Radio control model / Flugmodel

ROYAL AIR FORCE

SUPERMARINE SPITFIRE

VQ No: VQA120

ALL BALSA, PLYWOOD CONSTRUCTION AND ALMOST READY TO FLY

Instruction manual / Montageanleitung

SPECIFICATIONS

Wingspan:.....1540mm
Length:.....1230mm
Electric Motor:.....See next pager
Glow Engine:..... .50 2-T / .70 4-T
RTF Weight: 3.9Kg (will vary with equipment use)
Radio:.....6 Channels / 6-7 Servos
Function: Ailerons-Elevator-Rudder-Throttle Flaps-Optional Retractable Landing Gear.

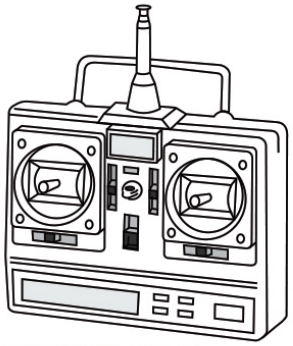
TECHNISCHE DATEN

Spannweite:.....1540mm
Länge:.....1230mm
Elektroantrieb.....(siehe nächste Seite)
Verbrennerantrieb:.....7.45cc - 11.5cc
Fluggewicht:.....3.9Kg
Fernsteuerung.....6 Kanal / 6-7 Servos

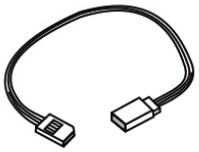
WARNING! This radio controlled model is NOT a toy. If modified or flown carelessly it could go out of controll and cause serious human injury or property damage. Before flying your airplane, ensure the air field is spacious enough. Always fly it outdoors in safe areas and seek professional advice if you are unexperienced.

ACHTUNG! Dieses ferngesteuerte Modell ist KEIN Spielzeug! Es ist für fortgeschrittene Modellflugpiloten bestimmt, die ausreichende Erfahrung im Umgang mit derartigen Modellen besitzen. Bei unsachgemässer Verwendung kann hoher Personen- und/oder Sachschaden entstehen. Fragen Sie in einem Modellbauverein in Ihrer Nähe um professionelle Unterstätzung, wenn Sie Hilfe im Bau und Betrieb benötigen. Der Zusammenbau dieses Modells ist durch die vielen Abbildungen selbsterklärend und ist für fortgeschrittene, erfahrene Modellbauer bestimmt.

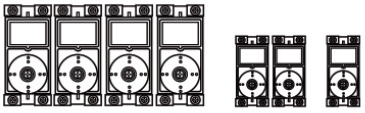
REQUIRED FOR OPERATION (Purchase separately)



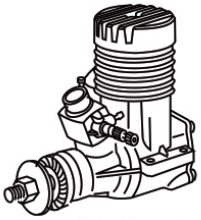
10.5x6 for .40 - 2 cycle engine
11x6 for .46 - 2 cycle engine
12x6 for .60 - 4 cycle engine
12x7 for .70 - 4 cycle engine
13x7 - 13x8 for electric motor



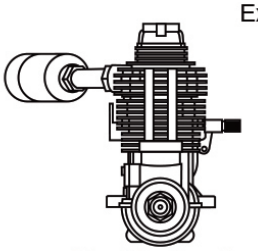
Extension cord for aileron servos: 50cm(x2)
Extension cord for flap servos: 50cm(x4)
Extension cord for retract servos: 30cm(x2)
Extension cord for Rx battery pack: 20cm(x1)



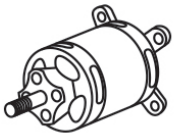
Standard Mini



.46 ~ .50 - 2 cycle



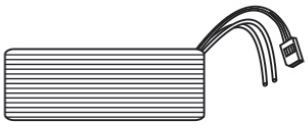
.60 ~.70 - 4 cycle



700-800W Brushless Motor

Minimum 6 channels radio
Elevator : 1 standard servo
Rudder : 1 standard servo
Aileron : 2 standard servo
Flaps : 2 mini servo
Throttle : 1 mini servo (for glow engine only)

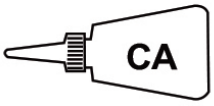
Silicone tube



5 cell 4500mAh LiPo battery

GLUE (Purchase separately)

Silicon sealer



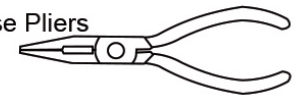
Cyanoacrylate Glue (thin type)

Epoxy Glue
(30 minute type)

TOLLS REQUIRED (Purchase separately)

Hobby knife

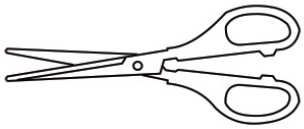
Needle nose Pliers



Sander

Phillip screw driver

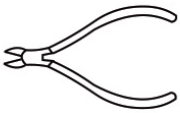
Scissors



Hex Wrench

Awl

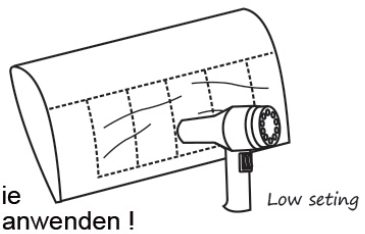
Wire Cutters



Masking tape - Straight Edged Ruler - Pen or pencil - Drill and Assorted Drill Bits

If exposed to direct sunlight and/or heat, wrinkels can appear. Storing the model in a cool place will let the wrinkles disappear. Otherwise, remove wrinkles in covering film with a hair dryer, starting with low temperature. You can fix the corners by using a hot iron.

Bei Sonneneinstrahlung und/oder Wärme kann die Folie erschlaffen bzw. Falten entstehen. Verwenden Sie ein Warumluftgebläse (Haartrockner) um evtl. Falten aus der Folie zu bekomen. Die Kanten können Sie mit einem Bügeleisen behandeln. Nicht zuviel Hitze anwenden !



Symbols used throughout this instruction manual, comprise:

Drill holes using the stated size of drill (in this case 1.5 mm)

Take particular care here

Hatched-in areas: remove covering film carefully

Check during assembly that these parts move freely, without binding

Use epoxy glue

Apply cyano glue

Assemble left and right sides the same way.

Not included. These parts must be purchased separately

Löcher bohren mit dem angegebenen Bohrer (hier 1,5 mm)

Hier besonders aufpassen

Schraffierte Stellen, Bespannfolie vorsichtig entfernen

Während des Zusammenbaus immer prüfen, ob sich die Teile auch reibungslos bewegen lassen

Epoxy-Klebstoff verwenden

Sekundenkleber auftragen

Linke und rechte Seite wird gleichermaßen zusammengebaut

Nicht enthalten. Teile müssen separat gekauft werden.

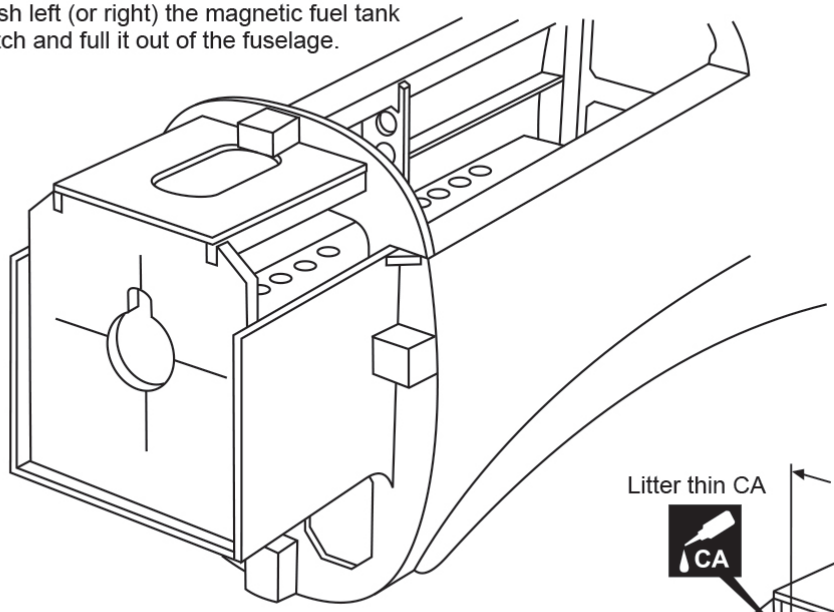
Read through the manual before you begin, so you will have an overall idea of what to do.

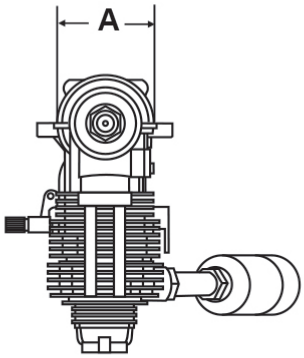
CONVERSION TABLE

1.0mm = 3/64”	3.0mm = 1/8”	10mm = 13/32”	25mm = 1”
1.5mm = 1/16”	4.0mm = 5/32”	12mm = 15/32”	30mm = 1-3/16”
2.0mm = 5/64”	5.0mm = 13/64”	15mm = 19/32”	45mm = 1-51/64”
2.5mm = 3/32”	6.0mm = 15/64”	20mm = 51/64”	

Engine installation

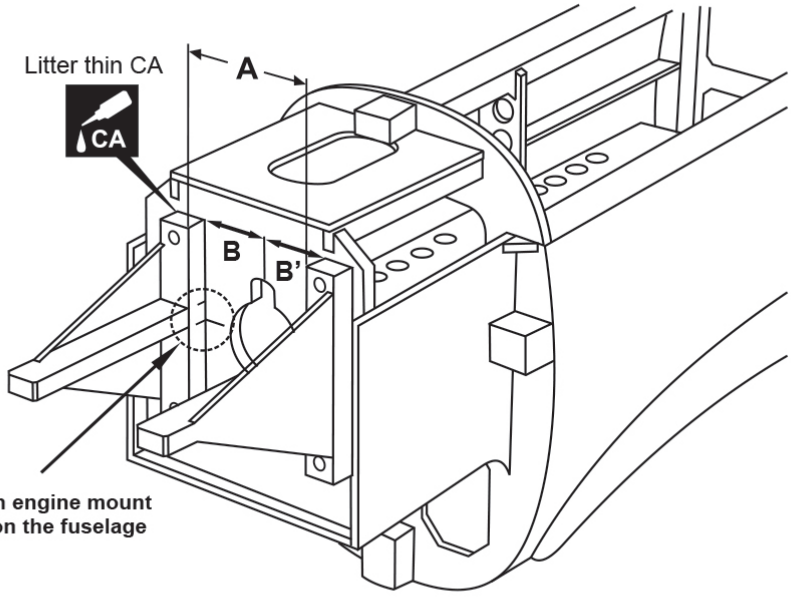
Push left (or right) the magnetic fuel tank hatch and full it out of the fuselage.



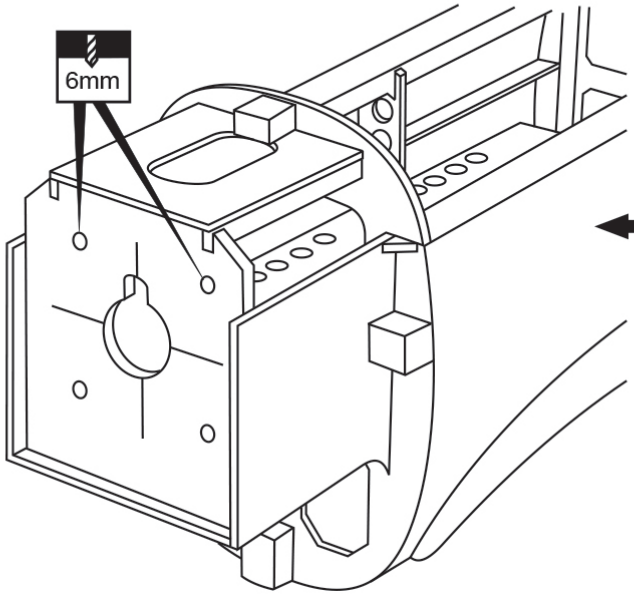


Attach the engine mount beams onto the fire-wall so the distance between of two engine mount beams is “A”,and B=B’ as show.
Secure the engine mount beams onto the fire-wall with **litter CA glue**.

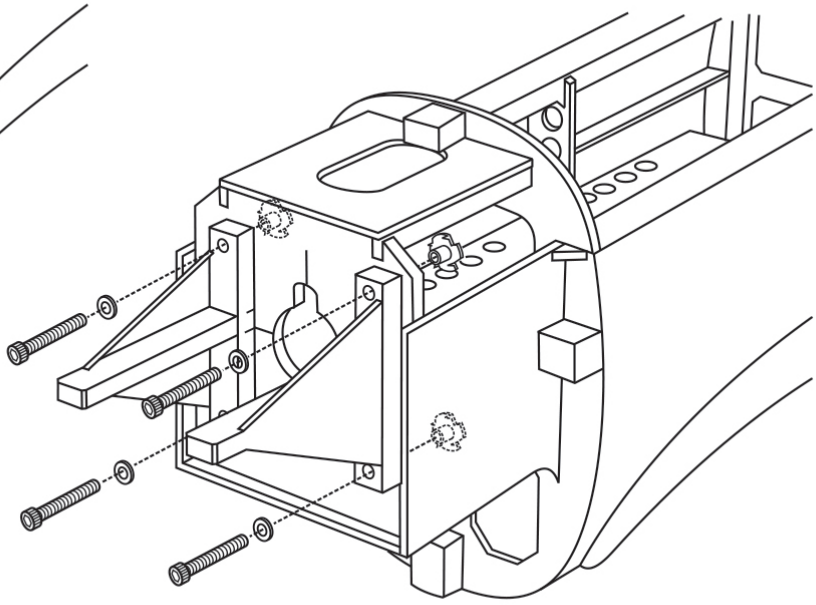
Using a pencil or felt tipped pen, mark the fire wall where the four holes are to be drilled(1B))



! Align the mark on both engine mount beams with the mark on the fuselage



Carefully remove the engine mount beams and drill a 6mm hole through the fire-wall at each of the four marks made above (1C)



Insert the blind-nut onto each of the four holes make above..

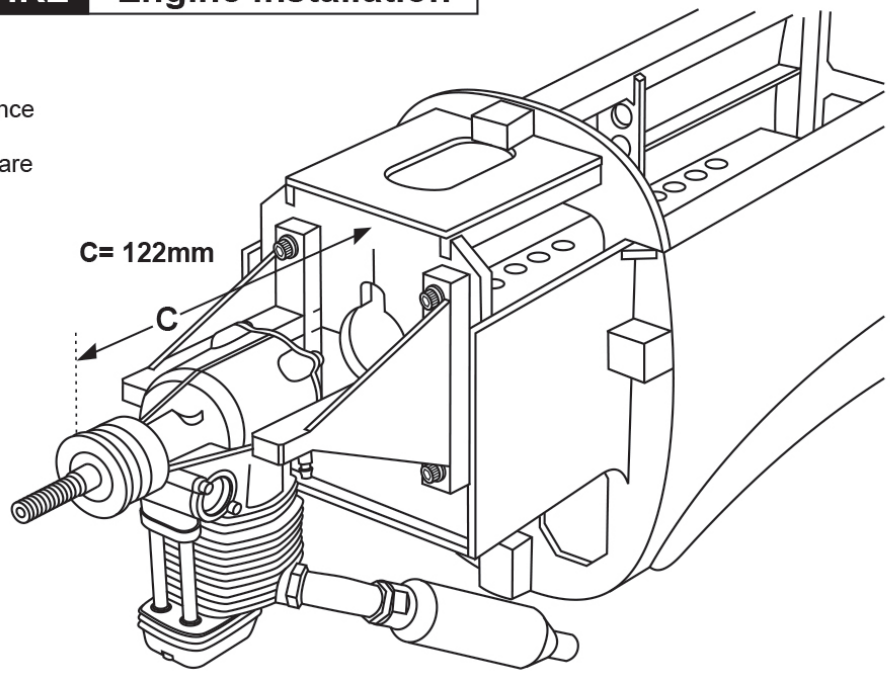
Reposition the engine mount beams on to the fire-wall and secure them with four 4x25mm screw .

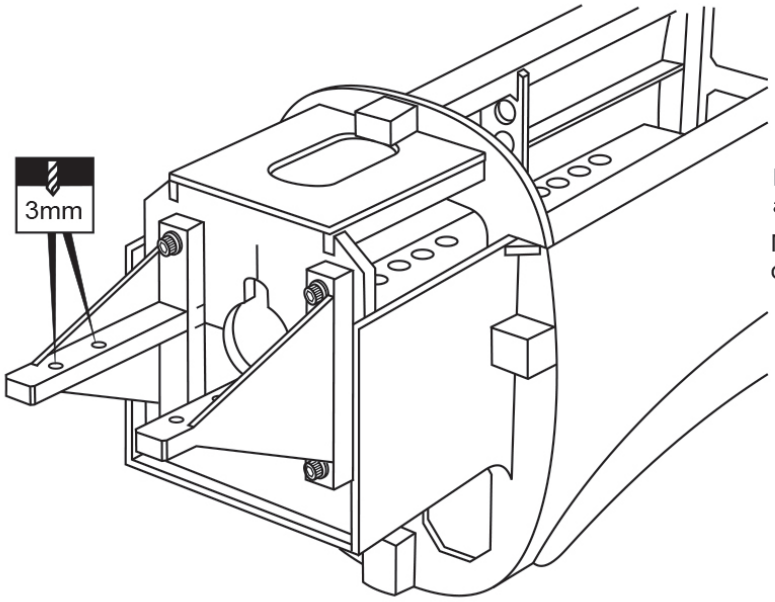
4x25mm screw - washer 4

Blind-nut 4

Engine installation

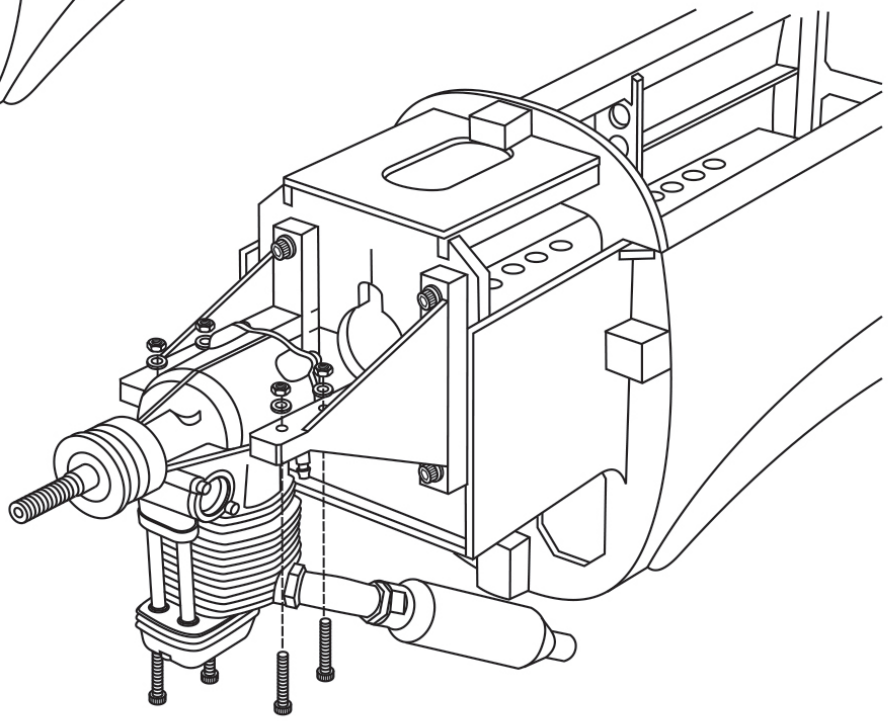
Position the engine to the engine mounts so the distance from the prop hub to the fire-wall is 122mm.
Mark the engine mounting plate where the four holes are to be drilled.





Remove the engine and drill a 3mm holes through the beam at each of the four marks made above (8C)

Marking sure that you drill the hole perpendicular to the beam of the engine mount.

