

Radio control model
R/C Flugmodell

INSTRUCTION MANUAL MONTAGEANLEITUNG

L-4

GRASS HOPPER



TECHNISCHE DATEN

Spannweite	2400mm
Länge	1510mm
Elektroantrieb	(siehe nächste Seite)
Verbrennerantrieb	20cc 2-T
Fernsteuerung	6 Kanal / 6 Servos

SPECIFICATIONS

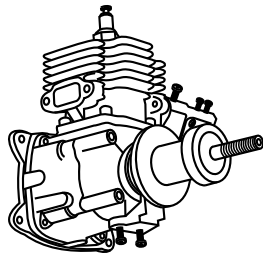
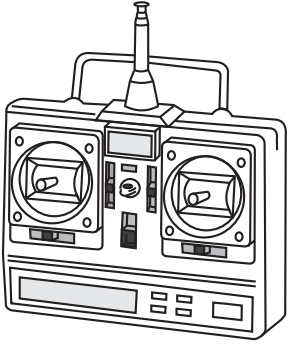
Wingspan	2400mm
Length	1510mm
Electric Motor	(See next page)
Glow Engine	.91 2T / 1.20 4T
Gasoline Engine	20cc 2T
Radio	6 Channel / 6 Servos



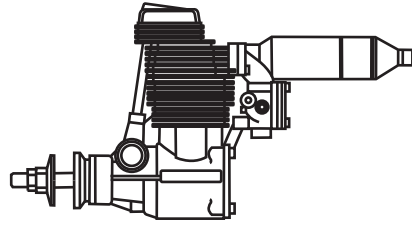
WARNING! This radio controlled model is NOT a toy. If modified or flown carelessly it could go out of control and cause serious human injury or property damage. Before flying your airplane, ensure the air field is spacious enough. Always fly it outdoors in safe areas and seek professional advice if you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

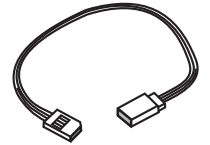
REQUIRED FOR OPERATION (Purchase separately) BENÖTIGTE KOMPONENTEN FÜR DEN ABFLUG (Nicht enthalten)



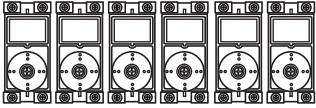
Gas Engine: 20cc



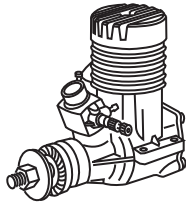
Glow Engine: 1.20 4T



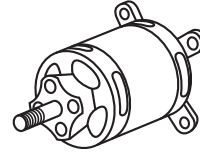
Extension for aileron servo, throttle servo.



Minimum 6 channel radio for airplane with 6 servos
 .Motor control x1 .Aileron x2
 .Elevator x2 .Rudder x1



Glow Engine: .91 2T 4T



1650W Brushless Motor



Fuel tube

GLUE (Purchase separately)



Silicon sealer

Cyanoacrylate Glue
Klebstoff



CA



EPOXY A

Epoxy Glue (5 minute type)
Epoxy-Klebstoff (5min-Typ)




EPOXY B


Epoxy Glue (30 minute type)
Epoxy-Klebstoff (30min-Typ)

TOLLS REQUIRED (Purchase separately)


Hobby knife 

Phillip screw driver 

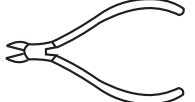
Hex Wrench 

Needle nose Pliers 

Scissors 

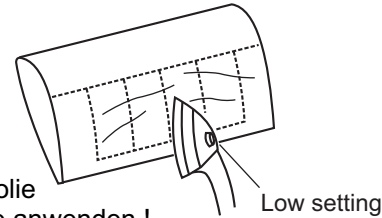
Awl 

Sander 


Wire Cutters 


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


If exposed to direct sunlight and/or heat, wrinkles 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 Warmluftgebläse (Haartrockner) um evtl. Falten aus der Folie zu bekommen. Die Kanten können Sie mit einem Bügeleisen behandeln. Nicht zuviel Hitze anwenden !


 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

 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

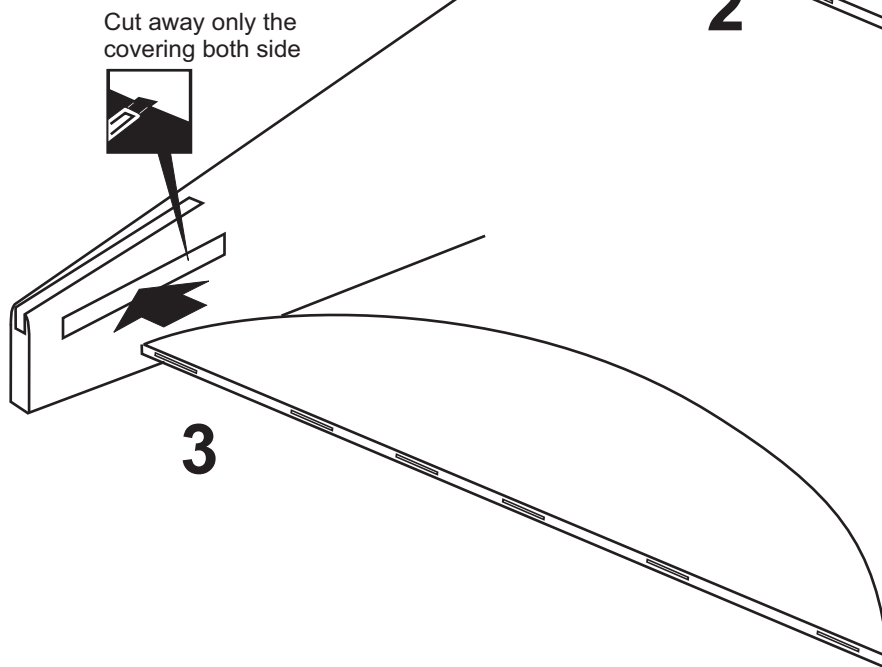
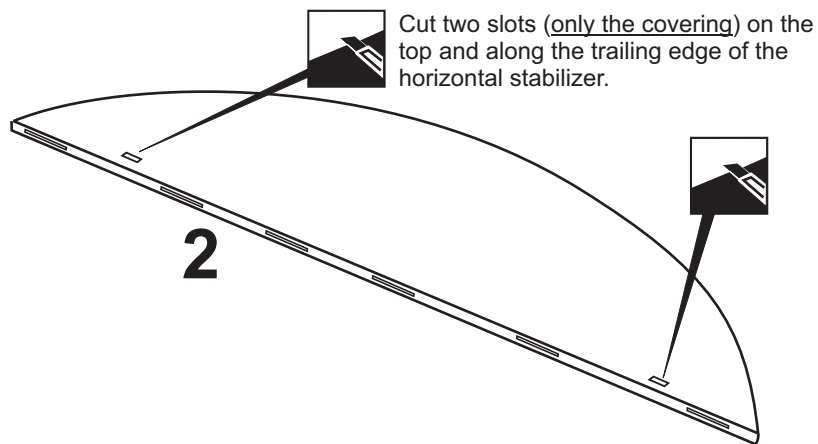
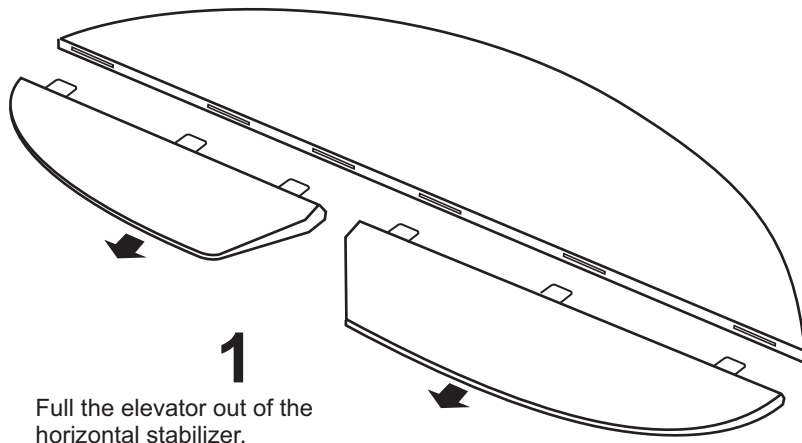
 Nicht enthalten. Teile müssen separat gekauft werden.

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

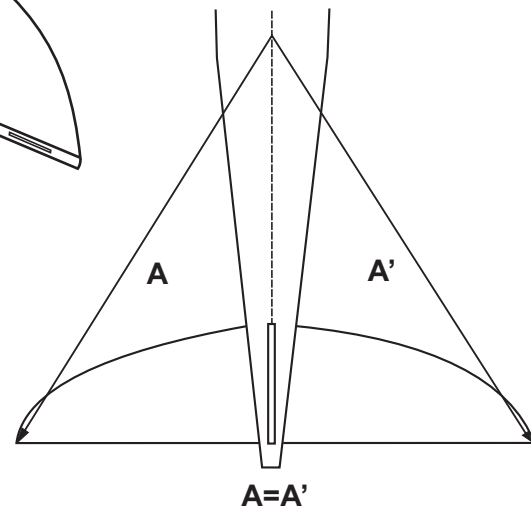
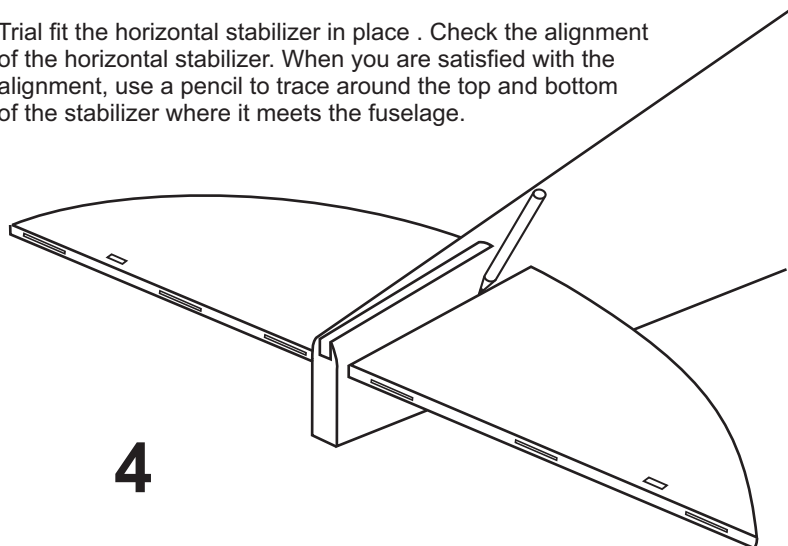
CONVERSION TABLE

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"	

L-4 Grass hopper section 1 HORIZONTAL STABILIZER



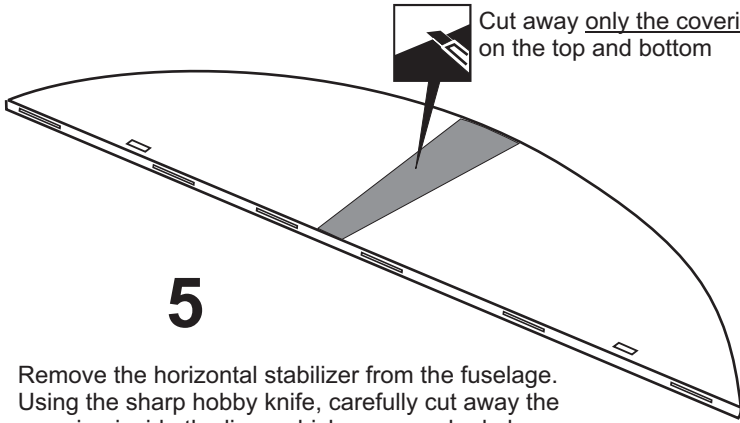
Trial fit the horizontal stabilizer in place . Check the alignment of the horizontal stabilizer. When you are satisfied with the alignment, use a pencil to trace around the top and bottom of the stabilizer where it meets the fuselage.



L-4 Grass hopper section 2 HORIZONTAL STABILIZER

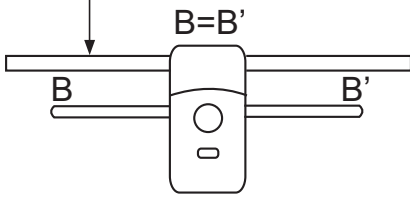
5

Cut away only the covering on the top and bottom



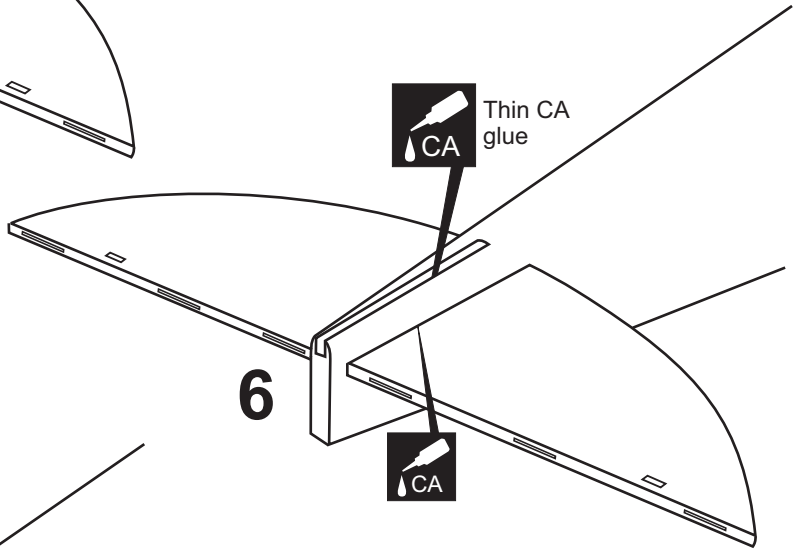
Remove the horizontal stabilizer from the fuselage. Using the sharp hobby knife, carefully cut away the covering inside the lines which were marked above.

Aluminum wing joiner

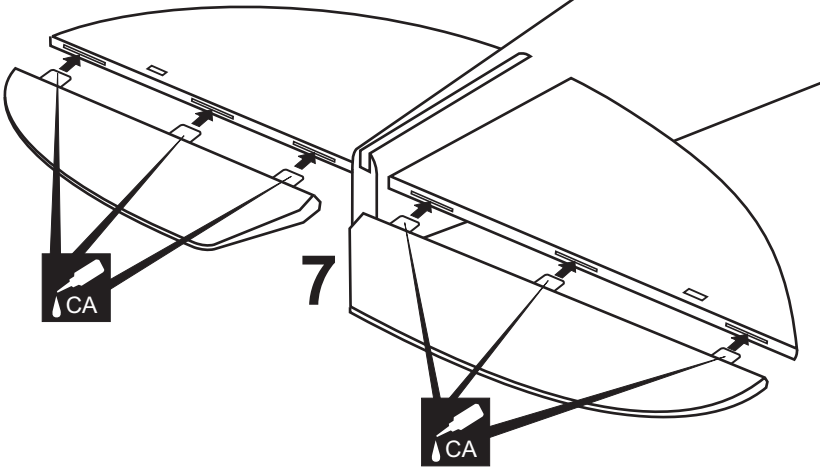


6

Thin CA glue



7

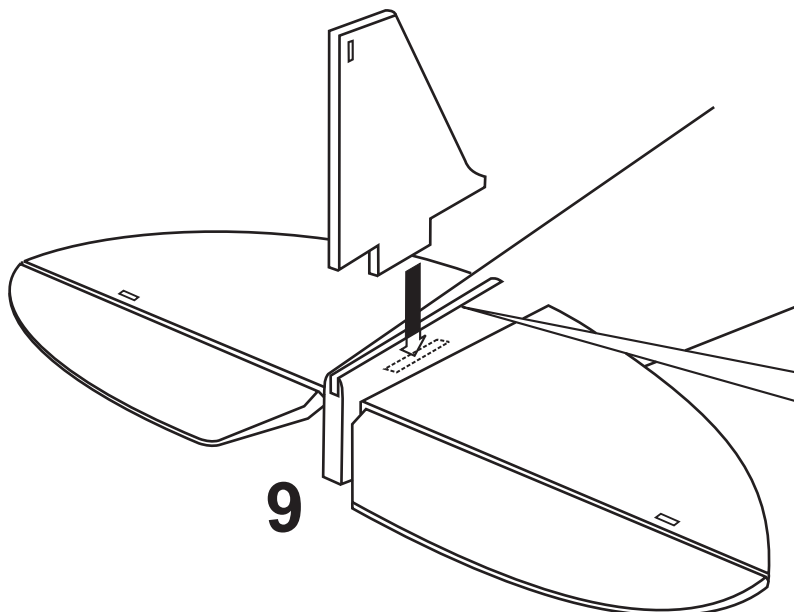


The elevator hinges are pre-glue into the elevator halves. Working with one elevator half for now, apply a thin layer of petroleum jelly to only the pivot point of the two hinges.

Without using glue yet, push the elevator half and its hinges into the hinge slots in the trailing edge of the horizontal stabilizer. There should be a minimal hinge gap and the end of the elevator half should not rub against the horizontal stabilizer.

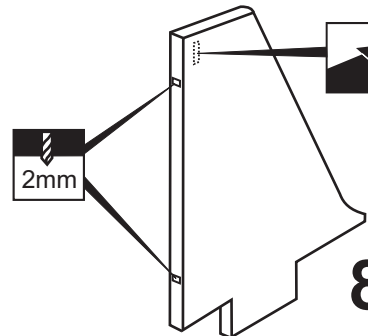
When satisfied with the fit and alignment, hinge the elevator half to the horizontal stabilizer, using thick CA glue. Make sure to apply a thin layer of CA glue to the top and bottom of both hinges. Repeat the previous procedures to hinge the second elevator half to the other side of the horizontal stabilizer.

