SebArt *professional line*

Sukhoi 29S 140 ARF

ASSEMBLY MANUAL

The new Sukhoi 29*S 140 ARF* was designed by Italy aerobatic pilot, Sebastiano Silvestri and the design is based on of his new Tournament Of Champion's competition airplane.
This professional ARTF kit is the result of Sebastiano's long research in *3D* performance. This combined with an extremely lightweight structure, the all wood airframe, the big control surfaces and the **new revolutionary Lift Generator on landing gear** give the Sukhoi 29*S 140* an impressive thrust-to-weight ratio and crisp control authority at any airspeed and flight condition….That for this small class of airplane is revolutionary!

The Sukhoi 29*S 140* can do it all…unbelievable easy harriers, torque rolls, blenders, waterfalls and almost anything else you can dream up are waiting you!

.....the only aerobatic limit is your fantasy!

Specifications:
Wingspan:….....194 cm (76,37 in)
Length:….....……192 cm (75,59 in)
Wing Area:….....82 dm² (127,1 sq.in)

Recommended Set Up:
Weight:....4.000 - 4.200 g. RTF less motor battery
Radio:…..6-ch with 5 digital servos metal gear
Motor: …Hacker A60-22S + MasterBasic 90-Opto

Engine: …2 or 4 cycle 1.20 - 1.80

Table of contents

Required radio, motor and battery

Radio equipment:

- Minimum 5-channel radio system
- 5 digital servos metal gear, recommended JR PROPO DS 8411
- 2 servo extension 300mm, for elevator's servos
- 4 servo extension 100mm, for aileron's servos

Recommended electric motor for best performance:

- Hacker A60-22S + MasterBasic90-Opto controller + APC 20 x 11 E
- Hacker A60-24S + MasterBasic90-Opto controller + APC 20,5 x 12 WE

Recommended Li-Po battery pack for best performance:

- FlightPower 3700mAh 10S…..for unlimited 3D
- FlightPower 4250mAh 10S…..for 3D, duration and precision

Additional required item, tools and adhesives

Tools:

- Drill
- Drill bits: 1,5mm; 2mm; 2,5mm; 3mm; 5mm; 6mm
- Flat blade screwdriver
- Phillips screwdriver large and small
- Hobby knife
- Masking tape
- Paper towels
- Rubbing alcohol
- Sand paper
- Soldering iron
- synthetic oil

Adhesives:

- 5-minute epoxy
- thin CA
- medium CA

Warning

This RC aircraft is not a toy!
If misused, it can cause serius bodily harm and damage to property.
Fly only in open areas, preferably in official flying sites, following all instructions included with your radio and motor.
This plane is a compromise between Aerobatics and 3D flying, and not a pylon racer.
It is built with a very light structure and for this reason we hardly recommend:

→ Do NOT fly your airplane at high speeds, because this may cause structural failures or flutter due to the extremely large control surfaces.

Before starting assembly

Before starting the assembly of your Sukhoi 29S, remove each part from its bag and protection for a prior inspection. Closely inspect the fuselage, wing panels, rudder, and stabilizer for damage. If you find any damage or missing parts, contact the place of purchase.
If you find any wrinkles in the covering, use a heat gun or covering iron to remove them. Use caution while working around areas where the covering material overlap to prevent separating the covers.

Using the manual

This manual is divided into sections to help make assembly easier to understand and to provide breaks between each major section.
In addition, check boxes (□) have been placed next to each step to keep track of each step completed. Steps with two boxes indicate that the step will require repeating, such as for a right or left wing panel, two servos, etc.
Remember to take your time and follow the directions.

Warranty information

SebArt garantees this kit to be free from defects in both material and workmanship at the date of purchase.
This warranty does not cover any parts damage by use or modification, and in no case shall SebArt's liability exceed the original cost of the purchased kit.
Further, SebArt reserve the right to change or modify this warranty without notice.
In that SebArt has no control over the final assembly or material used for the final assembly, no liability shall be assumed or accepted for any damage of the final user-assembled product. By the act of using the product, the user accepts all resulting liability.

If the buyer is not prepared to accept the liability associated with the use of this product, the buyer is advised to return this kit immediately in new and unused condition to the place of purchase.

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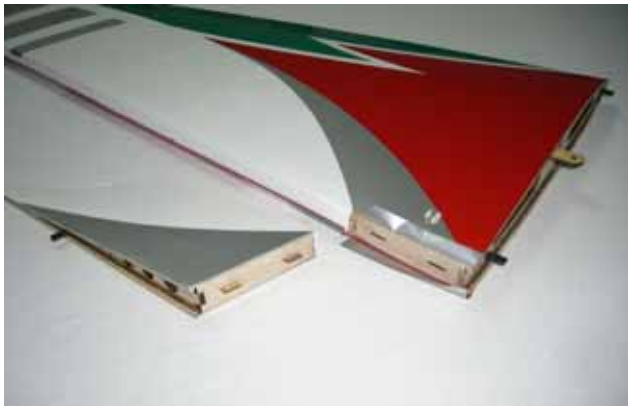
38017 Mezzolombardo (TN) – Italy
www.sebart.it

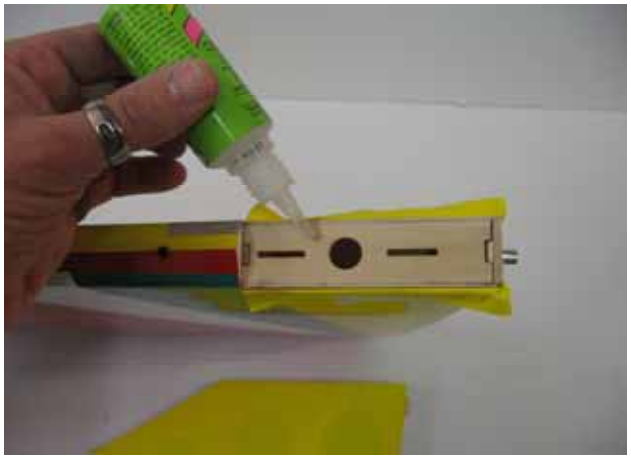
Section 1 – wing fillet installation

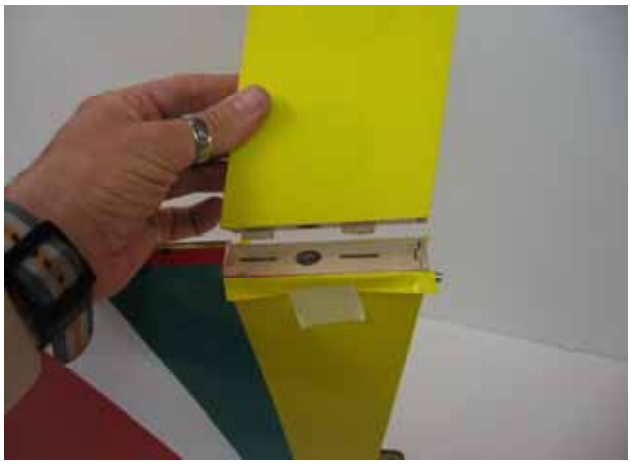
□□ step 1
Locate the corresponding wing fillet to the wing.



□□ step 2
Locate the wing tube in the fuselage, and carefully slide the wing panel. Make sure the wing panel alignment pins slide into the holes provided in the fuselage. If necessary sand a little the holes, to let enter the pins free. Test fit the wing fillet and his alignment.

□□ step 3
Once satisfied with the fit, glue the wing fillet to the wing panel using medium CA.
Use the glue carefully avoid over runs onto the area to be covered with the material.





□□ step 4
Use the covering iron carefully, at a medium temperature, to glue the cover material down around the area of the fillet. Use caution while working around areas where the cover material overlaps to prevent separating the covers.

□ step 5
Repeat steps 1 through 4 for the remaining wing panel and wing fillet.

Section 2 – ailerons installation

□□ step 1
Locate the five aileron pin-hinges included in the hardware and trial fit in their place and verify the correct position and alignment of the aileron with the wing panel.

□□ step 2
Before to glue the hinges, carefully put few drops of oil in the hinge of the pin-hinges.
Locate and glue the five hinges with 5 minutes epoxy, verifying their correct alignment.

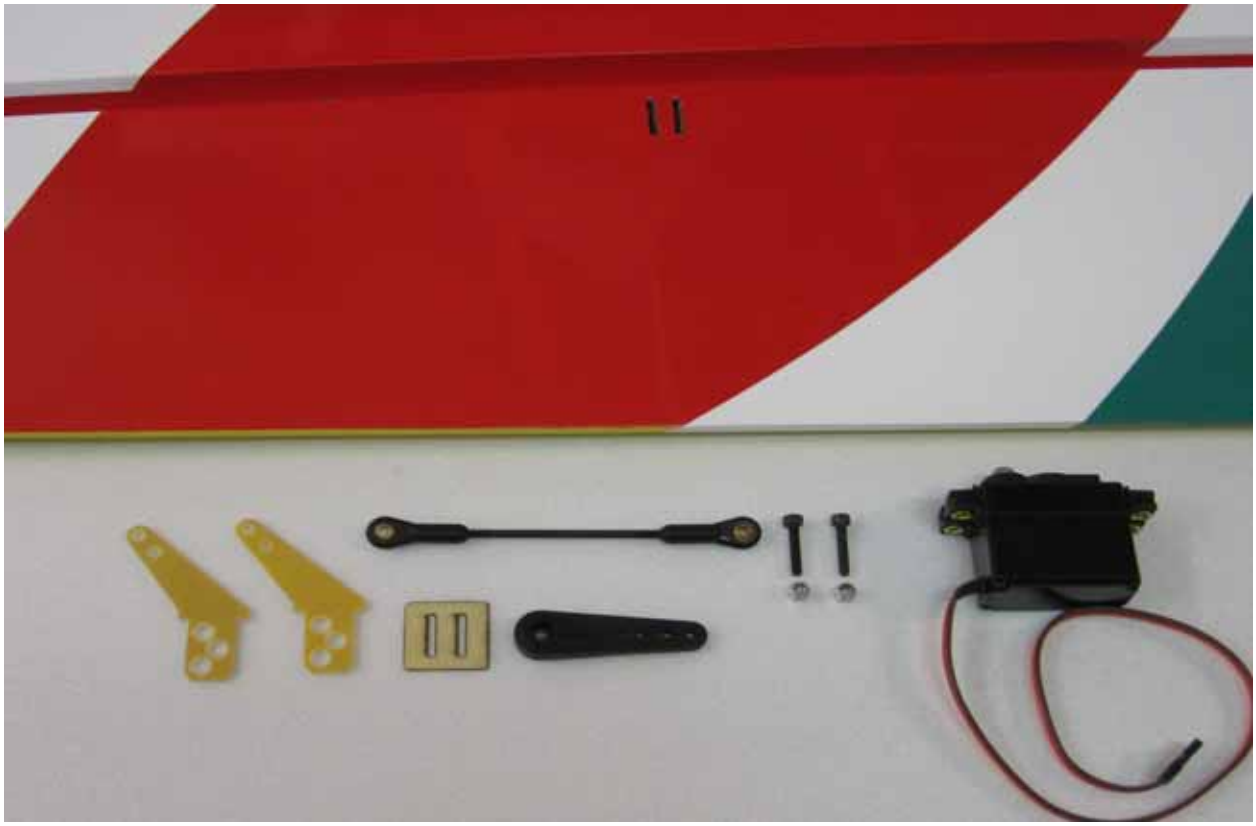
□□ step 3
Carefully glue, with 5 minutes epoxy, the hinges into the aileron.

□□ step 4
Work the aileron up and down some times to work the hinges and check for proper movement.

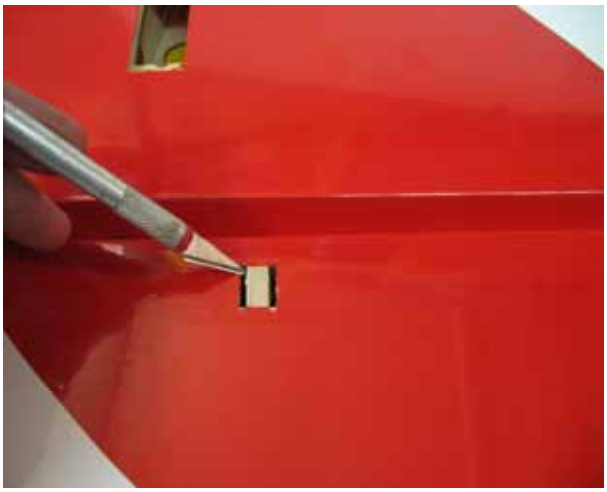
□ step 5
Repeat steps 1 through 4 for the remaining wing panel.

Section 3 – aileron servo & control horn installation

□□ step 1
Locate the following items, included in the hardware, plus the long arm and servo (not included). Install the servo hardware (gommets and eyelets) included with the servo.



□□ step 2
With the hobby knife open the servo bay and the control horn location.

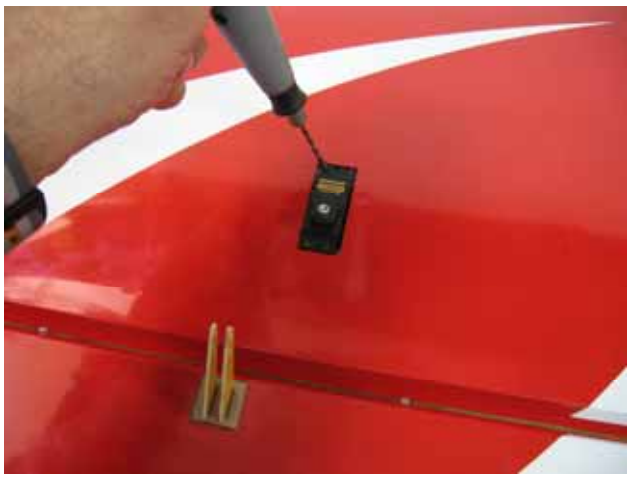


□□ step 3

Place the fibreglass control horn into aileron, check for correct alignment and glue it with some drops of medium CA.

