

Radio control model / Flugmodell

# PA-38 Tomahawk



## Instruction manual / Montageanleitung

### SPECIFICATIONS

Wingspan:.....1920mm  
Length:.....1320mm  
Electric Motor:.....900Watt - 80A. ESC  
Glow Engine:.....91 4T / 60 2T  
Gas Engine: .....17cc  
RTF Weight: 4.1 - 4.5Kg (Will vary with  
Equipment Used).  
Radio:.....See next pager

All balsa and  
plywood  
Construction



**RC**  
RADIO CONTROL

**ARE**  
VERSION

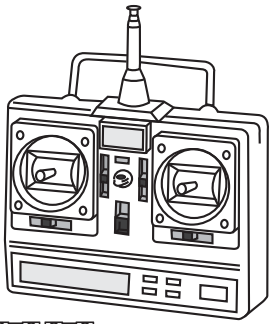


**NEXA**

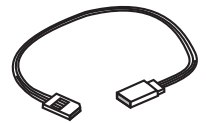
**WARNING!** This radio controlled model is NOT a toy. If modified or flown carelessly it could go out of control and cause serious human injury or property damage. Before flying your airplane, ensure the air field is spacious enough. Always fly it outdoors in safe areas and seek professional advice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

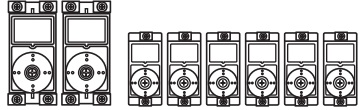
## REQUIRED FOR OPERATION (Purchase separately)



12x6 for .60 - 4 cycle engine  
 13x7 for .90 - 4 cycle engine  
 14X8 for Electric Motor.

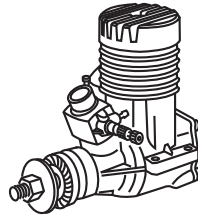


Servo extension cord:  
 Aileron: 50mm x2 pcs  
 Flap: 30mm x2 pcs  
 Elevator: 40mm x4 pcs  
 Rudder: 20mm x1 pc  
 Rx battery: 20mm x1 pc

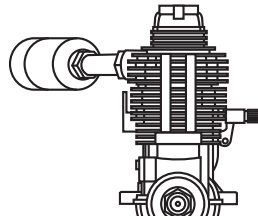


Minimum 7 channel radio for airplane with 8 servos (EP version) and 9 servos (GP version)

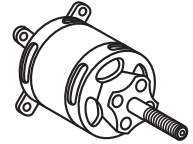
Standard servo: Nose gear x1, Rudder X1  
 Mini servo: Aileron x2, Flap X2, Elevator x2  
 Throttle x1 (GP version)



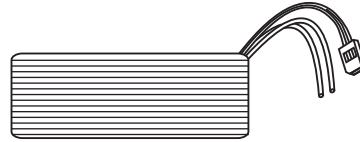
.60 - 2 cycle



.90 - 4 cycle



1000 Watt Brushless Motor



Depending on the motor used.



Silicone tube (GP version)

## GLUE (Purchase separately)



Silicon sealer

Cyanoacrylate  
 Glue



CA



EPOXY A



EPOXY B

Epoxy Glue ( 5 minute type)  
 Epoxy Glue (30 minute type)

## TOLLS REQUIRED (Purchase separately)


Hobby knife 

Phillip screw driver 


Hex Wrench 

Needle nose Pliers 

Scissors 

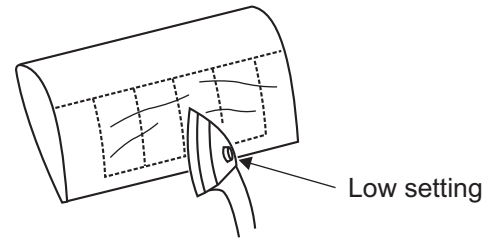
Awl 

Sander 


Wire Cutters 


The pre-covered film on ARF kit may wrinkle due to variations of temperature. Smooth out as explained right.


\* Use an iron or heat gun. Start as low setting. Increase the setting if necessary. If it is too high, you may damage the film





Symbols used throughout this instruction manual, comprise:


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


 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

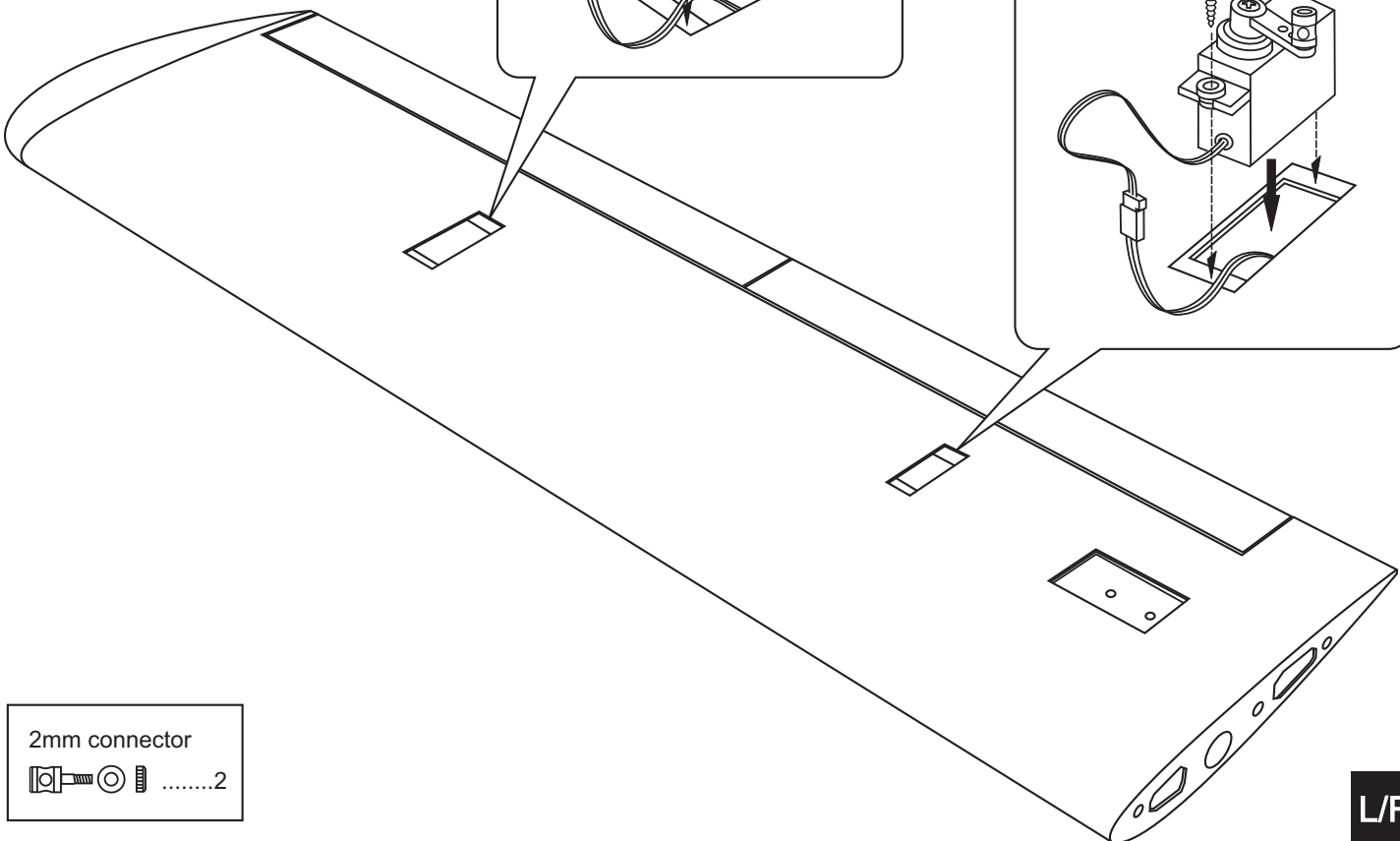
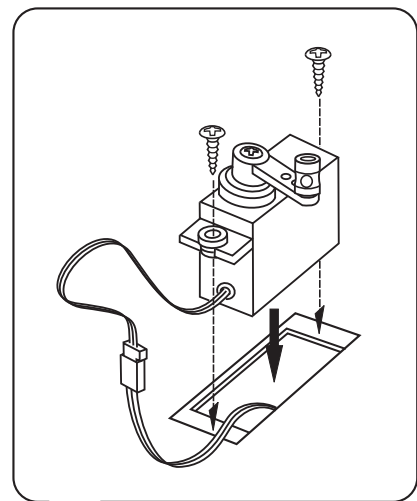
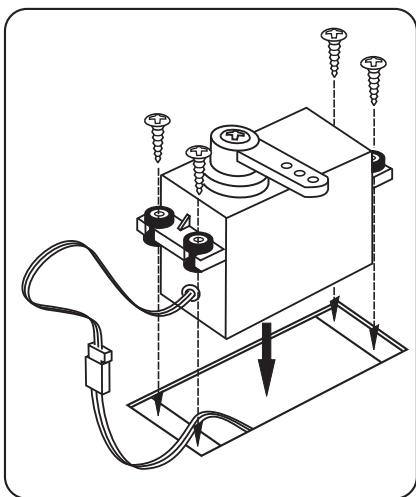
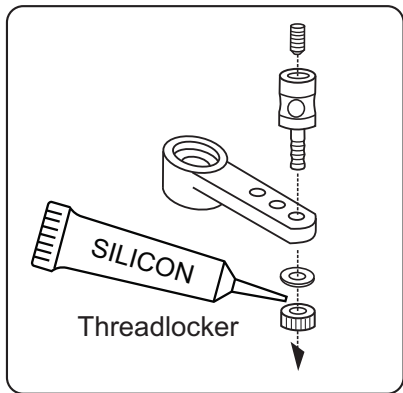
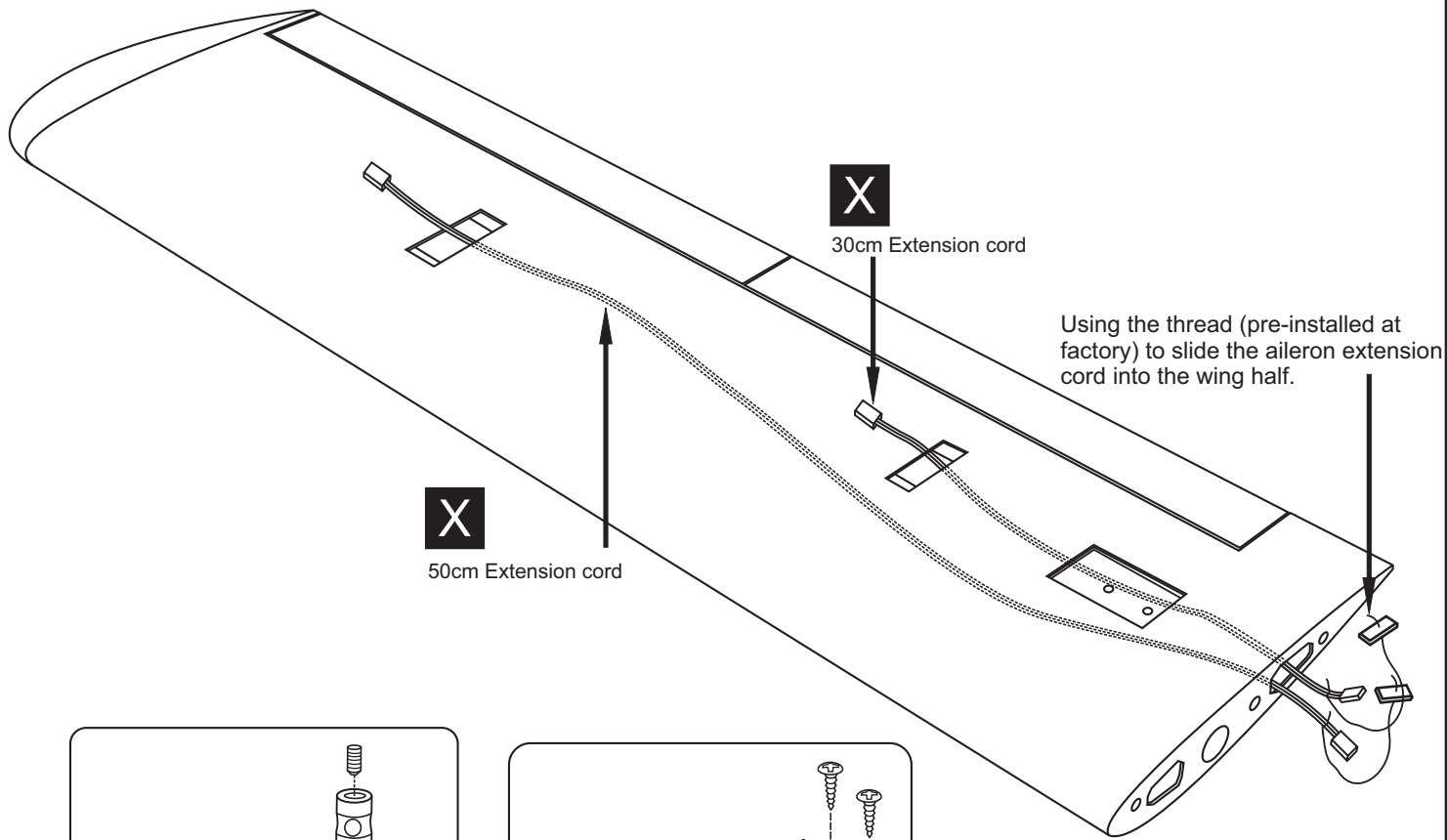
## SAFETY NOTES BEFORE ASSEMBLING

This model is highly pre-fabricated and can be built in a very short time. However, the work which you have to carry out is important and must be done carefully.

The model will only be strong and fly well if you complete your tasks competently - so please work slowly, accurately and check every joints, maybe apply more glue to be safe.

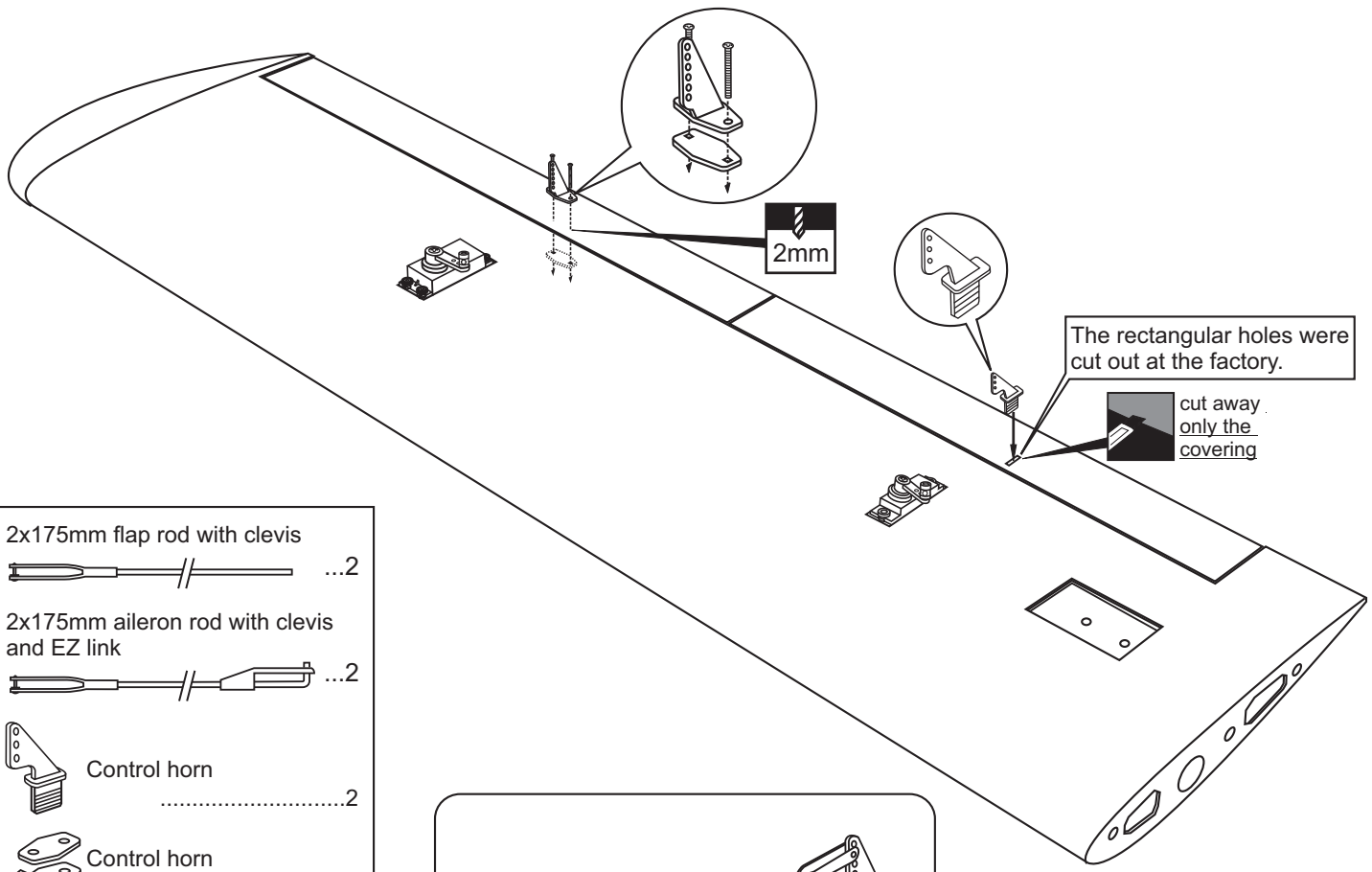
Read through the manual before you begin, so you will have an overall idea of what to do.

