## RADIO CONTROL MODEL / RC FLUGMODELL

VQAO1 Red
VQAO2 Black
VQAO1 N

# NORTH AMERICAN HARVARD AT-6

## BUILDING INSTRUCTIONS / MONTAGEANLEITUNG


**SPECIFICATIONS**

| | |
|---|---|
| Wingspan | 1540mm |
| Length | 1030mm |
| Flying weight | 2700g |
| Electric Motor | 650 Watt (BOOST 40) |
| Glow Engine | 6,5cc 2T / 8,5cc 4-T |
| Radio | 5 Channel / 6 Servos |

**Technische Daten**

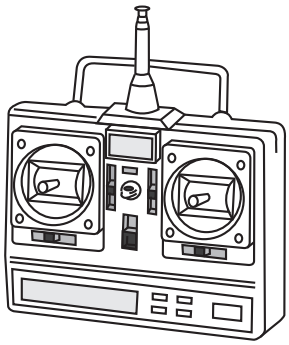
| | |
|---|---|
| Spannweite | 1540mm |
| Länge | 1030mm |
| Fluggewicht | 2700g |
| Elektroantrieb | 650 Watt (BOOST 40) |
| Verbrennerantrieb | 6,5cc 2T / 8,5cc 4T |
| Fernsteuerung | 5 Kanal / 6 Servos |

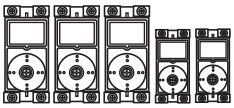
RADIO CONTROL MODEL ®

**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 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.

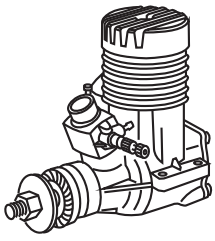
## REQUIRED FOR OPERATION (Purchase separately)
## BENÖTIGTE KOMPONENTEN FÜR DEN ABFLUG (Nicht enthalten)



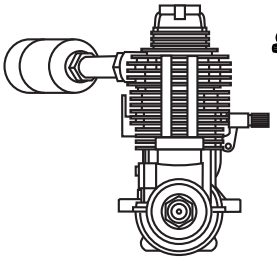


Minimum 5 channel radio
for airplane with 5 servos
.Motor x1 .Aileron (mini servo) x2
.Elevator x1 .Rudder x1

10.5x6 for .40 - 2 cycle engine
11x6 for .46 - 2 cycle engine
11x7 for .52 - 4 cycle engine
12x7 ~13x6 - Electric Motor



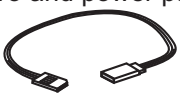
.40 ~ .46 - 2 cycle

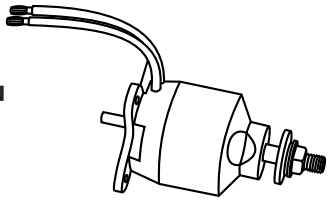


.50 ~.52 - 4 cycle

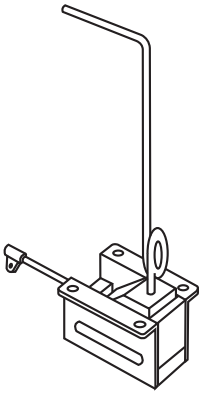
Silicone tube

Extension for aileron
servo and power pack





650Watt
Brushless Motor



Retract landing
gear VQAR01

Retract servo
x1

## GLUE (Purchase separately)


Silicon sealer

Cyanoacrylate
Glue

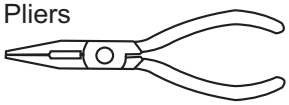


Epoxy Glue ( 5 minute type)
Epoxy Glue (30 minute type)

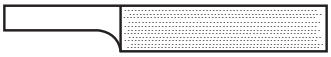
## TOLLS REQUIRED (Purchase separately)

Hobby knife

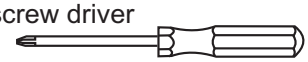
Needle nose Pliers



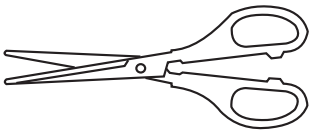
Sander



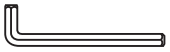
Phillip screw driver



Scissors

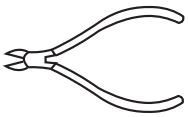


Hex Wrench



Awl

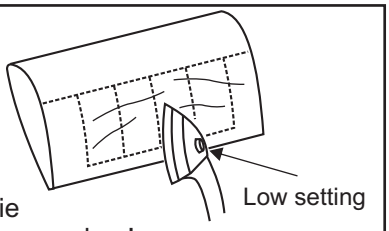
Wire Cutters



Masking tape - Straight Edged Ruler - Pen or pencil - Rubbing alcohol - 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 bekommen. 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 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” | |

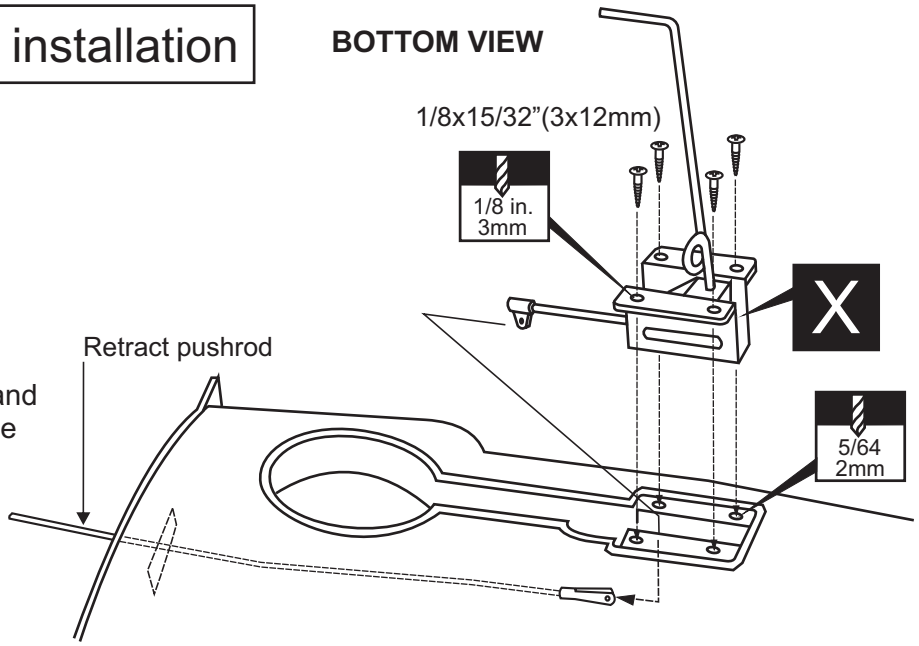
# 1. Retract landing gear installation

1/8x15/32”(3x12mm) Screw .....8

Trial fit the push rod into the wing. Join the pushrod to the retract gear arm and trial fit the retract into the wing.

Pull and push the retract push rod by hand to be sure to adjust the stroke so that the landing gear locks in both up and down position.

After checking that the retract works smoothly with the servos, fix the retract on the wing with 3x12mm screws