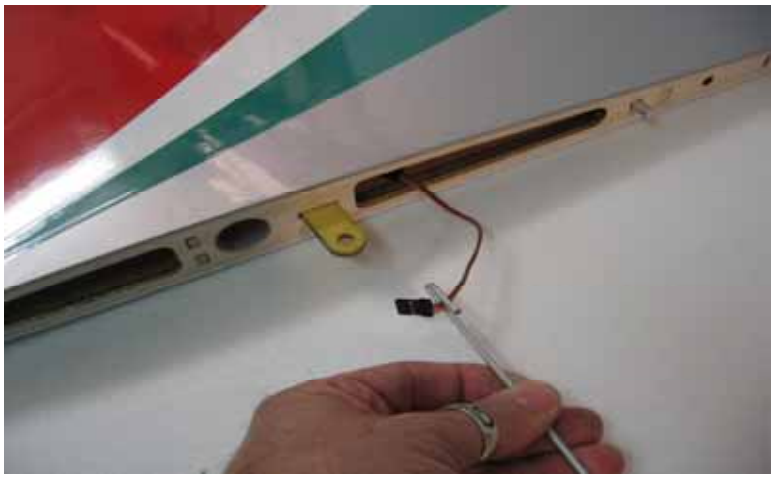
□□ step 4

Drill the location for the four self-tapping screw using a 1.5mm drill bit and install the servo into the wing panel as per the picture.

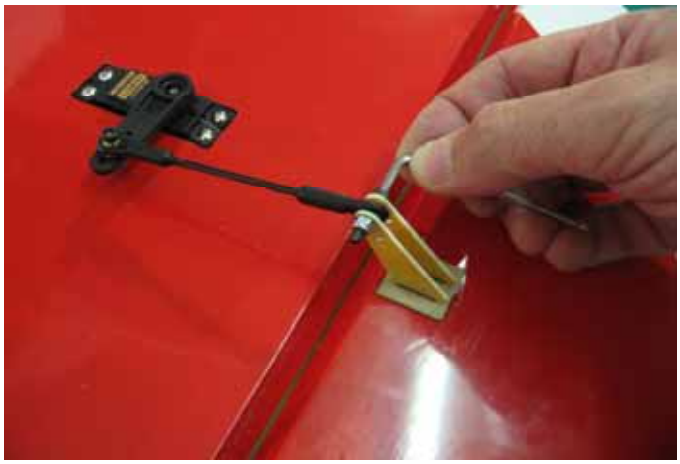


□□ step 5

Bring out the servo lead.



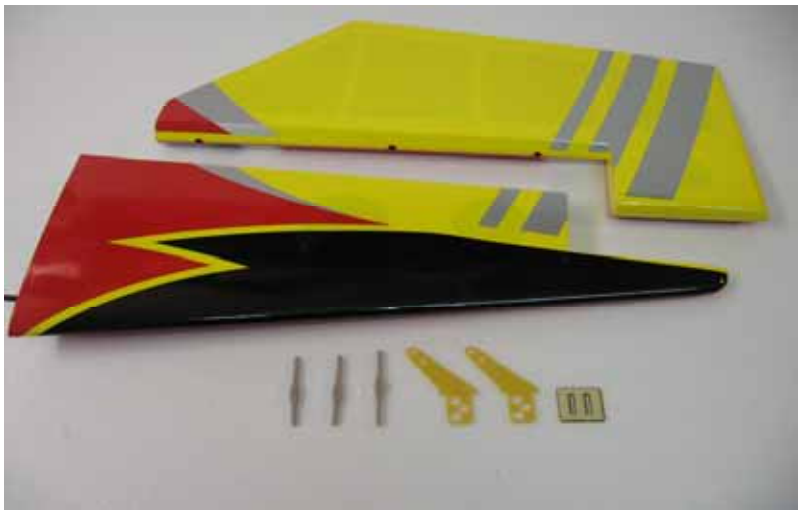
□□ step 6
Install the control horn as per picture.



□ step 7
Repeat steps 1 through 6 for the remaining wing panel.

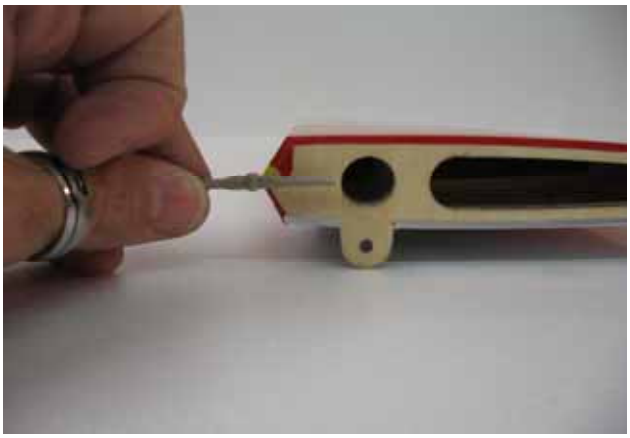
Section 4 – elevator installation

□□ step 1
Locate the following items, included in the hardware.



□□ step 2

Cut only one (1) of the three hinge as follow.

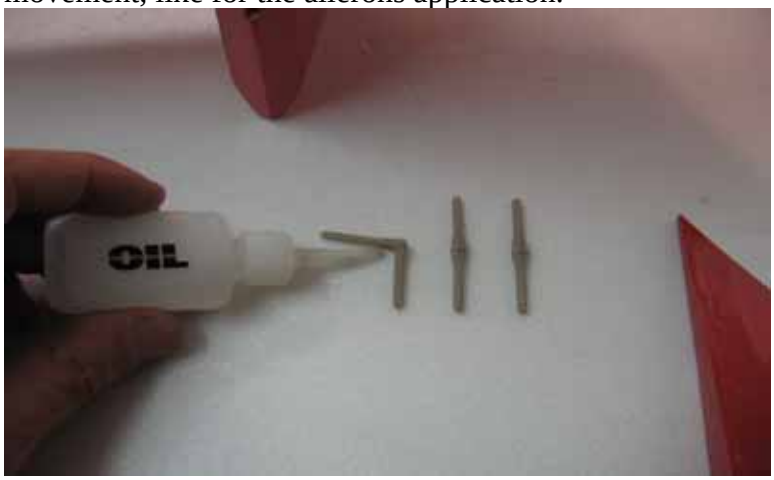


□□ step 3

Place the three hinges in their holes, and verify the correct position and alignment of the elevator with the stabilizer panel.

□□ step 4

Prepare the hinges for the application, using one small drop of sinthetic oil in their center of movement, like for the ailerons application.



□□ step 5

Use good quality 5 minutes epoxy to glue the hinges in the elevator, and remember to check the correct sense of work for every hinge. If necessary clean the zone of the hinges with paper towels and rubbing alcohol.

□□ step 6

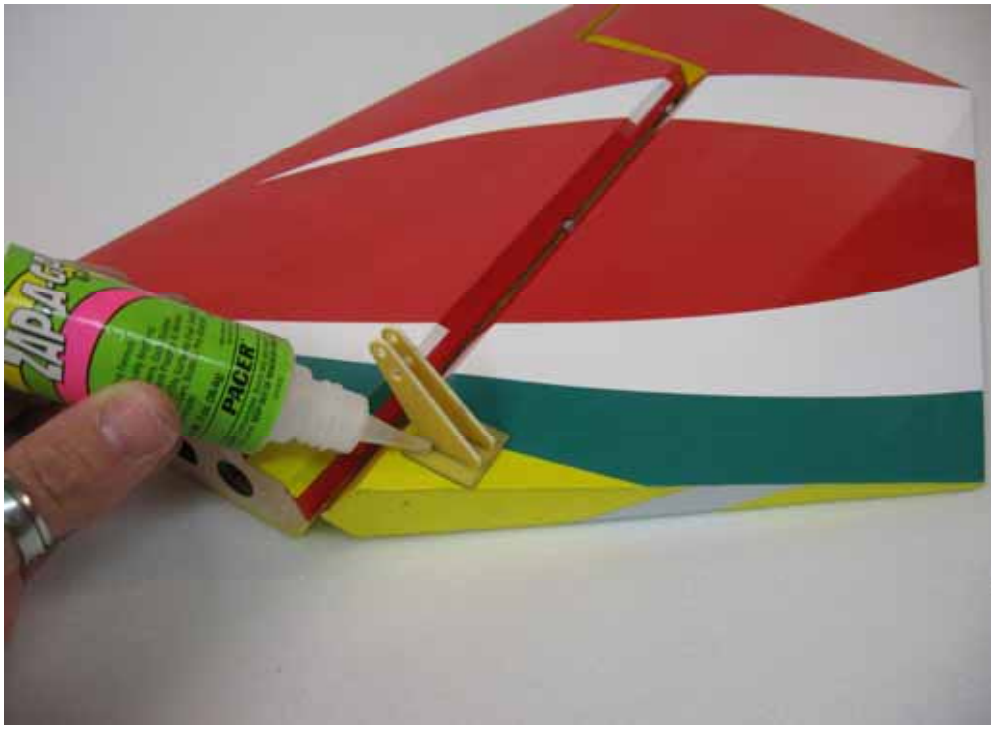
Always with 5 minutes epoxy glue the hinges in the stabilizer. If necessary clean the zone of the hinges with paper towels and rubbing alcohol.

□□ step 7

Work the elevator up and down some times to work the hinges and check for proper movement.

□□ step 8
With the hobby knife remove the cover in the control horn location.

□□ step 9
Place the fibreglass control horn into elevator, check for correct alignment and glue it with some drops of medium CA.

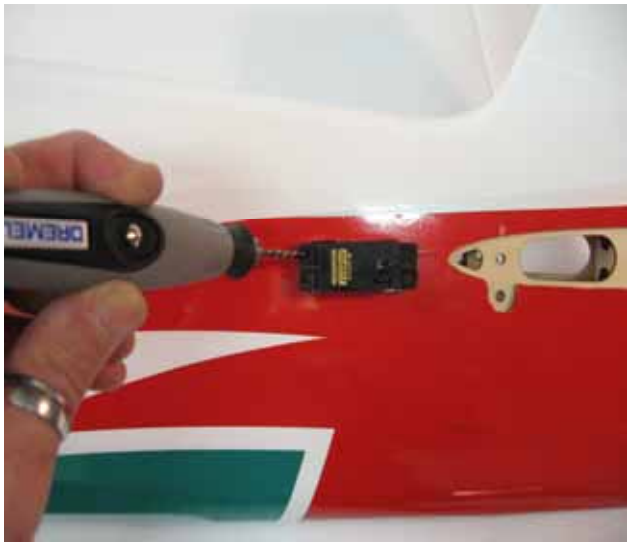


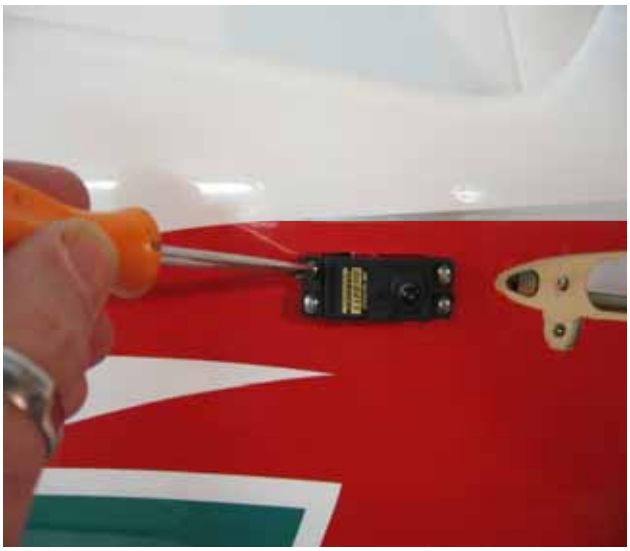
□ step 10
Repeat steps 1 through 9 for the remaining elevator.

Section 5 – elevator servo installation

□□ step 1
Install the servo hardware (gommets and eyelets) included with the servo.
Locate the following items, included in the hardware, plus the long arm and servo (not included).

□□ step 2
Drill the location for the four self-tapping screw using a 1.5mm drill bit and install the servo into the wing panel as per the picture.





□□ step 3
Locate the stabilizer carbon tube into fuselage and carefully slide the stabilizer on it too.

