

MEMO



# AGUSTA A09 POWER

## Assembly Manual



No.3842

No.3842-W

**Specifications:**

Fuselage Length (less rotor): 65.4" (1660mm)  
Fuselage Width (less rotor): 14.2"(360mm)  
Fuselage Height: 13.4"(340mm)  
Full-Equipped Weight: 14.2 lbs(6450g)

### Warranty

This kit is guaranteed to be free from defects in material and workmanship at the date of purchase. It does not cover any damage caused by use or modification. The warranty does not extend beyond the product itself and is limited only to the original cost of the kit. By the act of building this user-assembled kit, the user accepts all resulting in liability for damage caused by the final product. If the buyer is not prepared to accept this liability, it can be returned new and unused to the place of purchase for a refund.

### Notice: Adult Supervision Required

This is not a toy. Assembly and flying of this product requires adult supervision. Read through this book completely and become familiar with the assembly and flight of this A109. Inspect all parts for completeness and damage. Browse [www.thundertiger.com](http://www.thundertiger.com) for customer service if you encounter any problems.

# INTRODUCTION



Congratulations on the purchase of our finest scale heli fuselage to date. This famous A109 fits Thunder Tiger Raptor 90, the light fuselage comes factory pre-painted with all necessary hardware. It is very easy to assemble and only takes you few hours of enjoyable installation to put this scale body on your helicopter. This replica A109 is just like a real thing, hovering this 109 that will definitely make you stand out on the flying field.

## PRE-ASSEMBLY NOTES

Before beginning the assembly read the instructions thoroughly to give an understanding of the sequence of steps and a general awareness of the recommended assembly procedures.

By following these instructions carefully and referring to the corresponding pictures, the assembly of your model will be both enjoyable and rewarding. The result will be a well built, easy to assemble scale model, which you will be proud to display.

This A109 is designed for intermediate to advanced pilots, and this manual assumes a basic knowledge of R/C model construction.

## BEFORE YOUR ASSEMBLY

1. Before you start to assemble this fuselage on your helicopter, we suggest you to first fine tune your helicopter in the air.
2. Double-check all screws, then secure and Loctite all the loose screws.
3. The instruction manual is written for Raptor 90, if user should choose to install it on other branded helicopters, we would suggest you to study the manual thoroughly and see how it installed on a Raptor 90.

Before you begin, check the entire contents of your kit against the parts list and photos to make sure that no parts are missing or damaged. This will also help you to become familiar with each component of your model. If you find that any of the parts are either missing or damaged, please contact your local Thunder Tiger authorized distributors for replacements. Neither your dealer nor Thunder Tiger authorized distributor can accept kits for return if construction has begun.

Trial fit each part before gluing it in place. Make sure you are using the correct part and that it fits well before assembling.

## TABLE OF CONTENTS

Introduction.....	2
Recommended Tools & Materials.....	3
Item You May Need.....	3
Parts Drawings.....	4-5
Parts Check List.....	6
Assembly.....	7-15
MEMO.....	16



# PRE-ASSEMBLY NOTES

## RECOMMENDED TOOLS & MATERIALS

### Adhesives:

- Instant setting Cyanoacrylate adhesive (thin CA)
- Slow setting Cyanoacrylate adhesive (thick CA)
- 10 Minute Epoxy (fast) 20~30 Minute Epoxy (slow)



You will need two types of adhesives for the A109 Epoxy and Instant (cyanoacrylate) adhesives. We recommend that you purchase both 5-minute and 30-minute epoxy to cut down on assembly time, but you can get by with only 30-minute epoxy if time is not important. You will also need a small bottle of both "Thick" and "Thin" instant CA adhesive.

## ITEMS YOU MAY NEED



TTR1111 - 3-way Fuel Filter  
TTR1112 - AL. Fuel Filter

### R/C System:

- 6 Channel Heli radio req'd
- GYRO system req'd

### Helicopter:

Raptor 90 SE kit Suggested

TTR4891 - Raptor 90 SE KIT

### Tools:

- Model Knife, 1/2" MASK Tape, Small & Medium Screwdrivers, Scissors, Long nose Pliers, Drill and Drill Bits (1/8", 5/64"), 150 Grid Sand Paper, Rat Tail and half-round file, Fine Felt Tip Pen & Soft Lead Pencil, Reamer, Hex Wrenches.

