

User Guide

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FPV Orca



General Specifications

Length	: 365 mm	14.4 inches
Wingspan	: 800 mm	31.5 inches
Print Weight	: 254 g	8.7 oz.
Flight Weight	: 490 g	17.2 oz.
Wing Area	: 12.5 dm ²	
Wing Loading	: 39.2 g/dm ²	
Airfoil	: MH 45 9.85%	

Recommended Setup

Motor	: 2205 2300 kv
Propeller	: 6040 - 2 Blade
ESC	: 30A
Servo	: 2 X 9 g
Battery	: 3s 1500mAh Lipo
3+ Channels Radio with Elevon Mix	
Analog/Digital FPV systems	

Maker Skill 
Pilot Skill 



Min. Printer Size
150*150*150 mm
Filament
Regular PLA

Equipments

Necessary Equipments

- Minimum 4ch Radio System.
- 2205 2300Kv Motor.
- 30A ESC.
- 2 pcs 9grams Servo.
- 1500mAh 3S Lipo.
- 6045 Propeller
- Medium CA Glue.
- 2 mm Self-Tapping Screws
- 2 pcs Ø1x150mm Pushrods.
- 1 pcs Ø5x360mm CF Rod
- 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 1.2 mm steel wire.

Elevons: 2 pcs 150 mm

Servo Horn Connection Holes ->

Elevons: 4. hole

Flap Movements (X)