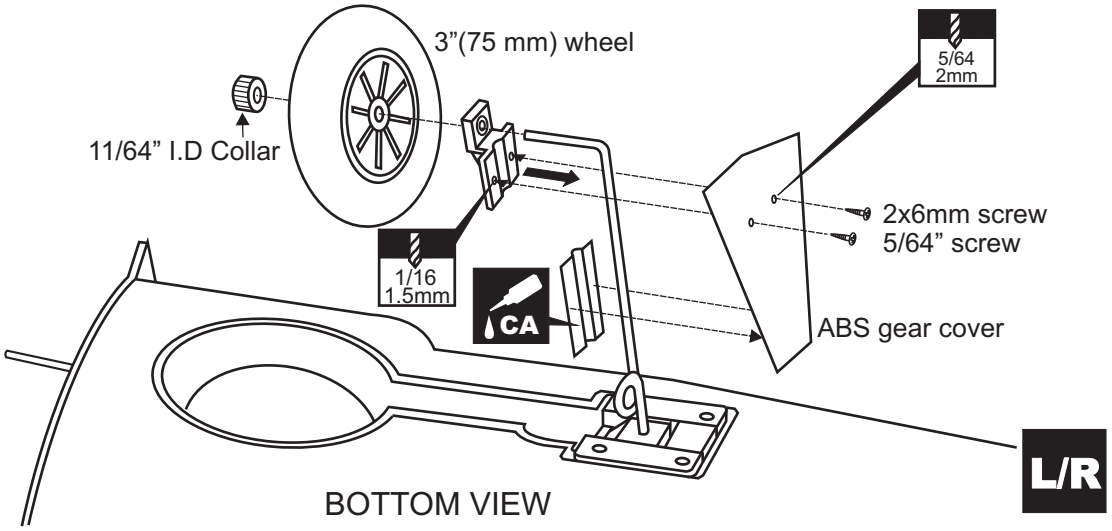

# 2. Retract landing gear installation

5/64”(2x6mm) screw .....8

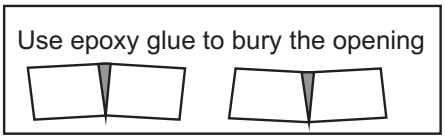
1/8”(3x6mm) screw .....2

11/64”(4.3mm) I.D Collar .....2

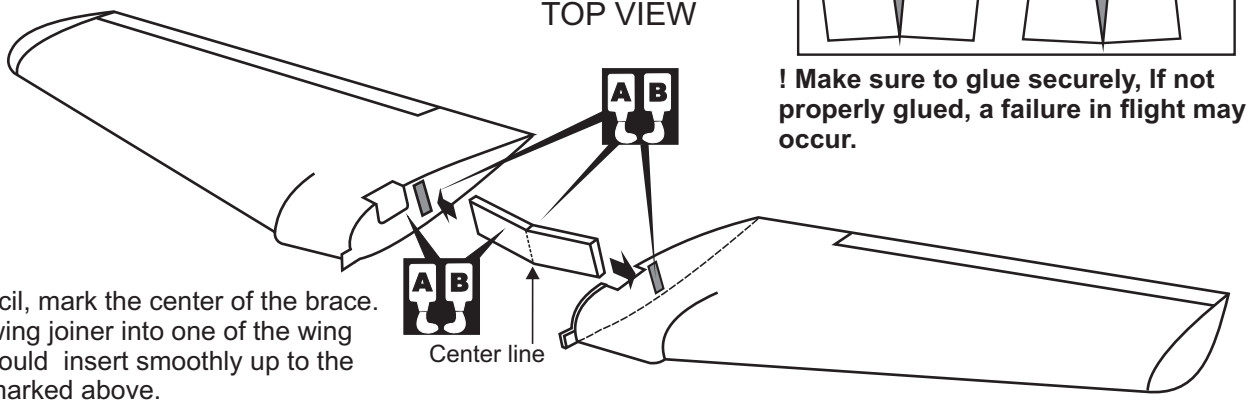
.....2




# 3. Joining the wing




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

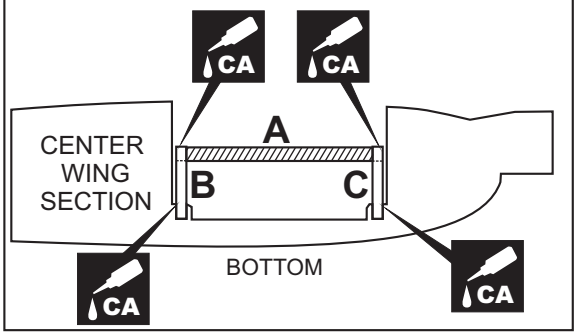



1- Using a pencil, mark the center of the brace.
2- Trial fit the wing joiner into one of the wing panels. It should insert smoothly up to the center line marked above.
3- Slide the other wing half onto the dihedral brace until the wing panel meet. If the fit is over tight, it may be necessary to lightly sand the dihedral brace.
4- Check for the correct dihedral angle.
5- Mix approximately 30 minute epoxy and apply a generous amount of epoxy into the wing joiner cavity of one wing half.
6- Coat one half of the dihedral brace with epoxy up to the center line. Install the epoxy-coated side of the dihedral brace into the wing joiner cavity up to the center line, marking sure that the “V” of the dihedral brace is positioned correctly
7- Do the same way with the other wing half.
8- Carefully slide the wing halves together, ensuring that they are accurately aligned. Firmly press the two halves together, allowing the excess epoxy to run out. Clean off the excess epoxy.

**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.

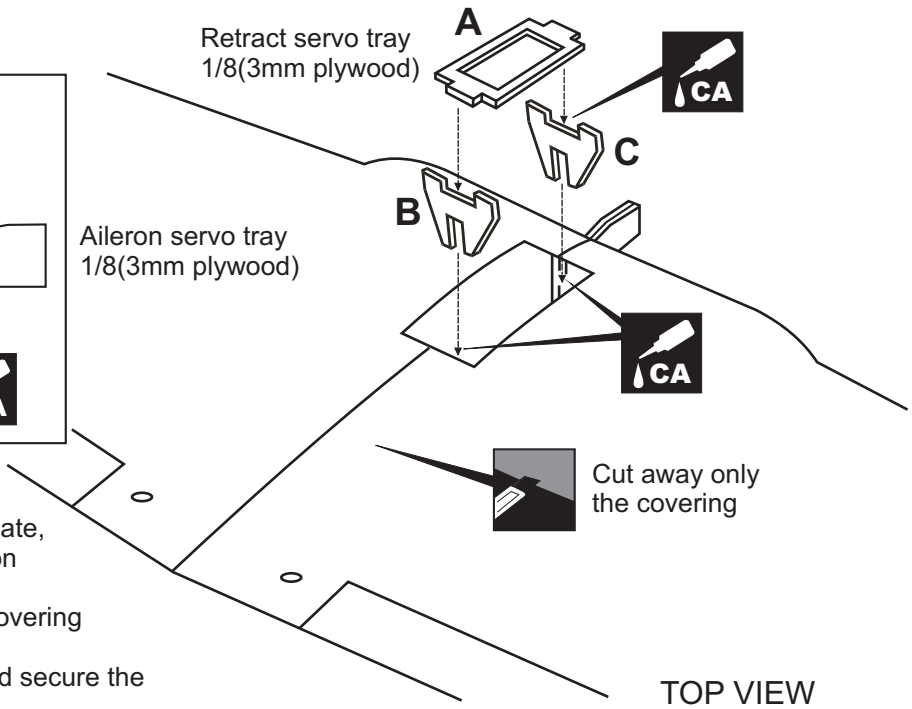
# 4. Servo tray

Retract servo tray installation




IN CASE OF MECHANIC RETRACT

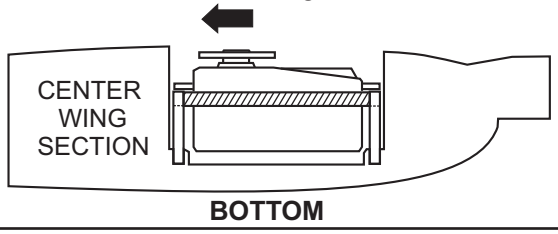
Using the aileron servo tray (**D**) as a template, trace around the outside edge of the aileron servo tray and then remove it.
Using a sharp hobby knife, cut away the covering inside the lines. Not to cut into the wood.
Apply the aileron servo tray(**D**) in place and secure the servo tray with CA glue.




TOP VIEW

# 5. Servo installation

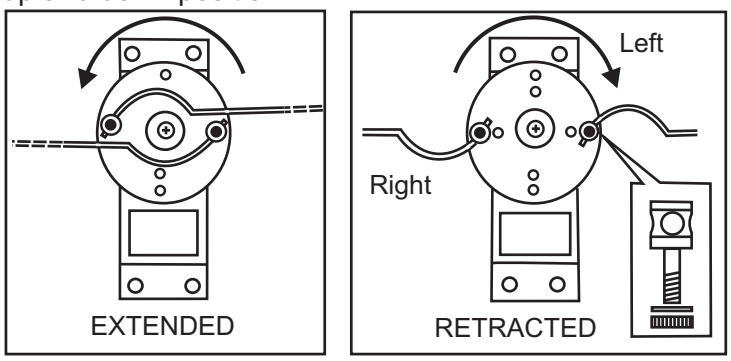
Note: The head of servo should be positioned toward the rear of the wing.

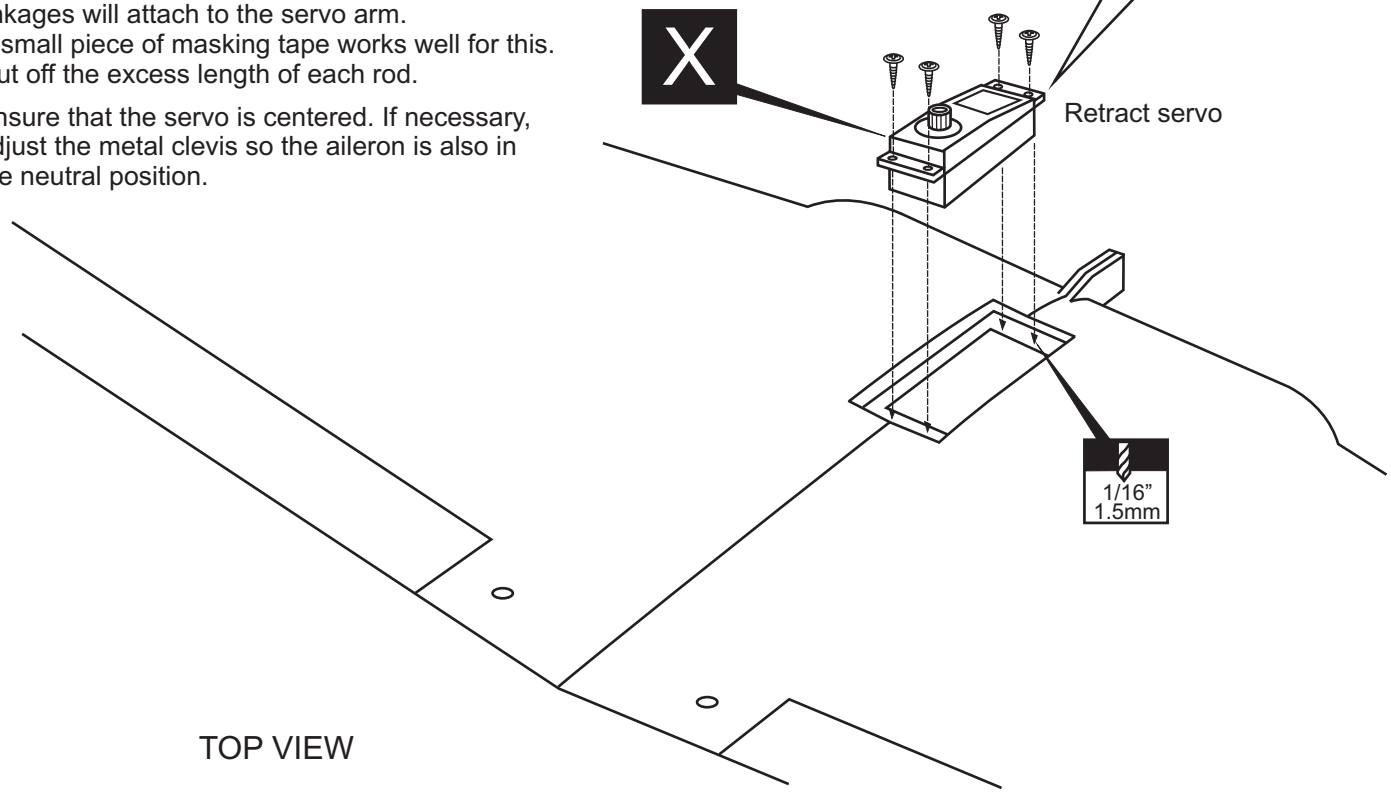



Install one clevis onto each of the aileron pushrod. With the ailerons and the aileron servo in the neutral position, mark the position where each of the linkages will attach to the servo arm.
A small piece of masking tape works well for this.
Cut off the excess length of each rod.