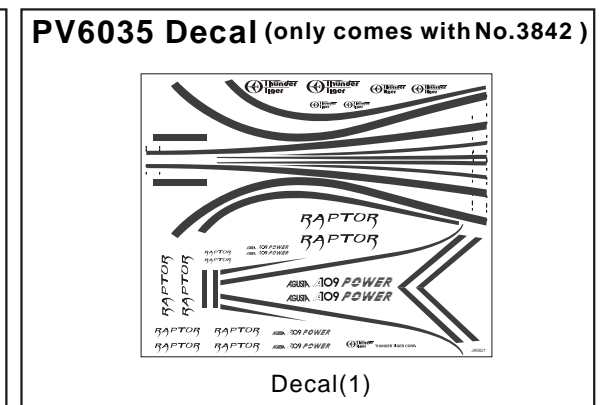
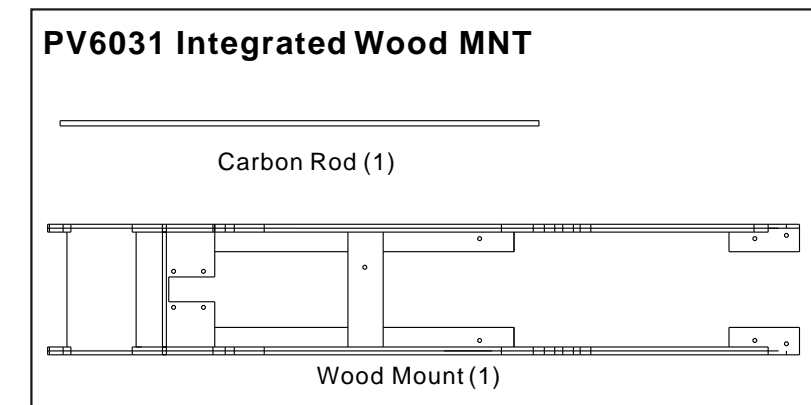
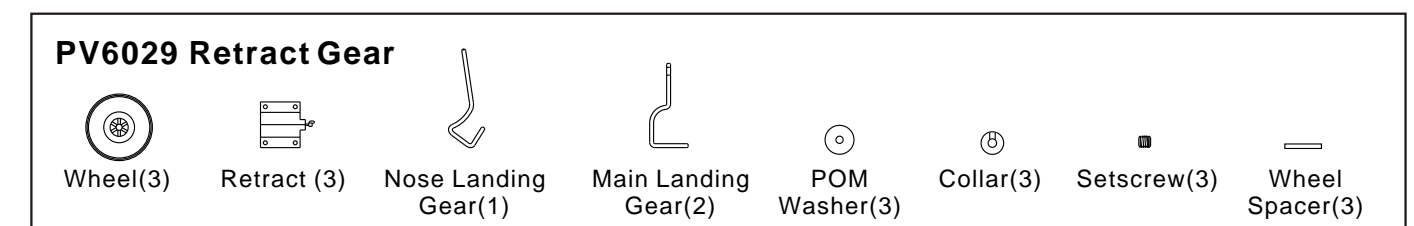
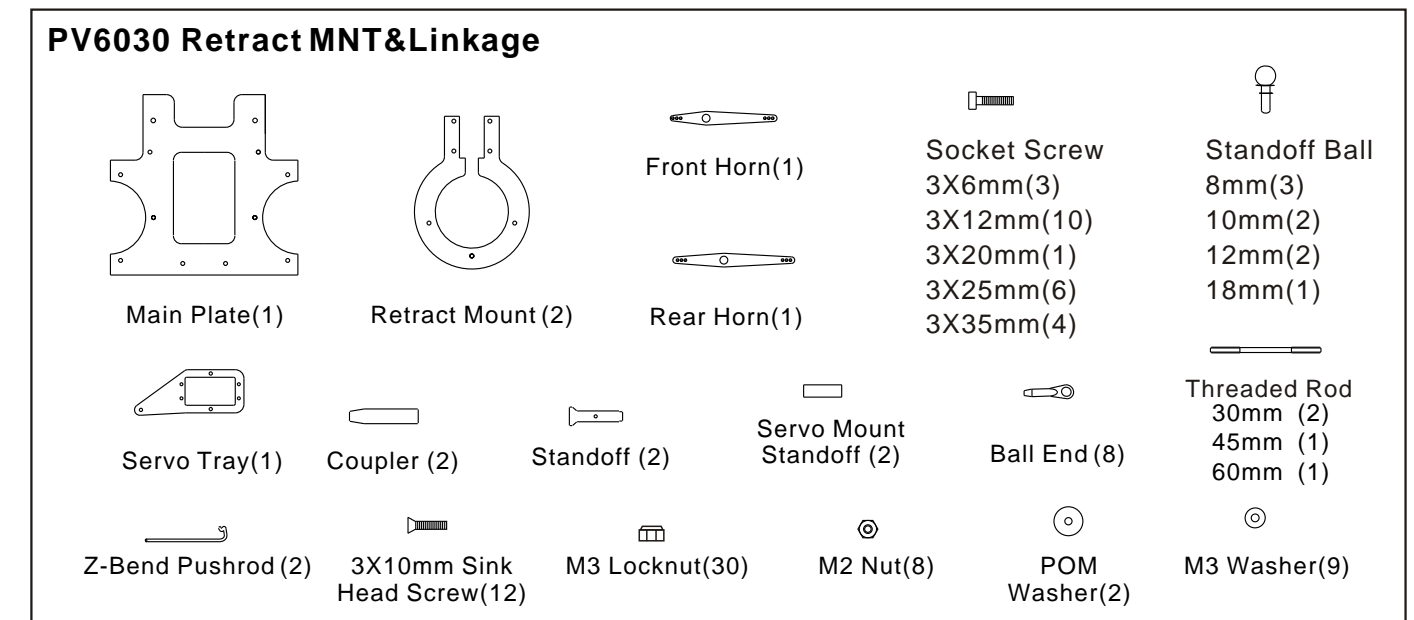
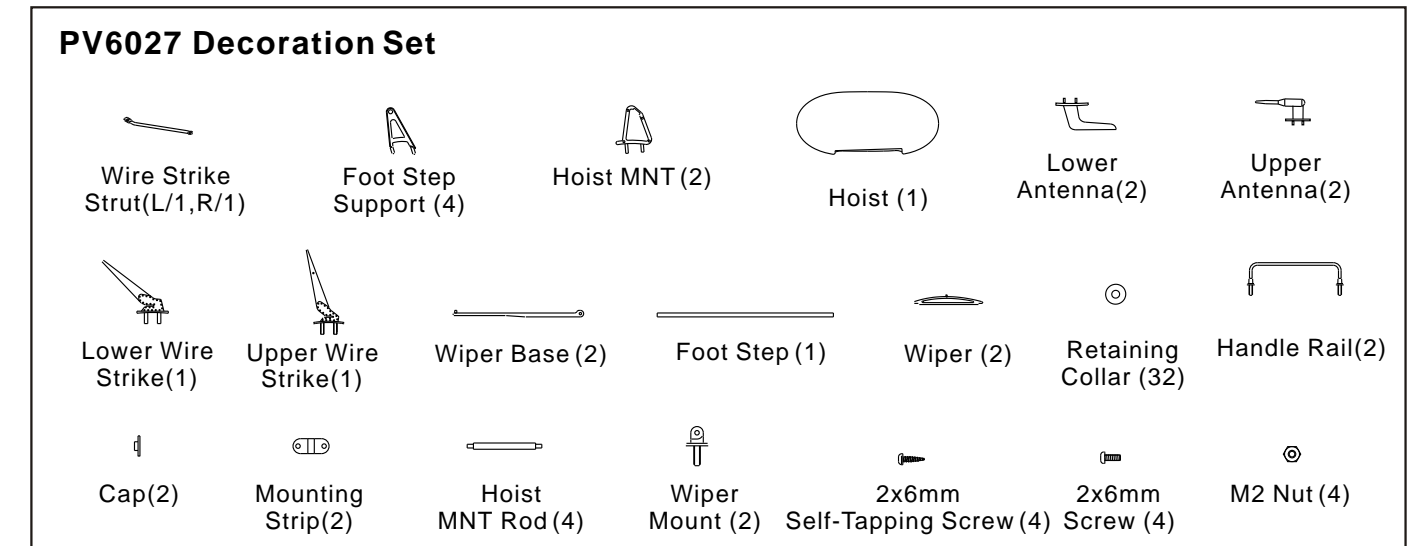
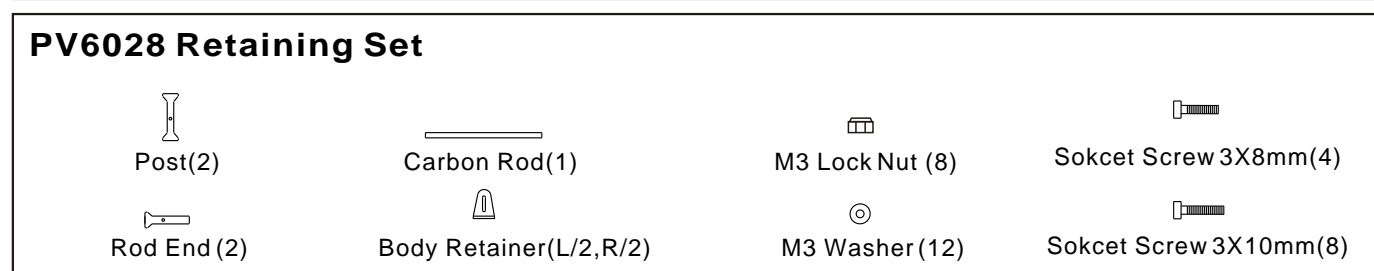
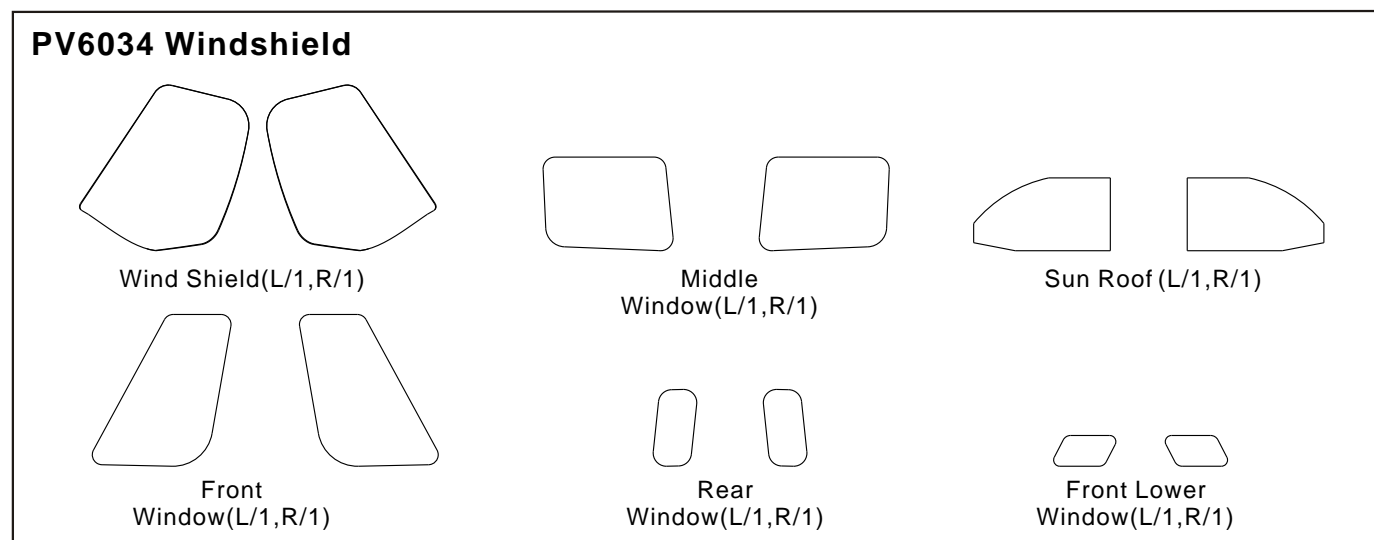
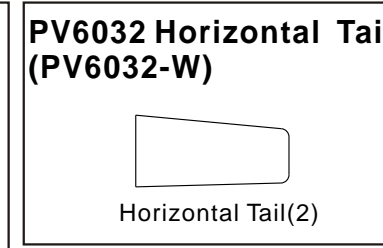
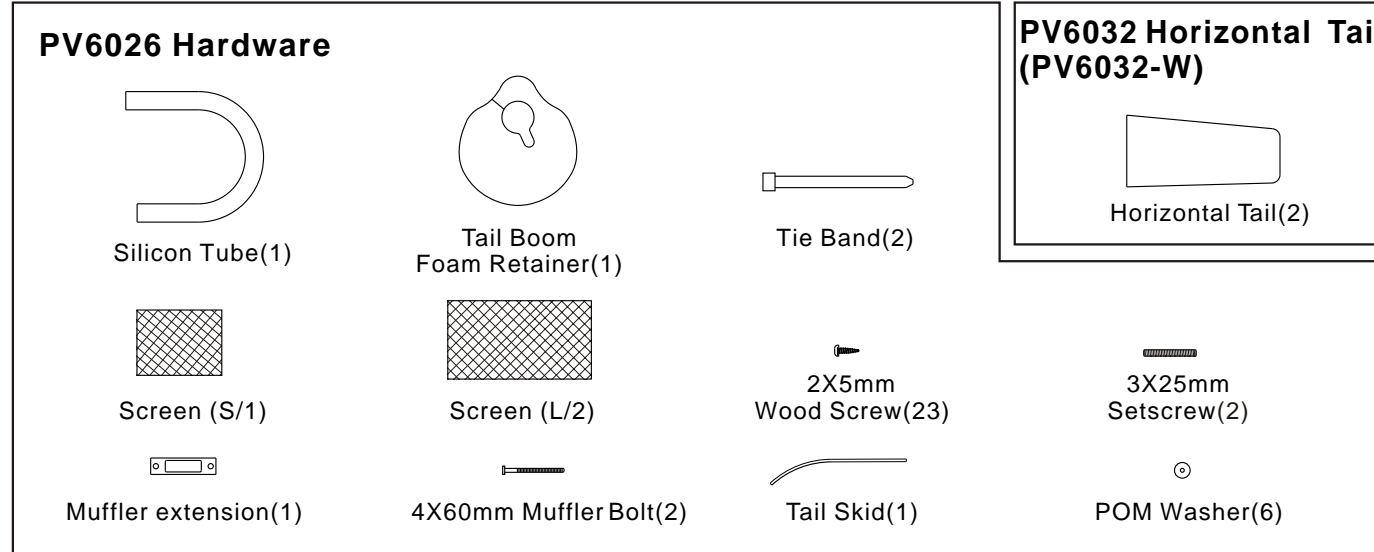
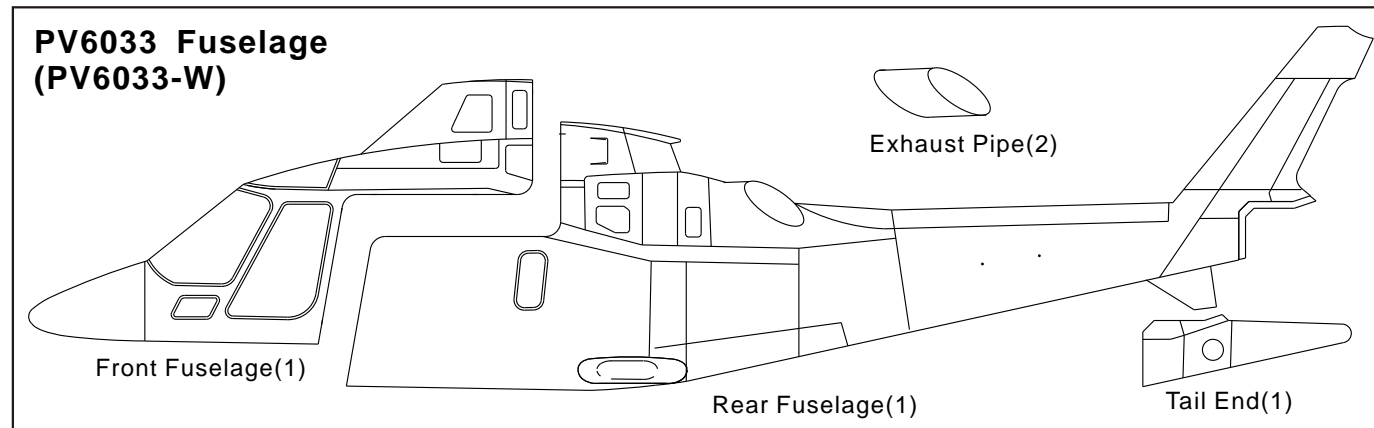


