

BME Aircraft -----Cap Maniac

Instruction Manual



Thank you for choosing BME Aircraft Cap Maniac. In order to ensure best result, please refer to this step by step instruction manual through out your building period.

Before starting

A. First we'd like you to check out all parts as soon as you open your box of Cap Maniac. Parts are wrapped in plastic bags separately as follow:

- | | |
|--|-----------------------------------|
| 1. Fuselage x 1 | 2. Main wing half x 2 |
| 3. Stabilizer and two elevator halves x1 | 4. Vertical fin and rudder x1 |
| 5. Belly pant x 1 | 6. Cowl x 1 |
| 7. A pair of wheel pants x 1 | 8. Two main wheels x 1 |
| 9. Landing gear x 1 | 10. Tinted canopy x 1 |
| 11. Fuel tank (320cc) x 1 | 12. Wing joiner and push rods x 1 |
| 13. Wing holding plate and stab wedges x 1 | 14. Hardware pack x 1 |

Note: Hardware pack includes all bolts and nuts, tail wheel, engine mount, control horns, fabric hinges, pull-pull wire etc.

B. After you inspect all parts, please take your heat iron, use medium heat and run the iron through all the covered surface to ensure the covering stick on nice and firm.

C. During the building process, please note that the covering material has to be removed from the two surfaces where you plan on gluing together with either CA or epoxy.

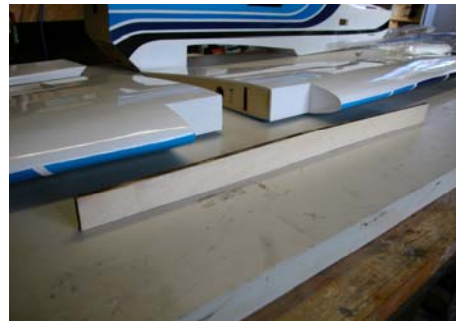
Time to start

1. You can choose to cut out all the openings that's covered by the film now or later along with your building progress.



2. Main Wing

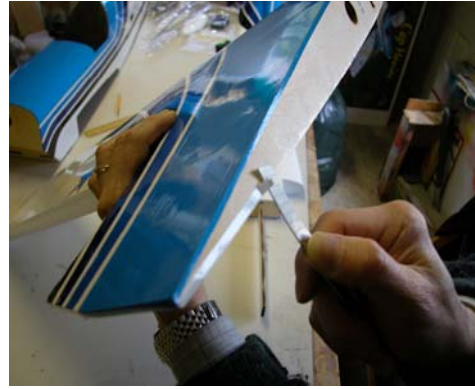
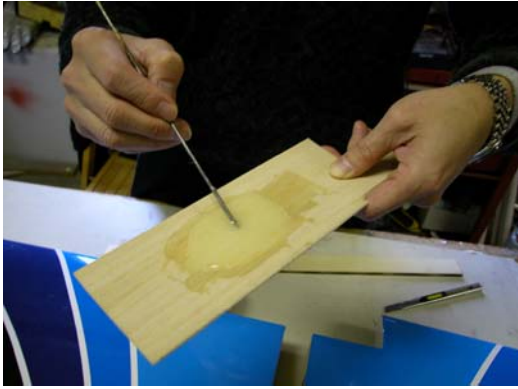
- a. Find the wing joiner, and two main wing halves. Inspect the wing joiner. Place the level edge on the table and wing top facing down on the table. This is how the wing joiner suppose to be glued into the slot. Level edge go with the wing top. Means wing top with 0 degree dihedral.



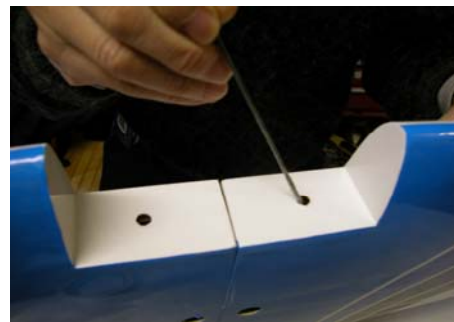
- b. Draw a center line on both side of the wing joiner. Then try fitting the joiner into the slot. Make sure it goes in and out nice and smooth.



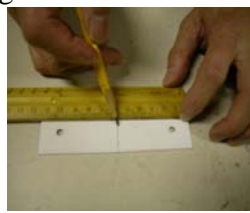
- c. Apply 30min. epoxy on the touching surface, remove some covering film if necessary. Tape the two wing halves together and place wing top down on a flat surface. Better put some weight on top to keep it nice and level.



