

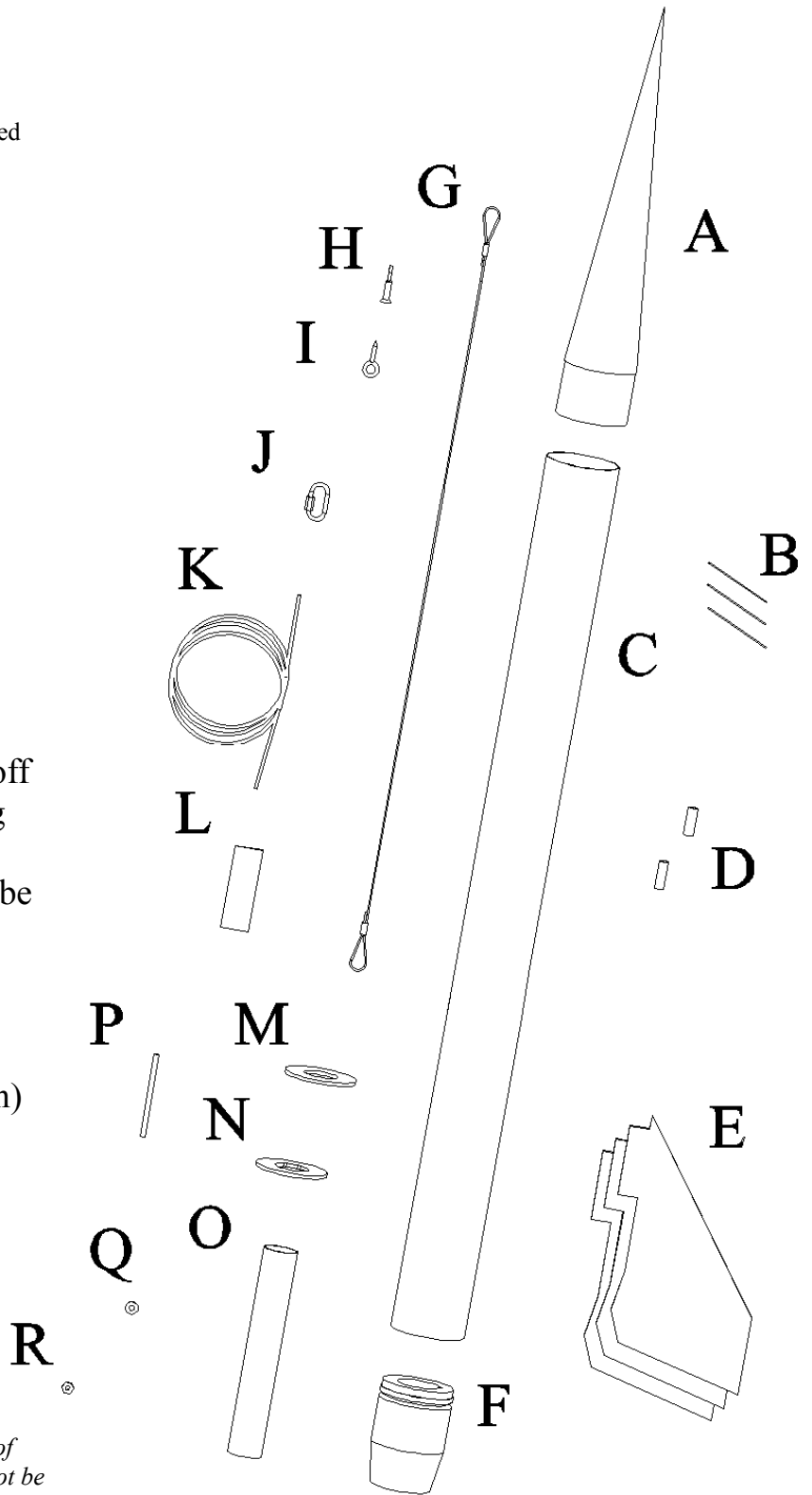
cosmodrome rocketry

1:6 BLACK BRANT II

This kit is capable of use with high thrust motors. It is therefore strongly recommended that epoxy be used throughout the construction of this kit.