9



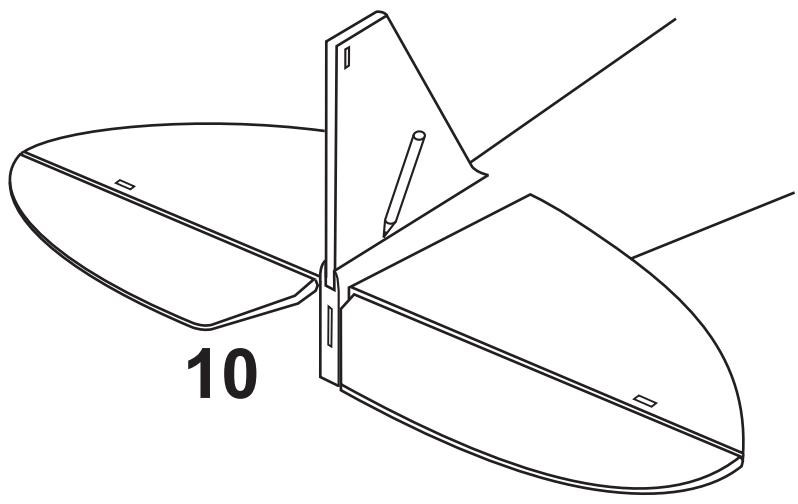
8

Cut away only the covering both sides.

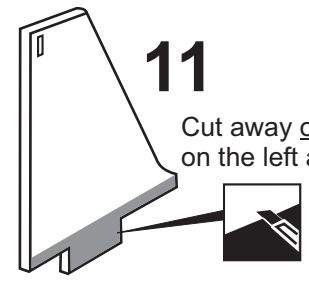


NOTE: You may need to open up the slots of the horizontal stabilizer so that the vertical stabilizer is not too difficult to push in.

L-4 Grass hopper section 3 VERTICAL STABILIZER



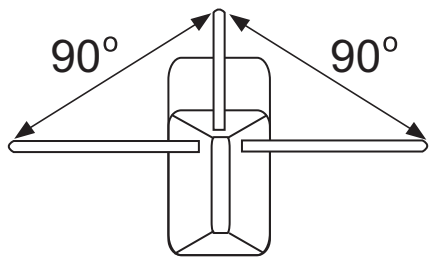
10



11

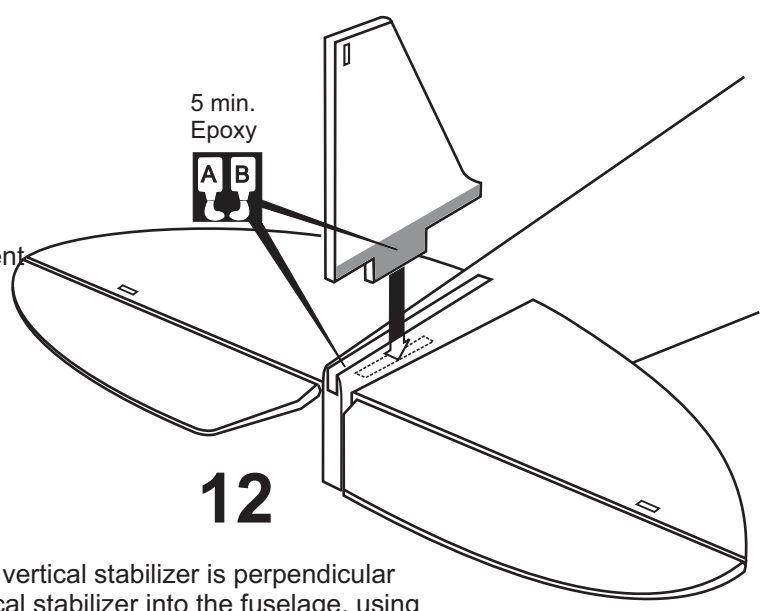
Cut away only the covering on the left and right side.

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



FUSELAGE - REAR VIEW

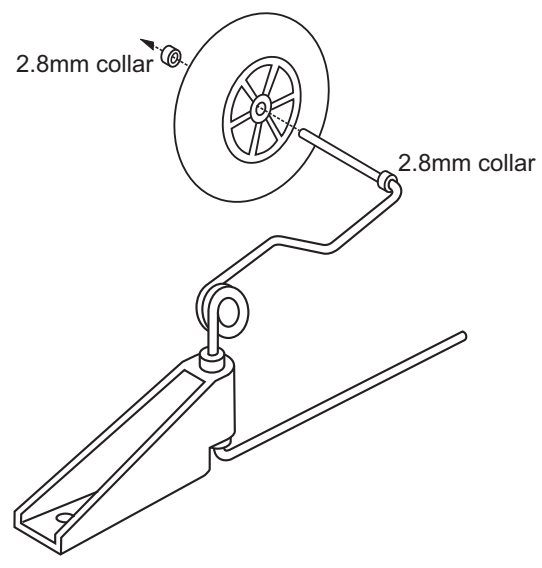
Trial fit the vertical stabilizer in place . Check the alignment of the vertical stabilizer. When you are satisfied with the alignment, use a pencil to trace around the right and left of the stabilizer where it meets the fuselage.



5 min. Epoxy
A B



12

Realign the vertical stabilizer , ensure that the vertical stabilizer is perpendicular to the horizontal stabilizer. Then glue the vertical stabilizer into the fuselage, using a generous amount of 5 min. Epoxy. Apply thin epoxy to each of the two joints and the entire bottom edge of the vertical stabilizer, use a generous amount to ensure to strong bond.

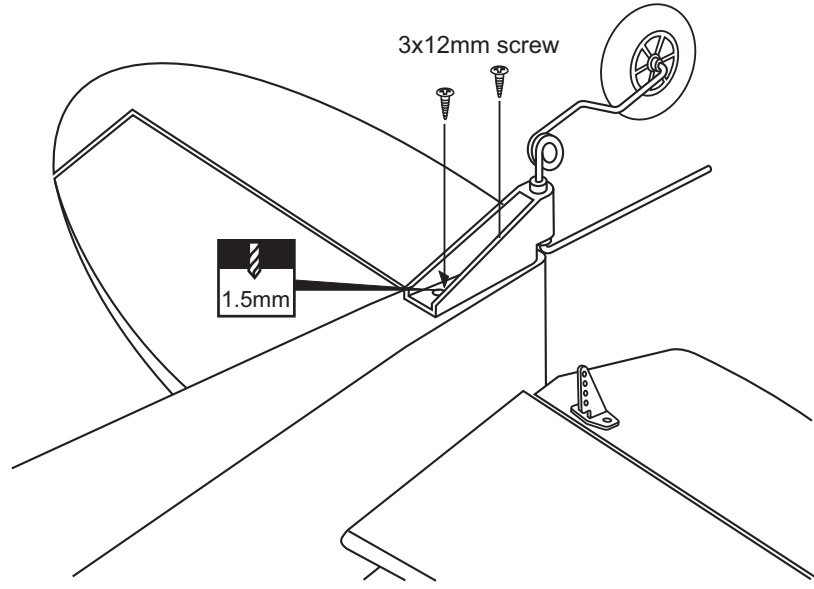
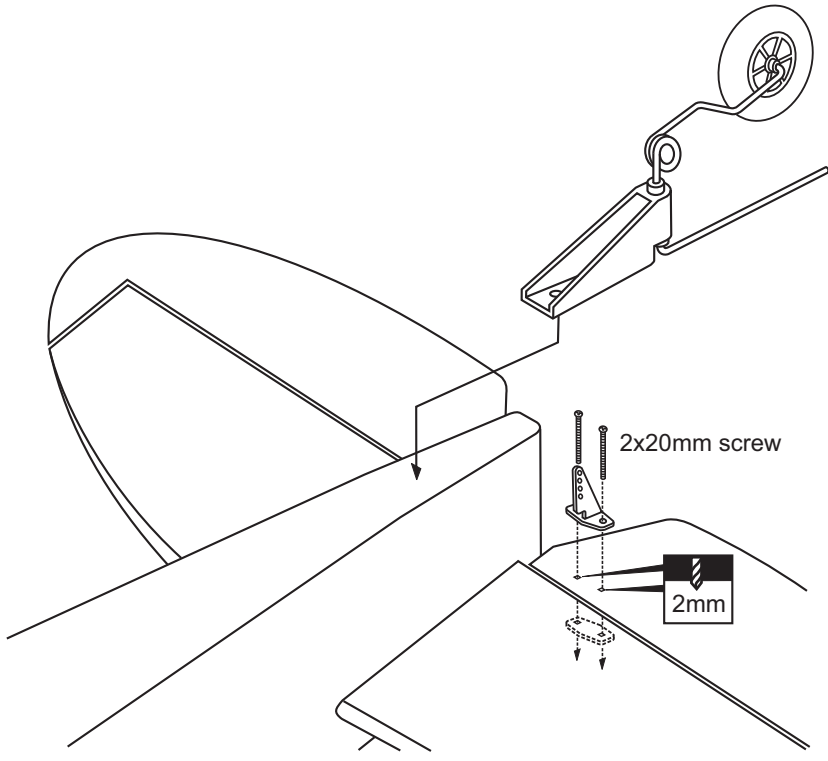



2.8mm collar

2.8mm collar

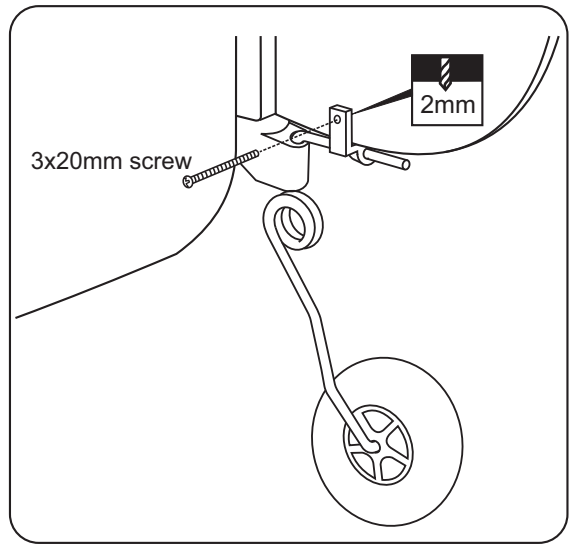
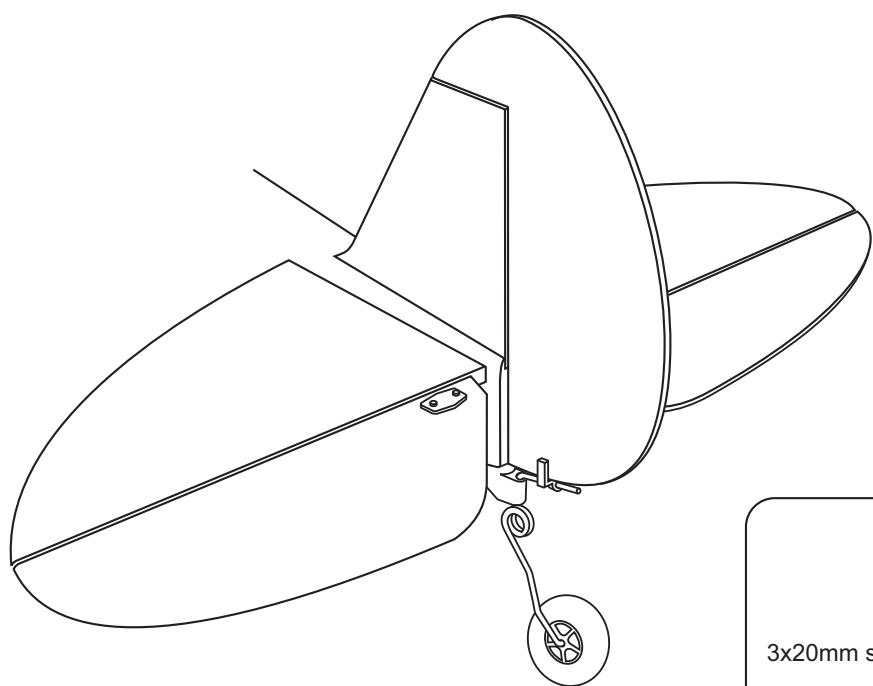
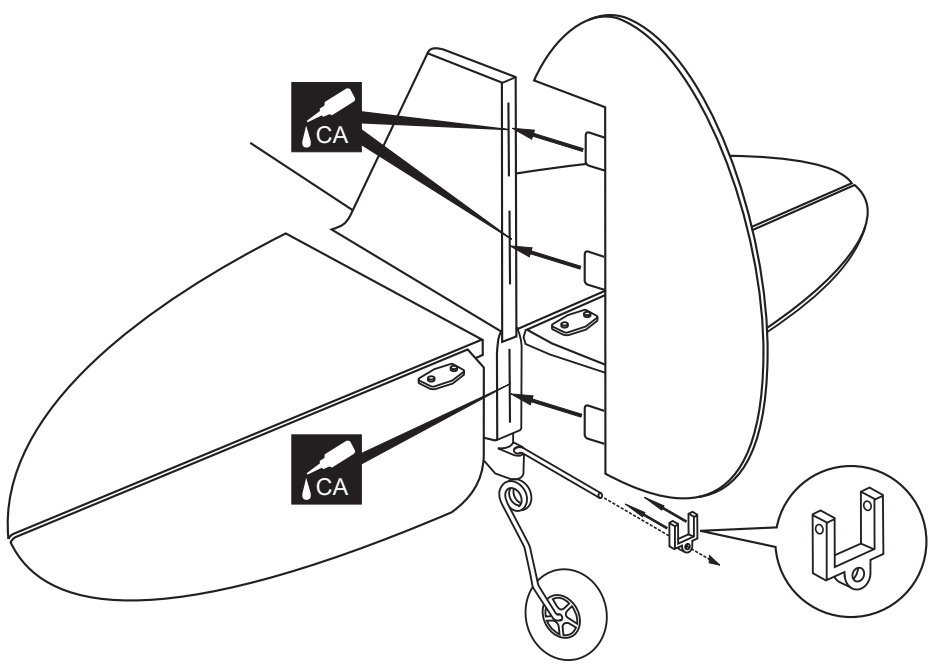
-  35mm wheel...1
-  2.8mm collar.....2

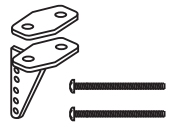
L-4 Grass hopper section 4 TAIL WHEEL



 3x12mm2

L-4 Grass hopper section 5 TAIL WHEEL



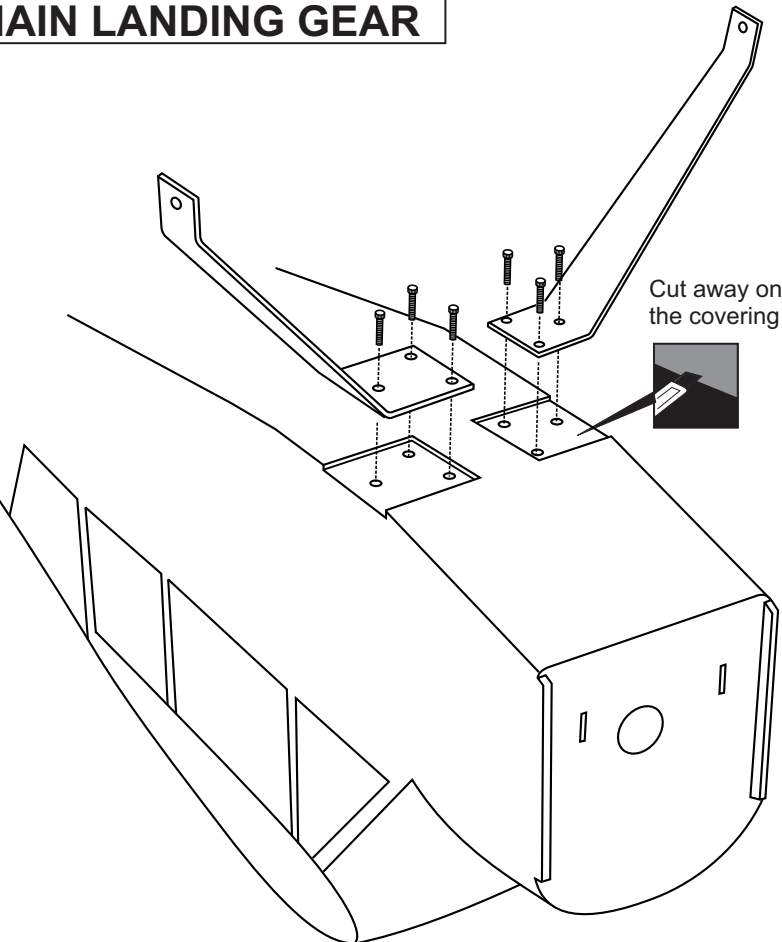
- Control horn
- 
-2 set

L-4 Grass hopper section 6 MAIN LANDING GEAR

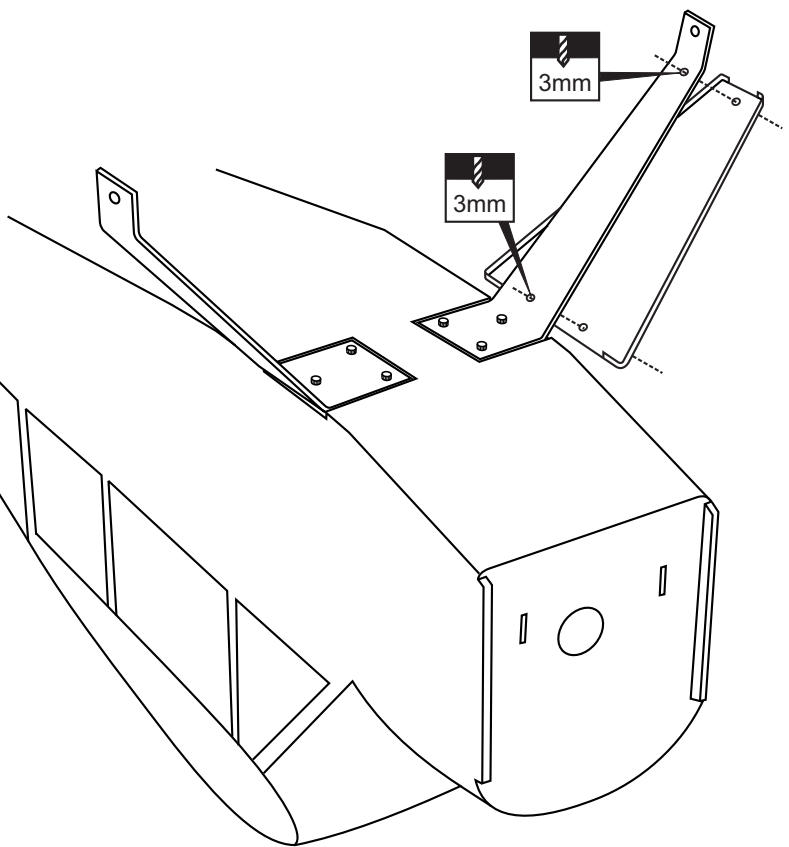
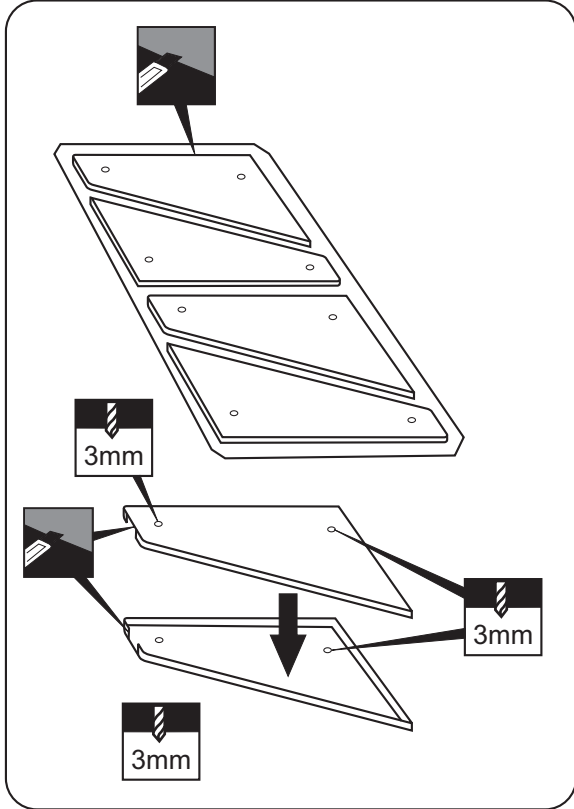
4X20mm screw



*** WARNING:** When removing any covering from the airframe, please ensure that you secure the cut edge with CA or similar cement. This will ensure the covering remain tight.



