



## L 39 Albatros



## Instruction Manual



Thank you very much for purchase our Skygate L 39 Abatros made with our Total Area Vacuum Sandwich technology ( TAVS )

Before you get start building and setting up your aircraft, please make sure you have read this manual and understood it.

If you have any question, please don't hesitate to contact your dealer, your rep or CARF Models directly.

Email: [feedback@carf-models.com](mailto:feedback@carf-models.com)

Telephone: Call you CARF Sales Rep - he will be there for you.

A full list of dealers and reps can be found on the CARF website:

<http://www.carf-models.com>

### **Liability Exclusion and Damages**

You have acquired a kit, which can be assembled into a fully working R/C model when fitted out with suitable accessories, as described in the instruction manual with the kit. However, as manufacturers, we at CARF-Models are not in a position to influence the way you build and operate your model, and we have no control over the methods you use to install, operate and maintain the radio control system components. For this reason we are obliged to deny all liability's for loss, damage or cost which are incurred due to the incompetent or incorrect application and operation of our products, or which are connected with such operation in any way.

Unless otherwise prescribed by binding law, the obligation of CARF Models company to pay compensation is excluded, regardless of the legal argument employed. This applies to personal injury, death, damage to buildings, loss of turnover and business, interruption of business or other direct and indirect consequent damages. In all circumstances our total liability is limited to the amount which you actually paid for this model.

### **BY OPERATING THIS MODEL YOU ASSUME FULL RESPONSIBILITY FOR YOUR ACTIONS.**

It is important to understand that CARF Models is unable to monitor whether you follow the instructions contained in this instruction manual regarding the construction, operating and maintenance of the aircraft, nor whether you install and use the radio control system correctly. For this reason we at CARF Models are unable to guarantee, or provide, a contractual agreement with any individual or company that the model you have made, functions correctly and safely. You, as operator of the model, must rely upon your own expertise and judgment in acquiring and operating this model.



## **Attention !**

This jet aircraft is a high end product and can create an enormous risk for both pilot and spectators . If not handled with care & used according to the instructions. Make sure that you operate your L 39 according to the laws and regulations governing model flying in the country of use. The engine, landing gear, servo, linkages and control surfaces have to be attached properly. Please use only the recommended servos and accessories. Make sure that the Centre of Gravity is located in the recommended place. Use the nose heavy end of the CG range for your first flights. A tail heavy plane can be an enormous danger for you and all spectators. Fix any weights and heavy items like batteries , very securely into the plane. Make sure that the plane is secured properly when you start the engine. Have a helper hold your plane from the nose before you start the engine. Make sure all spectators are far behind, or far in front of the aircraft when running up the engine. Make sure that you range check your R/C system thoroughly before the 1<sup>st</sup> flight. It is absolutely necessary to range check your complete R/C installation first WITHOUT the engine running. Leave the transmitter antenna retracted or incase of 2.4ghz depress the range check button and check the distance you can walk before FAILSAFE occurs. Then start the engine, run at about half a throttle and repeat the range check. Make sure that there is no range reduction before FAILSAFE occurs. If the range with engine running is less then with the engine off, please don't fly at that time. Check that the wing and stab retaining bolts are tight and that all linkages are secured. Please don't ignore our warnings, or those provided by other manufactures. They refer to things and processes which, if ignored could result in permanent damage or fatal injury.

## **Important/General Notes**

### **Servo Choice**

We strongly advise that you use the recommended servos and equipment listed in the manual.

### **Servo Screws**

Fix the all the servos into the milled plywood servo mounts using the 2.9x13mm or 16mm sheet metal screws provided in the Kit, not the standard screws normally supplied with the servos by the servo manufacturer. This because all the holes in our milled servo mounts are 2mm diameter, due to our CNC manufacturing process and this is too big for the normal screws.

### **Building Sequence**

The actual building sequence is your choice but it is usually most efficient to start as suggested in this manual, which has been created by building several airplanes by several experienced modelers.



## Adhesives and Solvents

Not all types of glue are suited to working with composite parts . Please don't use inferior quality glue you will end up with a inferior quality plane .that is not strong or save. Jet models require good gluing techniques, due to the higher flying speeds, and hence higher loads on many of the joints. We highly recommend that you use a slow curing epoxy such a 24hr resin and fill it with cotton flock or thixo for gluing highly stressed joints.

We take great care during production at the factory to ensure that all joints are properly glued but of course it is wise to check these yourself and regular any might just have been missed. When sanding areas on the inside of the composite sandwich parts to prepare the surface for gluing something onto it, do not sand trough the layer of lightweight glass cloth on the inside foam sandwich. It is only necessary to rough up the surface, with 120grit and wipe of any dust with acetone or de-natured alcohol before gluing to make a perfect joint. Of course ,you should always prepare both parts to be joined before gluing for the highest quality joints. Don't use ACETON for cleaning external. Painted, surfaces as you will damage the paint.

### TIP:

**For cleaning small spots or marks off the painted surface you can use liquid cigarette-lighter fuel.**

### Tip:

**Use only high quality 5 or 30 min epoxy, since the cheap brands of this kind of glue are not moisture resistant like a proper resin. You will notice this as older bondings change their color and get more and more soft until the bond eventually fails.**

At CARF Models we try our best to offer you a high quality kit, with outstanding value-for-money and as complete as possible. However, if you think that some additional or different hardware should be included, please feel free to let us know. Email us : [feedback@carf-models.com](mailto:feedback@carf-models.com).

We know that even good things can be made better!



Did you read the hints and warnings above and the instruction carefully? Did you understood everything in this manual completely ?

Then and only then, let's start assembling your Skygate Collection L39 Albatros  
If not, please read it again before you continue

## Accessories

This list will help you chose the main additional items needed to finish your L 39 Albatros

1. Servos: 8 high quality Servos all the main control surfaces require a minimum of 20 kg torque such as JR8711
2. Aluminum servo arms
3. A receiver power supply such as a Powerbox Evolution or Cockpit
4. Turbine with a thrust of 160 – 200 N
5. Scale retract Landing Gear Item No. 140500
6. Gear door pneumatic set Item No. 140600
7. Speed break pneumatic set Item No. 140650
8. Tank Set Item No. 140106
9. Trust Tube Item No. 140700
10. Scale Cockpit Item NO. 140400





## Hardware List

Bag 1,fuselage , nose retract & Turbine mount		
Quantity	Description	Remarks
1	Allen screws M3 x 16 mm	Accu support
1	Washer M3	Accu support
1	T-Nut M3	Accu support
4	Allen screws M4 x 25mm	Ducting fuselage Connection
4	T-Nut M4	Ducting fuselage Connection
4	Allen screws M4 x 40mm	Turbine mounting
4	T-Nut M4	Turbine mounting
4	Allen screws M3 x 10 mm	Trust tube ducting connection
4	Stop nut M3	Trust tube ducting connection
4	Washer M3	Trust tube ducting connection
Bag 2, Gear Door		
	Description	Remarks
3	Allen screws M2 x 12 mm	connecti on zylinder Gear door
1	Allen screws M3 x 20 mm	Connecti on zylinder support
2	Allen screws M4 x 20mm	Connecti on zylinder support
3	Aluminum Ball links M3	linkage zylinder Geardoor
3	wheel collar 4mm	travel adjustment
3	nut M2	connecti on zylinder Gear door
Bag 3, Speedbraeke		
	Description	Remarks
1 Set	GFK Milling Hinge	
2	Allen screws M4 x 20mm	Connecti on zylinder support
2	Allen screws M2 x 12mm	connecti on zylinder speedbreak
2	nut M2	connecti on zylinder speedbreak
2	Aluminum Ball links M3	linkage zylinder speedbreak
1	wheel collar 4mm	travel adjustment
Bag 4, stering and mount front landing gear		
	Description	Remarks
6	Countersunk sheet metal screws 3.5 x 22 mm	Retract
2	Plasti c Ball links M3	stering
4	Allen screws M3 x 12 mm	servo
2	Stop nut M3	stering
4	Washer M3	servo
2	Allen screws M3 x 16 mm	stering
1	All thread M3 x 30 mm	stering
Bag 5, Join Fuselage Front/rear		
	Description	Remarks
11	Allen screws M4 x 30mm	joint fuselage
11	Washer M4	joint fuselage



Bag 6, wing/retract		
	Description	Remarks
16	Sheet metal screws 2.9 x 13 mm	servo
16	Sheet metal screws 1.9 x 10 mm	servo - retract hatch
4	Plastic Ball links M3	2xail / 2x flap
2	Clevis metal M3	flap
2	All thread M3 x 90 mm	aileron
2	All thread M3 x 130 mm	flap
2	Nut M3	counter flap - Clevis
4	Allen screws M3 x 16 mm	servo linkage ail/flap
4	Stop nut M3	servo linkage ail/flap
2	Plastic Ball links M3 small	link -aileron
2	Butt on head screw M3 x 12mm	link -aileron
14	Countersunk sheet metal screws 3.5 x 22 mm	12x retract/2x aileron secure hingetube
2	Washer M6	Wing fuselage connection
2	Allen screws M6 x 40 mm	Wing fuselage connection

#### Bag 7, fin&rudder

Quantity	Description	Remarks
4	Plastic Ball links M3	linkage
2	All thread M3 x 120 mm	linkage
3	Allen screws M3 x 16 mm	1x fin -end cover/ 2x servo horn -balllink
4	Stop nut M3	linkage
1	Allen screws M3 x 25 mm	fin -fuselage join
4	Sheet metal screws 2.9 x 13 mm	servo

#### Bag 8, Stab

Quantity	Description	Remarks
4	Plastic Ball links M3	linkage
2	Allen screws M3 x 16 mm	servo -balllink
1	Allen screws M4 x 40 mm	join stab fuse
4	Stop nut M3	linkage
1	Washer M4	join stab fuse
8	Sheet metal screws 2.9 x 13 mm	servo

#### Special parts

Quantity	Description	Remarks
30cm	Carbon Roving	Stab
2	Stripes Plywood 3mm x 10x300mm	Leg cover
set	support Hopper tank wood	
1	Velcro 2000mm	
1 set	canopy lock	
10 cm	2 mm wire	Front gear door hinge
20 cm	Alloy Tube inside 3 mm	Speed break and Gear Door
20 cm	Brass Tube outside 3 mm	Speed break and Gear Door
1 Set	Accu support 3 mm ply wood	
1 Set	Support Air Valves 3mm light plywood	
1 Set	Support Powerbox 3mm light plywood	
1 Set	CG Jig 3 mm Plywood	
1 Set	Front gear cylinder mount 3mm light ply	
1 Set	4 Pc Ducting turbine support 3mm ply	
2	Stripes Plywood 3mm x 13x300mm	Turbine - Ducting



## Milled Parts and Hardware included in the kit







## Stab – Elevator

For the assembly the stab use the bag No. 8 and the carbon roving which is included in bag “Special Parts” .

