

33% *Ultimate*



Requires : 100 c.c. engine, 6-channel radio w/ 9 high torque servos.

Specifications

Wing Span	76 in / 1930 mm
Wing Area	2100 sq in / 135.5 sq dm
Flying Weight	23-25 lbs / 10440-11350 g
Fuselage Length	82 in / 2080 mm

* Specifications are subject to change without notice.*

Warning !This model is not a toy.

It is designed for maximum performance. Please seek advice if one is not familiar with this kind of engine powered precision model. Operating this model without prior preparation may cause injuries. Remember, safety is the most important thing. Always keep this instruction manual at hand for quick reference.



TWM
The World Models
Manufacturing Co., LTD.
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FACTORY PRE-FABRICATED
 ALMOST-READY-TO-FLY (ARF) SERIES
 MADE IN CHINA

33% Ultimate

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BEFORE YOU BEGIN

- 1 Read through the manual before you begin, so you will have an overall idea of what to do.
- 2 Check all parts. If you find any defective or missing parts contact your local dealer. Please DRY FIT and check for defects for all parts that will require CA or Epoxy for final assembly. Any parts you find to be defective after the gluing process may be difficult to remove for warranty replacement. The manufacturer will replace any defective parts, but will not extend to the parts that are good before gluing to defective parts during assembly. Warranty will not cover any parts modified by customer.
- 3 Symbols used throughout this instruction manual comprise of the following :-



Apply epoxy glue.



Apply instant glue
(C.A.glue, super glue.)



Assemble left and right
sides the same way.



Ensure smooth non-binding
movement while assembling.



Peel off shaded portion
covering film.



Cut off shaded portion.



Drill holes with the specified
diameter (here: 3mm).



Must be purchased separately!



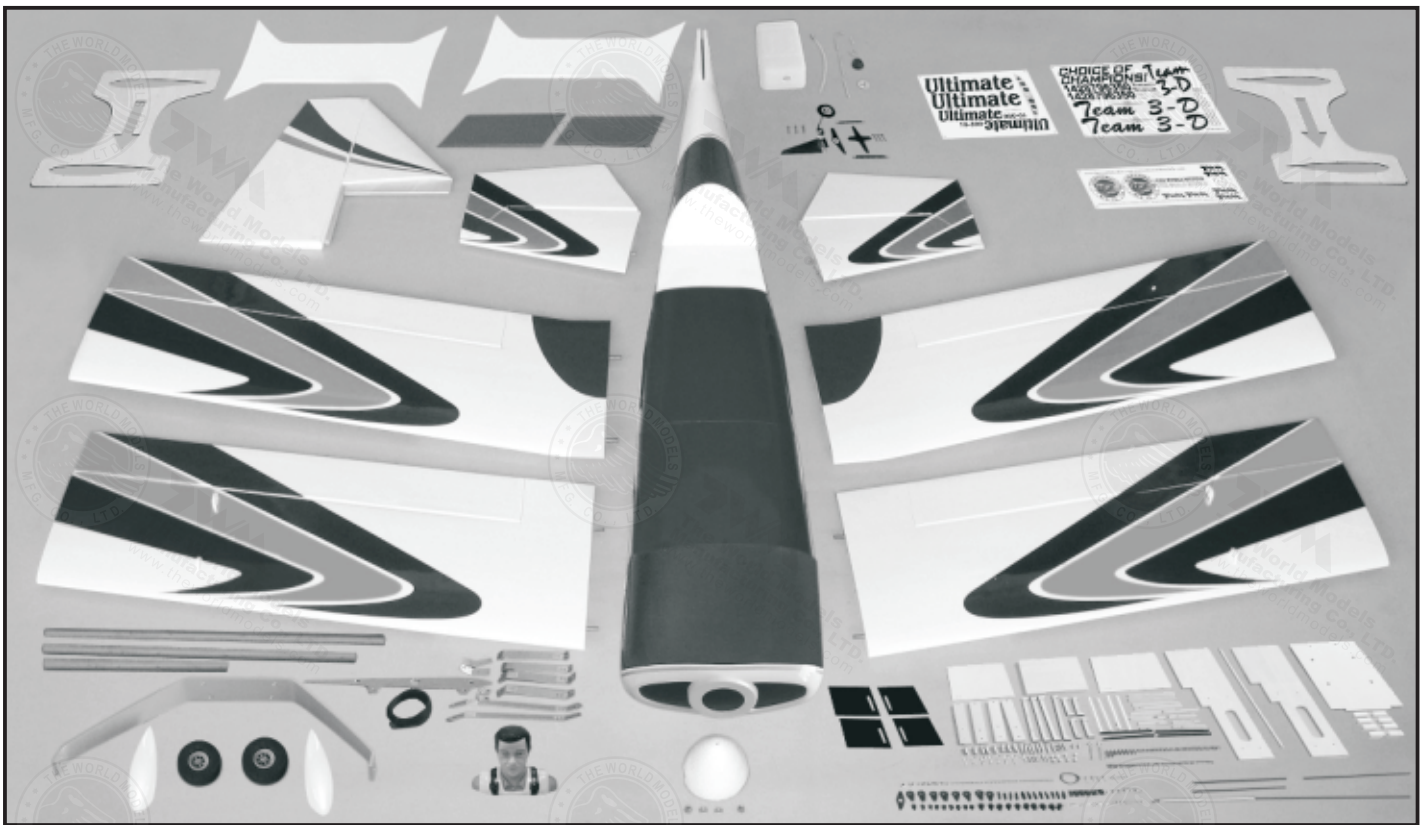
Pay close attention here!



Do not overlook this symbol!



Pierce the shaded portion
covering film.



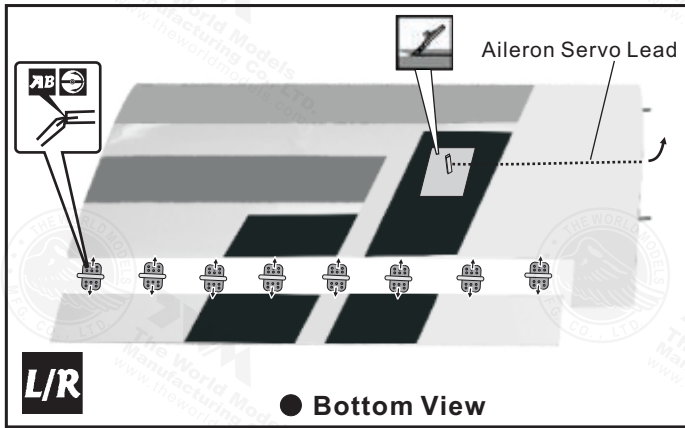
Parts List

1. MAIN WING (Upper Wing) -- 1 pair
MAIN WING (Lower Wing) -- 1 pair
METAL HINGES -- 32 pcs
 2. SERVO MOUNTING PANEL (For Aileron Servo) -- 2 pcs
HEAVY DUTY SERVO HORN PL4120350 -- 2 sets
SCREW PM4x50mm -- 2 pcs
SCREW PWA2x12mm -- 8 pcs
M4 NYLON INSERT LOCK NUT -- 2 pcs
HEAVY DUTY HORN BRACKET PL4112400 -- 2 sets
HEAVY DUTY CLEVIS PL412200 -- 4 sets
SWIVEL CLEVIS HORN FAIRING PL4610010 -- 2 sets
PUSHROD $\varnothing 2.5 \times 60$ mm w/Threads (For Aileron) -- 2 pcs
 3. SERVO MOUNTING PANEL (For Aileron Servo) -- 2 pcs
HEAVY DUTY SERVO HORN PL4120350 -- 2 sets
SCREW PM4x50mm -- 2 pcs
SCREW PWA2x12mm -- 8 pcs
M4 NYLON INSERT LOCK NUT -- 2 pcs
HEAVY DUTY HORN BRACKET PL4112400 -- 2 sets
HEAVY DUTY CLEVIS PL412200 -- 4 sets
SWIVEL CLEVIS HORN FAIRING PL4610010 -- 2 sets
PUSHROD $\varnothing 2.5 \times 60$ mm w/Threads (For Aileron) -- 2 pcs
 4. FUSELAGE -- 1 pc.
STABILIZER & ELEVATOR -- 1 set
METAL HINGES -- 8 pcs
STABILIZER TUBE $\varnothing 16 \times 394$ mm -- 1 pc.
SCREW PWA3x12mm -- 2 pcs
 5. VERTICAL FIN & RUDDER -- 1 set
METAL HINGES -- 6 pcs
 6. TAIL GEAR ASSEMBLY 13-22LBS PL3410021 -- 1 set
 7. SCREW PM3x16mm -- 8 pcs
M3 NYLON INSERT LOCK NUT -- 8 pcs
WASHER d3xD7mm -- 16 pcs
FIRE WALL 9x135x150mm (F11) -- 1 pc.
ENGINE BOX SIDE PLATE 4x95x409.3mm (F9) -- 1 pc.
ENGINE BOX SIDE PLATE 4x95x417.3mm (F10) -- 1 pc.
LOWER PLATE 2x150x152.5mm (F11B) -- 1 pc.
BALSA 7x7x132mm (F9A) -- 2 pcs
BALSA 10x10x95mm (F9B) -- 1 pc.
BALSA 7x7x62mm (F9E) -- 2 pcs
BALSA 7x7x54mm (F9F) -- 4 pcs
BALSA 7x7x140mm (F10A) -- 2 pcs
BALSA 10x10x95mm (F10B) -- 1 pc.
BALSA 7x7x95mm (F9C) -- 2 pcs
BALSA 7x7x69mm (F9D) -- 2 pcs
PLYWOOD 4x15x172.5mm (F22) -- 4 pcs
PLYWOOD 4x15x172.8mm (F22A) -- 4 pcs
BAMBOO D3.5x380mm -- 1 pc.
WOODEN 6x25x160mm (F20) -- 2 pcs
WOODEN 6x25x160mm (F20A) -- 2 pcs
 8. CENTER WING CABANE -- 1 set
ALUMINUM PLATE -- 2 pcs
SCREW PM3x16mm -- 6 pcs
WASHER d3xD7mm -- 12 pcs
M3 NYLON INSERT LOCK NUT -- 6 pcs
 9. MAIN LANDING GEAR -- 1 set
SOCKET HEAD SCREW M5x20mm -- 4 pcs
AXLE SHAFT $\varnothing 5 \times 63.5$ mm -- 2 pcs
SCREW PA3x14mm -- 4 pcs
SCREW PA3x12mm -- 4 pcs
COLLAR 5.1mm w/set screw -- 4 sets
M8 NYLON INSERT LOCK NUT -- 2 pcs
MAIN WHEEL $\varnothing 102$ mm -- 2 pcs
WHEEL PANTS -- 1 pair
ALUMINUM PLATE -- 2 pcs
 10. PUSHROD $\varnothing 2.5 \times 115$ mm w/Threads (For Rudder) -- 2 pcs
HEAVY DUTY SERVO HORN PL4120350 -- 2 sets
SCREW M4x80mm -- 1 pc.
M4 NYLON INSERT LOCK NUT -- 2 pcs
HEAVY DUTY HORN BRACKET PL4112400 -- 2 sets
HEAVY DUTY CLEVIS PL4112200 -- 4 sets
SWIVEL CLEVIS HORN FAIRING PL4610020 -- 1 set
PLYWOOD 3x8x20mm -- 2 pcs
 11. SCREW PM4x50mm -- 2 pcs
M4 NYLON INSERT LOCK NUT -- 2 pcs
HEAVY DUTY HORN BRACKET PL4112400 -- 2 sets
HEAVY DUTY SERVO HORN PL4120350 -- 2 sets
HEAVY DUTY CLEVIS PL4112200 -- 4 sets
SWIVEL CLEVIS HORN FAIRING PL4610010 -- 2 sets
PUSHROD $\varnothing 2.5 \times 100$ mm w/Threads (For Elevator) -- 2 pcs
 12. FUEL TANK 800cc PL111810G (Gasoline Fuel) -- 1 set
FUEL TANK HOLD DOWN PLATE 3x128x263mm (F13A) -- 1 pc.
SCREW PM3x12mm -- 1 pc.
WASHER d3xD7mm -- 1 pc.
SPONGE 10x80x200mm -- 1 pc.
CABLE TIE 400mm -- 2 pcs
 13. BLIND NUT M6 -- 4 pcs
SOCKET HEAD SCREW M6x30mm -- 4 pcs
WASHER d6xD15mm -- 4 pcs
UPPER PLATE 2x143.5x150mm (F11A) -- 1 pc.
LINKAGE CONNECTOR 2.1mm -- 1 set
THROTTLE PUSHWIRE $\varnothing 1.2 \times 600$ mm -- 1 pc.
w/Plastic tube d2xD3x450mm -- 1 pc.
 14. SPONGE 10x80x200mm -- 1 pc.
 15. WING TUBE $\varnothing 16 \times 724$ mm -- 1 pc.
SCREW PM3x16mm -- 1 pc.
SCREW PA3x16mm -- 1 pc.
WASHER d3xD7mm -- 2 pcs
 16. WING TUBE $\varnothing 16 \times 665$ mm -- 1 pc.
SCREW PM3x16mm -- 1 pc.
SCREW PA3x16mm -- 1 pc.
WASHER d3xD7mm -- 2 pcs
 17. PLYWOOD (OUTER WING CABANES) -- 1 pair
PLYWOOD 3x415x469mm (Wing Incidence Angle Template) -- 2 pcs
FLYING WIRE ASSEMBLY -- 1 set
WIRE $\varnothing 1 \times 1000$ mm -- 1 pc.
WOOD $\varnothing 6 \times 102$ mm -- 4 pcs
 18. CANOPY -- 1 pc.
COCKPIT -- 1 pc.
PILOT PC101110F/E -- 1 pc.
SCREW PM3x20mm -- 4 pcs
SCREW PWA2.3x8mm -- 4 pcs
WASHER d3xD7mm -- 4 pcs
SILICON GROMMET d1.5xD6.5mm -- 4 pcs
 19. COWLING -- 1 pc.
SPINNER (w/alu. back plate) $\varnothing 102$ mm -- 1 pc.
SCREW PA3x12mm -- 6 pcs
WASHER d3xD7mm -- 6 pcs
SILICON GROMMET d2.5xD8.5mm -- 5 pcs
 20. DECALS -- 1 set
 21. HAND TAP M3 -- 1 pc.
HAND TAP M4 -- 1 pc.
- **COVERING:--**
- | | |
|-------------------------------|---------------------------------|
| PURPLE COLOR SCHEME: | YELLOW COLOR SCHEME: |
| TOUGHLON STL 100 WHITE | TOUGHLON STL 100 WHITE |
| TOUGHLON STL 201 BLACK | TOUGHLON STL 201 BLACK |
| TOUGHLON STL 561 PEARL PURPLE | TOUGHLON STL 330 CADMIUM YELLOW |
| TOUGHLON STL 370 SILVER | TOUGHLON STL 370 SILVER |