Ensure that the servo is centered. If necessary, adjust the metal clevis so the aileron is also in the neutral position.

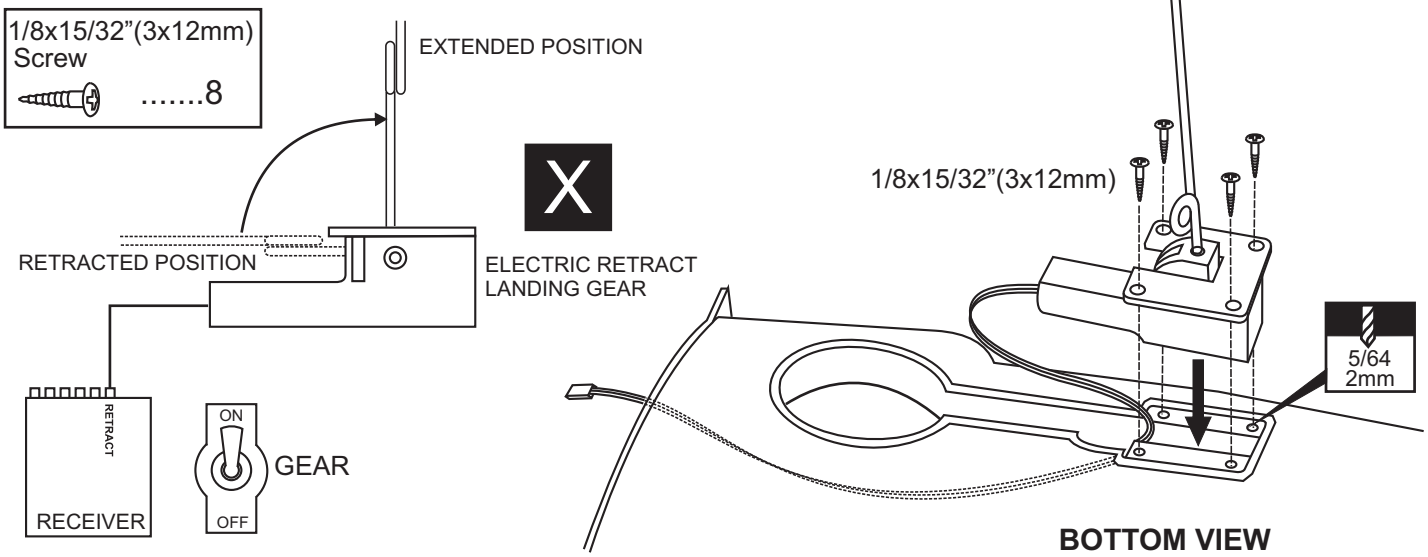
Link the servo and retract gear arm with pushrod. Be sure to adjust the stroke so that the landing gear locks in both up and down position.



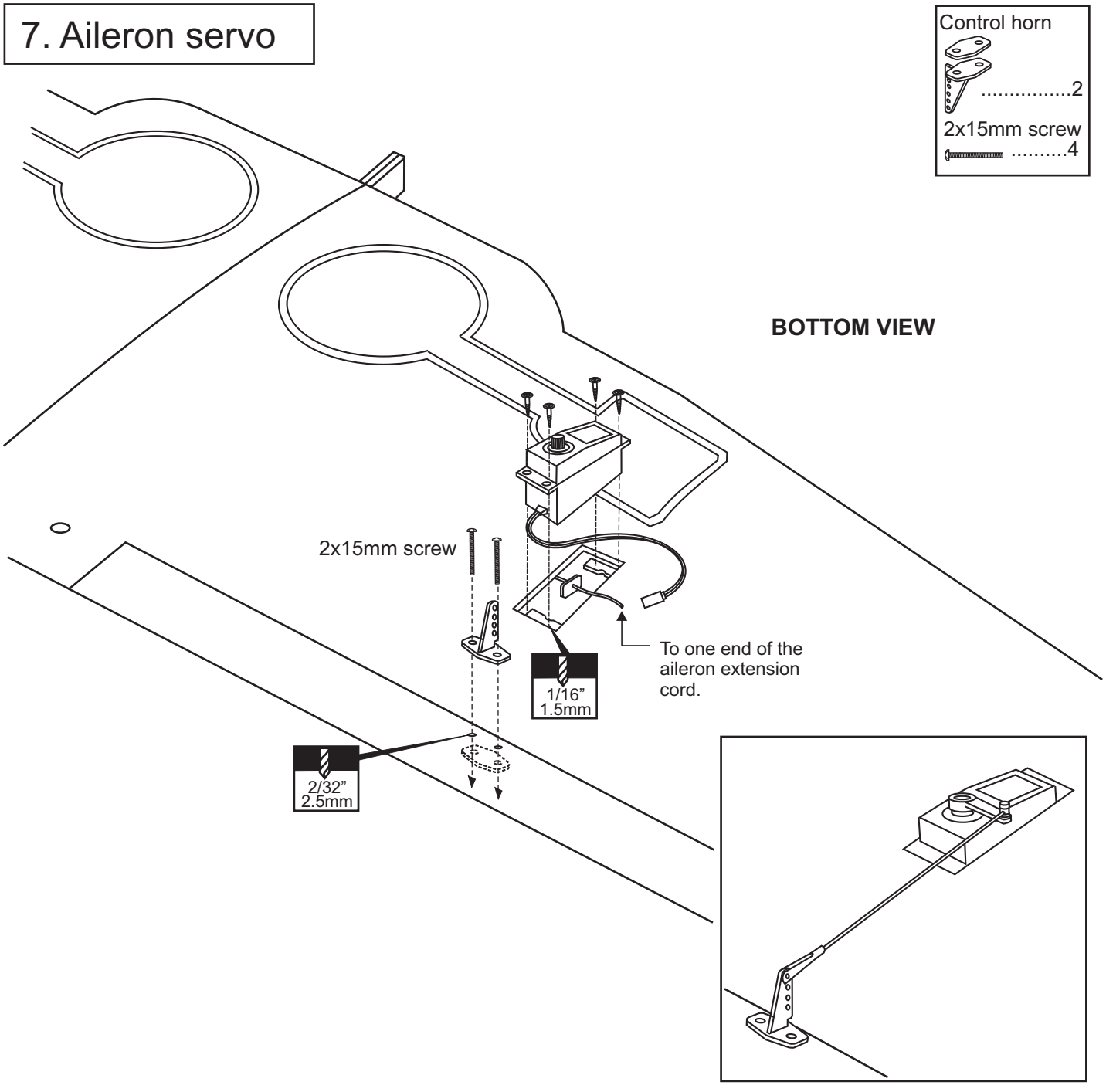




TOP VIEW

# 6. Electric retract landing gear installation

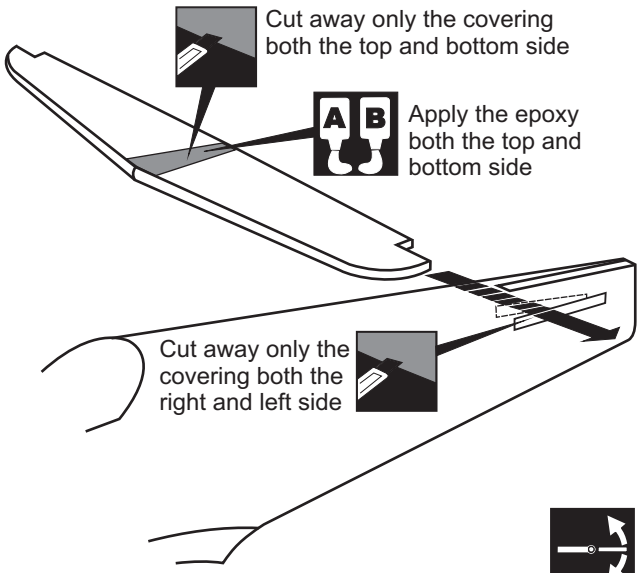


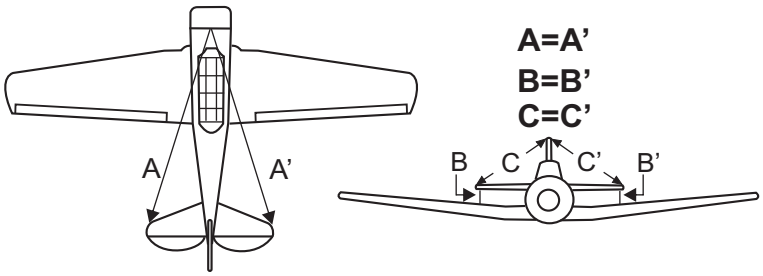

# 7. Aileron servo



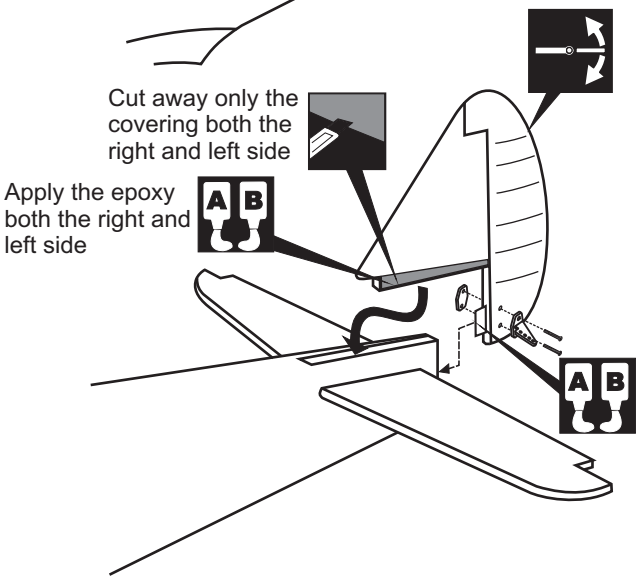
# 8. Tailplane

1-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.
2-Remove the horizontal stabilizer from the fuselage.
Using the sharp hobby knife, carefully cut away the covering inside the lines which were marked above.
3-Spread epoxy (30 minute) onto the top and bottom of the horizontal stabilizer along the area where the covering was removed and to the fuselage where the horizontal stabilizer mounts.
4-Install the horizontal stabilizer into the fuselage and adust the alignment as described in steep 1
5-Allow the epoxy to cure before proceeding to next step.



