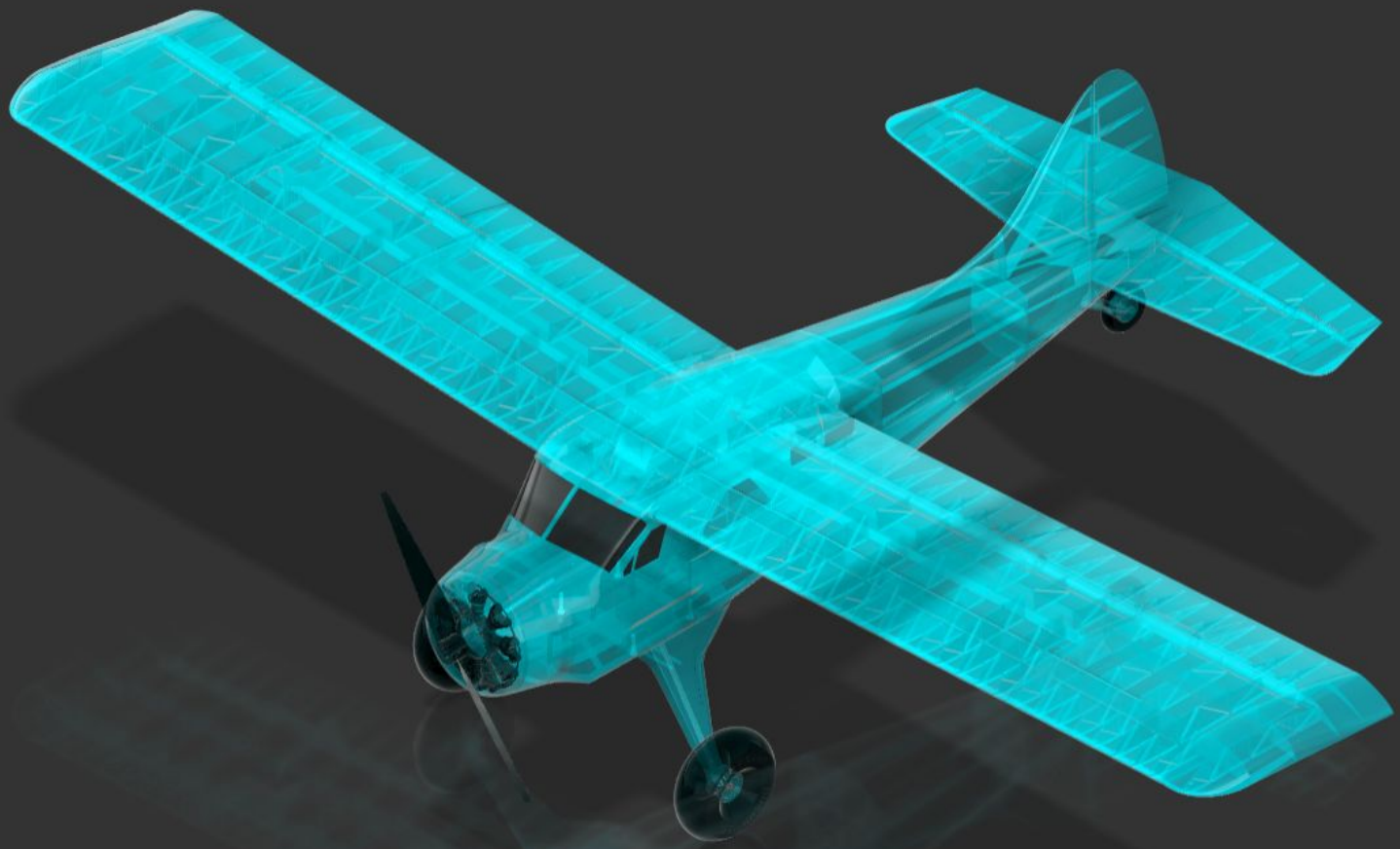
STEVEN FRANK

de Havilland Canada DHC-2 Beaver

3D printed RC model

1:12



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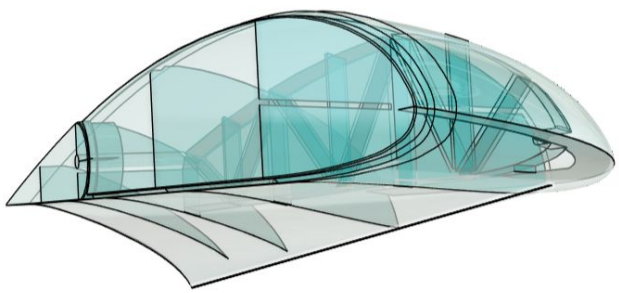
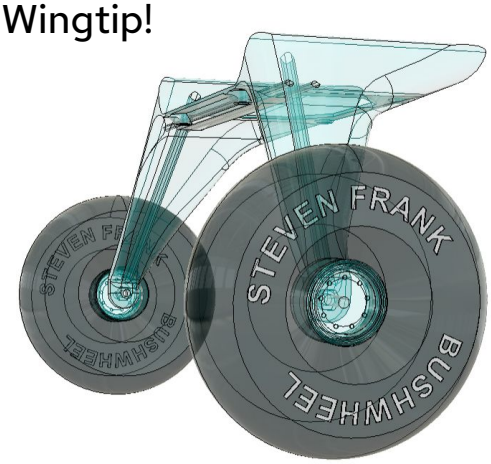
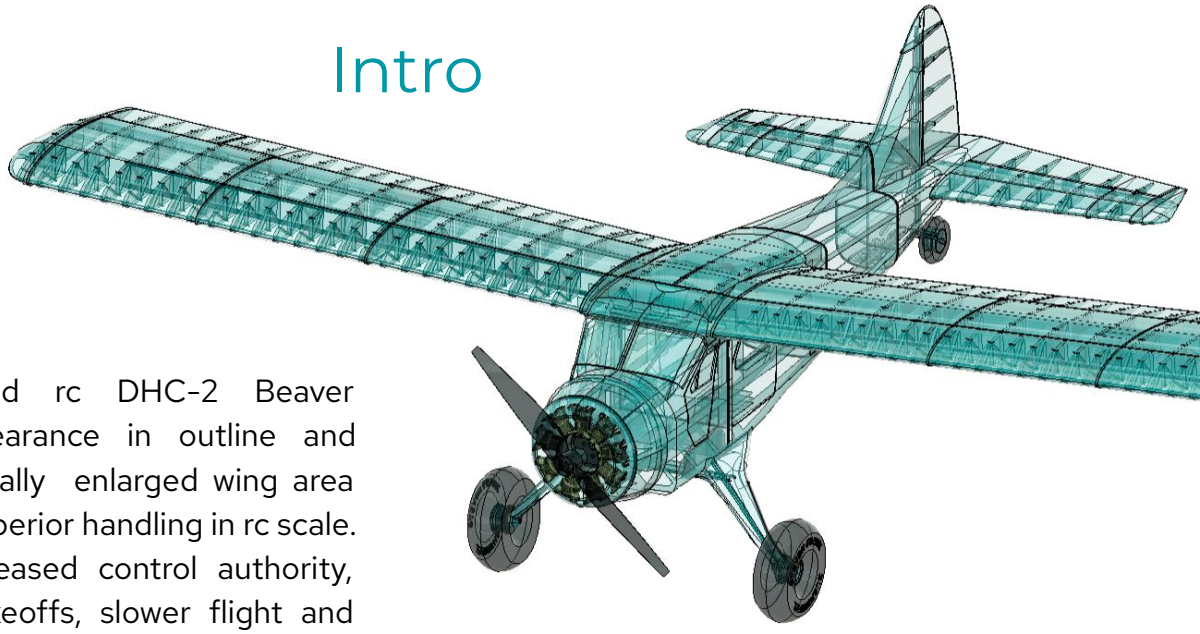
+ **Now** with **EXTRA files:** Bushwheel and Drooped Wingtip!





Intro



This fully 3D-printed rc DHC-2 Beaver maintains scale appearance in outline and details, while intentionally enlarged wing area and tail surfaces for superior handling in rc scale. Boosted lift and increased control authority, resulting in easier takeoffs, slower flight and better low-speed control – ideal for beginners and relaxed flying.

Meticulously engineered internal frame structure that ensures rigidity while maintaining a lightweight design.

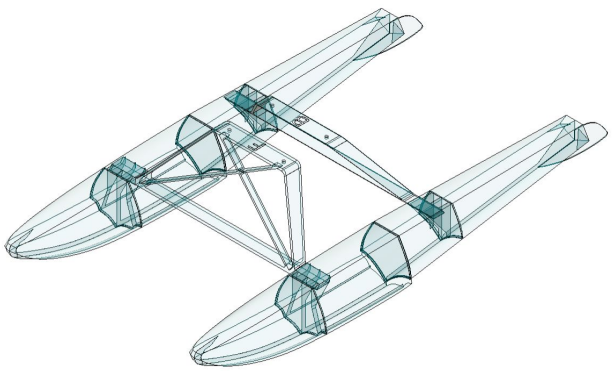
The rc model's inherent stability—derived from the Beaver's proven aerodynamic design—makes it forgiving for beginners and pilots of varying skill levels. It excels in low-speed maneuvers, resists stalling, and performs reliably in varied conditions, including grass fields or water with floats, even in snow!

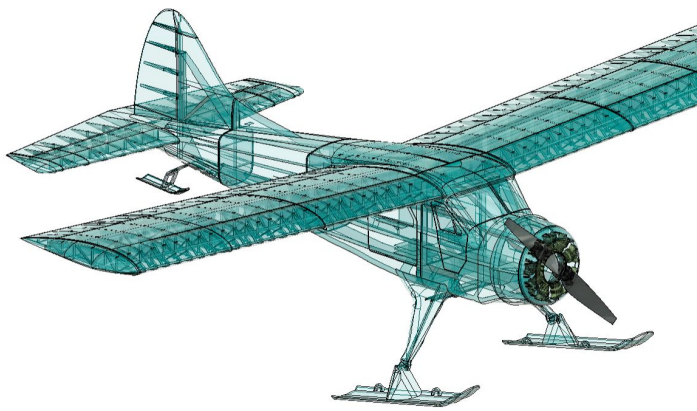
Requires only a 3D printer, easily purchasable parts, and ca-glue. Prepared print files are provided, and assembly is straightforward and easy to complete, **the parts slide into each other.**

You get an iconic airplane with great performance–Low stall speed (~18 km/h), and also very stall-resistant — just mushes instead of dropping a wing.

Capable of flying gently +15 minutes with one battery. And it's also able to reach 100 km/h!

