# Mini Sinbad 1200

Rev 0.0 – 08.01.2021
3d-printz Original

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...hinterlässt EinDruck !

Take-off-weight: ca. 400g (LW-PLA) ca. 700g (PETG)
Span: ca. 1200 mm
Airfoil: Original Sinbad / RG15
CG: 45 mm

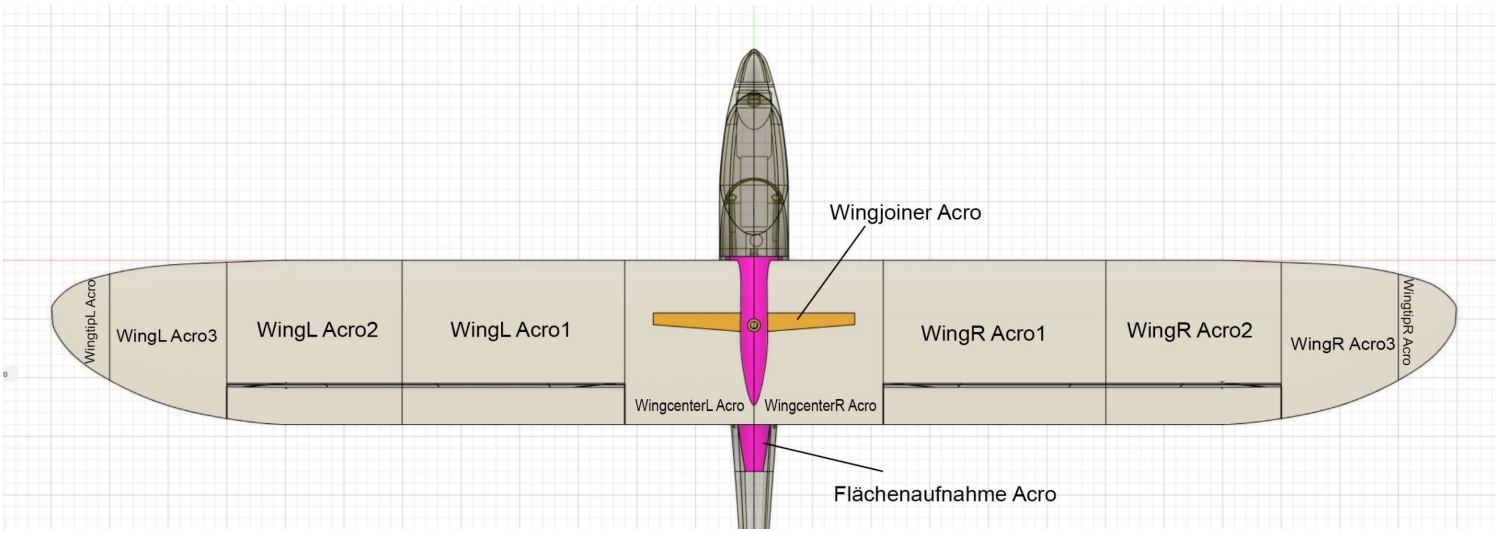
additional Material:

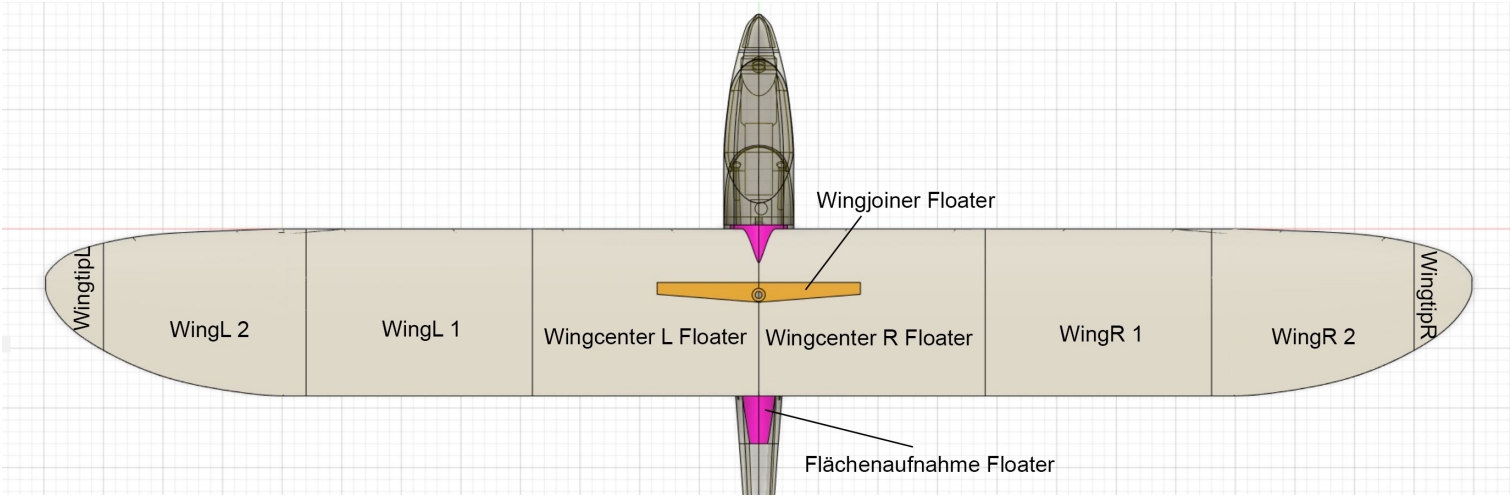
RC-Components
Bowden
CA medium and thin viscosity
Cutterknife
Sandpaper
4mm  Carbonrod
(2x 465mm forFloaterwing, 2x 360mm for Acro Wing,
1x 45mm, 1x 65mm for Wingmount)
3mm Carbonrod 105mm
2mm Carbonrod 230mm bzw. 45mm
some Lead
4 round Magnets 10x4mm
Plasticscrew M6
Screwnut  M6