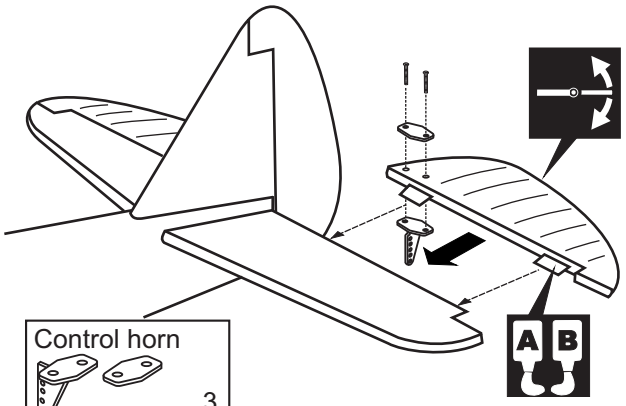

1-Trial fit the vertical stabilizer in place . Check the alignment of the vertical stabilizer. When you are satisfied with the alignment, use a pencil to trace around the right and left of the stabilizer where it meets the fuselage.
2-Remove the vertical stabilizer from the fuselage.
Using the sharp hobby knife, carefully cut away the covering inside the lines which were marked above.
3-Spread epoxy (30 minute) onto the right and left and bottom of the vertical stabilizer along the area where the covering was removed and to the fuselage where the vertical stabilizer mounts.
4-Install the vertical stabilizer into the fuselage and adust the alignment as described in steep 1
5-Allow the epoxy to cure before proceeding to next step.




ELEVATOR

Apply a thin layer of machine oil or petroleum jelly to only the pivot point of the hinges on the elevator, then push the elevator 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 should not rub against the horizontal stabilizer.
When satisfied with the and alignment, hinge the elevator to the horizontal stabilizer using 5 minute epoxy. Make sure to apply a thin layer of epoxy to the top and bottom of both hinges and to inside the hinge slots. Repeat the previous procedures to hinge the second elevator to the other side of the horizontal stabilizer.

*** 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.**




Control horn
.....3
2x20mm screw
.....6

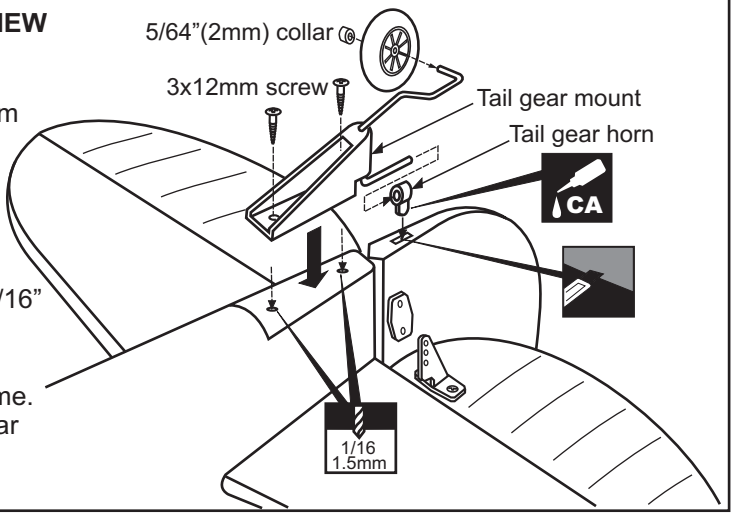
**Securely glue together. If coming off during flight, you lose control of your air plane.**

# 9.Tailgear

1/8x15/32" (3x12mm) screw .....2
Tail gear horn .....1
5/64"(2mm) collar .....1

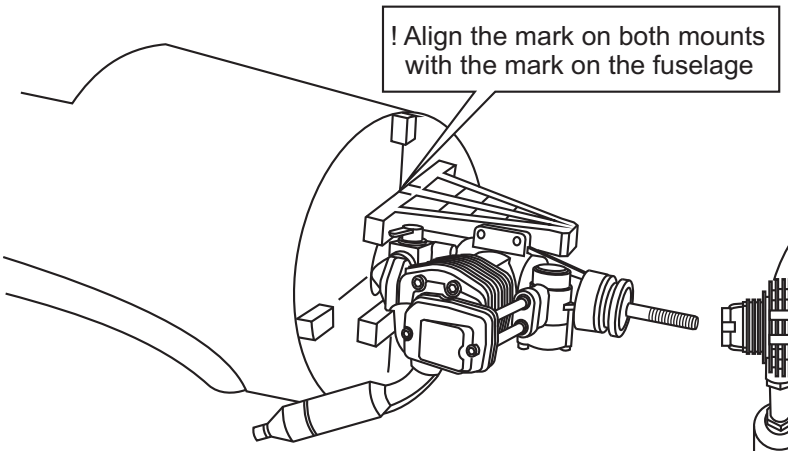
1-Place the tail gear mount on the bottom of the fuselage as show, mark the mounting hole positions with a pencil.
2-Remove the tail gear mount from the fuselage, Drill the two mounting holes as marked.
3-Cut a 5/64"(2mm) wide slot which is 5/16" (8mm) length and 5/16"(8mm) depth on the bottom of the rudder as shown.
4-Trial fit the tail gear horn into the slot. Do not glue at this time.
5-Slide the tail gear into the tail gear horn. Secure the tail gear mount in place using the two 3x12mm screw.
6-Secure the tail gear horn in place using CA glue as shown.

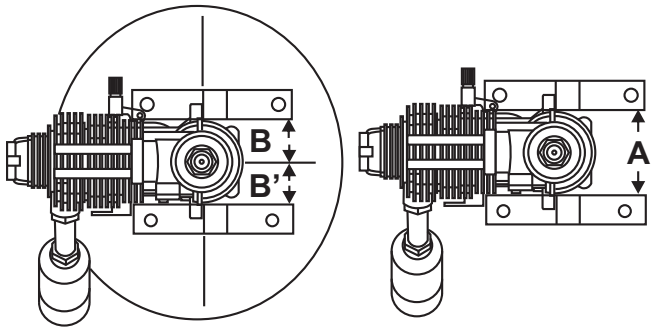
**BOTTOM VIEW**



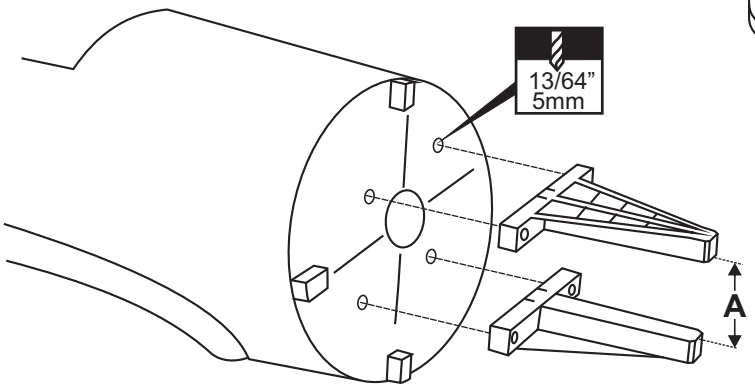
# 10. Engine mount - Engine

| | |
|---|---|
| 5/32”x1” 4x25mm screw | ...4 |
| 5/32”(4mm)blind-nut | .....4 |
| 1/8”x51/64” 3x25mm screw | ...4 |
| 1/8”(3mm)nut | .....4 |

