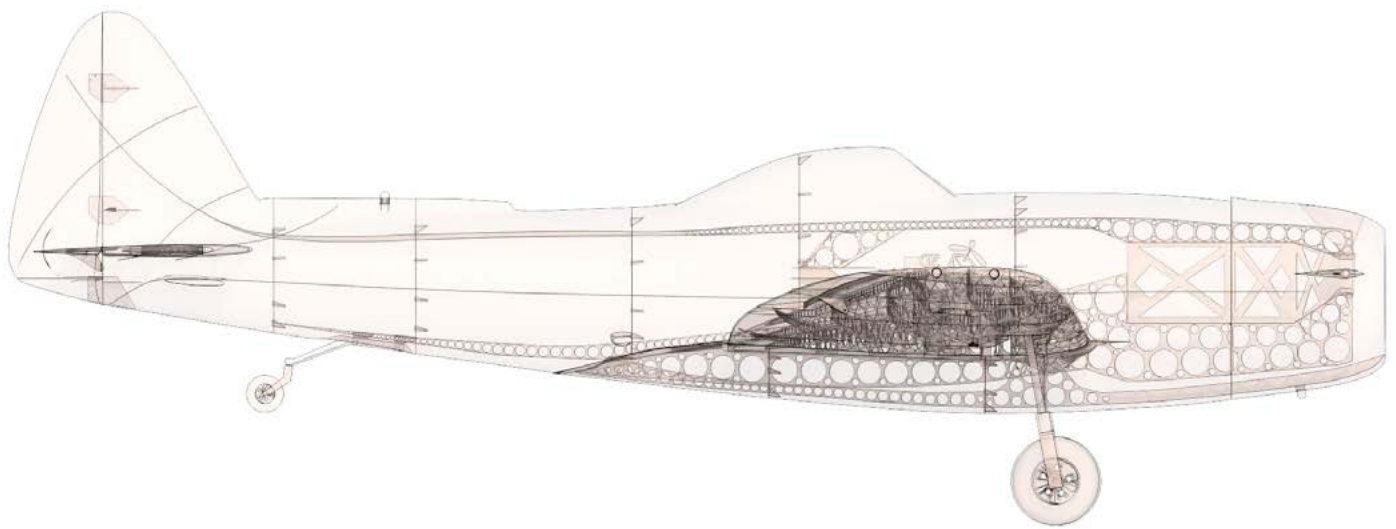


User Guide

rev. 2016/09



Fully 3d printable

Retract. Landing Gear for Republic P47 N15 Thunderbolt

This conversion kit allow you add retractable landing gear, conrollable rudder and LED position lights to your standard P47 N15 version...

Retractable Landing Gear, Rudder + LED for 3D Lab Print

P 47 N15 Thunderbolt

Future of flying - Print your own plane

We still trying move things further, so this project is again full of other improvements for better durability , easier assembly , better geometry solution and so on..., we hope you enjoy it, although this print may test your competencies to and quality of your printer (welcome to the thin wall printing)

This conversion kit includes whole wing modified for use with retractable landing gear, modified parts of fuselage with rudder.

Remember you will need rudder for use of landing gear. (or you can use only rudder from this kit) Also include modified parts for installing LED lighting airplane system.

Note: this conversion include only conversion parts (you will need buy P47 N15 to complete whole plane)

Included parts:

P47_fuselage_01_retract.stl
P47_fuselage_01_retract_long.stl (for longer motor)
P47_fuselage_06_retract.stl
P47_fuselage_07_retract.stl
P47_fuselage_08_retract.stl
P47_fuselage_08A_retract.stl
P47_fuselage_08A_01_150retract.stl (version for 150mm Z height)
P47_fuselage_08A_02_150retract.stl (version for 150mm Z height)

