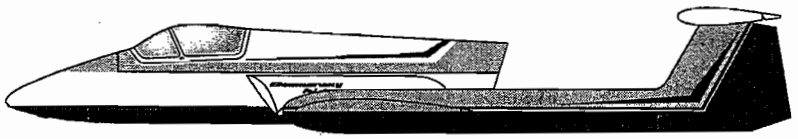
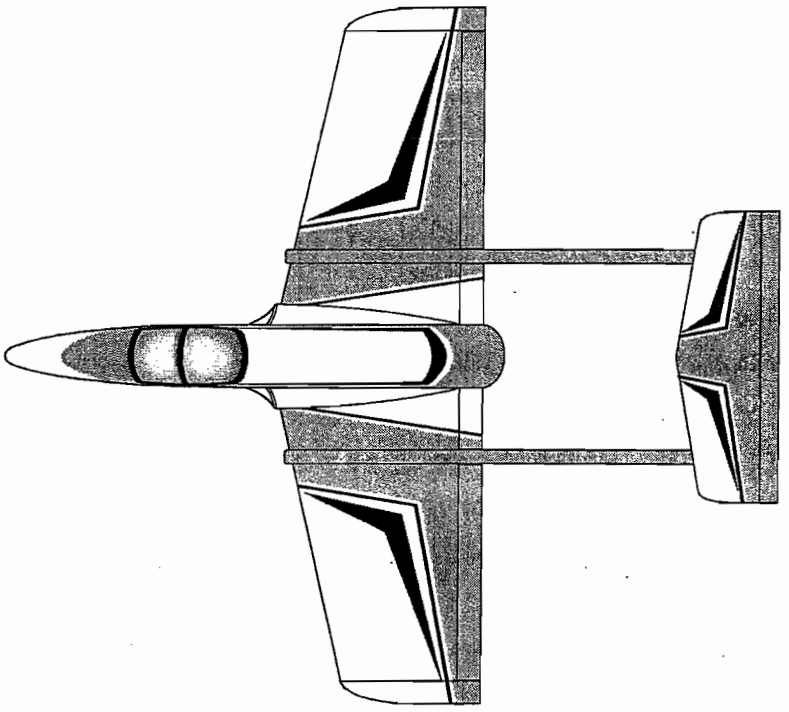
Boomerang NANO

Aerobatic Sport / Trainer Jet for up to 14 lb maximum thrust turbines
Almost ready to fly kit. Speed range from 18 to 150 MPH.





Wingspan..... 59.75" (1520mm)
Length..... 67" (1700 mm)
Weight..12 to 13lbs(5.45-5.9kg)
Radio..... 5 to 8 Channels.

Designer Alan Cardash
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SAFETY PRECAUTIONS

The Nano turbine model is designed for experienced modellers. This model is not recommended for beginners to R/C flying and should not be attempted by those with insufficient building and flying experience. This manual is for guidance only. If you are unsure of any model building techniques, seek help from an experienced model builder or contact Boomerang Jets Ltd for assistance. Jet models are dangerous if construction is carelessly or incorrectly carried out. As the building assembly of this kit is out of our control after point of sale, no liability is accepted by Boomerang Jets Ltd or Boomerang Jets USA Llc for any accident or loss, however caused. Purchase of this kit implies acceptance of these conditions by the purchaser. To decline these terms, return the unused kit to your supplier for full refund.

Some of the additional items you will need to complete this kit.
Suggested servos;-

Ailerons;- 2 Servos (3 kilos min.)
Elevator;- 1 High torque servo (5Kilos min.)
Rudders;-2 Servos (3 Kilos min.)
Flap;- 1 Servo (3 Kilos min.)
Steering;- Medium power servo.
Retracts and brakes etc.; Standard servos or electronic valves.

Extension leads to servos (assuming the RX to be fully forward in the installation);-

In the Fuselage from RX to the booms;-
5 off 800mm extensions for Ailerons(2),Rudders (2)and Elevator.
(OR can use one 800mm."Y"lead for Aileons and one 800mm"Y"lead for Elevators).
1 off 500 mm. extension for Flap.

In the Booms;-
2 off 600 mm to Rudders, one in each boom.
1 off 1000mm. to Elevator used in the left hand boom.

In the Wings;-
Most servos have long enough leads not to require extensions. If the make you are using have very short wires, small extensions of 100 to 150mm will allow them to reach the booms.

A Dubro 50 ounce fuel tank is recommended, with the kerosene bung fitted and a Hanson Super trap or similar UAT bubble trap.
These can be purchased through your Boomerang Jets dealer.

Any make of light weight heavy duty retracts can be used. Fixed landing gear is supplied in the kit. Wheel size is 55mm. (2"to 2.25") Brakes are mandatory in the USA.

The Nano kit is for turbines of up to 14 lbs of thrust. **DO NOT USE A LARGER OR MORE POWERFUL TURBINE.**
Some spare Profilm (Orocover) covering is included in the kit.

Note the Symbols used throughout these instructions.

Assemble left and right sides the same way.

Not supplied

Drill holes to the specified diameter (here: 2mm. shown).

Cut off shaded portion.

Apply epoxy glue.

Pay close attention here!

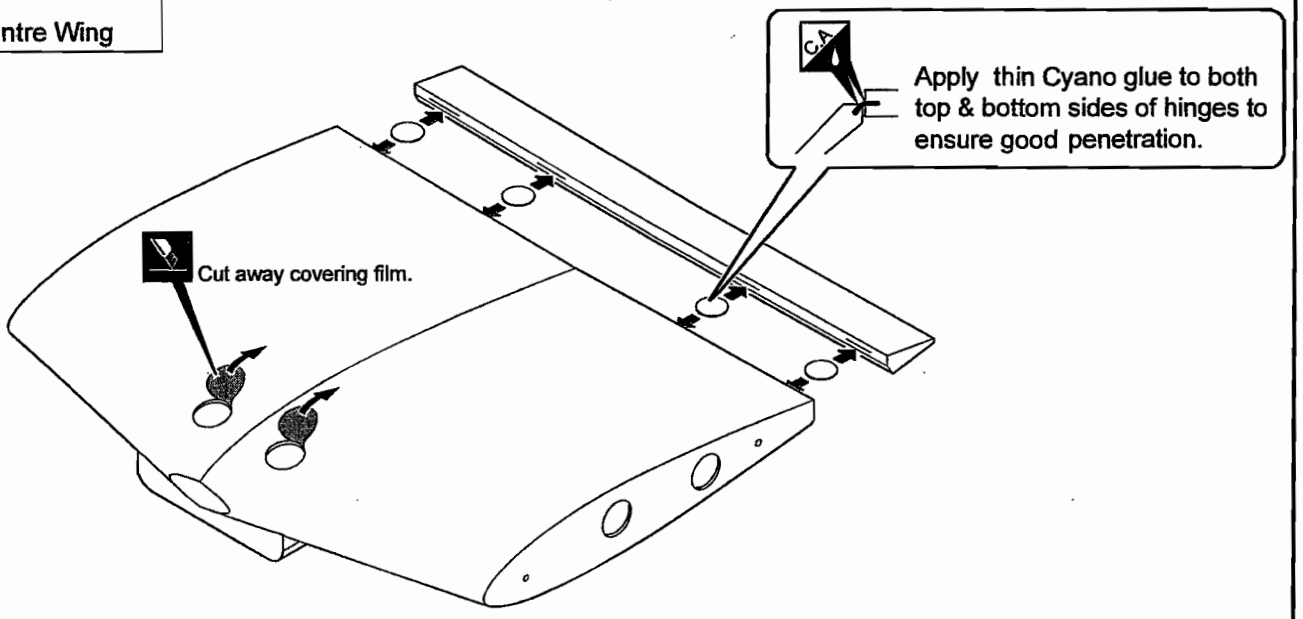
Ensure smooth non-binding movement while assembling.

Apply instant glue (CA glue, super glue).

Warning!

Do not overlook this symbol!

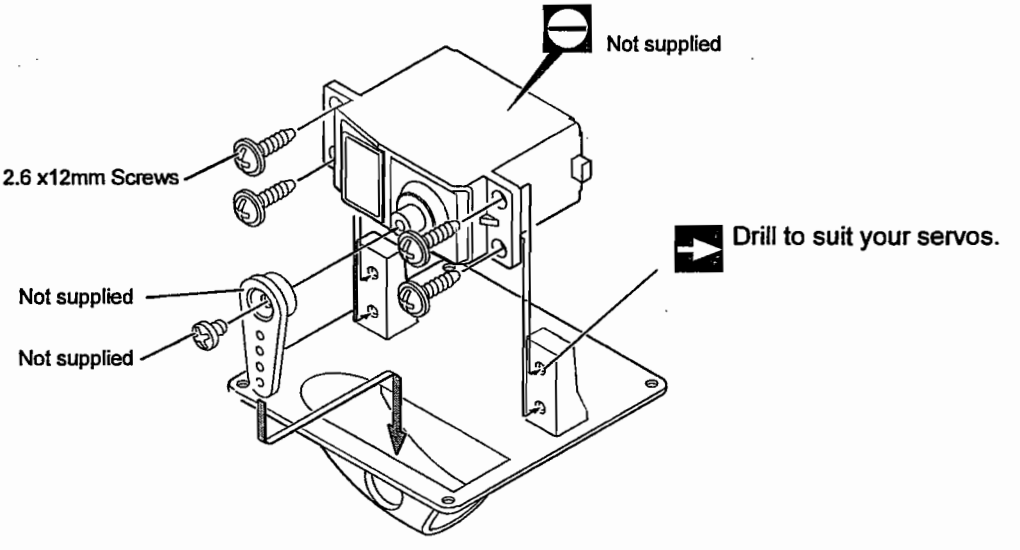
1 Centre Wing



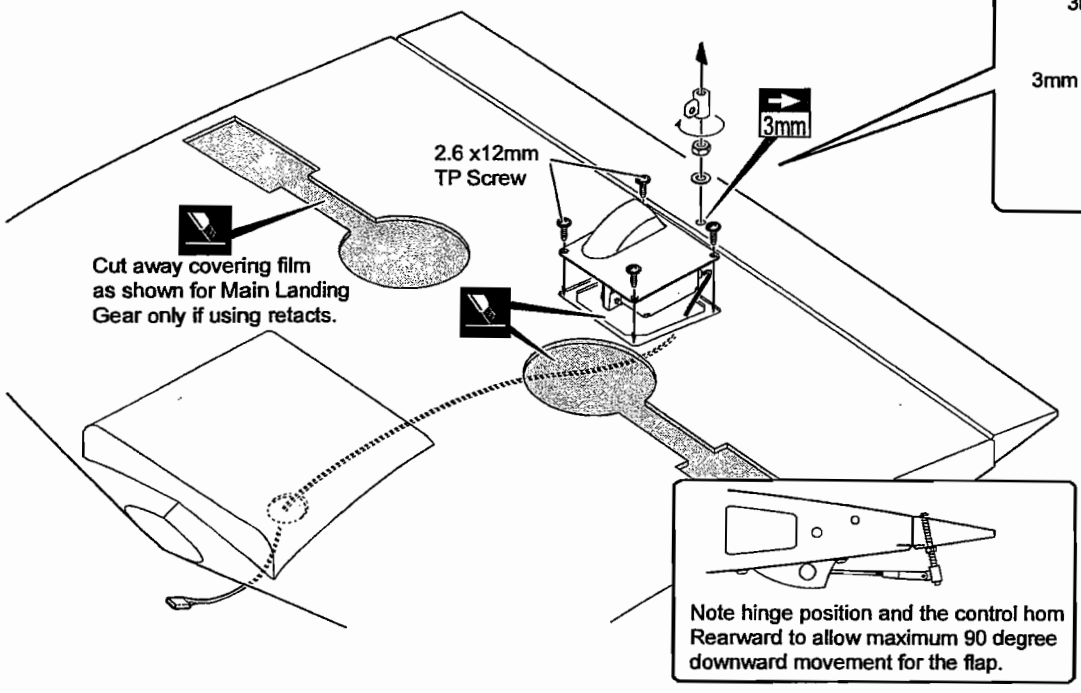
Warning!

