

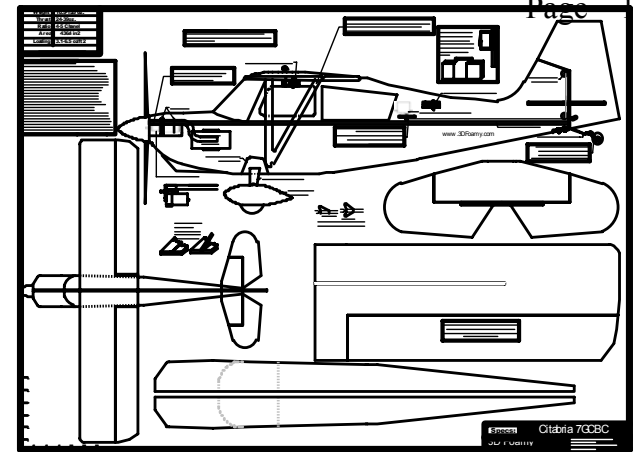
3D FOAMY

Citabria 3D



Made In Washington State, USA!

Kit# 3DF006



A Hi Performance Electric 3D'r

About This Construction Manual

This booklet divides the construction into sub-assemblies; wing, fuselage, etc. **Please read each section carefully before starting on that particular sub-assembly.** There is a complete description of all parts under "Kit Contents" Please check to make sure your kit is complete. We are human, and occasionally miss something! If you have trouble identifying a part, or are missing something, please contact us and we can help.

During the construction process the steps will outline what part to use. We have used actual pictures instead of unclear or often inaccurate illustrations to assist in the building process. This manual was intended for English users, and all measurements are made in standard units. (Inch, foot, etc.)

Customer Service:

Should you experience a problem building or flying this kit, we recommend you see your hobby shop first. If you are unable to solve the problem, feel free to write:

3D Foamy (Levi Jordan)
10040 West Barberry
Cheney, WA 99004

help@3DFoamy.com or online at www.3DFoamy.com

This product is sold with exclusion of all warrantee, expressed or implied, statutory or otherwise. Pilot assumes all risk in building and operating this model. Do not operate if you are not an experienced modeler. Refer to and abide by AMA rules at www.modelaviation.com for regulations on Radio Control Models.



Kit Contents

| Part No. | QTY. | Dimensions | Description |
|----------|------|-------------------------|------------------------|
| 6201a | 1 | Laser Cut Foam | Foam Kit Parts A |
| 6201b | 1 | Laser Cut Foam | Foam Kit Parts B |
| 6202 | 1 | .188" Dia. | Carbon Spar |
| 6203 | 1 | Laser Cut Plastic | Control Horns/Doublers |
| 6204 | 1 | Low Stretch Line | Pull / Pull Cables |
| 6205 | 1 | Laser Cut ply | Motor Mount |
| 6206 | 1 | Velcro | Battery Mount Strap |
| 6207 | 2 | Wire/Carbon/Shrink tube | Aileron Pushrods |
| 6208 | 1 | CD ROM | Instruction/Plans CD |
| 6209 | 1 | Fiberglass | Elevator Joiner |
| 6210 | 1 | Intro Sheet | Getting Started Paper |
| 6211 | 2 | .125" Dia | Carbon struts |
| 6212 | 1 | Laser cut ply | Strut/wing attachments |
| 6213 | 8 | 2-56 Nuts/Bolts | Wing/strut attachments |

Additional items you will need to make your plane tear up the sky!

| | | |
|--|---|--|
| <input type="checkbox"/> 2- 1.75" wheels (Optional) | <input type="checkbox"/> 4- 1/8" wheel collars (Optional with gear) | <input type="checkbox"/> 4-5 Ch Radio System with 4 micro servos and mini or micro receiver (HS-55 or similar) |
| <input type="checkbox"/> Odorless Medium CA and accelerator. (Accelerator a must) | <input type="checkbox"/> Plugs – One set of JST or Dean's micro for speed controller to motor and to battery/Charger. | <input type="checkbox"/> Castle Creations Pixie 20 Brushed motor speed controller or equivalent |
| <input type="checkbox"/> 5 or 15 minute Epoxy | <input type="checkbox"/> Li-Poly Battery pack (1200 mah 3s1p recommended)** | <input type="checkbox"/> Li-Po Charger (Must be approved for Li-Po Cells!) |
| <input type="checkbox"/> Clear Packing Tape | <input type="checkbox"/> GWS "D" type gearbox which has 6.6:1 ratio | <input type="checkbox"/> Extra high quality flexible hook up wire. |
| ** 11.1 Volts over rates the 350 motor, but is great performance. Use full throttle sparingly. | | |

Building Supplies that make it easy.

| | | |
|--|---|--|
| <input type="checkbox"/> Scissors | <input type="checkbox"/> #80 sand paper | <input type="checkbox"/> Steel straight edge |
| <input type="checkbox"/> Razor saw | <input type="checkbox"/> Hobby Knife and extra blades | <input type="checkbox"/> Small building square |
| <input type="checkbox"/> Denatured Alcohol | <input type="checkbox"/> Pencil and Pen | <input type="checkbox"/> Wire cutters |
| <input type="checkbox"/> Soldering iron | <input type="checkbox"/> Assorted screwdrivers | <input type="checkbox"/> Paper towels |

Definitions

- **LE-** Leading Edge
- **TE-** Trailing Edge
- **CA-** "Super Glue"
- **Brushed-** Normal motor type, brushes, can, magnets.
- **Brushless-** New motors, no brushes, computer controlled.
- **Li-Poly-** New Battery packs. Lithium Polymer (Cell phone battery)
- **3S1P-** 3 cells, 1 Pack
- **3S2P-** 3 cells, 2 packs
- **"C" Rating-** the maximum charge or discharge rate of the cell. A 1000 mah pack rated at "10C" could provide a 10 amp discharge. All packs should be charged at "1C"(1000mah pack should charge at 1000 mah max. That means a 1 hour charge time.
- **HA-** High Alpha Flight. Also called 3D flight.