Additional **floats and skis** are available separately for water landings and for snow operations!





History

Diego Delso, delso photo, License CC BY-SA

de Havilland Canada DHC-2 Beaver, first introduced in 1947, stands as one of the most revered aircraft in aviation history. Developed in the post-World War II era, specifically engineered for bush operations in remote and challenging environments. Often described as "one of the best bush plane ever built," the Beaver has earned its reputation through exceptional performance, reliability, and versatility. Over 1,600 units were produced until 1967, and many remain operational today, a testament to its enduring design.

The Beaver's design originated from direct consultations with Canadian bush pilots, who emphasized the need for superior short takeoff and landing (STOL) capabilities, rugged all-metal construction, and practical features for remote operations. Its high-lift wings, effective flap system, and robust undercarriage enable operations from unprepared strips, lakes, rivers, or snow.

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A key strength lies in its adaptability. The aircraft can be equipped with wheels, floats, or skis, making it ideal for diverse terrains. Large cargo doors on both sides facilitate loading of bulky items, while accommodating up to eight passengers or substantial freight payloads of approximately 2,000 pounds.

The Beaver's reliability in harsh conditions has been proven across civilian and military applications. It served extensively with the U.S. military (nearly 1,000 units acquired) in roles including reconnaissance and search-and-rescue, and operated in over 60 countries. Its durability under limited maintenance and punishing use contributed to its legendary status.

In summary, the DHC-2 Beaver excels due to its unparalleled STOL performance, rugged construction, versatility across landing surfaces, and proven reliability in demanding environments. It not only opened access to Canada's northern frontiers but also set the standard for utility aircraft, earning its place as a cornerstone of aviation heritage.

Specifications

Wingspan & Length	1220 mm & 780 mm (48.0 in & 30.7 in)
Wing area	24.0 dm² (372 in²)
RTF weight w/o battery	705 g - **LW-PLA**
Takeoff weight:	
with 3s 2200mah	850 g (30 oz)
Wing Cube Loading	7.2 (easy to fly, excellent trainer)
Wing loading	35.4 g/dm² (11.6 oz/sq ft)
Max takeoff weight	1500 g
Stall speed	18 km/h (11 mph)
Never exceed speed	120 km/h (75 mp)

Receiver with 5 or more channel: aileron, elevator, throttle, rudder, flaps.

Performance

Max flight time: 20 min (gentle cruising, 3s 2200mah)
Full throttle: 7 min (3s 2200mah, 9x5 prop)
Static thrust:

GWS HD 9x5 prop	~900 g
APC E 9x4.5 prop	~1000 g
APC E 10x5 prop	~1250 g

Recommended setup

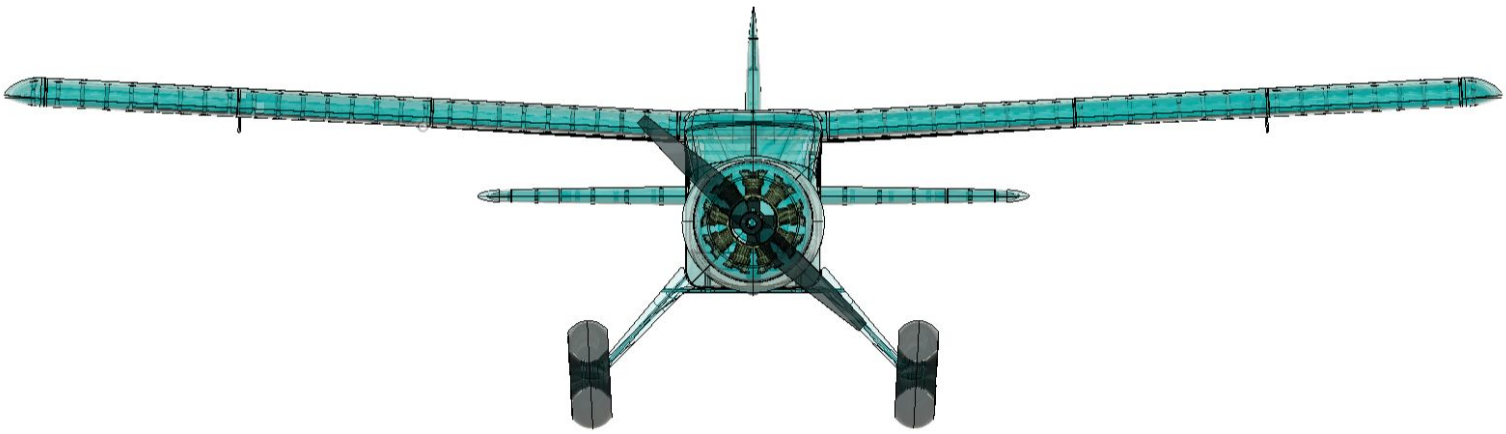
Motor: 2836 1120kv Surpass Hobby

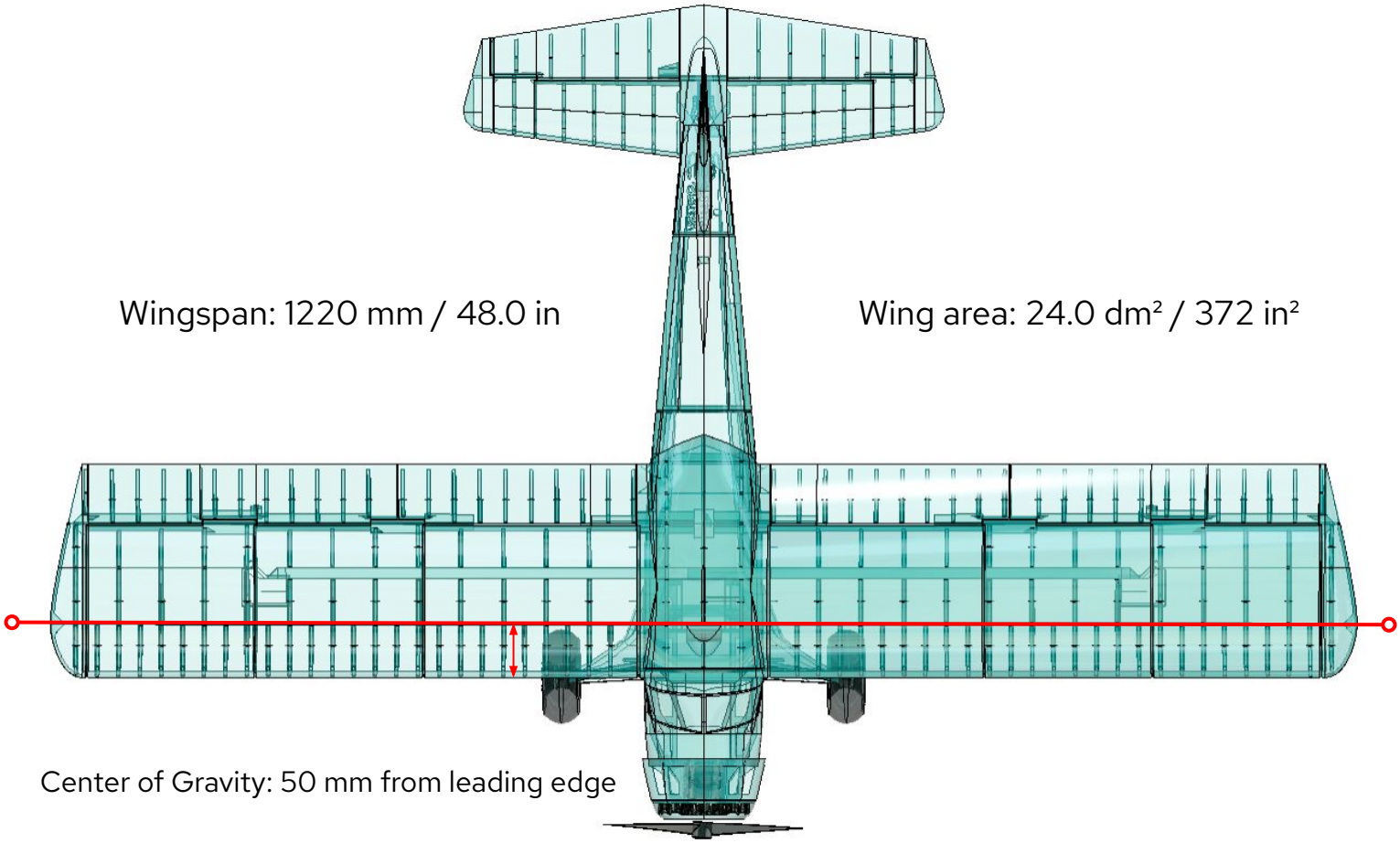
ESC: 30A Surpass Hobby Flier 2-4s

Battery: CNHL Lipo 3s 2200mah

Servos: "9g" PTK 7465 (metal geared)

Buy them HERE

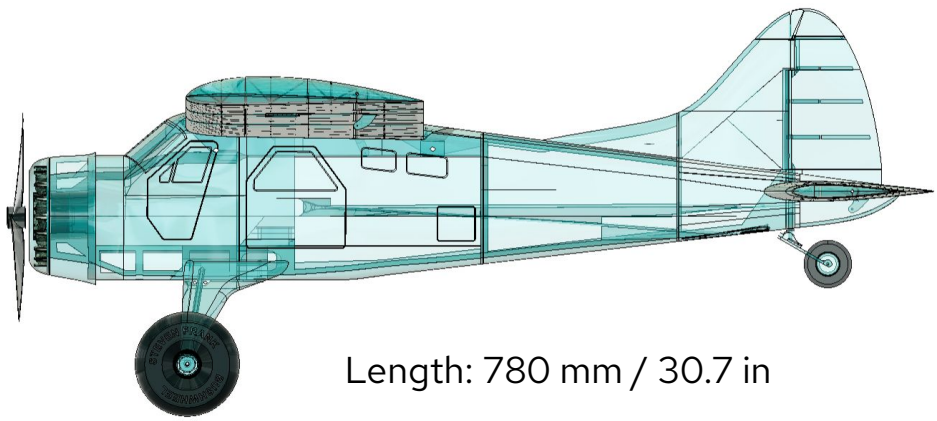




Wingspan: 1220 mm / 48.0 in

Wing area: 24.0 dm² / 372 in²

Center of Gravity: 50 mm from leading edge



Length: 780 mm / 30.7 in

Off-the-shelf parts

- 2836 1000-1120 kv motor
- 30A ESC
- 5pcs 9g servo
- 4 x 300 mm servo extension cable
- 9x5 or 10x5 prop APC E (or GWS HD)
- from 3s 1300mah to 3s 3000mah LiPo battery (at least 140 grams)
- 2 x 1 meter 1.5 mm diameter carbon or laminated rod
- 2 x 1 meter 2 mm diameter carbon or laminated rod
- 1 meter 3 mm diameter carbon or laminated rod
- 30 cm 3 mm aluminium tube or rod
- rubber bands
- 2 meter 1 mm diameter steel wire
- 8 x M3 16mm D head wood screws
- 8 x M2 8 mm wood screw
- 2 x M3 partially threaded 25mm screw + 4x M3 nut

