

3D Spirit

Assembly Manual

Specifications:

Wing Span: 53" (1350mm)

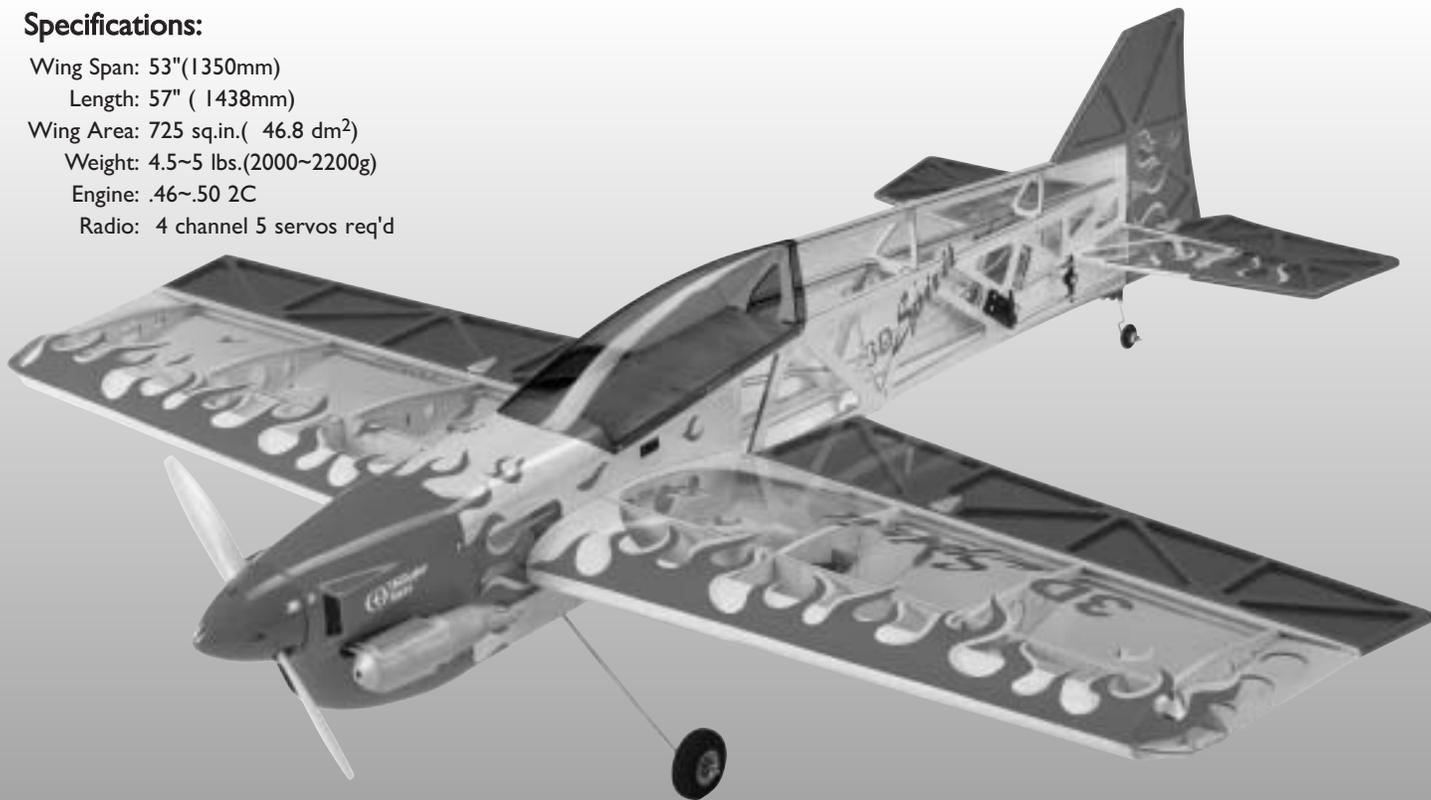
Length: 57" (1438mm)

Wing Area: 725 sq.in. (46.8 dm²)

Weight: 4.5~5 lbs. (2000~2200g)

Engine: .46~.50 2C

Radio: 4 channel 5 servos req'd



Thunder Tiger 3D Spirit ARF Airplane (TTR4572)

Distributed in North America by Ace Hobby Distributors, Inc. • 2055 Main Street, Irvine, CA 92614

Telephone: 949.833.0088 • www.acehobby.com • E-mail: service@acehobby.com

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 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 airplane. Inspect all parts for completeness and damage. If you encounter any problems, call us for help.



JE6643

INTRODUCTION

Congratulations on the purchase of one of our finest ARFs to date. This plane is designed for 3D aerobatics and available in ARF version that only takes you a few hours in assembly. Built from precisely laser cut balsa and ply, covered in durable and easily repairable Oracover/Ultracote[®], ultra flying characteristic that you will enjoy.

感謝您選購這台 3D Spirit 停旋機，這台飛機採用了精選的航空級Balsa以先進的雷射切削加工成型、再加上純熟的手工精細完成，精美的塗裝設計採用德國品牌 Oracover 包覆搭配烈焰彩裝貼紙、玻璃纖維引擎罩使用環氧系塗料塗裝完成，是一台完成度高、性能非常優越的飛機。

這台精巧的飛機需要比較精細的組裝技巧、與調整技術，因此我們將這台飛機設定為中高階飛行愛好者對象所使用。

PRE-ASSEMBLY NOTES

Before the start of the assembly read the instructions thoroughly to have 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 A.R.F. model, which you will be proud to display.

This 3D Spirit is designed for intermediate to advanced pilots, and this manual assumes basic knowledge of R/C model construction.

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 plane. If you find that any of the parts are either missing or damaged, please contact Ace Hobby Distributors, Inc., Customer Service immediately for replacements.

Please read the entire manual before beginning construction, specially the cautions in Page 18. Neither your dealer nor Ace Hobby Distributors, Inc., 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. No amount of glue can make up for a poor-fitting part.

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Adhesives:

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

Tools:

- Model knife, T-Pins, 1/2" MASK tape
- Small screwdrivers, medium screwdrivers
- Scissors
- Steel straight edge
- Long nose pliers and diagonal cutting pliers
- Drill and drill bits (1/16", 5/64", 1/8")
- Fine felt tip pen and soft lead pencil
- Straight building board
- Reamer
- File

R/C System:

- 4 Channel radio with 5 servos
- One "Y" style or two 10" extension wire
- Two 20" extension wires

Engine:

2 cycle: .46~.50

Propeller:

Suggest 11x4.5, 12x4.



Adhesives - You will need two types of adhesives for the 3D Spirit - 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.



Tools - 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.



Radio - A 4-channel radio with 5 STD servos and are required.



Engine - The Thunder Tiger PRO-46 is the ideal engine for this airplane. These quiet-running engine is easy to start, requires no special break-in periods, is very easy to maintain and will last for years.

AS6280 Main Wing

Wing Mounting Plate(1) Dowel(2) CA Hinge(8) Doubler(1) Retainer(4)

AS6279 Fuselage

Bottom Section(1)

AS6281 Horizontal Tail

CA Hinge(4)

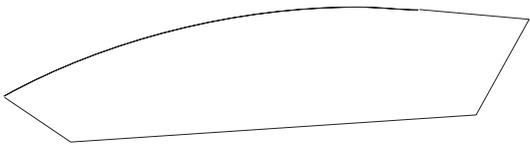
AS6282 Vertical Tail

CA Hinge(3)

AS6289 Decal

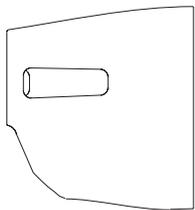
Decal(2) Decal(1)

AS6283 Canopy



Canopy(1)

AS6284 Engine Cowl



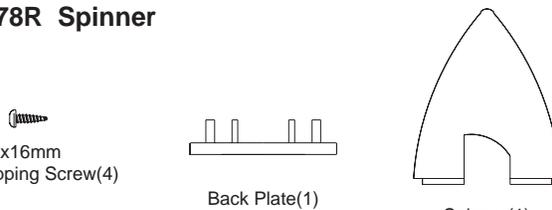
FRP Cowl(1)

AS6290 Screw Set



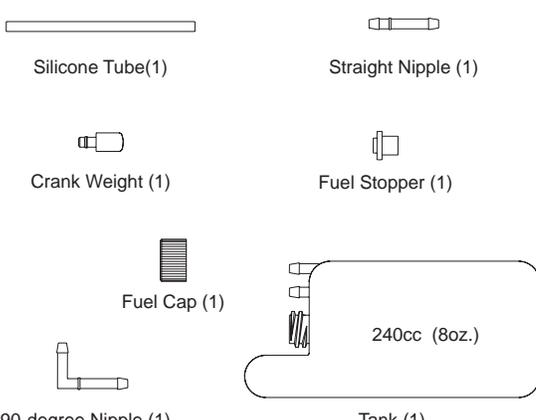
3x22mm Screw(4) M3 Washer(6)
 3x15mm Wood Screw(4) M3 Nut(4)
 3x35mm Wood Screw(2) 3x8mm Wood Screw(10)

