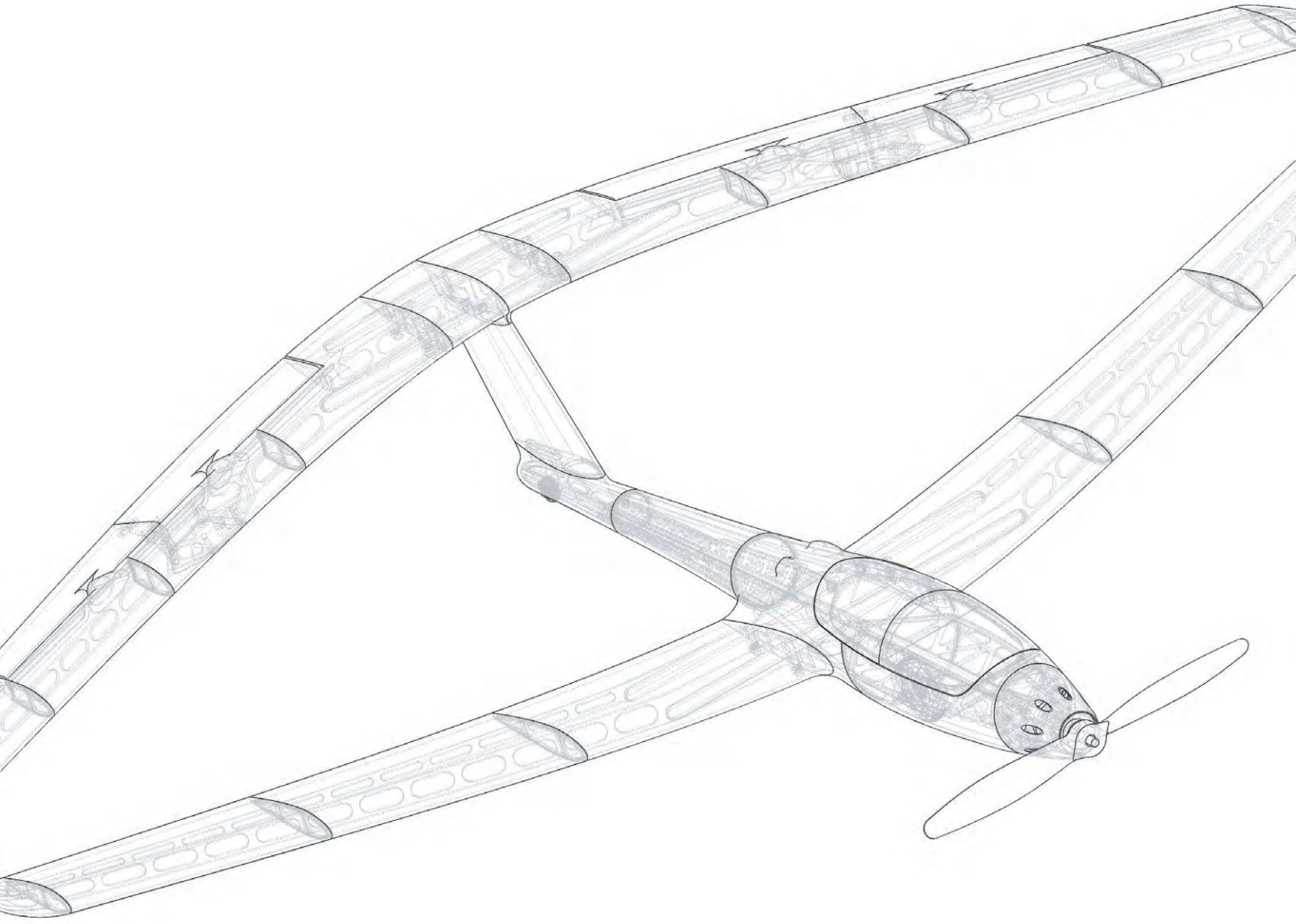
X-100 Infinity Wing V2

3D Printed R/C Aircraft

Build Guide

Wingspan: 1270mm (50”)



www.3DAeroventures.com

Included in Your Download:

1. STL Files
2. Simplify3D Factory Files (for the recommended materials)
3. Cura and PrusaSlicer Profiles and Recommended Slicer Settings for different materials
4. Generic Gcode for i3 style printers (for the recommended materials)
5. PDF Build Guide

Please Read A Note from the Designer:

First of all, thank you so much for your interest and support of 3DAeroventures. I can't tell you how much joy I get out of designing and testing these aircraft, and the fact that you can now get joy out of my creations just makes this calling that much more special. I dove into the R/C aircraft hobby as a 12 year old kid with my dad and it's a passion I've maintained into adulthood. Part of 3DAeroventures mission is to encourage people to not let go of the thing they were most passionate about growing up. That's why our motto is "Never Stop Exploring. Never Stop Questioning. Never Stop Playing." I hope the building and flying of this model keeps your passion for model aviation ignited. More importantly, I encourage you to share your build and flying process with young people, hopefully igniting a fire in them and helping to maintain and grow this wonderful hobby.

Now, on to the technical stuff. The X-100 Infinity Wing has been re-designed into this V2 version to meet several goals: Improved stall performance, better printability/surface quality, increased part strength, the ability to print the parts in any material - PLA, ABS, ASA, PETG, and especially LW-PLA or LW-ASA, and much simpler slicing and the ability to use any slicer (like Prusa Slicer). I am now a big proponent of using multiple material types to build a good performing and long-lasting craft. So you should find this style of part design to be simpler to slice on your own and print in many different materials. The outer walls of the parts now print like a corrugated plastic - two single perimeter walls filled with a very low infill, anywhere between 3 - 7%. The downside is, printing this style of design in standard PLA leads to a heavier aircraft, though not too heavy to fly well. That's why I am particularly excited about the results I've gotten printing this aircraft as a hybrid with LW-PLA. I recommended at least printing some of the parts in LW-PLA to keep the weight as low as possible and for the ideal weight distribution. The hybrid version balances perfectly at the new recommended CG position with a 3S 2200mah battery located in the middle of the battery compartment. A standard PLA version may require a larger battery or a small amount of nose weight to properly balance. If you do only print a few of the parts in LW-PLA I recommend printing the Back Wing parts in LW-PLA for better weight distribution.

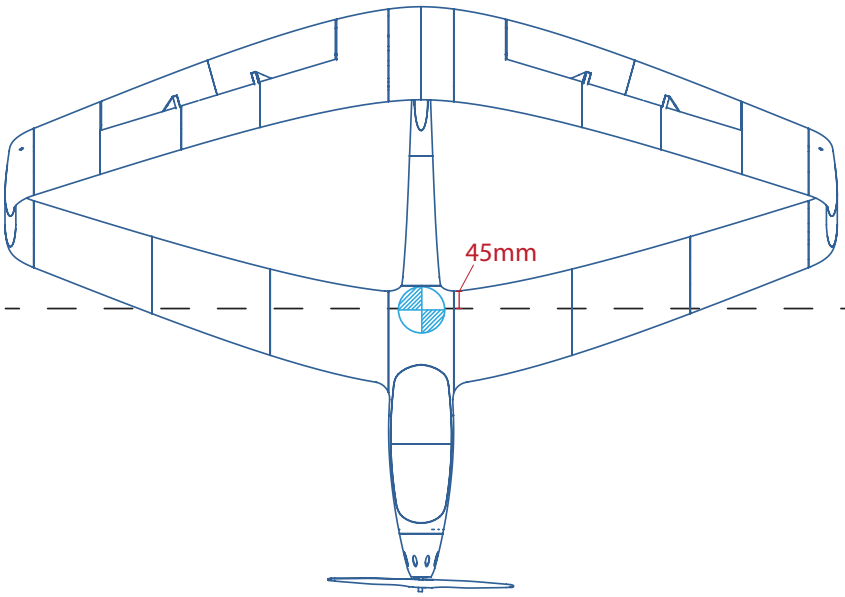
I'd love to hear about your build and flight experience with this aircraft. You may contact me directly at eric@3daeroventures.com with any feedback or troubleshooting questions. Or post your experiences on the 3DAeroventures Pilots Alliance Facebook Group.

Thanks again and enjoy your flight!
Eric Haddad
Pilot in Command

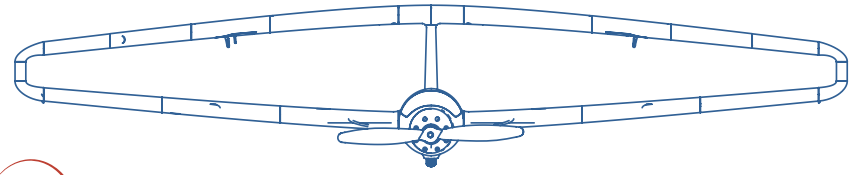
www.3DAeroventures.com

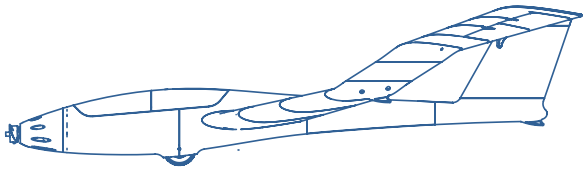
Specs:

Wingspan:	**1270mm / 50”**
Length:	**879mm / 34.6”**
Height:	**242.5mm / 9.5”**
Wing Area:	**437.5 in²**
Wing Loading (LW-PLA Hybrid):	**13.3 oz/ft²**
Wing Cube Loading (LW-PLA Hybrid):	**7.5**
Wing Loading (PLA):	**17.6 oz/ft²**
Wing Cube Loading (PLA):	**10.1**
Flight Performance Category:	**General Sport and Scale Aerobatics**
Center of Gravity Location:	**45mm in Front of Trailing Edge at the Wing Root**
Weight of Printed Parts(LW-PLA Hybrid):	**684g / 24.1 oz**
Weight of Printed Parts(PLA):	**1048g / 37 oz**
Flying Weight (3S 2200 mAh):	**1130g (LW-PLA) to 1520g (PLA) / 39.9 - 53.6 oz**
Recommended Max Flying Weight:	**1800g / 63.5 oz**
No. of Channels:	**3 - Throttle, Aileron, Elevator (Elevons)**



CG Location 45mm in front of the Trailing Edge of the Wing Root





www.3DAeroventures.com

Recommended Setup:

Motor Options: EFlite Power 15
Leopard 3536-7T 1100kV
or motor with equivalent X mounting pattern

ESC Options: 40A or 50A Esc like HobbyWing Skywalker Series 40A ESC

Rec. Prop: 12x8(EFlite) or 11x6 (Leopard) Folding Propeller

Battery: 3S 2200mAh LiPo or
4S 2200 - 3300 mAh

Radio: Radio with Elevon Mixing Capability + 4 Channel Reciever

Servos: EMAX ES08MA II (12g) Metal Gear Servo or equivalent 23x11.5x24mm size servo (x2)
24" Servo Extensions (x2)
6" Servo Extensions (x2)

Tools and Materials Needed:

- Min 200mm x 200mm x 205mm desktop 3D Printer
- 3D Printing Material of Choice (LW-PLA and PLA hybrid recommended)
  - PETG, ABS, ASA, or PC for motor mount
  - TPU or TPE for Belly Wheel Tire
- Medium Bodied CA/Super Glue
- Accelerator for CA
- Sandpaper and/or Small Files
- Soldering Iron (for heat set threaded inserts)
- Screwdriver and/or allen wrench for chosen screws/bolts

Hardware Needed:

Fuselage:

	Quantity:
- M3 x 0.5mm Thread Heat-set Threaded Inserts for wing bolts	8
- M3 x 0.5mm Thread Lock Nuts for motor mount	4
- M3 x 0.5mm Thread x 15mm (or 30mm) Long Socket Head Screws for motor mount	4
- 5mm O.D x 3mm Thick Rare Earth Magnets for Removable Canopy	4
- 3mm O.D. Carbon Fiber rod or equivelent O.D. wood or plastic dowel for wheel axles	2
- M2 or #2 Thread Forming or Tapping Screws for mounting cowl (spare servo mounting screws will work)	4

Wings:

- M3 x 0.5mm Thread Heat-set Threaded Inserts for wing tip bolts	4
- M3 x 0.5mm Thread x 10mm Long Socket Head Screws for removable wings	12
- M2 or #2 Thread Forming or Tapping Screws for mounting servo covers	8
- 6mm O.D. x 4mm I.D. (or 0.150" I.D.) x 600mm Long Carbon Fiber Hollow Tubes for wing spars cut to these lengths:	3x 300mm long
- 300mm Long (x3)	1x 200mm long
- 200mm Long (x1)	
- 1mm - 1.5mm O.D. x 400mm Long Carbon fiber rod or Steel Wire for Elevon Hinges	2
- 1.2 mm steel wire for servo control rods	

Estimated Part Weights by Material Type (Grams):

