



# USER GUIDE

print your own plane



**3D LabPrint Supermarine Spitfire Mk XVI**  
**ver.1.2 2015/08**



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## 3D Lab Print Supermarine Spitfire Mk XVI - fully printable R/C plane for your home 3Dprinter

Future of flying - Print your own plane

The first fully printable airplane with suitable files prepared for your 3Dprinter. Flight characteristics are comparable or even better than classic build model airplane.

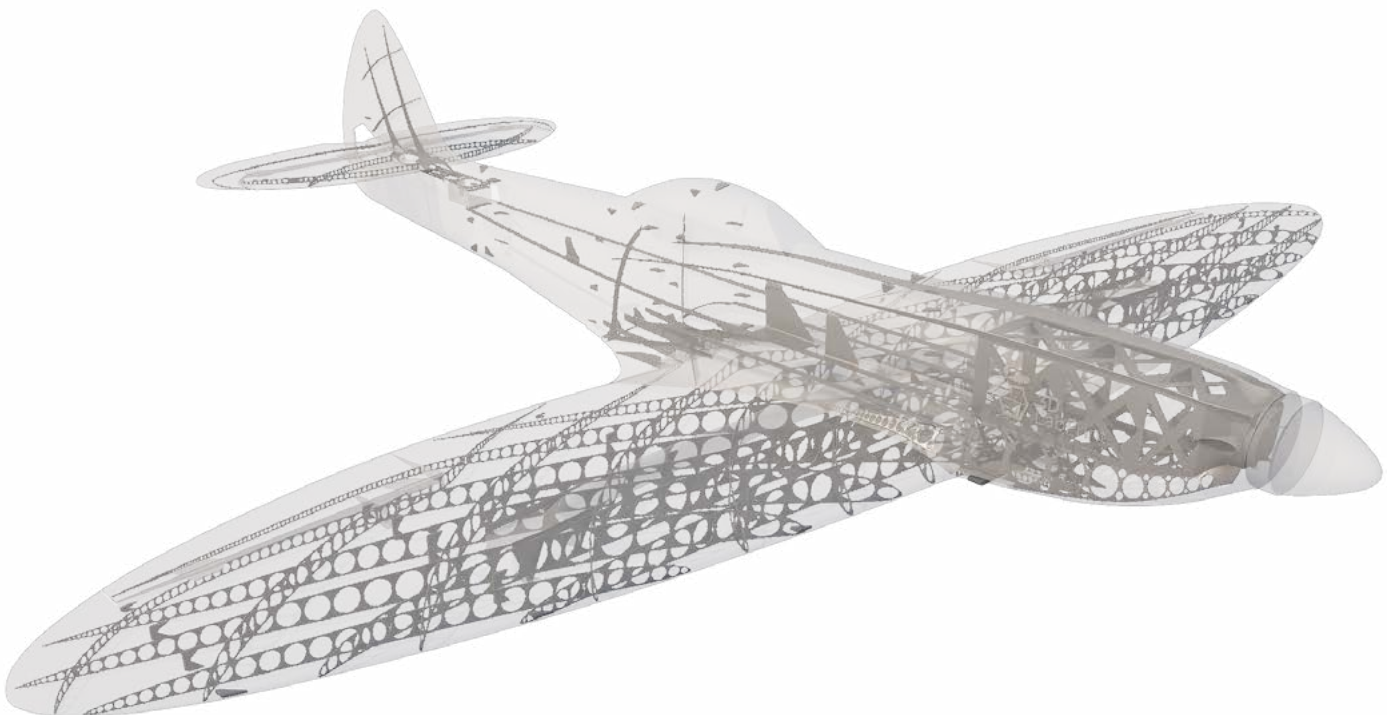
Simply download and then print it anytime you need only for \$10 (filament cost).

This is not a dream, now you can print this HI-TECH ... at home, print spar parts, and so on...

Both parts the wing and the fuselage features extensive hitech 3d structural reinforcement which makes the model very rigid while still maintaining light-weight airframe and exact airfoil even when it is made only from plastic. This perfect and exact 3d structure is possible only due to additive 3dprinting technology. So welcome to the 21th century of model flying. Be The first at your airfield. Of course we complies with the ACES aircombat rules.

