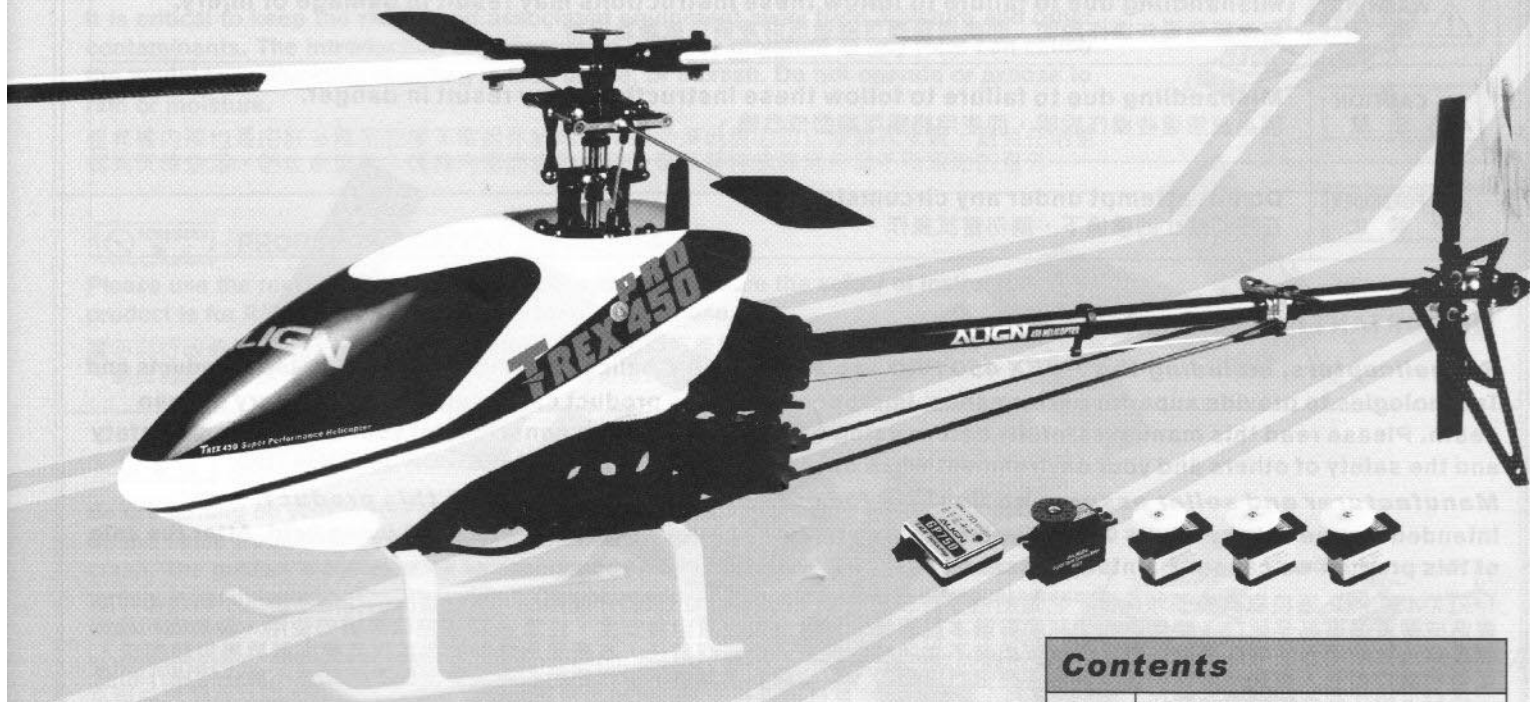


## Super Performance HELICOPTER **T-REX 450 PRO Super Combo**

# INSTRUCTION MANUAL 使用說明書



### Contents

1	INTRODUCTION 前言
1~2	SAFETY NOTES 安全注意事項
3	EQUIPMENT REQUIRED FOR ASSEMBLY 自備設備
3	PACKAGE ILLUSTRATION 包裝說明
4	SAFETY CHECK BEFORE FLYING 飛行前安全檢查重要事項
5~16	ASSEMBLY SECTION 組裝說明
17	EQUIPMENT ILLUSTRATION 設備建議配置圖示
18	BRUSHLESS SPEED CONTROLLER INSTALLATION SUGGESTION ESC無刷調速器安裝建議位置
18	CANOPY ASSEMBLY 機頭罩安裝
18	SERVO SETTING AND ADJUSTMENT 伺服器設定調整
18	ADJUSTMENTS FOR GYRO AND TAIL NEUTRAL SETTING 陀螺儀與尾翼中立點調整
20	PITCH AND THROTTLE SETTING 主旋翼螺距與油門設定
21	POWER COLLOCATION REFERENCE 原裝動力數據參考表
21~24	RCE-BL35X BRUSHLESS SPEED CONTROLLER INSTRUCTION MANUAL 無刷調速器使用說明
25~27	GP750 HEAD LOCK GYRO SET USER MANUAL GP750鎖定式陀螺儀組使用說明
27~30	FLIGHT ADJUSTMENT AND SETTING 飛行動作調整與設定
31~38	PART NAMES AND OPTIONAL PART LIST 各部件名稱與選購備品明細





Thank you for buying ALIGN products. The **T-REX 450PRO** is the latest technology in Rotary RC models. Please read this manual carefully before assembling and flying the new **T-REX 450PRO** helicopter. We recommend that you keep this manual for future reference regarding tuning and maintenance.

承蒙閣下選用亞拓遙控世界系列產品，謹表謝意。進入遙控世界之前必須告訴您許多相關的知識與注意事項，以確保您能夠在學習的過程中較得心應手。在開始操作之前，請務必詳閱本說明書，相信一定能夠給您帶來相當大的幫助，也請您妥善保管這本說明書，以作為日後參考。

### 3.EQUIPMENT REQUIRED FOR ASSEMBLY 自備設備

ALIGN

#### RADIO TRANSMITTER AND ELECTRONIC EQUIPMENT REQUIRED FOR ASSEMBLY 自備遙控及電子設備

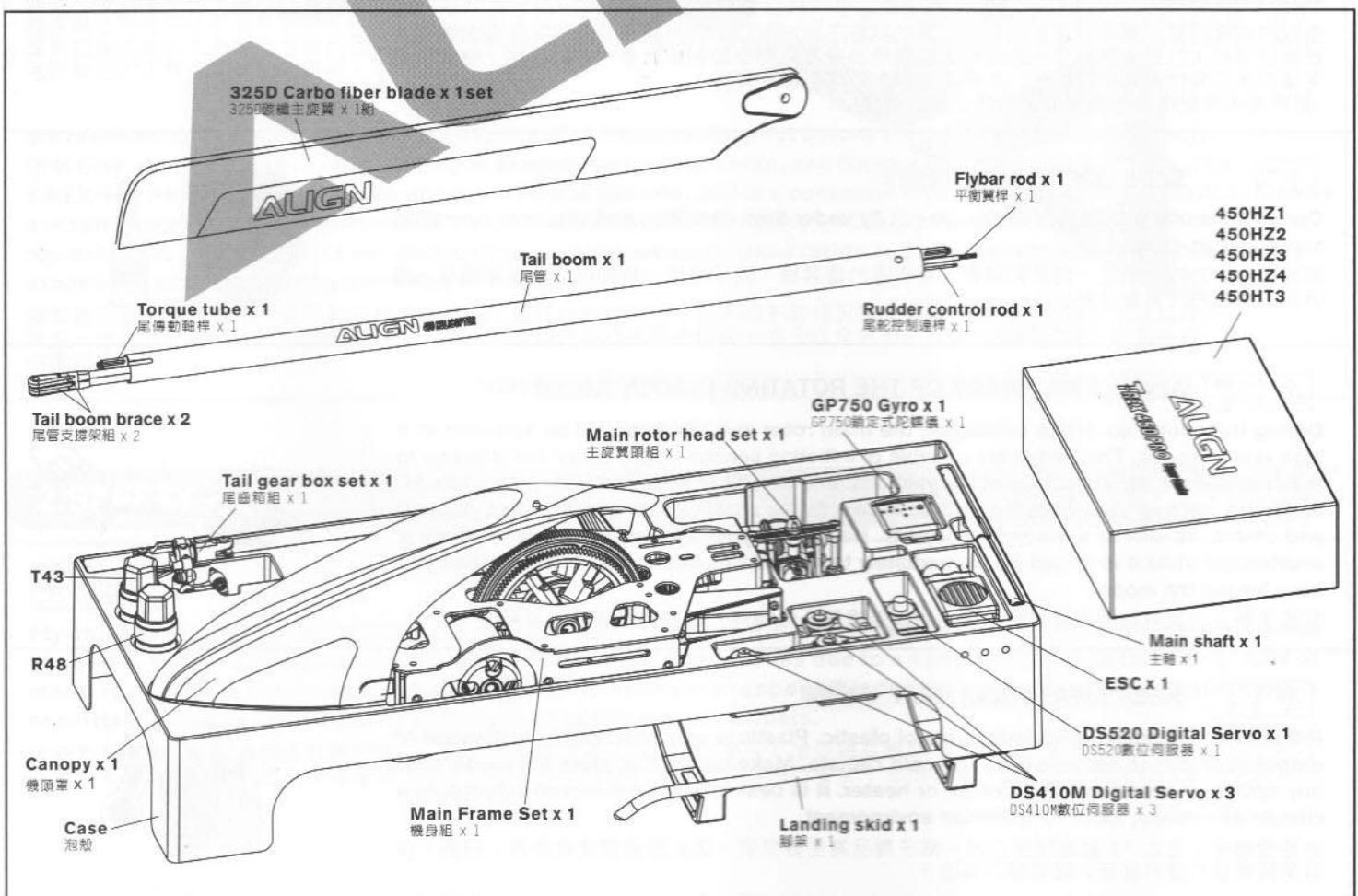
 <p><b>Transmitter</b> (6-channel or more, helicopter system) 發射機 (六動以上直昇機模式遙控器)</p>	 <p><b>Receiver(6-channel or more)</b> 接收機 (六動以上)</p>
 <p><b>22.2V 6S 2100~2500mAh Li-Po Battery x 1pc</b> 22.2V 6S 2100-2500mAh Li-Po電池 x 1</p>	 <p><b>Dial Pitch Gauge x 1pc</b> 旋轉式螺距規 x 1</p>

#### ADDITIONAL TOOLS REQUIRED FOR ASSEMBLY 自備工具

 <p><b>Scissors</b> 剪刀</p>	 <p><b>Cutter Knife</b> 刀子</p>	 <p><b>Diagonal Cutting Pliers</b> 斜口鉗</p>	 <p><b>Needle Nose Pliers</b> 尖嘴鉗</p>
 <p><b>Oil</b> 潤滑油</p>	 <p><b>CA</b> 瞬間膠</p>	 <p><b>Hexagon Screw Driver</b> 六角螺絲起子 2.5mm/2mm/1.5mm/1.3mm</p>	 <p><b>Philips Screw Driver</b> 十字螺絲起子 PH1(φ3.0mm)</p>

### 4.PACKAGE ILLUSTRATION 包裝說明

ALIGN



**CAREFULLY INSPECT BEFORE REAL FLIGHT** 實機飛行前請嚴格執行飛行前檢查義務

- ☆ **Before flying, please check to make sure no one else is operating on the same frequency for the safety.**
- ☆ **Before flight, please check if the batteries of transmitter and receiver are enough for the flight.**
- ☆ **Before turn on the transmitter, please check if the throttle stick is in the lowest position. IDLE switch is OFF.**
- ☆ **When turn off the unit, please follow the power on/off procedure. Power ON- Please turn on the transmitter first, and then turn on receiver. Power OFF- Please turn off the receiver first and then turn off the transmitter. Improper procedure may cause out of control, so please to have this correct habit.**
- ☆ **Before operation, check every movement is smooth and directions are correct. Carefully inspect servos for interference and broken gear.**
- ☆ **Check for missing or loose screws and nuts. See if there is any cracked and incomplete assembly of parts. Carefully check main rotor blades and rotor holders. Broken and premature failures of parts possibly cause resulting in a dangerous situation.**
- ☆ **Check all ball links to avoid excess play and replace as needed. Failure to do so will result in poor flight stability.**
- ☆ **Check the battery and power plug are fastened. Vibration and violent flight may cause the plug loose and result out of control.**

- ★ 每次飛行前應先確認所使用的頻率是否會干擾他人，以確保你自身與他人的安全。
- ★ 每次飛行前確定您發射機與接收機電池的電量是在足夠飛行的狀態。
- ★ 開機前確認油門搖桿是否位於最低點，熄火降落開關，定速開關(IDLE)是否於關閉位置。
- ★ 關機時必須遵守電源開關機的程序，開機時應先開啓發射機後，再開啓接收機電源；關機時應先關閉接收機後，再關閉發射機電源。不正確的開關程序可能會造成失控的現象，影響自身與他人的安全，請養成正確的習慣。
- ★ 開機請先確定直昇機各個動作是否順暢，及方向是否正確，並檢查伺服器的動作是否有干涉或崩齒的情形，使用故障的伺服器將導致不可預期的危險。
- ★ 飛行前確認沒有缺少或鬆脫的螺絲與螺帽，確認沒有組裝不完整或損毀的零件，仔細檢查主旋翼是否有損壞，特別是接近主旋翼夾座的部位。損壞或組裝不完整的零件不僅影響飛行，更會造成不可預期的危險。注意對損耗、有裂痕零件更新及定期保養檢查的重要性。
- ★ 檢查所有的連桿頭是否有鬆脫的情形，過鬆的連桿頭應先更新，否則將造成直昇機無法操控的危險。
- ★ 確認電池及電源接頭是否固定牢靠，飛行中的震動或激烈的飛行，可能造成電源接頭鬆脫而造成失控的危險。

**Standard Equipment 標準配備**

 <b>450HC</b>	 <b>450HH1</b>	 <b>450HH2</b>	 <b>450HB1</b>	 <b>450HB2</b>
 <b>450HT1</b>	 <b>450HT2</b>	 <b>450HG1</b>	 <b>450HZ</b>	 <b>13T x 1 M3x3 Set Screw x 1 Motor Pinion Gear x 1pc 馬達主齒 x 1</b>
 <b>430SP Brushless motor x 1</b> 430SP無刷馬達 x 1	 <b>DS410M Digital Servo x 3</b> DS410M數位伺服器 x 3	 <b>GP750 Head Lock Gyro Combo</b> GP750鎖定式陀螺儀組 (GP750+DS520)		 <b>325D Carbon fiber blade x 1</b> 325D碳纖主旋翼 x 1

When you see the marks as below, please use glue or grease to ensure flying safety.

標有下符號之組裝步驟，請配合上膠或上油，以確保使用之可靠度。

- CA:** Apply CA Glue to fix.
- R48:** Apply Anaerobics Retainer to fix.
- T43:** Apply Thread Lock to fix.
- OIL:** Add Grease.



- CA: 使用瞬間膠固定
- R48: 使用金屬管狀固定缺氧膠固定
- T43: 使用螺絲膠
- OIL: 添加潤滑油

When assembling ball links, make sure the "A" character faces outside.

各項塑膠製連桿頭扣接時，A字請朝外。



Grease  
潤滑油



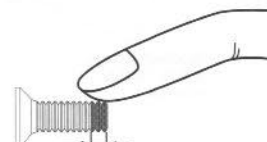
R48  
綠色



T43  
藍色



Self-furnished  
鋼潤膠(自備)



T43 Glue width: approx. 1mm  
T43上膠寬度約1mm

R48 metal tubular adhesive (eg. Bearings). T43 thread lock, apply a small amount on screws or metal parts and wipe surplus off. When disassembling, recommend to heat the metal joint about 15 Seconds. (NOTE: Keep plastic parts away from heat.)