General Construction Notes

- 1) Start by thoroughly reading this manual, and also look carefully at the plans. Many items are addressed more clearly on the plans.
- 2) The foam is custom laser cut at 3D Foamy and has a clear plastic covering. This covering greatly increases the strength, so leave it on.
- 3) Normal CA will melt the foam, but odorless CA can be used. Accelerator is a must! It will take hours to dry on its own...
- 4) Use odorless medium CA everywhere you can. Hot melt glue works very well for mounting servos and electrical components, but hot melt glue is heavy so use it sparingly.



- 5) Glue everything to the plane (servos, speed controller, receiver, receiver, etc.). To ease disassembly (if required), wrap the items mentioned in shrink wrap or tape first. Then glue in place with the tape protecting the electronics. To disassemble, cut the part loose and then remove the tape.



- 6) **PAINTING:** Painting is not necessary. However, test the paint on a small scrap first. Check the "Painting" section for brands that work well. If masking for painting, use blue low adhesive tape or else when the tape is removed, the film will inadvertently be removed as well. When removing the tape, pull the tape towards any edge of the film so that the film is not pulled loose. You will likely need to put striping tape between the colors as they can bleed under the tape. An alternative to painting is vinyl film found at any sign shop. It is easy to use, self adhesive, and low cost.

Electronics Notes

There are many choices to make when deciding on your power system and it can get confusing. Below are the 3 most popular setups. I listed everything out for you so you know exactly what works.

The Basic Brushed setup

Motor: GWS 350C "D" ratio (6.6:1)

Battery: Any 1000-1500 mAh 3S1P Li Poly pack.

Speed Control: Castle Creations Pixie 20

Radio System: Any 4 Ch. FM transmitter, and a micro receiver. GWS or Hitec are recommended. Servos should be sub micro. Hitec HS-55, Cirrus CS-5 or 10, Bluebird micros, etc...**4 needed**

Charger: Must be approved and designed to charge Li Poly packs. The Kokam charger is great, and so is the apache 2500

Prop: APC or GWS 11x4.7

Stuff: Get a few feet of red/black high quality silicone wrapped hook up wire, 2 sets of Deans micro plugs, and some high quality clear medical tape or packing tape.

That pretty much does it for the economy package. However, it still provides power to hover at 1/3 throttle, pull out of nasty situations, and provides 15-25 minutes of flight time! The above setup will provide approximately 24 oz of thrust to a plane that weights 11-14 oz! That is fun! Just plan on having a couple replacement 370 motors around, because at 11.1 volts, the brushes wear out quickly (10-15 flights) However, they are under \$5 for a whole new motor! As an alternate motor, you can use the Baja motor from the Losi mini racing trucks. They have replicable brushes like you see in R/C Cars.

Step Up to Brushless

Motor: Himax HA2015-4100 bolted to the GWS 350C "D" ratio (6.6:1) reduction unit.

Battery: Any 1000-2100 mAh 3S1P Li Poly pack.

Speed Control: Castle Creations Phoenix 25 brushless controller.

Radio System: Any 4 Ch. FM transmitter, and a micro receiver. GWS or Hitec are recommended. Servos should be sub micro. Hitec HS-55, Cirrus CS-5 or 10, Bluebird micros, etc... **4 needed.**

Charger: Must be approved and designed to charge Li Poly packs. The Kokam charger is great, and so is the apache 2500

Prop: APC 12x6

Stuff: Get a few feet of red/black high quality silicone wrapped hook up wire, 2 sets of Deans micro plugs, and some high quality clear medical tape or packing tape.

The benefit of going brushless is 2 fold. Better performance and better run time. Your motor will last for years, and you are more efficient, producing more power. This setup will give you about 30 oz of thrust, but better runtime and more reliability.

All Out Brushless

Motor: Hacker B20-15L brushless motor and a 4:1 planetary gear reduction unit.

Battery: 2100 mAh **3S2P** Li Poly pack. Or a 20c rated 2200 3S1P Li-Poly pack

Speed Control: Castle Creations Phoenix 25 brushless controller.

Radio System: Hitec Electron 6 receiver. 4-Hitec HS-56HD sub micro servos.

Charger: Must be approved and designed to charge Li Poly packs. The Kokam charger is great, and so is the apache 2500.

Prop: APC 11x4.7

Stuff: Get a few feet of red/black high quality silicone wrapped hook up wire, 2 sets of Deans micro plugs, and some high quality clear medical tape or packing tape.

This setup is the Purple Power setup. Providing over 40oz of thrust! It should be used only by those familiar with high performance aircraft! This will emulate a 40% gasser, and then some! However, it is almost double the price of the Himax setup, but the grin you get is worth it!

Please DO NOT think the you need to spend tons of money to have fun. The GWS 350 setup is capable of hovering for 10 minutes, then pull out vertical and fly around for another 10 minutes!

About your Plane

Your Aircraft was designed by computer (CAD) for accuracy and construction ease. All parts have been precision cut on a CNC laser cutting system right here in the 3D Foamy shop! Not only are these planes simple, but they adhere to the full scale's outlines 100%. Control surfaces were the only deviation. This makes your plane fly like the big planes do! It also makes it one of the best looking foamy's out there, and a great trainer for aerobatics.

The foam used in your kit is the best quality available. The Blucore foam is very light and stiff, and the Depron is very forgiving and easy to paint. However, because we want weight at the minimums, the planes are still somewhat fragile, so a little care can go a long way.

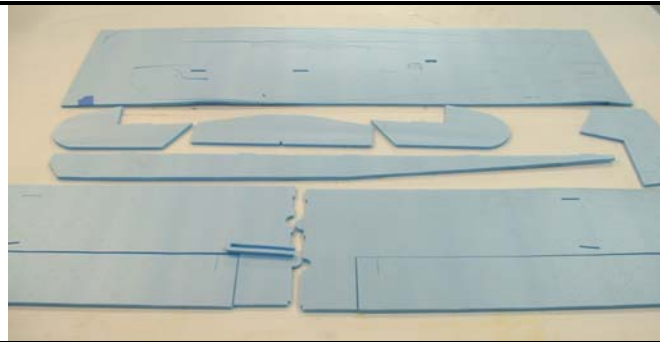
I hope that you are going to enjoy building and flying this plane as much as I have! Best of luck, and don't hesitate to e-mail me with any questions or comments at levi@3DFoamy.com.