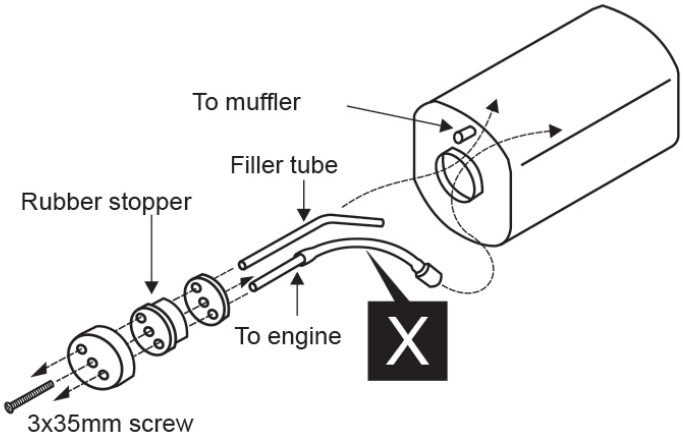


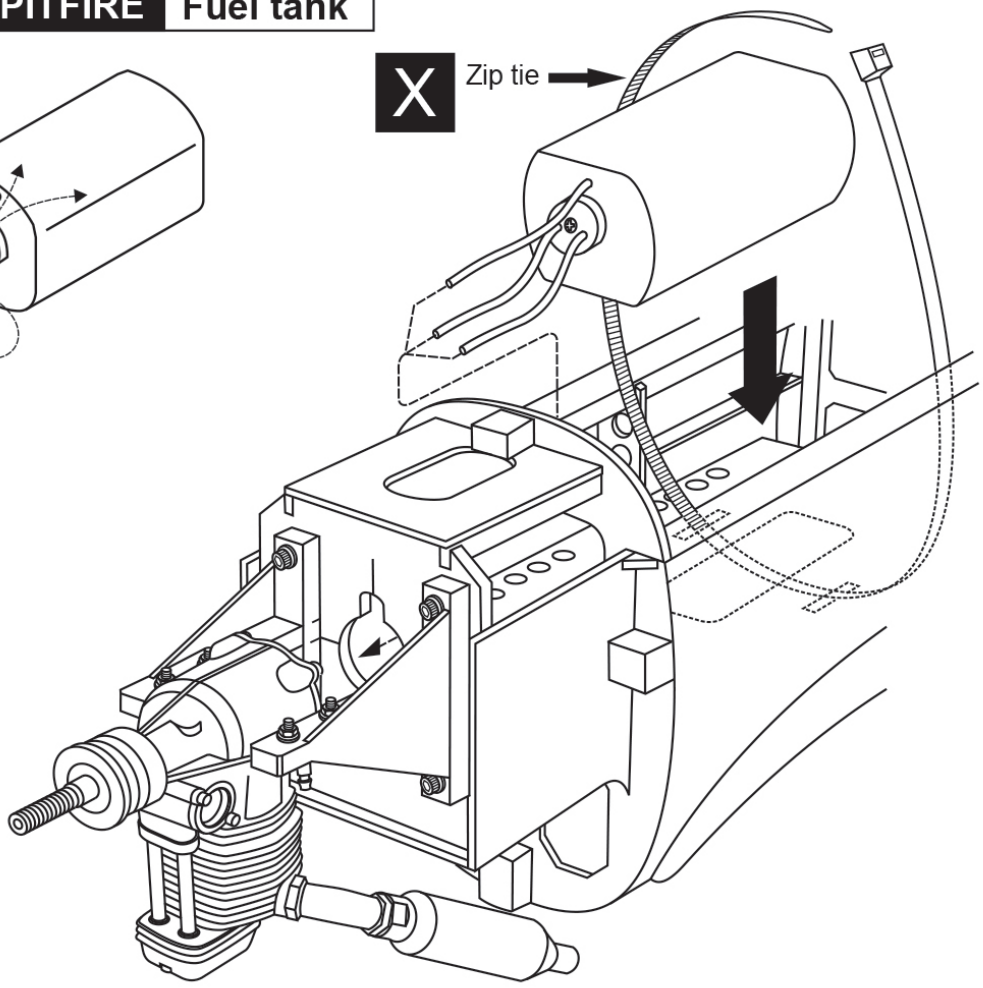
Reposition the engine on the engine mount beams, aligning it with the holes. Secure the engine to the engine mount using four 3x25mm screws .

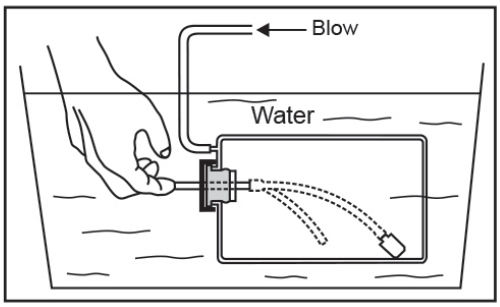
Note: Apply Silicon sealer to each of the 3x25mm screw and nut.

3x25mm screw	4
3mm Washer	4
3mm Nut	

Fuel tank



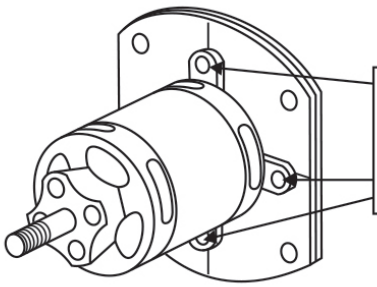




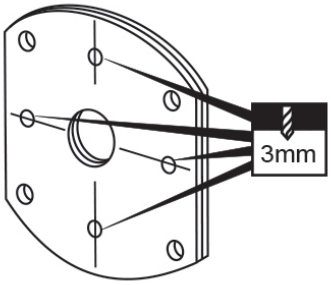
Checking for leaks - block the vents and blow into the feed - if in doubt submersing the tank in a blow of water will show up any problems.

! Do not secure the tank into place permanently until after balancing the airplane. You may need to remove the tank.

Electric motor installation

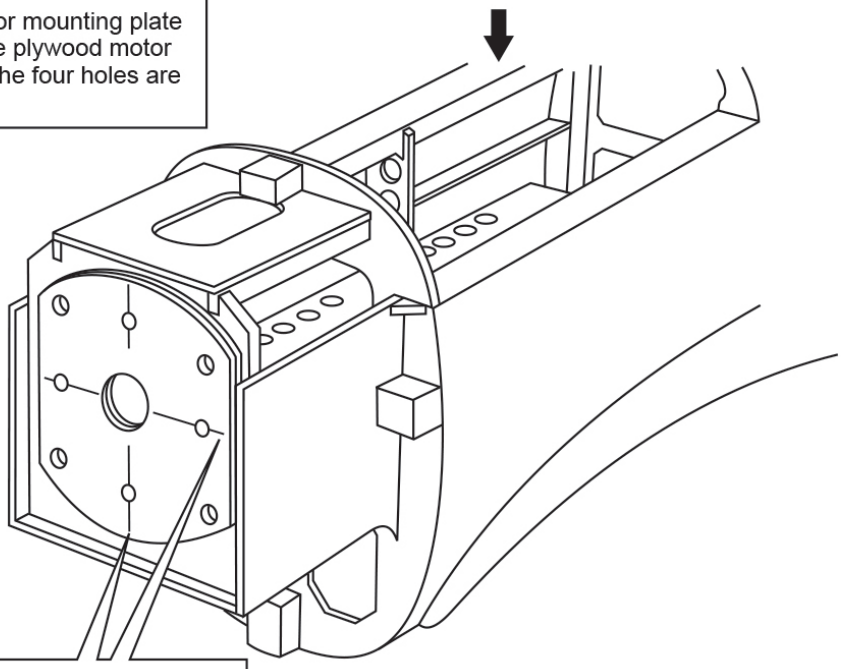


Using a aluminum motor mounting plate as a template, mark the plywood motor mounting plate where the four holes are to be drilled.



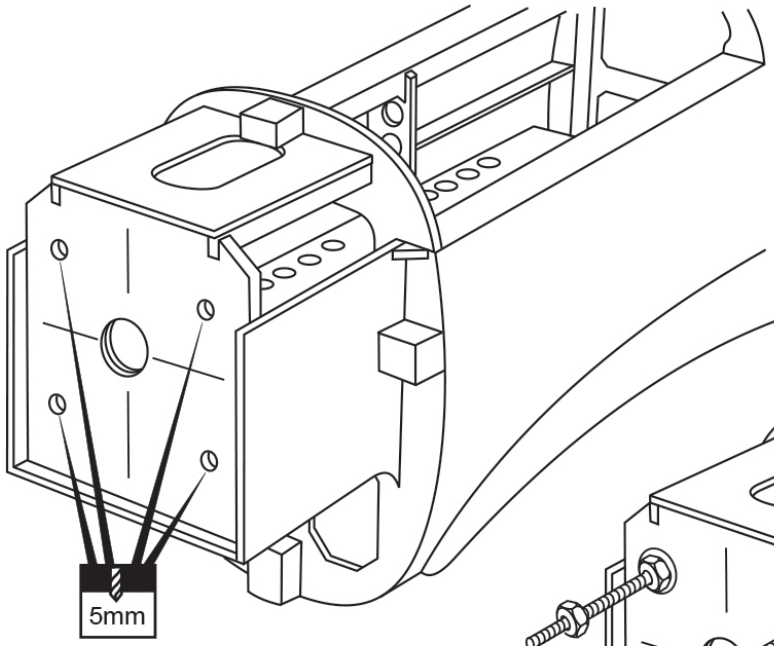
Remove the aluminum motor mounting plate and drill a 1/8"(3mm) hole through the plywood at each of the four marks marked .

Using a wooden motor mounting plate as a template, mark the fire-wall where the four holes are to be drilled.

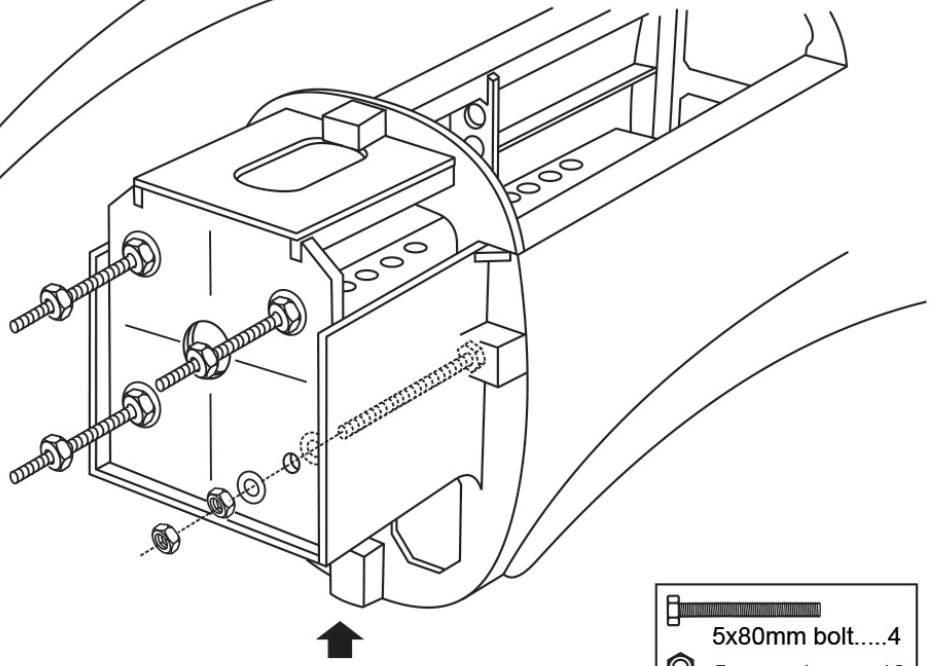


! Align the mark on wooden motor mounting plate with the mark on the fire-wall.

Electric motor installation

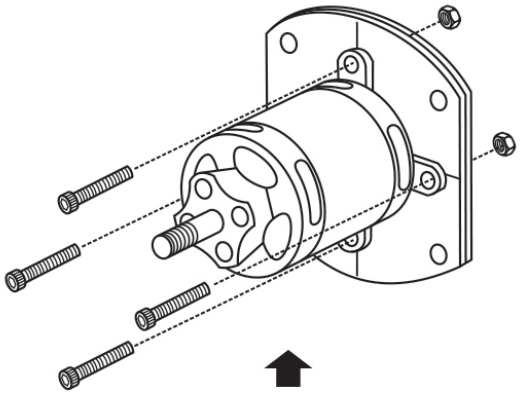


Remove the wooden motor mounting plate and drill a 5mm hole through the fire-wall at each of the four marks marked .



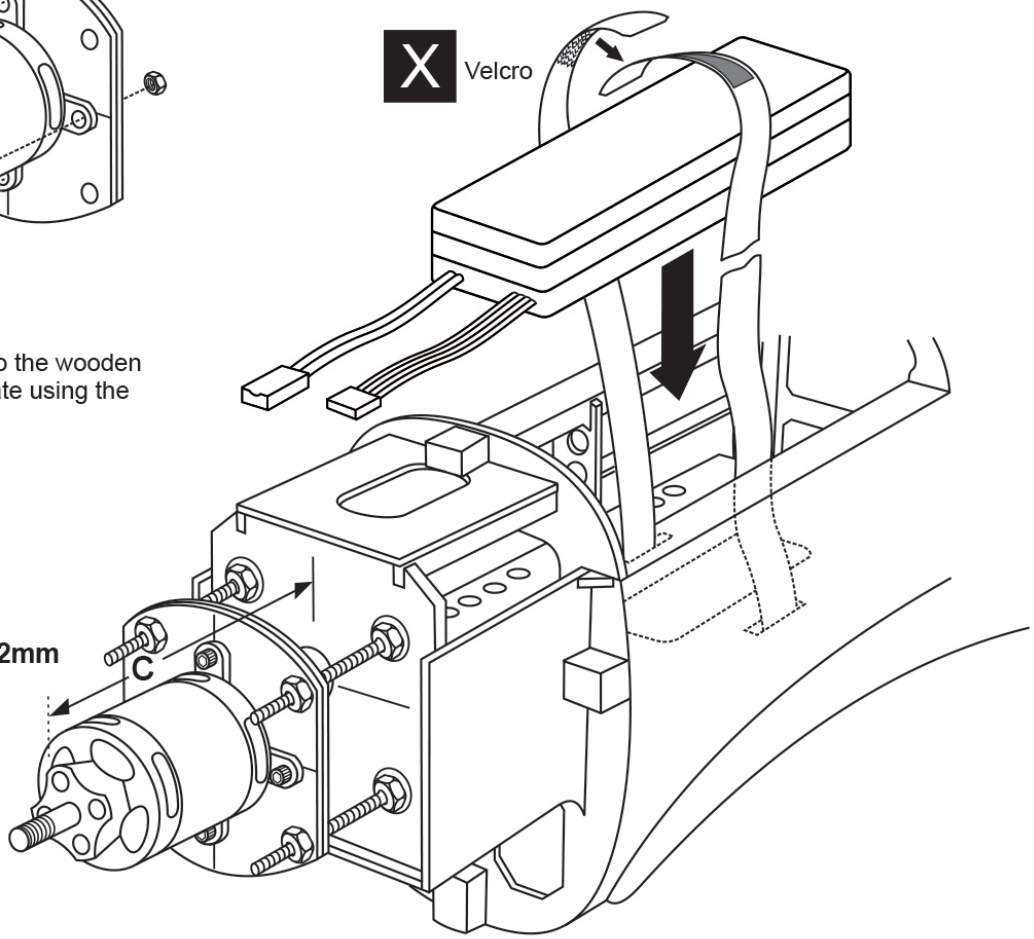
Attach the four 5x80mm bolts and nuts to the fire-wall as shown.

5x80mm bolt.....4
5mm nut.....12
5mm washer...16



3mm bolt / nut...4

Secure the Motor to the wooden motor mounting plate using the four 3mm bolts.



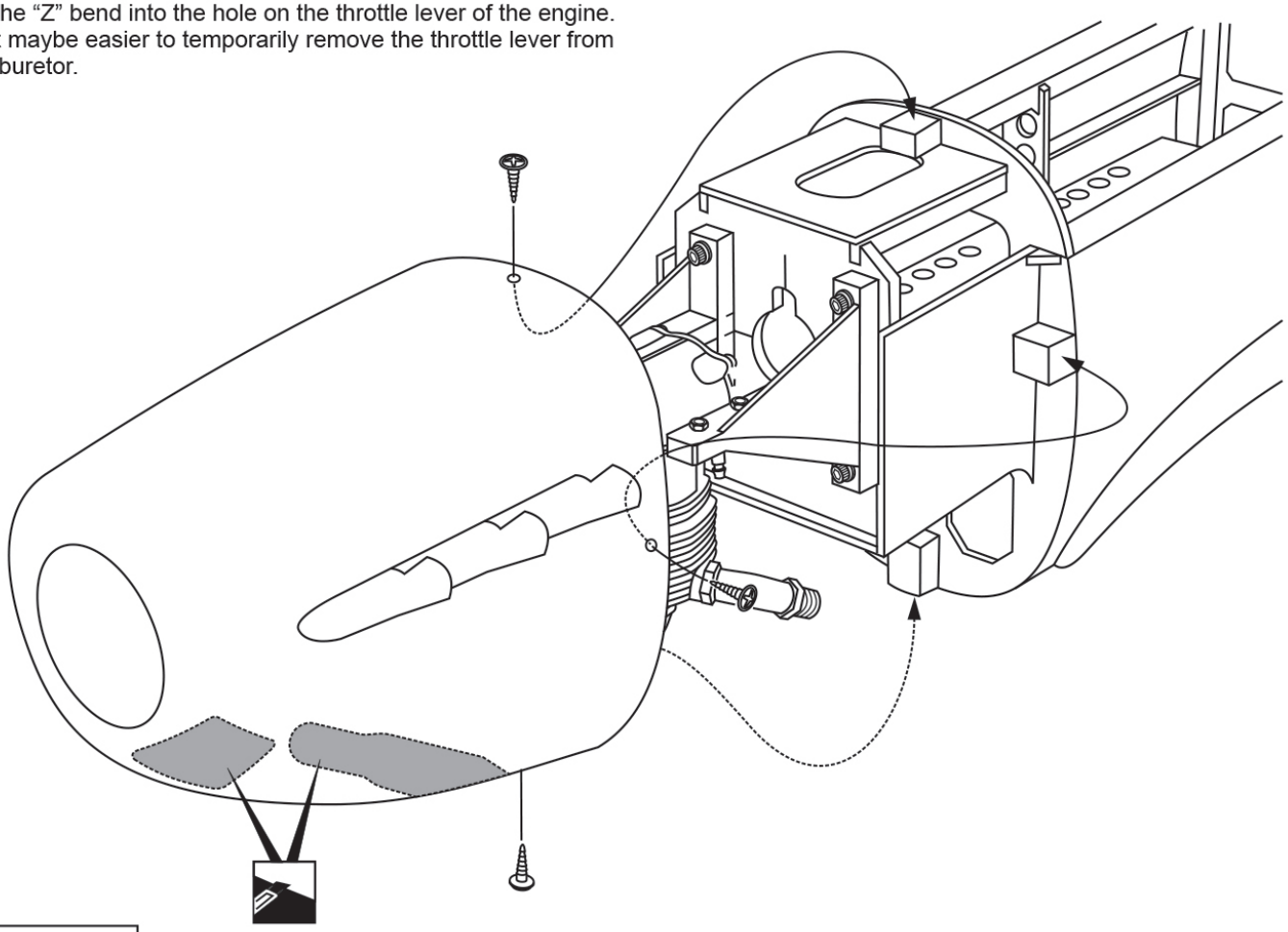
Before installing the cowl

1- Drill a 3mm hole on the fire-wallwhere the pushrod tube exits.

2- Slide the pushrod tube into the hole.

3- Slide the wire, straight end first, into the pushrod tube.

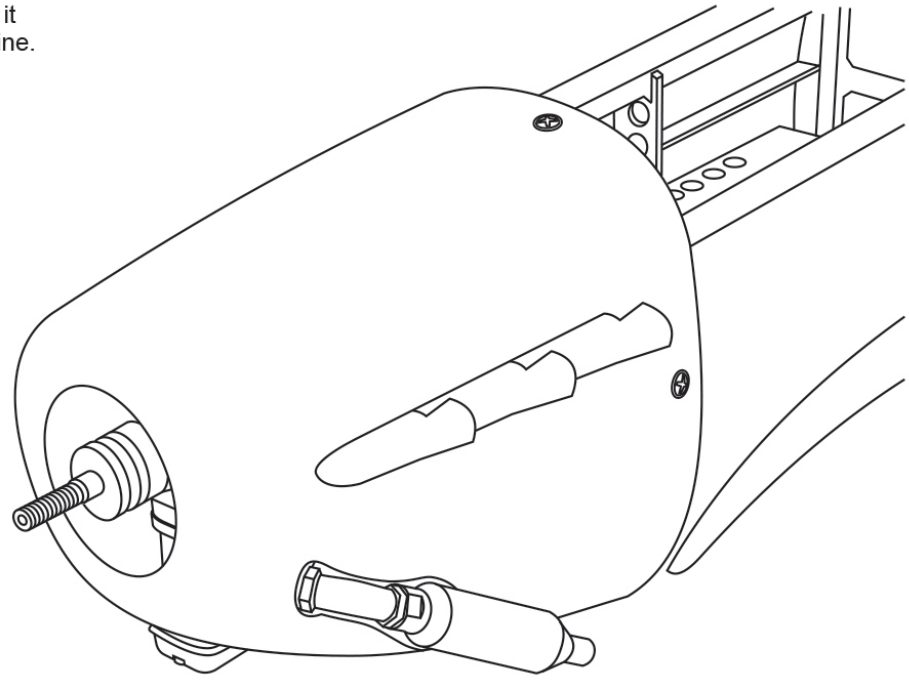
4- Insert the “Z” bend into the hole on the throttle lever of the engine.
Note: it maybe easier to temporarily remove the throttle lever from the carburetor.

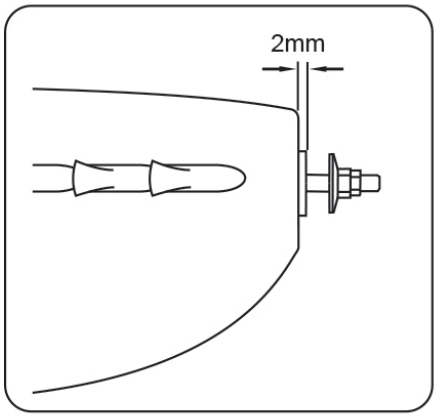


Trim the cowling so it will match your engine.