R48 為強力金屬管狀(如軸承)接著劑，T43為螺絲膠，膠合螺絲或金屬內外徑請務必少量使用，必要時請用手去除多餘膠量，欲拆卸時可於金屬接合部位熱烤約15秒。(注意！塑膠件避免接近熱源)

450HH1

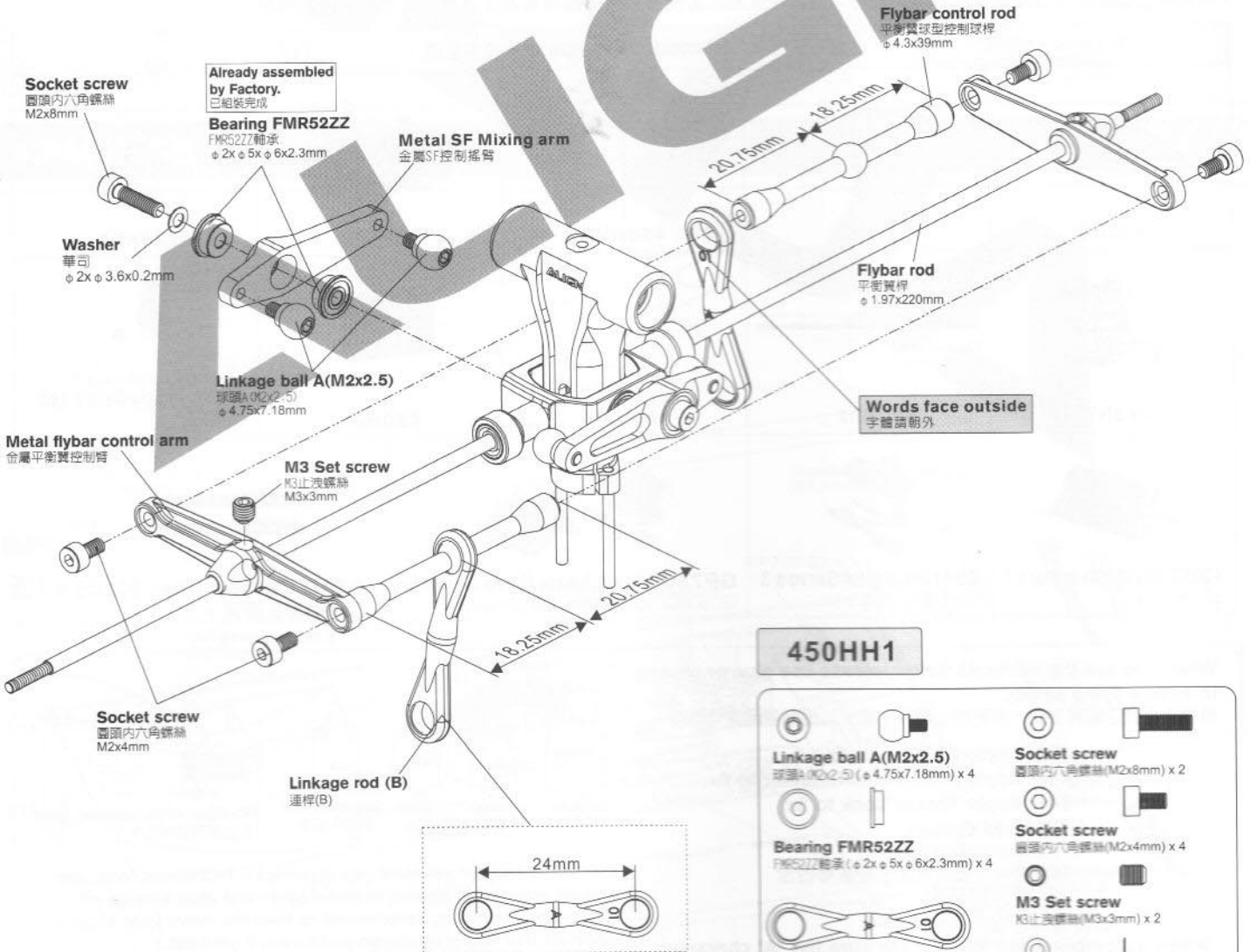
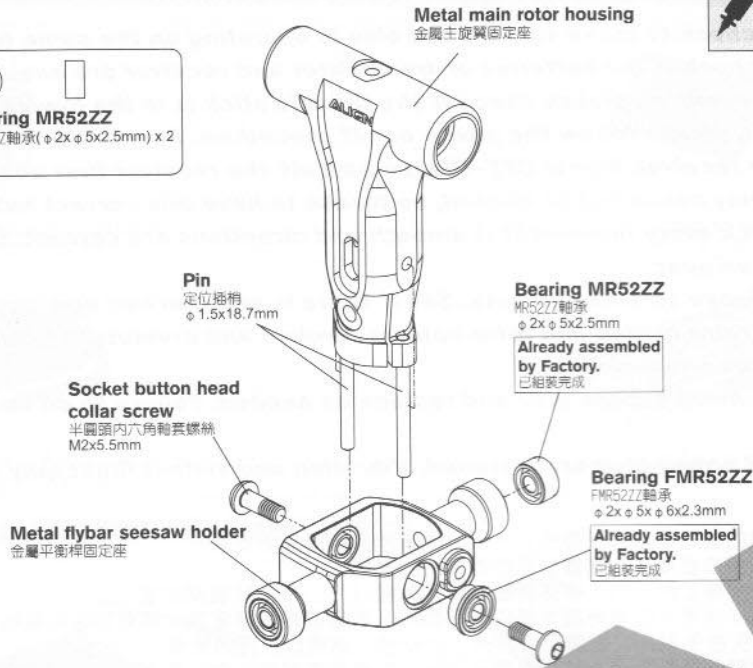
- Socket button head screw**  
半圓頭內六角軸套螺絲(M2x5.5mm) x 2
- Bearing MR52ZZ**  
MR52ZZ軸承(φ2xφ5x2.5mm) x 2
- Bearing FMR52ZZ**  
FMR52ZZ軸承(φ2xφ5xφ6x2.3mm) x 2

**CAUTION**  
注意

When tightening linkage balls and screws to plastic parts, please note to tighten them firmly and the best tightening torque is within 4~4.5 kgf.cm. Do not over tighten, or the plastic parts will break off or the screws strip.  
螺絲及球頭鎖入塑膠件時務必注意，適當扭力鎖緊即可，鎖入力道控制在4~4.5kgf.cm內為佳。若力道太大可能會造成塑膠件破裂或螺絲滑牙、斷裂。

For original manufactory package, if the product is already assembled by Factory, please check again if screws are firmly secured and applied with some glue.  
原廠零件出廠時，如果產品是組裝品，請再確認螺絲鎖緊並適量塗膠。

Apply a little amount of T43 thread lock when fixing a metal part.  
螺絲鎖於金屬件時請使用適量T43(螺絲膠)



450HH1

- Linkage ball A (M2x2.5)**  
球頭A (M2x2.5) (φ4.75x7.18mm) x 4
- Bearing FMR52ZZ**  
FMR52ZZ軸承(φ2xφ5xφ6x2.3mm) x 4
- Linkage rod (B)**  
連桿(B) x 2
- Socket screw**  
圓頭內六角螺絲(M2x8mm) x 2
- Socket screw**  
圓頭內六角螺絲(M2x4mm) x 4
- M3 Set screw**  
M3止洩螺絲(M3x3mm) x 2
- Washer**  
華司(φ2xφ3.6x0.2mm) x 2

## 450HH1

**Socket button head screw**  
半圓頭內六角螺絲(0#x4mm) x 4

**Socket screw**  
圓頭內六角螺絲(M2x8mm) x 2

**Bearing FMR52ZZ**  
FMR52ZZ軸承(φ2xφ5xφ6x2.3mm) x 4

**Bearing 681ZZ**  
681ZZ軸承(φ1.5xφ4x2mm) x 4

**Linkage ball A(M2x2.5)**  
球頭A(M2x2.5)(φ4.75x7.18mm) x 8

**Long linkage ball(M2x2.5)**  
導板長球頭(M2x2.5)(φ4.75x19.68mm) x 1

**Washer**  
華司(φ2xφ3.6x0.2mm) x 2

## 450HZ1

**Linkage rod (C)**  
連桿(C) φ1.3x32mm x 2

**Ball link**  
連桿頭 x 4

Apply a little amount of T43 thread lock when fixing a metal part.  
螺絲鎖附於金屬件請使用適量T43(螺絲膠)

## 450HB2

**Socket screw**  
圓頭內六角螺絲(M2x10mm) x 1

**M2 Nut**  
M2螺帽 x 1

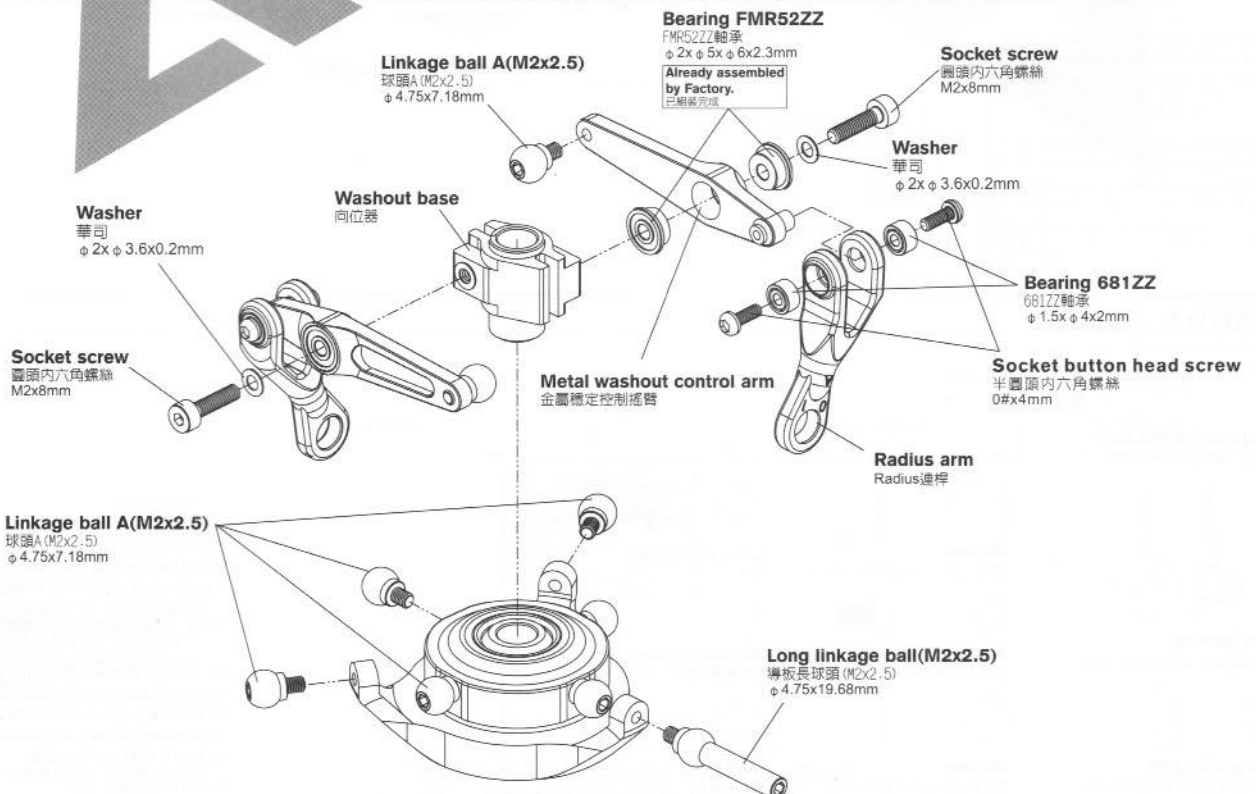
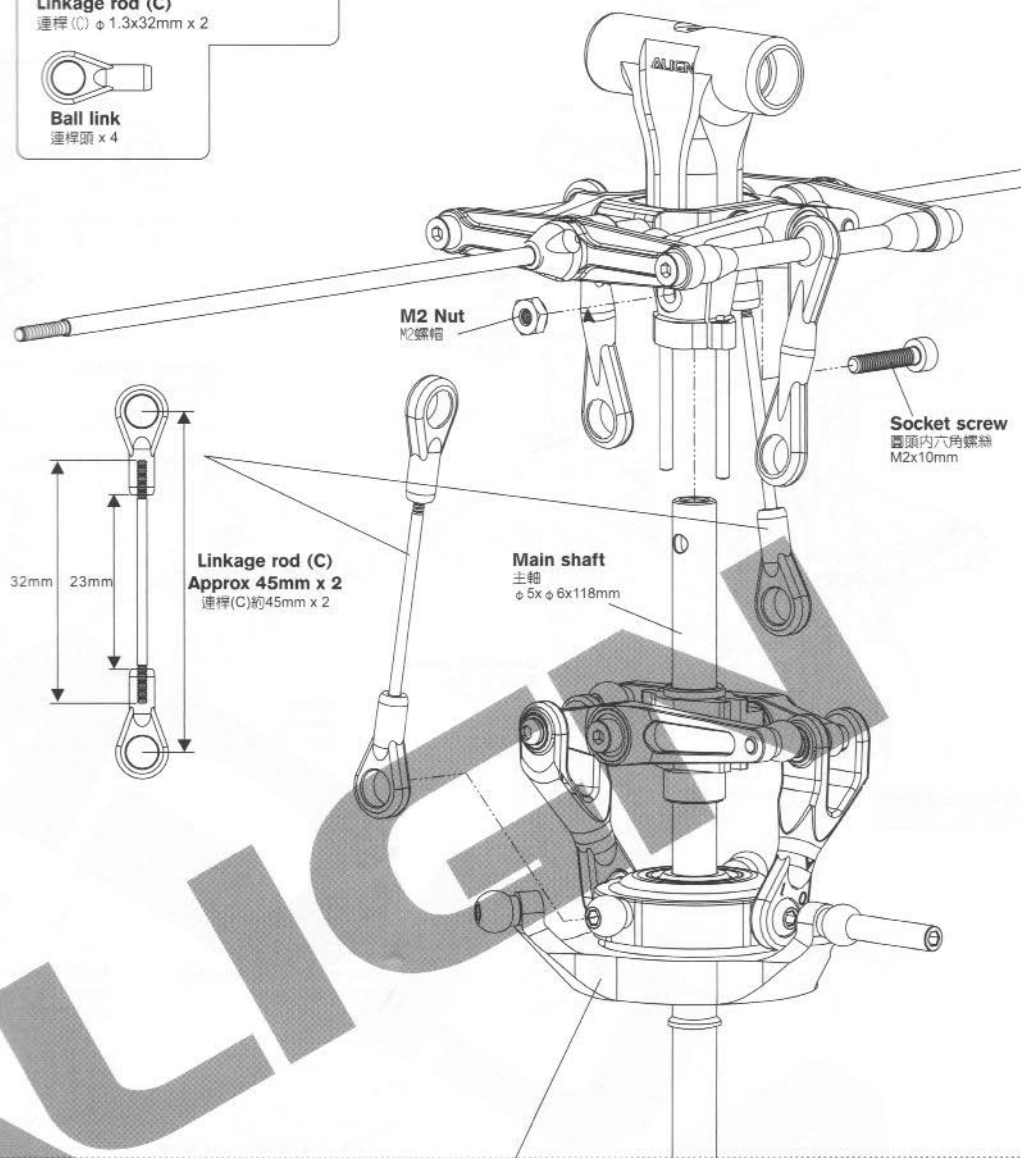
**CAUTION**  
注意

For original manufactory package, if the product is already assembled by Factory, please check again if screws are firmly secured and applied with some glue.

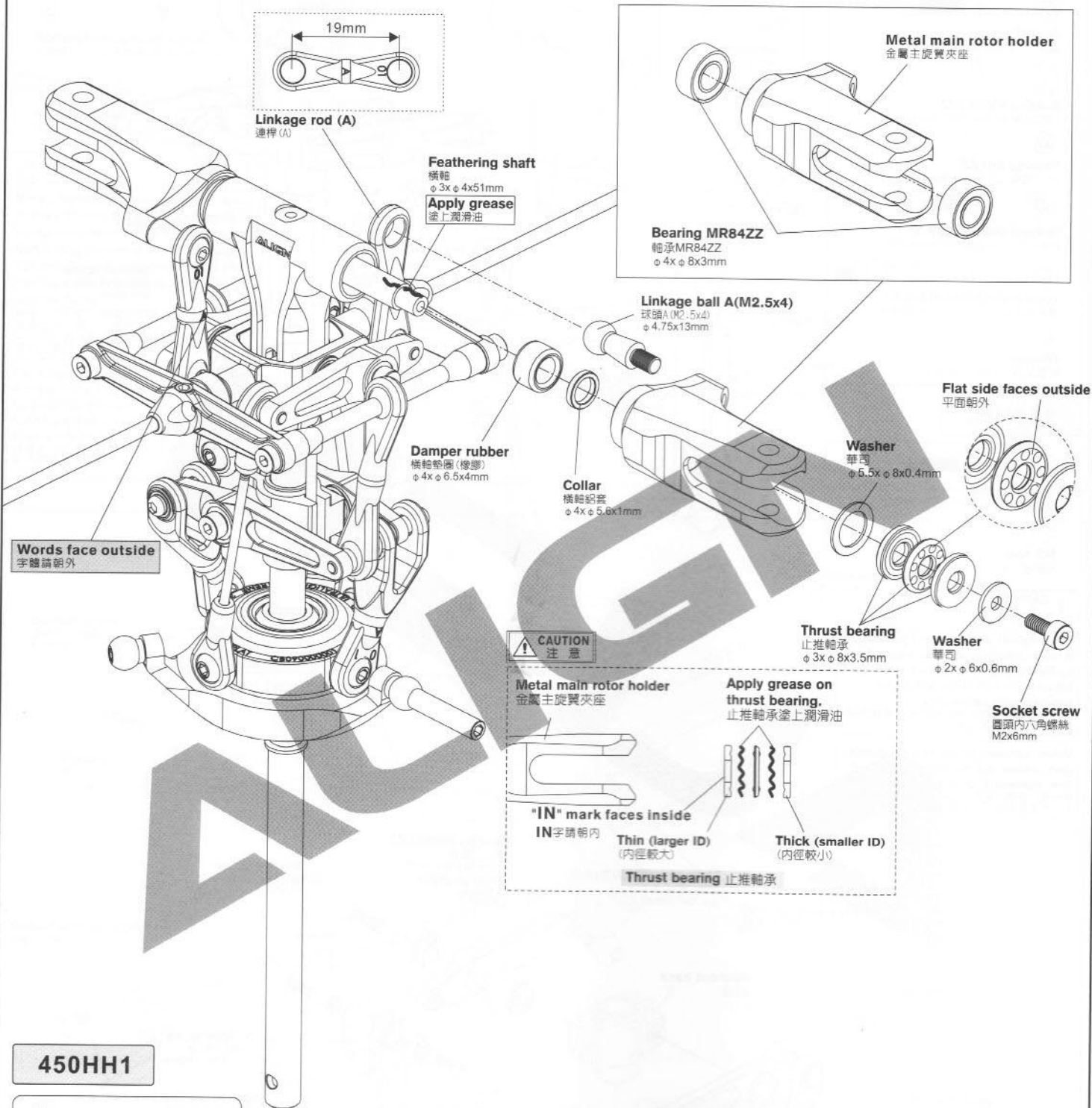
原廠零件出廠包裝如果是組裝品，請再確認各螺絲是否鎖緊上膠。

When tightening a screw to a plastic part, please tighten it firmly, but not over tightened, or they will strip.