Part Name	Hybrid PLA/LW-PLA	Recommended Material for Hybrid		Estimated PLA/PETG Weights
Fuse 1	38	LW-PLA		65
Fuse 2	50	LW-PLA		82
Fuse 3	20	LW-PLA		31
Fuse 4	12	LW-PLA		21
Fuse Tray 1	12	PLA		12
Fuse Tray 2	8	PLA		8
Fuse Tray 3	4	PLA		4
Canopy 1	11	LW-PLA		20
Canopy 2	10	LW-PLA		17
Vert Stab	18	LW-PLA		26
Back Wing R1	13	LW-PLA		20
Back Wing R2	25	LW-PLA		38
Back Wing R3	15	LW-PLA		26
Back Wing R4	14	LW-PLA		22
Back Wing R5	15	LW-PLA		23
Back Wing L1	13	LW-PLA		20
Back Wing L2	25	LW-PLA		38
Back Wing L3	15	LW-PLA		26
Back Wing L4	14	LW-PLA		22
Back Wing L5	15	LW-PLA		23
Front Wing R1	40	LW-PLA		60
Front Wing R2	31	LW-PLA		47
Front Wing R3	27	LW-PLA		40
Front Wing L1	40	LW-PLA		60
Front Wing L2	31	LW-PLA		47
Front Wing L3	27	LW-PLA		40
Back Wing Tip R	8	LW-PLA		18
Back Wing Tip L	8	LW-PLA		18
Front Wing Tip R	8	LW-PLA		18
Front Wing Tip L	8	LW-PLA		18
Middle Wing Tip R	3	LW-PLA		6
Middle Wing Tip L	3	LW-PLA		6
Elevon R1	16	LW-PLA		27
Elevon R2	12	LW-PLA		21
Elevon L1	16	LW-PLA		27
Elevon L2	12	LW-PLA		21
Cowl	12	PLA		12
Servo Cover R	6	PLA		6
Servo Cover L	6	PLA		6
Motor Mounts	9	PETG		
Tire	7	TPU/TPE		
Tire Hub 1	3	PLA		3
Tire Hub 2	3	PLA		3
Tailwheel	1	TPU/TPE		
Printed Part Weight	684			1048

Step-by-Step Build Guide

Step 1. 3D Printing the Included Parts

Minimum Requirements:

- 200mm x 200mm x 200mm Print Bed Size
- 0.4mm Nozzle
- Heated Bed (recommended)
- Any Slicer Software

Your Options for Printing the Parts:

Option 1: G-Code

Transfer the included G-Code to an SD Card and run directly on your i3 style printer using the materials we recommend. The provided G-Code is for our recommended PLA / LW-PLA Hybrid build. We've had good results with LW-PLA at 250º Celcius and standard PLA at 225º Celcius but experiment with your printer to make sure you achieve strong layer adhesion. If you wish to print this aircraft from a different material, reference the included Slicer Settings PDF and use your preferred slicer.

Option 2: Simplify 3D Factory Files

If you prefer to use Simplify3D as your slicer, open the included Factory Files and edit the preset profiles for your printer/material to ensure nice outer surfaces and excellent layer bonding.

Option 3: STL + Your Preferred Slicer

If you prefer to use another slicer or create your own profiles in Simplify3D, use the included STL files and reference the included Recommended Slicer Settings PDF. Cura and PrusaSlicer profiles for PLA are also provided

www.3DAeroventures.com

Step-by-Step Build Guide (cont'd)

3D Printing Tips

ColorFabb LW-PLA

ColorFabb LW-PLA is an interesting material that uses foaming technology to achieve lightweight, low density PLA parts. This material is printed at a higher temperature (which causes it to expand) and a much lower extrusion multiplier than standard PLA. In order to determine the proper nozzle temperature and extrusion multipler for your particular printer you can follow ColorFabb's instructions: https://learn.colorfabb.com/print-lw-pla/ We had good results printing LW-PLA at 250ºC at an Extrusion Multiplier of 0.4 and a bed temp of 60ºC. You will also likely combat quite a bit of stringing with LW-PLA. We increase X/Y Axis Movement Speed to 200mm/s and run the cooling fan at 25% to help combat stringing.

Standard PLA Temperatures:

We see good results printing Paramount3D PLA at 225ºC with a bed temperature of 70ºC. Experiment with your particular printer and brand of material to ensure proper layer bonding but you will likely land somewhere between 210 and 240ºC.

Cooling Fan:

Typically, PLA is printed with the fan set to 100%. However, this can cause layer bonding issues when printing thin walled aircraft. We have experienced nice , clean outer surfaces when keeping the fan speed up to 20% without negatively affecting layer bonding. Experiment with fan speeds set between 0 - 20%.

www.3DAeroventures.com

Step-by-Step Build Guide (cont'd)

3D Printing Tips (cont'd)

Standard Materials Extrusion Multiplier (Flow):

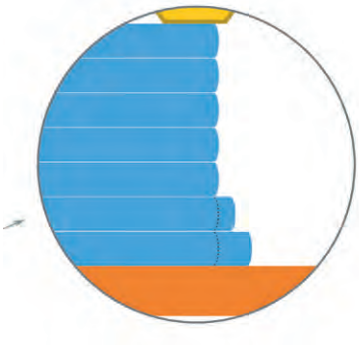
You will need to experiment with extrusion multiplier for your particular printer and material. You will likely land somewhere between 0.95 and 1.05 extrusion multiplier.

Support Structures:

A few parts of this aircraft require support structures and it's recommended to use your slicer's auto-generated support structures. The GCode and the Simplify3D Factory Files already have the support structures in place.

Elephant's Foot:

Try to avoid the first few layers of each print from squishing too far outside the designed wall dimensions, also known as "elephant's foot". This can be caused by your nozzle being too close to the print bed or first layer width set too high in your slicer. A small amount of elephant's foot is okay but too much will interfere with the designed alignment aids.



Step-by-Step Build Guide (cont'd)

A landing gear and rudder upgrade package is now available for the X-100 Infinity Wing V2. It includes a separate fuselage file set which is compatible with the wings included in this file set. Learn more at www.3daeroventures.com/shop

Step-by-Step Build Guide (cont'd)

Step 2. Fuselage + Vertical Stabilizer Assembly

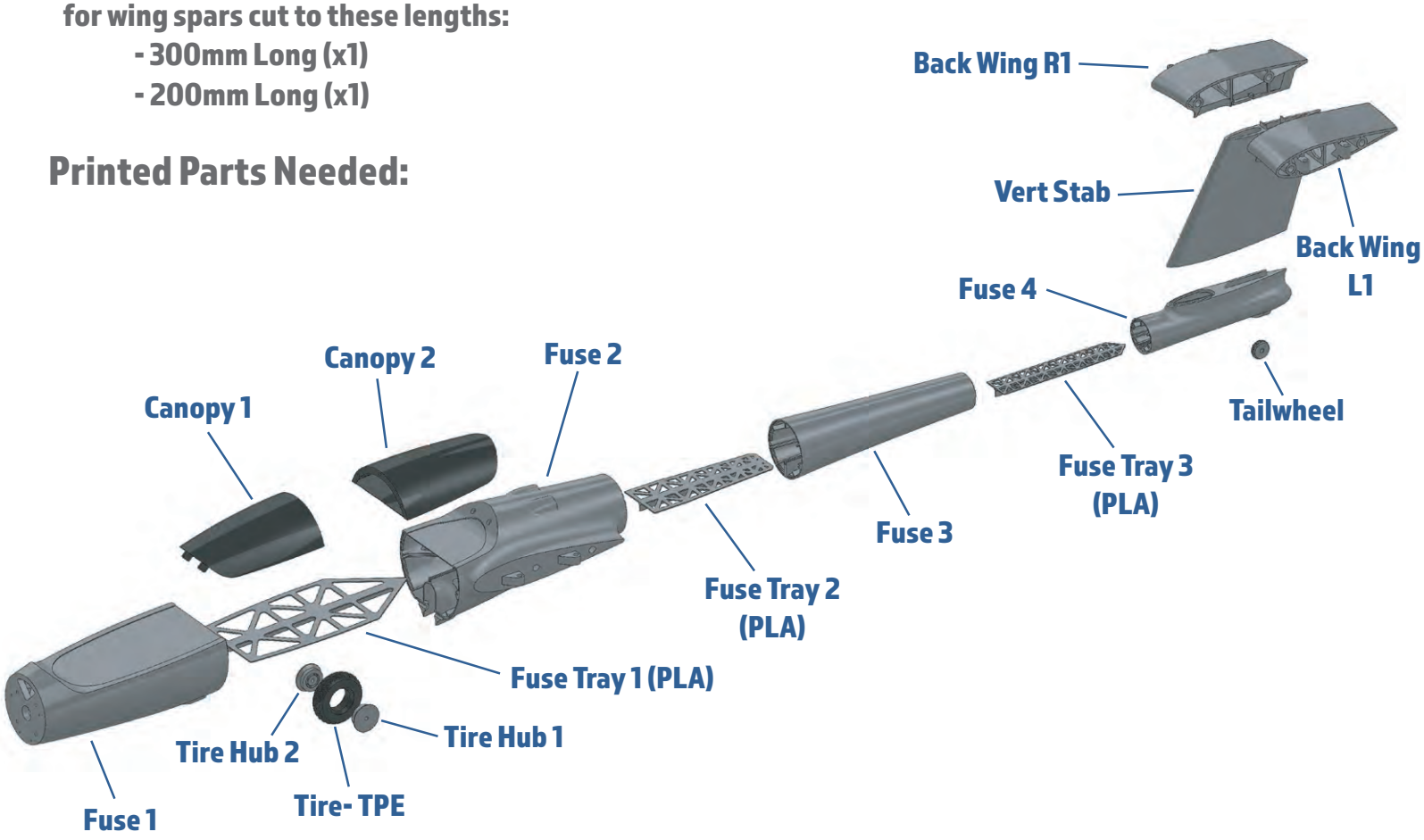
Tools and Materials Needed:

- Medium Bodied CA/Super Glue
- Accelerator for CA
- Sandpaper and/or Small Files
- Soldering Iron (for heat set threaded inserts)

Hardware Needed (links to recommended hardware on pg 4):

- M3 x 0.5mm Thread Heat-set Threaded Inserts for wing bolts (x8)
- 3mm O.D. Carbon Fiber rod or equivelent O.D. wood or plastic dowel for wheel axle and canopy
- 5mm O.D x 3mm Thick Rare Earth Magnets for Removable Canopy
- 6mm O.D. x 4mm I.D. (or 0.150" I.D.) x 600mm Long Carbon Fiber Hollow Tubes for wing spars cut to these lengths:
  - 300mm Long (x1)
  - 200mm Long (x1)

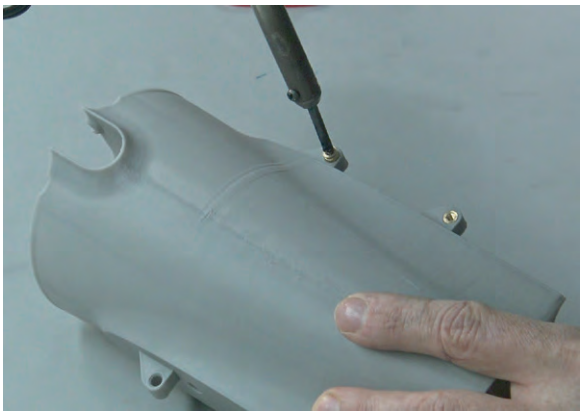
Printed Parts Needed:

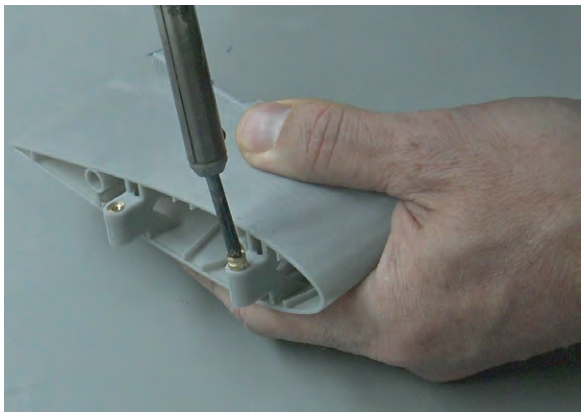


Step-by-Step Build Guide (cont'd)

Step 2.1 Heat Set Inserts

Before gluing parts together. Find parts Fuse 2, Back Wing R1, and Back Wing L1 and use a soldering iron to insert the M3x0.5mm thread heat set threaded inserts. You will insert a total of eight heat set threaded inserts, four in part Fuse 2, two in part Back Wing R1, and two in part Back Wing L1.





Step 2.2 Cut 6mm O.D. Carbon Fiber Tubes to Length

Using a rotary tool (Dremel), miter saw, or hand saw, cut your 6mm carbon fiber wing tubes to the proper lengths. You will need:

Qty. 3 300mm long
Qty. 1 200mm long

Step 2.3 Glue Fuselage and Fuse Tray Parts Together

ATTENTION: The fuselage is designed with separate Fuse Tray parts. This was done in case you choose to print the Fuse parts in LW-PLA or LW-ASA. The Fuse Tray parts should be printed in a more rigid plastic like standard PLA, ABS, PETG, or PC.

