Hobby
CRAYCLE
www.craycle.com

CraycleCub

General Specifications

Length	: 510 mm	20 inches
Wingspan	: 800 mm	31.5 inches
Print Weight	: 253 g	8.9 oz.
Flying Weight	: 440 g	18.3 oz.
Wing Area	: 9.16 dm2	
Wing Loading	: 48 g/dm2	
Airfoil	: USA 35B	

Recommended Setup

Motor	: 2204/5/6 1500/2500 kv
Propeller	: 5/6/7" - 2/3/4 Blade
ESC	: 15-30A
Servo	: 4 X 9 g
Battery	: 2s-4s 850-2200 mAh

4+ Channels Radio System
Analog/Digital FPV systems

Maker Skill
Pilot Skill

Min. Printer Size
180*180*180 mm
Filament
Regular PLA

Equipments

Necessary Equipments

· Minimum 4ch Radio System.
· 2205 2300Kv Motor.
· 30A ESC.
· 4pcs 9grams Servo.
· 1500mAh 3S Lipo.
· 6045 Propeller
· Medium CA Glue.
· Y cable for Aileron servos.
· 2 mm Self-Tapping Screws
· 2pcs 100, 2pcs 300, Ø1mm Pushrods.
· PLA - TPU - PetG Filaments.

Optional Equipments

· Adjustable Pushrod connectors.
· Strong Pliers to prepare landing gear.
· Z bend tool.
· Aileron Angle Meter
· Servo Tester.
· Servo Plug Connectors.
· Screw Driver set.
· Sprey Paint.
· Model stand.
· Lipo Alarm.
· Digital or Analog FPV System.

CG position
You can see the marked point under the wing.

Pushrods
You can use 1 mm steel wire.
Wings: 2 pcs 100 mm / **Tail:** 2 pcs 300 mm

Servo Horn Connection Holes –>
Ailerons: 4. hole / **Elevator:** 3. hole / **Rudder:** 3. hole

Flap Movements (X)
Ailerons: 12mm / **Elevator:** 10mm / **Rudder:** 10mm

Radio Settings for the Servos
Expos: 35%
Rates: 75%

1 2 3 4 5 6

X

Payload/Lipo Dimensions
50x36x150mm

150 mm

50 mm

36 mm
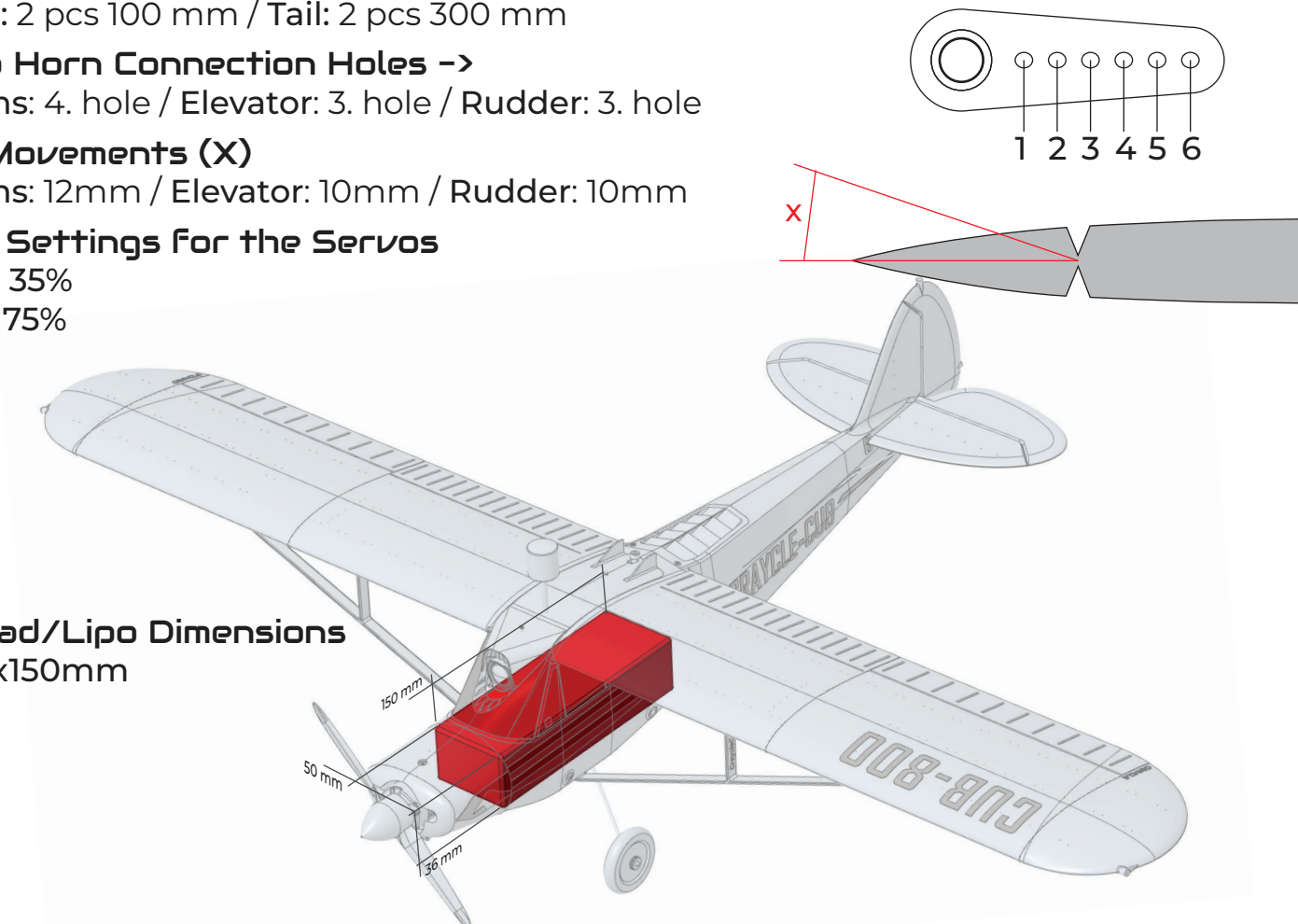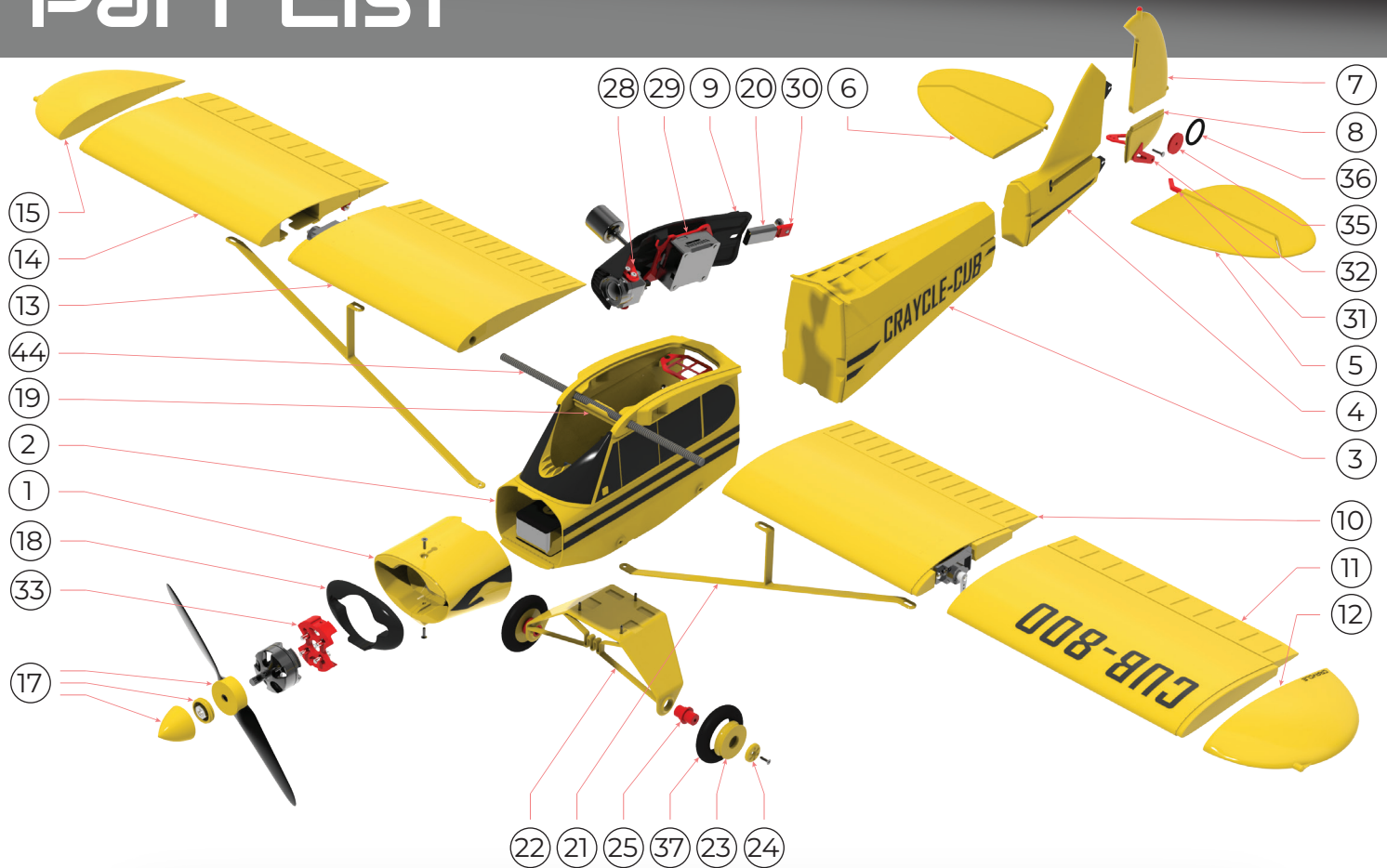
Part List