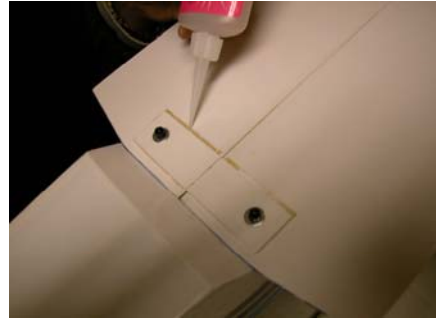
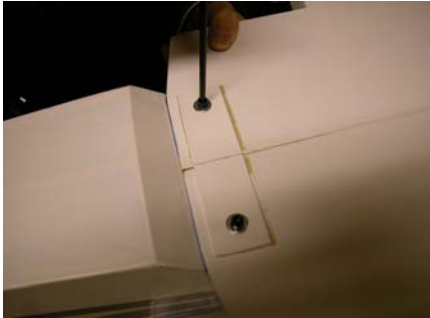
d. Cut out the film on the dowel slot. Epoxy the two wing holding dowels into the slots with 5 min. epoxy,



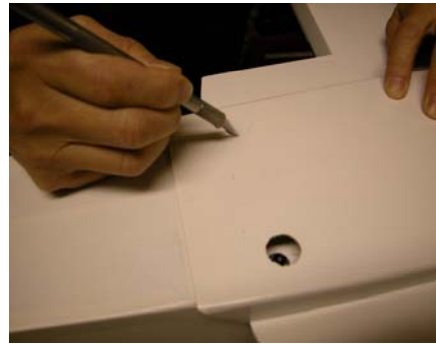
e. Find the wing holding plate. Then remove the covering film on one side. Draw a center line on the other side. Put the plate on the rear part of the wing center bottom. Align the holes where the wing holding blots go. Draw the line along the plate, and cut off the film along the line.



f. Use provided bolts with washers and spring washers to secure wing onto the fuse through this plate. Then use thin CA to glue the plate on.



g. Take the belly pant and cut off the film at the round bolts access.

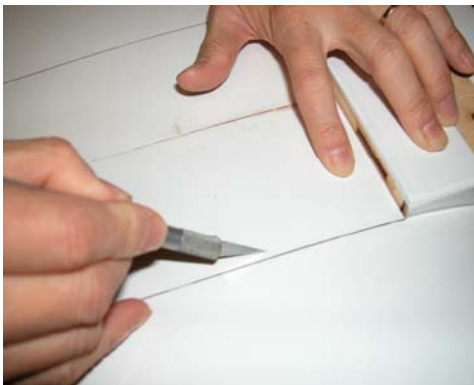


Align the belly pant in place. Draw two line along the belly pant side on the wing bottom.



Cut the film 2mm away from the line inside.

Peer off the film, Then use medium CA to glue it in place. Leave the front and rear end of the belly pant unglued till remove the wing from the fuse.





3. Stabilizer

- a. Measure and draw a center line on both side of the stab.



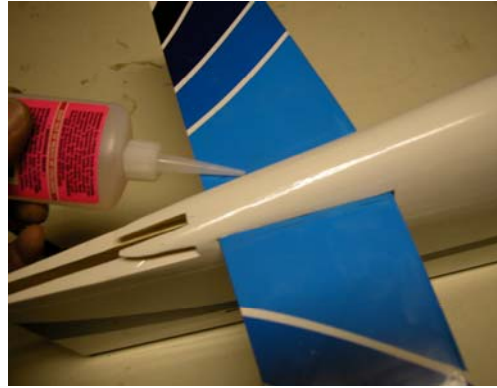
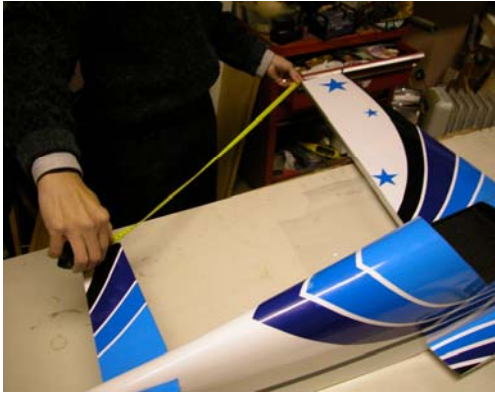
- b. Measure the top front and rear width of the elevator slot and mark on the stab.
Repeat the same on the bottom of the stab.