螺絲鎖入塑膠件請務必注意，適當扭力鎖緊即可，而過緊的扭力可能會導致滑牙。



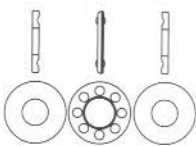
Apply a little amount of T43 thread lock when fixing a metal part.  
螺絲鎖附於金屬件請使用適量T43(螺絲膠)



450HH1



**Linkage ball A(M2.5x4)**  
球頭A(M2.5x4)(φ4.75x13mm) x 2



**Thrust bearing**  
止推軸承(φ3xφ8x3.5mm) x 2



**Bearing MR84ZZ**  
軸承MR84ZZ(φ4xφ8x3mm) x 4



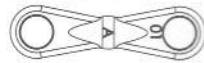
**Washer**  
華司(φ5.5xφ8x0.4mm) x 2



**Socket screw**  
圓頭內六角螺絲(M2x6mm) x 2



**Washer**  
華司(φ2xφ6x0.6mm) x 2



**Linkage rod (A)**  
連桿(A) x 2



**Damper rubber**  
橫軸墊圈(橡膠)(φ4xφ6.5x4mm) x 2



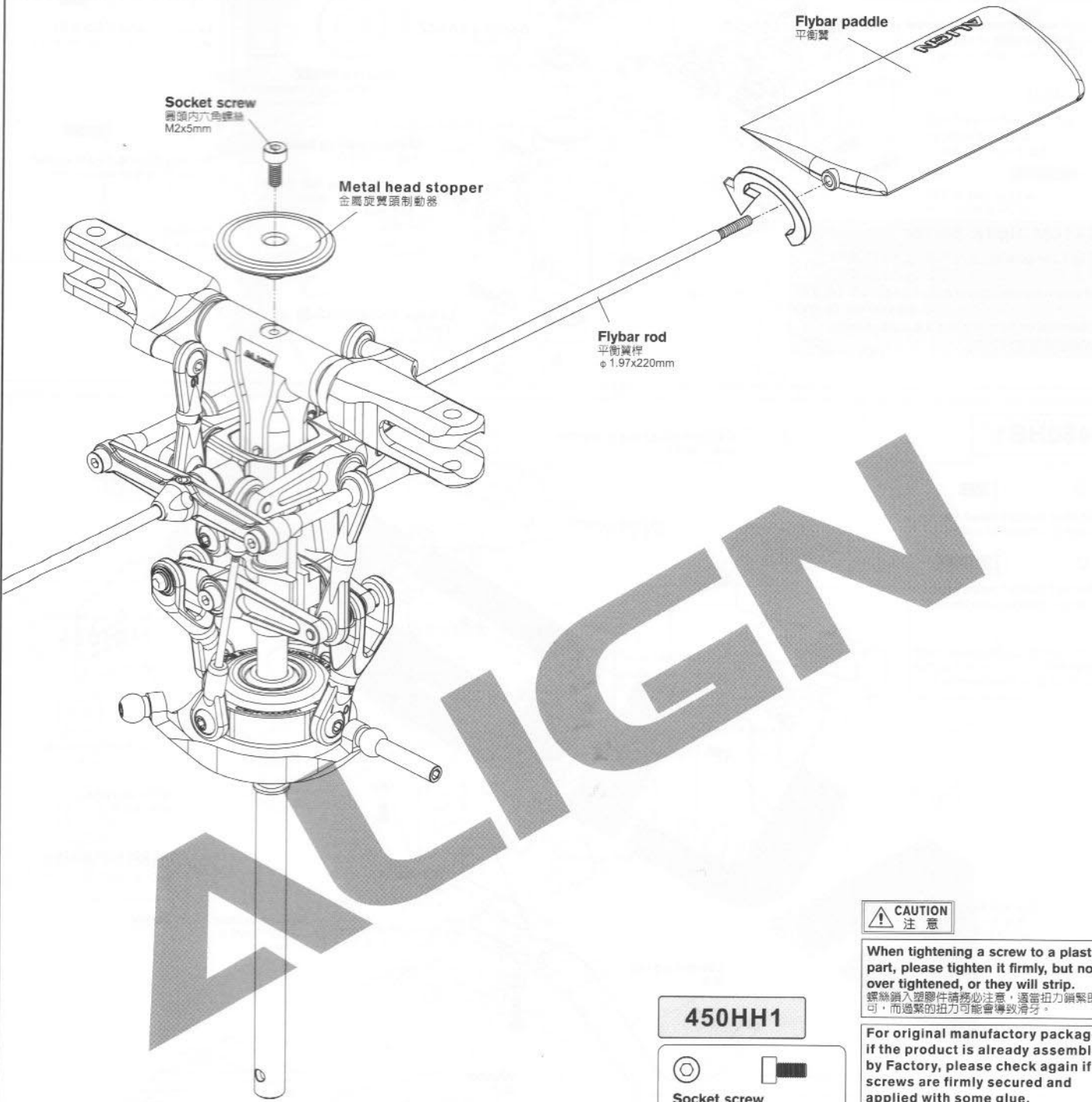
**Collar**  
橫軸鋁套(φ4xφ5.6x1mm) x 2

**CAUTION**  
注意

When tightening a screw to a plastic part, please tighten it firmly, but not over tightened, or they will strip.  
螺絲鎖入塑膠件請務必注意，適當扭力鎖緊即可，而過緊的扭力可能會導致滑牙。

For original manufactory package, if the product is already assembled by Factory, please check again if screws are firmly secured and applied with some glue.  
原廠零件出廠包裝如果是組裝品，請再確認各螺絲是否鎖緊上膠。

Apply a little amount of T43 thread lock when fixing a metal part.  
 螺絲鎖附於金屬件時使用適量T43 螺絲膠



ALIGN

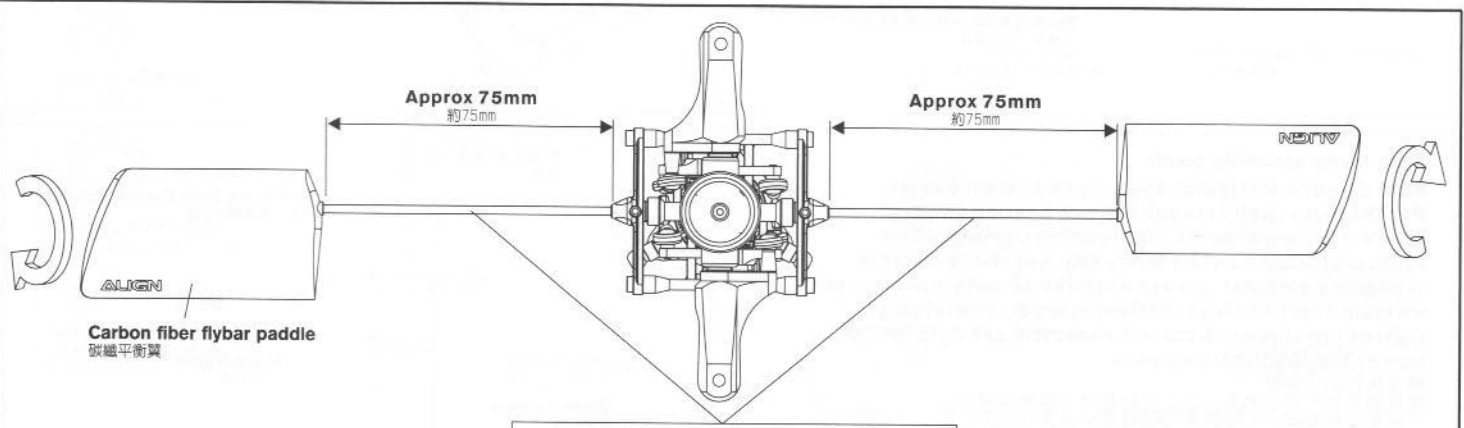
**CAUTION**  
 注意

When tightening a screw to a plastic part, please tighten it firmly, but not over tightened, or they will strip.  
 螺絲鎖入塑膠件時務必注意，適當扭力鎖緊即可，而過緊的扭力可能會導致滑牙。

**450HH1**

Socket screw  
 圓頭內六角螺絲(M2x5mm) x 1

For original manufactory package, if the product is already assembled by Factory, please check again if screws are firmly secured and applied with some glue.  
 原廠零件出廠包裝如果是組裝品，請再確認各螺絲是否鎖緊上膠。



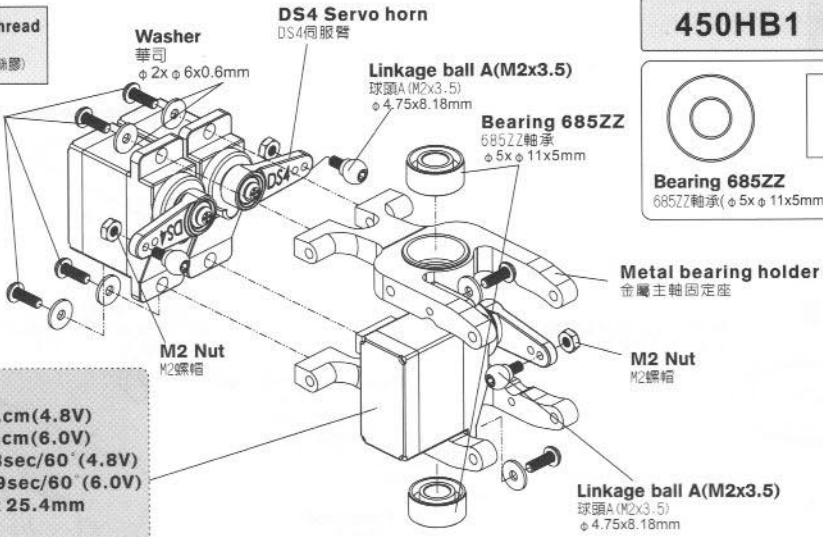
Make sure both sides are equal in length.  
 請保持平衡桿兩邊長度相等。

Apply a little amount of T43 thread lock when fixing a metal part.  
螺絲鎖附於金屬件時使用適量T43(螺絲膠)

Socket button head screw  
半圓頭內六角螺絲  
M2x6mm

**DS410M Digital Servo:**

1. Stall torque/輸出扭力: 1.8kg.cm(4.8V)  
2.2kg.cm(6.0V)
2. Motion speed/動作速度: 0.13sec/60°(4.8V)  
0.09sec/60°(6.0V)
3. Dimension/尺寸: 22.8 x 12 x 25.4mm
4. Weight/重量: 13.3g



**450HB1**

Bearing 685ZZ  
685ZZ軸承(φ5xφ11x5mm) x 2

**450HZ2**

Linkage ball A (M2x3.5)  
球頭A (M2x3.5) (φ4.75x8.18mm) x 3

M2 Nut  
M2螺帽 x 3

Socket button head screw  
半圓頭內六角螺絲(M2x6mm) x 6

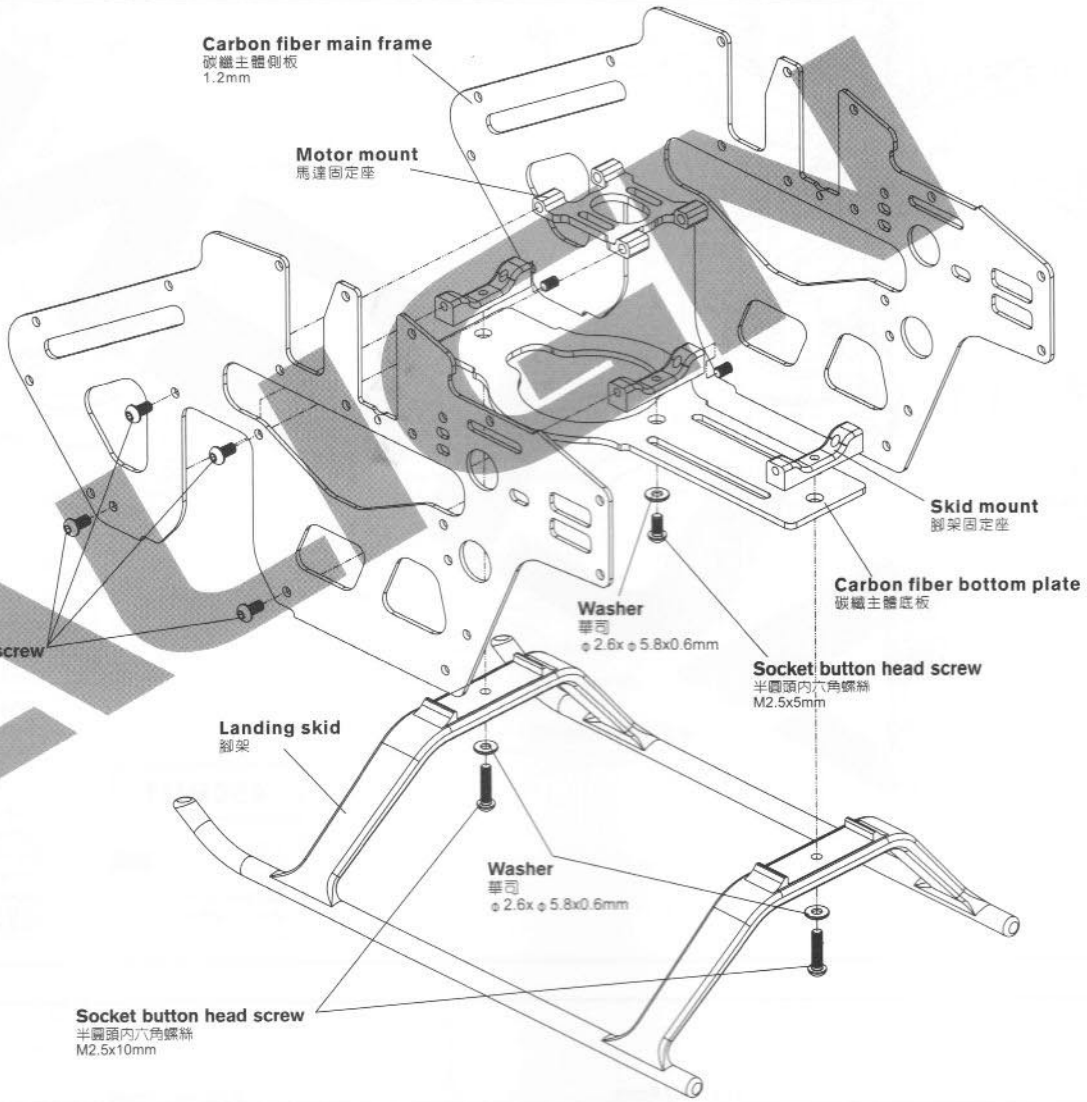
Washer  
華司(φ2xφ6x0.6mm) x 6

**450HB1**

Socket button head screw  
半圓頭內六角螺絲(M2.5x5mm) x 9

Socket button head screw  
半圓頭內六角螺絲(M2.5x10mm) x 2

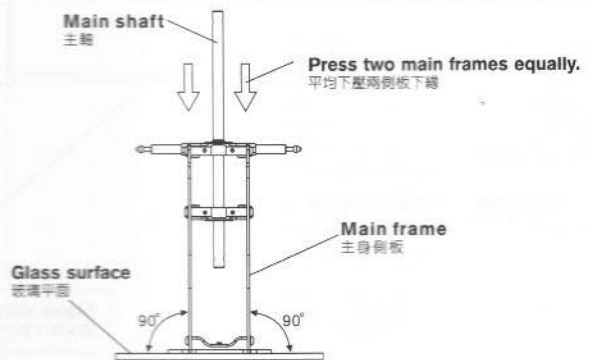
Washer  
華司(φ2.6xφ5.8x0.6mm) x 3



**Main frame assembly point:**

First do not fully tighten the screws of main frames. Put the main shaft through the two bearings and check if the movements (up/down) are smooth. The bottom bracket must be firmly touched the level table top (glass surface); please keep the smooth movements on main shaft and level bottom bracket, then slowly tighten the screws. A correct assembly can help for the power and flight performance.