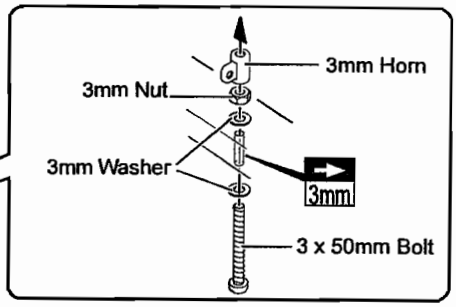
Be sure to glue securely.
This is Vital for safe flying!

2 Typical Servo Mount



3 Flap Servo Installation



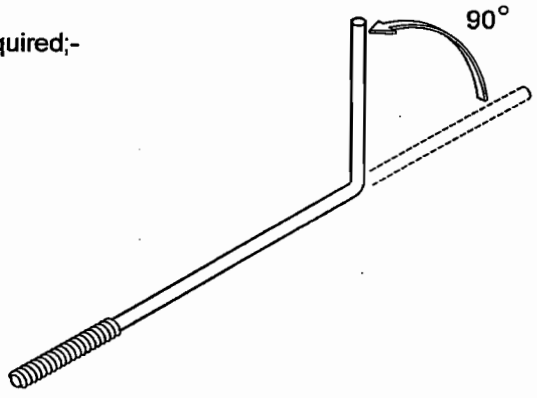


Clevis	1
2 x 150mm Pushrod	1
2.6 x12mm TP Screw	4
3mm Horn	1
3mm Washer	2
3mm Nut	1
3 x 50mm Bolt	1

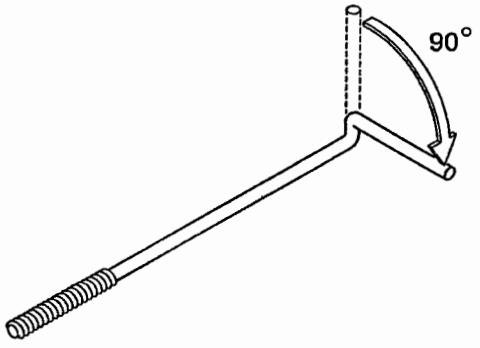
4 Pushrods

To Make the Pushrods to the length required;-

Make a 90 degree bend in the wire at the length required to meet the output hole in the servo arm with the servo centred.

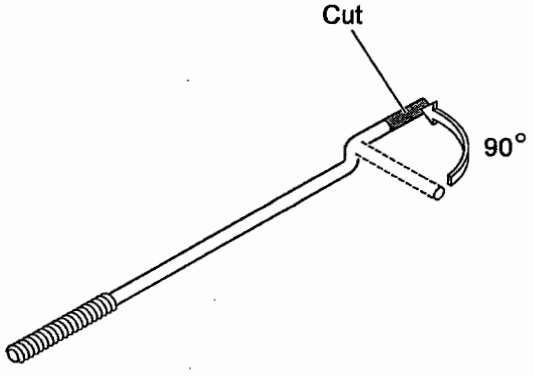


(2) Now make a second bend off at 90 degrees to the first one, left or right, in the wire at approx. 3mm away from the first bend.



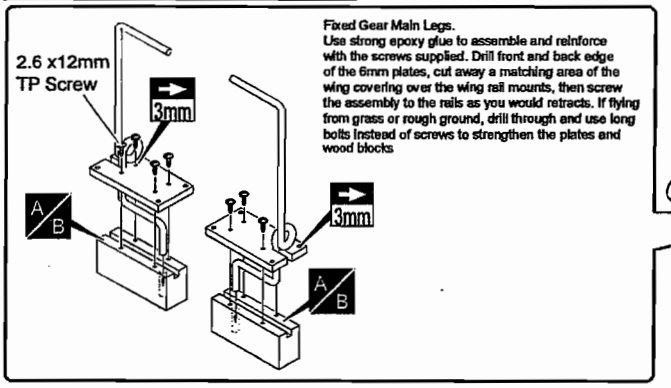
(3) Straighten the wire by gripping each side of the "Z" bend with pliers and slowly turning until the ends are in line. Now cut off the excess wire. The output hole in the servo arm may have to be drilled out to accommodate the "Z" bend wire passing through it. Adjustment of the pushrod length is carried out by adjusting the clevis along the threaded part of the pushrod.

<u>An extra pushrod is supplied to allow for possible error.</u>

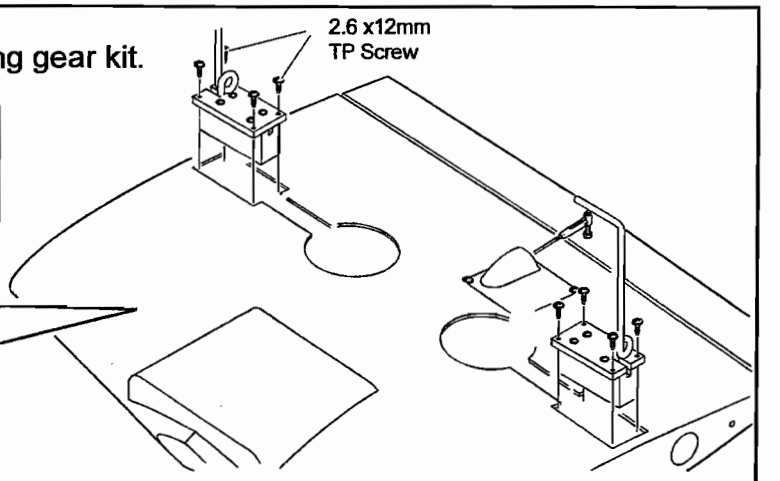


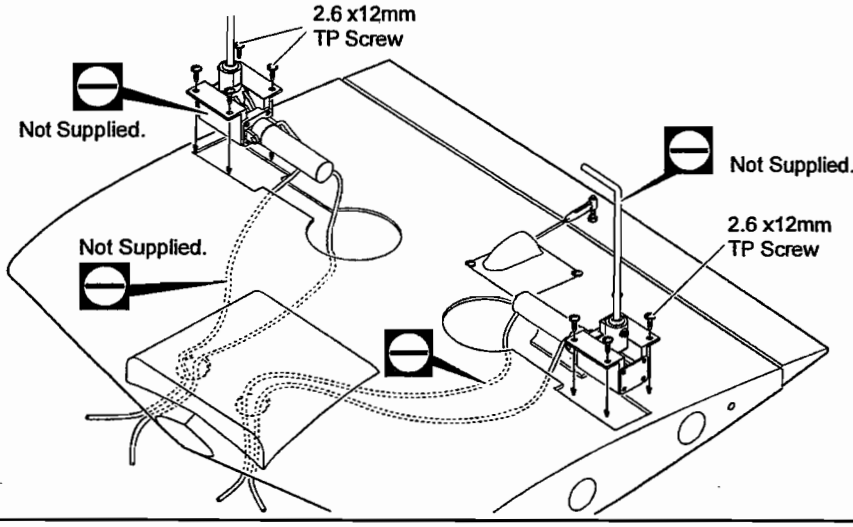
5 Main Landing Gear

Optional fixed landing gear kit.



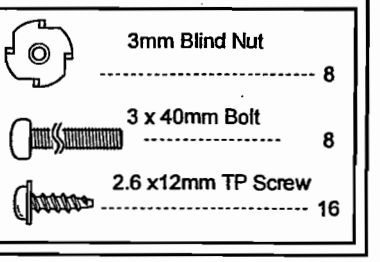
Fixed Gear Main Legs.
Use strong epoxy glue to assemble and reinforce with the screws supplied. Drill front and back edge of the 6mm plates, cut away a matching area of the wing covering over the wing rail mounts, then screw the assembly to the rails as you would retracts. If flying from grass or rough ground, drill through and use long bolts instead of screws to strengthen the plates and wood blocks



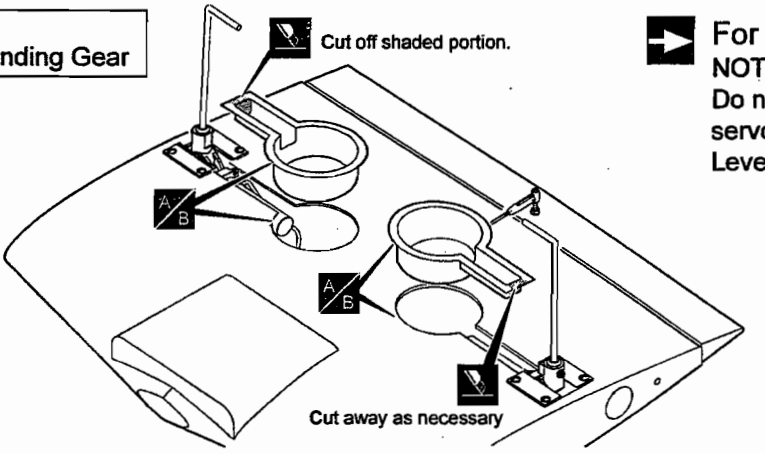


For Retractable landing gear

● Requires some modification on main gear cover.