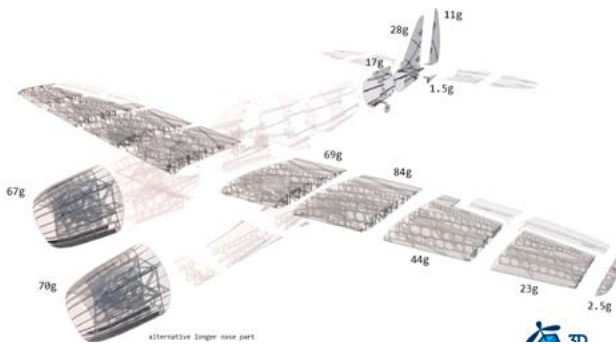
P47_wingR_01_retract.stl
P47_wingR_02_retract.stl
P47_wingR_03_retract.stl
P47_wingR_04_retract.stl
P47_wingR_05_retract.stl

P47_wingL_01_retract.stl
P47_wingL_02_retract.stl
P47_wingL_03_retract.stl
P47_wingL_04_retract.stl
P47_wingL_05_retract.stl

Included:

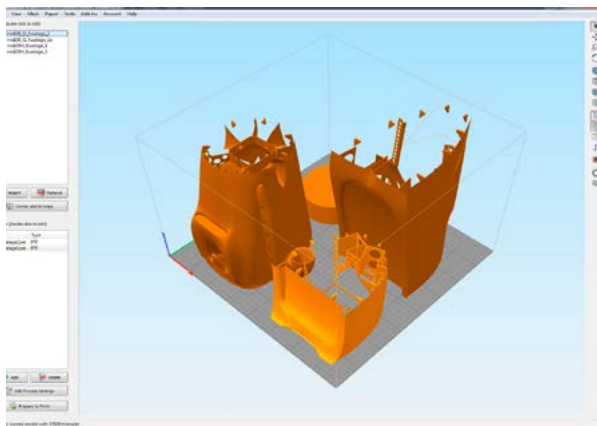
1. STL 3d files

universal STL files designed for use with desktop FMD 3d printers and slicer software as Simplify3D (recommend) CURA or MatterControl (this STLs are not compatible with Slic3r).



2. Factory files for Simplify3D slicer

with all our setting, this Factory files included all you need, note: we use PRUSA i3 ORIGINAL printers so you may need adjust the basic printing parameters to match your printer or use it as a start point for you, please give a look to [Simplify3D](http://www.3DLabPrint.com)



3. Step By Step PDF/VIDEO userguides

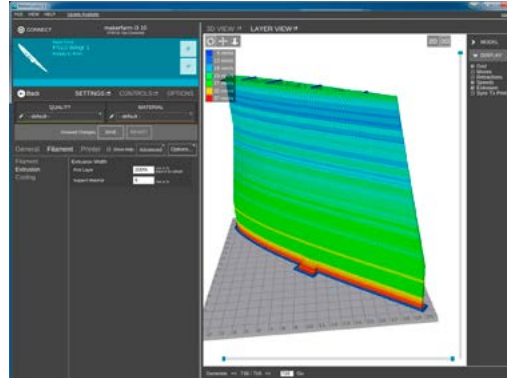
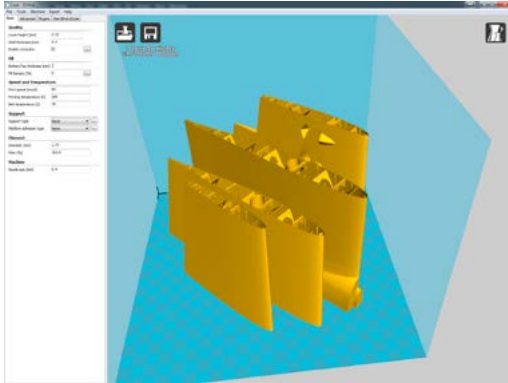
Apart from this userguide, please give a look to the Printing Guide with some Tips and Advices for airplane printing (Thin Wall Printing)