機身側板組立重點:  
側板螺絲先不完全鎖緊, 放入主軸貫穿二顆軸承確認上下移動必需滑順, 主體底板必須與水平桌面(玻璃平面)踏實緊貼; 請保持主軸滑順與底板平行桌面後慢慢鎖緊螺絲。正確側板的組裝對動力與飛行性能有顯著幫助。

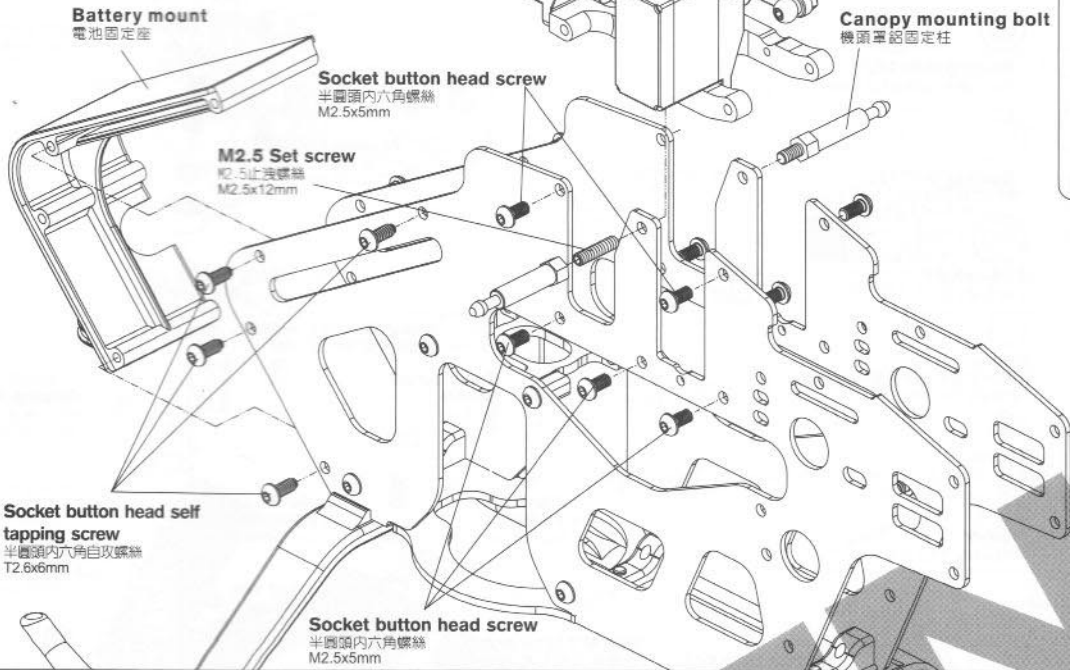




Apply a little amount of T43 thread lock when fixing a metal part.  
螺絲鎖附於金屬件請使用適量T43螺絲膠。

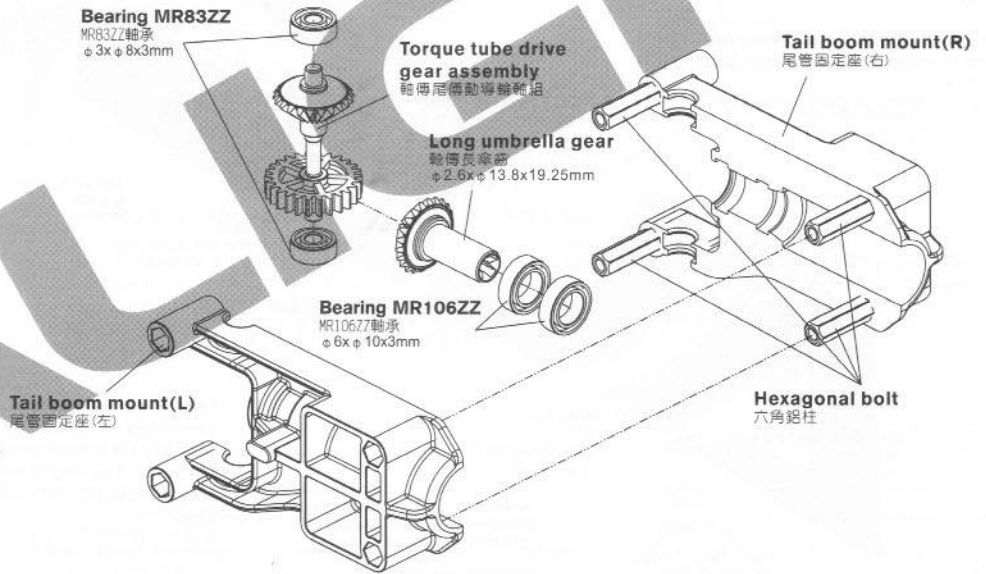
### 450HB1

-  **Socket button head screw**  
半圓頭內六角螺絲(M2.5x5mm) x 10
-  **Socket button head self tapping screw**  
半圓頭內六角自攻螺絲(T2.6x6mm) x 8
-  **M2.5 Set screw**  
M2.5止洩螺絲(M2.5x12mm) x 2



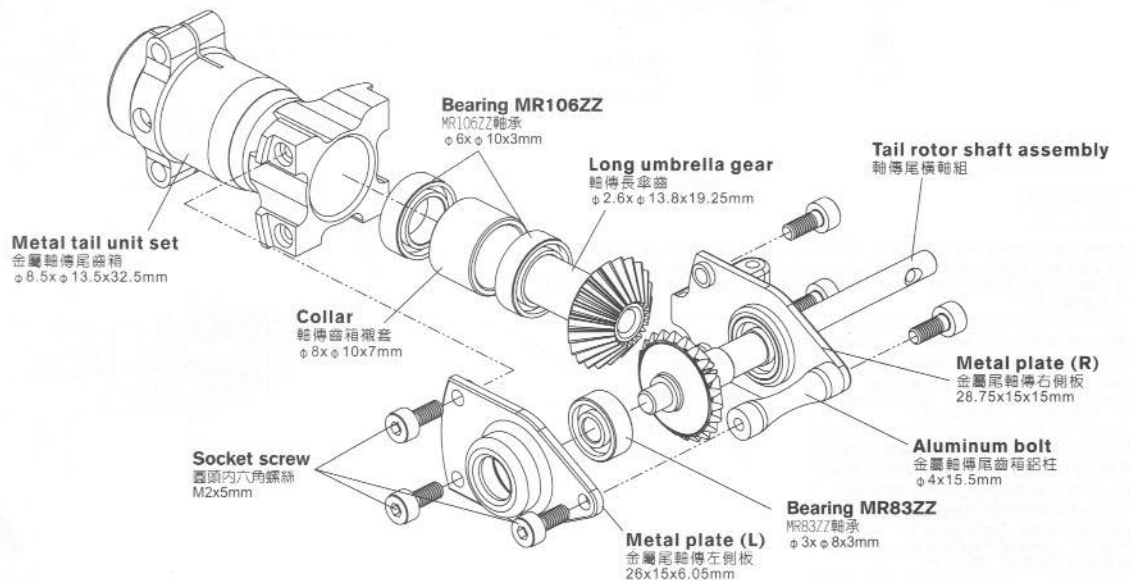
### 450HB1

-  **Bearing MR83ZZ**  
MR83ZZ軸承(φ3xφ8x3mm) x 2
-  **Bearing MR106ZZ**  
MR106ZZ軸承(φ6xφ10x3mm) x 2



### 450HT1

-  **Bearing MR83ZZ**  
MR83ZZ軸承(φ3xφ8x3mm) x 2
-  **Bearing MR106ZZ**  
MR106ZZ軸承(φ6xφ10x3mm) x 2
-  **Socket screw**  
圓頭內六角螺絲(M2x5mm) x 6



# 450HT1

-  **Collar screw**  
軸套螺絲(M2x6mm) x 2
-  **Collar screw**  
軸套螺絲(M2x8mm) x 2
-  **Collar screw**  
軸套螺絲(M2x9mm) x 1
-  **Socket screw**  
圓頭內六角螺絲(M2x8mm) x 2
-  **M3 Set screw**  
M3止洩螺絲(M3x3mm) x 1
-  **Collar A**  
尾連桿頭鋼套A (φ2xφ3x4mm) x 2
-  **Collar B**  
尾連桿頭鋼套B (φ2xφ3x3mm) x 2
-  **Linkage ball A(M2x3.5)**  
球頭A(M2x3.5) (φ4.75x8.18mm) x 1
-  **Linkage ball E(M2x2.5)**  
球頭E(M2x2.5) (φ4.75x6.3mm) x 1

-  **Bearing MR52ZZ**  
MR52ZZ軸承(φ2xφ5x2.5mm) x 4
-  **Bearing MR63ZZ**  
MR63ZZ軸承(φ3xφ6x2.5mm) x 2
-  **Bearing MR74ZZ**  
MR74ZZ軸承(φ4xφ7x2.5mm) x 2
-  **Slide shaft**  
尾軸滑套 x 1
-  **Collar**  
尾控制組軸承座鋁襯墊 (φ4xφ5.1x0.3mm) x 1
-  **Washer**  
華司(φ2xφ3.6x0.5mm) x 2
-  **Washer**  
華司(φ2xφ3.6x0.2mm) x 3

**Socket screw**  
圓頭內六角螺絲  
M2x8mm

**Washer**  
華司  
φ2xφ3.6x0.2mm

**Bearing MR52ZZ**  
MR52ZZ軸承  
φ2xφ5x2.5mm

**Metal Tail rotor holder**  
金屬尾旋翼夾座

**Bearing MR63ZZ**  
MR63ZZ軸承  
φ3xφ6x2.5mm

**Collar screw**  
軸套螺絲  
M2x8mm

**Tail rotor hub**  
尾旋翼T型座  
φ8x18.2mm

**Collar B**  
尾連桿頭鋼套B  
φ2xφ3x2.5mm

**Collar A**  
尾連桿頭鋼套A  
φ2xφ3x4mm

**Control link**  
尾控制連桿

**M3 Set screw**  
M3止洩螺絲  
M3x3mm

**Bearing MR74ZZ**  
MR74ZZ軸承  
φ4xφ7x2.5mm

**Metal T type arm**  
金屬尾T型控制臂

**Bearing holder**  
尾翼控制組軸承座

**Slide shaft**  
尾軸滑套

**Collar screw**  
軸套螺絲  
M2x8mm

**Collar**  
尾控制組軸承座鋁襯墊  
φ4xφ5.1x0.3mm

**Linkage ball E(M2x2.5)**  
球頭E(M2x2.5)  
φ4.75x6.3mm

**Bearing MR52ZZ**  
MR52ZZ軸承  
φ2xφ5x2.5mm

**Washer**  
華司  
φ2xφ3.6x0.5mm

**Already assembled by factory, please note to check again.**  
已組裝完成，請務必自行再確認。

**Tail rotor control arm**  
尾旋翼控制臂

**Washer**  
華司  
φ2xφ3.6x0.2mm

**Linkage ball A(M2x3.5)**  
球頭A(M2x3.5)  
φ4.75x8.18mm

**Collar screw**  
軸套螺絲  
M2x9mm

**Care must be taken during assembly to ensure tail grips operate smoothly without binding. Any slight binding may affect tail action during flight.**  
組裝時，確保尾夾座滑順，些微干涉將可能導致飛行時尾動作不順暢。

## CAUTION

**When tightening a linkage ball to a plastic part, please note to use a little CA glue and tighten it firmly, but not over tightened, or they will strip.**  
球頭鎖入塑膠件請務必注意，使用少量CA膠並適當扭力鎖緊即可，而過緊的扭力可能會導致滑牙。

**When tightening a screw to a plastic part, please tighten it firmly, but not over tightened, or they will strip.**  
螺絲鎖入塑膠件請務必注意，適當扭力鎖緊即可，而過緊的扭力可能會導致滑牙。

**For original manufactory package, if the product is already assembled by Factory, please check again if screws are firmly secured and applied with some glue.**  
原廠零件出廠包裝如果是組裝品，請再確認各螺絲是否鎖緊上膠。

**Tail pitch bell crank must be parallel to tail output shaft to ensure sufficient pitch travel range.**  
尾T型座與尾橫軸平齊以保持行程量足夠。

**Apply a little amount of T43 thread lock when fixing a metal part.**  
螺絲鎖於金屬件請使用適量T43(螺絲膠)

Apply a little amount of T43 thread lock when fixing a metal part.  
螺絲鎖附於金屬件時使用適量T43(螺絲膠)

When assembling into the tail boom, please apply some oil on the surface, to make it smooth during the assembling and keep it vertical with the torque tube for smooth rotation.  
插入尾管內時，外表抹些潤滑油，以確保平滑壓入尾管中並與尾傳動軸保持垂直，讓尾軸傳動順暢。

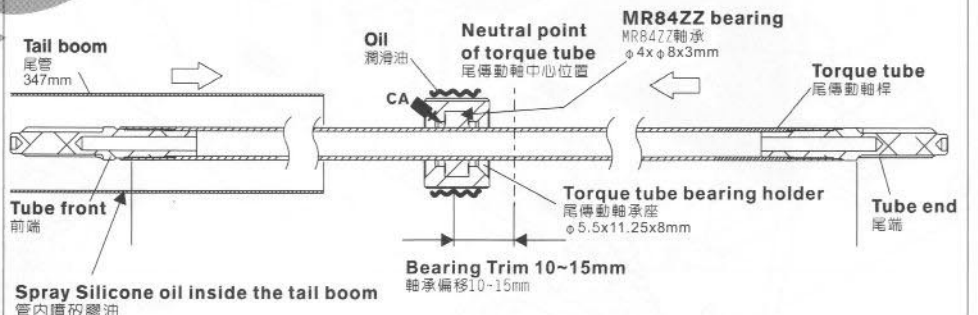
Already assembled by factory, please note to check again.  
已組裝完成，請務必自行再確認。

When assembling the tail boom, please aim at the fixing hole  $\phi 3$ .  
裝入尾管時請注意孔對準尾管 $\phi 3$ 固定孔。

Before assembling, please wrap the tail boom with a scotch tape (Thickness 0.03~0.05mm) to avoid the mount slipping.  
安裝前請先用透明膠帶(0.03-0.05mm厚)包纏尾管，可防止固定座滑動。

Tip to fix the torque tube 傳動軸軸承固定位要領

Please apply some CA glue to fix MR84ZZ bearing on the torque tube, avoid CA glue adhering to the dust cover or it may cause the bearing stuck. When assembling into the tail boom, please apply some oil on the bearing holder and press the holder into the tail boom horizontally.  
請以少量CA膠將MR84ZZ軸承固定於尾傳動軸上，避免CA沾到軸承的防塵蓋而導致軸承卡死，插入尾管內時，尾傳動軸承墊圈外表抹些潤滑油，將尾傳動軸承墊圈平行壓入尾管中不可歪斜。

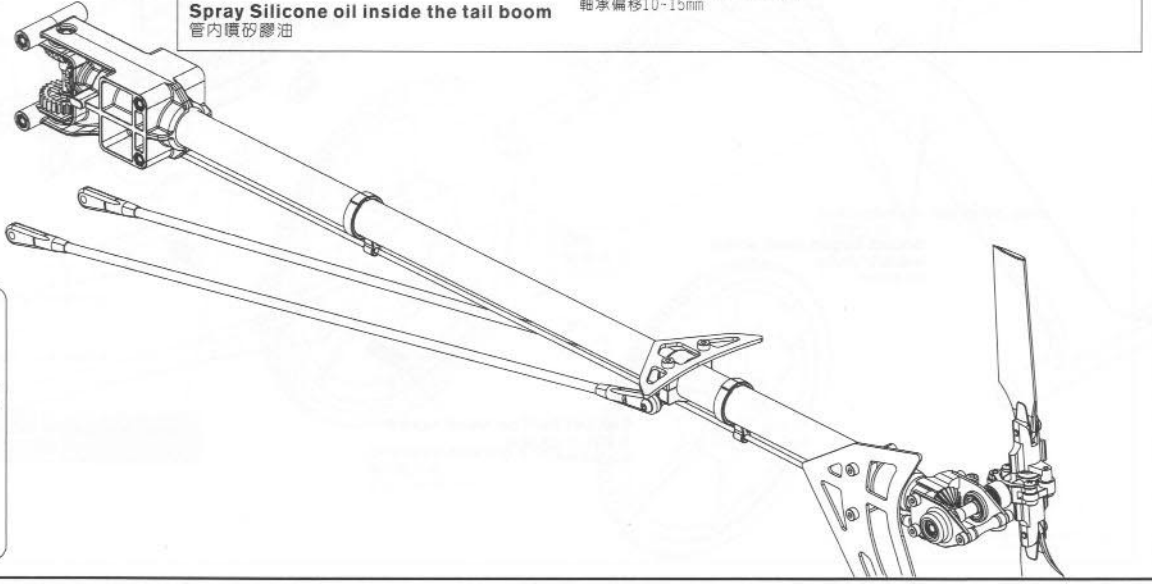
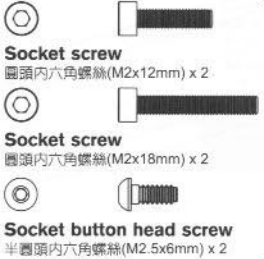


