# Super Combo
# T-REX 500E PRO
# INSTRUCTION MANUAL
# 使用說明書

KX017015T

## Contents

Thank you for buying ALIGN products. The T-REX 500E PRO is the latest technology in Rotary RC models. Please read this manual carefully before assembling and flying the new T-REX 500E PRO 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。

Thank you for buying ALIGN Products. The T-REX 500E PRO Helicopter is designed as an easy to use, full featured Helicopter R/C model capable of all forms of rotary flight. Please read the manual carefully before assembling the model, and follow all precautions and recommendations located within the manual. Be sure to retain the manual for future reference, routine maintenance, and tuning. The T-REX 500E PRO is a new product developed by ALIGN. It features the best design available on the R/C helicopters market to date, providing flying stability for beginners, full aerobatic capability for advanced fliers, and unsurpassed reliability for customer support.

感謝您選購亞拓產品，為了讓您容易方便的使用 T-REX 500E PRO 直昇機、請您詳細的閱讀完這本說明書之後再進行組裝以及操作這台直昇機，同時請您妥善的保存這本說明書、作為日後進行調整以及維修的參考。T-REX 500E PRO 是由亞拓自行研發的新產品，不論您是需求飛行穩定性的初學者或是追求性能的飛行愛好者。T-REX 500E PRO 將是您最佳的選擇。

## WARNING LABEL LEGEND 標誌代表涵義

| 🚫 FORBIDDEN 禁 止 | **Do not attempt under any circumstances.**<br>在任何禁止的環境下，請勿嘗試操作。 |
| ⚠ WARNING 警 告 | **Mishandling due to failure to follow these instructions may result in damage or injury.**<br>因為疏忽這些操作說明，而使用錯誤可能造成財產損失或嚴重傷害。 |
| ⚠ CAUTION 注 意 | **Mishandling due to failure to follow these instructions may result in danger.**<br>因為疏忽這些操作說明，而使用錯誤可能造成危險。 |

## IMPORTANT NOTES 重要聲明

R/C helicopters, including the T-REX 500E PRO are not toys. R/C helicopter utilize various high-tech products and technologies to provide superior performance. Improper use of this product can result in serious injury or even death. Please read this manual carefully before using and make sure to be conscious of your own personal safety and the safety of others and your environment when operating all ALIGN products. Manufacturer and seller assume no liability for the operation or the use of this product. This product is intended for use only by adults with experience flying remote control helicopters at a legal flying field. After the sale of this product we cannot maintain any control over its operation or usage.

As the user of this product, you are solely responsible for operating it in a manner that does not endanger yourself and others or result in damage to the product or the property of others.

T-REX 500E PRO遙控直昇機並非玩具，它是結合了許多高科技產品所設計出來的休閒用品，所以商品的使用不當或不熟悉都可能會造成嚴重傷害甚至死亡，使用之前請務必詳讀本說明書，勿輕忽並注意自身安全。注意！任何遙控直昇機的使用，製造商和經銷商是無法對使用者於零件使用的損耗異常或組裝不當所發生之意外負任何責任，本產品是提供給有操作過模型直昇機經驗的成人或有相當技術的人員在旁指導於當地合法遙控飛行場飛行，以確保安全無虞下操作使用，產品售出後本公司將不負任何操作和使用控制上的任何性能與安全責任。

作為本產品的使用者，您，是唯一對於您自己操作的環境及行為負全部的責任之人。

We recommend that you obtain the assistance of an experienced pilot before attempting to fly our products for the first time. A local expert is the best way to properly assemble, setup, and fly your model for the first time. The T-REX 500E PRO requires a certain degree of skill to operate, and is a consumer item. Any damage or dissatisfaction as a result of accidents or modifications are not covered by any warrantee and cannot be returned for repair or replacement. Please contact our distributors for free technical consultation and parts at discounted rates when you experience problems during operation or maintenance. As Align Corporation Limited has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability.

模型商品屬於需高操作技術且為消耗性之商品，如經拆裝使用後，會造成不等情況零件損耗，任何使用情況所造成商品不良或不滿意，將無法於保固條件內更換新品或退貨，如遇有使用操作維修問題，本公司全省分公司或代理商將提供技術指導、特價零件供應服務。對使用者的不當使用、設定、組裝、修改、或操作不良所造成的破損或傷害，本公司無法控制及負責。任何使用、設定、組裝、修改、或操作不良所造成的破損、意外或傷害，使用者應承擔全部責任。

⚠ CAUTION 注 意

· Fly only in safe areas, away from other people. Do not operate R/C aircraft within the vicinity of homes or crowds of people. R/C aircraft are prone to accidents, failures, and crashes due to a variety of reasons including, lack of maintenance, pilot error, and radio interference. Pilots are responsible for their actions and damage or injury occurring during the operation or as of a result of R/C aircraft models.

· Prior to every flight, carefully check rotorhead spindle shaft screws and tail blade grip screws, linkage balls and screws, ensure they are firmly secured.

· 遙控模型飛機、直昇機屬高危險性商品，飛行時務必遠離人群，人為組裝不當或機件損壞、電子控制設備不良，以及操控上的不熟悉、都有可能導致飛行失控損傷等不可預期的意外，請飛行者務必注意飛行安全，並需了解自負疏忽所造成任何意外之責任。

· 每趟飛行前須仔細檢查，主旋翼夾座橫軸螺絲、尾旋翼夾座螺絲，以及機身各部位球頭、螺絲，確實上膠鎖緊才能昇空飛行。

## ⊘ FORBIDDEN 禁止　LOCATE AN APPROPRIATE LOCATION 遠離障礙物及人群

R/C helicopters fly at high speed, thus posing a certain degree of potential danger.
Choose a legal flying field consisting of flat, smooth ground without obstacles. Do
not fly near buildings, high voltage cables, or trees to ensure the safety of yourself,
others and your model. For the first practice, please choose a legal flying field.
Do not fly your model in inclement weather, such as rain, wind, snow or darkness.

直昇機飛行時具有一定的速度，相對的也潛在著危險性，場地的選擇也相對重要，請需遵守當地法規
到合法遙控飛行場地飛行。務必選擇在空曠合法專屬飛行場地，並必須注意周遭有沒有人、高樓、建築
物、高壓電線、樹木等等，避免操控的不當造成自己與他人財產的損壞。
請勿在下雨、打雷等惡劣天候下操作，以確保本身及機體的安全。

## ⊘ FORBIDDEN 禁止　NOTE ON LITHIUM POLYMER BATTERIES 鋰聚電池注意事項

Lithium Polymer batteries are significantly more volatile than alkaline or Ni-Cd/Ni-
MH batteries used in RC applications. All manufacturer's instructions and warnings
must be followed closely. Mishandling of Li-Po batteries can result in fire. Always
follow the manufacturer's instructions when disposing of Lithium Polymer batteries.

鋰聚電池跟一般在RC使用的鹼性電池、鎳鎘電池、鎳氫電池比較起來是相對危險的。請嚴格遵守鋰聚
電池說明書之使用注意事項。不恰當使用鋰聚電池，可能造成火災並傷及生命財產安全，切勿大意！
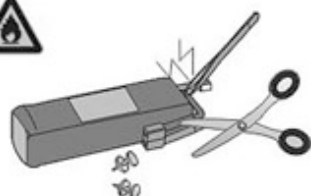
## ⊘ FORBIDDEN 禁止　PREVENT MOISTURE 遠離潮濕環境

R/C models are composed of many precision electrical components. It is critical to
keep the model and associated equipment away from moisture and other
contaminants. The introduction or exposure to water or moisture in any form can
cause the model to malfunction resulting in loss of use, or a crash. Do not operate
or expose to rain or moisture.

直昇機內部也是由許多精密的電子零組件組成，所以必須絕對的防止潮濕或水氣，避免在浴室或雨天時
使用，防止水氣進入機身內部而導致機件及電子零件故障而引發不可預期的意外！
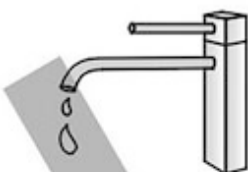
## ⊘ FORBIDDEN 禁止　PROPER OPERATION 勿不當使用本產品

Please use the replacement of parts on the manual to ensure the safety of
instructors. This product is for R/C model, so do not use for other purpose.

請勿自行改造加工，任何的升級改裝或維修，請使用亞拓產品目錄中的零件，以確保結構的安全。
請確認於產品限界內操作，請勿過載使用，並勿用於安全、法令外其它非法用途。

## ⚠ WARNING 警告　OBTAIN THE ASSISTANCE OF AN EXPERIENCED PILOT 避免獨自操控

Before turning on your model and transmitter, check to make sure no one else is
operating on the same frequency. Frequency interference can cause your model,
or other models to crash. The guidance provided by an experienced pilot will be
invaluable for the assembly, tuning, trimming, and actual first flight or unforeseen
danger may happen. (Recommend you to practice with computer-based flight
simulator.)

至飛行場飛行前，需確認是否有相同頻率的同好正進行飛行，因為開啟相同頻率的發射機將導致自己
與他人立即干擾等意外危險。遙控飛機操控技巧在學習初期有著一定的難度，要盡量避免獨自操控飛
行，需有經驗的人士在旁指導，才可以操控飛行，否則將可能造成不可預期的意外發生。(勤練電腦模
擬器及老手指導是入門必要的選擇)

## ⚠ WARNING 警告　SAFE OPERATION 安全操作

Operate this unit within your ability. Do not fly under tired condition and improper
operation may cause in danger. Never take your eyes off the model or leave it
unattended while it is turned on. Immediately turn off the model and transmitter
when you have landed the model.