Model assembly can be much easier if the proper tools are used. Therefore, we have included in our checklist to the left, a complete listing of all the tools we used to assemble our prototype models. As you will notice, many household tools can be utilized during construction.



Ignition Extension.







**Kit Contents**

**Fuselage**

- Front Fuselage (1)
- Rear Fuselage (1)
- Tail End (1)
- Exhaust Pipe (2)

**Horizontal Tail**

- Horizontal Tail (2)

**Windshield**

- Wind Shied (L/1,R/1)
- Middle Window (L/1,R/1)
- Sun Roof (L/1,R/1)
- Front Window (L/1,R/1)
- Rear window (L/1,R/1)
- Front Lower Window (L/1,R/1)

**Retaining Set**

- Pos t(2)
- Rod End (2)
- Carbon Rod (1)
- Body Retainer (L/1,R/1)
- M3 Lock Nut (8)
- M3 Washer (12)
- Sokcet Screw 3X8mm(4)
- Socket Screw 3X10mm(8)

**Retract Gear**

- Wheel (3)
- Retract (3)
- Nose Landing Gear (1)
- Main Landing Gear (2)
- POM Washer (3)
- Collar (3)
- Setscrew (3)
- Wheel Spacer (3)

**Decoration set**

- Wire Strike Strut (L/1,R/1)
- Foot Step Support (4)
- Hoist MNT (2)
- Hoist(1)
- Lower Antenna (2)
- Upper Antenna (2)
- Lower Wier Strike (1)
- Upper wire Strike (1)
- Wiper Base (2)
- Foot Step (1)
- Wiper (2)
- Retaining Collar (32)
- Handle Rail (2)
- Cap (2)
- Mounting Strip (2)
- Hoist MNT Rod (4)
- Wiper Mount (2)
- 2X6mm Self-Tapping Screw (4)
- 2X6mm Screw (4)
- M2 Nut (4)

**Hardware**

- Silicon Tube (1)
- Tail Boom Foam Retainer (1)
- Tie Band (1)
- Screen (S/1)
- Screen (L/2)
- 2X5mm Wood Screw (23)
- 3X25mm Setscrew (2)
- Muffler Extension (1)
- 4X60mm Muffler Bolt (2)
- Tail Skid (1)
- POM Washer (6)

**Retract MNT&Linkage**

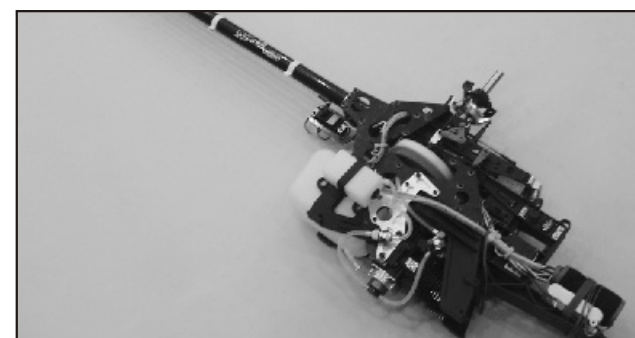
- Main Plate (1)
- Retract Mount (2)
- Front Horn (1)
- Rear Horn (1)
- Socket Screw 3X6mm(3)
- Socket Screw 3X12mm(10)
- Socket Screw 3X20mm(1)
- Socket Screw 3X25mm(6)
- Socket Screw 3X35mm(4)
- Standoff Ball 8mm(3)
- Standoff Ball 10mm(2)
- Standoff Ball 12mm(2)
- Standoff Ball 18mm(1)
- Threaded Rod 30mm(2)
- Threaded Rod 45mm(1)
- Threaded Rod 60mm(1)
- Servo Tray (1)
- Coupler (2)
- Standoff (2)
- Ball End (8)
- Z-Bend Pushrod (2)
- 3X10mm SinK Head Screw (12)
- M3 Locknut (30)
- M2 Nut (8)
- POM Washer (2)
- M3 Washer (9)

**Integrated Wood MNT**

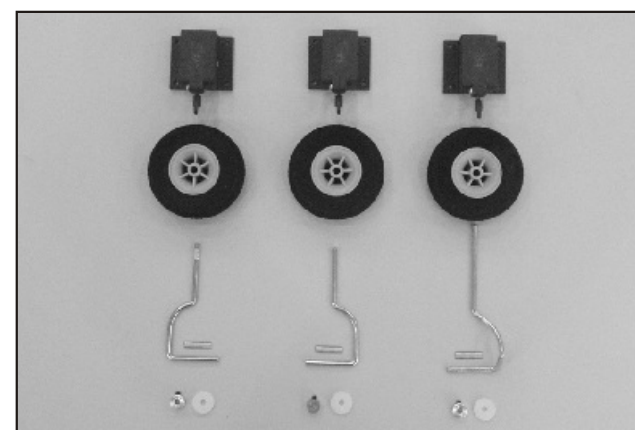
- Carbon Rod (1)
- Wood Mount (1)