# PA-38 Tomahawk 1- Extension cord & Servo

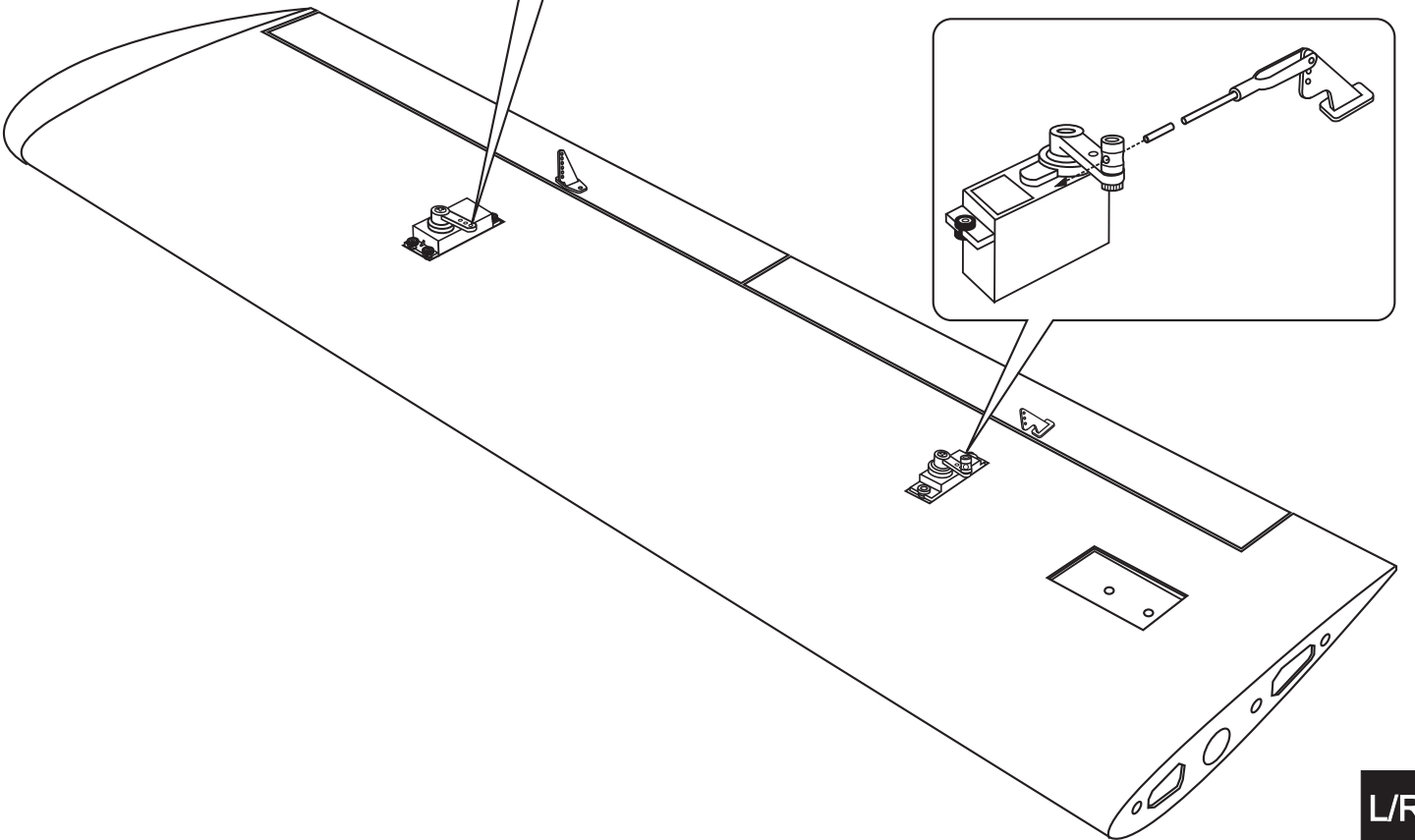
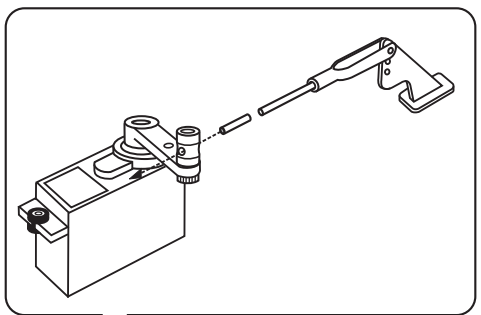
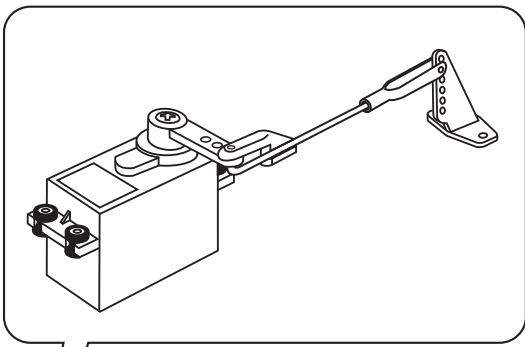


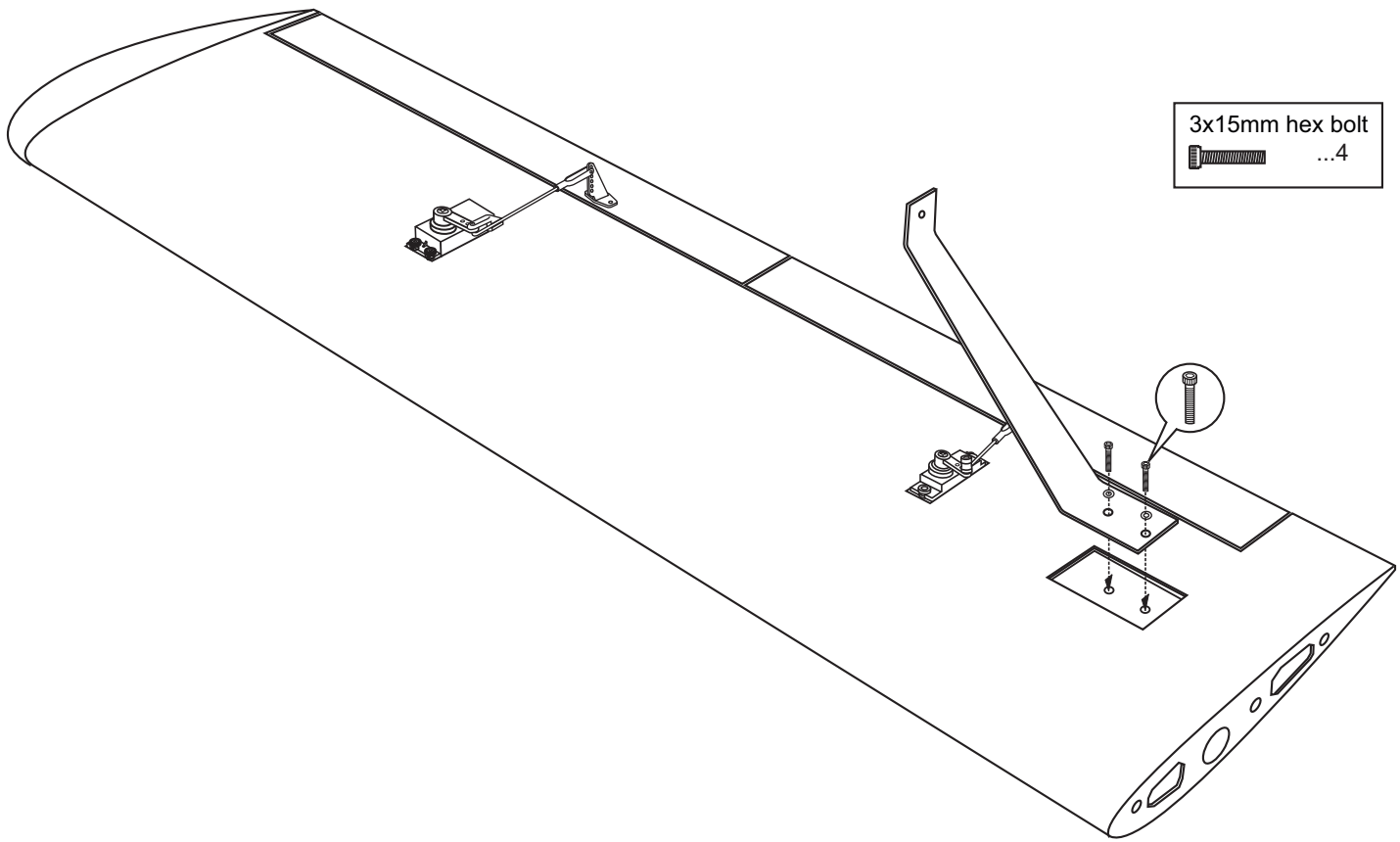
- 2mm connector
- .....2

# PA-38 Tomahawk 2- Control horn & Linkages

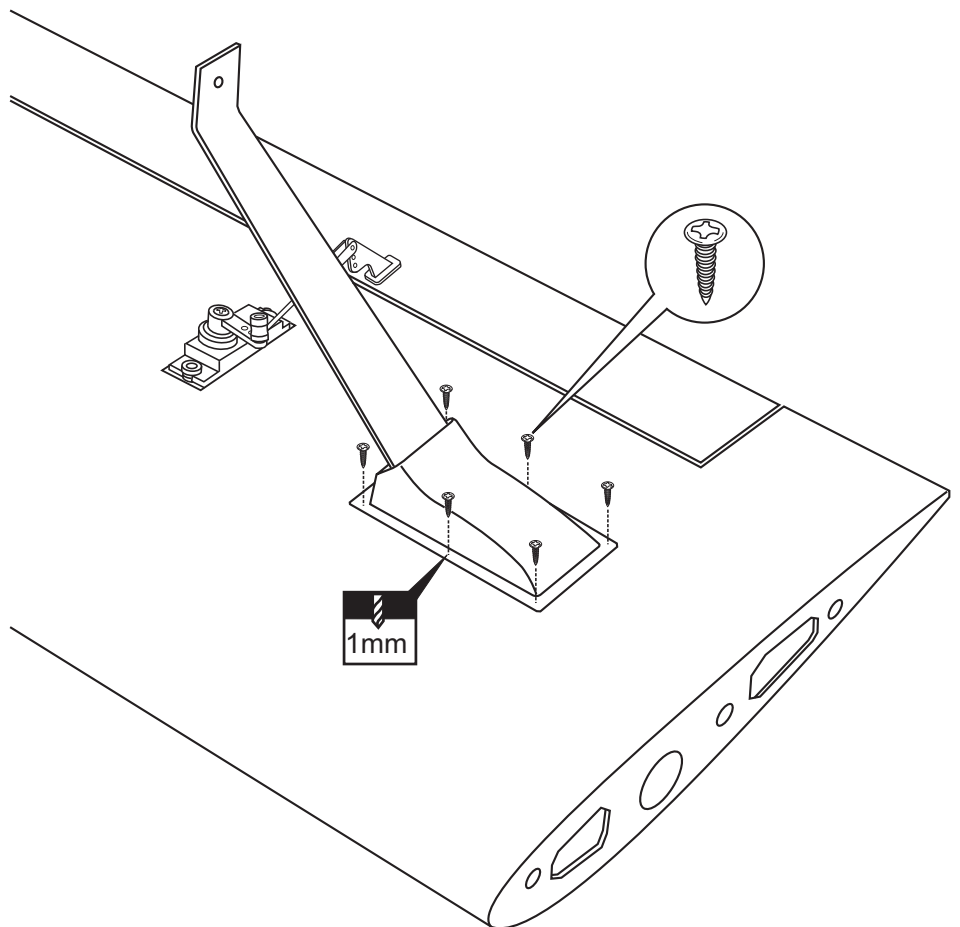


- 2x175mm flap rod with clevis ...2
- 2x175mm aileron rod with clevis and EZ link ...2
- Control horn .....2
- Control horn .....2 set





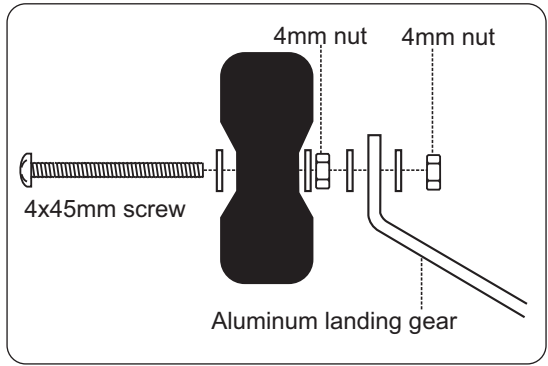
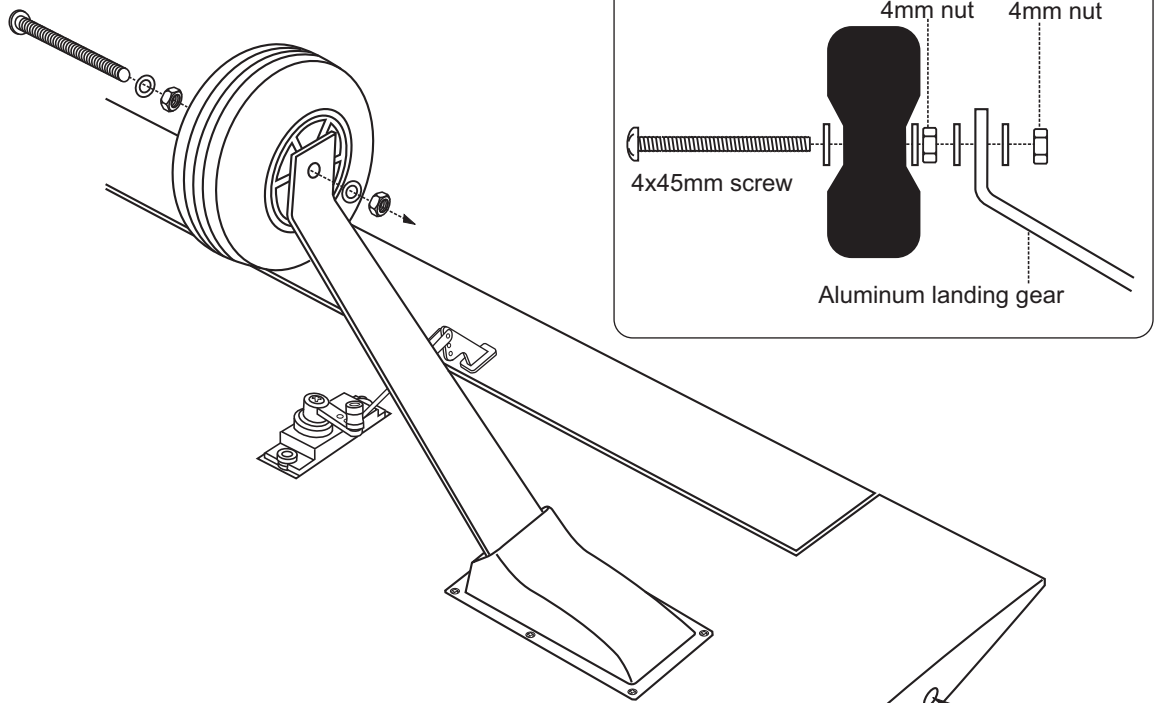
3x15mm hex bolt  
...4



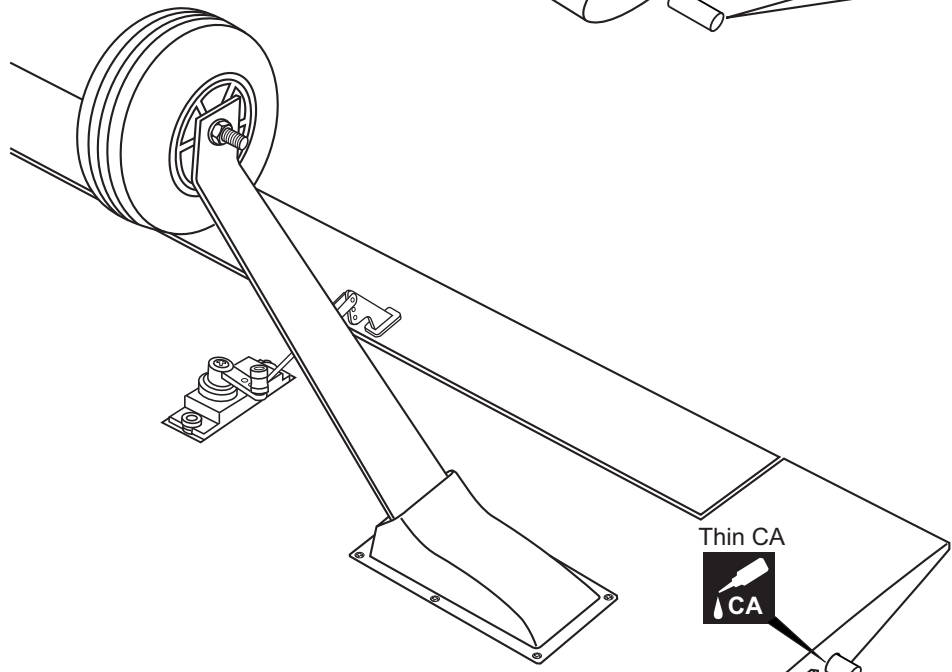
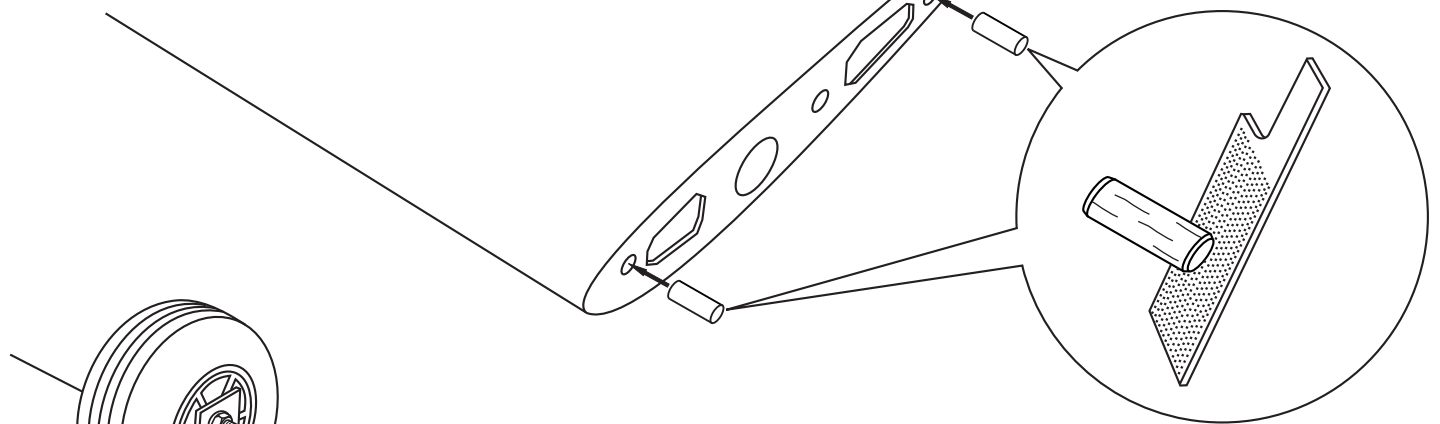
1mm