P.S. If you think I can improve or clarify something in this manual, please let me know!

-Levi Jordan

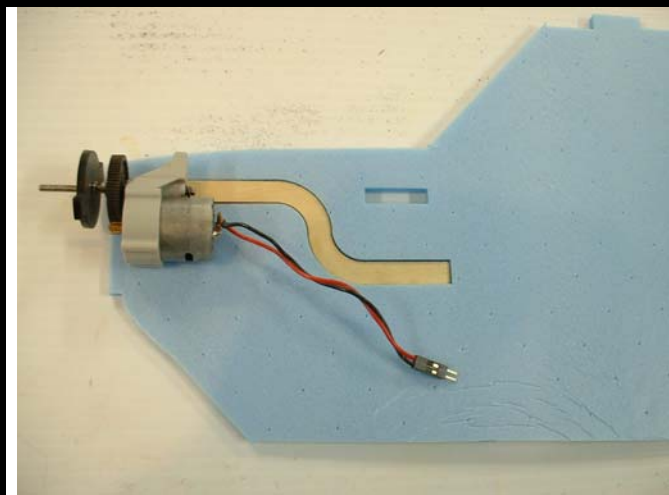
Construction

Airframe Construction

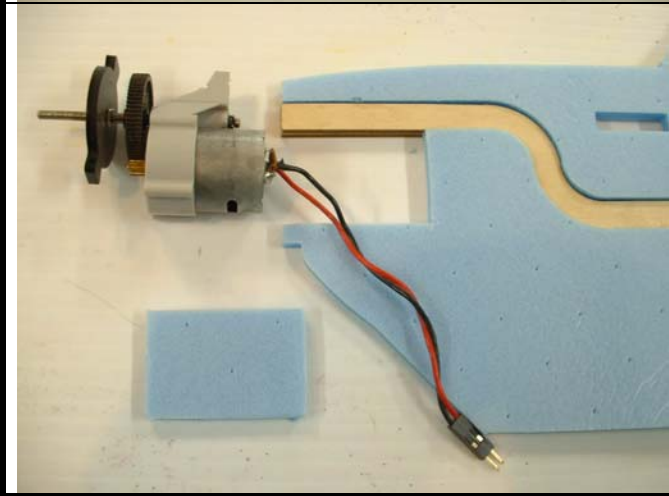


All parts have been accurately cut on a computer controlled laser cutting machine. Remove the aircraft parts from the foam packing sheets. Cut the tabs loose with a razor blade for best results.

Get friendly with your glue of choice. I prefer medium odorless CA and accelerator. It makes strong joints and is much cleaner, lighter, and faster than epoxy. Accelerator is a must! Test glue some scraps together to get the hang of it. It is different than normal CA.



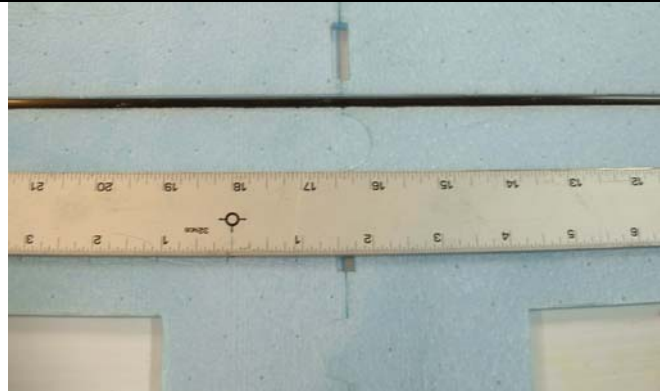
1. **TEMPORARLY** place the laser cut motor mounts into the slots in the fuselage. Test Slide your motor/gearbox in place. You will need to trim the foam to match the motor you have chosen to use. A sharp #11 x-acto blade works best. You may need to cut back some of the motor mount to get the prop and spinner in the correct location.



2. Locate the two 1/8" Ply laser cut motor sticks. This is for the standard GWS 350 drive unit. If you plan on using the Hacker B20 then the steps are the same, but you will need to groove the motor block to match the motor can. There is also a motor mount on the www.3dfoamy.com website for mounting your hacker motor. A Special mount for Axi Motors is also available.
3. Epoxy the two pieces together to form the laminate. Let cure, then epoxy into the airplane. Make sure to use epoxy! (5 min. is fine). It will not crack under the torque of the motor. Do not add any right thrust here, we will do this later by adding the laser cut plastic shims to the motor mount, shimming the motor to the desired angle.



4. CA the side rails onto the main fuselage. Use the foam square to make sure they are 90° to each other. Make sure you test fit them before adding glue. It is important that they are completely inserted into the tabbed holes. This is where you get the strength out of the fuselage.