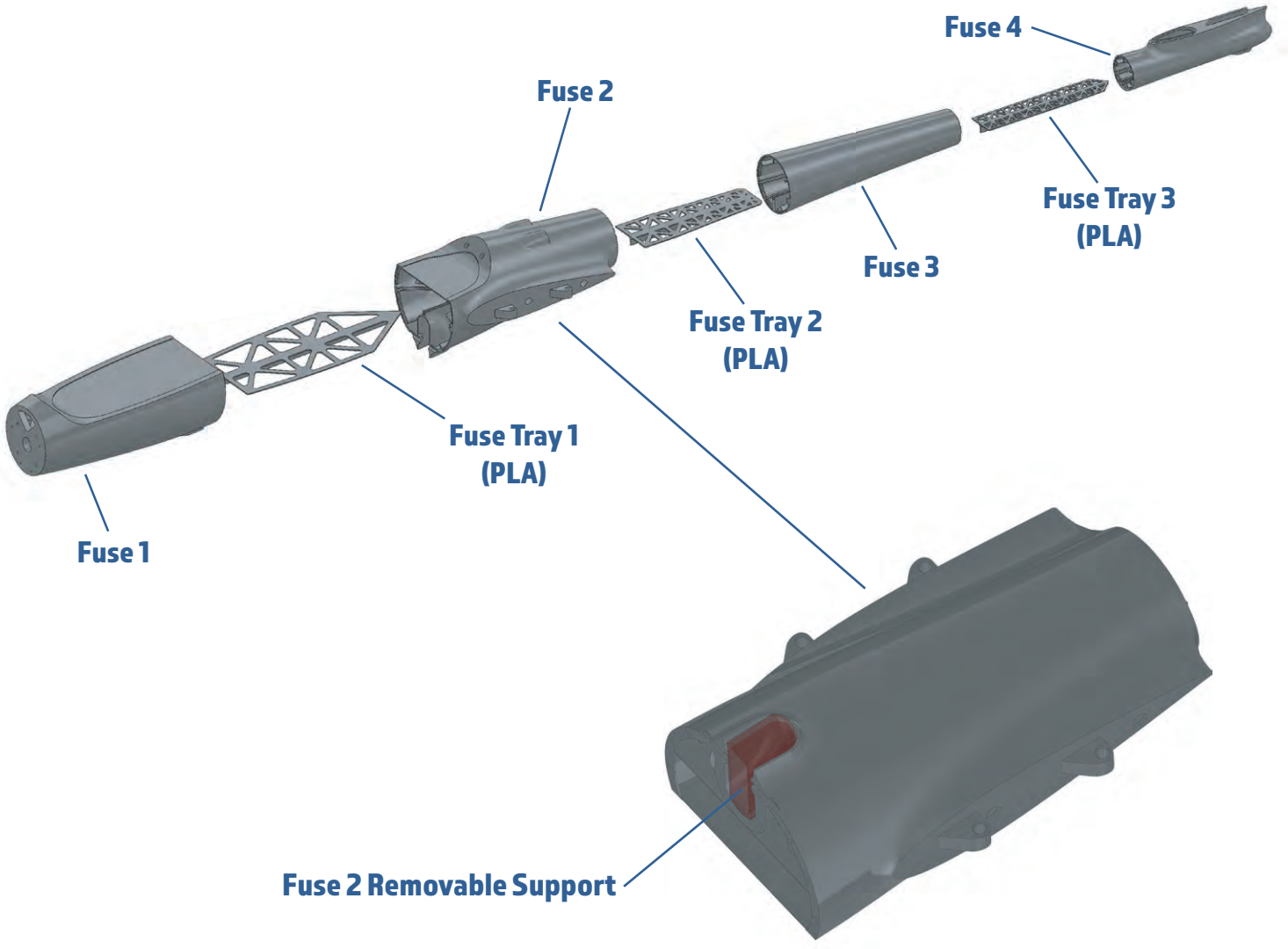
The Fuse parts must be assembled with the Fuse Tray parts in a certain order. You will notice the Fuse Tray parts slide into rails located in the Fuse parts. The Trays overlap the seams of the Fuse parts and make for a very strong, rigid fuselage.

DO NOT GLUE ALL OF THE FUSE PARTS TOGETHER WITHOUT THE FUSE TRAY PARTS IN PLACE!

Step-by-Step Build Guide (cont'd)

2.3.1 Starting with Fuse 1, apply CA adhesive to the rails where Fuse Tray 1 slides into place. **Ensure Fuse Tray 1 is fully seated into place in the rail behind the firewall and wipe off any residual glue from the Fuse 1 surface that mates with Fuse 2 before applying CA Accelerator to secure the bond.**

2.3.2 Continue Gluing the Fuse and Fuse Tray parts, together, followng the order shown in the image below. **NOTE: Part Fuse 2 contains a sacrificial support structure in the wheel bay area. this can be pulled away with slight force.**

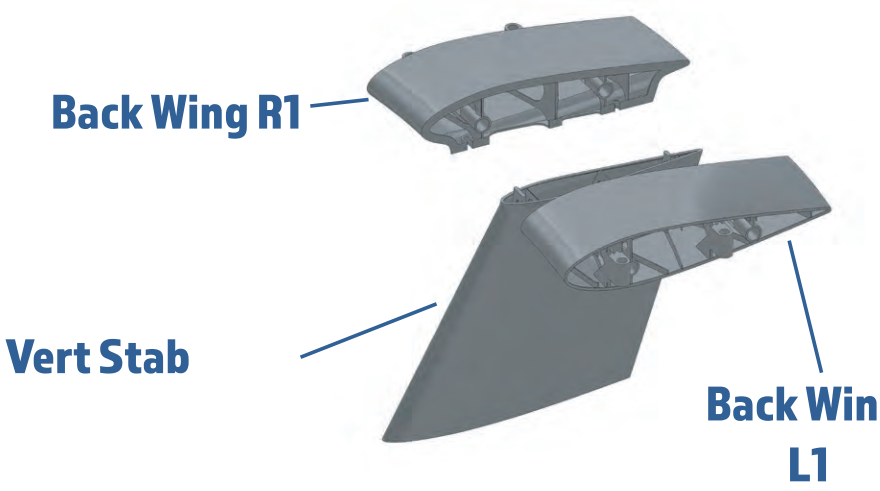


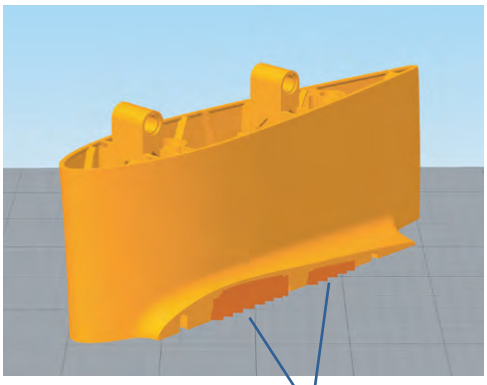
Step-by-Step Build Guide (cont'd)

2.3.3 Glue parts Back Wing R1 and Back Wing L1 together using CA glue. Use the 6mm carbon fiber tubes to ensure good alignment between the two parts, being careful not to permanently glue the carbon fiber tubes to the printed parts.

NOTE: Parts Back Wing R1 and Back Wing L1 each contain a sacrificial support this can be pulled away with slight force.

2.3.4 Glue the Back WingR1/L1 sub-assembly to the top of the part Vert Stab





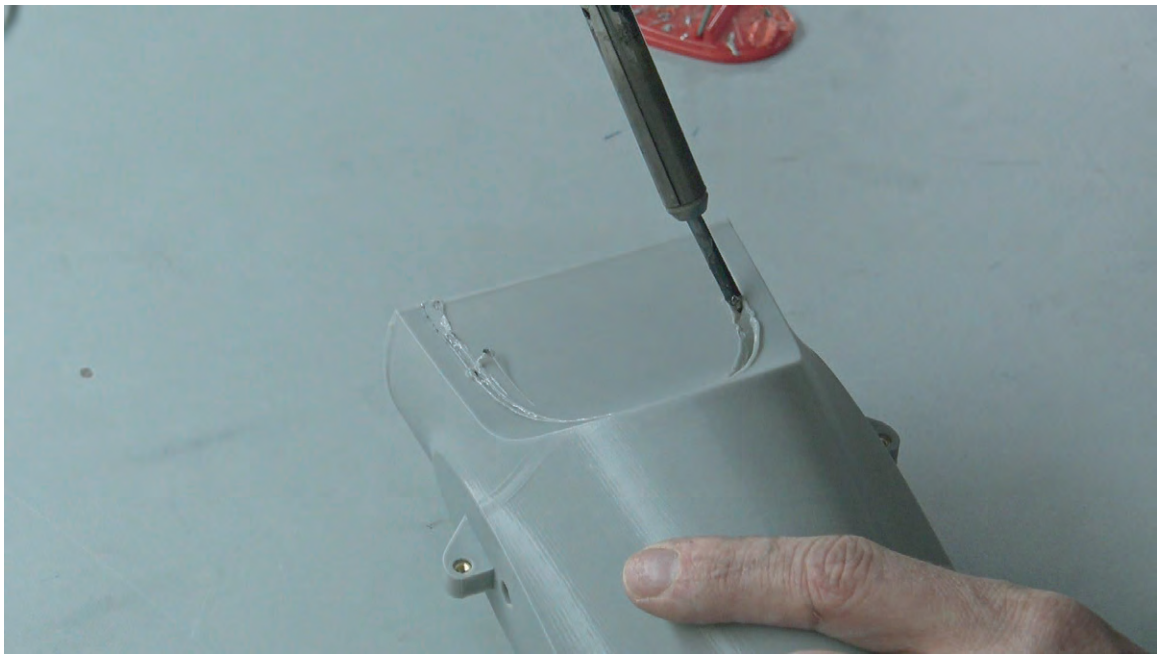
Note: You can choose to route the 24" + 6" servo extensions through the vert stab and fuselage at this point, before gluing on the Vert Stab/ Back Wing R1/ Back Wing L1. This can make the routing process easier. Otherwise, use a piece of string with a weight (such as a lock nut) tied to one end, and your servo extension lead tied to the other end. Use the weighted string to aid in routing the extension.

ALWAYS TEST YOUR EXTENSIONS AND SERVOS PRIOR TO INSTALLATION

2.3.5 Glue the Vert Stab/Back Wing R1/Back Wing L1 sub-assembly to your Fuselage assembly using CA glue. The built in alingment tabs will keep all parts well aligned.

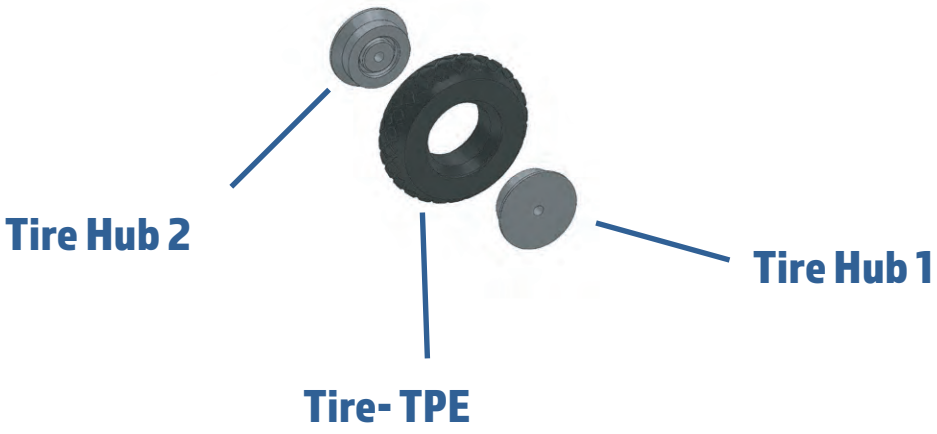
Step-by-Step Build Guide (cont'd)

2.3.6 Use a Soldering Iron or a hot knife to remove the support panel in the canopy area of parts Fuse 1 and Fuse 2. Cleanup the edge with sandpaper.