2x8mm screw  
.....12

# PA-38 Tomahawk 4- Main wheel & Dowel

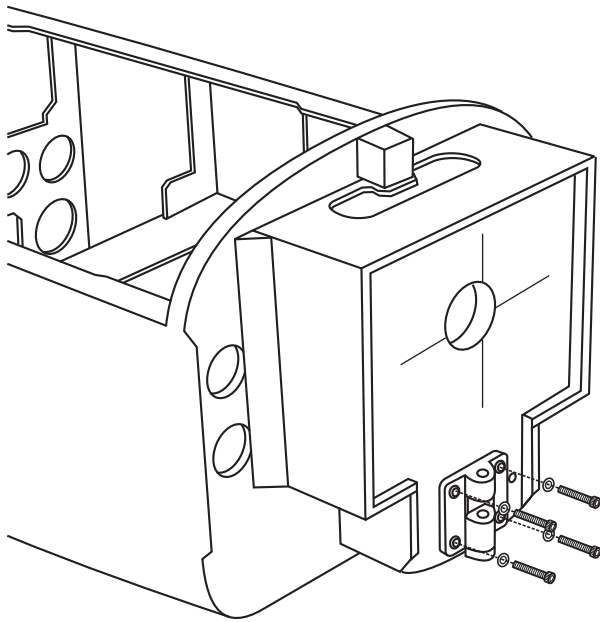
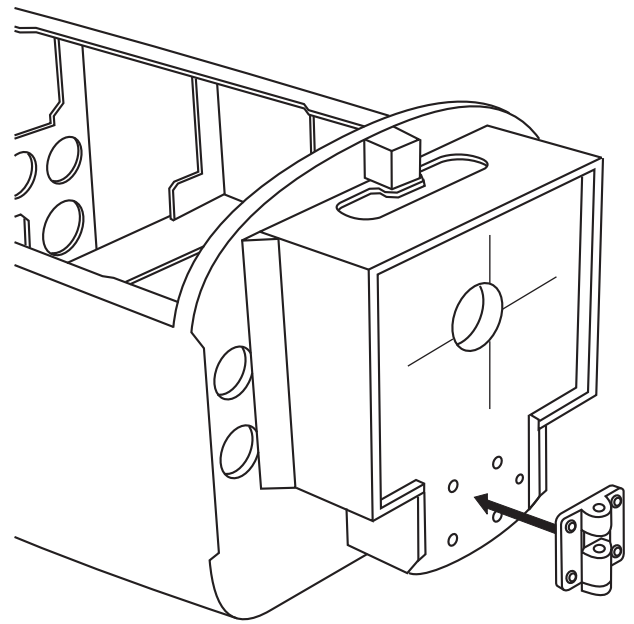


- |              |        |
|--------------|--------|
| 75mm wheel   | ...2   |
| 4X40mm screw | ...2   |
| 4mm nut      | .....4 |
| 4mm washer   | .....6 |



**Note:** Make sure that the dowel must be perpendicular with the wing root before glue.

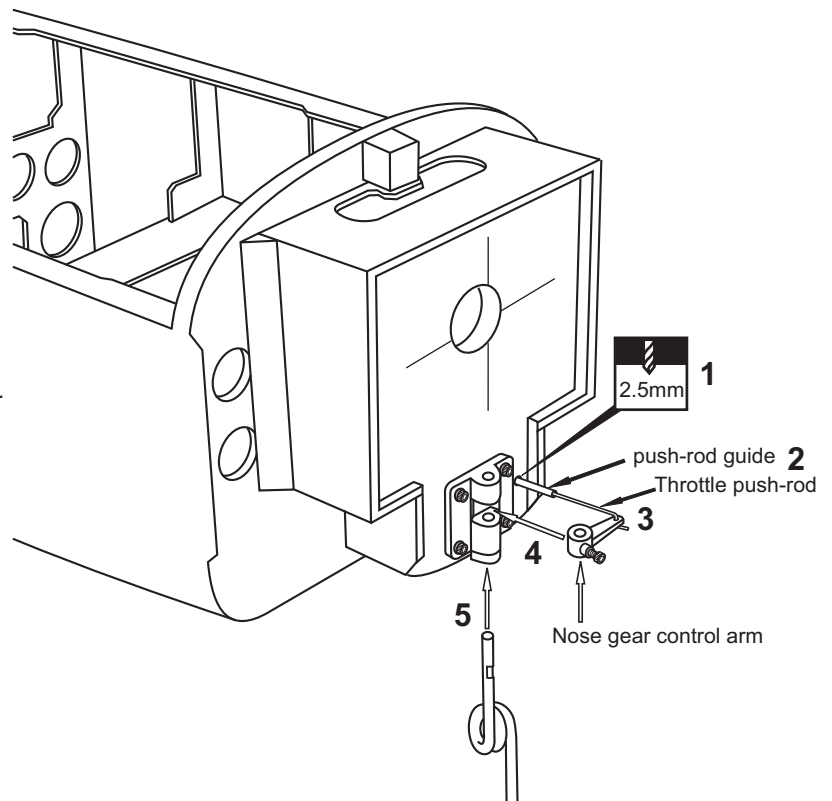
# PA-38 Tomahawk 5- Nose gear installation



3x20mm hex bolt

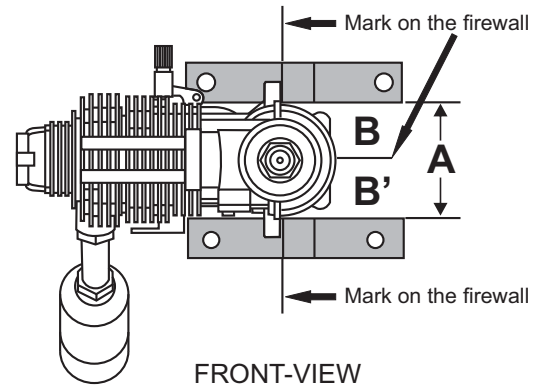
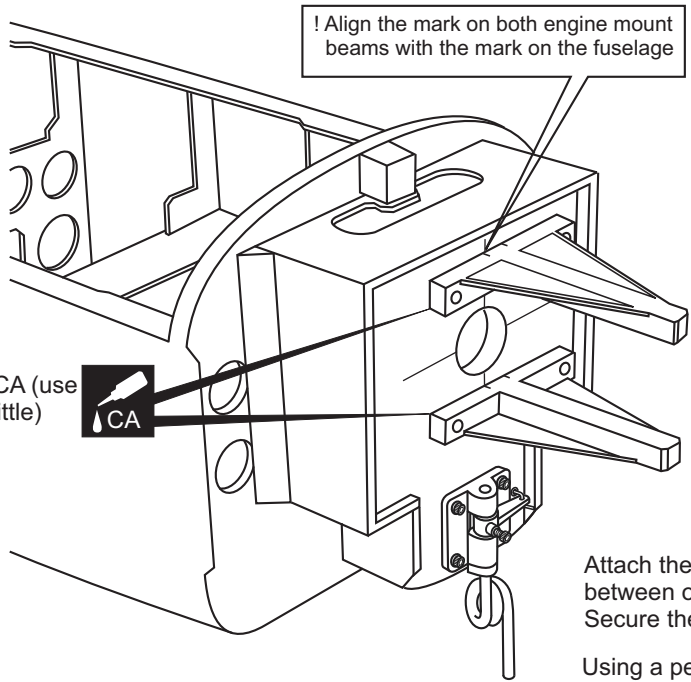


- 1- Drill the 2.5mm hole on the firewall where the nylon pushrod guide will go through .
- 2- Insert the nylon pushrod guide and nose gear push rod through the firewall as shown.
- 3- Insert the "Z" bend of the nose gear push rod into the hole of the nose gear arm as shown.
- 4- Insert the nose gear arm onto the nose gear mount.
- 5- Insert the nose gear though the nose gear mount.



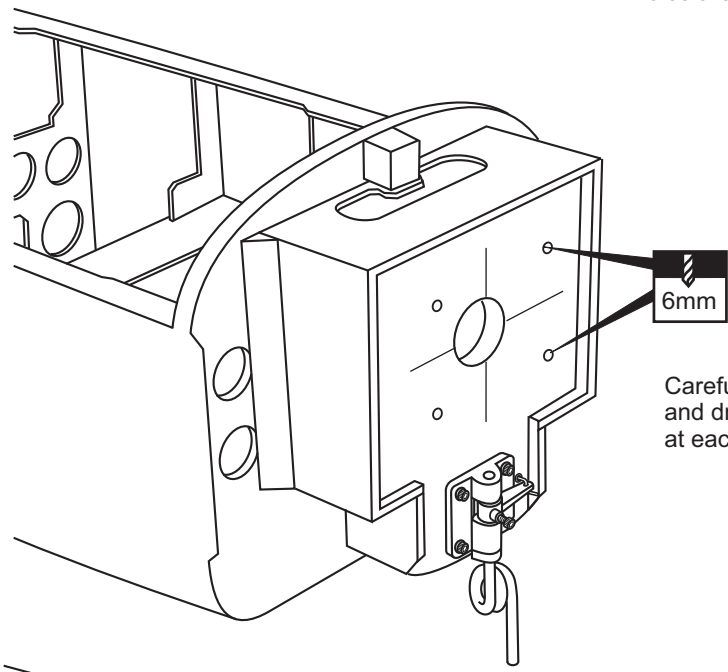
# PA-38 Tomahawk 6- Engine mount

The center of the engine axis and the angle of inclination of the firewall have been designed correctly, should not be modified.

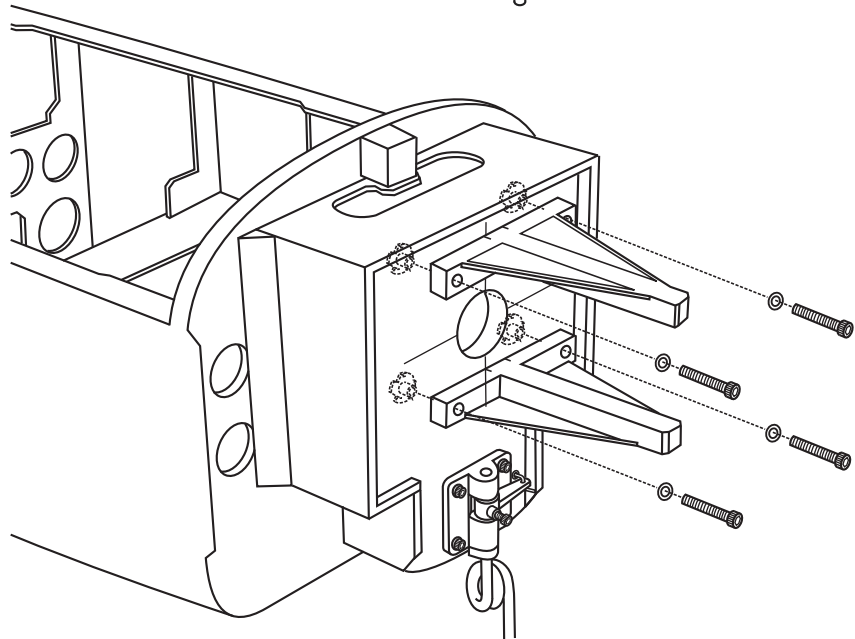


Attach the engine mount beams onto the fire-wall so the distance between of two engine mount beams is "A", and B=B' as show. Secure the engine mount beams onto the fire-wall with litter CA glue

Using a pencil or felt tipped pen, mark the fire wall where the four holes are to be drilled.



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



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 hex bolts.

- |                          |  |        |
|--------------------------|--|--------|
| 4x25mm hex bolt - washer |  | .....4 |
| Blind-nut                |  | .....4 |



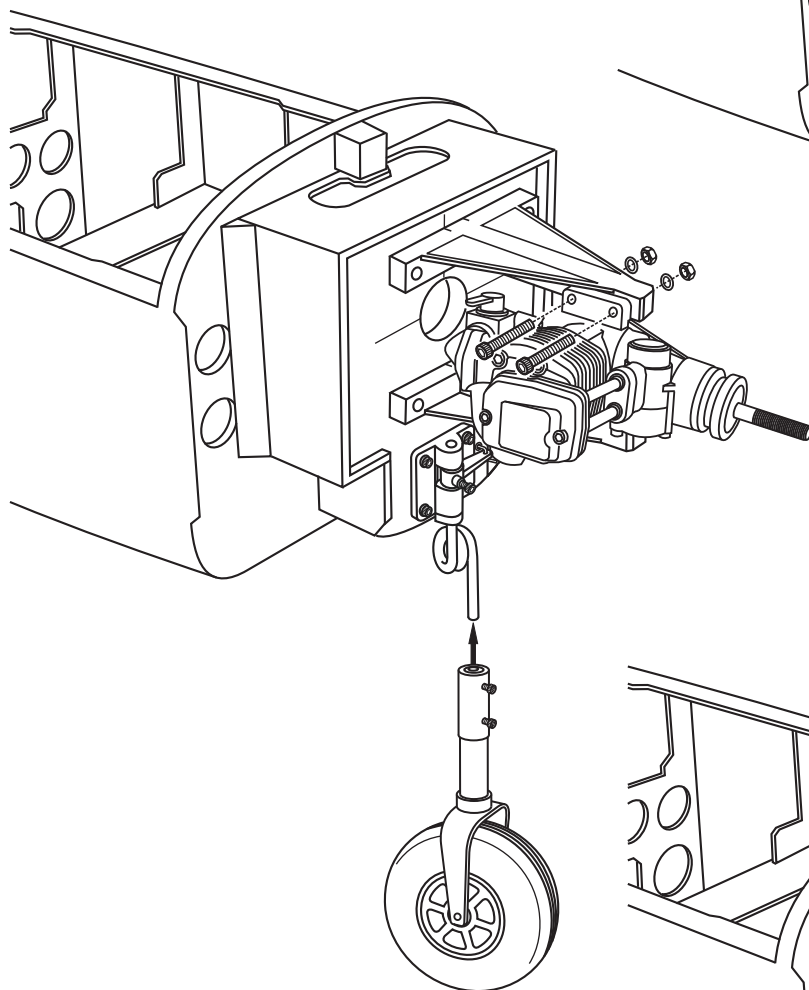
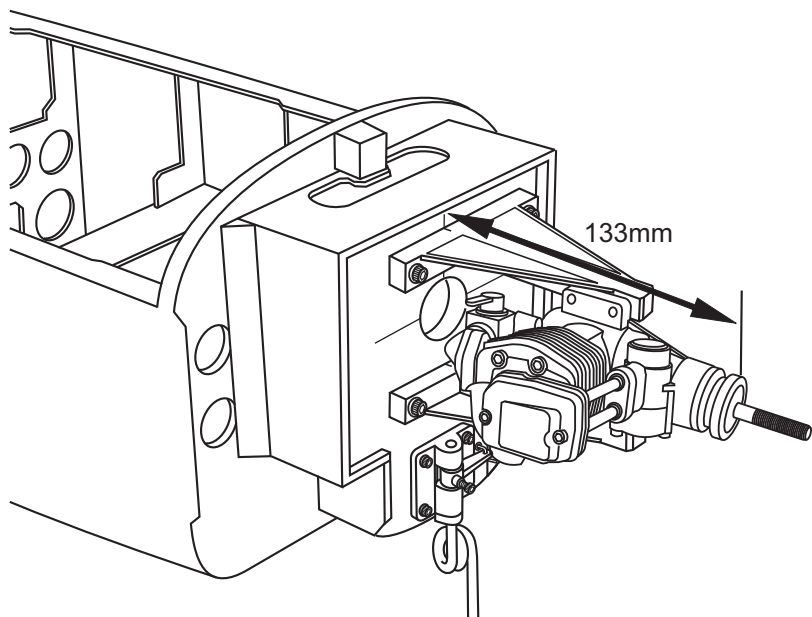
# PA-38 Tomahawk 7- Engine

Position the engine to the engine mounts so the distance from the prop hub to the fire-wall is **133mm (\*)**. Mark the engine mounting plate where the four holes are to be drilled.

