

F-100

*for AMT Pegasus jet engine
or Jet CAT P-120 / P-160*

Assembly Manual

AVIATION DESIGN

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INTRODUCTION

The F-100 from **AVIATION DESIGN** is designed for high thrust jet engines. It is a scale kit, with all the panel lines engraved in the fuselage and a lot of scale details (gears, hinges, cockpit...). It is fully molded in fiberglass, carbon and epoxy. The flight characteristics are excellent with low and high speed capability. The model has plug in wings, stabs and fin.

F-100 is available :

- in "C" version with small fin and small fixed flaps
- in "D" version with larger fin and large movable flaps

F-100 model includes

- High quality epoxy-glass fuselage painted.
- All plywood and wood parts premounted.
- Epoxy-glass inlet
- Exhaust nozzle.
- Fully molded wings, stabs and fin painted
- Access hatch requiring no additional framework.
- ABS cockpit interior.
- Clear formed canopy.
- All hardware (ball links, bearings, screws ...)
- Instructions in English.

To complete the kit :

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

Jet Engine :

1 Complete **AMT Pegasus** jet engine
or 1 Jet Cat P120 or P160

Cockpit detail kit : ref : ADJ 465

This kit include :
1/7 full body jet pilot, 1/7 ejector seat & instrument panel.

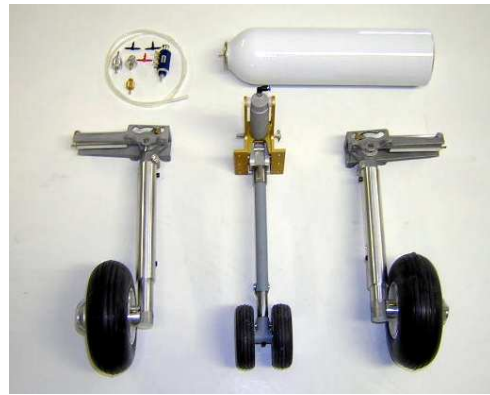


Landing gear : ref : ADJ 467

AVIATION DESIGN retractable landing gear is specially designed for the F-100.

It is made in aluminium by CNC

It includes 3 retracts system, 3 oleo legs, 4 way valve, tubing, connectors, air tank, filling valve, ...



Gear doors kit : ref : ADJ 469

Include 3 air cylinders, electronic gear door cycler, 4 way valve, tubing, connectors, air tank, door hinges, ball links

Wheels set + brakes : ref : ADJ 469

This set include:

2 x 110 mm diameter wheels + scale cover + brakes

2 x 60 mm diameter front wheels

It includes valve, tubing, connectors, air tank, filling valve.

Variable pressure brake control valve : ref : ADT Brk

Kevlar Fuel tank : ref ADJ 473K

Fuel cell molded in kevlar. Capacity : 3.2 liters

Include tubing, nipples and clunks + 1 upper tank



Air brake : ref ADJ 475

Air brakes fully molded

Include 2 air cylinders, tubing, connector and valve.

2 Underwing fuel tank : ref : ADJ 480

Fully molded ,epoxy-glass. Rails and fins included



Double walded stainless steel tailpipe : ref : ADJ 490

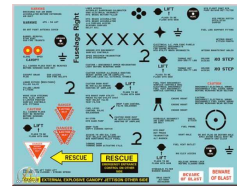
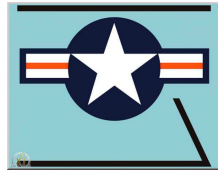
Detail set : ref : ADJ 485

Include refuelling probe, pitot probe and 4 guns



New super scale water decals :

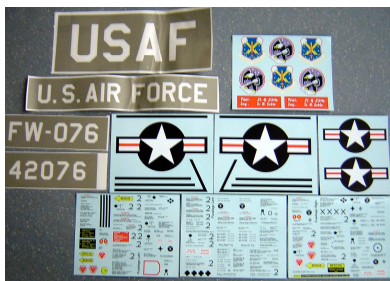
Basic stencil (all marking on airplane)



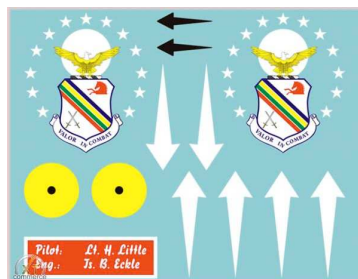
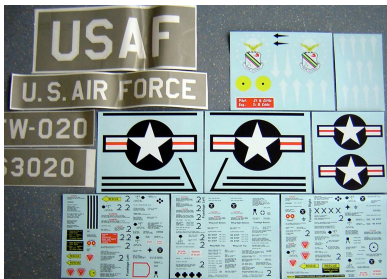
F-100 Skyblasers



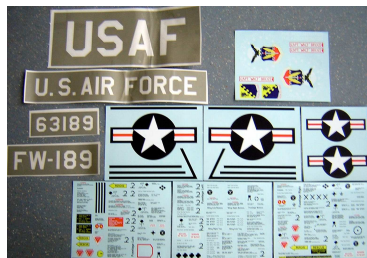
F-100 435 Tactical Fighter squadron FW-076



F-100 FW-020



F-100 FW-189



More versions in near futur

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 license and insurance, as required.

CONSTRUCTION

Fuselage :

We recommend to let the fuselage in 2 parts for transportation.

All plywood reinforcement are already glued and hole drill in the front and rear fuselage.

You'll just have to screw the 2 parts together with 4 x M3x16 mm diameter screws + blind nuts.

Don't forget to check the 4 screws before to fly

Front gear door :

Cut the front gear door according to the engraved panel lines with fine diamond disc.

Glue the 5 door hinges with cyano (take care of the position according to the photo) : 3 hinges on rear door on right side, 2 hinges on front door on front side.

For this operation in order to avoid glue to "harden" the hinges put a small drop of oil in the pivot point.



Front landing gear :

Screw the front landing gear on the plywood mount with 4 x d3x16 mm parker screw

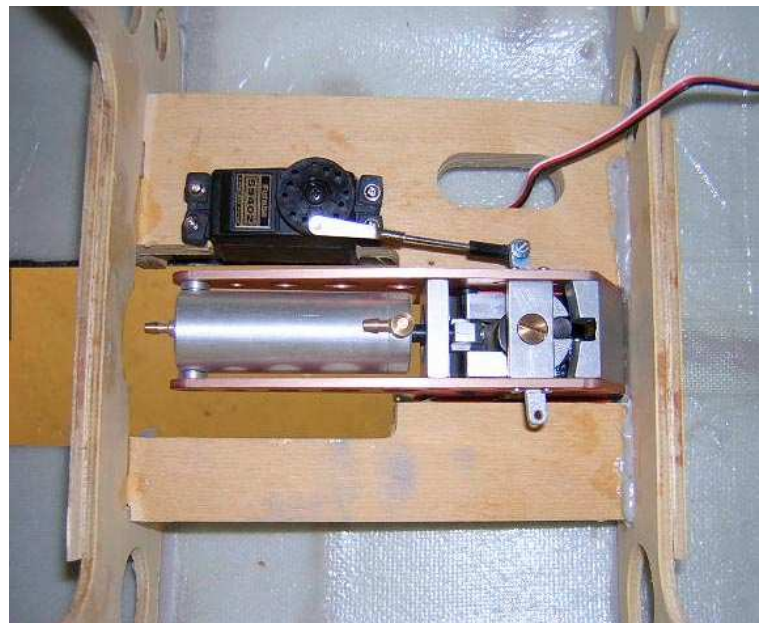
Screw the servo on the servo plywood mount

The steering servo should be a 3 kg.cm servo

Connect the servo to nose gear steering arm with 1 x M2 link, 1 M2 ball link and M2 threaded rod (30 mm long).