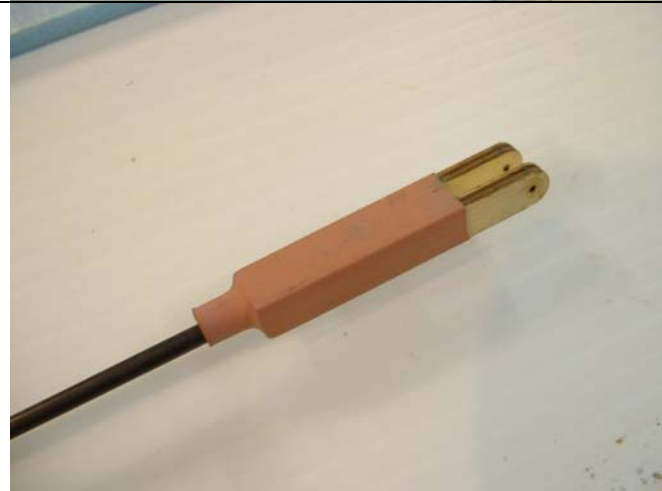
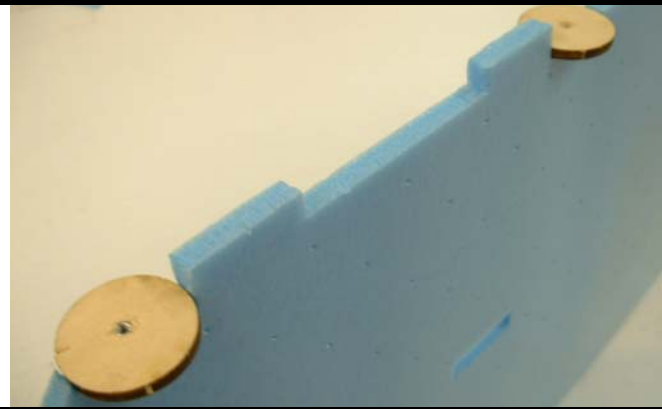
5. Slide the 2 wing sections together so that the jigs match up. Glue this joint with Epoxy. Wipe any excess off with denatured alcohol. Locate the composite main wing spar. Reference the plans to where it is installed and make a groove on the bottom to glue it into. A Dremel router base makes this easy. It is 3" from the LE.

6. Glue the spar into the wing slot with 5-30 min epoxy. You can use CA if you want, but the epoxy will hold better, and will flex under loads.

Note: I left the spar slot uncut so that you can maintain a clean, smooth top surface of the wing. (Lasers go all the way through :O)



7. The Wing is designed to be removable for transport. Insert the 2-56 blind nuts into the bottom of the wing mount plates. Then epoxy the 2 plywood disks into the locations shown for the wing attach bolts.

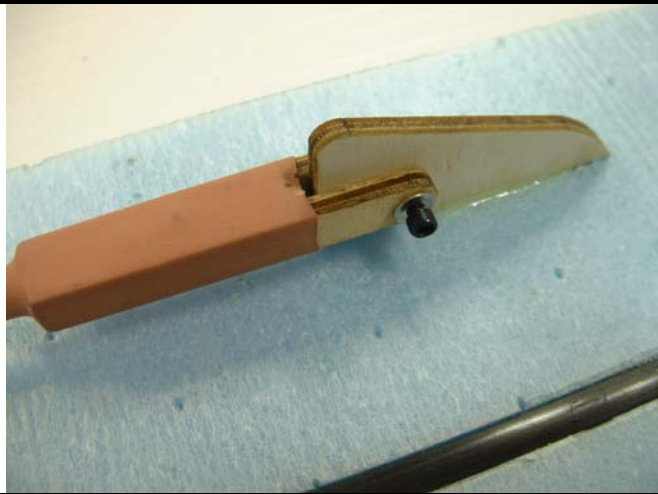


8. Epoxy the strut attachments into the 4 cutouts on the bottom of the wing.

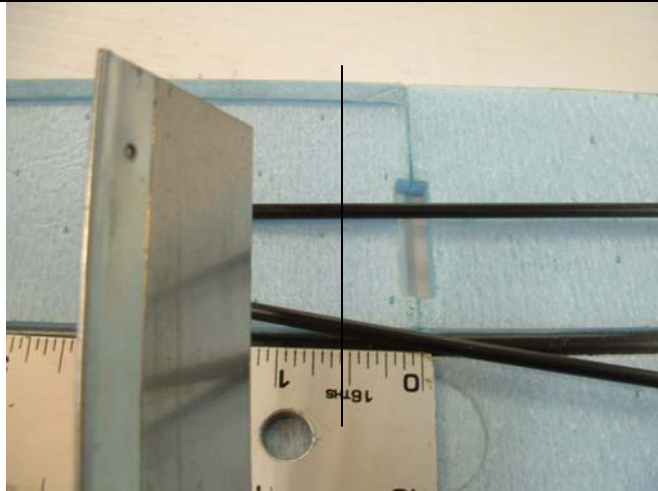
9. Make 4 struts by cutting the .125 carbon rods in half. Add the strut attachments to **one** end of each strut by epoxying the laser cut “forks” to both sides of the strut. Use 2” of large shrink wrap to secure the fork to the end.

Note: Make sure to leave .75” between the mount hole and the end of the carbon strut when gluing the forks in place.

TIP: You can sand the fork edges round for a better look.



10. Use a 2-56 nut and bolt to attach the struts to the right half of the wing. CA the nut to the inside of the strut attach fork.

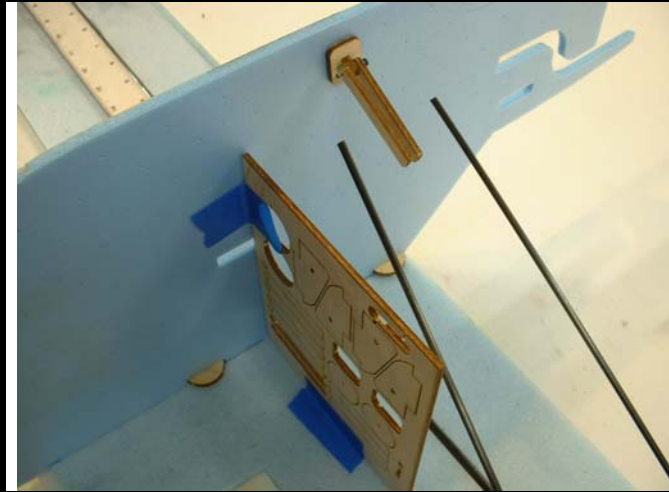


11. Fold the 2 struts into the center of the wing. Measure .5" from the wing center joint to the OPPOSITE SIDE of the wing panel. Cut the struts there with a razor saw.

NOTE: In the picture, the strut mounts are to the Right>>>>>



- 12.** Assemble the fuse/strut mount and glue it into the hole on the fuselage side.
Use Epoxy here. You can bevel the edges of the plate for a smoother look.
- 13.** Bolt a set of the fork pieces to both sides of the mount.



