

SPITFIRE MK IX

Full composite

Assembly Manual

AVIATION DESIGN

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INTRODUCTION

The *Spitfire MK IX* from **AVIATION DESIGN** is a scale model with excellent flying and ground handling characteristics.

The Spitfire is one of the most famous warbird, and probably the best design with its elliptical wing. Our model is 100% scale and had already made several F4C competition. The model is fully molded in epoxy/glass with all panel lines engraved and all rivets and screws in relief. Construction is very straightforward and requires only approximately 15 hours for assembly. The model is designed to be fitted with a large Spring Air retracts. This model has plug in wings. The large engine bay accommodate 2-strokes engines from 20-32cc and 4-strokes from 20-30cc.

The performance are really fantastic !

This warbird is very easy to fly. Our Spitfire has some incredible low speed performances due to its special wing section and washout. Some aerobatics manoeuvres are also possible.

This model has plug in wings. The kit is designed for Spring Air retracts

KIT FEATURES

- Aluminium painted epoxy/glass fuselage with plywood frame already glued
- Cowl and control surface in epoxy glass painted.
- Stabs in epoxy with aluminium spare already installed.
- Wings in epoxy painted with aluminium spare and plywood mounting already installed, ailerons fitted with live hinges.
- Clear, formed canopy.
- High tensile aluminium wing and stabs joining tube.
- Instructions in English.

To complete the kit :

The following items are not included in the kit. They are available from **AVIATION DESIGN**.

Hardware package : ref ADW 204

For the wings :

4 links M3

M3 threaded rod, 2 x 50 mm long

2 hooks

8 screws for landing gear

For the fuselage :

7 link M3

M3 threaded rod

9 hinges

1x 620 cc fuel tank

0.5 silicone tubing

For the canopy and cowl :

10 Parker screws

Engine :

The large engine bay accommodate 2-strokes engines from 20-32cc and 4-strokes from 20-30cc. Thunder Tiger 120, Super Tiger 2500, MOKI 180, ...

Aluminium Spinner ref : ADW 205

Spring Air retracts (mod 403 S)

Scale wheels : ADW 212

Scale oleo struts : ADW 211

Cockpit detail kit : ADW 209

Include the instrument panel molded in resin. It also include the ABS side panels

Detail set : ADW 207

Include the guns, exhaust pipes, under-wing cooler, under-wing fairing, air intake, ...

DISCLAIMER

AVIATION DESIGN assumes no liability for the operation and use of these products.

The owner and operator of these products should have the necessary experience and exercise common sense. Said owner and operator must have a valid Model Airplane licence and insurance as required.

CONSTRUCTION

WINGS

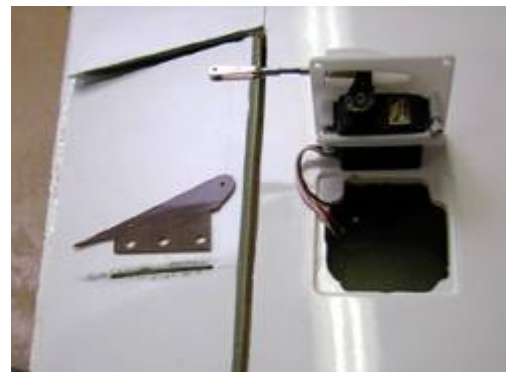
According to the drawing under the wings, cut the gear location with a small cutting disc (Perma Grit disc for ex.).
Remove the fiber+foam for the wheel location.

Install the servo in the wings.
Make a 3 mm slot in the aileron and glue the control horns..
Insert in the wing the servo extension lead
Make a hole in the wing root for the servo

lead.

Connect the servo and the control horn with 2 x M3 links and M3 threaded rod.
Apply thread lock.

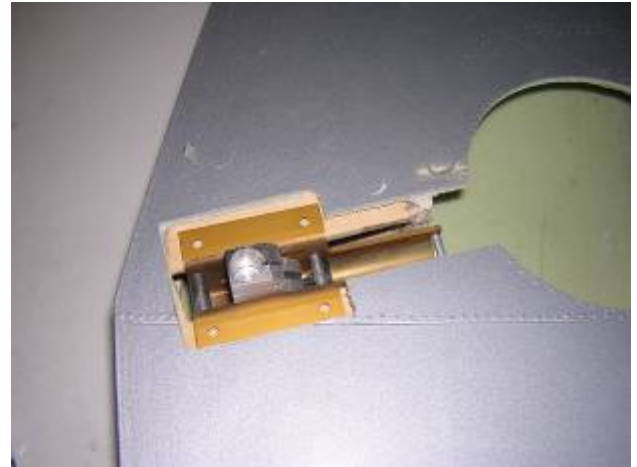
Screw the wing hook in the wing root chord



Slide the aluminium tube in the fuselage.
Slide the 2 wings against the fuselage.