2.5x10mm screw

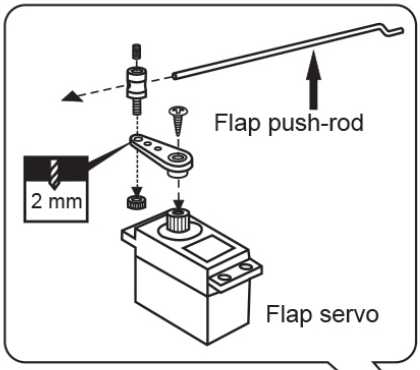
 4

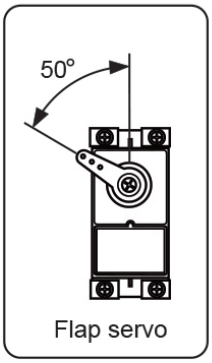


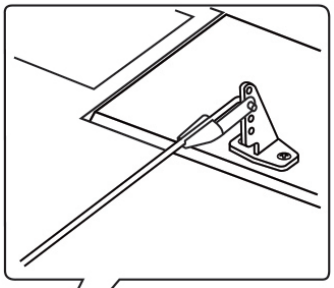


Wing: Linkages

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







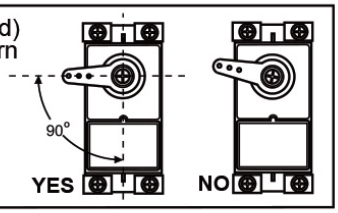
Connector 4

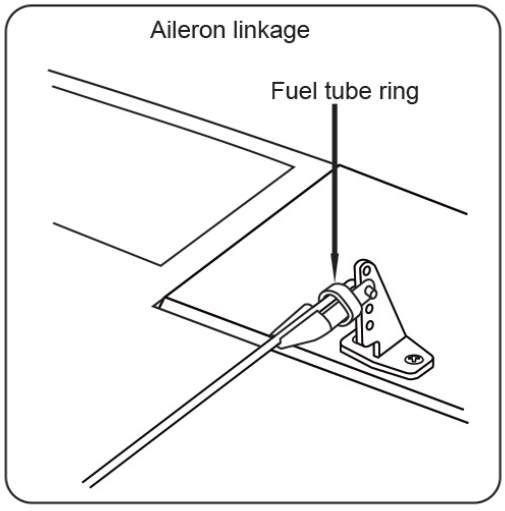
EZ link 4

Aileron push rod (2mm) 2

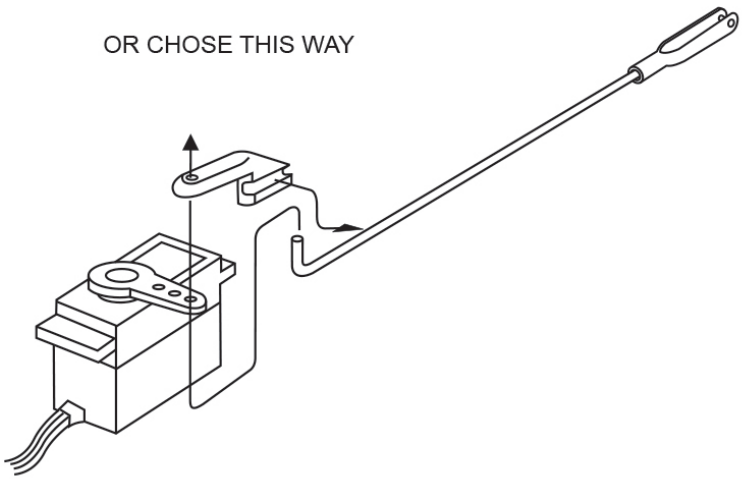
Flap push rod (1.2mm) 2

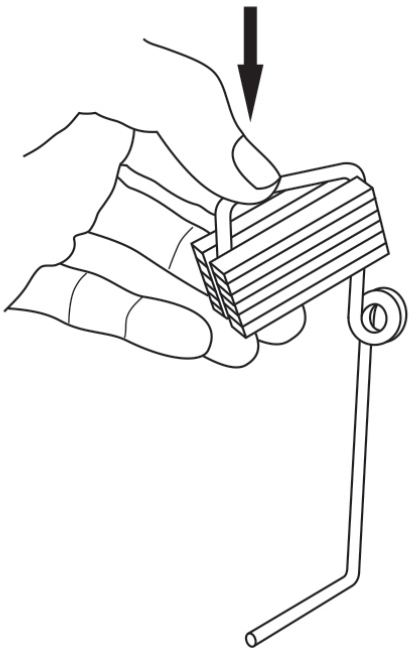
-Switch on the radio (trims centered) Then mount the ailerons servo horn In neutral position.
-The servo horn should be Perpendicular to the servo





OR CHOSE THIS WAY

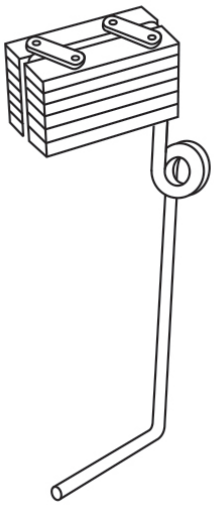




7A

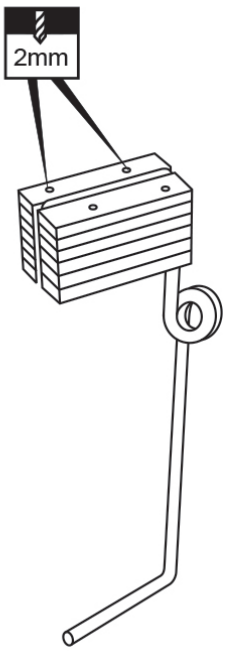
Slide the landing gear onto the plywood gear mount and push the landing gear as shown.

TOP VIEW



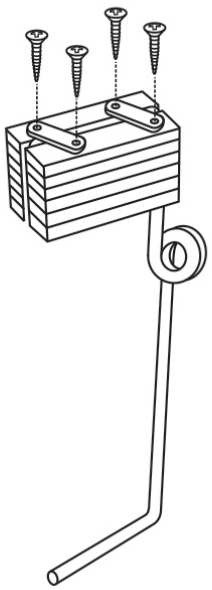
7B

Using the nylon gear strap as a template, mark the plywood gear mount where the four holes to be drill.



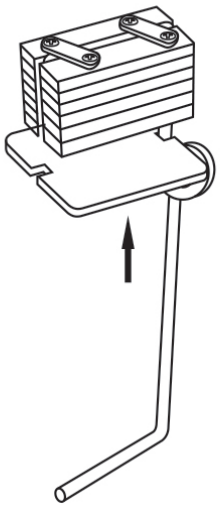
7C

Remove the nylon gear strap and drill a 2mm hole at each of the four marks marked.



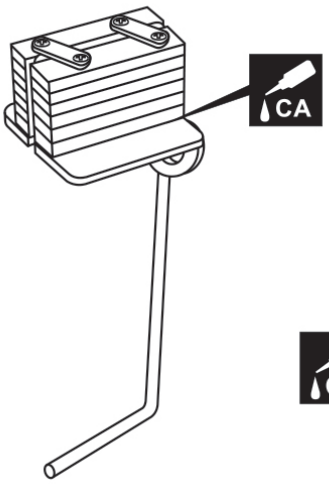
7D

Reposition the nylon gear strap and secure them in place using four 3x20mm screws.



7E

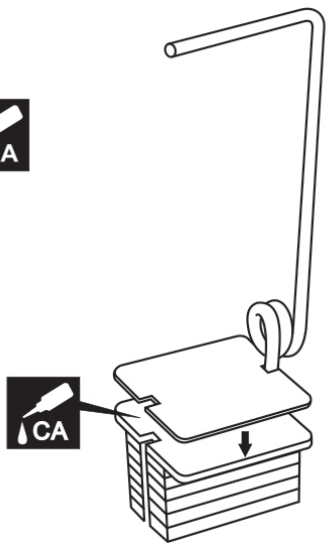
Attach the ply gear mount plate to the plywood gear mount



7F

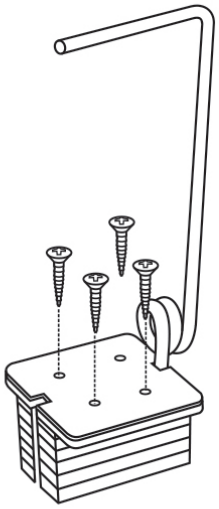
Secure the ply gear mount plate in place using CA glue.

BOTTOM VIEW



7G

Attach the square plastic onto the ply gear mount, secure it in place using CA glue.

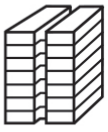


7H

Drill a 2mm holes through the square plastic and ply gear mount plate.
Secure the ply gear mount using four 3x20mm screws.

3x20mm screw 16

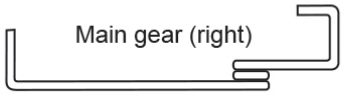
Nylon gear strap 4



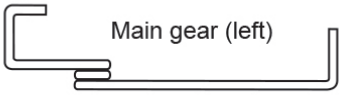
Plywood Gear mount x 2

Square plastic x2

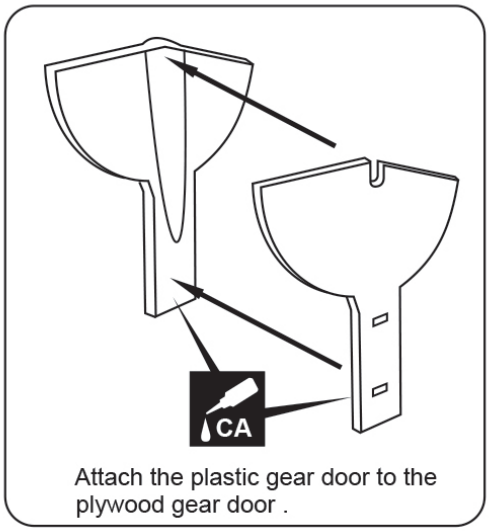
Ply gear mount plate x 2



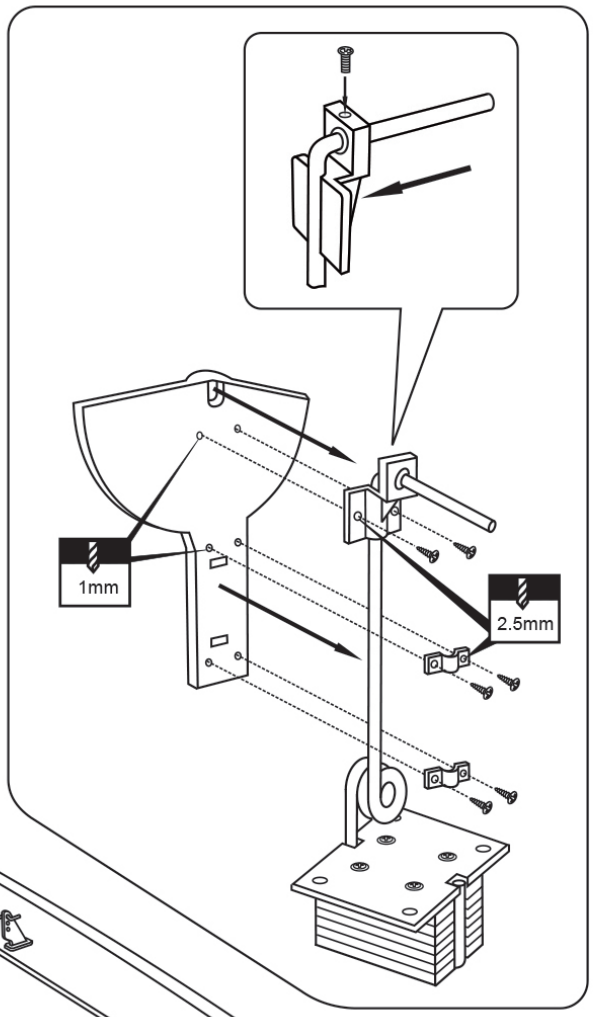
Main gear (right)

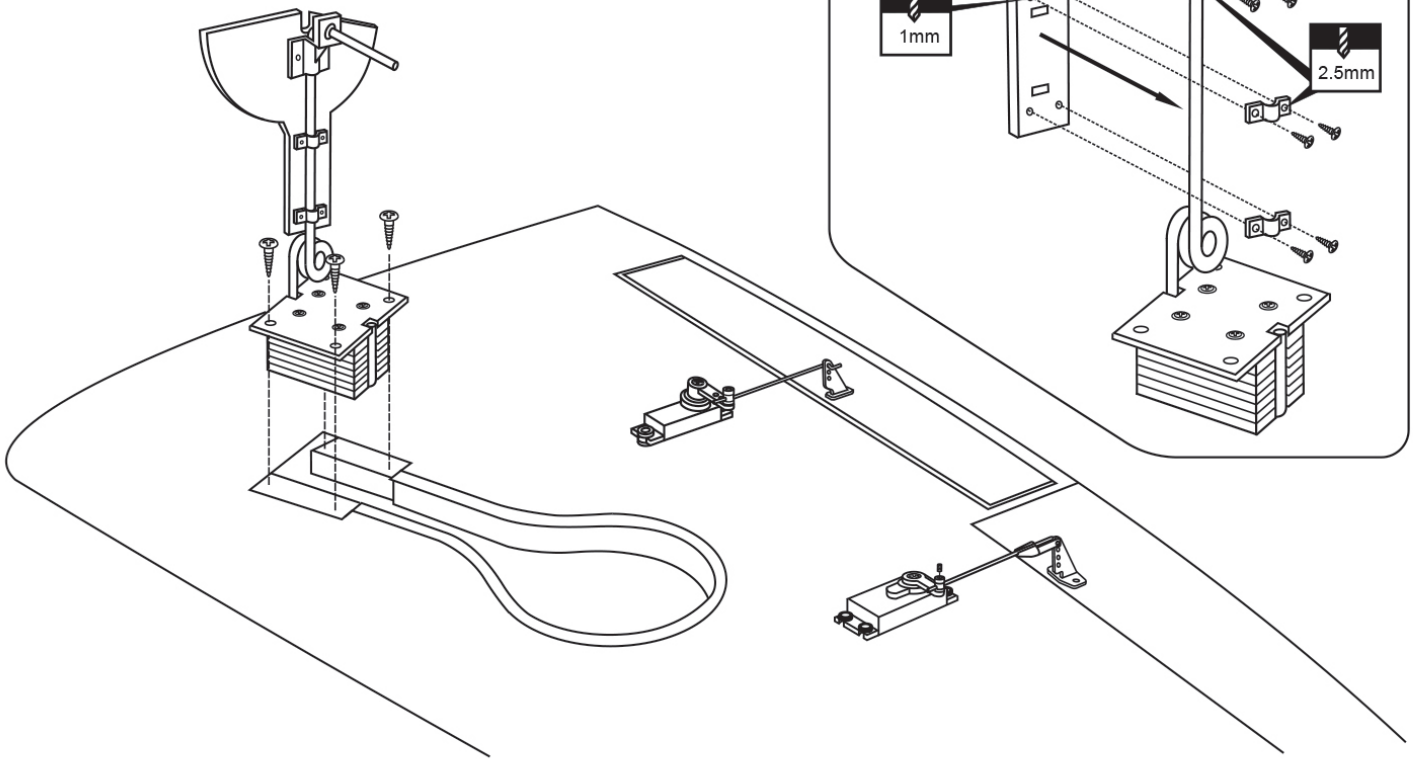


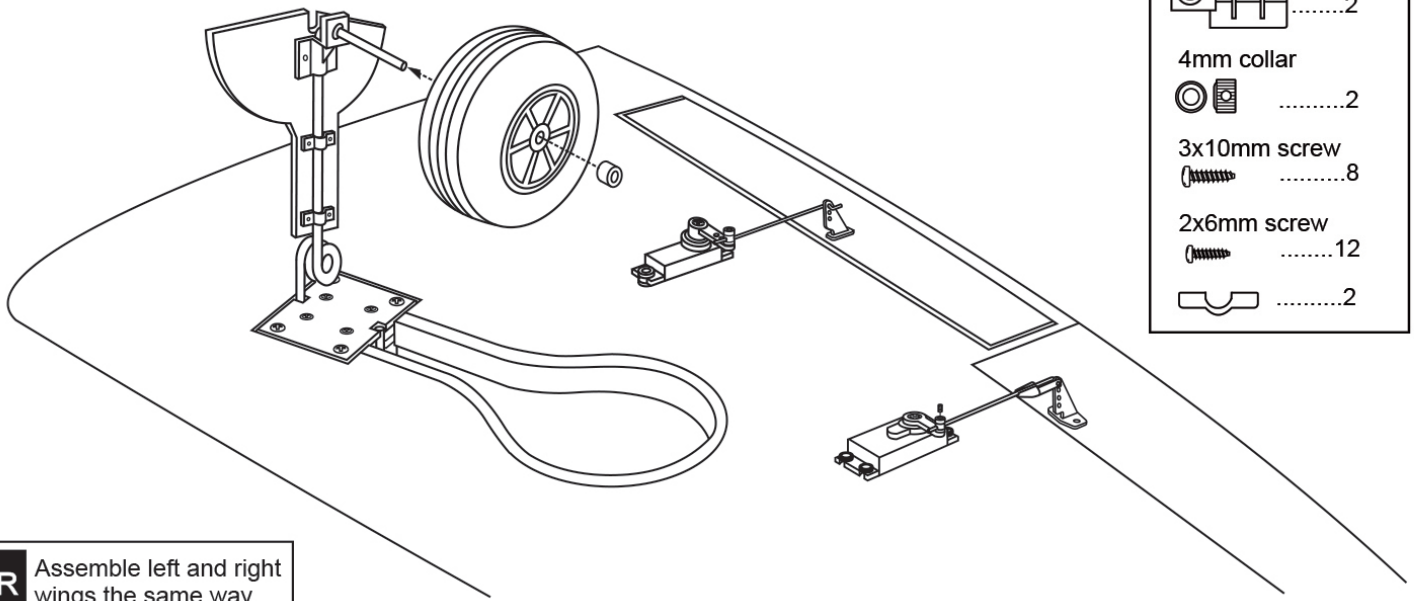
Main gear (left)



Attach the plastic gear door to the plywood gear door .

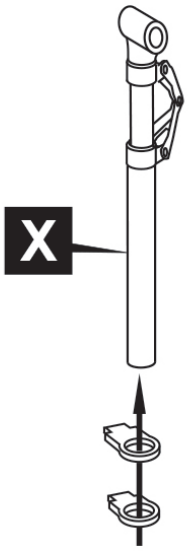




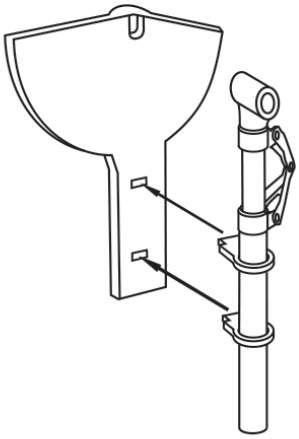


L/R Assemble left and right wings the same way.

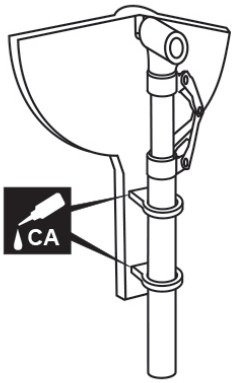
Wing: E-Retract gear and Strut installation



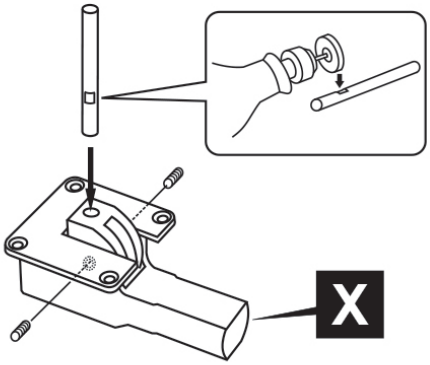
Slide the wooden gear door mounts to the lading gear.