Spray Silicone oil inside the tail boom  
管內噴砂矽油

450HT1



450HT3



### 450HB1




**Socket button head screw**  
半圓頭內六角螺絲(M2.5x5mm) x 8

### 450HT3



**Socket button head screw**  
半圓頭內六角螺絲(M2.5x8mm) x 2

 **Apply a little amount of T43 thread lock when fixing a metal part.**  
螺絲鎖附於金屬件時使用適量T43(螺絲膠)

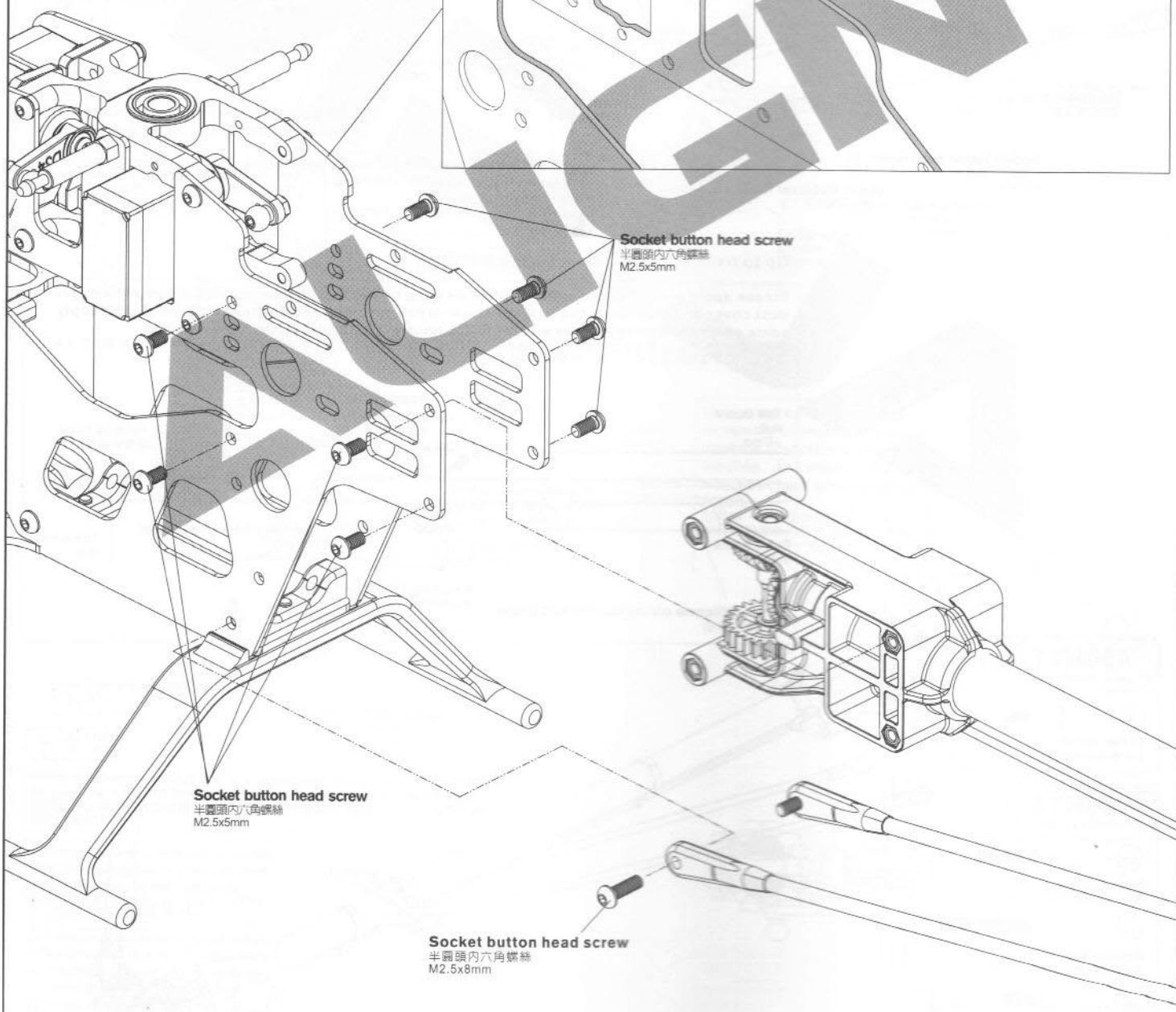
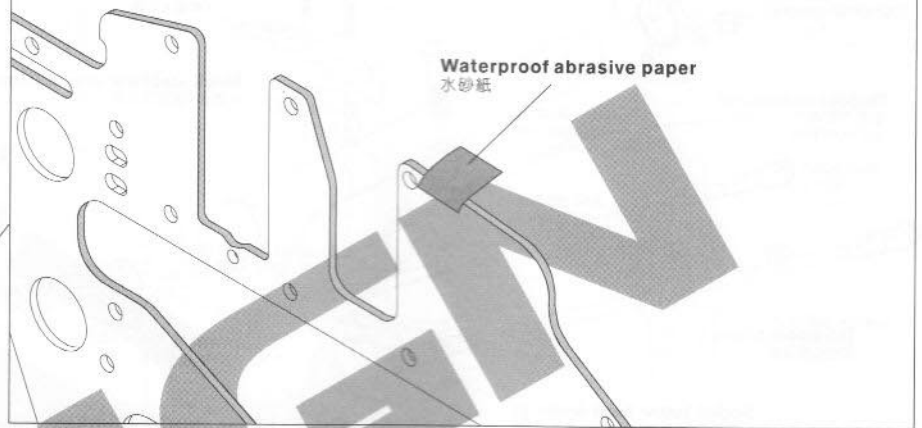
 **CAUTION**  
注意

**When tightening a screw to a plastic part, please tighten it firmly, but not over tightened, or they will strip.**  
螺絲鎖入塑膠件時務必注意，適當扭力鎖緊即可，而過緊的扭力可能會導致滑牙。

**For original manufacturing package, if the product is already assembled by Factory, please check again if screws are firmly secured and applied with some glue.**  
原廠零件出廠包裝如果是組裝品，請再確認各螺絲是否鎖緊上膠。

**Recommend sanding the marked position with a waterproof abrasive paper(#800-1000) as below illustration to avoid the wires of electric parts to be cut.**

建議於下圖色塊標示處，可使用#800-1000水砂紙打磨，可防止電子設備電線被割破。



**450HB1**

**Socket button head self tapping screw**  
半圓頭內六角自攻螺絲(T2.6x6mm) x 2

**450HB2**

**Cross screw**  
圓頭十字螺絲(M2X4mm) x 4

**Shaft ring**  
單向軸套圈(φ6xφ8X1.6mm) x 1

**Socket screw**  
圓頭內六角螺絲(M2x12mm) x 1

**M2 Nut**  
M2螺帽 x 1

**450HZ3**

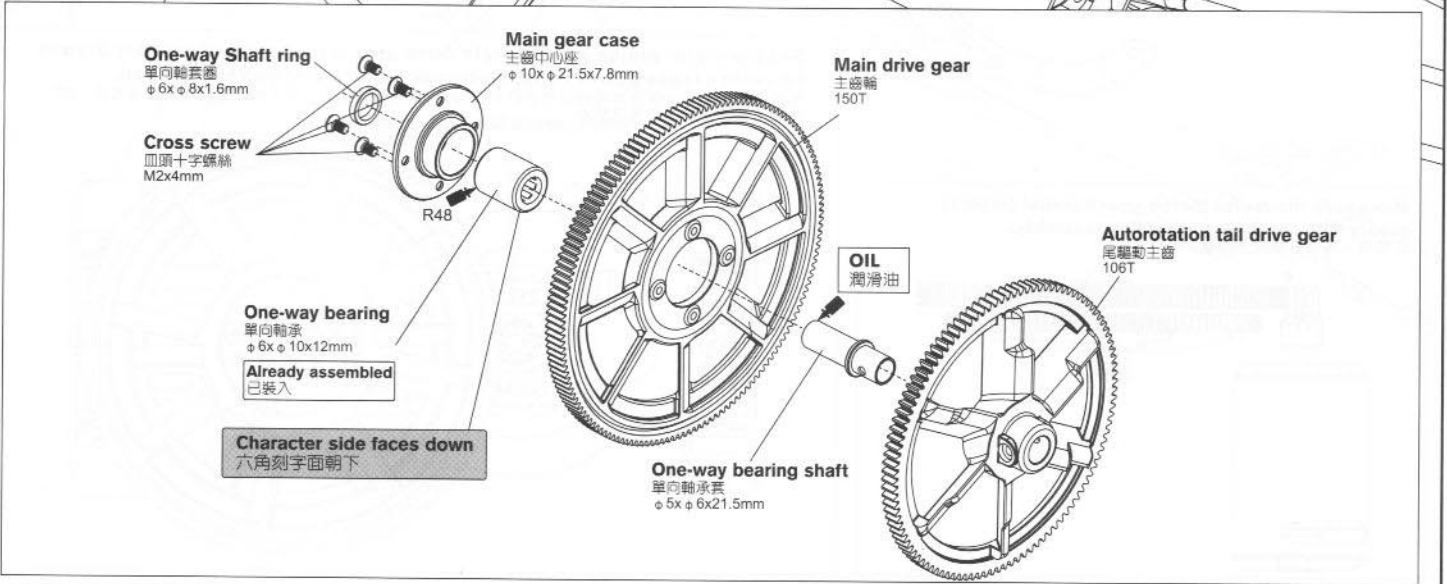
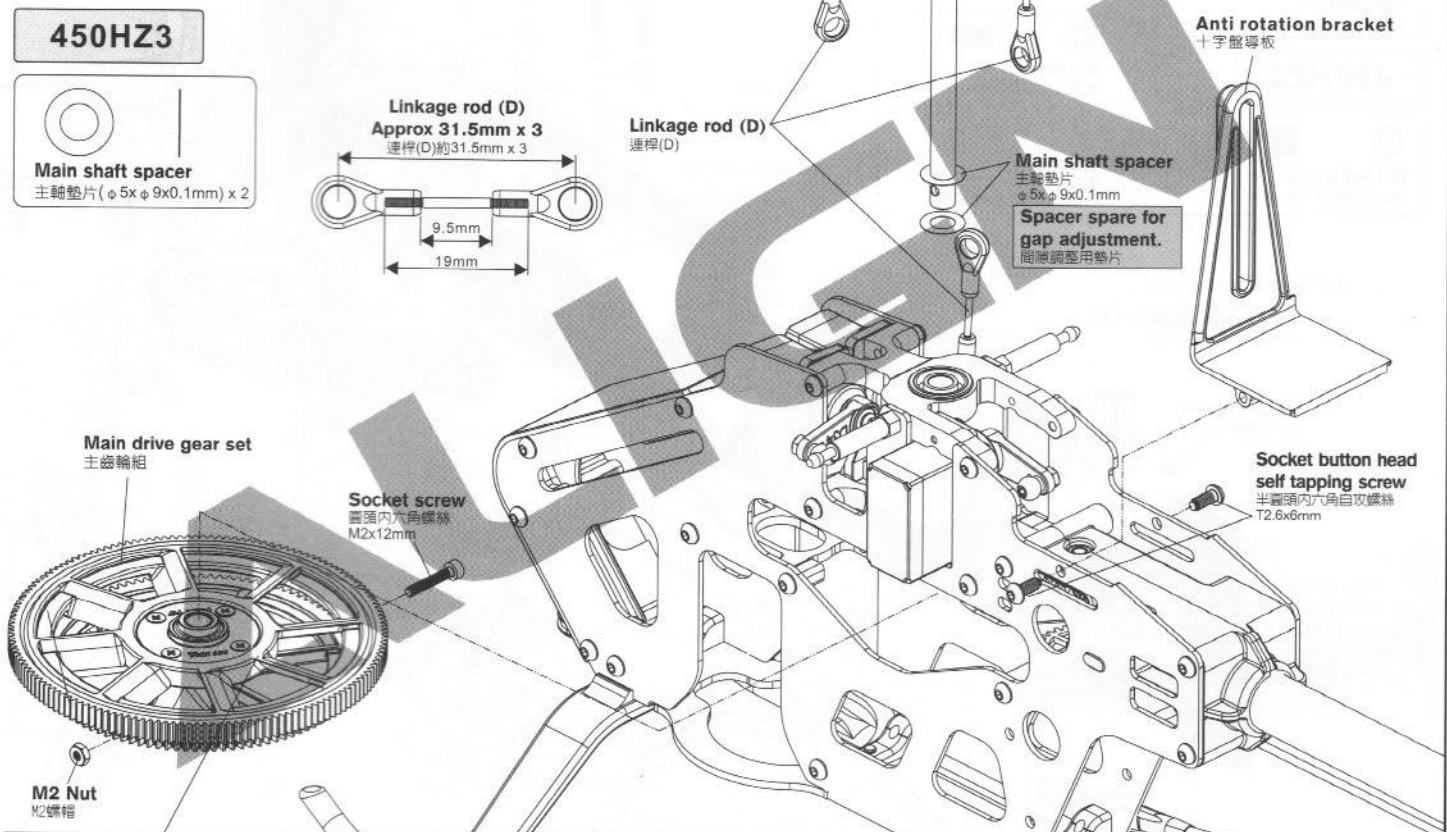
**Main shaft spacer**  
主軸墊片(φ5xφ9x0.1mm) x 2


**450HZ1**

**Linkage rod (D)**  
連桿(D) φ1.3x19mm x 3

**Ball link**  
連桿頭 x 6

Apply a little amount of T43 thread lock when fixing a metal part.  
螺絲鎖附於金屬件請使用適量T43(螺絲膠)



 Apply a little amount of T43 thread lock when fixing a metal part.  
螺絲鎖附於金屬件請使用適量T43(螺絲膠)

**CAUTION**  
注意

When tightening a screw to a plastic part, please tighten it firmly, but not over tightened, or they will strip.  
螺絲鎖入塑膠件請務必注意，適當扭力鎖緊即可，而過緊的扭力可能會導致滑牙。

For original manufactory package, if the product is already assembled by Factory, please check again if screws are firmly secured and applied with some glue.  
原廠零件出廠包裝如果是組裝品，請需再確認各螺絲是否鎖緊上膠。

**450HH1**

 **Socket collar screw**  
圓頭內六角軸套螺絲(M3x16mm) x 2

 **M3 Nut**  
M3防鬆螺帽 x 2

**450HZ2**

 **M3 Set screw**  
M3止洩螺絲(M3x3mm) x 1

**325D Carbo fiber blade**  
325D碳纖維主旋翼

**450HM1**

 **Socket screw**  
圓頭內六角螺絲(M2.5x6mm) x 2

 **Washer**  
華司(φ2.6xφ5.8x0.6mm) x 1

**Socket collar screw**  
圓頭內六角軸套螺絲  
M3x16mm

**M3 Nut**  
M3防鬆螺帽

**Socket screw**  
圓頭內六角螺絲  
M2.5x6mm

**For motor fixing**  
馬達固定螺絲

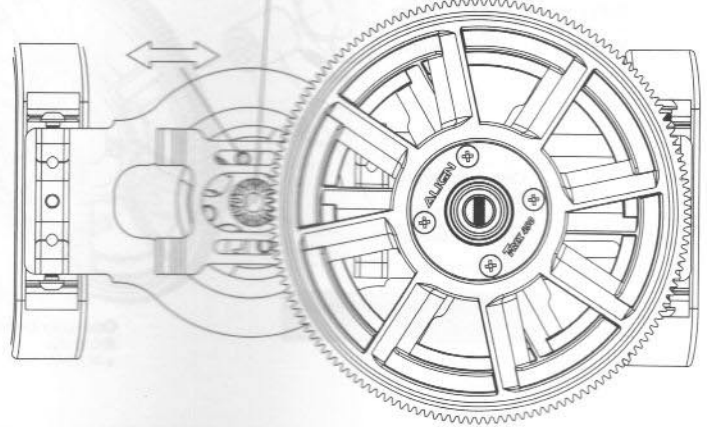
**Washer**  
華司  
φ2.6xφ5.8x0.6mm

**Motor pinion gear 13T**  
馬達齒輪 13T

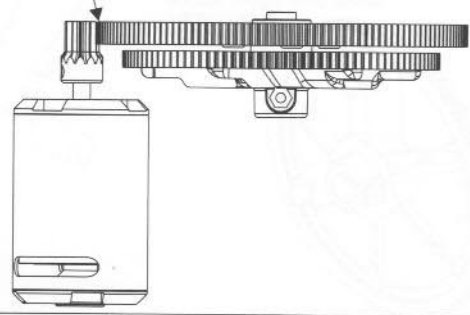
**M3 Set screw**  
M3止洩螺絲  
M3x3mm

**Motor**  
馬達

**Set the motor pinion gear to main drive gear mesh to approximately 0.1mm to avoid excess power consumption or motor burnt due to overload.**  
馬達前後可移動以保時齒輪啮合處約有0.1mm間隙，過緊齒咬合將造成動力損失或馬達高阻力的過載，鬆開可避免過熱或燒毀。