You also need the carbon linkages which are already assembled by the factory.



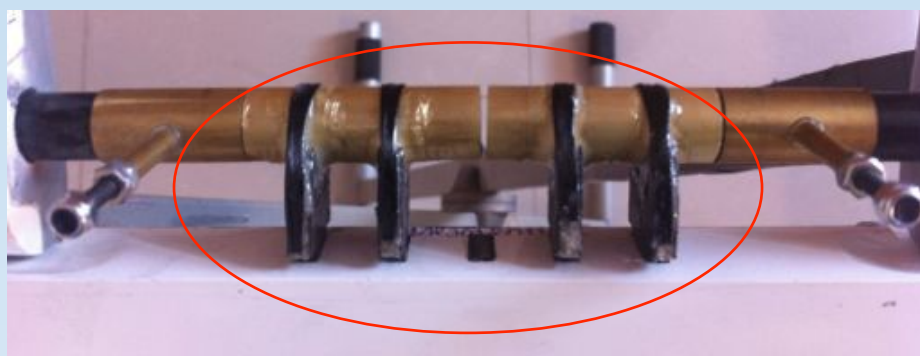
The stab comes as preassembled as possible and should look like shown on the Picture. Note: The long brass tube can be cut in the center with a diamond disk if you encounter slight alignment issues of the two elevator halves.



You have to add just 4 carbon roving's which you put around the 4 supports. Use Hysol or 30 min epoxy with some milled fiber or cotton flock.

Clean the brass surface and roughen with sand paper before putting the rovings on.

Make sure the elevators move smoothly without binding after the resin has cured.

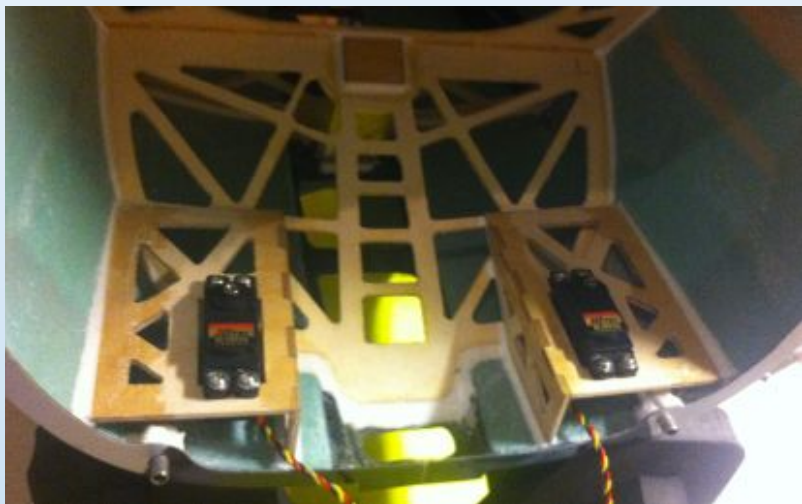




## Tail Area – Stab

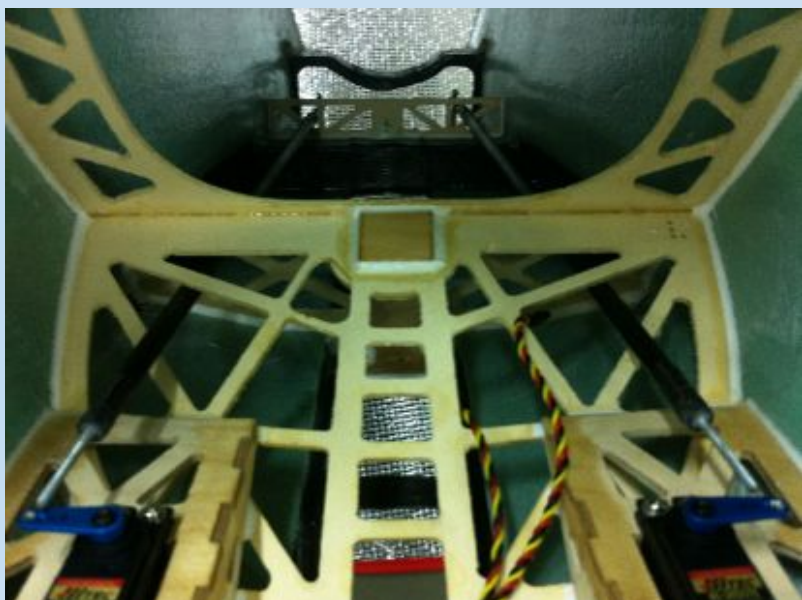
The elevator servos are mounted in the rear fuselage. CARF-Models recommends these servos to be at least of 20kg torque fitted with 1.25 inch (30 mm) aluminum servo arms .

The installation is quite easy, make sure to use the 8 pcs. Of 2.9x 13 sheet metal screws included in the hardware bag.



the carbon linkage to the elevator are finished at the factory, just turn the ball links onto the threaded studs.

NOTE: In some earlier kits the wood construction might have to be a little altered to allow the straight alignment of the rod between servo horn and control horn, which is somewhat dependent on the type of servo and control arm used. This is not a problem, even if some wood braces have to be removed.



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To attach the carbon linkage to the servo use the plastic ball link and the allen screw M3 x 16 and the stop nut.



To attach the carbon linkage to the elevator use also the plastic ball link and M3 stop nut.







## Fin - Rudder

For the assembly of fin and rudder use the bag No. 7.



The first work step on the fin is to adjust the length of the linkage like as you see on the picture.



The ruder servo is installed in a cutout in the fin rib.

Please use also a double aluminum servo horn and the 4 pcs of 2.9x 13 sheet metal screws.



The torsion rod with steering plate is completely assembled and ready to connect.

For the sake of safety consider gluing the rod into the rudder after final assembly, because there is no need to ever take it apart again.

Just use 2x M3 stop nuts to secure the ball links and make sure that the linkage has enough clearance in the slots of the spar. If necessary, re-shape slightly to adjust the holes.





To connect the servo to the linkages use the M3 x 16 allen bolt and the M3 stop nut.



To join the fin to the fuselage use the M3 x 20 allen bolt. Note the small blue tubing in the photo, it is a 4mm Festo pneumatic tubing which prevents the screw from falling out during transport.





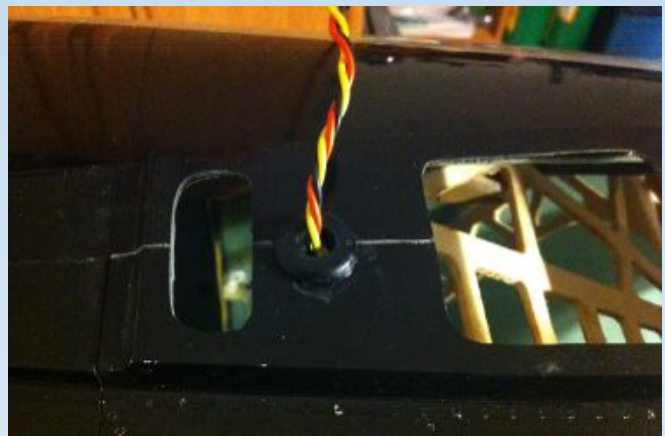
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The tail cover gets connected to the fin with an M3 x 16 allen bolt and a 3mm washer.



NOTE: You must protect the servo wire from rubbing against the fiberglass by using a rubber grommet!





## Wing

To assemble the wing and install the main landing gear use the bag No. 6.



Just like the other parts the wing has been almost finished for you at the factory.

The ailerons and flaps are all hinged and control horns are glued in, so all you need to do is install servos and main gear. Optionally, if you like, a pair of wing tip lights.



The aileron linkage is made by using the M3x90mm threaded rod with 3mm plastic ball links on both sides.