Parts List

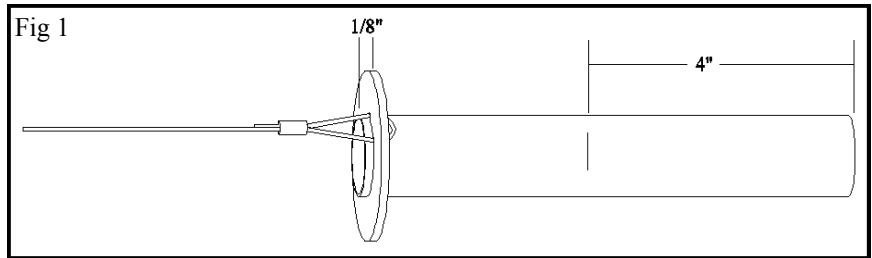
A	1	Nose cone
B	3	Antennae
C	1	Body Tube
D	2	Launch lugs
E	3	Fins
F	1	Boat tail
G	1	Shock cord mount
H	1	Nose cone anchor
I	1	Screw eye
J	1	Quick link
K	1	Shock cord
L	1	Engine retainer stand off
M	1	Forward centering ring
N	1	Aft centering ring
O	1	29mm motor mount tube
P	1	Engine retainer
Q	1	Washer
R	1	Nut
S	1	Parachute (not shown)
T	1	Decal sheet (not shown)



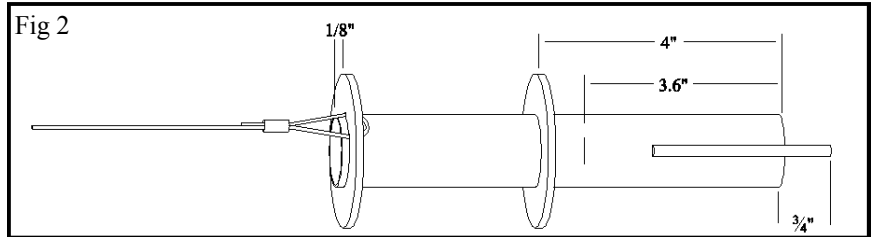
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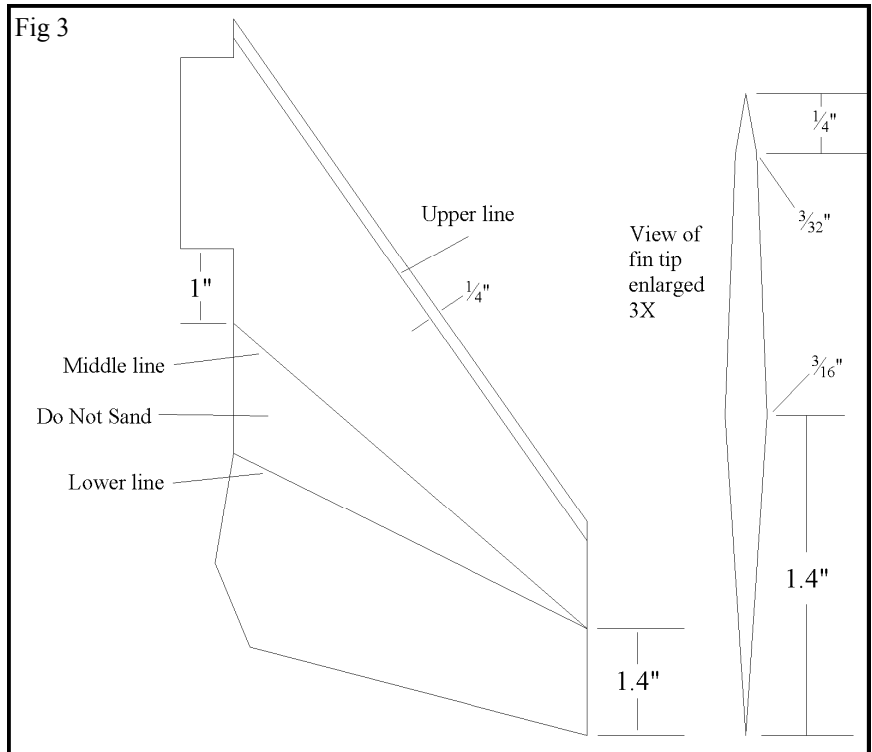
1. Draw a line down the side of the 29mm motor mount tube and mark the line 4" and 3.6" (3 19/32") from one end and 1/8" from the other. Insert one end of the shock cord mount into the two holes in the forward centering ring. Slide the centering ring onto the motor mount tube. Position the centering ring onto the 1/8" mark on the tube as shown in figure 1. Epoxy the centering ring and shock cord mount to the tube.