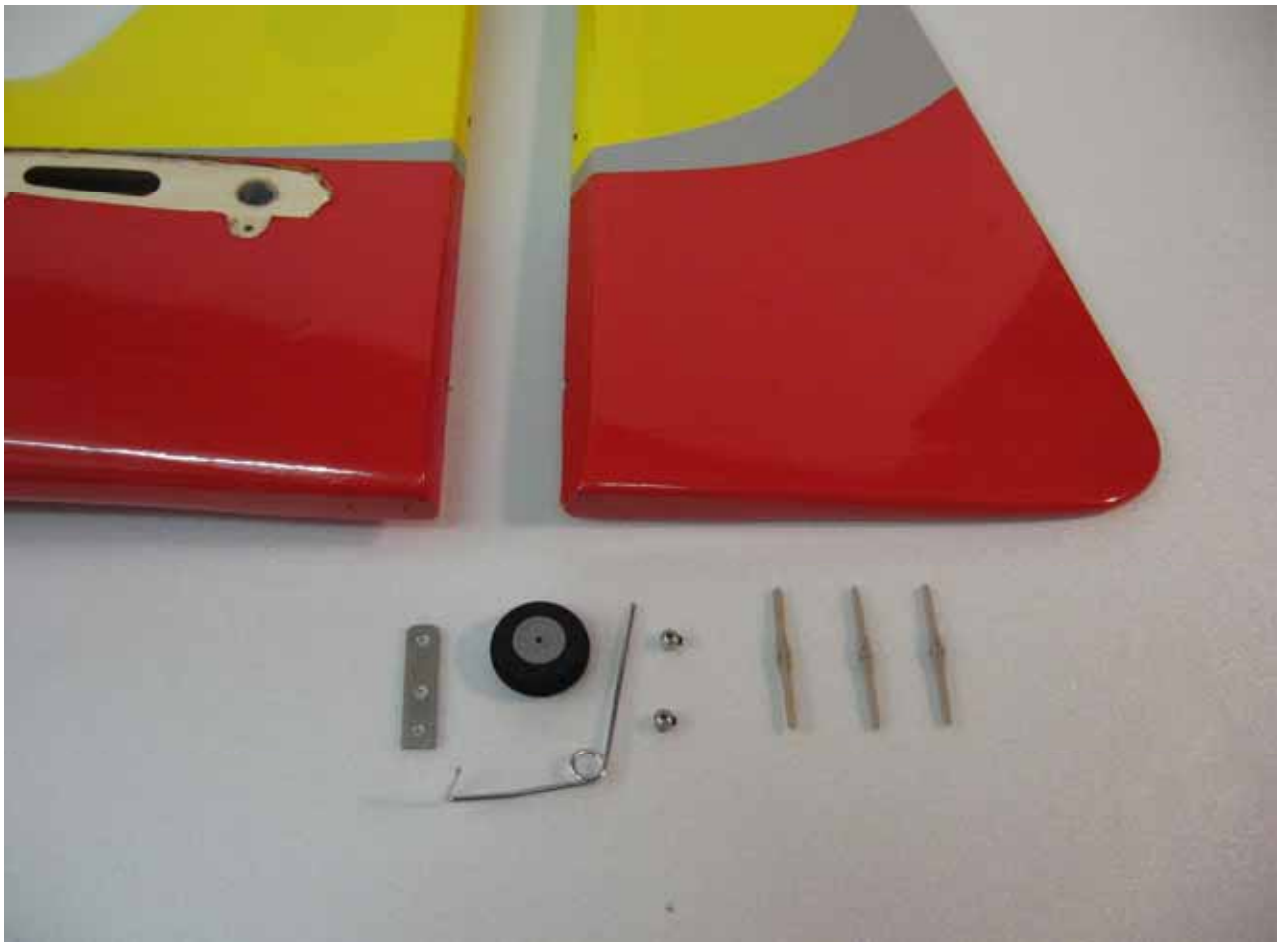

□□ step 4
Fix the stabilizer on the fuselage with the provided 3mm screws and washers.

□□ step 5
Install the control horn as per picture.


□ step 6
Remove the stabilizer, and repeat steps 1 through 5 for the opposite side of the fuselage.

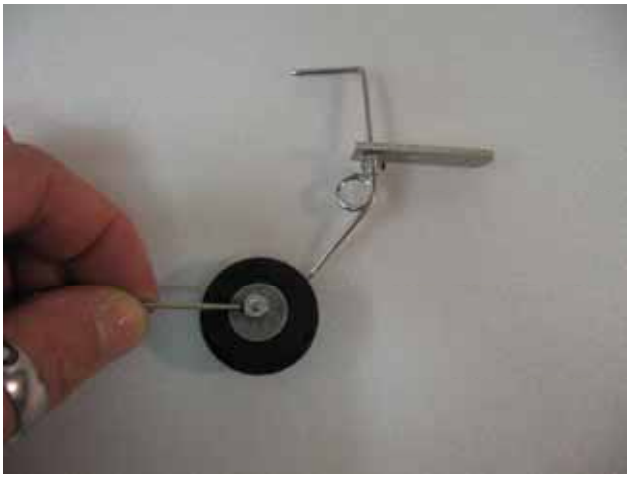
Section 6 – tail wheel & rudder installation

□ step 1
Locate the following items, included in the hardware.



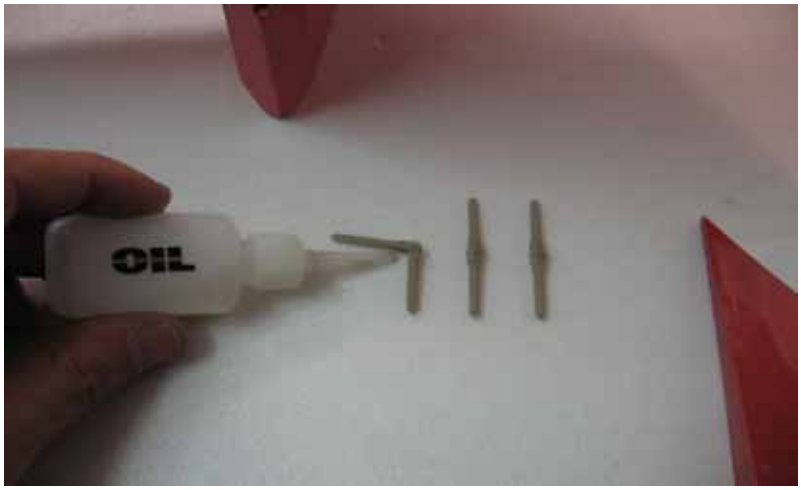
□ step 2
Using a 2mm drill bit, carefully drill the hole into rudder, 25mm from the base level, for the tail wheel. With the hobby knife cut a groove 25mm length into the rudder as follow.

□ step 3
Assemble the tail wheel as follow.

□ step 4
Locate the tail wheel on rudder and glue it with some drops of medium CA.

□ step 5
Prepare the hinges for the application, using one small drop of sinthetic oil in their center of movement.



□ step 6

Use 5 minutes epoxy to glue the hinges in the rudder, remember to check the correct sense of work for every hinge. If necessary clean the zone of the hinges with paper towels and rubbing alcohol.

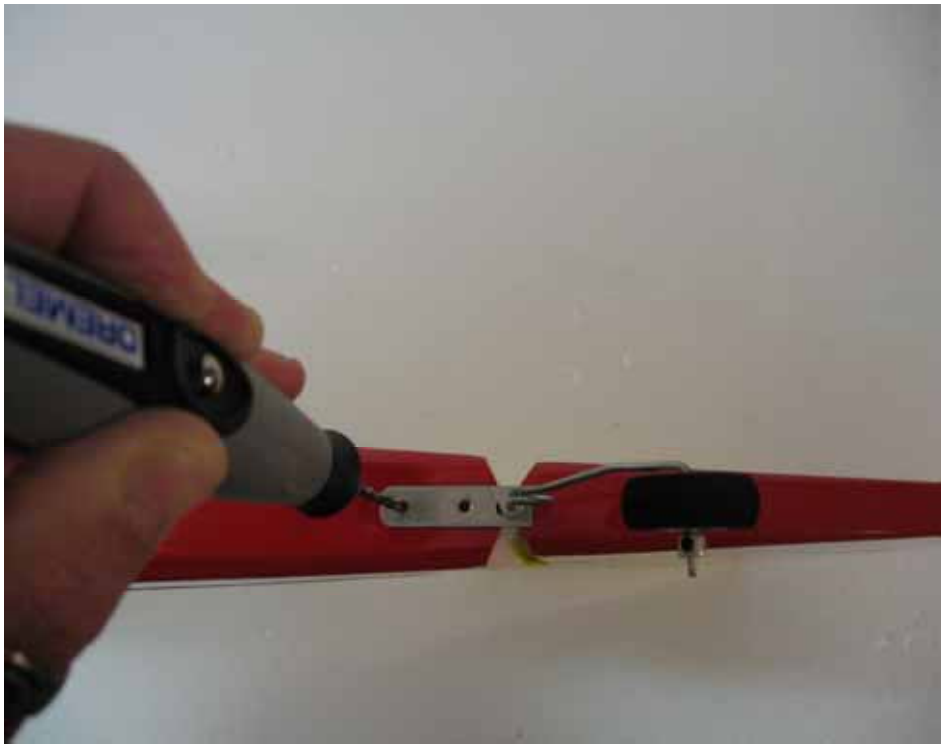
□ step 7

Always with 5 minutes epoxy glue the hinges in the fuselage. If necessary clean the zone of the hinges with paper towels and rubbing alcohol.

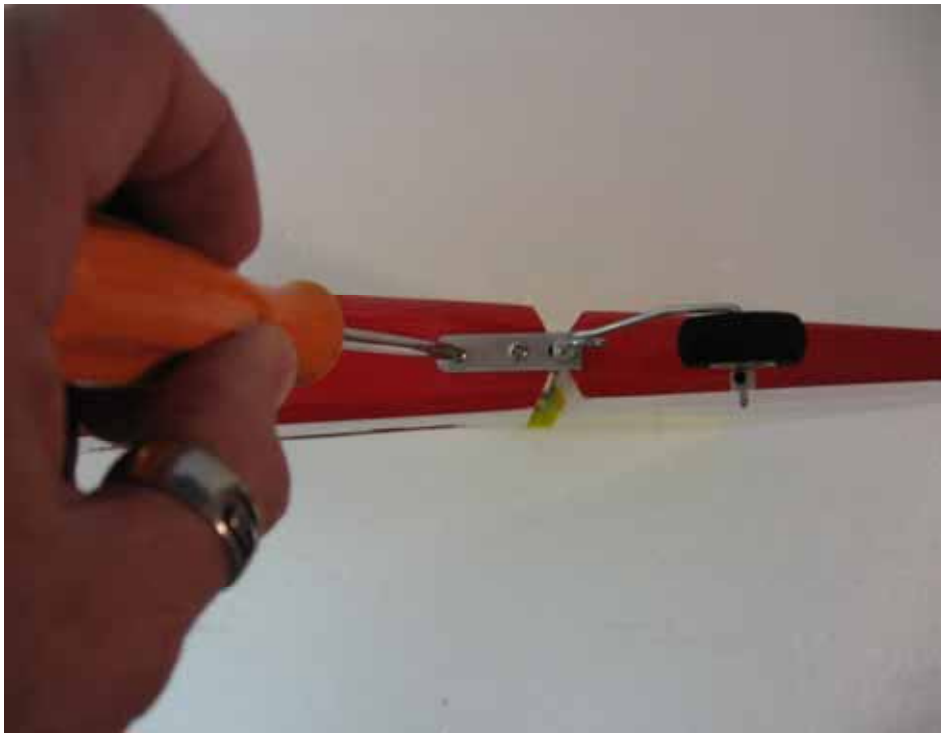
□ step 8

Work the rudder right and left some times to work the hinges and check for proper movement.

□ step 9
Using a 1,5mm drill bit, carefully drill the two holes for fixing the tail wheel on the fuselage.

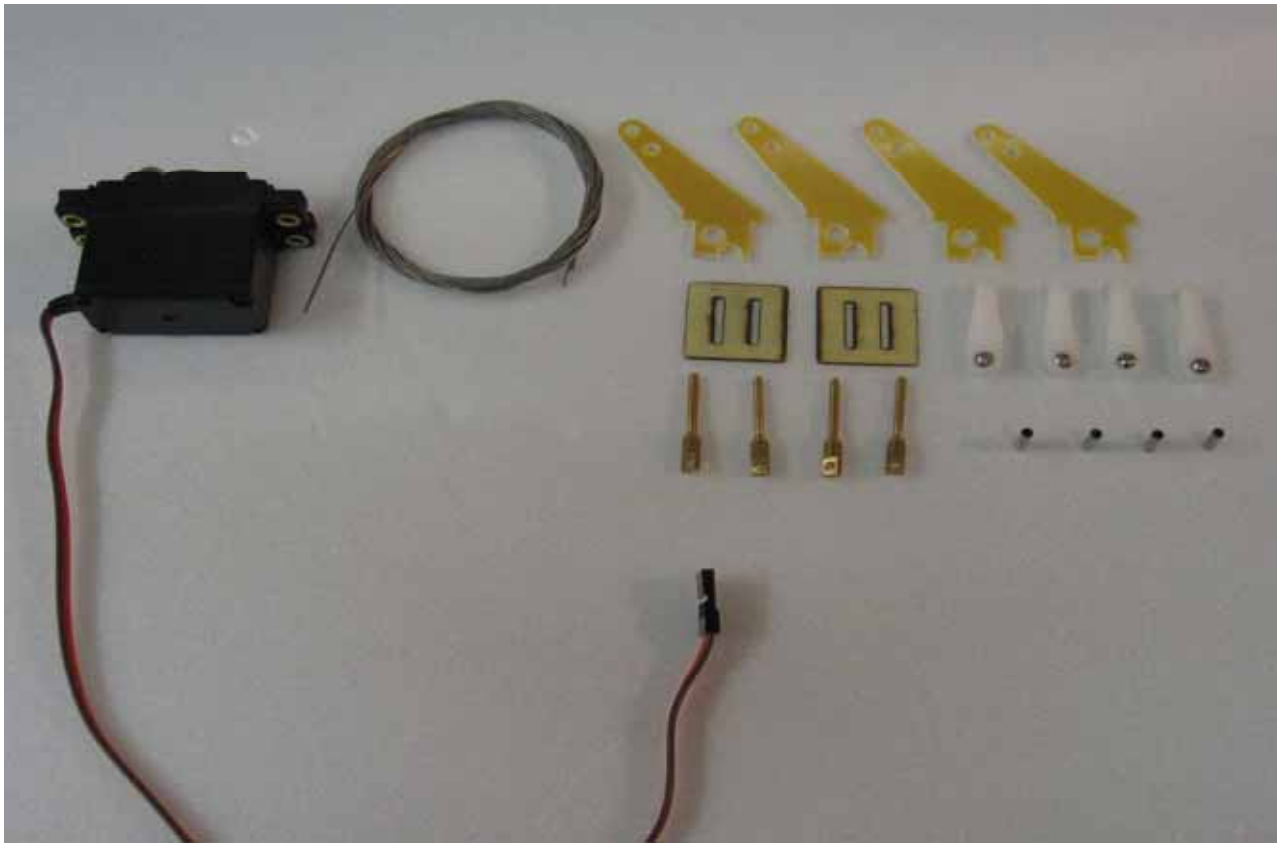


□ step 10
Use the two self-tapping screws to fix the tail wheel as follow.