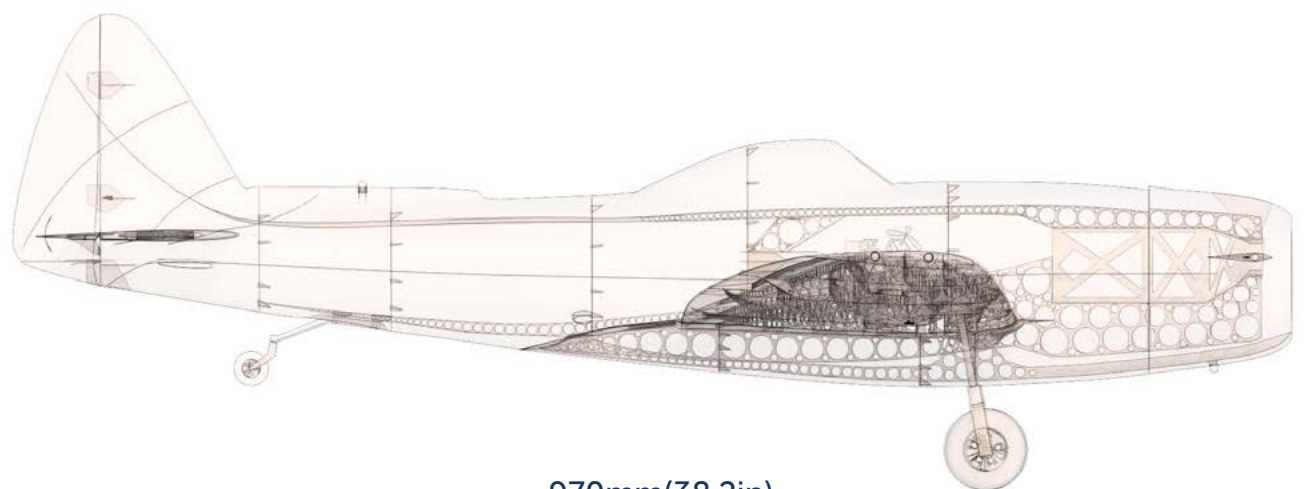
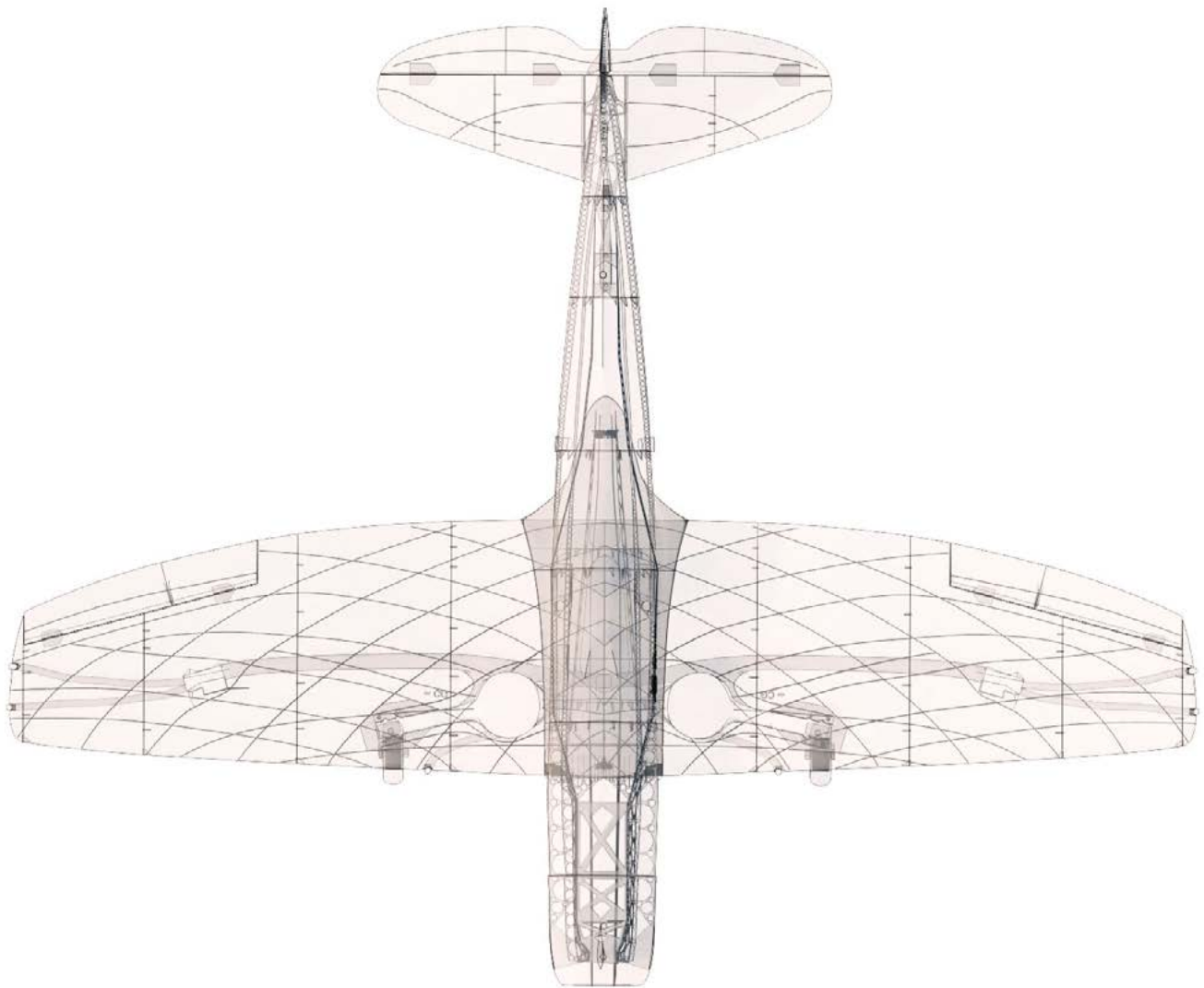
4. Gcodes