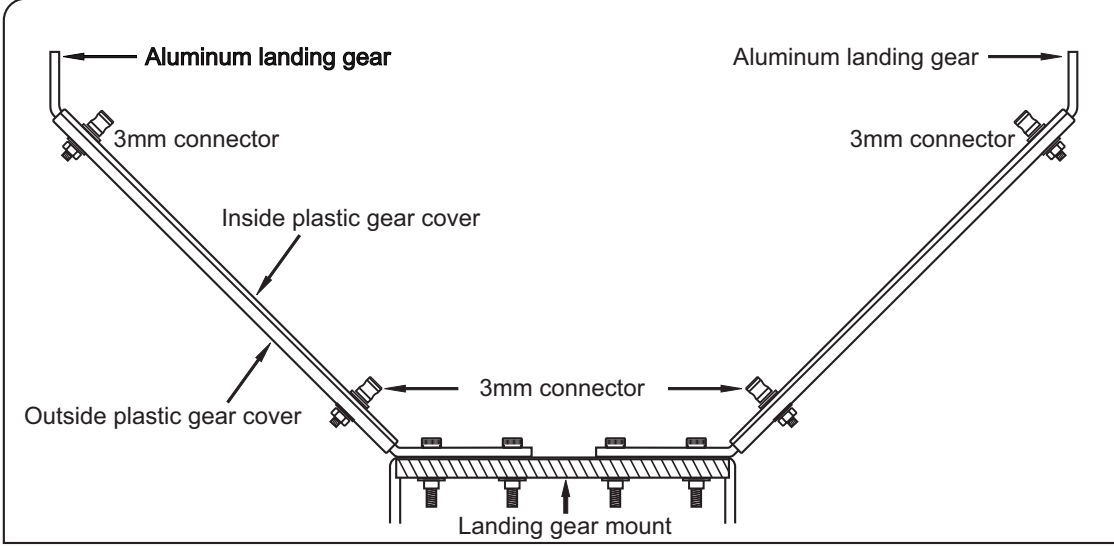
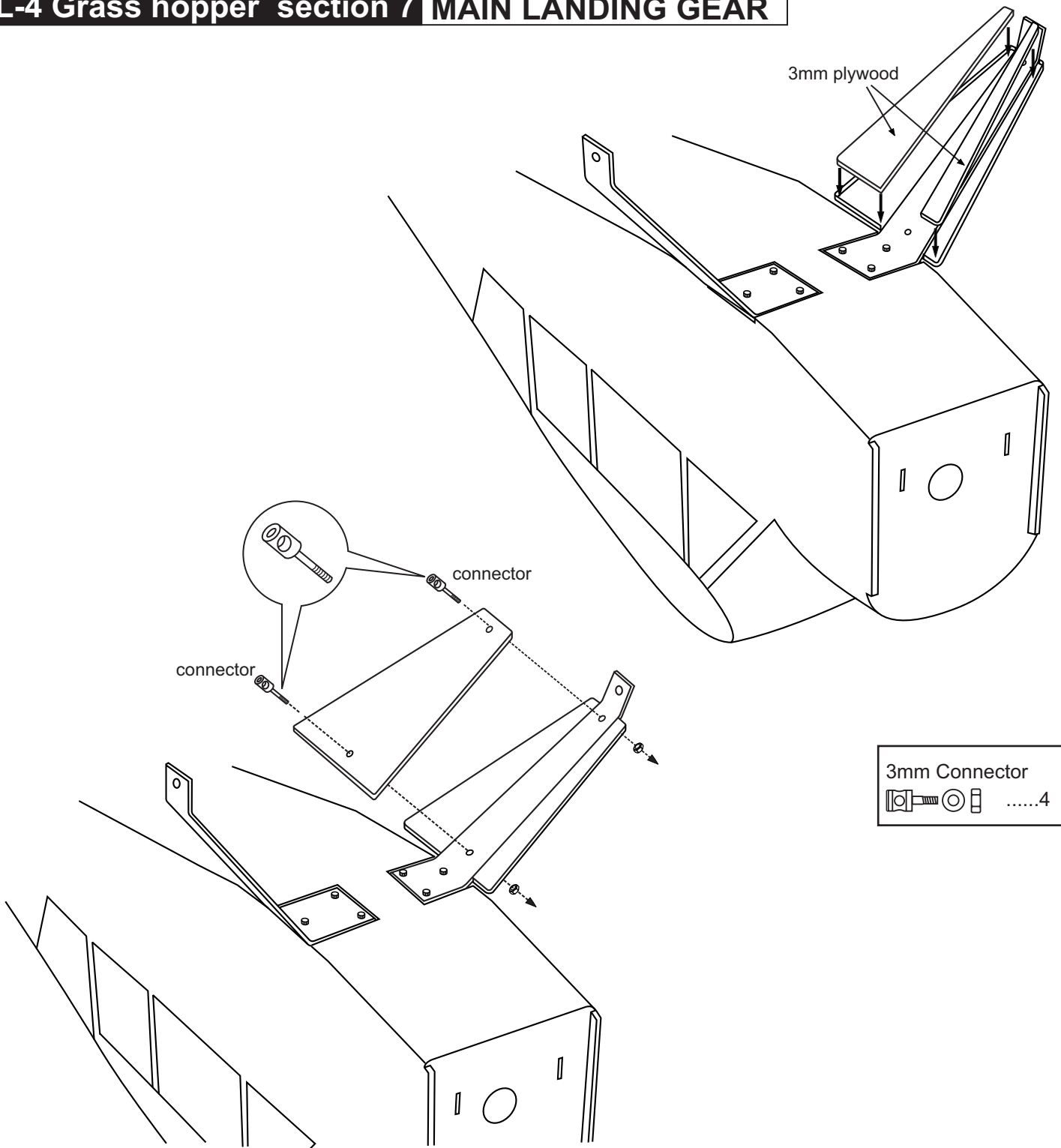
Cut away only the covering



3mm


3mm

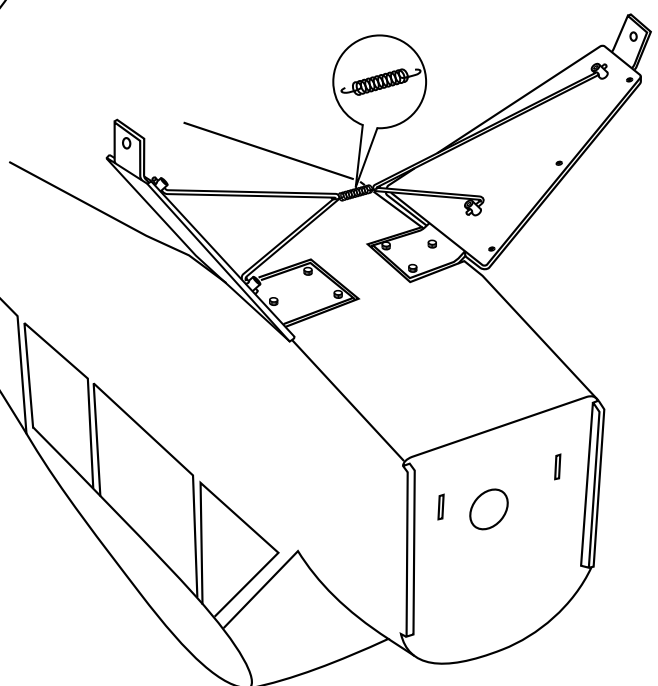
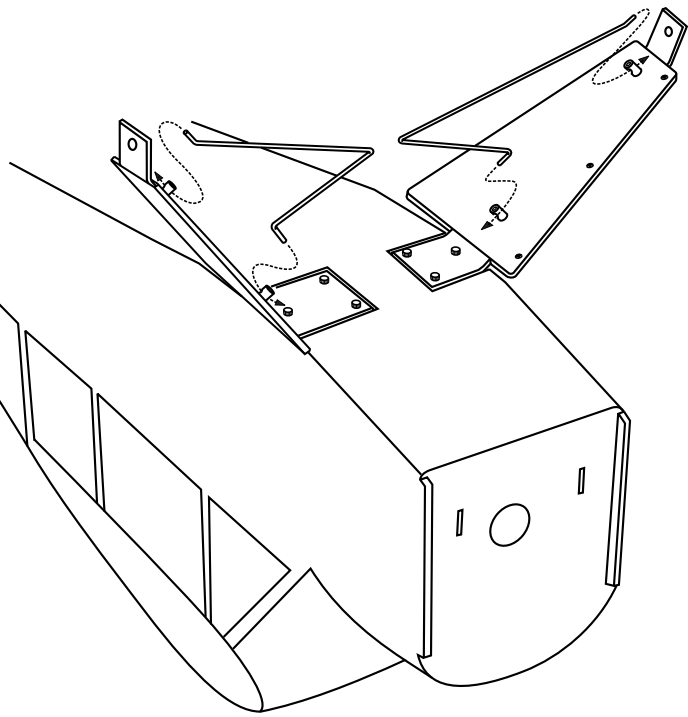
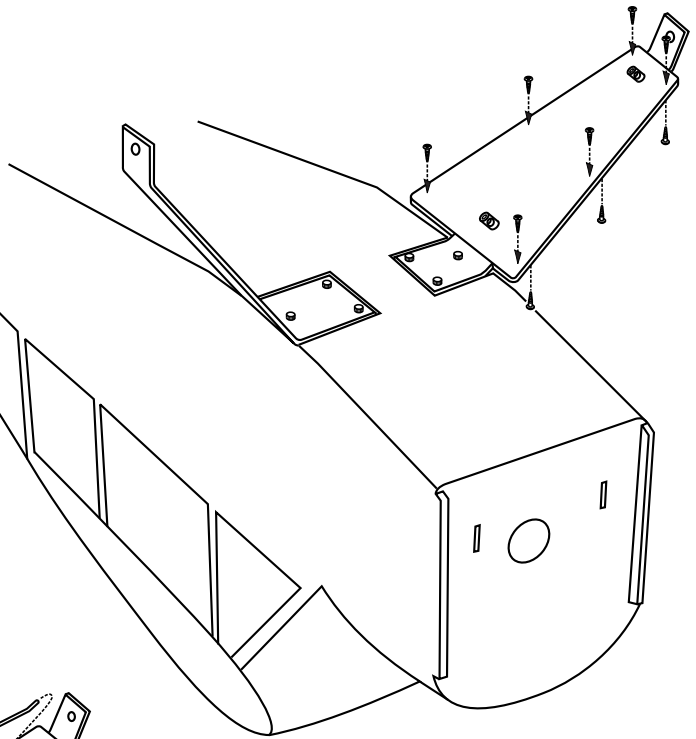
L-4 Grass hopper section 7 MAIN LANDING GEAR



L-4 Grass hopper section 8 MAIN LANDING GEAR

2x6mm screw

24

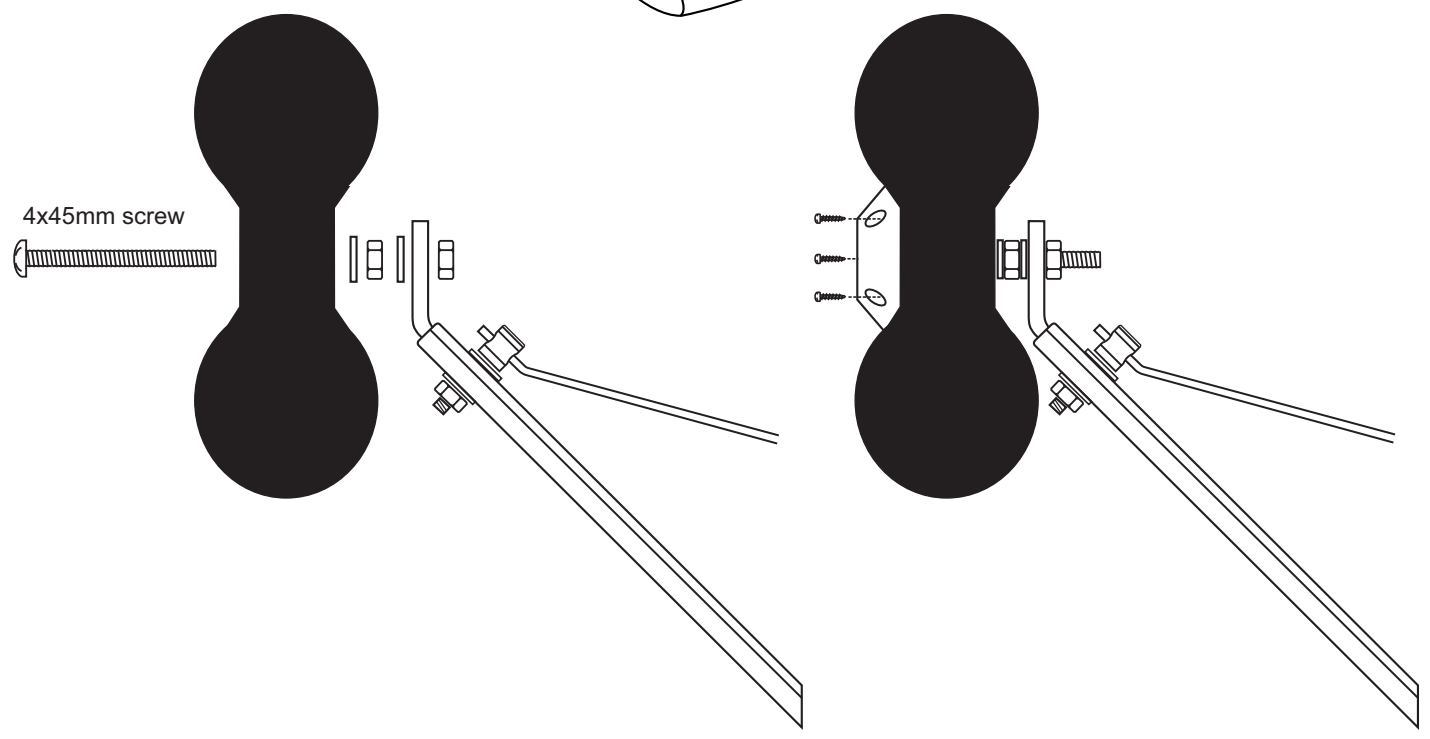
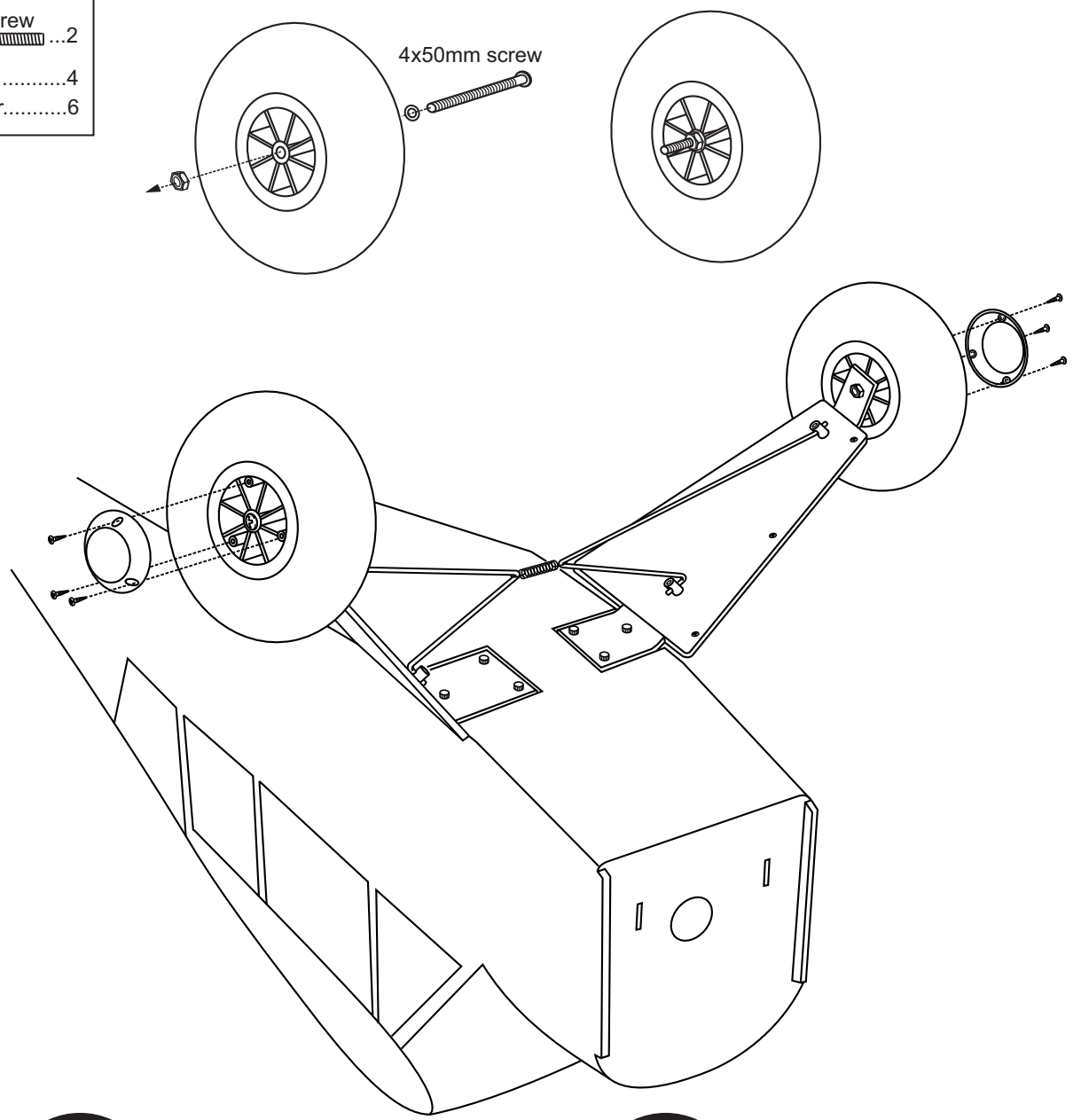