Note: This distance (\*) depends on the type of engine you use.

Remove the engine and drill a 3mm holes through the beam at each of the four marks made above.

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



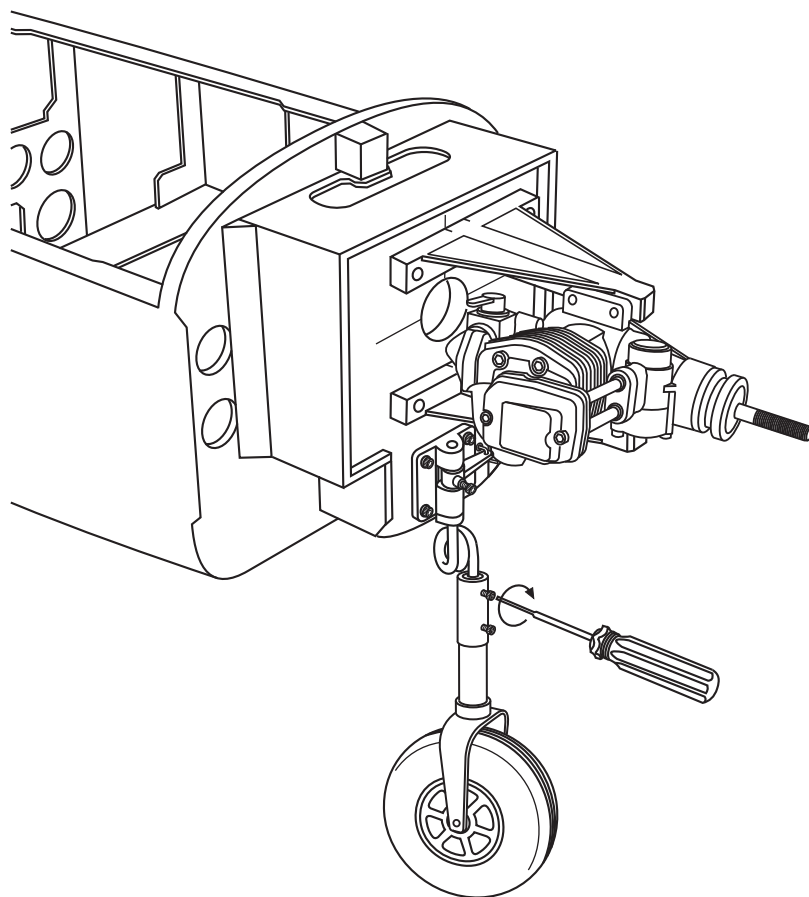
Reposition the engine on the engine mount beams, aligning it with the holes. Secure the engine to the engine mount using four 3x25mm hex bolts.

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

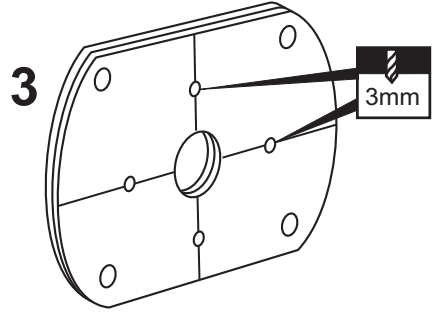
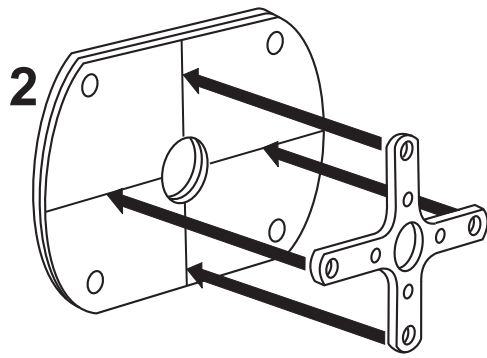
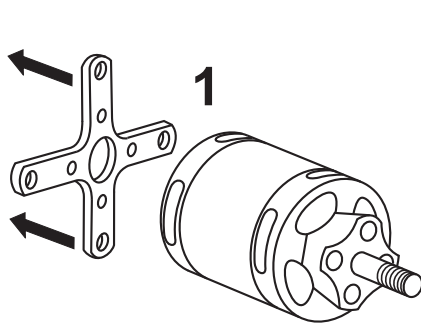
3x25mm hex bolt

 ...4

  ...4

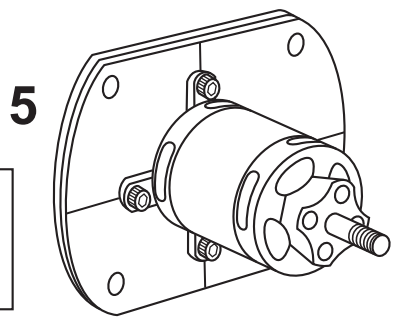
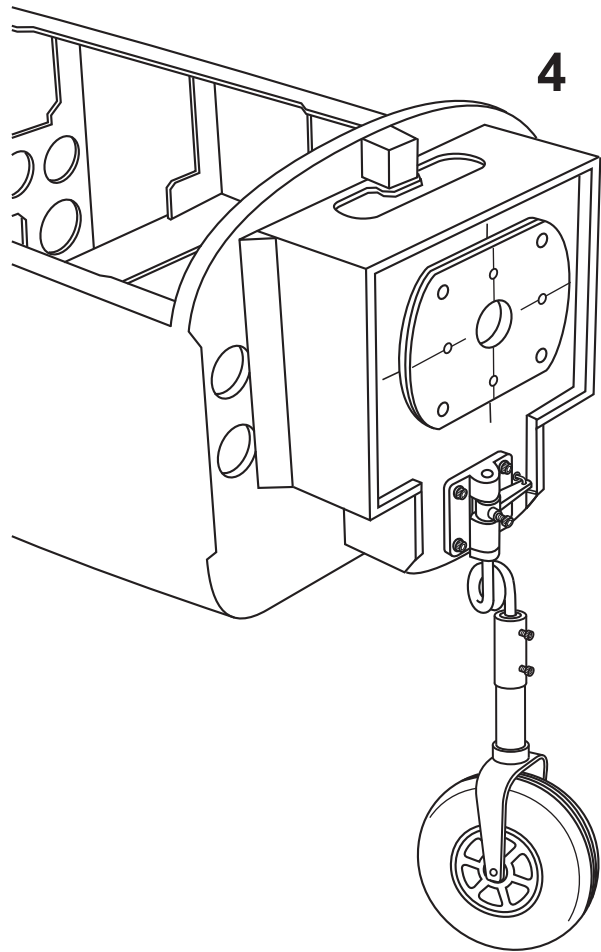


# PA-38 Tomahawk 8- Electric motor mount

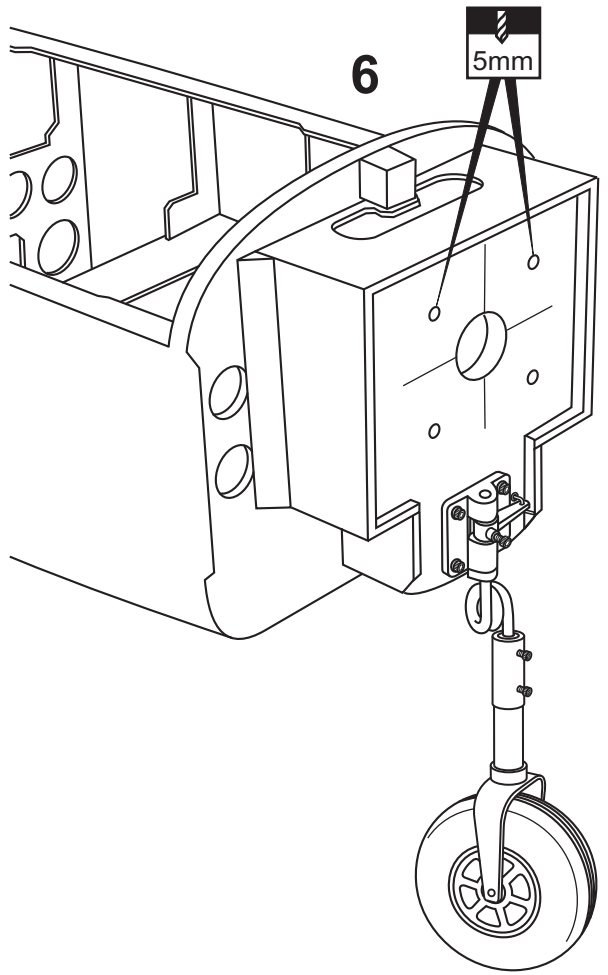


Using an aluminum motor mounting plate as a template, mark the plywood motor mounting plate where the four holes are to be drilled.




Remove the aluminum motor mounting plate and drill a 3mm hole through the plywood at each of the four marks marked.



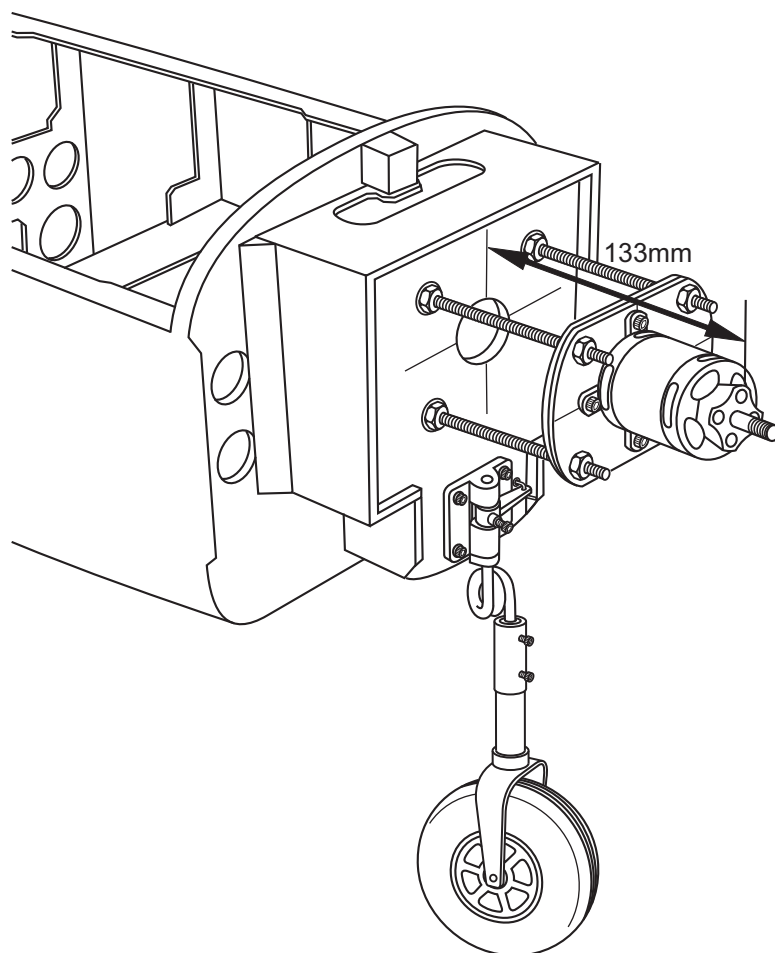
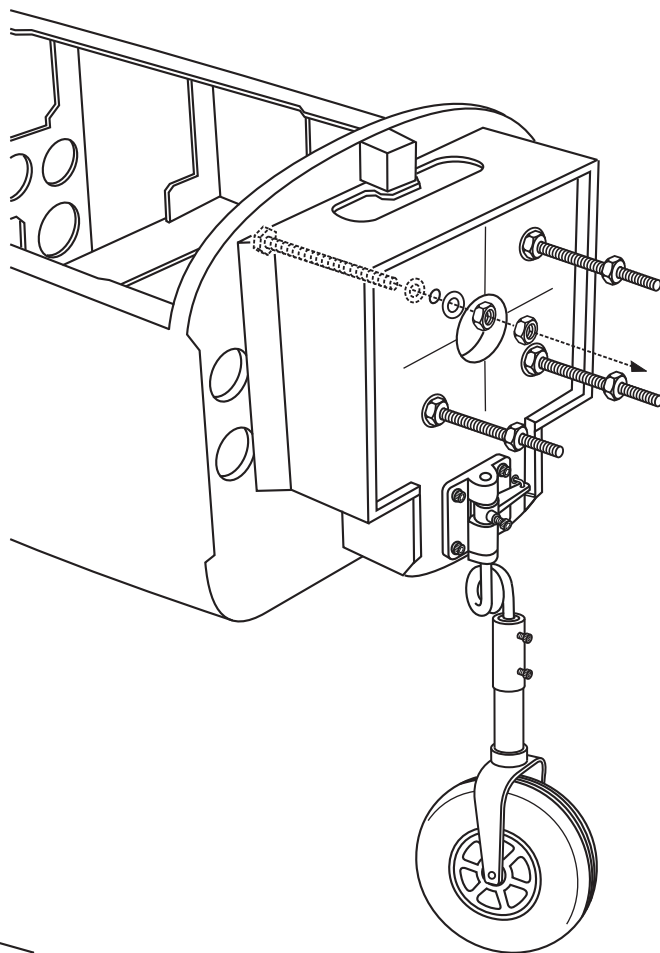
- 3x15mm hex bolt
  - Nut
- |  |        |
|--|--------|
|  | ...4   |
|  | .....4 |



# PA-38 Tomahawk 8- Electric motor mount

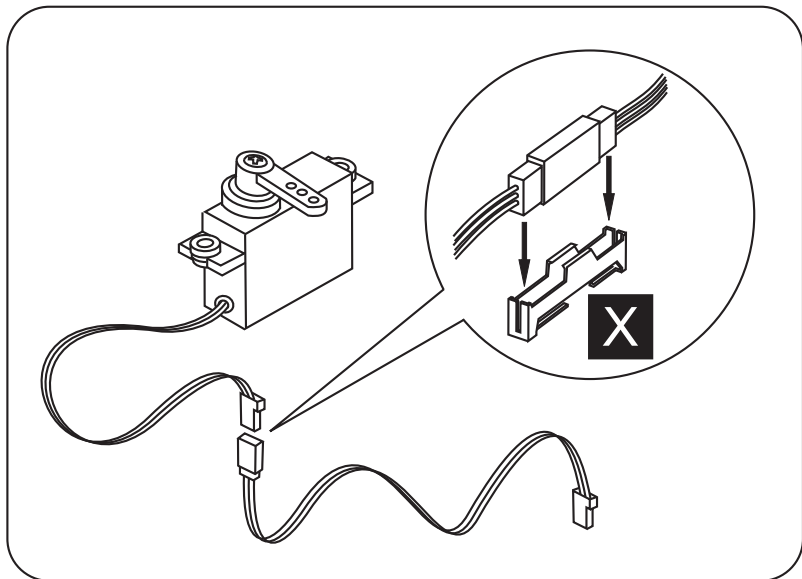
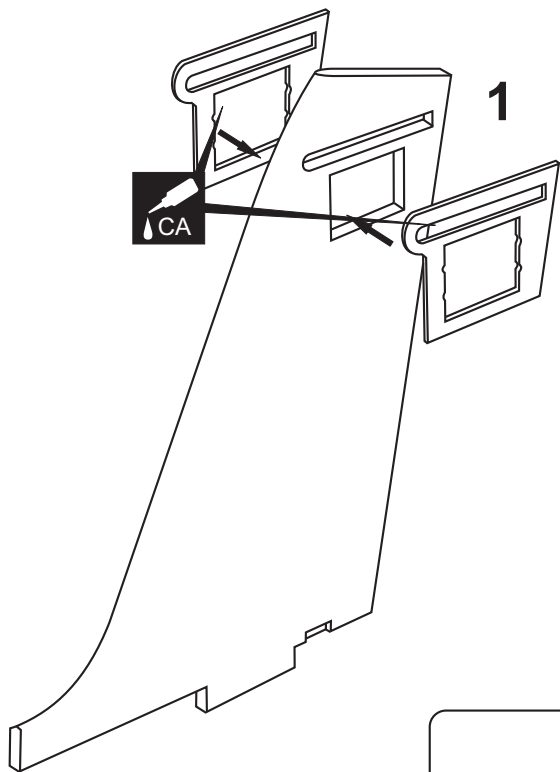
-  5x80mm bolt.....4
-  5mm nut.....12
-  5mm washer...16