**The hardware bag contains 2 different plastic ball links. The smaller one is used on the aileron side and the larger one connects to the servo.**



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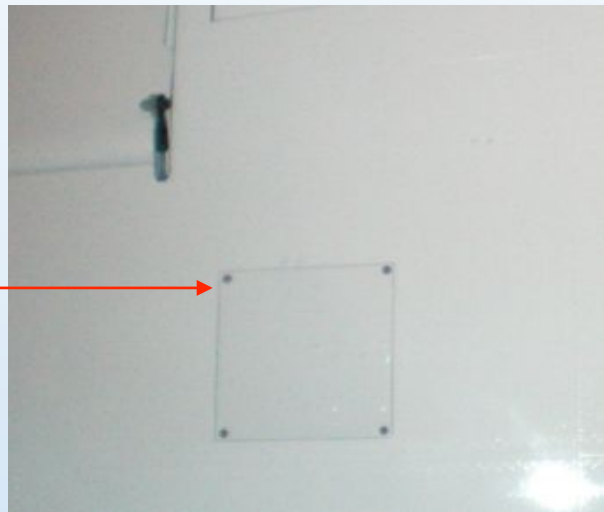
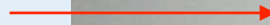
Please make sure your servo arm is mounted so that the servo centers perpendicular to the linkage, which connects servo and control horn on opposite sides (diagonally across the wing section). That way you almost do not need any slot in the wing surface. Then mount the servo with the 2.9 x 13 mm sheet metal screws into the ply rib.

Our production process does not allow to open the hole all the way before the mold halves are joined, so go ahead and increase the hole size as needed. It is important that the linkage is not touching the spar or binding elsewhere.





now you can close the servo hatch just drill 1.5mm holes and screw it with 4x 1.9 x 10mm sheet metal screws



for the connection between linkage and horn use the smaller ball link with a m3x12mm button head screw and stop nut



**important** on the one end of the aileron hinge brass tube you can see like a 90 degree bended 2 mm steel wire, here trough you have to secure the hinge tube with counter sunk sheet metal 3.5x 22 mm







The flap horns are installed for you at the factory. You only need to install the servo and linkage. The length of the servo arm should be 1.5 in (35 mm). The linkage is made from an M3 x130 mm threaded rod.

On the servo side use the M3 ball link with M3 x 16 allen bolt and stop nut, on the flap side use the M3 spring steel clevis. (included is a very high quality hardware)

As always, use only the included 2.9 x 13 mm sheet metal screws to install the servo into the wood rib.







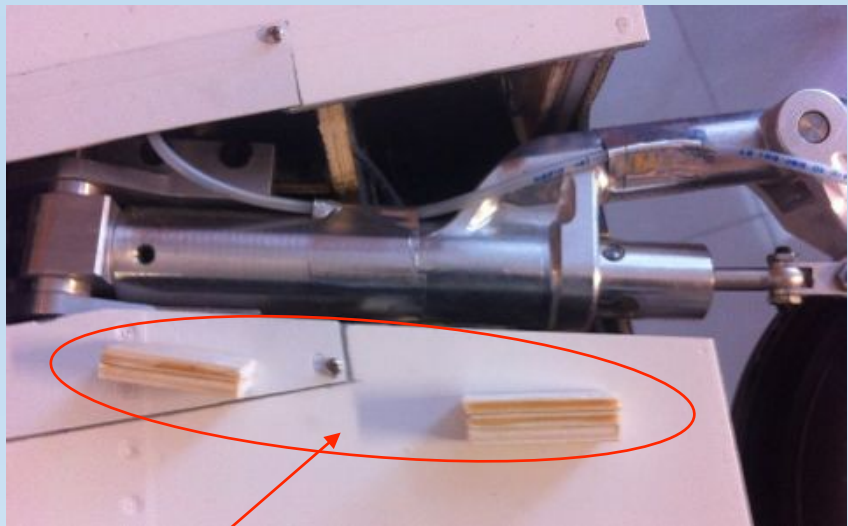
The landing gear should fit smoothly into the gear mounts. Connect the airlines to the cylinder and slide it in the slot.

In order to find the right adjustment and to make sure that you have enough clearance for the wheel, join both wings with the fuselage for the final installation of the gear.



To screw the landing gear in place use 6x counter sunk sheet metal 3.5x 22 mm. It is recommended to drill holes into the wood rails with a 2mm drill before you inserting the screws.

The hatches are already cut out in the factory and you only need to drill 1.5mm holes and screw it on with the small 2.2 x 10 mm sheet metal screws included.



There are simple and more complicated ways to mount a fixed strut cover. We opted for the simple way and use wooden spacers between strut and gear door. We include plywood rectangles for that, use 2 layer on the outward point and 3 layer on the inward point.



Clean and roughen the strut in the area where the spacers have to be glued on. Use Hysol (Aeropoxy) or a good 30 min epoxy.

Note: Some L-39 have white painted landing gear parts. Paint the metal parts, including the wood spacers, so that it looks right, or paint the wood spacers silver, if the struts have to stay metallic color.





This is now the time to install landing lights if you decide to do so. There are a lot of after market lighting systems available and we do not want to recommend one over the other.

You might be required to create small mounting formers depending on which lights you use.

The clear lenses need to be cut and trimmed and then screwed on with 3pcs 2.2x13 mm sheet metal screws.



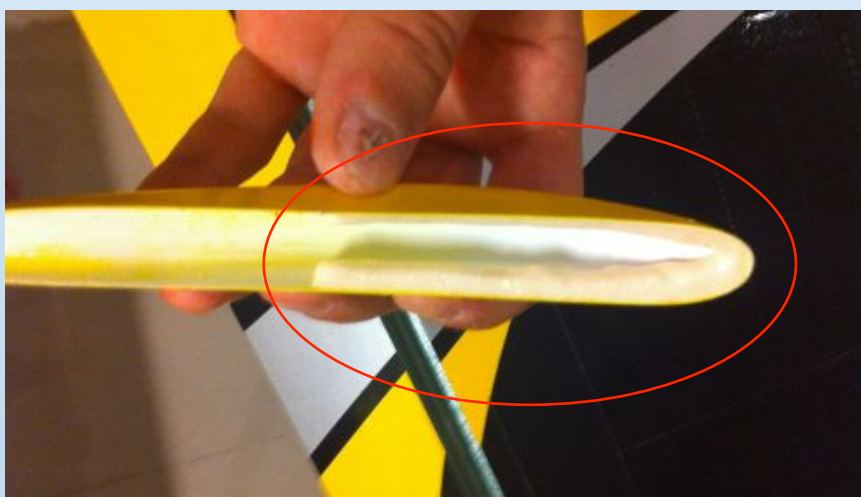


The flap fairings are already painted in the factory. Cut and sand cut them carefully to fit perfectly on the wing. If the fairings are not sanded to fit properly you will always see a gap, since the plane is already painted. This is of course not so critical if you are building an all silver version and paint the plane yourself.

The mark for the correct position are clearly visible on the wing. Mask around this area, sand carefully and glue the fairing on with a SMALL amount of 30 min resin.

You see in the photo how to apply the resin inside the fairing. Place the fairings on the wing at the correct position and fix it with tape. Make sure the wing lies totally flat on the table. After few minutes the resin mix will run down on the inside and the glue joint will be perfect if you previously sanded the fairings to fit the wing perfectly. If you didn't do this properly, you're going to end in a big mess, so make sure that there is no gap between fairing and wing surface. Check this by dry-fitting several times.

The result can be astonishingly clean and perfect if done right.





This is how the resut should look like...



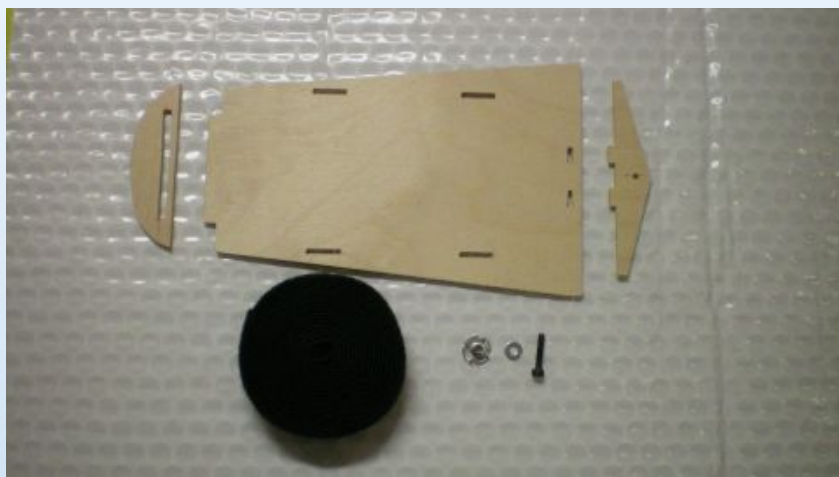




## Nose Cone

To finish the nose cone you only have to glue in the mounts for the battery tray.

The M3 bolt, washer and T-nut you will find in bag No. 1, the Velcro in bag "Special parts".



First glue the vertical former on to the battery floor and push the M3 T-nut in.



Then slide the front former on to the front tab of the battery floor, add some 30 min epoxy to the area which will contact the inside skin of the nose cone and place the tray in the right position, as seen on the photo. After the 30 min resin has cured, take the tray out and fill the bond with some more resin.

Don't forget to sand the fiberglass surface before glueing, as usual.