- c. Draw lines between those mark and cut 2mm away from the line on the inside of the lines. Then peer off the film and insert the stab into the slot.

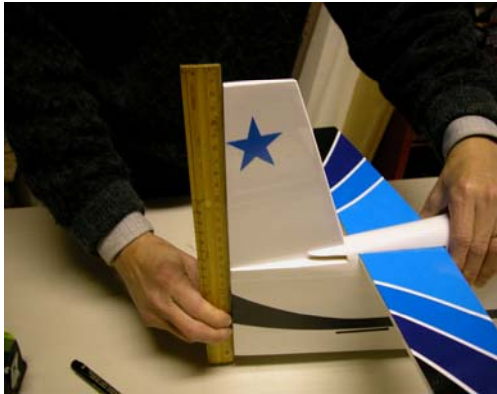


d. Measure the closest corner between stab and main wing on both left and right side.
.Adjust the stab until the above measurement is equal. Then apply thin CA on both top and bottom of the stab.

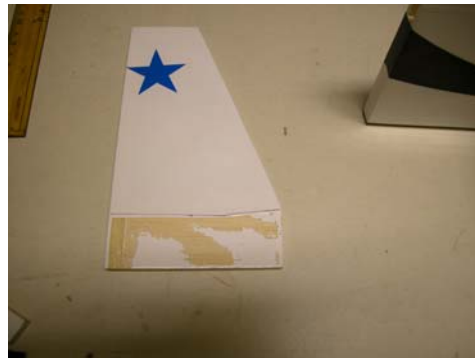
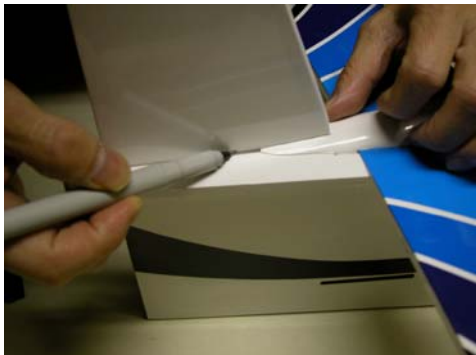


4. Vertical Fin

a. Insert the fin into the slot and use a ruler to straighten the hinge line. Then insert the stab rear wedge into the side slot by the fin.



b. Draw line along the corner on both side of the fin. Cut 2mm below the line and peer off the film. Ready for zapping.



c. Peer off the covering film on where the stab wedges is going to be glue on. Put the fin back in place. Straighten hinge line with ruler then zap it with thin CA.



d. Try fitting the stab wedges on both side of the fin. Make sure they go on the right side where they fit the best. You might need to trim they to fit in place better. Also cut out the film where you might need to put glue on. After these are all done, it's ready to apply CA on it.



5. Landing Gear assembly

a. Gather all parts of landing gear assembly as the photo shown to the right.

b. First put wheel axle and landing gear together. Fasten the axle with lock nut.



Then cut a 5mm long medium size fuel tube. Put it around the axle, push to the root. Then put the wheel and collar into the axle.



c. Cut a 8mm wide opening centering the axle access hole on the wheel pant.
Place wheel pant on top of the wheel. Push down through axle.



Mark the location of the holding screws.
Drill the hole of the size of the 4-40 tee-nut.
Insert tee-nut in place.



Put some white glue on the tee-nut before nail in.
Place wheel pant on top of the wheel and secure it with 4-40 bolts.
Secure the landing gear on to the fuselage bottom.



6. Tail wheel assembly

- Tail wheel assembly pack should include parts as photo on the right.
- Assemble all parts as photo shown.



c. Cut off the excess shaft to flush with the top level.

Mark and drill then screw on the tail wheel assembly in place.



Secure the tiller with a small wood screw,
Screw it onto the bottom of the rudder.



7. Now it's time to install elevator, aileron, and rudder servos before go ahead with next step.

8. Control horn installation

A. Rudder— a. Shape the horn as photo shown and make them a pair.

b. Make a mark about 2 cm from the bottom of rudder. Screw 2 shaped horns on each side of the rudder at the mark. The holes on the horn should flush with hinge line.