請於自己能力內及需要一定技術範圍內操作遙台直昇機，過於疲勞、精神不佳或不當操作，意外發生風
險將可能會提高。不可在視線範圍外進行，降落後也請馬上關掉直昇機和遙控器電源。

## ⚠ CAUTION 注意　ALWAYS BE AWARE OF THE ROTATING BLADES 遠離運轉中零件

During the operation of the helicopter, the main rotor and tail rotor will be spinning
at a high rate of speed. The blades are capable of inflicting serious bodily injury
and damage to the environment. Be conscious of your actions, and careful to keep
your face, eyes, hands, and loose clothing away from the blades. Always fly the
model a safe distance from yourself and others, as well as surrounding objects.

直昇機主旋翼與尾旋翼運轉時會以高轉速下進行，在高轉速下的旋翼會造成自己與他人在身體上或環
境上的嚴重損傷，請勿觸摸運轉中的主旋翼與尾旋翼，並保持安全距離以避免造成危險及損壞。

## ⚠ CAUTION 注意　KEEP AWAY FROM HEAT 遠離熱源

R/C models are made of various forms of plastic. Plastic is very susceptible to
damage or deformation due to extreme heat and cold climate. Make sure not to
store the model near any source of heat such as an oven, or heater. It is best to
store the model indoors, in a climate-controlled, room temperature environment.

遙控飛機、直昇機多半是以PA纖維或聚乙烯、電子商品為主要材質，因此要盡量遠離熱源、日曬，以
避免因高溫而變形甚至熔毀損壞的可能。
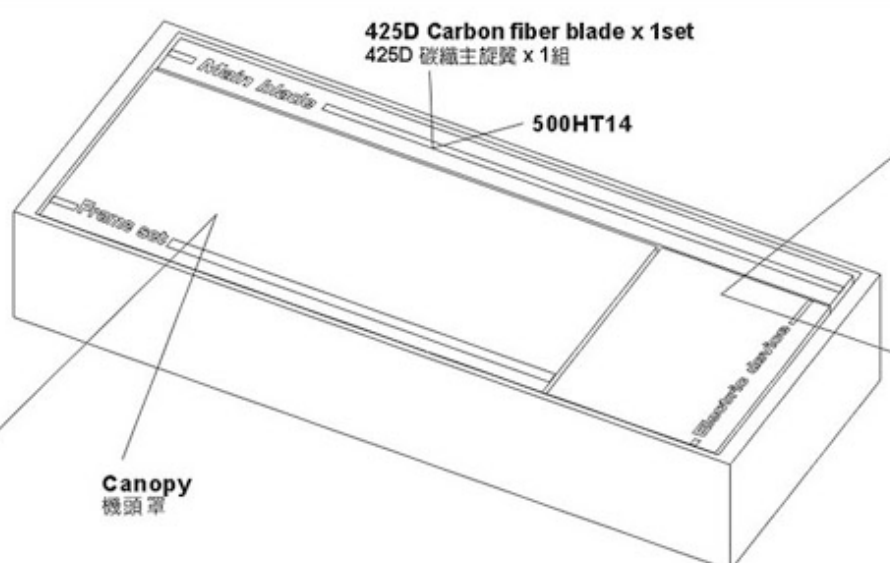
## RADIO TRANSMITTER AND ELECTRONIC EQUIPMENT REQUIRED FOR ASSEMBLY 自備遙控及電子設備

**Transmitter**
(7-channel or more,helicopter system)
發射機(七動以上直昇機模式遙控器)

**Receiver(6-channel or more)**
接收機(七動以上)

or
或

**Remote receiver**
衛星天線

**Li-Po Battery Charger RCC-6CX**
Li-Po電池充電器 RCC-6CX

**22.2V 6S 2600~3300mAh Li-Po Battery x 1pc**
22.2V 6S 2600~3300mAh Li-Po電池 x 1

## ADDITIONAL TOOLS REQUIRED FOR ASSEMBLY 自備工具

**Swashplate Leveler**
十字盤調整器

**Digital Pitch Gauge**
電子螺距規

**Multi-function Tester**
**Voltmeter/Servo Diagnosis**
多功能檢測計
電池電壓/伺服器檢測

**Philips Screw Driver**
十字螺絲起子
φ3.0/φ1.8mm

**Cutter Knife**
刀子

**Hexagon Screw Driver**
六角螺絲起子
3mm/2.5mm/2mm/1.5mm

**Needle Nose Pliers**
尖嘴鉗

**Oil**
潤滑油

**CA**
瞬間膠

# 4.PACKAGE ILLUSTRATION 包裝說明 **ALIGN** ///

**425D Carbon fiber blade x 1set**
425D 碳纖主旋翼 x 1組

**500HT14**

**RCM-BL500MX Motor x 1**
RCM-BL500MX 無刷馬達 x 1

**RCE-BL70G Brushless ESC**
**(Governer Mode) x 1**
RCE-BL70G 無刷定速調速器 x 1

**DS510M Digital Servo x 3**
DS510M 數位伺服器 x 3

**DS520 Digital Servo x 1**
DS520數位伺服器 x 1

**GP900 Head lock Gyro x 1**
GP900 鎖定式陀螺儀 x 1

**500HT11**
**500HZ1**

**500HH**
**500HT12**
**500HB5**
**500HB6**
**500HG2**

**Canopy**
機頭罩

## CAREFULLY INSPECT BEFORE REAL FLIGHT　請嚴格執行飛行前之檢查義務

· 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 if 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，以確保您自身與他人的安全。
· 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。
· 關機前必須遵守電源開關機的程序，開機時應先開啟發射機後，再開啟接收機電源；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的各個動作是否順暢，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：每次飛行前的安全檢查、保養、及更換損耗零件，請確實嚴格執行以確保安全。
· 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

| | | | | | |
|---|---|---|---|---|---|
| 500HC | 500HH14 | 500HB | 500HB5A | 500HB6 | 500HT11 |
| 500HT12 | 500HZ1 | 500HT14 | 500HG2 | DS510M Digital Servo x3  DS510M 數位伺服器 x 3 | DS520 Digital Servo x1  DS520 數位伺服器 x1 |
| GP900 Herd Lock Gyro x1  GP900 鎖定式陀螺儀 x1 | RCE-BL70G Brushless ESC (Governer Mode) x1  REC-BL70G 無鎖定速控本器x1 | M3x3 Set Screw  x 2  M3x3 止溺螺絲  x 2  Motor Pinion Gear 12T  x 1  馬達斜齒輪12T x1 | RCM-BL500MX 1600KV Brushless motor x 1  RCM-BL500MX 1600KV 無刷馬達 x 1 | 425D Carbon Fiber Blade x 1  425D 碳纖主旋翼 x 1 | |

When you see the marks as below, please use glue or grease  to ensure flying safety.
標有以下符號之組裝步驟，請配合上膠或上油，以確保使用之可靠度。

Grease  R48  T22  CA

Self-grease  Self-green  Purple  Self-furnished
潤滑油(自備)  綠色(自備)  紫色  膠固膠(自備)

**CA: Apply CA Glue to fix.**
**R48: Apply Anaerobics Retainer to fix.**
**T22: 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
T22: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。

T22 Glue width: approx. 1mm
T22上膠寬度約1mm
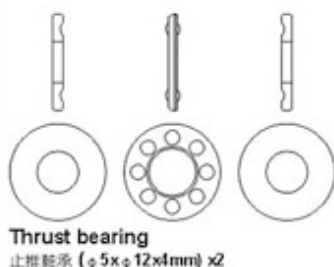
R48 metal tubular adhesive (eg. Bearings).  T22 thread lock, apply a small amount on screws or metal parts and wipe surplus off. When disassembling, recommend to heat the metal joint about 15 Seconds. (NOTE：Keep plastic parts away from heat.)

R48 為強力金屬管狀(如軸承)接著劑，T22 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)

## 500HH14

**Bearing**
軸承(φ6xφ12x4mm) x 4

**Socket collar screw**
圓頭內六角軸套螺絲(M3x6mm) x4

**Thrust bearing**
止推軸承 (φ5xφ12x4mm) x2

**Washer**
橫軸華司 (φ9xφ12x0.8mm) x2

⚠ **CAUTION** 注意

Thrust bearing and washer for radial bearing are wear items, and thus should be inspected for replace ment after every 20 flights. For flights with high headspeed, the inspection interval should be reduced to ensure flight safety.