No	Quantity	Part Name	Weight (g)	No	Quantity	Part Name	Weight (g)
1	1	cubv2_fs1	28,9	23	2	craycle_3dlg_rim	2,9
2	1	cubv2_fs2	40,9	24	2	craycle_3dlg_stopper	1,3
3	1	cubv2_fs3	15,8	25	2	craycle_3dlg_shaft	0,5
4	1	cubv2_fs4	6,8	26	1	cubv2_fcmount	1,4
5	1	cubv2_elevator_l	7,3	27	1	cubv2_gpsmount	0,7
6	1	cubv2_elevator_r	7,3	28	1	craycle_fpv-cammount	0,7
7	1	cubv2_rudder_1	2,5	29	1	craycle_fpv-vtxmount	2,3
8	1	cubv2_rudder_2	0,9	30	1	craycle_springlock_catch	0,3
9	1	cubv2_hatch1	5,4	31	1	craycle_elevatorbar	0,4
10	1	cubv2_wing_l1	19,4	32	2	craycle_ruddergear	0,4
11	1	cubv2_wing_l2	21,8	33	1	craycle_motormount	2,4
12	1	cubv2_wing_l3	4,7	34	4	craycle_horn	1,2
13	1	cubv2_wing_r1	18,6	35	1	craycle_wheel20_rim	0,4
14	1	cubv2_wing_r2	21,4	36	1	craycle_wheel20_ring	0,3
15	1	cubv2_wing_r3	4,8	37	2	craycle_wheel40-55_ring	5,2
16	2	craycle_servohatch	2,5	38	9	craycle_hinge	1,6
17	1	craycle_spinner_5x25-cap-base-adaptor	2,3	39	1	Ø5x170 mm Carbon Fiber Rod	-
18	1	cubv2_nose	3,4	40	1	M3x8 mm Imbus Bolt	-
19	1	cubv2_fs_support	0,8	41	16	Ø2x8 mm Screw (Self-tapping)	-
20	1	craycle_springlock_body	0,5	42	2	Ø1x300 mm Pushrod Wire	-
21	2	cubv2_wingsupport	7,0	43	2	Ø1x150 mm Pushrod Wire	-
22	1	cubv2_lg_body	8,0	44			
				Total Printed Weight:	253		
				Yellow parts are unprinted parts.			

Assembly
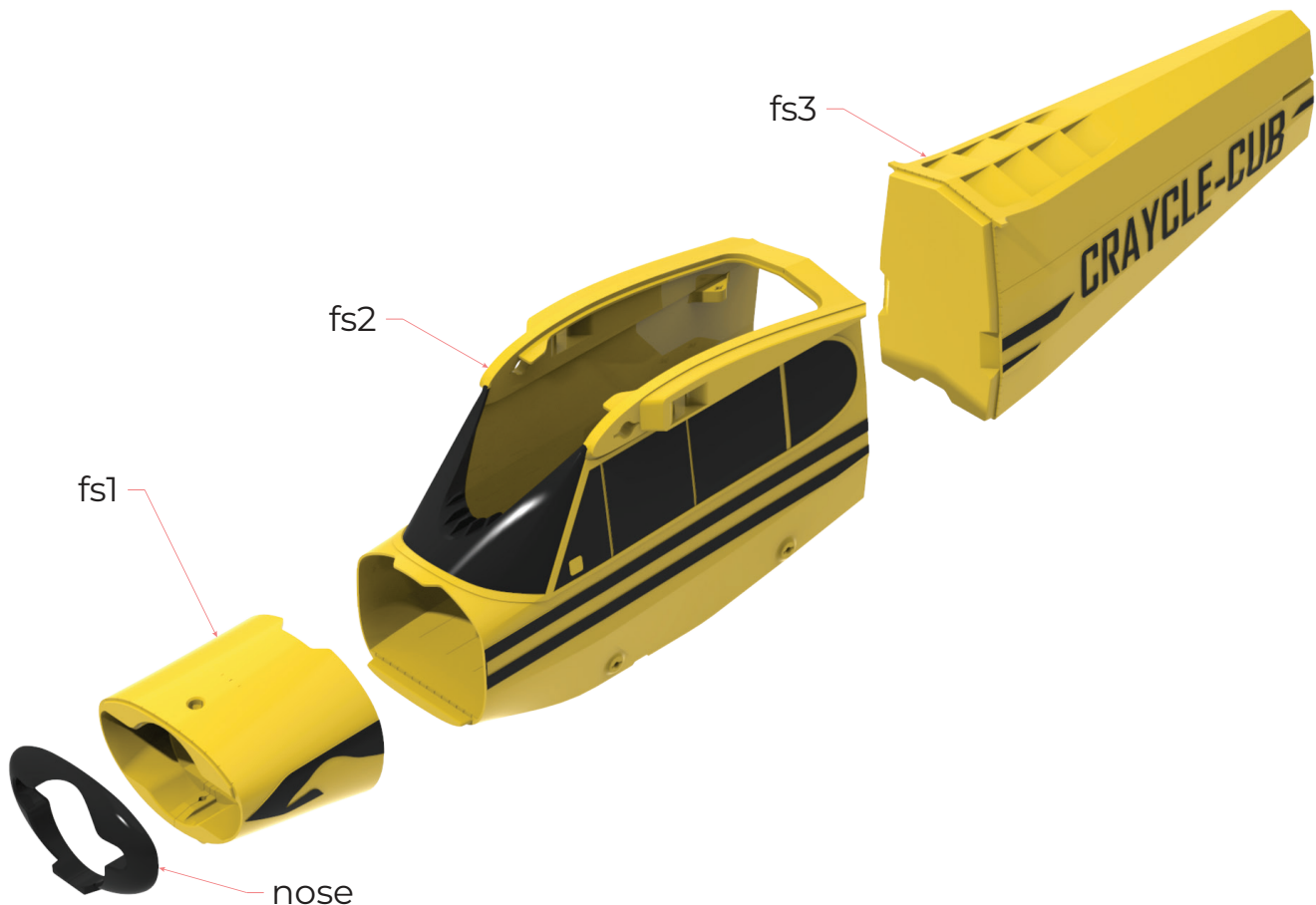
STEP 1

Glue the "lipo_mount" part to "fs2", then glue the "fs1-nose-fs2-fs3" parts together using CA glue. You can insert the "craycle_pim" parts into their slots on the fuselage parts to facilitate assembly.

Avoid spraying the accelerator directly onto the CA glue! Spray on first piece and wait for 15 seconds to dry it. Then you can aply glue on the other piece and put the pieces together.

Note: Avoid excessive use of glue.

Assembly

STEP 2

Glue the "fs4" - "elevator_r" - "elevator_l" parts together. Make sure that the elevators are 90 degrees to the rudder.

Carefully glue the "elevatorbar" part into the slot under the elevator parts. The elevator bar will distribute all the force to both sides.

It's okay there is a small gap between elevator_r and elevator_l. The elevator bar will handle the mechanism. Please avoid the excessive usage of glue.

Carefully use sprey accelerator on this step. Avoid spraying the hinge slots. This makes hinge installation difficult.