Filaments:

- 350 g LW-PLA
- 100 g PETG
- some TPU or LW-TPU (for the tyres)

Links HERE

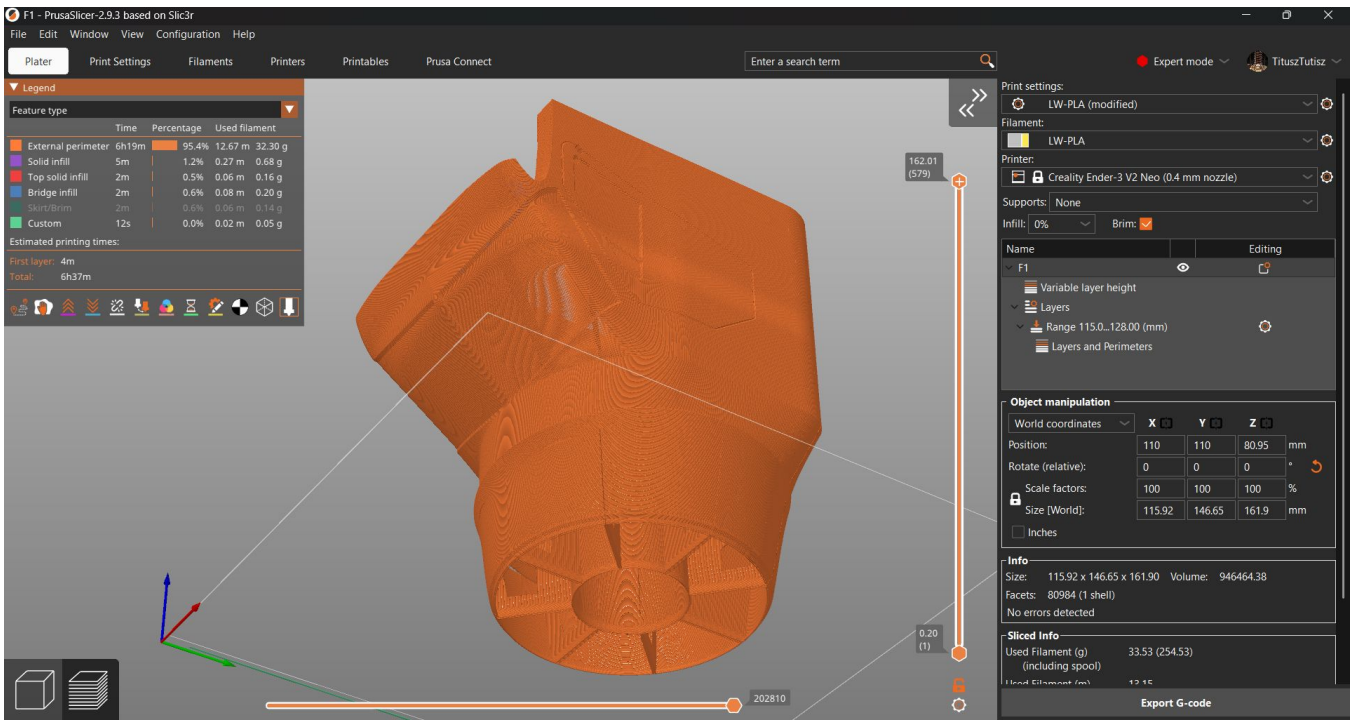
Minimum print area for this airplane: 220x220x220 mm

Recommended to use **LW-PLA**, this airplane is designed for LW-PLA.

After downloading the plans. You will find folders containing all the parts (print files).

*Open these .3mf files in **PrusaSlicer**.*

In each part's file, all print parameters are preset and ready to print!
(just do the test print first, see next page)



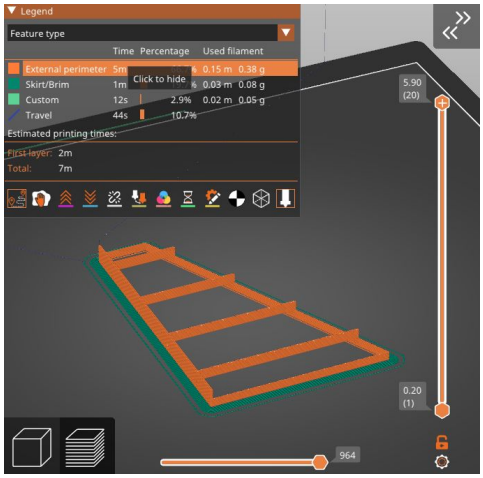
OR

You can use other slicers (.STL files included, just open .3mf in other slicers) and you must set the print settings yourself by referencing ours in PrusaSlicer. Most parts simply print in "vase mode". Some parts require bottom layers or different layer heights.

But we recommend to try PrusaSlicer. You can find many custom printer presets online. If you have a widely used printer, you'll find custom printer presets for it. You can easily import them and start printing. Or you can setup your own printer's preset manually in PrusaSlicer.

LW-PLA filament test print

*240-250 Celsius nozzle temperature and 0.5 flow rate works for most LW-PLA filaments. But it is **highly recommended** to run the test print **PRINT_TEST_FOR_LW-PLA.3mf** first.*



- Open the file named **PRINT_TEST_FOR_LW-PLA.3mf**
- Then select your own printer
- Export gcode & print

This test print allows you to verify that the extrusion multiplier and nozzle temperature are set correctly for your specific LW-PLA filament, and it also checks bridging performance.

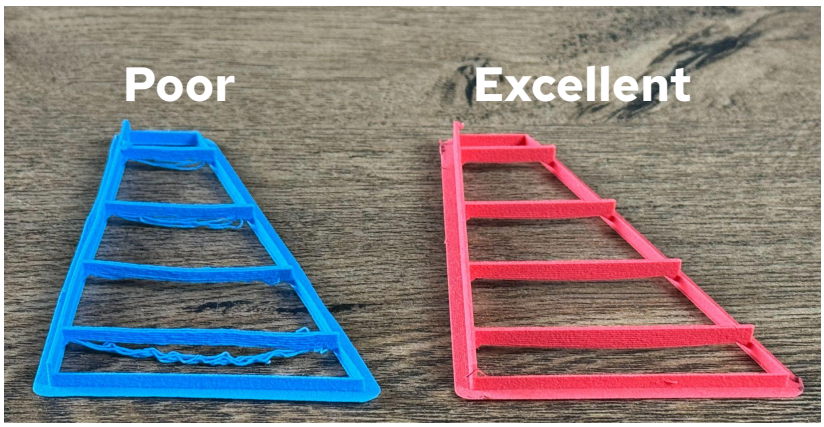
After printing, measure the wall thickness with a caliper.
One wall thickness should be between **0.55 mm and 0.65 mm**, and **bridging also has to work.**
If the measured wall thickness is outside the 0.55–0.65 mm range, adjust as follows:

Wall thickness depends on both “nozzle temperature” and “extrusion multiplier”
- If under-extruded (too thin): increase “nozzle temperature” first.
- If over-extruded (too thick): decrease the extrusion multiplier.

Reprint the test after each change.

Also monitor bridging performance:
- Too high temperature can worsen bridging.
- If bridging fails, lower the temperature

(and may increase the extrusion multiplier slightly to compensate, only if necessary or you can play with “Bridge Flow Ratio”.)



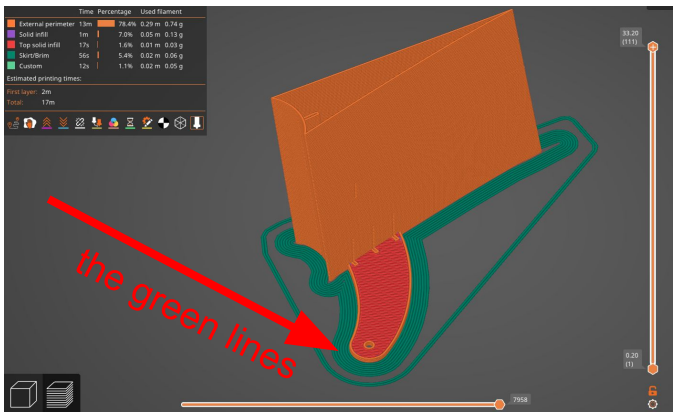
Once you find the correct settings for your own LW-PLA, save them as your custom filament profile!

After the test print. You can confidently proceed to export the gcodes and print all the parts.

Each part is in its own separate .3mf file, **all other print settings are already prepared in every .3mf file!** (walls, layers, layer heights, etc.)

Tip:
For good **LW-PLA bed adhesion**, it's excellent to print on **PEI sheets** or **plain glass** plates **coated with strong hairspray**.

The default setting has **brim enabled** to help with bed adhesion for thin walls. This ensures the print doesn't come off during printing. It can be easily cut off after printing with a scalpel. (*However you can disable it in the slicer, if you find it unnecessary.)*



Tip:
You can **print multiple small parts at once** with the same material on one bed to speed up the process. Ensure they fit and enable separate (sequential) printing:

In Prusa Slicer: Load multiple parts on the bed. Go to Print Settings → Output options. Enable Complete individual objects (sequential printing). Then Arrange (A key).

For printing standard materials like PLA and PETG, please refer to online guides.

Other Slicer programs

Any slicer program can be used.