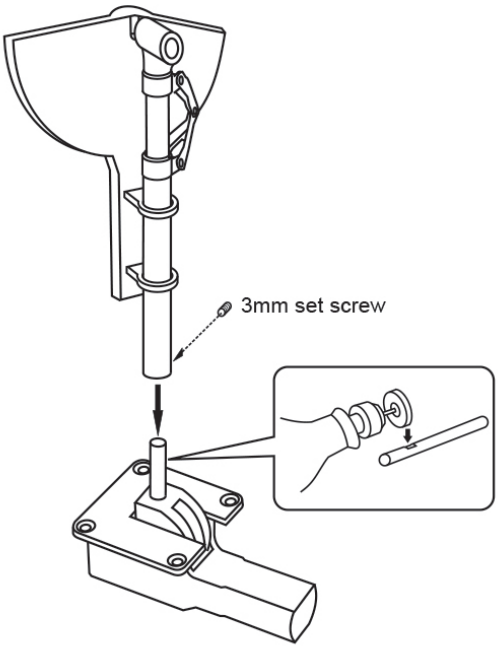


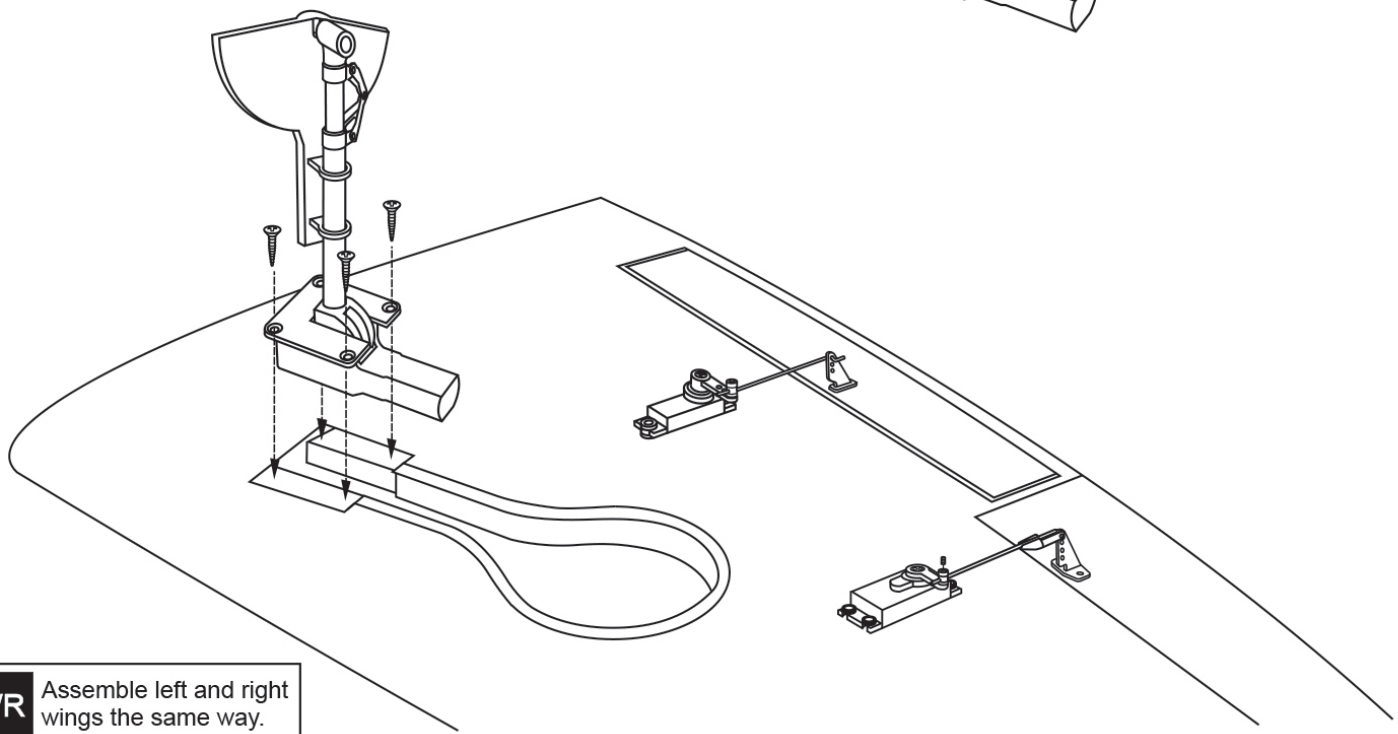
Attach the gear door to the wooden gear door mounts.



Secure it in place using CA glue. Do not glue the wooden gear door mounts to the strut at this time.

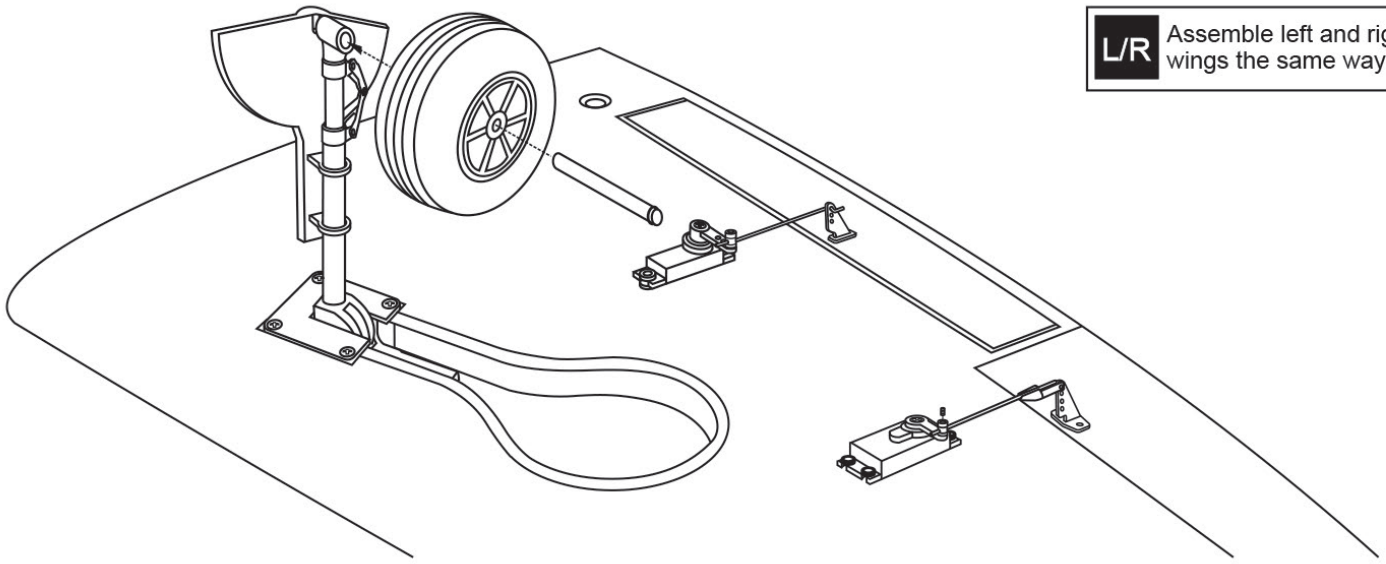




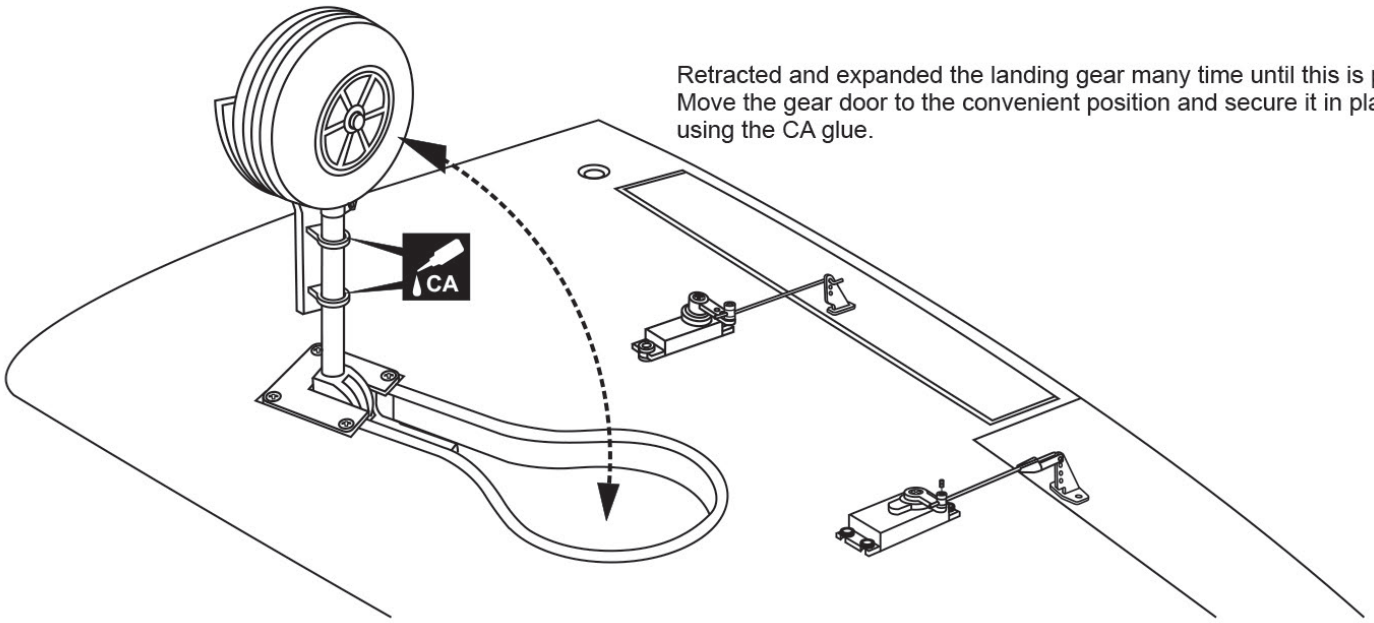


L/R Assemble left and right wings the same way.

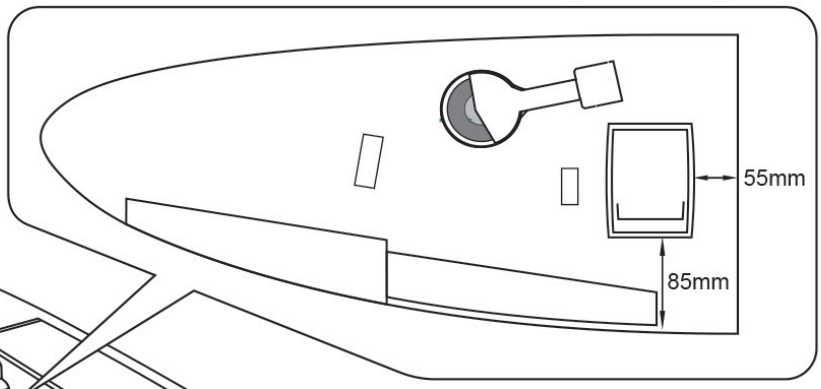
Wing: E-Retract gear and Strut installation



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



Retracted and expanded the landing gear many time until this is perfect. Move the gear door to the convenient position and secure it in place using the CA glue.

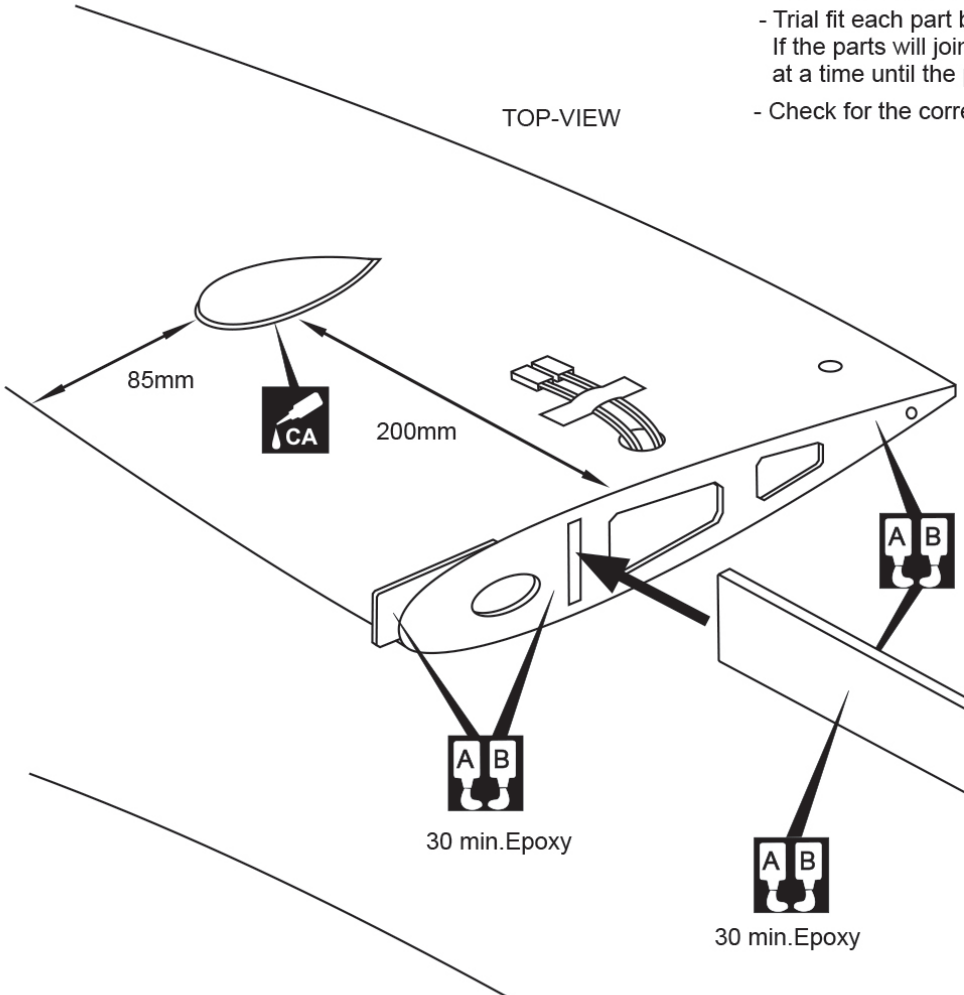


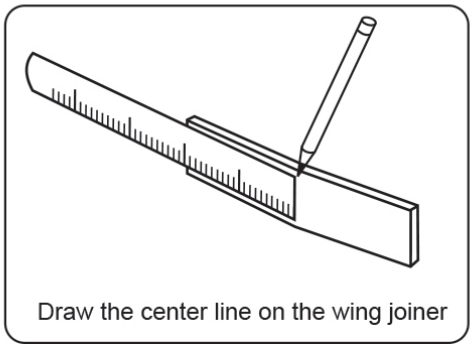
Joining the wing halves

Before gluing:

- Draw the center line on the wing joiner.
- Trial fit each part before gluing . Be certain that there are no gaps. If the parts will join, but with a gaps, sand or trim the parts a little at a time until the parts meet exactly with no gaps.
- Check for the correct dihedral angle

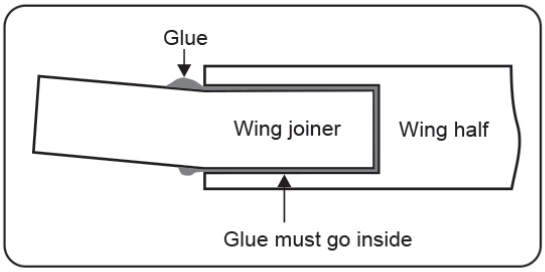
TOP-VIEW





Draw the center line on the wing joiner

! Make sure to glue securely, If not properly glued, a failure in flight may occur.

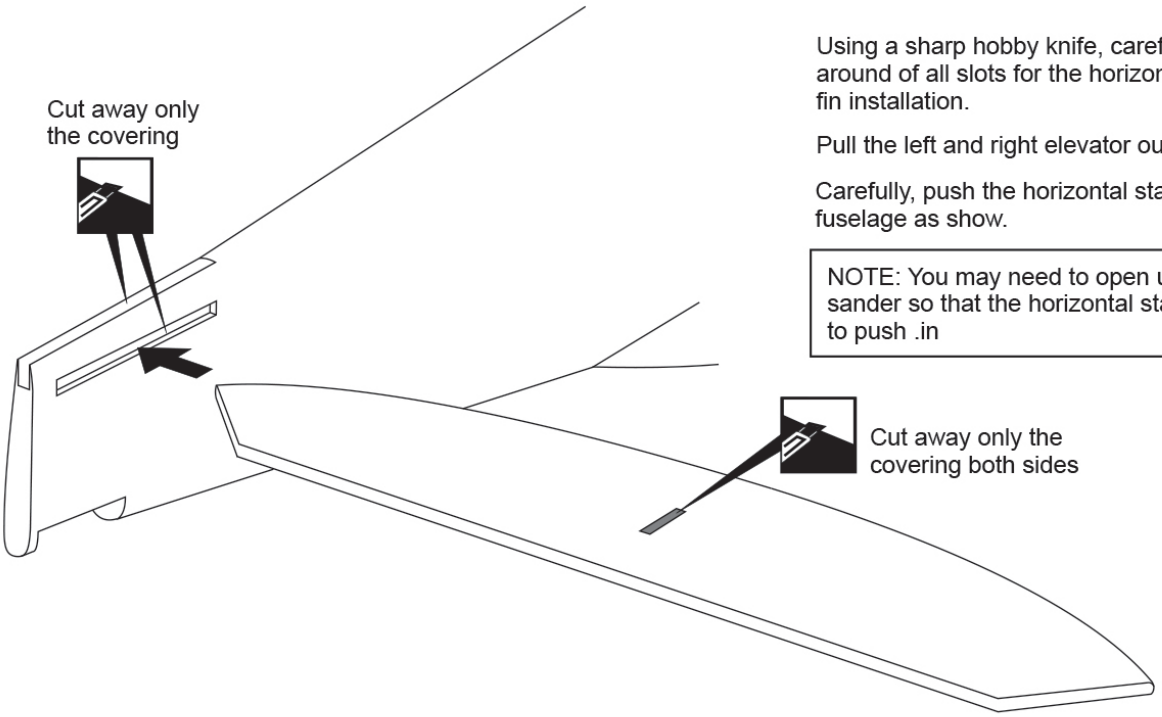


Note: The two wing halves roots must fit together perfectly.

Hold the wing halves together with paper clamp and rubber band.

IMPORTANT: Please do not clean off the excess epoxy on the wing with strong solvent or pure alcohol, only use kerosene to keep the colour of your model not fade.

Horizontal stabilizer

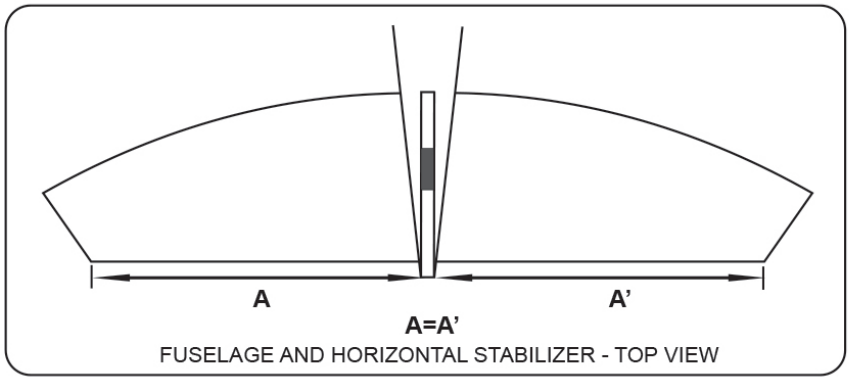


Using a sharp hobby knife, carefully cut away the covering around of all slots for the horizontal stabilizer and vertical fin installation.

Pull the left and right elevator out of the horizontal stabilizer.

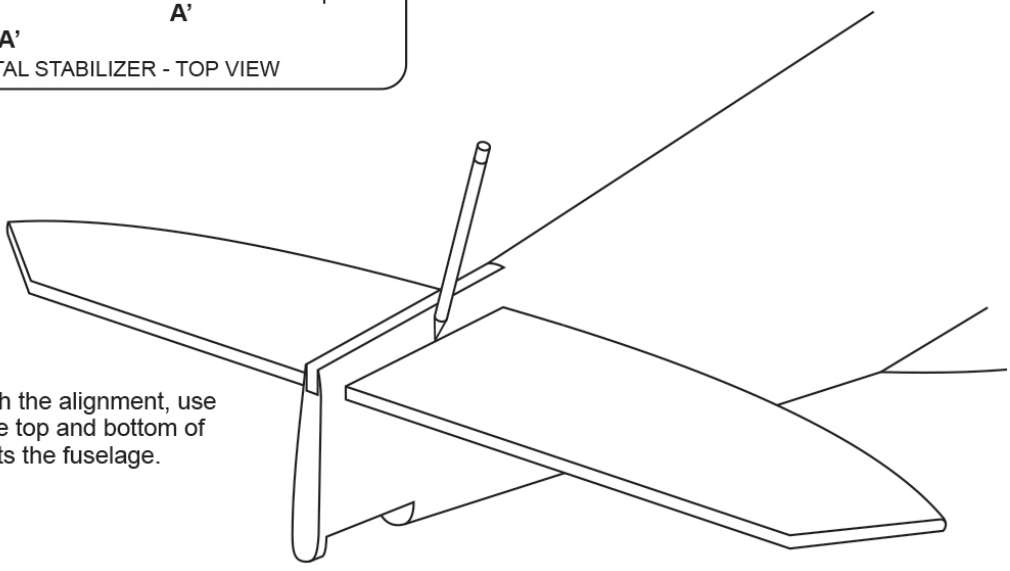
Carefully, push the horizontal stabilizer into the slot on the fuselage as show.

NOTE: You may need to open up the slots with the thin sander so that the horizontal stabilizer is not too difficult to push .in

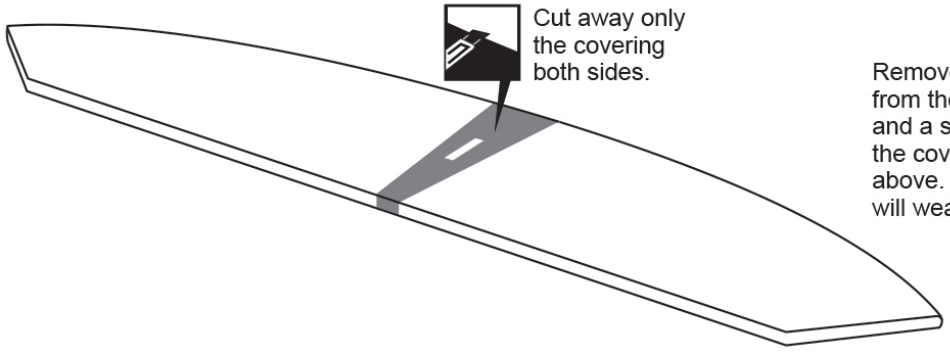


FUSELAGE AND HORIZONTAL STABILIZER - TOP VIEW

The rectangular hole on the Horizontal stabilizer must be located in the middle and parallel with the fuselage.

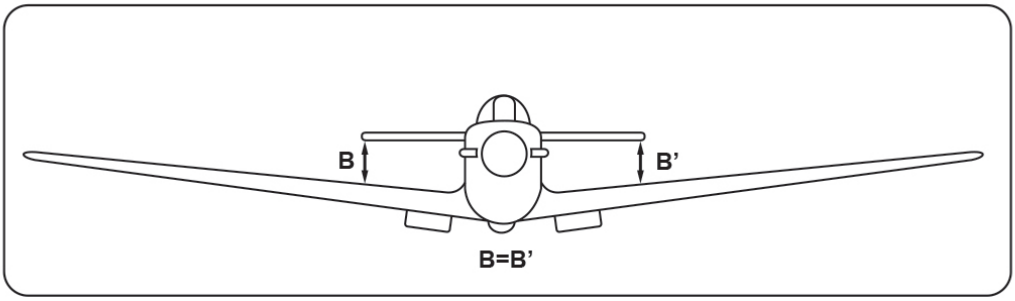


When you are satisfied with the alignment, use a pencil to trace around the top and bottom of the stabilizer where it meets the fuselage.