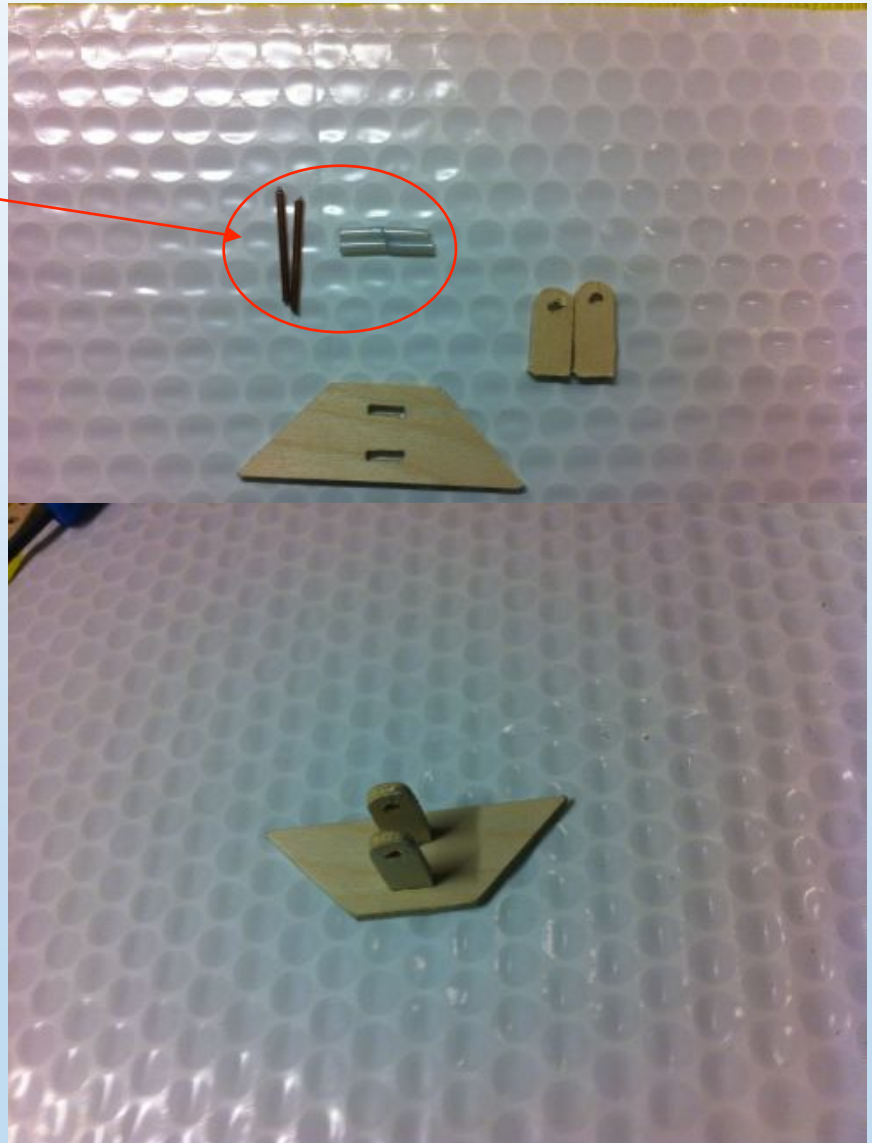


## Nose Gear Door

To install the gear door cut 2 pcs of 2cm of 2 mm piano wire and 4 x 1cm pcs of 3 mm Festo tubing.

The 2mm wire you will find in bag "Special Parts".

Glue the cylinder mount together as shown on the photo.



Use the 2mm steel wire as hinge wire for the front gear door and secure it with the Festo tubing as shown.



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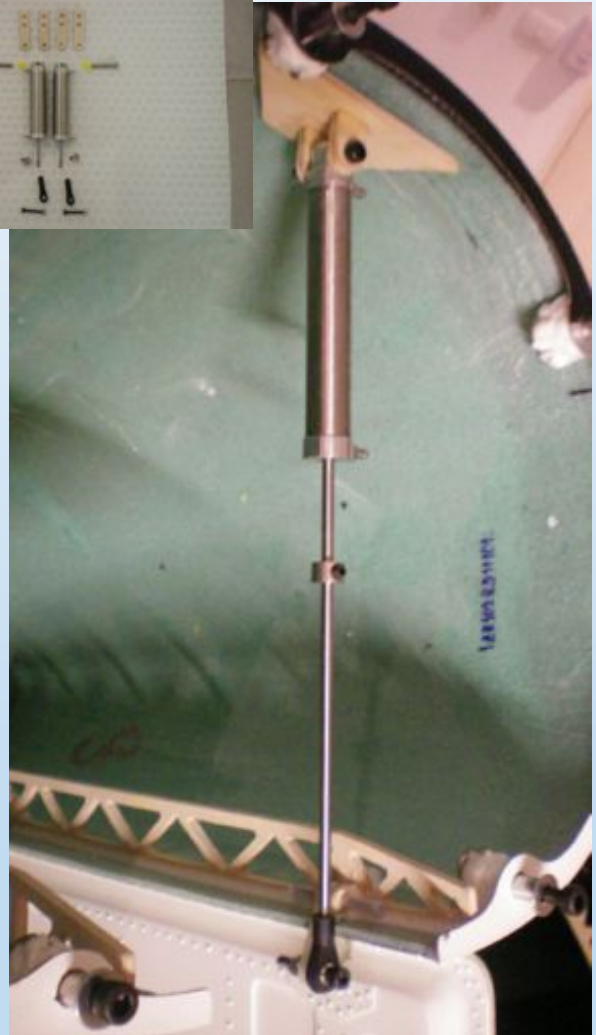
For the installation of the gear door cylinder use bag No. 2.

For the connection between cylinder and fuselage use the support which you already glued together, slide the cylinder in and take the m3 x25mm allen screw, as a replacement of a nut (the area is hard to reach if you want to take the cylinder out later for maintenance) use a piece of 4 mm festo tube which to pull over the screw's end.

On gear door side you use the M3 aluminum ball link with the M2 x 15mm screw. To determine the right position for the cylinder support, pull on the ball link until the cylinder blocks at its end of travel. Now you have the max. stroke, the gear door should be 90 degree open. Determine the right place and then glue the wood mount on the surface. Use 30 min epoxy. Work with the fuselage on the table inverted.

The collar will act as a Stop and define the "closed position" of the cylinder/gear door.

**Note:**  
The cylinders are to be purchased separately!

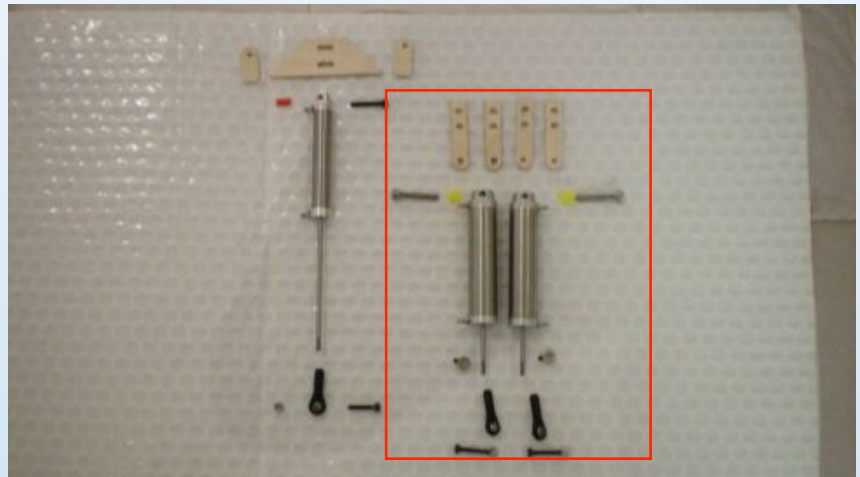






## Main Gear Doors

Define the parts required to install the main gear door cylinders.



See the mounts for the cylinder,s which you have to glue in.



As first step use the M4 x 20mm allen bolt and connect the cylinder with the mount.s  
To secure the screw you can use a 4 mm tygon tube.





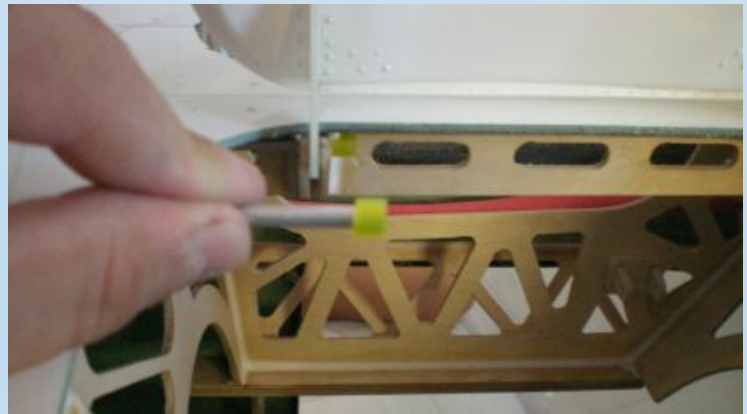
You will find in your kit one aluminum tube (inside 3mm dia.) and one brass tube (outside 3mm dia.). The brass we need later for the speed brake. Cut from the aluminum tube 4 pieces x 20mm long and keep the remaining for the speed brake.



In the wood structure we already milled the slots for the cylinder mounts, just slide the assembled cylinder mount parts in.



the gear door hinge are made with the 4 x 20 mm aluminum tubes, also secured with small piece of 4mm tygon which you just pull over the tubes when everything is mounted.





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On gear door side you use the M3 aluminum ball link with the M2 x 15mm screw. To get the right opening angle of the door, pull on the ball link until the cylinder blocks. The gear door should be 90 degree open. Then glue the mount into the former, so that the gear door open position is always the end position of the cylinder. With the wheel collar you can now adjust the travel to close the door.





## Speed Brake

if you decide that you'd like make the speed brake doors functional, use the hardware of bag No. 3.



This is what you need to find in the kit to start working.