1

fs4

2
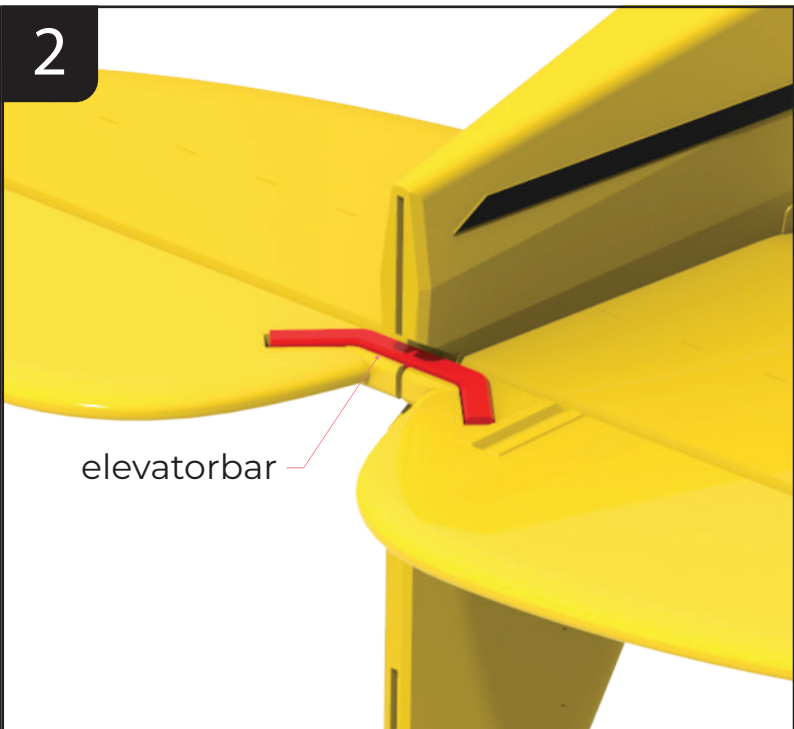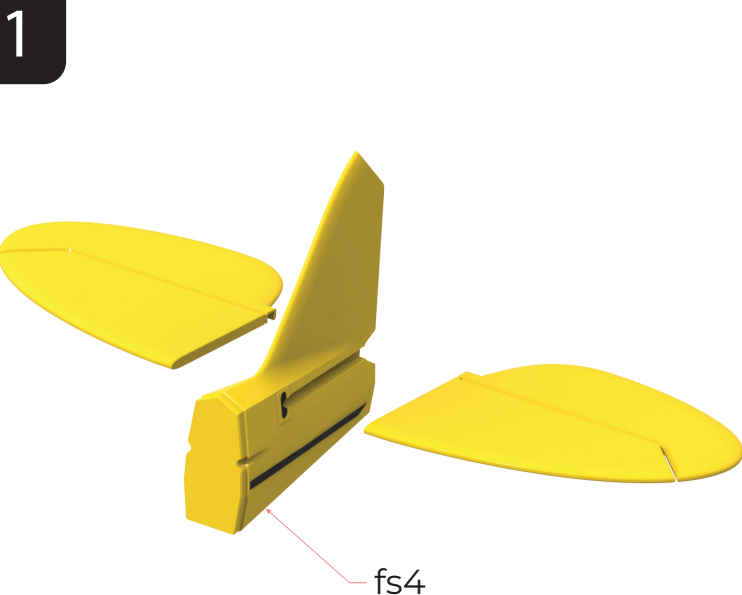
elevatorbar
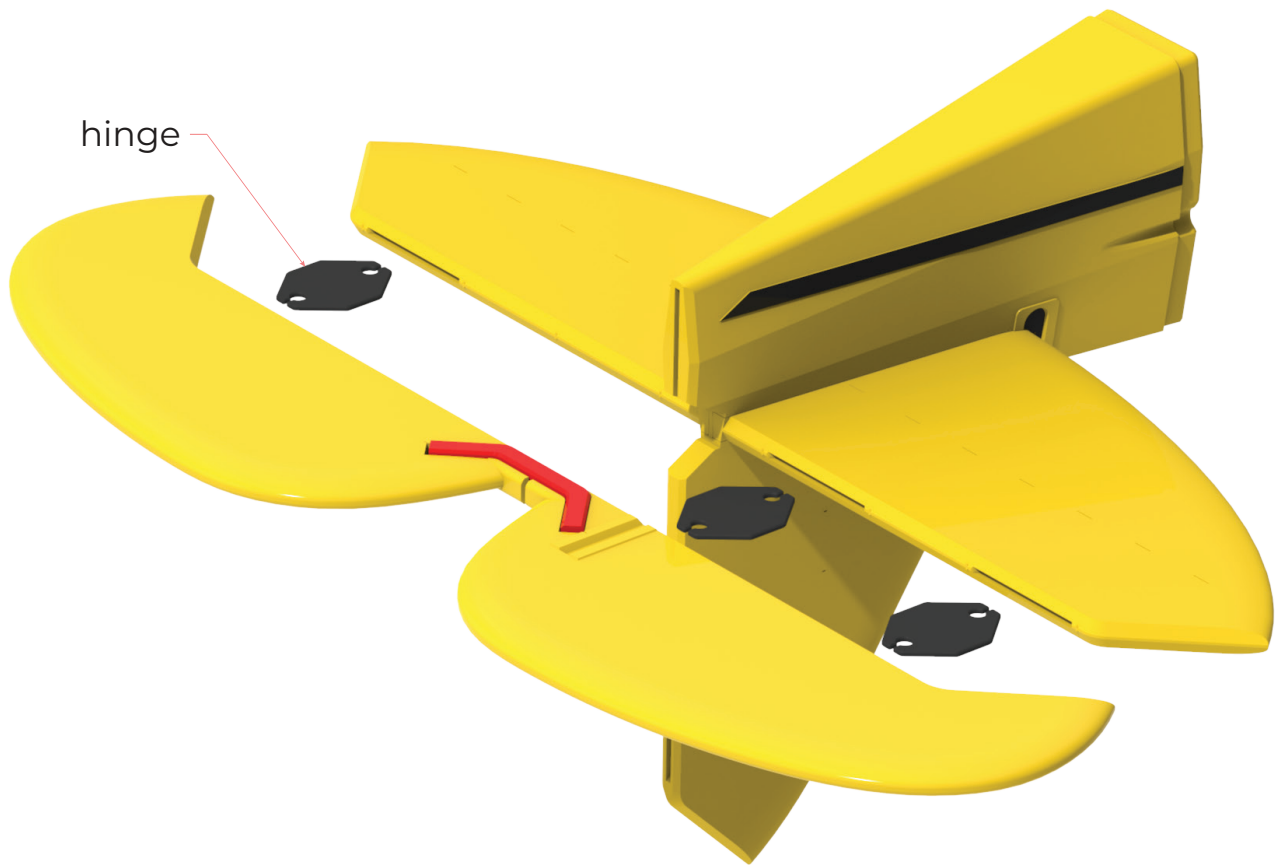
Assembly

hinge

STEP 3

Release the elevator flaps from the elevator by breaking it's tiny connections.

Reassemble and glue the flaps using TPU hinges or CA hinges that you prepared by using Hinge Maker Tool (Available on craycle.com).