Basic Gcodes prepared for direct use, so universal as is possible. Should work with i3 style printers, you can try it out, but We can not guarantee that it will work with your printer. 100% works with PRUSA i3 ORIGINAL 3d printers...

5.Prepared settings for CURA and MatterControl slicers

If you dont like Simplify3D for any reason, there is always possibility to use another free slicer you can use our basic setting (setting files) as a start point and edit it as you need.

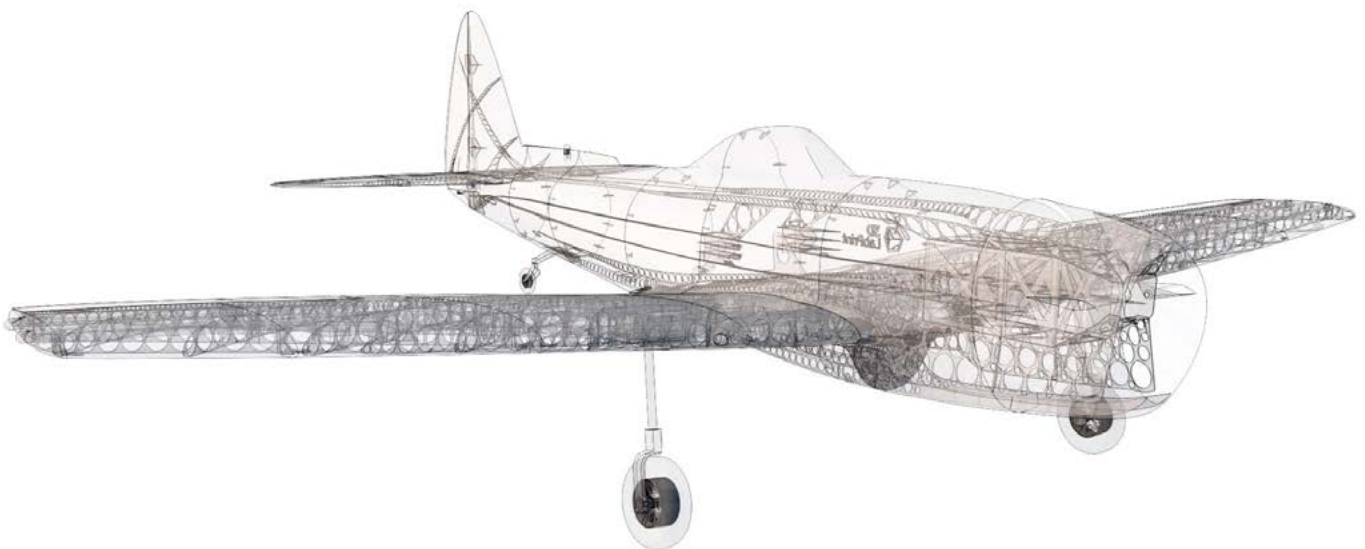




970mm(38.2in)