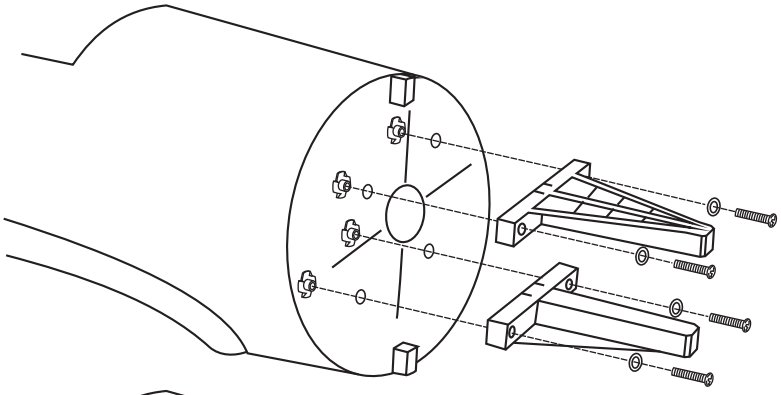


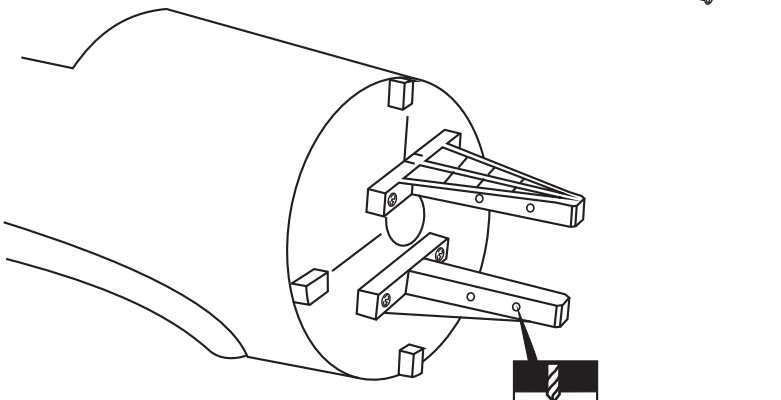

**B=B’**




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

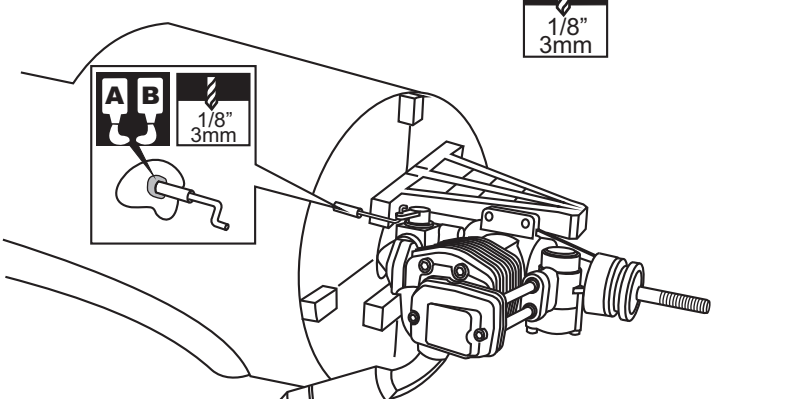


- Remove the engine mount and drill a 3/16”(5mm) hole through the fire-wall at each of the four marks made above

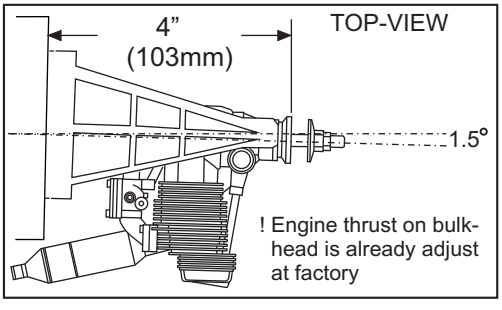


- Attach the four blind-nuts to the fire-wall as show

- Reposition the engine mounts on to the fire-wall and secure them with four 5/32X1”(4x25mm) screws.



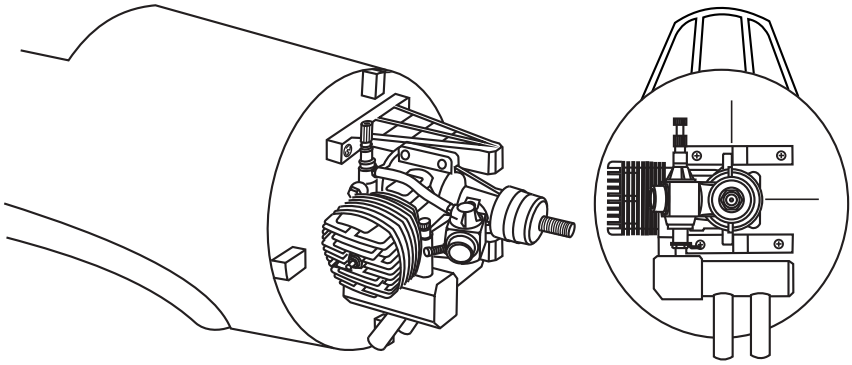

- Reposition the engine on the engine mount beams so the distance from the prop hub to the fire wall is 4”(103mm)
- Mark the engine mounting plate where the four holes are to be drilled.
  Note: Mark the mounting plate through the engine mounting flanges.
- Remove the engine and drill a 1/8”(3mm) holes through the beam at each of the four marks made above.

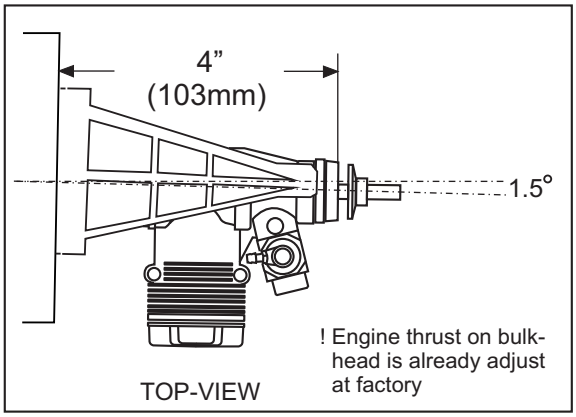




- Reposition the engine on the engine mount beams, aligning it with the holes. Secure the engine to the engine mount using four 1/8x51/64”(3x25mm) screws.

# 11. Engine mount - Engine

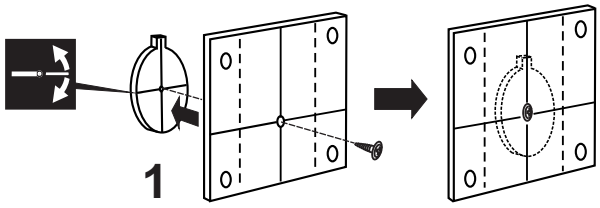
**In case of two-Stroke engine with hang silencer (Pitts-style)**