**Note:**  
The cylinders are sold separately.

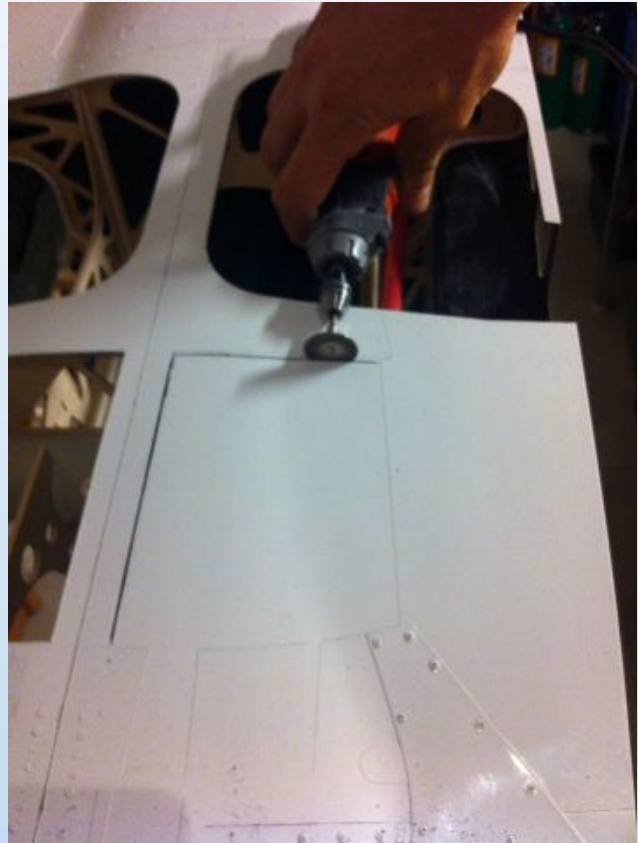




As this work is optional, it requires a little more work and skill.

On the bottom side of the fuselage you can see clearly the marks for the speed brake doors. You can trust these lines, they are really accurate.

Cut them out by using a dremel with diamant disk.



Sand around the edges, trial fit the speed brake doors and make sure they have enough clearance around.





As hinges use the milled poly ply parts. Mark the height of the necessary slots on the speed brake doors by measuring the hinges.



Mill the slots and the glue area well.



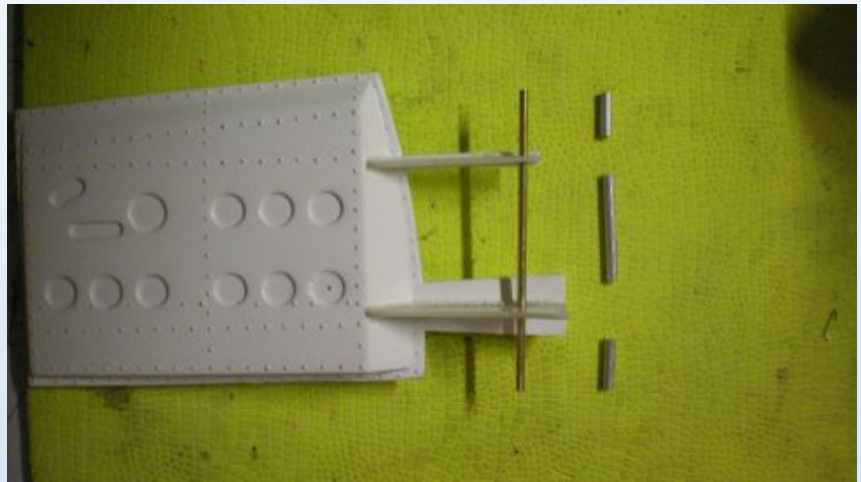


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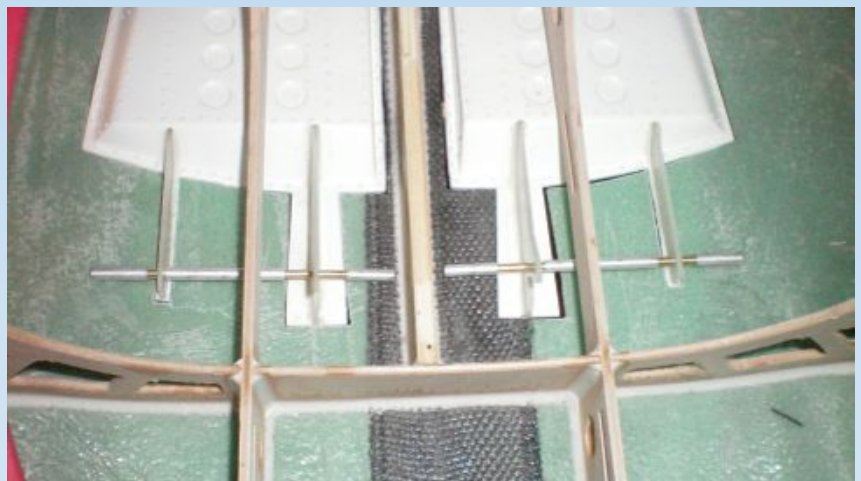
Slide the 3mm brass tube through the fiberglass hinges and then glue the hinges to the speed brake door together .  
Use Hysol or 30 min epoxy.

Once the hinges are glued, cut the aluminum tubes to the correct length, clean and sand them from the outside and assemble everything.

Wax or grease the hinge pin slightly!

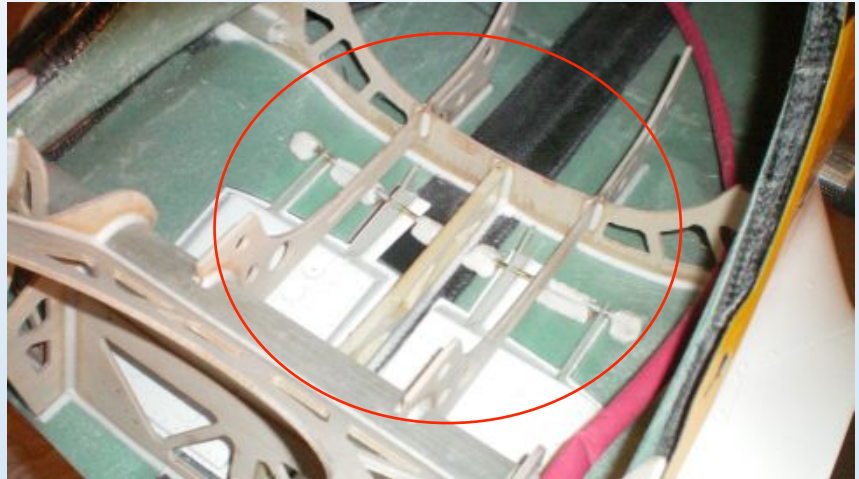


**Tip:** To align the speed brake doors perfectly with the surface of the fuselage, use some masking tape on the surfaces as shown, then use small balsa blocks 1.5 cm long and glue them on with a tiny point of CA glue.

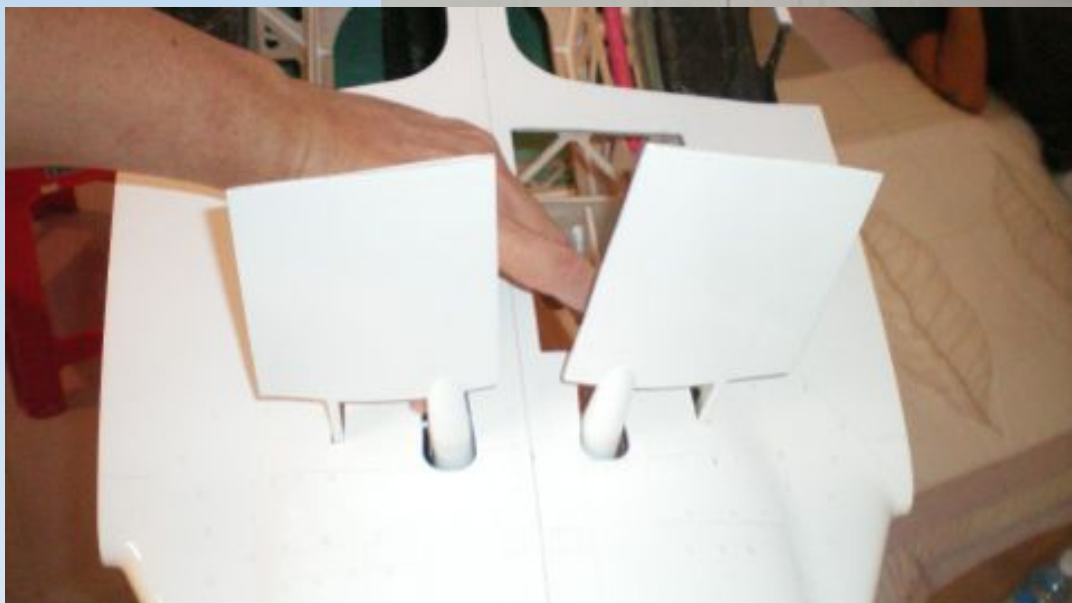
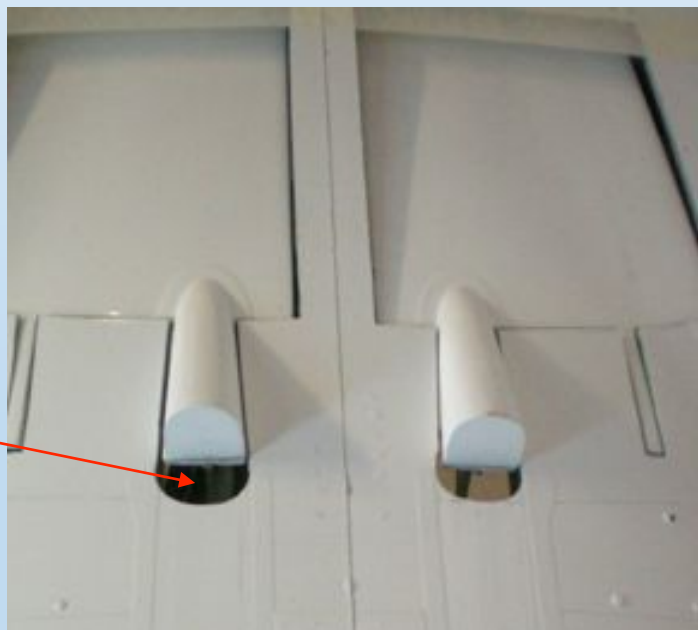


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Then glue the aluminum tubes in with thickened 30 min epoxy or a 24hr resin and cotton flock.