1160mm(45.7in)



Step By Step PDF/VIDEO userguide

1. Choose airplane at www.3DLabprint.com, our [Facebook](#) for live information...



Basic requirments (P47 N15):

min volume 195/195/150mm (250/120/150)

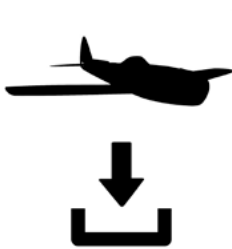
nozzle 0.4mm recommended (0.35 or 0.5mm alternatively)

Heated Bed recommended

PLA filament (or PETG, APLA, htPLA, PC-max....) not ABS

If you feel a little bit confused you can [download wing test part](#) from our websites or thingiverse, (the biggest part). Or contact support@3dlabprint.com

2. Create account, download

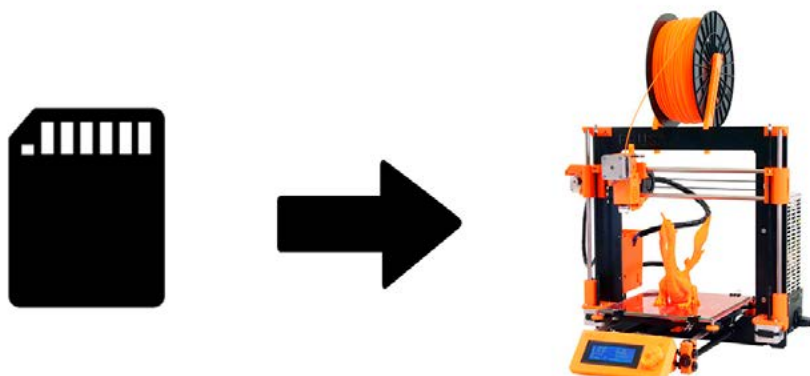


You will get download link for all files to your email (zipped) or you can log in to your account and download directly from our websites.

3. Gcodes preparing

options A Gcodes:

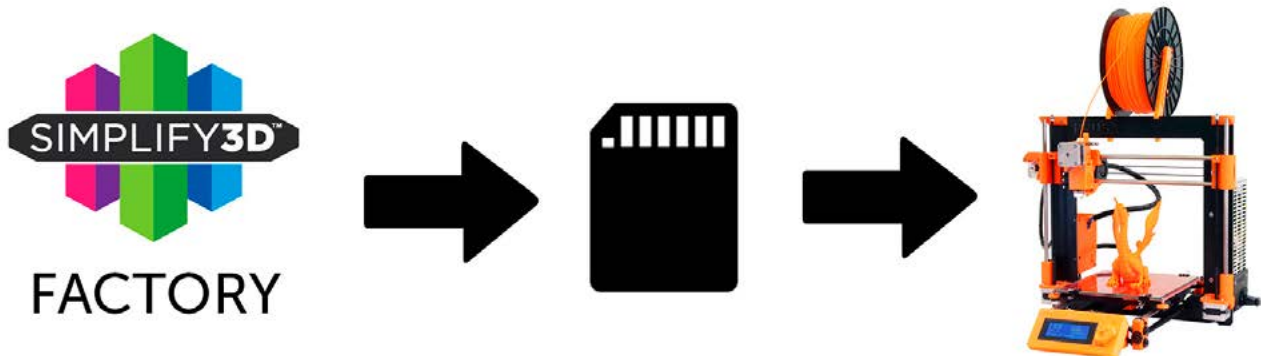
if your printer is i3 comptatible you can directly use [prepared gcodes](#), simply save each to SD card and let 3d printer do his job, HE temperature is set to 230 for best layer bonding, you can edit speed and temperature on your printer LCD only. If Gcodes does not work please proceed to the next options.



options B Factory files Simplify3D (recommended)