Spring

1

L-4 Grass hopper section 9 MAIN LANDING GEAR

- 4x50mm screw2
- 4mm nut.....4
- 4mm washer.....6

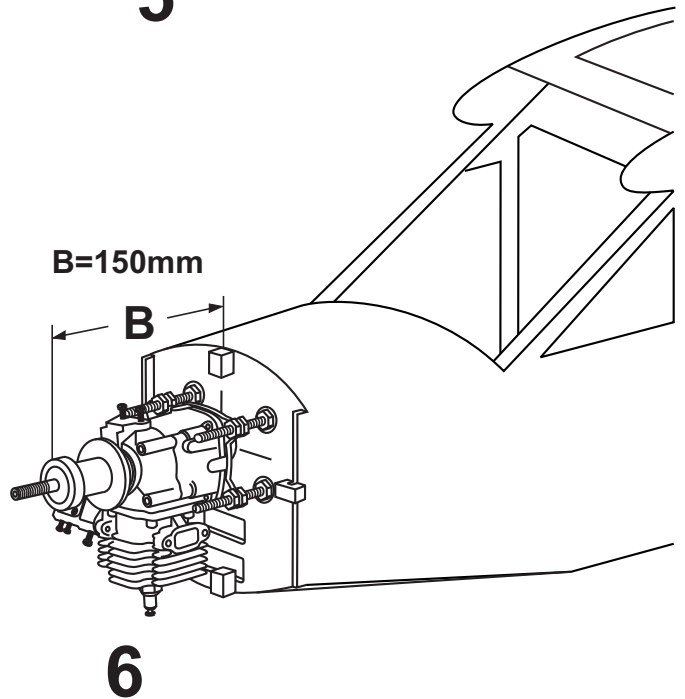
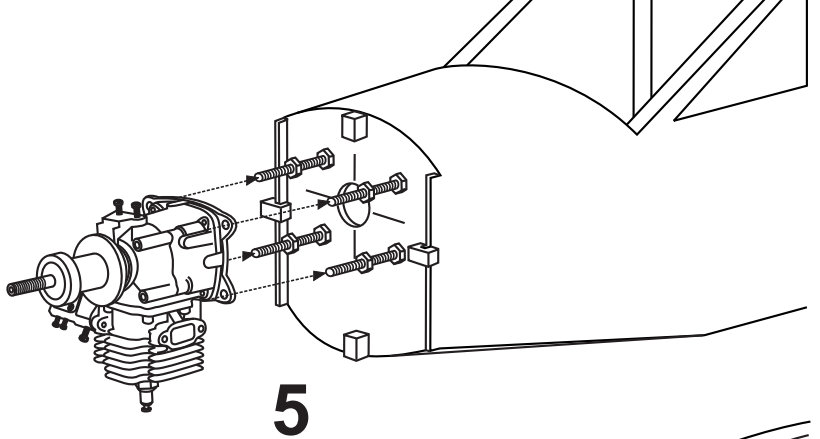
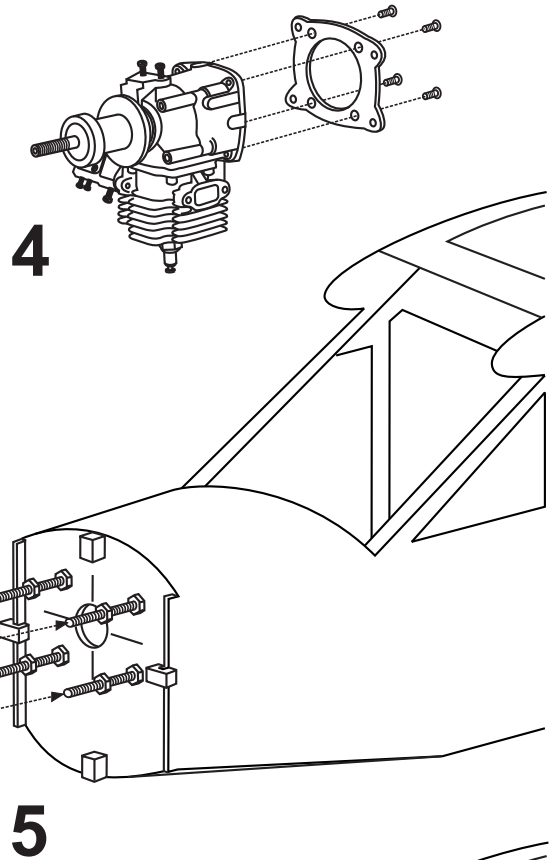
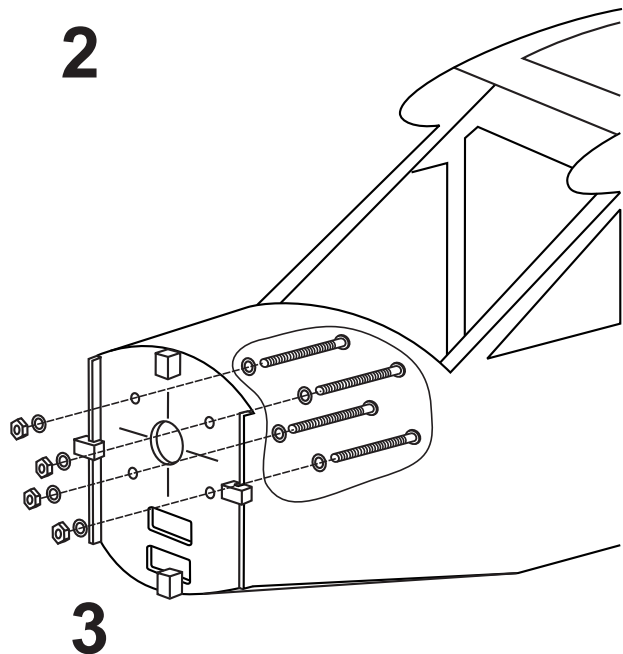
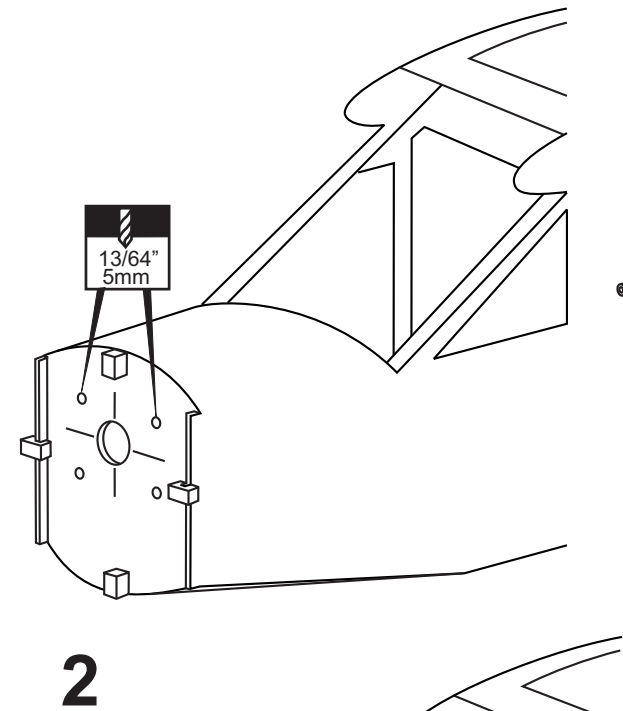
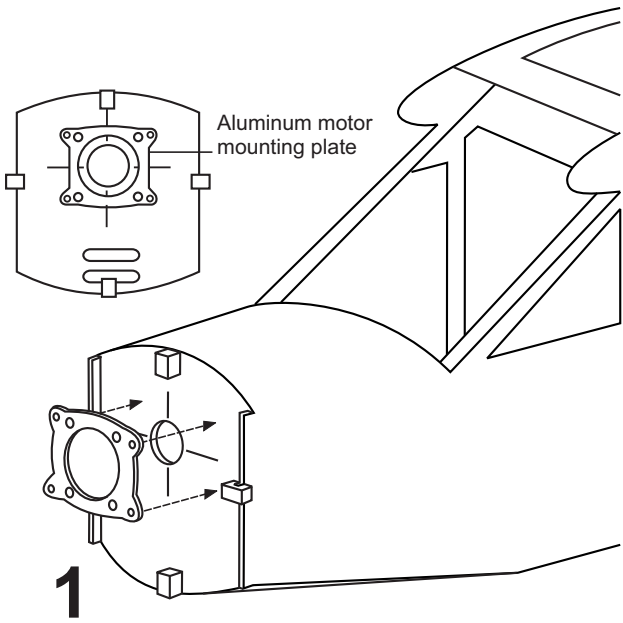


L-4 Grass hopper section 10 ENGINE

Using a aluminum motor mounting plate as a template, mark the fire-wall where the four holes are to be drilled (1).

Remove the aluminum motor mounting plate and drill a 5mm hole through the plywood at each of the four marks marked (2).

Note: The aluminum motor mounting and screws included with the engine.



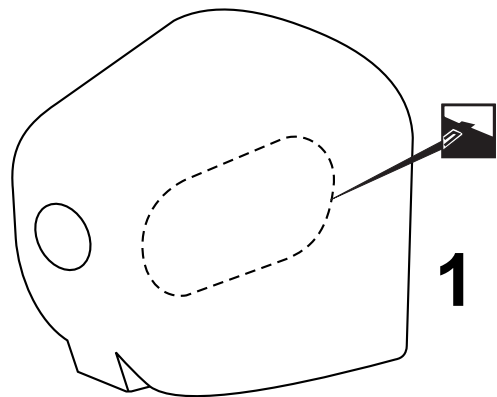
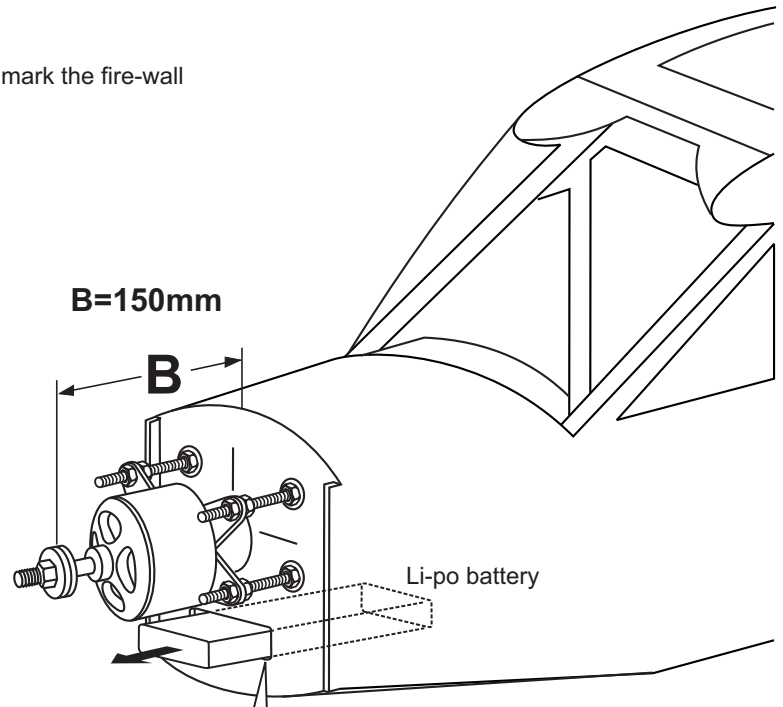
5X80mm screw4
5mm washer12
5mm nut12

L-4 Grass hopper section 11 | ELECTRIC MOTOR & DUMMY ENGINE

Using a aluminum motor mounting plate as a template, mark the fire-wall where the four holes are to be drilled (1).

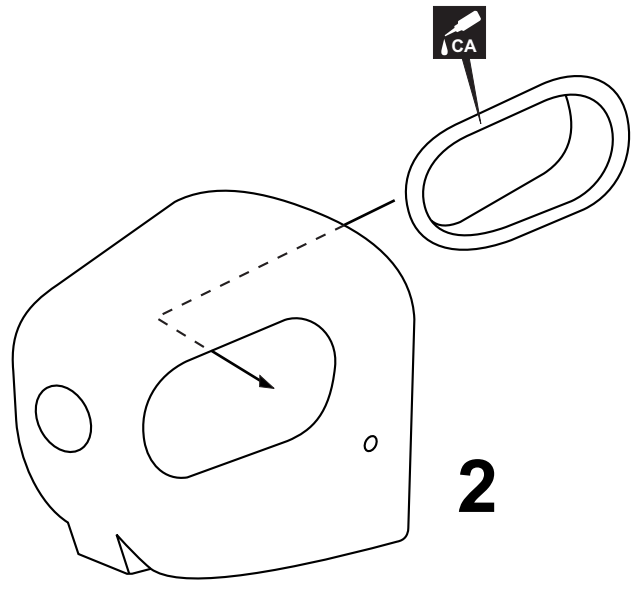
Remove the aluminum motor mounting plate and drill a 5mm hole through the plywood at each of the four marks marked (2).

Note: The aluminum motor mounting and screws included with the motor.

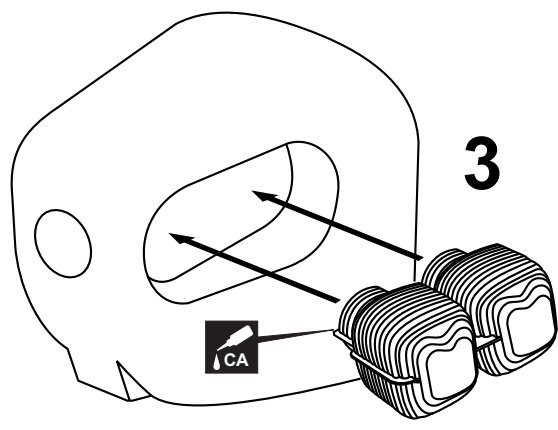


1

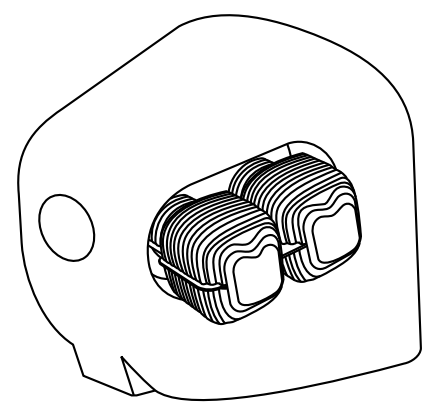
Cut a hole on the fire-wall to you can move the Li-po battery to the nose of the model, this helps the easy to balance your model.