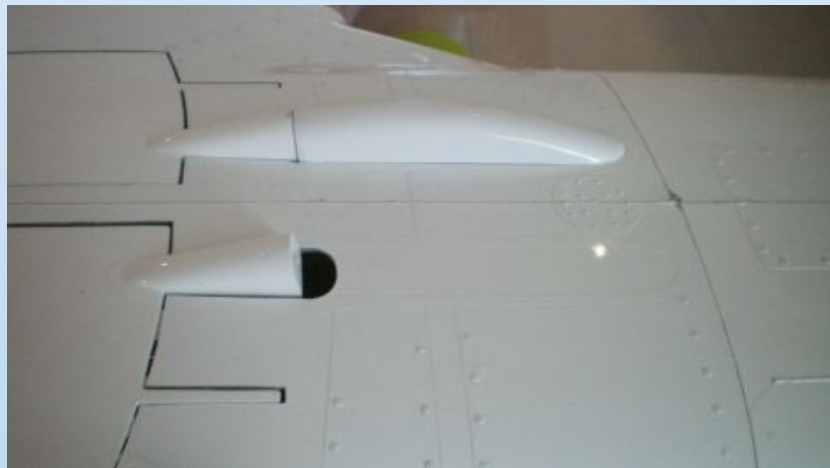


now you need open this area step by step until the speed break can move properly.





Cut the fairing as shown on the photos, make sure it will fit well to the fuselage and not foul the movement of the speed brake door. Then proceed with the gluing like the work steps taken when installing the flap fairings to the wing.







The final work left is connecting the cylinders with the in the factory preassembled wood mount. Use again M4 x 20mm allen bolts and secure with a piece of tygon tube

Connect the cylinders to the doors with the M3 aluminum ball link, the M2 x 15mm screw. To adjust the travel adjust the ball link on the thread.





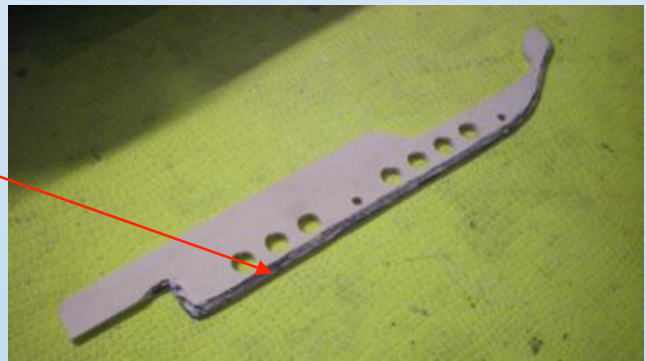


## Turbine and Trust Tube

Start by locating the 4 3mm milled plywood pieces.



The two lower ones, which later contact the duct surface, need to be rounded as you see here. Trial fit until they sit flat on the duct mount surface.



Roughen the gluing area and glue the wood parts with 30 min epoxy on the carbon ducting. Make sure they sit flush and are aligned to each other.





After the resin is cured the duct looks like shown on the photo.



The duct is a standard part used on other CARF airplanes as well. This it needs to be adapted in length. The L-39's internal wood structure and the tight space from the intake to the engine, make it necessary to cut the ducting shorter, the estimated cut point is on the 4<sup>th</sup> hole in the wood support.



To make sure the cutting will be straight use tape to give you the direction. To create a more balanced bypass air flow around the engine, you can even cut the center area further back in a circular shape. Use a Dremel with a diamond disk.



# CARF-MODELS

The trust tube, which is to be purchased separately, has already 4 holes drilled in the front edge, you just have to slide it over the ducting. Sometimes you will have to sand the duct area a little down because there are manufacturing tolerances during spot welding process.

Slide the tube approx. 10 mm over the duct and drill the holes through. Then use M3 x 10 allen screw with stop nut. The screw heads need to be from the inside!



The tail fairing and thrust tube support on the rear end might need to be cut 4-8 mm but please check your trust tube in a trial assembly first. Sand the fiberglass tail fairing if necessary. The tube needs to slide easily over. If the fit is too tight, it will be difficult to take the rear part of the fuselage off and back on, in case you have to remove it for transport or maintenance.



Once the trust tube fits well on to the fairing, you can glue the fairing with 30 min epoxy to the fuselage. This joint is permanent, so make sure that you have fitted everything perfectly before you glue.

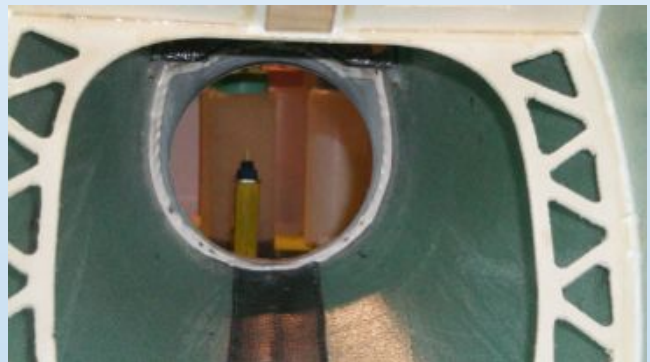




# CARF-MODELS

Secure the fairing during the curing process with tape.

Finally fill the glue joints, where applicable, with resin and mircoballon.







Now you can more or less permanently join the rear part with the main part of the fuselage. For that take 5 pcs M4 x 30mm allen bolts and washers from bag No. 5.



At that time also you should route the extension cable for the elevator and ruder servos and secure them properly and safely.

Remember that when the engine is running, in this area is a very hot thrust tube. Make sure that wires can't touch it under any circumstances!



# CARF-MODELS

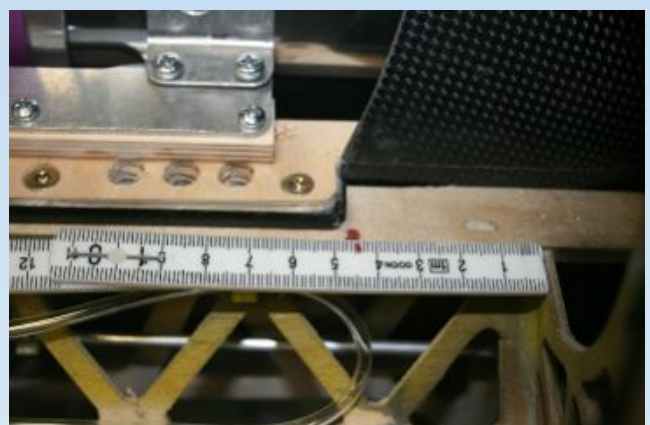
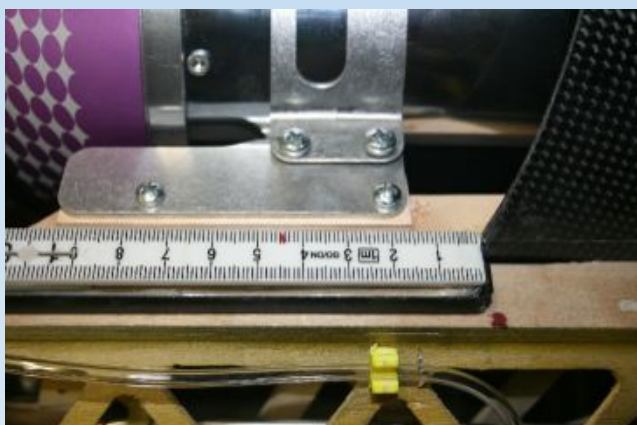
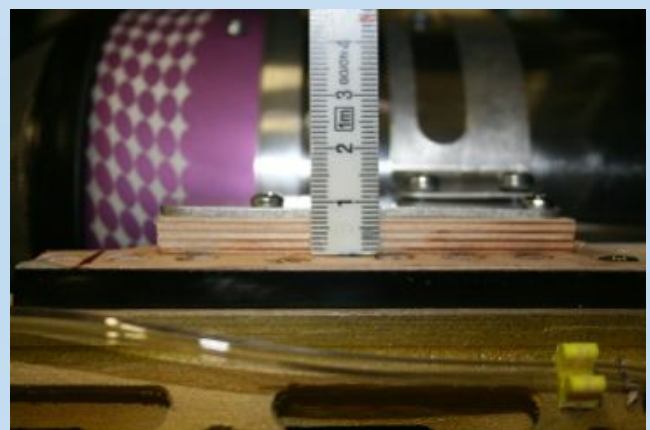
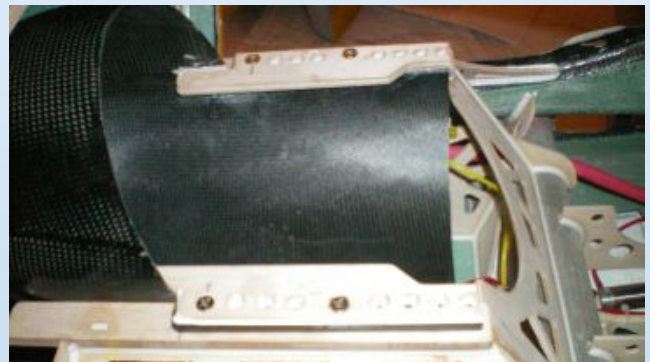
To install the ducting and turbine use the bag No. 1.