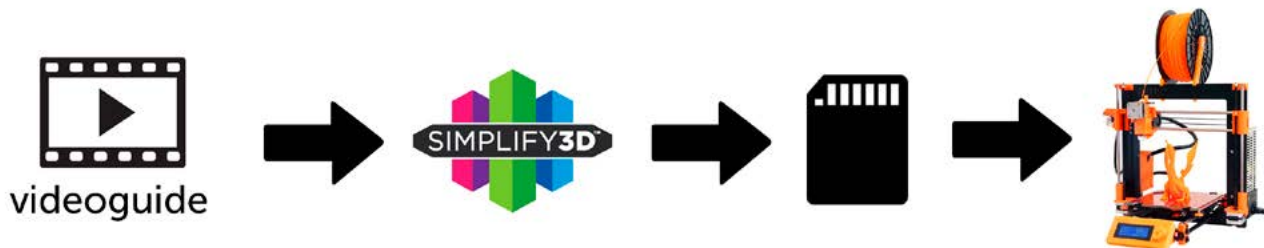
We prepare all you need in this files (basic FFF, parts arranged and so on...)

You can use this our setting as a start point and edit it as you need (adapt it for your printer), print only parts you need and so on... On most 3d printers it should work as it is, but please give a look to the setting and edit it if it is different to your printer, we are not liable for damages resulting from the use of our settings. If this does not work please proceed to the next option.



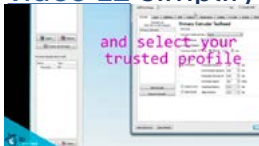
options C Simplify3D manual setting (watch and learn)

Use our [video guide 12](#) for proper setting... this is very good option and you will learn a lot about Simplify3d and become an 3d expert. Of course you spend a lot of time and youtube pause button will become your friend.



AND... please give a look to VideoGuides:

[video 12 Simplify3D setting](#)



[video 2.1 before start printing](#)



[video about Thin Wall Printing](#)



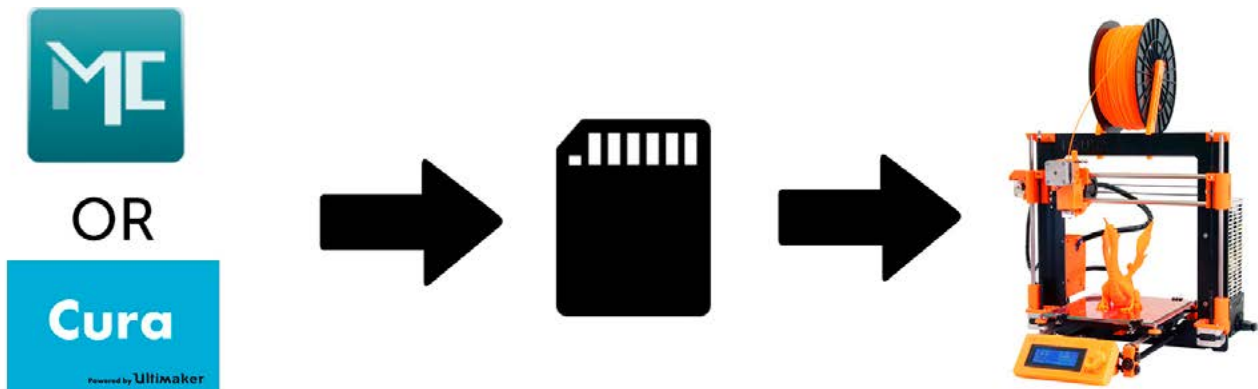
options D CURA or MatterControl

MatterControl and CURA are free :-)) and also gives very good results and airframe is still strong enough, slicer setting is very easy.

Please try [find right extrusion multiplier and temperature](#) for good weight and bets layer bonding, give a look to parts weight list for proper multiplier setting.

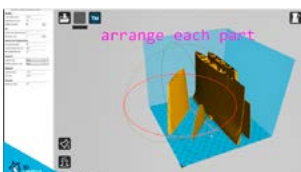
You can also use our [predefined](#) CURA or MC slicer setting file included in package (always adapt it for your printer, change build volume, filament diameter and so on... depends on your printer!!!):

CURA_wing_fuse.ini	(wing and fuselage and so on... parts)
CURA_ailer_elev.ini	(only ailerons, elevator and rudder parts)
CURA_thick.ini	(motor mount, battery holder, spinner)
OR	
MC_wing_fuse.slice	(wing and fuselage and so on... parts)
MC_ailer_elev.slice	(only ailerons, elevator and rudder parts)
MC_thick.slice	(motor mount, battery holder, spinner)

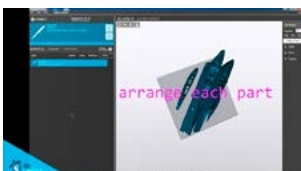


AND... please give a look to [VideoGuides](#):

[video CURA](#) slicer setting



[video CMatterControl](#) slicer setting



4. Print it

Save generated Gcodes and insert SD card to your printer, prepare your printer and start printing, we prefer to use SD than direct connection via USB Note: ABS filament is not suitable for this...