- 14.** Use the Ply parts sheet as a square. Tape it in place to square the fuse to the wing.



15. Apply Epoxy to the strut and wood strut attachments. Slide a 3" section of shrink tube over the glue joint and shrink to hold it tight.

Note: You will need to elongate the holes in the fork to for allow the angle of the struts.

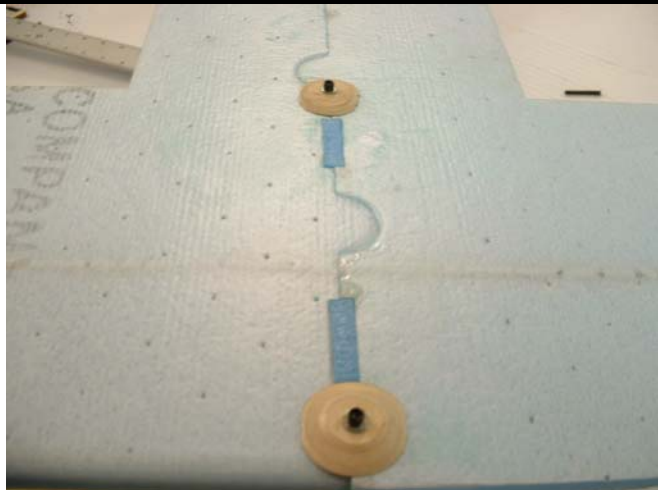


16. The finished strut on the wing and fuse. It should all be square!

17. GO BACK AND REPEAT FOR THE OPPOSITE WING STRUT



18. Bevel the 2 remaining ply washers for good looks.



19. Cut a ¼" hole over the top of the 2 wing mount plates. Thread the 2-56 bolts into place, and then Epoxy the top reinforcement plates into place.
20. **Do not** over tighten. The struts take up the flight forces.
21. As an option, you can glue the top of the fuselage piece to the top of the wing. You will need to remove a sliver of foam to access the wing bolts.



22. Place the laser cut ply center hinge on the joiner rod.
23. Join the elevator halves to each other with the fiberglass joiner rod. You can cut it to size easily with a razor saw. Use the horizontal stab as a jig to set the correct length.



24. The Stab has a notch in the LE. Slide the stab into place, then push forward to engage the front tab. Now you know it is centered, just align the whole stab so it is square to the fuselage. Glue it in place with CA or epoxy.
25. Glue the stab support rails around the horizontal stab after squaring it up.

The Following steps are only for kits that included the molded Carbon Fiber landing gear. Skip ahead to the next section if you are not mounting a landing gear on your plane.

Caution: The gear is very strong, but it is still only mounted to foam. I only recommend using the landing gear on smooth take off and landing surfaces. Grass will most likely tear the gear off on a bad landing. The bolt on method makes it easy to remove for

different flying locations.

26. Your landing gear should have included the following materials.

- 1- Gear
- 1- Tail Skid
- 1- Laser Cut Lite Ply mounting set
- 4- 2-56 Washers
- 2- 2-56 Lock Nuts
- 2- 2-56 Bolts
- 2- 2-56 Wood Screws




27. Use the landing gear detail on the plans for mounting location and as a template for the next steps.


28. I sand the edges to a bevel for better looks. After sanding, **EPOXY** the plates to the side of the fuselage.

29. Repeat for the other side of the fuselage. **Make sure that the gear plates are EXACTLY lined up with each other!**





30. Use a sharp razorblade to cut out the foam that is in the gear-hole area.

- 
- 31.** Epoxy the 1" ply plate into the slot through the fuselage. It should be equally spaced on both sides of the plane.
32. Drill 1 .063 hole on each side of the gear and thread the 2-56 wood screw through the carbon gear into the wood mount. Cut off any excess length.



33. The 2-56 gear axles are included with the gear set. Bolt them on as needed for your wheel installation.

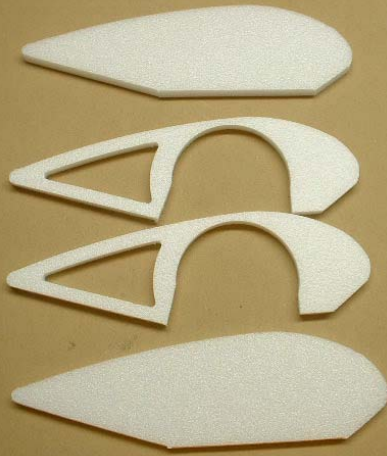


34. Cut a 1/8 piece of foam from the rear of the fuselage (bottom) for mounting the tail skid.

35. Epoxy the 1/4" wide lite ply mount into the cut out.

36. Use the supplied 2-56 wood screws to mount the skid to the airframe.

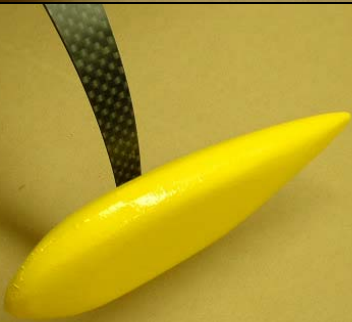
Note: If you plan on being rough with the gear, wrap a 2" strip of clear packing tape around the tail skid mount before bolting it on.



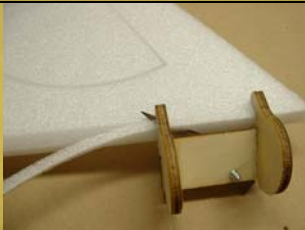
- 37.** If you would like to add the wheel pants, build them now.
38. You may need to use both inside cutouts depending on the wheel you have chosen to use.



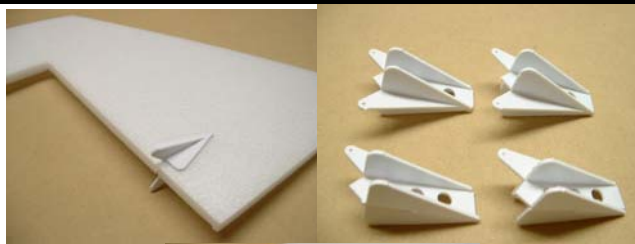
- 39.** Glue them together with CA. You can leave them square or sand them to look contoured.