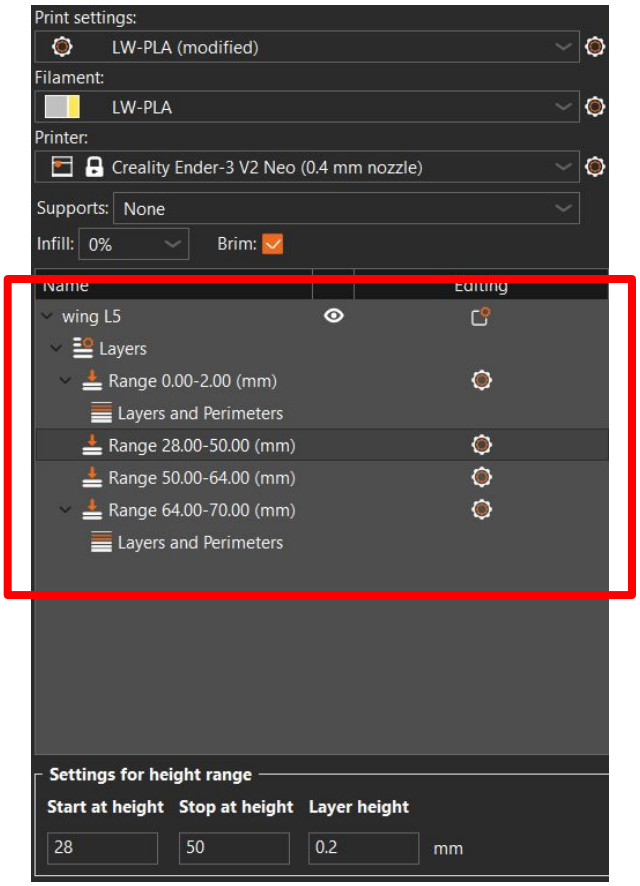
Set up a general setting for LW-PLA and tune it for your specific LW-PLA filament.

0.5 flow rate, 40 mm/s, zero retract, aim for 0.60 mm wall thickness
All of our setting can be fund in any .3mf file.

Some parts have modifiers. Open the part in PrusaSlicer and check the right-side panel to view them.

Key settings: layer height changes (shorten when print angle declines) and **top/bottom solid infill.**

Top and bottom solid infill provide structural strength. Apply the modifiers where needed by referencing the PrusaSlicer settings for each part.



Assembly

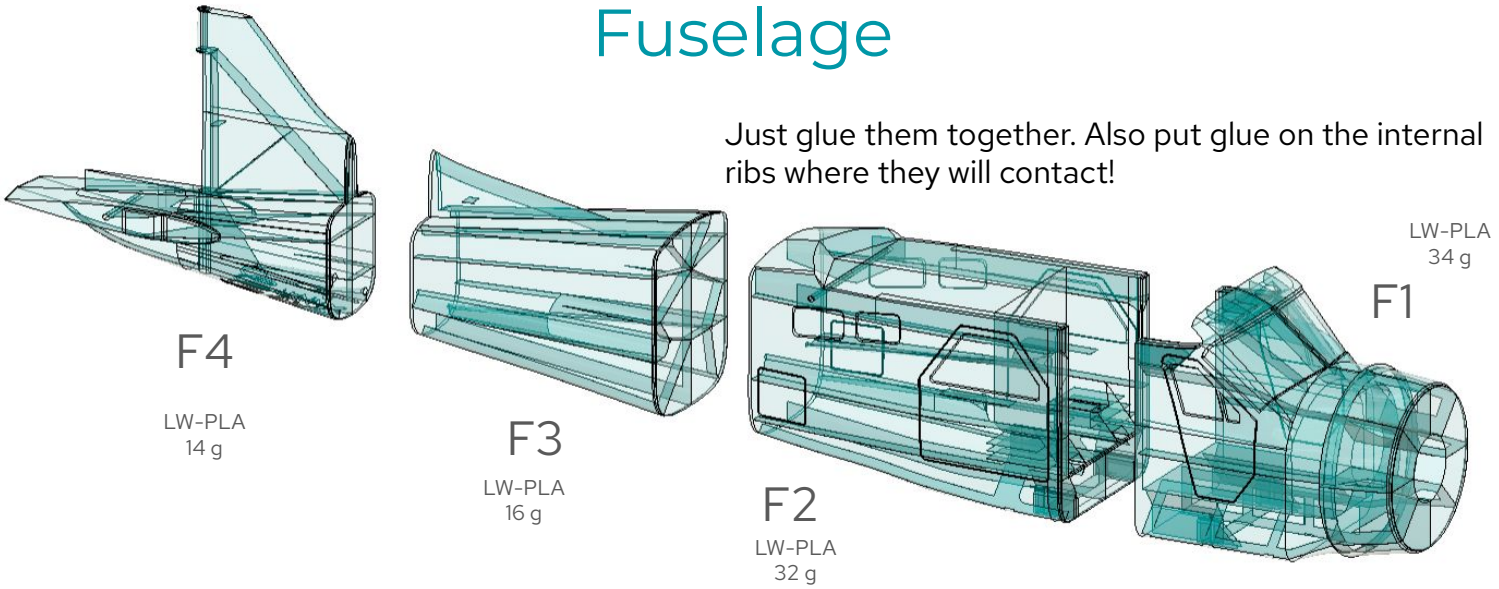
Easy to assemble; parts slide into each other. These joints must be glued, and glue must also be applied to the internal ribs where the ribs contact each other.

You will need **medium CA glue + activator** and a **hobby knife**.

Before gluing parts together, always dry-fit them first. They usually fit well, but sometimes you need to scrape lightly with a hobby knife or trim a small plastic remnant from printing.

Fuselage

Just glue them together. Also put glue on the internal ribs where they will contact!



F4

LW-PLA
14 g

F3

LW-PLA
16 g

F2

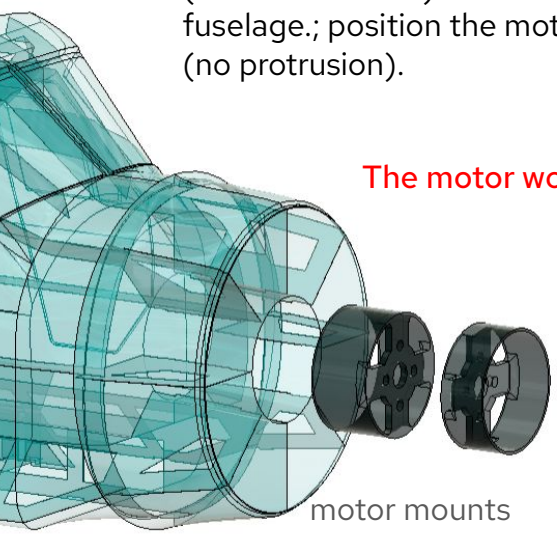
LW-PLA
32 g

F1

LW-PLA
34 g

Glue motor mounts together, then screw on the motor (use 2836 motor). Afterward, glue assembly into fuselage.; position the motor mount edge flush with F1 (no protrusion).

The motor won't stand straight in it. This is intentional!



motor mounts

PETG
7 g

radial engine (dummy)

PLA
13 g

F0

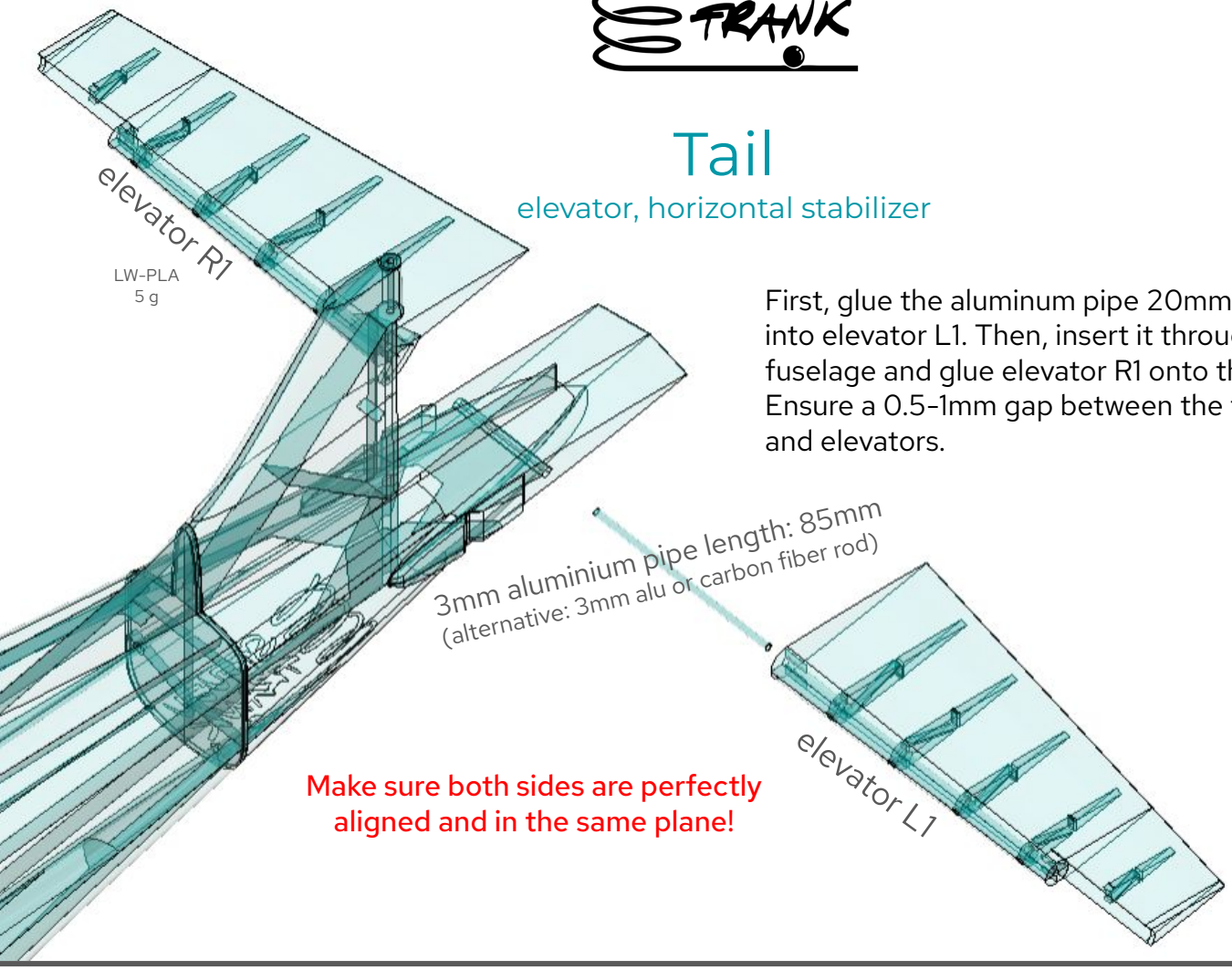
LW-PLA
2 g

After gluing in the motor, you can attach the radial engine. Optionally, you can glue in 1.5mm wires for more realism, along with black cables.

Once the radial engine is attached to the fuselage, you can complete the fuselage by gluing on F0 too.