Ball link is screwed under the gear arm

The M2 link should be connected in the arm hole closest to the gear axis.



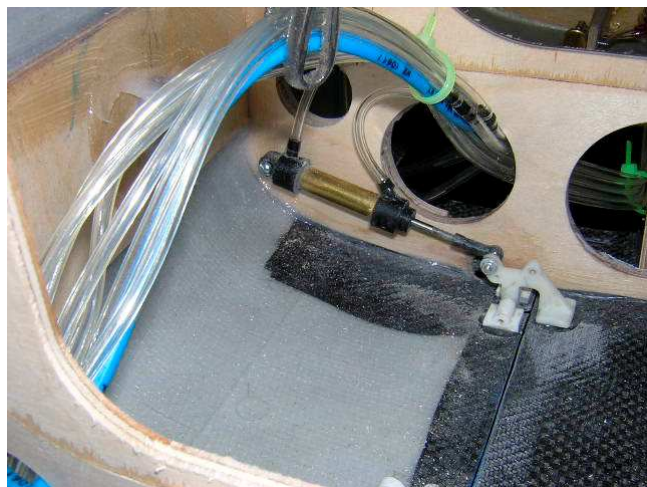


Front gear door cylinder:

Screw a ball link on the 1" air cylinder.
Screw the air cylinder on the plywood frame.

Screw the ball of the ball link on the rear door hinge

Connect the link to the ball link and check that the door closes perfectly : the door is open when the cylinder is fully extended and the door is closed when the air cylinder is retracted.

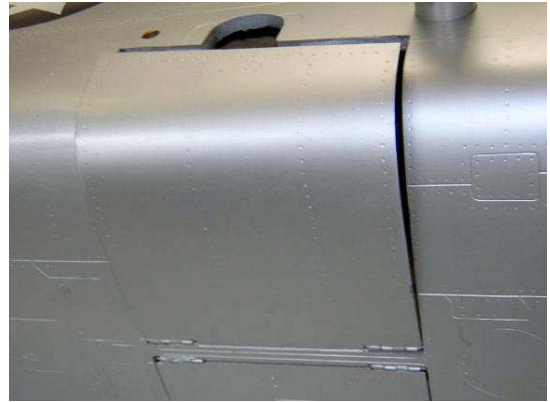


Main gear door :

Cut the 2 main gear doors according to the engraved panel lines.

Glue the 4 flat hinges with cyano (take care of the position according to the photo).

For this operation in order to avoid glue to "harden" the hinges put a small drop of oil in the pivot point.



Main gear doors cylinder

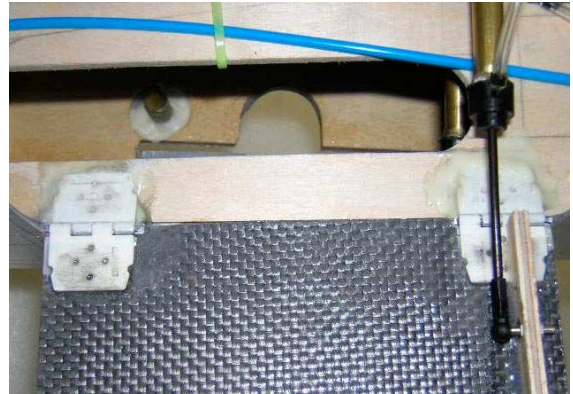
Glue the fiber horn reinforcement on each gear door with CA and epoxy.

It is located just on the front of the door (see photo)

Screw a ball link on the 1.5" air cylinder. Screw the air cylinder on the plywood part.

Glue the part in the fuselage according to the pics.

Connect the link to the ball link and check that the door close perfectly : the door is open when the cylinder is fully extended and the door is closed when the air cylinder is retracted.



Air brake (optional):

Cut the air brake according to the engraved panel lines.

Drill a hole in the air brake for the piano wire

Screw the 2 aluminium link to the 2 air cylinder

Connect the link to the air brake

Fit the piano wire in the control horn of the air brake



Fit the air brake in position

Glue the piano wire with cyano.

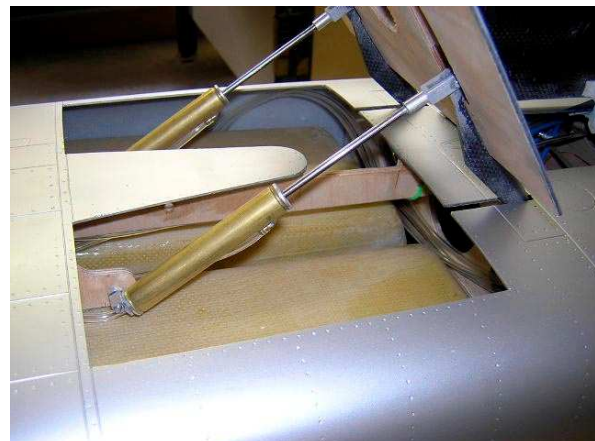
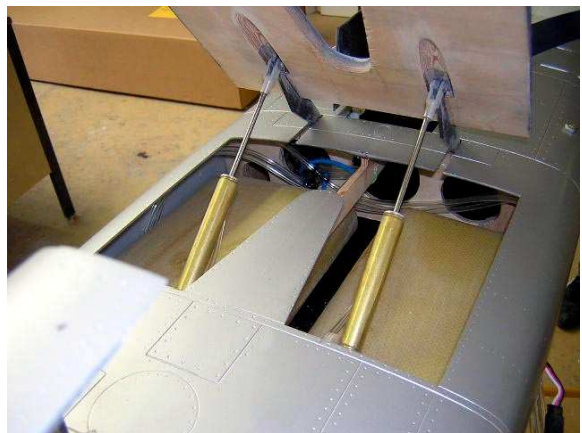
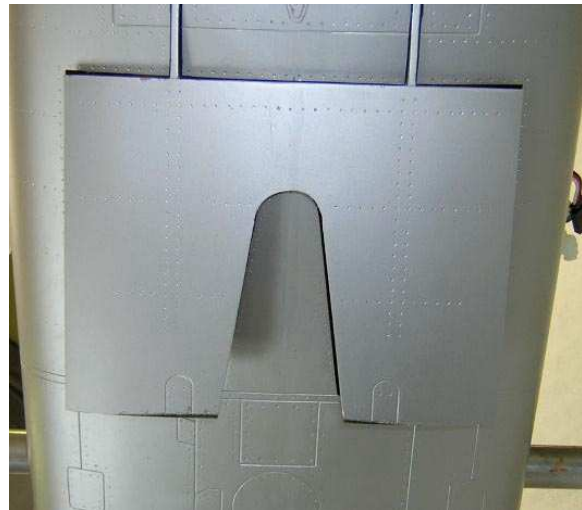
Check that the air brake can open and close without trouble.