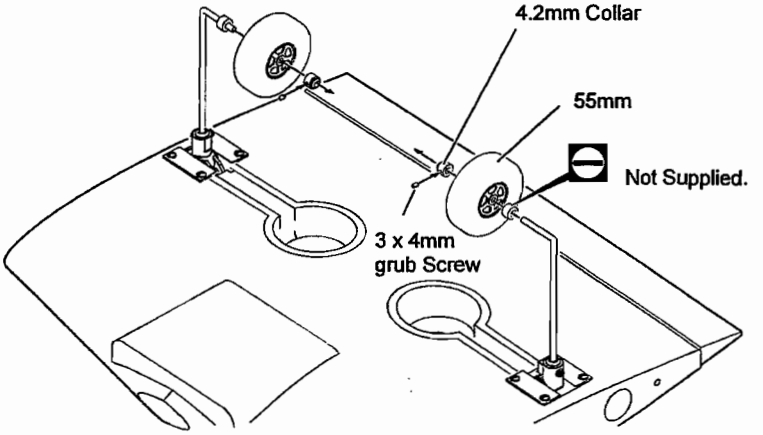


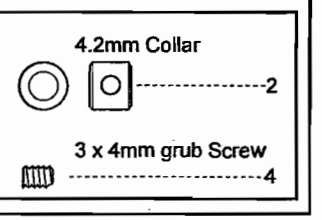
6 Main Landing Gear



For Retractable landing gear

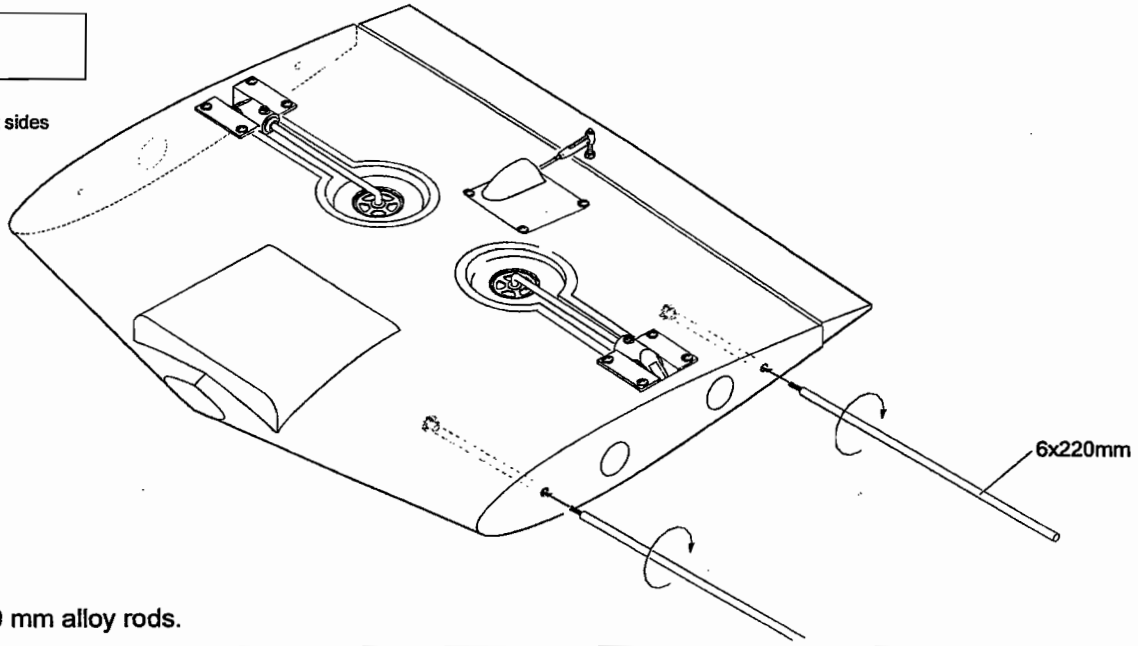
NOTE;
Do not fix plastic wheel wells until the servo wires and air lines are in place.
Level off the surface around the retract units.





7 Outer wing

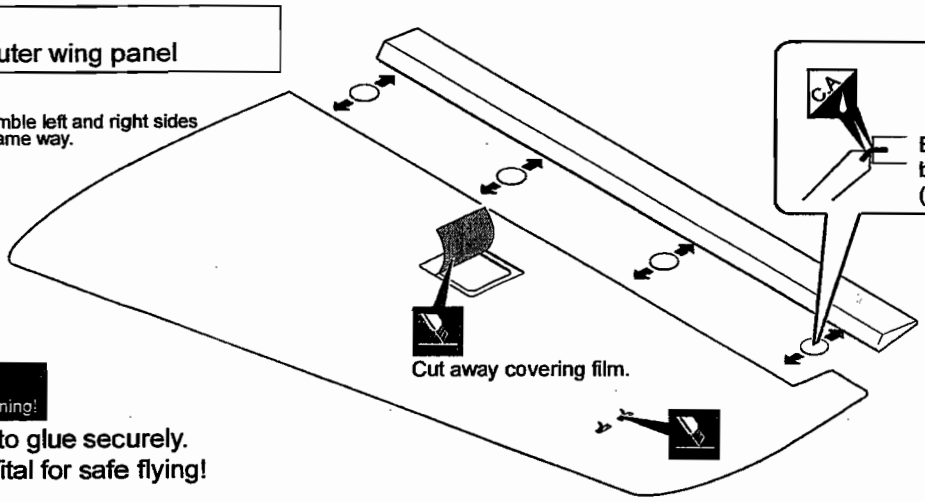
L/R Assemble left and right sides the same way.



Screw in the 6 X 220 mm alloy rods.

8 Outer wing panel

L/R Assemble left and right sides the same way.



Be sure to apply thin type CA glue to both sides of each hinges. (low viscosity type)

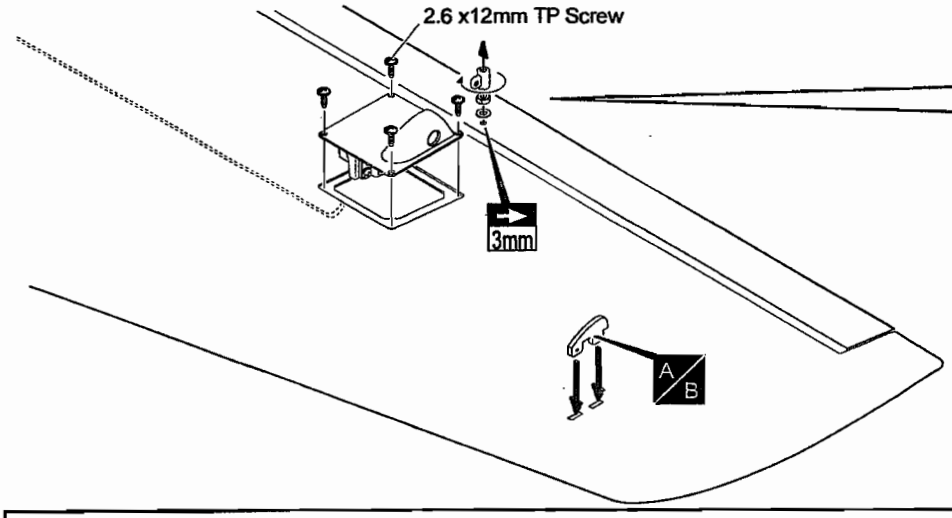
Warning!

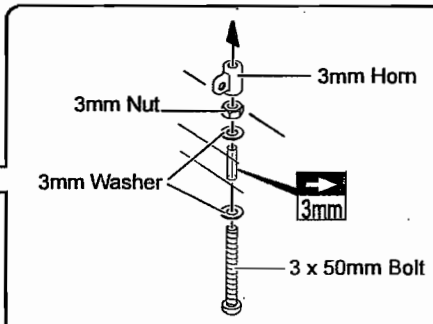
Be sure to glue securely.
This is Vital for safe flying!

When cutting away the film,for the servo mount leave a generous overhang to allow for the strong shrinkage of the Profilm (Orocover) when you finally iron it back in place.

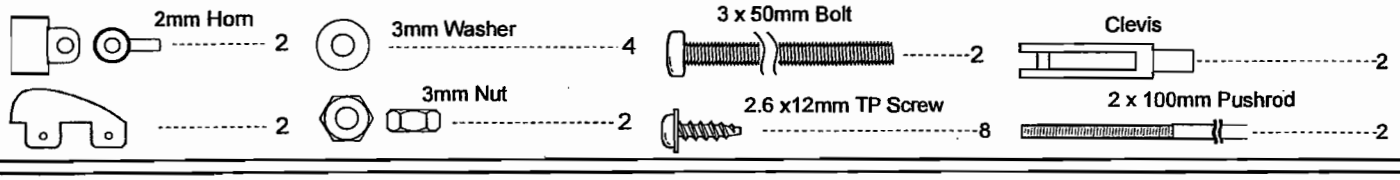
9 Aileron Servo installation

L/R Assemble left and right sides the same way.



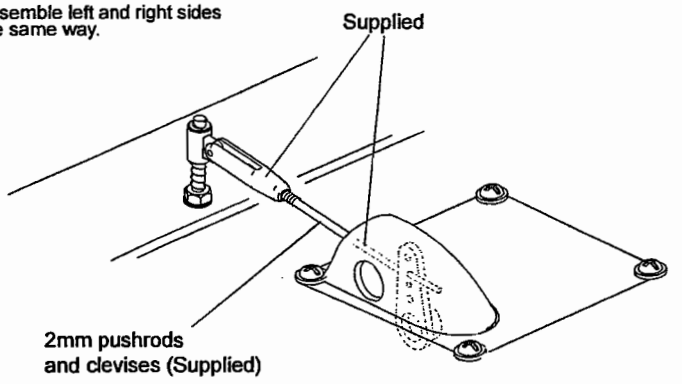


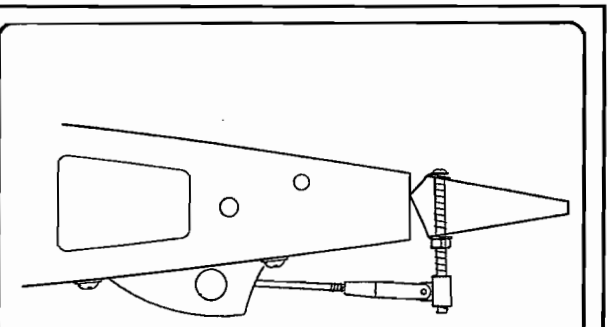
Apply thin cyano top and bottom and immediately tighten the 3mm. nut to prevent the 3mm. bolt rotating.



10 Aileron Servo installation

L/R Assemble left and right sides the same way.

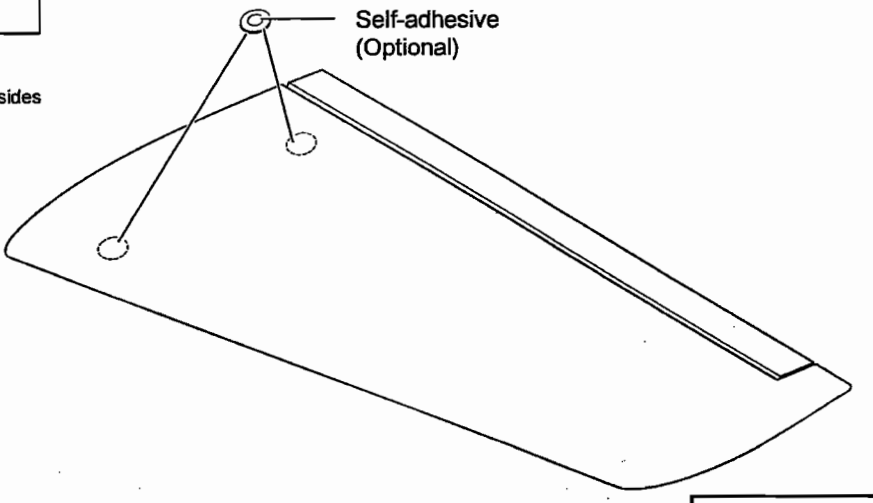




Completed

11 Centre Wing

L/R Assemble left and right sides the same way



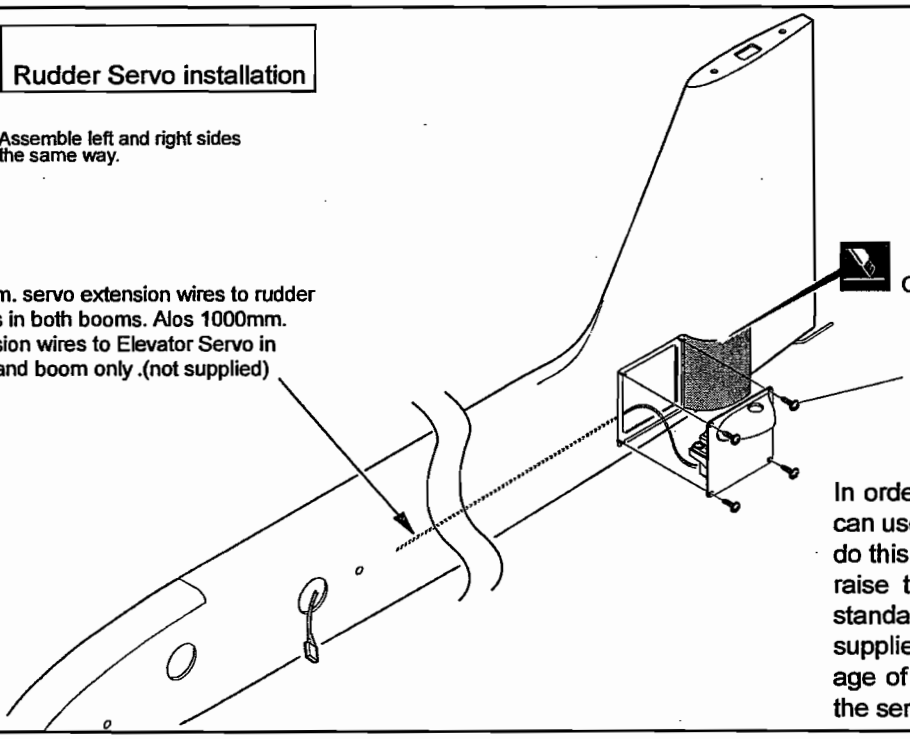
Open the holes for access to the wing fixing bolts then apply the self adhesive rings.