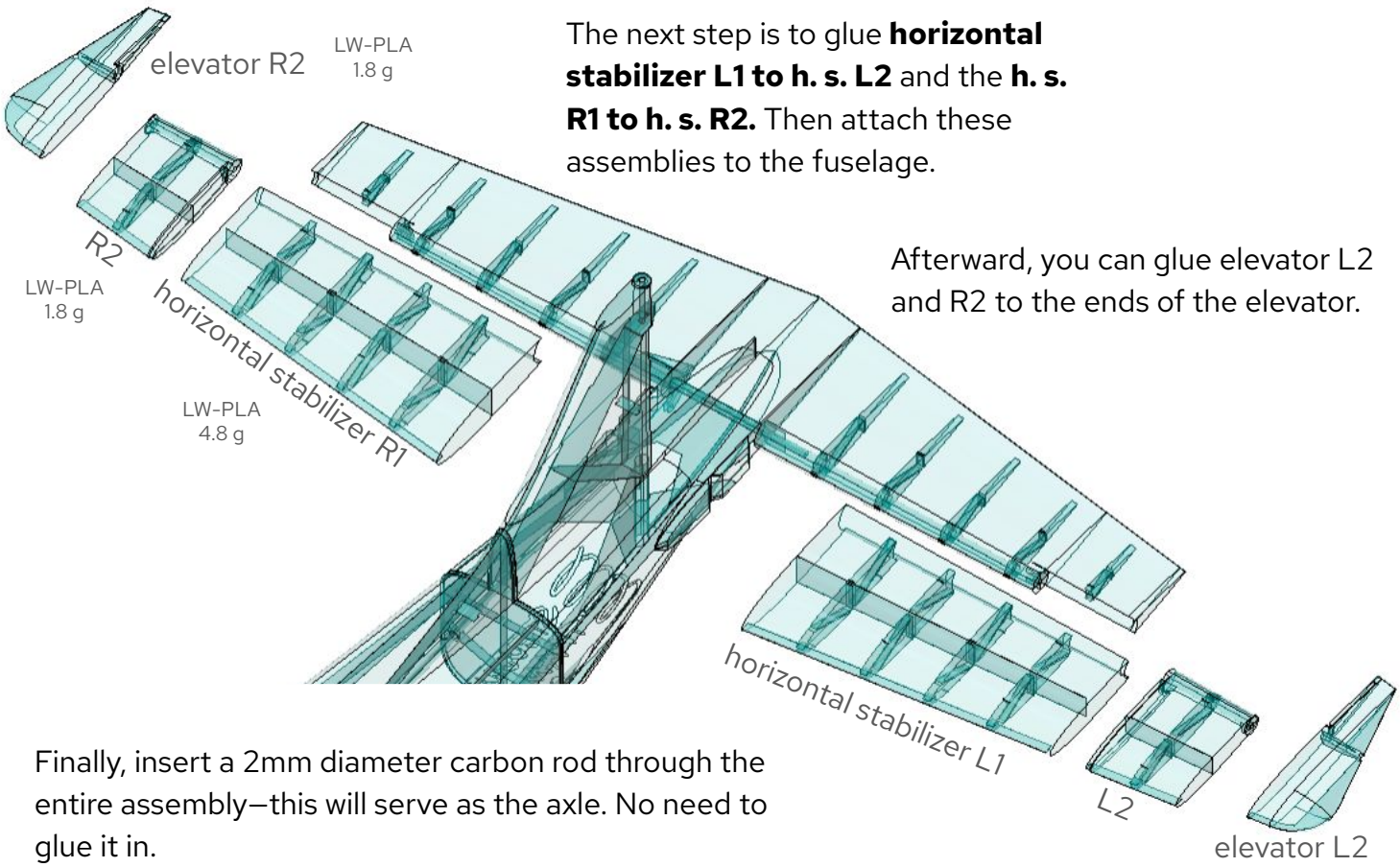
Tail

elevator, horizontal stabilizer



First, glue the aluminum pipe 20mm deep into elevator L1. Then, insert it through the fuselage and glue elevator R1 onto the pipe. Ensure a 0.5-1mm gap between the fuselage and elevators.

Make sure both sides are perfectly aligned and in the same plane!



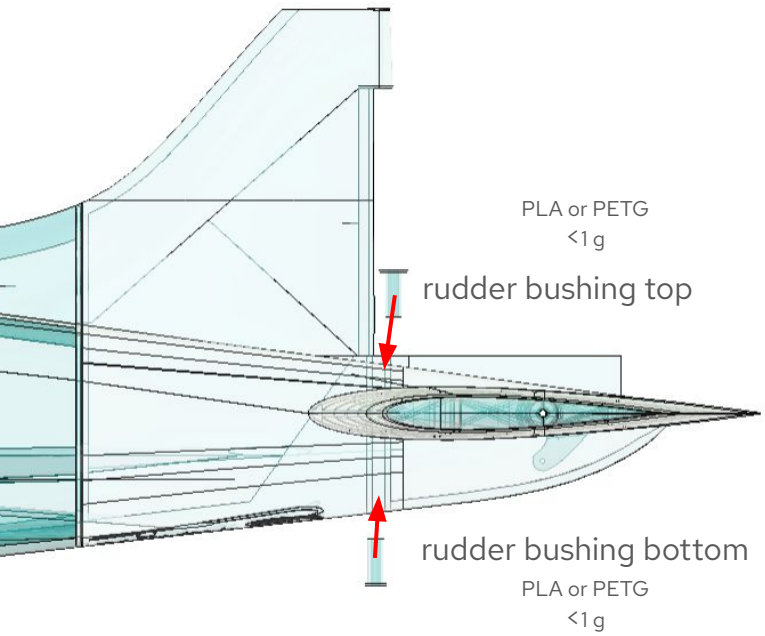
The next step is to glue **horizontal stabilizer L1 to h. s. L2** and the **h. s. R1 to h. s. R2.** Then attach these assemblies to the fuselage.

Afterward, you can glue elevator L2 and R2 to the ends of the elevator.

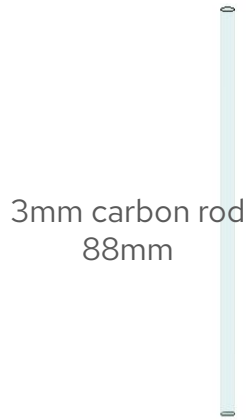
Finally, insert a 2mm diameter carbon rod through the entire assembly—this will serve as the axle. No need to glue it in.

Tail

tailwheel, rudder



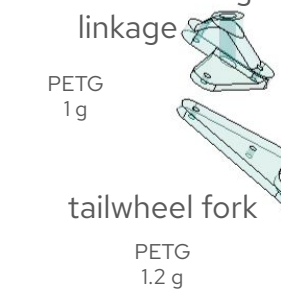
Glue these two bushings in the fuselage.

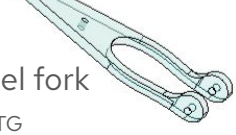


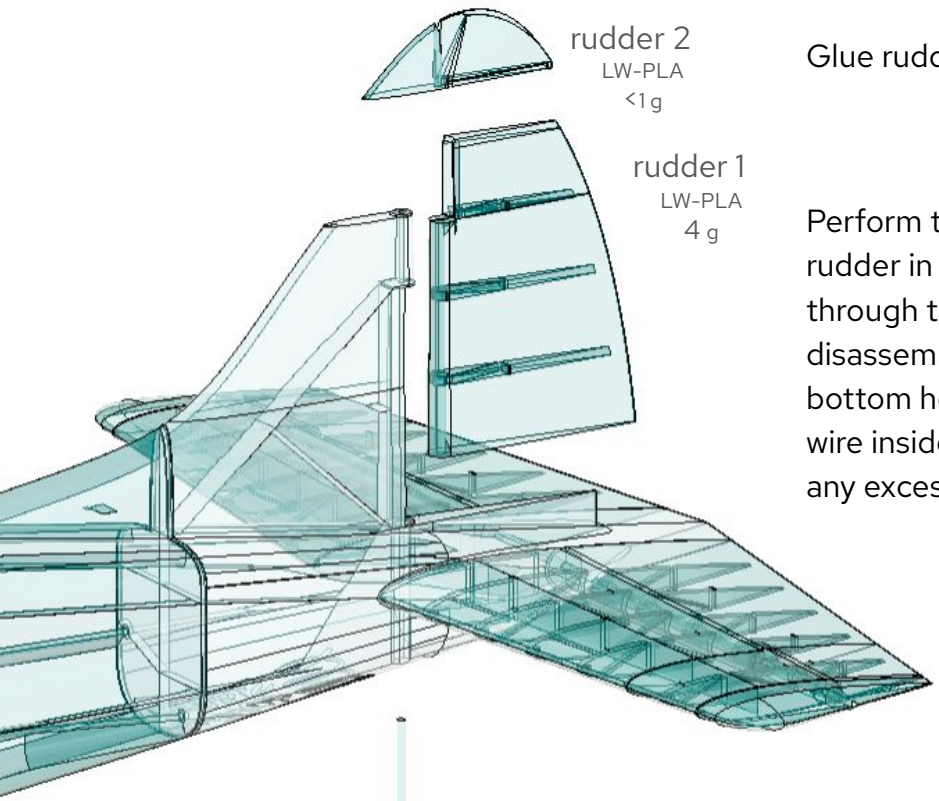
Glue the 3mm carbon rod to the tailwheel steering linkage, flush with the bottom.

Slip the tailwheel tyre onto the tailwheel rim, and insert a 1.5mm wire into the tailwheel fork as the axis for the tailwheel.

Lastly screw on the tailwheel fork with M2 woodscrews.

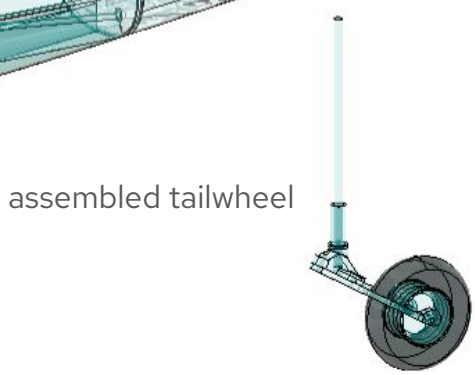






Glue rudder 1 and rudder 2 together.

Perform the next step carefully. First, dry-fit the rudder in place and insert the assembled tailwheel through the fuselage into the rudder. If it fits well, disassemble and apply glue to the rudder's bottom hole without letting it flow back—use a wire inside the hole to spread it evenly. Wipe off any excess glue.



Next, position the rudder to its place and insert the assembled tailwheel through the fuselage into the rudder. Leave a small gap for free rotation.

Ensure the rudder and tailwheel are perfectly aligned, when you glue it!!!