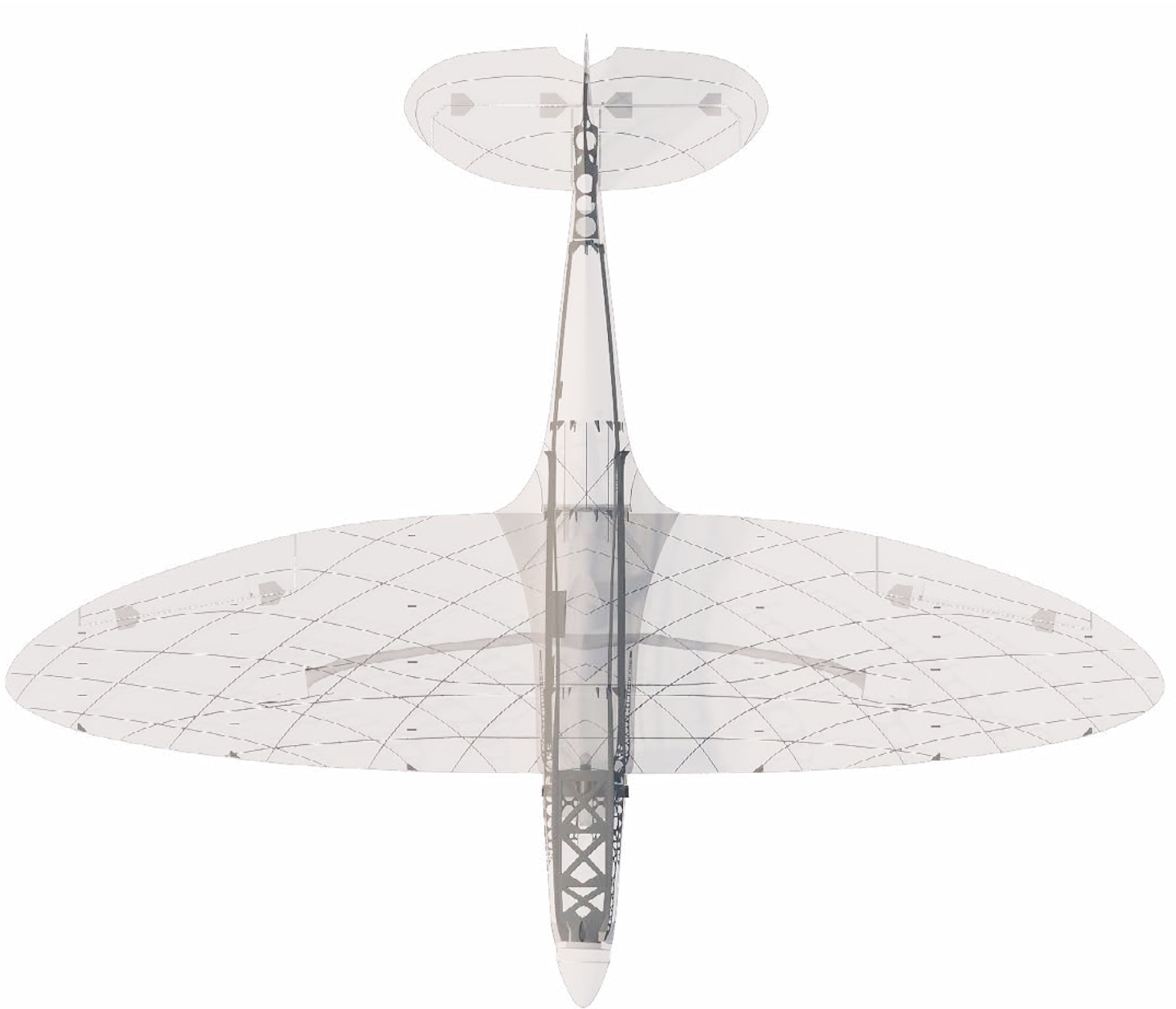
Easy to assembly, you do not need any extra tool or hardware, you only need to glue printed parts together. The rest of the assembly is very easy. Simply add brushless motor, ESC, servos and radio system. Don't worry, detailed step by step PDF/VIDEO is included.

You will get superb performance airplane with High efficient powerplant which let you fly 7+ minutes at full throttle with the speed exceeding 150 kph. On the other hand low stall speed is achieved for easy landing.