Self-adhesive ---------- 4

12 Rudder Servo installation

L/R Assemble left and right sides the same way.

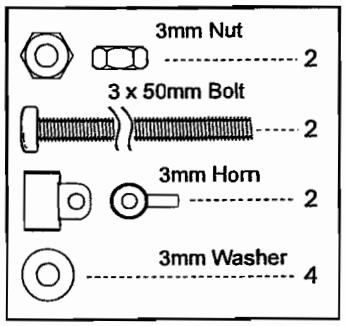
2.6 x12mm TP Screw ---------- 8



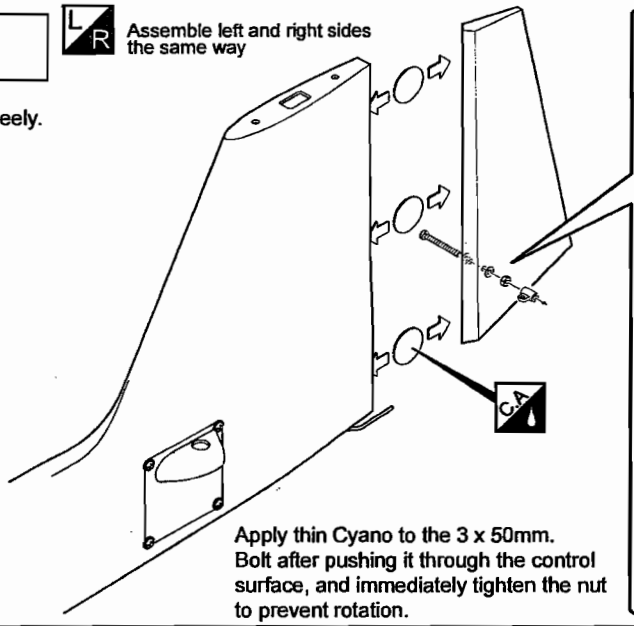
In order to save weight at the tail end, you can use "Midi" servos for the rudders. If you do this make up 6mm (1/4") liteply plates to raise the smaller servos and reduce the standard spacing of the servo mountings supplied. Remember to allow for the shrinkage of the covering when cutting away for the servo mounts.

13 Rudder installation

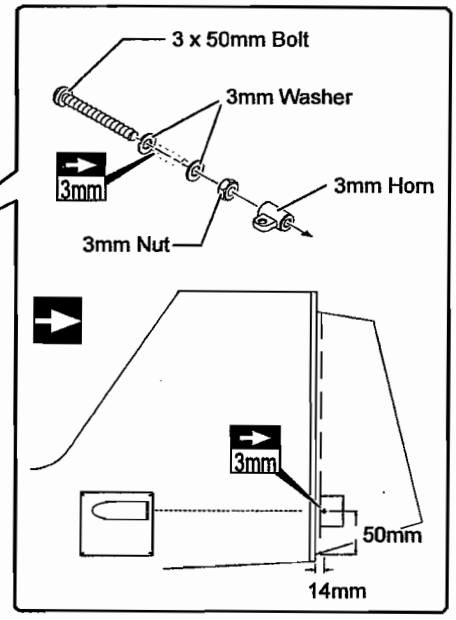
The tailskids are designed to swivel freely.



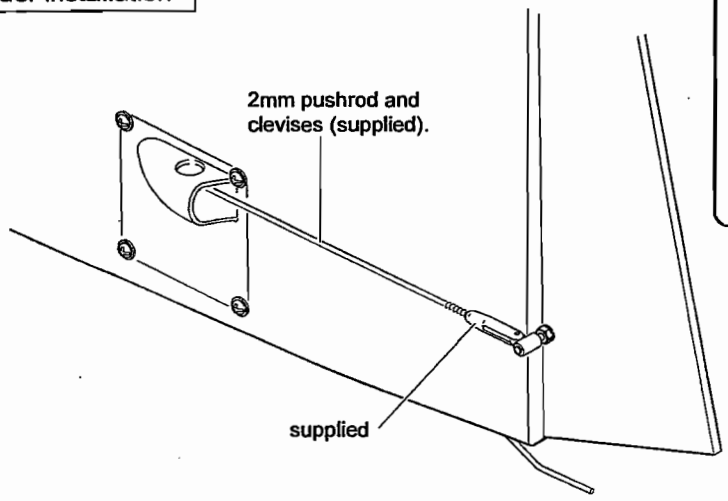
L/R Assemble left and right sides the same way

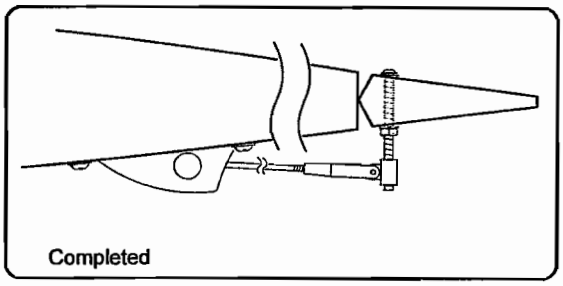


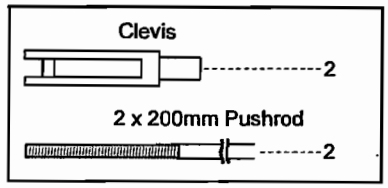
Apply thin Cyano to the 3 x 50mm. Bolt after pushing it through the control surface, and immediately tighten the nut to prevent rotation.



14 Rudder installation



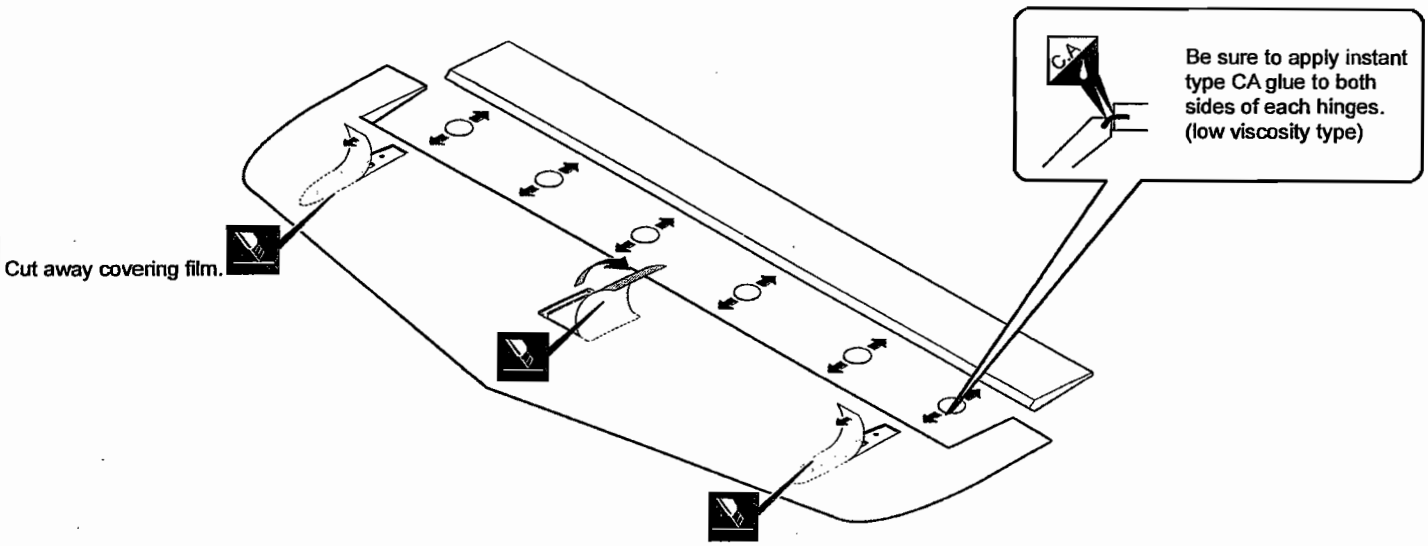




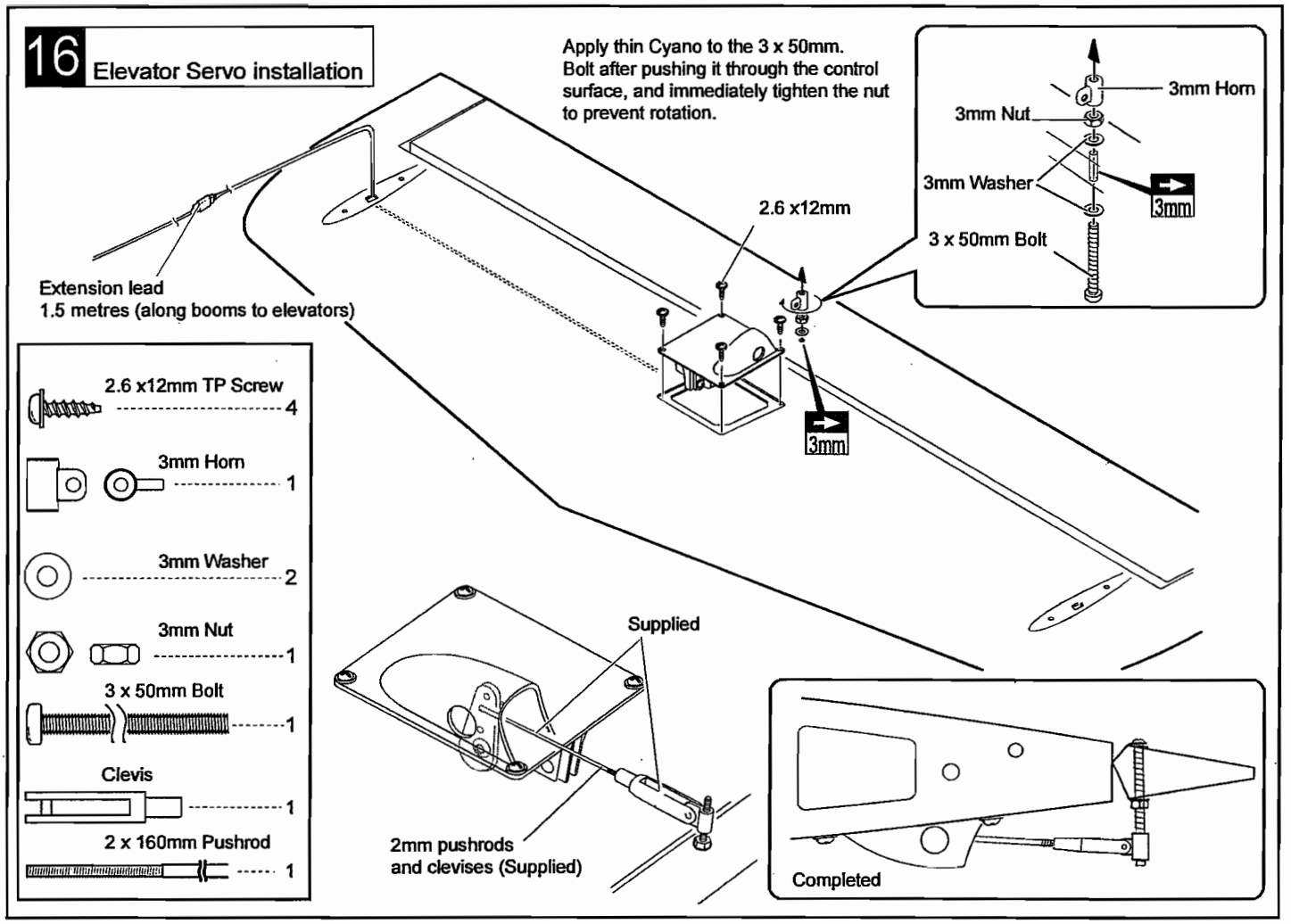
L/R Assemble left and right sides the same way.