Elevons: 11 mm

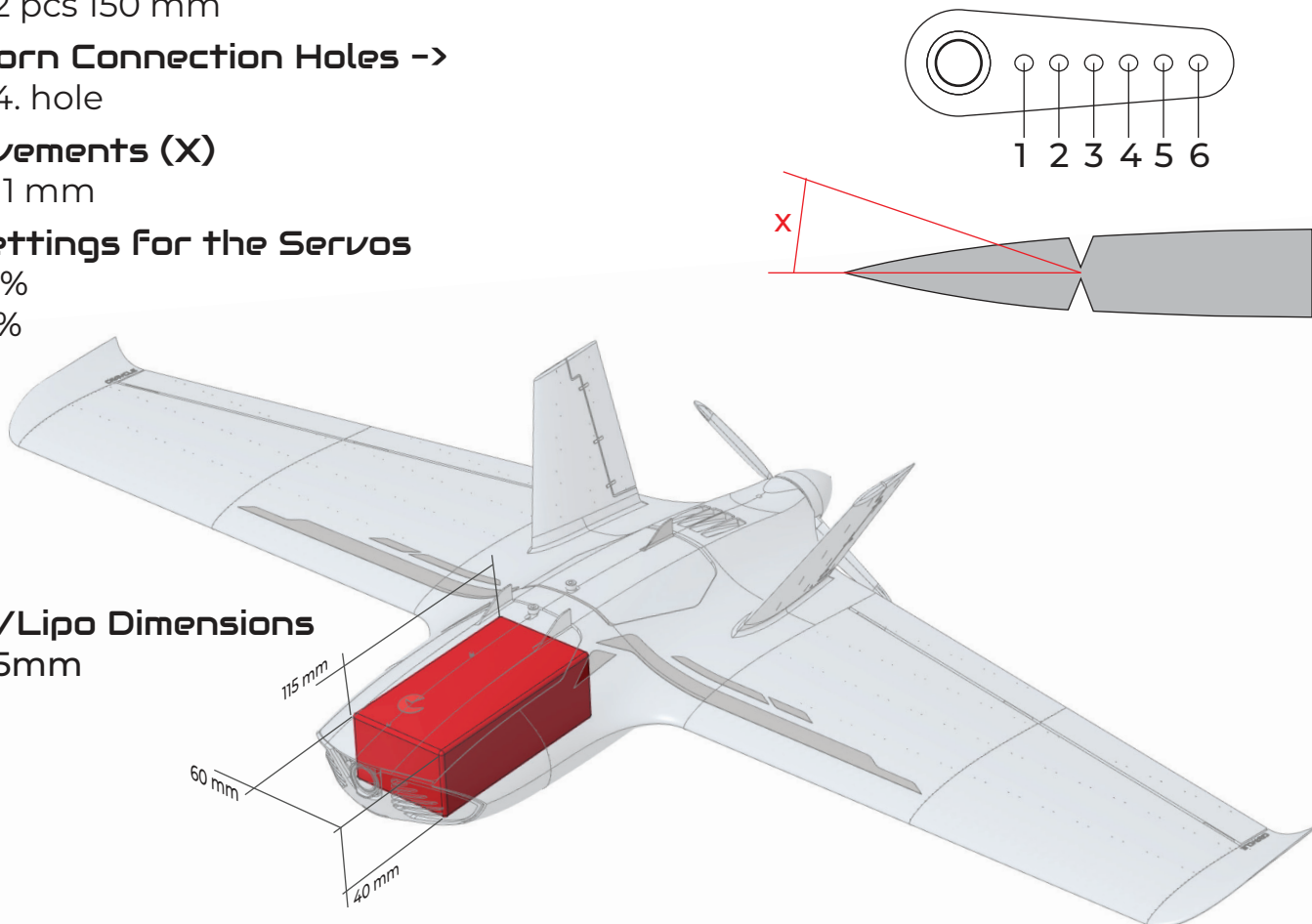
Radio Settings for the Servos

Expos: 35%

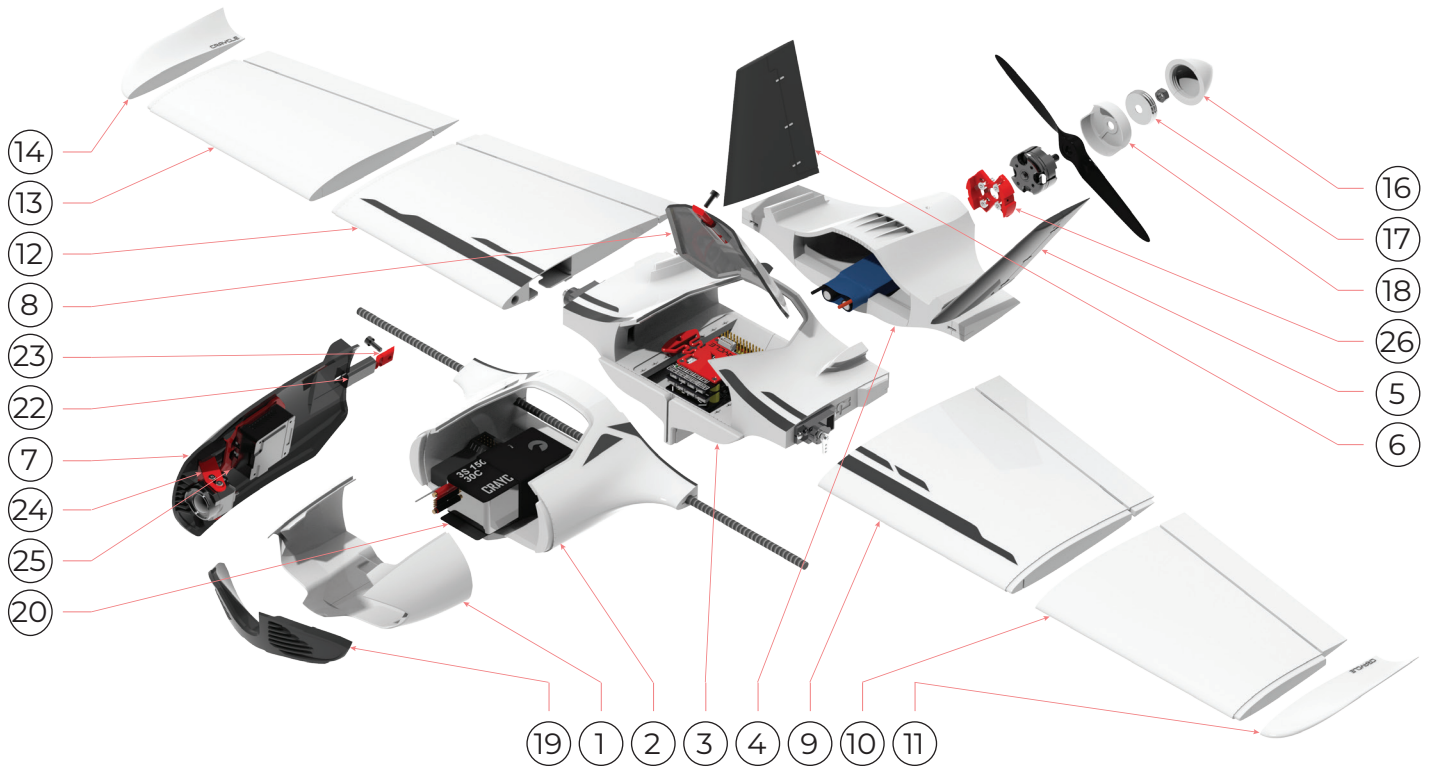
Rates: 75%

Payload/Lipo Dimensions

60x40x115mm

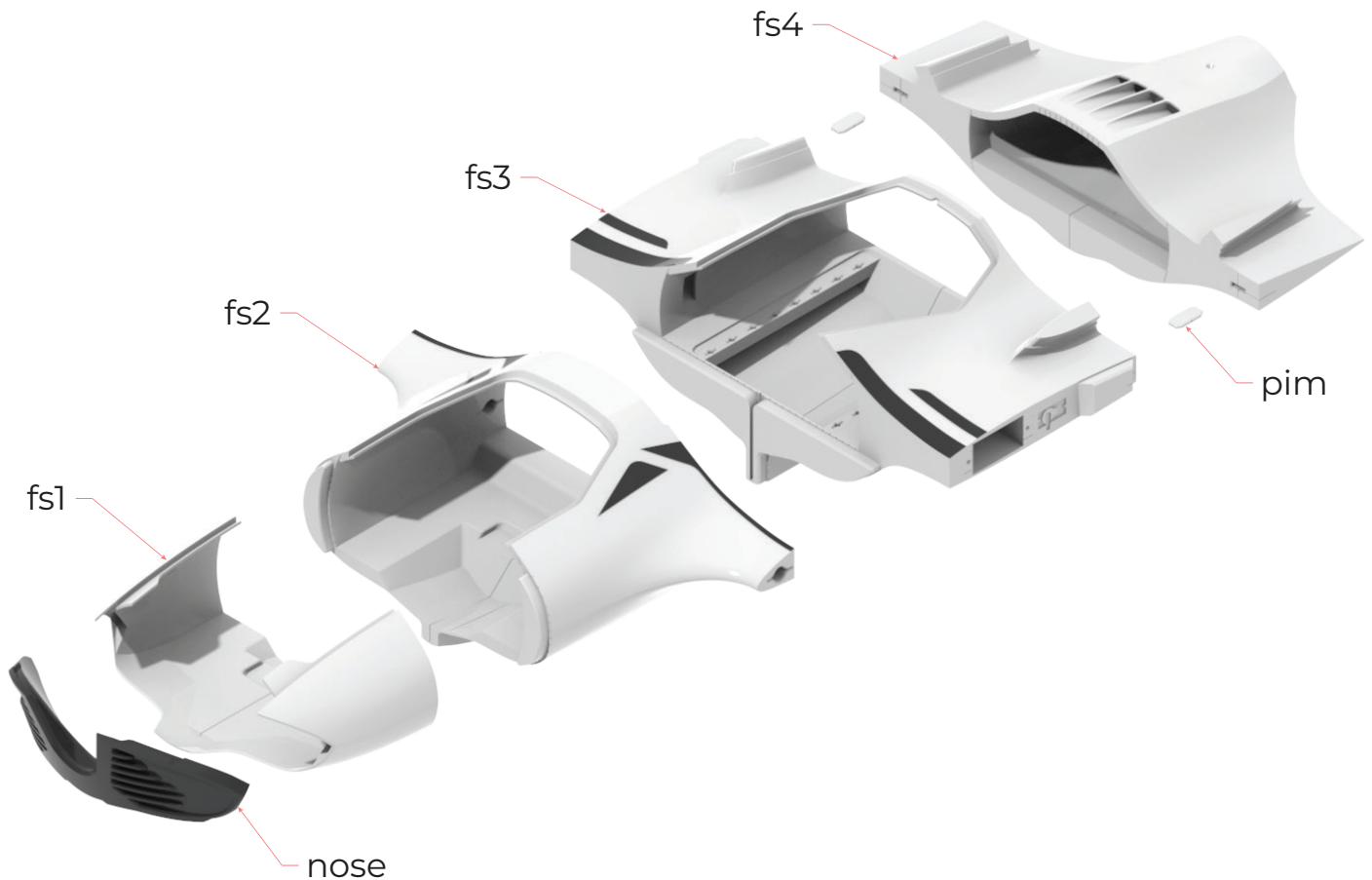


Part List



Part List							
No	Quantity	Part Name	Weight (g)	No	Quantity	Part Name	Weight (g)
1	1	orca_fs1	20,0	19	1	orca_nose	13,0
2	1	orca_fs2	24,0	20	1	craycle_lipomount	3,0
3	1	orca_fs3	31,0	21	2	craycle_pim	0,3
4	1	orca_fs4	22,0	22	2	craycle_springlock_body	1,0
5	1	orca_vertical_l	5,0	23	2	craycle_springlock_catch	0,6
6	1	orca_vertical_r	5,0	24	1	craycle_fpv-cammount	0,7
7	1	orca_hatch1	13,0	25	1	craycle_fpv-vtxmount	2,9
8	1	orca_hatch2	7,0	26	1	craycle_motormount	2,4
9	1	orca_wing_l1	25,0	27	2	craycle_horn	1,2
10	1	orca_wing_l2	19,0	28	1	craycle_e-brackets	2,0
11	1	orca_wing_l3	2,0	29	6	craycle_hinge (TPU)	1,1
12	1	orca_wing_r1	25,0	30	2	M3x8 mm Imbus Bolt	-
13	1	orca_wing_r2	19,0	31	8	ø2x8 mm Screw (Self-tapping)	-
14	1	orca_wing_r3	2,0	32	2	ø1x150 mm Pushrod Wire	-
15	2	craycle_servohatch	3,0	33	1	ø5x360 mm CF Rod	-
16	1	craycle_spinner_5x35_cap	4,0				
17	1	craycle_spinner_5x35_adaptor					
18	1	craycle_spinner_5x35_base					
Total Printed Weight:				254			
Yellow parts are purchased parts.							

Assembly



STEP 1

Glue the “nose”, “fs1”, “fs2”, “fs3” and “fs4” in this order using CA glue. You need to insert the “pim” part gluing the “fs4” to facilitate assembly. Other parts have their inserts already.