Note: The CA accelerator sprayed to stick the elevator may have contaminated the hinge slots! Take your time, apply the glue onto the hinges one by one and insert into the slots on the flap first.
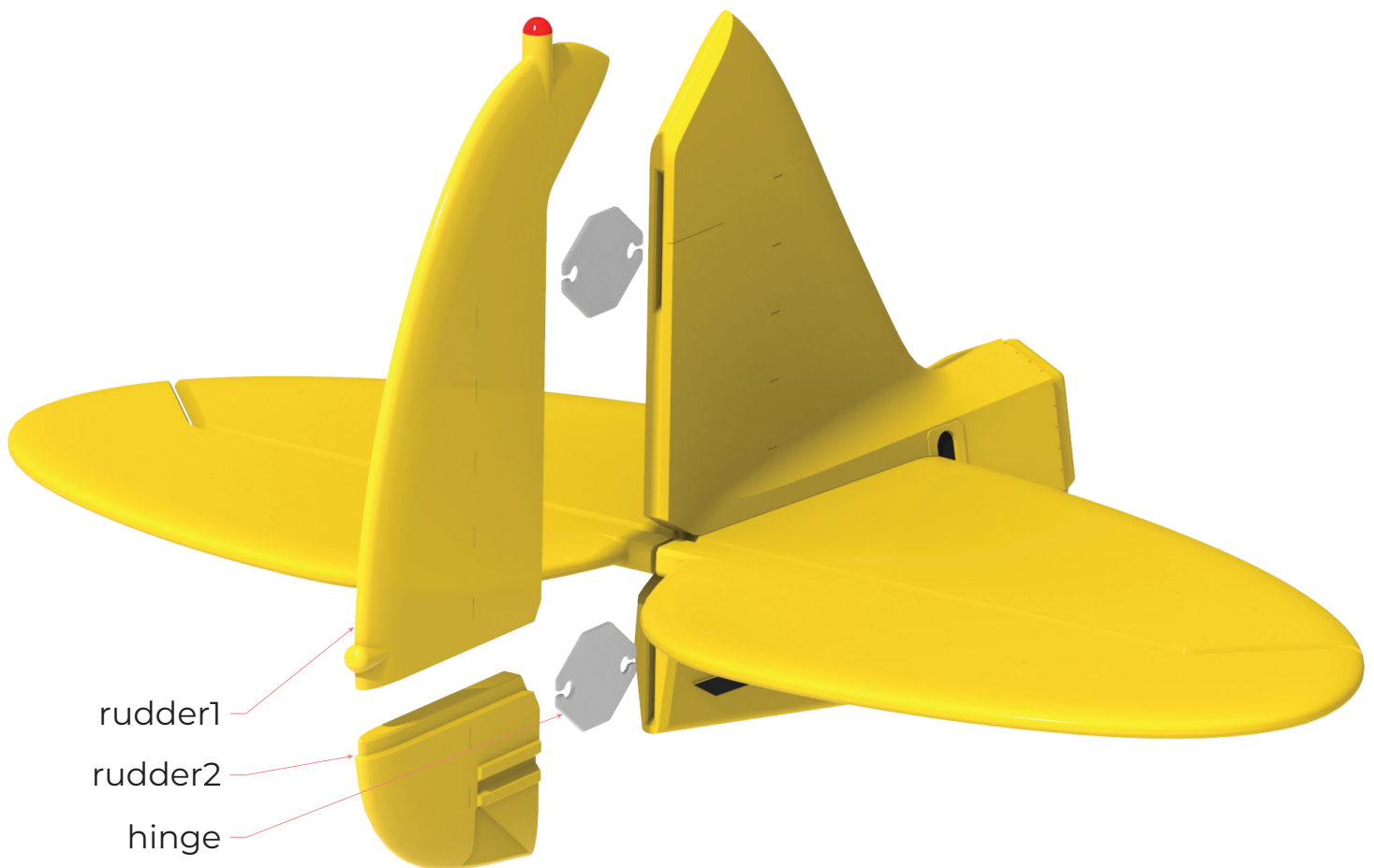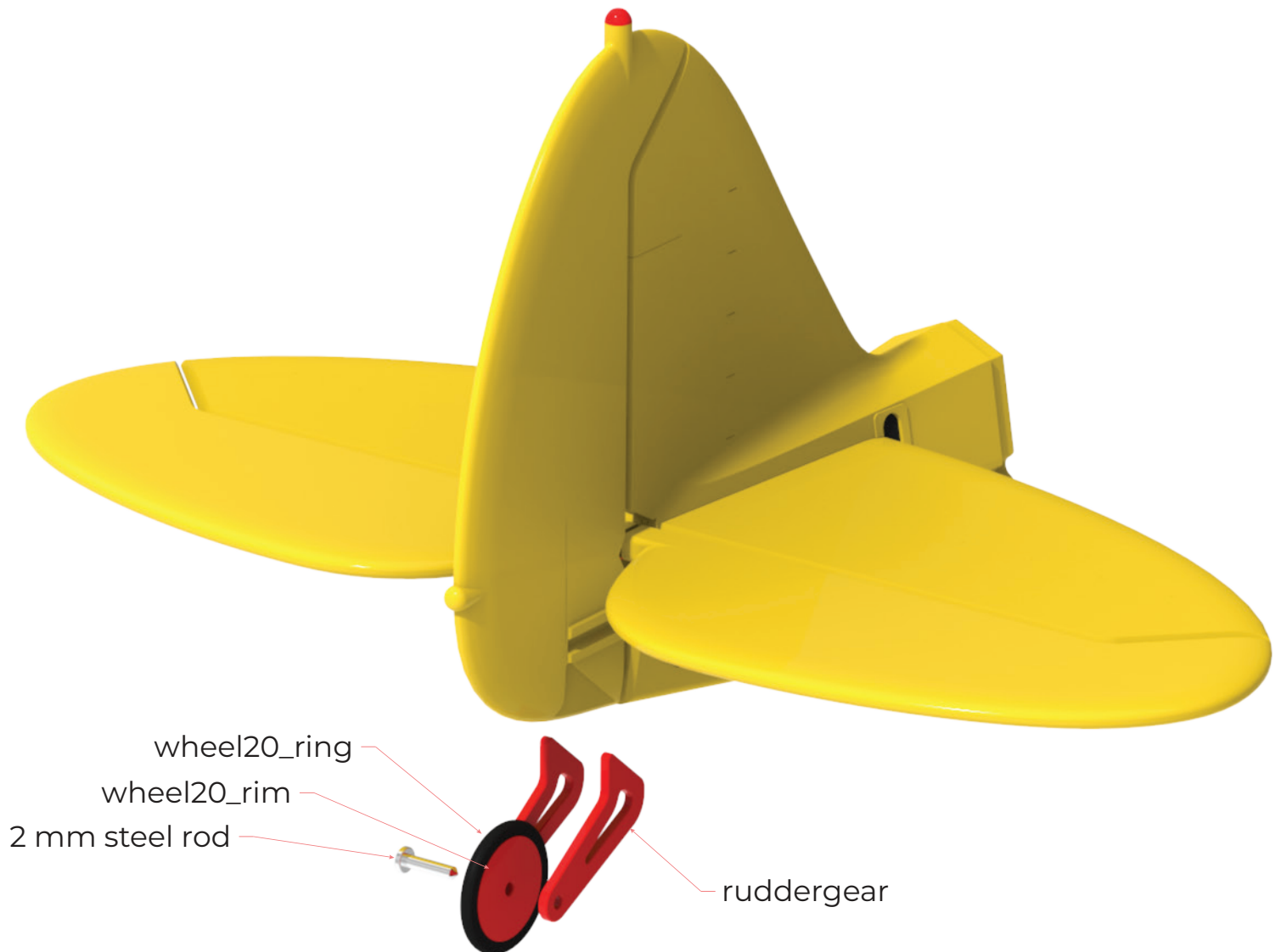
Assembly

STEP 4

Glue the "rudder1" and "rudder2" parts together by inserting "cub_pim".
Glue the rudder you prepared to the tail by inserting hinges into it's slots.

Note: The CA accelerator sprayed to stick the elevator may have contaminated the hinge slots! Take your time, apply the glue onto the hinges one by one and insert into the slots on the rudder first.

rudder1

rudder2

hinge

Assembly

wheel20_ring
wheel20_rim
2 mm steel rod
ruddergear

STEP 5

Clean the little "ruddergear" parts and glue them onto the slots on the rudder. Assemble the "wheel20_rim" and "wheel20_ring" parts to get the rear wheel.

Assemble the rear wheel to the rudder gear by using a 2 mm steel rod or something similar. Glue the steel rod carefully without applying glue to the wheel. You can apply some liquid oil to make the wheel turn easily.

That's it! You have a rear landing gear with the steering system.

Assembly

STEP 6

Release the aileron flaps from the "wing2" by breaking it's tiny connections and reassemble the aileron using CA hinces.
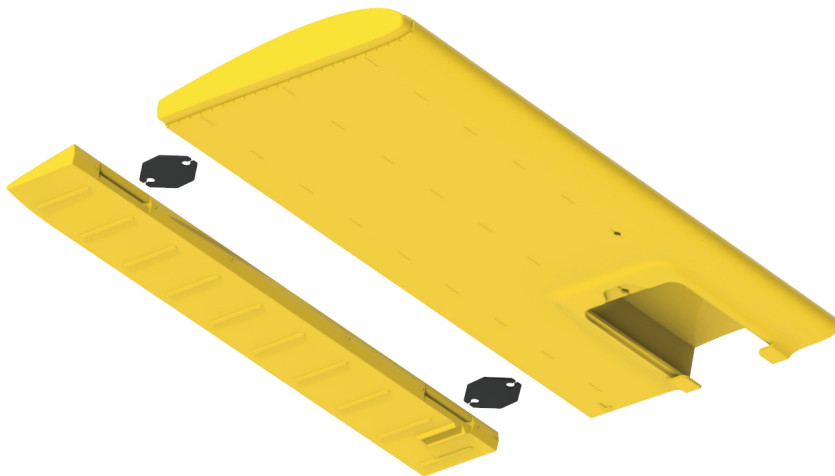
Take the servo as position as the same in the image below and screw onto the "wing1" part. Then you can glue the "wing1"-"wing2" and "wing3" parts together. Be careful not to apply glue to the servo and same process goes for the other side.