止推軸承及橫軸軸圈屬於飛行消耗品,建議每20趟定期檢查及更換,高主旋翼轉速飛行時,請縮短定期檢查之趟數,以確保飛行安全。

✒ Apply a little amount of T22 thread lock when fixing a metal part.
螺絲鎖附於金屬件請使用適量T22(螺絲膠)

⚠ **CAUTION** 注意

Already assembled by Factory. Before flying, please check if the screws are fixed with glue.
原廠組裝完成品,每一次飛行前請先確認螺絲是否已上膠不會鬆動。

**Obverse of bearing faces inside.**
軸承面凹開口朝內

**Thrust bearing**
止推軸承
φ5xφ12x4mm

**Spindle bearing spacer**
橫軸華司
φ9xφ12x0.8mm

**Bearing**
軸承
φ6xφ12x4mm

**Socket collar screw**
圓頭內六角軸套螺絲
M3x6mm

**Metal main rotor holder**
金屬主旋翼夾座

**Main Blade Grip Arm**
主旋翼夾座臂

⚠ **CAUTION** 注意

**Apply grease on thrust bearing.**
止推軸承塗上潤滑油

(OUT)
Smaller ID
內徑較小

(IN)
larger ID
內徑較大

Thrust bearing 止推軸承

**Metal main rotor holder**
金屬主旋翼夾座

## 500HH14

**Feathering shaft sleeve**
橫軸套管(φ6xφ8x26mm) x 1

**Damper rubber-black 80°**
橫軸膠圈 黑色80° (φ5.9xφ11.1x4mm) x 2

**Spacer**
橫軸套圈(φ6.1xφ10.5x1.5mm) x 2

**Socket screw**
圓頭內六角螺絲(M3x10mm)x2

**Washer**
橫軸華司(φ3xφ10x1mm)x2

**Metal main rotor housing**
金屬主旋翼固定座

**Feathering shaft**
橫軸
φ5xφ6x76.2mm

**Apply grease**
塗上潤滑油

**Damper rubber**
橫軸膠圈(橡膠)
φ5.9xφ11.1x4mm

**Spacer(Copper)**
橫軸套圈(銅)
(φ6.1xφ10.5x1.5mm) x2

**Washer**
橫軸華司
φ3xφ10x1mm

16mm

**Pin**
定位捎梢
φ2x28mm

**Feathering shaft sleeve**
橫軸套管
φ6xφ8x26mm

**Feathering shaft sleeve**
橫軸套管
φ6xφ8x26mm

**Socket screw**
圓頭內六角螺絲
M3x10mm

⚠ **CAUTION** 注意

ALIGN **logo on the top**
字樣朝上

## 500HH14

◎ M2.5 collar screw
M2.5 蛇套螺絲(M2.5x5.5mm)X2

◎ Washer
華司( ϕ3x ϕ4.8x0.3mm)X4

◉ Socket button head screw
半圓頭內六角螺絲(M3x12mm)X2

□ Washer
控制搖臂套( ϕ3.1x ϕ4.7x3.8mm)X2

◎ Bearing
軸承( ϕ3x ϕ6x2.5mm) x 4

◎ Bearing
軸承( ϕ4 x ϕ7x2.5mm)X2

## 500HH15A

◎ Linkage ball A(M2.5x2.5)
球頭C(M2.5x2.5)( ϕ4.75x11.5mm) x2

◎ Linkage ball A(M3x4)
球頭A(M3x4)( ϕ4.75x8.68mm) x4

Linkage ball A(M3x4)
球頭A(M3x4)
ϕ4.75x8.68mm

Bearing
軸承
ϕ3x ϕ6x2.5mm

Washer
華司
ϕ3x ϕ4.8x0.3mm

Washer
控制搖臂套
ϕ3.1x ϕ4.7x3.8mm

Washer
華司
ϕ3x ϕ4.8x0.3mm

Socket button head screw
半圓頭內六角螺絲
M3x12 mm

Mixingarm(U)
上混控臂

Linkage ball A
球頭A(M2.5x2.5)
ϕ4.75x11.5mm

Metal flybar seesaw holder
金屬平衡桿固定座

R48

Bearing
軸承
ϕ4x ϕ7x2.5mm

M2.5 collar screw
M2.5 蛇套螺絲
M2.5x5.5mm(牙長2.2)

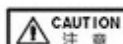**Apply a little amount of T22 thread lock when fixing a metal part.**
螺絲鎖附於金屬件請使用適量T22(螺絲膠)

**Please tighten it firmly but not over tightened. Overtightened may cause it strip.**
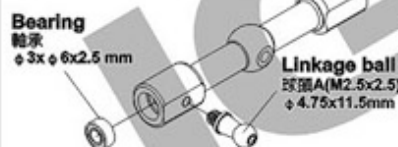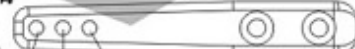以適當扭力鎖緊即可，過緊的扭力可能會導致滑牙。

### Mixingarm(U)
上混控臂孔位

Hole A is suitable for normal flight
Hole B is suitable for 3D flight
A孔適用於一般飛行
B孔適用於3D飛行

**ALREADY ASSEMBLED BY FACTORY.**
已組裝完成

Bearing
軸承
ϕ3x ϕ6x2.5 mm

Linkage ball D
球頭A(M2.5x2.5)
ϕ4.75x11.5mm

### Main blade grip
主旋翼夾座臂

A1 A2 A3

A1: Positive Delta: Increase maneuver response speed
A2: Zero Delta: Recommended setting
A3: Negative Delta: Decrease maneuver response speed

A1: 正三角補償角:加快動作反應速度
A2: 三角補償角0度: 建議使用
A3: 負三角補償角:減緩動作反應速度

## 500HH15

◎ Socket collar screw
圓頭內六角螺絲 (M2x5mm) x4

◎ M3 Set screw
M3 止洩螺絲(M3x4mm)X2

◎ M3 Set screw
M3 止洩螺絲(M3x3mm)X4

◎ Bearing
軸承( ϕ3x ϕ6x2.5mm) x 2

## 500HZ11

◎ Linkage rod(B)
連桿(B) ϕ1.96x13.5mm x 2

Ball link
連桿頭 ×4

## 500HH14

3K Flybar paddle
3K平衡翼

M3 Set screw
M3 止洩螺絲
M3x4mm

M3 Set screw
M3 止洩螺絲
M3x3mm

Socket collar screw
圓頭內六角螺絲
M2x5mm

Metal flybar control arm
金屬平衡翼型控制臂

Flybar rod
平衡翼桿
ϕ3x340mm

Flybar control rod
平衡翼球型控制球桿
ϕ3.5x59.1mm

Tighter press side
較緊的壓入面

Looser press side
較鬆的壓入面

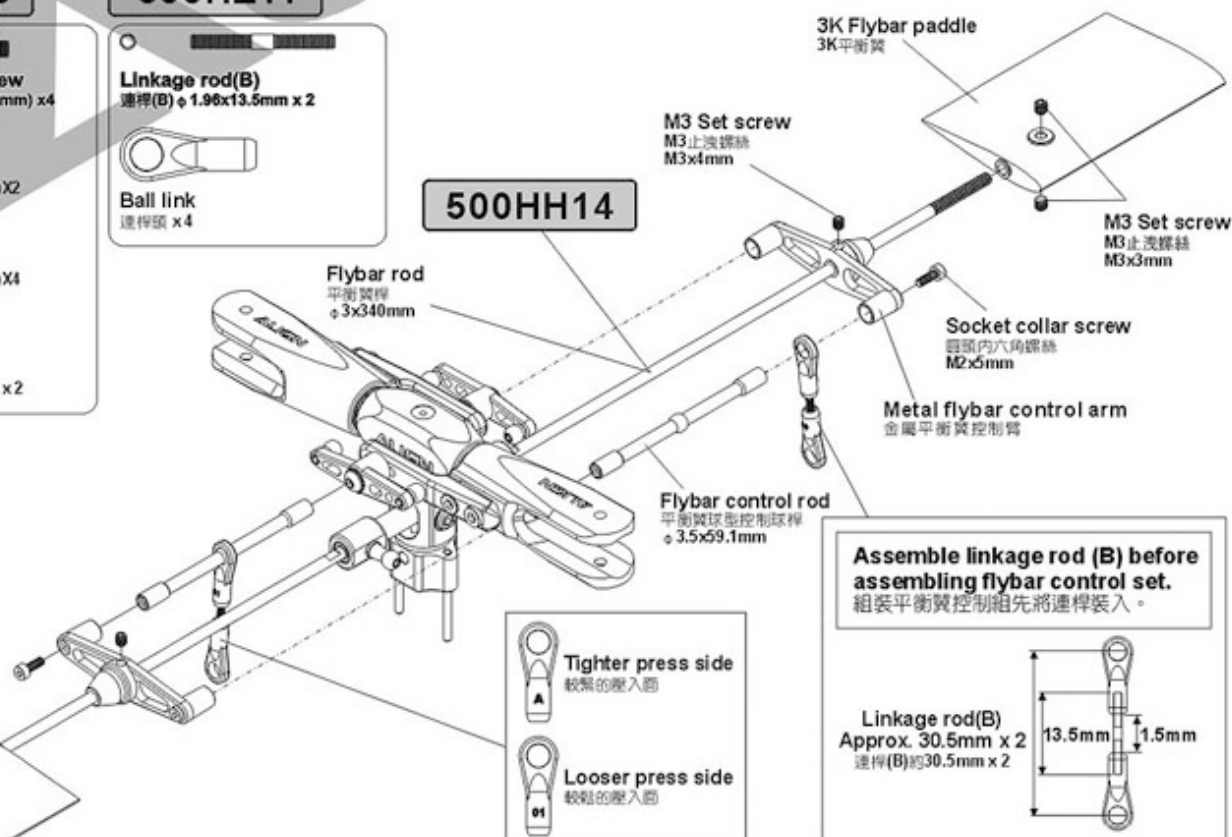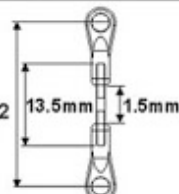**Assemble linkage rod (B) before assembling flybar control set.**
組裝平衡翼控制組先將連桿裝入。

Linkage rod(B)
Approx. 30.5mm x 2
連桿(B)約30.5mm x 2

13.5mm   1.5mm

## 500HH16

Socket button head collar screw
半圓頭內六角螺絲
M3x10mm x2

Socket screw
圓頭內六角螺絲(M2x5mm) x 4

Bearing
軸承(φ2x φ5x6x2.3mm) x4

Washer
華司
(φ3x φ4.8x0.3mm) x2

Collar
搖臂軸承襯套
(φ3x φ4.5x1mm) x2

Bearing
軸承(φ3x φ6x2.5mm) x4

## 500HH5

Long linkage ball(M2.5x3)
導板長球頭(M2.5x3)
(φ4.75x24.59mm) x1

Linkage ball B(M2.5x3)
球頭B(M2.5x3) (φ4.75x9.77mm) x6

**Apply a little amount of T22 thread lock when fixing a metal part.**
螺絲鎖附於金屬件請使用適量T22(螺絲膠)

Socket collar screw
圓頭內六角軸套螺絲(M2.5X19mm)