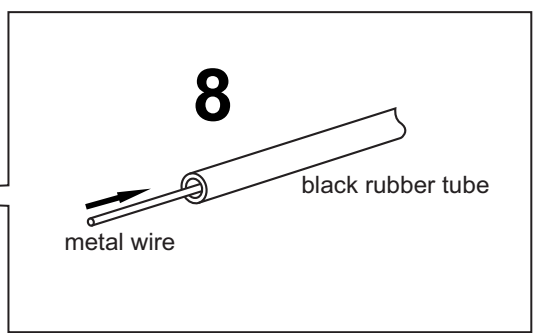
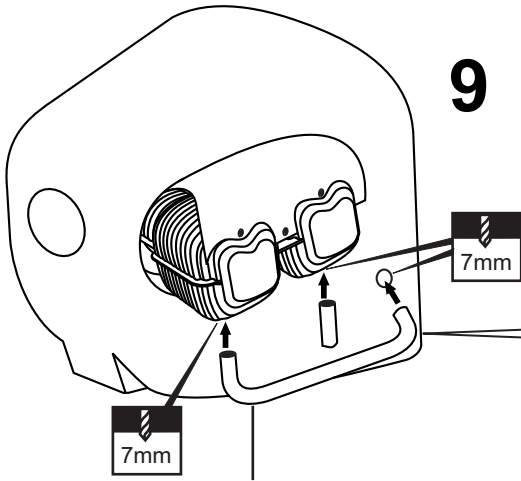
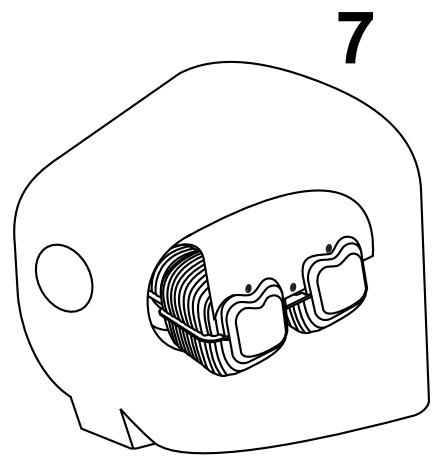
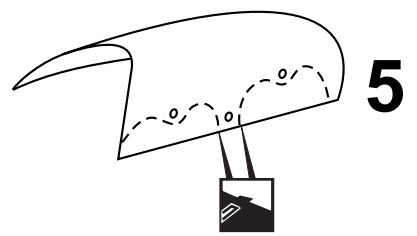
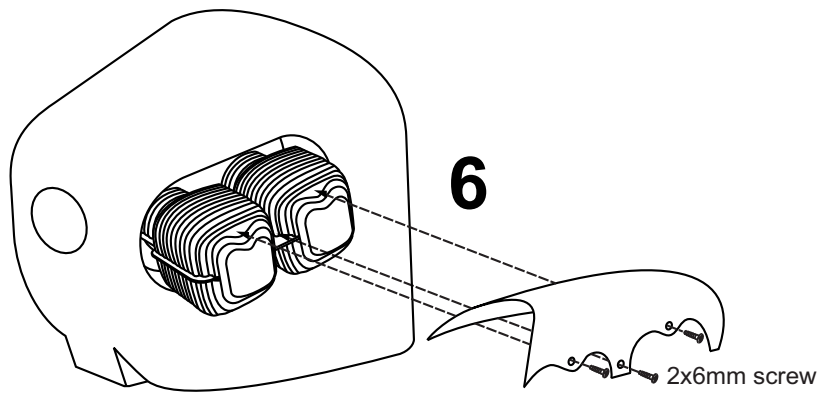
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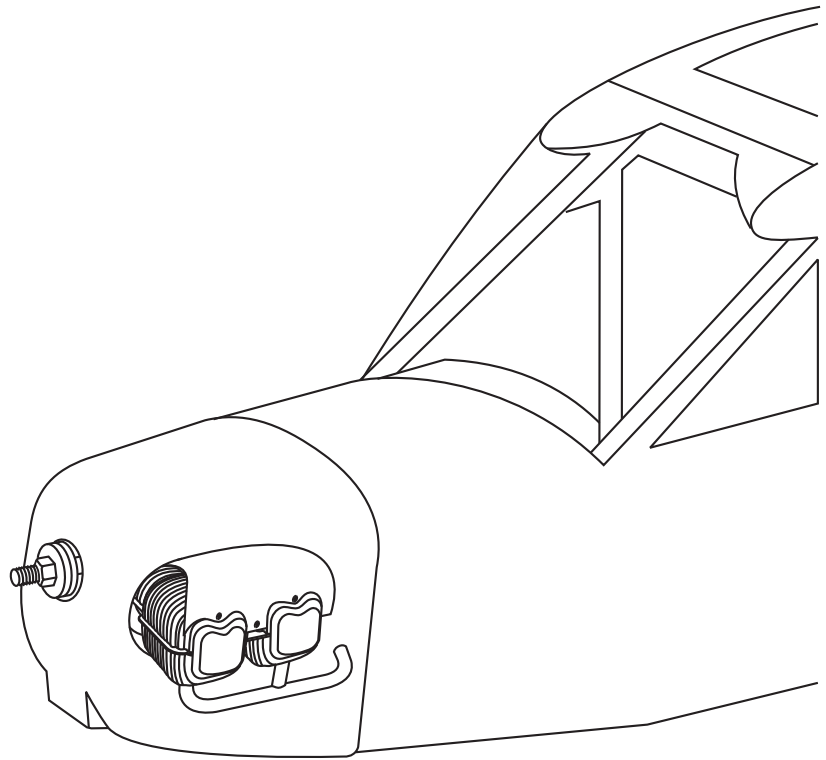
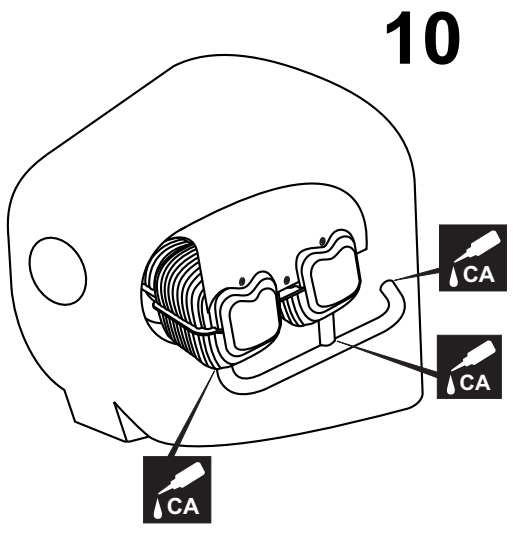
3



4

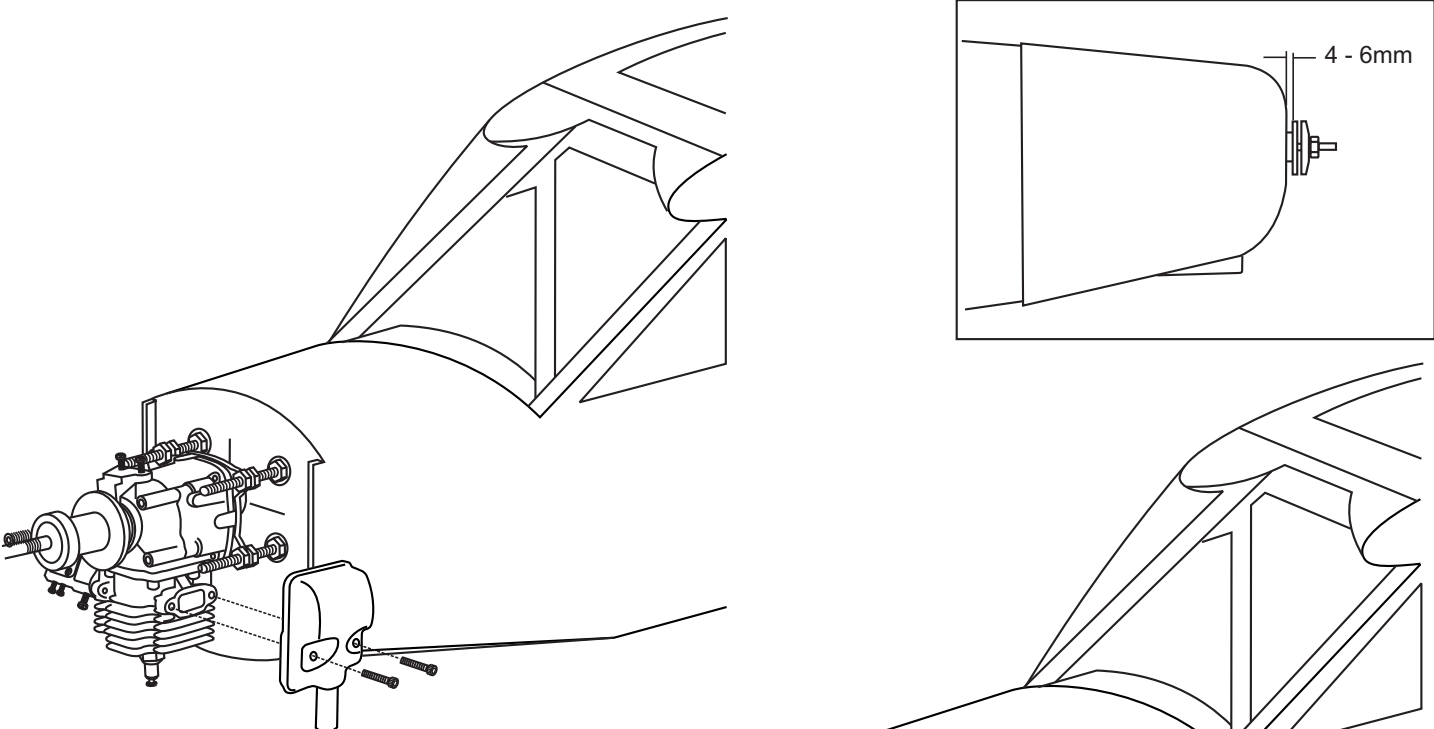



black rubber tube with metal wire inside

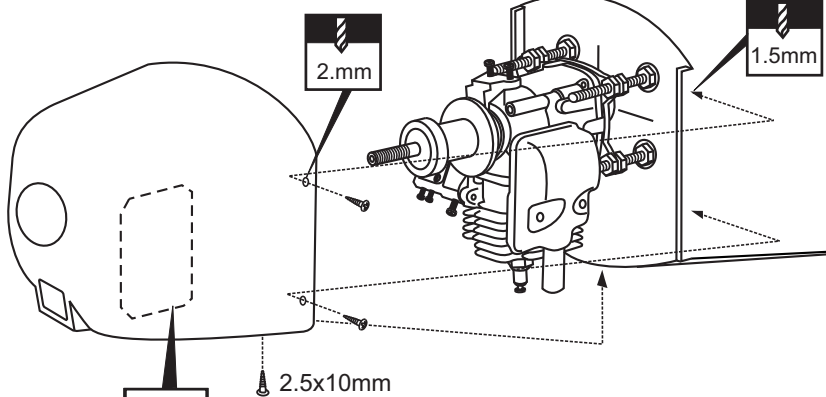



IN CASE OF ELECTRIC MOTOR USING

L-4 Grass hopper section 13 COWL & FUEL TANK



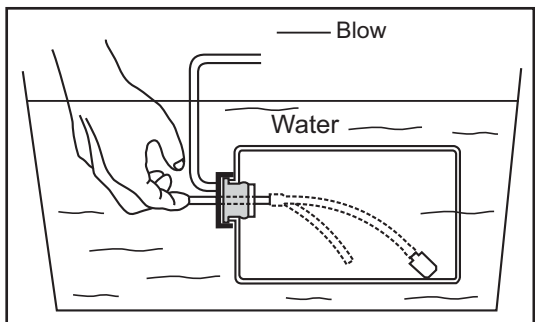
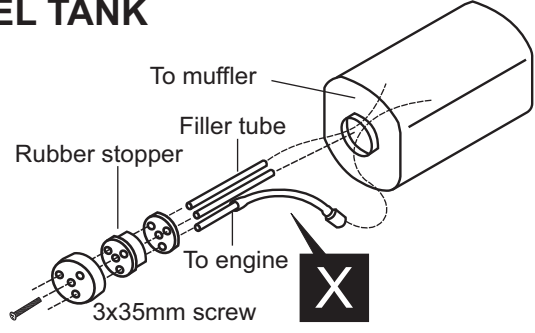
2.5x10mm
5



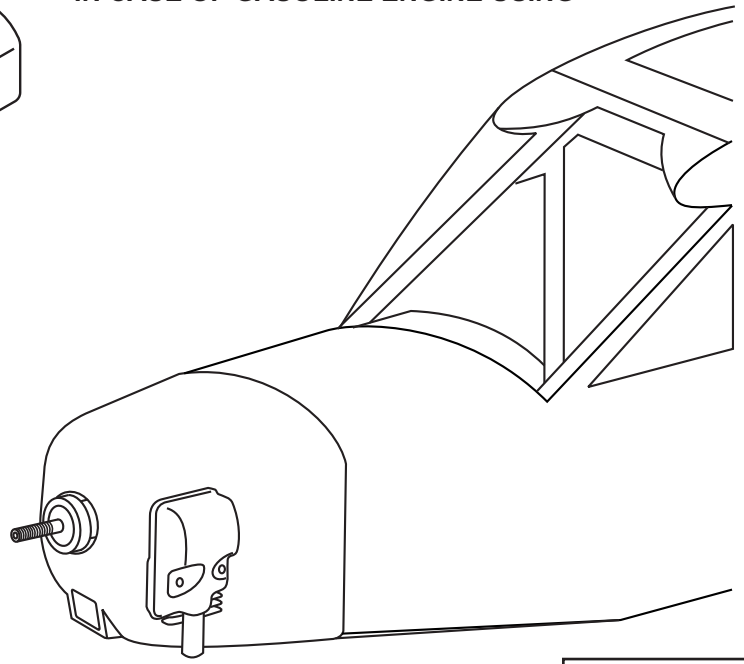
 2.5x10mm
 Relieve the cowl to clear the silencer, carburetor and plug.


FUEL TANK

IN CASE OF GASOLINE ENGINE USING

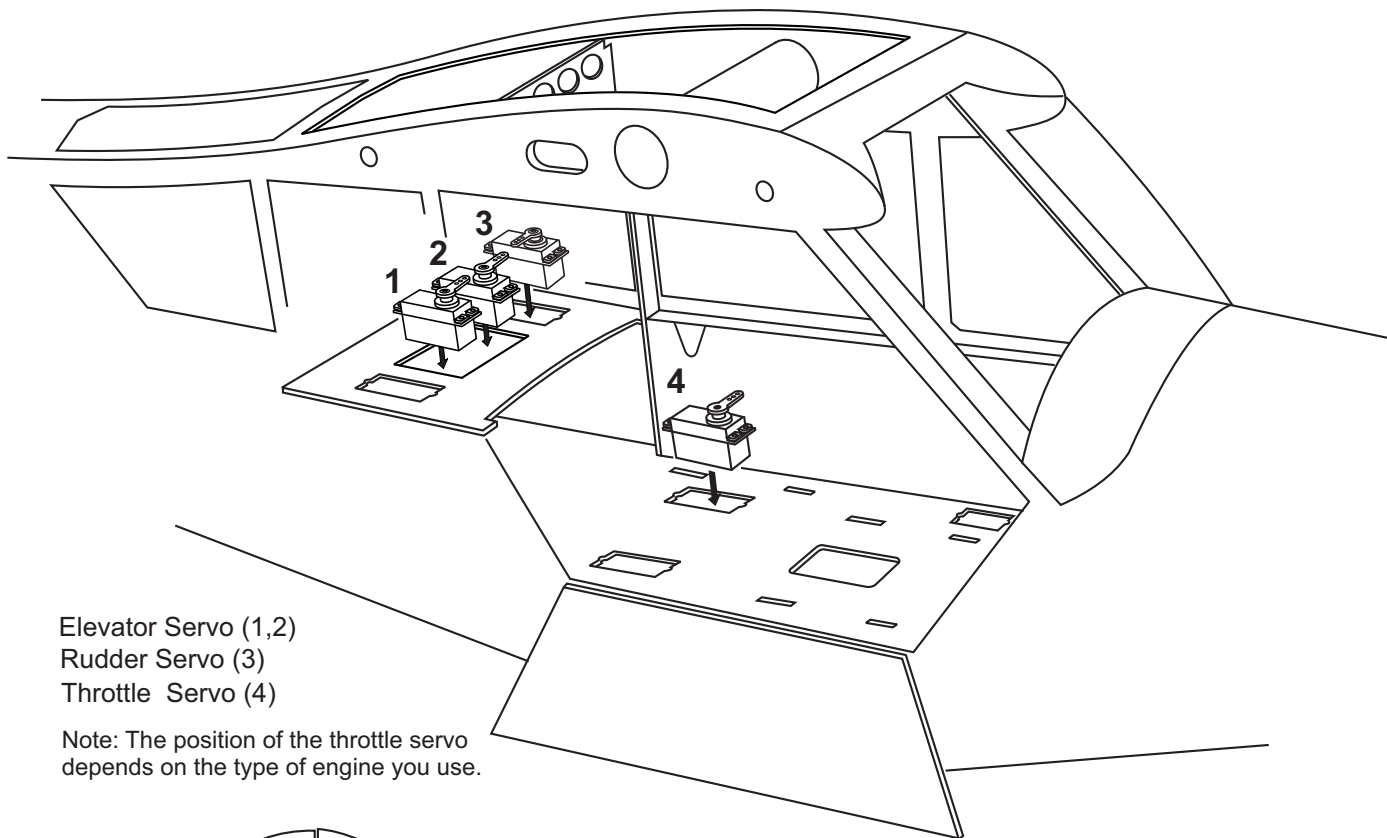


Checking for leaks - block the vents and blow into the feed - if in doubt submersing the tank in a blow of water will show up any problems (10B).