wing3

wing2

wing1

servohatch

Assembly

Ø5x170 CF Rod
fs_support
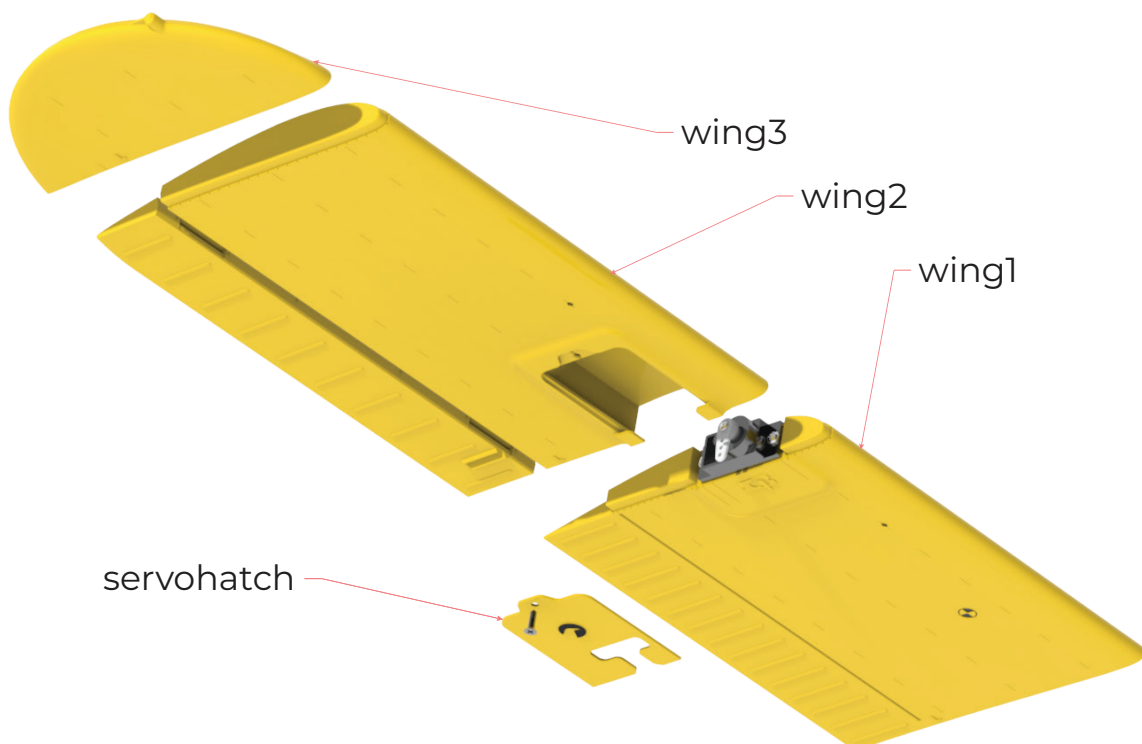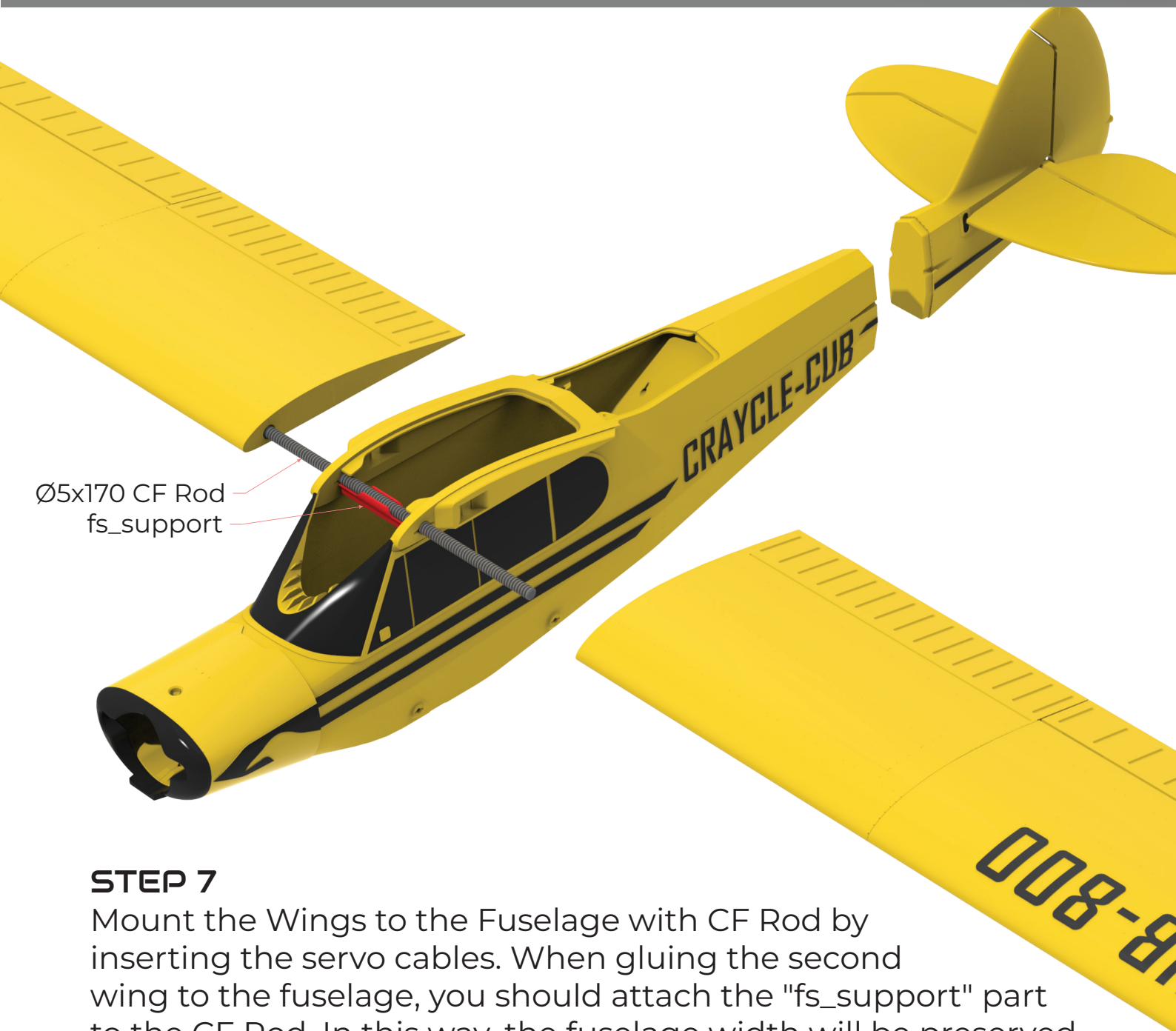
STEP 7

Mount the Wings to the Fuselage with CF Rod by inserting the servo cables. When gluing the second wing to the fuselage, you should attach the "fs_support" part to the CF Rod. In this way, the fuselage width will be preserved. The "fs_support" part should be glued to the fuselage to prevent the fuselage from stretching. Apply a minimum amount of adhesive to the CF Rod to be able to reuse it.

Stick the tail that you prepared to the fuselage by inserting it's slot to facilate assembly.
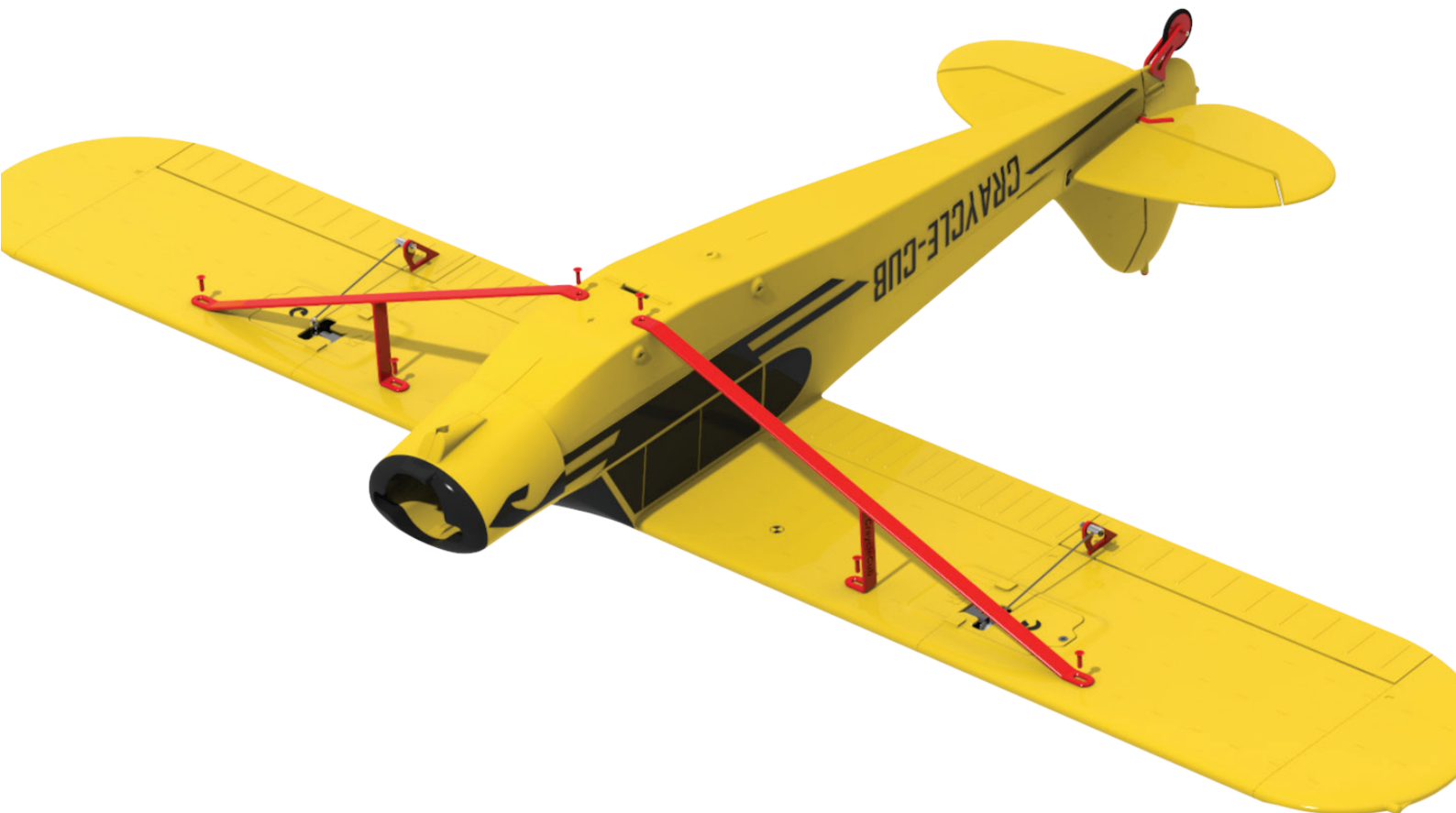
Assembly