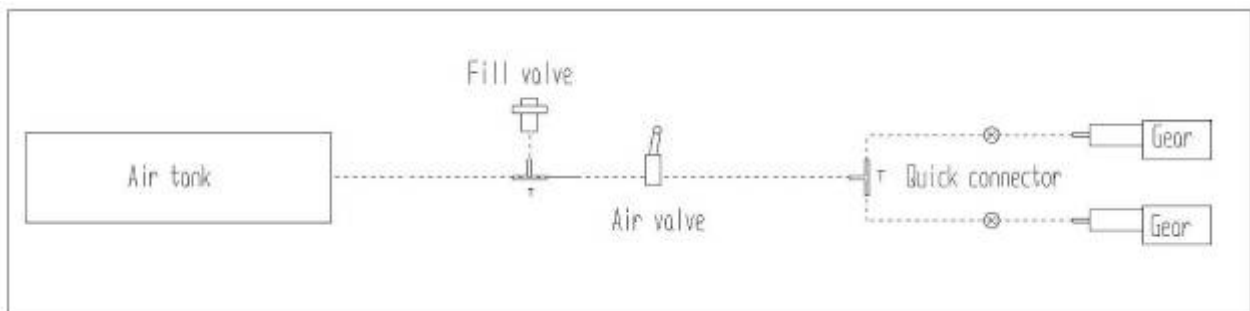
Landing gear :

Fit the 2 landing gears in the wings
Drill 8 hole diameter 1 mm and screw the 8 parker screws
Connect all air tubing.
You can use the mecanic air valve with a micro servo or use an electrovalve (optionnal).
The air bottle will be fitted in the fuselage with double face tape.
A quick air connector will allow to disassemble the wings



Fit the oleo legs in the spring air retracts.

Fit the wheels on the legs.



STABS

Horizontal stabilizer and stabs Control surface :

Drill some 5 mm hole in the control surface leading edge and trailing edge stab for the hinges location.

Sand the trailing edge with half round Perma Grit tool

Glue the hinges with epoxy
The hinges should be pinned.

Make a 3 mm slot in the aileron and glue the control horns..



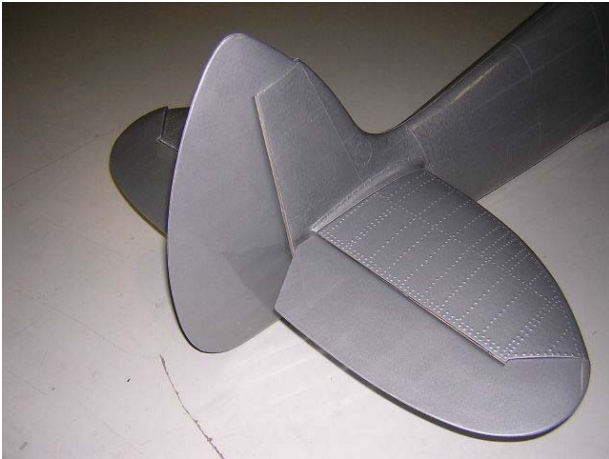
Fin Control surface :

Drill some 5 mm hole in the control surface leading edge and trailing edge rudder for the hinges location.

Sand the trailing edge with half round Perma Grit tool

Glue the hinges with epoxy
The hinges should be pinned.

Make a 3 mm slot in the aileron and glue the control horns..



FUSELAGE

Tail wheel :

Glue C6 in the fuselage
Fit the tail wheel on C6.

Servos

Fit the 2 servos on the plywood support.
Make sure that the servos do not touch the fuselage.