15 Tailplane/Stab

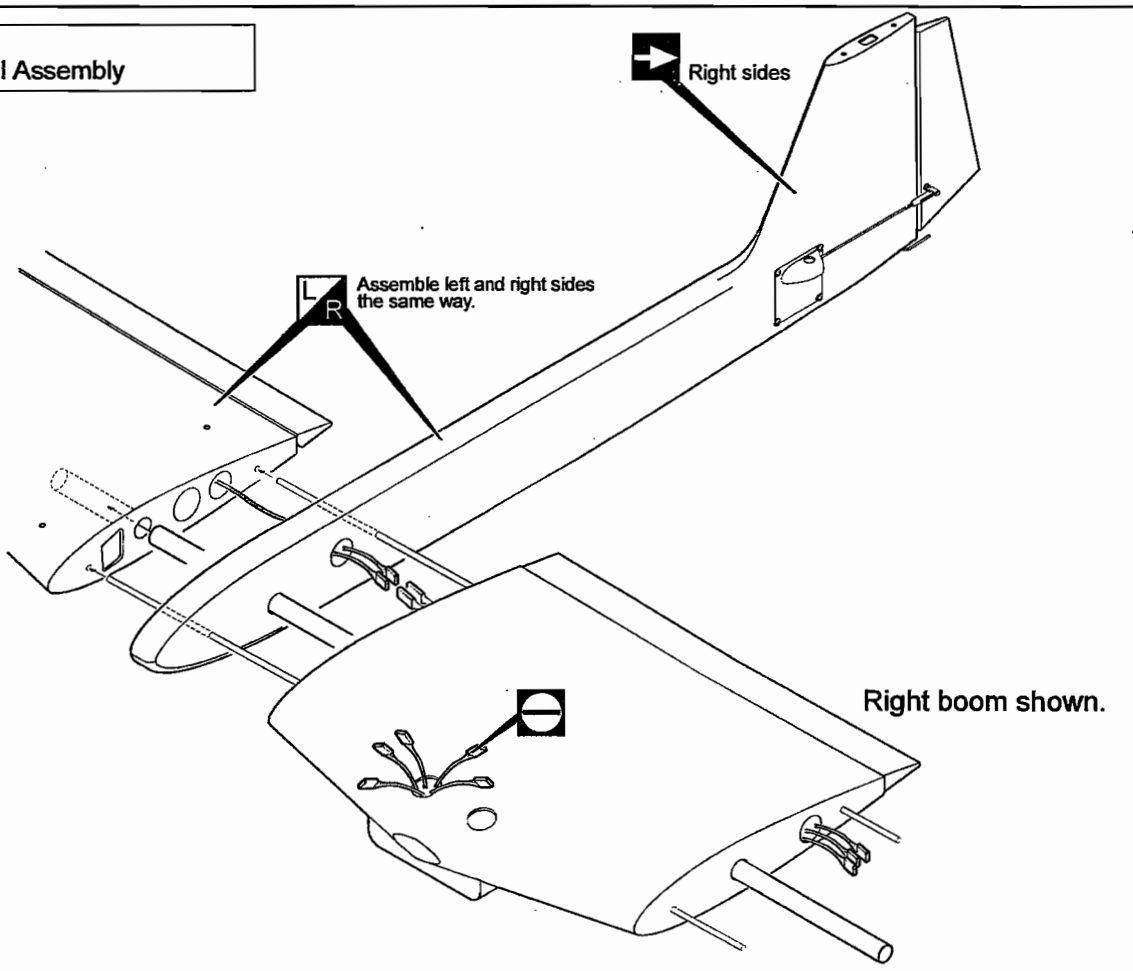
Lightly iron the covering through a cloth with a warm iron before cutting away covering film for the servo mount. Leave 3mm overhang all around the servo mount as per the wings.