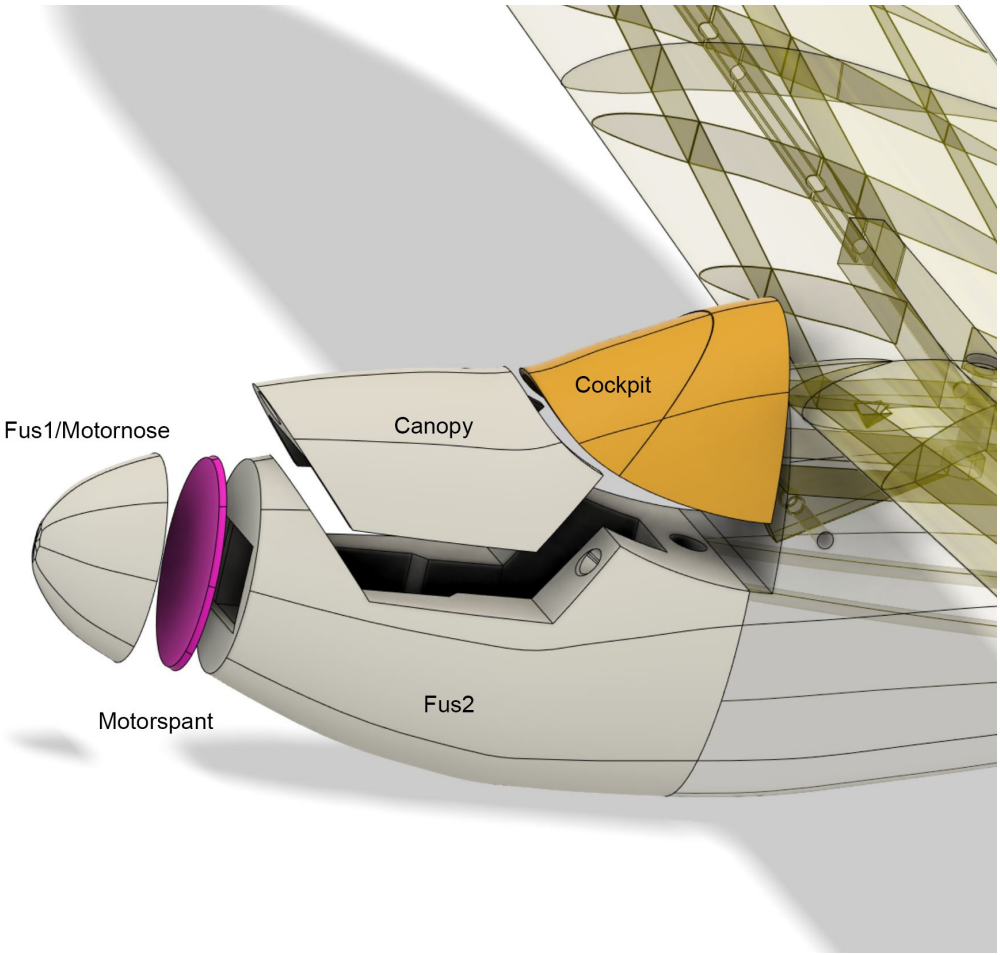
RC Components:
RC Receiver
Battery (f.e. NimH 400mah - AAA for Gliderversion)
2x or 4x Microservos