M2.5 Nut
M2.5的鬆螺帽

Main shaft
主軸
φ4x φ8x151.7mm

## 500HH16A

Socket collar screw
圓頭內六角軸套螺絲(M2.5x19mm) x 1

M3 Nut
M3防鬆螺帽 x 1

Linkage ball B(M2.5x3)
球頭B (M2.5x3)( φ4.75x9.77mm) x 2

Tighter press side
較緊的壓入面

Looser press side
較鬆的壓入面

Bearing
軸承
φ2x φ5x φ6x2.3mm
**Already assembled by Factory.**
已組裝完成

Radius arm
Radius 連桿

Metal washout base
金屬向位器

Socket collar screw
圓頭內六角螺絲
M2x5mm

Socket button head screw
半圓頭內六角螺絲
M3x10mm

Washer
華司
φ3x φ4.8x0.3mm

Collar
搖臂軸承襯套
φ3x φ4.5x1mm

Bearing
軸承
φ3x φ6x2.5mm

Linkage ball B(M2.5x3)
球頭B(M2.5x3)
φ4.75x9.77mm

⚠ 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。

Linkage ball B(M2.5x3)
球頭B(M2.5x3)
φ4.75x9.77mm

Long linkage ball(M2.5x3)
導板長球頭(M2.5x3)
φ4.75x24.59mm
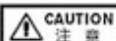
## 500HH14A

**Socket screw**
圓頭內六角螺絲(M2x8mm) x 1

## 500HZ11

**Linkage rod(A)**
連桿(A) ○ 1.96x13.5mm x 2

**Linkage rod(C)**
連桿(C) ○ 1.96x56mm x 2

## 500HZ11

**Ball link**
連桿頭 x4

**Ball link**
500 連桿頭 x4

**Metal head stopper**
金屬旋翼頭制動器
○38x9.26mm

**Socket screw**
圓頭內六角螺絲
M2x8mm

**Apply a little amount of T22 thread lock when fixing a metal part.**
螺絲鎖附於金屬件請使用適量T22(螺絲膠)

**90°**

**Mixingarm(U)**
上混控臂

**Mixingarm(L)**
下混控臂

**Linkage rod(A)**
Approx. 31.5mm x 2
連桿(A)約31.5mm x 2

2.5mm
10mm

**Linkage rod(B)**
Approx. 30.5mm x 2
連桿(B)約30.5mm x 2

13.5mm    1.5mm

**Linkage rod (C)**
Approx. 70.5mm x 2    56mm
連桿(C)約70.5mm x 2

41.5mm

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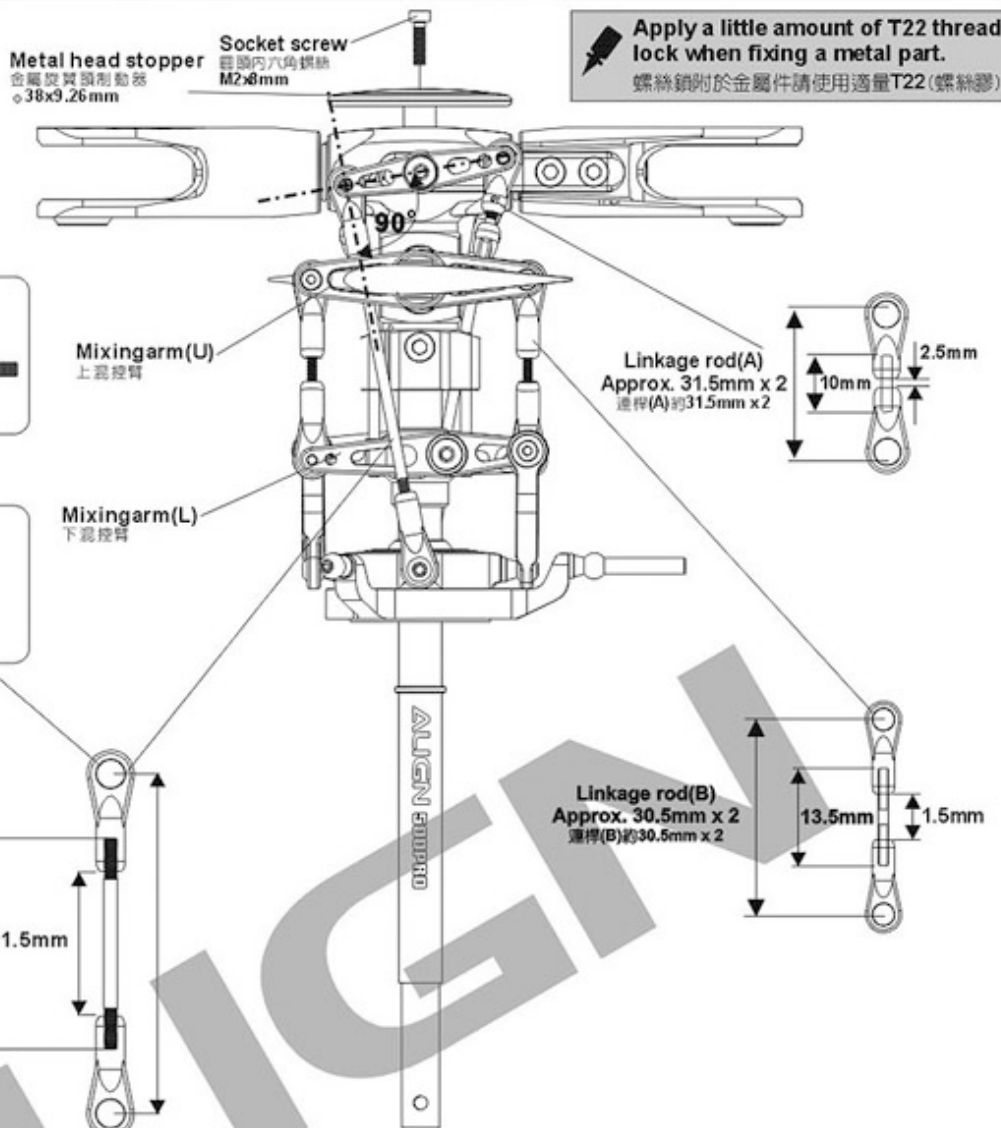
## EFFECT OF ADJUSTMENT MOUNTING HOLES 調整孔位影響特性:

**Main Blade Grip**
主旋翼夾座臂

A1  A2  A3

**A1: Positive Delta:**
Increase maneuver response speed
**A2: Zero Delta: Recommended setting**
**A3: Negative Delta:**
Decrease maneuver response speed

A1：正三角補償角：加快動作反應速度
A2：三角補償角0度：建議使用
A3：負三角補償角：減緩動作反應速度

**Mixingarm(U)**
上混控臂孔位

A  B

**Hole A is suitable for normal flight**
**Hole B is suitable for 3D flight**
A孔適用於一般飛行
B孔適用於3D飛行

**Mixingarm(L)**
下混控臂孔位

A  B

**Hole A is suitable for normal flight**
**Hole B is suitable for 3D flight**
A孔適用於一般飛行
B孔適用於3D飛行

---

Approx. 104mm
約104mm

Approx. 104mm
約104mm

**3K Flybar paddle**
3K平衡翼

**3K Flybar paddle**
3K平衡翼
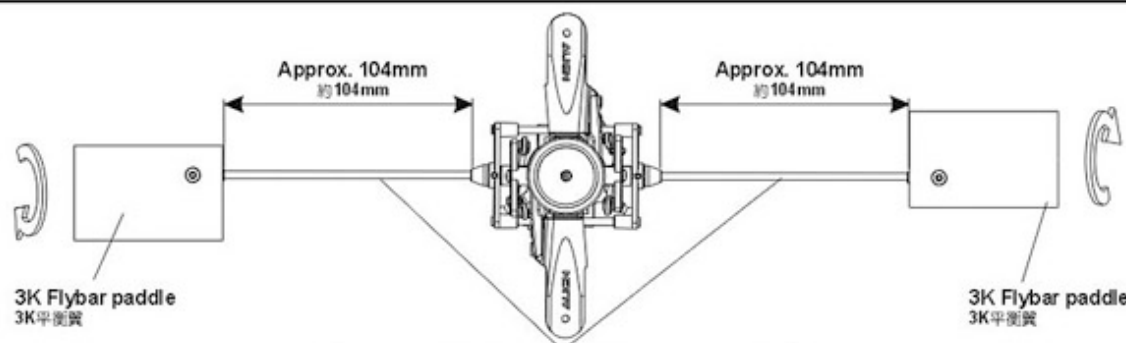
**Make sure both sides are equal in length.**
請保持平衡桿兩邊長度相等。