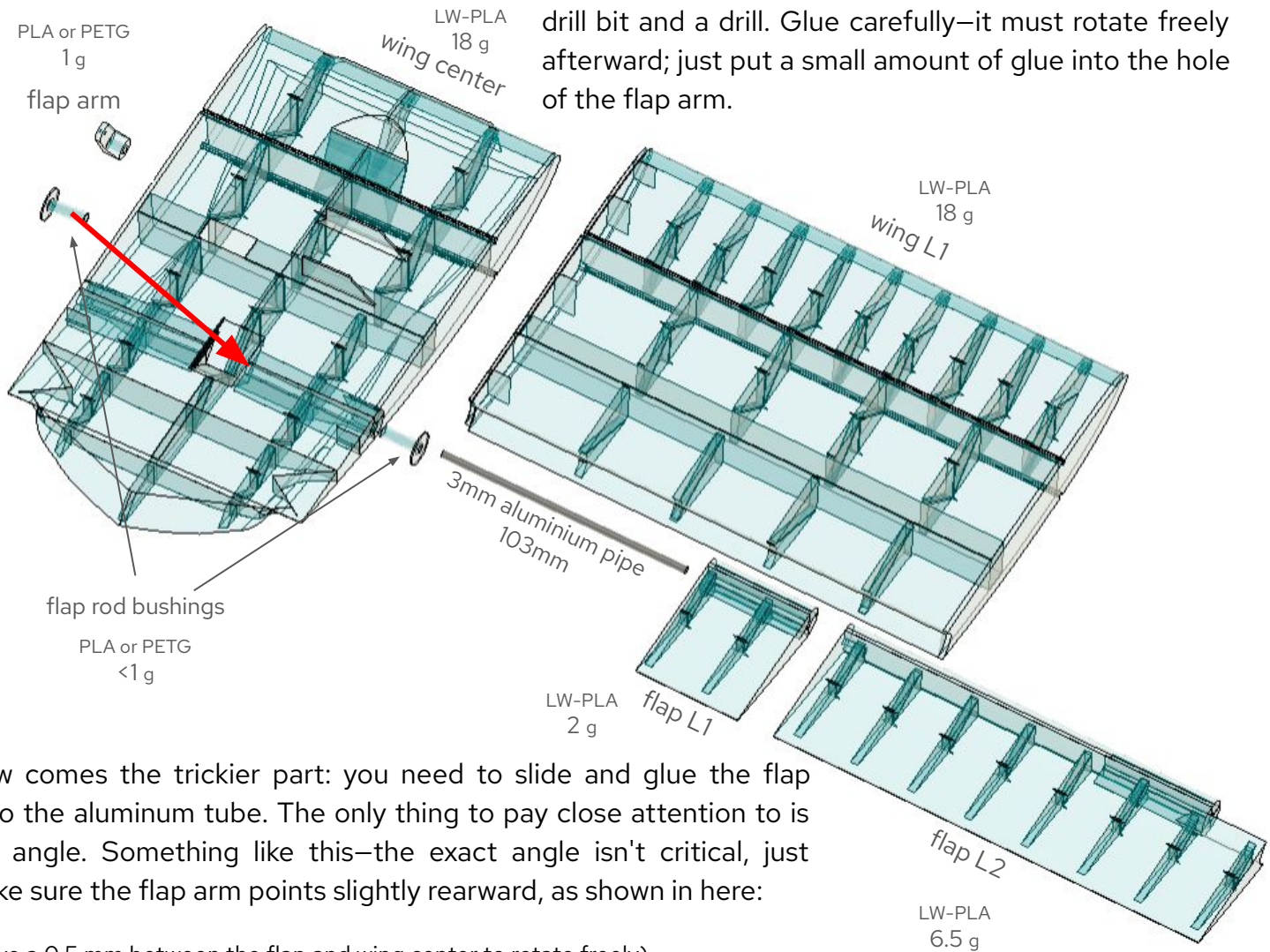
Lastly, insert a 2 mm diameter carbon rod through the top of the rudder. No need to glue it in.

Wing

First, check the holes of the flap rod bushings, use 3mm drill bit if they are too tight. Then glue in the flap rod bushings into the wing center; a small amount of glue is enough just at their base. Pay attention to them because they are not symmetrical—they are slightly angled—so rotate them until they align flush with the edge of the hole.

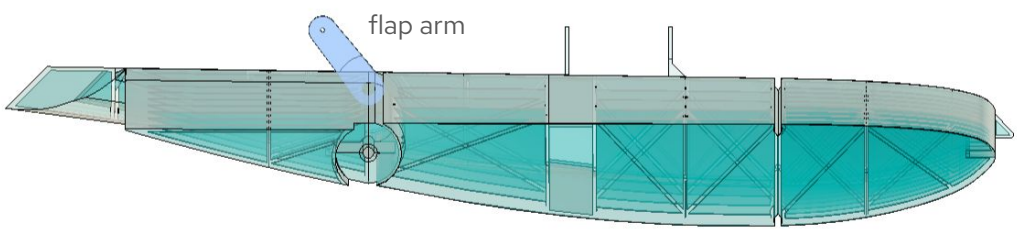
Next, glue together the wing center and the wing L1. And flap L1 and flap L2 (you can use a 3mm rod to align the holes, but don't glue that rod in).

Next, insert the 3 mm aluminum tube and glue the flap arm to its end. Do a dry fit first, if it can't fit use a 3mm drill bit and a drill. Glue carefully—it must rotate freely afterward; just put a small amount of glue into the hole of the flap arm.



Now comes the trickier part: you need to slide and glue the flap onto the aluminum tube. The only thing to pay close attention to is the angle. Something like this—the exact angle isn't critical, just make sure the flap arm points slightly rearward, as shown in here:

(leave a 0.5 mm between the flap and wing center to rotate freely)

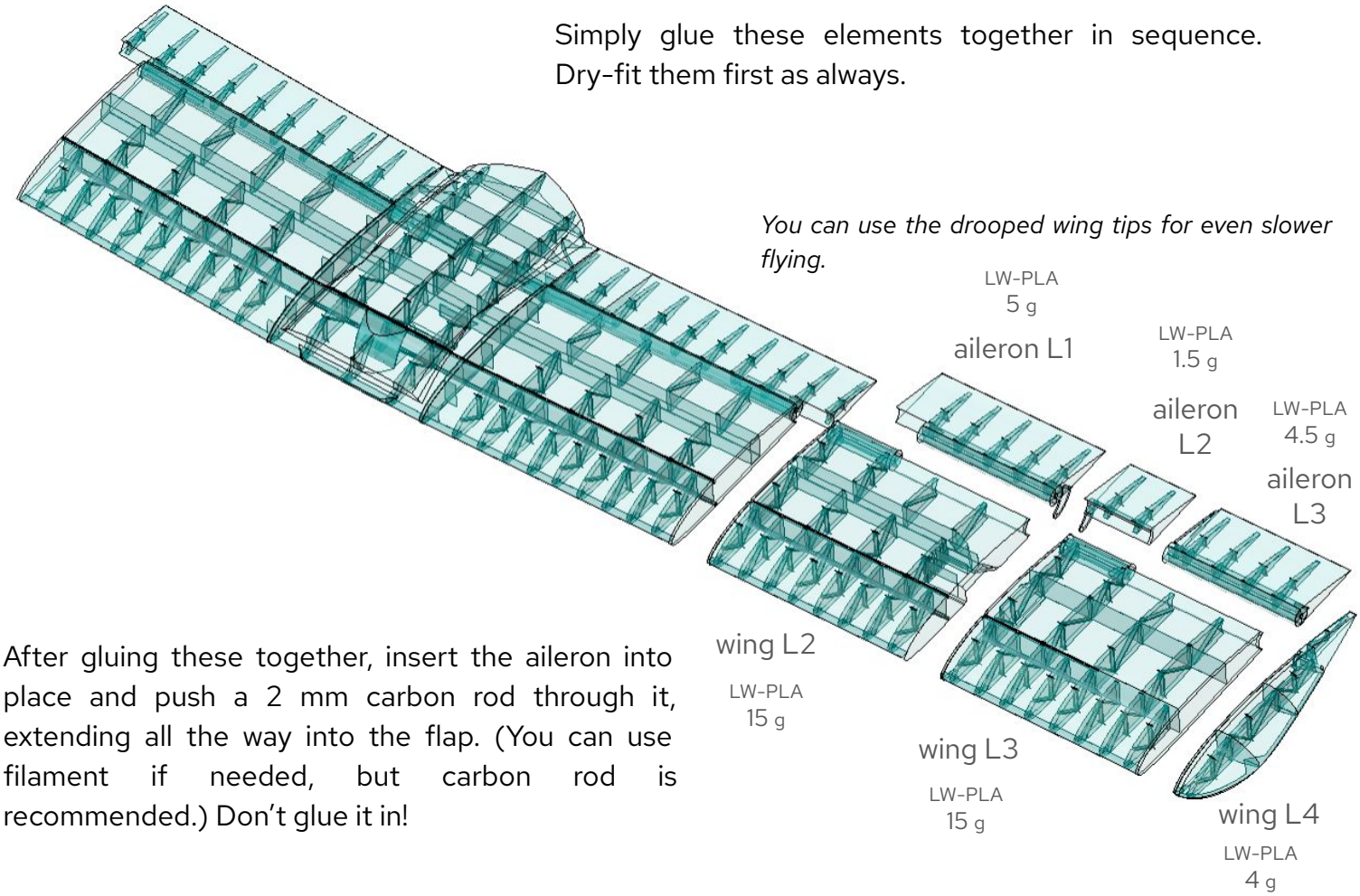


Repeat the same on the right side of the wing as well.

Wing

Simply glue these elements together in sequence. Dry-fit them first as always.