Remove the horizontal stabilizer from the fuselage. Using a straight edge and a sharp hobby knife, carefully cut away the covering **inside the lines** which were marked above. Be cautious **not to cut into the wood**-this will weaken the structure.

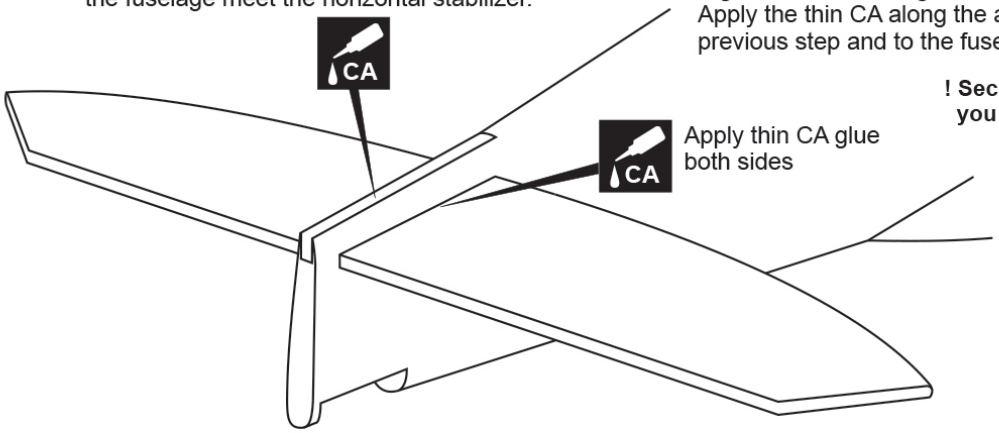
Horizontal and Vertical stabilizer



Install the horizontal stabilizer onto the fuselage and adjust the alignment as described before.
Note: it is important to ensure that the horizontal stabilizer is also level in regards to the fuselage.
Apply the thin CA along the area where the covering was removed in the previous step and to the fuselage where the horizontal stabilizer mounts .

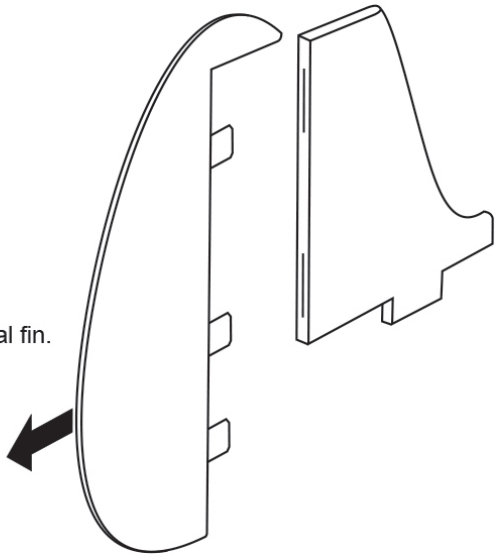
! Securely glue together. If coming off during fly, you lose control of your air plane.

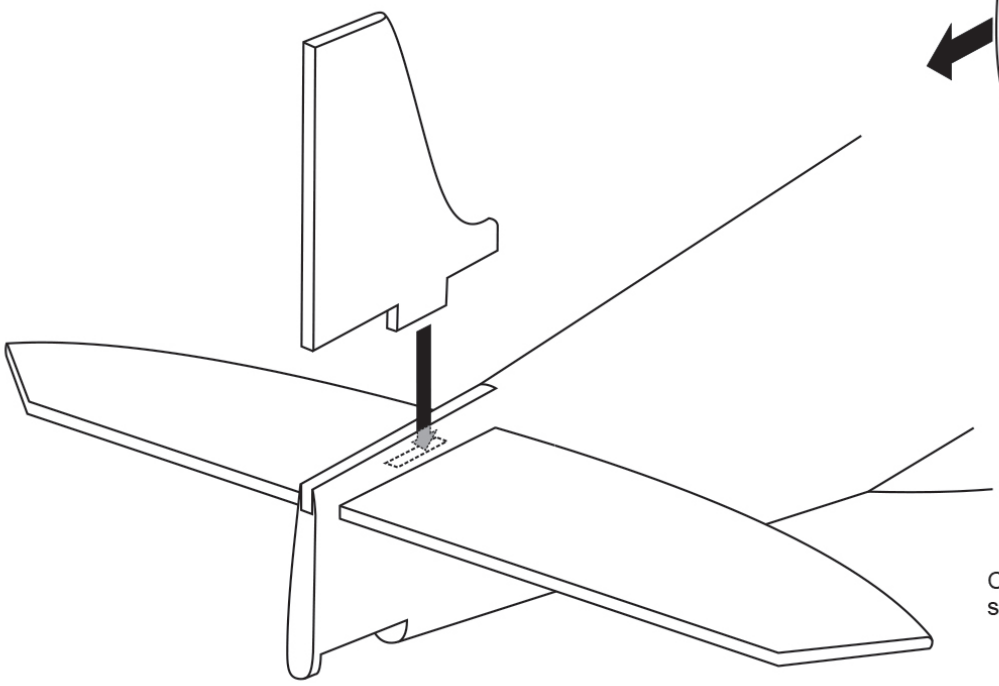
Apply thin CA glue into the slot where the fuselage meet the horizontal stabilizer.



Apply thin CA glue both sides

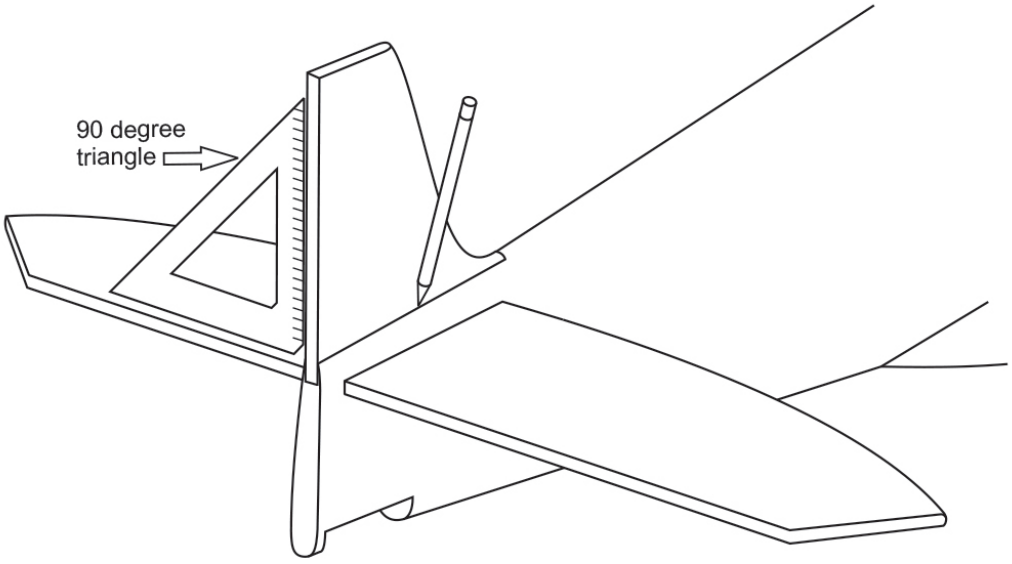
Pull the rudder out of the vertical fin.





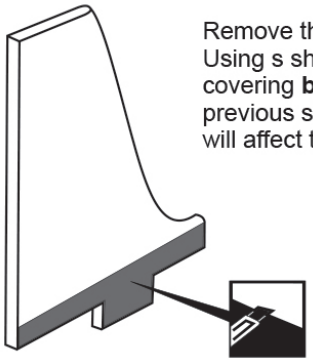
Carefully, push the vertical fin into the slot on the fuselage as shown (12A).

Vertical stabilizer



Trial fit the vertical fin in position. Using a 90 degree triangle, ensure that the vertical stabilizer is perpendicular to the horizontal stabilizer.

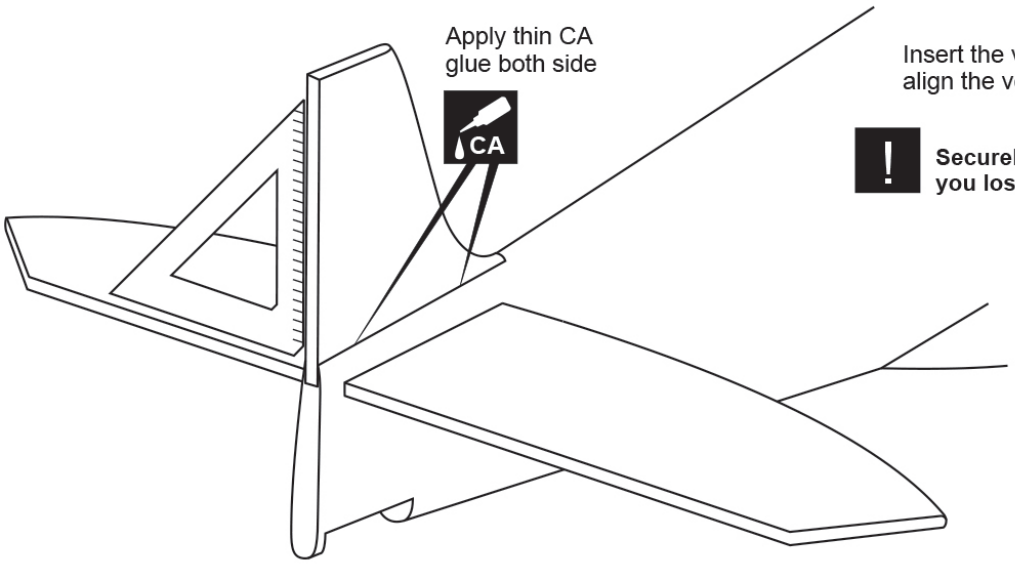
Using a pencil, trace around the vertical stabilizer where it meets the fuselage. Remove the vertical stabilizer from the fuselage.



Remove the vertical stabilizer from the fuselage. Using s sharp hobby knife, carefully cut away the covering **below the lines** which were drawn in the previous steep. **Do not cut into the woods** as this will affect the structural integrity of the stabilizer.

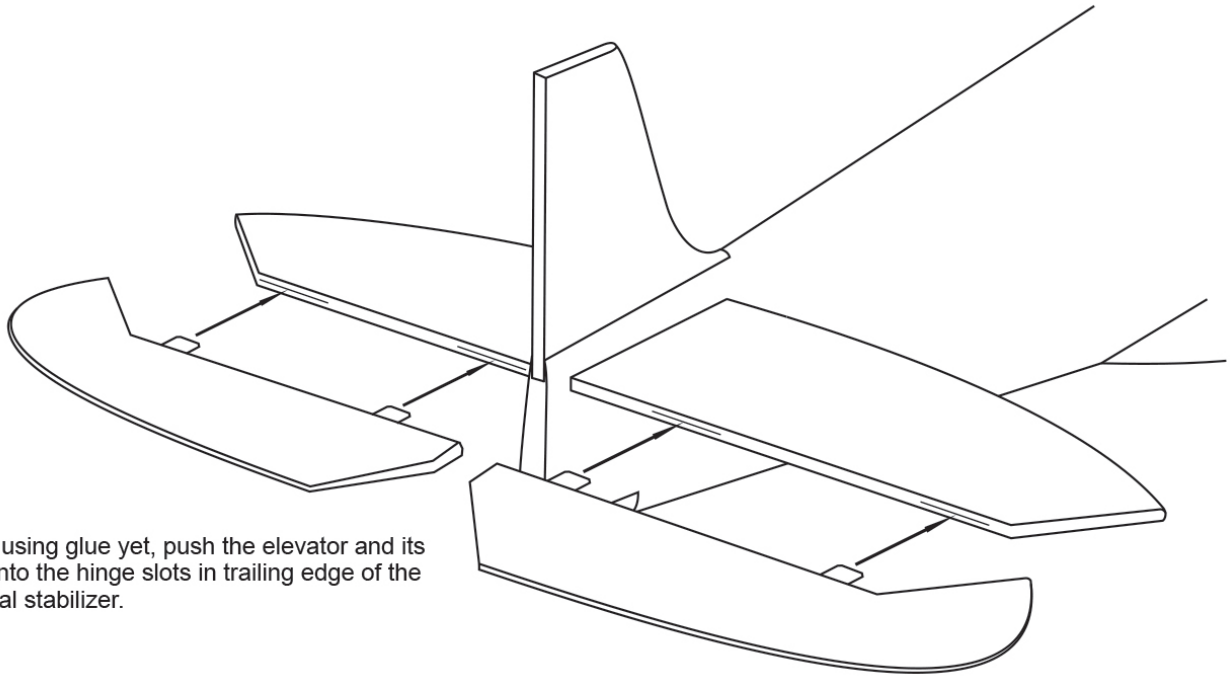
Cut away only
the covering
both sides.

Apply the thin CA glue on the vertical stabilizer where it contacts the fuselage.

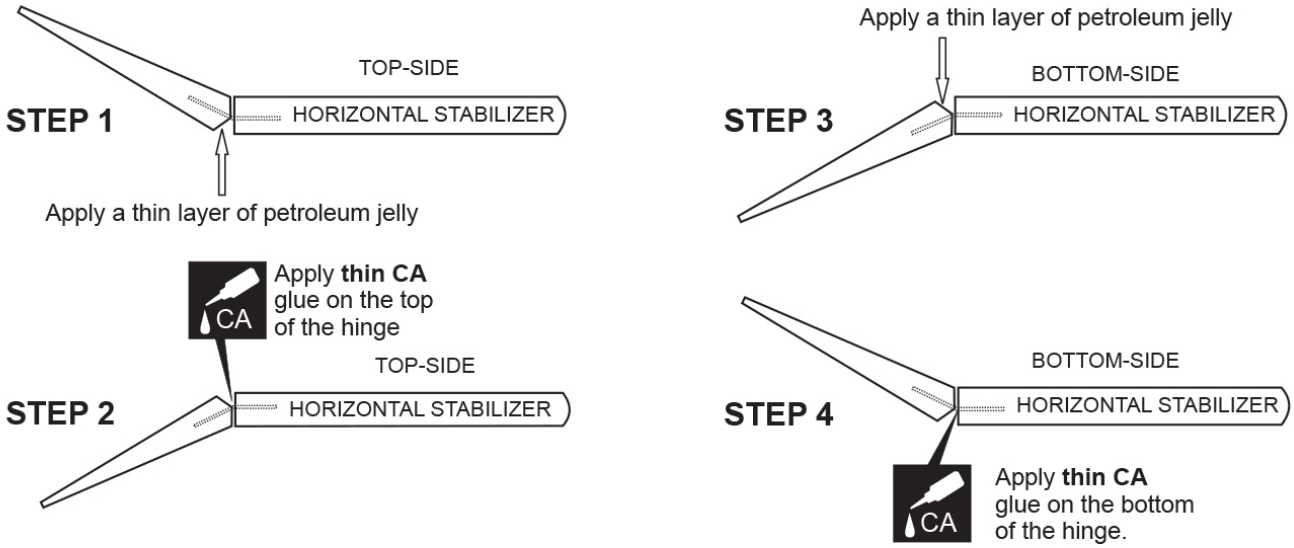


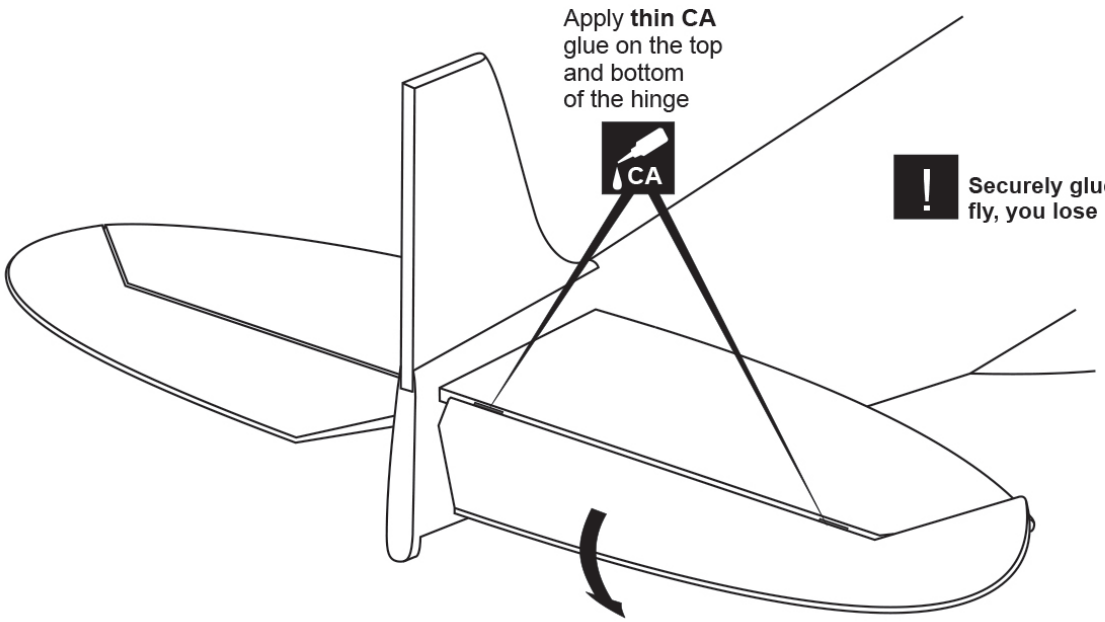
Insert the vertical fin into the fuselage, precisely align the vertical stabilizer as described before.

Securely glue together. If coming off during fly, you lose control of your air plane.



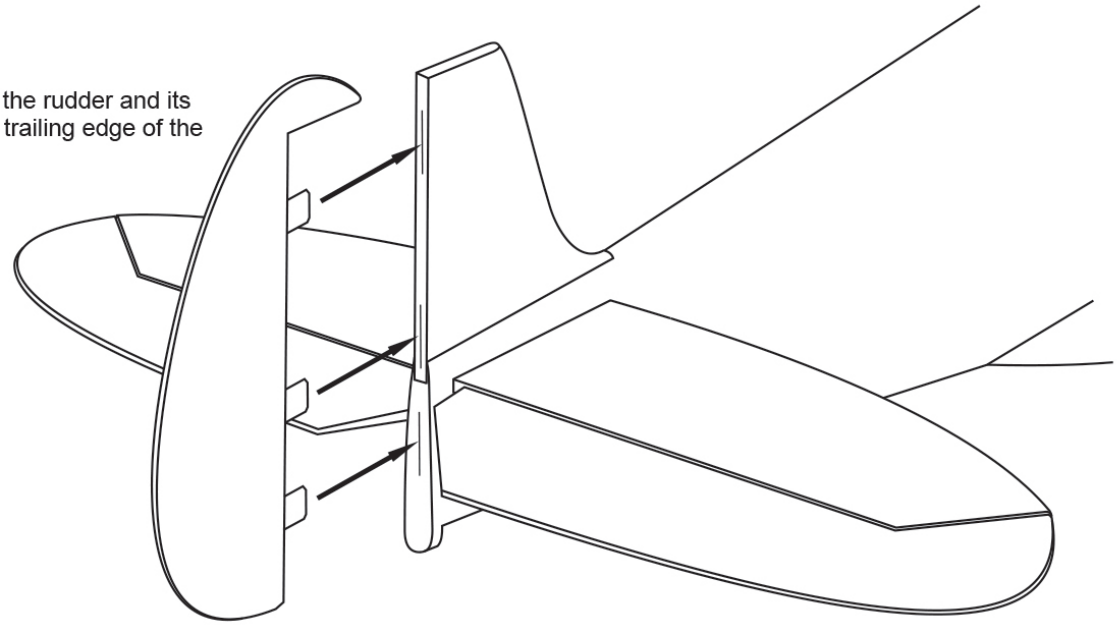
Without using glue yet, push the elevator and its hinges into the hinge slots in trailing edge of the horizontal stabilizer.