Socket screw
圓頭內六角螺絲(M2.5x6mm) x 18

Socket button head self tapping screw
半圓頭內六角自攻螺絲(T2.6x8mm) x 2

Socket screw
圓頭內六角螺絲(M3x6mm) x 4

Socket button head screw
M2.5止洩螺絲(M2.5x12mm) x2

Bearing
軸承(φ8xφ16x5mm) x 2

Canopy mounting bolt
機頭罩固定柱
(M2.5x25.3mm) x2
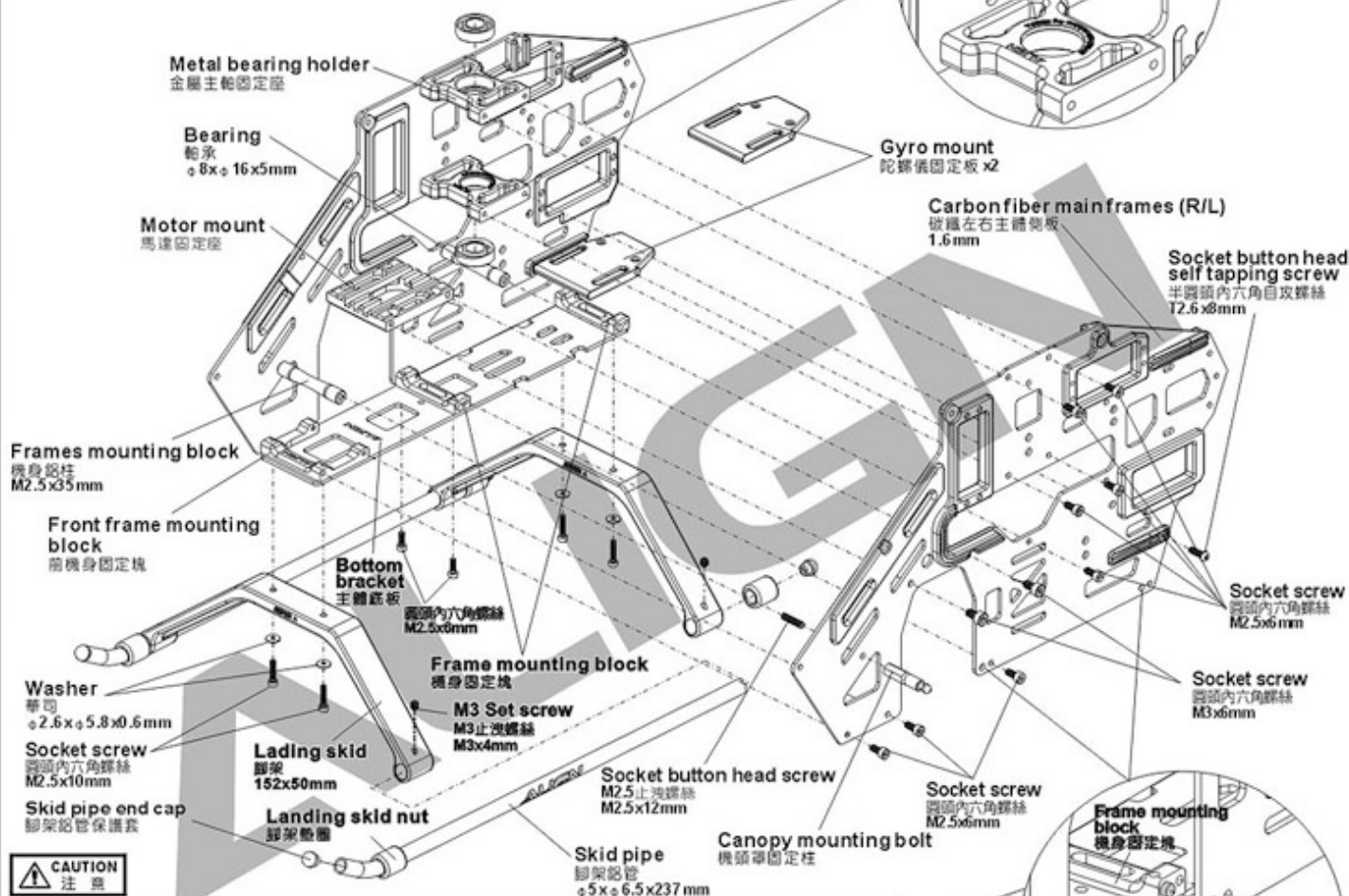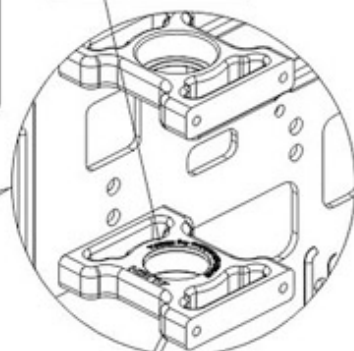
Socket screw
圓頭內六角螺絲(M2.5x10mm) x 4

M3 Set screw
M3止洩螺絲(M3x4mm) x 4

Washer
華司(φ2.6xφ5.8x0.6mm) x 4

Apply a little amount of T22 thread lock when fixing a metal part.
螺絲鎖附於金屬件請使用適量T22(螺絲膠)

⚠ CAUTION 注意

Laser engraving face inside
雷刻字樣朝內

Metal bearing holder
金屬主軸固定座

Bearing
軸承
φ8xφ16x5mm

Motor mount
馬達固定座

Gyro mount
陀螺儀固定板 x2

Carbon fiber main frames (R/L)
碳纖左右主體側板
1.6mm

Socket button head self tapping screw
半圓頭內六角自攻螺絲
T2.6x8mm

Frames mounting block
機身鋁柱
M2.5x35mm

Front frame mounting block
前機身固定塊

Bottom bracket
主體底板

圓頭內六角螺絲
M2.5x6mm

Frame mounting block
機身固定塊

M3 Set screw
M3止洩螺絲
M3x4mm

Socket screw
圓頭內六角螺絲
M2.5x6mm

Socket screw
圓頭內六角螺絲
M3x6mm

Washer
華司
φ2.6xφ5.8x0.6mm

Socket screw
圓頭內六角螺絲
M2.5x10mm

Lading skid
卸架
152x50mm

Skid pipe end cap
卸架鋁管保護套

Landing skid nut
卸架墊圈

Socket button head screw
M2.5止洩螺絲
M2.5x12mm

Skid pipe
卸架鋁管
φ5xφ6.5x237mm

Canopy mounting bolt
機頭罩固定柱

Socket screw
圓頭內六角螺絲
M2.5x6mm

Frame mounting block
機身固定塊

CF Bottom plate
碳纖底板

圓頭內六角螺絲
M2.5x6mm

⚠ CAUTION 注意

When tightening a screw to a plastic part, please tighten it firmly, but not over tightened, or they will strip.
螺絲鎖附於塑膠件請務必注意，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。

Insert the bulging part on frame mounting block into the hole on the side frame as shown and fastern with socket screw.
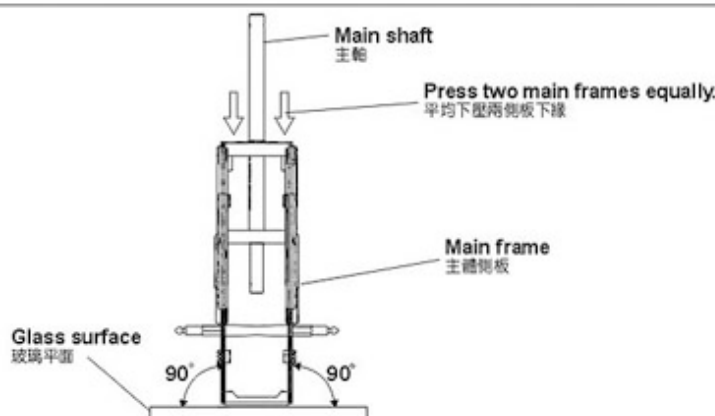將機身固定塊凸面崁入側板凹孔後鎖附圓頭內六角螺絲
(M2.5x6mm)

⚠ CAUTION 注意

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須滑順，主體底板必須與水平平面（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。

Main shaft
主軸

Press two main frames equally.
平均下壓兩側板下緣

Main frame
主體側板

Glass surface
玻璃平面

90°  90°

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。

Waterproof abrasive paper
水砂紙

Apply a little amount of T22 thread lock when fixing a metal part.
螺絲鎖附於金屬件請使用適量T22(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。