**Decal**

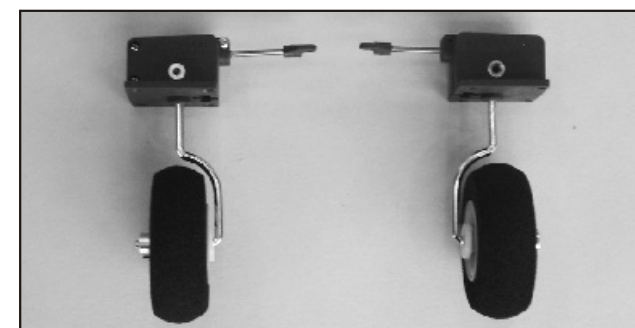
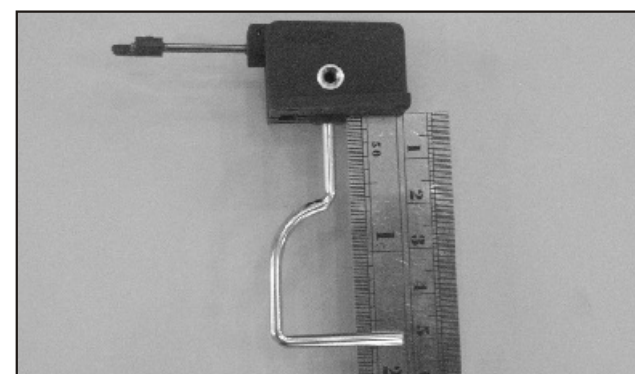
- Decal (1)



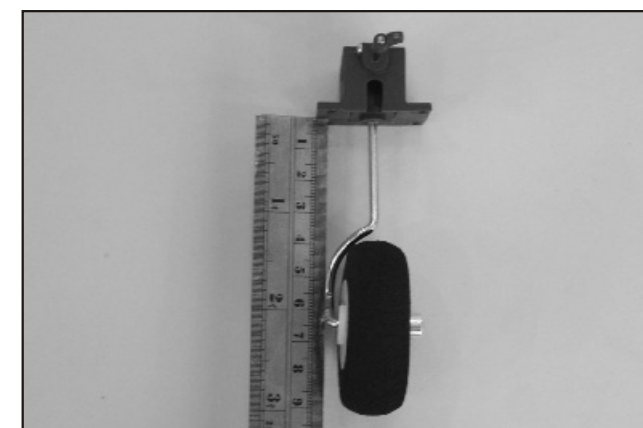
1. Get your Raptor90 well tuned before you install the body. Remove the tail transmission, landing skid and rotor head.



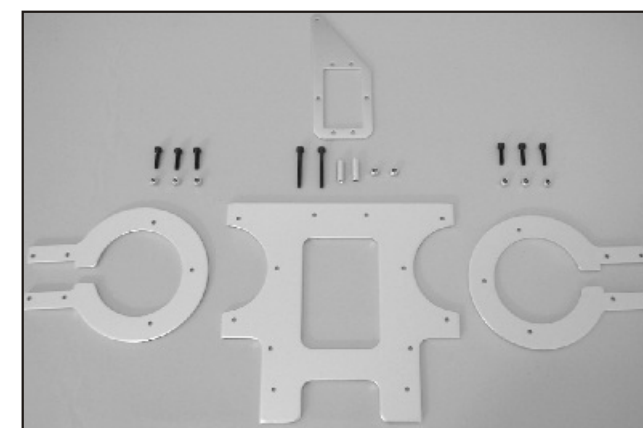
2. Locate the landing gear includes retracts, wires, wheels, collars, POM washers, wheel spacers and setscrews.



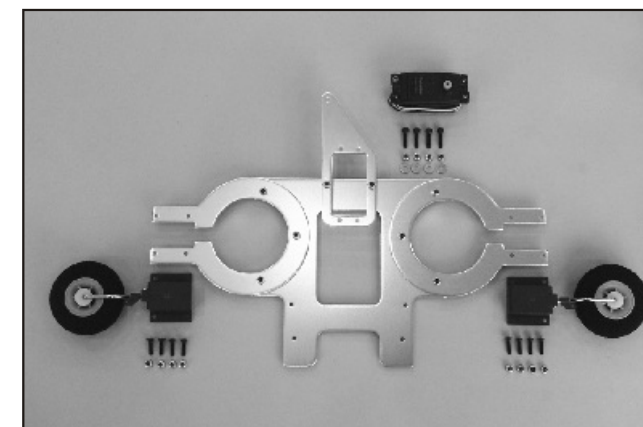
3. Secure the main retract wire with the setscrew which is already in the retract shaft. Adjust the wire at 50mm (1-31/32") in length then insert POM washer, wheel then secure the collar with setscrew.



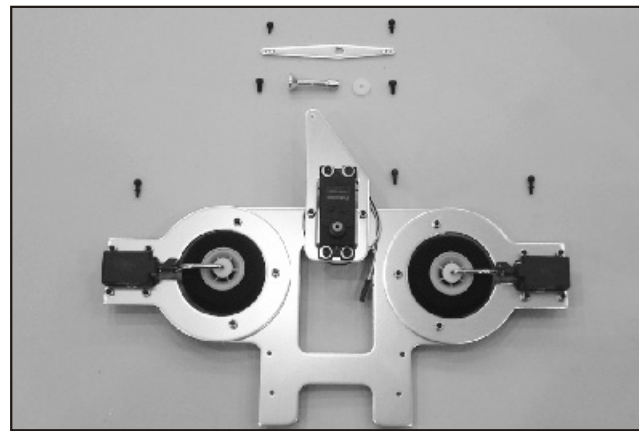
4. Same way to assemble the nose gear and adjust the wire at 65mm( 2-1/2 ") in length.



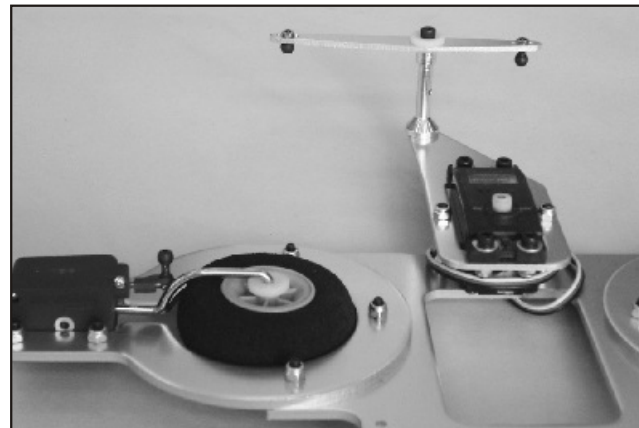
5. Locate the mainplate, retract mount, servo tray, M3 locknuts, standoff, 3x12mm and 3x25mm socket screws as shown in the photo.



6. Secure the retract mount and the servo tray on the main plate. Next locate retract gear, 3x10mm sink head screw, M3 locknut, retract servo, 3x12mm socket screw, M3 locknut and washer as shown.



7. Install the retract gear on main plate as well as the retract servo, note the servo orientation. Locate the two 12mm standoff-balls for retract pushrod; 8 and 10mm standoff-balls, standoff, 3x6mm socket screws and POM washer for rear horn. Note the rear horn is longer than front horn.



8. Install the balls and rear horn in place properly. Secure the M2 Nut on all balls. Note the 10mm standoff-ball should be installed at the short arm side.

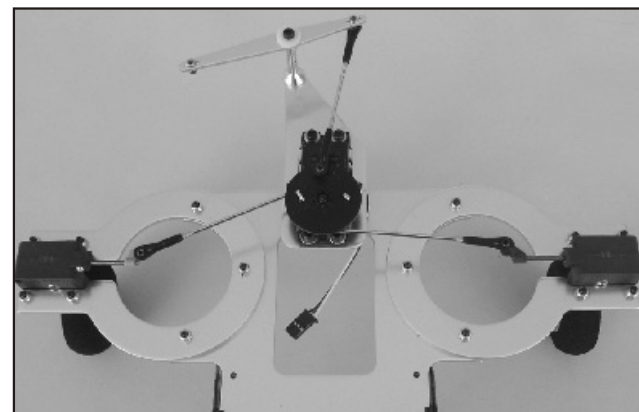
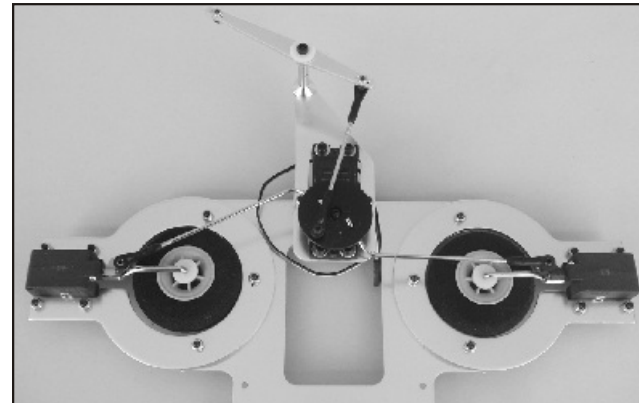
**Note: Do not over tighten the standoff ball on the retract link as it may break the plastic. Just tight and use Loctite.**



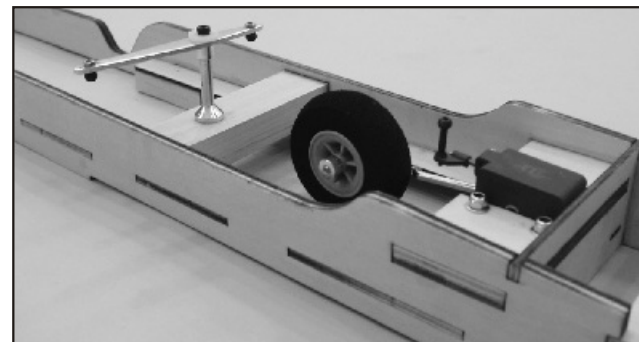
9. Locate the Z-bend pushrod and 45mm threaded rod then thread the ball ends. Measure at two ball ends at about 75mm.