**Note: We are installing a Jet Cat P-180. If you use a different turbine you might have to adjust or modify the installation process as well as the required hardware.**

Now you can slide the trust tube, mounted to the ducting, trough the canopy area. Bolt the ducting with M4 x 25 and T-nuts in place.

The following steps depend on which type of engine you use. For the Jet Cat 180 RX please follow the dimensions shown on the next 3 pictures. For other engines these dimensions might vary.

For easy working, after marking the positions, the duct can be removed for permanent engine mounting.





## Nose Landing Gear

All the parts which you need to assemble the steering you can see here.

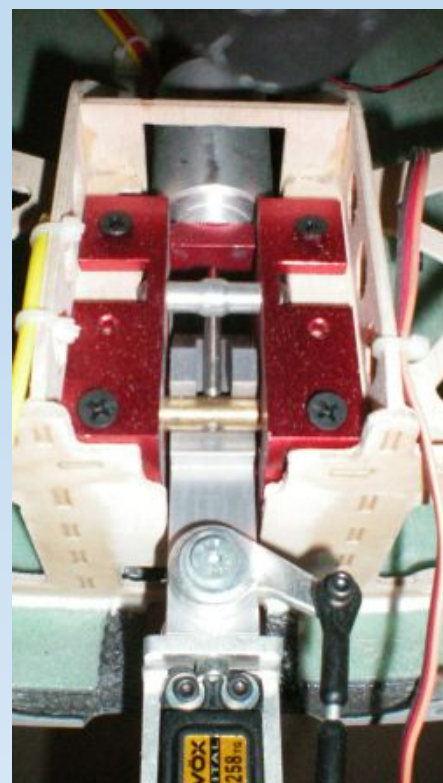


The 4 pcs M3 x 12 allen bolts and the washer you use to mount the servo. M3 x 16mm bolts are used for the connection between the servo and landing gear arm.



For mounting the landing gear take 4 or 6 x 3.5 x 22 mm countersunk sheet metal screws.

**Note:** The sheet metal screws do really create a very good mount for nose and main gear. Please be assured that they are strong enough even for operation of grass and less than perfect runways. However, if you have an accident, they will strip out of the wood and save your plane from much more serious damage.





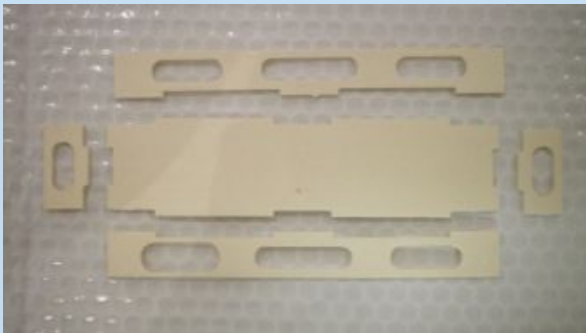


## Rc Equipment

This part of the manual should be only a guideline because every modeler has his own choice of equipment. We show here the equipment we supply with our Pneumatic Installation Pack, which also includes air valves from JetTronics.

Furthermore we use a Powerbox "Cockpit" power supply system .

Milled wood parts made from 3mm light plywood for the air valves and powerbox.





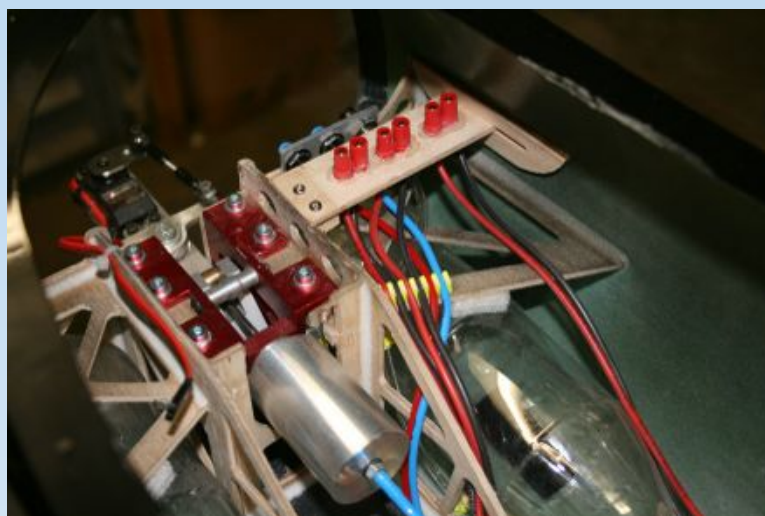
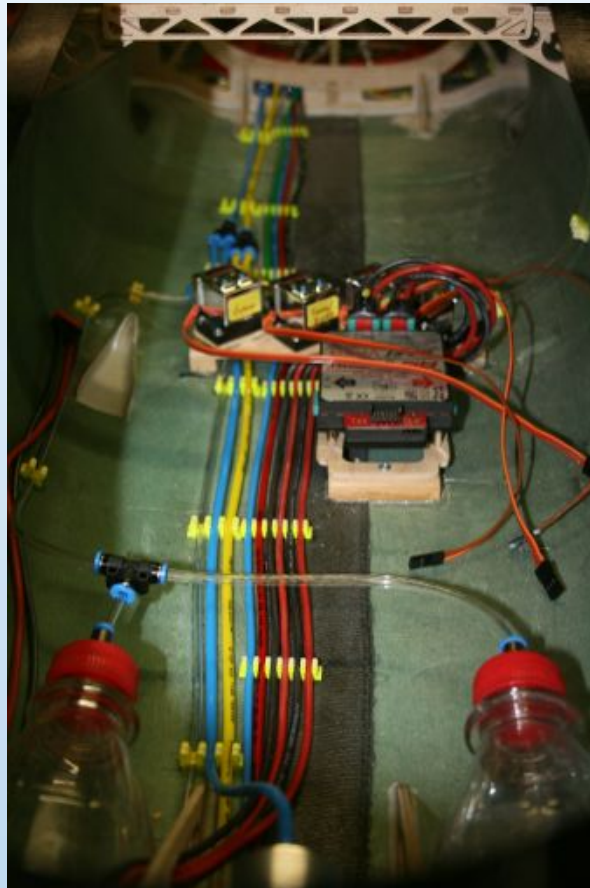
# CARF-MODELS

These pictures are from the build for this manual



# CARF-MODELS

Here a sample from Thomas Singer's L39 (Kit-Prototype)





## Main and Hopper Tank

We sell a separate tank set for our L-39, which is designed to fit perfectly into the fuselage.

Besides individual fuel tank systems, this is the most recommended solution for you.



The main tank is very easily installed on to the milled wood former in front of the wing tube. A fiberglass pan is already part of the kit.

The tank is simply secured with two strips of velcro.







## Hopper tank assembly

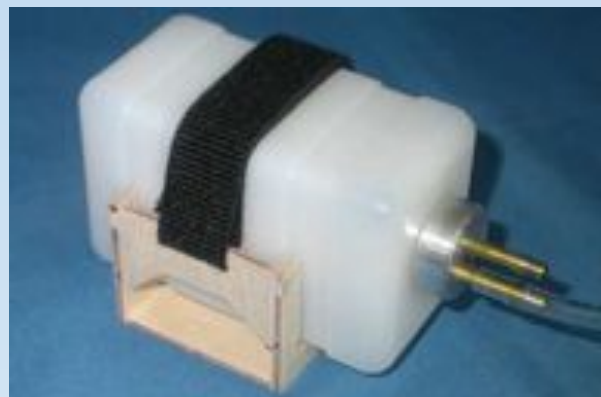
If you purchased the CARF tank set you've got everything you need to assemble the two tanks.



Use a very short 6mm festo tube for the clunk line. The clunk is placed in the cubic center of the hopper, it is not designed to move at all.

For the breather tube (connection to the main fuel tank) use a piece of tygon and cut a "V" shape to the end, that makes sure you get as much as possible air out during refill .

The wood parts of the hopper tank mount are self explaining. Glue them together with thick CA glue and mount the hopper with a strip of Velcro.





The main tank can be assembled with our supplied hardware, too.

Optionally you can use your own metal clunk instead of our felt clunk. We generally use felt clunks because they guarantee air free supply from the main tank into the hopper tank. But with very powerful engines some worry that they restrict fuel flow... we are sure that there is nothing to worry about.

The advantage of a felt clunk is that you'll be sure there's a leak of some kind, if you find air in your hopper tank after a flight.

Use Tygon fuel tube and extend the breather tube like you did on the hopper tank. make sure the breather tube touches the inside surface of the tank ..

**NOTE:** The supplied felt clunk will become heavier when charged with fuel and will easily reach all areas of the fuel tank.





## Canopy and frame

The canopy latch set is provided in the Kit. It is designed as a "hidden" system.



Slide the spring 1 cm over the brass tube. Make sure that the pin protrudes the fuselage surface and securely locks into the hole in the canopy frame.



Use the white plastic sleeve to guide the steel wire. Cut the white tube approx 3 cm shorter than the steel wire, make a loop into the steel wire, (add an M3 nut in the loop) and place the end in an accessible place inside the fuselage. You must be able to reach it easily when one air intake is removed. Then glue the guide tube with 30 min epoxy on to the inner surface of the fuselage.





The canopy frame has all work done. It comes completely finished with all locks, tabs and slides. It fits perfectly on the fuselage. You just have to cut out the clear canopy and glue it into the frame.



The easiest will be if you split the canopy in 3 pieces. Start with the front part and work towards the rear because you have always access through the next opening, and the rear one you can reach through the air intake .