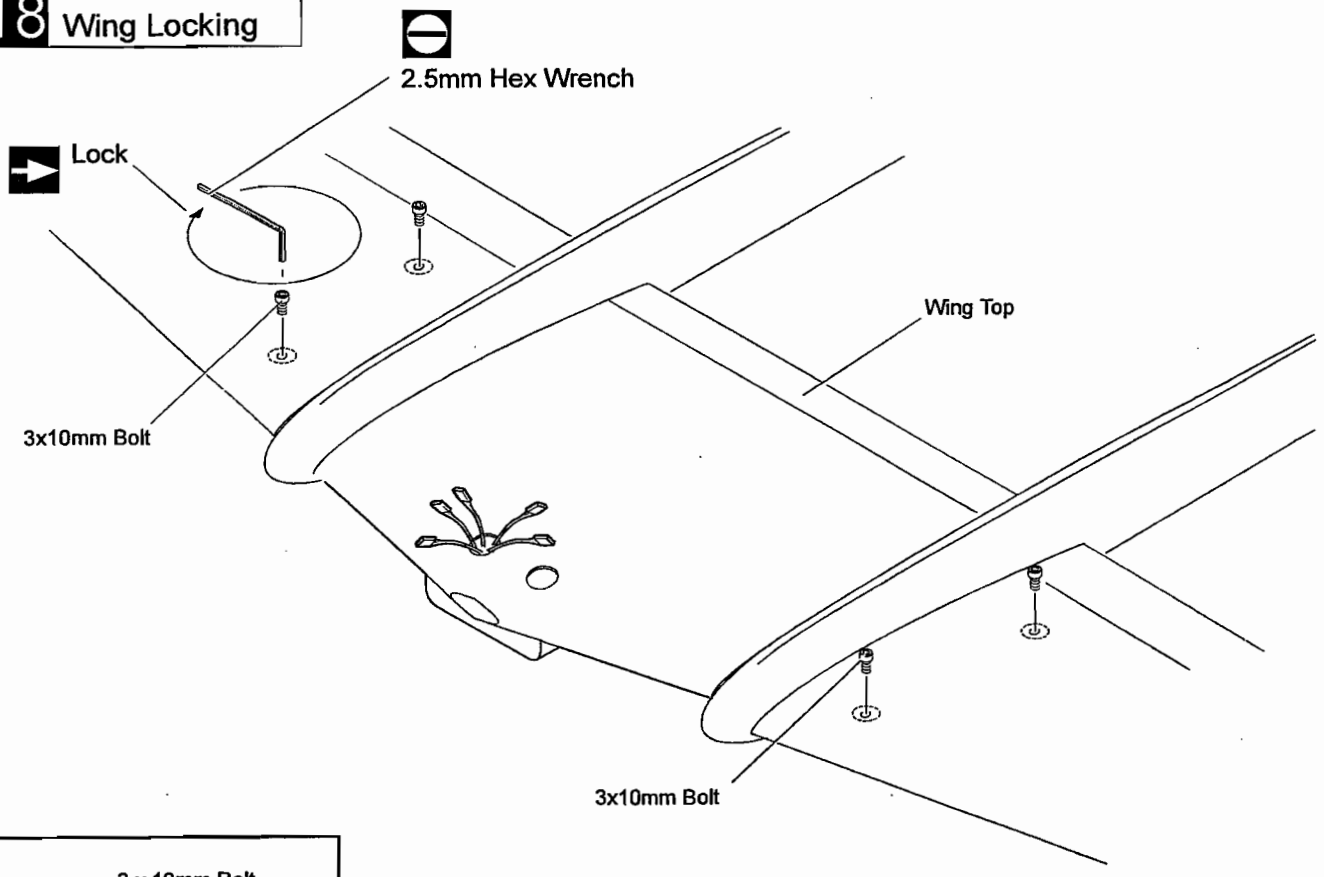
16 Elevator Servo installation



17 Final Assembly

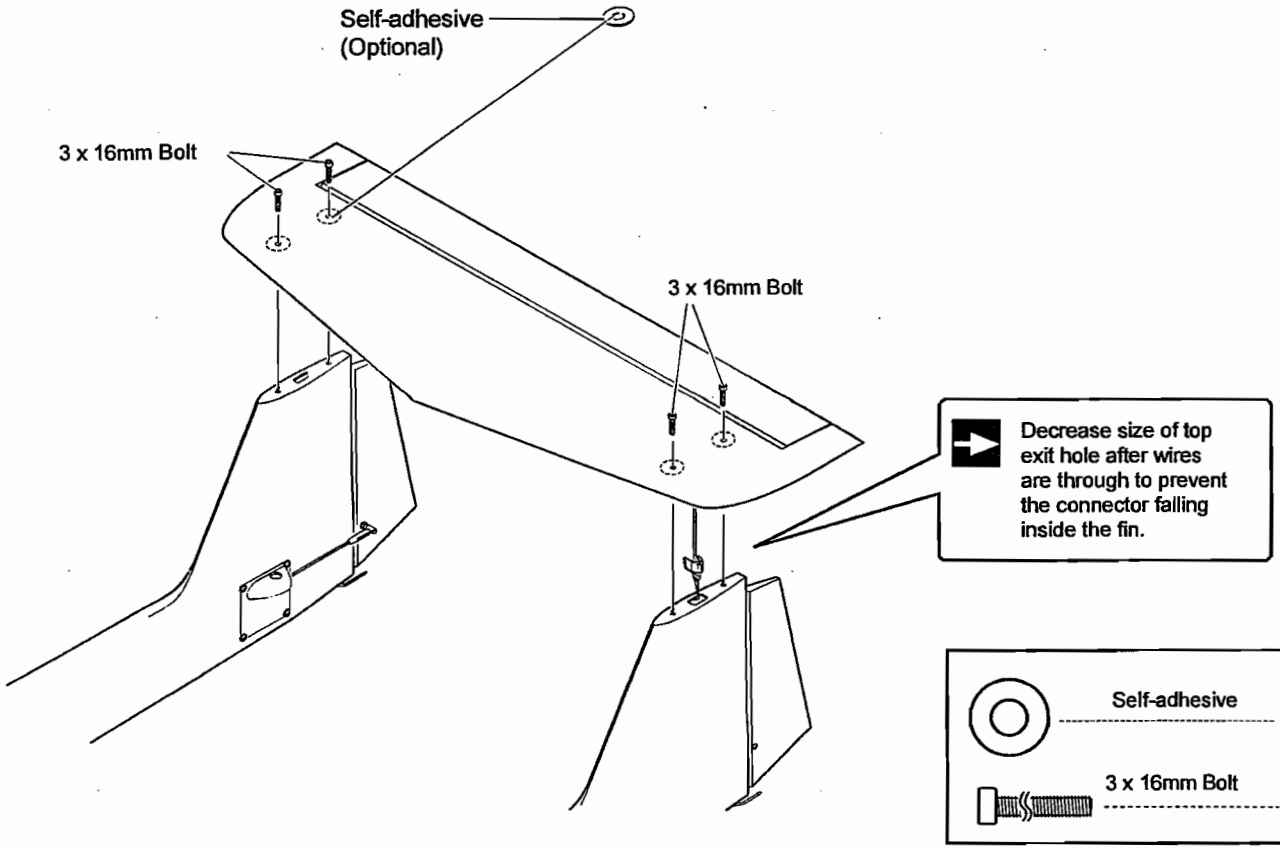


18 Wing Locking



3 x 10mm Bolt ---------- 4

19 Tail Assembly

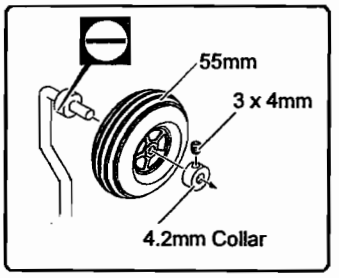


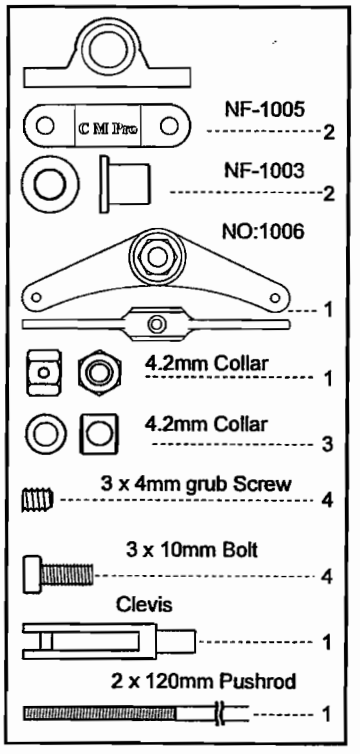
Self-adhesive ---------- 4

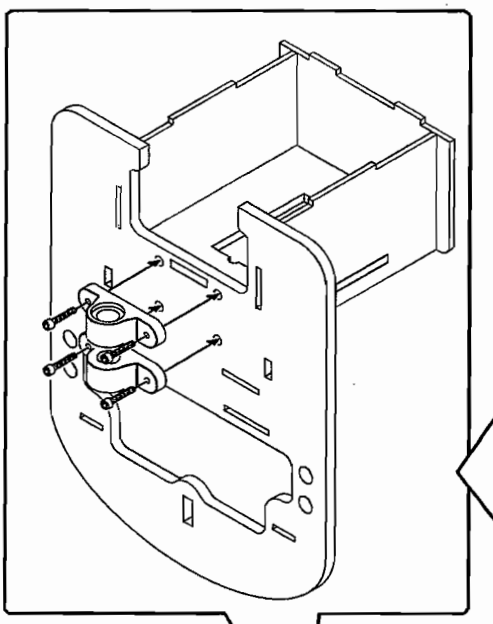
3 x 16mm Bolt ---------- 4

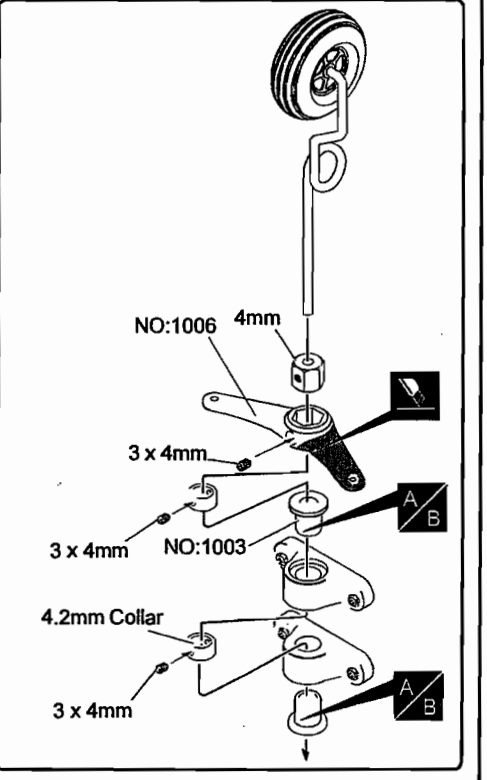
20 Noseleg Mounting

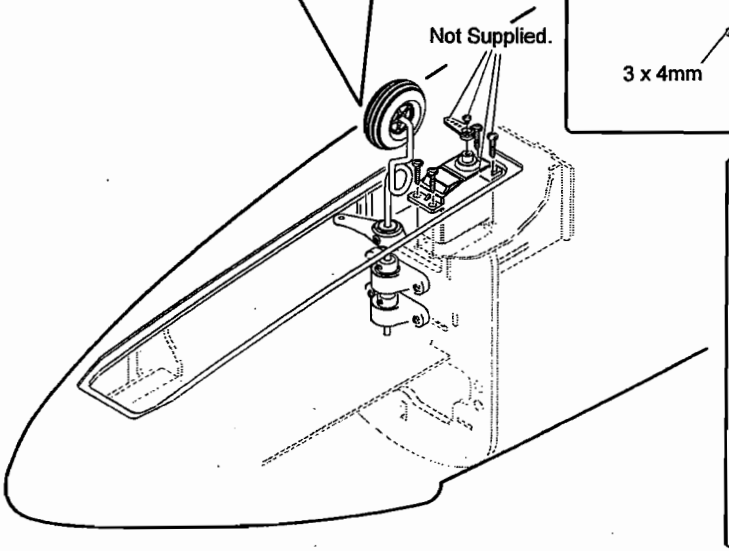
For Fixed landing gear



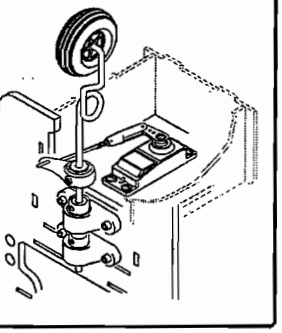








Completed



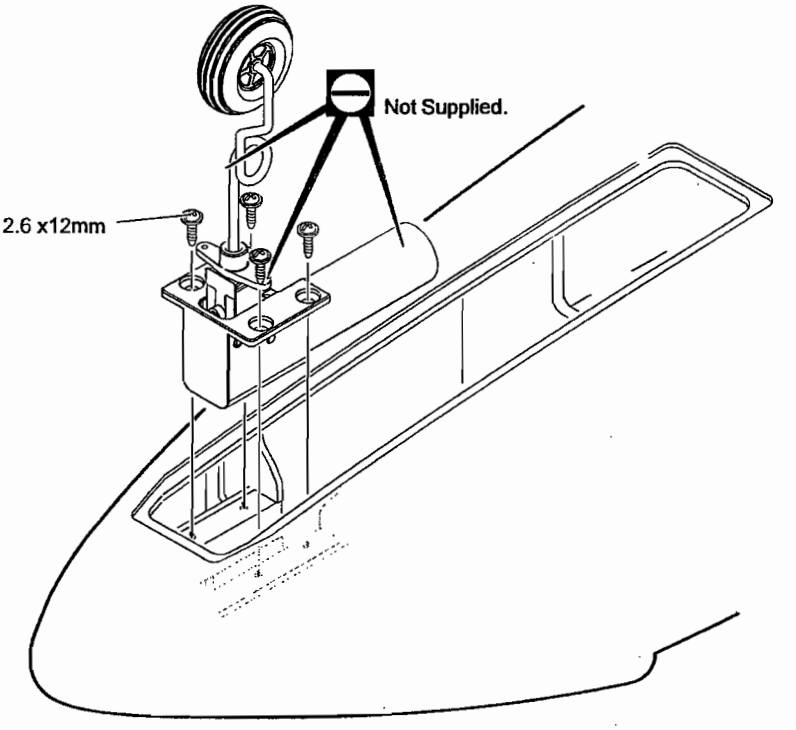
21 Noseleg Mounting

For Retractable landing gear.

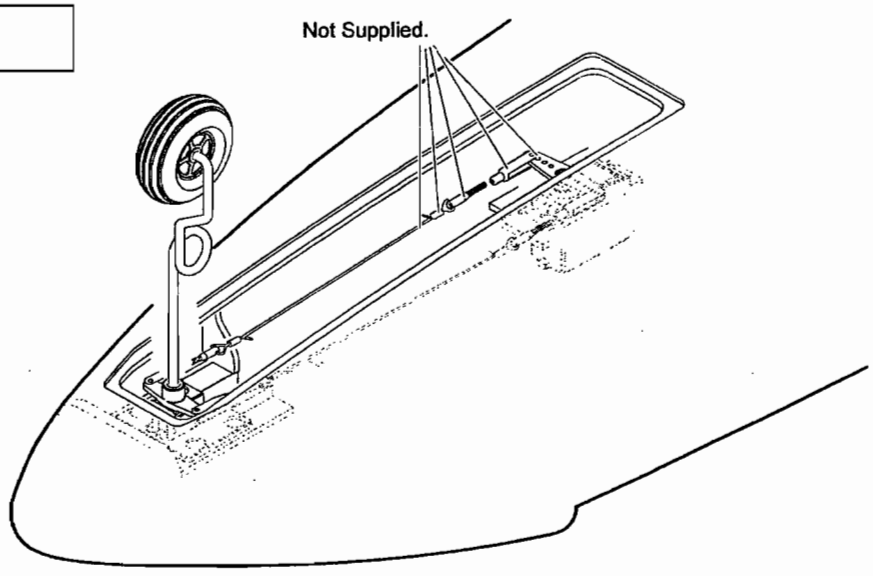
"Trim the Cover Plate to clear the leg."

Cut away part of the former at the rear of the rails to allow the retract unit steering arms to drop cleanly aft of the retract mounting rails.

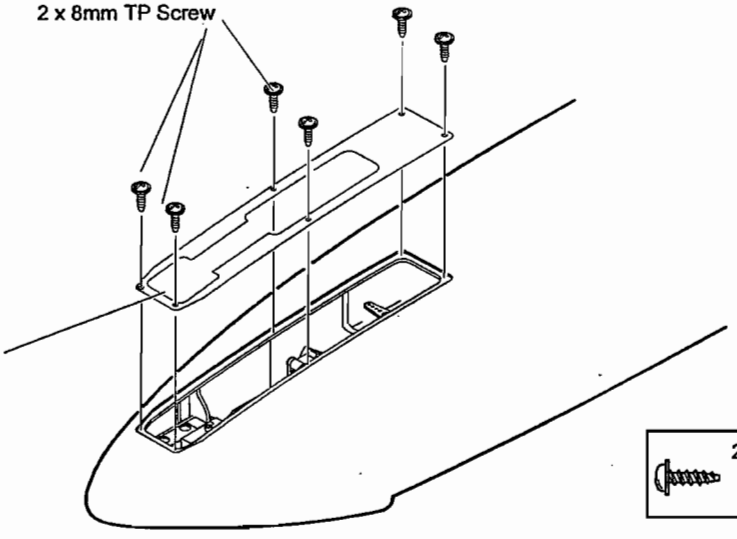
The nose leg length adjusted to give a degree or two negative incidence or slightly nose down attitude when Intro is standing on a level surface. This will be easily overcome on take off by the elevator authority and will also help to eliminate bounce on landing.