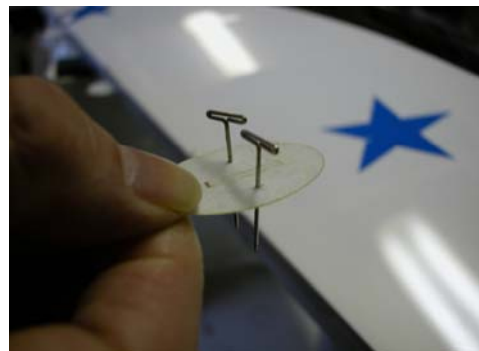
- B. Aileron**— a. Mark a line on the aileron square with hinge line and line up with the outer hole of the servo arm.
b. Secure the horn with long screws that's provided.



- C. Elevator**—a. Locate the horn about 8mm from the inside edge of the elevator on the bottom. Make sure the holes line up with hinge line.
b. Secure the horn with the provided short screw.

9. Hinges installation

- a. First take two pins stick into the center of the provided fabric hinge, one on each side. Repeat this on all the hinges that you may need to use.
b. Then place the hinge in place.



- c. Install all the moving surfaces with the pinned hinges. Then remove all pins.
- d. Apply thin CA on all the hinges. Noted that before CA, move the surface to get enough gap for maximum deflect angle that's suggested as follow.
 Aileron--- 35 degree, Elevator--- 45 degree, Rudder--- 45 degree



10. Engine Installation

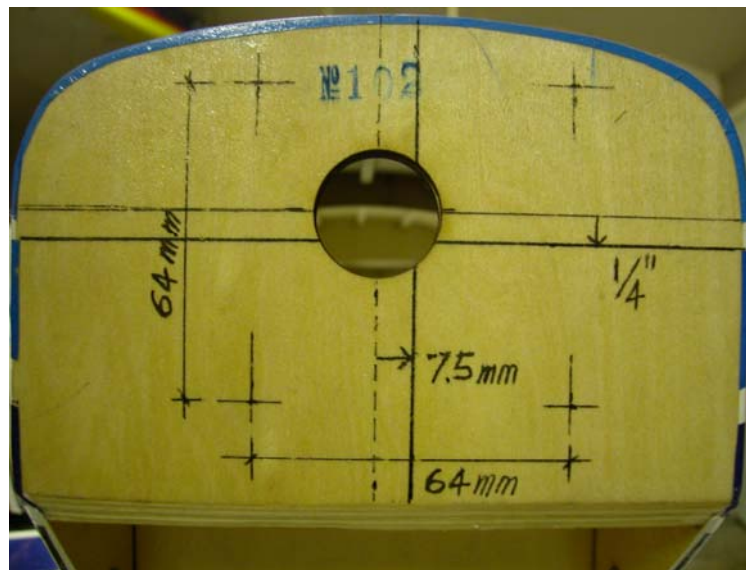
A. Fire wall configuration

a. Thrust line ----

The thrust line is located within the center line of the round hole and 1/4" below.

b. Right thrust off set—

Right thrust off set is at 7.5mm to the right of the vertical line of the round hole.



c. The engine mount holding screws should be 64mm apart in a square.

d. Drill holes for tee-nuts installation. Use same size bolt to tighten tee-nuts and bite into the firewall.



- B.** Mount the engine on to the engine mount. Make sure the distance from the mounting surface to the engine prop hub face is **5 1/2"**.
- C.** Bolt on the engine mount on to the firewall.
- D.** Install fueling tap (optional)

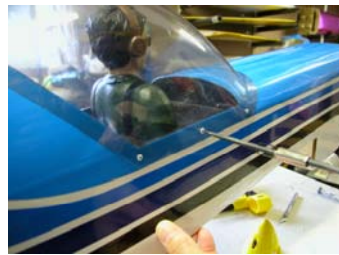


11. Canopy installation

- a.** Place canopy on top of the cockpit area with about 7mm overlap on the turtle deck. Make sure it's nice and balance on both side. Then draw a line on both side and mark where you like the holding screws to go on as shown on photo.



- b.** Drill holes on the marks.
- c.** Screw the canopy in place with small wood screws to make the thread on the fuse. Then unscrew all the screws.
- d.** CA all the holes on both side where the screws are going on.
- e.** Put the canopy back on and screw it on tight.
- f.** Wrap tape around the edge of the canopy(optional).