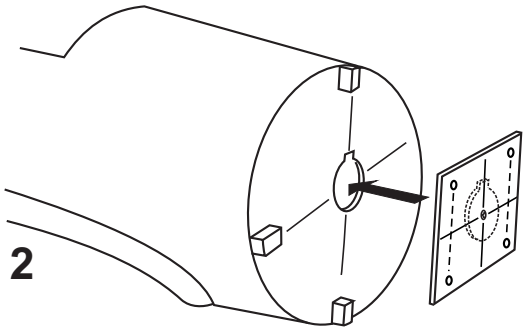


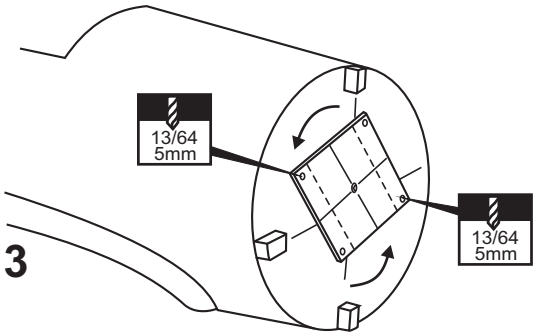


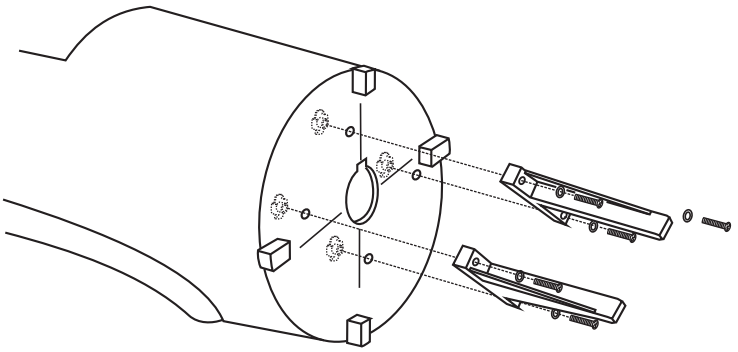

**In case of two-Stroke engine with side silencer.**

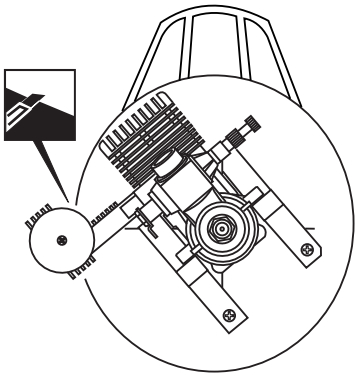
Ply engine mount template

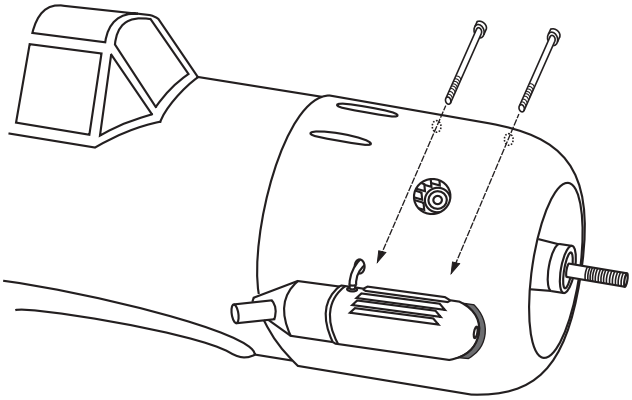


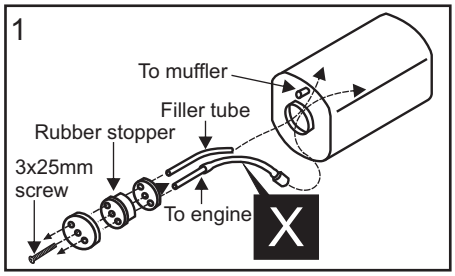



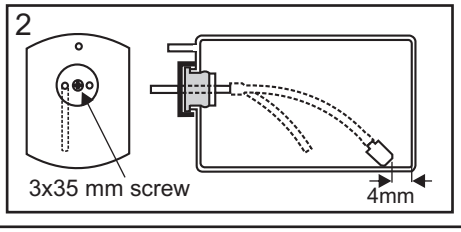





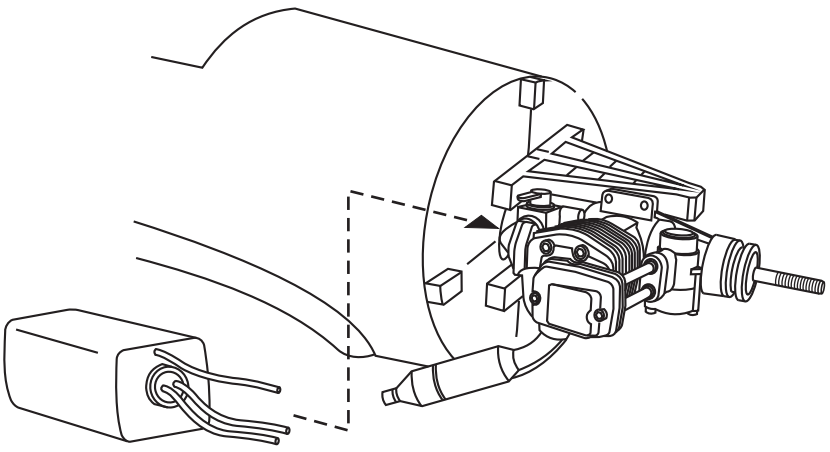


# 12. Fueltank



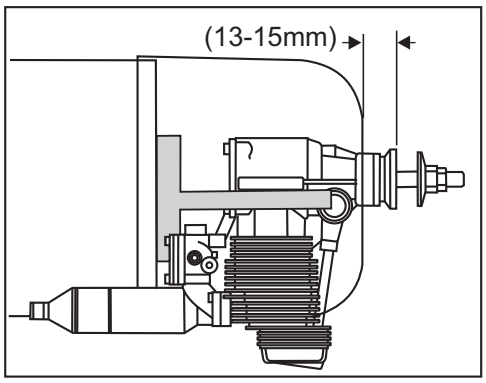



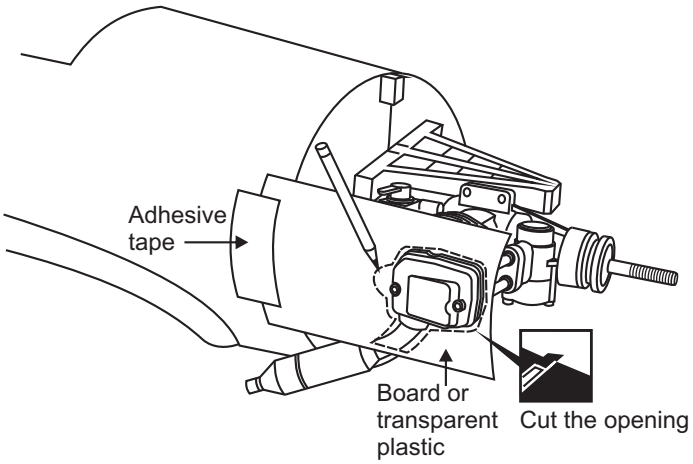

After confirming the direction . Insert this assembly, clunk end first, into the fuel tank and tighten and screw the fuel tank cap on firmly.



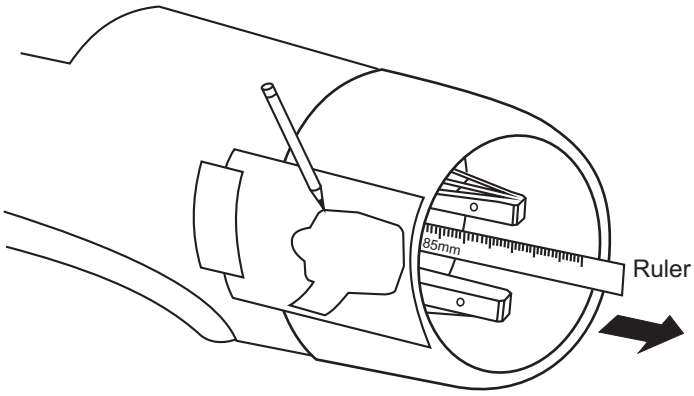
# 13. Motor Cowl

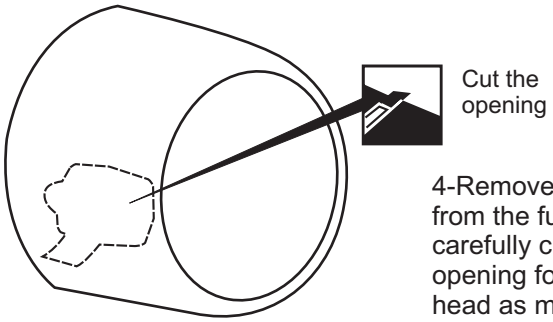
3/32x25/64”(2.5x10mm)
.....4



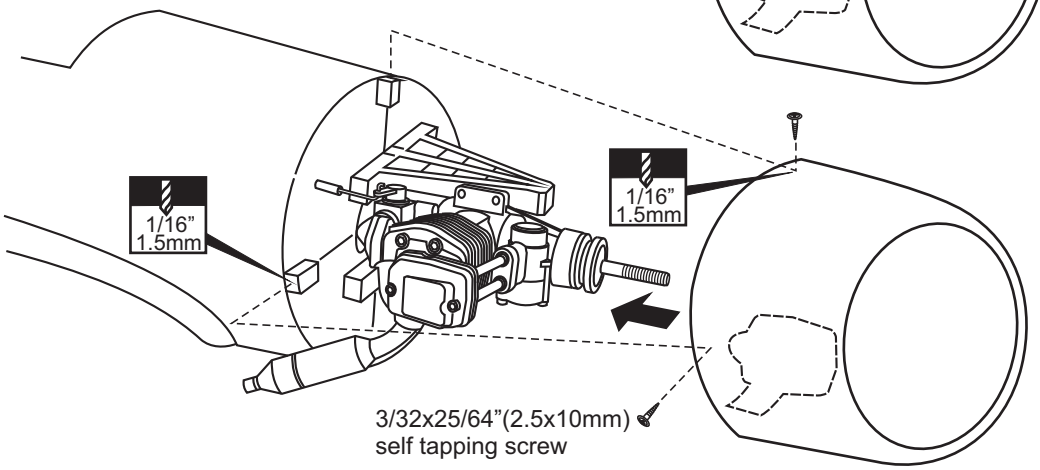

1-Attach the board or transparent plastic on the side of the fuselage with the adhesive tape as show.
2-Using a pencil or felt tipped pen trace around the engine head where it meet the cowl. Cut the opening the board or transparent plastic for the engine head as marked before.
3-Remove the engine and insert the cowl on to the fuselage so the distance from the fire wall to the front of the cowl is 3.35”(85mm). Trace around inside the hole on the board or transparent plastic with a pencil.



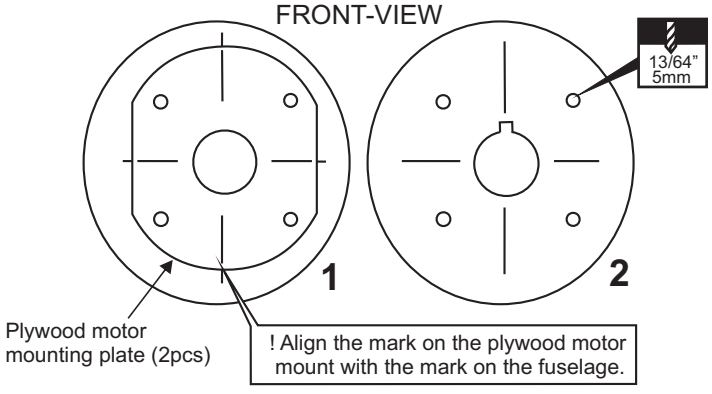

4-Remove the cowl from the fuselage and carefully cut the opening for the engine head as marked above. Do the same way with the hole for needle-valve.

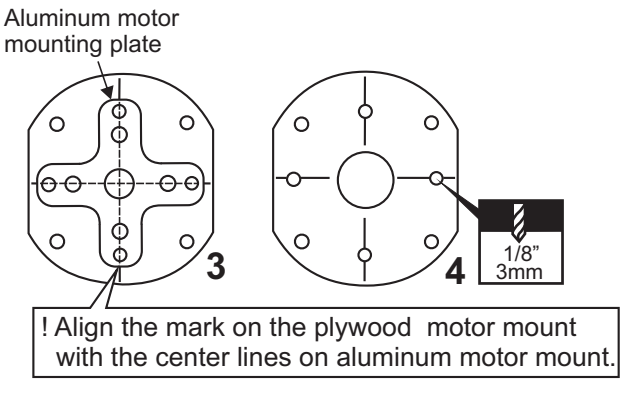
5-Again, insert the cowl on to the fuselage and secure it in place with four 3/32x25/64” (2.5x10mm) self tapping screws.




# 14- Electric Motor

- Using a plywood motor mounting plate as a template, mark the fire wall where the four holes are to be drilled (1).
- Remove the plywood motor mounting plate and drill a 13/64”(5mm) hole through the fire-wall at each of the four marks marked (2).
- Using a aluminum motor mounting plate as a template, mark the plywood motor mounting plate where the four holes are to be drilled (3).
- Remove the aluminum motor mounting plate and drill a 1/8”(3mm) hole through the plywood at each of the four marks marked (4).



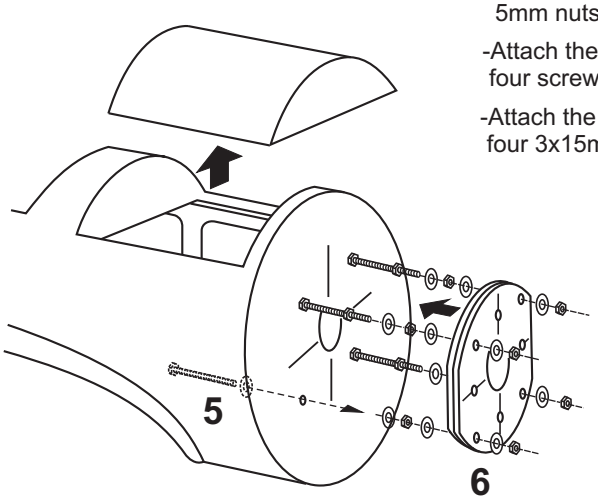
# 15- Electric Motor

-Push the four 5x70mm bolts through the fire-wall as shown (5).