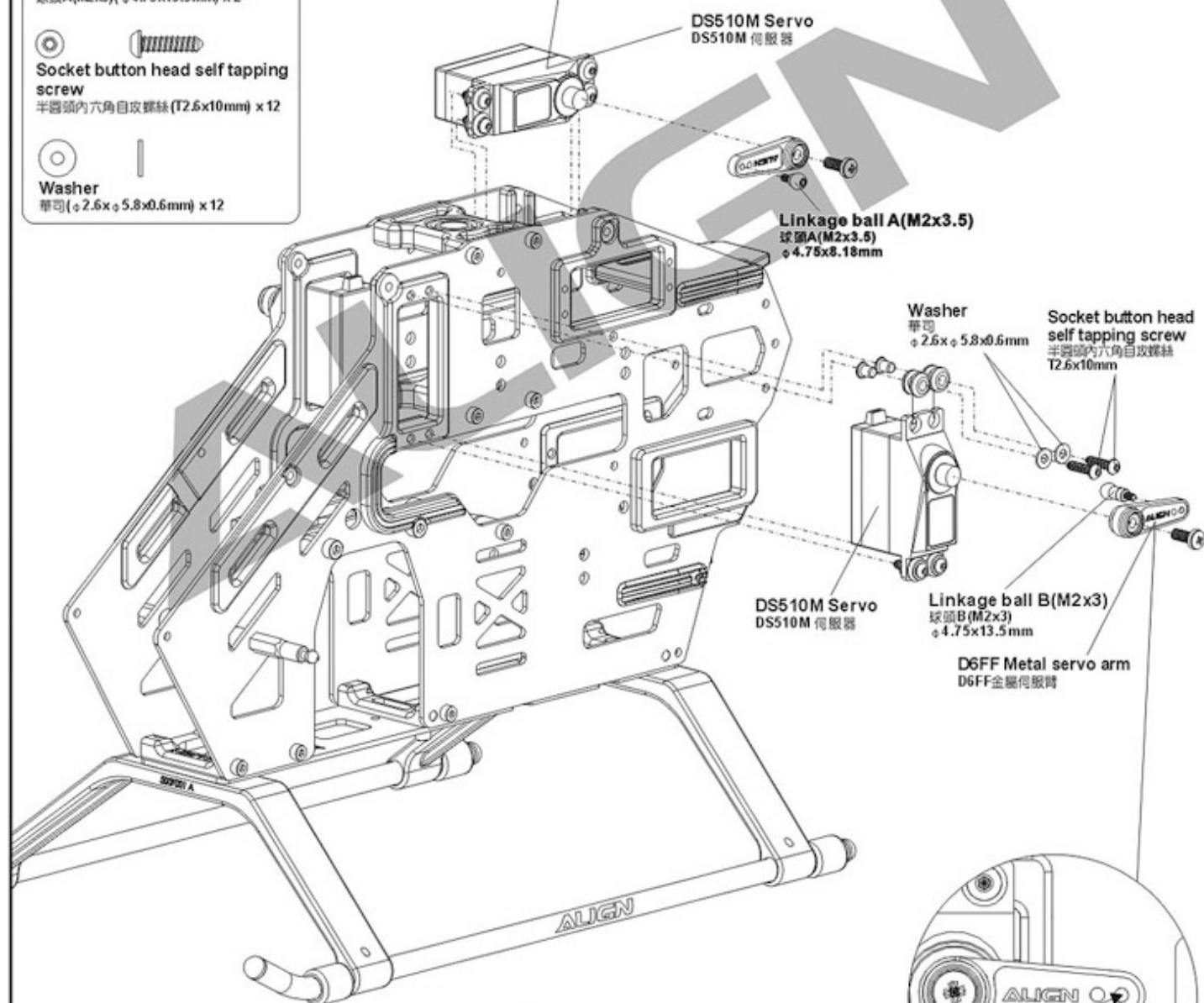## 500HZ13

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

Linkage ball A(M2x3)
球頭A(M2x3)(φ4.75x13.5mm) x 2

Socket button head self tapping screw
半圓頭內六角自攻螺絲 (T2.6x10mm) x 12

Washer
華司 (φ2.6xφ5.8x0.6mm) x 12

DS510M Digital Servo:
1. Stall torque/輸出扭力: 3.7kg.cm(4.8V)
   4.6kg.cm(6.0V)
2. Motion speed/動作速度: 0.13sec/60˚(4.8V)
   0.11sec/60˚(6.0V)
3. Dimension/尺寸: 35 x 15 x 29.2mm
4. Weight/重量: 29g

DS510M Servo
DS510M 伺服器

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

Washer
華司
φ2.6 x φ5.8x0.6mm

Socket button head self tapping screw
半圓頭內六角自攻螺絲
T2.6x10mm

DS510M Servo
DS510M 伺服器

Linkage ball B(M2x3)
球頭B(M2x3)
φ4.75x13.5mm

D6FF Metal servo arm
D6FF金屬伺服臂

⚠ CAUTION 注意

Please make sure there is no interference when you install linkage ball.
安裝球頭時須確認動作無干涉。

Use the outer hole
鎖鎖附於外孔

## 500HT11

Bearing
軸承
φ4×φ9×4mm

500PRO Hexagonal bolt
500PRO六角鋁柱

Torque tube drive gear assembly 36T
軸傳尾數導輪軸組 36T

Long umbrella gear
軸傳長傘齒
φ18.5×φ8×25.4mm

Bearing
軸承
φ8×φ12×2.5mm

Tail boom mount(R)
軸傳尾管固定座(右)

Tail boom mount(L)
軸傳尾管固定座(左)

Bearing
軸承(φ4×φ9×4mm) x 2

Bearing
軸承(φ8×φ12×2.5mm) x 2

**Apply a little amount of T22 thread lock when fixing a metal part.**
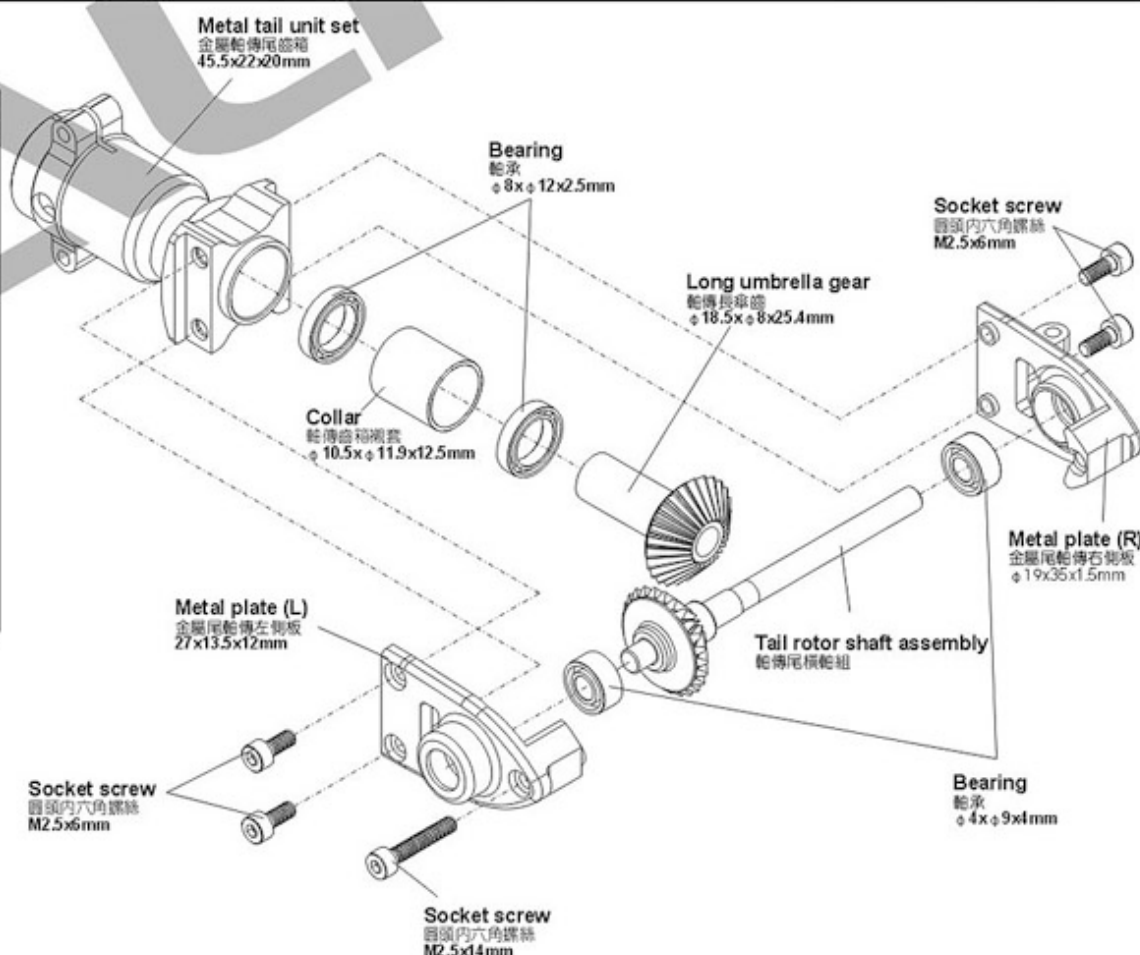螺絲鎖附於金屬件請使用適量T22(螺絲膠)

⚠ 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。

## 500HT12

Socket screw
圓頭內六角螺絲(M2.5×14mm) x 1

Socket collar screw
圓頭內六角螺絲(M2.5×6mm) x 4

Bearing
軸承(φ4×φ9×4mm) x 2

Bearing
軸承(φ8×φ12×2.5mm) x 2

Metal tail unit set
金屬軸傳尾盛箱
45.5×22×20mm

Bearing
軸承
φ8×φ12×2.5mm

Socket screw
圓頭內六角螺絲
M2.5×6mm

Long umbrella gear
軸傳長傘齒
φ18.5×φ8×25.4mm

Collar
軸傳齒箱襯套
φ10.5×φ11.9×12.5mm

Metal plate (R)
金屬尾軸傳右側板
φ19×35×1.5mm

Metal plate (L)
金屬尾軸傳左側板
27×13.5×12mm

Socket screw
圓頭內六角螺絲
M2.5×6mm

Tail rotor shaft assembly
軸傳尾槳軸組

Bearing
軸承
φ4×φ9×4mm

Socket screw
圓頭內六角螺絲
M2.5×14mm

11

## 500HT12

Apply a little amount of T22 thread lock when fixing a metal part.
螺絲鎖附於金屬件請使用適量T22(螺絲膠)