No. 3278R Spinner



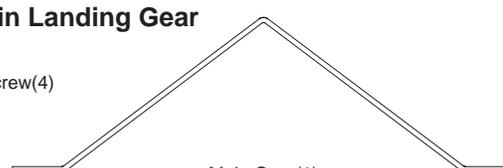
3x16mm Self Tapping Screw(4)
 Back Plate(1)
 Spinner(1)

No. 3262 Fuel Tank



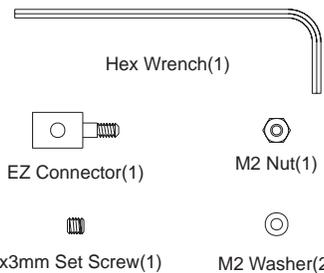
Silicone Tube(1) Straight Nipple (1)
 Crank Weight (1) Fuel Stopper (1)
 Fuel Cap (1)
 90-degree Nipple (1) Tank (1) 240cc (8oz.)

AS6285 Main Landing Gear



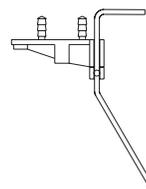
3x3mm Set Screw(4)
 Collar(4)
 Main Gear(1)

PE0009 Hardware Set



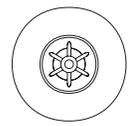
Hex Wrench(1)
 EZ Connector(1) M2 Nut(1)
 3x3mm Set Screw(1) M2 Washer(2)

AS6178 Tail Gear



Collar(1) Tail Wheel(1)
 3x12 mm Self-Tapping Screw(1) 3x16mm Self-Tapping Screw(1)
 Tail Gear(1)
 3x3mm Set Screw(2)

No.3255 Wheel



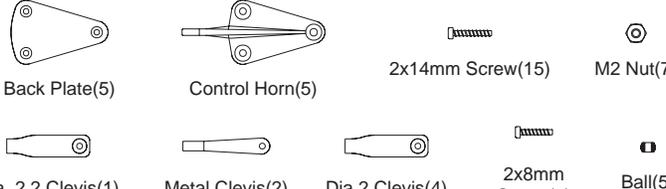
Wheel(2)

AS6287 Dual Linkage System



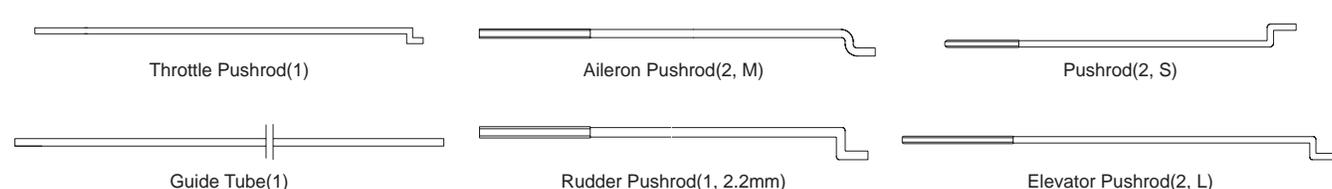
Tube(1) Control Arm(2)
 Shaft(1) 3x3mm Set Screw(2)

AS6288 Control Horn

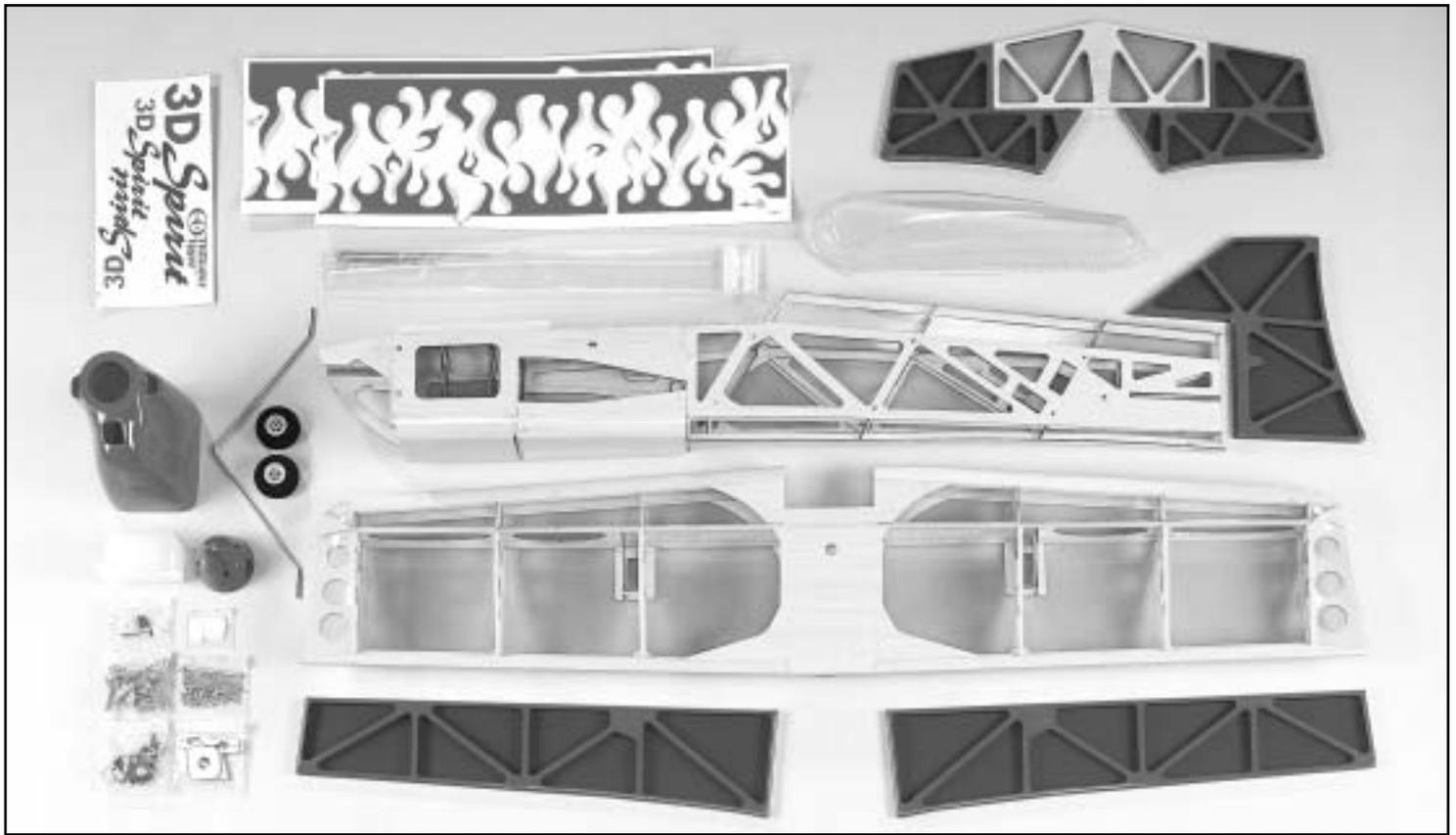


Back Plate(5) Control Horn(5)
 Dia. 2.2 Clevis(1) Metal Clevis(2) Dia.2 Clevis(4)
 2x14mm Screw(15) M2 Nut(7)
 2x8mm Screw(5) Ball(5)

AS6286 Pushrod Set



Throttle Pushrod(1) Aileron Pushrod(2, M) Pushrod(2, S)
 Guide Tube(1) Rudder Pushrod(1, 2.2mm) Elevator Pushrod(2, L)



Kit Contents:

Main Wing

One-Piece Main Wing x 1
 Wing Mounting Plate x 1
 Dowel x 2
 CA Hinge x 8
 Doubler x 1
 Retainer x 4

Horizontal Tail

Horizontal Tail x 1
 Elevator (Left/1, Right/1)
 CA Hinge x 4

Vertical Tail

Rudder x 1
 CA Hinge x 3

Fuselage

Fuselage x 1
 Bottom Section x 1

Spinner

Spinner x 1
 Backplate x 1
 3x16mm Self-Tapping Screw x 4

Pushrod

Throttle Pushrod x 1
 Guide Tube(1)
 Aileron Pushrod(M) x 2
 Rudder Pushrod(2.2mm) x 2
 Pushrod (S) x 2
 Elevator Pushrod(L) x 2