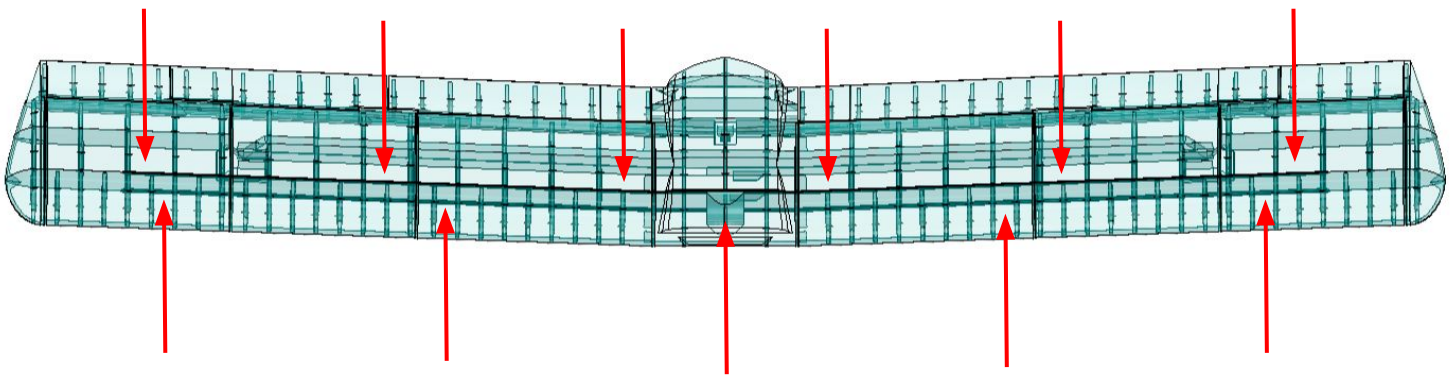
You can use the drooped wing tips for even slower flying.



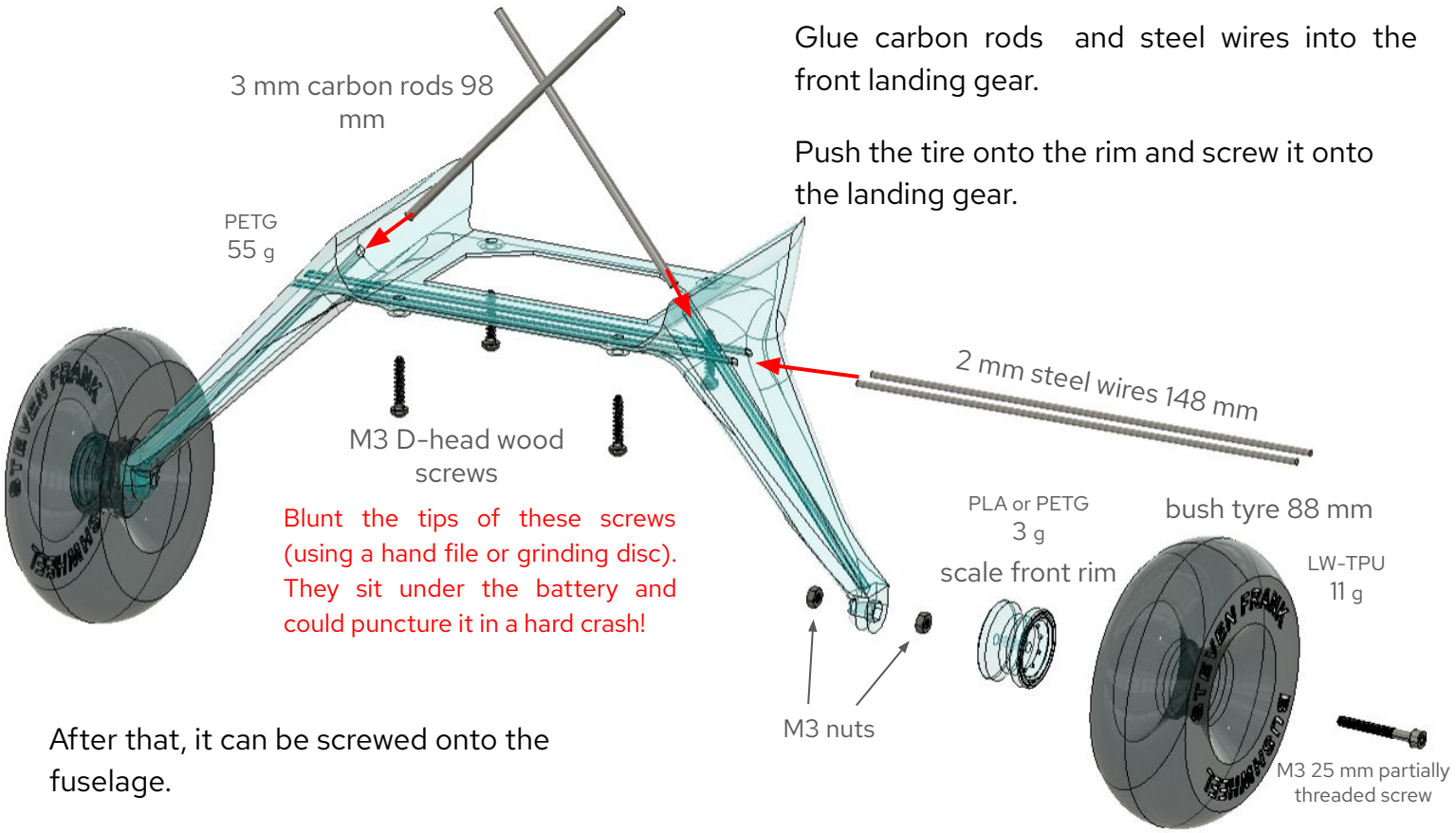
After gluing these together, insert the aileron into place and push a 2 mm carbon rod through it, extending all the way into the flap. (You can use filament if needed, but carbon rod is recommended.) Don't glue it in!

Repeat the same on the right side of the wing as well.

Very important step! Push 1.5 mm carbon rod (1 meter long) into the grooves on the wing, both bottom and top. And glue it in with thin CA glue! This provides wing rigidity. (Optionally, 1.5 or 1.6 mm steel wire can be used with the same result, but it adds 20 grams—carbon rod recommended!)



Landing gear

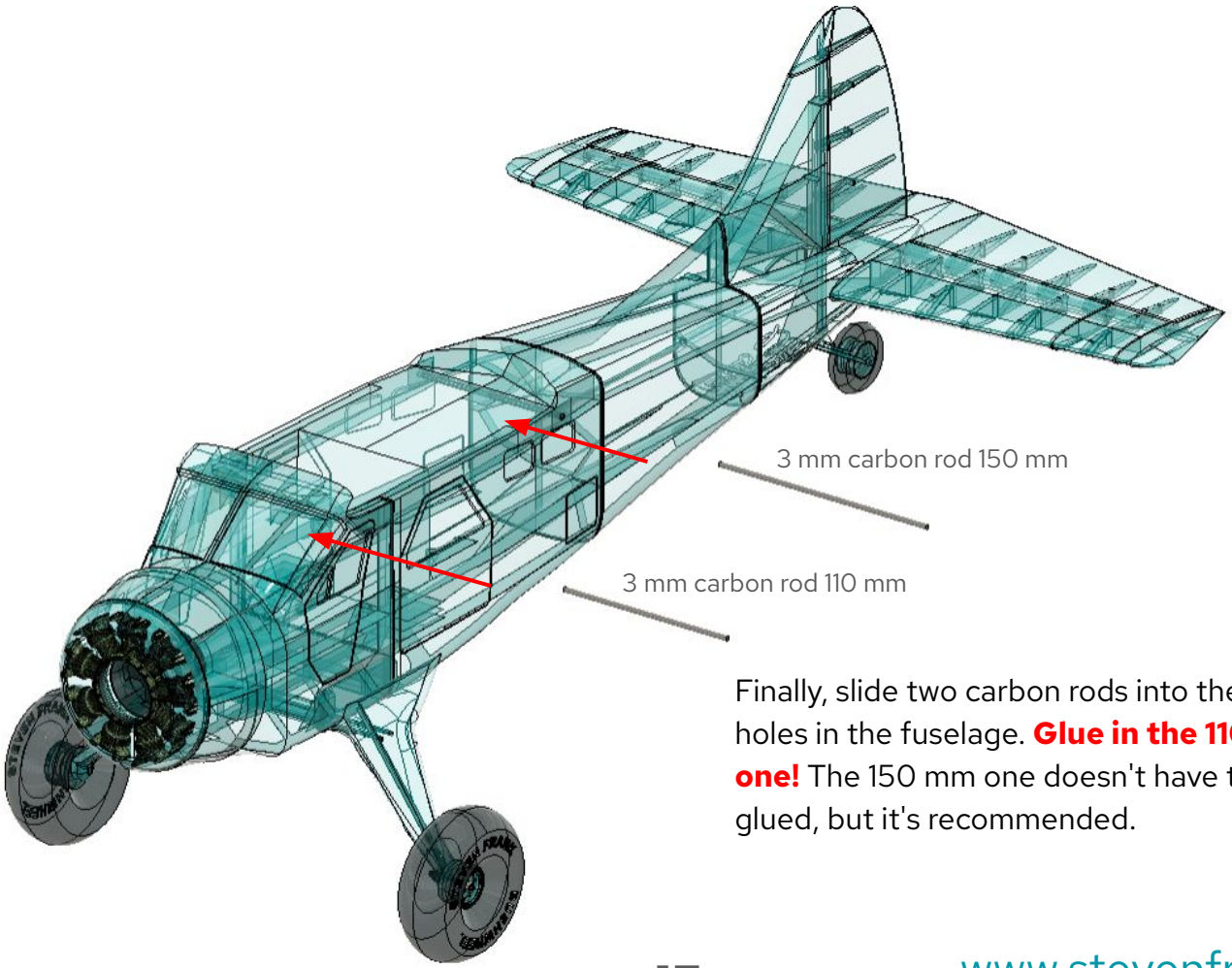


Glue carbon rods and steel wires into the front landing gear.

Push the tire onto the rim and screw it onto the landing gear.

Blunt the tips of these screws (using a hand file or grinding disc). They sit under the battery and could puncture it in a hard crash!

After that, it can be screwed onto the fuselage.



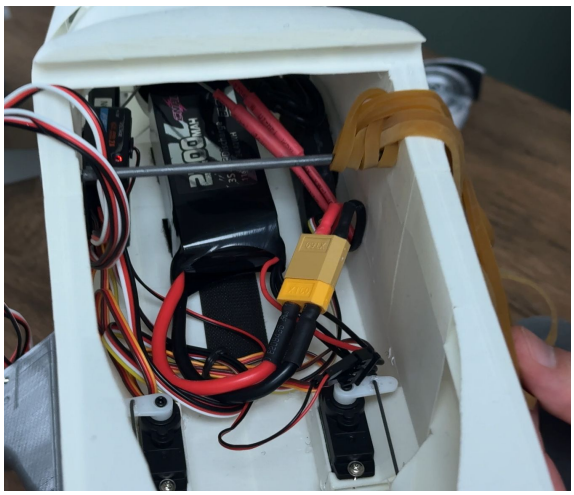
Finally, slide two carbon rods into these two holes in the fuselage. **Glue in the 110 mm one!** The 150 mm one doesn't have to be glued, but it's recommended.