22 Noseleg



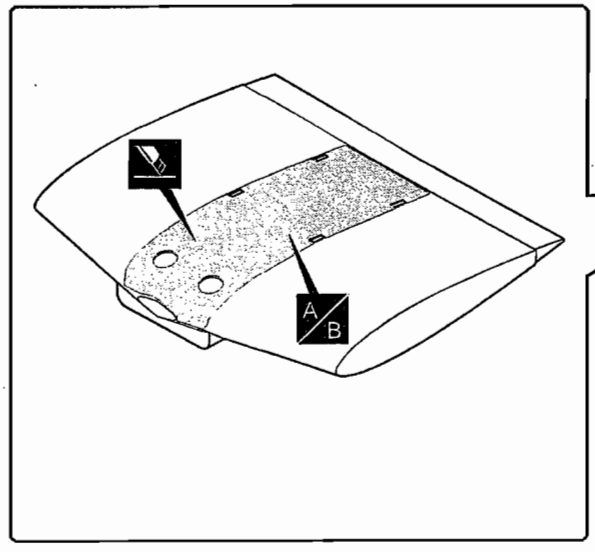
23 Noseleg Cover Plate

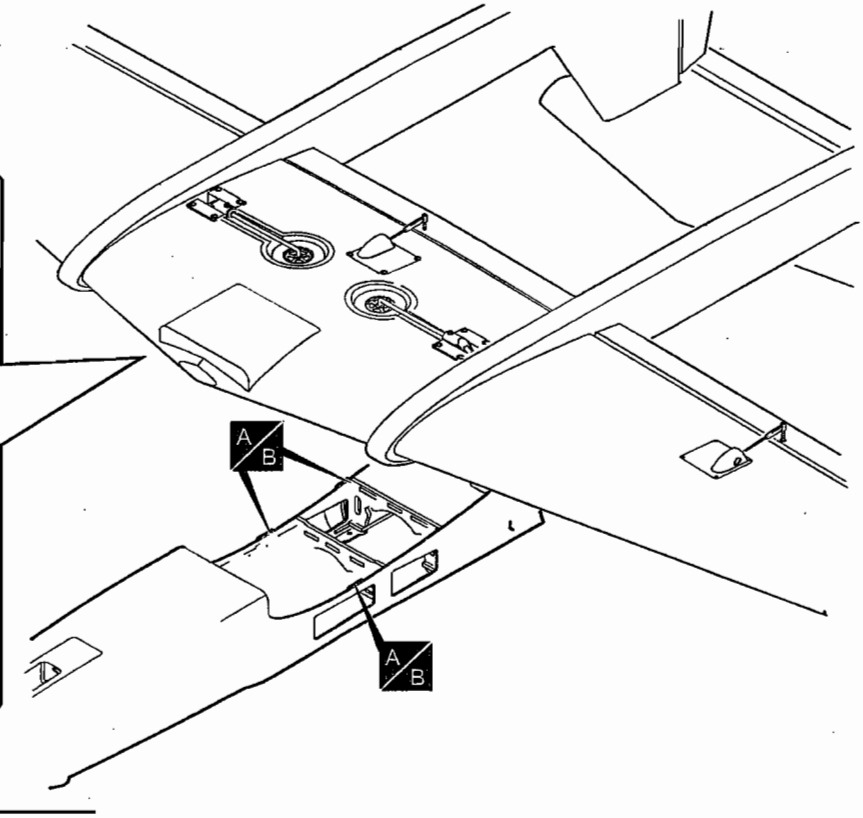


Trim the cover plate as required.

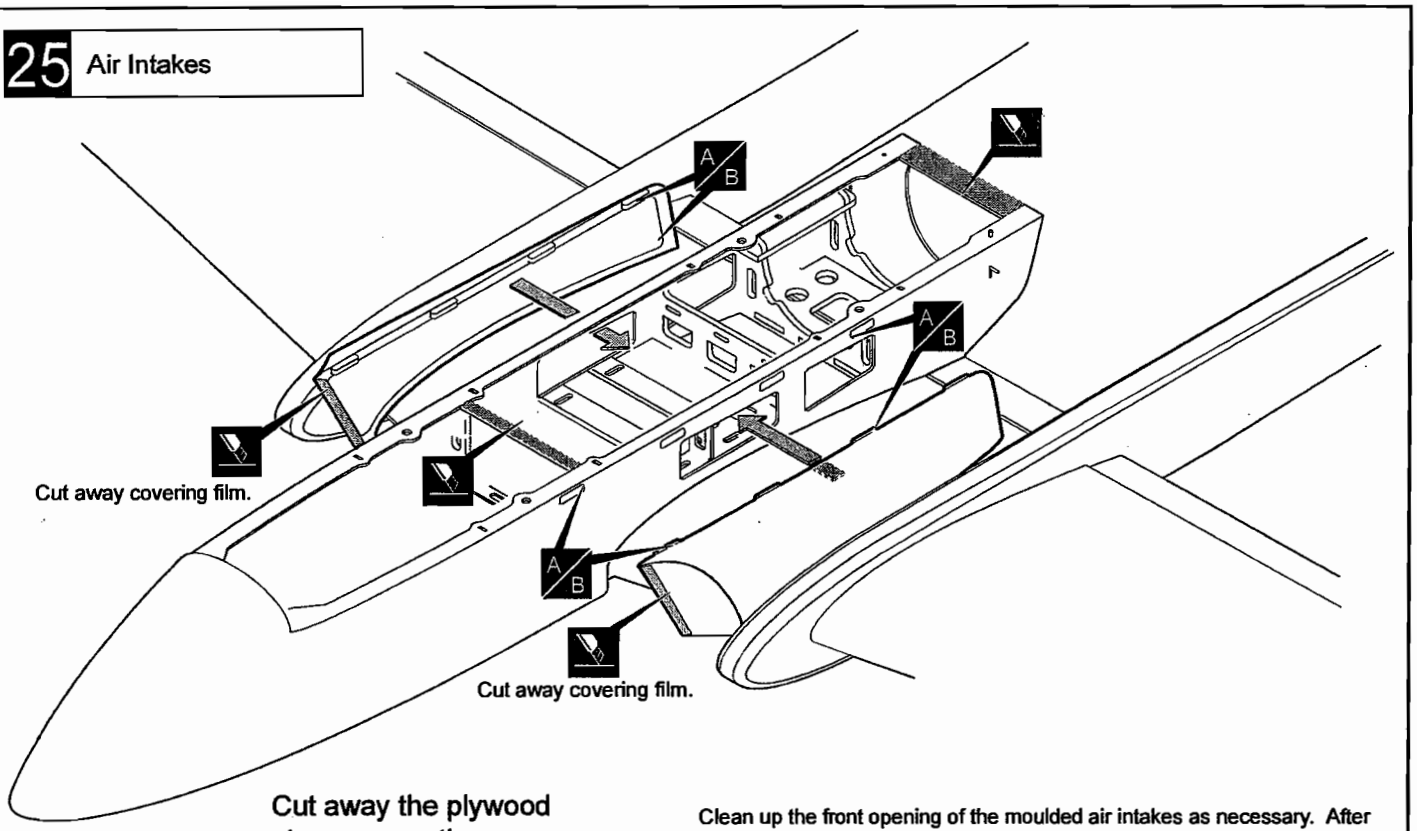
2 x 8mm TP Screw ---------- 6

24 Fuselage/Wing joining





25 Air Intakes



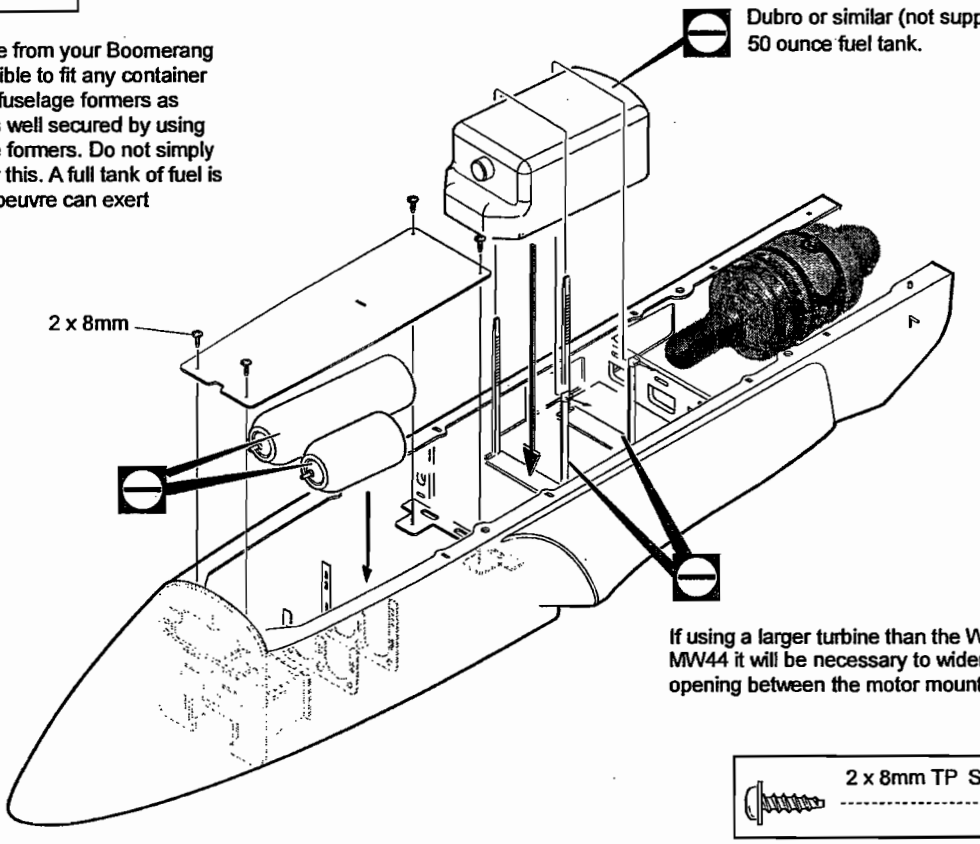
Cut away the plywood stays across the fuselage and the hatch where they are marked. These are for packing only, not structural to the airframe.

Clean up the front opening of the moulded air intakes as necessary. After carefully stripping away covering from the small cutouts in the upper fuselage use the air intakes as a guide to how much covering to remove from each side of the fuselage, opening up the airflow openings each side and leaving a bare wood gluing surface just a few mm. smaller than the intakes all round ready to fix the intakes using thick CA glue.

The air-intake is glued to the fuselage only. Not to the wing.

26 Fuel Tank etc

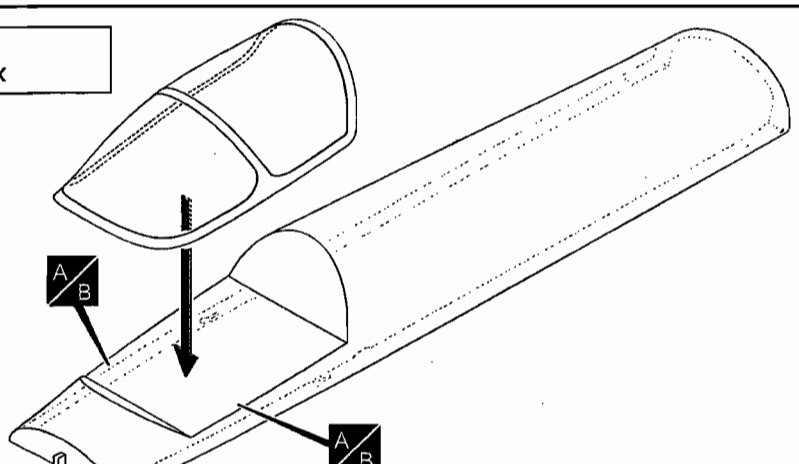
Dubro 50oz fuel tank is available from your Boomerang Jets dealer. Otherwise it is possible to fit any container from 1 litre up by modifying the fuselage formers as required. Ensure that the tank is well secured by using long cable tie wraps through the formers. Do not simply depend on the tank bay floor for this. A full tank of fuel is heavy and in a negative G manoeuvre can exert considerable upward pull.