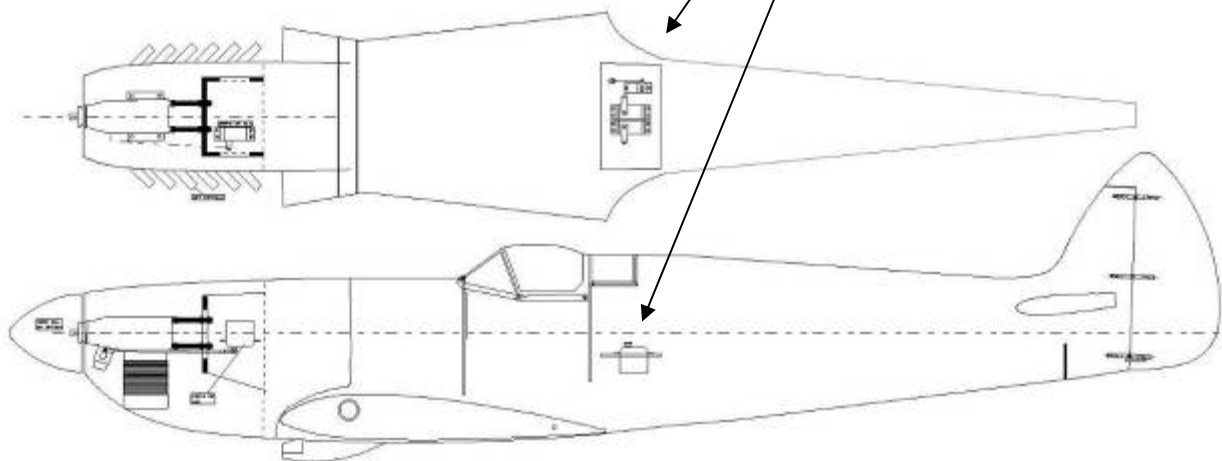
Glue C5 in the fuselage with epoxy and fiber glass.

Connect the rudder servo to the control horn with 70 cm M3 threaded rod and 2xM3 link.
Glue the obechi spar on the M3 threaded rod

For the elevator servo, weld the rod in Y as drawn

Connect the elevator servo to the control horn with 70 cm M3 threaded rod .

Glue the obechi spar on the M3 threaded rod
Fit this in the fuselage and screw the M3 link.