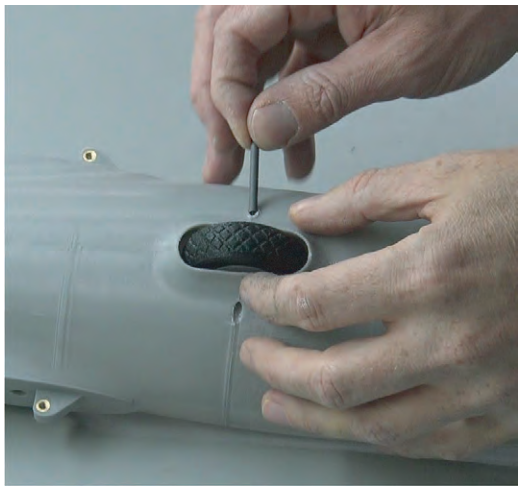
Step 2.4 Assemble the Wheels

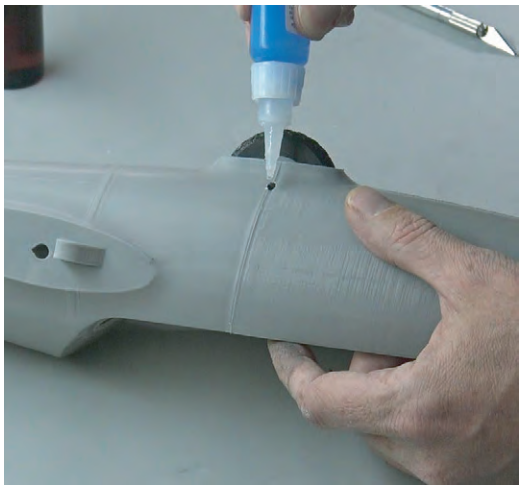
2.4.1 Tire Hub 1 and Tire Hub 2 are designed to be inserted into each open side of the Tire-TPE component. Insert Tire Hub 1 into one side of the TPE Tire, apply a small amount of CA glue to the mating face of the hub and insert Tire Hub 2 into the other side of the TPE Tire.



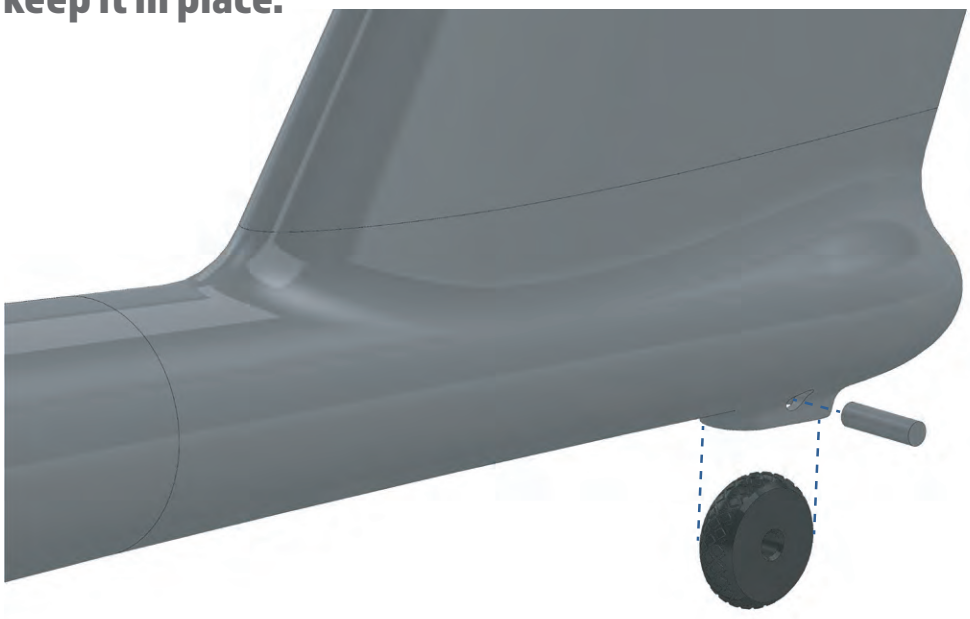
Step-by-Step Build Guide (cont'd)

2.4.2 Use a 3mm carbon fiber rod, wooden dowel or plastic dowel as your wheel axle. Cut the axle to length so it is fully recessed in the belly wheel axle hole. Insert your wheel into the wheel bay, insert your wheel axle and apply a small drop of CA glue into both sides of the axle hole to keep it in place.





2.4.3 Use a 3mm carbon fiber rod, wooden dowel or plastic dowel as your tailwheel axle. Cut the axle to length so it is fully recessed in the tailwheel axle hole located at the bottom of Fuse 4. Insert your tailwheel into the wheel bay, insert your wheel axle and apply a small drop of CA glue into both sides of the axle hole to keep it in place.



Step-by-Step Build Guide (cont'd)

Step 2.5 Assemble the Canopy

2.5.1 Use a Soldering Iron or a hot knife to remove the support panel on both Canopy 1 and Canopy 2. Cleanup the edge with sandpaper.

2.5.2 Cut a 3mm diameter carbon rod, wooden dowel, or plastic dowels into qty. 3, 10mm long pieces. These small dowel pins will be used to align parts Canopy 1 and Canopy 2 for gluing.

2.5.3 Insert your 3mm diameter pins into part Canopy 1, apply glue to the mating face and mate to part Canopy 2.

Step-by-Step Build Guide (cont'd)

2.5.4 The canopy is held in place with 5mm O.D. x 3mm thick rare earth magnets. Apply a drop of glue into each magnet recess in part Canopy 2 and pop in your magnet. The mating magnets can then be glued into the magnet recesses in part Fuse 2. BE EXTRA CAREFUL TO GLUE THESE MAGNETS IN THE PROPER ORIENTATION SO AS TO ATTRACT AND NOT REPELL THE MATING MAGNET.

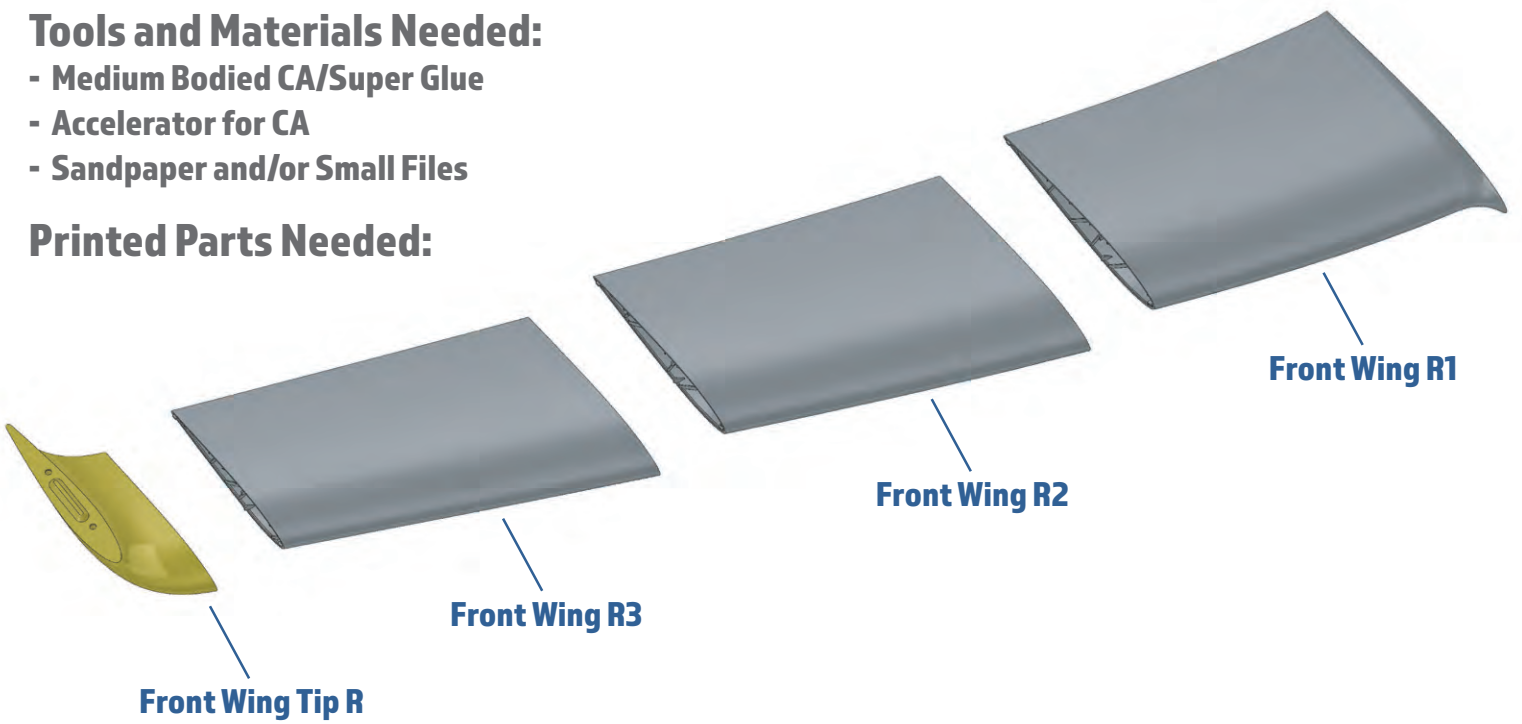
Step-by-Step Build Guide (cont'd)

Step 3. Front Wing Assembly

Tools and Materials Needed:

- Medium Bodied CA/Super Glue
- Accelerator for CA
- Sandpaper and/or Small Files

Printed Parts Needed:



Step 3.1 Glue The Front Wing Parts Together

3.1.1 Glue parts Front Wing R1 - Front Wing R3 together using CA glue. Spray accelerator on the joint to speed curing of the CA glue. The built in alingment tabs will keep all parts well aligned. You can then glue on part Front Wing Tip R.

3.1.2 Repeat the previous step for the front left wing, using parts Front Wing L1 - Front Wing L3 and Front Wing Tip L.

NOTE: Parts Front Wing Tip R and Front Wing Tip L contain a sacrificial support structure that was generated in Simplify3D.

Step-by-Step Build Guide (cont'd)

Step 4. Back Wing Assembly + Servo Installation

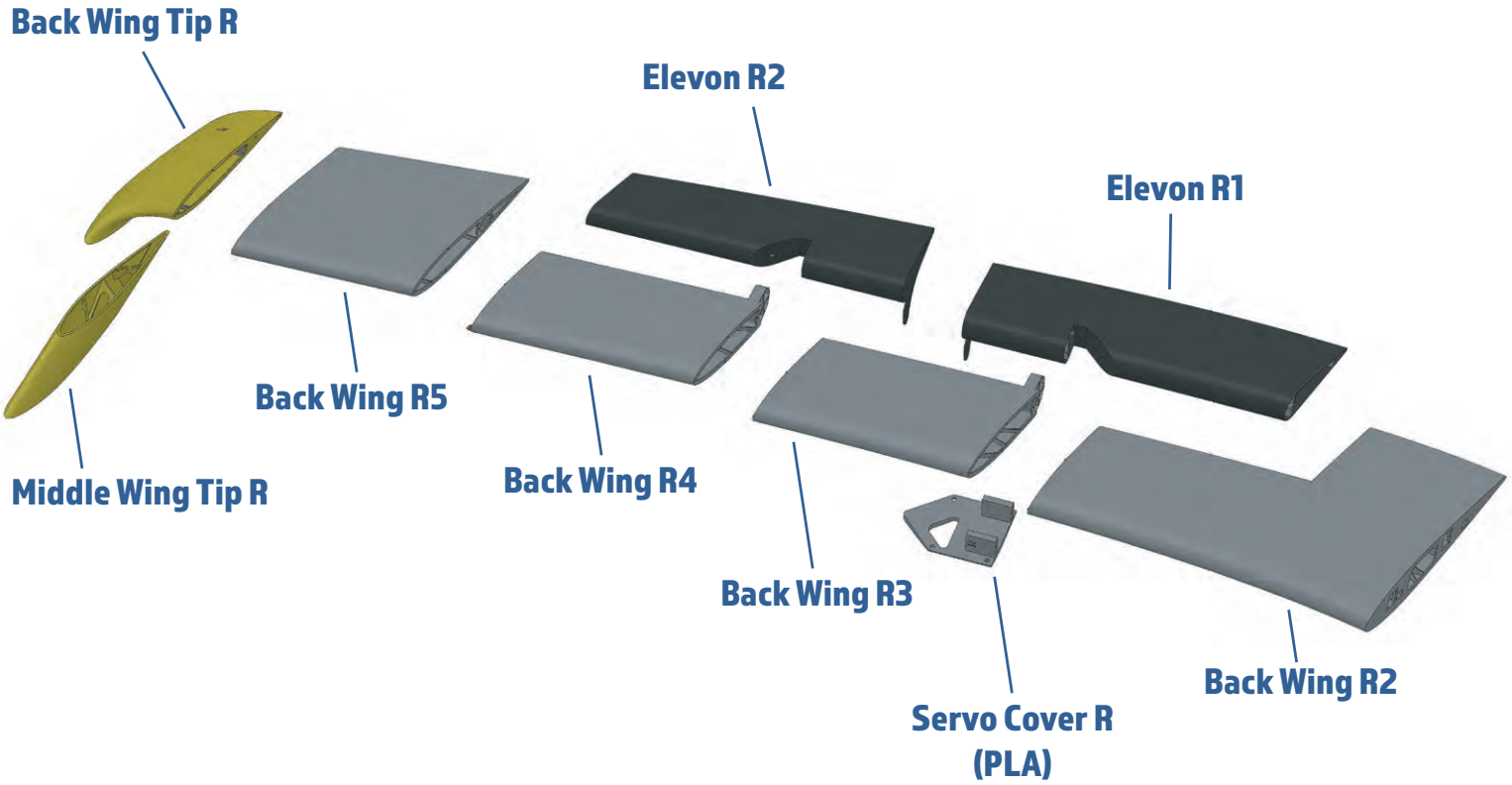
Tools and Materials Needed:

- Medium Bodied CA/Super Glue
- Accelerator for CA
- Sandpaper and/or Small Files
- Soldering Iron (for heat set threaded inserts)

Hardware/Electronics Needed (links to recommended hardware on pg 4):

- M3 x 0.5mm Thread Heat-set Threaded Inserts for wing tip bolts (x4)
- Wing servos (x2) + mounting screws included with servos
- M2 or #2 x 3/8" Long Thread Forming or Tapping Screws for mounting servo covers
- 1mm O.D. x 400mm Long Carbon fiber rod or Steel Wire for Elevon Hinges
- 3mm O.D. Carbon Fiber rod or equivelent O.D. wood or plastic dowel for elevon alignment
- 1.2mm O.D. Steel Wire for servo control linkages

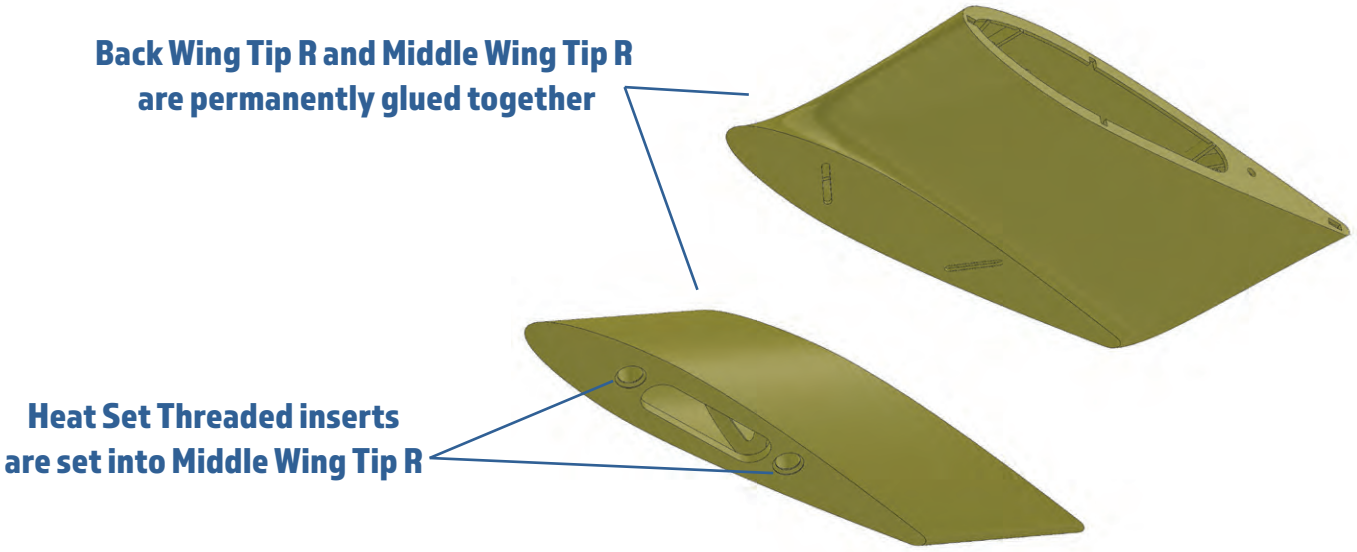
Printed Parts Needed:



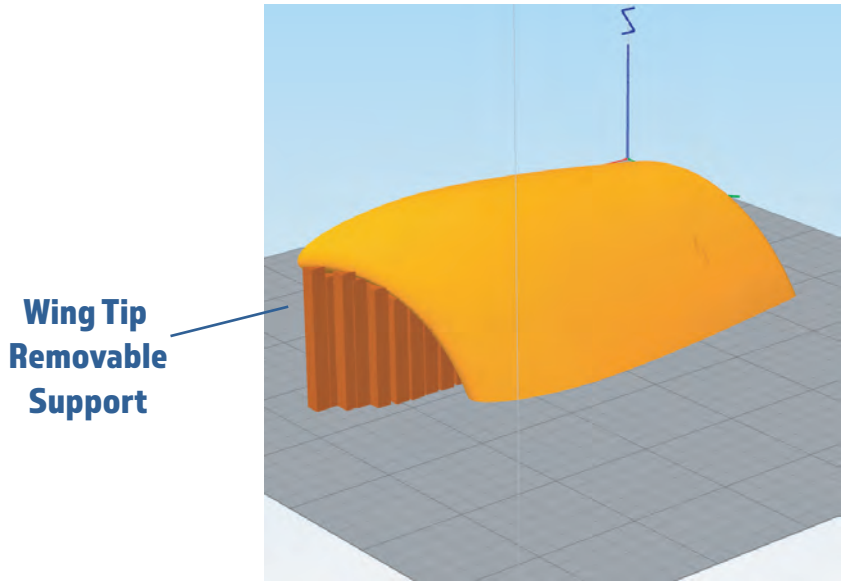
Step-by-Step Build Guide (cont'd)

Step 4.1 Heat Set Inserts

Before gluing parts together. Find parts Middle Wing Tip R and Middle Wing Tip L use a soldering iron to insert the M3x0.5mm thread heat set threaded inserts. You will insert a total of four heat set threaded inserts, two in each wing tip.



NOTE: Parts Back Wing Tip R and Back Wing Tip L contain a sacrificial support that was generated in Simplify3D. Use slight force to remove these support structures. Sand this area with sandpaper or a small file to clean it up.

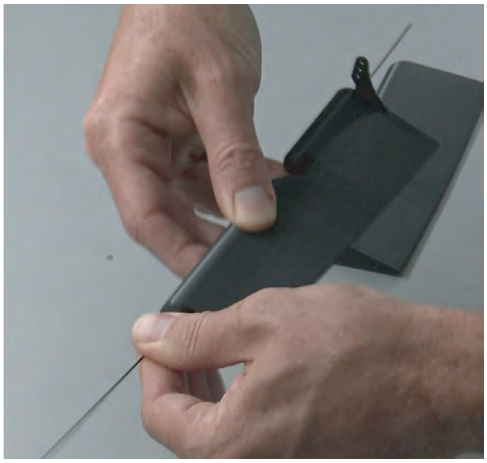


Step 4.2 Glue The Back Wing Parts Together

4.2.1 Glue parts Back Wing R2 - Back Wing R5 together using CA glue. Spray accelerator on the joints to speed curing of the CA glue. The built in alingment tabs will keep all parts well aligned. You can then glue on parts Back Wing Tip R and Middle Wing Tip R

4.2.2 Prior to gluing parts Elevon R1 and Elevon R2 together, use the 1mm - 1.5mm O.D. carbon fiber rod or steel rod to make sure it slides freely in the hinge hole. Then glue the two elevon parts together using the carbon fiber rod and 10mm length 3mm dowel pins to keep the two parts aligned.

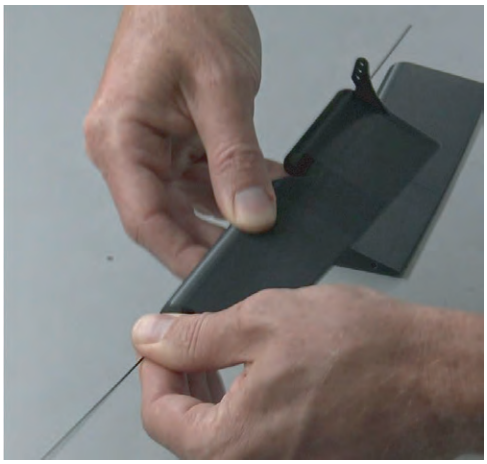
BE VERY CARFEUL NOT TO GLUE THE CARBON FIBER ROD PERMANENTLY IN PLACE



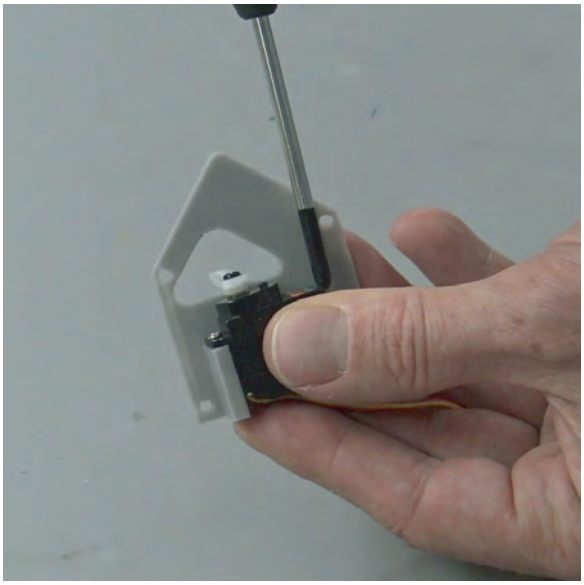
4.2.1 Repeat steps 4.2.1 and 4.2.2 for the Back Left Wing, using parts Back Wing L1 - Back Wing L5, Back Wing Tip L, and Middle Wing TIp L for the wing. Use parts Elevon L1 and Elevon L2 for the elevon.

Step 4.3 Install the Elevons and Servos

4.3.1 Holding Elevon R1/R2 in place in the wing, route the 1mm O.D. carbon fiber rod through the entry hole in Back Wing Tip R, through the elevon and wing hinge holes, until the rod exits the other side of the elevon and is fully inserted. You may use a 1mm steel rod to clear out any debris in the hinge holes or drill out the hinge holes in the wing with a 1.2mm drill bit if needed.



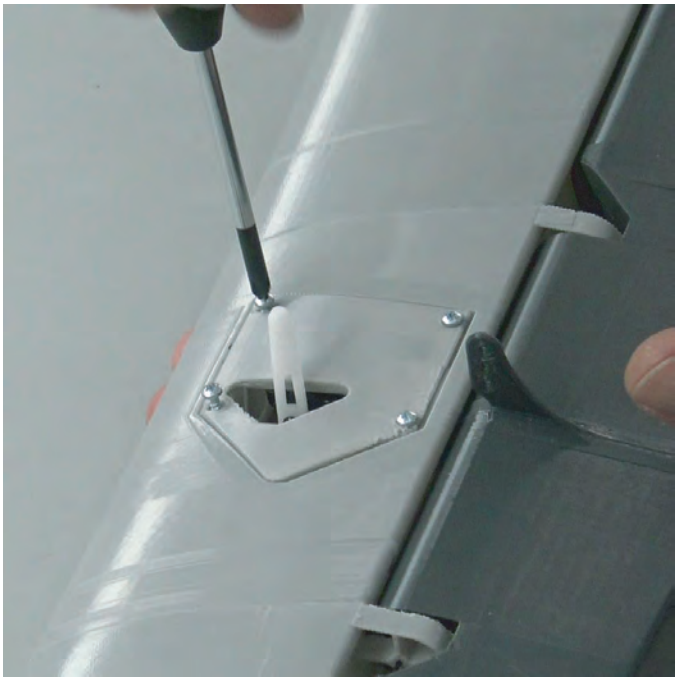
4.3.2 Using the mounting screws that came with your servo, mount the servo to part Servo Cover R. **Note: It is recommended to test and center the servos and install the servo control horn prior to installation.**



Step-by-Step Build Guide (cont'd)

4.3.3 Route the servo wire through the wing and screw the Servo Cover R to the wing using M2 thread forming screws.

4.3.4 Install your preferred servo control linkages. We used a 1.2mm O.D. steel wire with a Z bend on the servo control horn and a connector linkage on the elevon control horn.