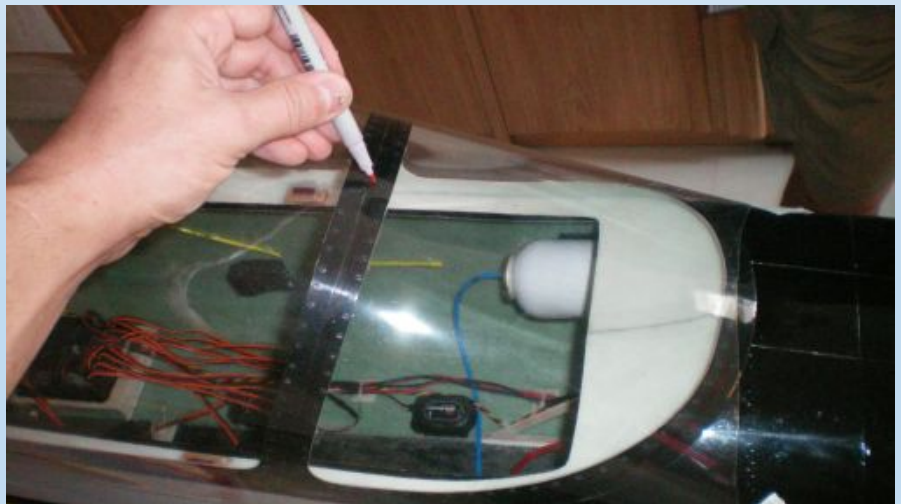


# CARF-MODELS

Roughly cut the front and rear of the canopy as molded, so that you can put it over the fuselage.



Fix it with small pieces of tape and mark around the three canopy cutouts. Allow 4 mm excess material so you can glue it later from the inside in to the frame.



Cut now the front part around your mark. Use a pair of short, curved scissors or a diamond disk with a dremel. Make sure the room is warm, or warm up the material before you cut, to prevent splitting or cracking.



# CARF-MODELS



Now repeat the work steps on the center and rear part of the canopy.





# CARF-MODELS

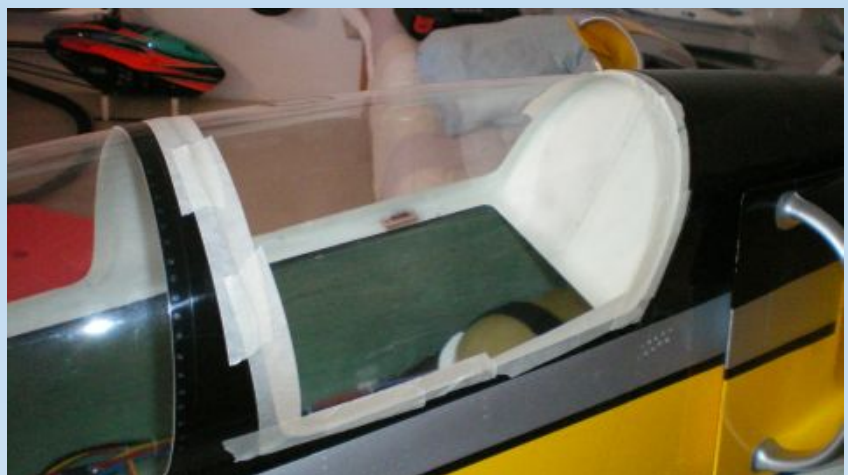
Gluing in the canopy pieces is a tricky job. There are many ways to do a great job.

Start on the front canopy, use a proper tape for this work with a good tack.

After everything is taped make sure the canopy all around sit as tight as possible against the frame. Then use thin CA glue to fix it in a few spots. Apply very little amounts with the tip of a knife and do not use accelerator.

When the screen is fixed well, apply 30 min epoxy from the inside and let it cure. The resin will creep into the gap slowly and create a good joint.

Work backwards one by one screen. Allow ample time to do this job, as it is critical for the professional looks of your cockpit.



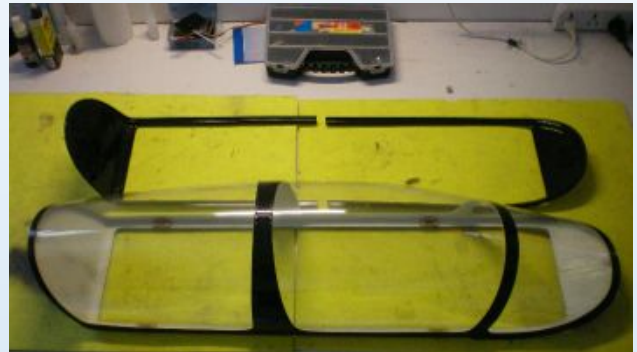


Alternatively you can use small neodym magnets instead of the tape.



# CARF-MODELS

We provide in our kit a scale frame inlay. It will be very difficult to get it inside the canopy frame in one piece. So, simply cut it in two pieces and glue it in as shown on the photo.

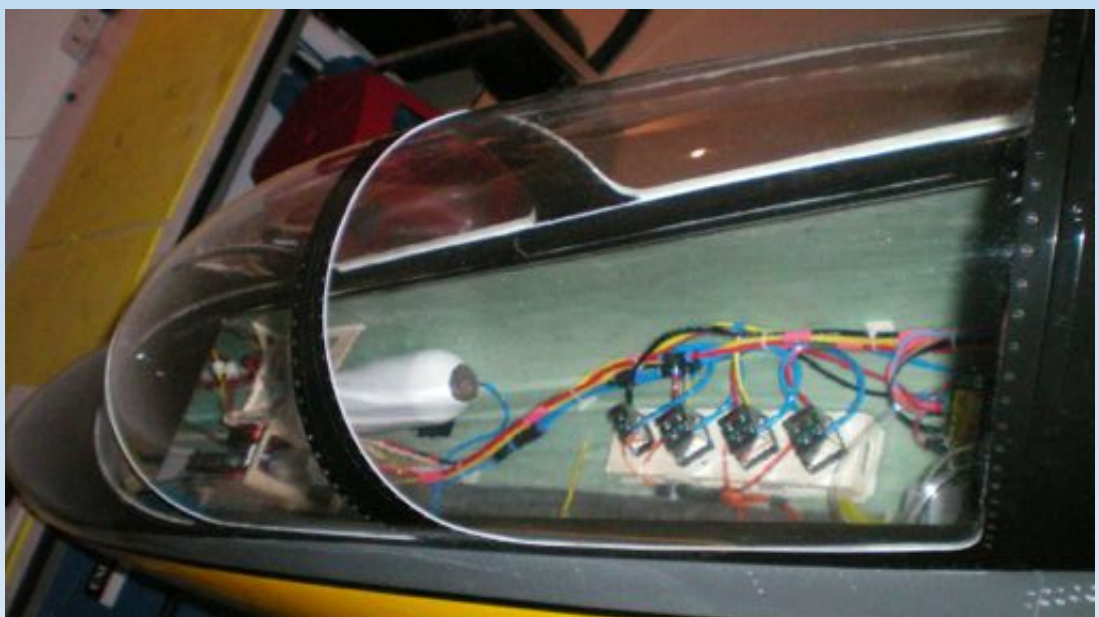


Finally, you can use grey or black silicone to create a nice filled between the canopy glass and frame. Mask the glass, cut the masking tape parallel to the frame with a very sharp knife, in a distance of 2-3 mm. Remove the tape close to the frame, apply the silicone with a very thin nozzle.



Use your finger and form a nice round fillet. Then pull the tape off, make sure you have a sharp line on the wind screen and let the silicone cure overnight.

Lastly, next day, you simply can rub off any excess silicone from the fiberglass canopy frame.







## Scale Details and more Pics

All those naca inlets are clearly marked on the surface of the fuselage. Cut them out carefully and glue in the pre painted intakes which come with your kit. Cut them to fit and glue them from inside.





## **Balancing**

The final weight of your L39 Albatros will vary depending on your equipment/turbine choice and the amount of scale detail you might choose to add. We guarantee that the plane can be built below 20 kg dry weight with our production cockpit, which can be ordered as an accessory.

However, if you are not careful, you can easily end up being 1-2 kg too heavy. Don't give up if you need to keep the weight limit, you will find areas where you can save weight, if you end up a bit too heavy.



The center of gravity is quite easy to check, just use the jig which we provide in our kit. Check it with full hopper tank but empty main tank and extended landing gear.

We have listed below the control movements recommended to fly the aircraft. Different pilots sometimes prefer a different feel but you will find your personal setting using these deflections as a starting point.

<b>Aileron</b>	<b>+ 40mm - 25mm</b>	<b>30 - 40% Expo</b>	
<b>Elevator</b>	<b>+ 32mm - 26mm</b>	<b>55 % Expo</b>	<b>For Landing + 43 mm - 26mm</b>
<b>Ruder</b>	<b>+/- 75 mm</b>	<b>25-30% Expo</b>	
<b>Flap</b>	<b>Take Off (step 1) - 62mm</b>	<b>Landing (step 2) - 105mm</b>	

**No Flap to Elevator mix necessary.**

All measurements are related to the root trailing edge of each surface.



## Settings for Powerbox I-Gyro

If you are planning to use the I-Gyro from Powerbox, here are the recommended settings of Stephan Voelker, who is the designer of this magnificent aircraft. Please be aware that these settings very much depend on the absolute control movements and the CG position.

Our recommendation is to always test fly the airplane for several flights without any Gyro activated and only then start to experiment with the Gyro. If you do not want to copy the values below, use the the setup assistant of the I-Gyro to set all gains to your liking, which is ALWAYS the recommended way to go.

I Gyro L-39 2013

Kreisel	FM 1	FM 2 Normal	FM 2 Heading	FM 3 Normal	FM 3 Heading
AIL A	0	50	8	60	25
AIL B	0	50	8	60	25
ELV A	0	40	8	55	20
ELV B	0	40	8	55	20
RUDDER	0	30	0	40	30
Boost	0	1	1	1	1