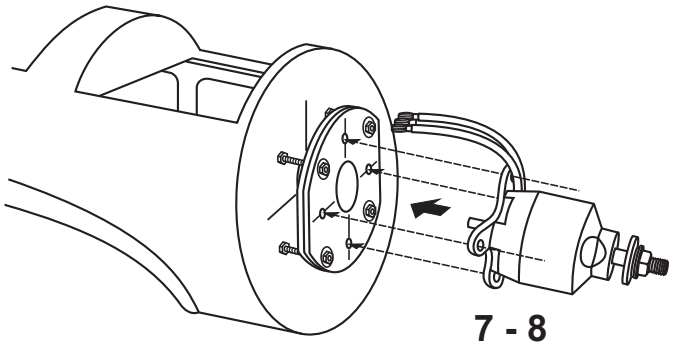
- Reposition the plywood motor mounting plate (2pcs) and secure it in place with eight 5mm nuts and washers (6). Note: B=B'(Side-view) and A=A'(Top-view)

-Attach the aluminum motor mounting plate on to the motor and secure it in place with four screws ( included with motor set) (7).

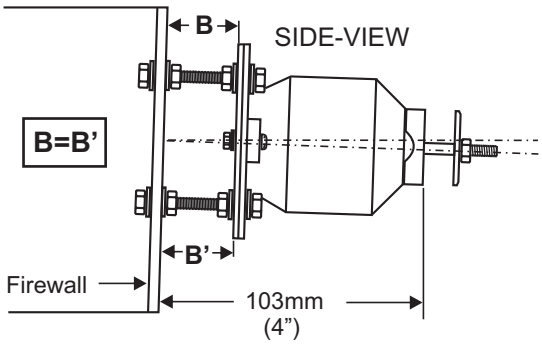
-Attach the motor on to the plywood motor mounting plate and secure it in place with four 3x15mm (1/8x19/32") screws(8).

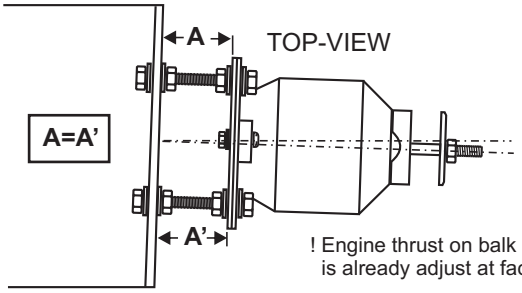



6

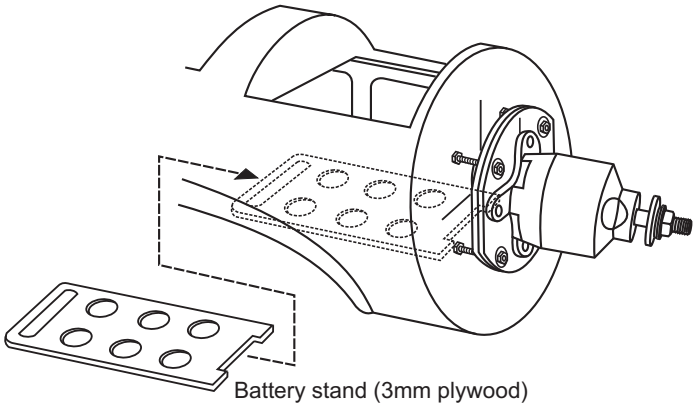


7 - 8




! Engine thrust on balk head is already adjust at factory



Battery stand (3mm plywood)

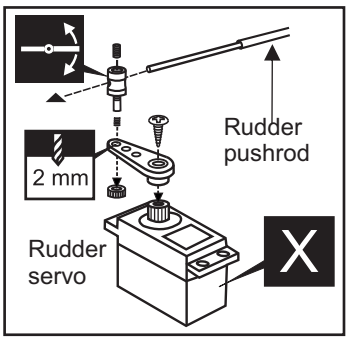
Insert the Battery stand into the fuselage ( In case of Electric power) and secure it in place with CA glue.

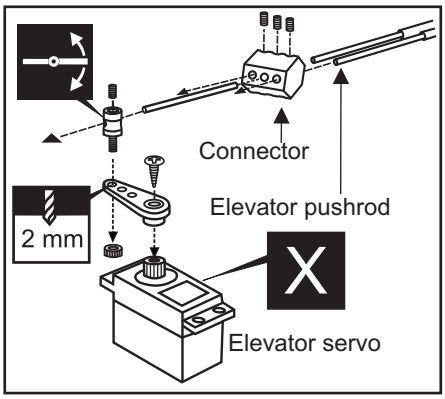
| | |
|---|---|
| 5x70mm.....4 | 5mm washer...16 |
| 5mm nut.....12 | 3mm screw/nut...4 |