Scaling the model will lead to unusable result!

[video guide about printing](#)

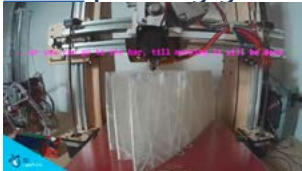
you will need: PLA filament - good quality and strong PLA (we need good layer bonding)

Strong hair spray (or your favorite adhesive bed surface)

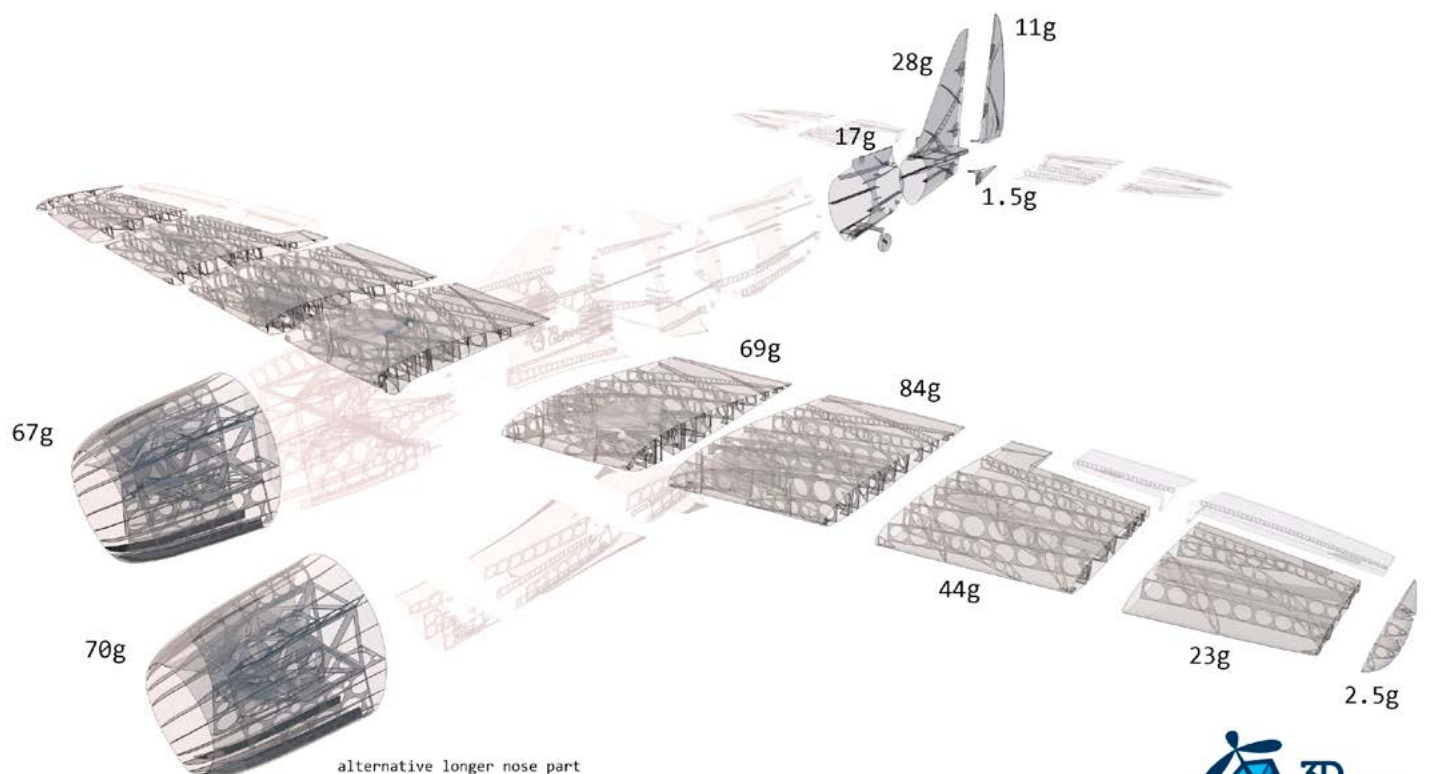
Razor blade

AND... please give a look to VideoGuides:

[video printing guide](#)



Main parts weight list:



Basic Typs and Advices

Plese Experiment with your [extrusion multiplier](#)...