Tail Gear Set

Tail Gear x 1
 Tail Wheel x 1
 Collar x 1
 3x3mm Set Screw x 2
 3x12mm Wood Screw x 1
 3x16mm Wood Screw x 1

Control Horn

Control Horn x 5
 Backplate x 5
 2 x14mm Screw x 15
 M2 Nut x 7
 Dia. 2.2mm Clevis x 1
 Dia. 1.7mm Clevis x 4
 Metal Clevis x 2
 2x8mm Screw x 5
 Ball x 5

EZ Connector

Connector x 1
 M2 Nut x 1
 M2 Washer x 2
 3x3mm Set Screw x 1
 Allen Wrench x 1

Fuel Tank

Tank x 1
 Clunk x 1
 Nipple x 1
 90-degree Nipple x 1
 Fuel Stopper x 1
 Fuel Tube x 1
 Cap x 1

Main Landing Gear

Landing Gear Strut x 1
 3x3mm Set Screw x 4
 Collar x 4

Dual Linkage System

Tube x 1
 Shaft x 1
 Control Arm x 2
 3x3mm Set Screw x 2

Decal

Fire Decal x 2
 Logo Decal x 1

Screw Set

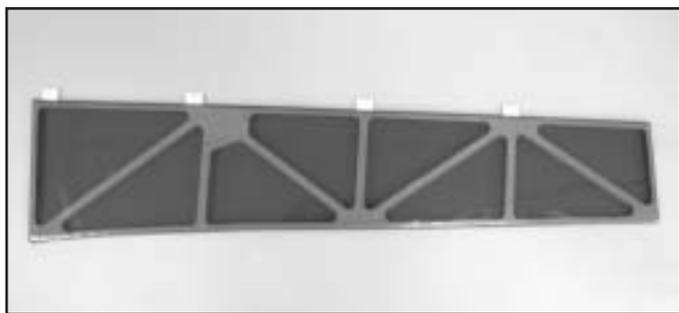
3x22mm Screw x 4
 M3 Nut x 4
 M3 Washer x 6
 3x15mm Wood Screw x 4
 3x8mm Wood Screw x 10
 3x35mm Wood Screw x 2

Wheel x 2

Engine Cowl x 1

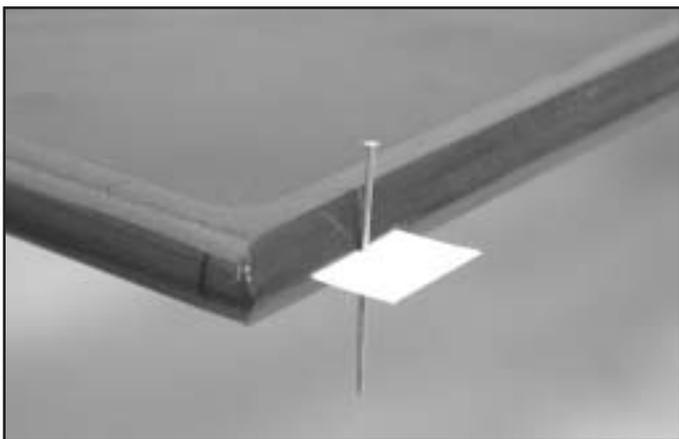
Canopy x 1

Manual x 1



- 1. Decide the position of hinge then carefully cut slots at trailing edge and aileron.

爲了得到良好的組裝品質活頁組裝溝槽必須請您親自加工，如圖示決定出四個活頁位置。



- 2. Insert hinges in place and use pin to position the hinge in the center.

插入活頁於副翼再將副翼裝置於後緣上，爲防止活頁移動以大頭針將其固定於中心位置。



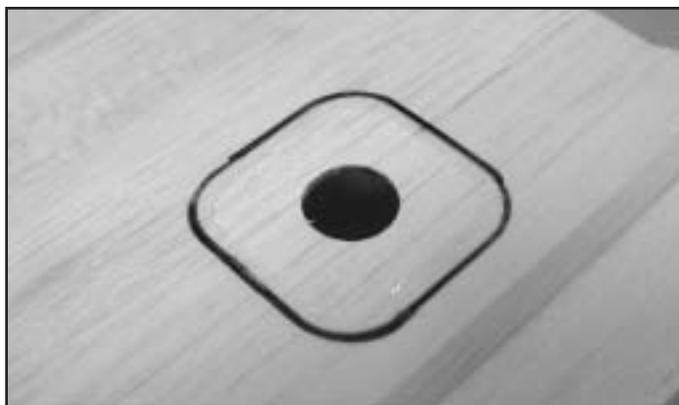
- 3. Attach the aileron to the trailing edge, remove all pins then drop CA to the hinges at both sides. Same procedure on the other aileron.

定位後移除大頭針使用瞬間膠水粘合活頁。



- 4. Locate the servo wire opening doubler, use fine tip marker to mark where covering is going to remove.

以補強片爲樣板於該處用麥克筆做記號。



- 5. Remove the covering about 1/8"(3mm) inside the line you drew. Be careful only cut the covering or it will hurt the planking.

使用銳利的美工刀小心的依據記號向內約3mm移除包覆紙。



- 6. Glue the doubler in place with instant CA glue.

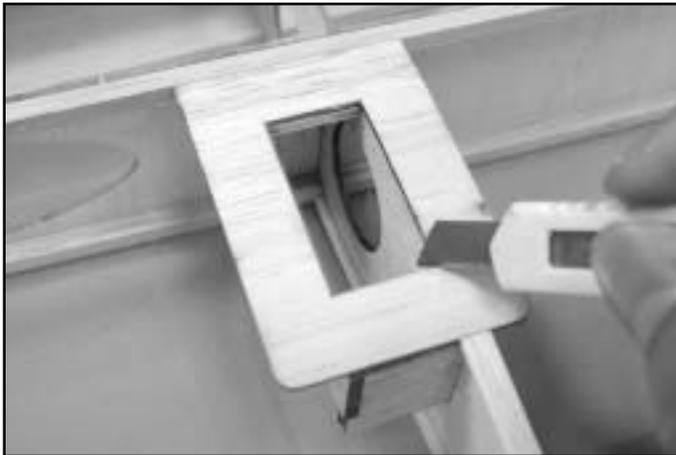
使用瞬間膠水粘合補強片。

WING ASSEMBLY



- 7. Remove the covering at the holes and epoxy two dowels all the way in.

移除孔位之包覆紙將竹棒插入該孔位並推到底以AB 膠或高粘度瞬間膠水固定。



- 8. Remove the covering by a hobby knife at the aileron servo well.

移除副翼伺服機座上之包覆紙。



- 9. Thread the servo wire through wing panels and exit at the servo wire exit hole. If you use a standard 4ch radio then you will need a "Y" style extension wire. Tape the connectors to

prevent from loosening. If you use a quality programmable radio then we suggest you to use two 10" long servo extension wires and turn on the function of "Flapron" or Aileron-Flap mixture control.

將伺服機線穿過機翼於出口處以鑷子夾出，連接延長線並以膠帶固定防止脫落。建議使用25cm以上長度之延長線2條並使用遙控器Flapron功能。



- 10. Locate the control horns. Install the control horn as shown. There are 5 clevises in the parts bag and a special clevis which has larger pushrod hole that is for rudder pushrod. Use the clevis with small hole in this step.

組裝舵角控制片，如圖示找出所有零件將鋼球壓入控制片以M2螺絲及螺帽將連桿頭固定。連桿頭孔位有分大小孔，本步驟使用孔位較小之連桿頭。



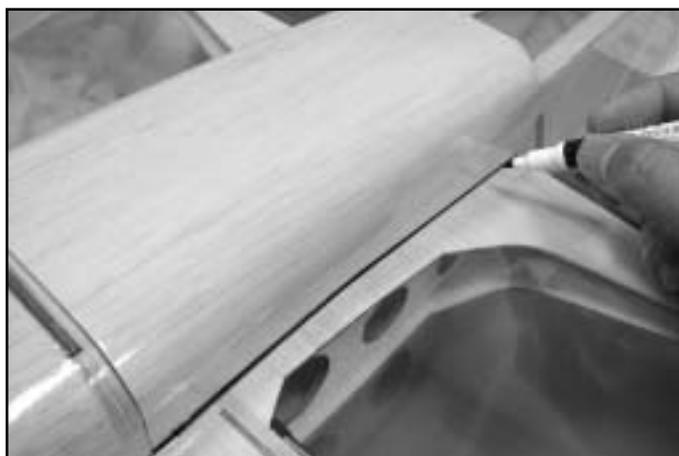
- 11. Place the control horn on the aileron with aileron pushrod(M) installed. Drill 5/64" (2mm) holes.