If using a larger turbine than the Wren MW44 it will be necessary to widen the opening between the motor mounting rails.

2 x 8mm TP Screw ---------- 4

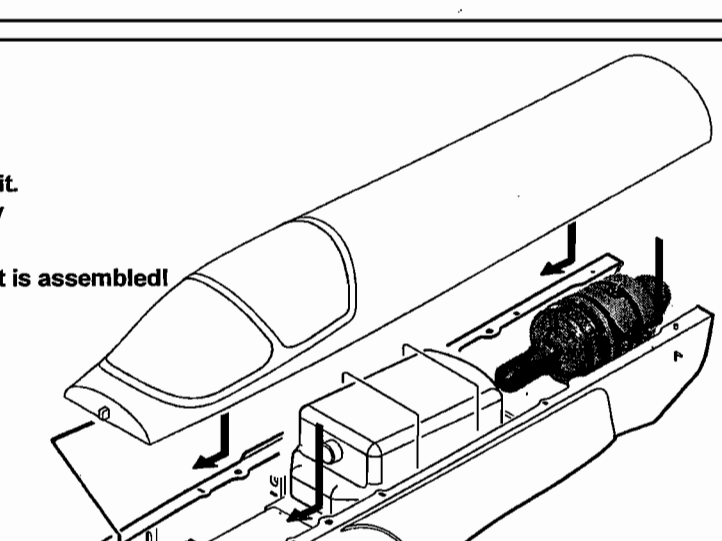
27 Canopy fix



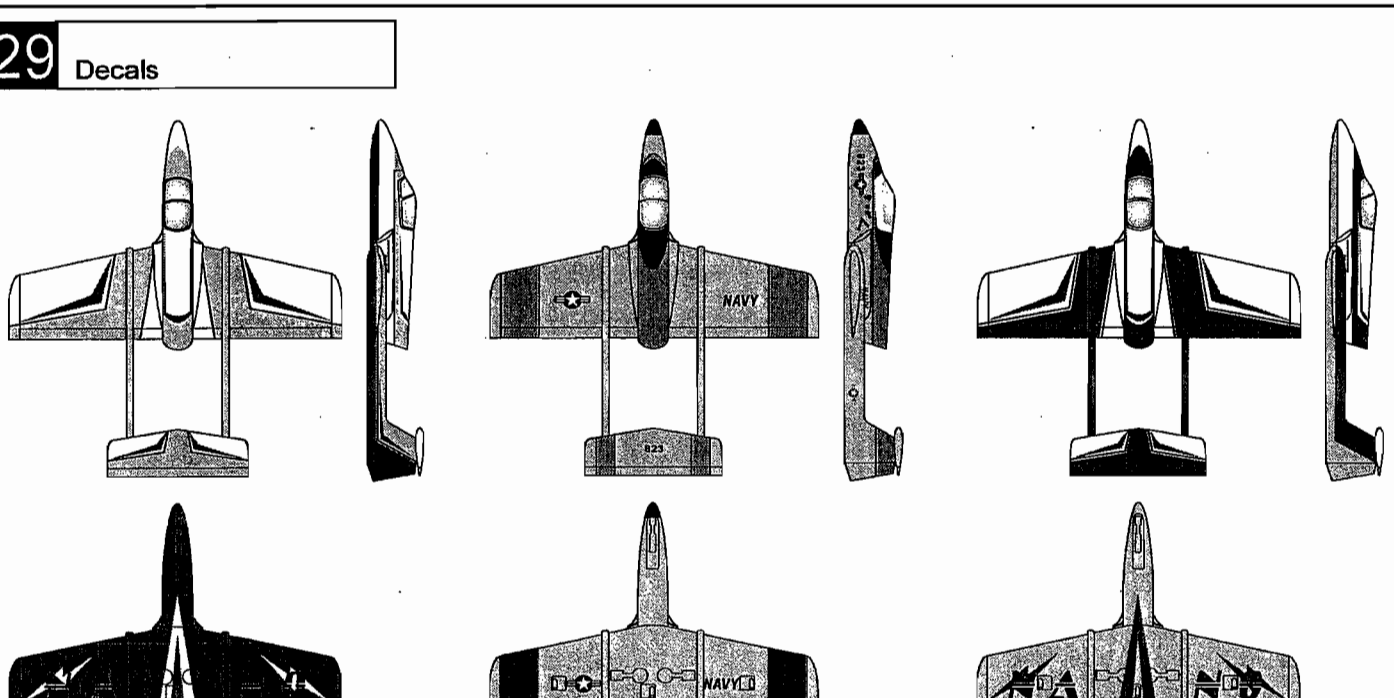
28 Check Hatch fit

Trim the hatch latch and round off the front ply locating tongueto achieve a good sliding fit. A small smear of grease on the slots and alloy pins will help the hatch to slide easily.

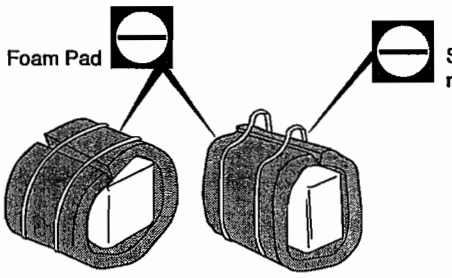
DO NOT use the hatch to lift the model when it is assembled!



29 Decals



30 Control Surface Movement

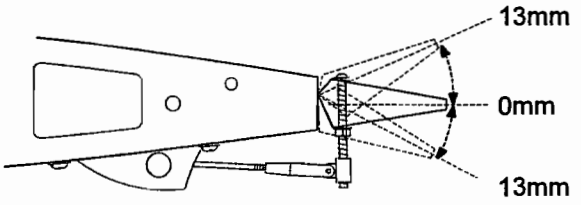


Secure foam padding with rubber bands or tape as required.

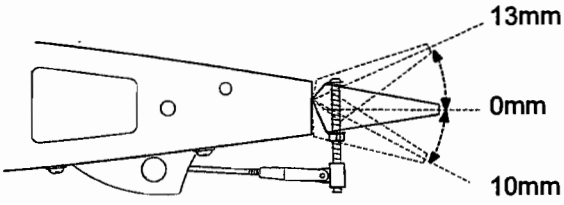
Set the travel to the values show below for the first flights. You can increase these later for aerobatics if desired.

Carefully install the receiver and battery pack to ensure that they will not shift during flight.

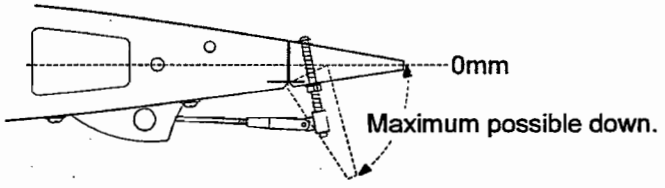
Shift the location of the receiver and battery pack as needed to obtain the specified CG.



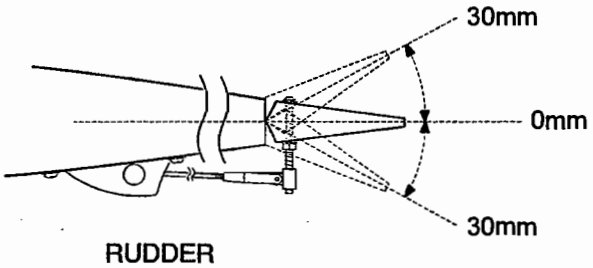
ELEVATOR



AILERON

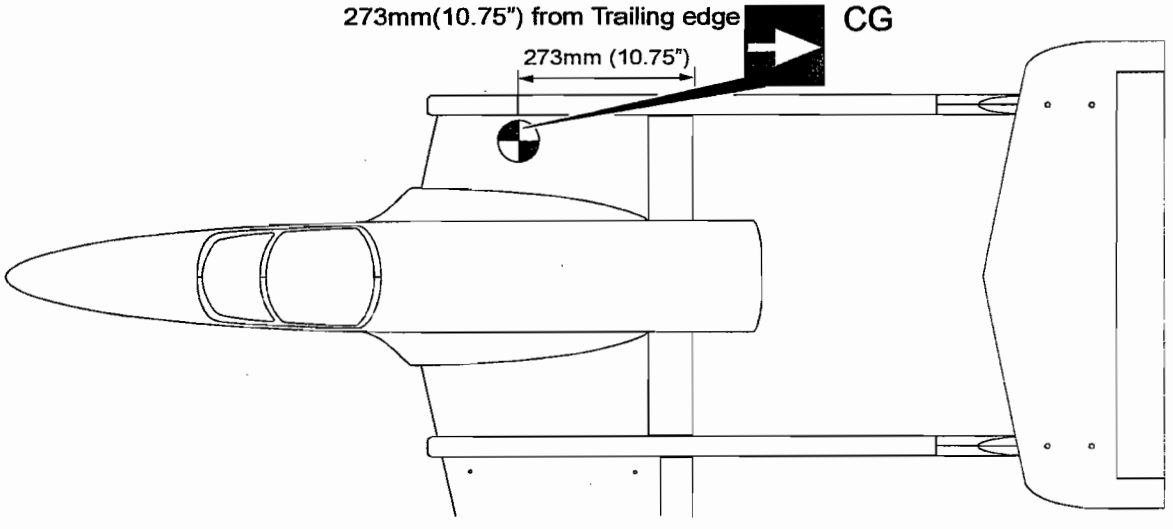


FLAP



RUDDER

For first trimming flights CG should be as shown. Later you can move the CG back a small amount at a time to increase sensitivity for aerobatics.



TRIMMING SET UP AND FLYING NOTES

Boomerang NANO is not tricky or difficult to set up.

Set the Centre of Gravity to not less than 10.75" (273mm.) forward of the wing trailing edge for the first flights, measure with the wheels down, UAT full, main fuel tank empty.
Start with ½" (13mm) Up and 3/8" (10mm.) down Aileron and ½" (13mm.) up and down Elevator.

Adjust the CG later to your own personal preferences.

The flap is very effective acting as an airbrake and slowing the glide speed. Set it to drop as far as possible, mixing in about 1/8" (3mm.) of down elevator mixed with the flap to stop the nose rising as flap is applied.. You will probably have to adjust this mix by trial and error until it is right for your own model. Variables such as weight and CG position will affect it. If you use a crow mix, only 1.8"(3mm.) of raised ailerons is enough with full flap as a starting mix.

You will be delighted with the forgiving flying characteristics of the Nano, allied to the almost unlimited aerobatic capacity it possesses. Spins, upright and inverted, snaps, tumbles, rolling circles, and loops, knife edge and very slow flight are all possible up to the limits of your flying skill.

You should enjoy some good flying with the Nano, as always with Boomerang Jets designs, the most stress free jet flying you can get! Feel free to email any feedback or comments to Alan Cardash at sales@boomerangjets.com