Secure the piano wire with epoxy and microballon

Screw the end of the air cylinder to the 2 plywood reinforcement

Plue the plywood part with CA in the fuselage

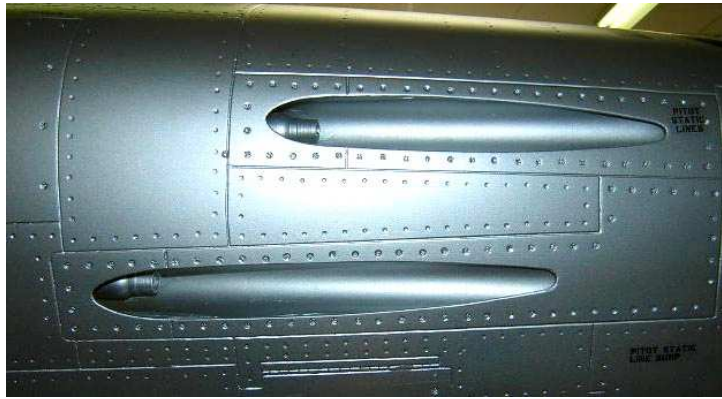
Check that the air brake close perfectly : the air brake is open when the cylinder is fully extended and the air brake is closed when the air cylinder is retracted.



FRONT GUN (optional):

Cut the opening for the 4 gun according to the engraved panel lines.

Glue the 4 resin gun inside the fuselage with CA



FIN INSTALLATION :

Fit the fin on the fuselage

Drill a 2.5 mm hole through the fin tube, the 12 mm tube and the plywood frame
Insert a 3 mm screw to lock the fin.



Rudder :

If you want to fit a rudder, we recommend to fit the servo in the fin to minimize flutter problem.

Cut the rudder as panel line engraved
Glue in the fin and in the rudder a balsa spar (15 mm large in both side)
Put 4 large Robart hinges
Cut a hole in the rudder for the servo
Fit control horn and link. Check that there is no play in the rudder

Bearings installation

You have 2 bearings per stabs with aluminium mounting.
 First check that all mounting are perfectly screwed to the plywood and that the bearings are glued in the mounting
 If not, just glue the bearing in the aluminium block with threadlock.

Stabs installation

Important : the 2 stabs MUST be balanced

You will have to drill a hole in the stab root and glue some lester in the leading edge to balance them.

You will need approximately 35 grams of lester per stabs.

When the stabs is fitted in the 2 bearings, it must be free in rotation : not hard point, no unbalance.

Now fit the stab in the fuselage and of course in the first ball bearing.

Insert the aluminium control horn + plastic washer and fit the tube in the second bearing

Screw the control horn to secure the tube

Adjust the clearance between the fuselage and the stab. The stab must not touch the fuselage when it rotate. Do the same for the 2 stabs.



Servos installation

Important : the servo MUST be a very high quality servo, 9 kg torque minimum, with metallic gears.

Screw the servo on the plywood mount

The servo lead must be protected with ceramic fiber.



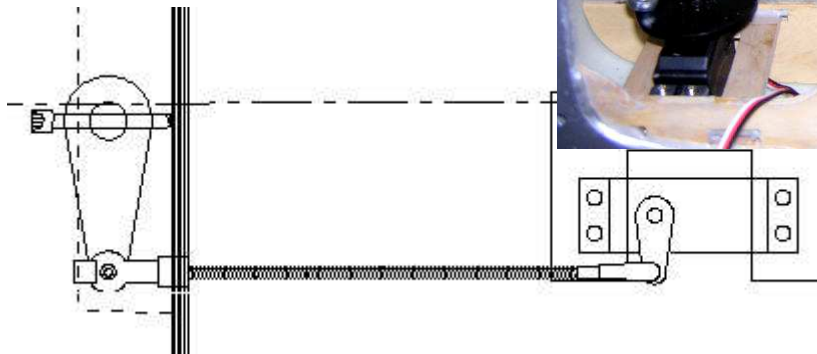
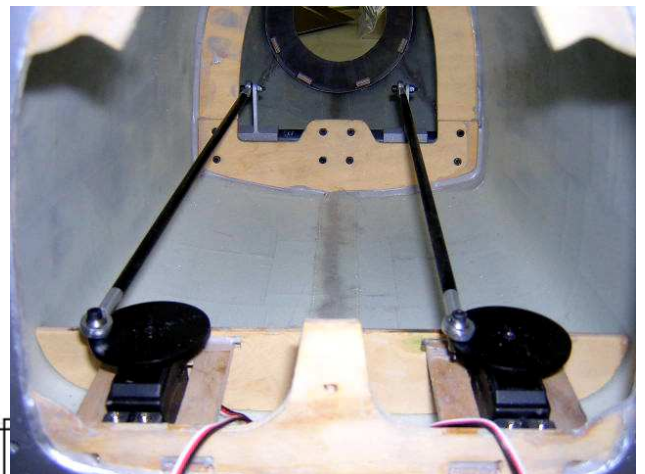
Put the stab horizontal.

Put the control arm vertical.

Screw and secure the control arm

Connect the servo to the arm with the large M4 ball link, M4 threaded rod + carbon rod outside (to prevent bending) and M4 aluminium link

Glue them with threadlock.



Wings :

Aileron servo :

Increase the hole for the servo location in the wings with a permagrit rotating tool for the aileron

Screw the servo in the servo cover (you can also glue it with silicon glue for more security)

Put in place the servo cover on the wings
Drill 4 x 1 mm hole in the wings for the screws



Cut a slot in the control surface for the fiber control horn

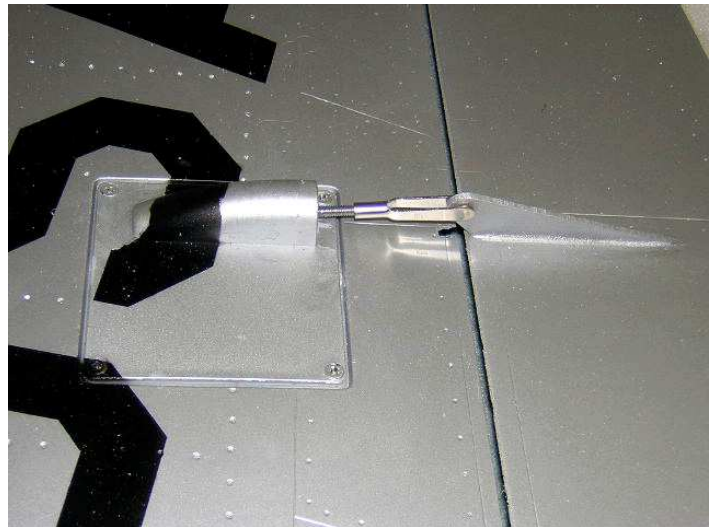
Glue with fast epoxy the control horn

Connect two 3 mm link with M3 threaded rod

Screw the servo cover with the 4 parker screws

Connect the servo with the control horn

Apply thread lock.