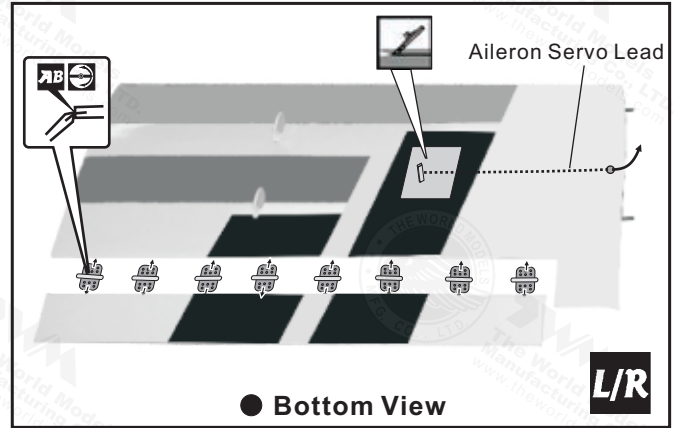
1 Main Wing

- Replace CA hinges by metal hinges. Glue the metal hinges to wing and aileron by epoxy.

Main Wing (Lower)



Main Wing (Upper)

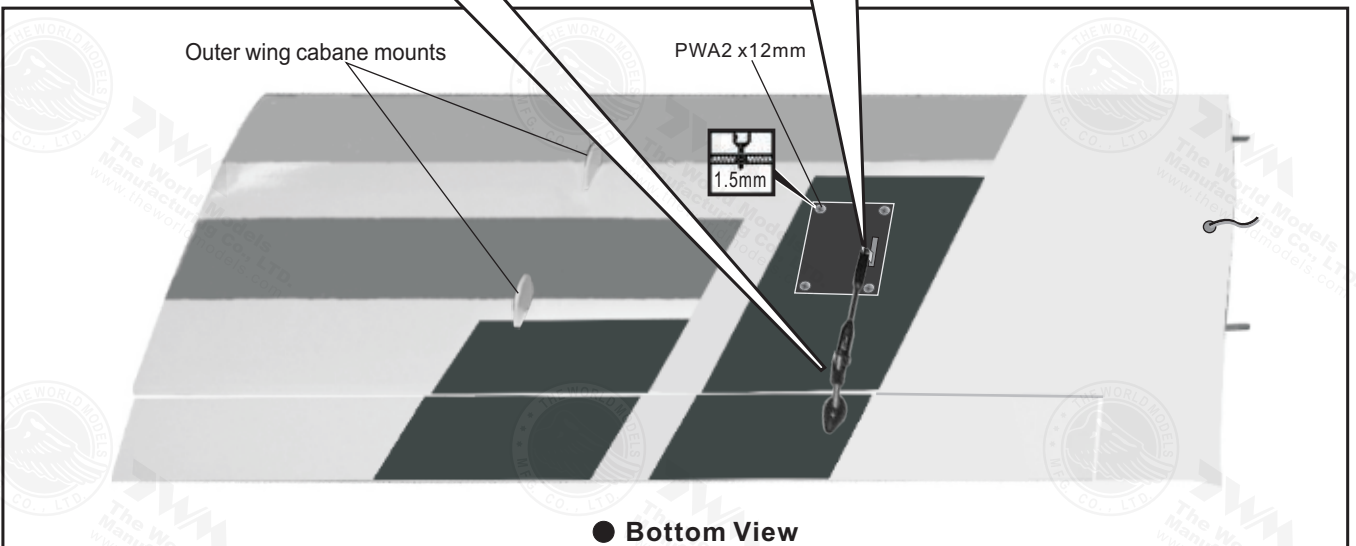
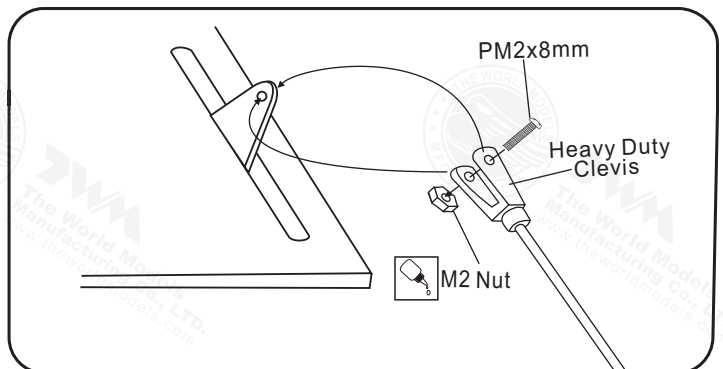
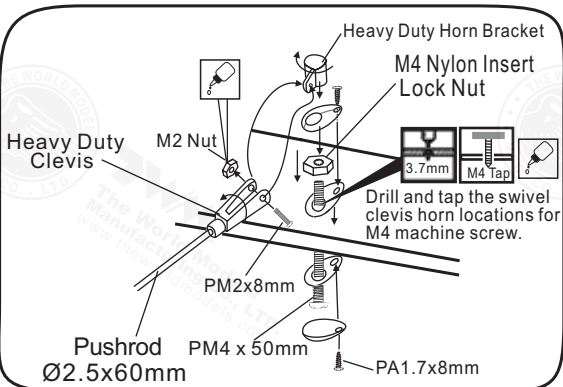
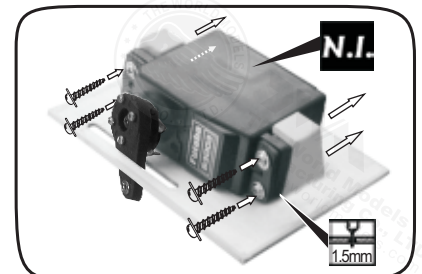


2 Aileron Servo (Upper Wing)

PM4x50mm Screw 2

PWA 2x12mm Screw 8

M4 Nylon Insert Lock Nut 2

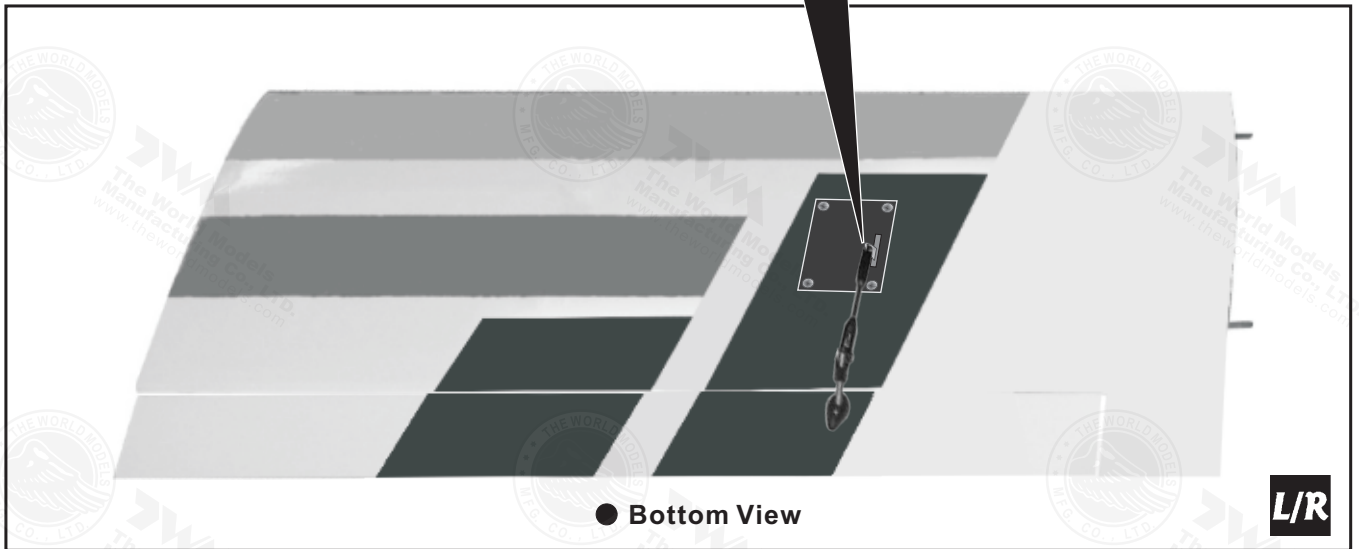
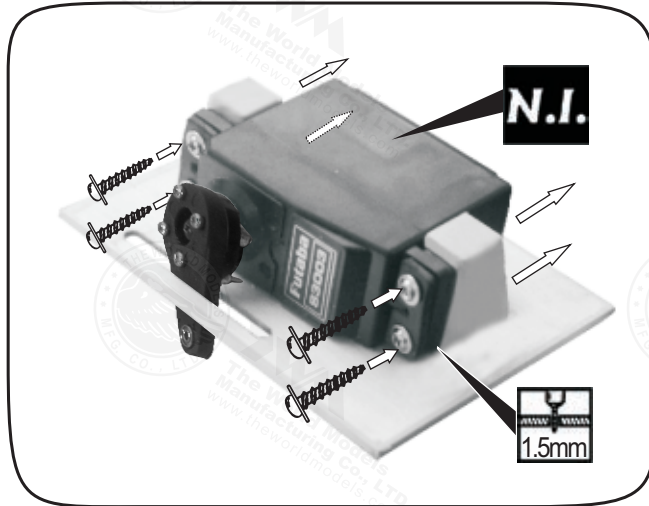