Also [HotEnd temperature](#) is very important for strong result, please try increase temperature to find the best value ([200 up to 260 celsius](#))

Turn [OFF cooling fan](#) for better layer adhesion ([HE fan of course ON](#)) we dont need it for our thin wall printing...

We try lot of filaments and so far PLA is still the best for our models (2016).

You can try aslo PETG and PC-max from polymaker is very promising filament.

HEATED BED is very recommended, 60-70celsius (print without warping ends)

Looks like any standard quality PLA is OK for our planes, BUT it always depends on combination PLA vs. Extruder vs. HotEnd.

We find that some color of filament has lower layer adhesion also.

Nowadays there is lot of 3dprinters on the market, very most of them is OK for printing our aircrafts (specific thin wall printing...) suficient volume, heated bed, 0.4mm nozzle.

Please give a look to Printing Guide:



printing guide rev. 2016/06



Some Tips and Advices for airplane printing

Printing fully printable 3dLabPrint Airplanes

... If we want print aircraft there always be demand on low weight and enough strenght, with Thin Wall Printing we can achieve it ...

5. Assembling printed parts

5.1 LED lighting system installing

[See video guide #13](#)

you will need: [LED light system](#)

[CA Glue - medium](#) or similar medium viscosity CA glue

[Activator for CA Glue](#) or similar

5.2 Retractable landing gear installing, tail wheel installing

[See video guide #14](#)

you will need: [Servoless retracts 3mm mounting pin](#)

110mm landing gear, struts 3mm diameter (or suitable oleo legs, use optionally mounting pin reduction for 3mm...)

2x wheels 51-62mm

[OR you can adapt this...](#)

[Tail wheel system](#)

10 x Self Tapping Screw M3x12mm or similar

2x [Servo Lead Extension](#) or similar

[Y servo cable](#) or similar

Screwdriver +

Hex screwdriver 1.5mm

5.3 Rudder installing

Install rudder with AC hinge sheet, make pushrod for rudder, use carbon tube clevis+threaded end...

[See video guide #15](#)

you will need: [CA Glue - medium](#) or similar medium viscosity CA glue

[Activator for CA Glue](#) or similar

[AC Hinge Sheet](#) or similar

[Carbon tube 4/3 750mm](#)

[Clevis](#)

[Threaded end](#)

Scissors

soldering iron or any hot tool

6. Before flight check

Center of gravity is very important !never fly aft position! (see CG markings), battery properly charged, ailerons, rudder and elevator deflection check, your own flying skills or RC simulator training...

Accelerate gradually and keep the direction during taxiing by using the rudder, try it first without taking off a few times (taxiing on the runway) Then gain speed until the plane move up tail part , then pull the elevator gently and you're in the air.

Big But, it is very useful spend some time in this discussion, very very recommend:

[Basic to advanced ground handling take-off's and landing for warbirds](#)



7. Pilots please Attention!!!

For the first flights we recommend setting the center of gravity of the airplane by about 2-4mm forward of the CG tag (nose heavy, this increases the stability) is also good to increase the expo settings on your transmitter for elevator and ailerons to 80 % (this calms response from your stick inputs)

Also you can decrease a little bit elevator and ailerons deflection.

Make sure the battery is well fixed in proper position if it moves during flight it will cause move CoG aft and will lead to uncontrollable flight behavior...

You can then return to the center of gravity (balance aircraft) the CoG points and expo set to 50 % as stated in the video/instructions... this gain back maneuverability when you will be sure with flying your airplane.

And Please use this files only for your own purpose, do not send further, Thank you very much...