# 16. Linkages

Connector ..... 3

Connector ..... 1



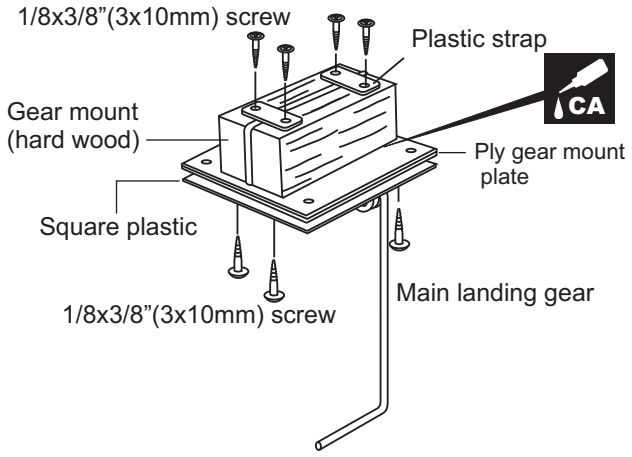



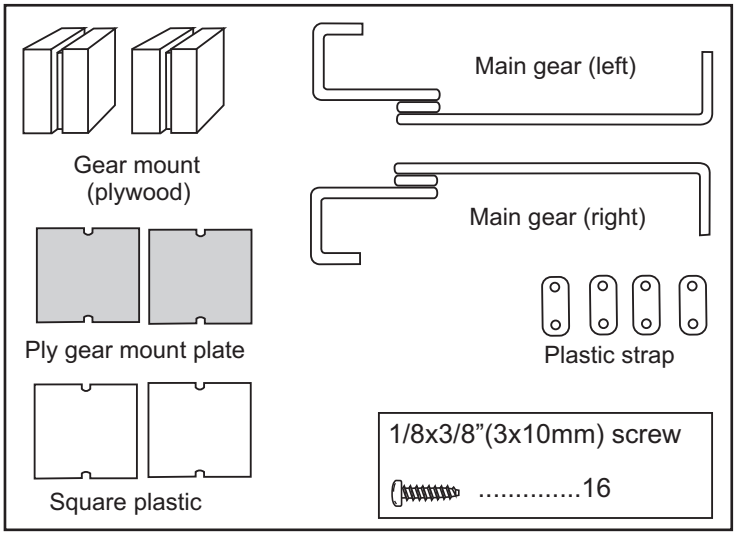




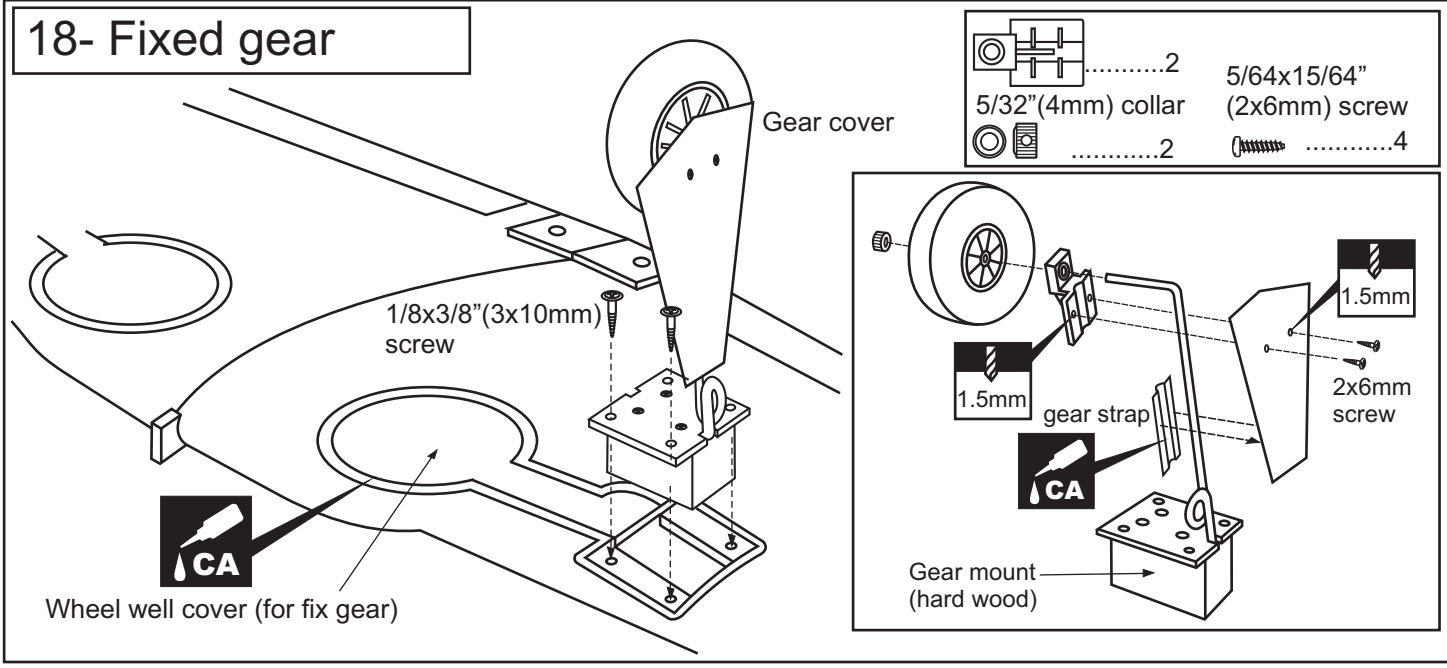
BOTTOM VIEW

# 17- Fixed gear

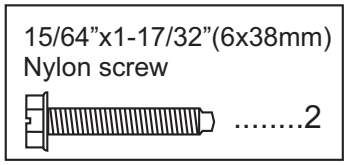


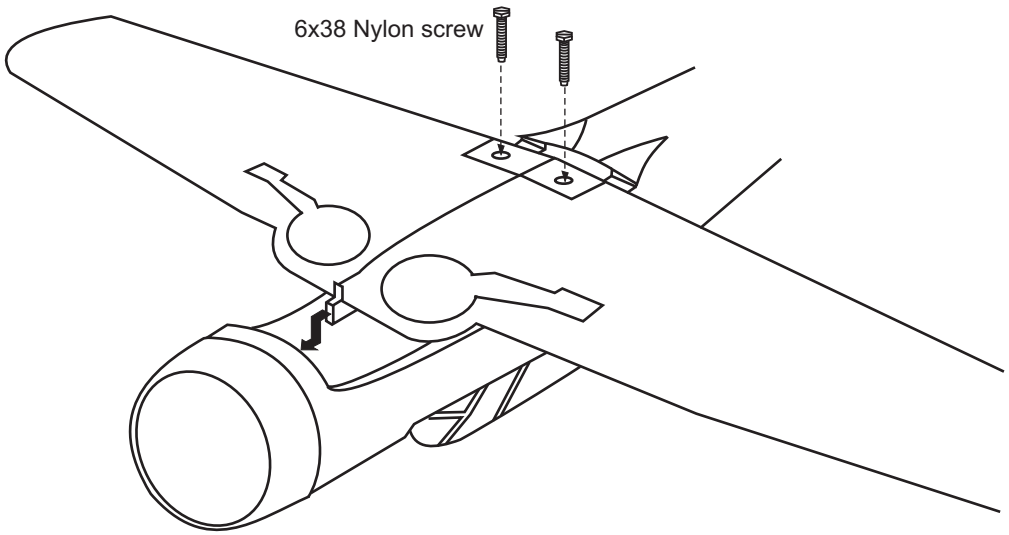




# 18- Fixed gear

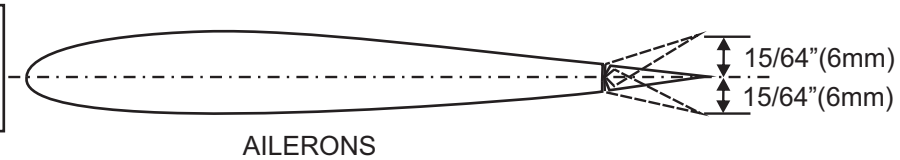


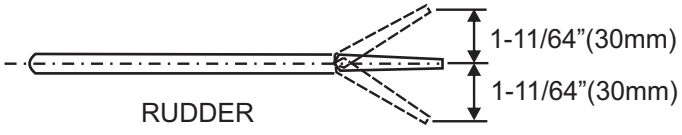

# 19. Wing mounting

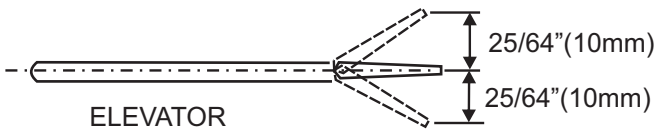


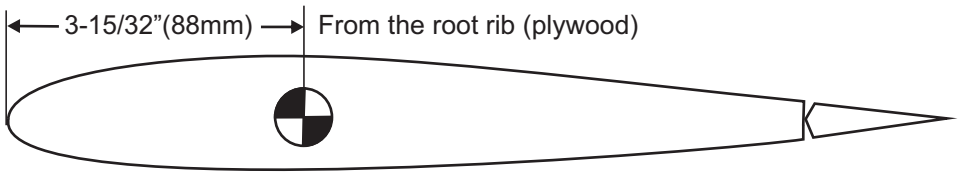

# 20. Control surface travels



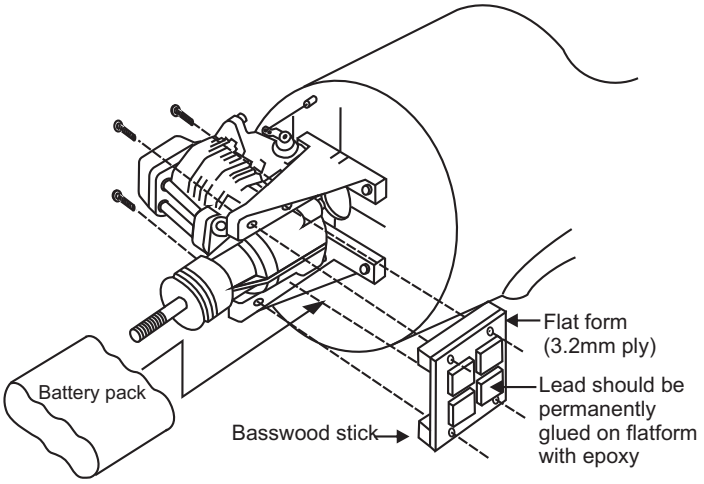



## 21. Center of Gravity



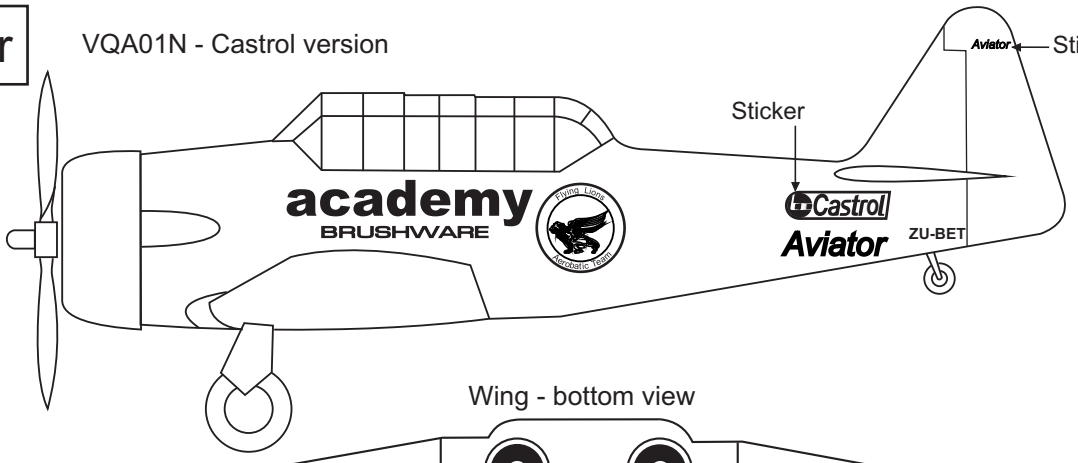

## 22. How to add noseweight

To get the correct C.G., Several strips of lead weight were required in the nose of this model . To minimize the amount of weight required, it is desirable to position the weight as far forward as possible. This can be done by making a platform form left over basswood stick and 3.2mm (1/8") ply wood. Using 4x35mm bolts to mount the engine would also be long enough to mount the flatform. The lead should be permanently glued on with epoxy.
IMPORTANT: Recheck the C.G. After the weight has been installed.

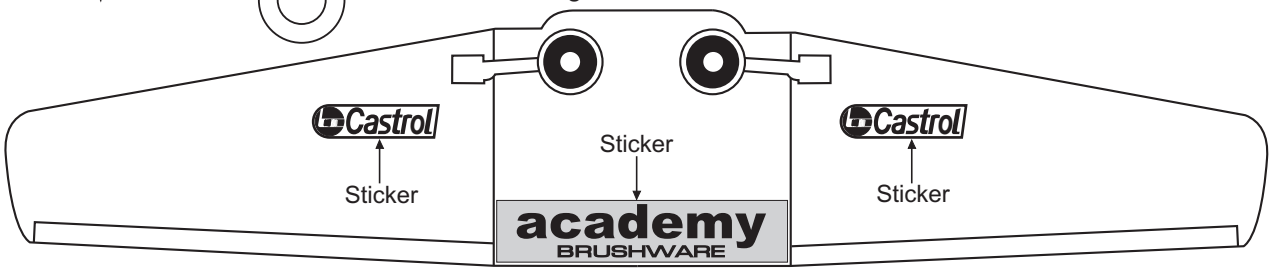



## 23. Decor

VQA01N - Castrol version




Wing - bottom view




***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.

CAUTIONS FOR SAFETY

Ensure the airfield is spacious enough.

Ensure the spinner and propeller are securely attached. Immediately disure defective propeller as well as deformed spinners.

Adjust the engine always from behind, but never from infront or the sides as rotating propeller may badly injure you.

Do not allow watching people to get too close to a rotating propeller.

Fully extend the transmitter and receiver antenna.

Always take off and landing your airplane into the wind.

Switch off the transmitter and receiver after landing.

Do not fly your airplane above people standing around.

BEFORE FLYING CHECK EVERYTHING
Before each flight, inspect the airplane for any loose parts. Check the hinges, make sure the pushrods are still firmly attached, and check the engine mounting bolts. In general, check everything on the plane that might possibly come loose.

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