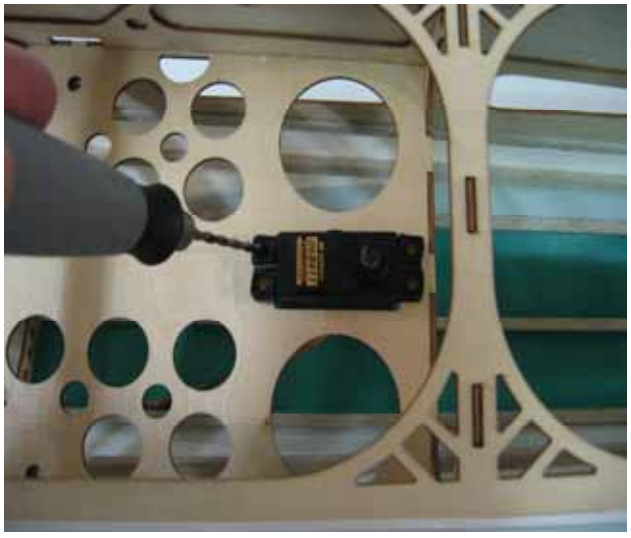


Section 7 – rudder servo installation

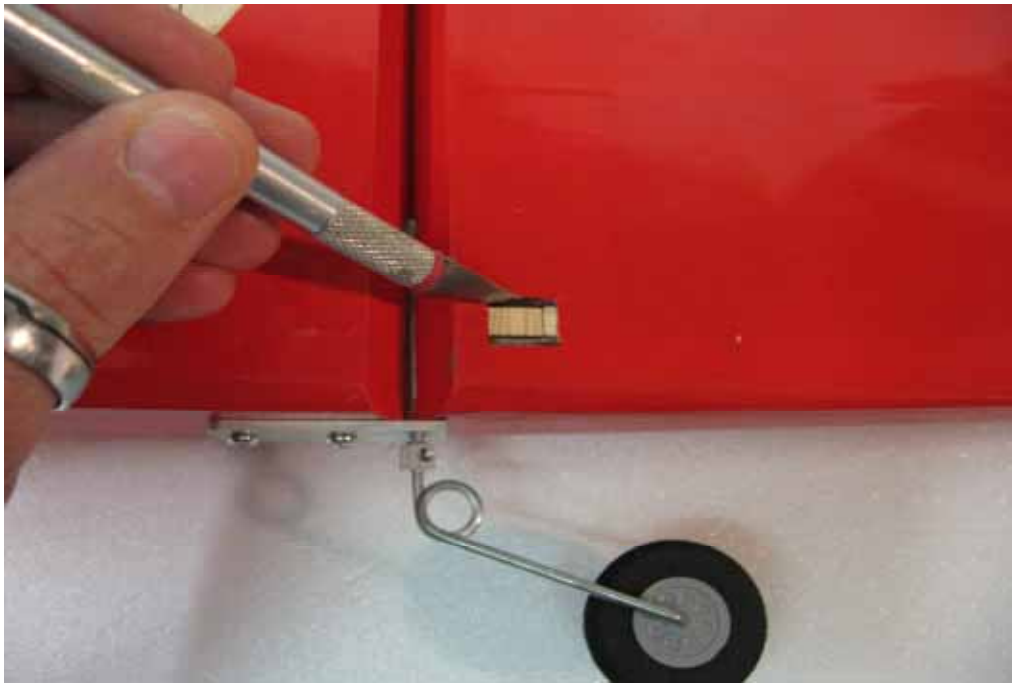
□ step 1
Install the servo hardware (gommets and eyelets) included with the servo and locate the following items, included in the hardware.



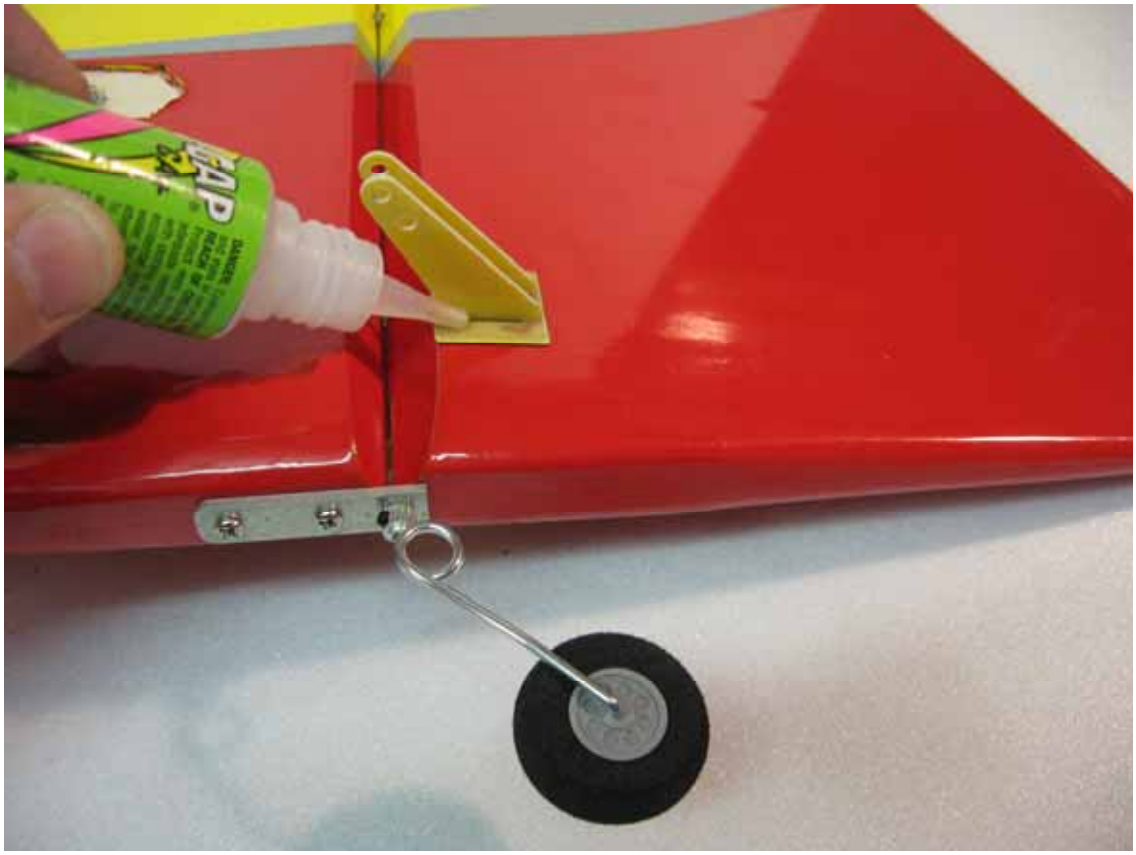
□ step 2
Drill the location for the four self-tapping screw using a 1.5mm drill bit and install the servo as per the picture.



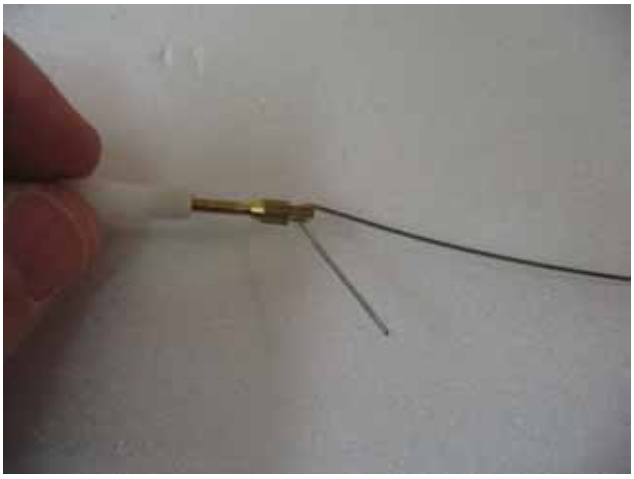
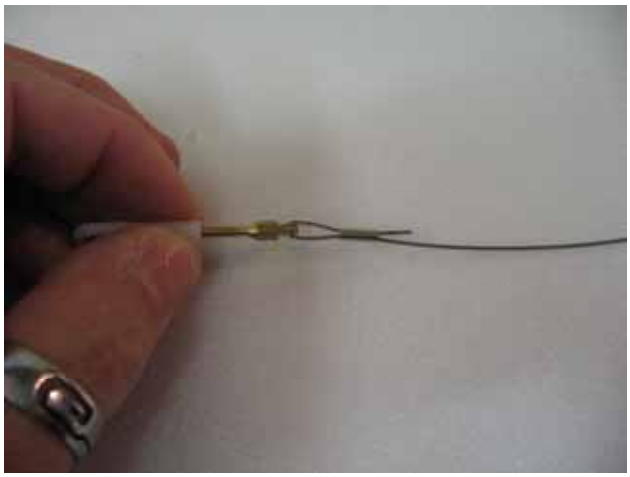
□□ step 3
With the hobby knife remove the cover in the control horn location.



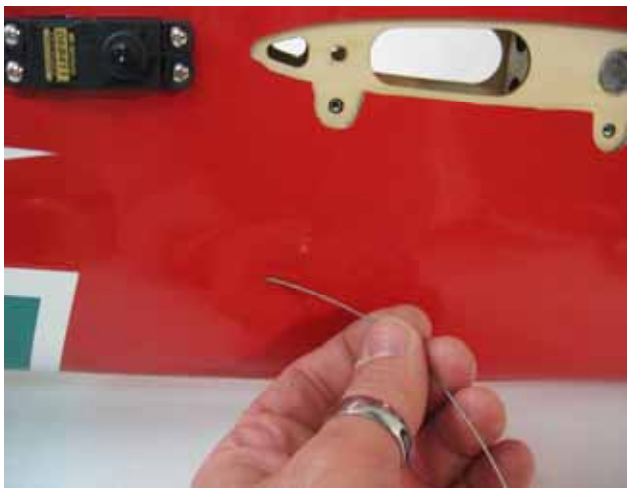
□□ step 4
Place the fibreglass control horn in the rudder, check for correct alignment and glue it with some drops of medium CA.



□□ step 5
Prepare the rudder cable as follow.

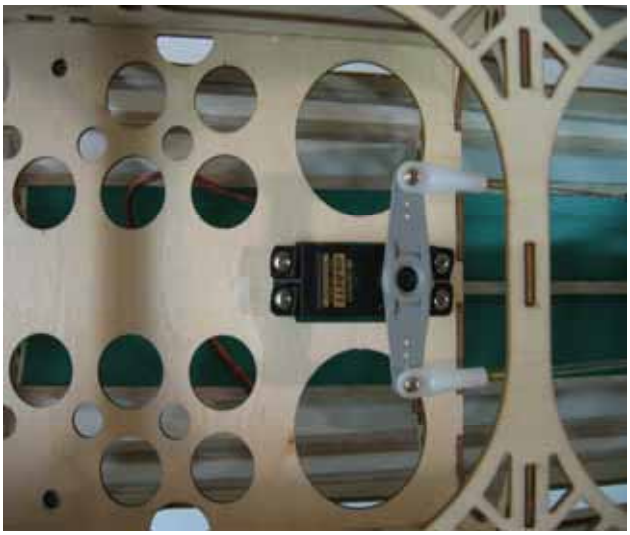





□□ step 6
Install the rudder cable as follow.




□ step 7
Repeat steps 3 through 6 for the opposite side of the fuselage.

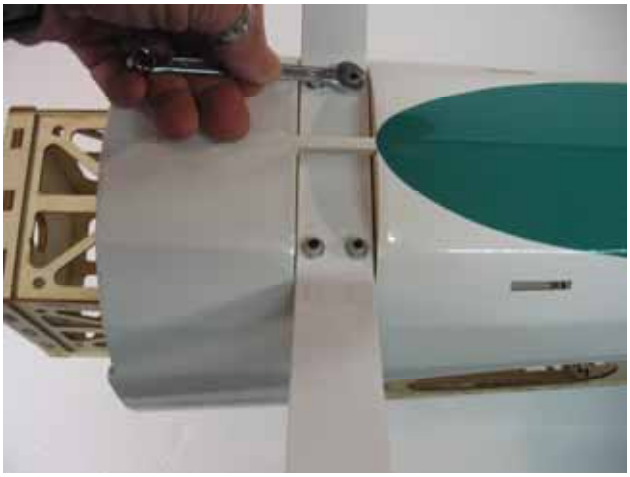
□ step 8
Attach a heavy-duty servo arm to the rudder servo, attach the uniballs at the servo arm and adjust the linkages, in order to have rudder and servo in central position.



Section 8 – landing gear & wheels installation

□ step 1
Locate all the necessary items.

□ step 2
Install the landing gear as follow.

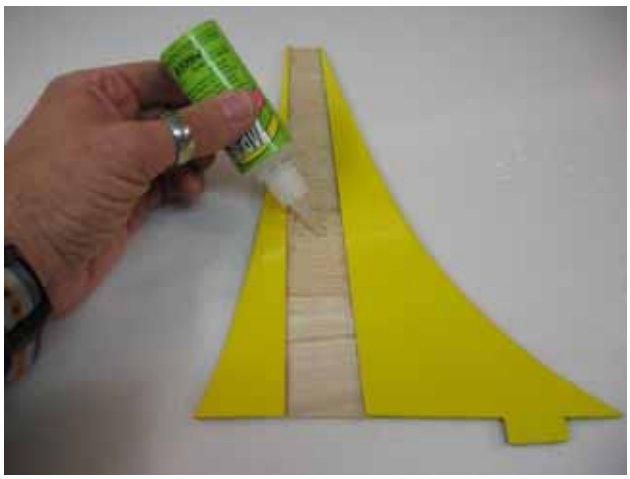
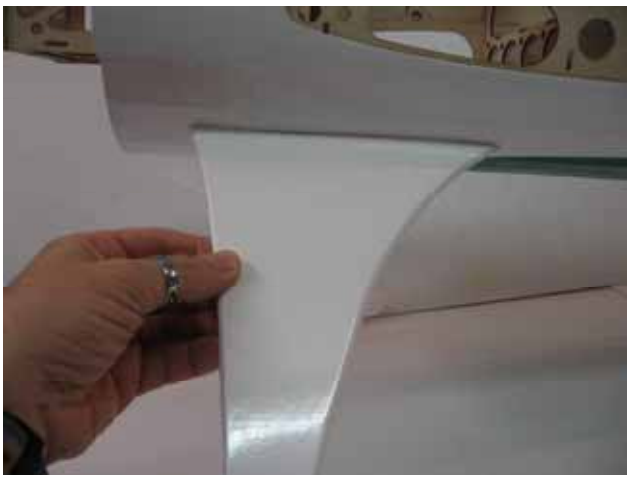
□□ step 3
Install the axle, wheel as follow.