以2mm鑽頭鑽孔並用2x14mm螺絲與固定片固定舵角控制片於副翼上。



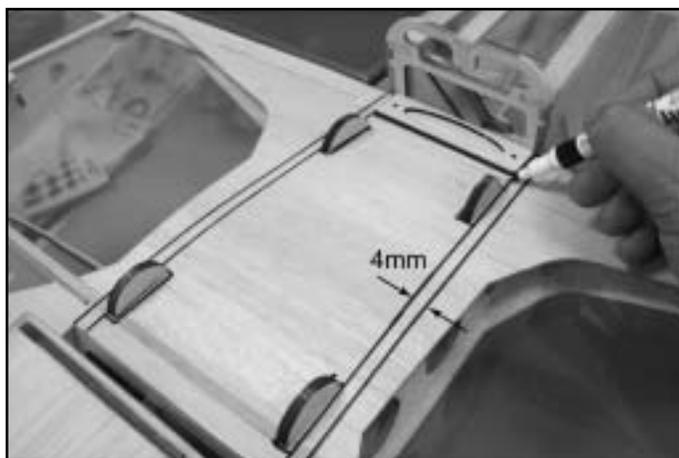
- 12. Secure control horn with furnished 2x14mm screws and control horn backplate.

按圖示安裝並調整副翼連桿(中型Z字連桿)。



- 13. Trail fit main wing in place then place fuselage bottom section and make marks on the bottom wing.

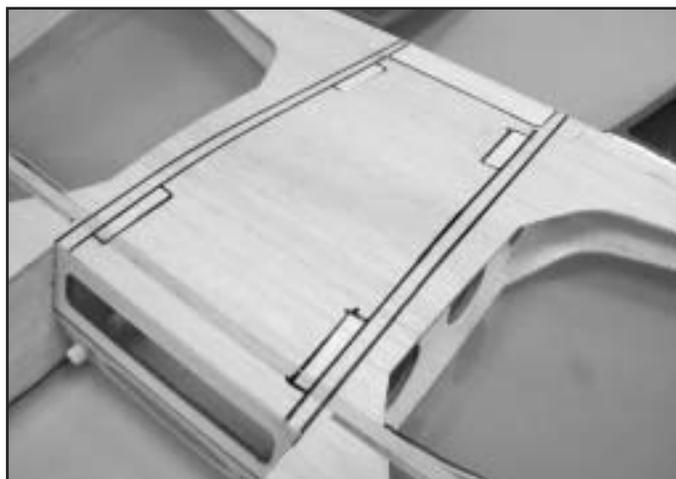
安裝機翼於機身上，將機腹蓋定位好以麥克筆做記號。



- 14. Draw a parallel line offset about $5/32"$ (4mm). Locate 4 pieces of bottom section mount and place the mounts right on the lines as shown.

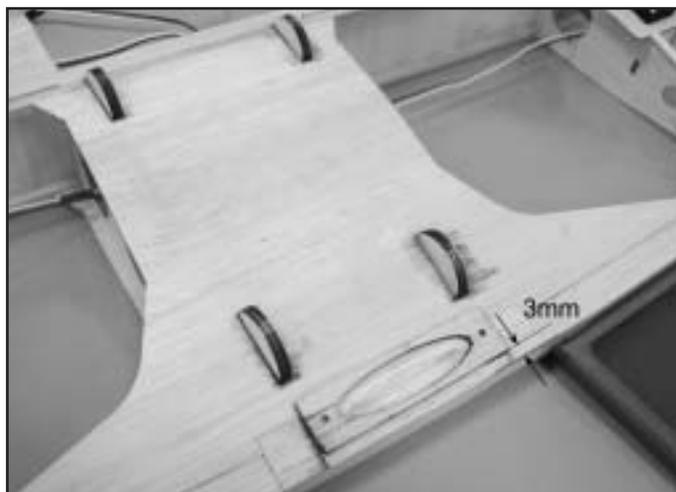
Locate the wing mounting plate and place it at the center and away from trailing edge about $1/8"$ (3mm). Make marks around these wood parts.

移除機腹蓋，另外向內再劃出距離約4mm之平行線，並找出機腹蓋固定片及機翼固定片將其定位並做記號。注意機翼固定片須距離後緣3mm。



- 15. Remove the covering of the marks you made.

使用銳利的美工刀小心的依據記號移除包覆紙。



- 16. Glue the wood parts in place with thick CA or epoxy. Note that wing mounting plate is $1/8"$ (3mm) away from trailing edge.

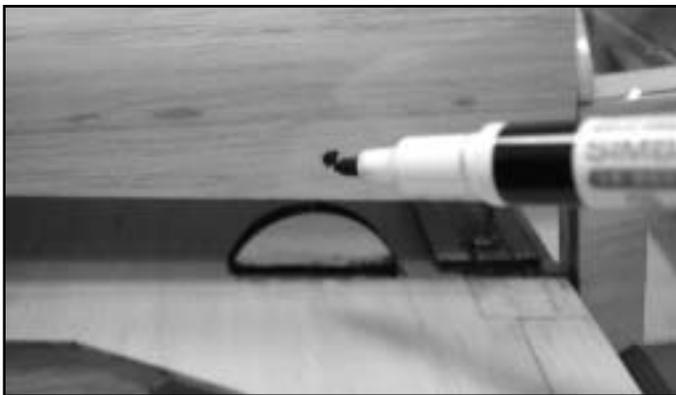
使用AB膠或高粘度瞬間膠水固定機腹蓋固定片及機翼固定片。

TAIL FEATHERS



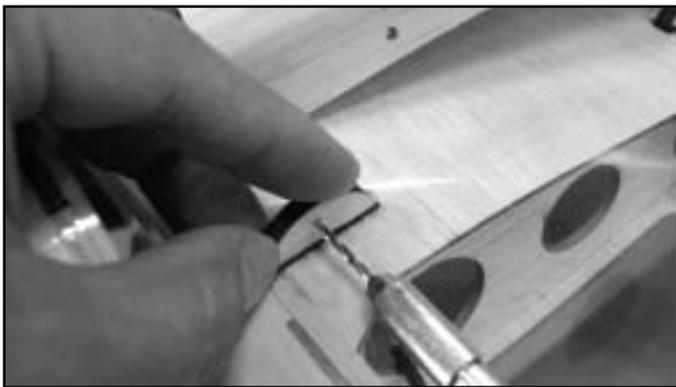
- 17. Fit the main wing on fuselage, drill 1/16"(1.5mm) wing mounting holes. Be careful to drill the hole through the wing and mounting block on fuselage. The mounting holes should be centered near two ends of mounting block.

以2mm鑽頭於機翼固定片之孔位以斜角鑽穿機翼並至機身上之主翼固定座上，注意孔位須在主翼固定座兩端中央上。



- 18. Trail Fit the bottom section. Make marks on the bottom section.

以麥克筆做出固定螺絲於機腹蓋固定片之記號。



- 19. Place the bottom section then drill 5/64"(2mm) holes. Drill the bottom section and make a drill mark on bottom section mount. Remove the bottom section then drill

the hole on bottom section mount as shown. This is to prevent you from breaking the mount when drilling.

以2mm鑽頭鑽孔鑽穿機腹蓋並在固定片上留下記號，移除機腹蓋，另外對固定片鑽孔，此為防止施力過當造成固定片於接合處斷裂。



- 20. Secure the bottom section with the furnished 3x 15 mm wood screw.

以3x 15 mm木螺絲固定機腹蓋。



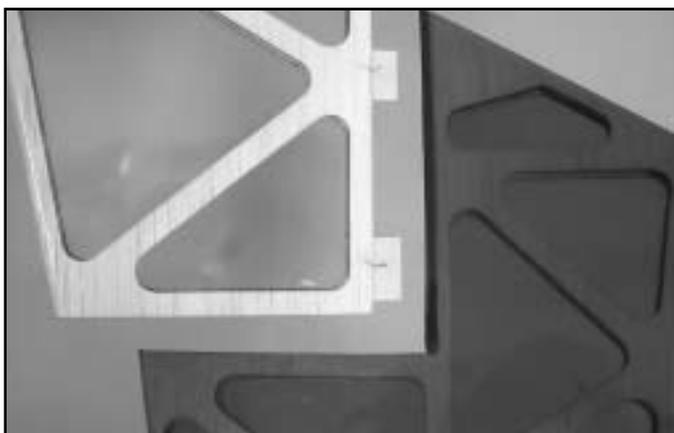
- 21. Remove the covering on the fuselage where horizon tail goes. Insert the tail in place then draw lines along fuselage on the tail at four sides.