Apply glue to the insert surface and assemble the model parts. Avoid spraying the accelerator to insert surfaces without assembling the model parts. This can cause the CA to dry fast while you try to assembly the model part.

Have a napkin with you and distribute the overflowing adhesive onto the joint surface. This process will strengthen the model. When spraying directly on CA, do not be excessive and spray from a distance.

Assembly

STEP 2

Install all your electronics to the fuselage before gluing the wings. Insert the Ø5x360 mm CF rod. Prepare the Spinner by gluing the "spinner_base" and "spinner_adaptor" parts together. Then you can install the "spinner_cap" while assembling the propeller.

Insert your servos according to the direction as shown on the model.



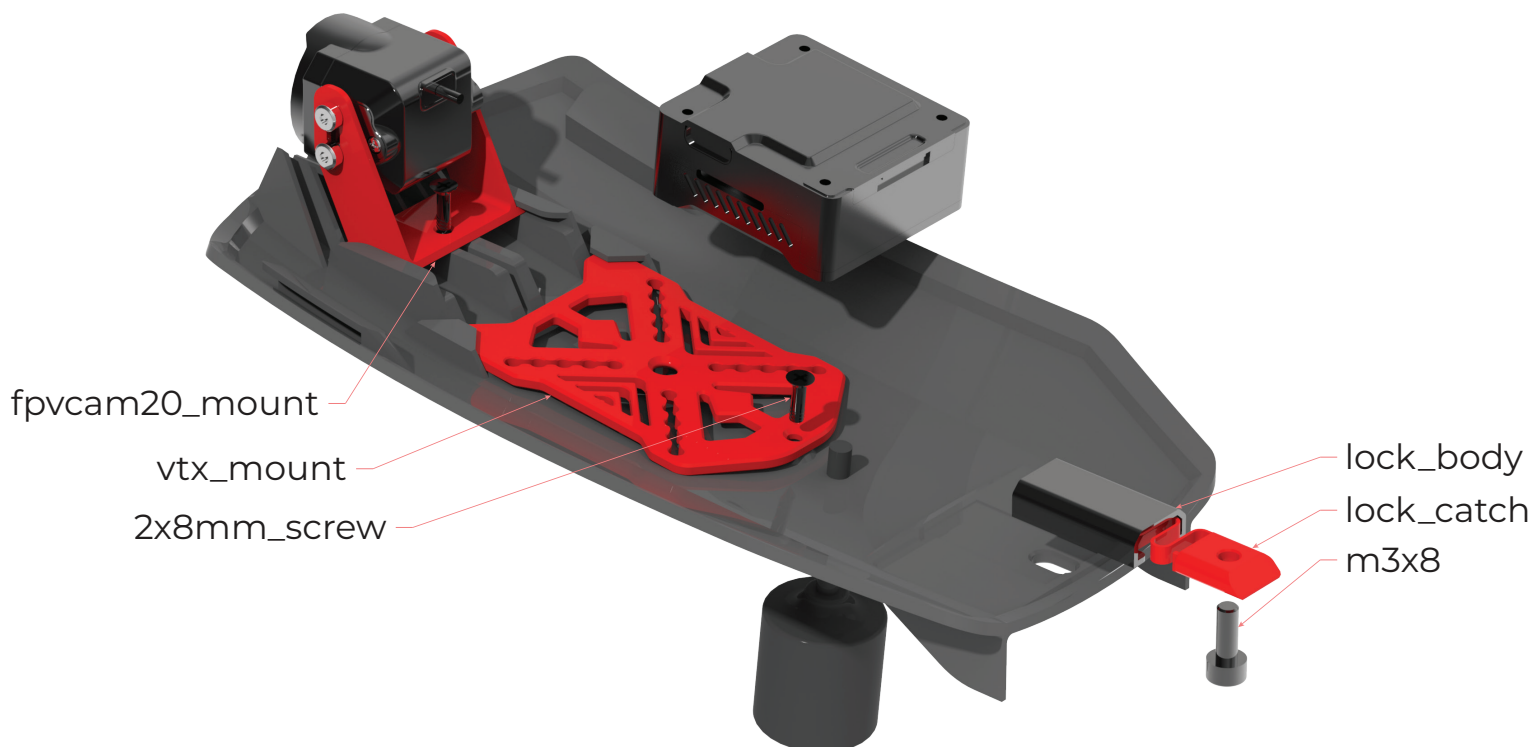
Assembly

STEP 3

Glue the “lock_body” part into the “hatch1”. Assemble the “lock_catch” part by using m3x8mm imbus bolt.

New Craycle 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 its 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.