L/R

3 Aileron Servo (Lower Wing)

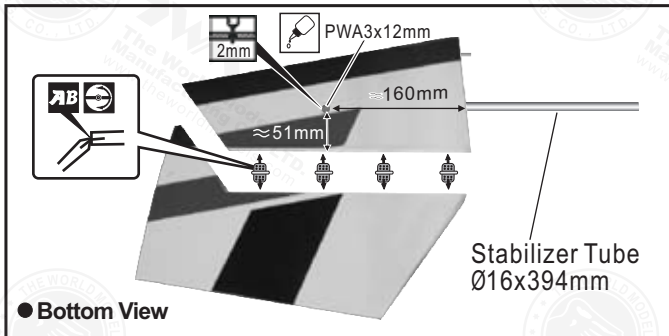
- PM4x50mm Screw — 2
- M4 Nylon Insert Lock Nut — 2

Similar installation as upper wing.

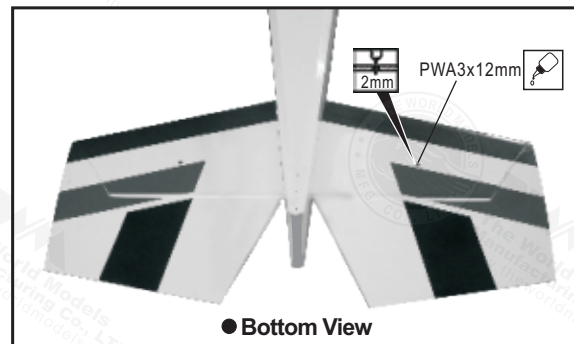
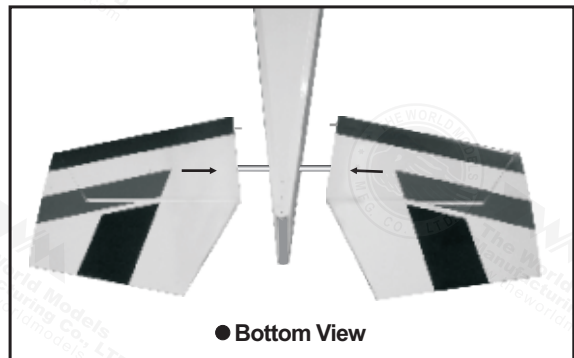


4 Stabilizer & Elevator

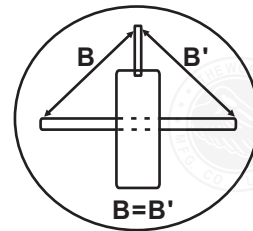
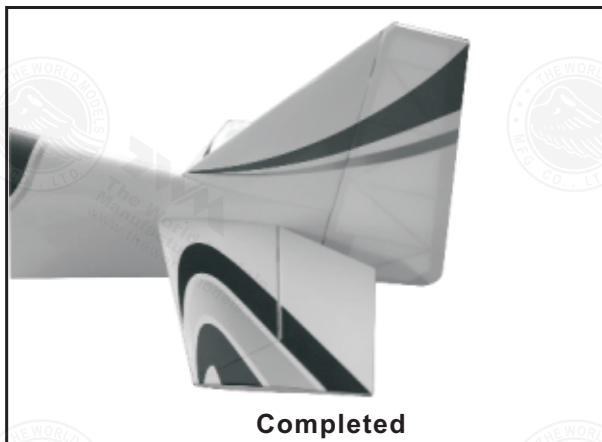
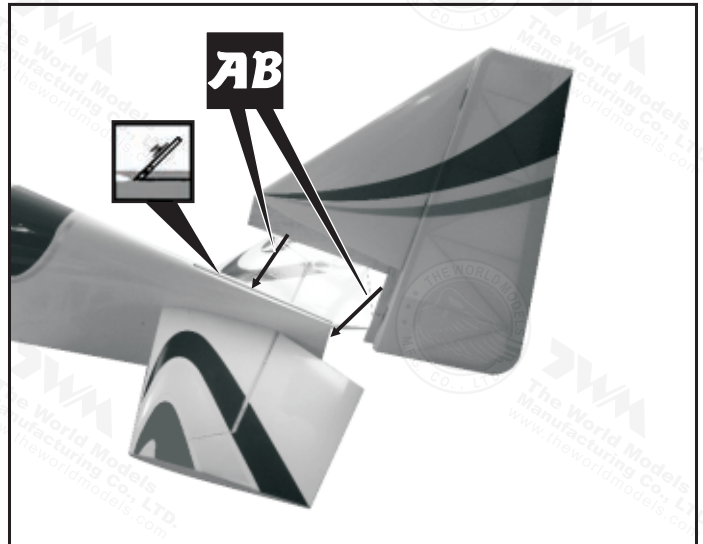
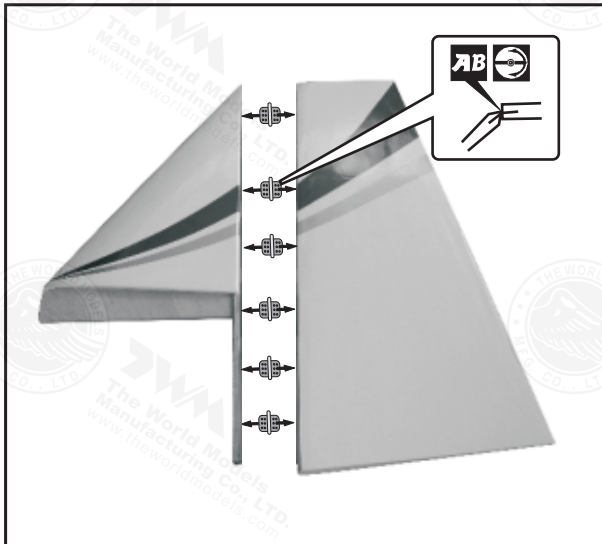
- PWA3 x 12mm Screw — 2



- Replace CA hinges by metal hinges. Glue the metal hinges to stabilizer and elevator by epoxy.



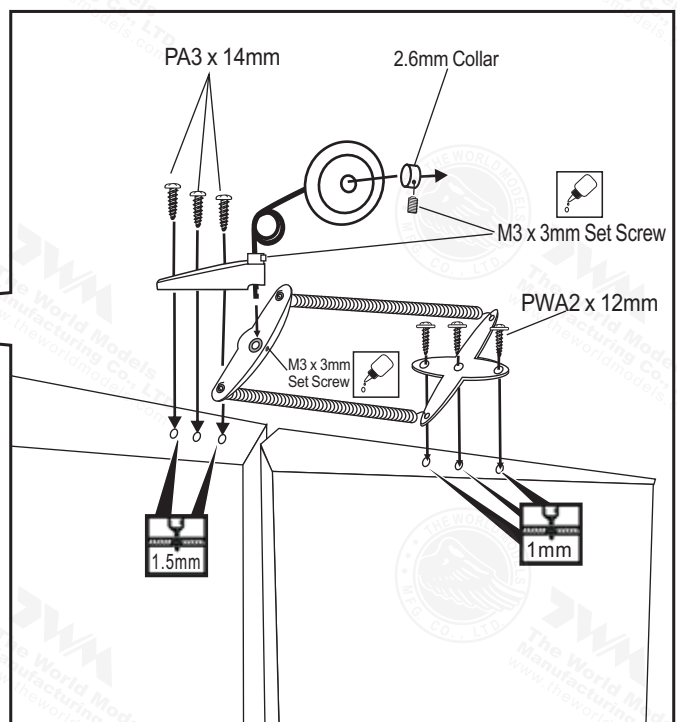
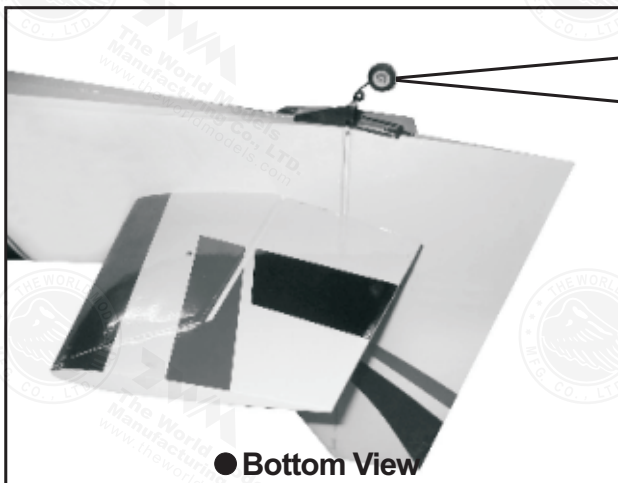
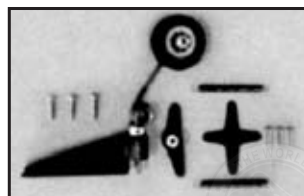
5 Vertical Fin & Rudder



- Replace CA hinges by metal hinges. Glue the metal hinges to vertical and rudder by epoxy.