4.3.5 Repeat Steps 4.3.1 - 4.3.5 for the Back Left Wing

Step-by-Step Build Guide (cont'd)

Step 5. Motor Installation

Tools and Materials Needed:

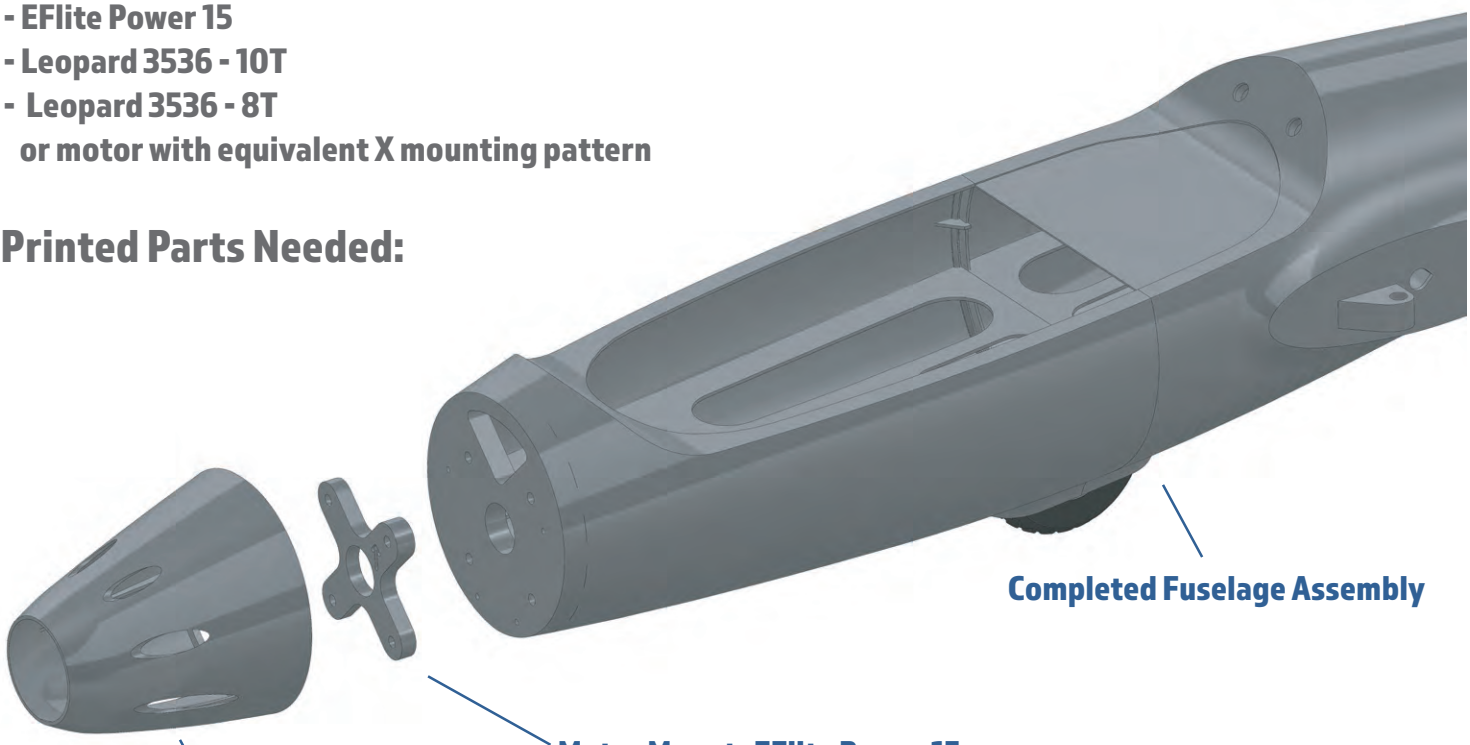
- Medium Bodied CA/Super Glue
- Accelerator for CA
- Tweezers or Needle Nose Pliers
- Allen Wrench and/or Screwdriver for M3 Screws

Hardware/Electronics Needed (links to recommended hardware on pg 4):

- M3 x 0.5mm Thread Lock Nuts for motor mount
- M3 x 0.5mm Thread x 15mm (or 30mm) Long Socket Head Screws for motor mount
- M2 or #2 x 3/8" Long Thread Forming or Tapping Screws for mounting cowl (spare servo mounting screws work)
- EFlite Power 15
- Leopard 3536 - 10T
- Leopard 3536 - 8T

or motor with equivalent X mounting pattern

Printed Parts Needed:



Completed Fuselage Assembly

Motor Mount- EFlite Power 15
or
Motor Mount- Leopard 3536
or
Motor Mount - 10mm Thick
or
Motor Mount - 15mm Thick

Cowl - EFlite Power 15 (12g)
or
Cowl - Leopard

Step-by-Step Build Guide (cont'd)

Step 5.1 Install M3 Locknuts + Motor

5.1.1 You'll see 4 hex shaped recesses in the back of the firewall on part Fuse 1 designed to accept the M3 locknuts. It is recommended to put a small amount of CA or Epoxy glue on one side face of the hex nut and use tweezers or needle nose pliers to seat the locknut in place.

CAUTION!

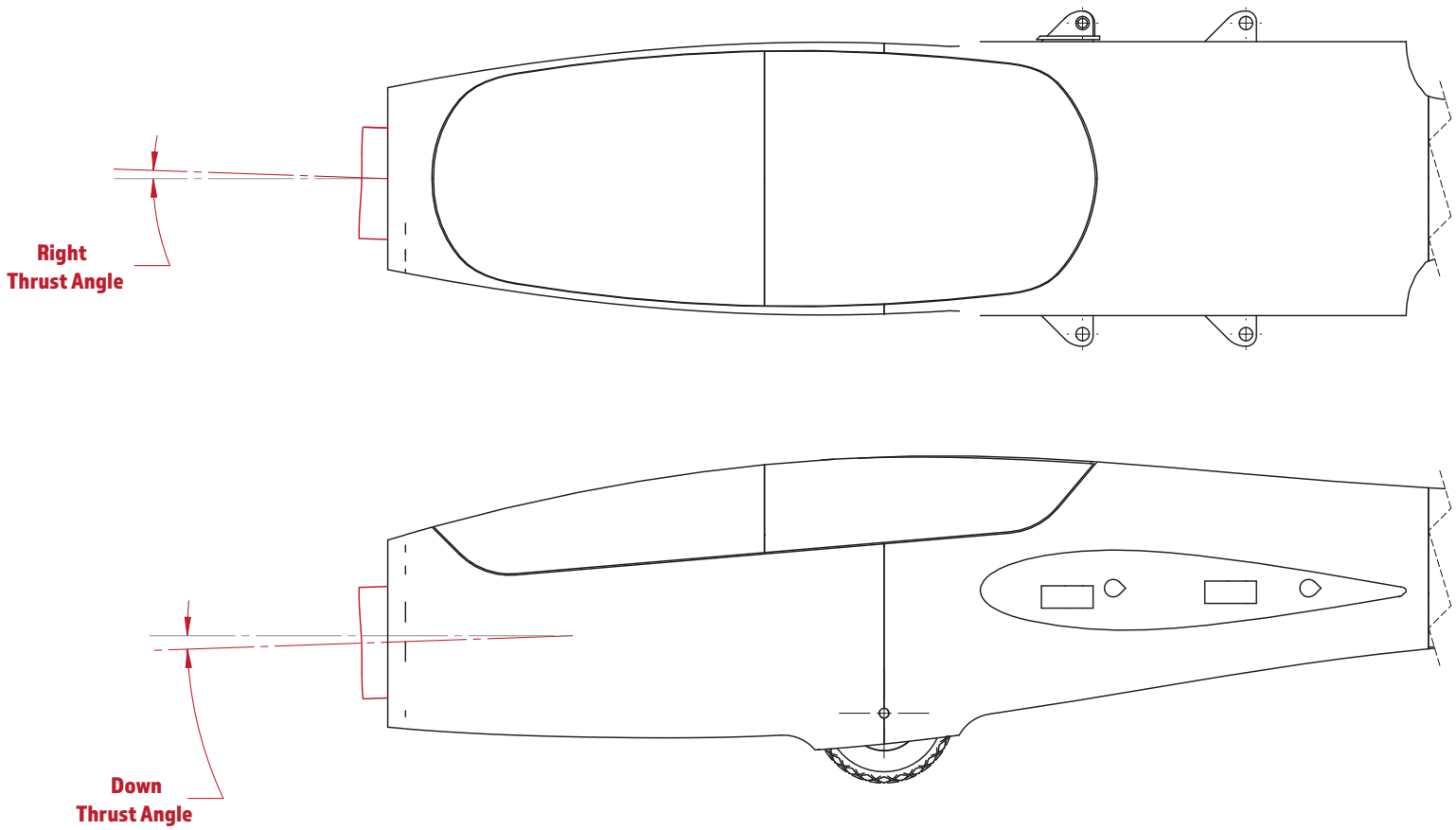
Do not skip the next step: Choosing the proper motor mount. The motor mount is designed to give your motor the proper down thrust and right thrust for optimal flight performance.

Step-by-Step Build Guide (cont'd)

5.1.2 Determine which Motor Mount part will work for your chosen motor. Included in the STL package is a motor mount for the EFlite Power 15, the Leopard 3536, as well as two other thickness options. Use the motor mount that ensures the propeller clears the front of the cowl.

CAUTION! Do not skip using one of these motor mounts. The motor mount is designed to give your motor the proper down thrust and right thrust for optimal flight performance.

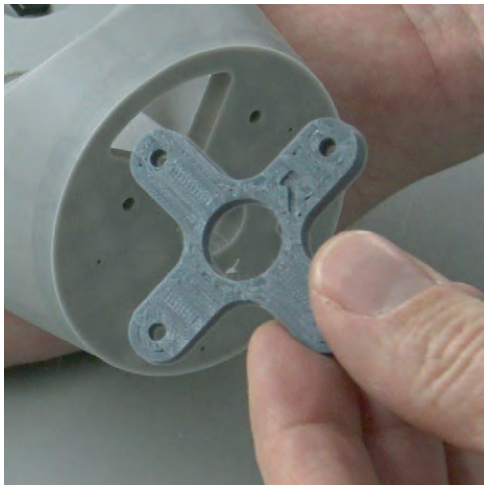
NOTE: It is recommended to print the motor mount from PETG, ABS, ASA, or other rigid plastic with higher temperature resistance than PLA.

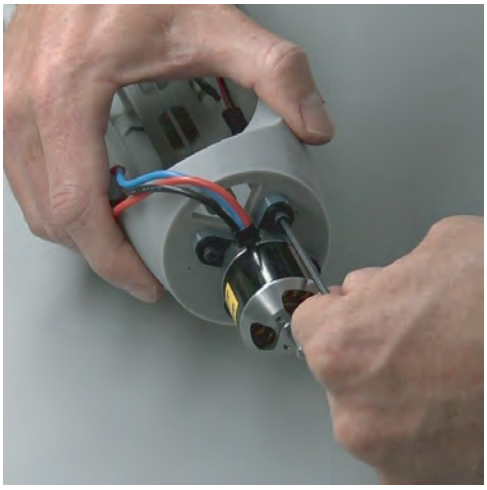


Step-by-Step Build Guide (cont'd)

5.1.3 Mount your motor on the chosen Motor Mount using the M3 x 15mm long or M3 x 30mm long screws (depending on how much length you need for your chosen motor) and screw the motor onto the firewall of Fuse 1.

CAUTION! You will see an arrow printed on the face of the motor mount. Make sure the arrow is pointing UP when you mount the motor this will give your motor the proper down thrust and right thrust.





5.1.4 Use qty. 4 M2 or #2 self tapping screws to mount the cowl. Extra servo mounting screws will also work.

Note: Two version of the cowl are included in the STL package. The one designated for the Leopard 3536 motor has a slightly large opening at the front of the cowl.

Step-by-Step Build Guide (cont'd)

Step 6. Final Electronics Installation and Assembly

Tools and Materials Needed:

- Velcro strips with adhesive backing
- Allen Wrench for M3 Wing Bolts

Hardware/Electronics Needed (links to recommended hardware on pg 4):

- Min. 4 channel Receiver
- 40A or 50A Esc like HobbyWing Skywalker Series 40A ESC
- 3S 2200 mAh Lipo Battery
- 6mm O.D. Carbon Fiber Wing Tubes you cut to length in step 2.2
- M3 x 10mm long Wing Bolts (x12)

Step 6.1 Install Receiver, ESC, and Battery

6.1.1 Install a long piece of velcro strip on the battery tray to give you room to adjust the battery postion for CG/balance adjustments.

6.1.2 Use adhesive backed velcro strips to install your ESC and receiver toward the front of the fuselage canopy opening.

6.1.3 Install the battery behind the reciever for now (you may need to adjust this later to achieve the proper balance). **It is recommended to use an additional velcro strap to wrap around the battery to securely hold it in place.**

Step-by-Step Build Guide (cont'd)

Step 6.2 Final Assembly, Radio Programming, and Balance

6.2.1 Assemble the whole aircraft together using the 6mm O.D. carbon fiber wing tubes. The 200mm length tube fits in the back hole of the back wing and the 300mm length tubes fit in the other three wing holes.

6.2.2 Connect your wing servo leads to the extensions and screw the wings together using the M3 x 15mm long wing bolts. 2 bolts for each wing root and 2 bolts for each wing tip (12 bolts total).

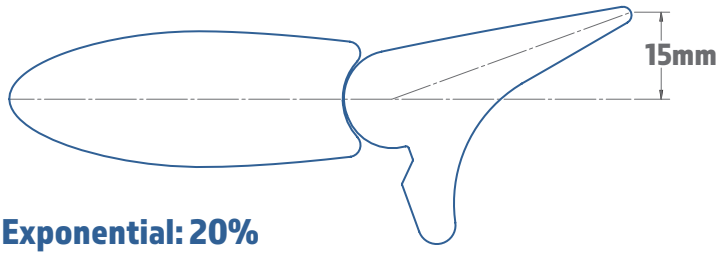
Step-by-Step Build Guide (cont'd)

6.2.3 Connect the battery, bind your radio, and follow the instructions included with your radio for mixing ailerons and elevator (elevons).