**Make sure the motor pinion gear parallel (match) evenly with the main gear while assembly.**  
組裝時，馬達齒輪與主齒盤平高。



Apply a little amount of T43 thread lock when fixing a metal part.  
 螺絲鎖附於金屬件請使用適量T43 螺絲膠

**CAUTION**  
 注意

When tightening a screw to a plastic part, please tighten it firmly, but not over tightened, or they will strip.  
 螺絲鎖入塑膠件請務必注意，適當扭力鎖緊即可，而過緊的扭力可能會導致滑牙。

For original manufactory package, if the product is already assembled by Factory, please check again if screws are firmly secured and applied with some glue.  
 原廠零件出廠包裝如果是組裝品，請再確認各螺絲是否鎖緊上膠。

### 450HB1



**Socket button head self tapping screw**  
 半圓頭內六角自攻螺絲(T2.6x6mm) x 4

### 450HZ2

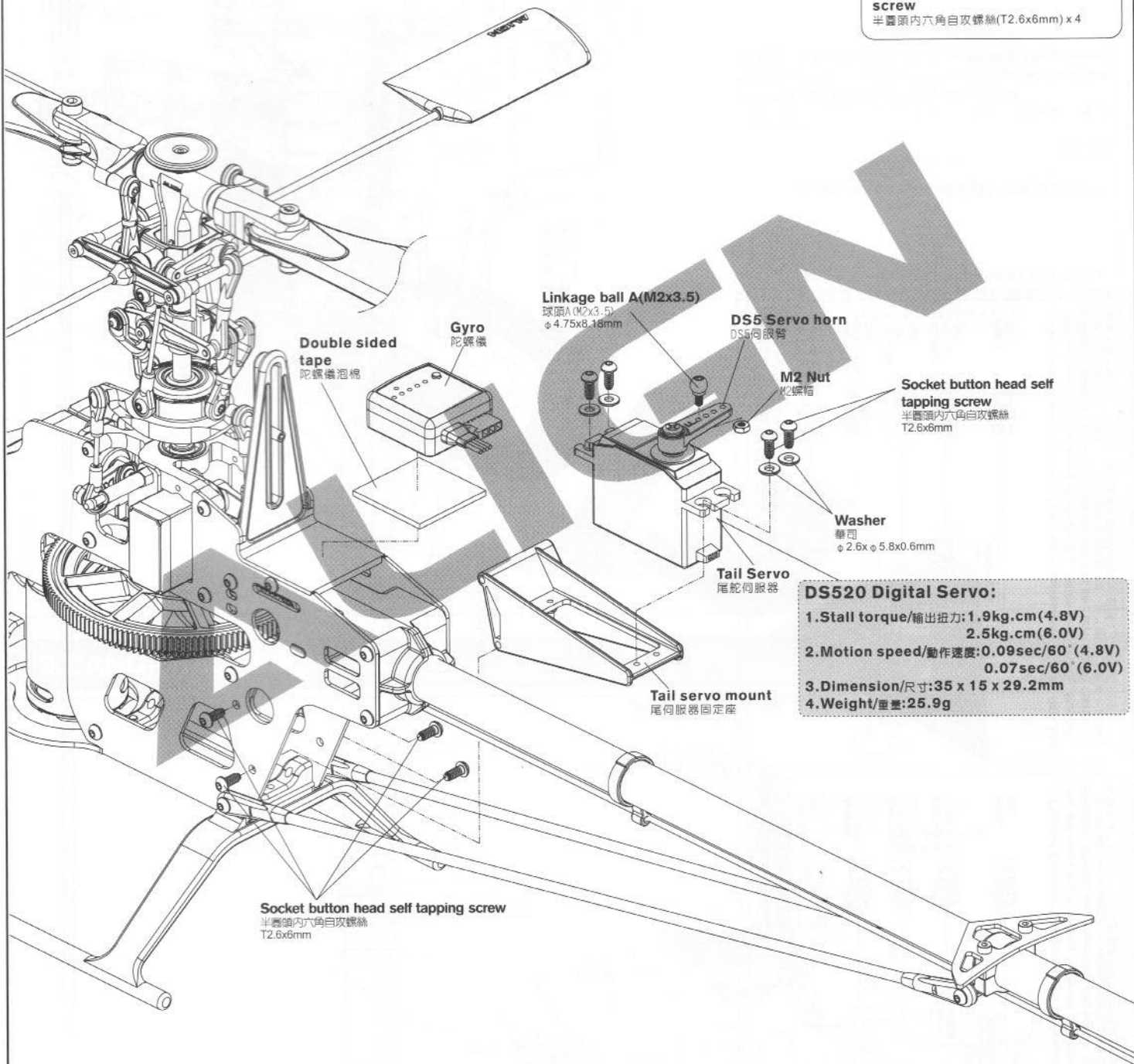


**Linkage ball A(M2x3.5)**  
 球頭A (M2x3.5) (φ4.75x8.18mm) x 1

**M2 Nut**  
 M2螺帽 x 1

**Washer**  
 華司(φ2.6xφ5.8x0.6mm) x 4

**Socket button head self tapping screw**  
 半圓頭內六角自攻螺絲(T2.6x6mm) x 4



**Double sided tape**  
 陀螺儀泡棉

**Gyro**  
 陀螺儀

**Linkage ball A(M2x3.5)**  
 球頭A (M2x3.5)  
 φ4.75x8.18mm

**DS5 Servo horn**  
 DS5伺服臂

**M2 Nut**  
 M2螺帽

**Socket button head self tapping screw**  
 半圓頭內六角自攻螺絲  
 T2.6x6mm

**Washer**  
 華司  
 φ2.6xφ5.8x0.6mm

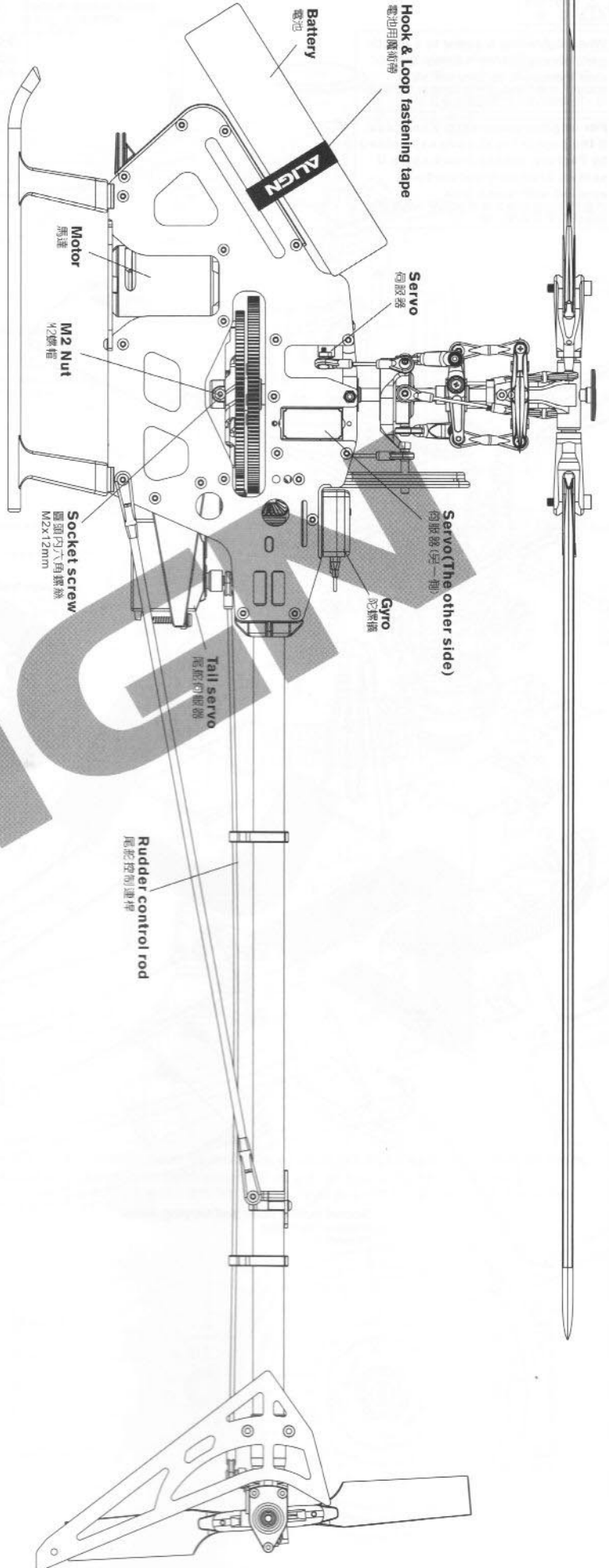
**Tail Servo**  
 尾舵伺服器

**Tail servo mount**  
 尾舵伺服器固定座

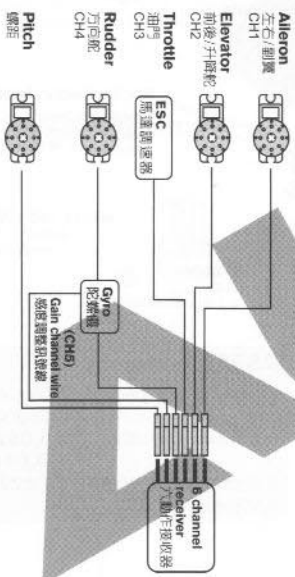
**Socket button head self tapping screw**  
 半圓頭內六角自攻螺絲  
 T2.6x6mm

#### DS520 Digital Servo:

1. Stall torque/輸出扭力: 1.9kg.cm(4.8V)  
 2.5kg.cm(6.0V)
2. Motion speed/動作速度: 0.09sec/60° (4.8V)  
 0.07sec/60° (6.0V)
3. Dimension/尺寸: 35 x 15 x 29.2mm
4. Weight/重量: 25.9g

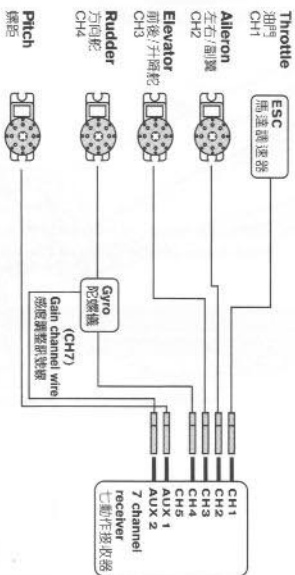


**HITEC、FUTABA 6CH receiver wiring**  
HITEC、FUTABA 6CH接收器接線示意圖



6-Channel Receiver is adequate for the requirements of the T-REX heli.  
You will need the following channels at a minimum: Throttle, Rudder, Elevator, Aileron, and especially Pitch(CH6) and Gyro(CH5) controls. 六通道的接收器已足夠應付T-REX遙控直升機的頻道需求，除了油门、方向舵、升降舵、副翼等基本動作外，亦可以對應具備感度調整訊號線的陀螺儀(CH5)與俯仰(CH6)。

**JR 7CH receiver wiring**  
JR 7CH接收器接線示意圖

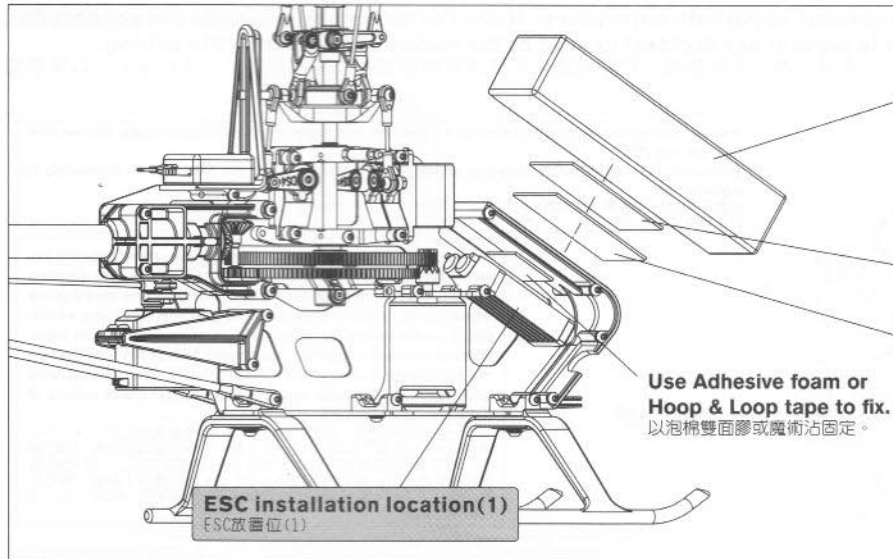


7-Channel Receiver is adequate for the requirements of the T-REX heli.  
You will need the following channels at a minimum: Throttle, Rudder, Elevator, Aileron, and especially Pitch(AUX 1) and Gyro(AUX 2) controls. 七通道的接收器已足夠應付T-REX遙控直升機的頻道需求，除了油门、方向舵、升降舵、副翼等基本動作外，亦可以對應具備感度調整訊號線的陀螺儀(AUX 2)與俯仰(AUX 1)。



## 8. BRUSHLESS SPEED CONTROLLER INSTALLTION SUGGESTION ESC無刷調速器安裝建議位置

ALIGN



### Installation Method (1) 安裝方式(1)

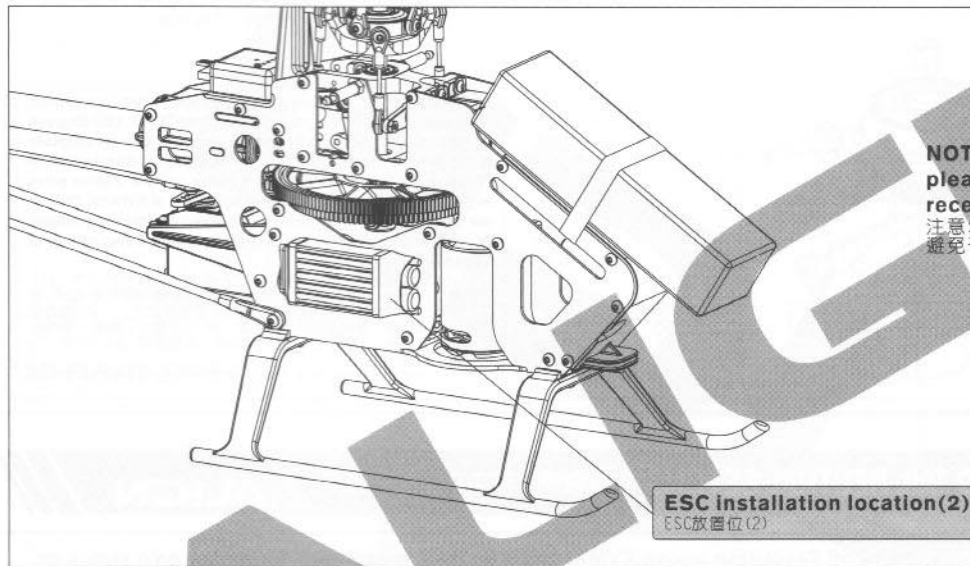
Use attached Hoop and Loop Tape, tape the Hoop side (hooked) on the battery mounting plate and the Loop side (fuzzy) on the battery to fix the battery in order to prevent any slip.  
以附贈的魔術沾膠帶，將公端的魔術沾(勾狀)黏貼於電池座上，母端的魔術沾(絨毛狀)黏貼於電池上，可有效固定電池避免滑動。

Hook and Loop Tape(fuzzy)  
魔術沾母端

Hook and Loop Tape(hooked)  
魔術沾公端

**NOTE:** When installing the speed controller, please keep a distance at least 3cm from the receiver to avoid any interference.