將機身水平翼槽上包覆紙割除，安裝水平翼以麥克筆做記號然後拆下。



- 22. Remove the covering about 1/16"(1.5mm) inside the line you drew.

使用銳利的美工刀依據先前所作記號保留約1.5mm將欲粘合位置的包覆紙割除，必須小心謹慎的儘可能不要傷害到木質結構。



- 23. Cut hinge slots first on elevator and horizontal tail. Glue the tail in fuselage then attach the elevator.

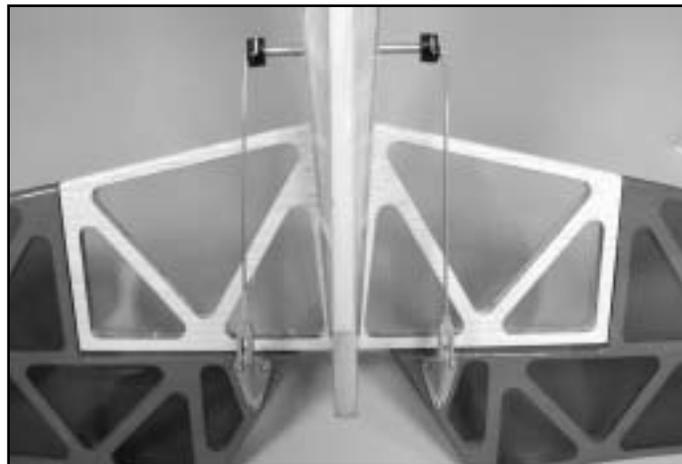
割出活頁溝槽，如圖示決定出二個活頁位置於尾翼及升降舵上，使用瞬間接著劑粘接水平尾翼後再安裝活頁及升降舵。活頁組裝方式請參考副翼的組裝程序。



- 24. Locate the parts of dual linkage system for elevator. Insert and center the tube in fuselage, glue it with thick CA. Next secure the control

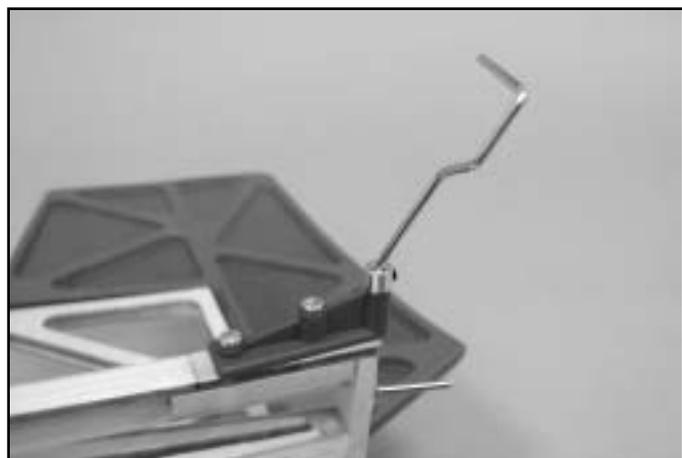
arm on the shaft with 3x3mm set screw. Cut away the elevator servo well covering.

找出雙推拉擺臂組零件，將套管居中於機身上並以瞬間接著劑固定，安裝轉軸及擺臂以3x3mm無頭內六角螺絲固定。



- 25. Install elevator control horns and elevator pushrods(L). Adjust two elevators so that they are level with each other.

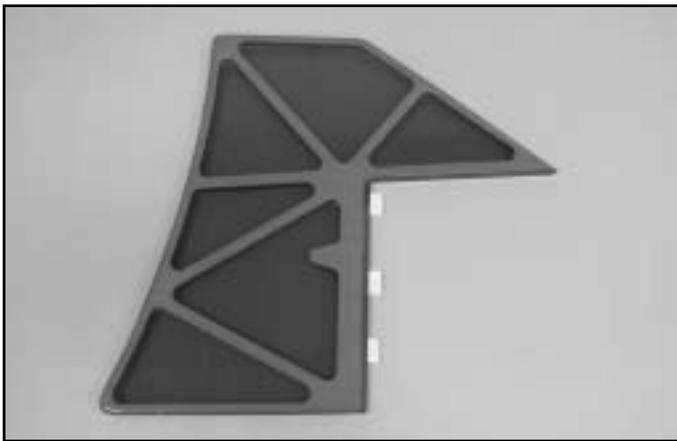
如圖示安裝升降舵舵角控制片及連桿(長型Z字連桿)，調整連桿長度使兩升降舵舵面一致。



- 26. Install tail gear on the fuselage. Secure the tail gear with 3x12mm and 3x 16mm wood screws. Secure the collar with 3x3mm set screw. Apply a drop of oil at the tail gear shaft.

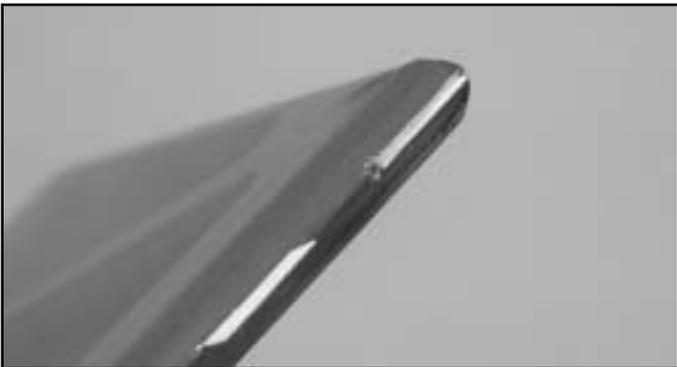
安裝尾輪架以3x12mm及3x16mm木螺絲固定於機尾下方。尾輪架轉軸處先上油以防上膠後卡死。

TAIL FEATHERS



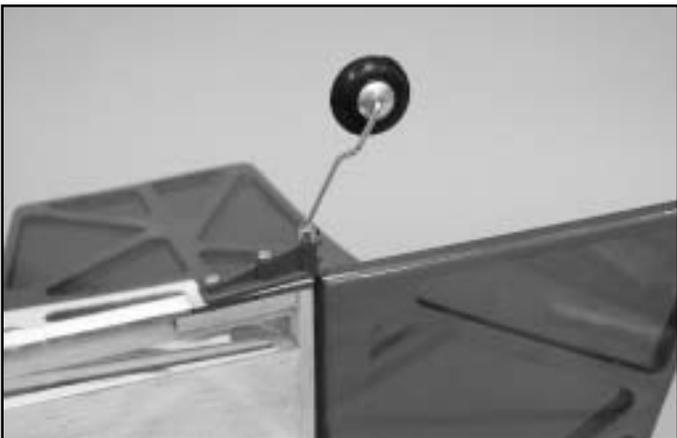
- 27. Cut slots on rudder and tail of fuselage.

割出方向舵及機尾活頁溝槽，活頁組裝方式請參考副翼的組裝程序。



- 28. Refer the photo in next step and drill a 5/64"(2mm) hole and carefully cut a slot for tail gear torque rod.

與尾輪架搭配決定扭力桿位置，以2mm鑽頭鑽出適當深度並以美工刀割出溝槽。



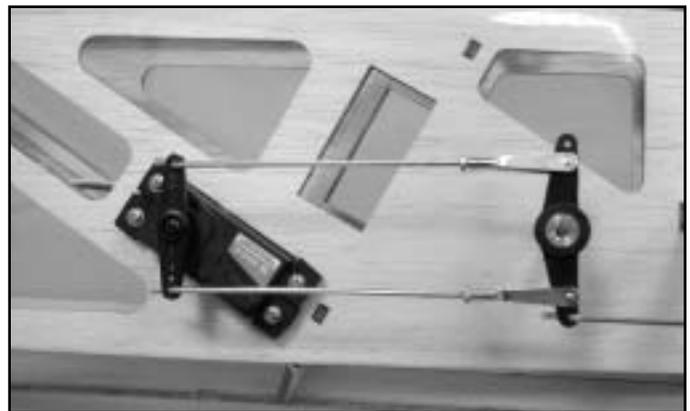
- 29. Trail fit rudder, glue the tail gear and rudder in place with thick CA when satisfied. Install the tail wheel and secure the collar with 3x3mm set screw.

以瞬間接著劑固定方向舵，安裝尾輪並以3x3mm無頭內六角螺絲及輪擋固定。



- 30. Connect a 20"(50cm) extension wire, make sure you secure the connectors with tape. Thread the servo wire through the bulkhead of fuselage then secure the elevator servo in place. Note the orientation of the servo.

使用50cm以上長度之延長線連接伺服機並以膠帶固定。將線穿過機身隔板至前機身艙中，注意伺服機方向。



- 31. Locate 2 pushrods(S size), install the push-pull rod, M2 nut and metal clevis. Adjust the clevis, make sure it moves smoothly.