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

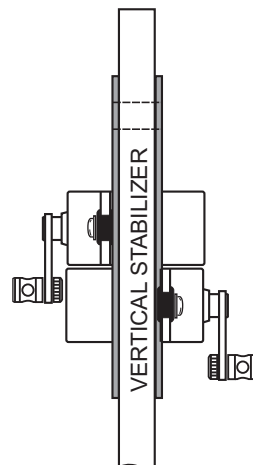
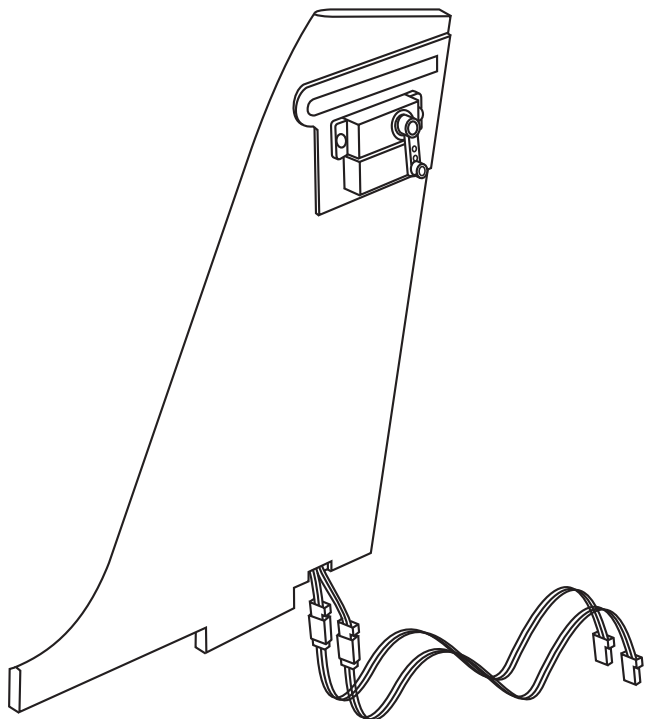
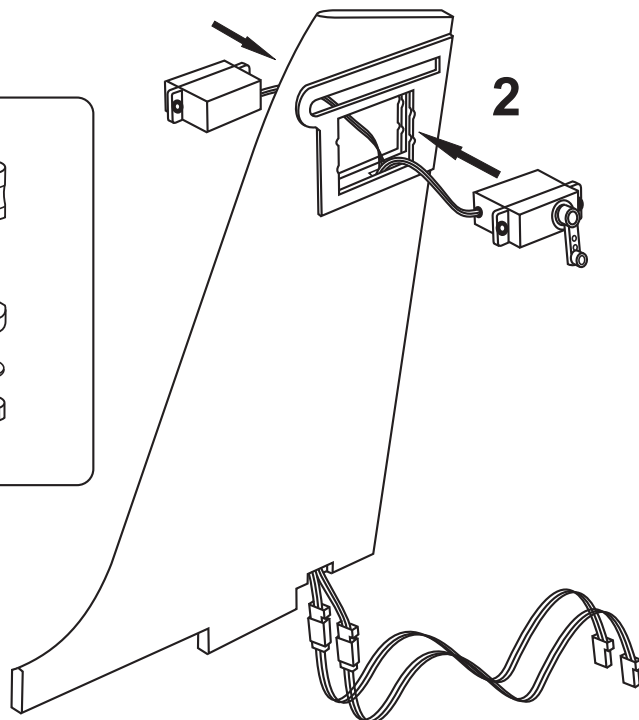
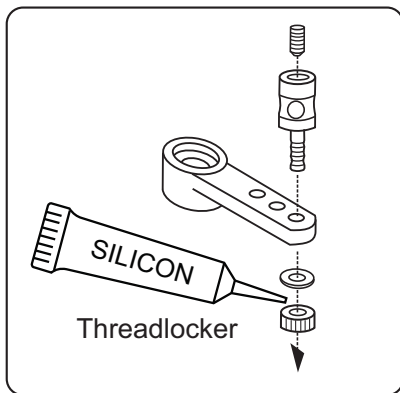


Position the motor mount to so the distance from the prop hub to the fire-wall is 133mm .

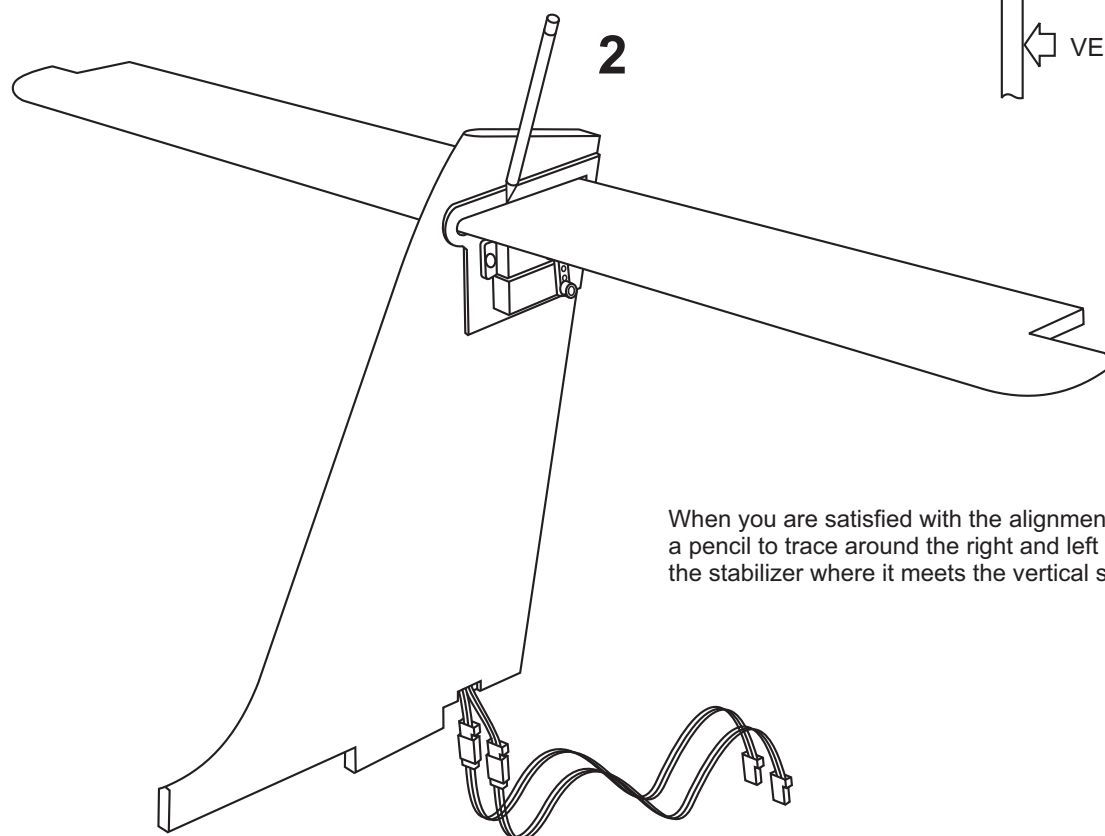
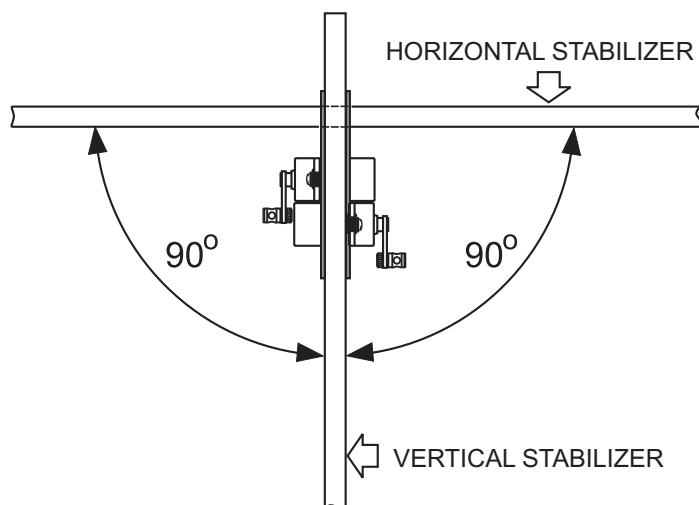
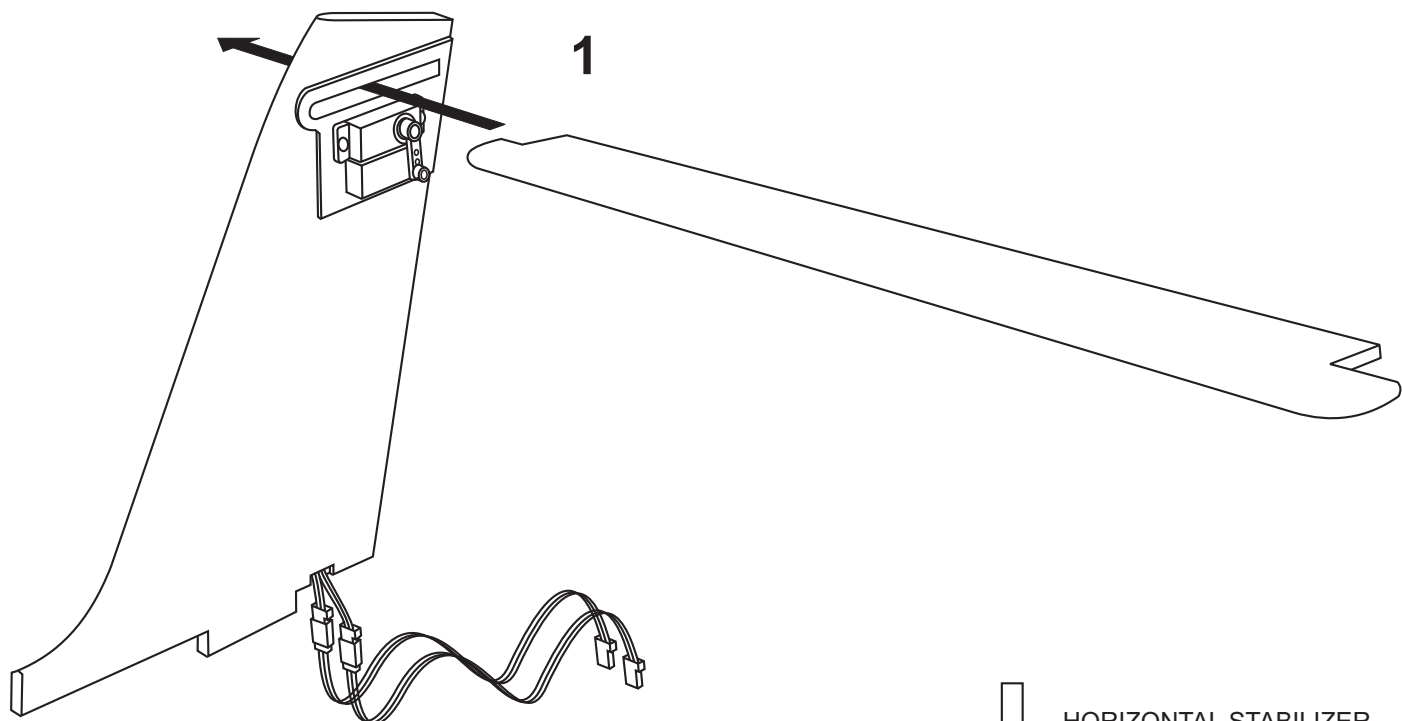
# PA-38 Tomahawk 9- Elevator servo mount



2mm connector  
  .....2



PA-38 Tomahawk 10- Horizontal stabilizer



When you are satisfied with the alignment, use a pencil to trace around the right and left of the stabilizer where it meets the vertical stabilizer.

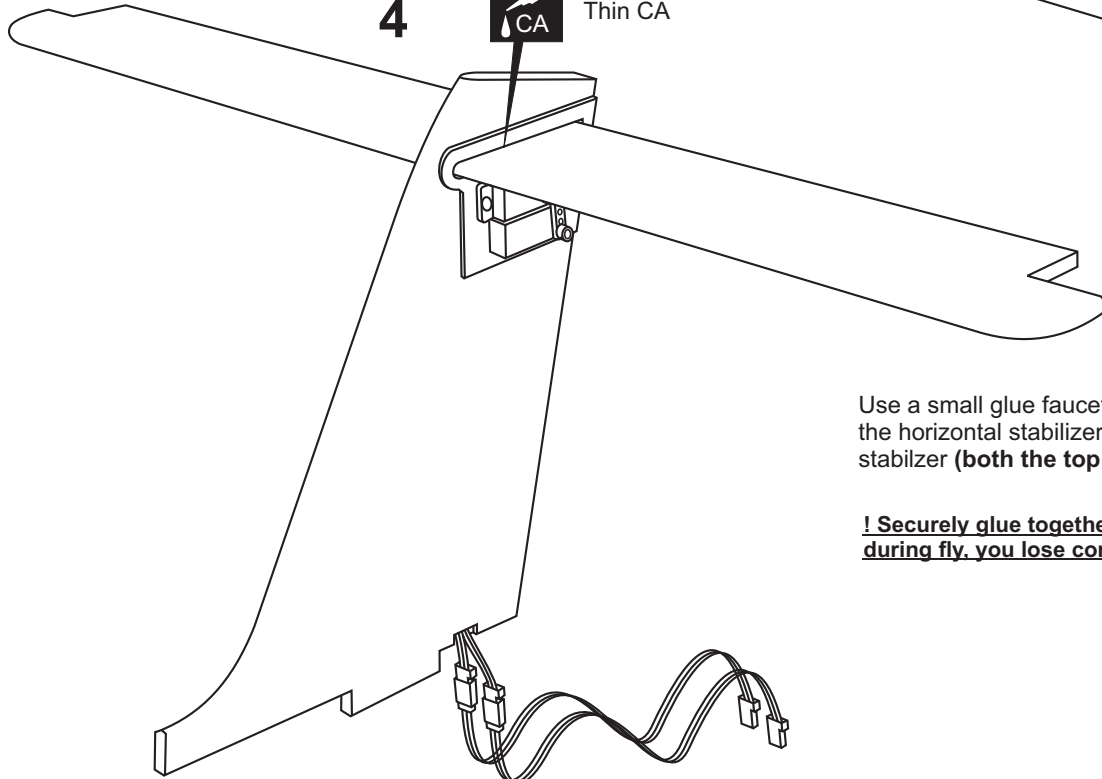
**3** Cut away only the covering



Remove the horizontal stabilizer from the fuselage. Using the 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.

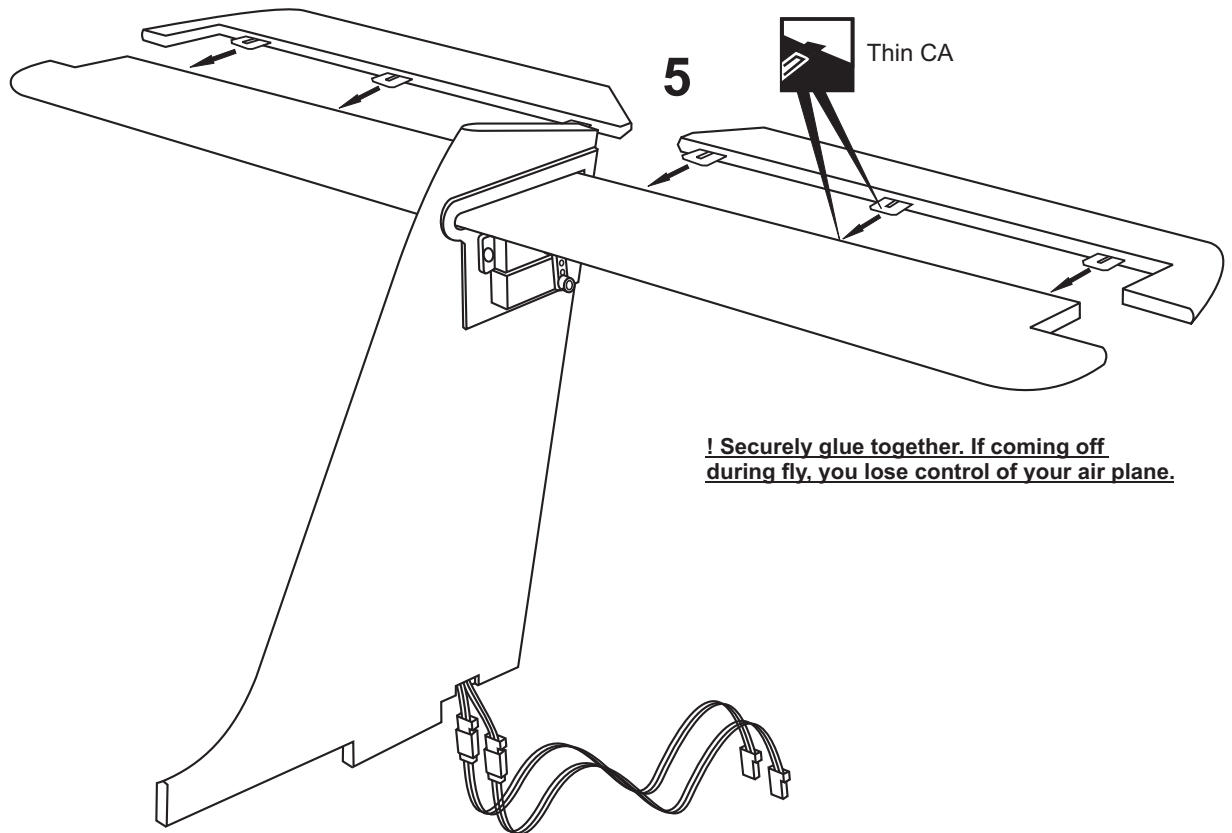
**4** Thin CA



Use a small glue faucet, Apply the thin CA glue on the horizontal stabilizer where it contacts the vertical stabilizer (**both the top and bottom sides**).