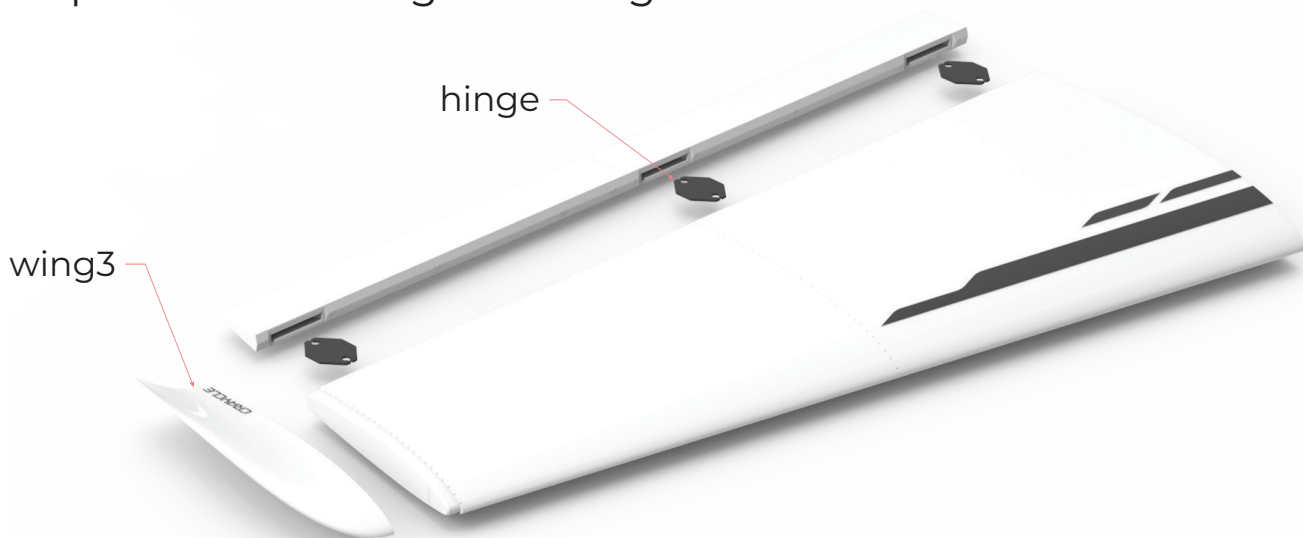
Assembly



STEP 4

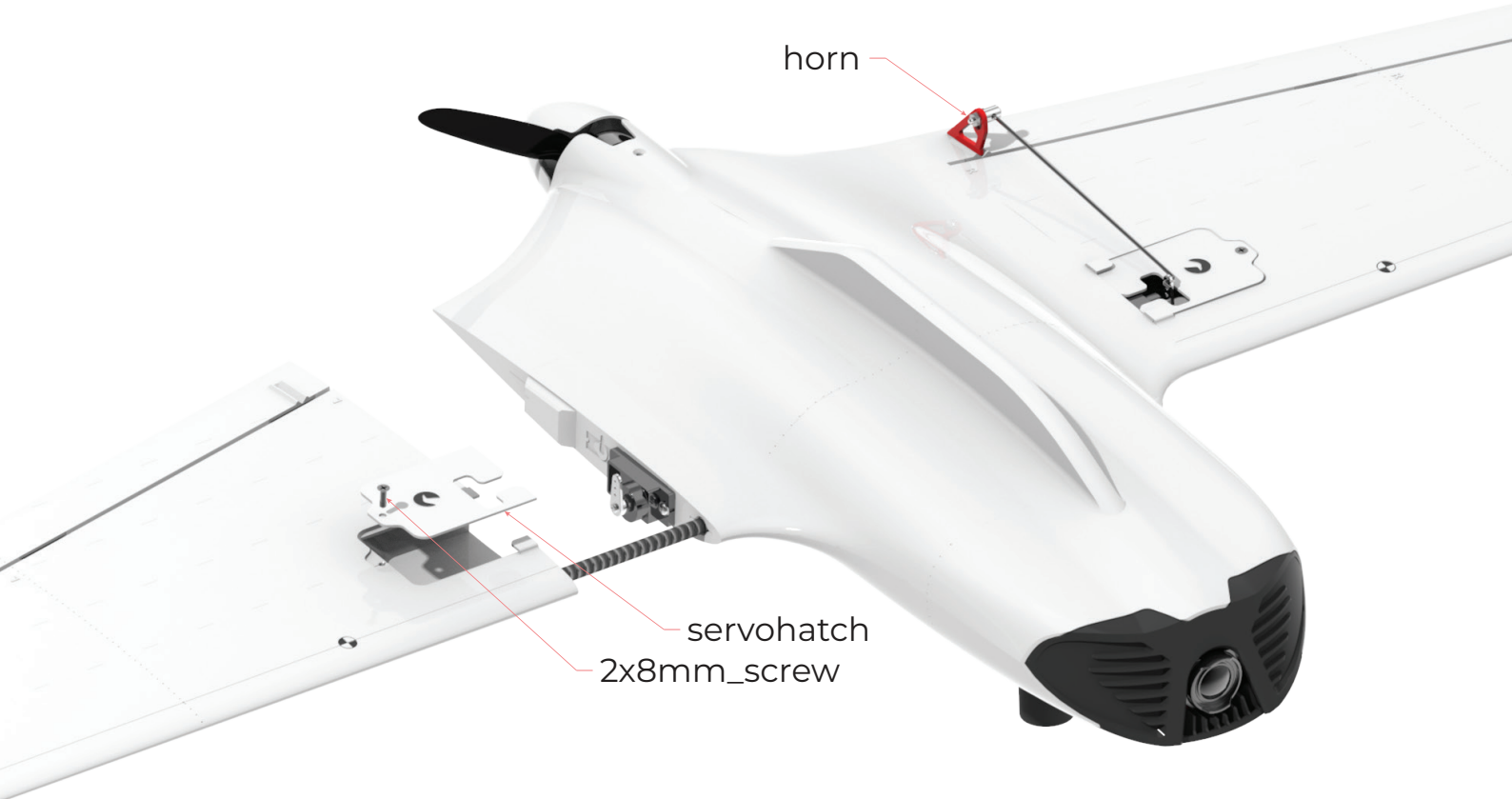
Test if the "wing_r1" and "wing_r2" parts fits together comfortably and reassemble by gluing the insert surface.