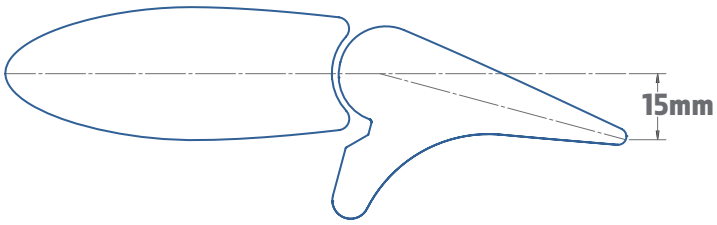
Recommended Rates and Exponential:

Elevator

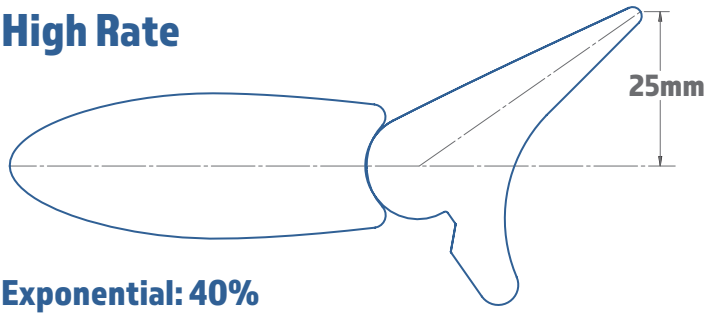
Low Rate



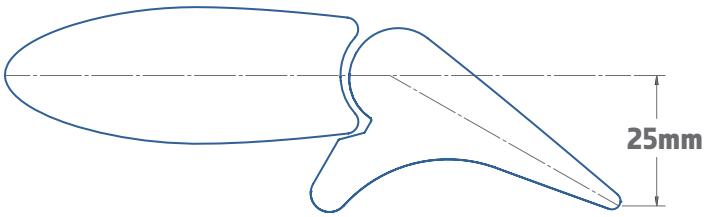
Exponential: 20%



High Rate

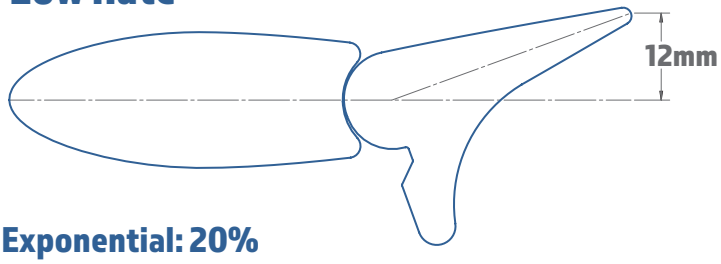


Exponential: 40%

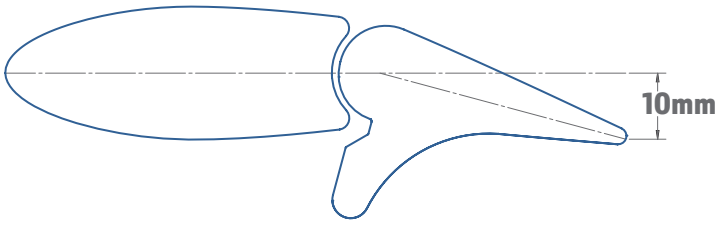


Aileron

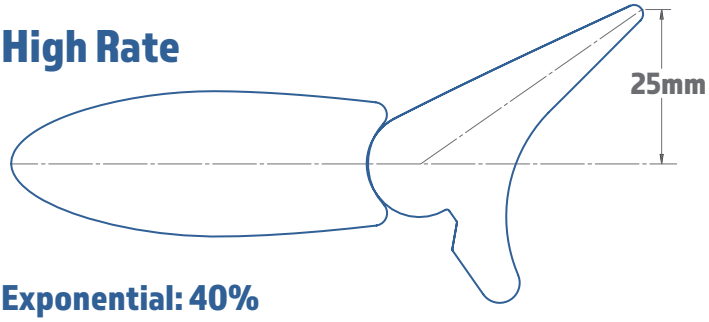
Low Rate



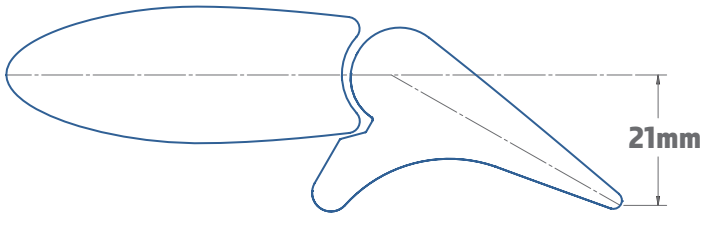
Exponential: 20%



High Rate

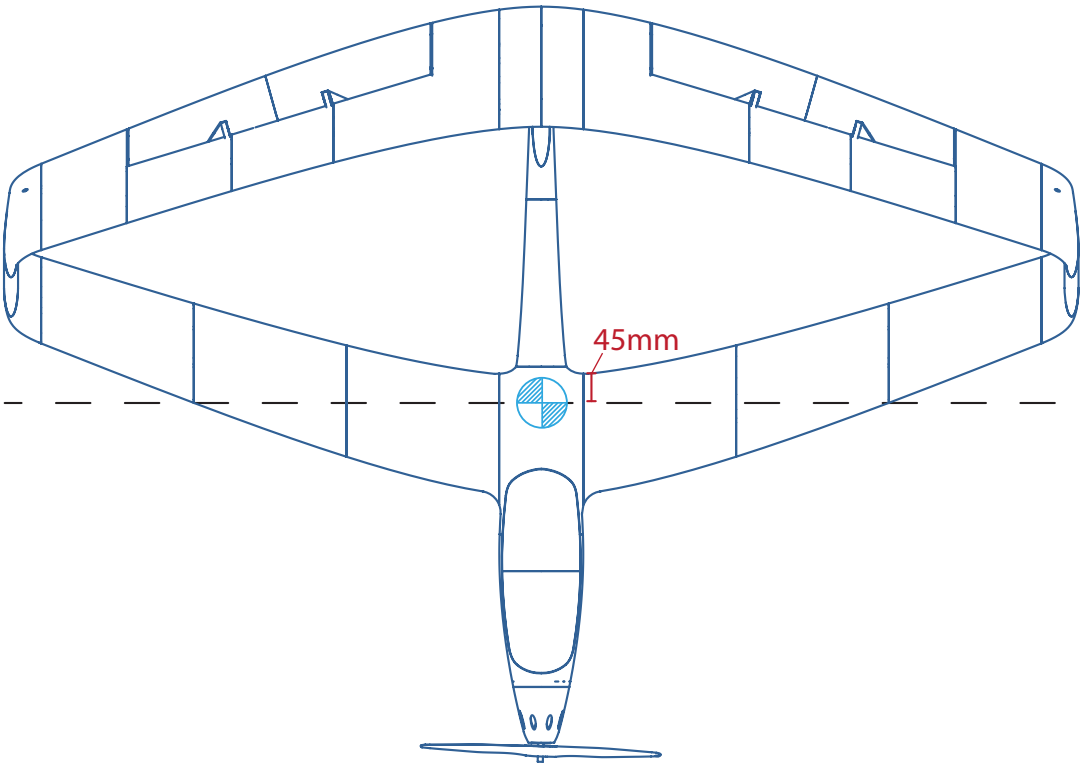


Exponential: 40%



Step-by-Step Build Guide (cont'd)

6.2.4 Finally, install your propeller, attach the canopy, and balance the aircraft along the recommended Center of Gravity position. The Center of Gravity position for the aircraft is located on the trailing edge of the front wing at the wing root, as shown in the image below. Shift the battery forward or aft to achieve the proper balance. Remember to err on the side of slightly nose heavy.



CG Location 45mm in front of the Trailing Edge of the Wing Root

Optional Dolly Assembly

Step 7. Optional Dolly Assembly

Tools and Materials Needed:

- Medium Bodied CA/Super Glue
- Accelerator for CA
- Sandpaper and/or Small Files
- Allen wrench for M3 screws

Hardware/Electronics Needed (links to recommended hardware on pg 4):

- 1/4" wide x 1/8" thick foam tape

Two Options for wheel axles:

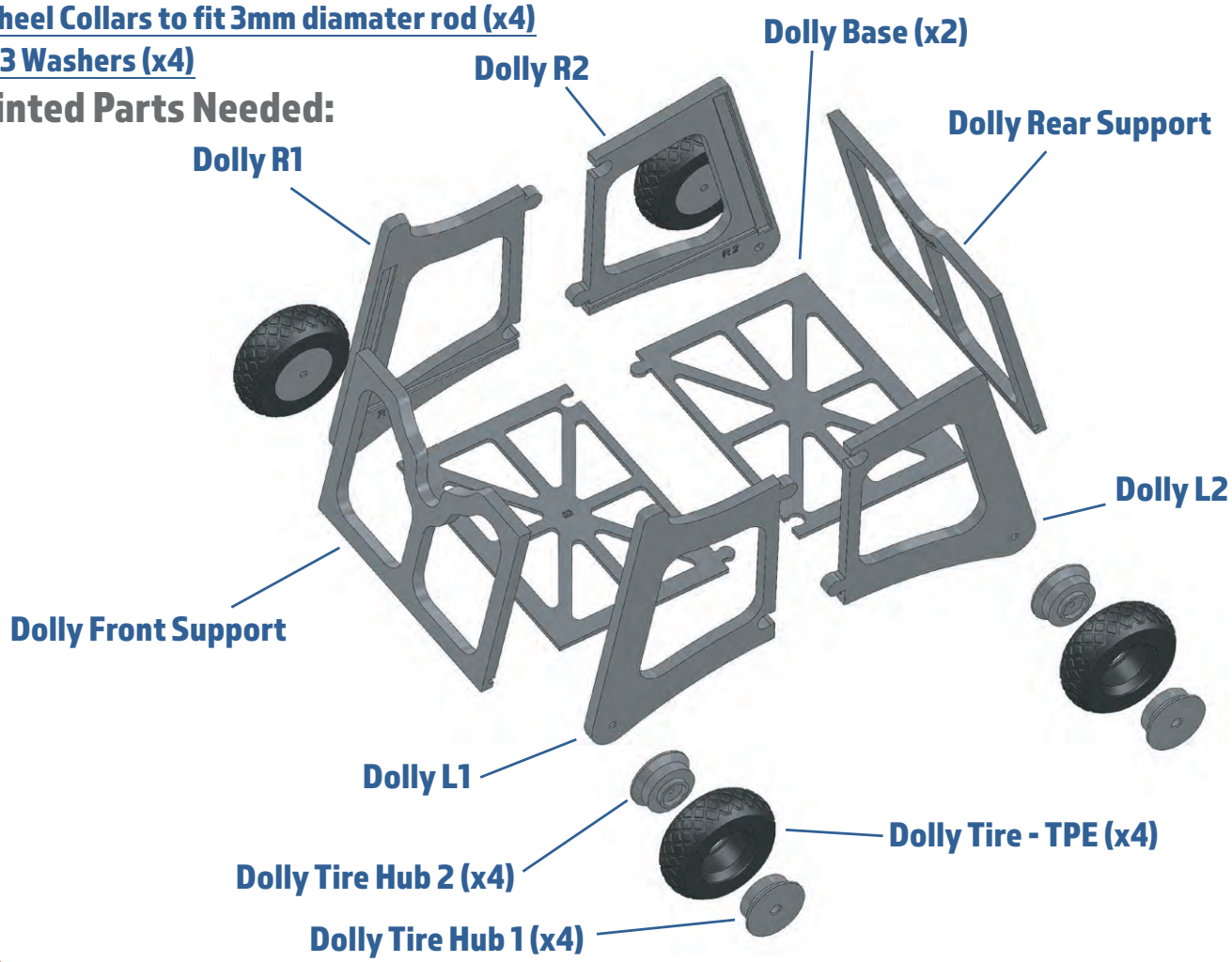
Option 1:

- M3 x 0.5mm Thread Lock Nuts (x8)
- M3 x 0.5mm Thread x 35mm long screws (x4)

Option 2:

- 3mm diameter x 260mm Long steel wire or carbon fiber rod (x2)
- Wheel Collars to fit 3mm diamater rod (x4)
- M3 Washers (x4)

Printed Parts Needed:



www.3DAeroventures.com

Optional Dolly Assembly (cont'd)