注意:安裝ESC時請與接收器保持至少3cm以上的距離，避免干擾接收器。



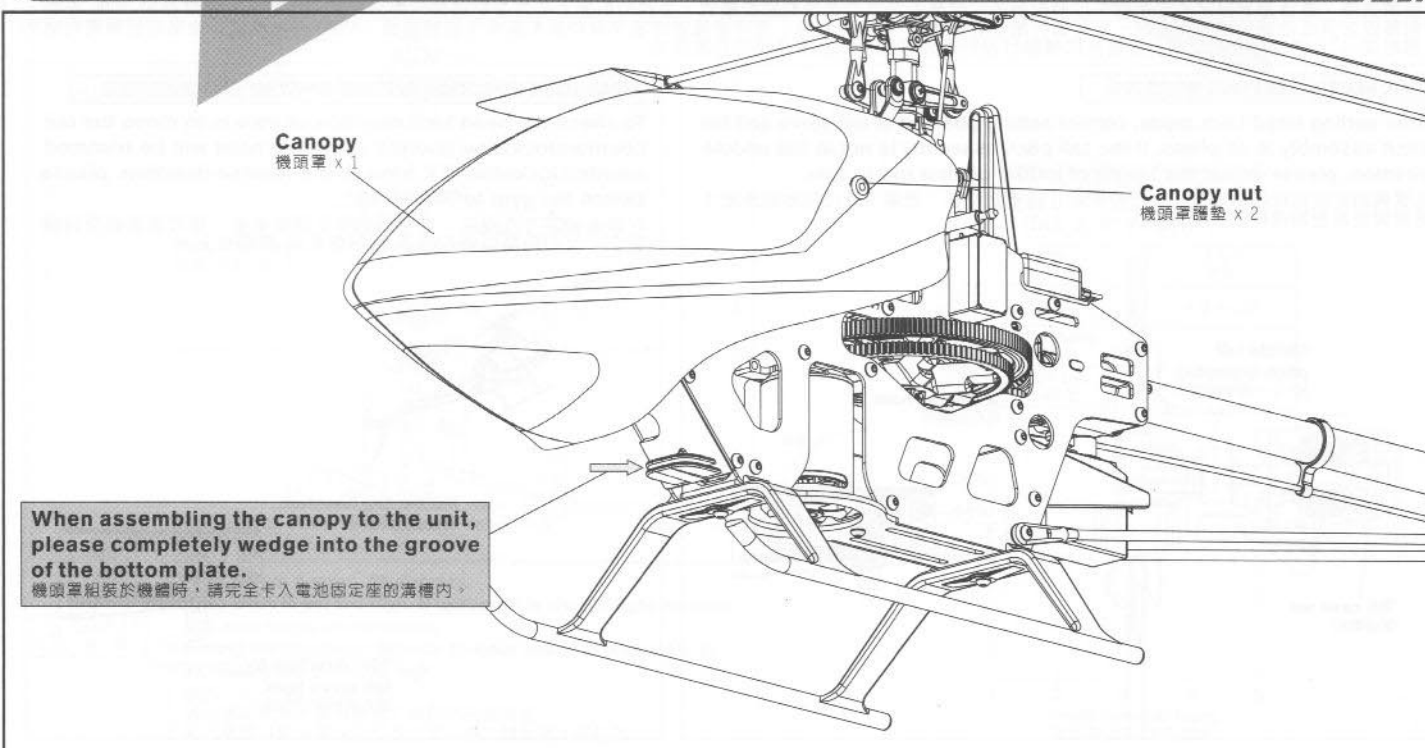
### Installation Method (2) 安裝方式(2)

**NOTE:** When installing the speed controller, please keep a distance at least 3cm from the receiver to avoid any interference.

注意:安裝ESC時請與接收器保持至少3cm以上的距離，避免干擾接收器。

## 9. CANOPY ASSEMBLY 機頭罩安裝

ALIGN



Canopy  
機頭罩 x 1

Canopy nut  
機頭罩護墊 x 2

When assembling the canopy to the unit, please completely wedge into the groove of the bottom plate.

機頭罩組裝於機體時，請完全卡入電池固定座的溝槽內。

To set this option is to turn on the transmitter and connect to the helicopter power. **Note: For the safety, please do not connect ESC to the brushless motor before the setting in order to prevent any accident caused by the motor running during the setting.**  
 此項設定只要開啓發射器，接上直昇機電源即可進行操作。注意：為了安全起見，設定前請先不要將無刷調速器與無刷馬達的三條線接上，以免調整時啓動馬達而發生危險。

**JR Transmitter/Servo**  
 JR遙控器對應伺服器關係

Please note to set the subtrim neutral for the first trial flight. If the helicopter wags, please trim linkage rod (D). Trim both rods (D) simultaneously to adjust for forward/backward tilt. Trim rod (D) separately for right/left tilt.  
 首次飛行測試，注意遙控器微調均設定中立點，若發現飛行時，機身後左右偏移，請先調整連桿(D)前後偏移。連桿(D)同步調整；左右偏移。連桿(D)單獨調整為標準。

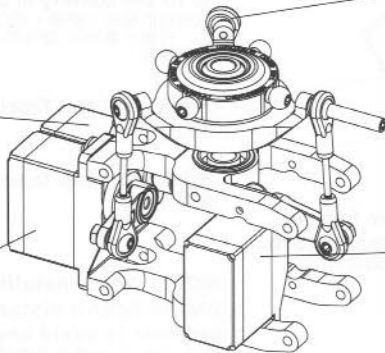
Pitch:CH6  
 螺距:CH6

Aileron:CH2  
 副翼:CH2

Aileron:CH2  
 副翼:CH2

Pitch:CH6  
 螺距:CH6

Elevator:CH3  
 升降舵:CH3



Positions of CH2 - CH6 are exchangeable, After assembling as photo (Note: Set the transmitter under CCPM 120 degrees mode), pull throttle stick (pitch) upward. If one swashplate servo (or two servos) moves downward, adjust reverse switch (REV) on the transmitter to make it moves upward. If three servo move downward, adjust the travel value (+-) of SWASH CH6 on the transmitter to make them move upward. When the actions of Aileron and Elevator are opposite, adjust travel values of SWASH CH2 and CH3.

CH2、CH6可互換配置，依圖連結後(注意：遙控器須設定於CCPM 120°十字盤模式)，將油門搖桿(Pitch)往上推，若十字盤伺服器有1個或2個往下移時，請調整遙控器的反轉開關(REV)使伺服器往上，若3個伺服器同時往下移時，請調整遙控器SWASH CH6行程量的正負值，使伺服器同時往上升移，副翼與前後動作相反時，同樣調整 SWASH CH2、CH3行程量正負值。

**FUTABA/HITEC Transmitter/Servo**  
 FUTABA/HITEC遙控器對應伺服器關係

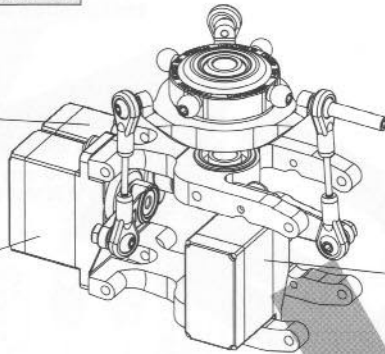
Pitch:CH6  
 螺距:CH6

Aileron:CH1  
 副翼:CH1

Aileron:CH1  
 副翼:CH1

Pitch:CH6  
 螺距:CH6

Elevator:CH2  
 升降舵:CH2



Positions of CH1 - CH6 are exchangeable, After assembling as photo (Note: Set the transmitter under CCPM 120 degrees mode), pull throttle stick (pitch) upward. If one swashplate servo (or two servos) moves downward, adjust reverse switch (REV) on the transmitter to make it moves upward. If three servo move downward, adjust the travel value (+-) of SWASH CH6 on the transmitter to make them move upward. When the actions of Aileron and Elevator are opposite, adjust travel values of SWASH CH1 and CH2.

CH1、CH6可互換配置，依圖連結後(注意：遙控器須設定於CCPM 120°十字盤模式)，將油門搖桿(Pitch)往上推，若十字盤伺服器有1個或2個往下移時，請調整遙控器的反轉開關(REV)使伺服器往上，若3個伺服器同時往下移時，請調整遙控器SWASH CH6行程量的正負值，使伺服器同時往上升移，副翼與前後動作相反時，同樣調整 SWASH CH1、CH2行程量正負值。

11.ADJUSTMENTS FOR GYRO AND TAIL NEUTRAL SETTING 陀螺儀與尾翼中立點設定調整

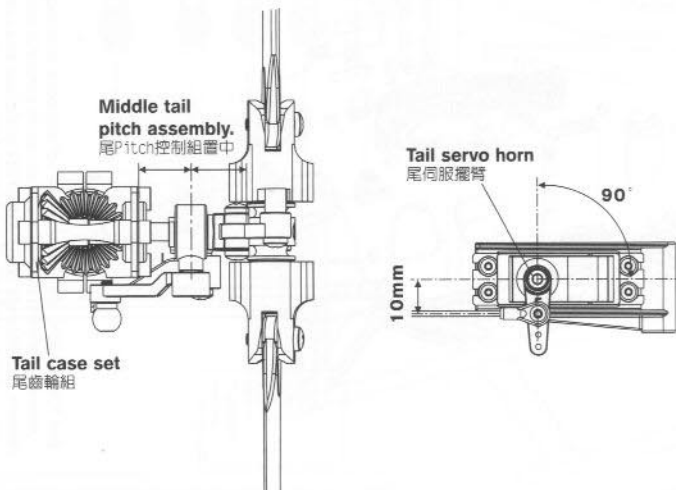
Recommend to choose Head Lock type for Gyro and turn off Revolution mixing(RVMX) mode on the transmitter, then set the gain switch on the transmitter and the gyro to Head lock mode. The gain setting is about 70%, and after transmitter setting, connect to the helicopter power for working on tail neutral setting. **Note: When connecting to the helicopter power, please do not touch tail rudder stick and the helicopter. Then wait for 3 seconds, make tail servo horn and tail servo at a right angle(90 degrees), tail pitch assembly must be correctly fixed about in the middle of the travel of tail rotor shaft for standard neutral setting.**

陀螺儀選擇，建議選用鎖定式陀螺儀，且發射器內陀螺儀設定請關閉根軸混控模式，並將發射器上的感度開關與陀螺儀切至鎖定模式，感度設約 70% 左右，發射器設定完成後接上直昇機電源，即可進行尾中立點設定。注意：當接上直昇機電源時請勿撥動尾舵搖桿或碰觸機體，待3秒陀螺儀鎖定後尾伺服器需與尾伺服器約成 90°，尾旋翼控制組須正確置於尾橫軸行程約中間位置，即為標準尾中立點設定。

**TAIL NEUTRAL SETTING 尾中立點設定**

After setting Head Lock mode, correct setting position of tail servo and tail pitch assembly is as photo. If the tail pitch assembly is not in the middle position, please adjust the length of rudder control rod to trim.

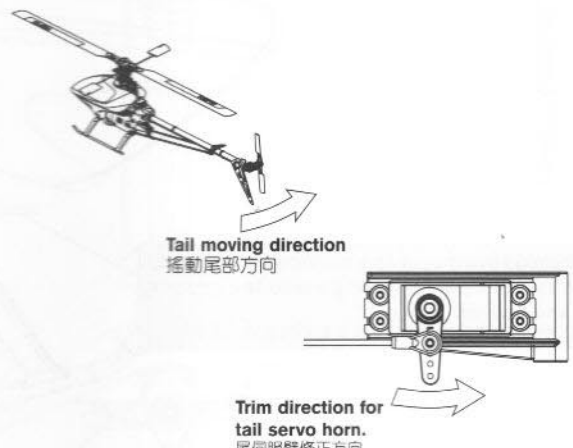
陀螺儀鎖定後尾伺服器與尾 Pitch控制組正確擺置位置。若尾 Pitch控制組未置中時請調整尾控制連桿的長度來修正。



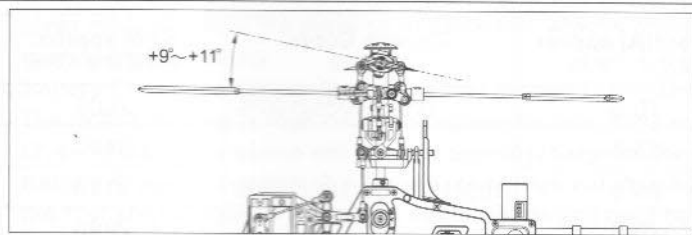
**HEAD LOCK DIRECTION SETTING OF GYRO 陀螺儀鎖定方向設定**

To check the head lock direction of gyro is to move the tail counterclockwise and the tail servo horn will be trimmed counterclockwise. if it trims in the reverse direction, please switch the gyro to "REVERSE".

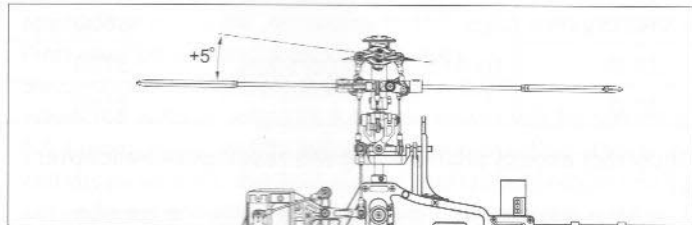
陀螺儀鎖定方向確認，當手搖尾部反時鐘擺動，尾伺服器應反時鐘修正，反向時請切換陀螺儀上"鎖定反向"開關修正。



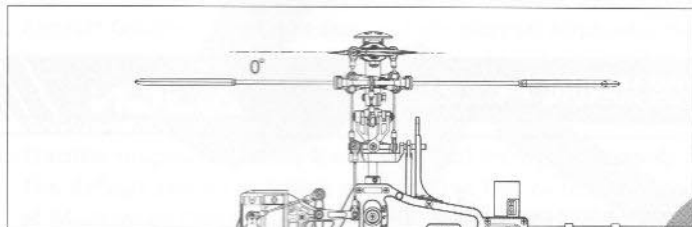
## GENERAL FLIGHT 一般飛行模式



Stick position at high/Throttle 100%/Pitch +9° ~ +11°  
搖桿高速/油門100%/Pitch +9° ~ +11°



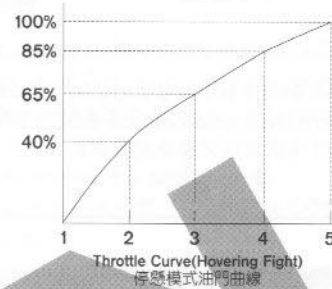
Stick position at Hovering/Throttle 60%~65%/Pitch +5°~+6°  
搖桿停懸/油門60%-65%/Pitch +5°~+6°



Stick position at low/Throttle 0%/Pitch 0°  
搖桿低速/油門0%/Pitch 0°

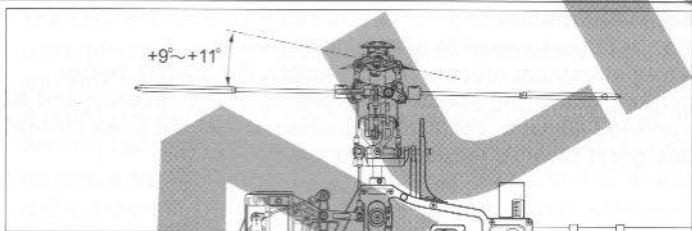
### GENERAL FLIGHT 一般飛行模式

	Throttle 油門	Pitch 螺距
5	100% High speed 100% 高速	+9° ~ +11°
4	85%	
3	60%~65% Hovering 60%-65% 停懸	+5°
2	40%	
1	0% Low speed 0% 低速	0°

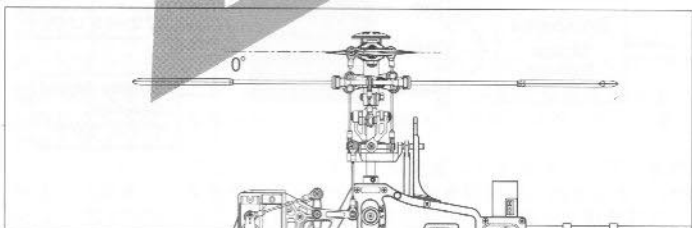


**Pitch and Rotation Speed Pitch與轉速關係**  
**TIP:** It is recommended to use a lower pitch setting when using higher RPM/Head speed. This will allow for better power.  
 搭配要領: 如果使用較高轉速馬達動力建議搭配調低 Pitch, 將獲得較佳動力效能。

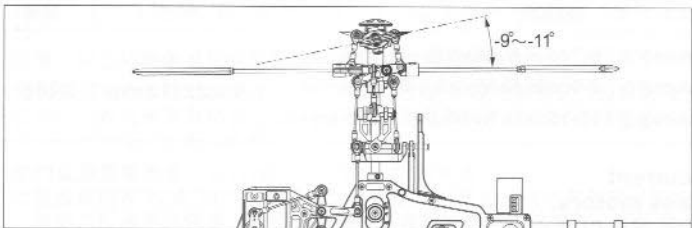
## 3D FLIGHT 3D特技飛行模式



Stick position at high/Throttle 100%/Pitch +9° ~ +11°  
搖桿高速/油門100%/Pitch +9° ~ +11°



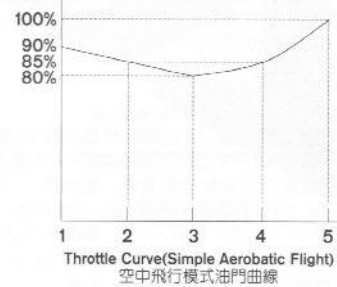
Stick position at middle/Throttle 90%/Pitch 0°  
搖桿中速/油門90%/Pitch 0°