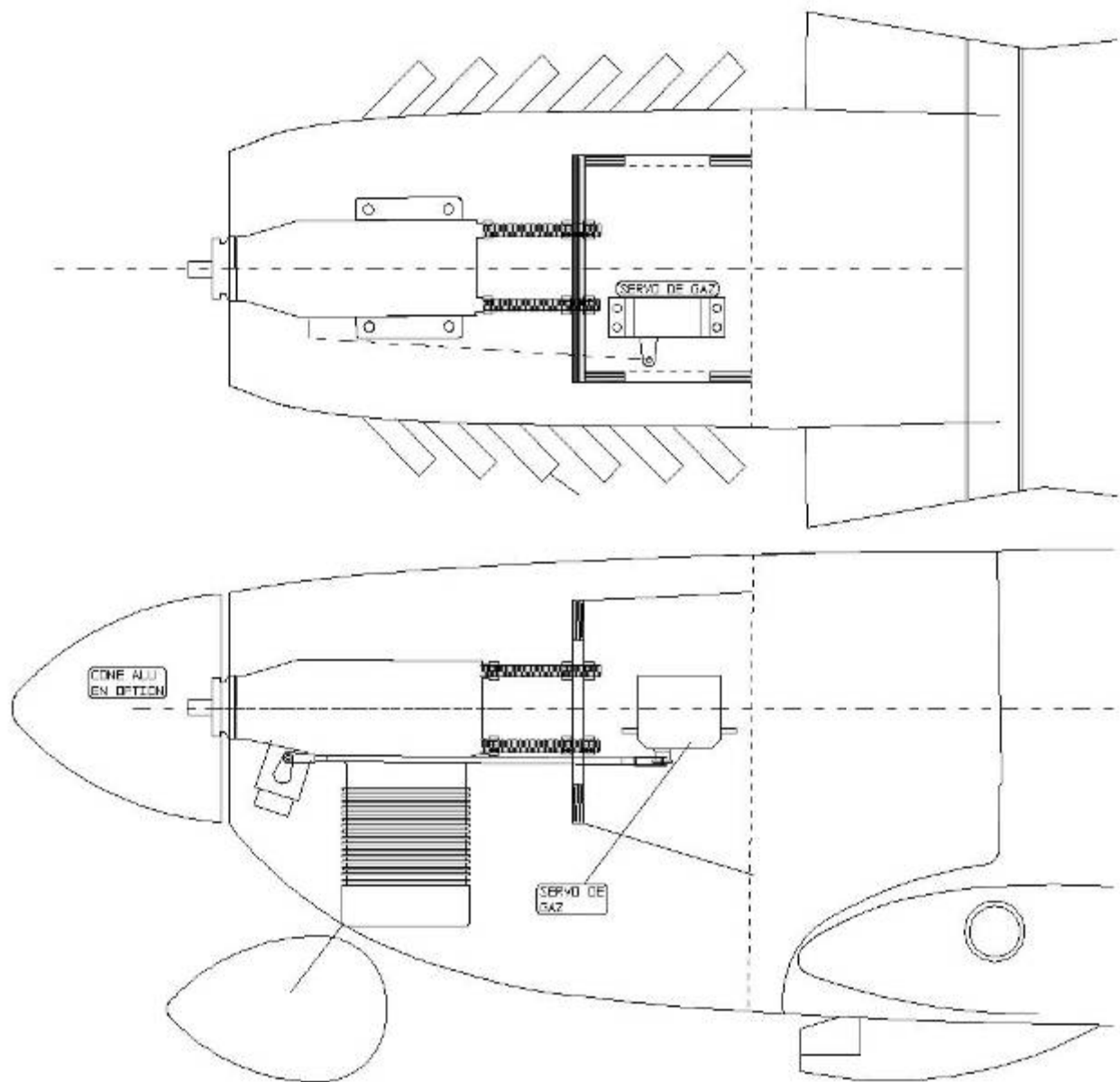


Engine :

The large engine bay accommodate 2-strokes engines from 20-32cc and 4-strokes from 20-30cc. Thunder Tiger 120, Super Tiger 2500, MOKI 180..
Anti-torque should be 1.5 °

The engine can be installed with 4 threaded rods direct on the plywood support like on our prototype (see pics and drawings).
It can also be fitted on a normal engine mount.



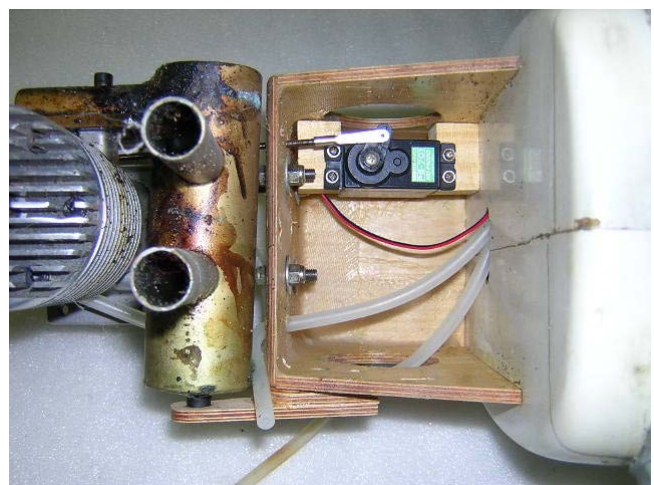


Throttle :

Screw the servo behind the front plywood frame
Connect the servo to the carburator with M3 link.

Tank :

Install the fuel tank in the fuselage with foam



Cowl fixation :

Drill 6x 1mm diameter hole in the cowl and screw the 3 Parker screws.

Drill a hole for the plug and for the needle valve.

Draw on the cowl the cooling hole according to the plan and pics

Cut a hole in the cowl for the air cooling of the engine.

Draw on the cowl the exhaust pipes location

Cut 12 holes in the cowl for each pipe to extract the hot air from the cooling .

Glue the 12 pipes on the cowl with CA



CANOPY

The canopy will be fitted with parker screws.



FINISHING TIPS

Now you have to remove the wax from the model.

The best way to do this is to sand all the fuselage with a "scotch brit" scouring pad used to wash up the crockery

Do not apply primer on the model.

All parts must be directly painted.

Think light : excessive paint build-up will add unnecessary weight to the model. Apply light, thin coats of paint and sand between coats to avoid excess weight.

For the stabs and fin, finish them as light as possible to have no trouble with the CG.

RADIO

The Spitfire needs 5 servos :

Ailerons : 2 servos 3 kg torque (ex : S3002)