STEP 8

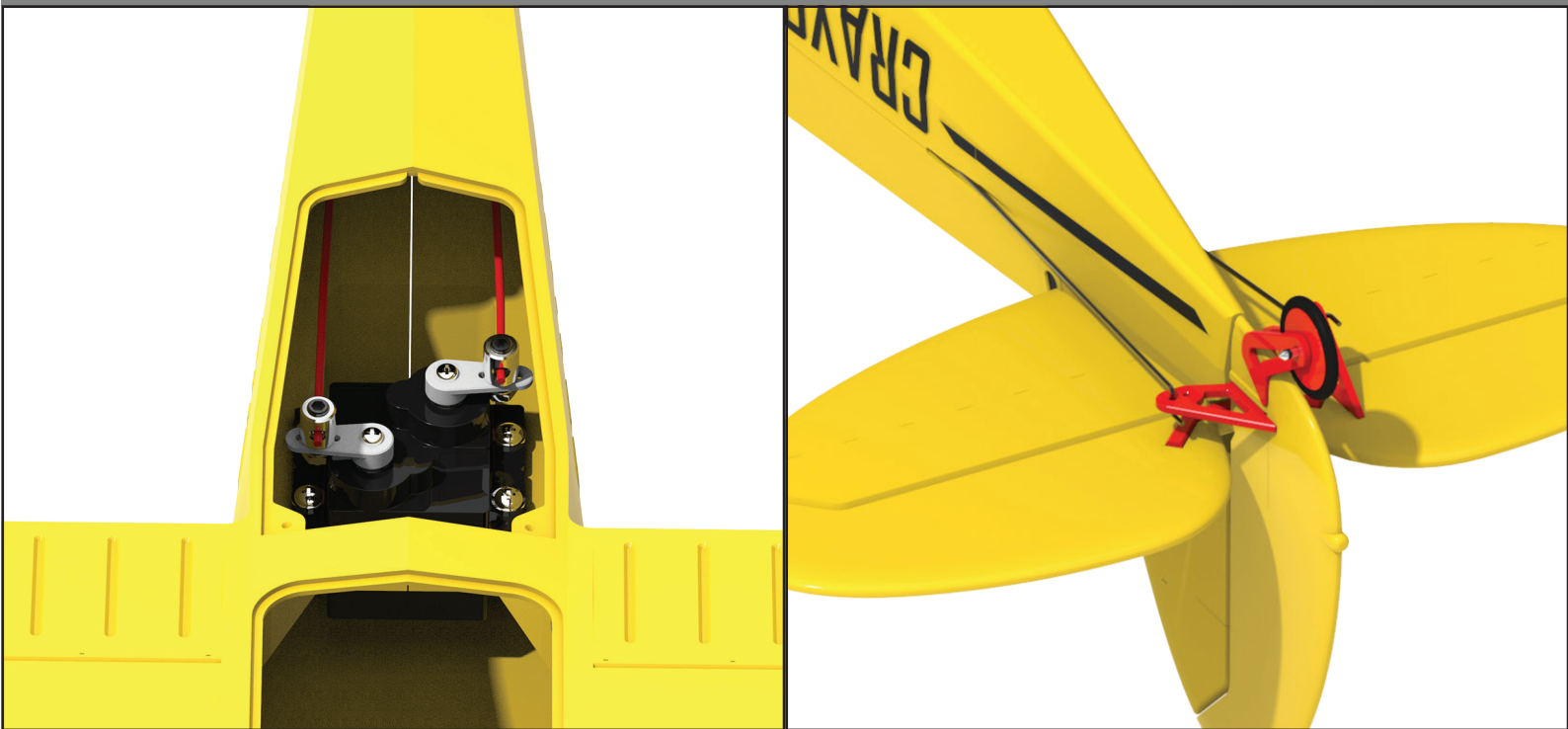In this step, take your time and do it right!

You need to be sure the wings are holded in a straight line (Hold the model upside down on the flat table).

Then you can screw the "wingsupport" part by using 2 mm screws (Servo mounting screws) into the holes on the wings and fuselage.

When assembly is complete, turn the model over and check the flatness of the wings.

Assembly

STEP 9
Install your servos to the fuselage and prepare 2 pieces of 1,2 mm pushrods which is approximately 210 mm length.

You can make Z bend for the both side or use rod linkage to make detachtable and facilate to set the flap positions.

For this model, the best way to mount the push rods is; Z-bend is mounted on the outside, the push rod connectors are mounted on the servo arms inside. In this way, connectors are installed quick, it becomes possible to deassemble the wires, and the objects that will create drag are reduced on the outside.

You can use cheap 9 gram servos for this model becouse of it's not required high sensitive on the control surfaces.

Assembly

SCALE 1,0

144

15

10,7

12,8

Ø1,5

6,1

45

11

STEP 10

Prepare quick release landing gear by using 2mm steel wire. You can use this page by printing as %100 scale and also you can use the dimensions as mm.

Assemble the "wheel35_ring" and "wheel35_rim" parts together and install them onto the landing gear that you prepared (You can make a clear hole in the "wheel35_rim" by drilling it with 2 mm drill bit.)

Glue the "spinner_adaptor" and "spinner_base" parts together by inserting 5 mm rod to make it centered. Assemble the spinner, motor and landing gear as shown.

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Assembly

STEP 11

Glue the "lock_body" part into the "hatch1". Assemble the "lock_catch" part by using m3x8mm bolt.

New Crayle FPV Cam and VTX mounts allow you to mount any FPV system in the market. You can adjust the camera position and fix it with a 2 mm screw. You can mount any FC with 10x10 to 35x35 mm VTX mounting holes on the bracket or stick with double-sided tape. You can also use zip ties to fix the VTX to the mount.

You can use a soldering iron to drill Hatch for FPV Antennas.