Spread the overflowing adhesive by wiping it along the joint line. This way you will get a stronger wing. Make sure the wing parts are sticking in a straight line.



Now you can break the aileron from its tiny connections and re-assemble them using CA Hinges. Then you can glue the "wing3" part to its place. Avoid using excessive glue and spray on the hinges. The same process goes for the other wing.

Assembly



STEP 5

Now you can assemble the wings to the fuselage. Be careful to not apply glue to under the aileron/elevator flaps.

You don't have to apply glue to the CF rod. CF Rod will be guide for the wings and spread the forces to the fuselage without gluing. This way you can use it again. But if you want to push limits with this model, better you apply glue to the CF rod. This will make the model more rigid.

Make sure your servos is centered and the servo arms are 90 degree as shown in the image above.

Glue the “horn” parts and assemble your pushrods. Then you can assemble the “servohatch” to the wing.

Now you can glue the “vertical” parts to the fuselage!

Epilogue



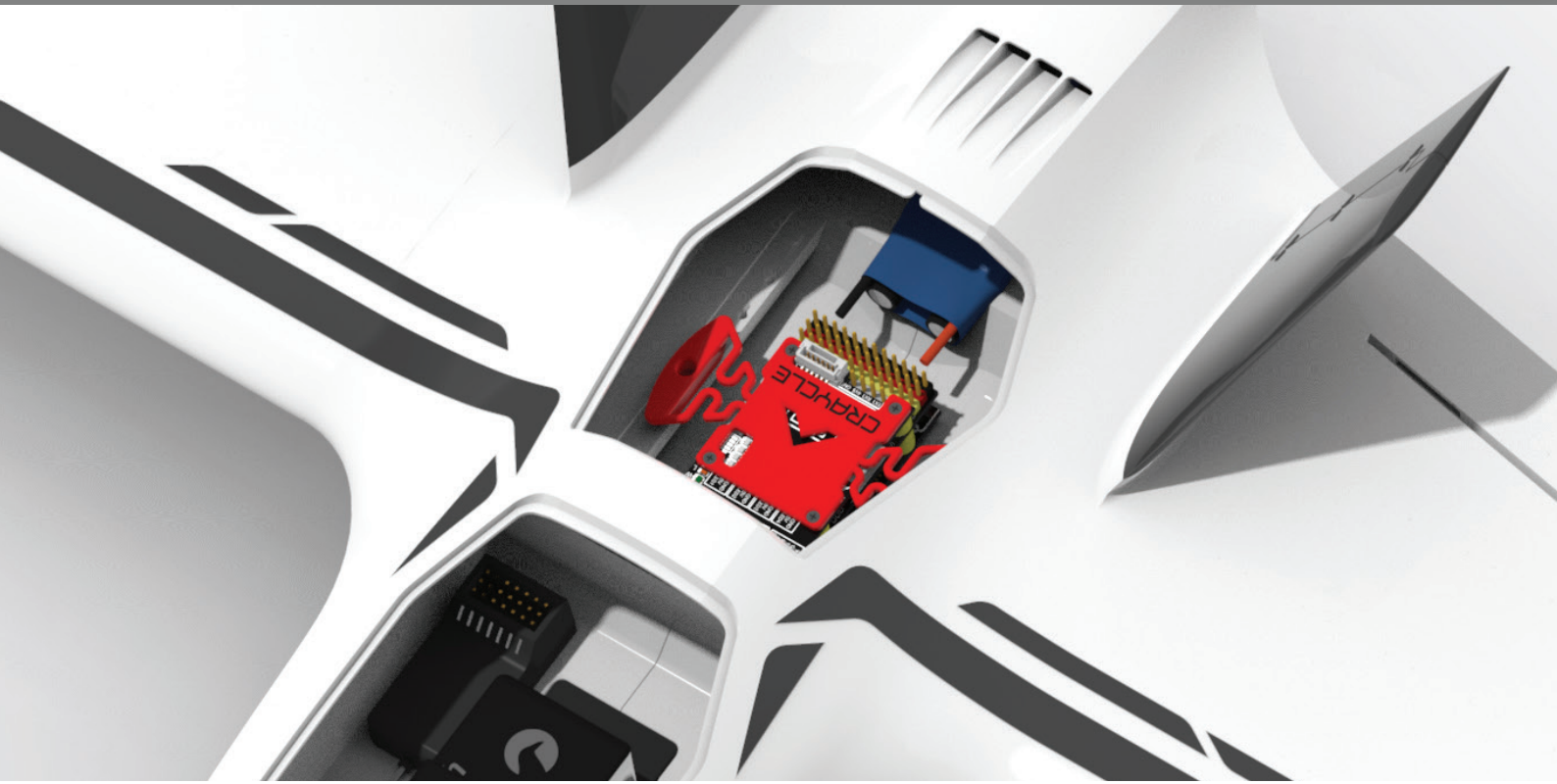
You can add extra weights into the “fs1” to make CG is correct. For Orca, CG is more important than the other models since its a flat flying-wing model. Once you get CG right, model will fly perfectly stable.