Flaps :

Only D version has movable flaps

For C version, just glue the flaps to the wings.

For D version :

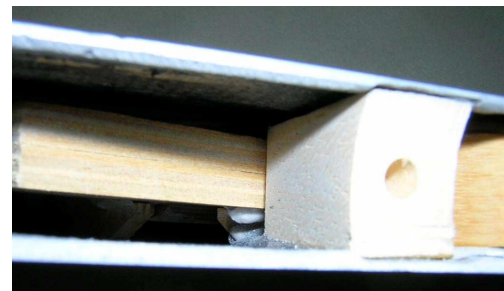
Cut the trailing edge of the wing to open it and to fit the flaps.

Sand it carefully to have fine shape

In flaps make 2 large hole for hinges and insert plywood reinforcement

Insert 2 large Robart hinges

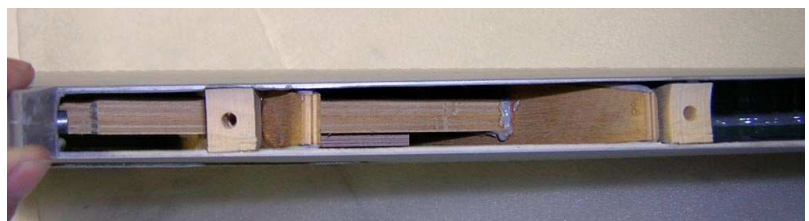
Insert and glue in wing corresponding wood block in front of the flaps hinges.



Glue hinges with epoxy and check that you have enough down throw

Make a hole for the servo location in the wings with a permagrit rotating tool (see photo)

Glue 2 plywood bloxk for servo mounting



Screw the servo on the plywood block

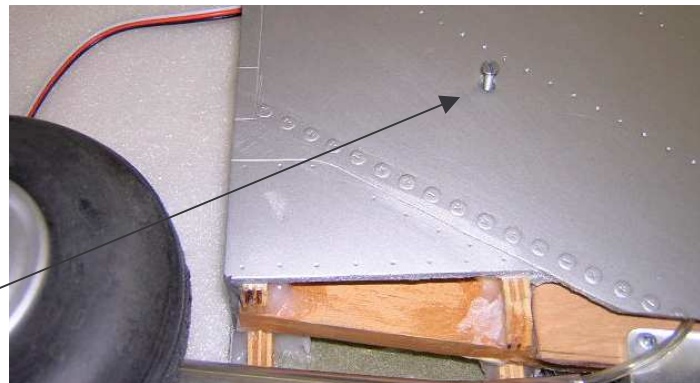
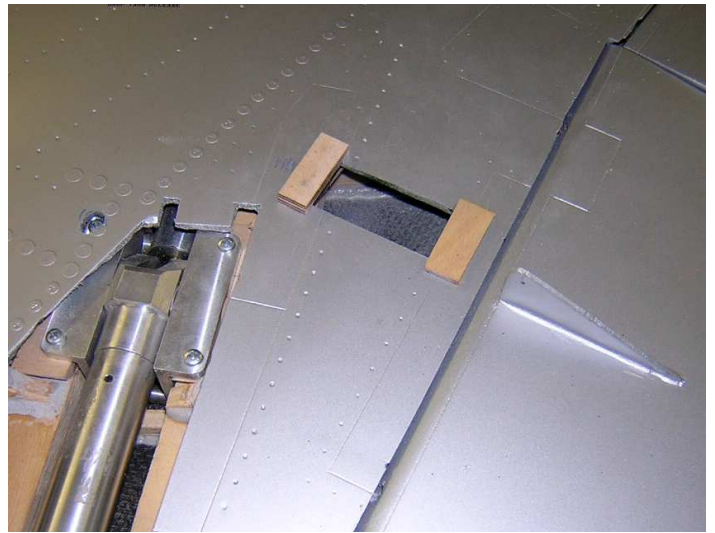
Cut a slot in the control surface for the fiber control horn

Glue with fast epoxy the control horn

Connect two 3 mm link with M3 threaded rod

Connect the servo with the control horn

Apply thread lock.



Secure the wing

Put the aluminium tube through the fuselage.

Check it is in the middle

Drill a hole in the fuselage fiber tube and secure the aluminium tube with a small parker screw.

Fit the 2 wings against the fuselage. Check that wings join perfectly with fuselage

Drill a 2.5 mm hole through the wing and the aluminium tube at 77 mm from the wing root

Tapped at M3

Insert a M3 screw

MAIN LANDING GEAR :

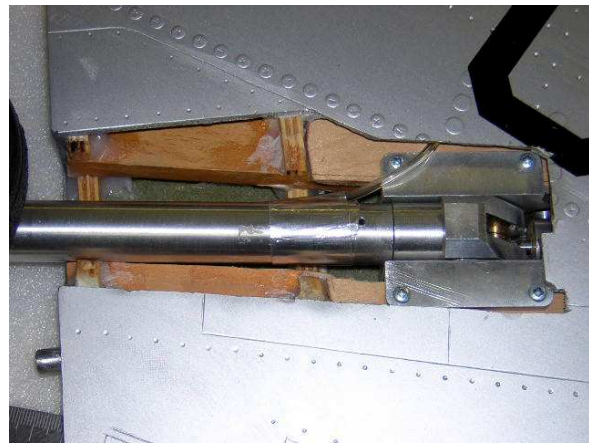
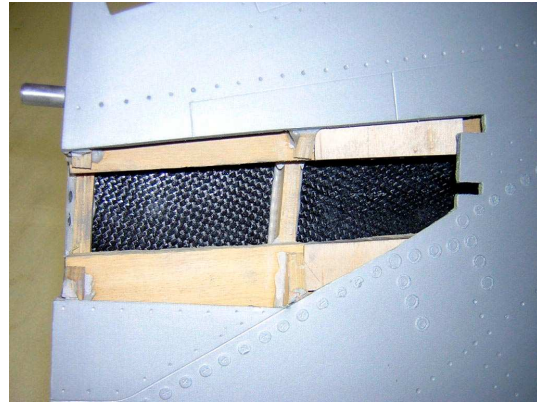
Make a hole for gear and oleo location in the wings with a permagrit rotating tool (see photo) according to the engraved panel lines.

Insert the retracts on the plywood mount.

Fit the oleo legs in the retracts. Check that the 2 wheels are parallel. Screw the leg in the retracts.