Socket collar screw
圓頭內六角軸套螺絲
(M2x6mm)X2

Collar screw 軸套螺絲-銀(M2x8mm)
(牙長3mm) x 2

Collar screw
軸套螺絲-黑(M2x8mm)(牙長4.2mm) x 2

Socket collar screw
圓頭內六角軸套螺絲(M3x15mm) x 1

Collar
尾旋翼控制臂鋁套 (φ3xφ4.9x5mm) x 1

Collar A
尾連桿頭銅套A(φ2xφ3x4mm) x 2

Collar
尾控制組軸套座鋁襯墊
(φ6xφ7.4x2mm) x 1

Washer
華司(φ2xφ6x0.6mm) x 2

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

Linkage ball A
球座A(M2x2.5)
(φ4.75x7.18mm) x 1

Bearing
軸承(φ4xφ8x3mm) x 4

M4 Set screw
M4止洩螺絲(M4x3mm) x 1

Washer
華司(φ3xφ4.8x0.3mm) x 2

Washer
華司(φ6xφ8x0.3mm) x 2

Bearing
軸承(φ3xφ6x2.5mm) x 2

Bearing
軸承(φ6xφ10x3mm) x 2

Slide shaft
尾軸滑套 x 1

Thrust bearing
止推軸承(φ3xφ8x3.5mm) x 2

Tail pitch bell crank sleeve
尾旋翼控制球頭套
(φ7.6xφ4.7x6.2mm) x 1

CAUTION 注意

Apply grease on thrust bearing.
止推軸承塗上潤滑液

(OUT) Smaller ID 內徑較小

(IN) larger ID 內徑較大

THRUST BEARING 止推軸承

Metal Tail rotor holder
金屬尾旋翼夾座

Socket collar screw
圓頭內六角軸套螺絲
M2x6mm

Washer
華司
φ2xφ6x0.6mm

Thrust bearing
止推軸承
φ3xφ8x3.5mm

Bearing
軸承
φ4xφ8x3mm

Washer
華司
φ6xφ8x0.3mm

Metal Tail rotor holder
金屬尾旋翼夾座

CAUTION 注意

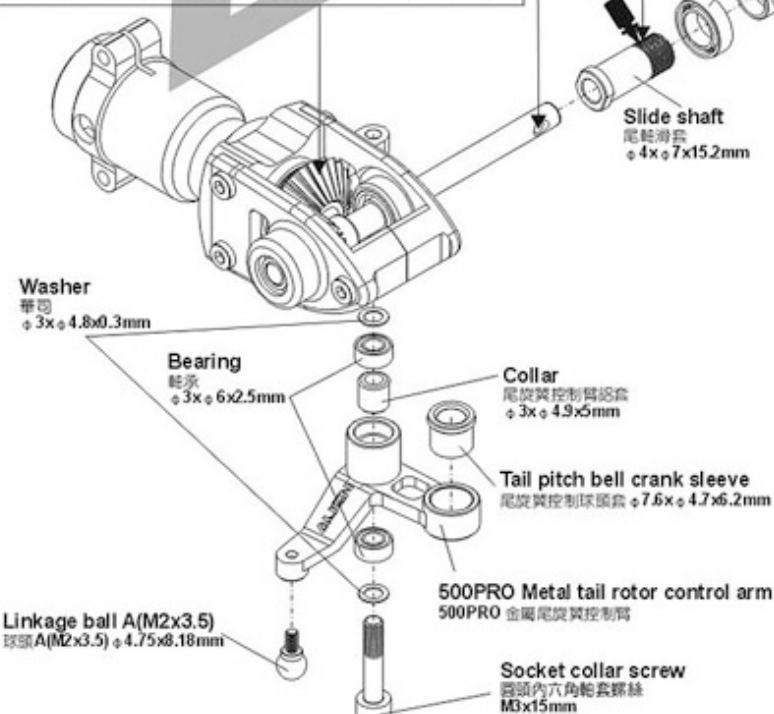Please tighten M2x8mm collar screw firmly but not over tightened. Over tighten the screw will cause the installation of installation of control link unsmoothly.
鎖附M2x8mm軸套螺絲請使用適當力道，過度鎖緊會造成尾控制連桿頭轉動不順。

While assembly the slide shaft, please use suitableamount of T22 on the thread. Please do not use R48 anaerobics retainer or other high strength glue to avoid damages while maintenance or repairs.
組立尾軸滑套時，請使用適量的T22螺絲膠在螺牙上，嚴禁使用R48高膠合性軸承膠防止膠合過緊，以避免日後拆修維護零件之損傷。

Aim tail rotor hub at the concave of tail rotor shaft and fix it, please apply a little glue on the set screw.
尾旋翼T型座瞄準尾橫軸的凹刻並鎖上，請確認止洩螺絲上膠。

Assembling Umbrella Gear:
Please note to push the gear to the end at a fixed position, to make sure the gear mesh with each other smoothly.
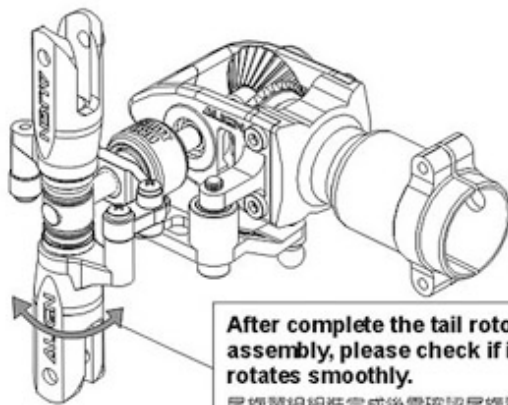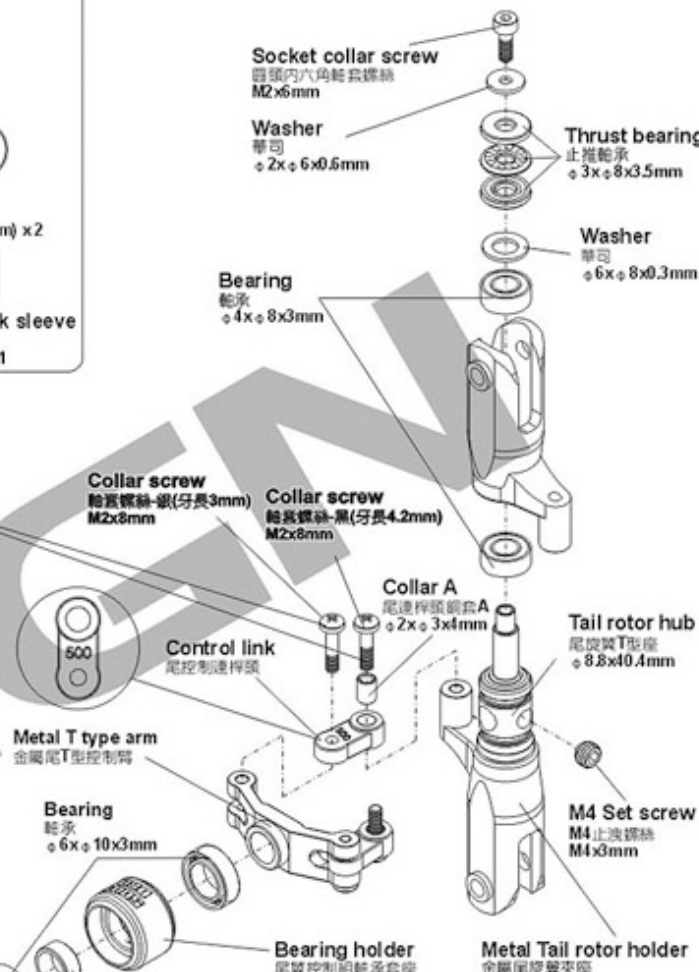傘齒組裝:注意務必前推到底定位，以避免齒咬合不順暢。