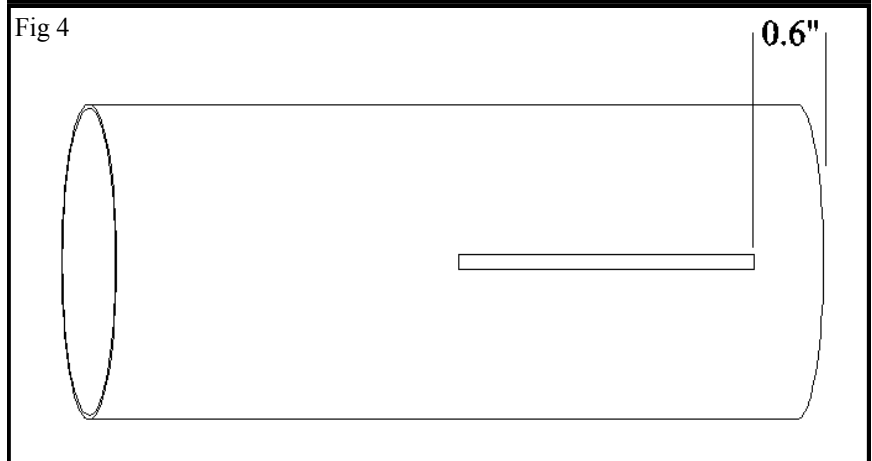
2. Slide the aft centering ring onto the tube until it is on the 4" mark, such that the hole in the centering ring is lined up with the line on the motor mount tube. Without getting epoxy near the hole, epoxy the centering ring into place. Cut out one piece of card stock, 1/8" x 2". Place the card stock on the line drawn in step one, even with the aft end of the tube. Place the engine retainer on the card stock so that 3/4" extends past the end of the tube. Note: One end of the engine retainer is cut (painted), one is not (unpainted), position the uncut end aft and it will be easier to thread the nut on. Epoxy the engine retainer and card stock to the tube, making sure that the engine retainer is on the line. Note: The card stock simply creates a space between the engine retainer and tube to allow for some reload cases enough clearance to fit. Be careful not to get epoxy on the threads of the engine retainer that extend past the tube.



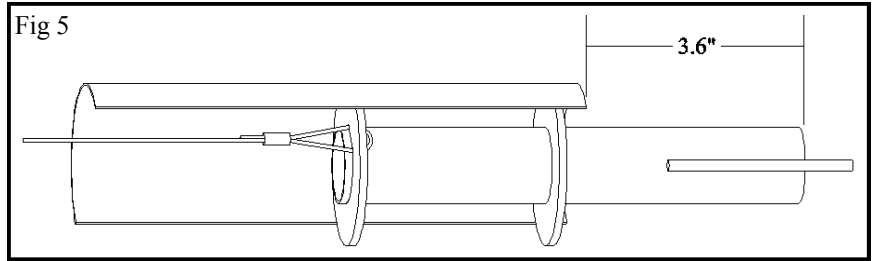
3. Draw guide line on the fins as shown in figure 3. Apply masking tape to the area between the lower and the middle lines. This area will not be sanded. Sand the lower part of the fin so that it is knife-edged to a point. Sand the upper part of the fin until the tip is half of the original thickness. Use the glue lines in the plywood as a guide when sanding. Sand the last 1/4" of the leading edge to a knife-edge.



