plate to the piston body 1/4" from the top. Apply an epoxy fillet to both sides of the bulkplate.

Step 8

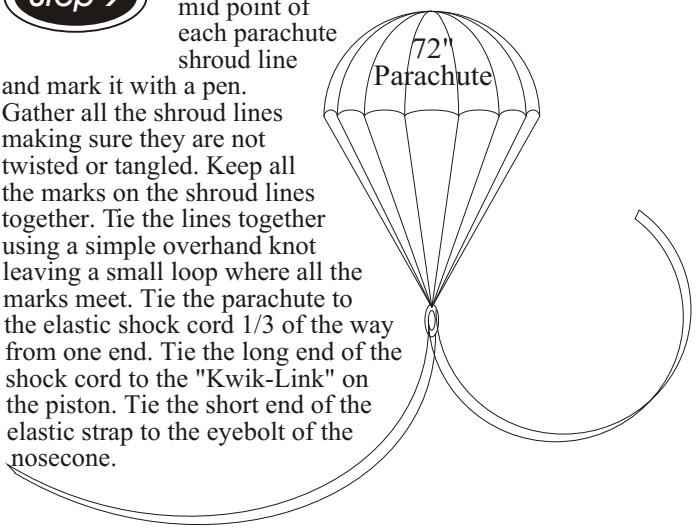


1) Screw a nut onto the eye bolt. Place the washer over the eye bolt. Thread the eye bolt through the hole in the coupler bulkplate. Place the washer over the eye bolt threads protruding through the bulkplate. Tighten the other nut against the washer.

2) Epoxy the bulkplate assembly inside the nosecone coupler section about 1/4" from the end. Apply an epoxy fillet to the bulkplate.

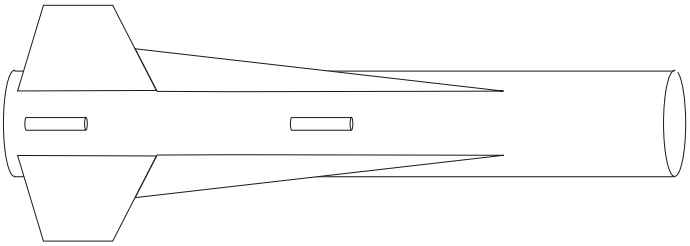
Step 9

Measure off the mid point of each parachute shroud line and mark it with a pen. Gather all the shroud lines making sure they are not twisted or tangled. Keep all the marks on the shroud lines together. Tie the lines together using a simple overhand knot leaving a small loop where all the marks meet. Tie the parachute to the elastic shock cord 1/3 of the way from one end. Tie the long end of the shock cord to the "Kwik-Link" on the piston. Tie the short end of the elastic strap to the eyebolt of the nosecone.



NOTE:
When tying the shock cord to the parachute and the "Kwik-Link", loop the shock cord through twice then tie a double overhand knot. Pull the knot tight and leave a 2-3 inch trailer.

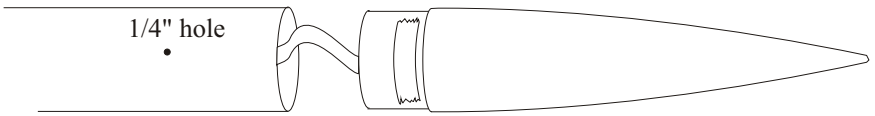
Step 10



Epoxy a launch lug 3" above the bottom of the rocket centered between two fins. Epoxy the other launch lug 24" above the bottom of the rocket. Be sure the lugs are parallel to the airframe and perfectly aligned with one another.

Step 11

Drill a 1/4" hole in the airframe 7" from the top to bleed off air pressure build-up during flight. Slide the piston into the rocket followed by the shock cord and parachute. Place the nose cone atop the rocket. Wrap masking tape around the shoulder of the nose cone if the fit is too loose. It should fit just tight enough to allow you to lift the rocket by the nose cone without it slipping off.



Apply masking tape to nose cone shoulder if the fit is too loose.

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