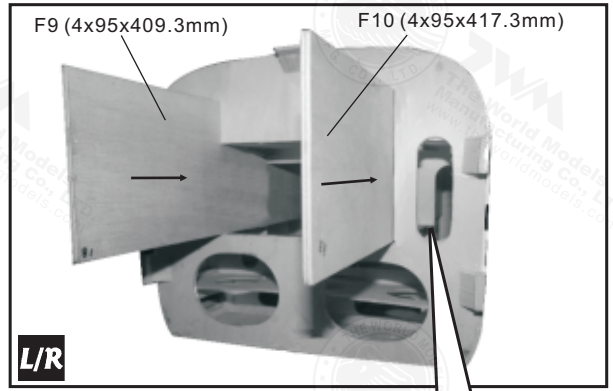
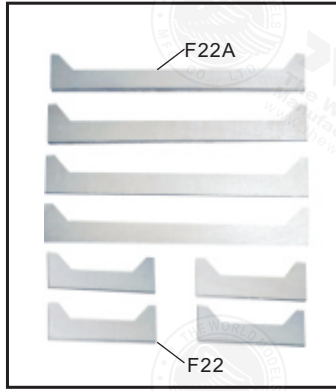
6 Tail Landing Gear

- | | |
|-------------------|---|
| PA3 x 14mm Screw | 3 |
| PWA2 x 12mm Screw | 3 |

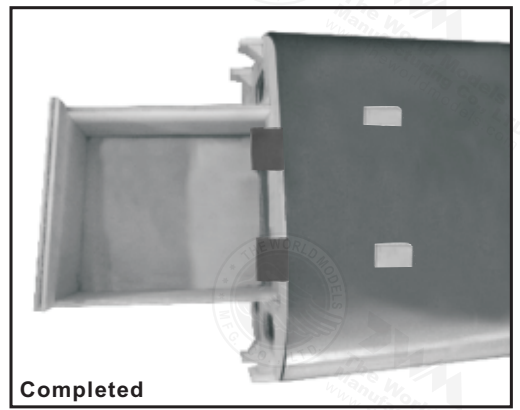
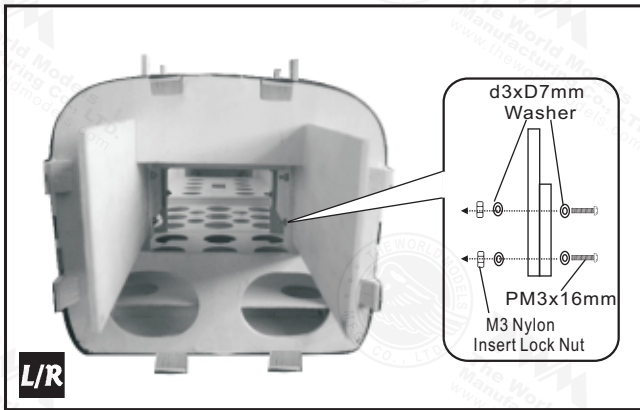
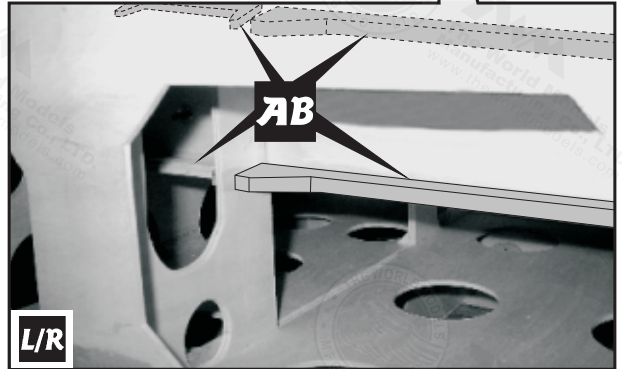
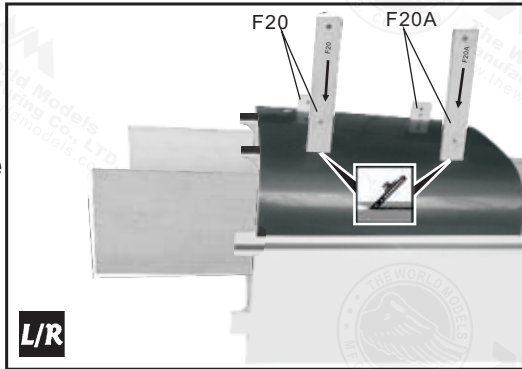


7 Engine Box

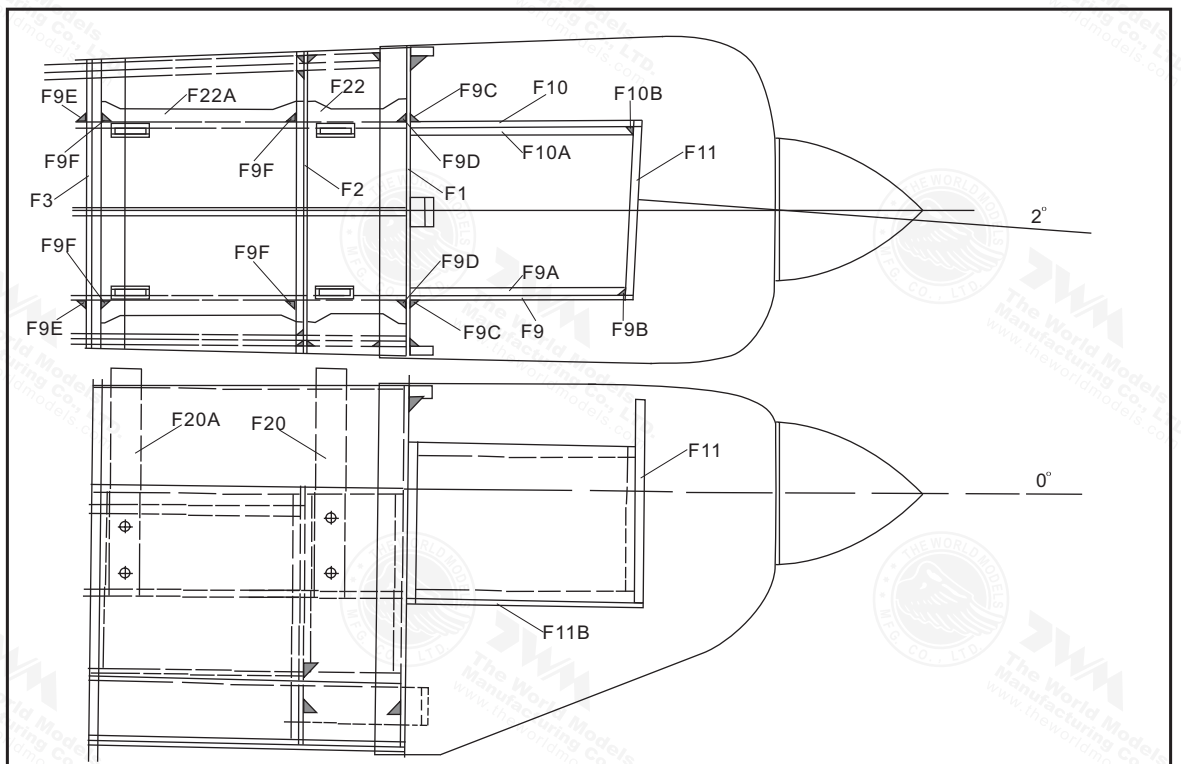
- PM3x16mm Screw — 8
- M3 Nylon Insert Lock Nut — 8
- d3xD7mm Washer — 16



! Please note right thrust angle of firewall.

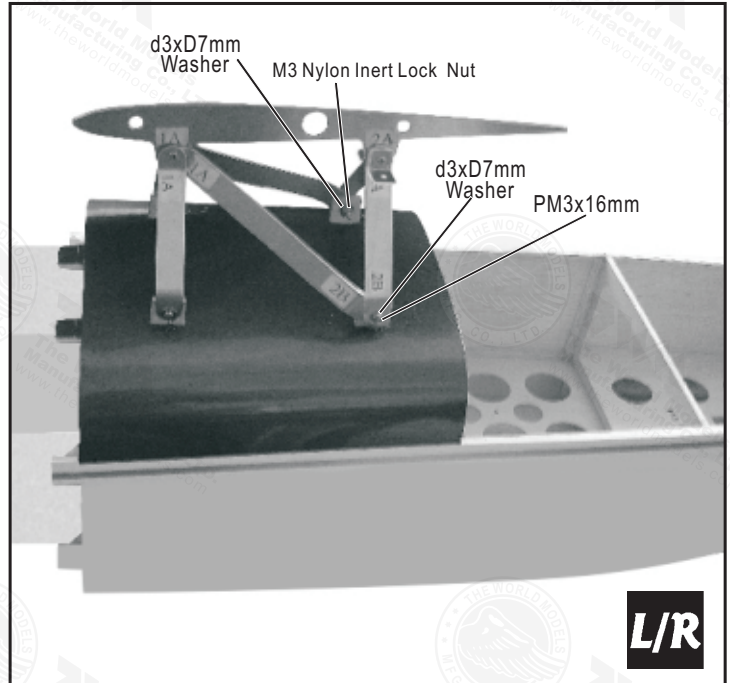
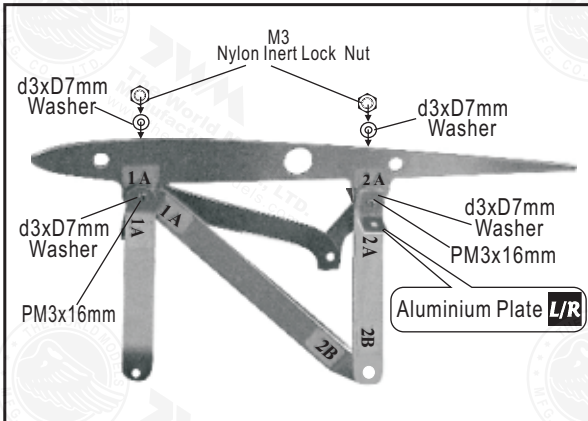


● Use epoxy to glue all parts together.



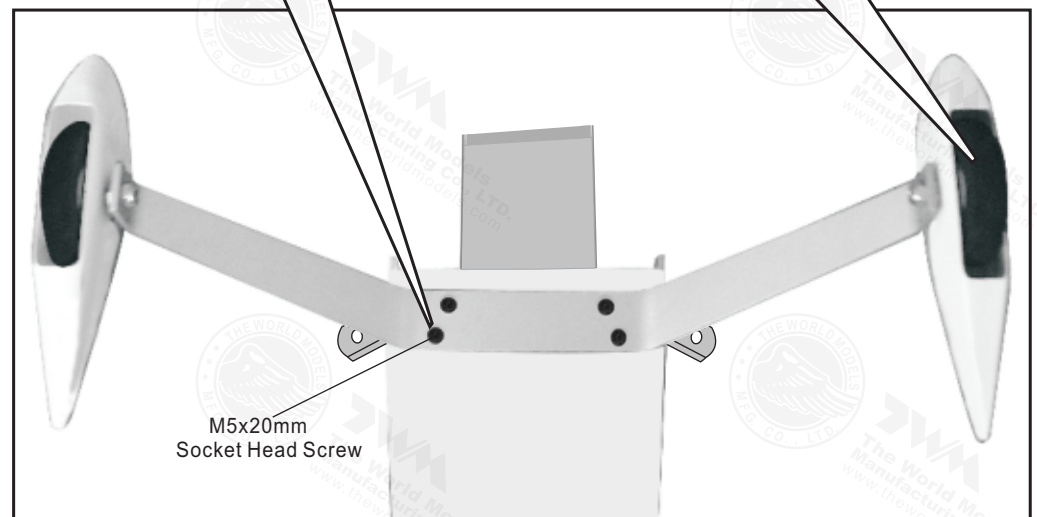
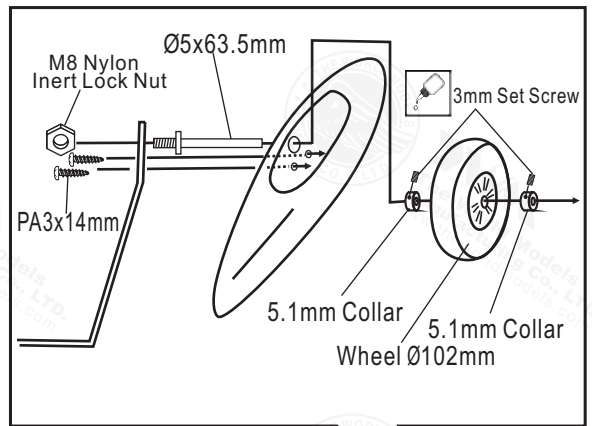
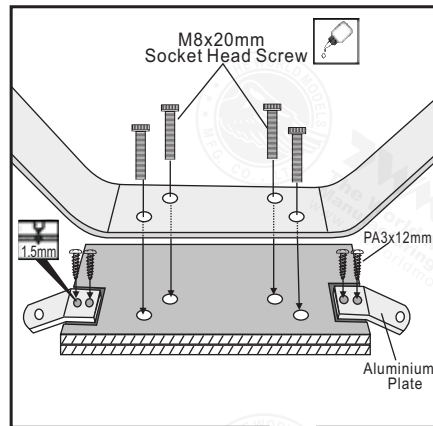
8 Wing Cabane