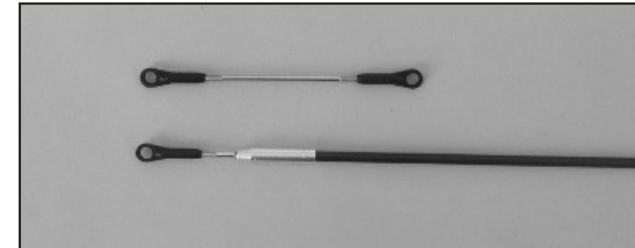
10. Get a disc horn then drill two 2mm hole ( 9.5mm to the center) as photo shown. Drill another 1.5mm hole (16mm to the center) then secure the 10mm standoff-ball with M2 nut.



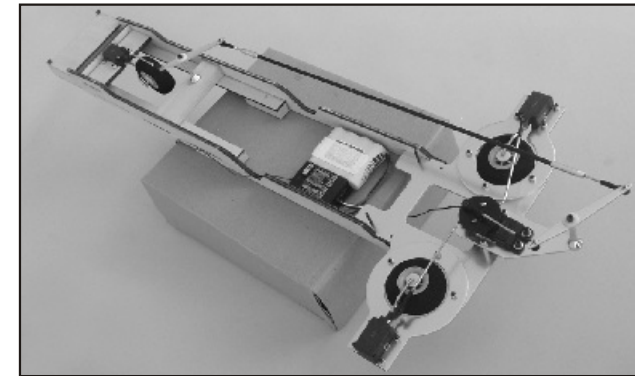
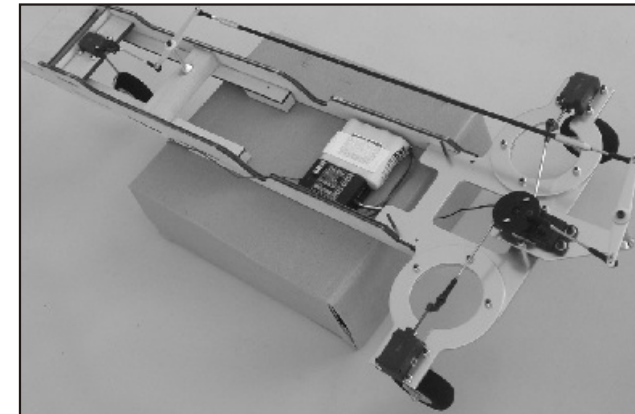
11. Install the pushrods as photo shown and adjust the ball end to get a good movement.



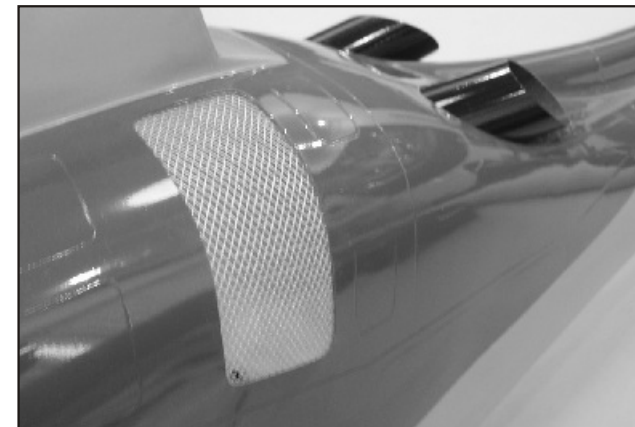
12. Same way to install the front horn in place with 3x6 and 20mm socket screw, M3 washer and POM washer, two 8mm standoff-balls. Install the nose gear in place with 3x10mm sink head screws, M3 washer and locknuts. Secure the 18mm standoff-balls on the nose gear pushrod with M2 nut.



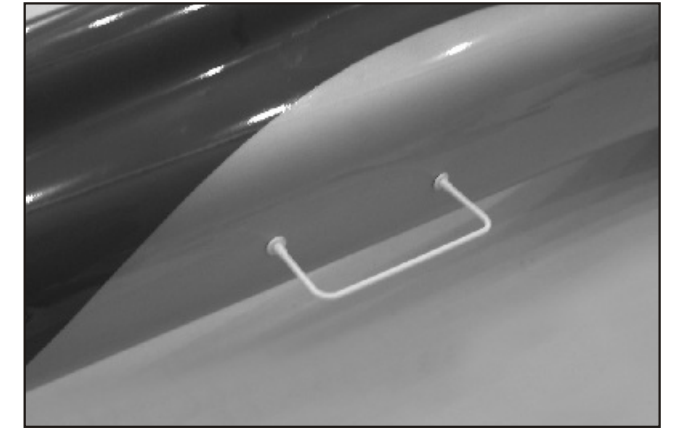
13. Assemble the pushrods; one is about 95mm between two center points of ball end, the other is about 465mm of two ball end center.



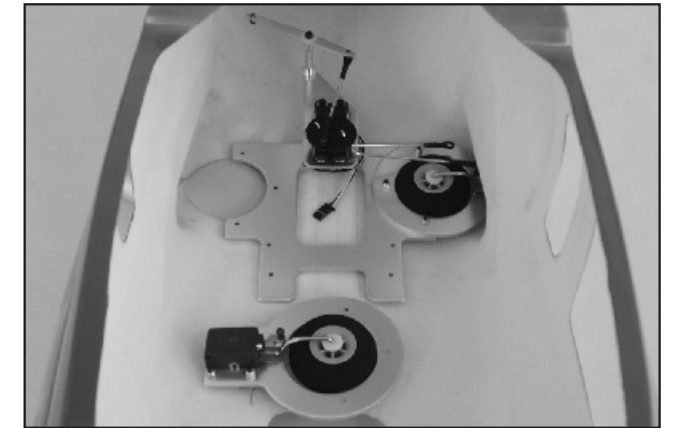
14. Temporarily install the retract assembly on the wood mount then install the pushrods to link the front and rear horn as well as the nose gear pushrod. Test the retract gear and adjust the pushrods until it works perfectly.



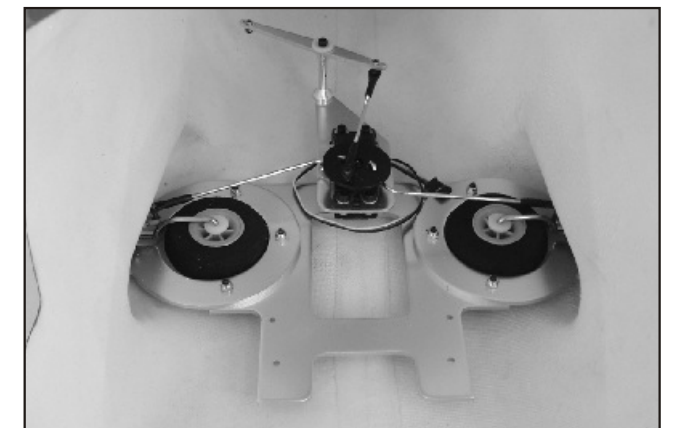
15. Epoxy the two pieces of screen and exhaust pipes in place.



16. Install the handle rail at the tail, it is about 27cm from the end. Drill 2mm holes and press plastic collar to secure it in place. Apply tiny CA at the contact area of handle rail and fuselage.



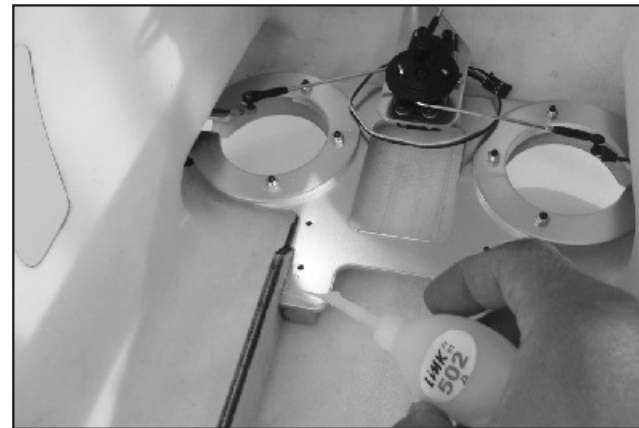
17. Remove the retract assembly from wood mount. Next remove one side of retract from main plate so it could be placed in the retract area of the fuselage.