□□ step 4
Install wheel and wheel pant as follow.

□□ step 5
Hold the wheel pant parallel to the fuselage and drill the location for the wheel pant screw using a 1,5mm drill bit. Attach the wheel pant to the landing gear using a 2mm short self-tapping screw.


□□ step 6
Test fit the landing gear fillet and his alignment.

□□ step 7
Once satisfied with the fit, glue the fillet on the landing gear using medium CA.
Use the glue carefully avoid over runs on other areas.

□ step 8
Repeat steps 3 through 7 for the opposite landing gear side.

Section 9 – electric motor & cowl installation

We recommend to fly HACKER motor, you need the following item (not included):

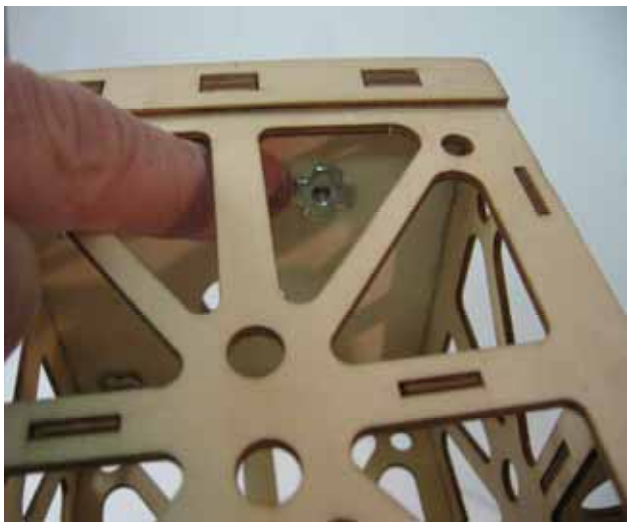
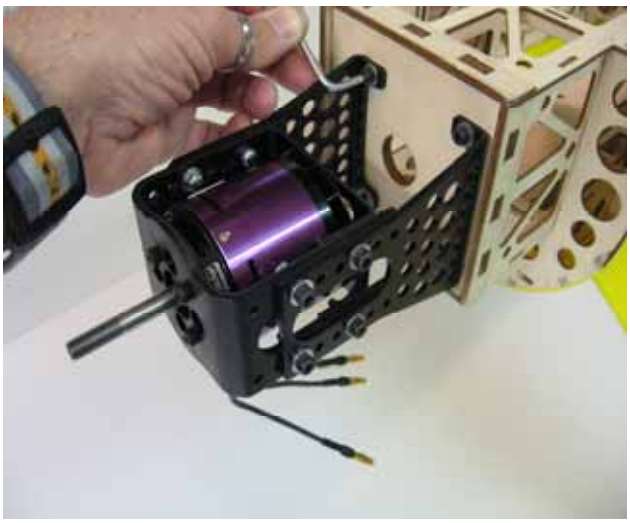
- Hacker A60-22S + MasterBasic90-Opto controller + APC 20 x 10 E
- Hacker motor mount for A60 series

step 1
Assemble the motor mount as follow.

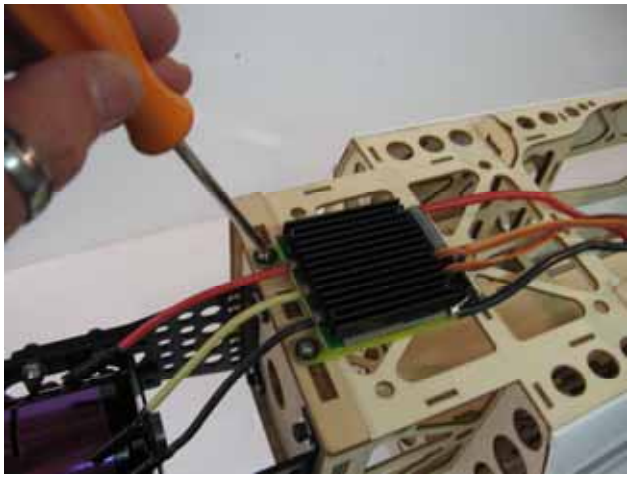
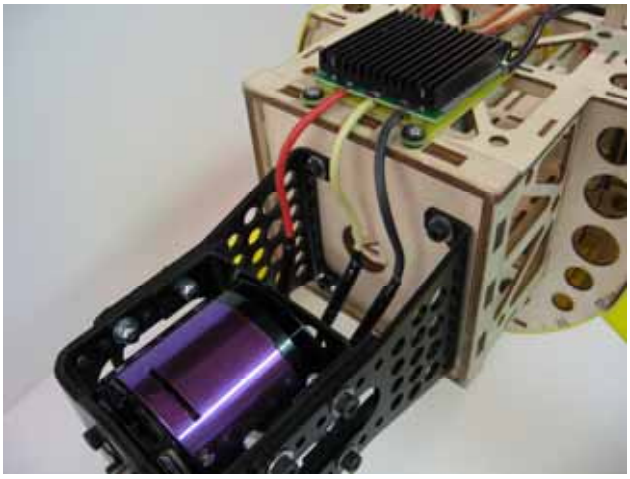
□ step 2
Install the motor on the mount as follow.




□ step 3
Drill the location of the blind nuts where it is marked on the firewall and install the 4 mm blind nuts included in the hardware pack.
Check the right length of the mount and install it on the fuselage as follow**.**

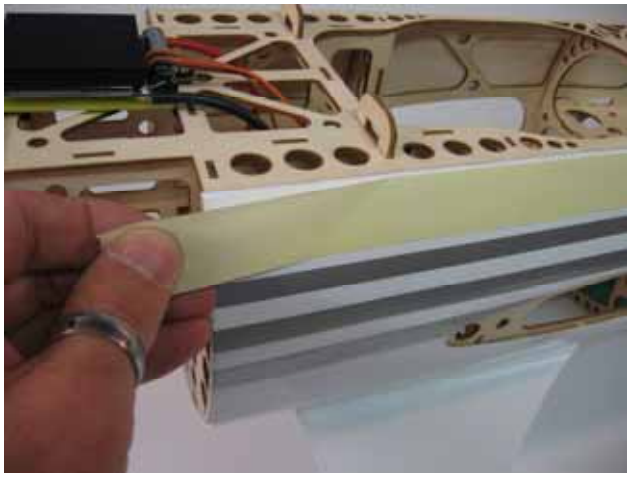
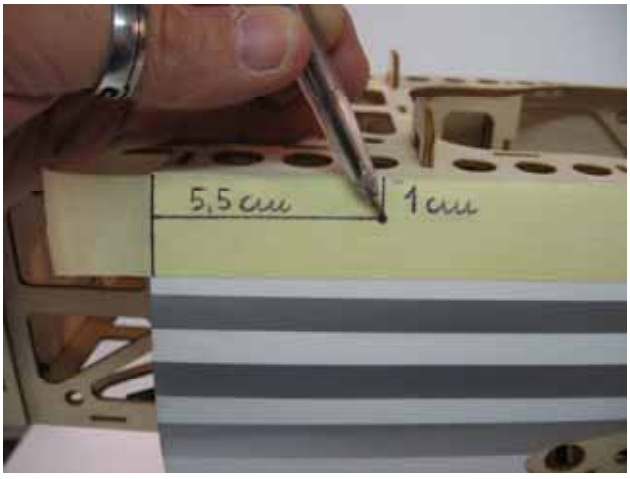



□ step 4
Install the ESC as follow.

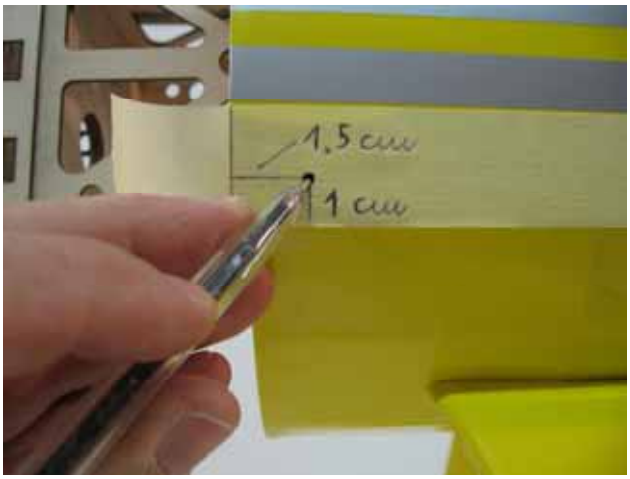



□ step 5
On bottom of fuselage, with the hobby knife remove the cover opening the holes for cooling.

□ step 6
Apply a piece of masking tape on the line were you have to make the top hole for the cowl fixing screw, and mark the position as per the picture.

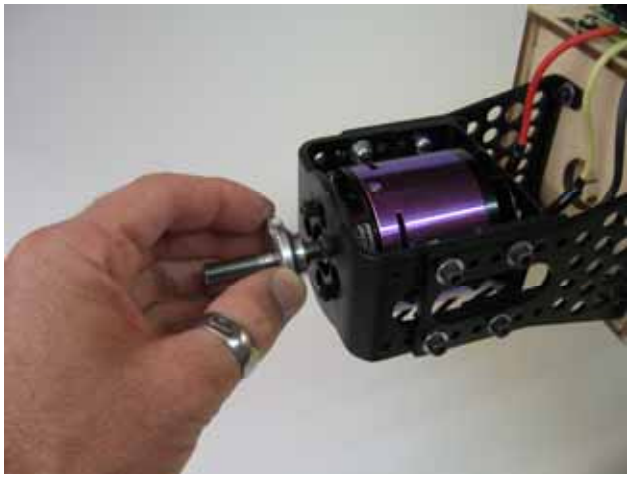



□ step 7
Apply a piece of masking tape on the line were you have to make the bottom hole for the cowl fixing screw, and mark the position as per the picture.



□ step 8
Locate the canopy, as per the picture.

□ step 9
Locate the spinner back plate.



□ step 10
Slide the cowling onto the fuselage and install the spinner back plate. Position and hold the cowl so there is 10mm gap between the back plate and the cowl.


□ step 11
Use the applied masking tape as follow.

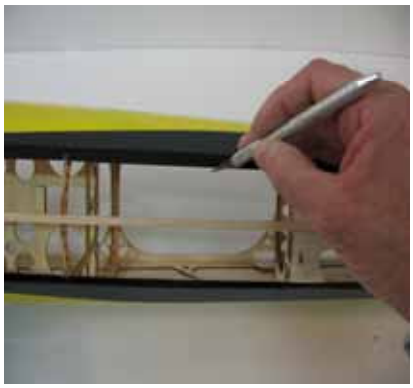
□ step 12
Drill the location for the four self-tapping screws using a 1.5mm drill bit.
Attach the cowl using the four self-tapping screws, included in hardware pack, and a Phillips screwdriver.

□ step 13
Fix carefully the prop and spinner.

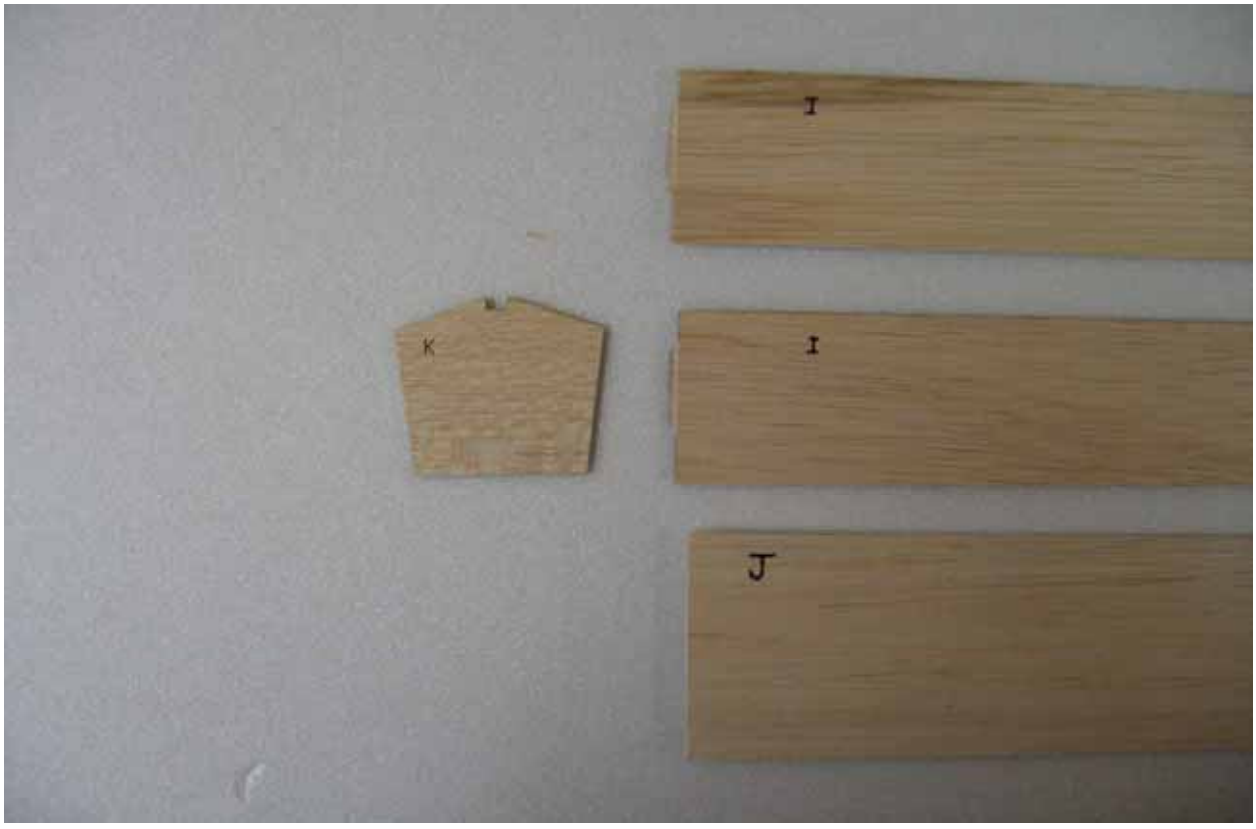
Section 10 – Glow engine installation

We recommend to use 1.20 -1.70 two-cycle engine or 1.20-1.70 four-cycle engine.