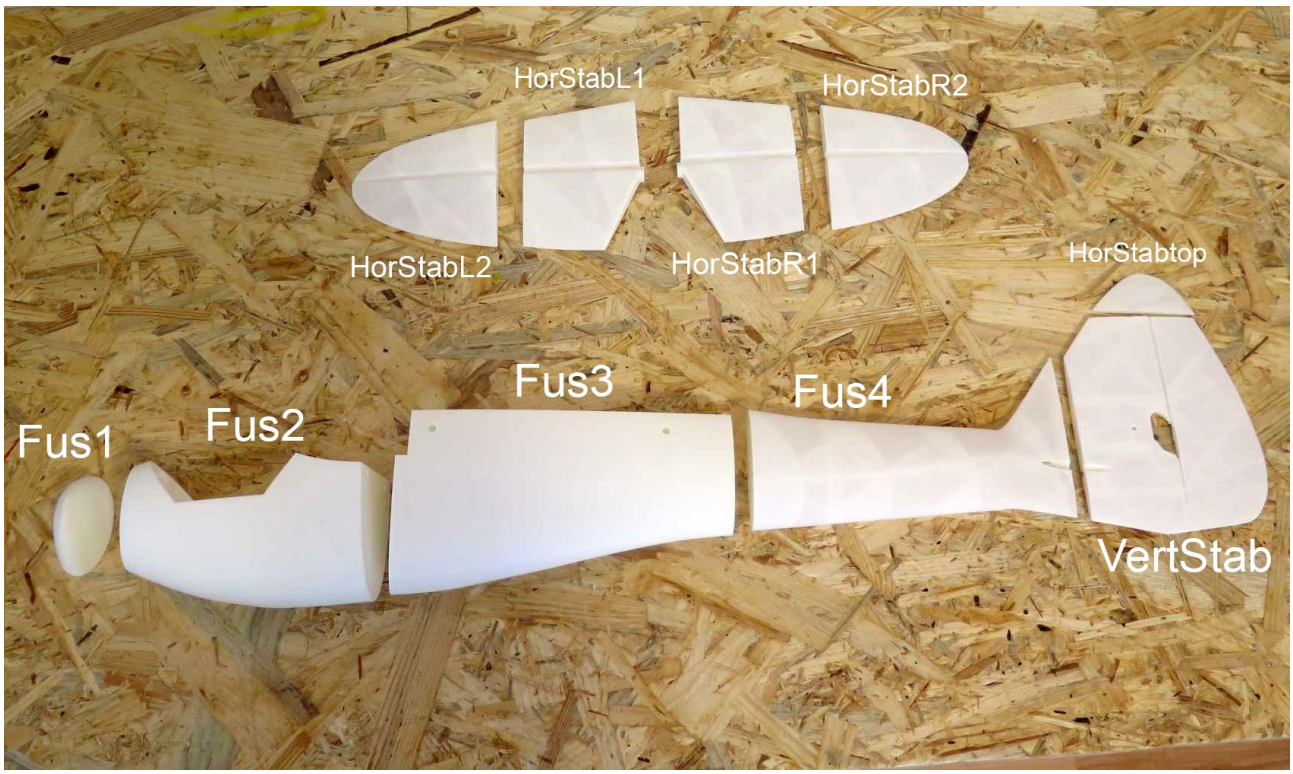
Trivia:

The Mini Sinbad was developed as an easy-to-fly slope glider. The possibility of flying it with the slow original airfoil only with rudder or with the faster RG 15 wing extends its field of application and provides variety. The slow flight characteristics are excellent and with the faster wing the small vintage glider can also pick up speed properly.
The flight behavior benefits from low weight so LW-PLA is the best choice of material, but it can also be printed with Standard PLA or PETG.


Wingjoiner Acro
WingtipL Acro
WingL Acro3
WingL Acro2
WingL Acro1
WingcenterL Acro
WingcenterR Acro
WingR Acro1
WingR Acro2
WingR Acro3
WingtipR Acro
Flächenaufnahme Acro


Wingjoiner Floater
WingtipL
WingL 2
WingL 1
Wingcenter L Floater
Wingcenter R Floater
WingR 1
WingR 2
WingtipR
Flächenaufnahme Floater


Cockpit
Canopy
Fus1/Motornose
Fus2
Motorspant




Assembling

First check whether all parts according to the list above are present and intact. If necessary, sand off residues with sandpaper and also roughen the adhesive surfaces a little. The rudder hinges are still a bit stiff due to production - move them back and forth until they run smoothly,  if necessary sand them, but be careful! The best way to assemble the fuselage is to use the Bowden cable sleeves as guide rails. Join Fus2, Fus3 and Fus4 in this way and glue the parts over a large area with medium-viscosity superglue! Make sure that the individual parts are correctly seated, the Bowden cable tubes will help you and act as guide rails. But be careful not to glue the bowdens to the fuselage parts, they should remain freely movable! Use some activator to get a strong adhesive bond!