Retract and extend the legs to check that the wheels fit well in the fuselage : adjust the position of the gear

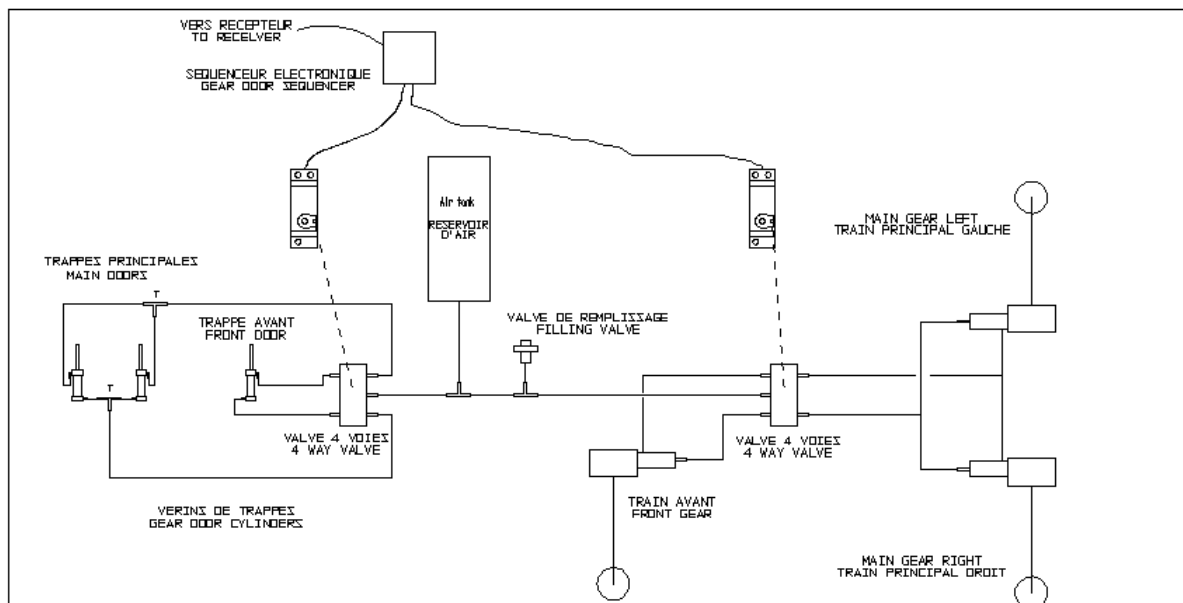
Screw the landing gear on the plywood mount with 4 x 3x20 parker screw



Connect all air tubing

Now connect all the landing gear tubing and the gear door tubing.

The 2 Robart 2 way valves can be mounted on a plywood frame and glued in the front fuselage.



The main air bottle and brake bottle will be mounted in the back of the front fuselage with double face tape

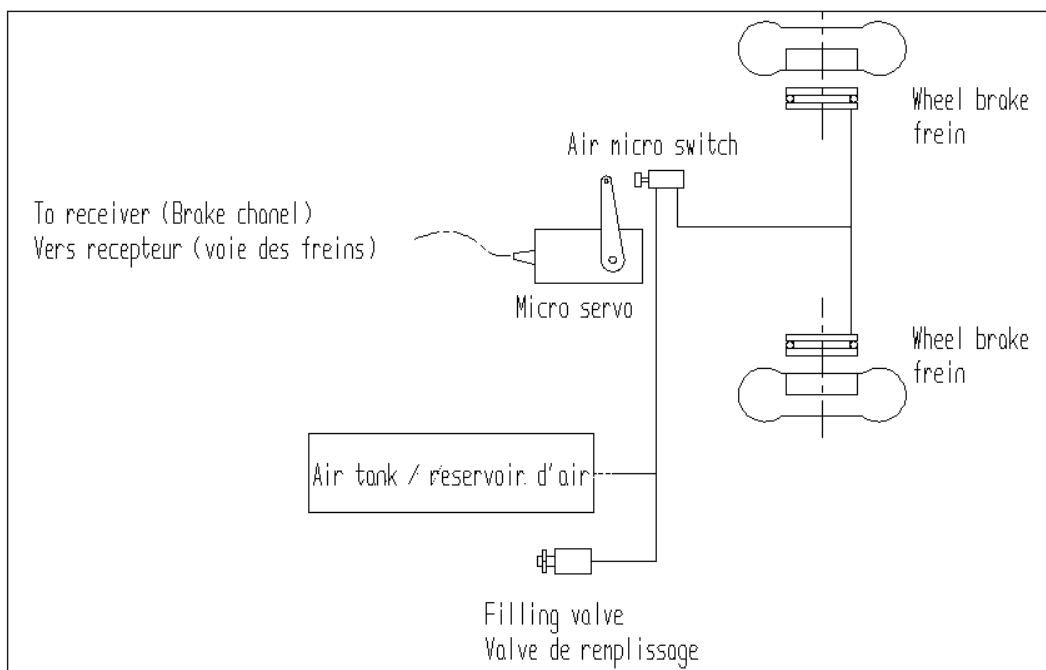


Wheels and brakes

Glue the 6 mm diameter screws with threadlock in the legs
Connect the system according to the manual.

Do not remove the O ring in the brake drum
Separate rubber tires and O ring are available in spare parts.

Usually, we use the brakes on fully elevator down stick.
Fill the system with an air pump or compressor at a maximum pressure 100 Psi / 8 bars before each flight



Variable pressure brakes control valve : ref ADT brk

Connect the valve instead of the air micro switch

Usually, we use the brakes on elevator down stick. The braking effect will be proportional to the stick travel.

Installation of the AMT jet engine.

The AMT is just screwed with 4x 3mm diameter screws on plywood engine mount with blind nuts.

The ECU and the AMT Batterie are put just rear of the canopy.

With this configuration, the F100 don't need any ballast to balance the model. Balance the model with the gear down and the fuel tanks empty.

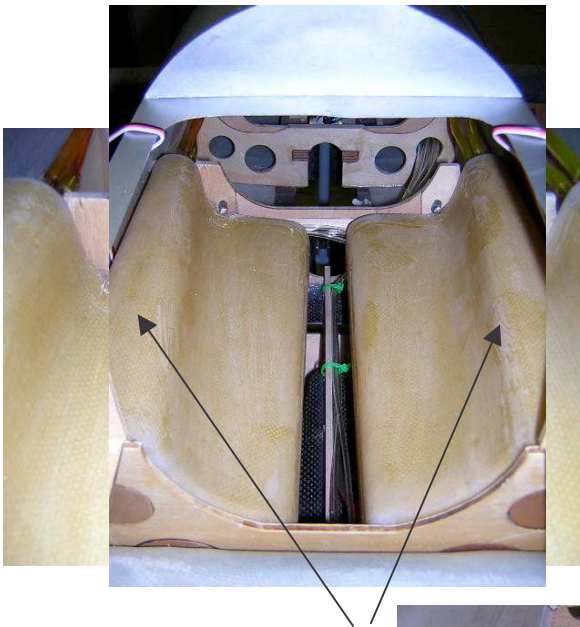
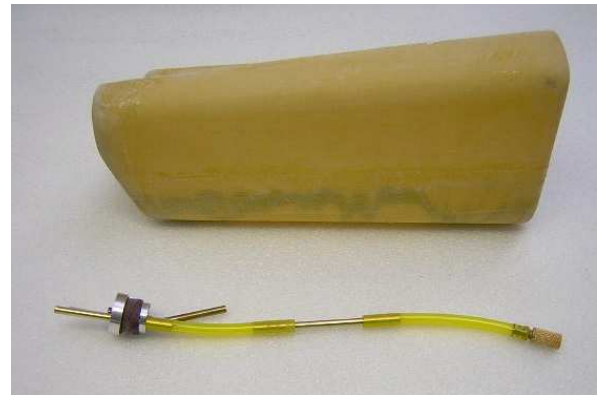
Kevlar Fuel Tanks :

You will now have to install the fuel tanks in the fuselage.