□ step 1
With an hobby knife open into cover the tuned pipe location, and remove the balsa spar and the plywood frames, as per picture.

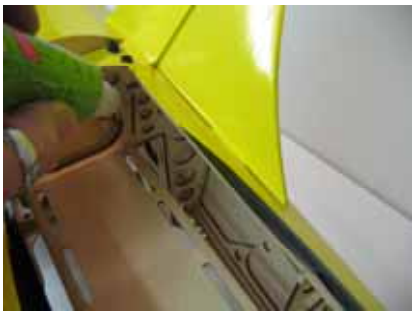


□ step 2
Install and glue all the tunnel pipe's parts with medium CA, as follow.









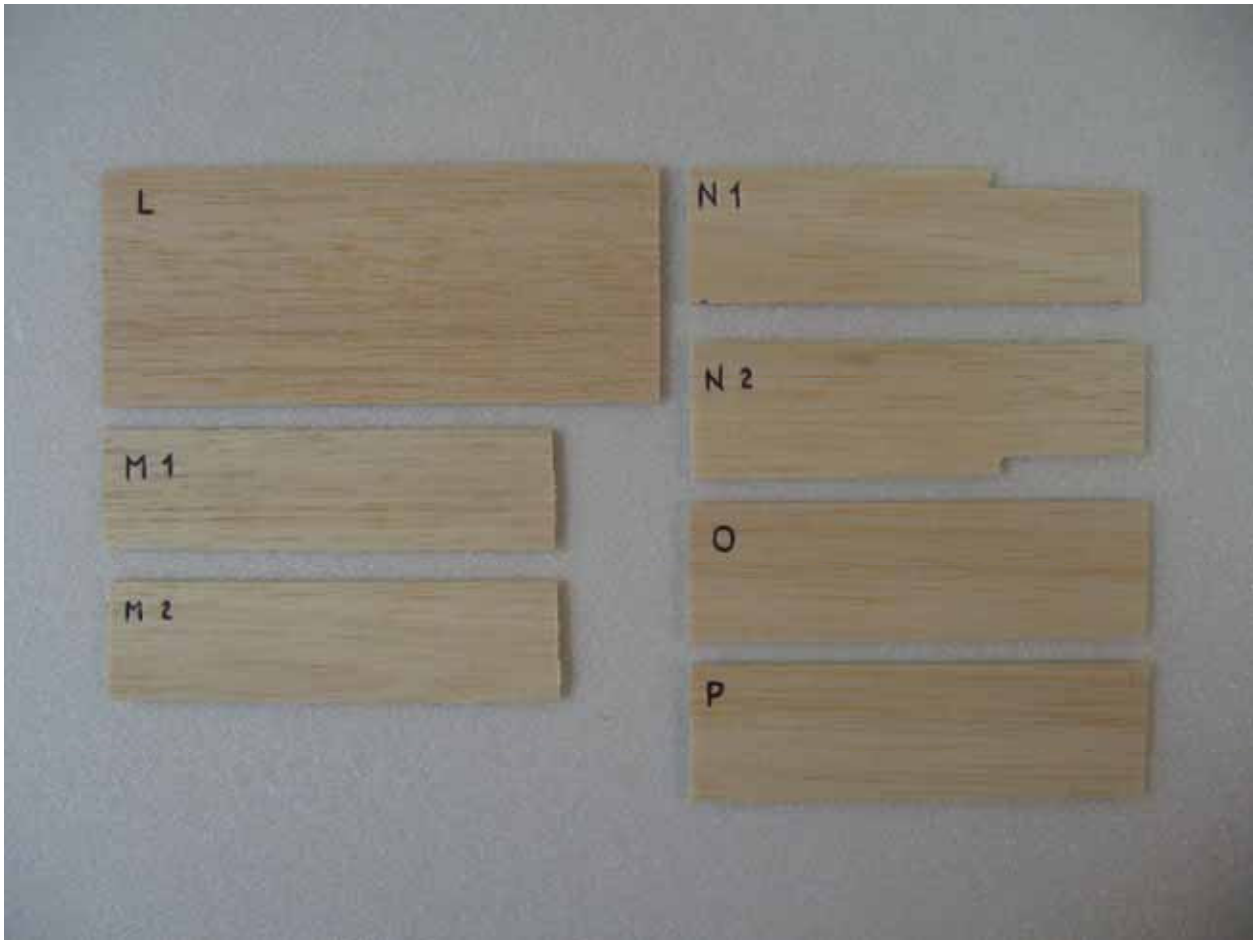


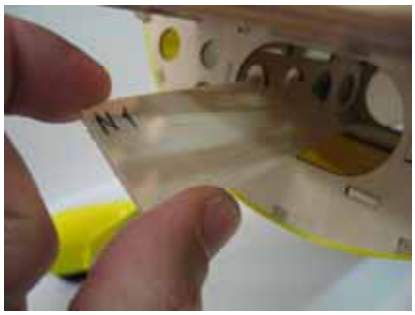
□ step 3

Use the covering iron carefully to glue the cover material all around down around the tunnel pipe.

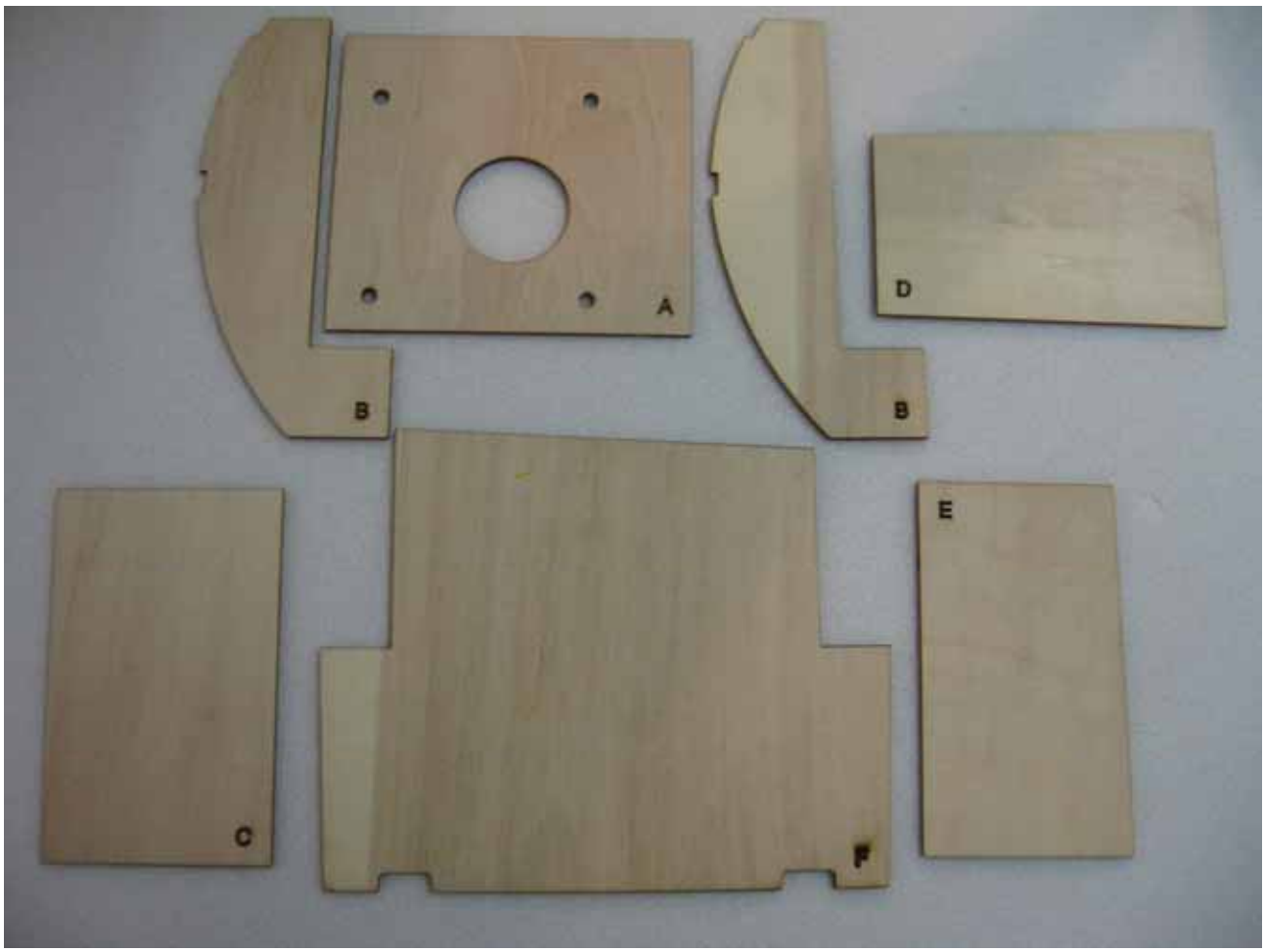
□ step 4

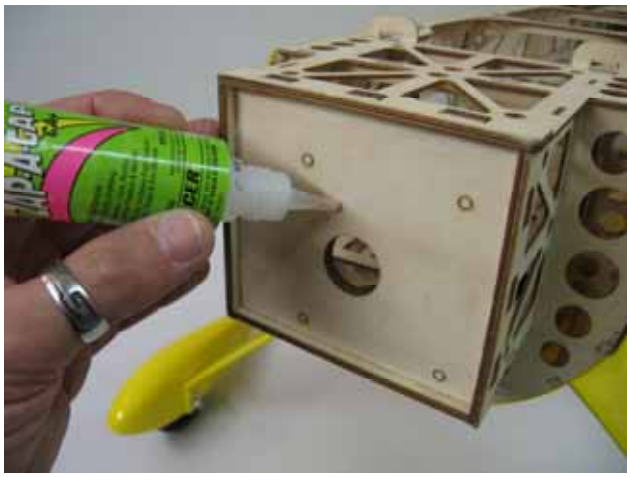
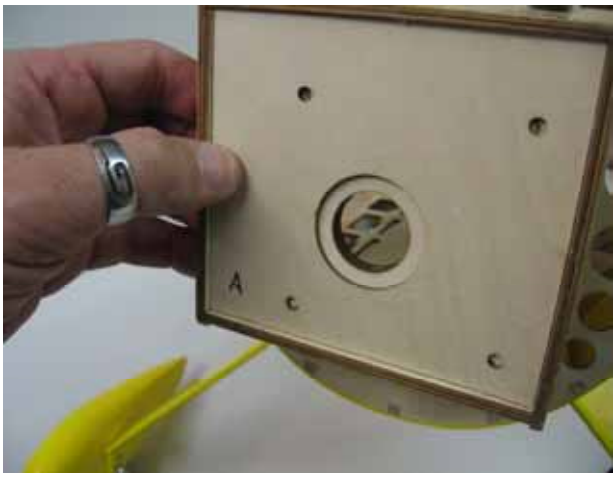
Install and glue this tunnel pipe's parts with medium CA too, as follow.



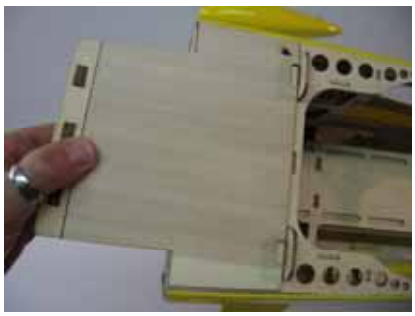




□ step 5
Locate and glue the motor mount reinforcement parts with medium CA, as follow.