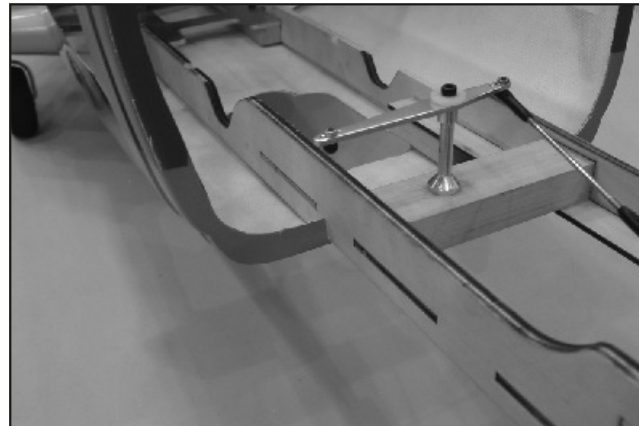
18. Install the retract you just removed from the main plate as shown.



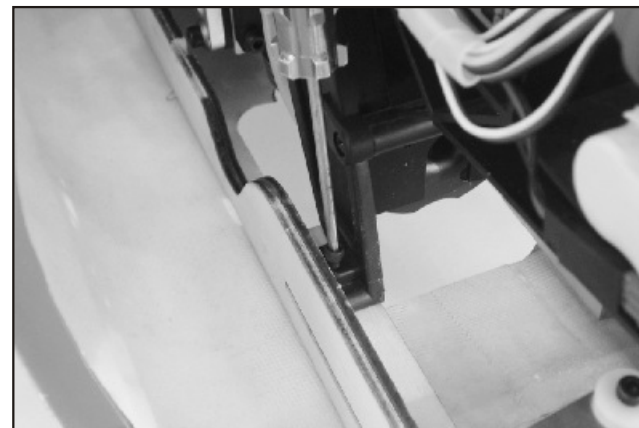
19. Place the wood mount and join the main plate, next center the wood mount then make marks on fuselage.



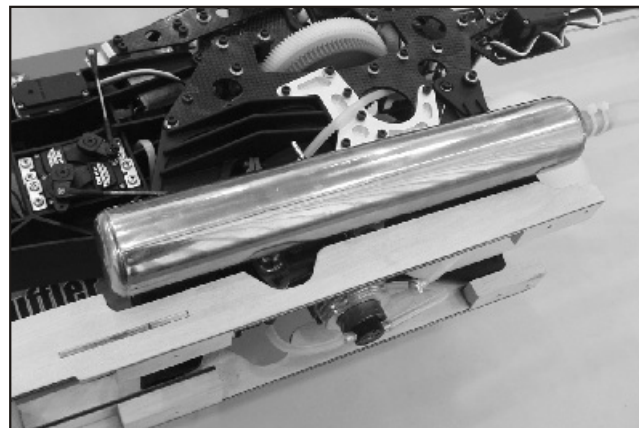
22. CA the main plate and wood mount in place and make sure the holes on main plate are aimed to the holes on woodmount.



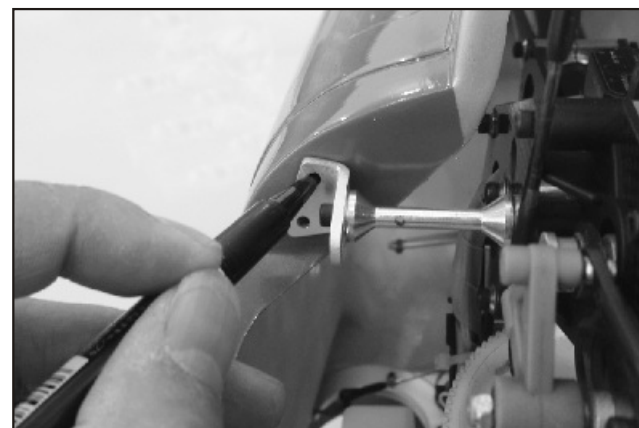
20. Remove the wood mount, then use file to make two notches so the wood rails can fit in later.



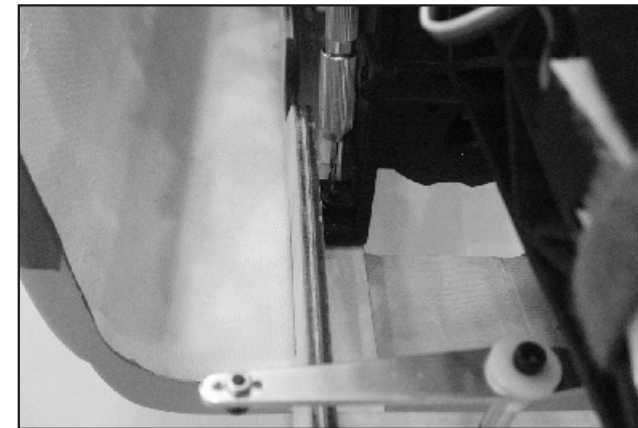
23. Temporally secure the helicopter on wood mount with a M3 socket screw, this is to keep helicopter and wood mount together for next assembly step.



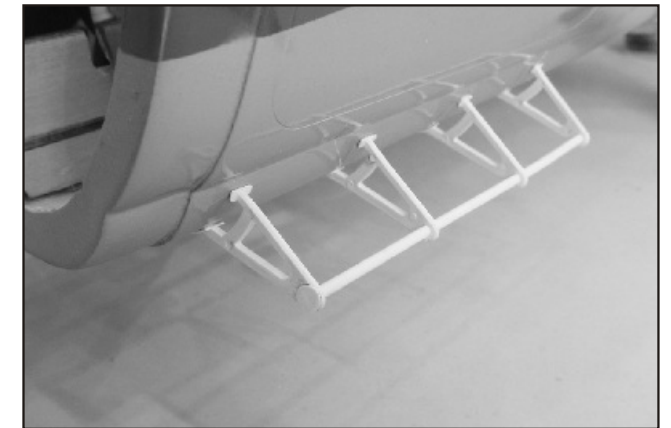
21. Install the muffler and check if muffler contacts the wood mount. You may need to trim the wood mount. (photos shown is OS91 with Zimmermn muffler) The kits comes with muffler extension that you may use. Check if the throttle lever contacts the muffler if you use the extension. Trim the contact area if necessary.



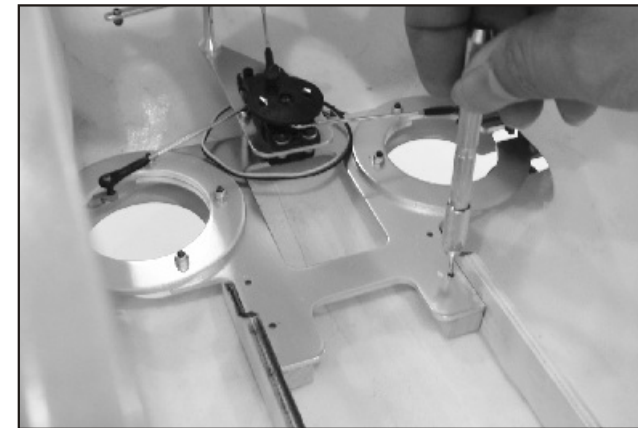
24. Replace the post from the old one. Next install the body retainer with 3x8mm socket screw and washer. Adjust the body retainer so it just contact the fuselage. Make marks at the holes. Do the same procedure at the other side.



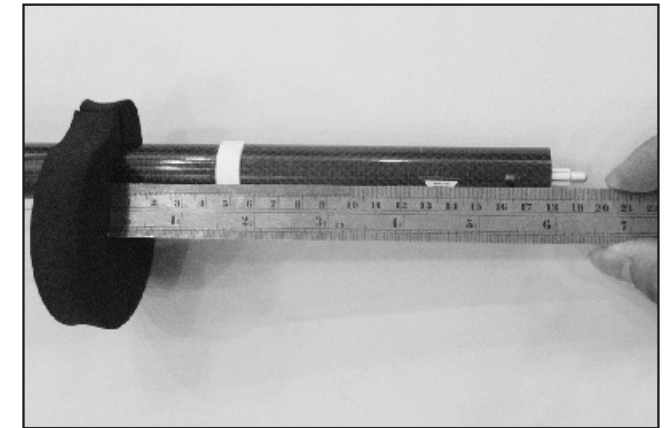
25. Make sure the helicopter and retract are well positioned. Carefully remove the socket screw, next use the hole as drilling guide then drill a pilot hole. Next enlarge the hole to 3mm.