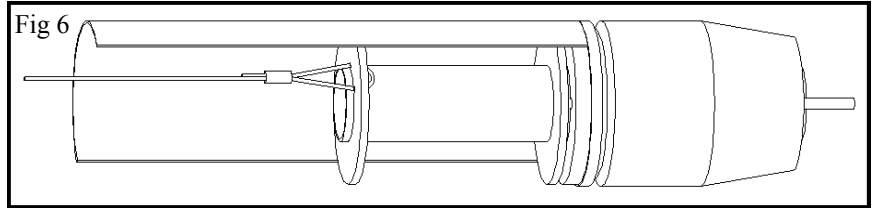
4. Cut out the alignment guide and tape it in place around the body tube. Mark the body tube at the fin and lug lines. Mark the body tube 0.6" (19/32") from the aft end. Using the bottom edge of the alignment guide, draw a line around the body tube at the 0.6" mark. Remove the guide, Draw lines the length of the body tube at the fin and lug marks. Place a fin on the body tube so that the aft end of the tab is centered on a fin line and on the 0.6" line. Draw a line completely around the tab. Using an X-acto knife, cut out a slot for a fin tab by cutting on the inside of the outline. Carefully enlarge the slot, if necessary, until the fin fits snugly. Repeat for the other two fins.



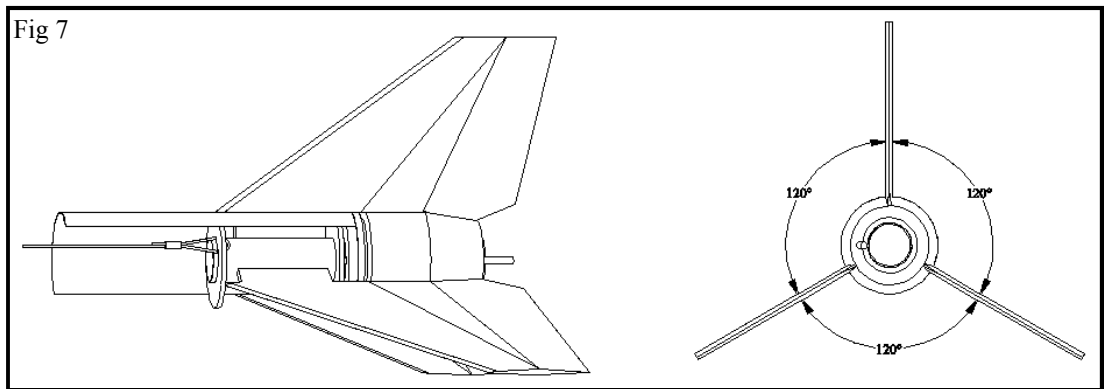
5. Apply a ring of epoxy to the inside of the body tube just forward of the fin slots. Push the motor mount assembly into the body tube until the 3.6" mark on the motor mount tube is even with the aft end of the body tube. Make sure the engine retainer is between two fin slots. Stand the assembly upright so that the epoxy can settle on the forward centering ring. Let the epoxy cure. Turn the assembly over and epoxy the aft centering ring to the body tube.



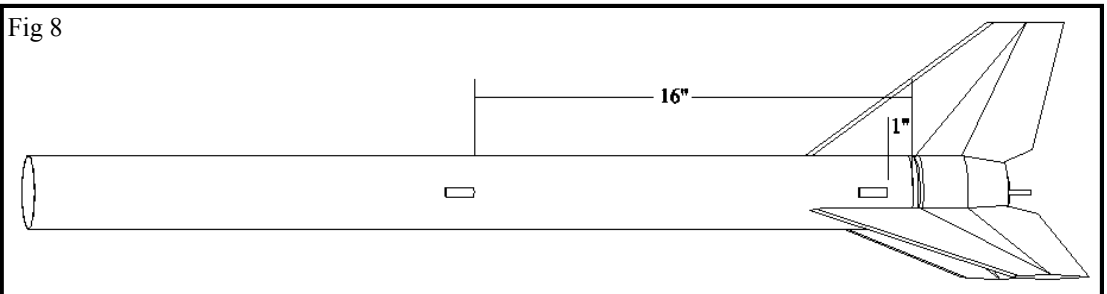
6. Apply a ring of epoxy to the inside of the body tube, at the aft end. Slide the boat tail over the motor mount tube assembly. Stand upright to cure. Fill the gap between the motor mount tube and the boat tail with epoxy or a wood filler. Be careful not to get epoxy on the engine retainer threads.