hatch1_fpv
lock_body
lock_catch
fpvcam_mount
vtx_mount
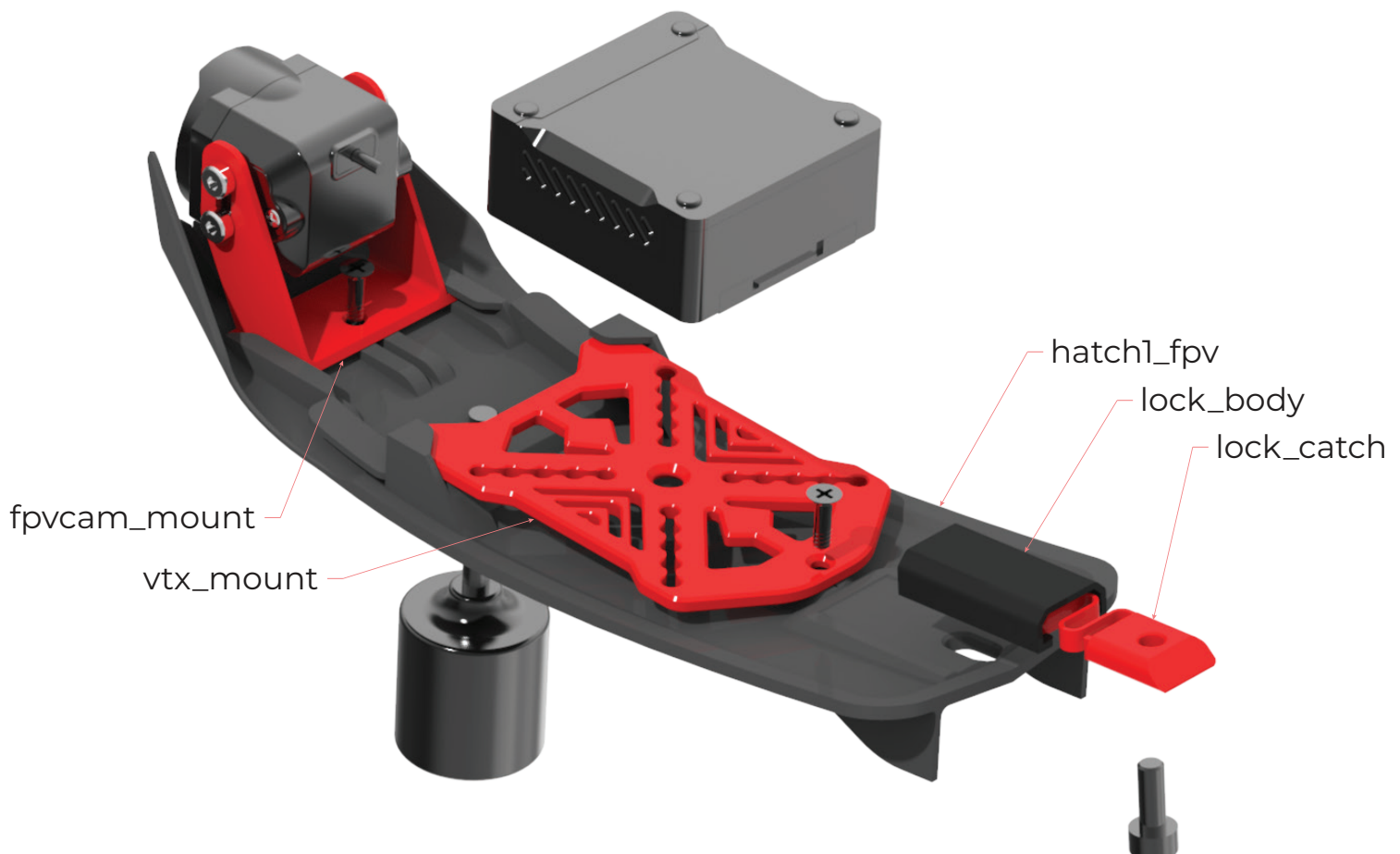
Epilogue
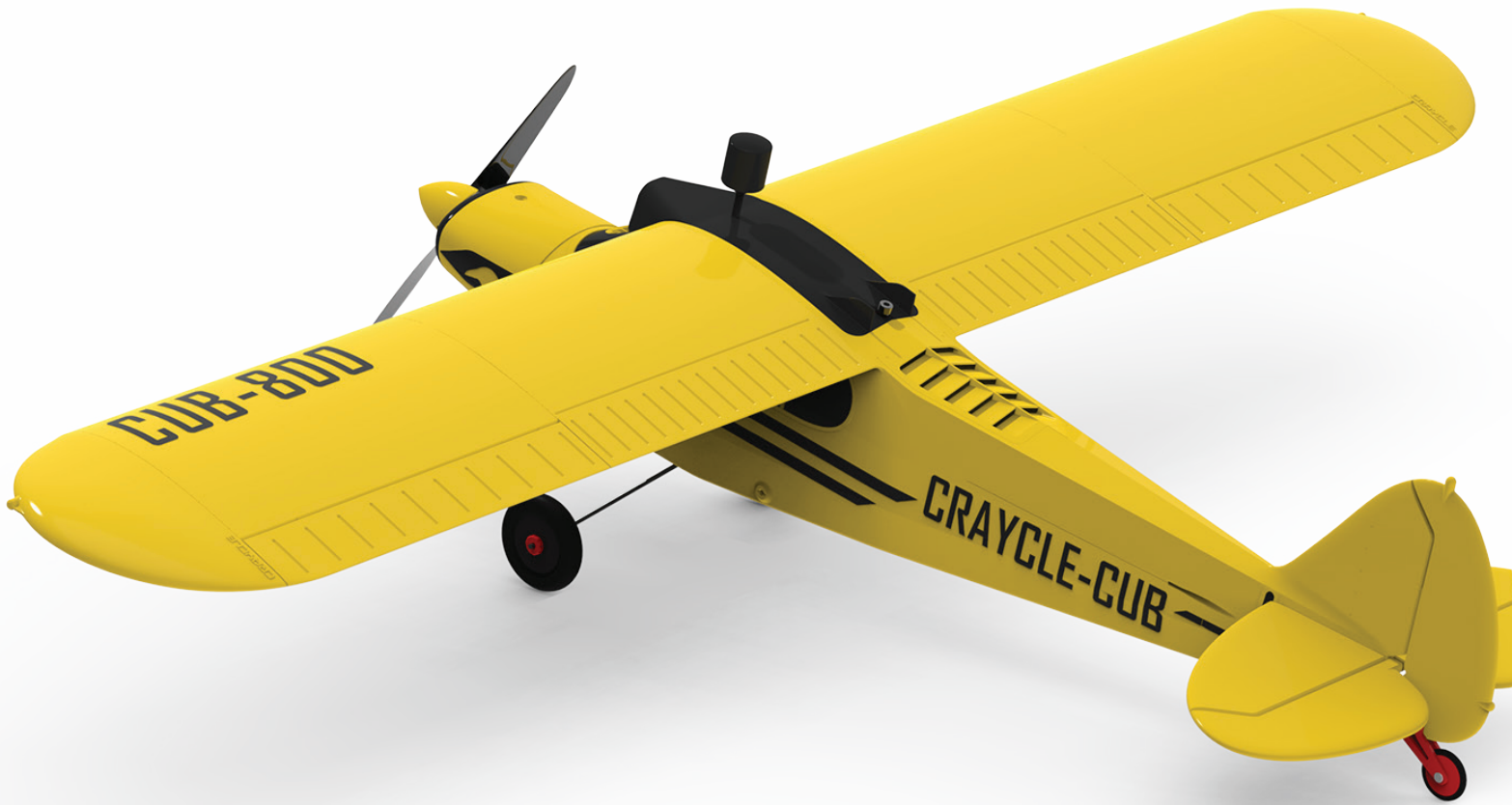
You can also prefer the Hatch1_flat and Hatch2_flat to make to model real scale if you fly without FPV. Use 2 mm screws to mount Hatch2 and drill before screwing.

You can add extra weights into the "fs1" to make CG correct. With Cub V2, CG is way easier to set correctly than before. Make sure the model is a little bit nose-heavy for the first flight.

You can print this model completely with LW-PLA to make it a park flyer but it's not necessary at all. Regular PLA will be enough thanks to the new design approach.

We recommend 6" propellers for this model but can also use a 7" propeller to make it model fly slower.

Epilogue

We developed this model as a compact Super Scale model to experience FPV flight from the real pilot's perspective. With V2, the model became even lighter and slower. So this model can also be used as a Trainer.

Enoy with free upgrade with CraycleCub V2! Please check update notes on craycle.com.

We are always continue to improve the model after published. Usually this happens becouse of requests. If you need some feature that is gonna be improve your user experience on this model, please join the Next Model Survey on craycle.com.

Is there a missing information in this guide? Please let us know. Thank you for supporting us by building our models!

Print Guide

We have prepared printer profile on Cura Slicer for you. If you have a Marlin XYZ type printer, you can print directly with provided gcodes as well. If you can't use the gcodes don't worry, just follow the instructions...

1) Go to the Cura Profile Article to download Cura V4.13.1 and import craycle.curaprofile.

   Article: https://craycle.com/craycle-cura-profile/

2) Change this settings according to your printer:

- Material Settings.
     Nozzle Temperature
     Buildplate Temperature
     Flow (wall flow is important!)
- Travel Settings.
     Retraction distance
     Retraction speed

We make internal supports by creating gaps in the model parts. So, the "Slice Gap Closing" value should be 0 mm or closed. Turn off all gap-filling features in the slicer.

You should print the biggest wing part of the model to test your printer. Make sure the wing weight is equal to the settings table! Then you are ready for the rest of the model parts.

This process will both verify your extruder flow and verify your printer settings correctly. If you have mechanical problems on your printer, you will also see that mesuring the model weight.