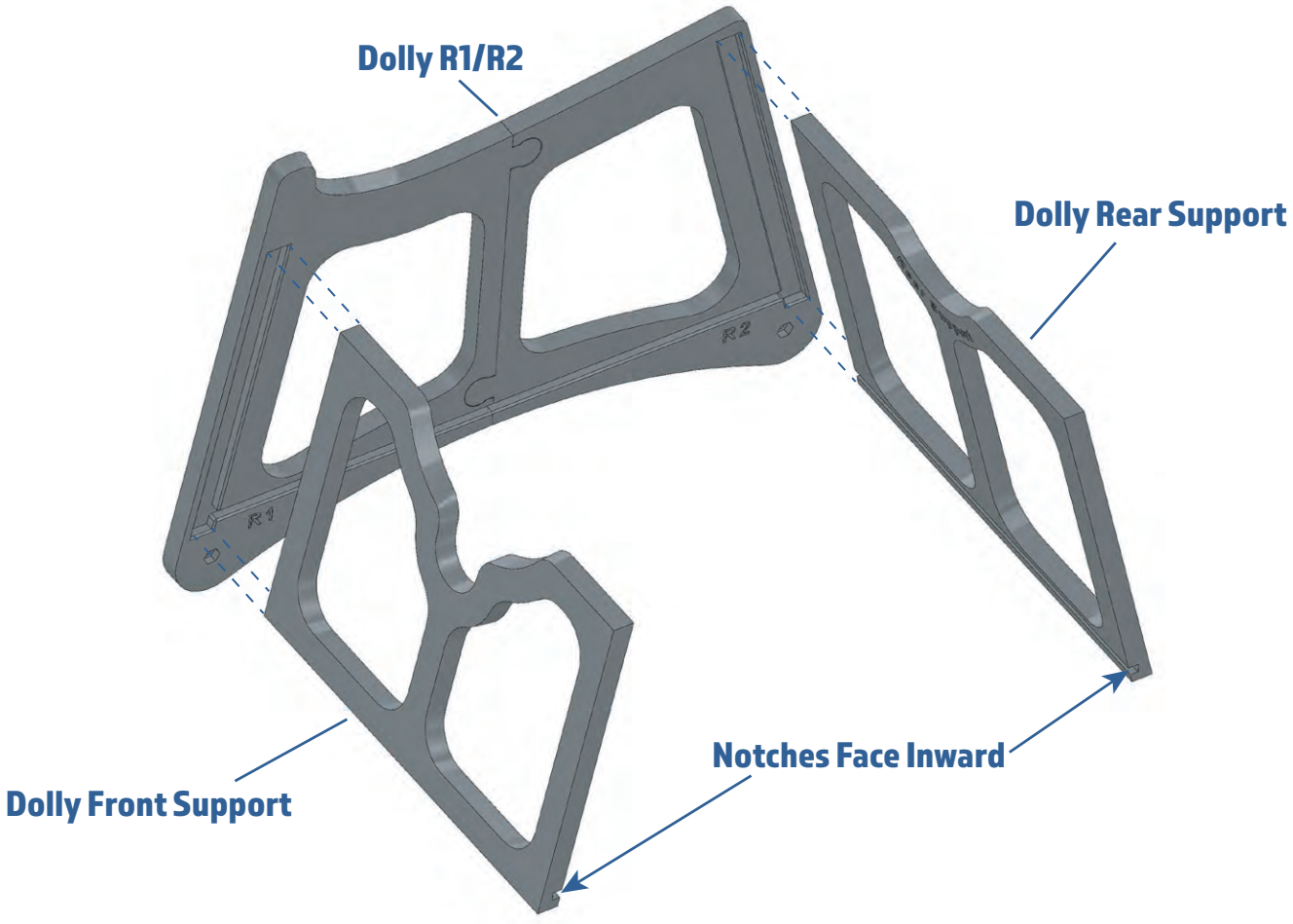
Step 7.1 Glue Printed Parts Together

7.1.1 Glue parts Dolly R1 and Dolly R2 together using the alignment tabs to key the parts together.

7.1.2 Glue parts Dolly L1 and Dolly L2 together using the alignment tabs to key the parts together.

7.1.3 The Base is made up of two identical parts called "Dolly Base" Glue the two Dolly Base parts together.

7.1.4 Glue the Dolly Front Support and Dolly Rear Support into their recesses in the R1/R2 assembly. **Make sure the notches on the Front and Rear supports are facing towards the inside of the assembly.**



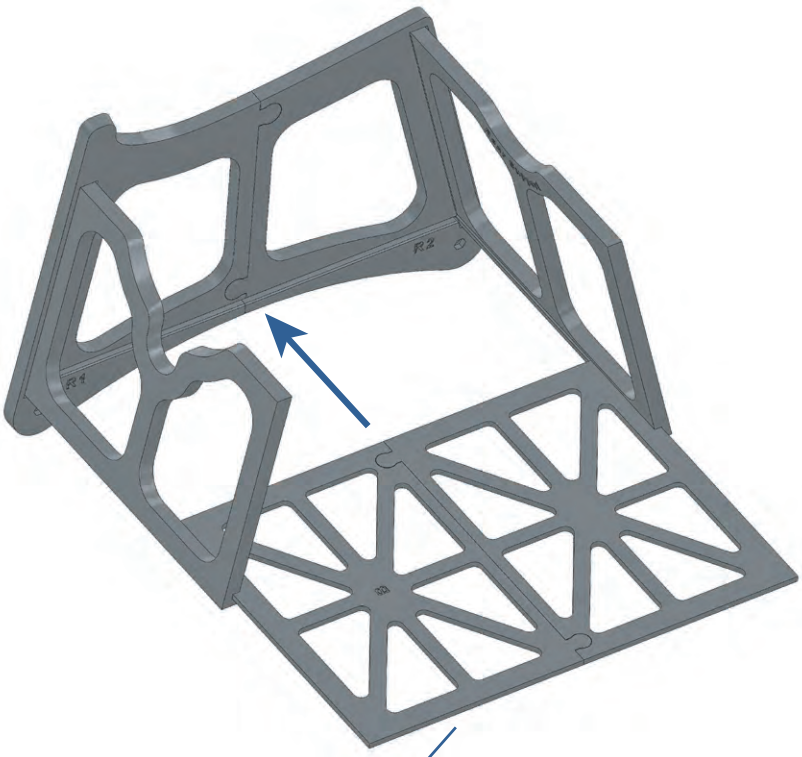
Optional Dolly Assembly (cont'd)

Step 7.1 Glue Printed Parts Together

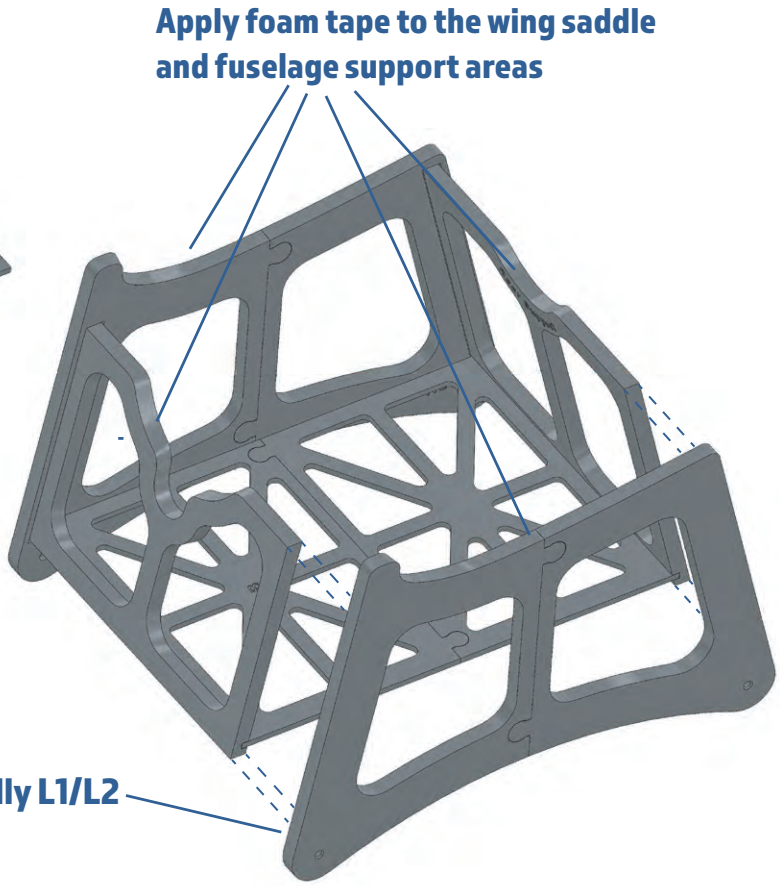
7.1.5 Slide the Base assembly into the notches on the Front and Rear supports and ensure it fully seats into the notch on the R1/R2 assembly.

7.1.6 Finally, Glue the L1/L2 assembly in place, using the recesses on it's face to align with the Front Support, rear Support and Base assembly.

7.1.7 Apply the 1/4" wide x 1/8" thick foam tape to the areas that the Infinity Wing will rest on.



Dolly Base Assembly



Optional Dolly Assembly (cont'd)

Step 7.2 Attach the Tires

7.2.1 Insert Tire Hub 1 into the TPE Tire, apply CA glue to the inside face of Tire Hub 1, and insert Tire Hub 2 to complete the wheel assembly. Repeat this for the remaining three tires.

7.2.2 You have two options for attaching the wheels to your dolly.

Option 1: Use a M3 x 35mm long screw along with two M3 locknuts per tire.

Option 2: Use a 3mm diameter x 260mm long steel or carbon fiber rod as and axle running the entire width of the dolly. Place 1 or 2 washers between the tire and the face of the dolly, and secure each side of the axle with a 3mm wheel collar.

Option 1

Option 2

Tips For Your First Flight

Weather:

For your first flight it is recommended to launch on a very calm day, with winds between 0 - 5 mph. Once you become proficient with the X-100 Infinity Wing know that is has been tested on blustery days and it handles 10 - 15 mph winds very well.

Pre-Flight Checks:

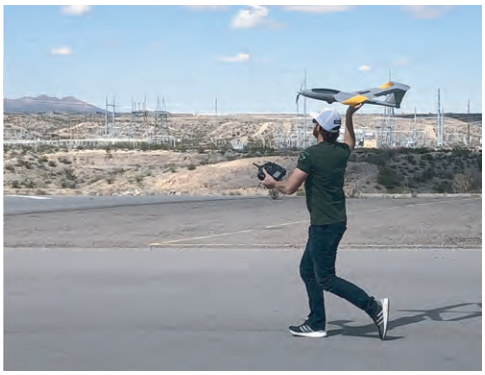
1. Double check all screws to ensure they are tight, including servos, control horns, motor mount, cowling, prop, and wing bolts.
2. Ensure servo extensions and all electronics are fully plugged in
3. Radio and onboard LiPo batteries are fully charged
4. It is recommended to test your radio from long range (30 or more paces away from the aircraft) to ensure your radio signal is strong and you don't experience servo flutter.
5. Double check all controls are moving the proper direction!

Tips For Your First Flight

Hand Launching:

f you've never hand launched an aircraft, don't be afraid. The recommended power setup provides plenty of power for hand launching, but it does require a stronger throw than you may be used to with lighter foam aircraft. Embrace your inner athlete and follow these steps:

1. Hold the aircraft's fuselage right behind the front wing with your dominant/ throwing hand.
2. With the radio in your other hand, advance to full throttle
3. Hold the aircraft with the wings level and the nose pointed up slightly, 5 to 10 degrees, and give the aircraft a strong throw.
4. Get your throwing hand back on the radio as quickly as possible and enjoy your flight!



Tips For Your First Flight

Launching with Takeoff Dolly:

The X-100 Infinity Wing can also be launched from a takeoff dolly. Users who fly off of a paved runway or tightly mown grass have had success with this option:

1. First, set the Infinity Wing on the dolly with the leading edge of the front wing touching the vertical tabs located on the front of the dolly's wing saddle.
2. Do a test run at low throttle to ensure your dolly is tracking straight. If it is not tracking straight you are likely taking off in a slight cross wind or one of your dolly's wheels is tighter than the others.
3. Now that you are ready for takeoff, advance the throttle slowly until you reach full throttle and apply slight up elevator until the aircraft lifts off of the dolly.
4. It's helpful to have another person assist you to clear the dolly from the runway affter takeoff.

About 3DAeroventures

3DAeroventures is a YouTube channel and eCommerce store where content creator and Pilot in Command, Eric Haddad, uses engineering technology and model aviation to encourage his viewers, customers, and team members to never stop exploring, never stop questioning, and never stop playing.

3DAeroventures' fully 3D-printable, functional RC aircraft designs can be fabricated on hobbyist level desktop 3D printers out of common materials. The digital files of 3DAeroventures' aircraft are available online, with new designs being made available every 1 - 2 months. If you'd like to stay up to date on 3DAeroventures' latest content and designs, visit www.3daeroventures.com and sign up for our email list.

Other ways to connect with 3DAeroventures:

- Consider subscribing to the YouTube channel at www.youtube.com/3daeroventures

- Connect with 3DAeroventures on Facebook and Instagram

- Join the Facebook group, 3DAeroventures Pilots Alliance, to connect with other Aeroventurers, to share your builds, and to troubleshoot any issues with us and the community.

- With any questions or feedback on 3DAeroventures' designs or content, you can email Eric directly at eric@3daeroventures.com

Never Stop Exploring. Never Stop Questioning. Never Stop Playing.

www.3daeroventures.com

www.youtube.com/3daeroventures