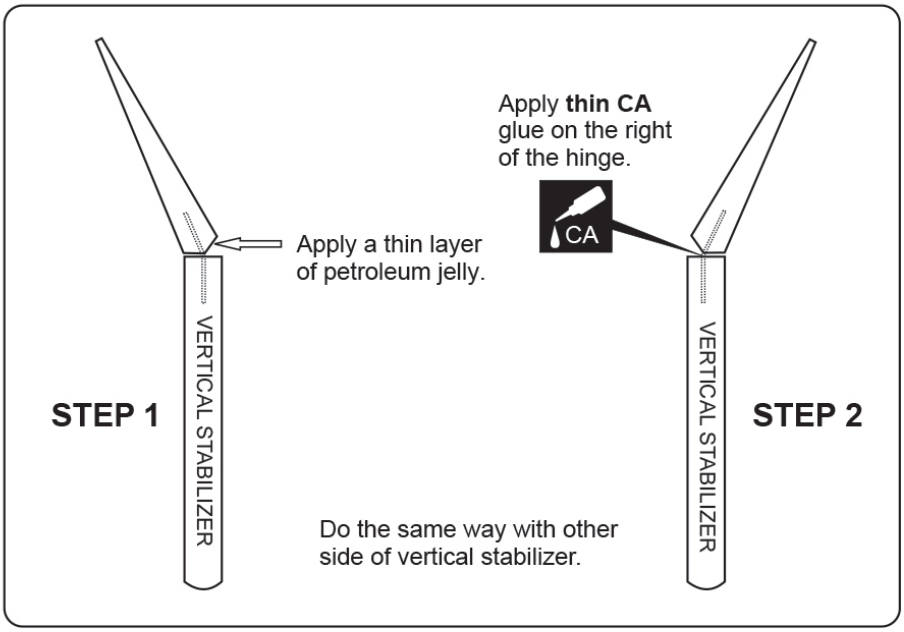


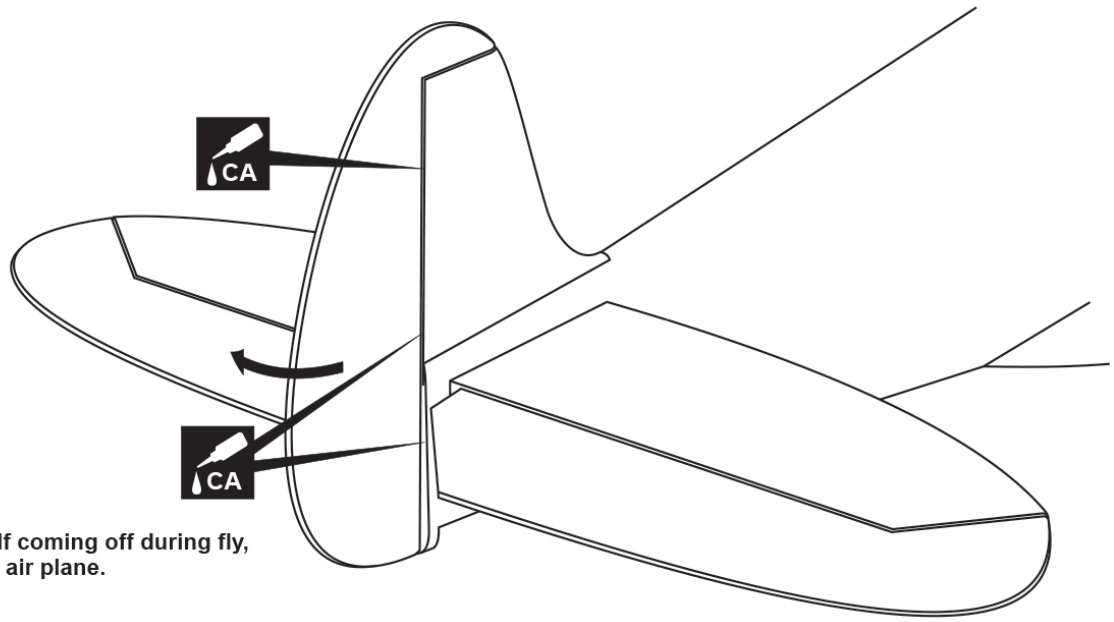


Securely glue together. If coming off during fly, you lose control of your air plane.

Without using glue yet, push the rudder and its hinges into the hinge slots in trailing edge of the vertical stabilizer.

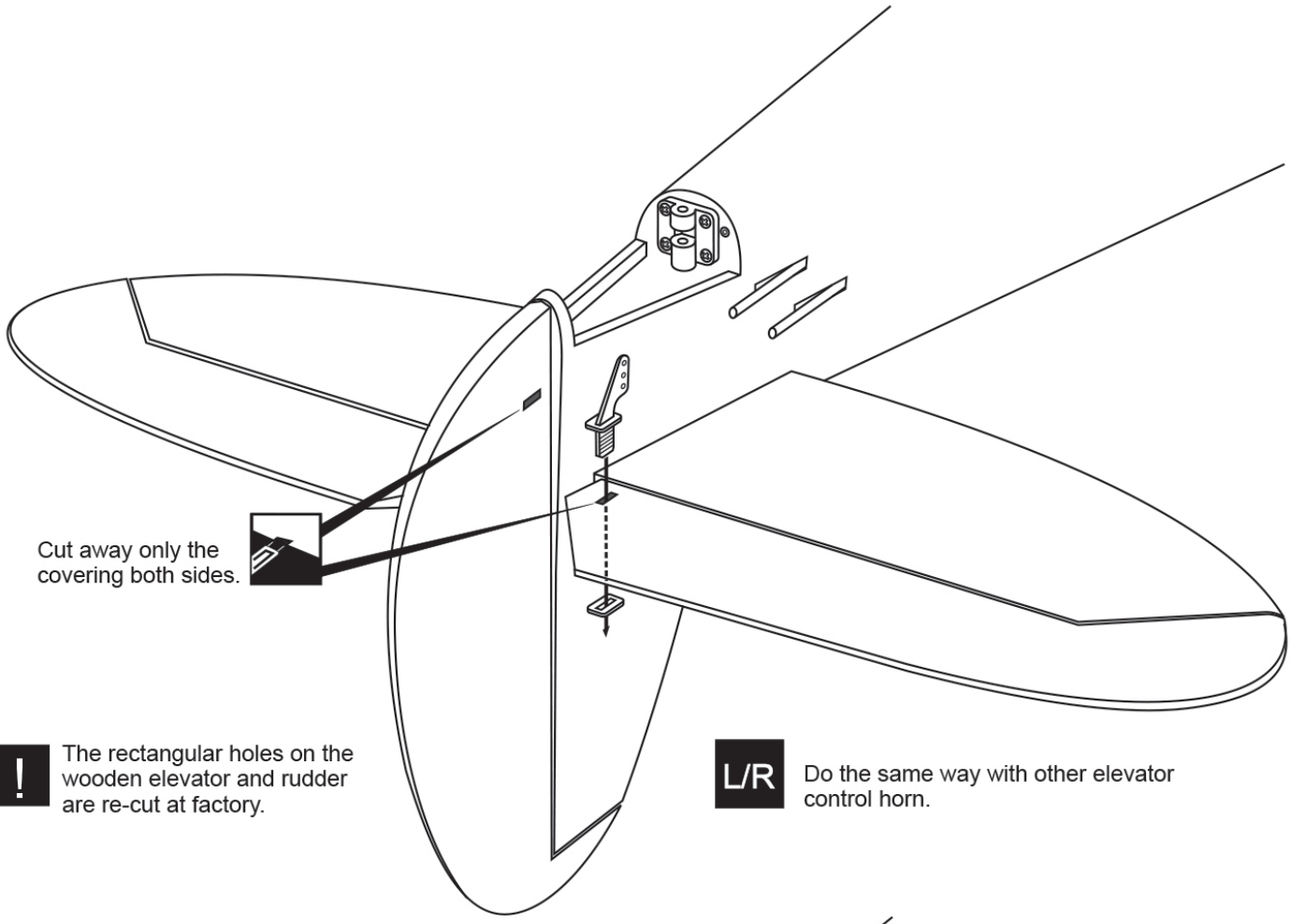






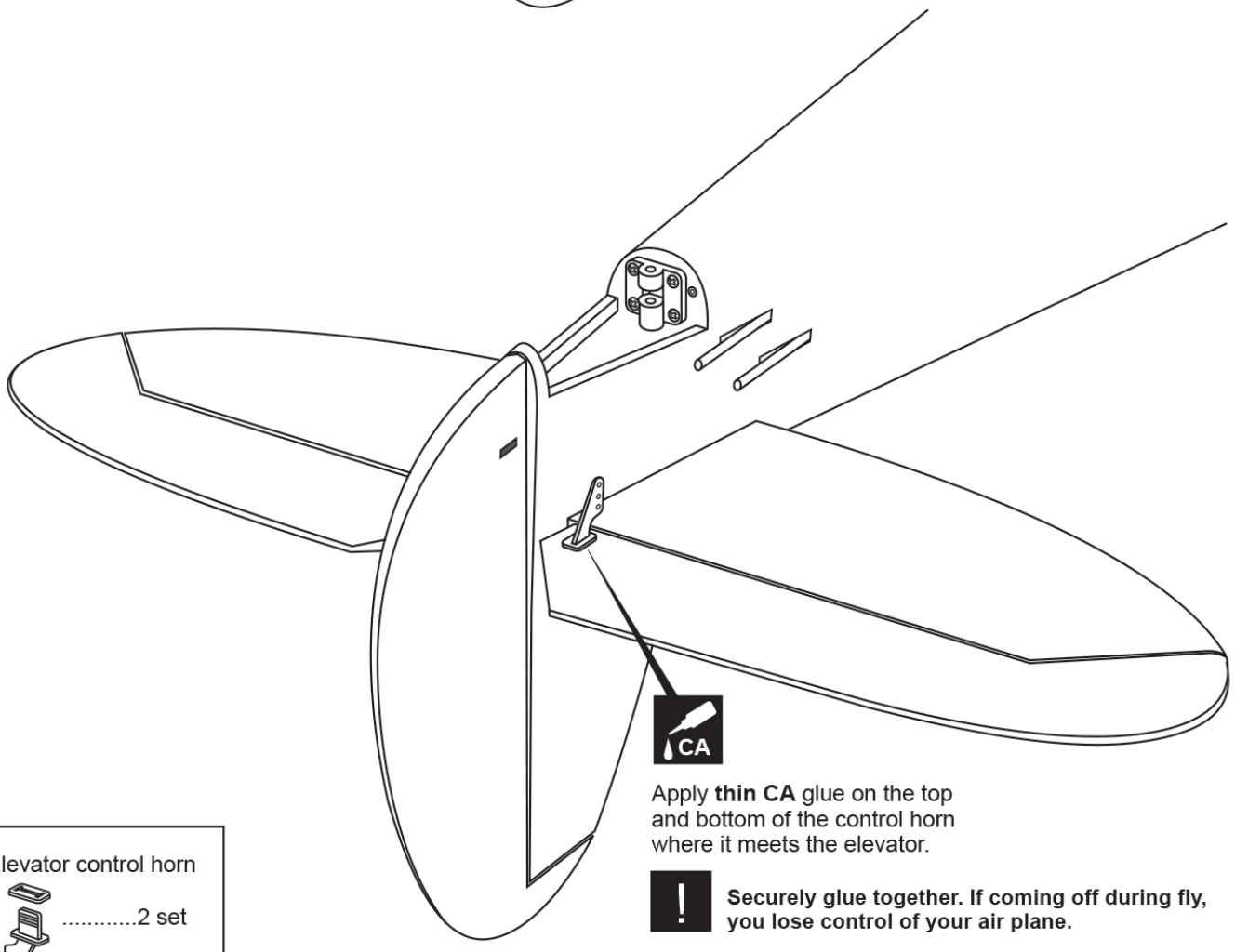
! **Securely glue together. If coming off during fly, you lose control of your air plane.**

Elevator control horn



! The rectangular holes on the wooden elevator and rudder are re-cut at factory.

L/R Do the same way with other elevator control horn.



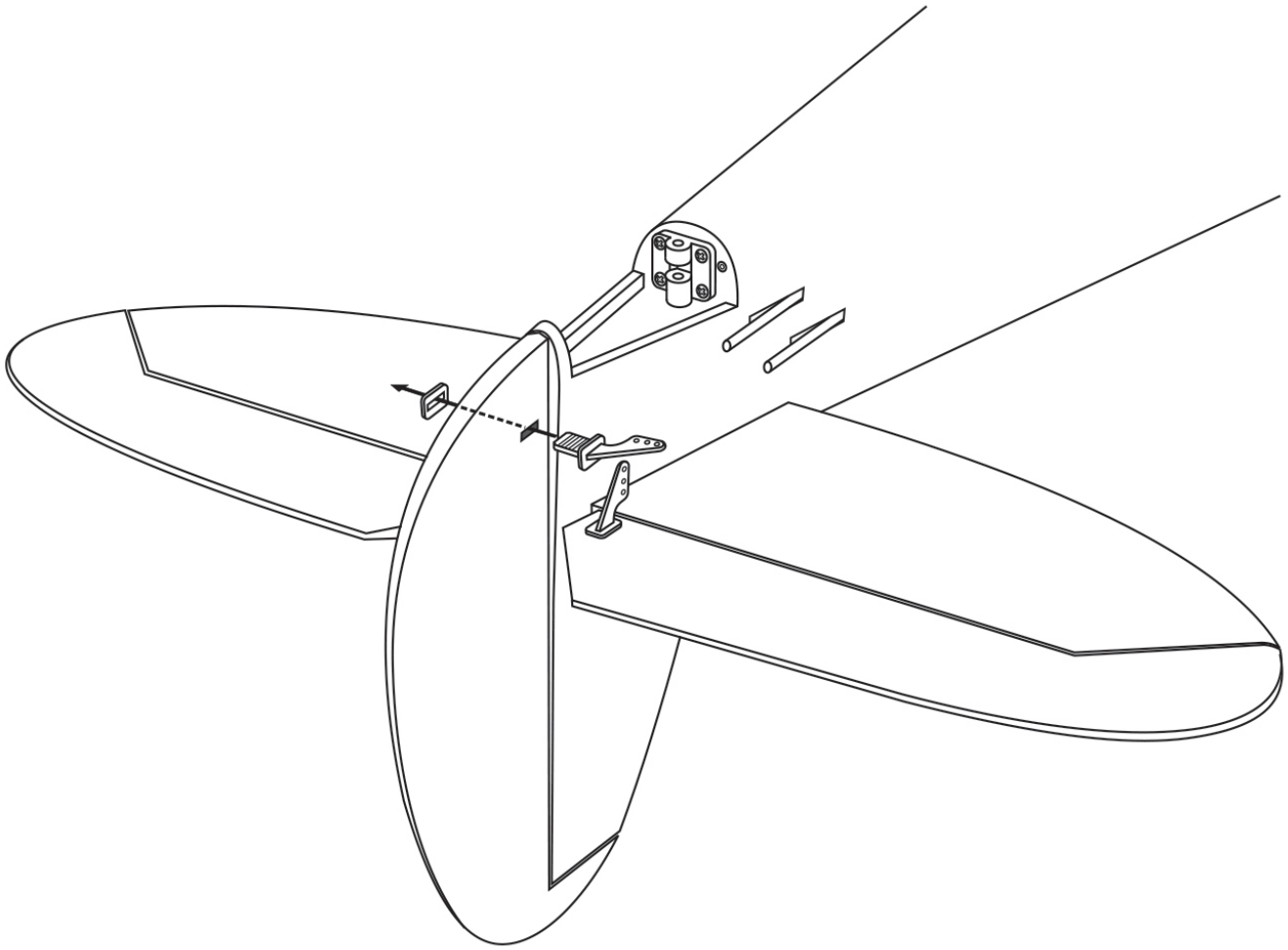
Apply **thin CA** glue on the top and bottom of the control horn where it meets the elevator.

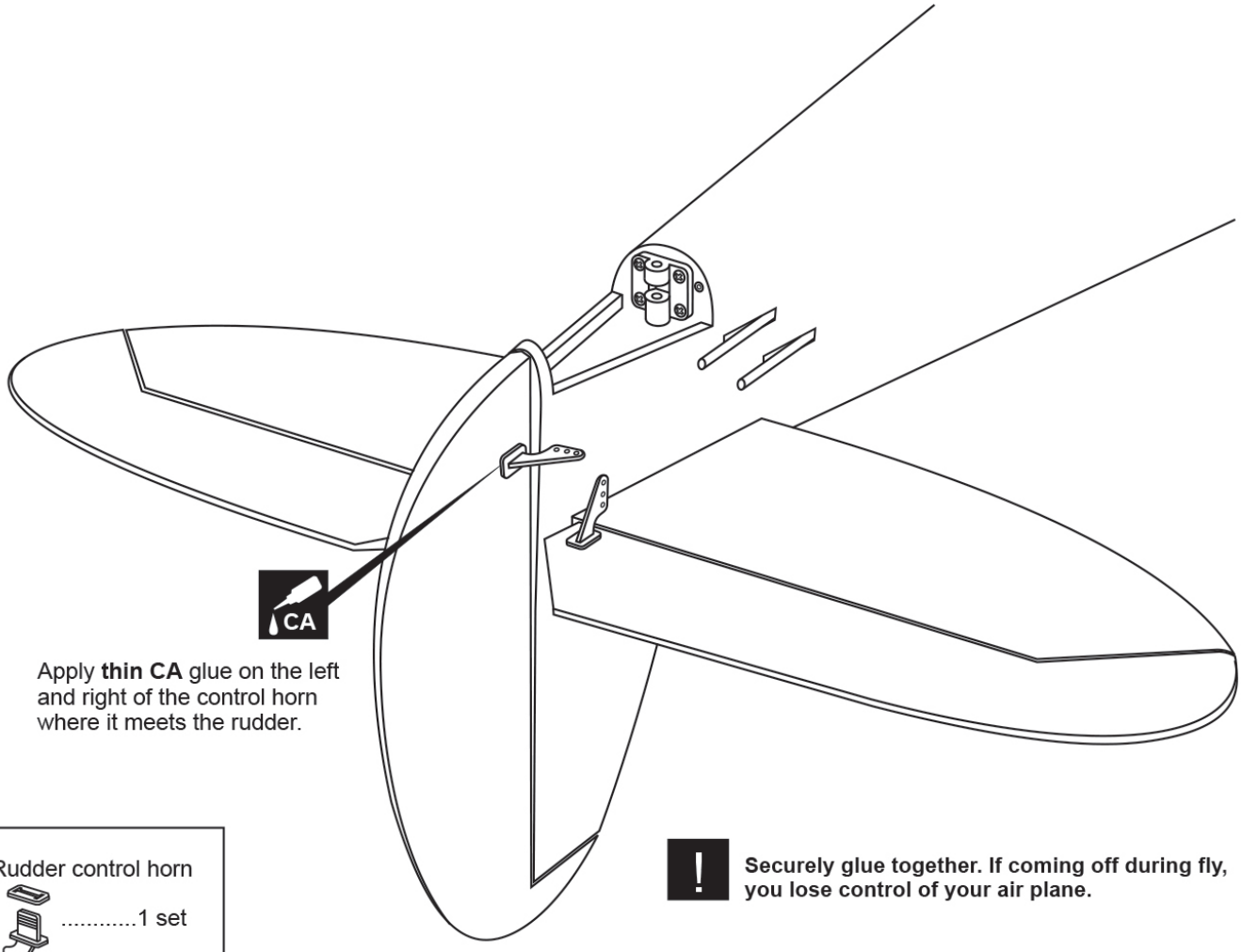
! **Securely glue together. If coming off during fly, you lose control of your air plane.**

Elevator control horn

.....2 set

Rudder control horn





Apply **thin CA** glue on the left and right of the control horn where it meets the rudder.