## Supermarine Spitfire Mk XVI, History

The prototype of the Spitfire, designated Supermarine Type 300, took to the air for the first time on 5th March, 1936. The fighter was designed with a maximum accent on the aerodynamic cleanliness - its Chief designer, Mr. Reginald Joseph Mitchell utilised the experience gained during the design and development of the racing seaplanes. The fact that the experience paid its dividend has been proven by altogether 24 versions produced and with a total of 22 000 machines manufactured within following thirteen years...



## General specifications

Lenght:	800mm
Wingspan:	973mm
Height:	210mm
Wing area:	16.8 dm <sup>2</sup>
Wing loading:	50.1 g/dm <sup>2</sup>
Airfoil:	aircombat modifcated
Print weight:	432g
Empty weight(eq. w/o battery):	638g
Takeoff weight (6s 1300 lipo):	840g
Max takeoff weight:	1100g
Never exceed speed, VNE:	205 km/h
Design maneuvering speed, VA:	165km/h
Stall speed, VS:	30 km/h



## Powerplant

Propeller:	aeronaut ELP 9/6 or APC 9/6 – 9/7.5
Motor:	AX-4008Q/620KV, 22pole brushless HE electric motor
ESC:	Castle Creations TALON 25
Battery:	Turnigy nanotech 1300 mAh/6s/22.2V, 206g, 25C

## Performance measurment

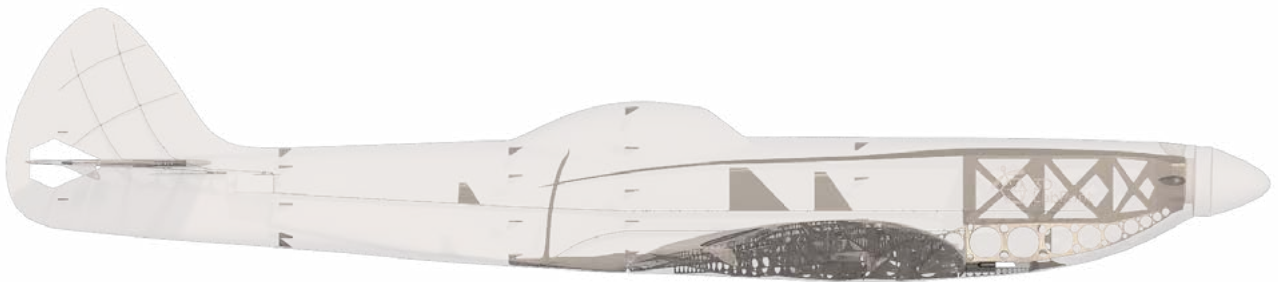
Max RPM and Amps (static):	12 000/min with APC 9/6, current 19A 11 550/min with APC 9/7.5, current 21A
Max RPM and Amps (level flight):	13 700/min with APC 9/6, current 12A 12 400/min with APC 9/7.5, current 13.5A
Max speed VH (level flight):	135 km/h – 67.5kn – 78 mph with APC 9/6 150 km/h – 73kn – 84 mph with APC 9/7.5
Rate of climb:	29 m/s (5 373 ft/min) with APC 9/6 32 m/s (5 728 ft/min) with APC 9/7.5
Flight time (6s 1300mAh/full):	7:40 with APC 9/6 5:30 with APC 9/7.5 7:40 with aeronaut ELP 9/6





973mm

210mm



800mm

## Step by step PDF/VIDEO user guide:

**1.** Choose airplane at [www.3Dlabprint.com](http://www.3Dlabprint.com) **and please visit youtube!!!**

**2.** Select and proceed to check out.

The only thing your printer must have is a build volume **195/195/150 (250/120/150)** or bigger and nozzle diameter **0.4mm**.

If you feel a little bit confused feel free to contact us at [support@3dlab-print.com](mailto:support@3dlab-print.com).

You will get STL files, pro tech support, detailed PDF/VIDEO guide and some accessories.

The only mandatory thing is nozzle 0.4 and sufficient build volume of your printer....

[See video guide #1](#)

**3.** Download and slice it

After checkout you will get a download link to your email, download it and unzip it.

After unzipping you get several STL files divided into directories (and PDF/VIDEO guide + some accessories)

See videolinks below for proper slicer setting (very important) adapt it!