如圖示於中立點安裝伺服機擺臂、連桿(短型Z字連桿)及連桿頭並以M2螺帽固定。



- 32. Remove the rudder servo well covering.

移除方向舵伺服機座上之包覆紙。

ENGINE INSTALLATION



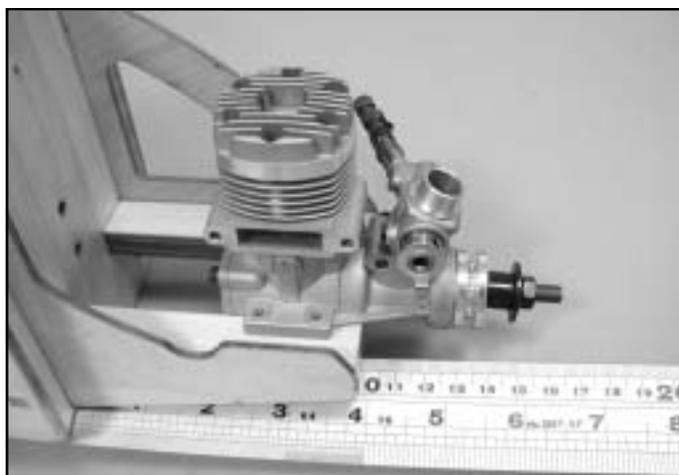
- 33. Install rudder control horn. Before you install the control horn, you may apply the decal (c) first. See the color photos on box label.

貼方向舵貼紙後再安裝舵角片。



- 34. Install the rudder pushrod (dia. 2.2mm). Use the larger pushrod hole on clevis in this step.

使用粗型連桿及孔位較大之連桿頭於伺服機中立點時安裝擺臂及連桿。



- 35. Place the engine on the engine mount. It will be 5 3/8"(135mm) from the firewall to drive washer. Make marks on engine mount holes.

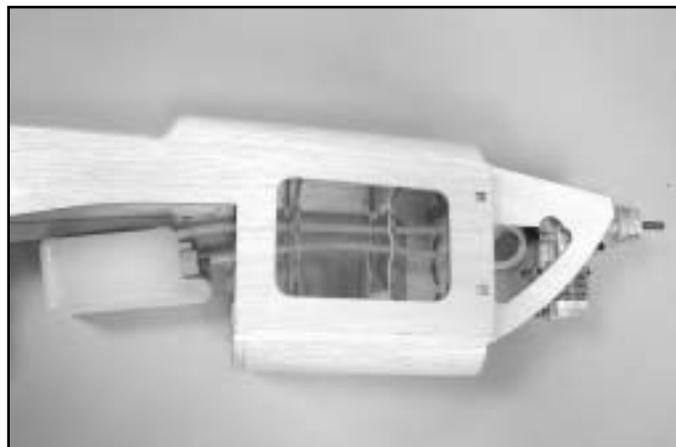
Drill 1/8" (3mm) engine mount holes then secure the engine with furnished 3x22mm machine screws, washer and nuts.

引擎裝配的位置為自防火牆算起(至引擎的螺旋槳驅動輪)135mm的位置。以3mm鑽頭鑽孔並以3x22mm、墊圈及螺帽固定。



- 36. Assemble the fuel tank as illustrated. Make sure the crank weight is free when tank is assembled.

油箱的裝配當中的輸油管長度必須能讓重錘延伸至底部，但也不能因過長影響到油箱重錘的運動。



- 37. Prepare a fuel tubing about 16"(45cm) in length(not included), thread two ends from front firewall through the fuselage. Connect to the fuel tank nipples.

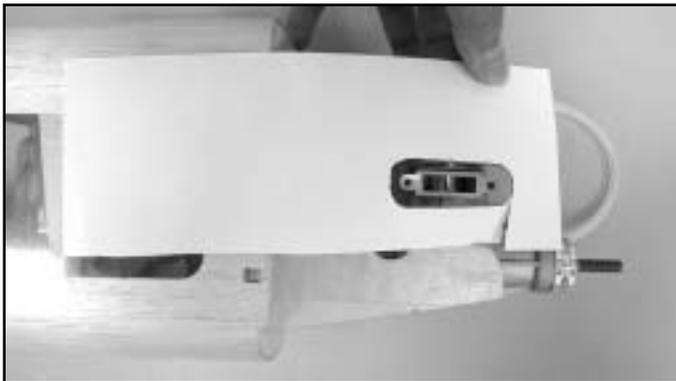
準備一條長約45公分油管將兩端分別從防火牆上兩個小孔穿入，上孔油管接油箱進氣孔另一端接出油孔。

ENGINE INSTALLATION



- 38. Insert the fuel tank slowly and carefully in place as shown. Pull the fuel tubing and note the tank orientation. Make sure the tubing is not bent.

將油箱慢慢推入到達定位注意不可太用力以防油箱固定隔板斷裂，油管往前拉不可有折曲。



- 39. Use a piece of paper to help you trim the cowl. Decide the muffler position and make marks on the paper. Cut away the marks you drew.

粘一張紙條在機身上做一樣板以協助您開引擎罩之孔位，首先定位出引擎排氣孔位並以剪刀剪出長溝孔。



- 40. Install the muffler in place as shown, make marks on paper which contacts the muffler.

裝置消音器於引擎上，依據消音器外型及引擎罩之曲線以麥克筆做出記號。



- 41. Cut away the marks you drew and clear the contact area as shown.

拉出紙條剪掉記號的部分，注意紙條還是粘在機身上。



- 42. Remove muffler then attach the cowl in place. Make sure the cowl is about 1/8"(3mm) after the drive washer at spinner area. Then use the paper as template to make marks on cowl.

套上引擎罩及機頭罩座，調整引擎罩與機頭罩座保留約2mm間隙，以麥克筆沿著樣板紙張被剪開的部位做記號。



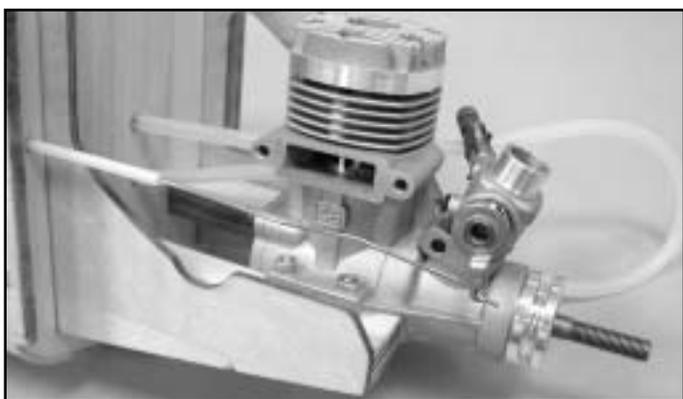
- 43. Remove the cowl and trim away the marked area. It might take time to trial fit and trim the cowl to get good fitness. You can take away the carburetor or needle valve for easy fitness.

取下引擎罩，割除記號部分並以銼刀修整。必要時多做幾次搭配修整動作。



- 44. Drill holes for needle valve, muffler bolt, mixture screw and Precision Fuel Valve (TTR1115) for easy fueling. A reamer is recommended (TTR1120) to drill holes.

以挖孔器 (No. 1120) 鑽出油針孔位, 消音器螺絲孔位及快速三通注油器 (No. 1115) 固定孔。



- 45. Insert the pushrod guide tube through the fuselage and glue it in place. Install the throttle pushrod. You might need to remove the throttle lever first then attach to Z-bend throttle pushrod end.

將套管穿過防火牆並突出防火牆約3公分。如圖示裝置油門拉桿。



- 46. Now connect all fuel lines properly, stick the decals before securing the cowl. Install spinner and propeller.

裝置引擎罩前先貼火焰貼紙於機身上並正確連接油管。安裝機頭罩及螺旋槳。



- 47. When satisfied, secure the cowl with four 3x8mm wood screw.

以3x8mm木螺絲固定引擎罩於機身上。



- 48. Locate the landing gear slot at bottom of fuselage. Cut away the covering and remove the landing gear retainer.

於機身下方切開腳架座包覆紙並取出腳架固定座。



- 49. Install the landing gear in place and glue the retainer with thick CA. Install the wheel and secure by collar with 3x3mm set screw.