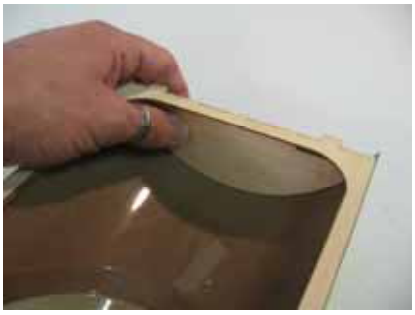
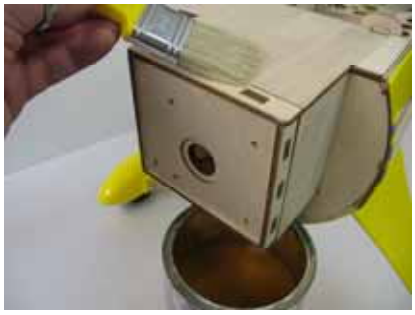




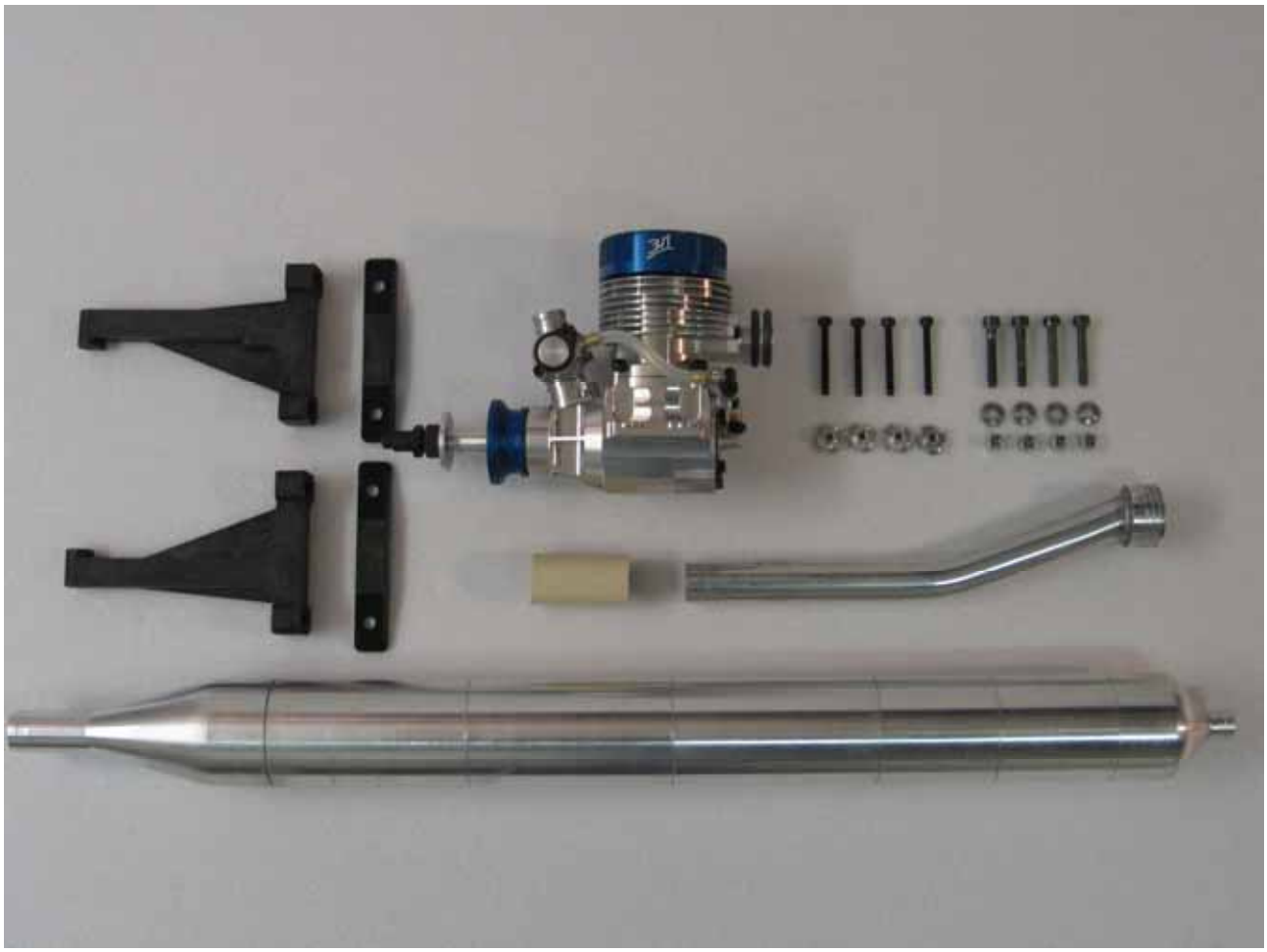


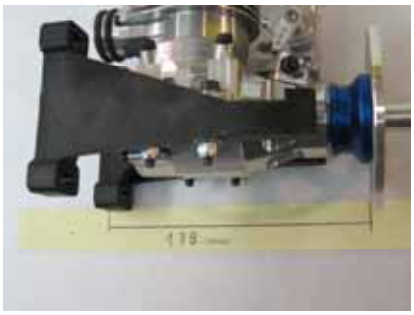



□ step 6

Locate the engine and the mount parts included in the hardware pack, and install the engine as per picture.

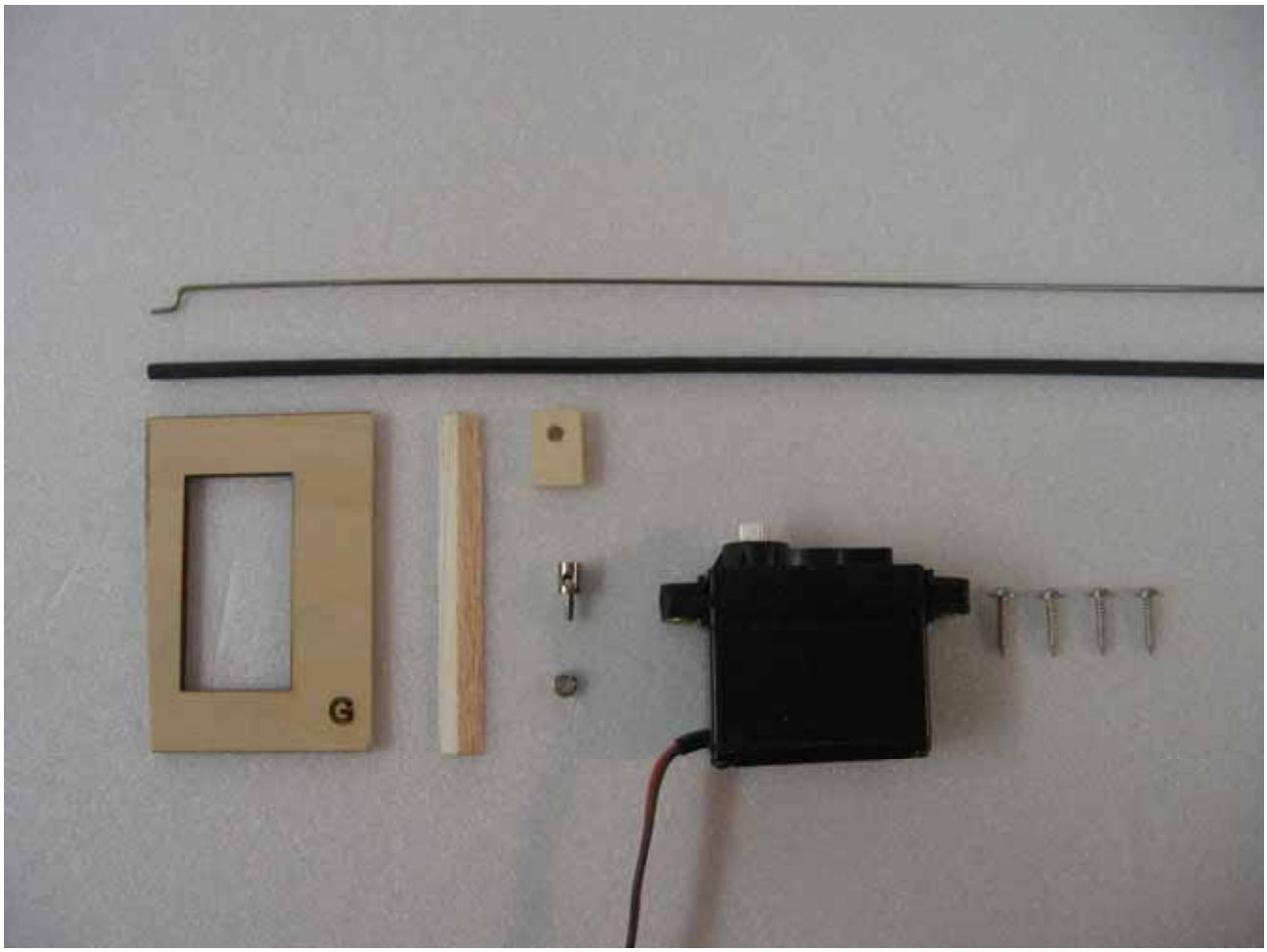






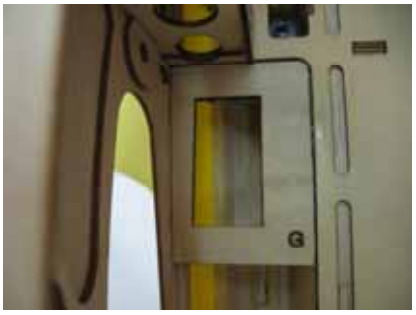



□ step 7
Locate the throttle servo parts for installation, and install them as follow.