**Or if you need help** please send us your trusted printer profile FFF (need Simplify3D) we will help you with proper setting for all files, so it will be very comfortable for you :- ) please add your order ID and printer type [support@3d-labprint.com](mailto:support@3d-labprint.com)

Scaling the model will lead to unusable result!

And please note that only few slicer software is able to work with such a complex model ( we have a good experience with Simplify3D, also Mattercontrol v1.3 looks promisingly, but we are missing some features which we need )

[See video guide #2 slicer setting](#)

[See video guide #12 about amount of filament fine-tune](#)

Static accessory slicer setting:	layer height	0.25mm
	top layers	3
	bottom layers	3
	outline/perimeter	2
	infill	10%

**4.** Print it

Save generated Gcodes and insert SD card to your printer, prepare your printer and start printing the first gcode file and then next and so on... (we prefer to use SD than direct connection) Notice: ABS filament is not suitable for this...

[See video guide #3](#)

you will need: PLA filament - good quality PLA (we get the best result with PLA so far)  
Strong hair spray  
Razor blade

## 5. Assembling printed parts

### 5.1 Wing assembling

Glue wing parts with CA glue together, use activator and instal ailerons...

[See video guide #4](#)

you will need: [CA Glue - medium](#) or similar medium viscosity CA glue  
[Activator for CA Glue](#) or similar  
[AC Hinge Sheet](#) or similar  
Scissors  
Snap knife  
Some cloth for wiping CA glue...

### 5.2 Fuselage assembling

Glue with CA glue fuselage parts together, use activator, instal elevator, instal peg, if needed tune parts shape with knife or sandpaper...

[See video guide #5](#)

you will need: [CA Glue - medium](#) or similar medium viscosity CA glue  
[Activator for CA Glue](#) or similar  
[AC Hinge Sheet](#) or similar  
Scissors  
Snap knife  
Sandpaper  
Some cloth for wiping CA glue...

## 6. R/C equipment preparing

**6.1** Complete your RC Powerplanr unit, You have to solder connectors (3.5gold) for motor, speed regulator(ESC) and battery(xt60)...

[See video guide #6](#)

you will need: [Motor - AX-4008Q-620KV](#)  
[Speed controler \(ESC\) - CC Talon 25](#) or similar 25A/6s  
[3x PAIRS, 3.5mm Gold Connectors](#) - optional  
[Li-Pol Battery 1300mAh/6s](#) - Turnigy nano-tech  
[Male XT60 connector](#)  
[Shrink Tube black](#), [Shrink Tube red](#)  
Solder wire and Soldering Iron  
[Hands free Holder](#) - optional

**6.2** Test and center all servos with servo tester or transmitter, then instal horns in midle position, plug extension wires and cut wing Servos mount...

[See video guide #7](#)

you will need: 3x [9g Servo HXT900](#)  
3x [Servo Lead Extension](#) or similar  
Your R/C transmitter and receiver or servotester with batt.  
Small screwdriver+  
Snap knife  
Soldering Iron or Small handsaw or Dremel



## 7. Instal prepared RC equipment: Motor, ESC, Servos...

### [See video guide #8](#)

you will need: Printed motor mount

2x Screw 3/12mm

Small screwdriver+

Your earlier prepared R/C equipment

3x Self Tapping Screw M3x8mm or similar

## 8. Made 3x pushrod and connect within servos and arms (ailerons and elevator)...

### [See video guide #9](#)

you will need: Steel pushrod, diameter 1 - 1.2mm

Pliers

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

[Activator for CA Glue](#) or similar

## 9. Instal your reciever, connect batery, setup servos and etc. with your trasmitter, lock servo position, then instal propeller...

### [See video guide #10](#)

you will need: Your own Rx/Tx system

[Li-Pol Battery 1300mAh/6s](#) - Turnigy nano-tech

Foam strip for Li-Pol battery

Scissors

Velcro

[Propeller APC Style 9/6](#) or similar

Small screwdriver+

[CA Glue](#) - medium + [activator](#)

## 10. Before flight check: **center of gravity is very important** (see CG markings), battery properly charged, ailerons and elevator deflection check, your own flying skills or RC simulator training...

Than go flying: set full throttle, put the elevator little upwards (1-2mm) and throw it energetically to the wind approx 10 grades up, wait till plane gain speed, then fly it in your manner...

### [See video guide #11](#)

...so, are you ready for flying popcorn, yeah!