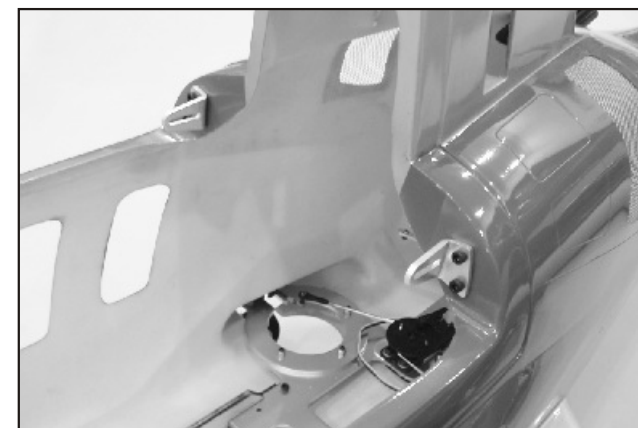
28. Locate foot step accessories then use care to install the footstep support on the fuselage, make sure they are level with each other. Press the retaining collar firmly then apply CA at the last.



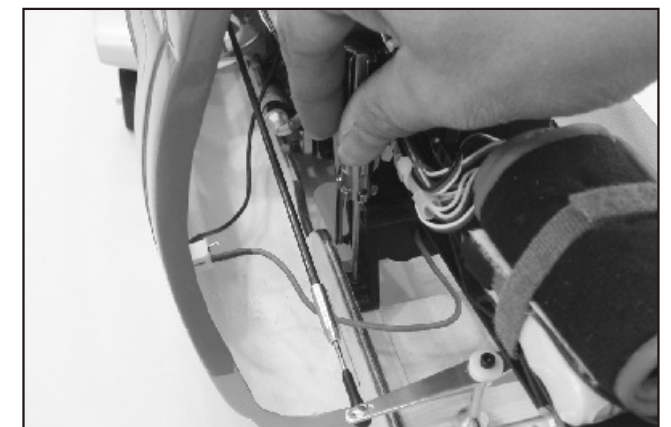
26. Temporally secure the wood mount at the hole you drew in the last step. Next using the four holes on main plate as drilling guide then drill pilot holes. Enlarge the hole to 3mm.



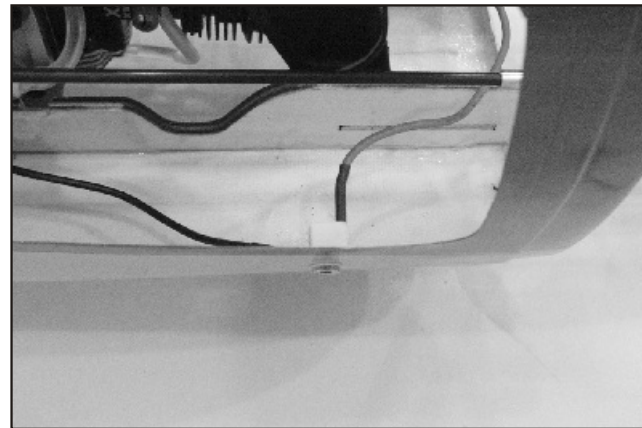
29. Locate the tail boom foam retainer, measure at 18cm(7") from the boom end. Secure foam retainer in place with CA.



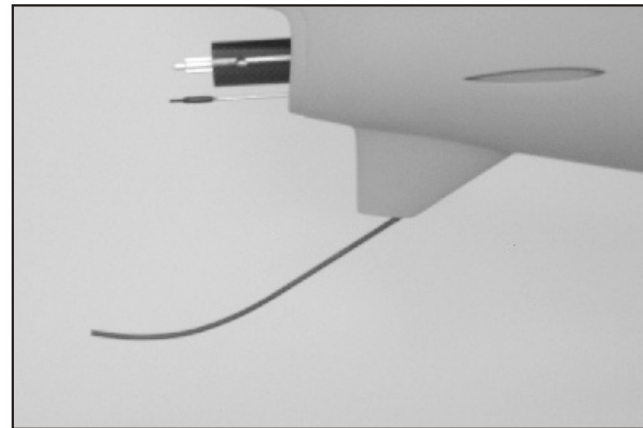
27. Drill 3mm holes at the marks, secure the retainer with 3x10mm socket screw with M3 washers and locknut. Secure the wood mount and main plate with two 3x25mm Socket Screw, POM washer and M3 nut at far-most two holes.



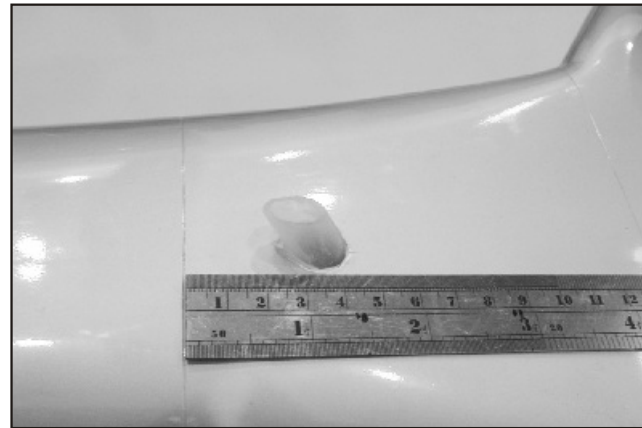
30. Before you install the helicopter into fuselage, get an extension wire for retract servo. Carefully install the helicopter in the fuselage, pull the tail boom and position the helicopter in place properly. Secure the helicopter with 3x35mm socket screw, POM washer and M3 Locknut.



31. Install the ignition extension outlet on fuselage.



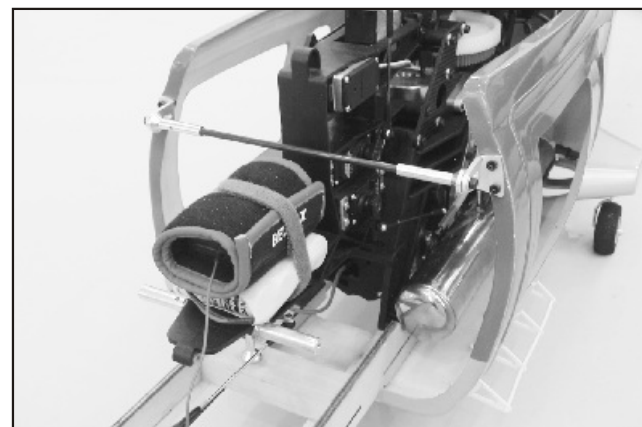
34. Drill 3mm hole at the bottom fin of leading edge then epoxy the tailskid inside the fin about 36mm(2-1/2" ).



32. Drill about 14mm(5-1/2" ) hole at the bottom fuselage where is 35mm (1-3/8" ) away from the panel line. Get the silicone tube exit at the hole.



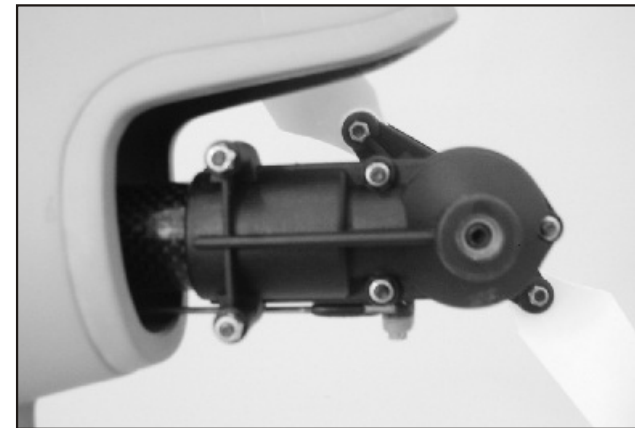
35. Locate 3x25mm setscrews then install on horizontal tail. Apply epoxy inside the hole and thread the setscrew in the tail and leave about 10mm in length outside the tail.



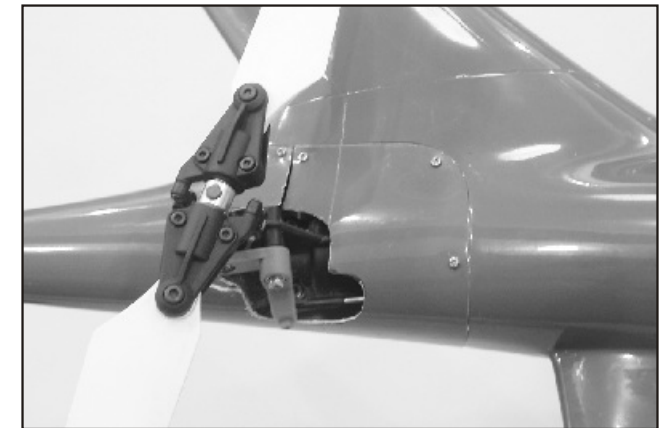
33. Assemble the carbon rod with two rod ends. Next install the other two body retainers and carbon rod with two 3x8mm, four 3x10mm socket screws, M3 washers and locknuts.