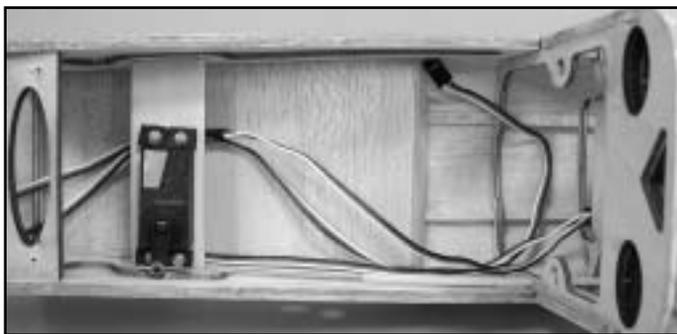
以AB膠將腳架及腳架座固定。裝置輪胎並以3x3mm無頭內六角螺絲固定輪檔。

CANOPY INSTALLATION



- 50. Trim the canopy along the molded line. Secure the canopy in place with furnished six 3x8mm wood screws.

以彎剪修整座艙並以3x8mm木螺絲固定座艙。



- 51. Install the throttle servo. Secure the EZ connector with two M2 washers and nut on the servo horn and adjust the throttle with radio on then secure the throttle pushrod with 3x3mm set screw.

安裝油門伺服機，將快速連桿調節器裝置到油門伺服機控制臂上，注意M2螺帽必須上防鬆膠，然後固定油門拉桿在適當位置上。

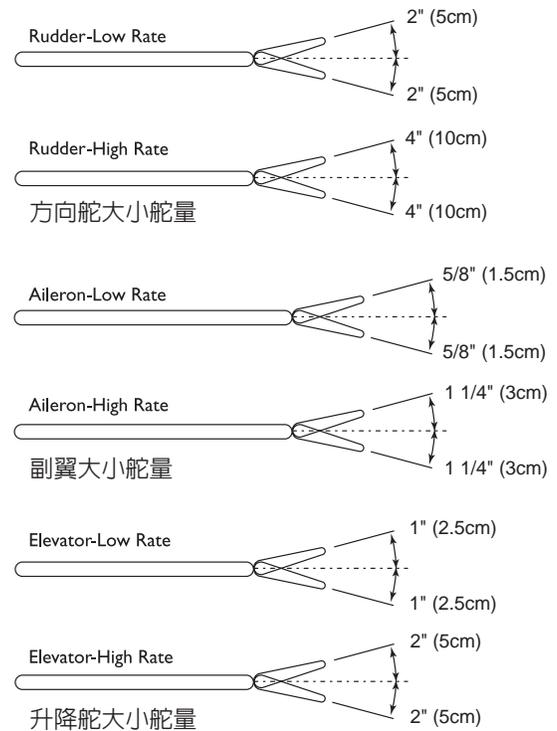


- 52. Install the switch and connect to receiver. Wrap the receiver and battery pack in foam padding. Route the RX antenna and drill a small hole on right side of fuselage. thread the antenna out of fuselage then tape it along the fuselage to tail.

安裝遙控器開關，連接各伺服機接頭於接收機上並以泡棉保護。電池位置於接收機下方，如重心位置與本說明書有所差異時、建議您實際依飛行狀況再調整電池位置。天線可從機身側板穿出。

Control Throws

These control throws are merely a starting point for your radio setup and can be tailored to fit your flying style.

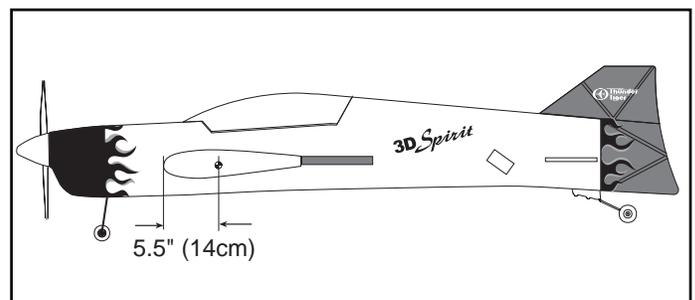


建議各舵面量

Center of Gravity

IMPORTANT- Do not attempt to fly your model before completing this very important section. A model that is not properly balanced will be unstable and could cause serious damage and/or injury. Adjust the battery location or add weight as needed to achieve level balance. Once you have everything positioned as necessary, wrap your battery pack in 1/4" or 1/2" thick foam for protection.

The balance point is about 5.5" (14mm) from the leading edge.



重心位置於主翼中央前緣算起約14公分處。

Locate A Good Flying Site

Generally, the best place to fly your model is at an AMA (Academy of Model Aeronautics) chartered club field. Your local hobby dealer can tell you if there is such a club in your area or write the AMA for information. It is also a good idea to join this organization before flying your model since they offer liability insurance that can protect you if your model causes damage or injury to others.

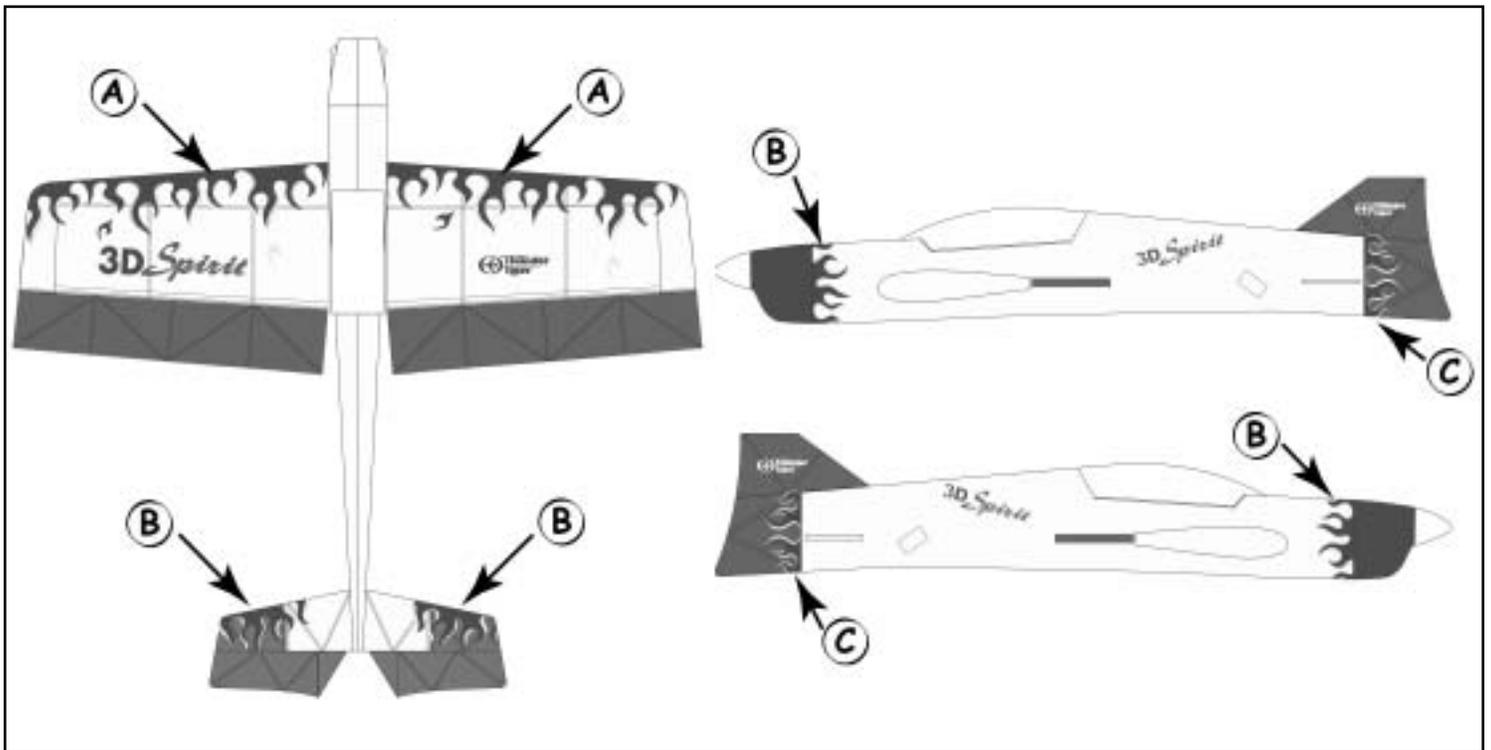
Academy of Model Aeronautics

5151 East Memorial DR
Muncie, IN 47302-9252

If there is not a chartered club field in your community, you will need to find a large area free of obstructions, and has a smooth grass or asphalt surface to be used as a runway. For safety's sake, it should be located well away from houses, buildings, schools, power lines and airports. If you will be flying within 6 miles of an airport, you should check with the airport manager before flying your model.

Congratulations

Now that you have completed the assembly of your 3D Spirit, we feel that you have a very capable and good looking sports plane. We hope that you will enjoy this model and get many hours of flying pleasure from its use. Thank you for purchasing this 3D Spirit from Thunder Tiger and we look forward to providing you with other great R/C products in the future.



Refer to the indicated drawing and box label to stick the decals.