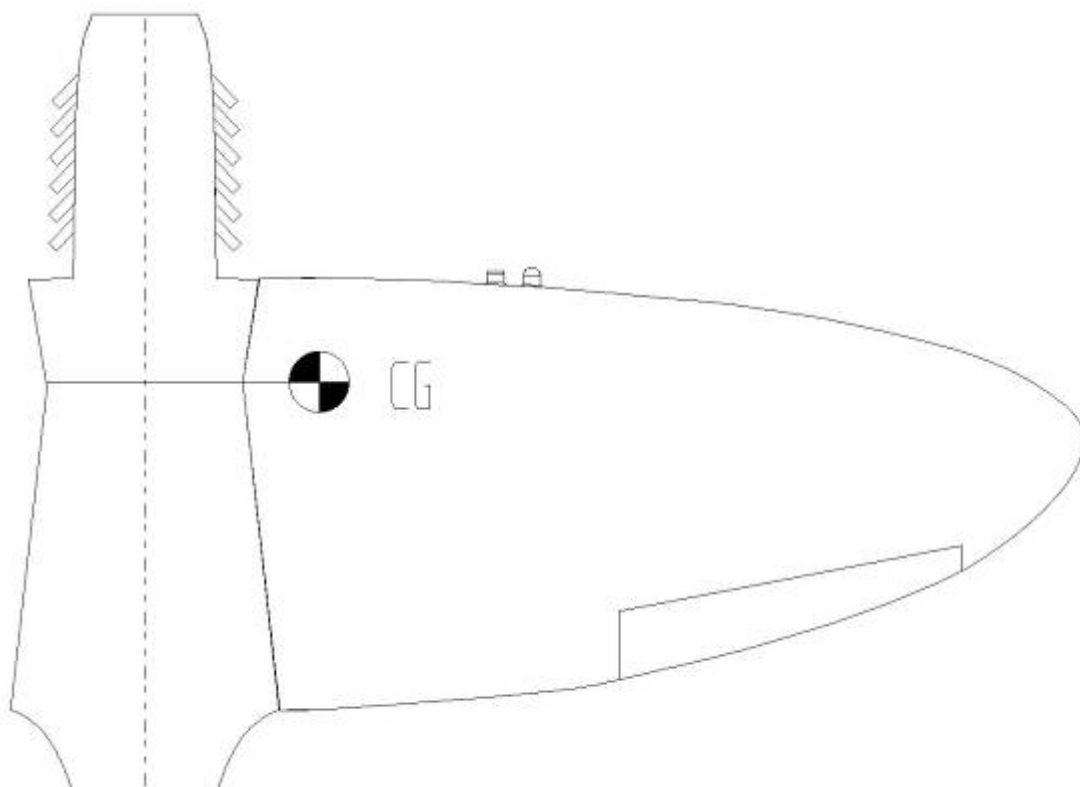
Elevator : 1 servo 4 kg torque (ex : S3002)

Rudder : 1 servo 4 kg torque (ex : S3002)

Throttle : 1 servo 3 kg torque (ex : S 148)

You normally need a 1200 Mah battery power.

The correct CG is just of the corner of the wing root.



Note : balance the model with fuel tank empty.

Aileron travel : 13 mm up and 13 mm down

Elevator travel : 15 mm up and 15 mm down

Rudder travel : 30 mm left and 30 mm right

It will be necessary to have a downward elevator trim (- 4 mm)

The total weight of the Spitfire is 7.5 to 8.5 kg tank empty.

Cockpit detail kit : ADW 209

Paint the instrument panel in black

All the vaccum parts will be painted in green
Glue the instrument panel on the vaccum part
Fit this part in the fuselage. Don't glue it but screw it on wood block to have access to the fuel tank.

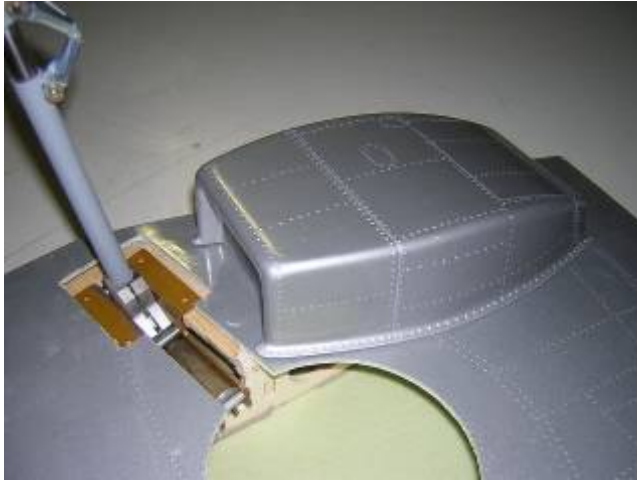


Detail set : ADW 207

Cut the exhaust pipe in 12 parts : lenght 40 mm, 45° angle.

Glue them on the cowl according to the plan.

Cut the under wing fairings (front face and rear face) so that the air can pass through them (to reduce the drag). Glue them with cyano according to the photo and engaved line



Important note : Pay very careful attention to structural integrity. It is your responsibility to operate it safely.

Specifications may change without notice.