- 40.** Cover or paint the wheel pants as desired. Mount to the landing gear with double side tape. This allows them to fold back on bad landings, instead of breaking off.



- 41.** Assemble the "Little Stripper" tool as shown in the picture. Use it to double Bevel the ailerons. Practice on some scraps first. It works great!
42. Use #80 sand paper on a sanding block to bevel the rudder and elevators.



43. You should see a laser cut vertical slot in each of the control surfaces. This is to mount the one of a kind control horns that we provide in the kit. Slide each horn into the according slot.

- Ailerons- Single horn
- Elevator- Double horn
- Rudder- Double horn

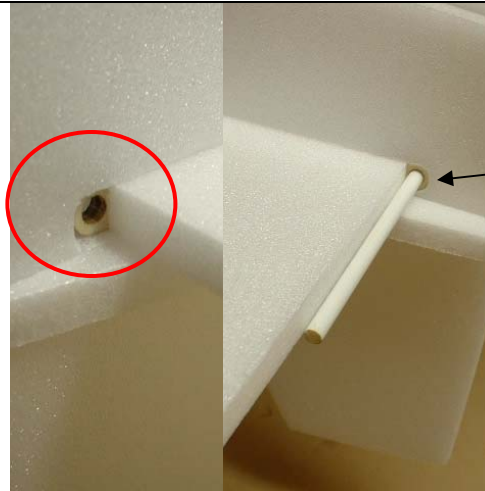
Use CA to glue in all the control horns. (wait till later if you plan on covering, rather than painting the plane)

Note: The elevator horn should be installed as close to the fuselage as possible. This puts it behind the joiner rod. Cut a small notch in the elevator control horn to make room for the joiner rod.

44. If you use Hinge points, install them now. If you are planning on tape, wait till it is covered, or painted. Use 2 micro hinge points on the elevator, and 3 on the rudder. 4 are used on the ailerons.

45. The center of the joiner rod makes its own hinge by going through the laser cut ply pivot.

Note: You can hinge all control surfaces with tape on the top and bottom, but I personally prefer using the micro Robart Hinge Points or CA hinges. They make a more permanent and accurate hinge line.



46. At this point you are finished with the main part of construction. Go buy some paint or sign vinyl now!

Painting

47. Createx, Rustolium, latex, Testors, Tempra, markers, sign vinyl, and many more, are just some of the choices you can make for the final paint. Just test on the foam squares before using it on the whole plane! **I Recommend using Testers Model master Spray Enamel, or Krylon "Short Cuts" spray enamel (small \$2.00 can) Neither of these paints attack the foam.**

- 48.** Be weary of weight. Use light coats to keep weight to a minimum. A fully painted plane is only ½ oz. heavier if painted carefully.
- 49.** The plans have a full size template for the aircrafts markings. You can cut it out and use it as a paint mask for easy scale paint jobs.
- 50.** Use the foams natural color in your paint scheme where ever possible. Mask off the areas you don't want painted then shoot it with a fine mist. Let it sit for 5 minutes then mist a second coat. It should almost be covered now. Repeat the process for each paint color. Start with lighter colors.
- Note:** If you will be landing the plane on its belly, then wrap a 2" strip of clear packing tape down the bottom of the planes fuselage. This will help keep it in one piece on your "not so great" landings!

Final Assembly

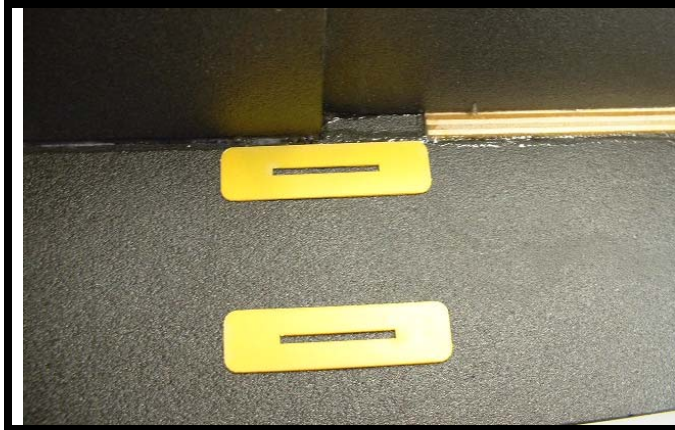
- 1.** You will need to temporarily mount your motor, servos, battery and receiver on the plane to establish the proper mounting locations for CG.



- 2.** Reference the locations of aileron servos on the plans. Use the 2 laser cut foam wing servo mounts to flush mount the aileron servos. (if using a HS55 or similar) Bevel the edges for a sleek look. Secure all the servos with hot glue or tape. I like to wrap the servo in shrink wrap or tape, then glue in place with hot glue.

Move the battery equipment around until the plane balances at the point recommended on the plans. (2.75" – 3.00" from Slot LE at wing root)

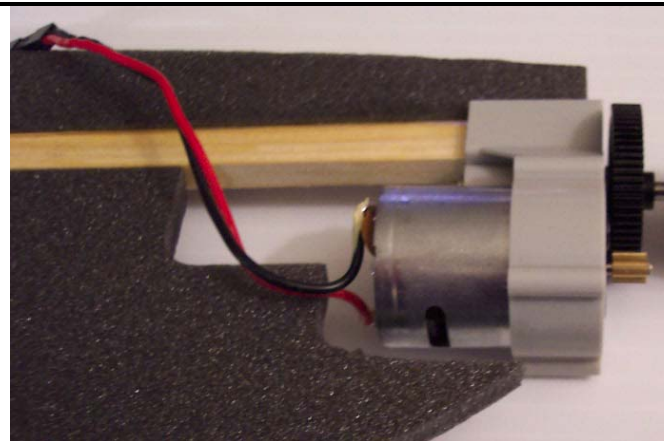
- 3. Note:** Make sure you have the control surfaces in place when test balancing!