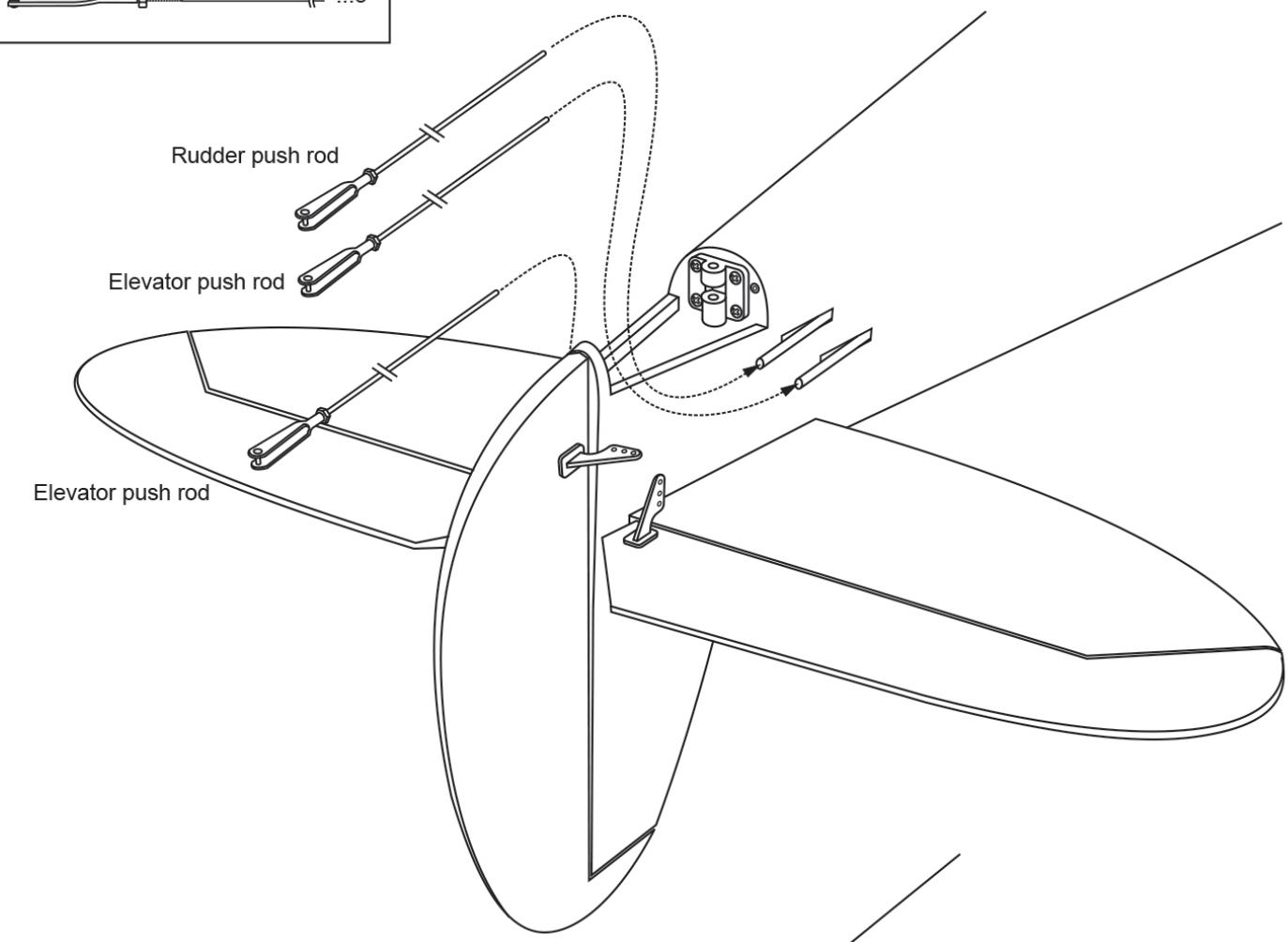
Rudder control horn

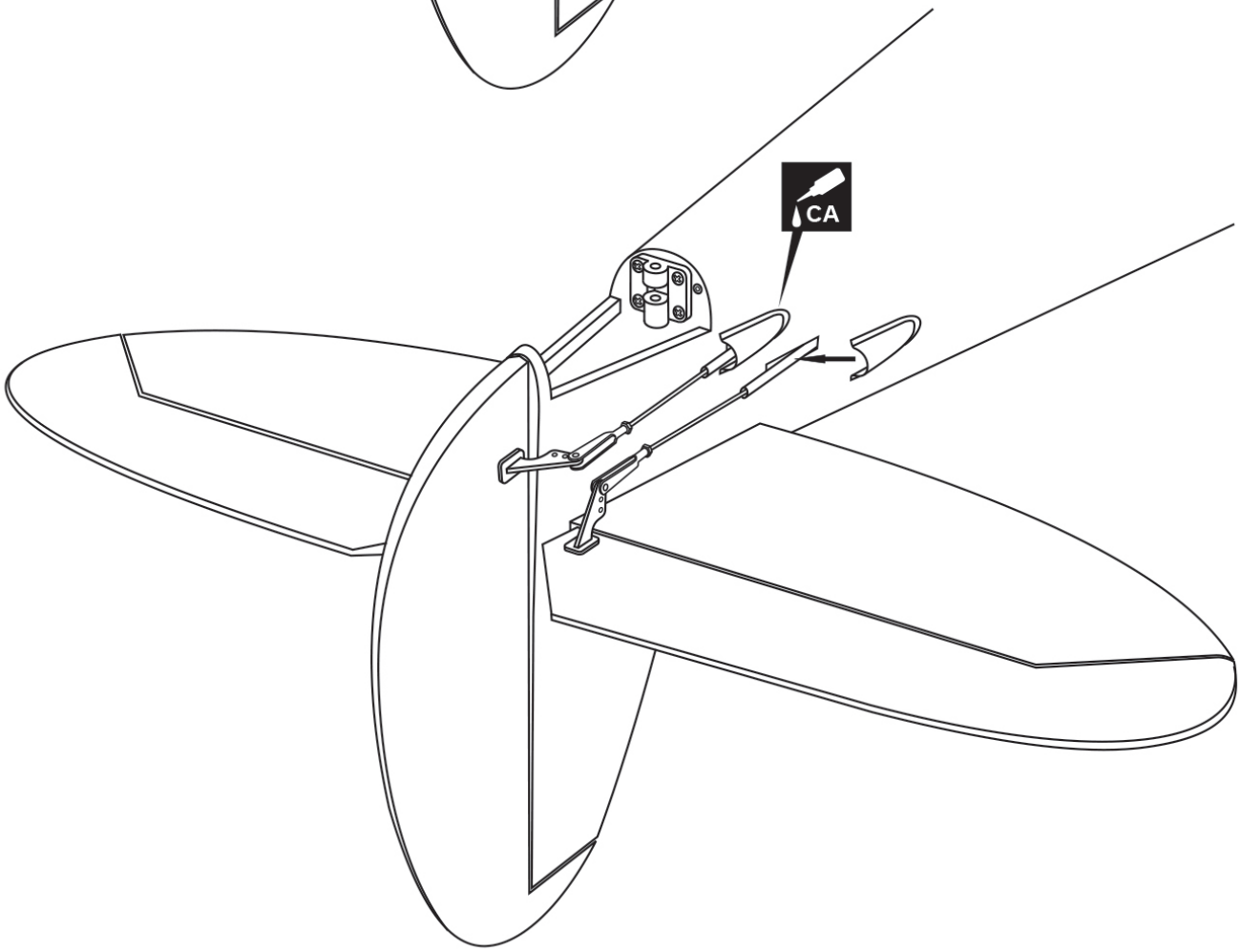
.....1 set

! **Securely glue together. If coming off during fly, you lose control of your air plane.**

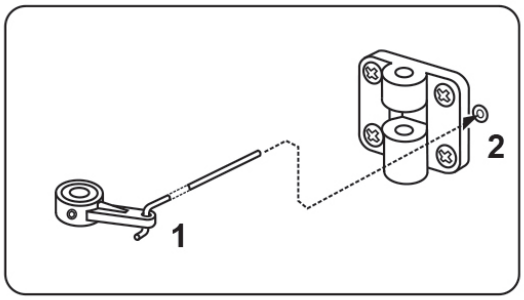
Rudder and elevator push-rod installation

2x950mm rod with clevis ...3





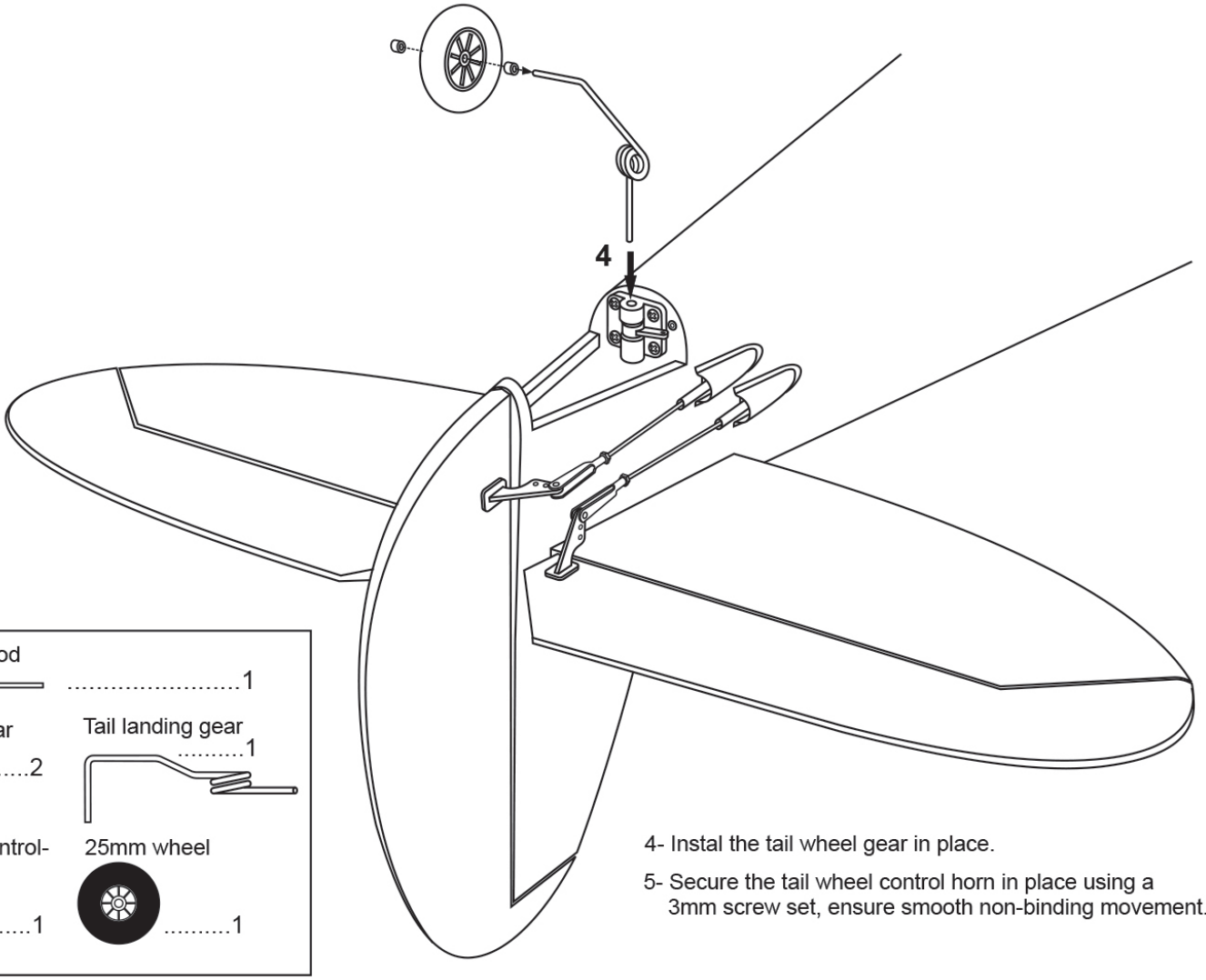
Tail gear installation



1- Insert the tail wheel push-rod into the hole on the tail gear control horn as show.

2- Insert the tail wheel push-rod into the white plastic tube inside the fuselage.

3- Install the tail wheel control horn in place.



1.2x800mm rod 1

2mm I.D collar 2

Tail landing gear 1

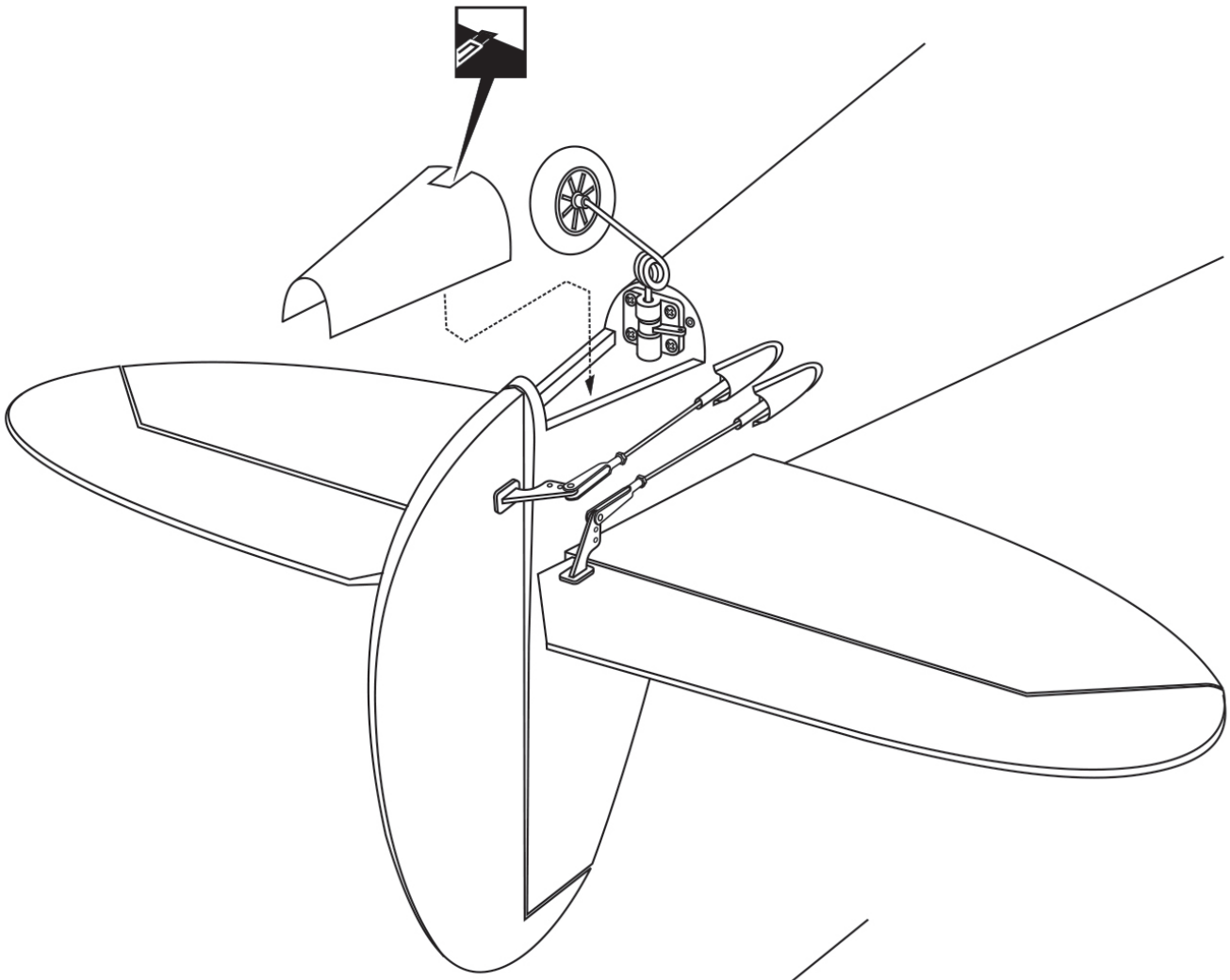
Tail wheel control-horn 1

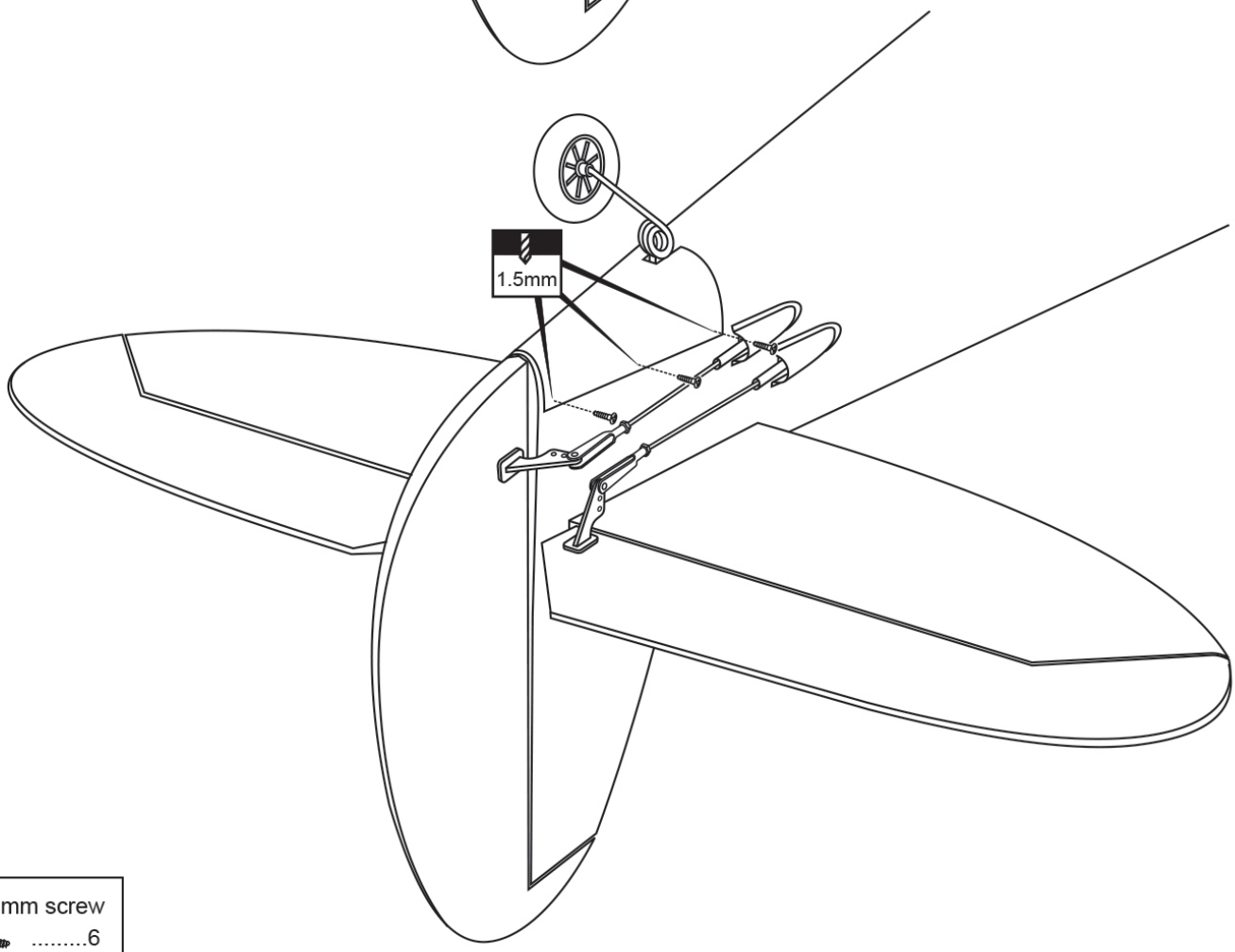
25mm wheel 1

4- Instal the tail wheel gear in place.

5- Secure the tail wheel control horn in place using a 3mm screw set, ensure smooth non-binding movement.