Make sure the model is a little bit nose-heavy for the maiden flight and give 1 mm elevator trim up. If you think the model flies too fast, consider to move CG a little to the back.

You can print this model completely with LW-PLA to make it slow flyer but it's not necessary at all. Regular PLA will be enough thanks to its new design approach. You can also prefer PetG to make the model heat resistant at summer.

We recommend 6" propellers for this model but can also use a 5" propeller to fly even faster with 4S lipo.

Epilogue



We developed this model as a compact freestyle FPV model to experience the best FPV flight with a small plane. With Orca V3, the model became nose longer, lighter and user-friendly in electronic setup. So this model can also be used as a long-range autonomus plane with the Craycle E-brackets for FC and GPS components and the brand new FPV Hatch.

We update our models according to user demands and share them free of charge to previous owners. If you see something 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. Please avoid pirated files and be honest in paying for our efforts.

Enoy the free upgrade with Orca V3! Please check the update notes on craycle.com.

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:

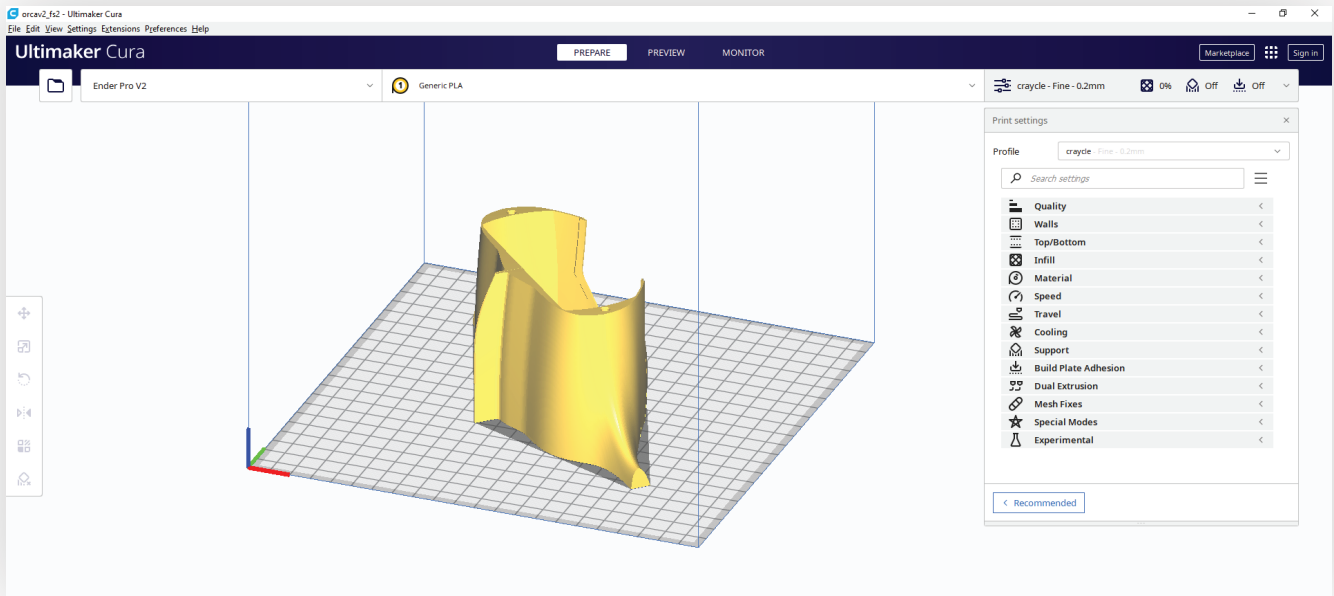
- Material Settings.
 - Nozzle Temperature
 - Buildplate Temperature
 - Flow (wall flow is important!)
- Travel Settings.
 - Retraction distance
 - Retraction speed

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.