Stick position at low/Throttle 100%/Pitch -9° ~ -11°  
搖桿低速/油門100%/Pitch -9° ~ -11°

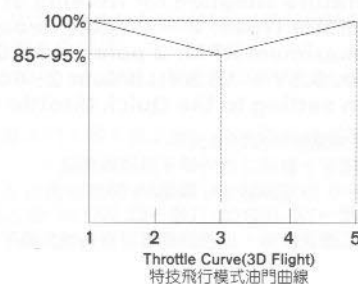
### IDLE 1: SPORT FLIGHT

	Throttle 油門	Pitch 螺距
5	100%	+9° ~ +11°
4	85%	
3	80%	+5°
2	85%	
1	90%	-5°



### IDLE 2: 3D FLIGHT

	Throttle 油門	Pitch 螺距
5	100% High 100% 高	+9° ~ +11°
3	90% Middle 90% 中	0°
1	100% Low 100% 低	-9° ~ -11°



1. Pitch range: Approx. 25 degrees.
  2. If the pitch is set too high, it will result in shorter flight duration and poor motor performance.
  3. Setting the throttle to provide a higher speed is preferable to increasing the pitch too high.
1. 螺距 (Pitch) 總行程約 25°
  2. 過大螺距設定, 會導致動力與飛行時間降低。
  3. 動力提升以較高轉速的設定方式, 優於螺距調大的設定。



## Battery 電池:ALIGN Li-Poly 11.1V 2150mAh

Motor Gear 馬達主齒	Main Rotor Blade 主旋翼規格	PITCH 螺距		Current(A) approx. 電流(A)大約值	Throttle Curve 油門曲線	RPM approx. 主旋翼轉速大約值
12T	325mm 3K Carbon blade 3K碳纖主旋翼	Hover停懸	+5°	10.5	0/50/65/85/100%	2600
			0°	13.8		3400
		Idle 2	+9°	25.4	100/100/100/100/100%	3130
			±11°	29.0		2980
13T	325mm 3K Carbon blade 3K碳纖主旋翼	Hover停懸	+5°	10.7	0/50/60/85/100%	2610
			0°	14.7		3600
		Idle 2	+9°	27.2	100/100/100/100/100%	3250
			±11°	31.0		3150

**NOTE: 1. Please use a pitch gauge to adjust the pitch value. Incorrect excess pitch setting will result poor helicopter performance and reduce ESC's life and battery's life.**

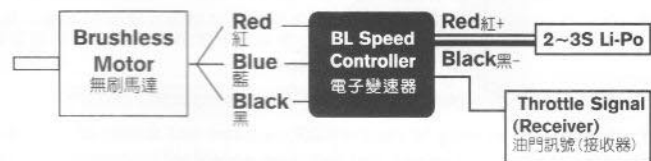
註: 1. 請務必使用螺距規來量測調整螺距, 不正確的過大螺距設定不但無法發揮直昇機的特性, 反會影響到無刷調速器與電池的壽命。

## 14.RCE-BL35X BRUSHLESS SPEED CONTROLLER INSTRUCTION MANUAL 無刷調速器使用說明

## PRODUCT FEATURES 產品特色

1. BEC output voltage (6V) shows great performance on the torque and speed of servo.
  2. Three programmable throttle speed settings to support quick throttle response.
  3. Include soft start and governor mode.
  4. Small and compact PCB design for lightweight and simple installation.
  5. Large heat sink for optimum thermal performance.
  6. Highly compatible to work with 98% of all brushless motors currently on the market.
  7. Ultra-smooth motor start designed to run with all kinds of brushless motors.
  8. The power inlet utilizes a Japanese made "Low ESR" capacitor in order to provide stable power source.
  9. The BEC power outlet utilizes a Japanese made special polymer aluminum electrolytic capacitor. It provides better noise filtering capability than other brushless ESC on the market, delivering stable performance of R/C receiver and BEC.
  10. The BEC features dual TO-252 package regulators. They provide superior thermal performance with 2A peak current.
  11. The throttle has more than 200 step resolution that provides great throttle response and control.
1. 6伏特BEC輸出電壓, 可將伺服器的扭力與速度完全發揮。
  2. 三段可程式油門反應速度, 使動力的反應應隨到。
  3. 具緩啟動及Governor Mode定速功能。
  4. 體積小, 窄型設計, 安裝於機身容易。
  5. 有散熱片設計, 可延長電變壽命。
  6. 超高相容性, 可對應市面上 98% 無刷馬達。
  7. 絕佳起步設計, 無論國產、進口、內轉、外轉無刷馬達皆起步順暢。
  8. 電池電源端採用日製 Low ESR 低阻抗電解電容, 大幅提高電源之穩定性。
  9. BEC 端採用日製超低阻抗之鋁聚合物電容, 提供優於目前市售無刷電變之濾波抗雜訊之能力, 大幅提高接收機與 BEC 之穩定性。
  10. 使用兩顆散熱良好之 TO-252 包裝之 BEC 晶體, 可達瞬間 2A 電流。
  11. 油門達 200 段以上解析度, 無格數之油門感覺。

## WIRING ILLUSTRATION 接線示意圖



## SPECIFICATION 規格

Model 型號	Continuous Current 持續	Peak Current 瞬間	BEC Output BEC輸出	Dimension 尺寸	Weight 重量
RCE-BL35X	35A	45A	2A: 2cells Lithium鋰電 / 6-7cells Ni-Mh鎳電→4~5 servos 3cells Lithium鋰電 / 8-9cells Ni-Mh鎳電→3~4 servos 4cells Lithium鋰電 / 10-12cells Ni-Mh鎳電→2~3 servos	45x22x12mm	25g

1. Good temperature situation for working at the maximum current
  2. Supporting motor types: 2 ~ 10 pole in/outrunner brushless motors.
  3. Supporting maximum RPM: 2 pole 190,000 rpm ; 6 pole 63,000 rpm.
  4. Input voltage: 5.5V ~ 16.8V(Lithium 2~4cells/Ni-Mh 6~12cells)
- NOTE: When setting to the Quick throttle response speed, the accelerative peak current will increase.**

1. 持續最大電流需在機體散熱良好情況下。
  2. 支援馬達型式: 二極至十數極之內外轉子無刷馬達。
  3. 輸入電壓: 5.5V~16.8V(鋰電2~4/鎳電6~12cells)。
  4. 支援最高轉速: 二極→190,000rpm; 六極→63,000rpm。
- 注意: 設定為高油門反應速度時, 加速瞬間電流會有增大情形。

## FUNCTIONS 產品功能

- 1. Brake Option - 3 settings that include Brake disabled/Soft brake/Hard brake.**
  - 2. Electronic Timing Option - 3 settings that include Low timing/Mid timing/High timing.**

Generally, 2 pole motors are recommended to use low timing, while 6 or more poles should use Mid timing. High timing gives more power at the expense of efficiency. Always check the current draw after changing the timing in order to prevent overloading of battery.
  - 3. Battery Protection Option- 2 settings that include Li-ion, Li-poly High/Middle cutoff voltage protection.**

The default setting is high cutoff voltage protection. CPU will automatically determine cell number of input Lithium battery (7.4~16.8V). This option will prevent over-discharge of the battery. The following reference is the guideline for setting the Battery Protection option. 3-1 Li-ion/Li-poly High cutoff voltage protection-When the voltage of single cell drops to 3.2V, the first step of battery protection mode will be engaged by the ESC resulting in reduced power. The pilot should reduce the throttle and prepare landing. If the voltage of single cell drops to 3.0V, the second step of battery protection mode will be engaged resulting in power cutoff. (\*Note 1) For 11.1V/3cells Lithium battery, the full charged voltage will be approximately 12.6V. According to this input voltage, CPU will determine that this is a 3cell battery.  
First step protection:  $3.2V \times 3cell = 9.6V$   
Second step protection:  $3.0V \times 3cell = 9.0V$   
When the voltage drops to 9.6V, the power will be reduced. When the voltage drops to 9.0V, the power will be cut off.

3-2 Li-ion/Li-poly Middle cutoff voltage protection- This option is same as instruction 3-1, but when the voltage of single cell drops to 3.0V, the first step of battery protection will be engaged. When the voltage of single cell drops to 2.8V, the second step of battery protection will be engaged. (\*Note 1)  
Note 1: Second step of battery protection only works when Aircraft mode is setting to the option 4-1.  
NOTE: THIS OPTION IS ONLY SUITABLE FOR A FULLY CHARGED BATTERY PACK IN GOOD WORKING CONDITION.
  - 4. Aircraft Option: 3 settings that include Normal Airplane / Helicopter 1 / Helicopter 2.**

Normal Airplane Mode is used for general airplanes and gliders. When flying Helicopters, you can choose Helicopter 1 Mode, or Helicopter 2 Mode. Helicopter 1 Mode provides Soft Start feature. Helicopter 2 Mode provides Soft Start and Governor Mode.
  - 5. Throttle response speed: 3 settings that include standard/ Medium/ Quick throttle response speed.**

The default setting is "quick speed". Use this option to adjust the setting according to flight character. For example, setting at Medium or Quick speed for 3D and powerful flight to make the power response more quickly, but note the accelerative peak current and power expense will increase.
  - 6. Thermal Protection: When the ESC temperature reaches 80°C for any reason, it will engage the battery protection circuit, reducing power to the ESC. We recommend mounting the ESC in a location with adequate air flow and ventilation.**
  - 7. Safe Power On Alarm: When the operator turns on the ESC, it will automatically detect the transmitter signal.**

The ESC will emit a confirmation tone and enter normal operation mode if the throttle is set to the lowest position. If the throttle position is at full throttle, it will begin to enter Setup Mode. If the throttle is in any other position, the ESC will emit an alarm and not enter into user mode for safety precautions.
  - 8. Aircraft Locator: If the aircraft should land or crash in an unexpected location and become lost, the pilot can enable the Aircraft Locator Option. The Aircraft Locator Option is engaged by turning off the transmitter. When the ESC does not receive a signal from the transmitter for 30 seconds, it will start to send an alarm to the motor. The sound of the alarm will aid the pilot to locate the aircraft. This option will not work with a PCM receiver that has SAVE function enabled, or with low noise resistant PPM receivers.**
- 1. 煞車設定:**三段選擇分為無煞車 / 軟性煞車 / 急煞車
  - 2. 進角設定:**三段選擇分為低進角 / 中進角 / 高進角  
設定時機分為二極以及六極以上無碳刷馬達, 二極無碳刷馬達一般適用低進角, 若希望馬達轉速提高, 可將進角設定為中進角。六極以上無碳刷馬達一般適用中進角, 若希望馬達轉速提高, 可將進角設定為高進角。然而進角之調整需要注意電流之變化, 避免電池過載, 影響電池及馬達壽命。
  - 3. 電池保護電壓設定:**二段選擇分為 Li-Ion、Li-Po高截止電壓保護/中截止電壓保護  
出廠設定為高截止電壓保護; 此功能會自動判定所輸入鋰電池的cell數(7.4-16.8V), 並提供使用者對該電池之放電保護, 以避免因放電電壓過低而造成電池損壞, 以下為設定值之解說:  
3-1 Li-Ion/Li-Po高截止電壓保護: 當鋰電單cell壓降達3.2V時, 電變會啟動第一階段保護, 使動力間歇性中斷, 此時使用者應將油門收小, 準備降落; 而當單cell電壓持續壓降達到3.0V時則會啟動第二階段保護, 完全限制動力輸出(註1:僅在4-1選項"一般飛機模式"下才會啟動第二階段保護)。例:以一個使用11.1V 3cell鋰電池之系統而言11.1V鋰電池充電電壓約12.6V, 此輸入電壓CPU會自動判定為3cell鋰電。  
第一階段保護:  $3.2V \times 3cell = 9.6V$  第二階段保護:  $3.0V \times 3cell = 9.0V$   
當電壓降至9.6V時, 動力會間歇性中斷, 當壓降達到9.0V時則完全限制動力輸出。  
3-2 Li-Ion/Li-Po中截止電壓保護: 同3-1功能說明, 但單cell壓降達到3.0V時, 會啟動第一階段保護, 單cell壓降達到2.8V時啟動第二階段保護(註1)。  
注意: 以上功能僅適用於充電電, 且功能正常的鋰電池。
  - 4. 飛機模式設定:**三段式選擇分為 一般飛機模式/直昇機模式1/直昇機模式2  
使用於一般飛機或滑翔機時, 請設定於一般飛機模式, 使用於直昇機時可選擇直昇機模式1: 具有緩啟動功能, 或直昇機模式2: 具有緩啟動及 Governor Mode 定速功能。
  - 5. 油門反應速度設定:**三段選擇分為標準/中速/快速  
出廠設定值為"快速"油門反應速度, 此功能提供使用者依所需的飛行特性來作適當的調整, 例如3D飛機與劇烈的3D直昇機飛行時可設定為中速或快速, 使動力反應更加快速、靈敏, 但須注意提高油門反應速度時, 加速瞬間電流與耗電量會有增大的情形。
  - 6. 溫度保護:**當電變因不良之空氣對流或是過載輸出導致溫度上升達 80°C 時, 電變會啟動溫度保護, 而使動力間歇性中斷, 建議將電變裝置在機艙內空氣對流之位置, 並實際使用電流量測輸出電流, 以達到電變之最佳效率。
  - 7. 開機防暴衝提醒功能:**當使用者開啓電變電源時, 系統會自動偵測發射機之設定, 如果發射機油門未置於最低點, 或未置於最高點準備進入設定模式, 馬達將不會轉動, 同時會有警示聲響提醒。
  - 8. 尋機功能:**當飛機降落在長草區無法以目視定位時, 使用者可將發射機關閉, 當電變無法接收來自接收機信號時, 電變會於三十秒後使馬達發出警示聲響, 以利定位。此功能不適用於設定了 SAVE 功能之 PCM 接收機, 或抗雜訊低之 PPM 接收機。

www.align.com.tw  
www.align.com.tw  
www.align.com.tw  
www.align.com.tw

# ALIGN

## Specifications & Equipment/規格配備:

Length/機身長: 635mm

Height/機身高: 230mm

Main Blade Length/主旋翼長: 325mm

Main Rotor Diameter/主旋翼直徑: 710mm

Tail Rotor Diameter/尾旋翼直徑: 158mm

Motor Pinion Gear/馬達主齒: 13T

Main Drive Gear/傳動主齒輪: 150T

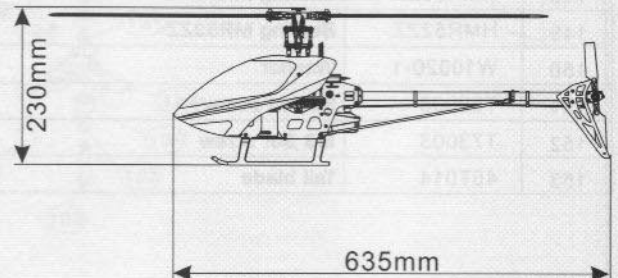
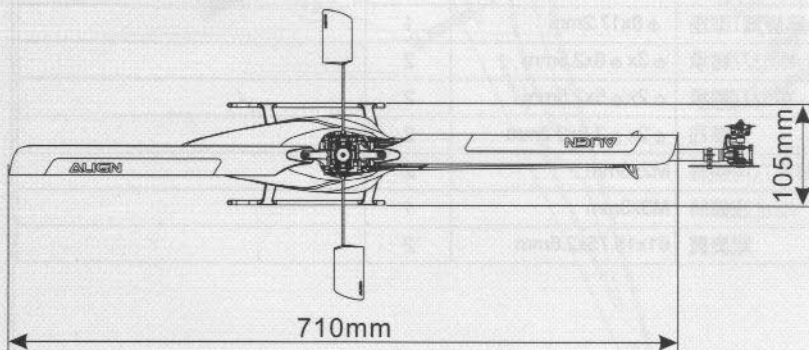
Autorotation Tail Drive Gear/尾驅動主齒: 106T

Tail Drive Gear/尾翼傳動齒: 25T

Drive Gear Ratio/齒輪傳動比: 1:11.5:4.24

Weight(w/o main blade)/空機重: 450g

Flying Weight/全配重: Approx 780g



## Features:

Newly designed head block with high rigidity and stability / Single piece integrated design of main bearing block and servo mount

Single piece integrated design of anti-rotation guide and gyro mount / Single piece integrated landing gear.

Highly stable flybar control system / High precision bearing mixing arms / Newly designed high resolution swashplate.

Single piece battery mount with integrated canopy mount designed to bring CG closer to disk plane.

Highly rigid frame with single piece carbon side and bottom plates / Highly efficient shaft driven tail design.

Weighted tail rotor blade grips to repel centripetal forces / Straight-up in-frame rudder servo mount for improved geometry.

Newly designed aerodynamic canopy / Newly designed high torque motor / Newly designed high strength main blade grips.