PM3x 16mm Screw	6
d3xD7mm Washer	12
M3 Nylon Inert Lock Nut	6





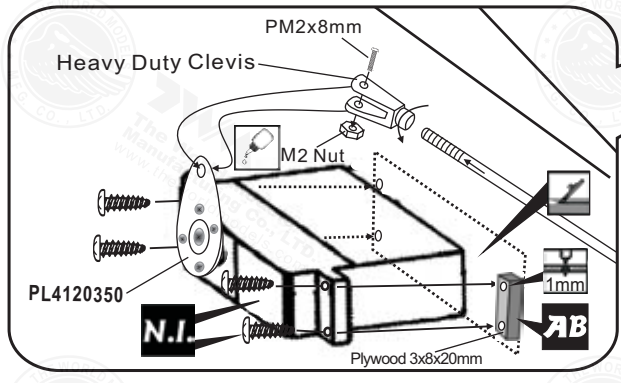
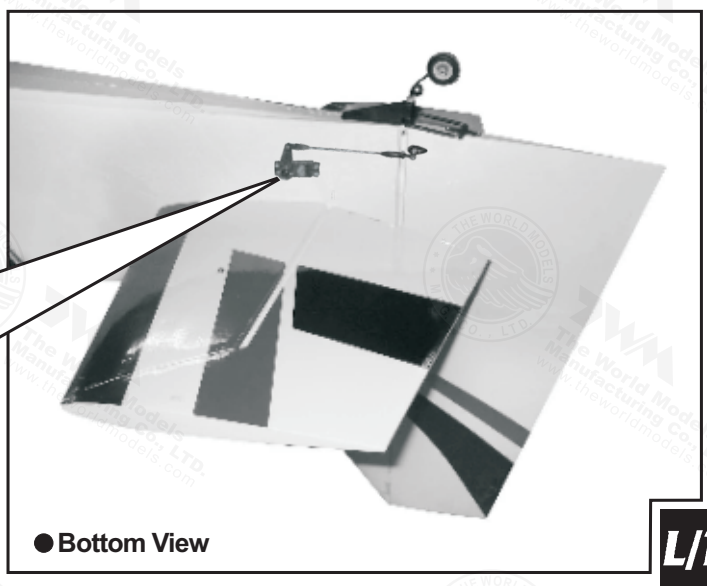
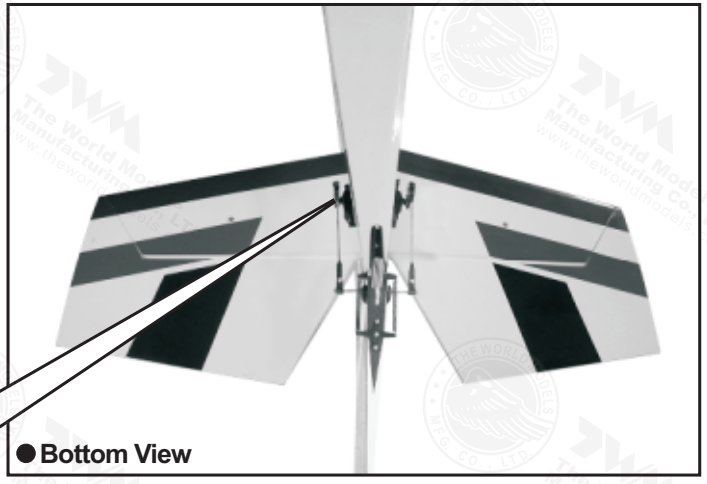
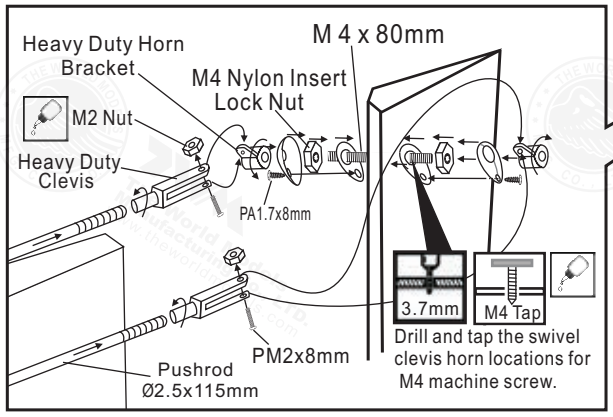
9 Main Landing Gear

Ø5x63.5mm Axle Shaft	2
M5x20mm SOCKET HEAD SCREW	4
PA3x12mm Screw	4
PA3x14mm Screw	4
5.1mm Collar	4
M8 Nylon Inert Lock Nut	2





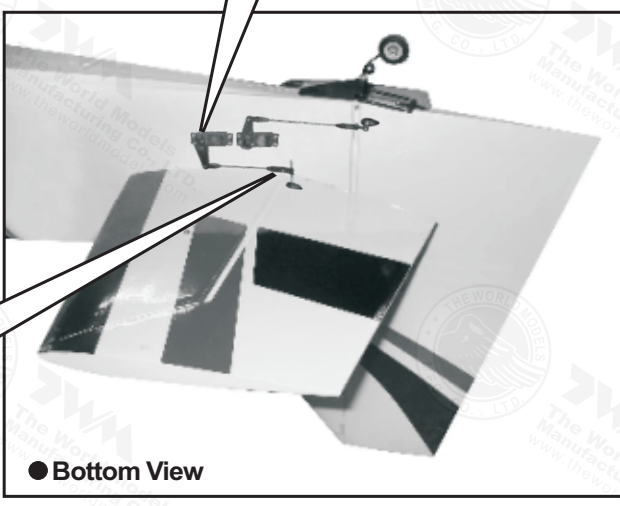
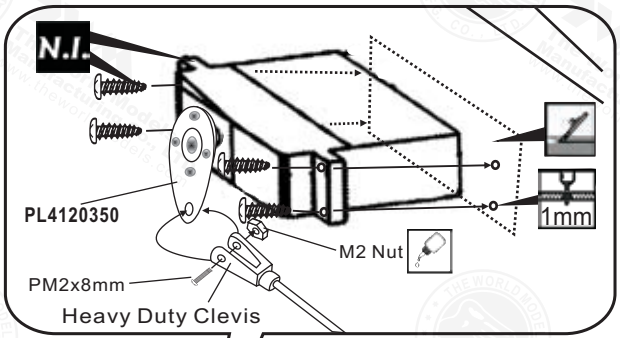
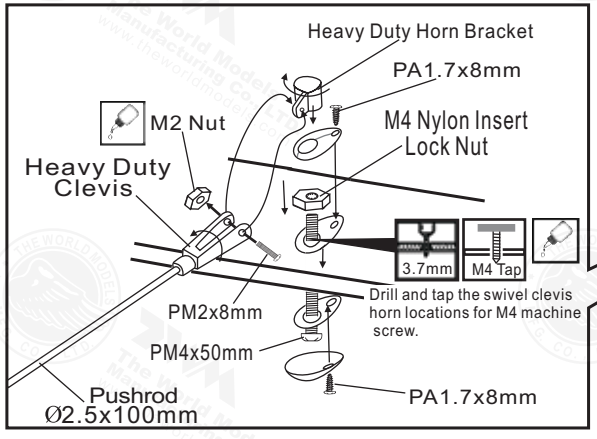
10 Rudder Pushrod

- M4x80mm **Screw**
 — 1
- M4 Nylon Insert Lock Nut
 — 2



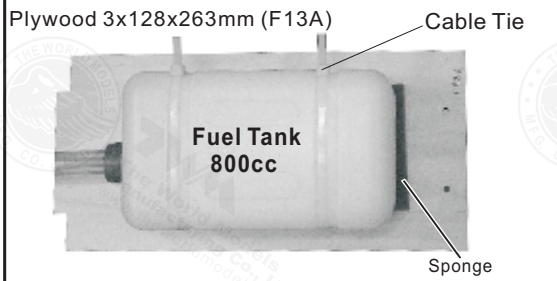
11 Elevator Pushrod

- PM 4 x 50mm **Screw**
 — 2
- M4 Nylon Insert Lock Nut
 — 2

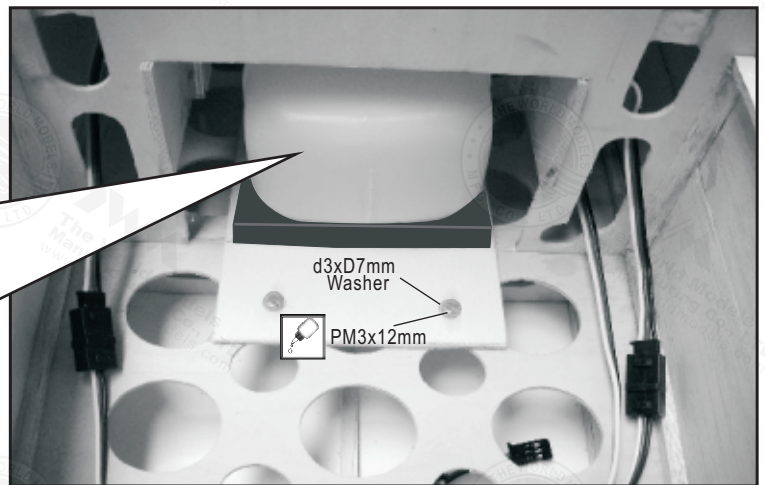
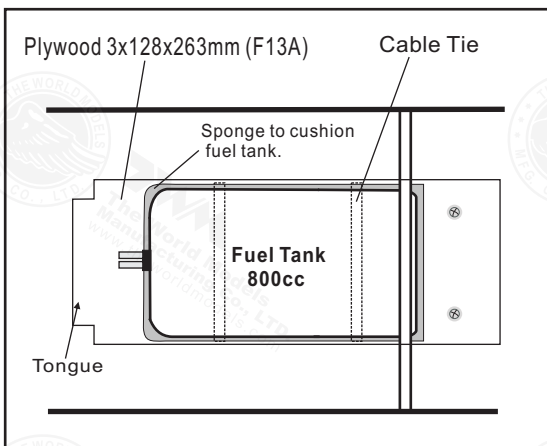