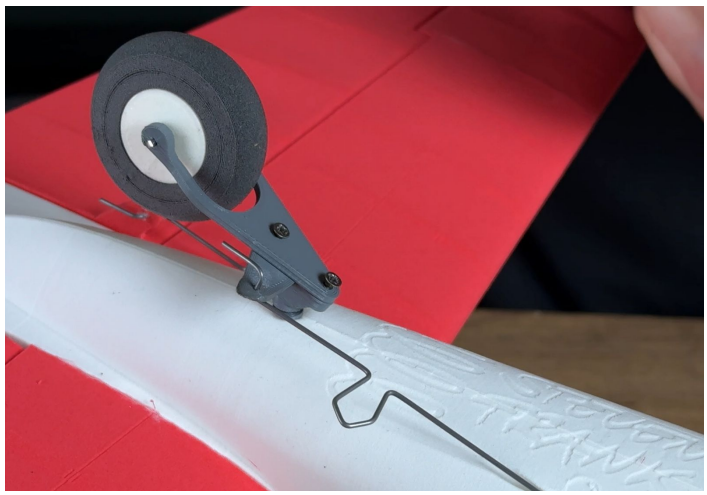
Electronics

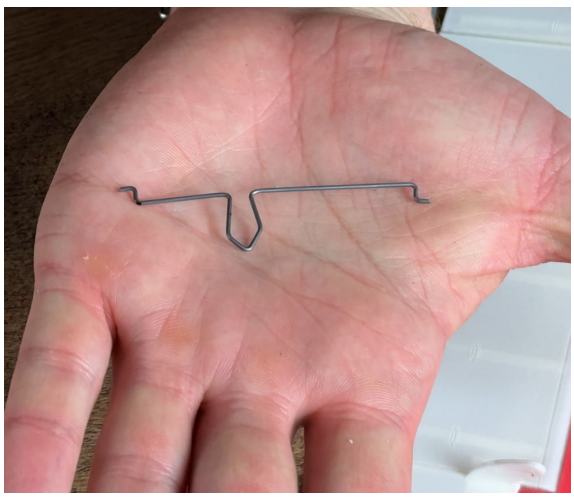
Mount the ESC (30A with at least 3A BEC) forward in the fuselage. Use Velcro or zip ties for secure fit. Connect motor wires.

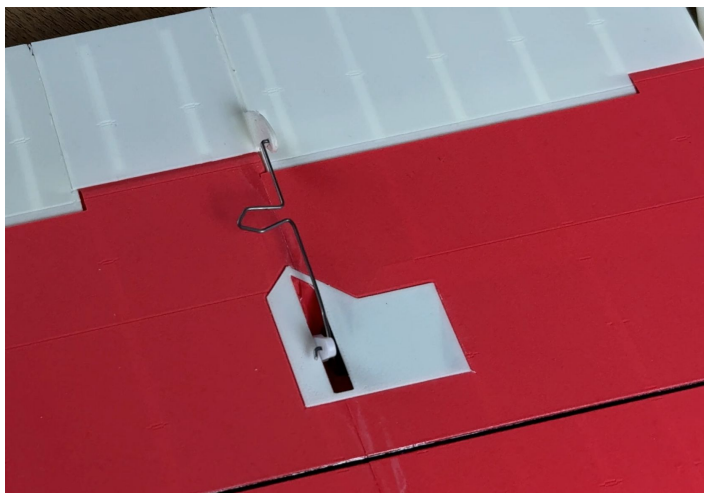
Secure two 9g servos in the fuselage. You will need three 9g servos in the wing; use servo cable extenders for the two aileron servos. Glue the wing servos into their pockets. (You can connect servos to control surfaces in many ways. I mostly use 1.5 mm carbon rods, gluing 1.2 mm steel wires with Z-bends to the ends. Wrap them with thread and add glue for a very strong bond.)

Some picture about them:









You can use any transmitter and receiver. For beginners, a reliable and affordable option is the Flysky i6X. (The plane is very easy to fly and control, but it's **highly recommended** to practice in a simulator first if you haven't flown before. Recommended free simulator: **PicaSim**, it works with Flysky i6X transmitter and its USB cable.)

Recommended Throws

(Feel free to experiment with other settings. It's worth setting up dual rates. High rates for harper, more responsive controls for aerobatics and advanced maneuvers. Low rates for gentler, forgiving controls for beginners, takeoffs, landings, and calm flying.)

Ailerons

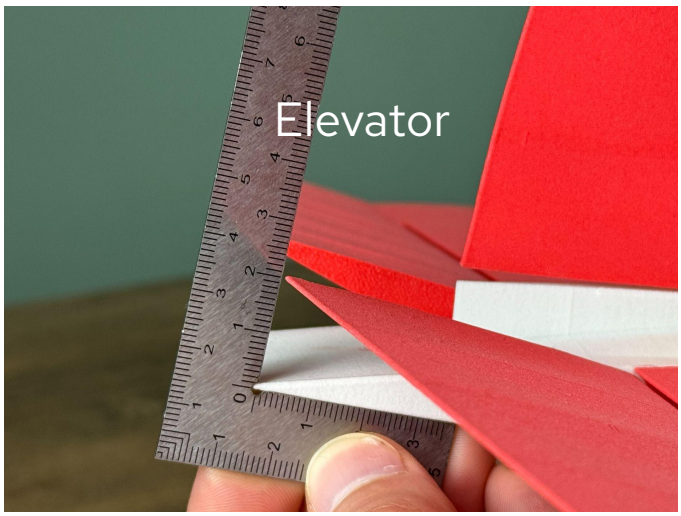
High Rate: 12 mm down, 20 mm up (20% expo)
Low Rate: 60% (30% expo)

Elevator

High Rate: 15 mm down. 20 mm up (30% expo)
Low Rate: 60% (40% expo)

Rudder

High Rate: 30-30 mm (20% expo)
Low Rate: 70% (30% expo)



Flaps and flaperons. Like the real Beaver.

Control flaps with a 3-position switch—no flaps, flaps, flaps + flaperons. (To set flaperons, mix aileron and flap channels.)

Flaps: 45 degree

Flaps: 45 degree **Flaperons:** both aileron go down to -10 mm

~20% down-elevator mix is also recommended.

Flaps cause pitch-up moment. You can add down-elevator mix to counter the pitch. Flaps and flaperons increase lift and drag, avoid full flaps at high speed.

Test the flaps and flaperons gradually, first set them to 30 degree.

Avoid low speed steep turns with flaps!

Before maiden flight

Pre-Flight Checks:

Always CHECK the center of gravity and all control surfaces move the right direction!

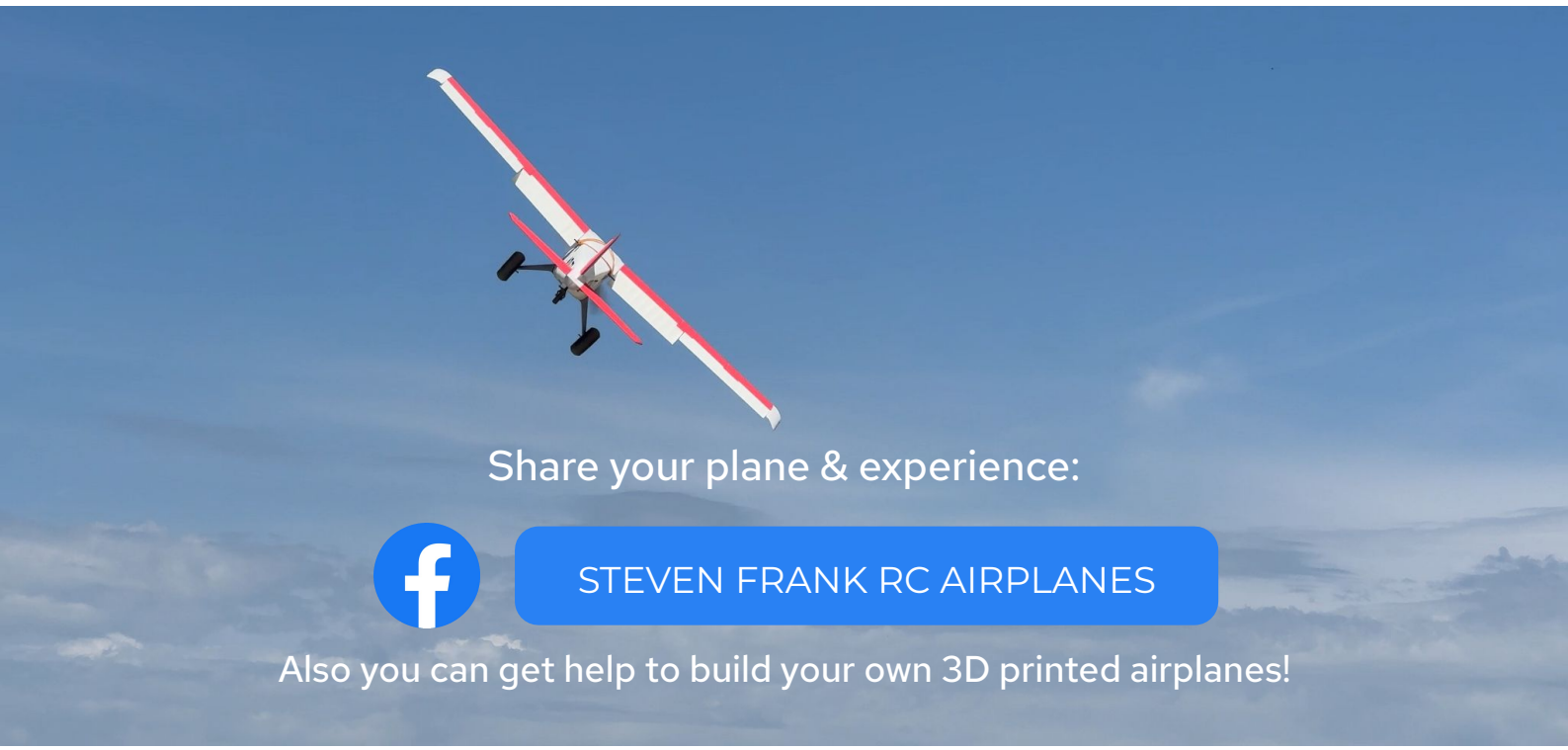
The recommended CG is 50 mm from the leading edge.

Before each flight session, check that the motor mounting screws are tight.

(Also it's recommended to balance your props.)

Avoid running full throttle for extended periods.

(Check the motor temperature between battery changes, particularly in hot weather.)



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Thank you!