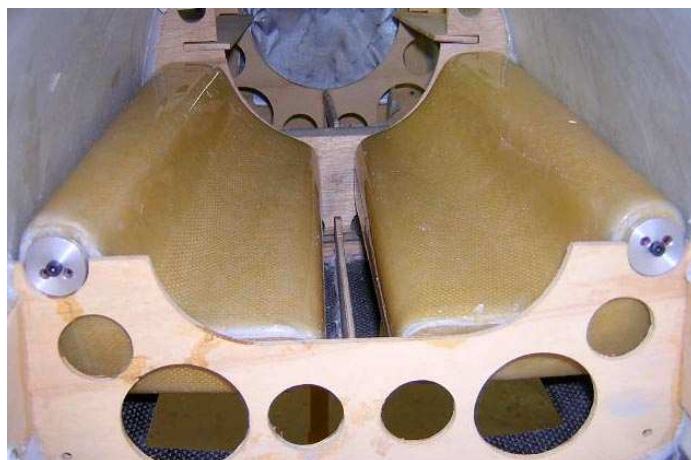
The kevlar fuel tanks are pre build.
Connect the tubing and clunk.
Check that the clunk can move freely.

You have now to check that your fuel tanks have no leaks.
Fill them fully with kerosen and let them during 1 hour
Full of fuel.
Check **carefully** that your fuel tanks have no leaks.

You can now fit the 2 kevlar fuel tanks in the F100
Kevlar fuel tank are conformal fuel tank with a 3.2 liters capacity



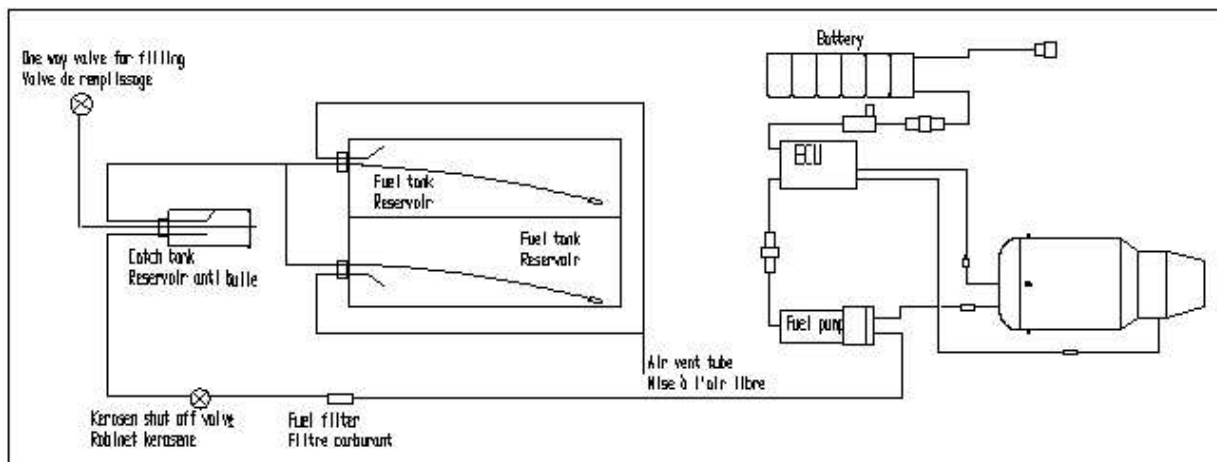
Fit the fuel tanks in the fuselage.
Secure them with one parker screw



Connect all tubing as the following drawing.

This fuel tank is connected to a small catch tank (200 cc) to be sure that there is no bubble in the fuel line. The tubing from the main tanks to the catch tank and to the catch tank to the fuel pump must be gasoline tubing (no silicone tubing). Also for the air vent tube.

The catch tank is glue with double face tape on one side of the inlet ducting (up to the main tanks)



Filling the fuel tanks :

Connect your pump and fill the system in direction of the catch tank. It will first fill the catch tank and after the main tanks. The main tank will be full when fuel come from the 2 air vent tube.

When tanks are full, close the filling tubing.

Do not close the air vent tube.

The system is ready for starting.

TAILPIPE EXHAUST

Tailpipe will be screw on the front frame with 3 x 3 mm diameter parker screw at 120°



Adjust the position of the front frame with the position of the end of the engine / beginning of the exhaust tube

Glue the front and back frame with silicone glue.

You can also glue the tailpipe to the rear frame with silicone glue

Exhaust nozzle

The exhaust nozzle can be screw (3 parker screws) on the fuselage

It can also be glued with silicone glue to the end of the fuselage.



Inlet ducting

Now the inlet ducting can be glued in the fuselage

Take care to sand carefully the front fuselage and the front of the ducting.

Inlet ducting must be glued with epoxy and microballon. Add a ribbon of carbon fiber(30 mm large) on the inlet

CANOPY

Cut all glass panel according to the engraved panel lines with fine diamond disc.



Paint now the canopy frame (inside).

Adjust the canopy in the canopy frame.
The canopy must overlap the frame from few mm.

Hold the canopy in position using some tape.
Glue the canopy inside the frame with ZAP canopy glue.

Glue front a rear canopy frame together
Fit the canopy frame on the fuselage.

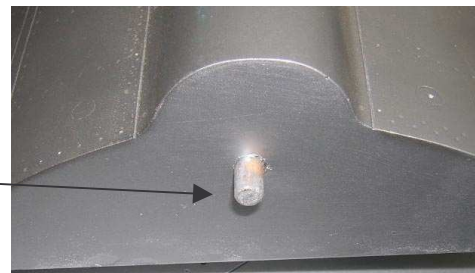
Drill a 6 mm hole through the front of the canopy frames and the fuselage
Glue a 6 mm pin in the frame

Drill a hole in the frame and in the fuselage for the rear hatch latch
Glue the hatch latch in the fuselage.

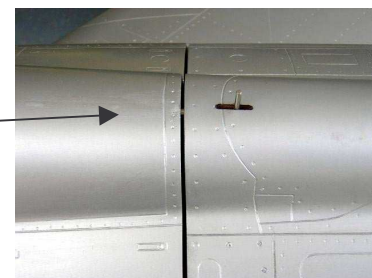


Fuselage hatch

Glue the 6 mm wood hatch pin with CA.



Glue the hatch latch and drill the corresponding hole in the fuselage.



Cockpit detail kit :

The first step is to assemble the ejector seat :

Cut the vacuum part as shown



Glue with CA the vacuum part and the 2 plastic parts according to the pics.



Fit the pilot on ejector seat.