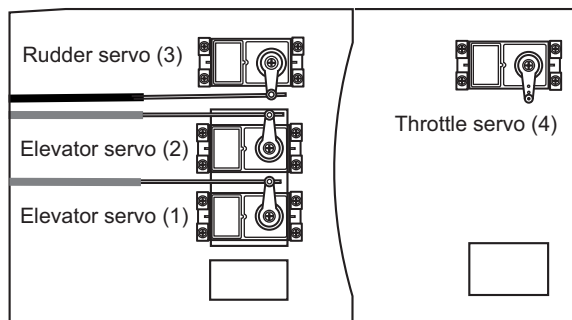
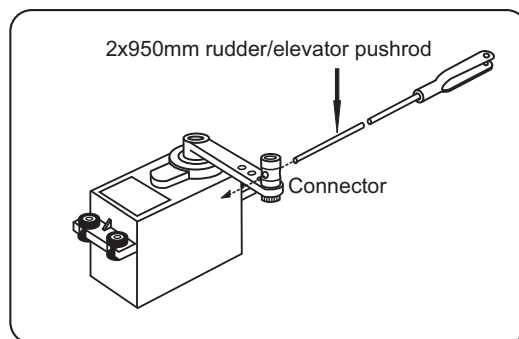
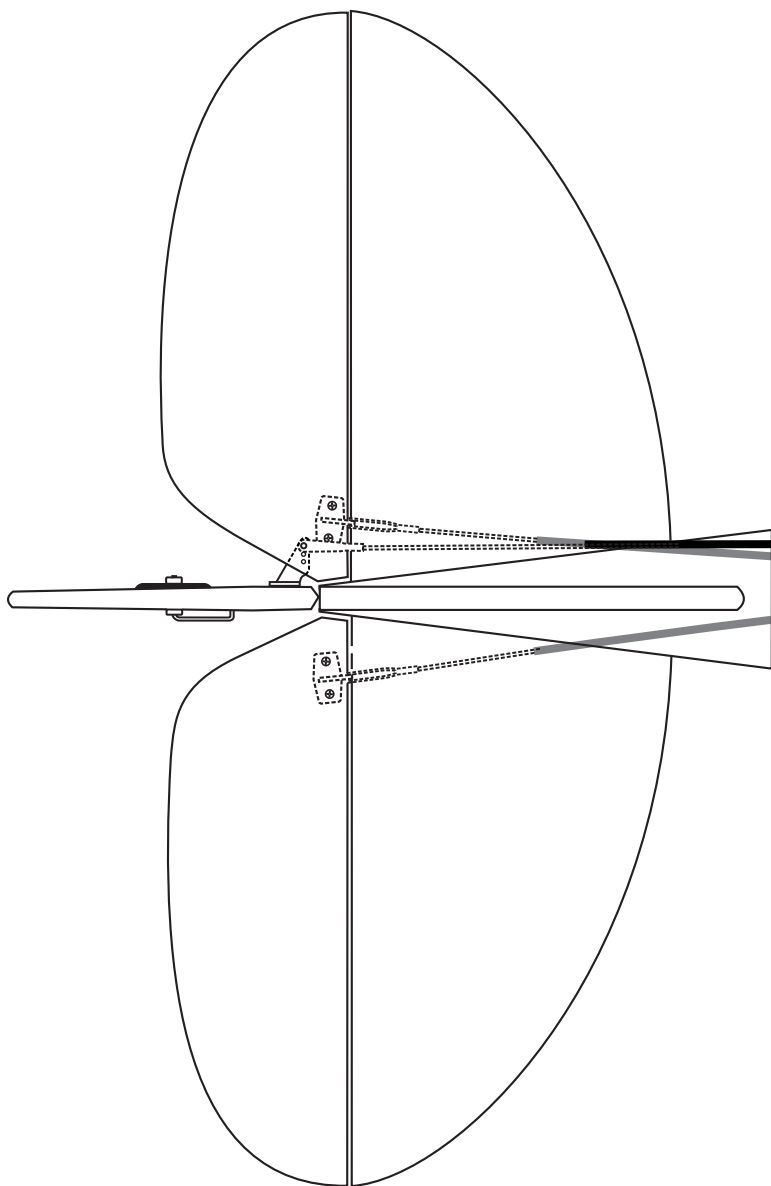
23x8mm screw
4

L-4 Grass hopper section 14 SERVO & LINKAGES



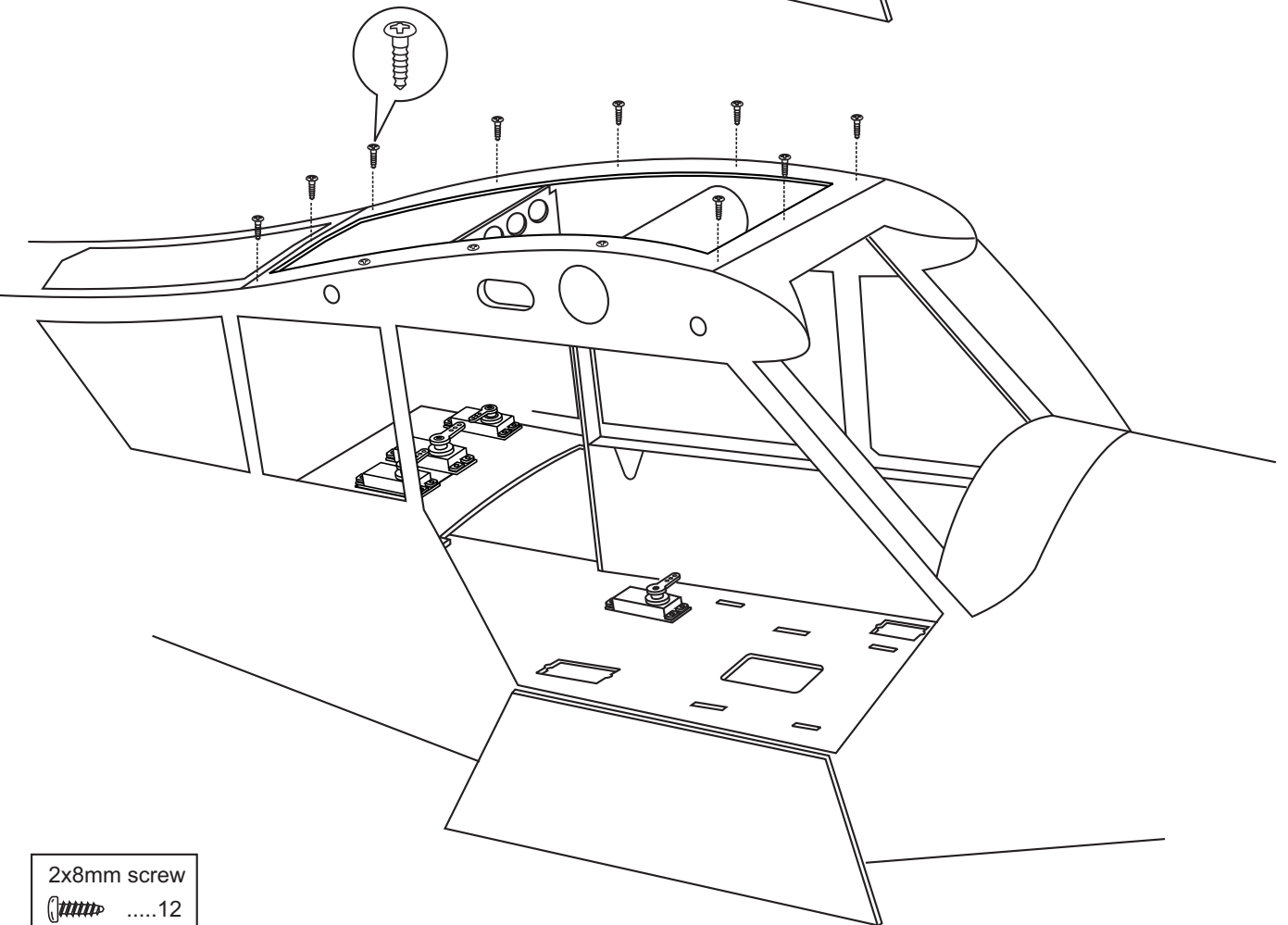
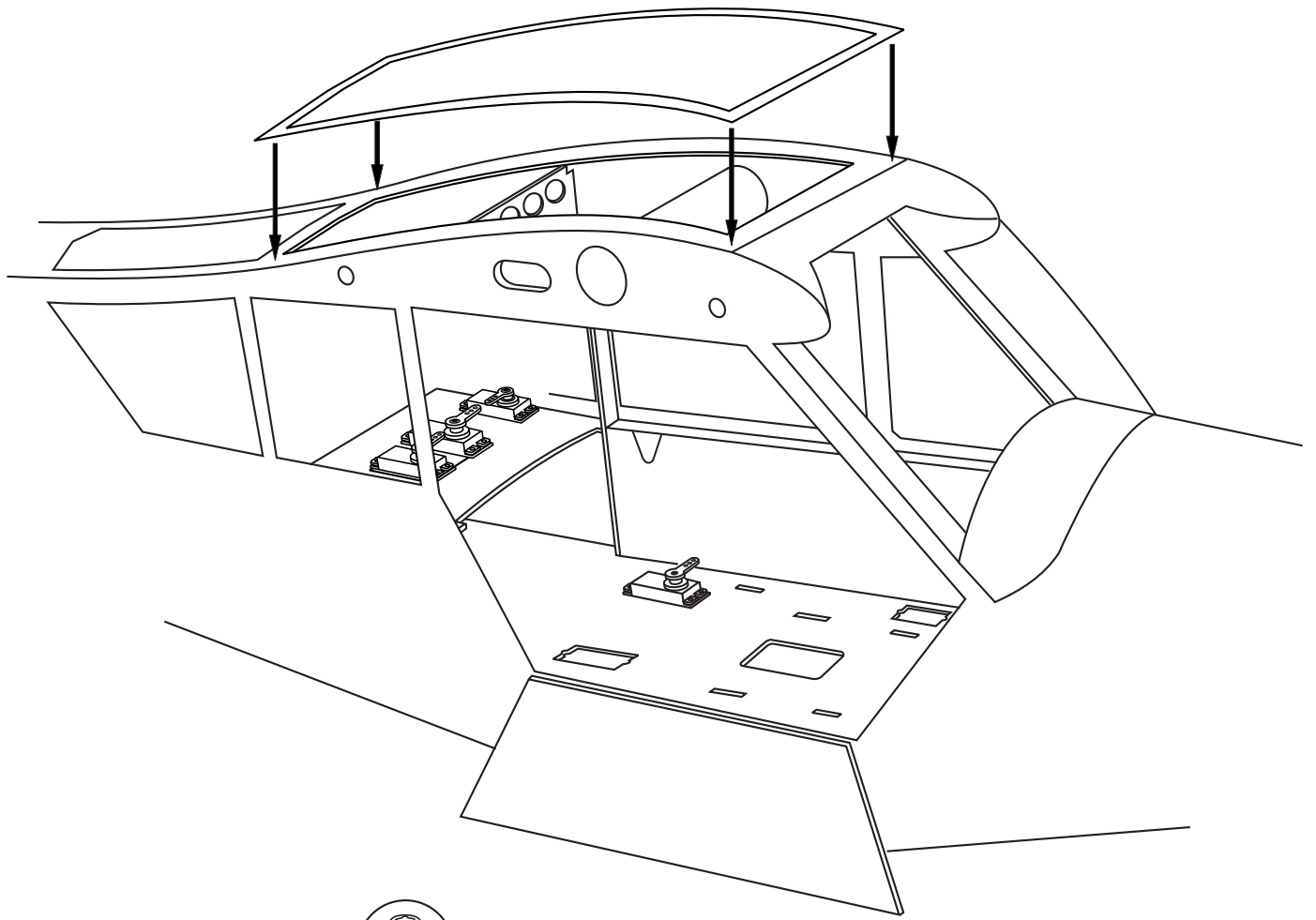
Elevator Servo (1,2)
 Rudder Servo (3)
 Throttle Servo (4)

Note: The position of the throttle servo depends on the type of engine you use.



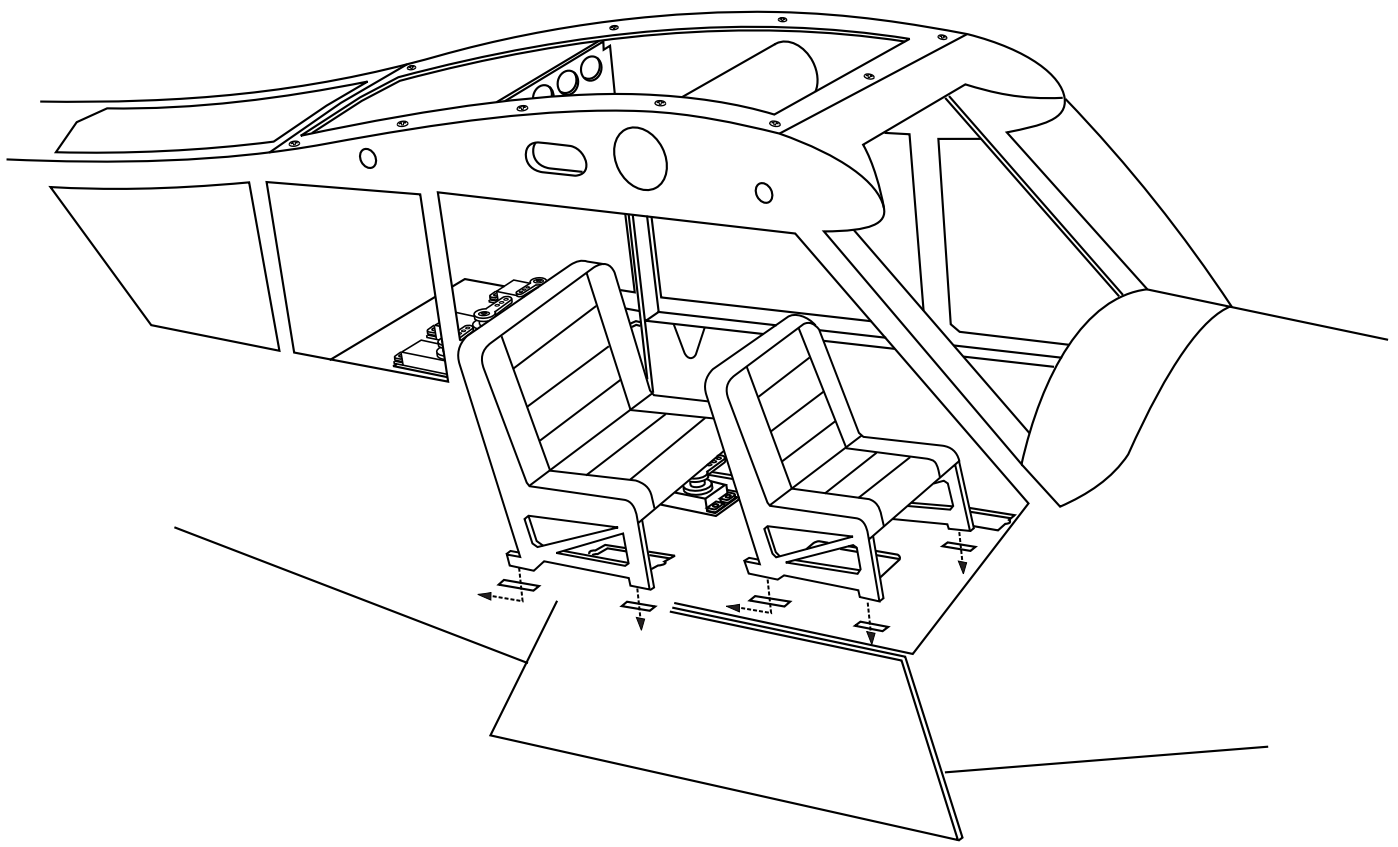
Connector4
2x950mm rod / Clevis3

L-4 Grass hopper section 15 Clear Plastic cover

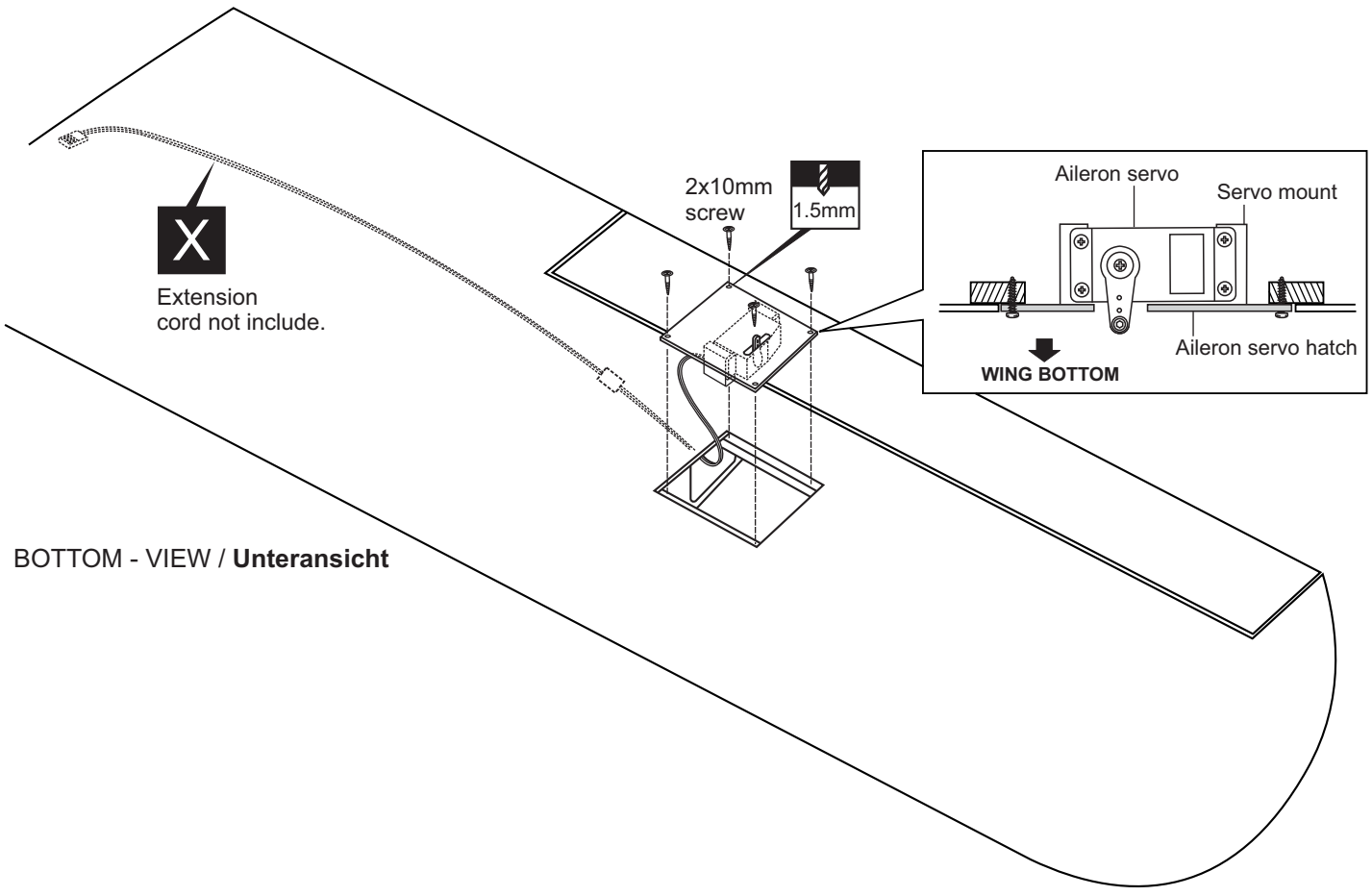


2x8mm screw
12




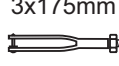
L-4 Grass hopper section 16 PILOT SEAT

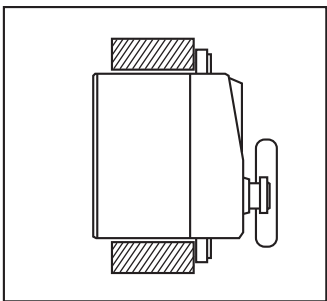


L-4 Grass hopper section 17 AILERON SERVO

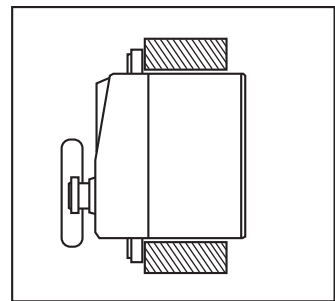


L-4 Grass hopper section 18 AILERON LINKAGE

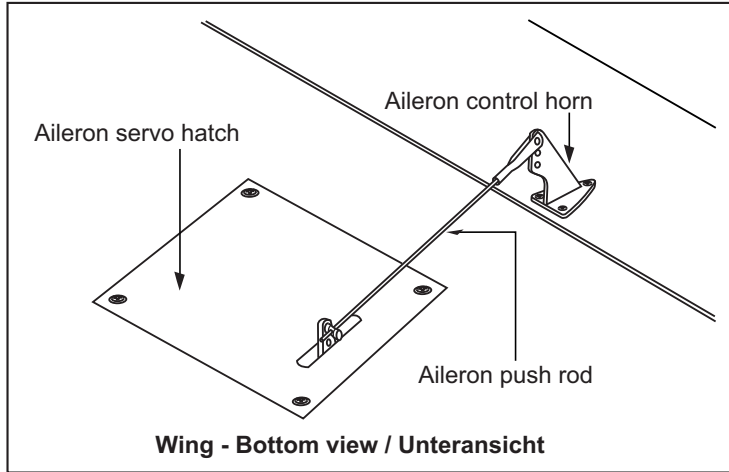
-  Control horn2
-  2x30mm screw6
-  Connector2
-  3x175mm Aileron pushrod2