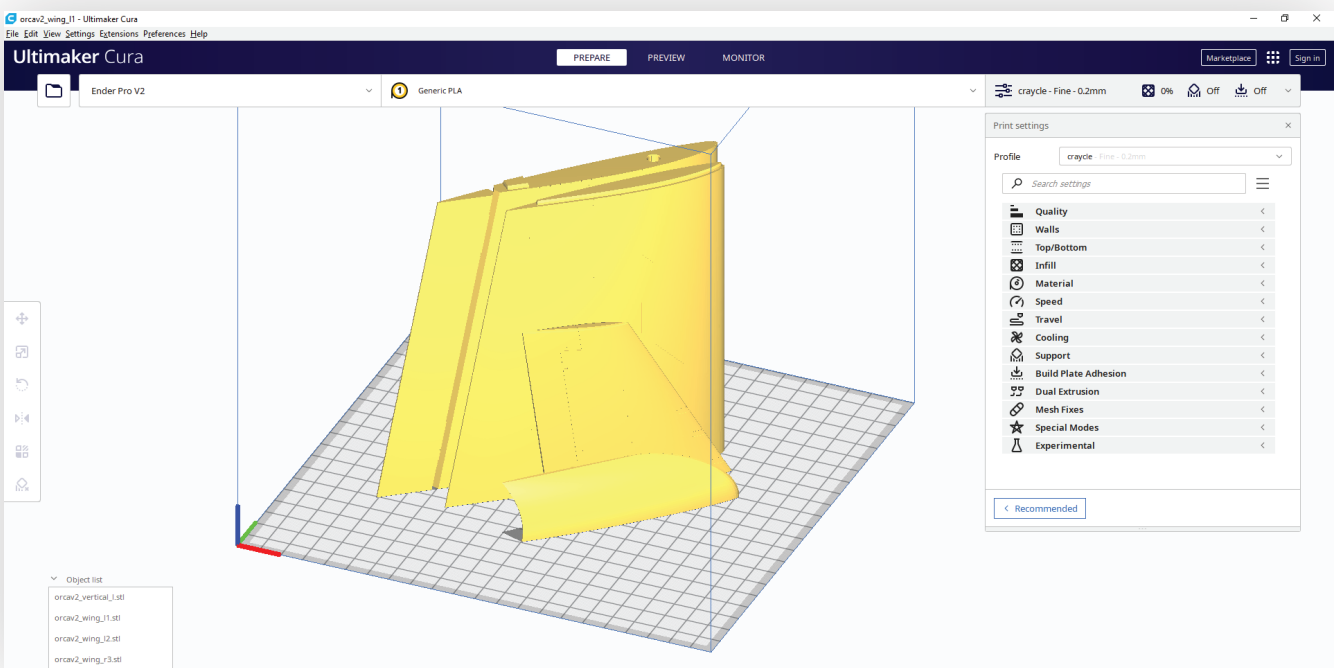
You should print the biggest wing part of the model to test your printer. Make sure the wing weight is equal to the settings table! Then you are ready for the rest of the model parts.

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 measuring 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	orca_fs1	0,18	1	10%	0	0	20
2	1	orca_fs2	0,18	1	0%	0	0	24
3	1	orca_fs3	0,18	1	0%	0	0	31
4	1	orca_fs4	0,18	1	0%	0	0	22
5	1	orca_vertical_l	0,18	1	0%	0	0	5
6	1	orca_vertical_r	0,18	1	0%	0	0	5
7	1	orca_hatch1	0,18	1	0%	0	0	13
8	1	orca_hatch2	0,18	1	0%	0	0	7
9	1	orca_wing_l1	0,18	1	0%	0	0	25
10	1	orca_wing_l2	0,18	1	0%	0	0	19
11	1	orca_wing_l3	0,18	1	0%	3	0	2
12	1	orca_wing_r1	0,18	1	0%	0	0	25
13	1	orca_wing_r2	0,18	1	0%	0	0	19
14	1	orca_wing_r3	0,18	1	0%	3	0	2
15	2	craycle_servohatch	0,18	1	0%	0	0	3
16	1	craycle_spinner_5x35_cap	0,14	1	0%	0	6	4
17	1	craycle_spinner_5x35_adaptor	0,14	1	0%	0	6	
18	1	craycle_spinner_5x35_base	0,14	1	0%	6	6	
19	1	orca_nose	0,18	2	20%	4	4	13
20	1	craycle_lipomount	0,18	2	20%	4	4	3
21	2	craycle_pim	0,18	2	20%	4	4	0,25
22	2	craycle_springlock_body	0,18	2	20%	4	4	1
23	2	craycle_springlock_catch	0,18	2	20%	4	4	0,6
24	1	craycle_fpv-cammount	0,18	2	20%	4	4	0,7
25	1	craycle_fpv-vtxmount	0,18	2	20%	4	4	2,85
26	1	craycle_motormount	0,18	3	40%	4	4	2,36
27	2	craycle_horn	0,18	2	20%	4	4	1,16
28	1	craycle_e-brackets	0,18	2	20%	4	4	2
29	6	craycle_hinge (TPU)	0,18	2	20%	4	4	1,06
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								
White Colored PLA Parts								

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