Next, connect VertStab to Fus4 - you need a carbon rod with a diameter of 3mm and a length of 105mm. First carefully check the stick for fit, then join Fus4 and VertStab with superglue make sure that the alignment is correct - here you can orientate yourself on the Bowden cable housings. As soon as the glue has dried (use activator!) You can glue HorStab top onto the rudder. Pay attention to the correct alignment, the part has a small shoulder which has to be glued to the rudder, but not to the tail unit. It is best to fix the part with some adhesive tape before gluing and check the ease of movement of the rudder - it should movable absolutly free. For the attachment of the horizontal stabilizer 2 pcs. 2mm carbon rods are required (see page 1). First glue HorStabR2 with HorStabR1, then insert the rods and then connect the right half of the tail unit with VertStab so that you have the right side of the tail unit ready. Then push HorStabL1 onto the bars and check whether the connecting pieces between the two tail unit halves lock into each other proper - this is essential so that the elevator can move properly later. Now glue HorStabL1 with VertStab and HorstabR1 (make sure that the connector between the oars is firmly and, above all, connected straight with thick superglue!)

After the last part of HorStabL2 has been glued to the rest of the horizontal stabilizer, you can continue with the wings.

To assemble the wings, 2 carbon rods with a 4mm diameter are required (465mm for Floaterwing and 360mm for Acrowing). The assembly is explained here using the example of the floater wing, but works in exactly the same way for acrowing.

First insert the carbon rod into the Wingjoiner and carefully assemble one wing half without glue. Check immediately whether the recess for the carbon rod is free, the manufacturing process may cause small impurities to be present. This must be carefully pierced with the rod. To do this, carefully twist and push the rod back and forth until the channel is free - but be careful! The fit of the Wingjoiner in the Wingcenter should also be checked before bonding and, if necessary, sanded down for a snug fit.

When everything fits, the carbon rod can be inserted into the Wingjoiner and the WingcenterL glued to the Wingjoiner - it is best to use thick superglue and apply it generously! Now the wing can be glued part by part on both sides, always making sure that the surface segments are flush.
After the wings have been glued, they can be screwed to the corresponding Wingadaptermount („Flächenaufnahme) (attention - as with the "Wingjoiner" part, there is also a part for the floater and a part for the acrowing).

To do this, insert an M6 hexagon nut into the recess provided in the Wingadaptermount and fix the wing from above with an M6 plastic screw. After the adapter and wing are connected, the fit between the fuselage and wing can be tested and, if necessary, sanded. The 2 tabs of the Adaptermount should slide into the corresponding recesses in the fuselage with light pressure and then be secured with 2 carbon rods (4mm diameter). The locking pins should have a snug fit with enough friction not to loosen in flight. Alternatively, other types of security can also be used.

Last but not least, the parts cockpit, canopy, motorspant and Fus1 or motor nose are beeing assembled as seen in the explosion view. To glue the canopy and cockpit at the right angle, the fuselage itself can be used as a template - apply glue, position the parts with the help of the fuselage and use the activator. 4 round magnets 10x4mm are used to

fix the canopy, which are glued into the recesses provided. The nose can be designed either as a motor or glider nose, with the motospant being used as an intermediate piece in both versions. The part Fus1 should be glued at the very end of assembling, after installing the RC Components when you set your CG, as it can be used as a chamber for trim weights. „Motorspant“ can be drilled through with the needed holespacing for the motor assembly. The motor shaft should be long enough to reach out through the motor nose.

Electronics

The servo bay in the fuselage takes 2 microservos with the following dimensions: 32 x 3 x 12 mm. The servos should be installed offset. These servos are for reference:
Banggood SG 90 Mini Analog

The wing servos are installed horizontally. Since the wing profile is quite thin, small servos are recommended - if you want to use larger servos that cannot be completely sunk into the wing, you can use the raised servo covers. The servos can either be glued in or screwed in with two stops made of balsa strips.
These servos are for reference:
Banggood GHS37A 3.7g servo

Battery recommendation: 350mah Nimh small or 800mah Nimh big

Linkage

The rudders are linked by glued-on rudder horns, which are simply fixed in the desired location with a little superglue.

Deflections

Using a CG of 45mm we recommend following throws:

Aileron: +/- 8mm
Elevator: +/- 7mm
Rudder: Maximum

CG

The right center of gravity is essential for comfortable flight behavior. This is why you always should test it out yourself. The starting value can be chosen around 45mm behind the leading edge. If the flight behavior is unstable, move the center of gravity further forward. If more agile flight behaviors are desired, the center of gravity can be shifted further back.

Please note that the center of gravity and the throws should be discovered by the pilot himself for each build!

**We wish you a lot of fun flying your Mini Sinbad!**