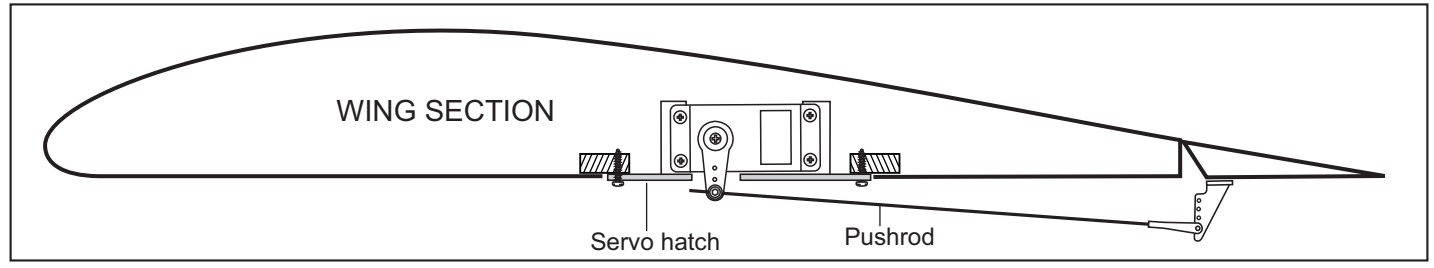
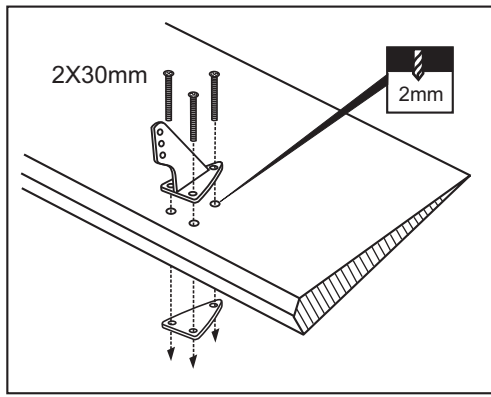
Aileron servo and hatch
RIGHT



Aileron servo and hatch
LEFT



Wing - Bottom view / Unteransicht

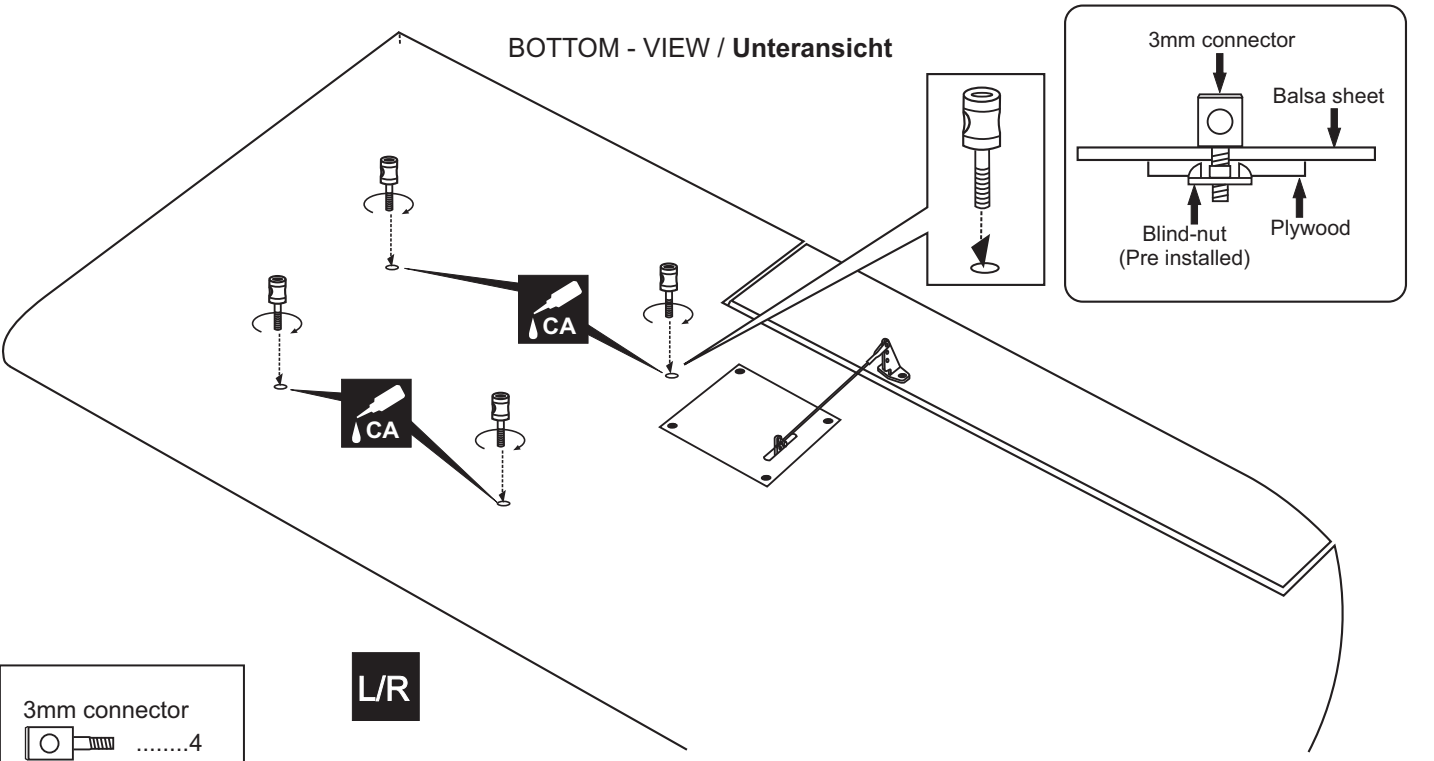


WING SECTION

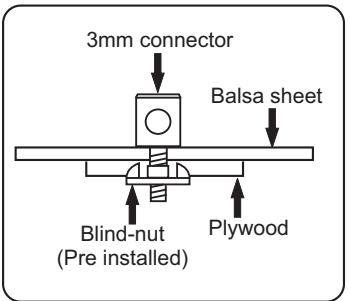
Servo hatch

Pushrod

L-4 Grass hopper section 19 AILERON LINKAGE



BOTTOM - VIEW / Unteransicht



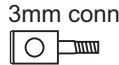
3mm connector

Balsa sheet

Blind-nut
(Pre installed)

Plywood

L/R

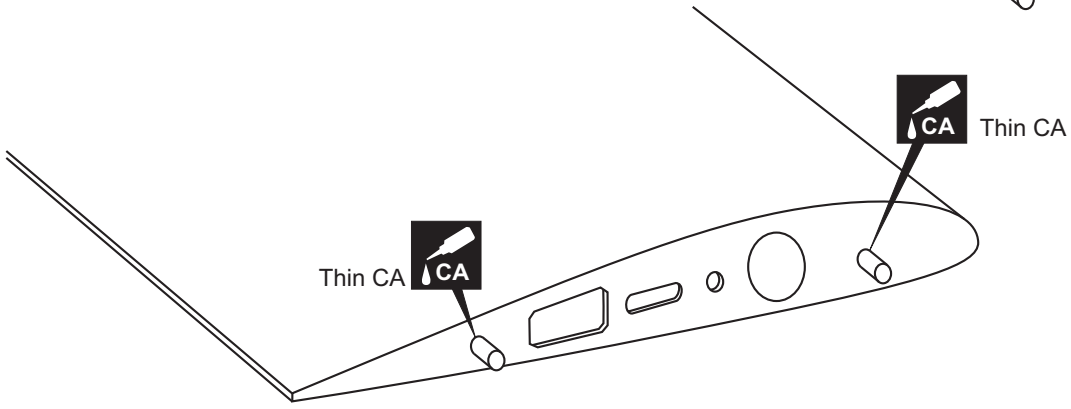
-  3mm connector4

L-4 Grass hopper section 20 DOWEL

8mm dowel

4

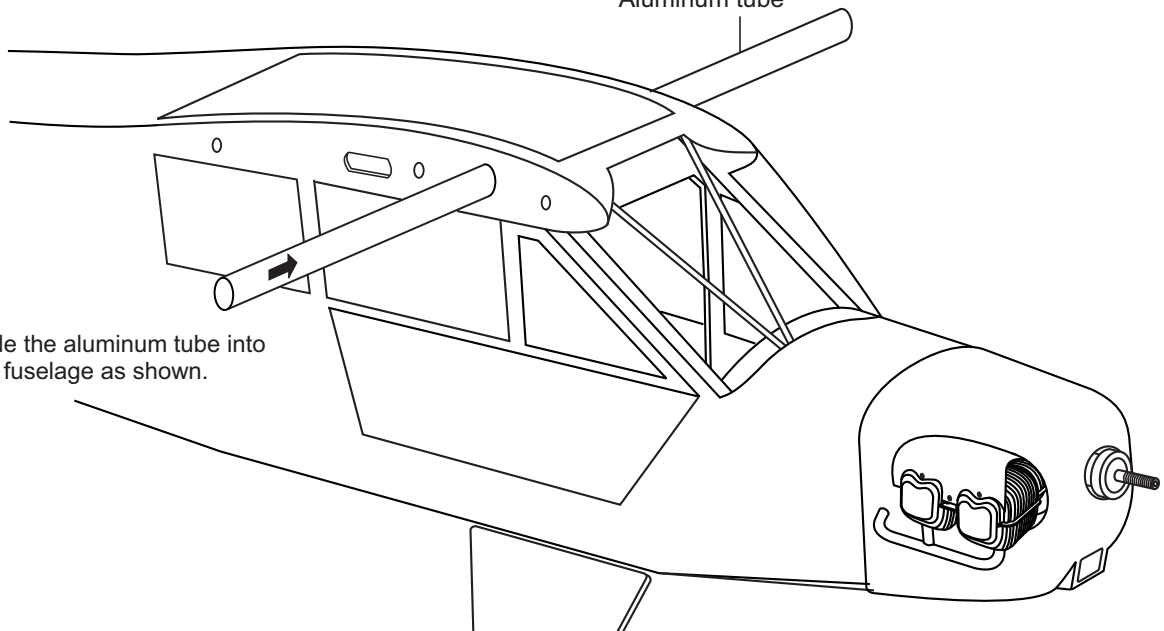
Push the wooden dowel to the hole on the rib as show. Ensure that the dowel is rectangular with the rib.
Secure it in place using the thin CA glue.



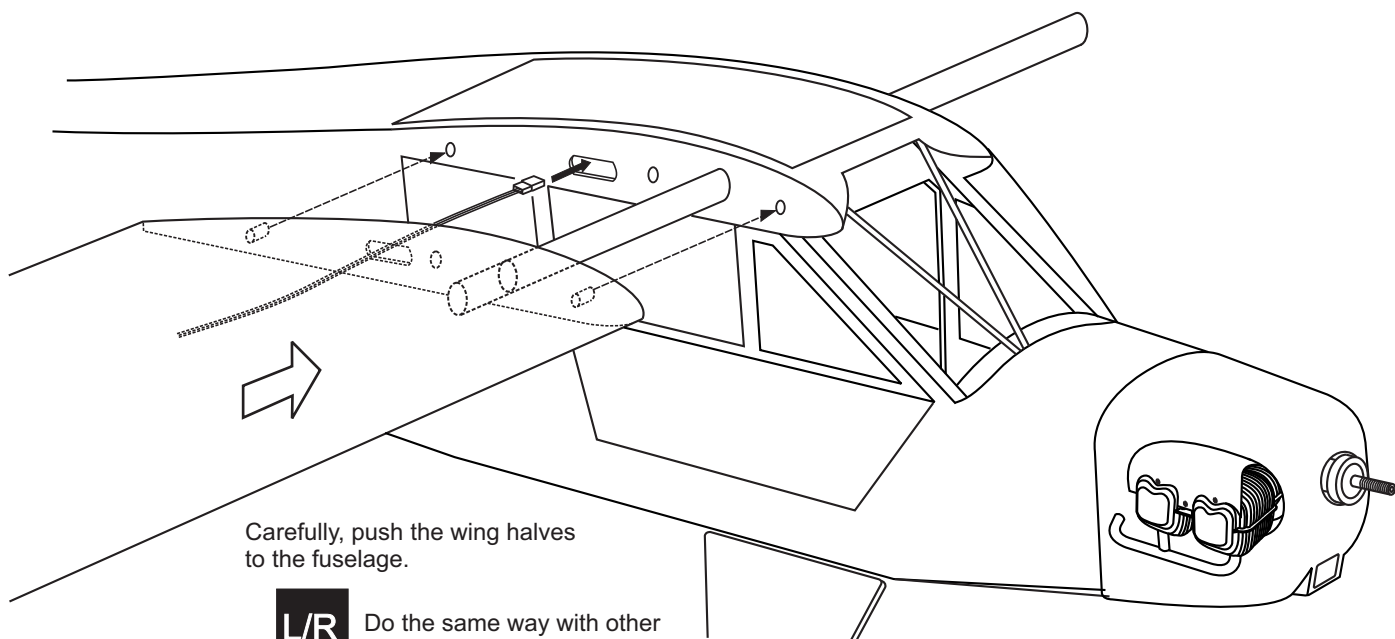
L-4 Grass hopper section 21 JOINING THE WING

Aluminum tube

Slide the aluminum tube into the fuselage as shown.

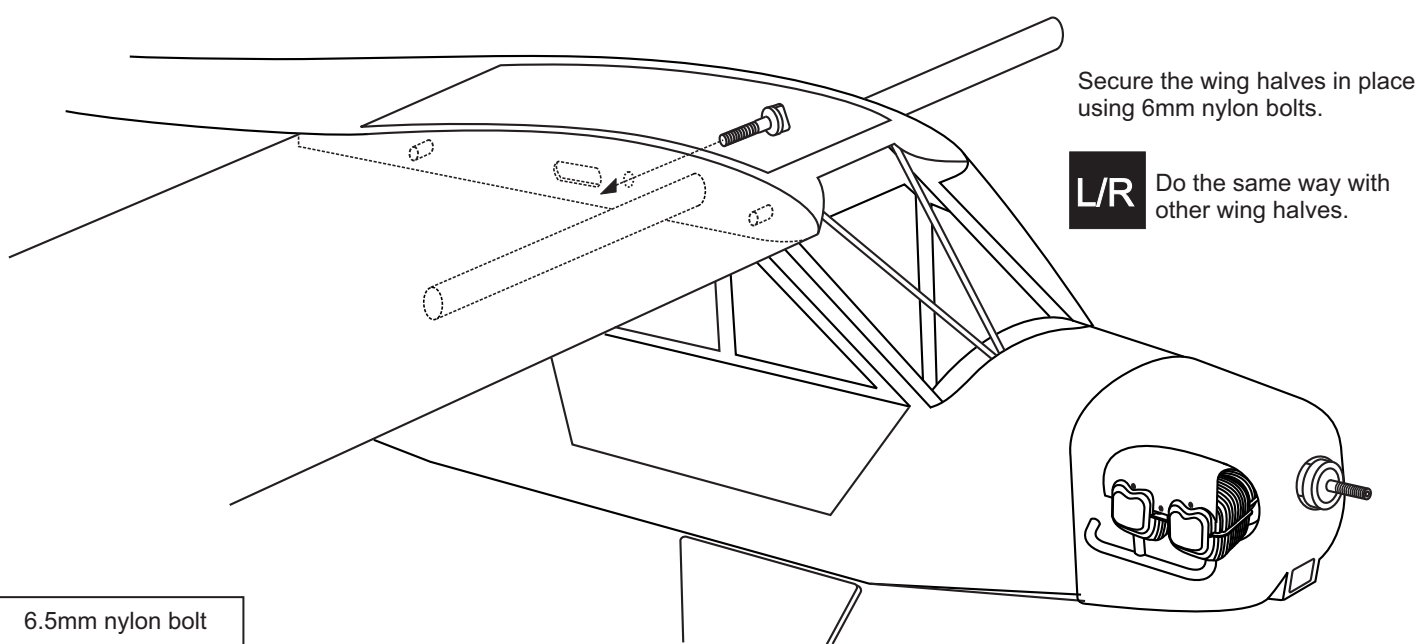


L-4 Grass hopper section 22 JOINING THE WING



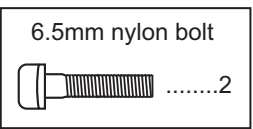
Carefully, push the wing halves to the fuselage.