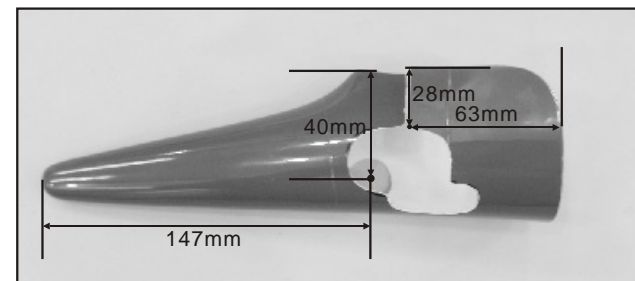
36. Drill a hole to accommodate the setscrew on tail. Trial fit the tail in place, lightly sand the glue area then epoxy the tails in place firmly.



37. Install the tail transmission and link in place. Make sure it works properly.



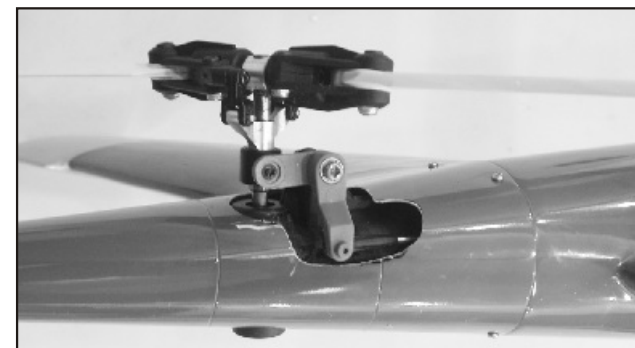
40. Secure the tail end with 2x5mm wood screws.



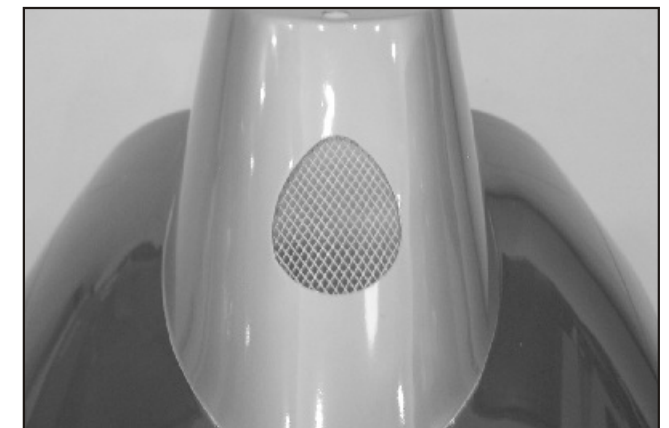
38. Cut tail end into two pieces as shown. Use the template in page 15, cut the template off and apply on tail end then trim off the area.



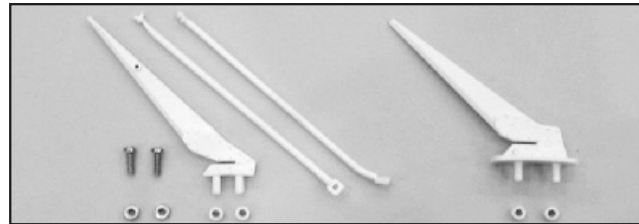
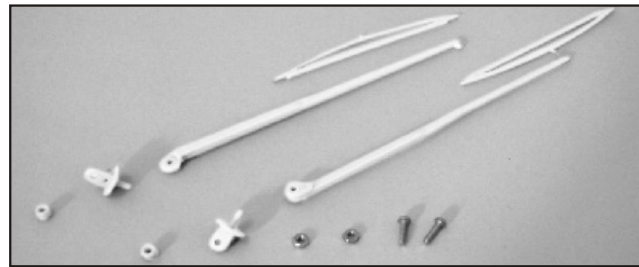
41. Trim all windshield and windows. Both sand the glue area to enhance the adhesion. You may skip installing the middle windows for easy access and tuning the helicopter. This also help the cooling.



39. Install the tail in place and trim the contact areas with tail transmission.



42. Epoxy the small screen inside the front fuselage as shown.



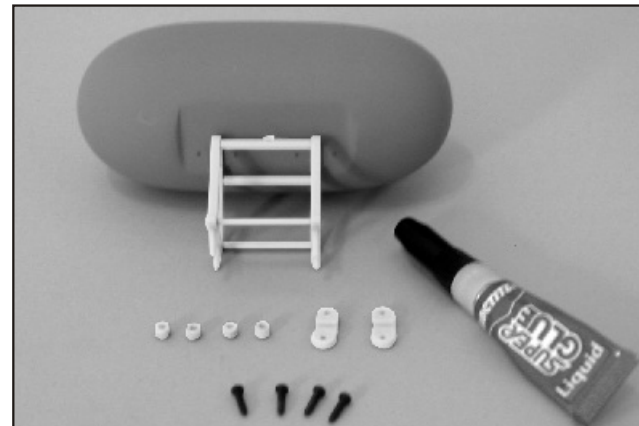
43. Locate the wiper and upper wire strike as well as its relative hardware.



44. Install the wipers, upper wire strike and antennas in front of the windshield as photo shown.



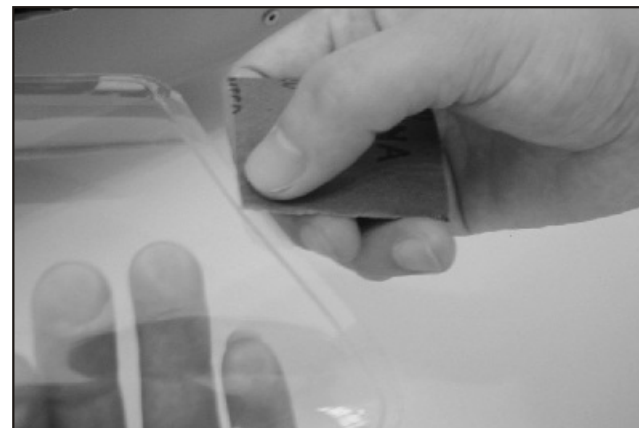
45. Install the lower antennas as well as the lower wire strike.



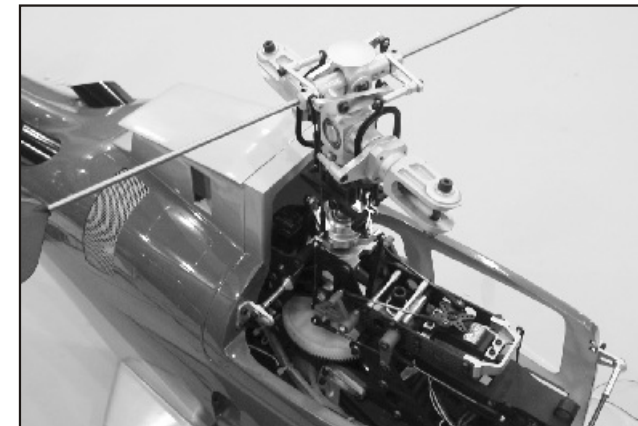
46. Assemble the external hoist mount first then secure the hoist on the mount with the mounting strip and four 2x6mm self-tapping.



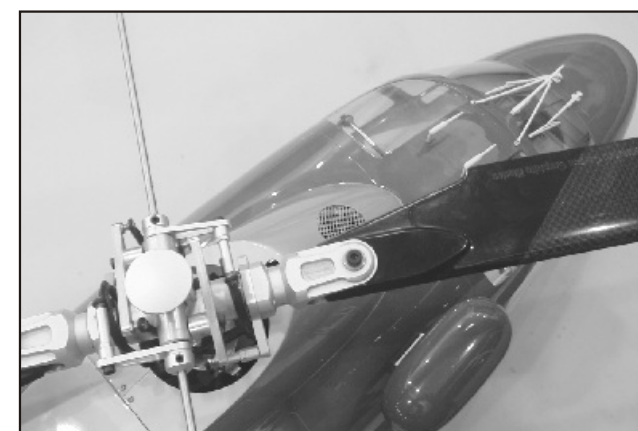
47. Next install the hoist assembly on the fuselage as photo shown.



48. Trim all windows and both sand the glue area on windows and fuselage. Epoxy the windows in place properly. You may skip installing the middle window for engine adjustment and any maintenance of helicopter.



49. Install the rotor head back to the helicopter, make sure all links are well connected and servos work fine.



50. Cut the front fuselage then join the front fuselage to the rear fuselage with 16 pieces of 2x5mm wood screws.



Congratulations! Now you are finished the assembly of this beautiful scale body.

1. When hovering your 109, try to keep your rotor speed at approximately 1500 RPM.
2. Check the helicopter and fuselage to see if any screw loosened after each flight.
3. Trim the elevator or rudder when switching on the idle when you process the speed flight if necessary.

### Template for Tail End Opening