Tail gear cover





2x8mm screw
.....6

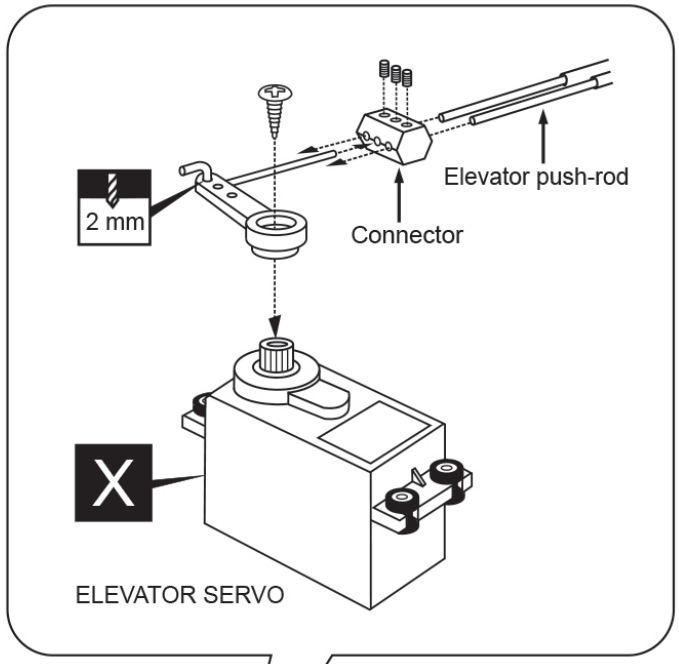
Servo and linkages

1.2x500mm throttle push-rod 1

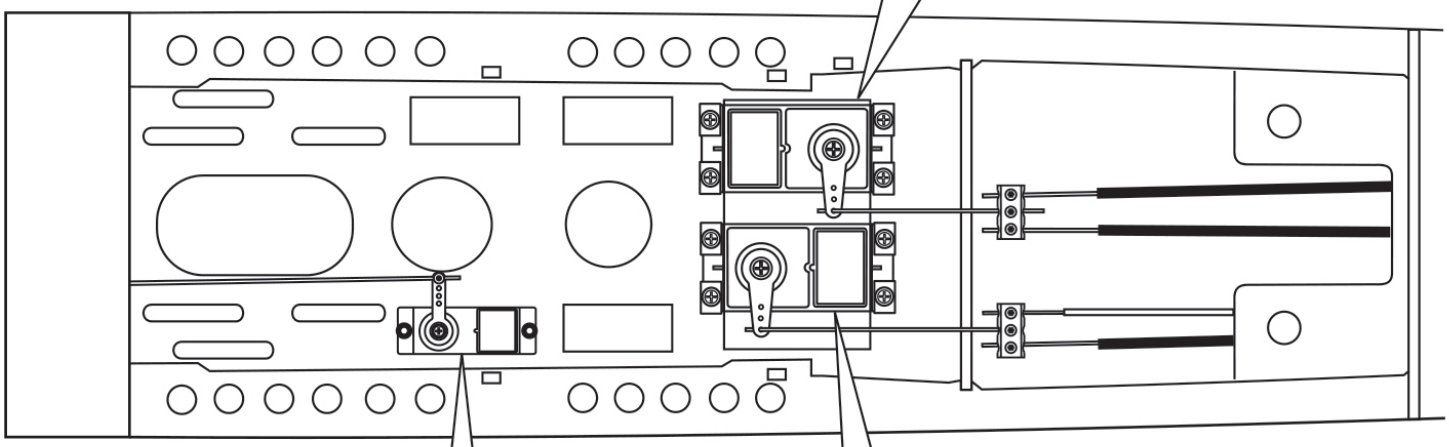
2x120mm rod (rudder/elevator) 2

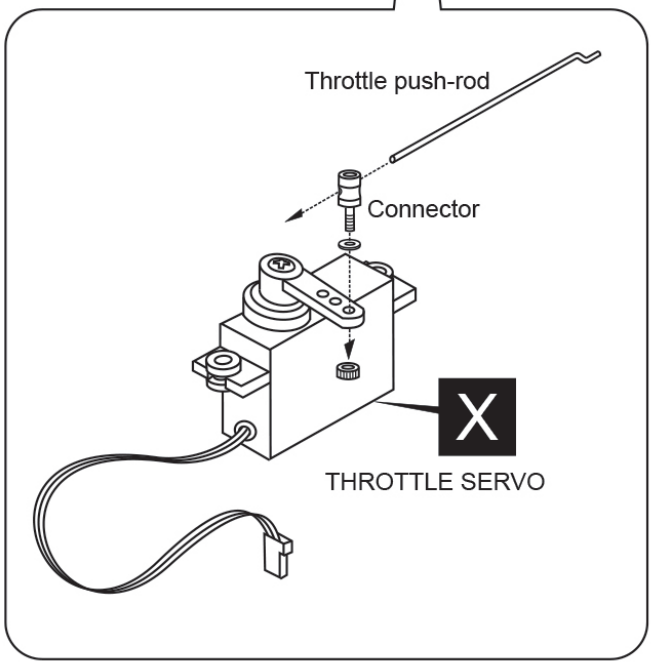
Connector 2

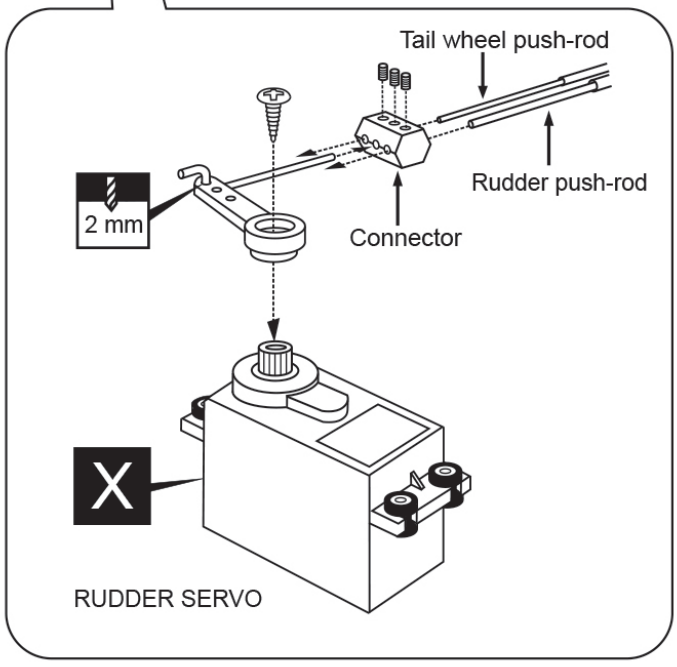
.....1

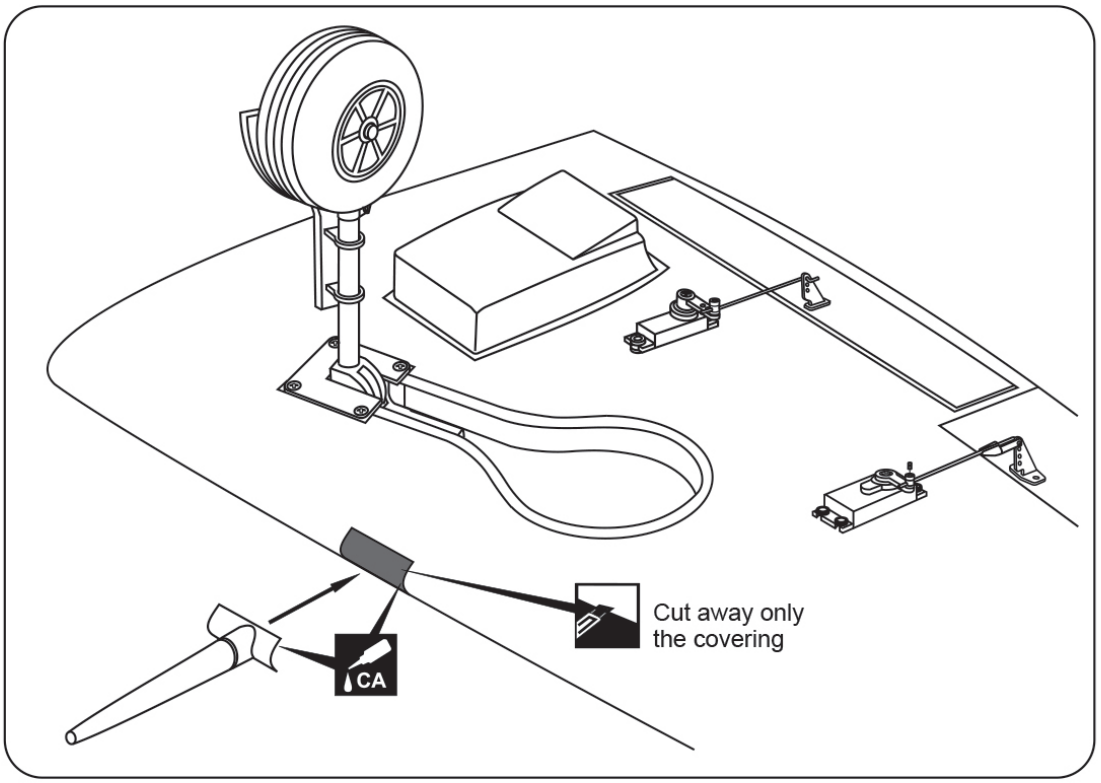


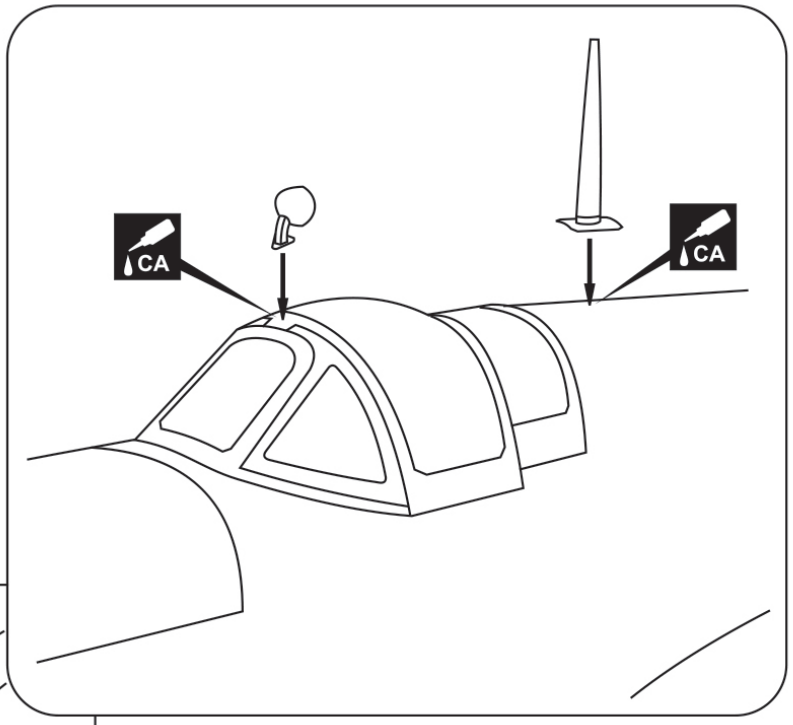
FUSELAGE - BOTTOM VIEW








Cut away only
the covering
CA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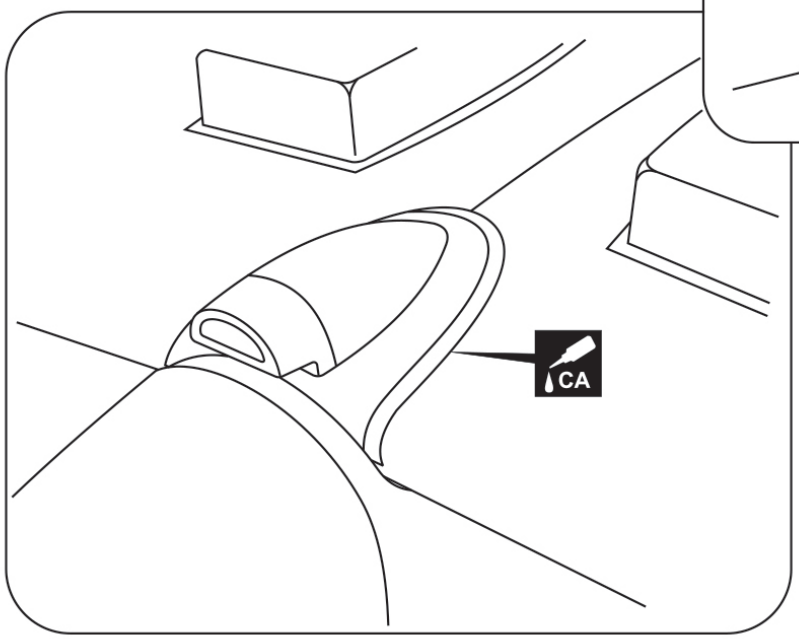
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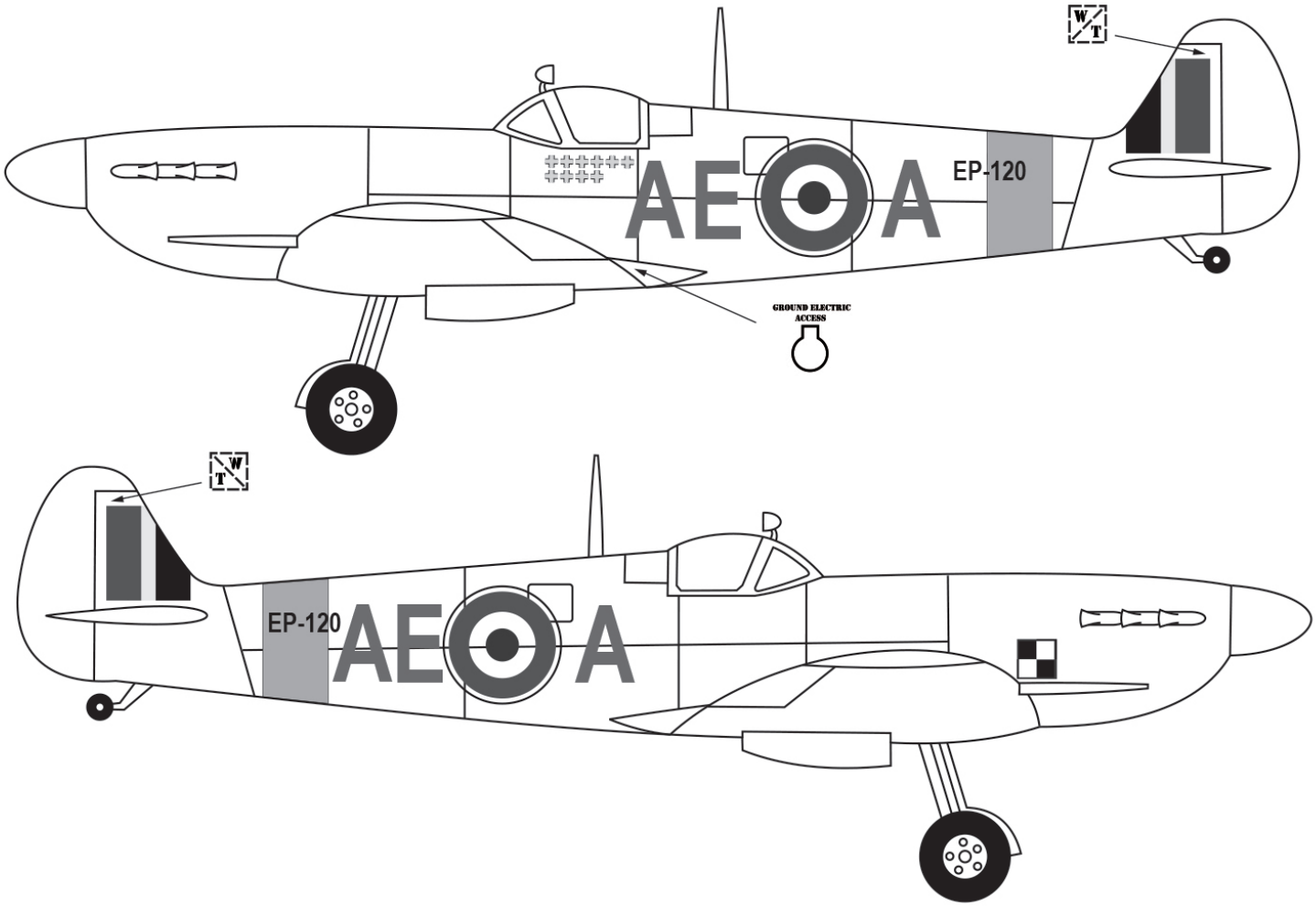
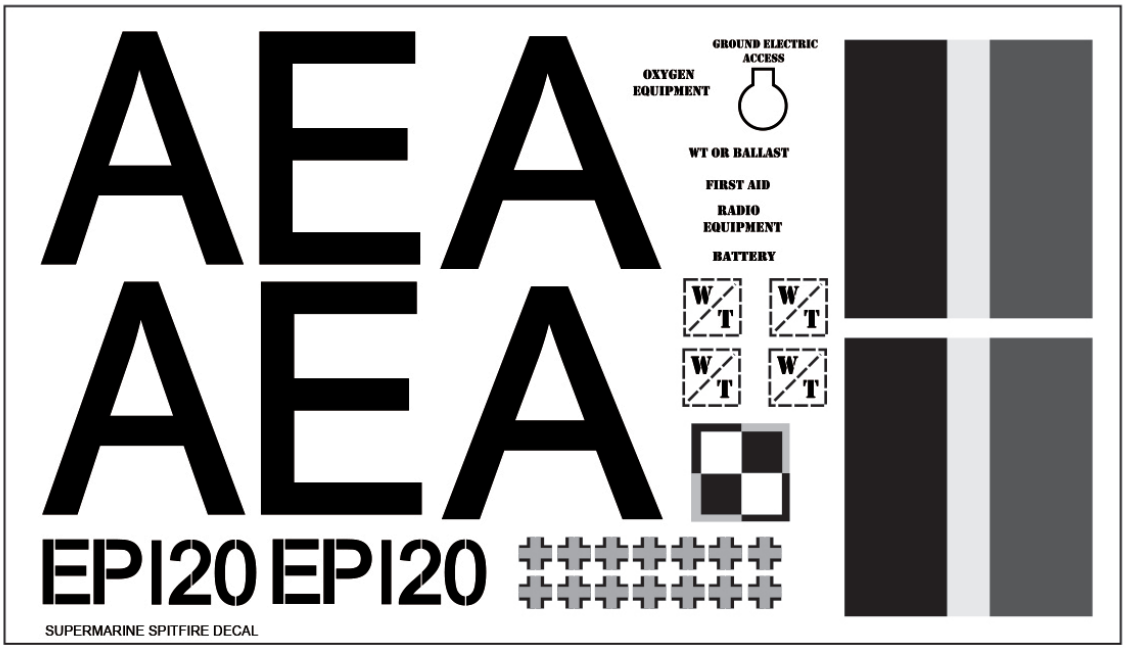


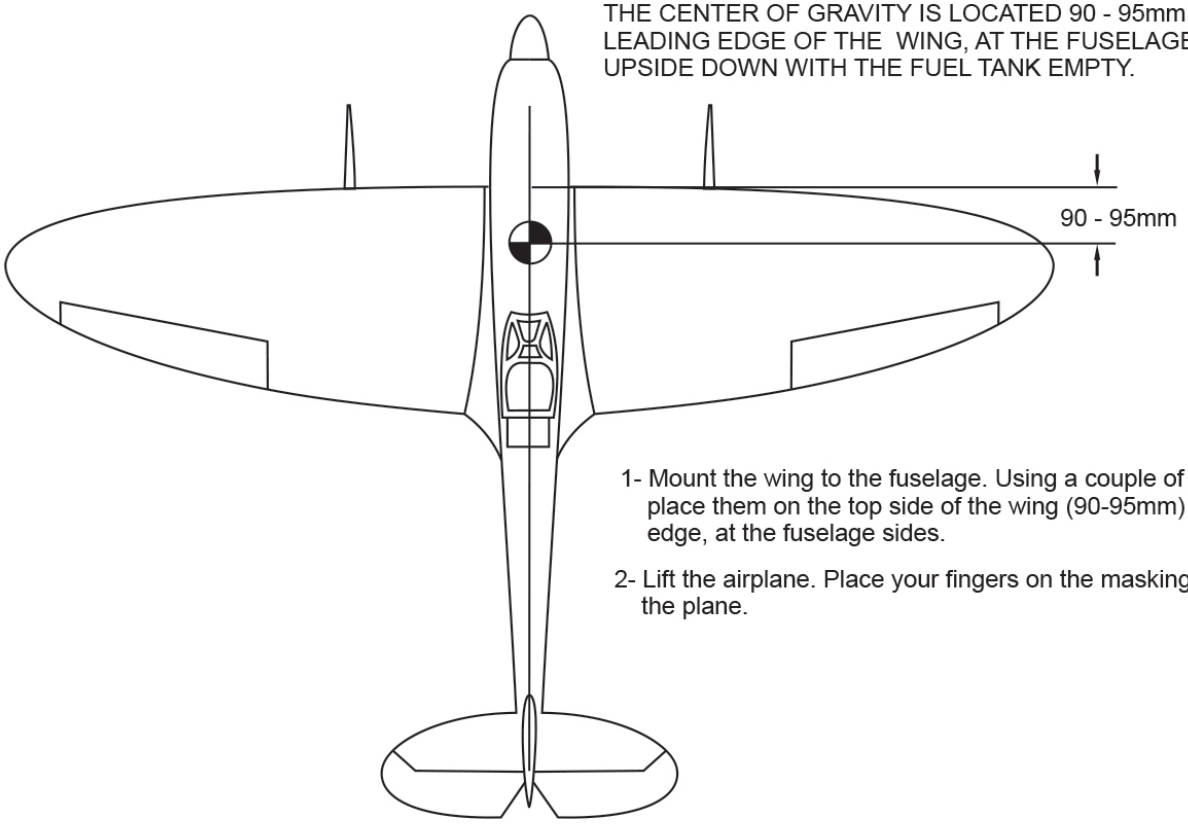


Note: Cut out the stickers and apply them in the proper area. Do not peel the backing paper off all at once.
Peel off one corner of the backing and cut off with scissors.
Arrange sticker on model and when satisfied adhere the corner without backing.
Carefully peel back the rest of the backing while at the same time adhering the rest of the sticker.
Try not to make air bubbles, if there are some, carefully puncture sticker (center of bubble) but not model surface with the tip of the knife or sharp pin and squeeze out the air.
At curves stretch sticker and apply a little heat so that no ceases occur.
Cut off the excess that is produced.

IMPORTANT: Please do not clean your model with strong solvent or pure alcohol, only use kerosene to keep the colour of your model not fade.

Balance and control surface

THE CENTER OF GRAVITY IS LOCATED 90 - 95mm BACK FROM THE LEADING EDGE OF THE WING, AT THE FUSELAGE. BALANCE A PLANE UPSIDE DOWN WITH THE FUEL TANK EMPTY.



1- Mount the wing to the fuselage. Using a couple of pieces of masking tape, place them on the top side of the wing (90-95mm) back from the leading edge, at the fuselage sides.

2- Lift the airplane. Place your fingers on the masking tape and carefully lift the plane.

3- If the nose of the plane falls, the plane is heavy nose. To correct this, move the battery pack further back in the fuselage.
If the tail of plane falls, the plane is tail heavy. To correct this, move the battery forward or if this is not possible, stick weight onto the firewall.
When balanced correctly, the airplane should level or slightly nose down when you lift it up with your fingers.

LATERAL BALANCE:

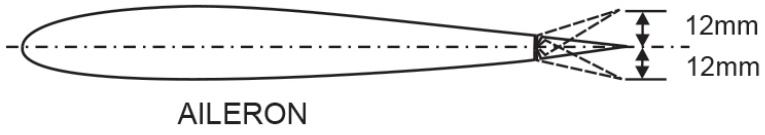
After you have balanced a plane on the CG, you should laterally balance it. Doing this will help the airplane track straighter.

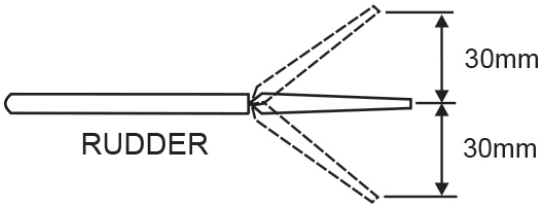
1- Turn the airplane upside down. Attach one loop of heavy string to the engine crankshaft and one to the tail wheel wire. With the wing level, carefully lift the airplane by the string. This may require two people to make easier.

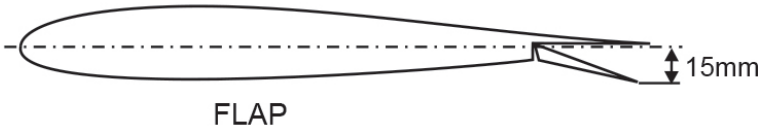
2- If one side of the wing fall, that side is heavier than the opposite. Add small amounts of lead weight to the bottom side of the lighter wing half's wing tip. Follow this procedure until the wing stays level when you lift the airplane.

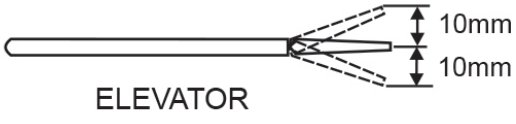
DO NOT try to fly an out-of-balance model !

CONTROL SURFACE









IMPORTANT: Flying your model at these throws will provide you with the greatest chance for successful first flights.
If,after you have become accustomed to the way the Tiger Moth flies, you would like to change the throws to suit your taste that is fine. However, too much control throw could make the model difficult to control, so remember, "more is not always better".

LOW RATE

Aileron	: 12mm up / down
Elevator	: 10mm up / down
Rudder	: 30mm right / left
Flap	: 15mm down

HIGH RATE

Aileron	: 15mm up / down
Elevator	: 15mm up / down
Rudder	: 40mm right / left
Flap	: 20mm down