12. Decal Installation

- a. Inside your decal pack, please find a semi-clear film with sticky back. This is what you may use to stick up the lettering from the decal set.
- b. Peer off the semi-clear film, then cover it on top of the decal evenly. Carefully peer it off again, the lettering should come off with the film.



- c. Place the film with the lettering above the designated location. Carefully press it on the wing surface. Make sure you press from one end to the other.
- d. After it's on press firmly on the letters, then peer off the film. Lift the control surface so you can fold the letter to the inside of the hinge line gap. Then cut the letter in the gap.
- e. Repeat **b.** to **d.** on the rest of the decal.

Location of the decal: BME Aircraft (red) ---- Main wing, Left
Cap Maniac (yellow)---- Main wing, Right
Small Cap Maniac (yellow)--- Fuse side, Both

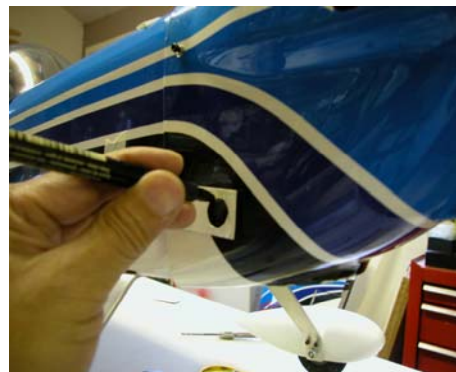
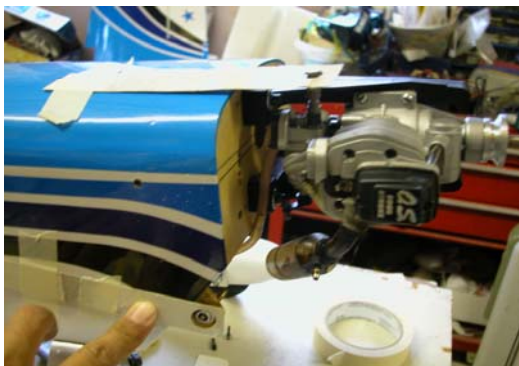


13. Cowl Installation

- a. Cut the Cylinder head shape out from a card paper strip. Place it on the cylinder head and make sure there's at least 2mm clearance around the cylinder head. Then tape the other end on the fuse far enough to clear the cowl
- b. Put the cowl back on, set it level and slightly off center. Then draw along the opening where you should cut out.
- c. Same method apply to locate the cowl holding screws. Take 4 card paper strips. Cut a 4-40 size hole on one end. Align the hole by screwing a 4-40 bolt through the paper onto the re-installed tee-nut.



- d. Insert a 1/8" of balsa in-between the spinner plate and cowl, zap it if you'd like. Align the spinner circle with cowl. Level the cowl nicely. Then mark and drill holes through the hole on the card paper strips.
- e. Use the same method to locate fueling tap or needle valve.



14. Fuel Tank installation

- a. Install fuel tank using provided fuel tank holding plate.

Apply plumbing silicon between fuel tank and the plate to hold the tank.

- b. Glue the lower part of the plate to the former in front of the landing gear with epoxy. Or install two tee-nuts on the plate and tighten it

from the out side of the former. So you can replace the tank later on.



15. Finishing up

- a. Now you've almost finish the building your Cap Maniac. The things that left for you to finish up are the push rods, pull-pull wires, throttle servo installation, and decide the location of your receiver and battery pack.
- b. The **CG** should be located **4 1/4"** to **4 3/4"** from the L.E. (Leading Edge), measured from the wing root. To get more precise checking of **CG**, it is recommended that you hold the plane inverted. And support the plane only with your finger on both wings. You should move the battery pack back and forth to achieve the right CG.
- c. The CG location is just a suggestion, you can move it backward to get more maneuverable characteristic, but also more unstable flying yet maybe more fun.

d. Angle of deflection

For **3D pilot** it is recommended that you set maximum deflection as follow:

1. Aileron 35 degree
2. Elevator 45 degree
3. Rudder 45 degree

For **Sport pilot** it is recommended that you set 50% of the above deflection.

Beginners are not recommended to fly this plane.

Either you are a 3D pilot or sport pilot, up to 70% of exp. is strongly recommended to achieve smooth flying. Futaba user set it on negative(-), JR user set it in positive(+).

**Thank you again for choosing BME Aircraft.
Enjoy your flying with Cap Maniac**