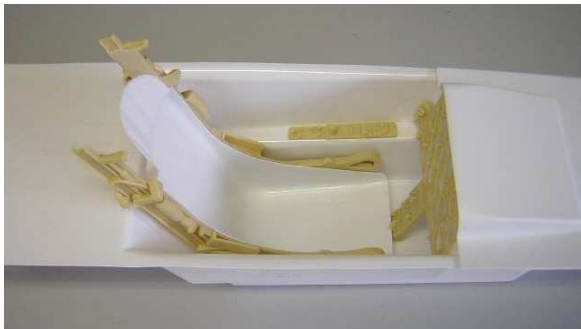
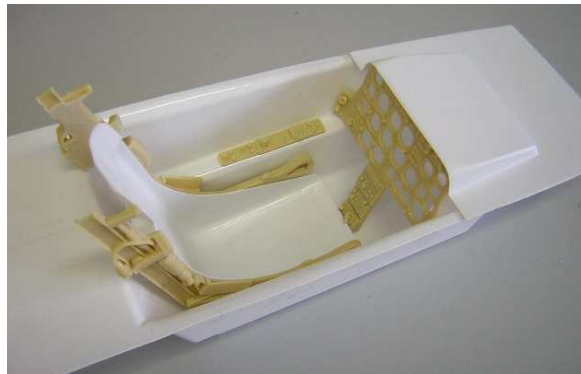
The third step is to fit all the part in the cockpit

Fit the ejector seat in the ABS vacuum part.
Fit the pilot and instrument panel.

You should have to heat the pilot (with a air gun heater) to fit it in the cockpit with the good angle and to slide the instrument panel between its legs.

If everything is OK, you have to paint all the parts first before to glue them.

Glue the ejector seat in first.
After glue the pilot.
After glue the instrument panel.
And glue the instrument panel cover.



FINISHING TIPS

Decals (optionnal) :

Fit the water decals on the plane

Refuelling probe (optionnal) :

Glue under the wing the refuelling probe mounting

Glue all aluminium tubings with CA according to the plan



Pitot probe (optionnal)

Glue all aluminium tubings with CA according to the plan

Underwing fuel tank (optionnal)

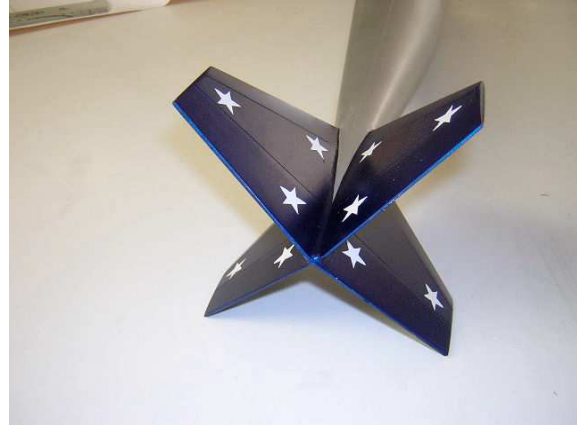
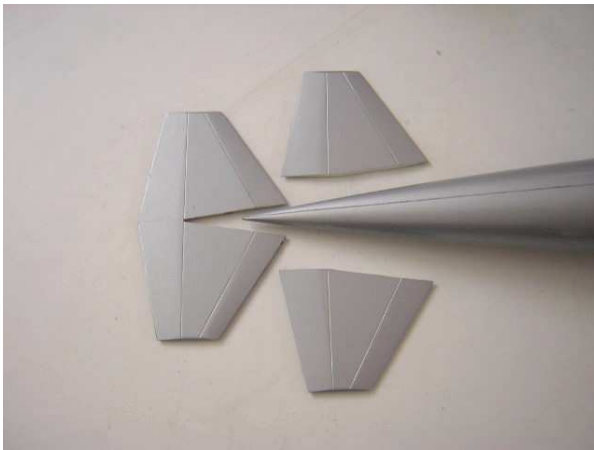
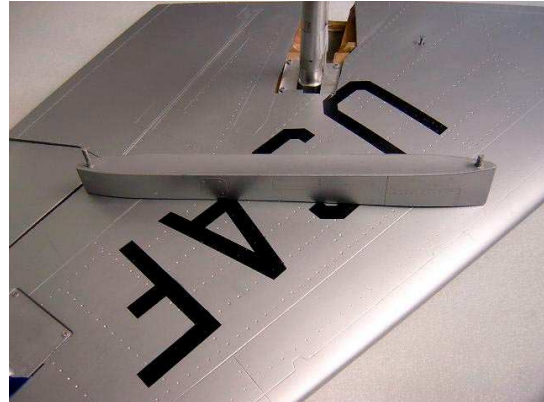
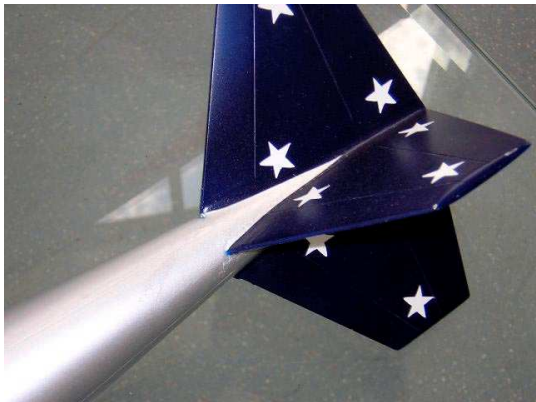
Cut the fin as the pics

Glue all the fin with CA

Glue the rail on the wings

Fit the tanks on the rails and secure them with on screw

Warning : Check CG modification if you fly with or without them



Installation of the radio equipment

Components need:

Elevator: 2 servo 8 kg torque

Rudder: 1 servo 5 kg torque

Ailerons: 2 servos 8 kg torque

Flaps: 2 servos 8 kg torque

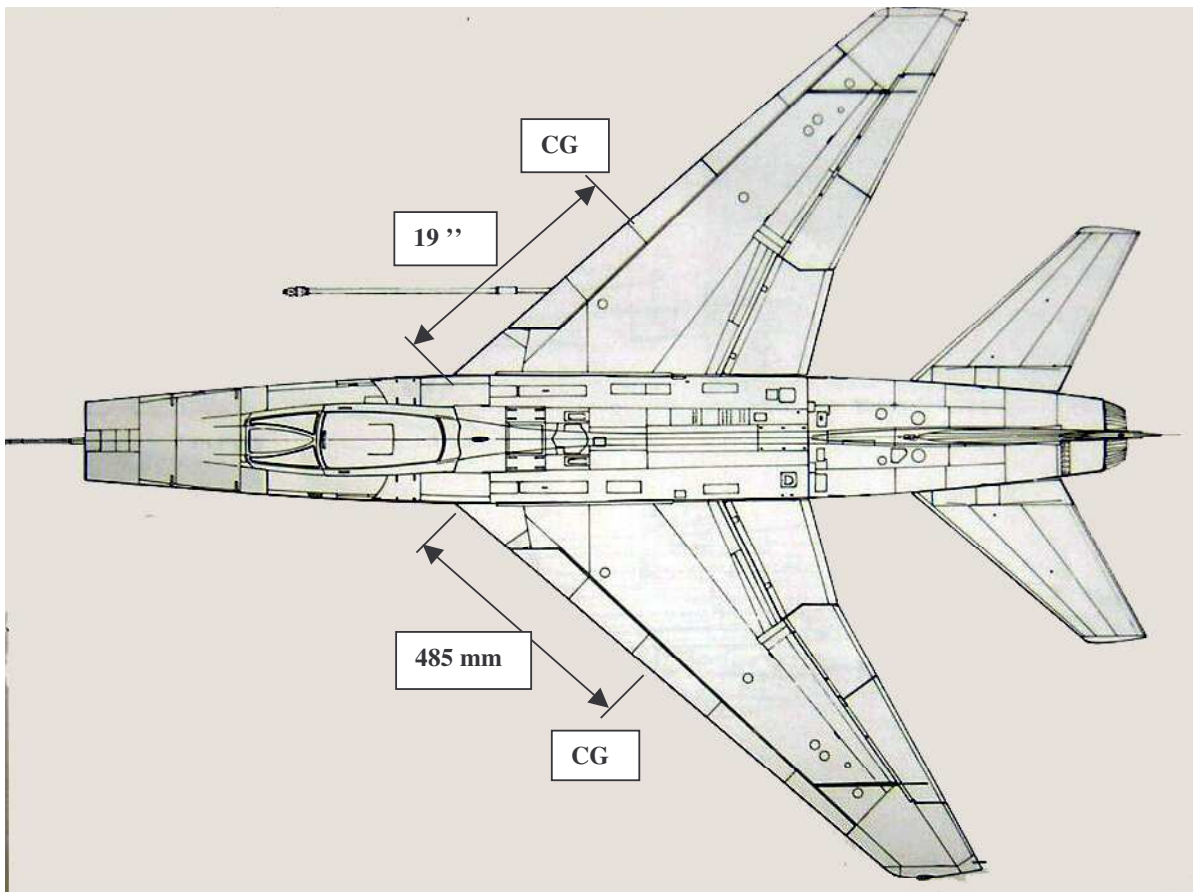
Steering nose wheel: 1 servo 3 kg torque