12 Fuel Tank

PM3x12mm Screw	2
d3xD7mm Washer	2

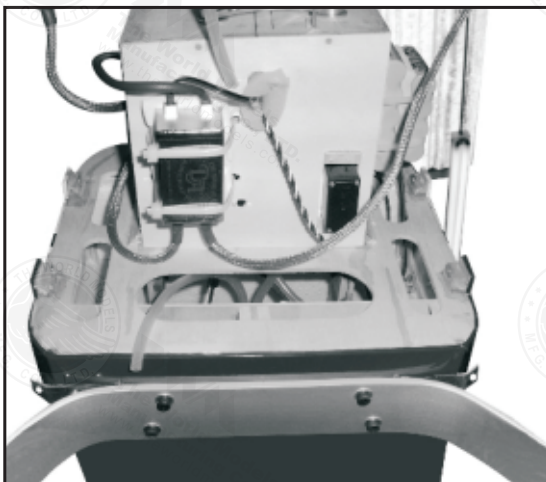
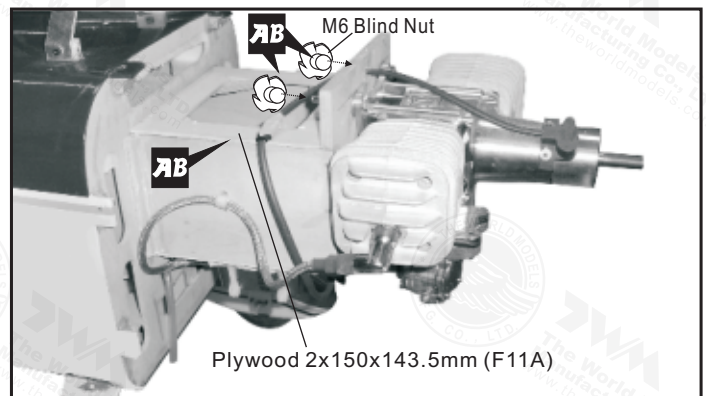
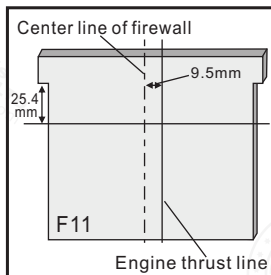


● Make sure that tongue on front of fuel tank hold down plate slides into slot of F2.

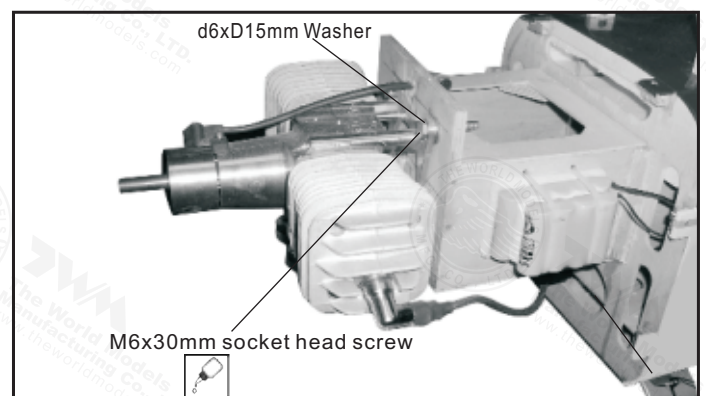


13 Engine

M6 Blind Nut	4
M6x30mm SOCKET HEAD SCREW	4
d6xD15mm Washer	4

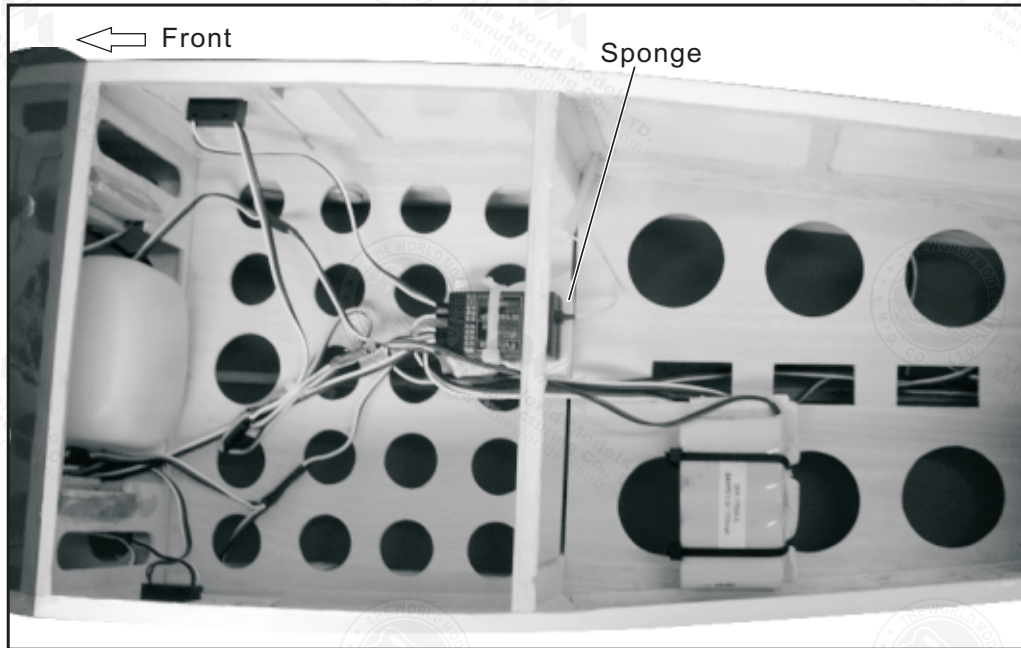


● Bottom View



14 Radio Equipment

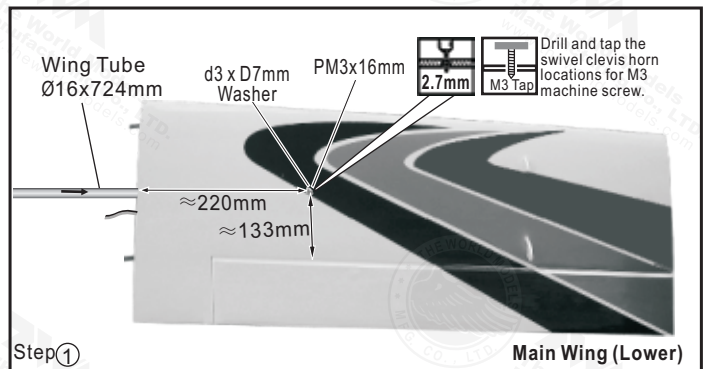
● Install and arrange the receiver and battery as shown in the diagram.



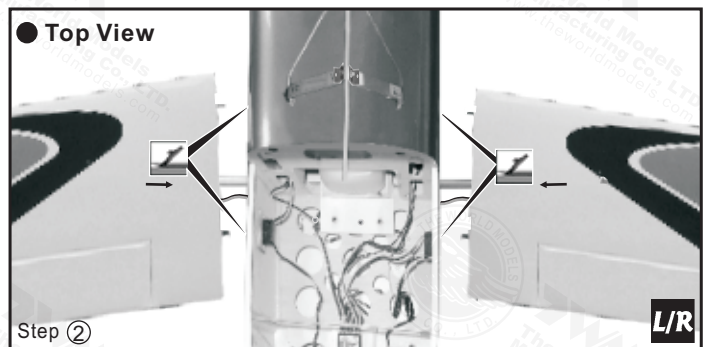
15 Main Wing (Lower)

PM3x16mm Screw	1
PA3x16mm Screw	1
d3xD7mm Washer	2

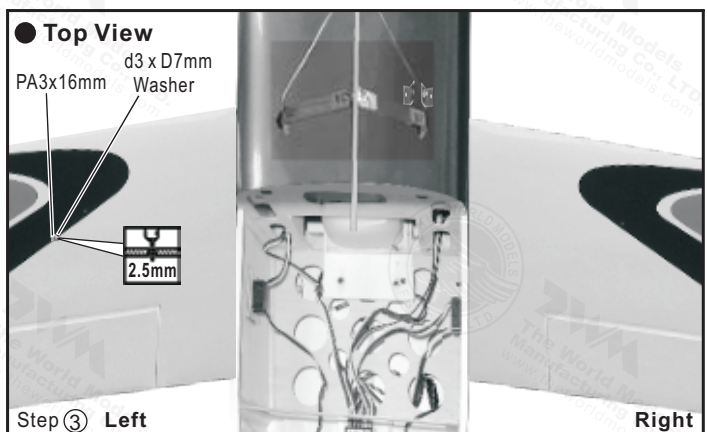
Step 1. Insert the aluminum wing tube ($\varnothing 16 \times 724 \text{mm}$) end into the right wing (lower). Locate hard point in top of wing for wing retainer attachment screw. Drill through wing hard point into wing tube. Then tap hard point, aluminum tube and hardwood dowel in tube for PM3x16mm machine screw. Then apply the PM3x16mm machine screw. (Do not over tighten the PM3 screw, the set up is for future removal of the wing.)



Step 2. Install the right wing to the fuselage by inserting the wing tube (now attached to the right wing) through the fuselage, then install the left wing.



Step 3. Make sure the wings are resting against the fuselage tightly. Locate the pre-drilled 2mm hole at top of left wing, and drill along with 2.5mm drill bit until it passes through the wing tube. Apply the PA3x16mm self-tapping screw.

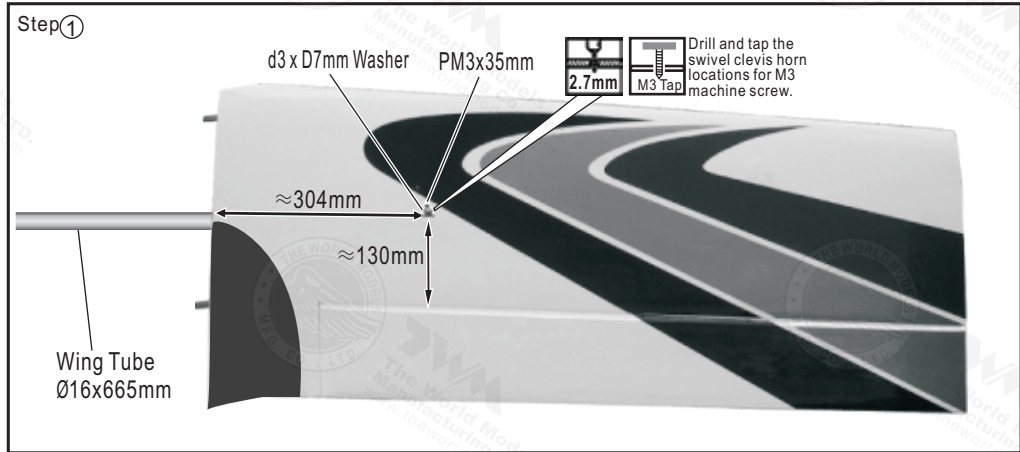


Note : It is recommended that the wing tube stays with the left wing. Removal of the wings could be achieved by removing the right wing machine screw, the right wing then the left wing with wing tube. If removal of wing tube from left wing is also required, it is recommended that instead of applying self-tapping screw in step 3, you pre-tap with M3 thread cutter and apply M3 machine screw.