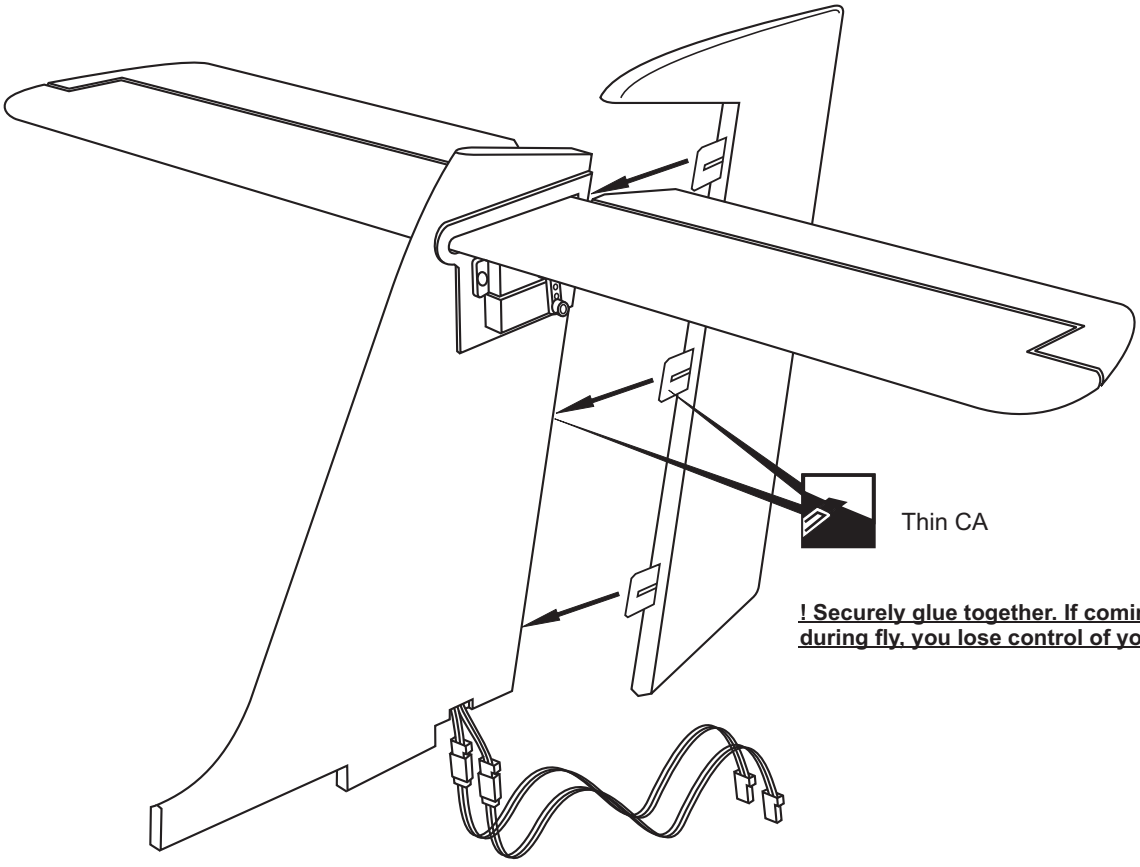
**! Securely glue together. If coming off during fly, you lose control of your air plane.**

**5** Thin CA



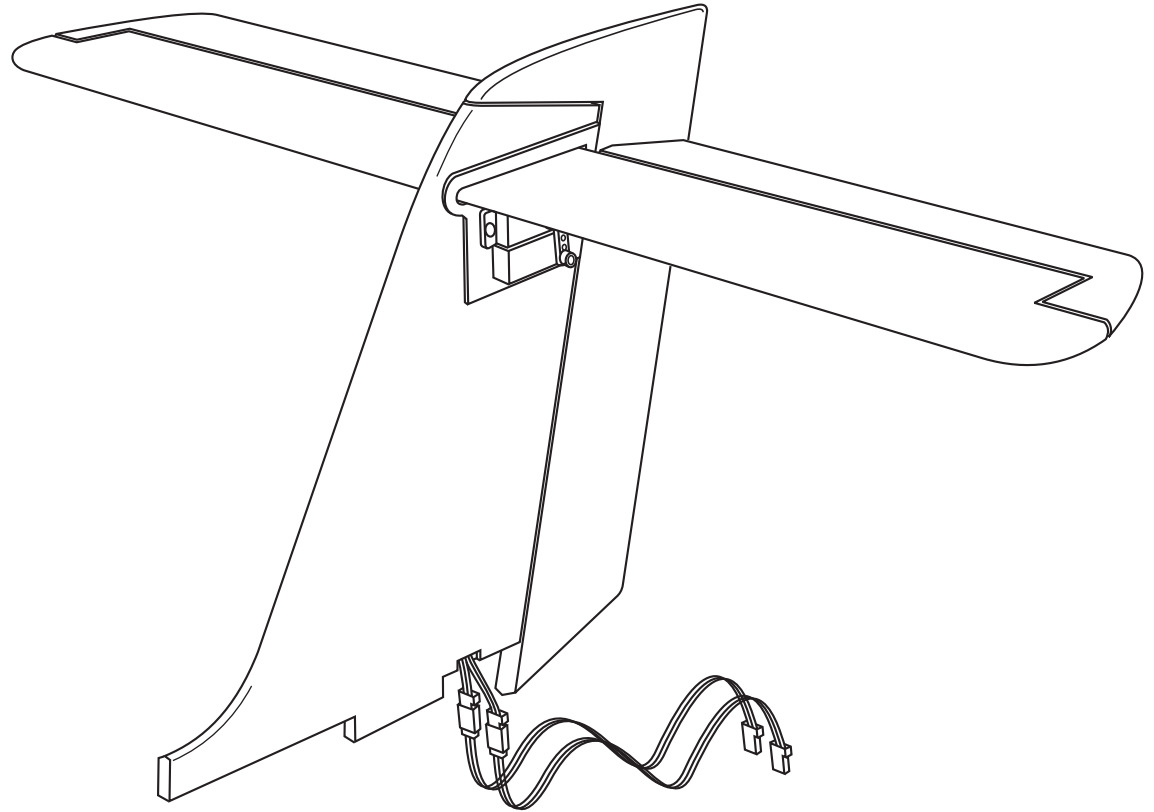
**! Securely glue together. If coming off during fly, you lose control of your air plane.**

PA-38 Tomahawk 12- Rudder

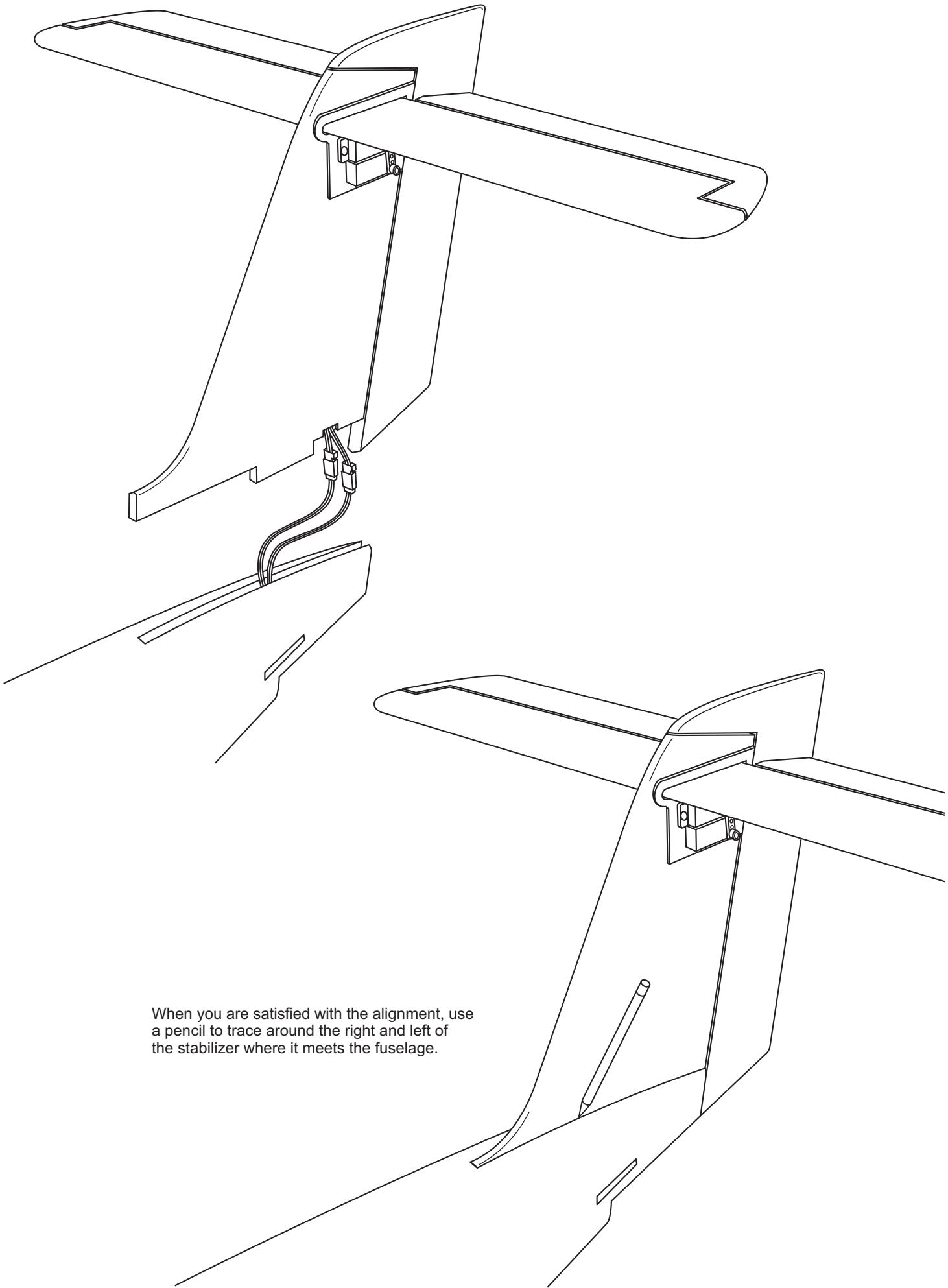


Thin CA

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

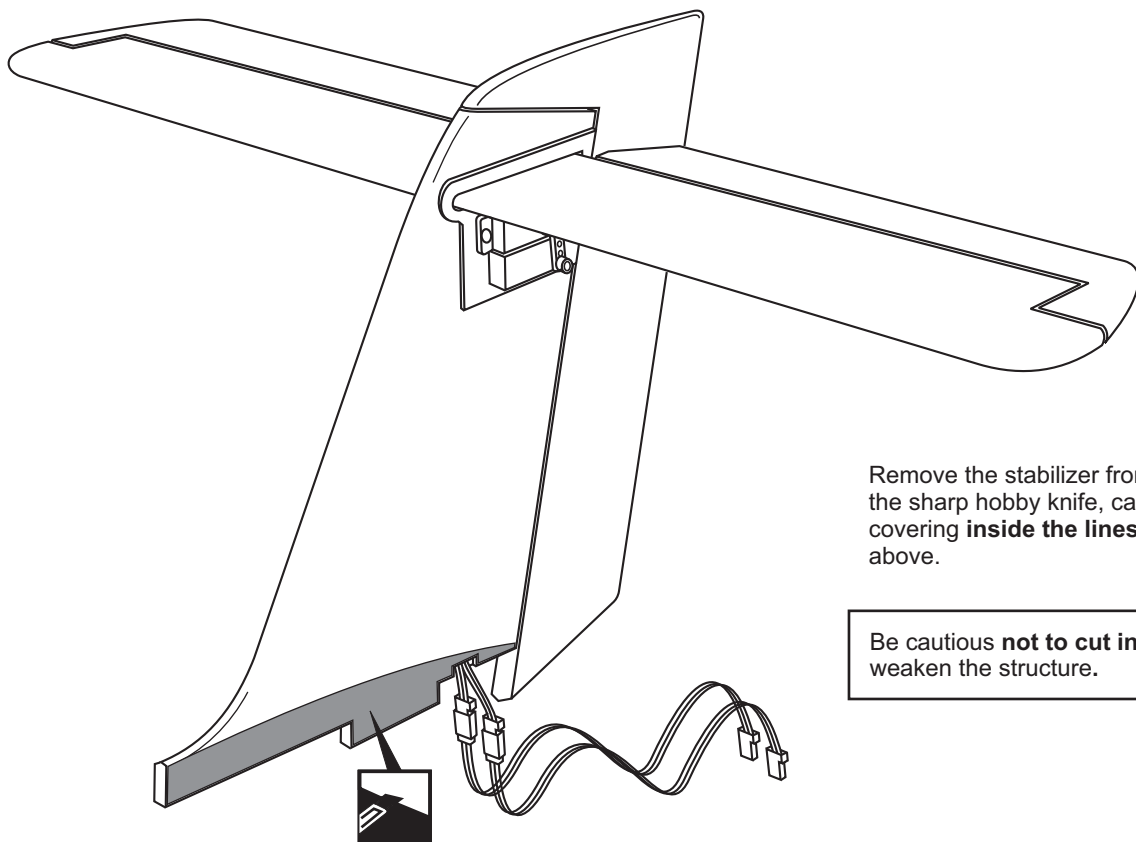


**PA-38 Tomahawk 13- Attach the stabilizer to the fuselage**



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





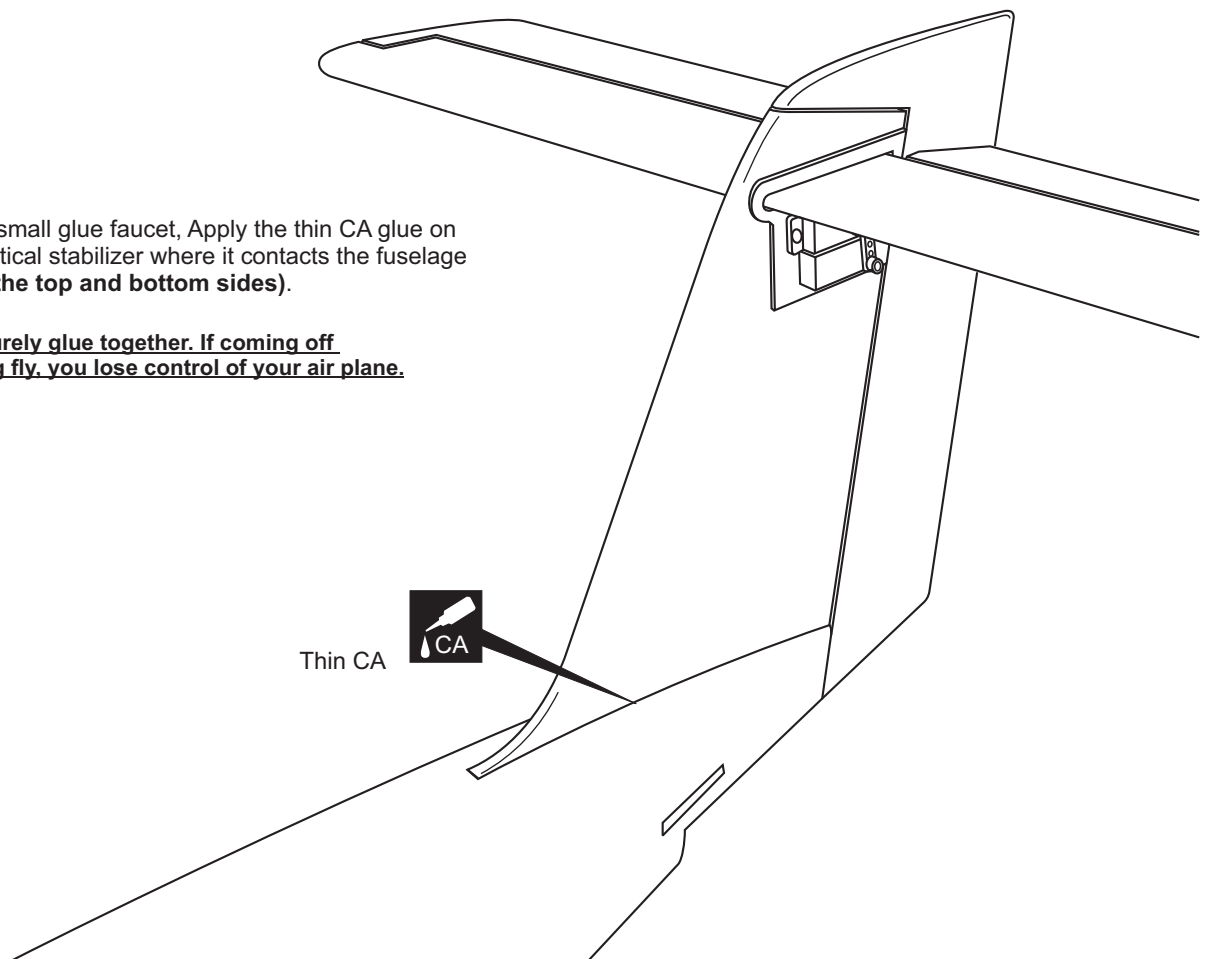
Remove the stabilizer from the fuselage. Using the sharp hobby knife, carefully cut away the covering **inside the lines** which were marked above.

Be cautious **not to cut into the wood**, this will weaken the structure.

Use a small glue faucet, Apply the thin CA glue on the vertical stabilizer where it contacts the fuselage (**both the top and bottom sides**).