4. When everything is in the right spot, cut 2 slots in the fuselage to Velcro your pack through. CA the laser cut plastic doublers to both sides to keep the Velcro strap from cutting into the foam.

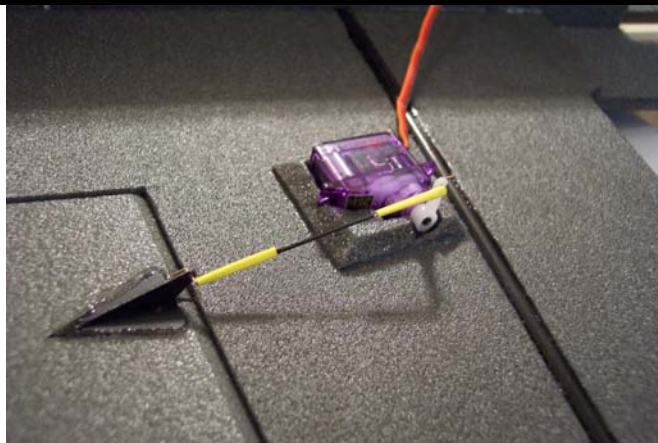
Motor and Radio Installation

I know this plane has gone together fast and you are almost ready to fly, but now is the time to slow down and make quality count. You'll be very happy in the air if you take the time to install your electronics right, and have slop free controls!



1. If you are using a GWS 350 drive unit, setting up your motor is easy. You will use the supplied 3/8" laser cut plastic to shim the motor to the correct right thrust.
2. Cut the strip into 4 squares. Stack 2 squares on top of each other and glue to the motor stick at the very front on the RIGHT side. (viewed from the cockpit)
3. Glue the remaining 2 squares to the LEFT side of the motor stick where the GWS drive stops.
4. This gives you the perfect amount of right thrust for this motor setup.
5. If you use a different motor setup and need installation help, just drop me an e-mail to levi@3dfoamy.com.

6. Use the supplied Velcro strap to go around the battery. Use some adhesive backed Velcro on the battery pack and the fuselage side for securing the battery. This will keep it from sliding out from under the strap.



7. Make the Aileron Pushrods from the Carbon rod, shrink wrap, and "Z" bent wire.
8. Cut a ½" length of Shrink wrap and shrink one end of the carbon rod with the "Z Bent" wire in place on the servo arm. Add a drop of thin CA to permanently hold it. **Now tape the control surface in the neutral position.**
9. Attach the other "Z bent" wire to the aileron control horn. Slide the wire and carbon rod together and Shrink wrap the two parts together. Add a drop of CA to hold it for good.

Note: It is wise to turn on your radio, power up your servos and receiver and zero all trims before setting up the control system. This will save a lot of setup time later!

10. Use a drop of hot melt glue to mount your receiver, speed control and antenna. Protect them from impacts and landings by mounting them high up on the fuselage. A 1" strip of tape will hold all your wires out of the way.

Flight Setup



1. My preferred method for the rudder and elevator controls is the Pull-Pull setup. The kit includes low stretch pull-pull lines, and a great attachment/tensioning method. (The stretch saves your servo!)
2. Tie the first end of the string to the control surface control horn.
3. Find the 2-56 socket cap wood screw and thread it into the desired servo horn location. (You may need to use an x-acto blade to slightly enlarge the hole).
4. Tie the string to the top of the screw. (The string should have a slight amount of slack in it when tied.)
5. Repeat for the other side of the control horns.
6. Now simply use your socket wrench to precisely set the tension on the pull-pull system by tightening the screw down. The string will wrap around the screw and the nylon control horn will keep it from loosening.

7. There are many radios to choose from... If you are just starting out, look for a radio with dual rates. Dual rates are almost a must if you plan on advancing into 3D aerobatics.
8. Adjust the travels so that you have 45 deg of throw for high (3D) rates and about 15-20 deg for low (normal) rates.
9. Travel adjustment can be done electronically on computer radios, or by placing the control lines in different servo hole locations.

10. I use 60% expo (on high rates only) to soften the response around neutral. This is just a personal preference, but helps you fly much smoother.

11. The plane is very true and will need very little tweaking for any yaw/roll or throttle/pitch coupling. But you can computerize it as much as you want to fit your flying style.

12. 2 deg of right thrust shimmed on the motor will help out in hovering. This setting was accomplished for GWS users if you shimmed the motor as outlined above.

13. Set your CG in the recommended location if you are new at 3D flight. You can experiment with CG later by shifting your battery pack around.

The CG is correct when the plane flies straight and level upright AND inverted hands off. Adjust battery position to obtain hands off flying. It doesn't take much movement of the battery to make a difference.

NOTE: It is important to have the CG correct to be able to fly the plane easily. The CG is correct when it flies as noted above, don't worry about where the location of the CG is on the wing, it's how it flies that matters.

If you have the capabilities, mixing flaperon on the ailerons makes for added response. A slight negative flap (up) on up elevator will ease transition to hover, and also stabilize harrier flight. Try 10-15 deg Of "up" flap at full up elevator for starters.

Programming The Speed Controller

If you have a problem with the speed control malfunctioning during set up it may be because of radio interference from the servos. Disconnect the servos, and then start the programming sequence again.