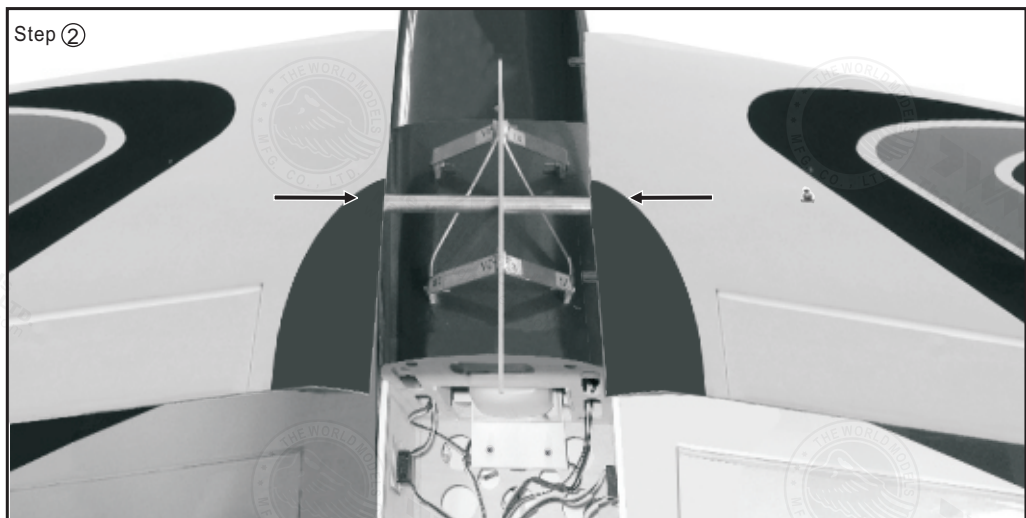
16 Main Wing (Upper)

Step 1. Insert the aluminum wing tube (Ø16x665mm) end into the right wing (upper). Locate hard point in top of wing for wing retainer attachment screw. Drill through wing hard point into wing tube. Then tap hard point, aluminum tube and hardwood dowel in tube for PM3x16mm machine screw. Then apply the PM3x16mm machine screw. (Do not over tighten the PM3 screw, the set up is for future removal of the wing.)

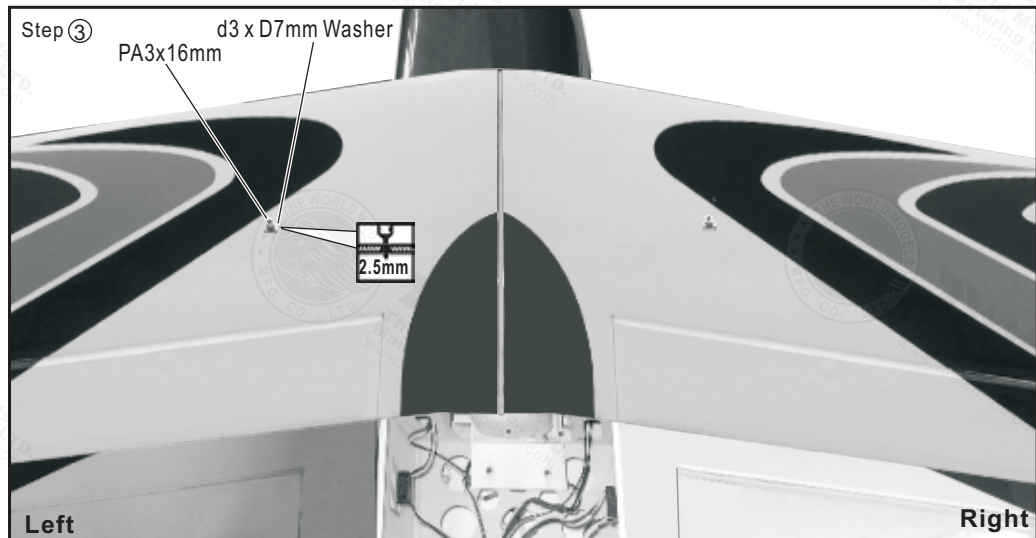
- PM3x16mm Screw 1
- PA3x16mm Screw 1
- d3 x D7mm Washer 2



Step 2. Install the right wing to the center wing cabane by inserting the wing tube (now attached to the right wing) through the cabane, then install the left wing.



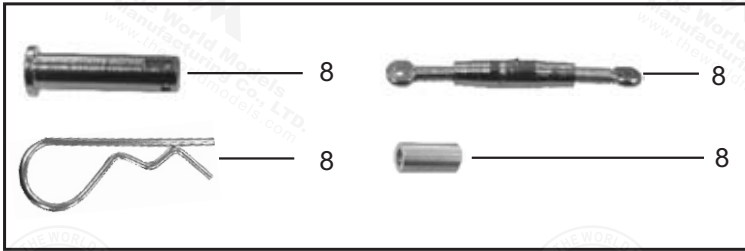
● Top View



Step 3. Make sure the wings are resting against the center wing cabane tightly. Locate the pre-drilled 2mm hole at top of left wing, and drill along with 2.5mm drill bit until it passes through the wing tube. Apply the PA3x16mm self-tapping screw.

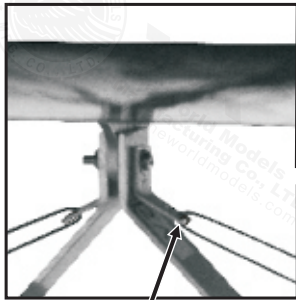
Note: It is recommended that the wing tube stays with the left wing. Removal of the wings could be achieved by removing the right wing machine screw, the right wing then the left wing with wing tube. If removal of wing tube from left wing is also required, it is recommended that instead of applying self-tapping screw in step 3, you pre-tap with M3 thread cutter and apply M3 machine screw.

17 Outer Wing Cabanes & Flying Wire

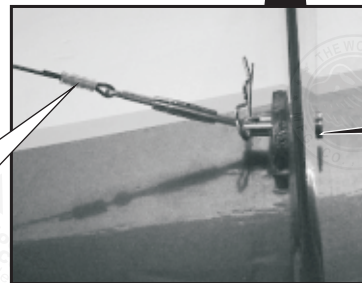
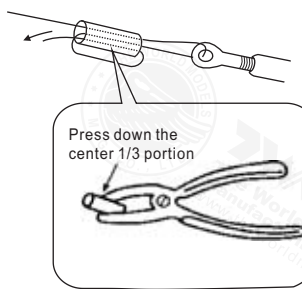
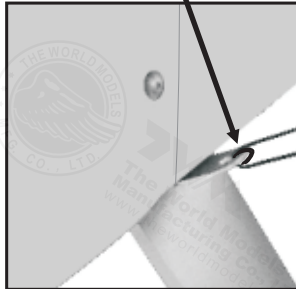
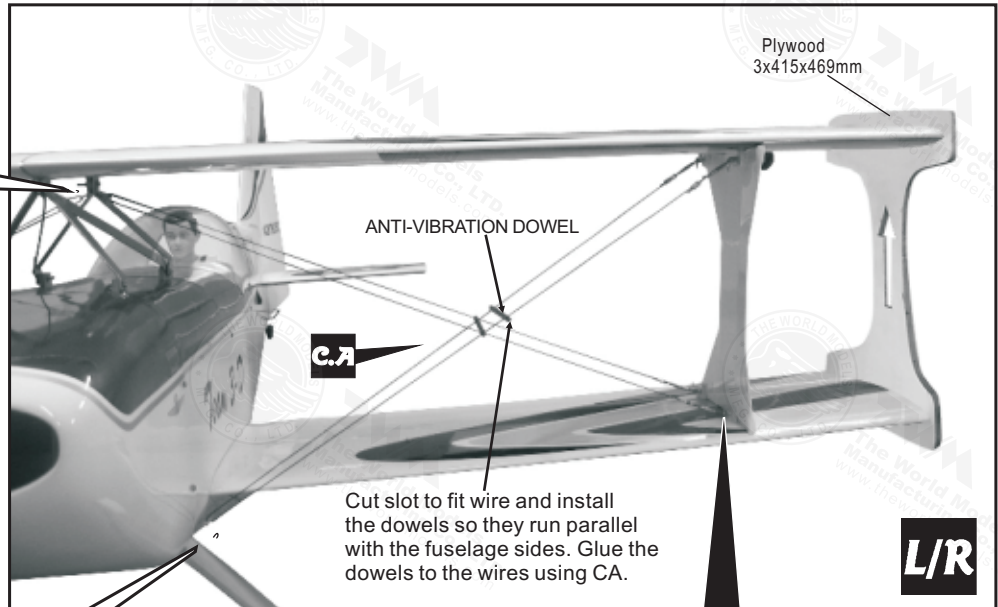


Outer wing cabane should fit to the outside of outer wing cabane mounts.

With the wing incidence angle template still in place, position the side cabanes, mark and drill the side cabane mounts and fasten with PM3x18mm screw and nut.



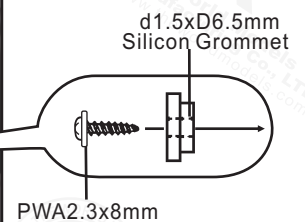
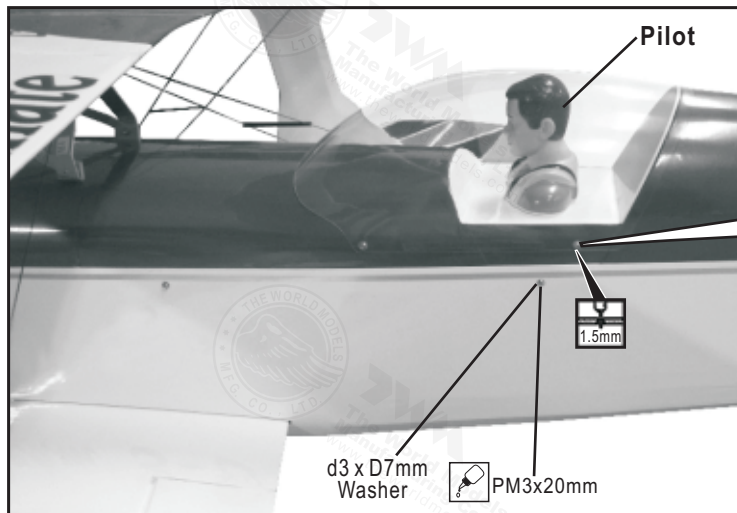
Once assembled, wire will remain permanently attached to center cabane and fuse bracket. Make sure that you triple wrap the wire in both places.



18 Canopy

● First insert the grommet to the canopy then apply screw.