貼上套件所附之火焰貼紙，請參考圖示及盒上彩圖。

3D Spirit Pre-Flight Cautions !

For satisfying 3D performance and safe sake please read the following guidelines before you fly your 3D Spirit.

- Do not install engine over .50 cu.in. as it is overpowerful for this plane. Normally a Thunder Tiger 46 could hover the 3D Spirit at its 70% output power.
- Recommend using 11x4.5 or 12x4 propeller, smaller pitch is preferred.
- Always set low rate as manual instructed for the first flight or taking off until you fine tune your plane.
- Since 3D plane is light weight structured and fantastic low/middle speed maneuverability, never intend to fly your 3D Spirit at full throttle or high speed
- Use care to check all control surfaces and linkage before each flight. Do not take chances to fly the plane if there is any problem.

Again, this plane is not designed for overpower nor flying at high speed. Such choices put your model at high risk for catastrophic failure and void any protections offered in its warranty.

飛行前注意事項：

- 請勿使用超過50級引擎，本機建議使用雷虎PRO-46，約7分速即可停懸。
- 建議使用11x4.5 或 12x4螺槳，螺距太大不適用本機。
- 請按照本說明書舵面設定調整您的愛機。於初次飛行或一般起飛請設定小動作量以確保飛行安全。
- 3D機為求重量減輕，機體結構較一般傳統飛機脆弱且飛機特性亦不適合高速或急彎。一般上空飛行請保持中低速，僅停懸時可加速至中高速。
- 於起飛前詳細檢視所有控制舵面如有鬆脫或虛位時請勿飛行以策安全。
- 再次提醒您，3D機之機體結構設計以輕量化為主不以高速飛行為考慮重點，所以如因飛行時引擎轉速太高而讓您愛機陷入高危險狀況時，本公司將不負責任何產品保證及肇事責任。



Staudacher 60 ARF

ACE4563

ACE4563 Staudacher 60

Wing Span:	65"
Wing Area:	780in ²
Length:	55.2"
Weight:	8.5-9.5 lbs.
Engine:	.60 2 cycle
	.90-1.20 4 cycle
Radio:	4 channel, 5 servos



Combine the scale appearance and striking color scheme of Diane Hakala's legendary Staudacher S-300 with the late Fred Reese's genius for light-weight yet sturdy construction, and you have an Almost-Ready-To-Fly airplane that will turn heads both on the ground and in the air. Now you can enjoy the experience of scale modeling without investing the hundreds of hours of time necessary to achieve satisfactory results.

Just because this is a scale airplane, don't think it is a "lead-sled". It is an extremely pleasurable airplane to fly with characteristics akin to a comfortable sport airplane rather than a fickle scale beauty. Solid tracking, instant acceleration, nimble aerobatics, and predictable landings make this airplane fly as good as it looks.

Completely built from balsa/ply and covered with UltraCote, this Almost-Ready-To-Fly airplane is ready to load up for the field in only a few short hours.

- Impressive scale appearance with sport performance
- Completely built from balsa/ply and covered with UltraCote®
- Quality epoxy/fiberglass cowl is flawlessly painted



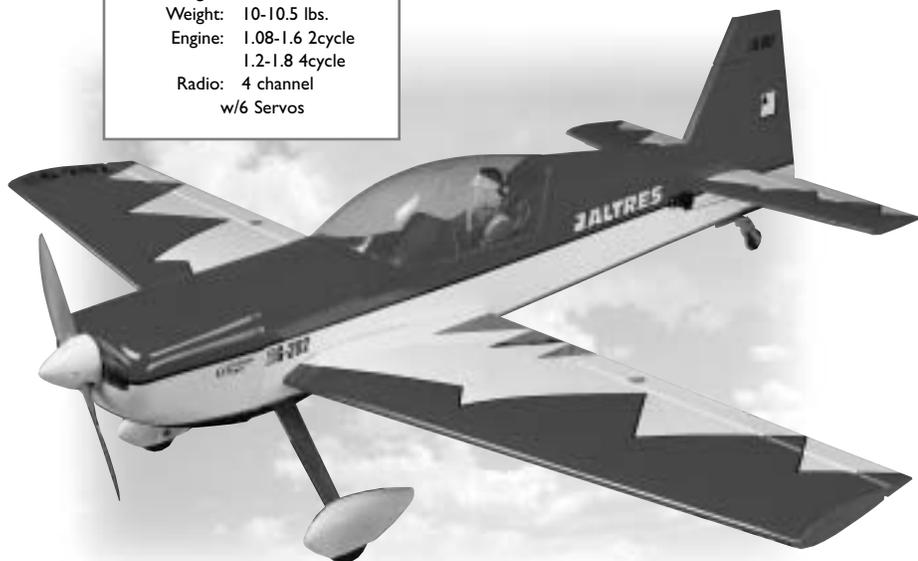
GILES G-202 140

No.4550

No.4550 G-202 140

Wing Span:	70"
Wing Area:	1022in ²
Length:	70"
Weight:	10-10.5 lbs.
Engine:	1.08-1.6 2cycle
	1.2-1.8 4cycle
Radio:	4 channel
	w/6 Servos

ARF



Wild blue yonder takes on a whole new meaning when you are pushing either of these ARF Giles 202 through the sky. Crisp aerobatics are what these replicas of the world famous airplane is all about.

This Almost-Ready-To-Fly airplanes is meticulously built from balsa/ply and covered with UltraCote. A few hours of final assembly plus radio and engine installation and you are ready to head for the tarmac and wave to the crowd after a successful airshow performance.

- Skilled craftsmen completely build this model from top quality balsa and plywood.
- Covered in Ultracote, the G-202 color scheme is bright, tough, and repairable.
- A flawlessly painted fiberglass cowl, blow molded wheel pants, and bottom wing cover are furnished.
- Quality accessories include pilot figure and instrument panel. The 140 includes scale tail-wheel assembly, flexible engine mount, and heavy duty linkage.



CLOUD DANCER ARF

ACE4559



ACE4559 Cloud Dancer 60

Wing Span:	72"
Wing Area:	840in ²
Length:	57"
Weight:	6-7 lbs.
Engine:	.61 2 cycle .91 4 cycle
Radio:	4~5 channel

If you are looking for a perfect sport airplane, you can't go wrong with a Cloud Dancer 60. Designed by the late Fred Reese, the Cloud Dancer 60 incorporates a strong lightweight frame that provides instant acceleration and nimble responsiveness for very impressive and truly enjoyable performance.

Cloud Dancer sports a double-tapered wing, a unique diamond-shaped tail group, wide-stance landing gear and wheel pants, and sleek fuselage with bubble canopy.

All of which results in a truly handsome airplane you can be proud of. Install the optional retractable landing gear, and watch the Cloud Dancer transform into the next level of awesome performance and good looks.

The Cloud Dancer 60 comes Almost-Ready-To-Fly, completely built from balsa/ply and skillfully covered with UltraCote®.

- Skillfully built from balsa/ply and covered with UltraCote®.
- Sleek lines and tapered wing provides clean, smooth performance
- Set-up for fixed gear or optional retracts



PIPER J-3 CUB

No.4532 Piper J-3 CUB

Wingspan:	82.7" (2100mm)
Length:	48" (1215mm)
Wing area:	850 in ² (55dm ²)
Weight:	6.5-7.5lbs (3-3.5kg)
Engine:	.46-.61 2 Cycle .50-.91 4 Cycle
Radio:	4 Channel (5 Servos)



One of the most recognized names in aviation history is the Piper J-3 Cub. A child of the Depression, Mr. Piper's Cub began production in the early '30s, evolving into the 65 HP J-3 version in 1939. Proliferating in the years before and during WWII, the Cub has introduced more young men to the joys of flight than any other airplane ever.

Now you can own a part of aviation's history and enjoy the relaxing and realistic flight characteristics of the venerable J-3 Cub. Thunder Tiger's ARF J-3 has been meticulously built from the finest material and covered with UltraCote in the classic Cub Yellow color scheme. Scale details such as wing struts, landing gear bungees, Cub wheels, accurately contoured fuselage, and dummy engine cylinder heads create a head-turning beauty. Only a few hours of enjoyable assembly and you are ready to step back in time and be a part of history by flying the classic J-3 Cub.

- Almost-Ready-To-Fly scale reproduction of a timeless classic.
- Meticulously built by factory craftsmen and covered with UltraCote .
- Scale details include wing struts, bungees, Cub wheels, and dummy engine cylinders.
- After a few hours of enjoyable assembly, you are ready to fly.
- Authentic Piper J-3 Cub color scheme.
- Meets IMAA requirements



THUNDER TIGER CORP. www.thundertiger.com