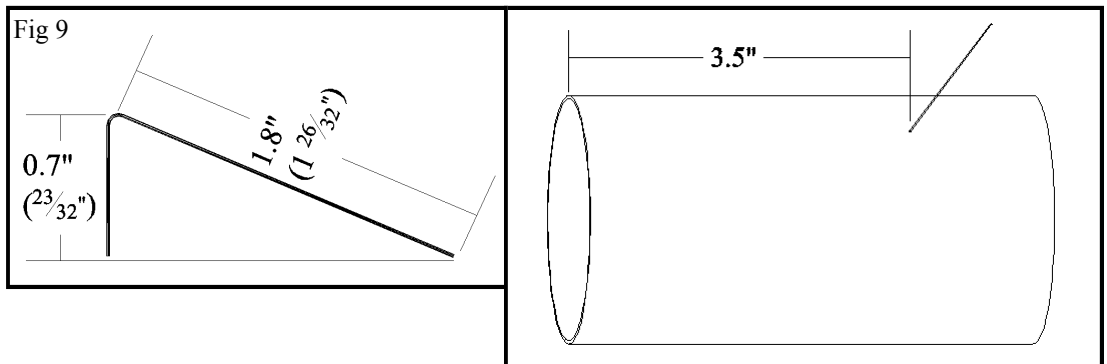
7. Apply epoxy to the motor mount tube through one of the fin slots. Also apply epoxy to the root edge of a fin. Insert the fin tab into the slot. Make sure that the fin is perpendicular to the body tube. Repeat for the other two fins, making sure that they are equally spaced around the body tube. Fill in the space between the groove in the boat tail and the fin with wood filler. Fillet each fin.



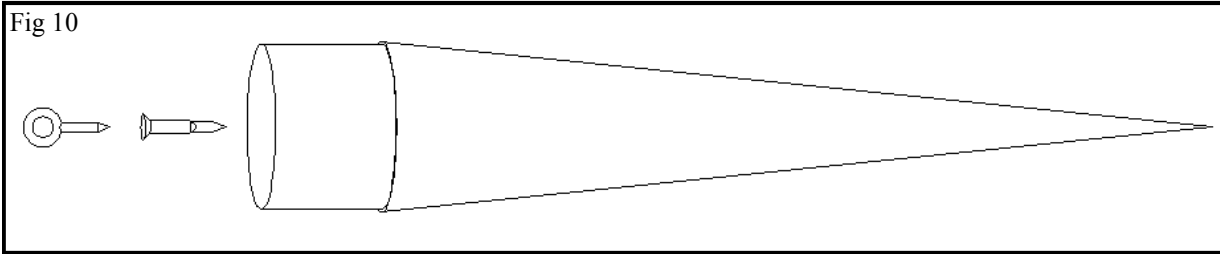
8. Epoxy the launch lugs to the body tube, on the 'lug' line. Place one of them 1" from the aft end of the body tube and the other 16" from the aft end. Using a 1/4" launch rod, align the lugs so that the rod slides easily through them.



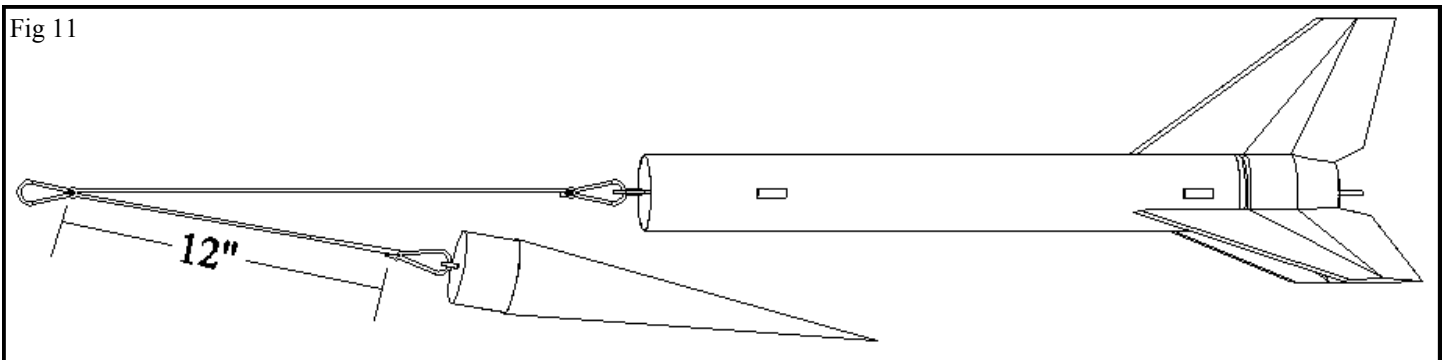
9. Bend the three antennae into shape using the antenna guide below. Using an X-acto knife or a 1/16" drill bit, drill a hole in each of the 'fin' lines on the body tube, 3 1/2" from the forward end. Put the antennae through the holes, from the inside of the body tube, and epoxy to the inside of the body tube. Make sure that the epoxy on the inside of the body tube is smooth so that the parachute does not snag on it.