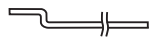
**! Securely glue together. If coming off during fly, you lose control of your air plane.**

Thin CA

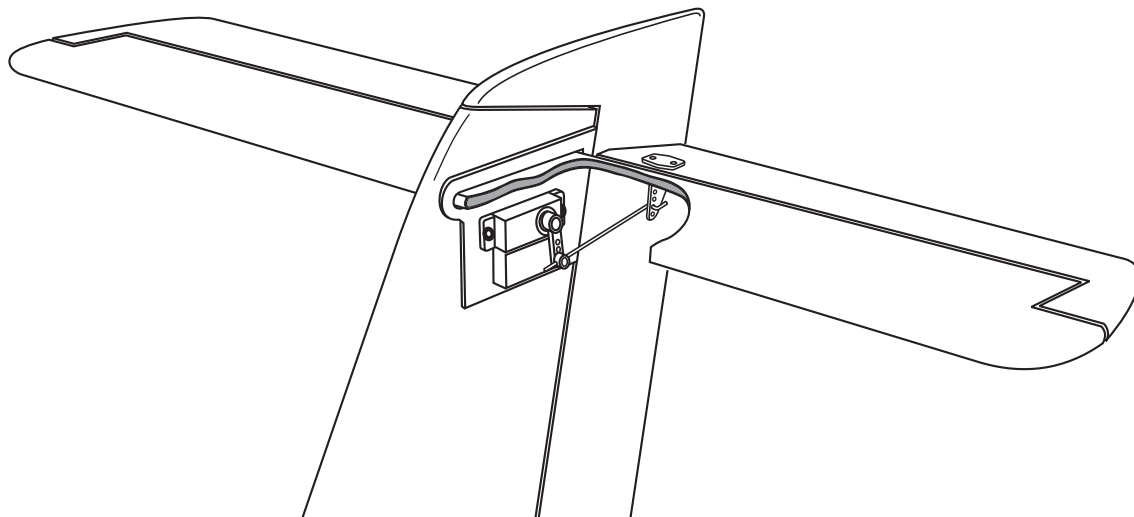
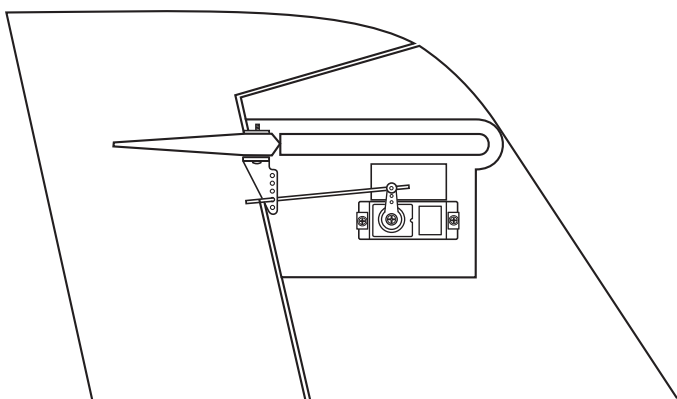
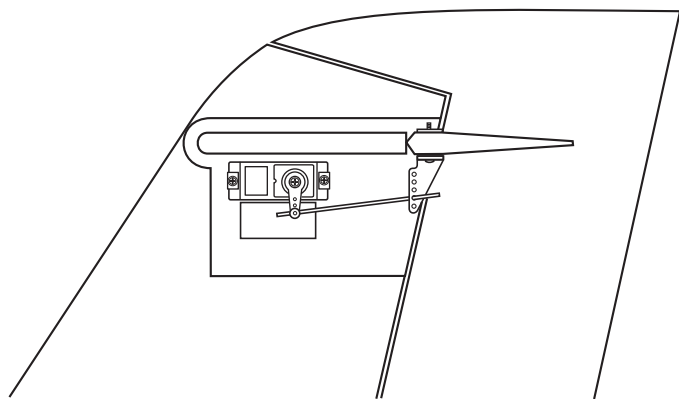
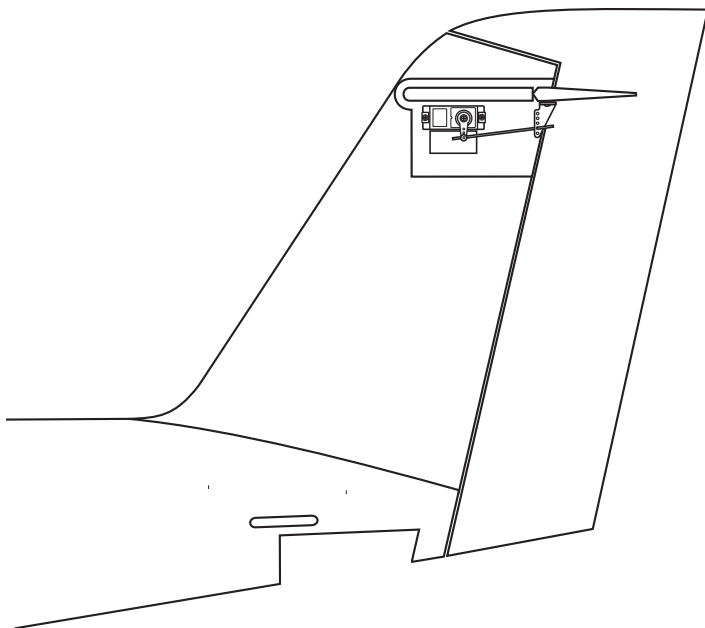


# PA-38 Tomahawk 15- Elevator linkage

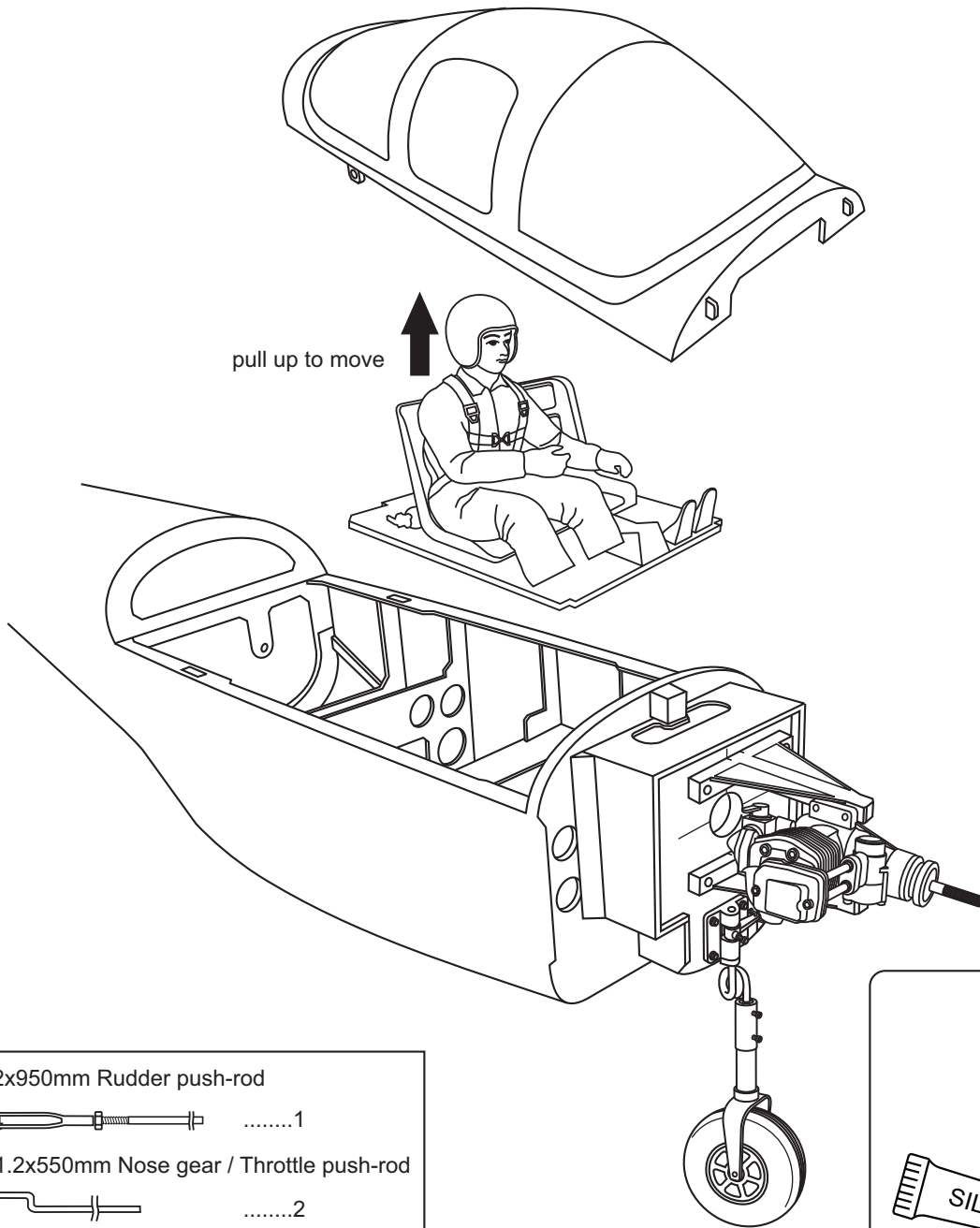
1.5x175mm rod






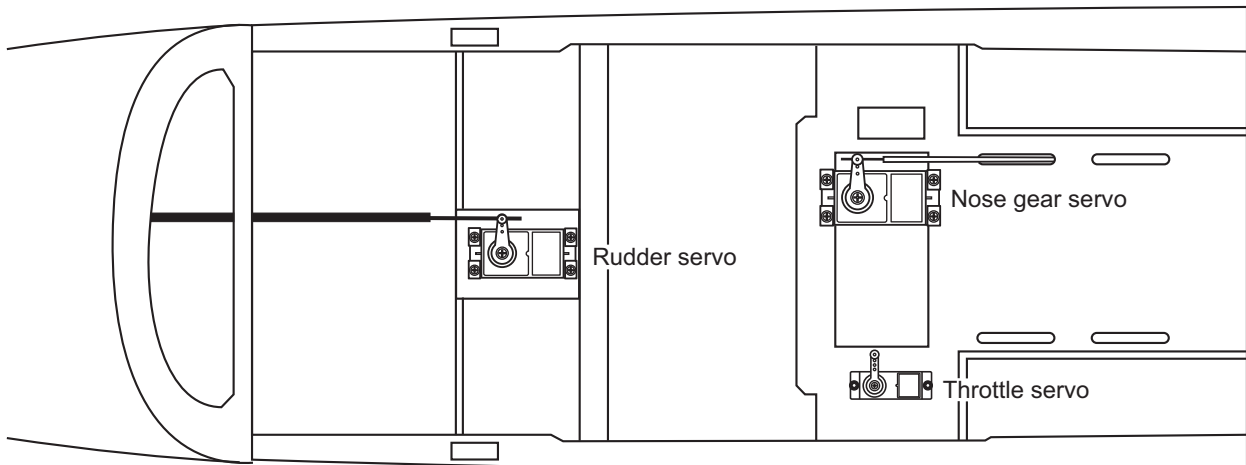
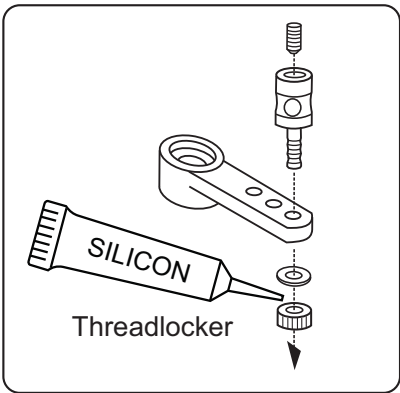
...2



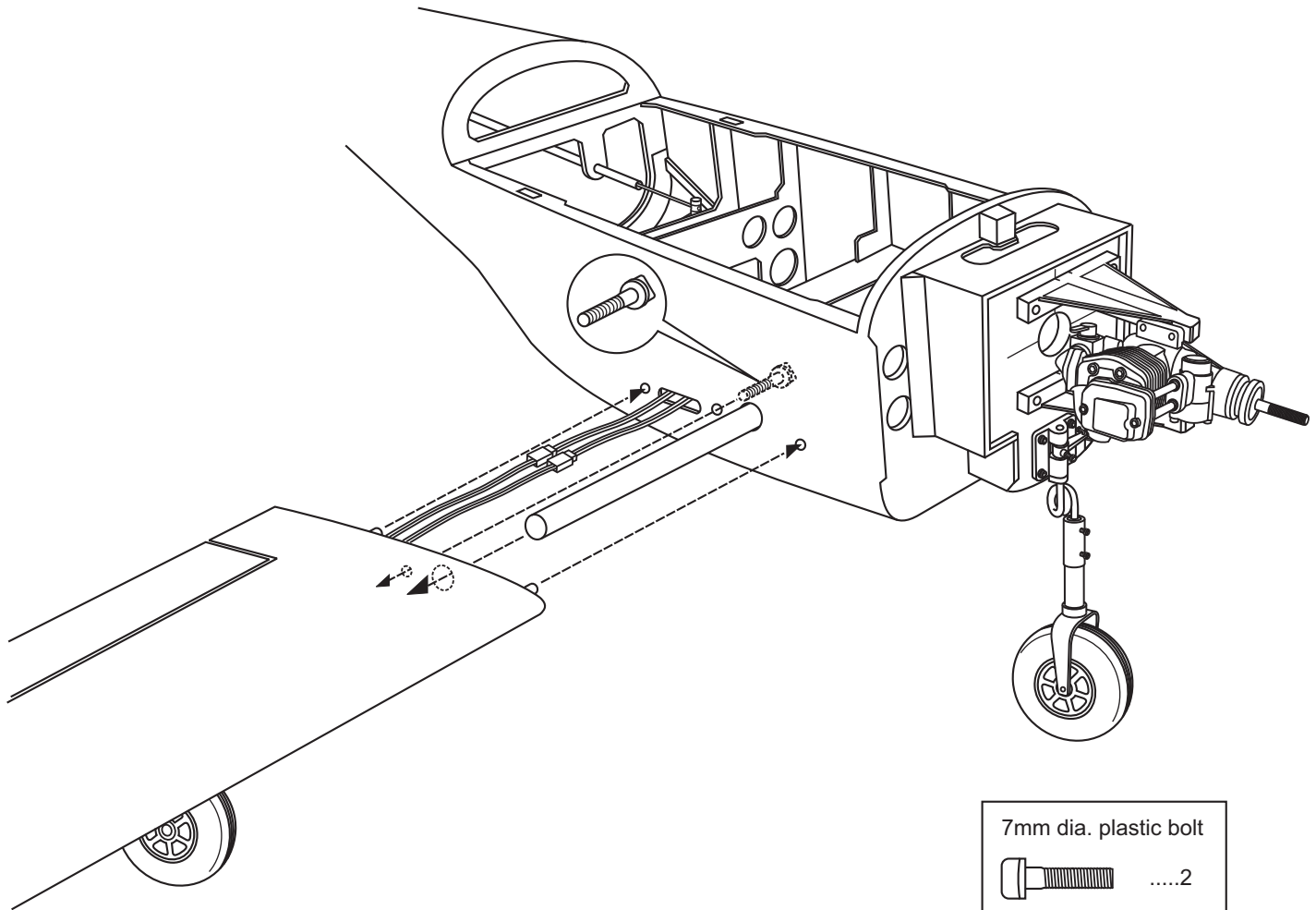
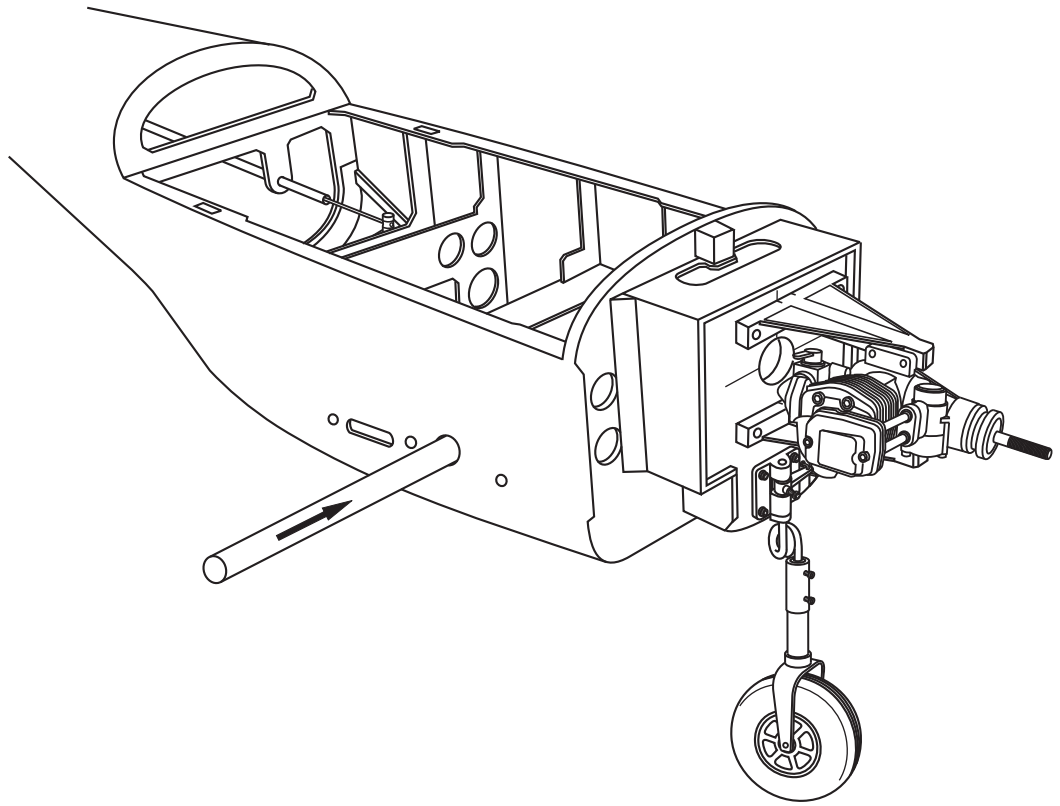
**PA-38 Tomahawk 16- Rudder - Nose gear - Throttle linkages linkage**