Retract + gear doors + brakes : 3 micro servos 1 kg torque or electrovalve

Receiver and switch

2 batteries 1600 mah

Center of gravity



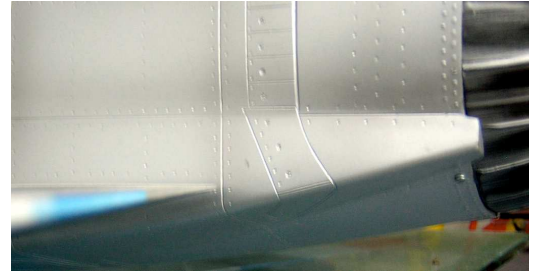
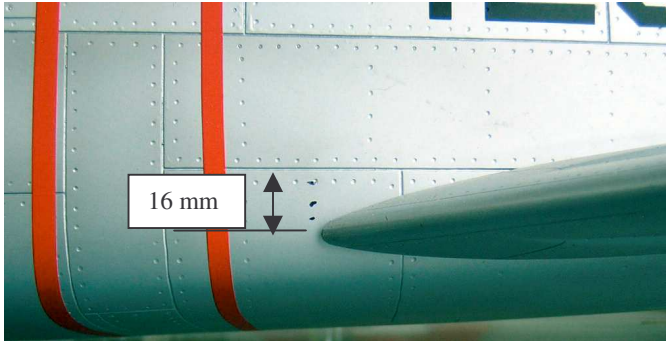
Note : balance the model with the gear down and the fuel tanks empty.

Recommended surface throws

Elevator :

In pitch : 38 mm up and 30 mm down at the leading edge

0 Trim : 16 mm from the panel line (see pics)



Aileron :

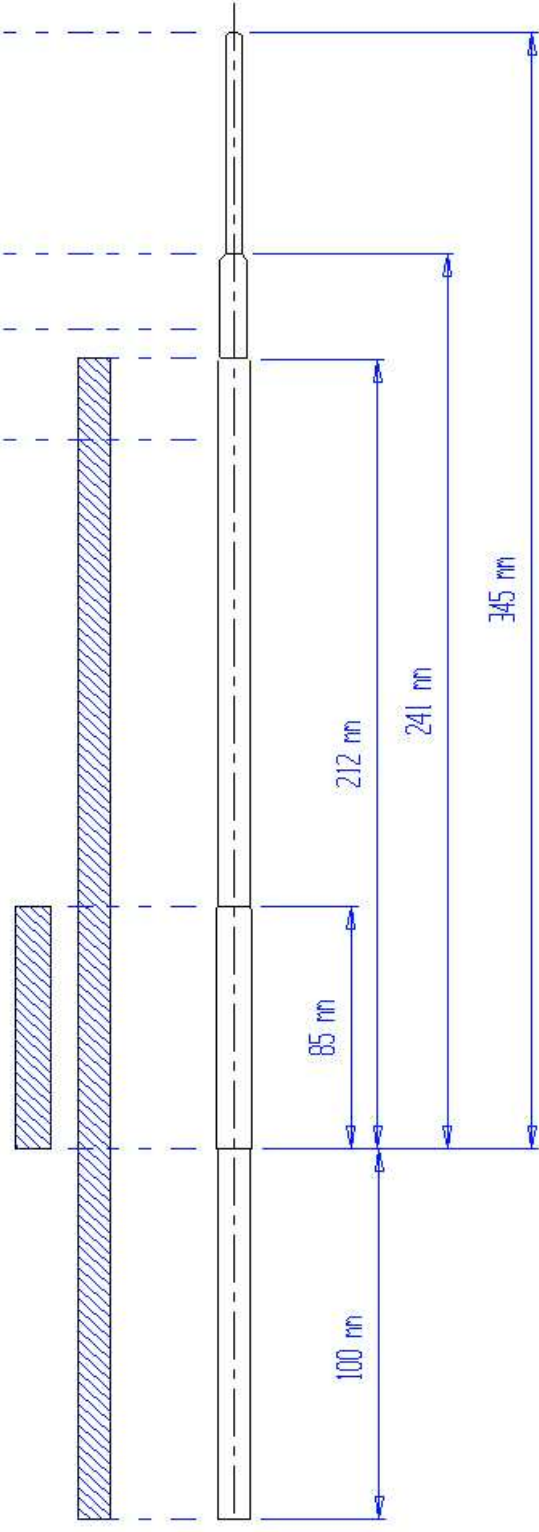
In roll : 15 mm up and 15 mm down at the leading edge

With an AMT Pegasus engine, the total weight of the F-100 is 13 kg, tanks empty, without external tank.

Important note : Pay very careful attention to structural integrity. This jet can reach speeds of over 300 KPH. It is your responsibility to operate it safely.

Specifications may change without notice.

- Glue tube 3x2 in tube 4x3 with thin CA
- Sand tip at 45°
- Glue tube 5x4 in tube 6x5 with thin CA
- Glue tube 6x5 in tube 7x6 with thin CA
- Sand tip at 45°
- Glue tube 4x3 in tube 5x4 and adjust correct length
- Glue tube 7x6 in tube 8x7 and adjust correct length
- Glue tube 9x8 on tube 8x7 at correct position



NO	DATE	NOTIFICATIONS
Ensemble: F 100		
Matière: AVIATION DESIGN		Echelle: 8X
Traitement: 04/08/2006		Date: 04/08/2006
Le plan est la propriété d'AVIATION DESIGN - Epic AVIATION -		Non: RANTEL E.
F100 pitot probe		CODE PLAN: F100-PROBE