- PWA2.3x8mm Screw — 4
- Pm3x20mm Screw — 4
- d3 x D7mm Washer — 4
- d1.5 x D6.5mm Silicon Grommet — 4

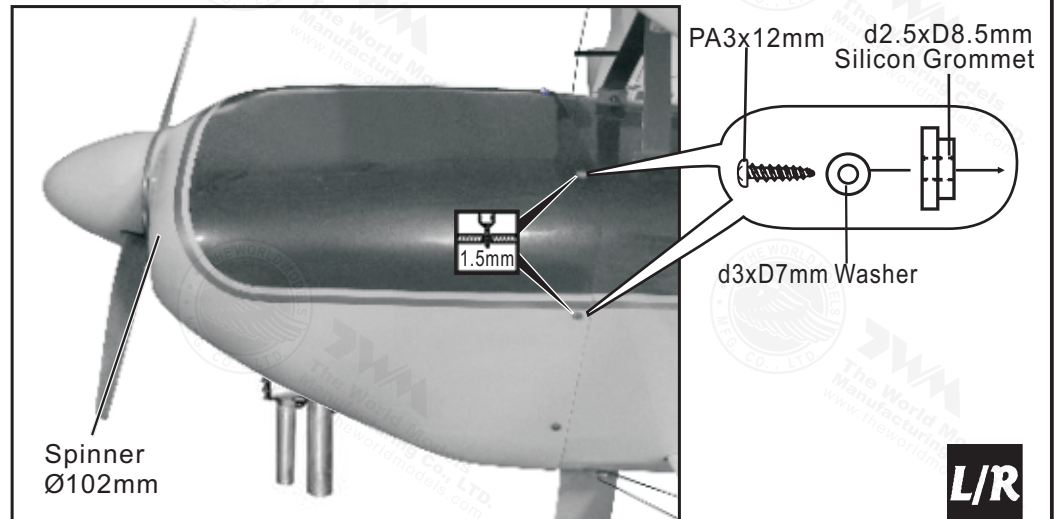


L/R

19 Cowling & Spinner

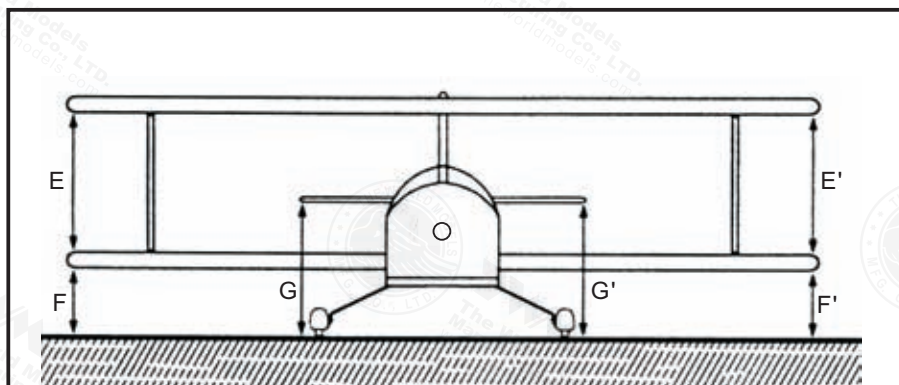
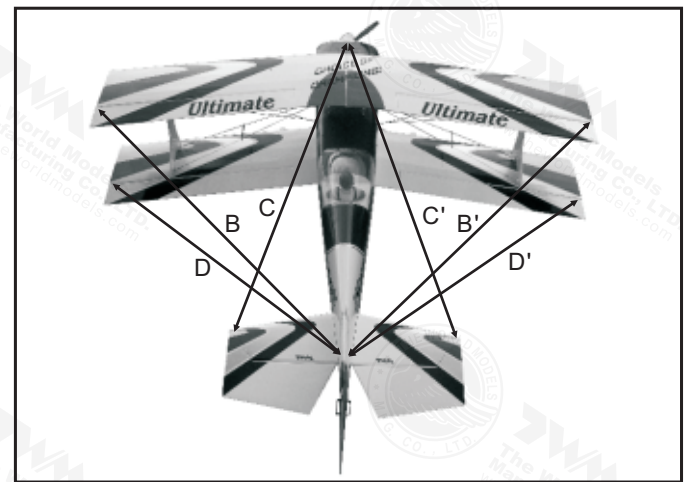
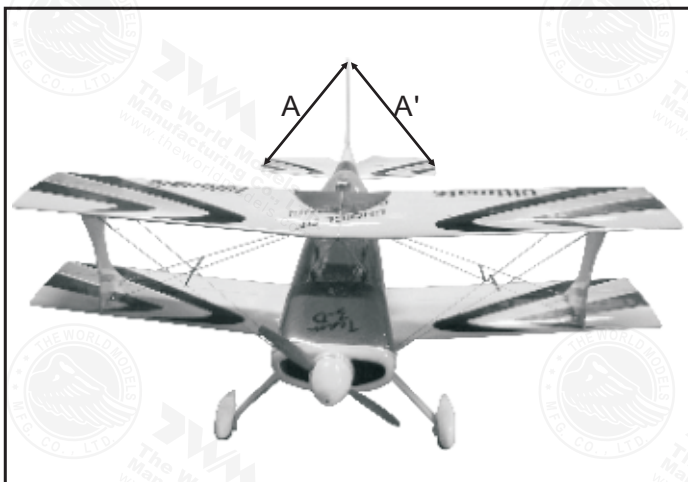
● First insert the grommet to the cowling then apply screw.

- PA3x12mm Screw 6
- d3 x D7mm Washer 6
- d2.5 x D8.5 mm Silicon Grommet 6



20 Wing Setting

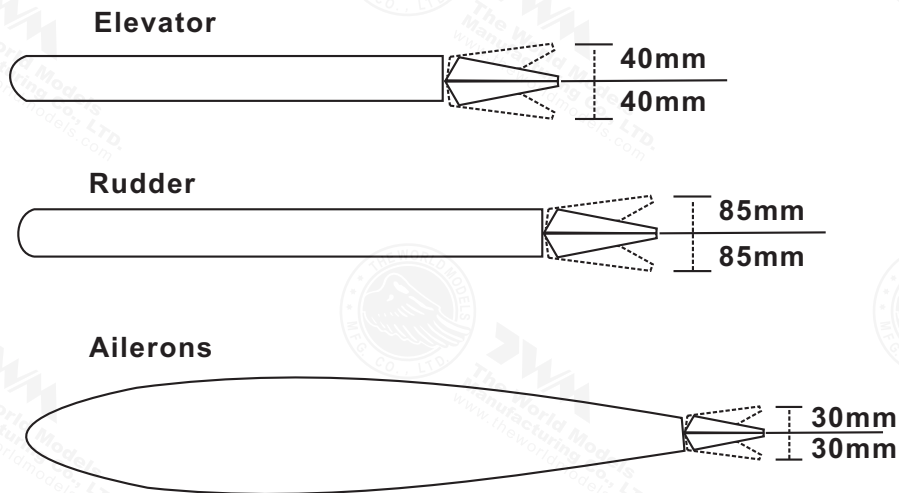
● Adjust the wing and fuselage configuration as in the diagrams.



A=A' B=B' C=C' D=D' E=E' F=F' G=G'

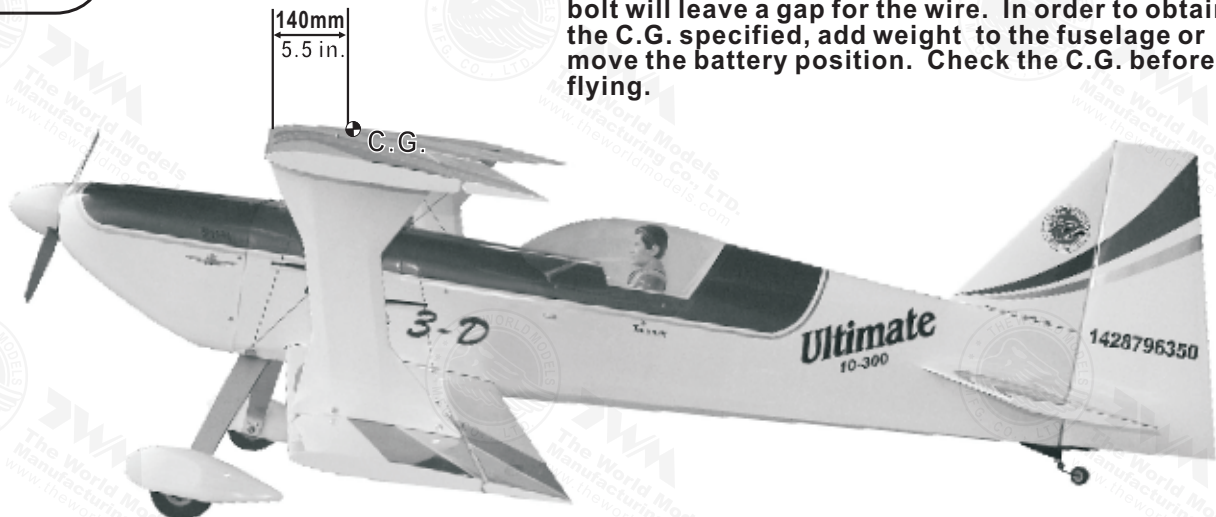
21 Control Throws

Adjust the control throws as shown in the diagram. These throws are good for general flying. You can adjust according to your personal preference.



22 C.G.

The ideal C.G. position is at center of top wing. You can Check the C.G. by hanging the plane with wire around the top wing tube. unscrew the right wing bolt will leave a gap for the wire. In order to obtain the C.G. specified, add weight to the fuselage or move the battery position. Check the C.G. before flying.



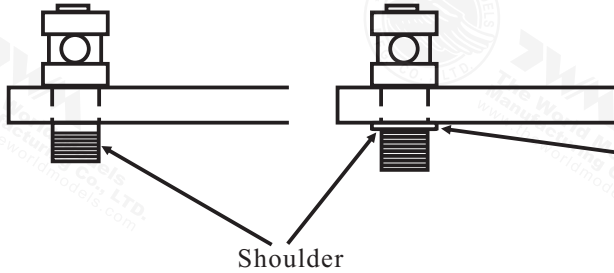
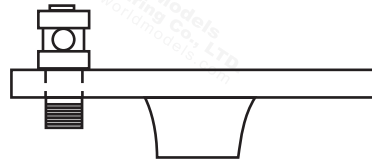
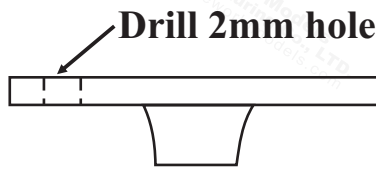
! Warning!

Important Safety Precautions

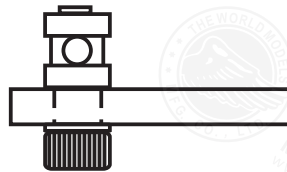
- # First time flyer should never fly by himself / herself. Assistance from experienced flyer is absolutely necessary.
- # Pre-flight adjustment must be done before flying, it is very dangerous to fly a badly pre-adjusted aircraft.
- # **33% Ultimate** is specially designed to be powered by **100cc** gasoline engine, using a more powerful engine does not mean better performance. In fact, over powered engine may cause severe damage and injuries.
- # Make sure the air field is spacious, never fly the plane too close to people and never get too close to a running propeller.
- # If you find wrinkles on the covering as a result of weather changes, you can use hot iron to remove the wrinkles. Please begin with lower temperature setting and gradually raise the temperature until the wrinkles are gone. Too hot an iron may damage the covering.
- # Check and re-tighten up all factory assembled screws, use thread locker if applicable.

LINKAGE CONNECTOR

HW7111050 & HW7111060



Make sure shoulder of screw is cleared from servo horn.
Add washer to reduce play if necessary.



After fastening the round nut, make sure that the linkage connector can rotate freely.

Product Registration Form (US Customers)

We would like to share with you any relevant information regarding your model, including product news and free upgrade parts when applicable. Please fill in the following and send to Air Borne Models, 4749-K, Bennett Drive, Livermore, CA 94551 USA.

1. Name: _____

2. Address: _____

3. Phone #: _____ e-mail: _____

4. Model: _____

Wing QC# _____ Fuselage QC# _____
(QC numbers are stamped on wing and fuselage)

5. Date of Purchase: _____

6. Store Name: _____

Please call AirBorne Models at 925 371 0922 for any assistance in filling this form. Thank you very much for purchasing our product.