PIXIE 20 BRUSHED SPEED CONTROLLER recommended set up:

- 9.1: Option 3 for 2-cell LiPoly packs; Option 5 for 3 cell LiPoly packs
- 9.2: Option 2 – soft cutoff
- 9.3: Option 1 – Auto calibration

PHOENIX 25 BRUSHLESS SPEED CONTROLLER recommended set up:

- 9.1 Option 5 – 8.4v cut off for 3 cell LiPoly (in conjunction with (f) below)
- 9.2 Option 3 – Standard current limiting
- 9.3 Option 5 – Brake Disabled
- 9.4 Option 1 – Auto Calibrating throttle
- 9.5 Option 2 – Standard Advance Timing (may cause prop to jump at start up)

- 9.6 Option 3 – Soft cutoff
- 9.7 Option 3 – Fast Start (for fast throttle response – essential for hovering)

Battery Charging

There are many battery chargers available. If you use a Duralite Lilon charger the Rx charge jacks are for 2-cell packs and the Tx jack is for 3-cell packs. **You must use a Li-Ion or Li-Poly charger on Li-Ion/Li-Poly cells or you will damage the cell or the cell could explode.** All Li-Poly cells should only be charged at a 1C. This means if you have a 1500 mah pack, it should only be charged at a maximum rate of 1500mah or 1.5 amps. Exceeding this will shorten the life of your cells, and can even cause a serious fire!!! (Yes, cars have gone up in flames from over charging!)

Flight Check List

- ✓ Check the CG. Set it as recommended.
- ✓ Check all control surface directions!
- ✓ Check all battery polarity connections.
- ✓ Check for any control binding, free as needed.
- ✓ Check your radio range. It should be at least 100' with the antenna down.
- ✓ Setup your speed control to match your battery pack.

2. The basics:

- Don't fly at full throttle all the time. Full power should only be used for goof up recovery and "punch outs" I fly at 1/3 to 1/2 power most of the time.
- Don't think you HAVE to fly low to fly 3D! Stay high and you'll have your plane much longer!
- Get used to moving the sticks while flipping from 3D to *normal* rates BEFORE you go fly.
- Stay out of the "Dead Zone" (don't know? Read the bottom 3D instructional)

3. Take off:

Holding the plane over head, advance to 3/4 throttle and gently toss at a slight upward angle.

- Or, if using landing gear, take off as normal from a smooth surface.
- Or, Hold vertical, got to full throttle, and let go! (Only if you have better than 1:1 power to weight ratio!)

4. Landing:

Come in as normal, hold some power and feed in up elevator until you are in a nice flair about a foot off the ground.

Cut power and continue to flair. It will plop down on the belly at almost a full stop.

- Or, if you have the landing gear, land as normal.
- Or, when hovering, just reach out and pick it up. (AMA likes this method best 😊)

5. REPAIRS

- Should the inevitable happen, here's some tips.
- Cracks in the foam are fixed with some foam safe CA. Just use accelerator to speed up the process.
- Almost anything is repairable. I cracked my plane in 5 pieces, and everyone thought it was finished. 15 minutes later it was flying. Just take some CA, accelerator and packing tape to the field with you!

If you are using more then 2 bottles of CA a day for fixes... order some more kits! 😊

3D Flight

What does 3D mean?

The simplest way to explain it is any maneuver done while the wing is fully stalled.... It can be a tumble, a hover, a decent with the nose at 45 deg or almost anything else where the wing is not creating normal lift for flight, rather the engine thrust and flight control surfaces are doing the most work.

What makes a plane 3D capable?

All the 3D maneuvers are mixed up with conventional aerobatics to make a breathtaking routine.... But unlike other types of flying, a specific plane is needed. To fly 3D, you have to have a plane that's has lots of pitch and yaw control. Elevators taking up 50%-60% of horizontal stabilizer's surface are a must. They need to be able to travel to 45 deg in either way. The same is true for the Rudder. Ailerons should also be large, but will require less throw than the rudder and elevator.

This plane is designed to fly as close as possible to its giant scale big brother. Most people practice the tricks with the little guy, and then when it is mastered, feel comfortable moving up to the BIG plane for air shows. Wing loadings are just right, so that you can still do snap maneuvers, but also float in 3D flight.

High Alpha

You will hear people talking about High Alpha.... it is simply a fancy name for flight at high angles of attack. It means that the wing is not producing enough normal lift to fly. In HA flight, the engines thrust, combined with the elevator or rudders deflection provides the plane with control and altitude. It is very much like a boat in water.... water is not flowing over the top of the boat, but rather against the bottom of it. Just like sticking your hand out the window of a car and rotating your palm back and forth. The same is applied to the fuselage side.... it too can keep you "suspended" in air when combined with enough thrust and rudder deflection. To be good at 3D a plane must be able to make a clean transition to HA flight from conventional flight.... with out snapping. The key to this is large control surfaces, lots of power, and high rates.

The "Dead Zone"

“Training wheels are for bikes”.... 3D requires you to jump in all the way or stay out.... What I mean is in regards to control throws. Do NOT think that starting out with 25-30 deg of surface deflection will help you stay under control! That is the dead zone! It refers to the area of flight that just turns into a snap instead of getting into high alpha. You need the control authority and thrust to go right through the stall and into that “sweet spot” for hovering and harrier type maneuvers. This sweet spot is at 45 deg. of deflection on the elevator and rudder. Any more and you just add drag... Before you try out 3D, get very familiar with your radio, and be able to switch from high to low rates easily, fast, and at any time in the flight. The Maneuvers

There are 5 basic 3D maneuvers that will give you the basics for all your advanced stuff. Check out the CD file called 3D Flight for a full course on how to do these, and other advanced 3D maneuvers.

The Harrier

- very slow forward flight in a very nose high (about 45 degrees) attitude.

Torque roll

- "hovering" vertically in place, rotating left around its roll axis.

The Elevator

- where the plane drops vertically while in a nose high attitude.

Waterfall

- a continuous tail-over-nose descending flip. It is not a loop, but the aircraft actually flops around its canopy.

The Blender

- a vertical diving roll that virtually stops its descent as it instantaneously enters into a flat spin.

All it takes is some practice and you can be flying them! Keep it high and stay alive!

If worse comes to worse and you crack up your plane beyond repair, then go to www.3dfoamy.com and order a new one! I'll even give you 20% off as a returning customer, just enter "20off" in the redeem coupon code box to get the discount. (That's only \$23 for a brand new kit!)

Best of flying to you, and I hope you have enjoyed building this kit as much as I have designing them!
Remember to send your pictures and videos to post on the website!!!

“I live for this stuff!”

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