10. Thread the screw eye into the plastic anchor and remove. Apply a small amount of epoxy to the inside of the anchor and re-install the screw eye. Let the epoxy cure. Thread the screw eye/anchor into the base of the nose cone and remove. Fill the hole with epoxy and re-install the screw eye/anchor.



11. Feed one end of the shock cord through the screw eye and tie it to itself, forming a loop. Tie a loop in the shock cord one foot away from the nose cone, this is where the parachute is attached. Tie a loop in the other end of the shock cord. The quick link will go through this loop and attach to the shock cord mount.

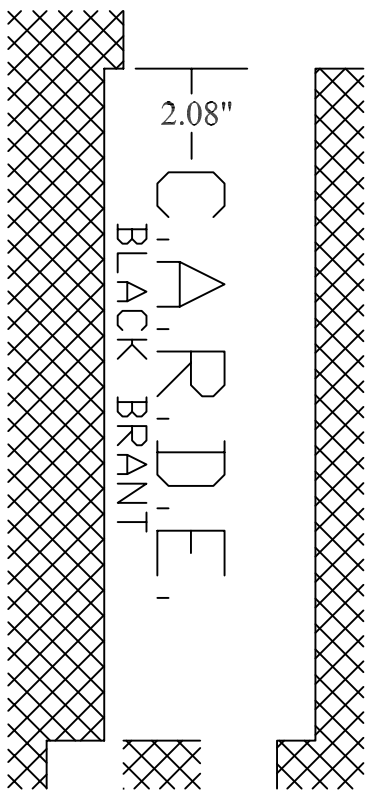
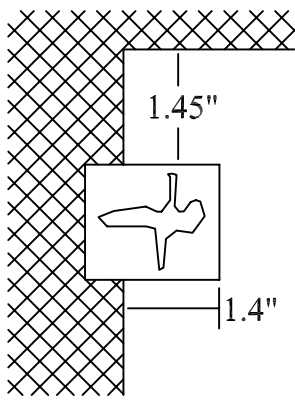


12. Finishing. This step is optional, but recommended. The standard paint scheme for the Black Brant II is outlined here. This is the most commonly available paint scheme, others do exist.