L/R Do the same way with other wing halves.

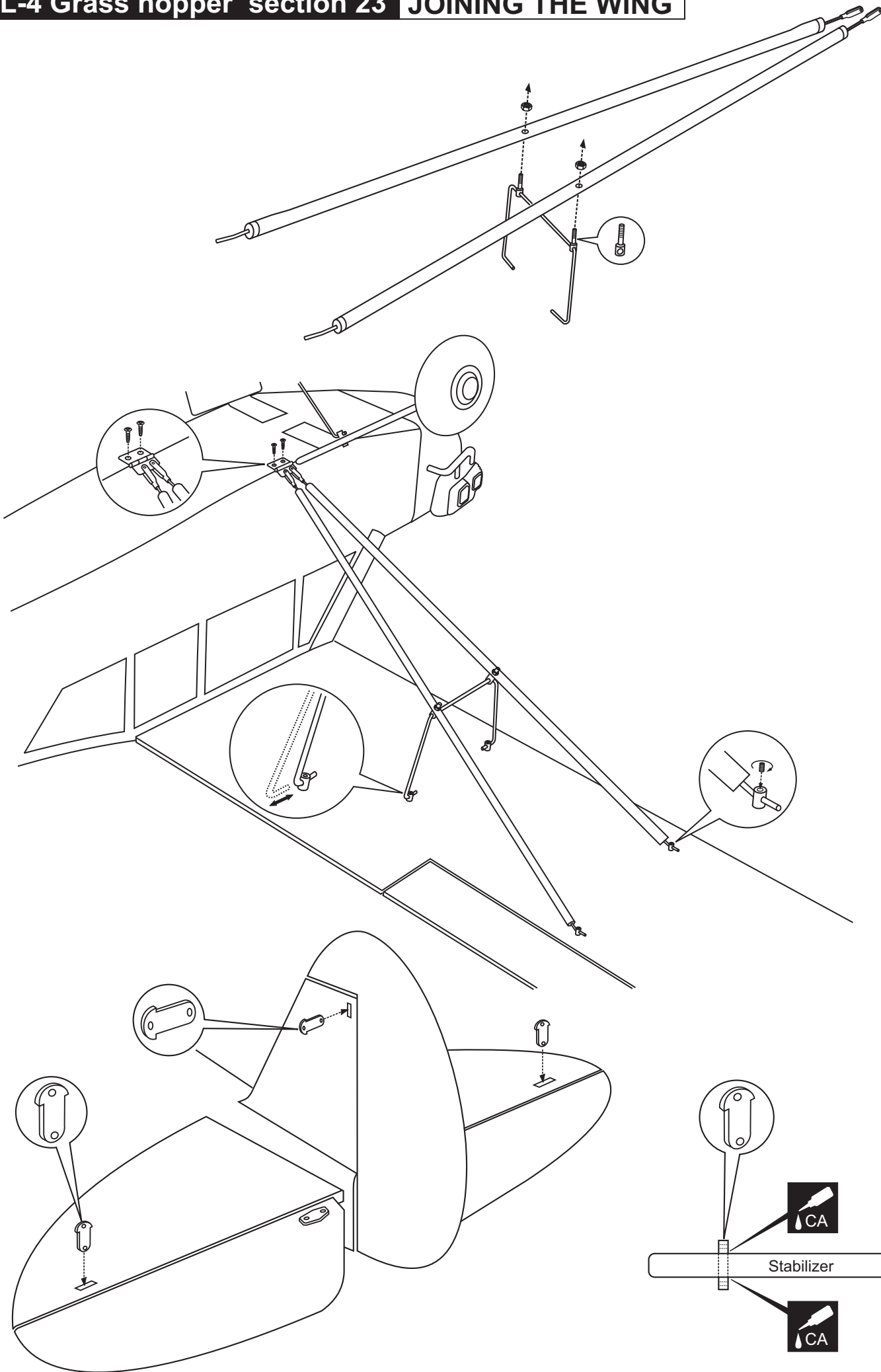


Secure the wing halves in place using 6mm nylon bolts.

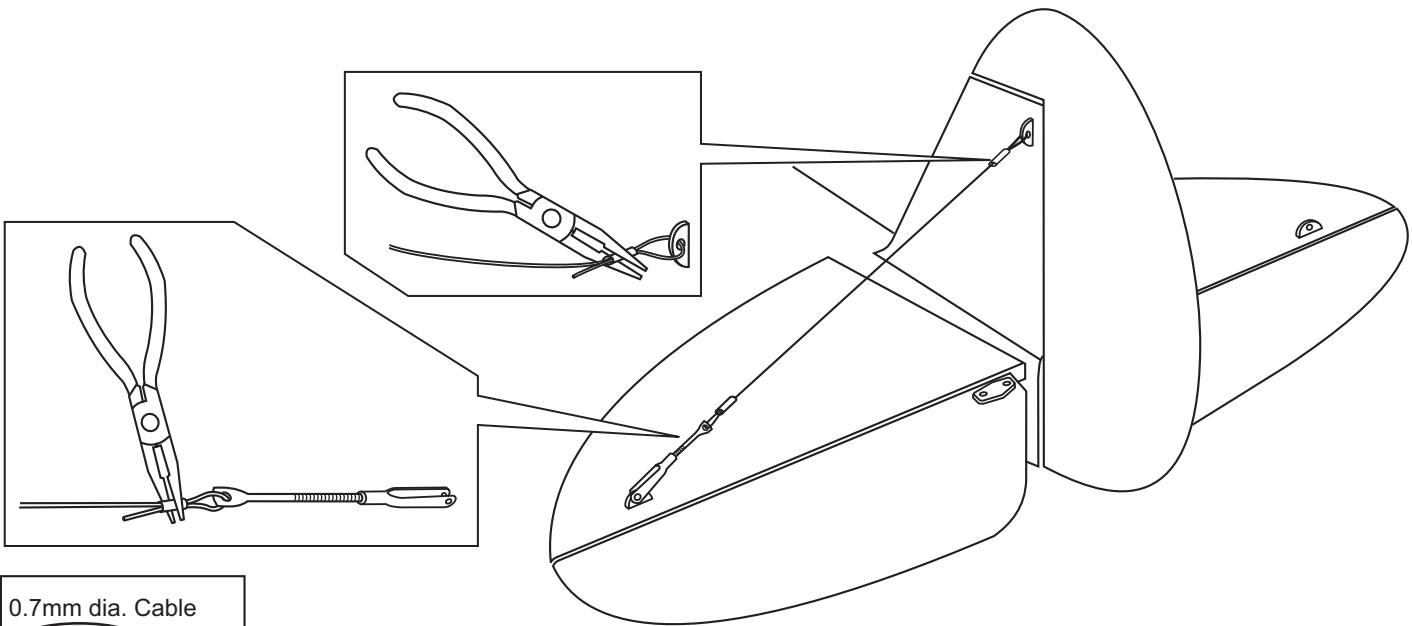
L/R Do the same way with other wing halves.



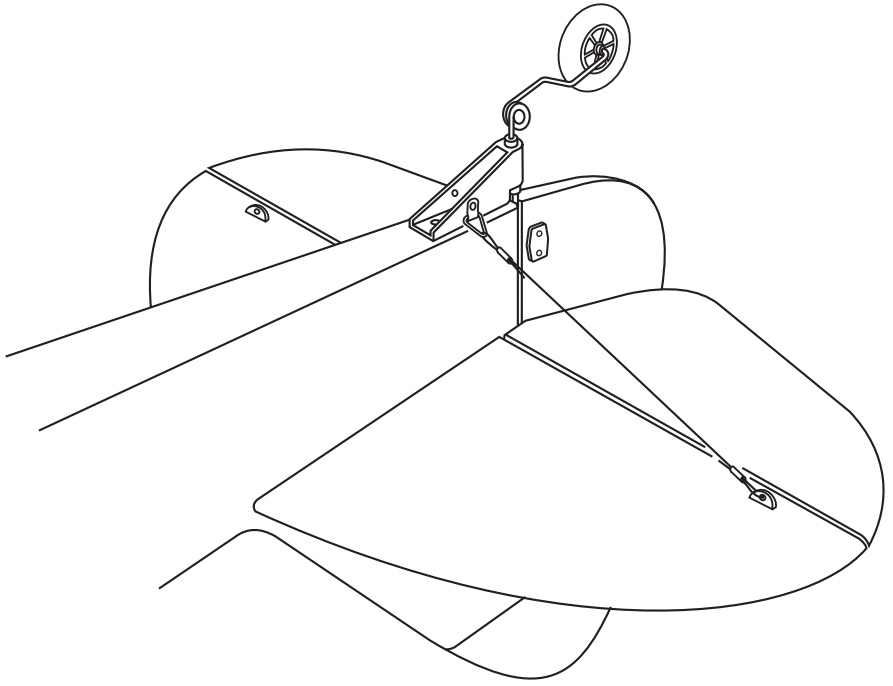
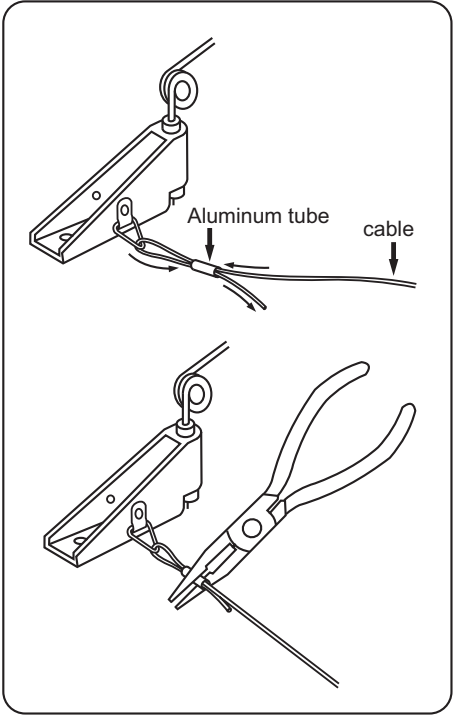
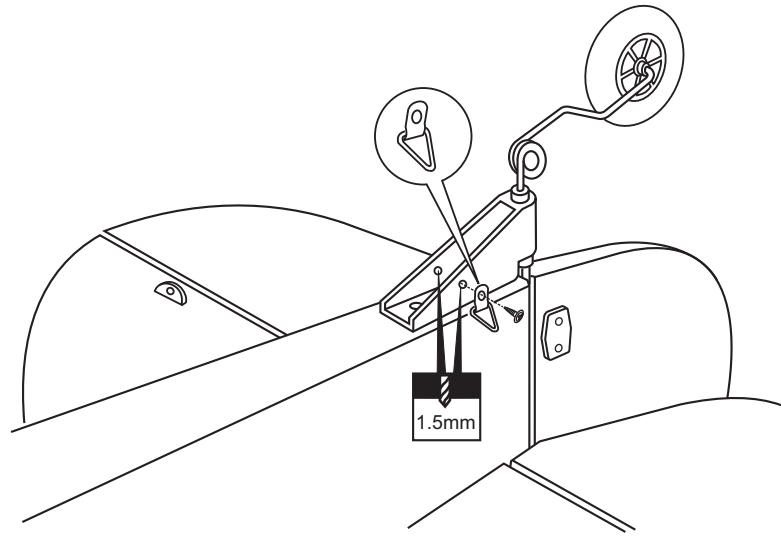
L-4 Grass hopper section 23 JOINING THE WING



L-4 Grass hopper section 24 CABLE WIRE

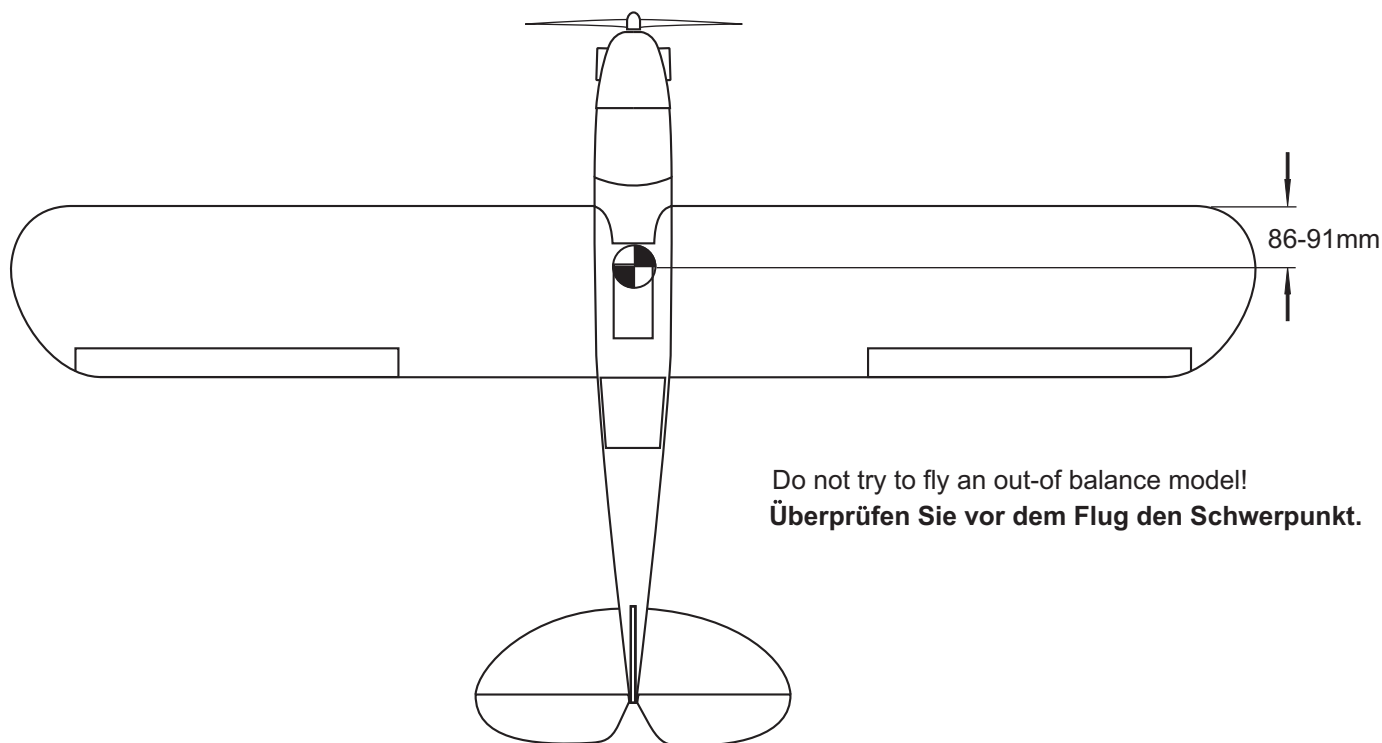


- 0.7mm dia. Cable ...1 roll
- 2mm metal tube8
-2
-2
-2
- 2x10mm screw2



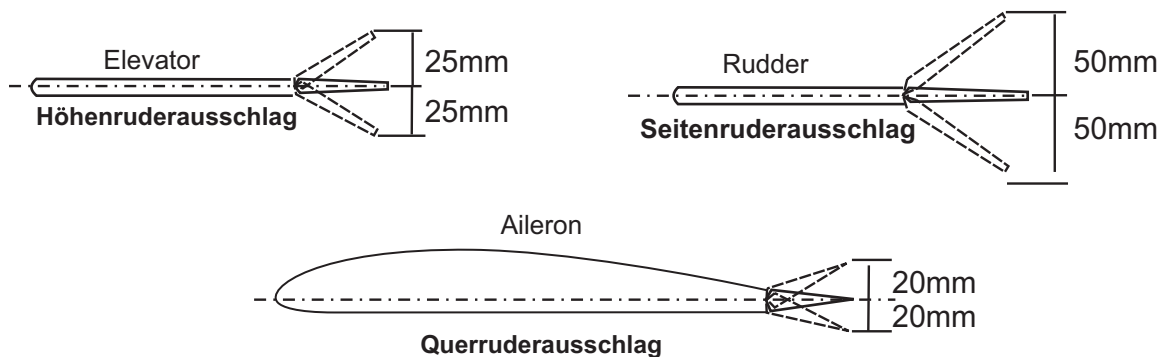
L-4 Grass hopper section 25 BALANCE & CONTROL SURFACE

THE CENTER OF GRAVITY IS LOCATED 86-91mm BACK FROM THE LEADING EDGE OF THE WING, AT THE FUSELAGE. BALANCE A PLANE UPSIDE DOWN WITH THE FUEL TANK EMPTY.



Do not try to fly an out-of balance model!
Überprüfen Sie vor dem Flug den Schwerpunkt.

- 1- Mount the wing to the fuselage. Using a couple of pieces of masking tape, place them on the bottom side of the wing (86-91mm) 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.



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 L-4 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".

! Check every bolt and every glue joint in your plane to ensure that everything is tight and well bonded.

IMPORTANT: Please do not clean your model with pure alcohol, only use liquid soap with water or use glass cleaner to clean on surface of your model to keep the colour not fade.

WARNING !

Do not put in a large-than recommended engine. A bigger engine does not necessarily mean better performance.

All details are subject to change without notice !

Technische Änderungen und Irrtümer vorbehalten !