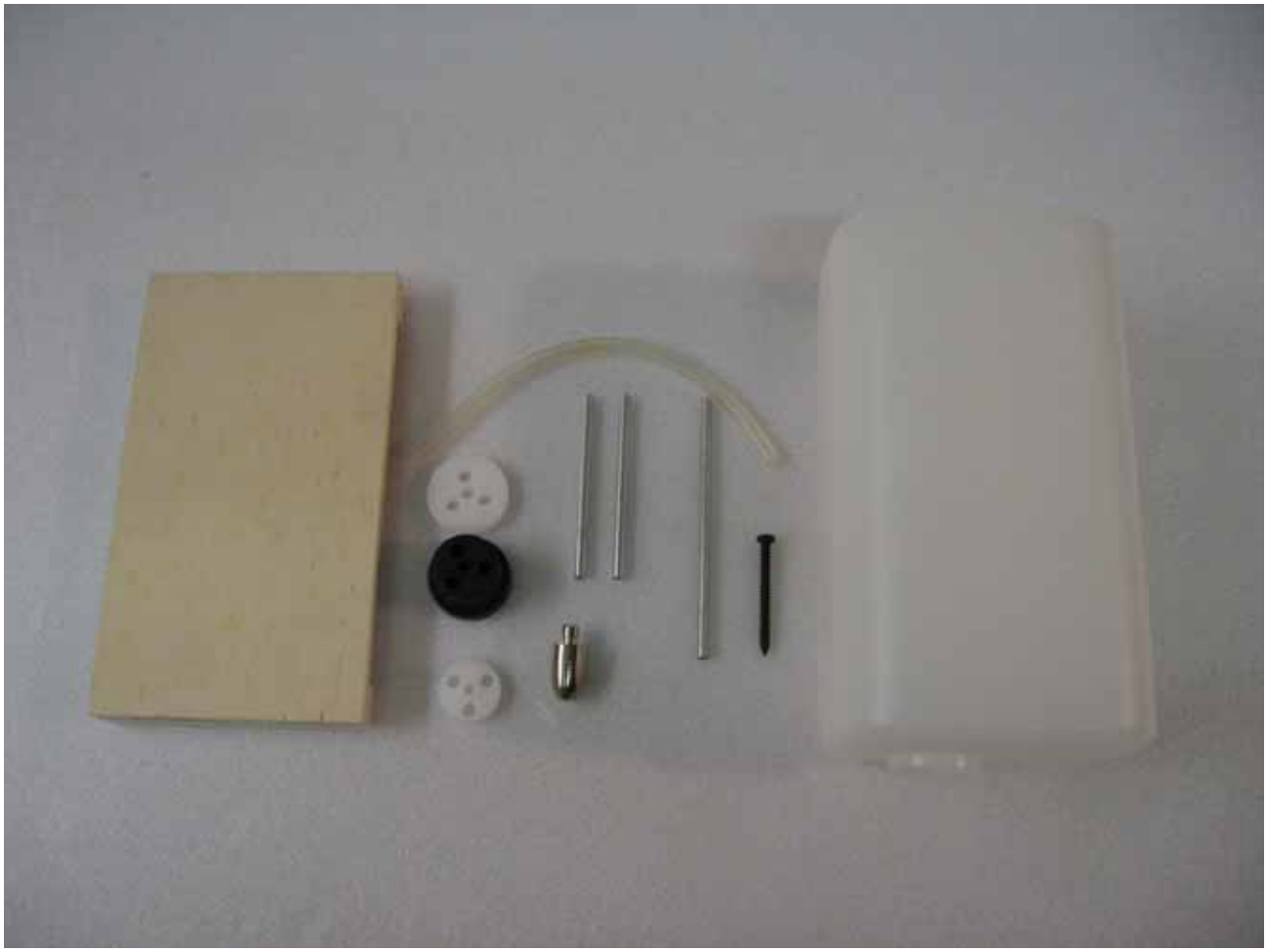


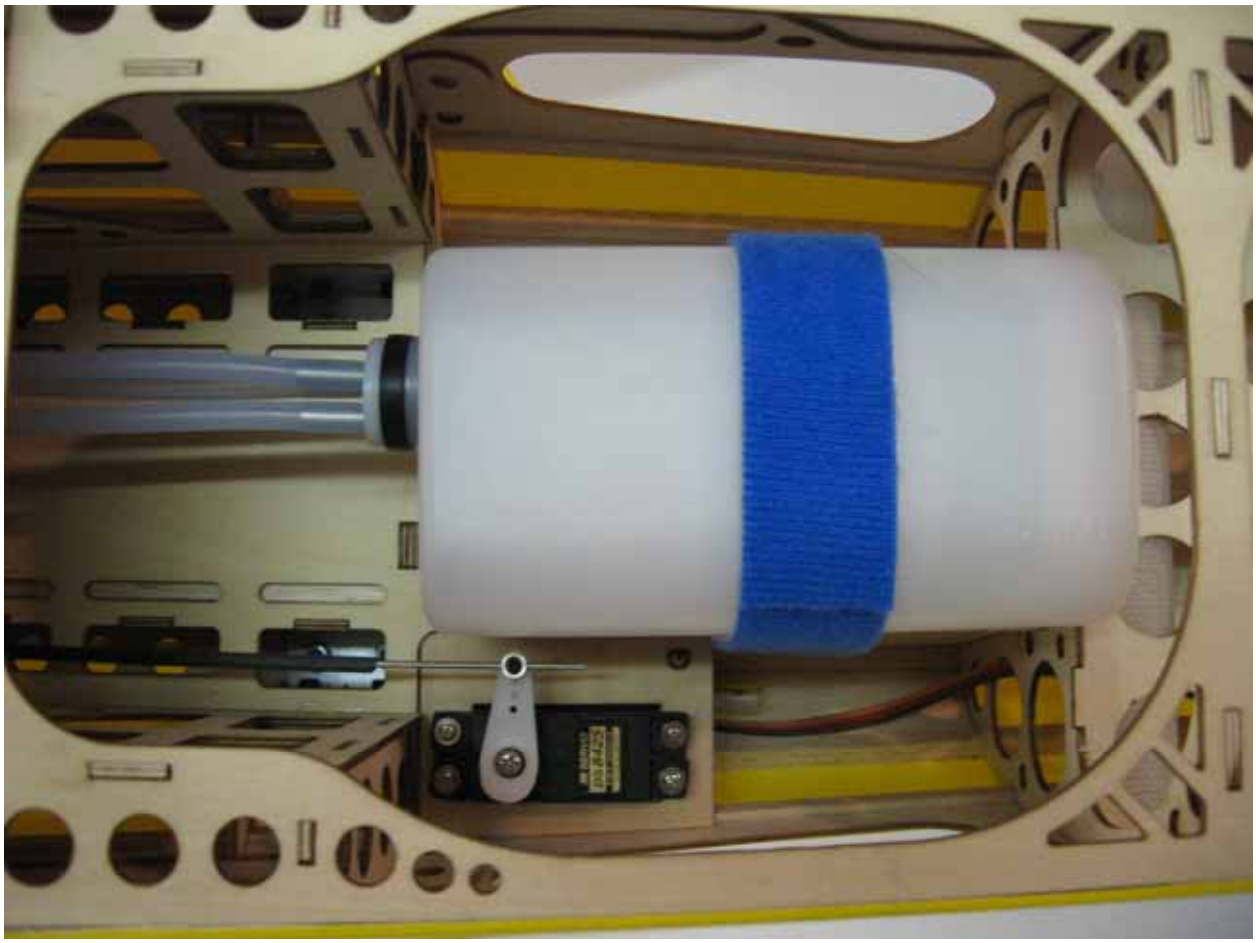




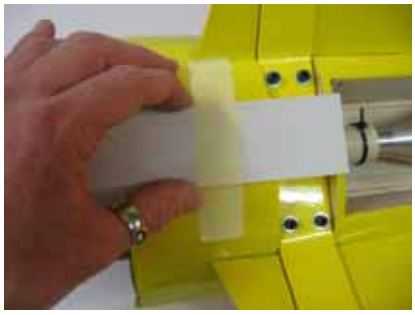
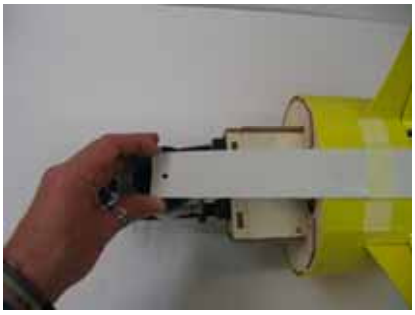
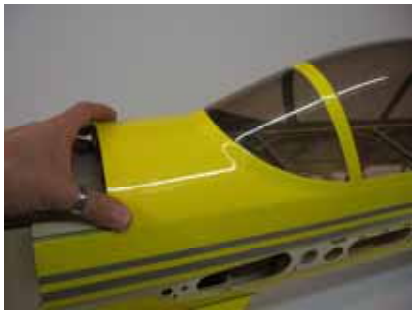


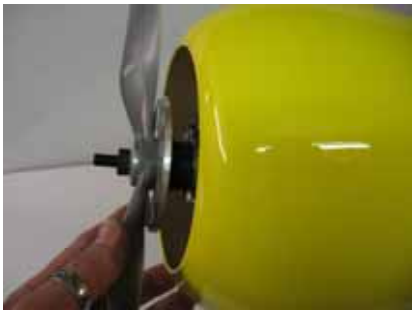
□ **step 8**
Assemble and locate the tank as follow.

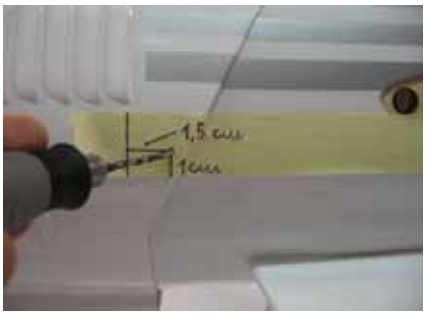




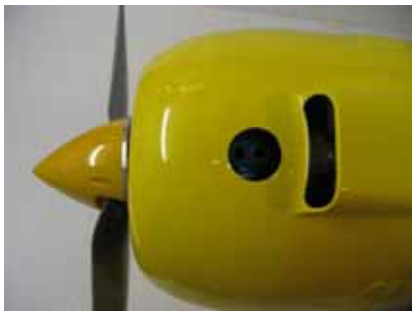
□ step 9
Install the cowl, as per picture.





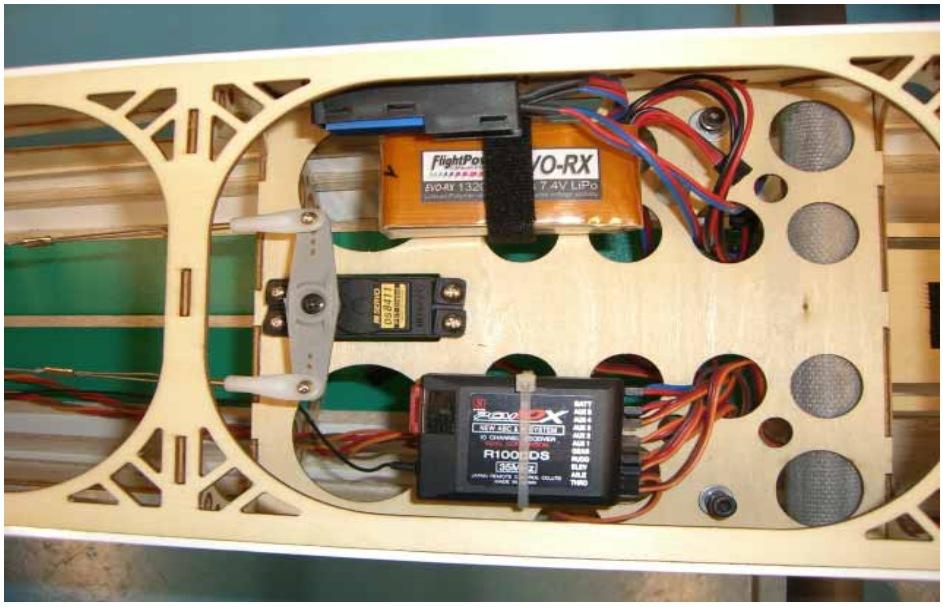



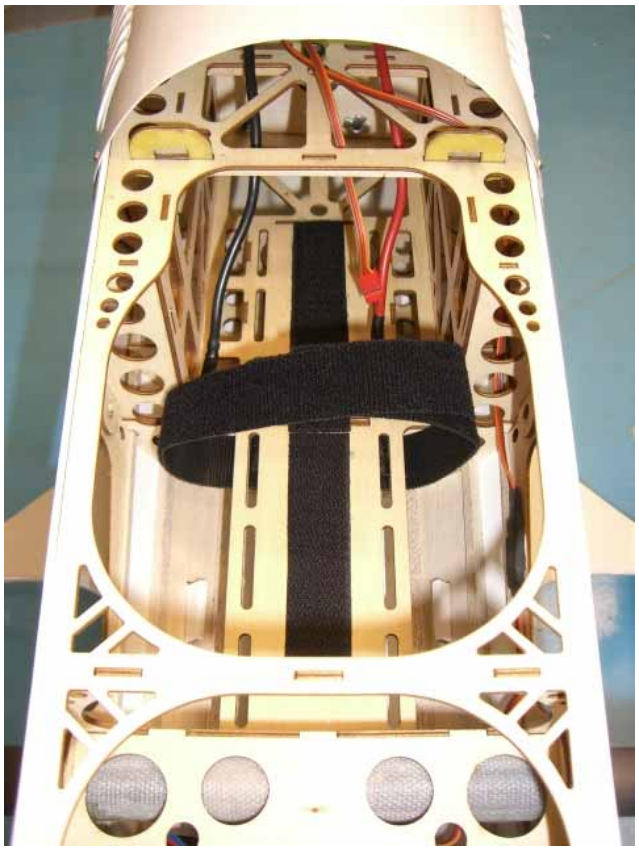
Section 11 – final radio installation

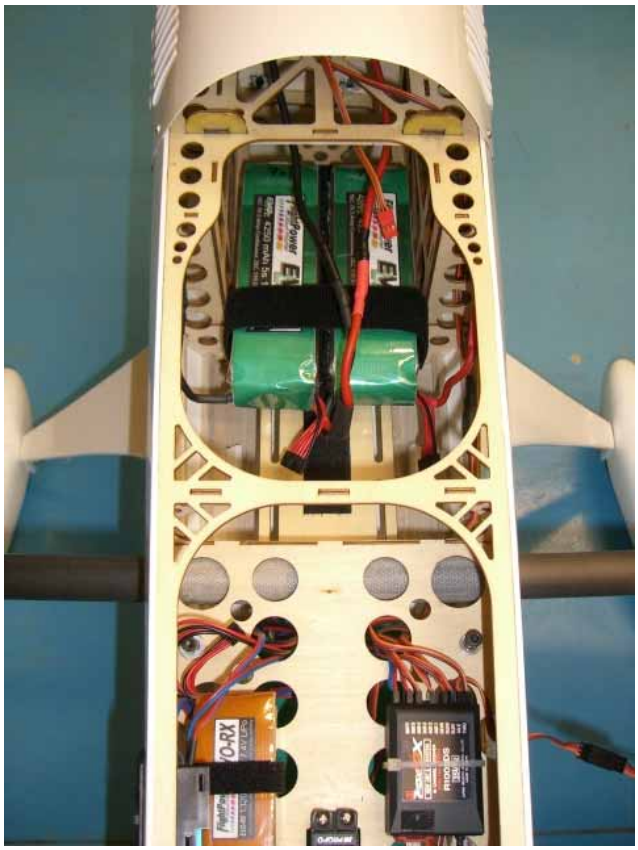
In order to have best performance and light weight, we recommend you to install as receiver & servos power system the following item (not included):

- Power Box System “SENSOR” Switch
- Power Box System 1500 li-po battery or Flight Power 1250-2S EVO-RX li-po battery







Section 12 – hatch & cockpit installation

For best look, we recommend you to install the optional parts ***Pilot figure and Panel instrument*** (not included):

□ **step 1**

Locate the following items.

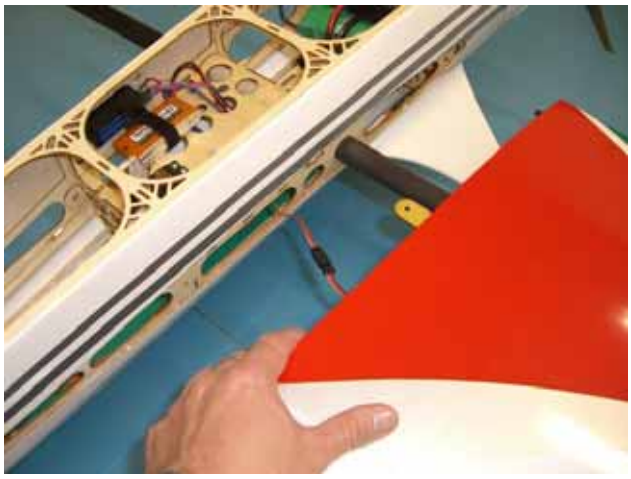
□ step 2
Assemble panel instrument and pilot figure as per their included manual.

□ step 3
Locate the depron base in the canopy and glue the panel instrument and pilot figure with 5 minutes epoxy, as per picture.

□ step 4
Locate the canopy on fuselage and place the 3mm screws with washers to fix it, as per picture.

Wings installation

Locate the wing panels and fix them using the two 4mm screws, included in the hardware pack, and a Phillips screwdriver.



Control throws

We recommend the use of a computer radio, that will allow you to do quite a bit of fine-tuning of the feel of the Sukhoi, which will make aerobatics even easier.
Please, follow carefully the recommended linkage setups:

For the AILERON we recommend the following throws:
Low rate: 20° up / 20° down **Expo:** 40%
3D rate: 45° up / 45° down **Expo:** 80%

For the ELEVATOR we recommend the following throws:
Low rate: 20° up / 20° down **Expo:** 25%
3D rate: 60° up / 60° down **Expo:** 80%

For the RUDDER we recommend the following throws:
Low rate: 30° left / 30° right **Expo:** 30%
3D rate: 50° left / 50° right **Expo:** 60%

Note: the **Expo** is (+) for JR systems, and (–) for Futaba systems.

Mixing

For best performance, we recommend a linear-mix*: **Rudder → Elevator UP**
When you give full rudder to the right or left side, the elevator have to go up (positive) approx. 4%

* if you have a programmable computer radio.

Rates and expos

Use the recommended expos to soften the feel of the model, especially on high 3D rates. The goal is to get the model to feel the same around neutral as it does on low rates.
Use low rate settings for all flying, included starts and landings, and high rate for 3D aerobatics.
For precision flying or general sport fliers, the low rate throws are perfect, even for snap rolls. When doing 3D aerobatics, flip to 3D rates just before the manover. As soon as the manover is done, flip back down to low rate to avoid over-controlling the model.

Recommended CG

The recommended **Center of Gravity** location is **170mm** behind the leading edge of the wing against the fuselage.

- **165mm** is good for pattern flying.
- **175mm** is good for 3D flying.

If you fly with electric motor, you can use the Flight Power battery pack, moving it forward or backward, to achieve the correct balance.

Pre-flight

Never attempt to make full throttle dives!
This model have to be flown like a full-scale airplane. If the airframe goes too fast, such as in a high throttle dive, it may fail.
Throttle management is absolutely necessary.

Range test your radio

- ✓ Before fly, be sure to range check your radio as manufacturer's instruction manual of you radio-system recommend.
- ✓ Double-check all controls (aileron, elevator, rudder and throttle) move in the correct direction.
- ✓ Be sure that your Flight Power batteries are fully charged, as per the instructions included with your batteries and that your radio is fully charged as per its instructions.

Finally...

have a nice flight!

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