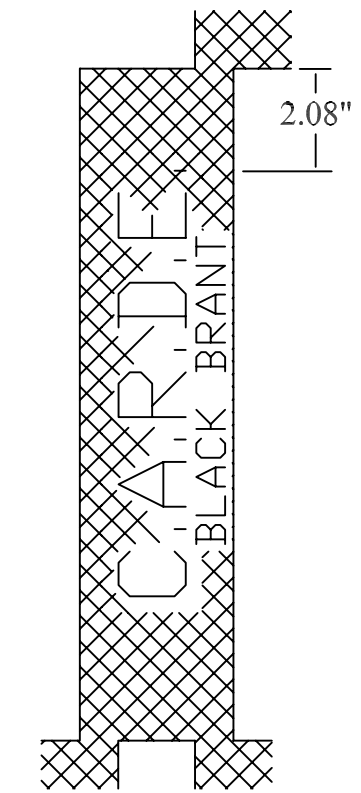
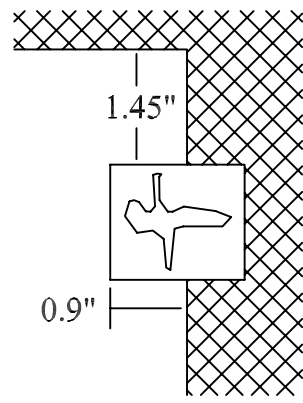
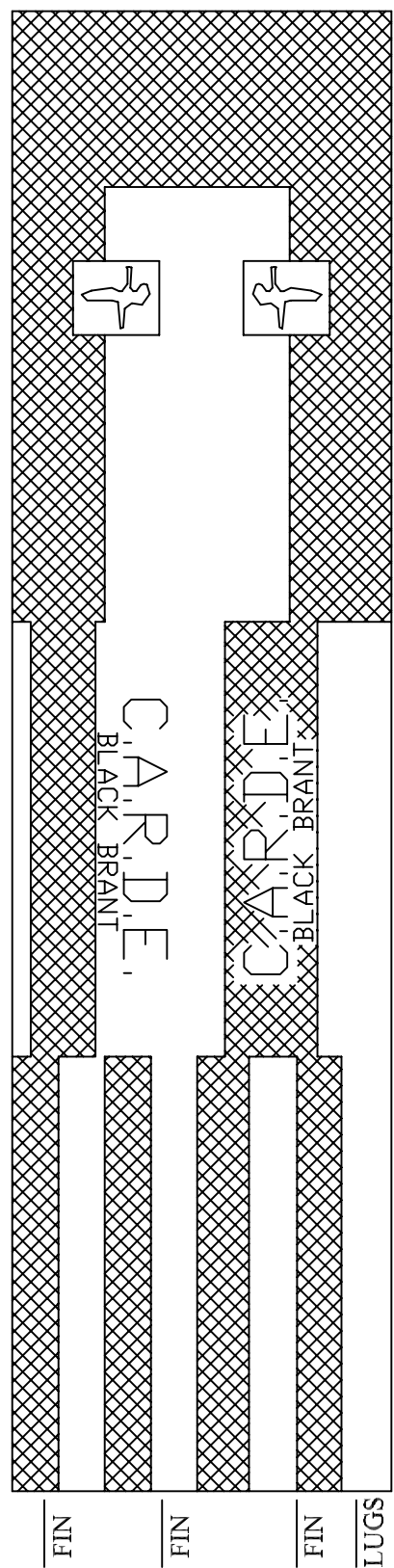
1. Fill in the spirals in the body tube.
2. Coat the nose cone, boat tail and fins with a sanding sealer to remove the grain of the wood.
3. Coat the inside surfaces of the forward end of the body tube and the aft end of the motor mount tube with thin CA. Sand until the motor and nose cone fit. This will help increase the life of your kit.
4. Paint as follows:
 - a. Fins, boat tail and nose cone: Black.
 - b. Body tube: White and Black according to the painting guide.
 - c. Lower 1/4" of the body tube: Silver.
5. Decals:
 - a. Apply the decals as shown on the painting guide.
6. Apply a coat of clear gloss to protect the decals.

11. Flying.

1. Insert recovery wadding and loosely pack the parachute. Install the nose cone.
2. Select a motor according to the most up-to-date recommended motor list available at <http://www.cosmodromerocketry.com>
3. Disposable motors:
 - a. Build up a thrust ring on the aft end of the motor using 1/2" masking tape. Wrap tape around the motor until it is at least as thick as the motor mount tube.
4. Reloadable motors:
 - a. Assemble the motor according to the manufacturer's instructions.
 - b. The thrust ring is built into the aft closure of the motor. No tape ring is needed.
5. Install the motor into the motor mount tube.
6. Slide the washer over the engine retainer.
7. Thread the nut on the engine retainer and tighten against the motor.
8. Install the igniter according to the manufacturer's instructions.



 **BLACK**



 **WHITE**

blank

overlap tab

LUGS

FIN

FIN

FIN

forward

aft

3.75"

9.47"
(9 15/32")

9.47"
(9 15/32")

9.47"
(9 15/32")