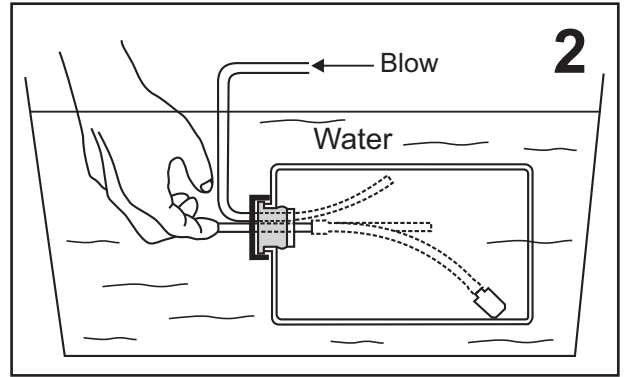
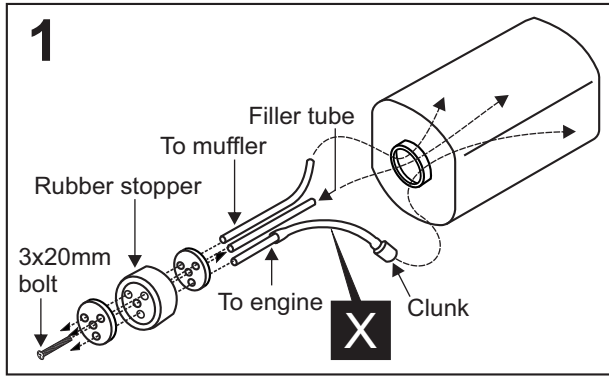
- 2x950mm Rudder push-rod  
 .....1
- 1.2x550mm Nose gear / Throttle push-rod  
 .....2
- 2mm connector  
 .....3



PA-38 Tomahawk 17- Joining the wing



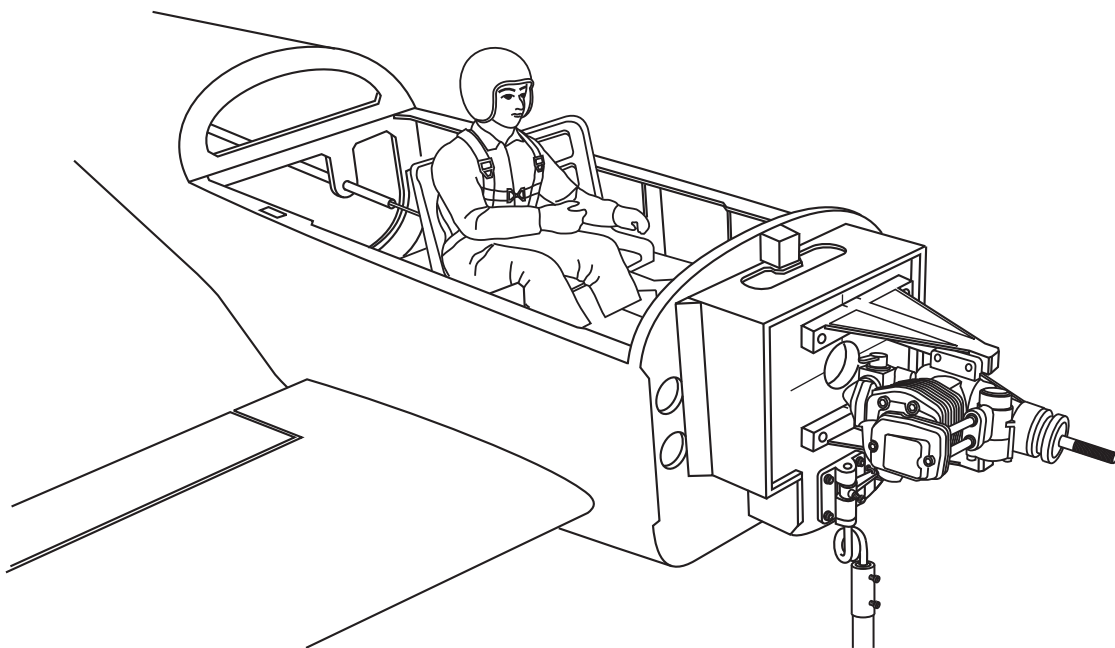
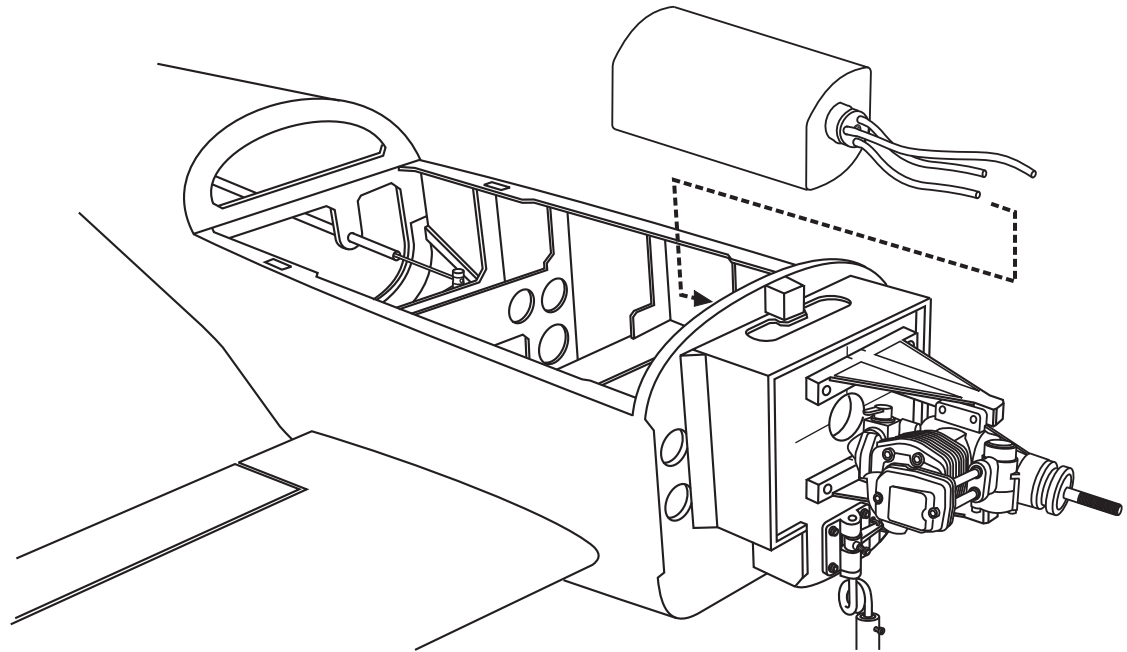
7mm dia. plastic bolt  
 .....2



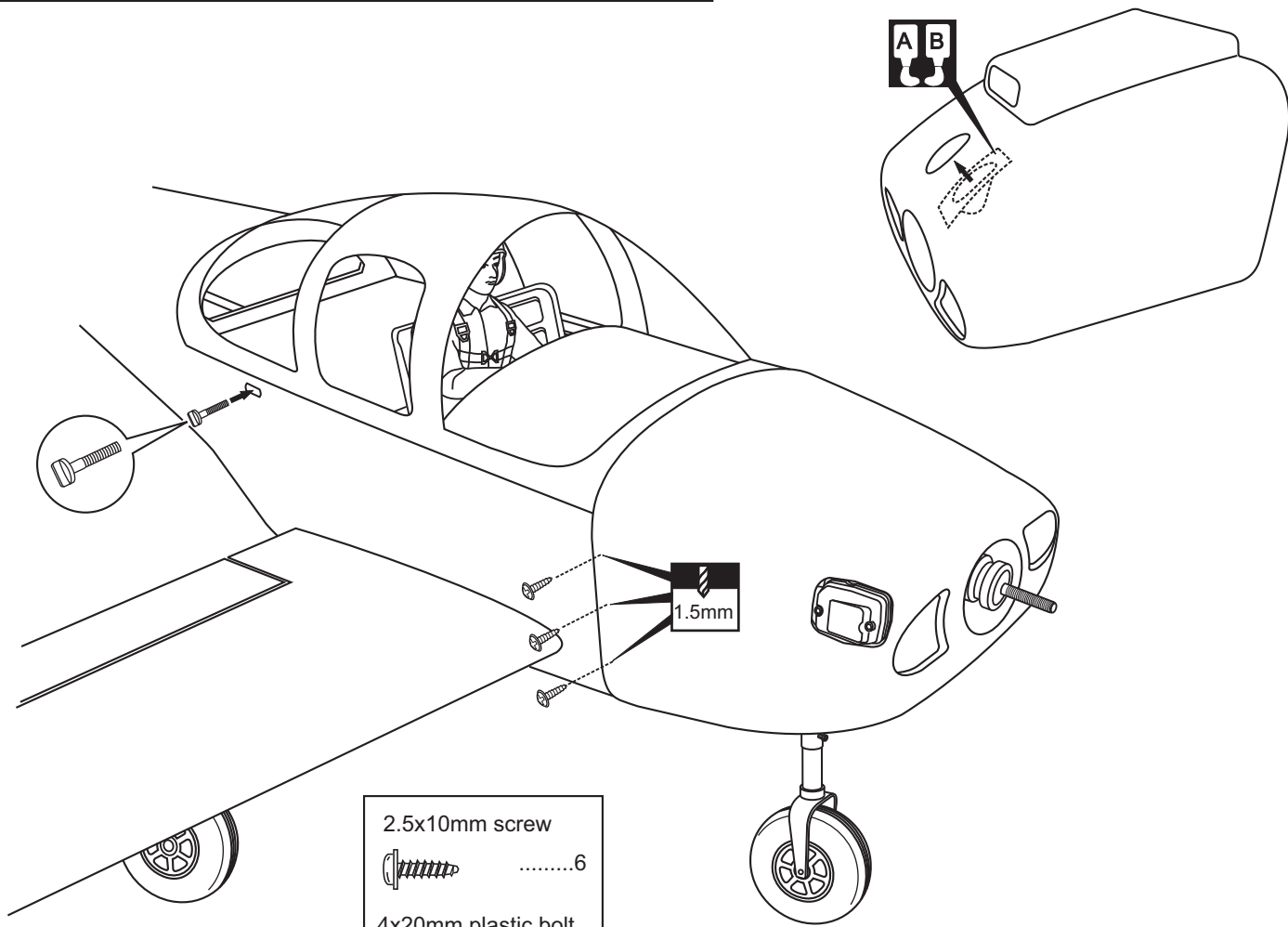
After confirming the direction . Insert this assembly, clunk end first, into the fuel tank and tighten and screw the fuel tank-cap on firmly.



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.

Ensure that the fuel tank clunk does not touch the rear of the fuel tank.

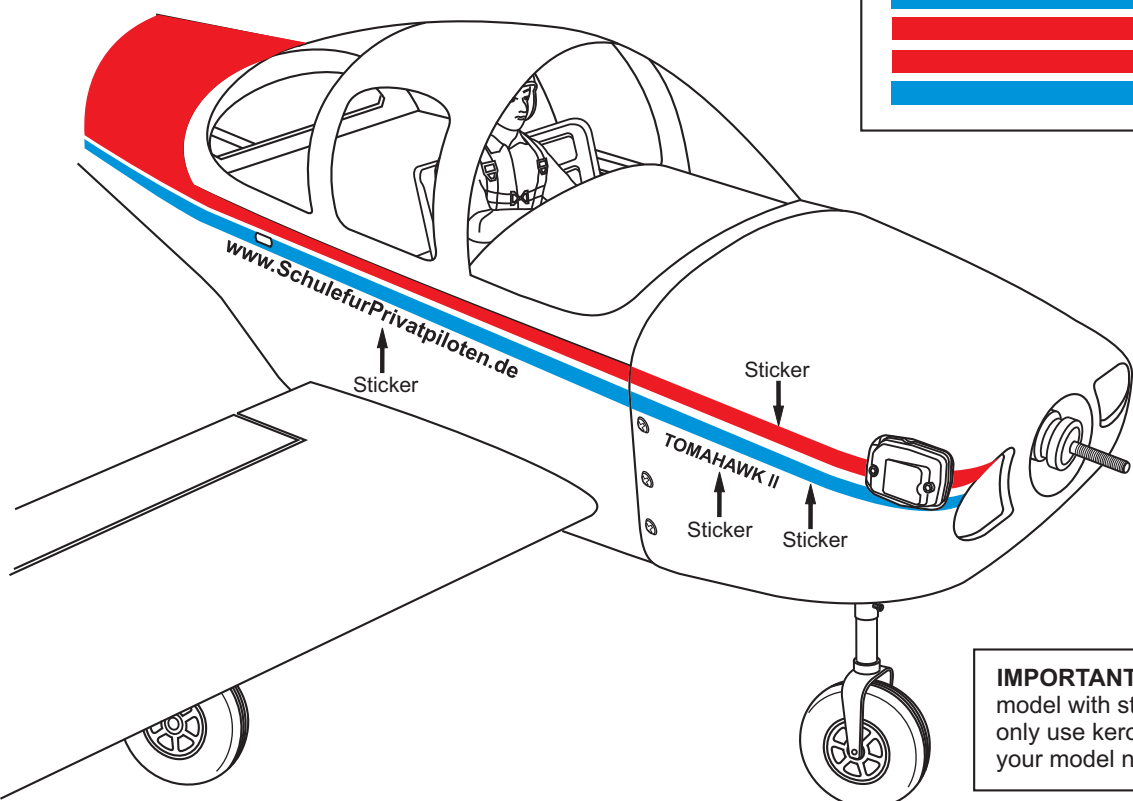


**PA-38 Tomahawk 19- Cowling - Sticker**



- 2.5x10mm screw  
 .....6
- 4x20mm plastic bolt  
 .....2

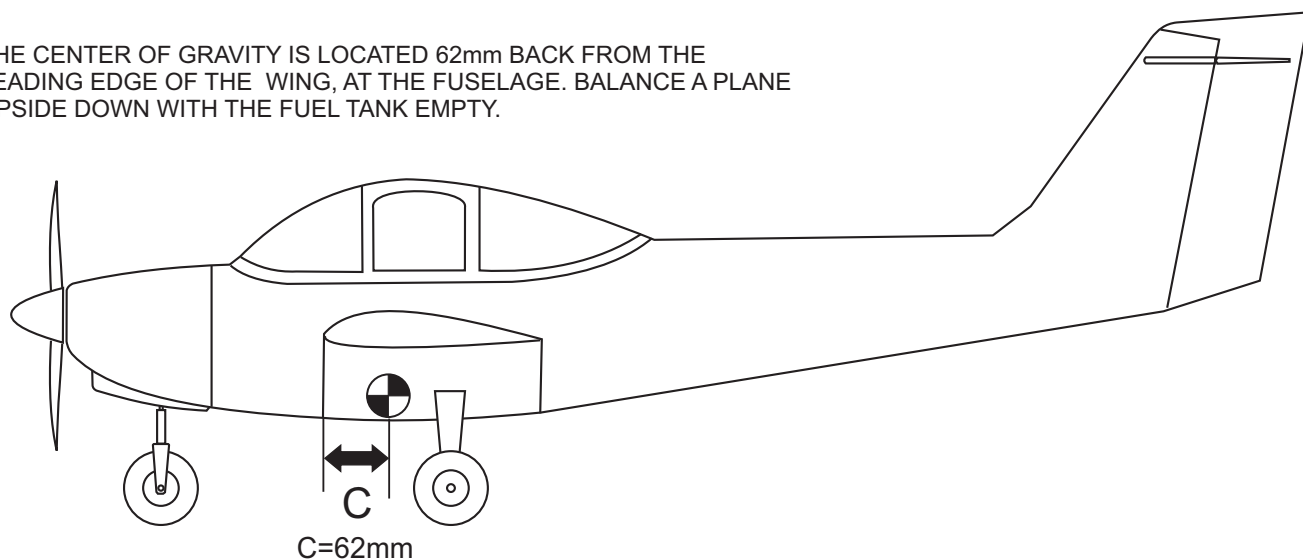
[www.SchulefürPrivatpiloten.de](http://www.SchulefürPrivatpiloten.de)  
[www.SchulefürPrivatpiloten.de](http://www.SchulefürPrivatpiloten.de)  
 TOMAHAWK II TOMAHAWK II

**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.

# PA-38 Tomahawk 20- Balance - Control surface

THE CENTER OF GRAVITY IS LOCATED 62mm BACK FROM THE LEADING EDGE OF THE WING, AT THE FUSELAGE. BALANCE A PLANE UPSIDE DOWN WITH THE FUEL TANK EMPTY.



C=62mm

- 1- Mount the wing to the fuselage. Using a couple of pieces of masking tape, place them on the top side of the wing (62mm) 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.

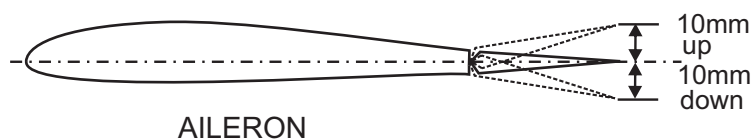
## LATERAL BALANCE:

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

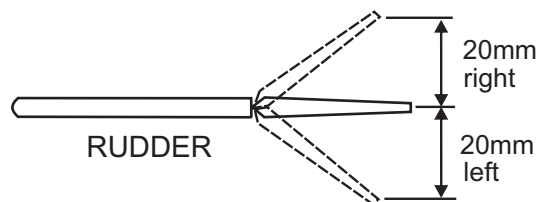
- 1- Turn the airplane upside down. Attach one loop of heavy string to the engine crankshaft and one to the tail wheel wire. With the wing level, carefully lift the airplane by the string. This may require two people to make easier.
- 2- If one side of the wing fall, that side is heavier than the opposite. 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 !**

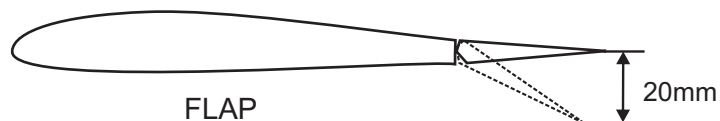
## CONTROL SURFACE



AILERON



RUDDER



FLAP



ELEVATOR

**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 PA-38 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 : 10mm up / down  
Elevator : 12mm up / down  
Rudder : 20mm right / left  
Flap : 20mm down

### HIGH RATE

Aileron : 15mm up / down  
Elevator : 16mm up / down  
Rudder : 25mm right / left  
Flap : 30mm down