Print Guide
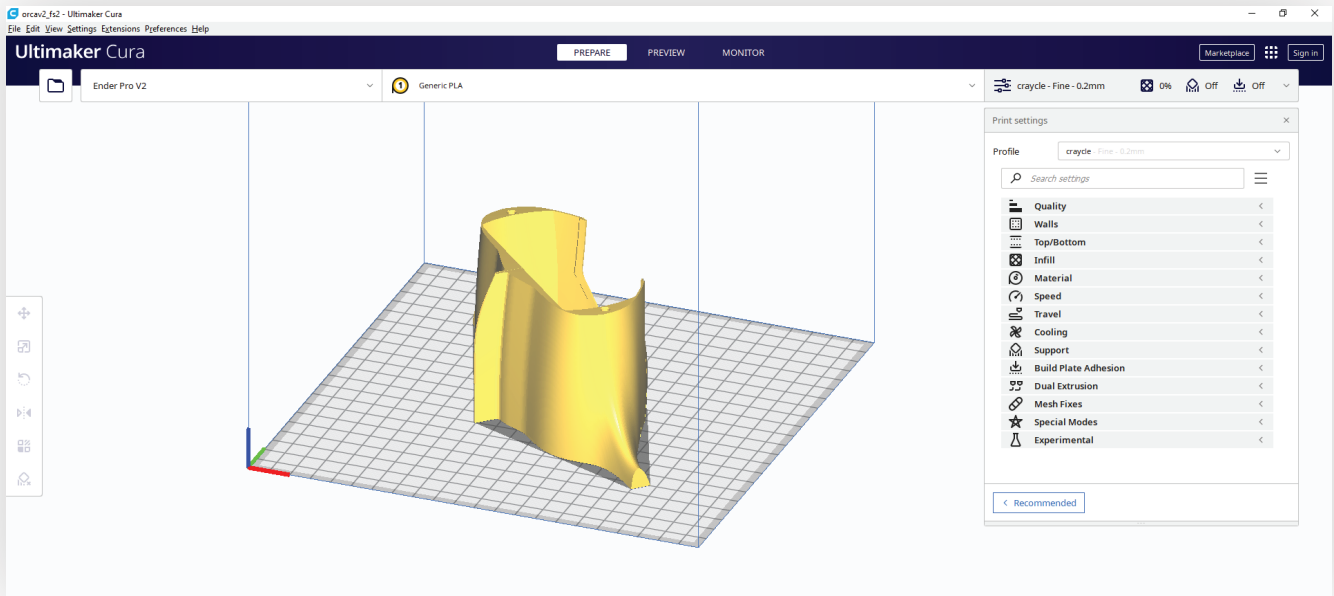
We pre-routed the model parts for you but still make sure the model parts are oriented at 45 degrees to the bed. This way X and Y axis works coordinated and you can get maximum surface quality. You can also set the Z seams to corners.
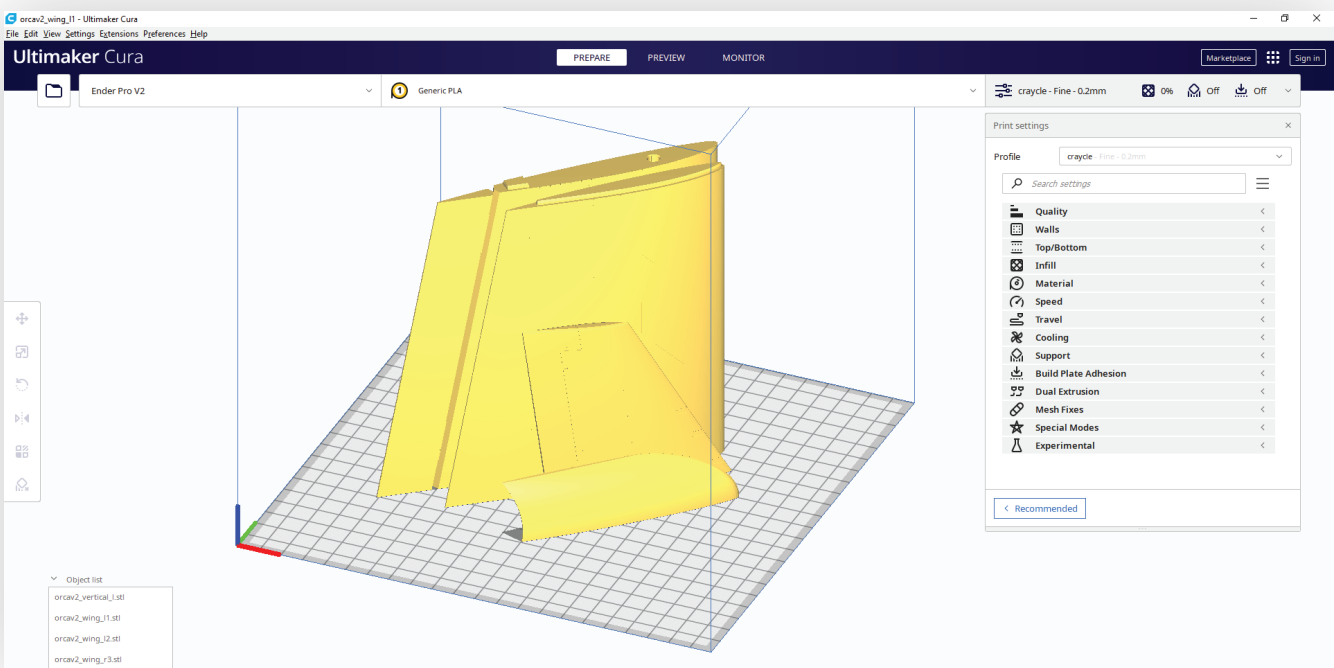
Print Guide

		Slicer Settings						
No	Quantity	Part Name	Layer Height	Walls	Infill	Top Layers	Bt. Layers	Weight (g)
1	1	cubv2_fs1	0,16	2	20%	0	0	28,9
2	1	cubv2_fs2	0,16	1	0%	0	0	40,9
3	1	cubv2_fs3	0,16	1	0%	0	0	15,8
4	1	cubv2_fs4	0,16	1	0%	0	2	6,8
5	1	cubv2_elevator_l	0,16	1	0%	0	0	7,3
6	1	cubv2_elevator_r	0,16	1	0%	0	0	7,3
7	1	cubv2_rudder_1	0,16	1	0%	0	0	2,5
8	1	cubv2_rudder_2	0,16	1	0%	0	0	0,9
9	1	cubv2_hatch1	0,16	1	0%	0	0	5,4
10	1	cubv2_wing_l1	0,16	1	0%	0	0	19,4
11	1	cubv2_wing_l2	0,16	1	0%	0	0	21,8
12	1	cubv2_wing_l3	0,16	1	0%	0	0	4,7
13	1	cubv2_wing_r1	0,16	1	0%	0	0	18,6
14	1	cubv2_wing_r2	0,16	1	0%	0	0	21,4
15	1	cubv2_wing_r3	0,16	1	0%	0	0	4,8
16	2	craycle_servohatch	0,16	1	0%	0	0	2,5
17	1	craycle_spinner_5x25-cap-base-adaptor	0,16	1	0%	6	6	2,3
18	1	cubv2_nose	0,16	2	20%	4	4	3,4
19	1	cubv2_fs_support	0,16	2	20%	4	4	0,8
20	1	craycle_springlock_body	0,16	2	20%	4	4	0,5
21	2	cubv2_wingsupport	0,16	2	0%	0	0	7,0
22	1	cubv2_lg_body	0,16	3	0%	0	0	8,0
23	2	craycle_3dlg_rim	0,16	2	20%	4	4	2,9
24	2	craycle_3dlg_stopper	0,16	2	20%	4	4	1,3
25	2	craycle_3dlg_shaft	0,16	2	20%	4	4	0,5
26	1	cubv2_fcmount	0,16	2	20%	4	4	1,4
27	1	cubv2_gpsmount	0,16	2	20%	4	4	0,7
28	1	craycle_fpv-cammount	0,16	2	20%	4	4	0,7
29	1	craycle_fpv-vtxmount	0,16	2	20%	4	4	2,3
30	1	craycle_springlock_catch	0,16	2	20%	4	4	0,3
31	1	craycle_elevatorbar	0,16	2	20%	4	4	0,4
32	2	craycle_ruddergear	0,16	2	20%	4	4	0,4
33	1	craycle_motormount	0,16	2	20%	4	4	2,4
34	4	craycle_horn	0,16	2	20%	4	4	1,2
35	1	craycle_wheel20_rim	0,16	2	20%	4	4	0,4
36	1	craycle_wheel20_ring	0,16	1	20%	4	4	0,3
37	2	craycle_wheel40-55_ring	0,16	2	0%	4	4	5,2
38	9	craycle_hinge	0,16	2	20%	4	4	1,6
		This color for changed values from the default profile. (So you can see the settings differences easily)						
		Red Colored PetG Parts						
		Black Colored TPU Parts						
		Black Colored PLA Parts						
		Yellow Colored PLA Parts						

@craycle