Collar screw
軸套螺絲-銀(牙長3mm)
M2x8mm

Collar screw
軸套螺絲-黑(牙長4.2mm)
M2x8mm

Collar A
尾連桿頭銅套A
φ2xφ3x4mm

Control link
尾控制連桿頭

Metal T type arm
金屬尾T型控制臂

Tail rotor hub
尾旋翼T型座
φ8.8x40.4mm

M4 Set screw
M4止洩螺絲
M4x3mm

Metal Tail rotor holder
金屬尾旋翼夾座

Bearing
軸承
φ6xφ10x3mm

Bearing holder
尾翼控制組軸承套座

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

T22

Slide shaft
尾軸滑套
φ4xφ7x15.2mm

Collar
尾控制組軸承座鋁襯墊
φ6xφ7.4x2mm

Washer
華司
φ3xφ4.8x0.3mm

Bearing
軸承
φ3xφ6x2.5mm

Collar
尾旋翼控制臂鋁套
φ3xφ4.9x5mm

Tail pitch bell crank sleeve
尾旋翼控制球頭套φ7.6xφ4.7x6.2mm

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

500PRO Metal tail rotor control arm
500PRO 金屬尾旋翼控制臂

Socket collar screw
圓頭內六角軸套螺絲
M3x15mm

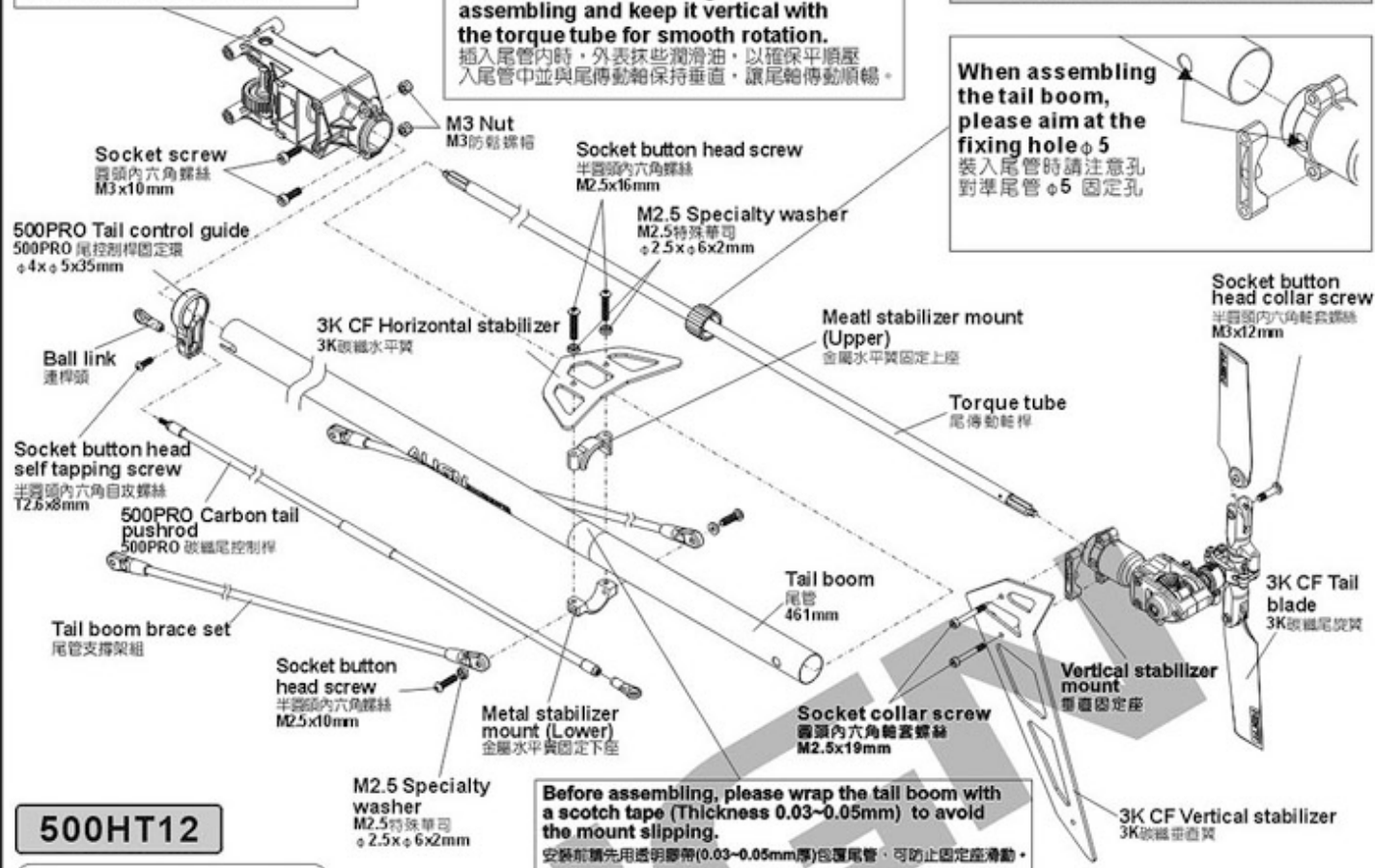After complete the tail rotor assembly, please check if it rotates smoothly.
尾旋翼組組裝完成後需確認尾旋翼夾座轉動滑順。

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

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，以確保平順壓入尾管中並與尾傳動軸保持垂直，讓尾管傳動順暢。

Apply a little amount of T22 thread lock when fixing a metal part.
螺絲鎖附於金屬件請使用適量T22（螺絲膠）

When assembling the tail boom, please aim at the fixing hole φ5
裝入尾管時請注意孔對準尾管φ5 固定孔

M3 Nut
M3防鬆螺帽

Socket screw
圓頭內六角螺絲
M3x10mm

Socket button head screw
半圓頭內六角螺絲
M2.5x16mm

M2.5 Specialty washer
M2.5特殊華司
φ2.5xφ6x2mm

500PRO Tail control guide
500PRO 尾控測桿固定環
φ4xφ5x35mm

Socket button head collar screw
半圓頭內六角軸套螺絲
M3x12mm

Ball link
連桿頭

3K CF Horizontal stabilizer
3K碳纖水平翼

Meatl stabilizer mount (Upper)
金屬水平翼固定上座

Torque tube
尾傳動軸桿

Socket button head self tapping screw
半圓頭內六角自攻螺絲
T2.6x8mm

500PRO Carbon tail pushrod
500PRO 碳纖尾控制桿

3K CF Tail blade
3K碳纖尾槳翼

Tail boom brace set
尾管支撐架組

Tail boom
尾管
461mm

Socket button head screw
半圓頭內六角螺絲
M2.5x10mm

Metal stabilizer mount (Lower)
金屬水平翼固定下座

Socket collar screw
圓頭內六角軸套螺絲
M2.5x19mm

Vertical stabilizer mount
垂直固定座

M2.5 Specialty washer
M2.5特殊華司
φ2.5xφ6x2mm

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)包覆尾管，可防止固定座滑動。

3K CF Vertical stabilizer
3K碳纖垂直翼

## 500HT12

Socket button head screw
半圓頭內六角螺絲(M2.5x16mm) x2

Socket collar screw
圓頭內六角軸套螺絲(M2.5x19mm) x2

M2.5 Specialty washer
M2.5特殊華司(φ2.5xφ6x2mm) x4

Socket button head screw
半圓頭內六角螺絲(M2.5x10mm) x2

Socket button head collar screw
半圓頭內六角螺絲(M3x12mm) x2

## 500HT14

Socket button head self tapping screw
半圓頭內六角自攻螺絲(T2.6x8mm) x1

Ball link
連桿頭 x2

## 500HT11

Socket screw
圓頭內六角螺絲(M3x10mm) x2

M3 Nut
M3防鬆螺帽 x2

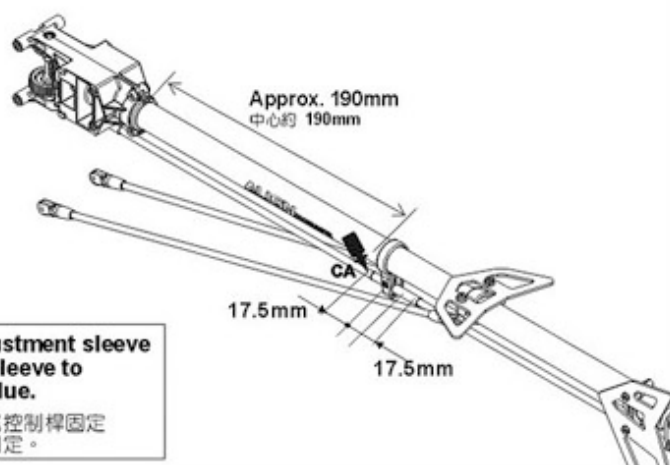## TIP TO FIX THE TORQUE TUBE 傳動軸軸承固定位要領

Please apply some CA glue to fix 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將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，尾傳動軸墊圈外表抹些潤滑油，將尾傳動軸墊圈平行壓入尾管中不可歪斜。

Tail boom
尾管
461mm

Oil
潤滑油

Neutral point of torque tube
尾傳動軸中心位置

Bearing
軸承
φ6xφ10x3mm

Torque tube
尾傳動軸桿

CA

Tube front
前端

About 21.9cm
約21.9公分

About 1.5cm
約1.5公分

About 24.8cm
約24.8公分

Tube end
尾端

Spray Silicone oil inside the tail boom
管內噴矽油

Torque tube bearing holder
尾傳動軸承座
φ14xφ7.5x10mm

⚠ CAUTION
注意
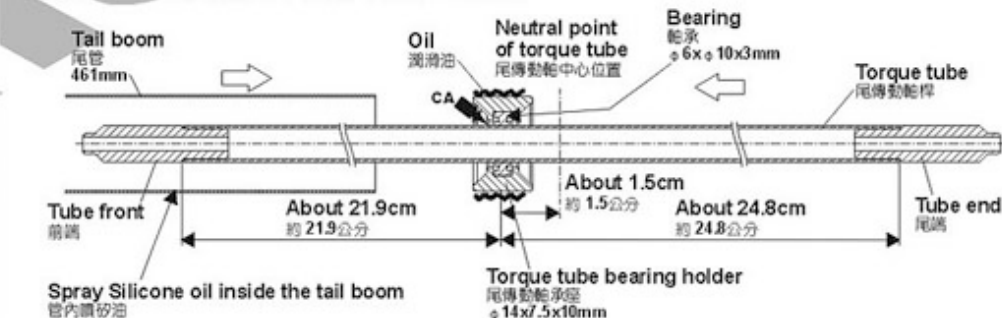
Skewed Torque tube bearing holder will interfere with torque tube rotation and cause unusual vibration.
尾傳動軸承座安裝歪斜會造成傳動軸運轉不順及尾部異常震動等問題

⚠ CAUTION
注意
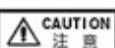
After moving the tail control rod adjustment sleeve to recommended position, glue the sleeve to carbon tail control rod with instant glue.
尾控制桿固定環調整至建議位置後，再將尾控制桿固定環套與碳纖尾控制桿接觸面以適量瞬間膠固定。

Approx. 190mm
中心約 190mm

CA

17.5mm

17.5mm

## 500HZ13

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

Washer
華司(φ2.6xφ5.8x0.6mm) x4

Socket button head self tapping screw
半圓頭內六角自攻螺絲
(T2.6x10mm) x 4

M2 Nut
M2蝶帽 x 1

**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。

**Apply a little amount of T22 thread lock when fixing a metal part.**
螺絲鎖附於金屬件請使用適量T22(螺絲膠)

**Please make sure there is no interference when you install linkage ball.**
安裝球頭時須確認動作無干涉。

Use the outer hole
請鎖附於外孔
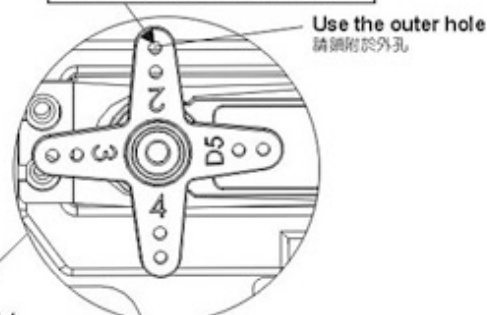
Linkage ball A (M2x3.5)
球頭A(M2x3.5)
φ4.75x8.18mm

Servo horn
伺服臂

M2 Nut
M2蝶帽

Washer
華司
φ2.6xφ5.8x0.6mm

Servo
伺服器

Socket button head self tapping screw
半圓頭內六角自攻螺絲
T2.6x10mm

**DS520 Digital Servo:**
1.1520μs standard band/1520μs寬頻系統
2.Stall torque/輸出扭力: 1.9kg.cm(4.8V)
　　　　　　　　　　　 2.5kg.cm(6.0V)
3.Motion speed/動作速度: 0.09sec/60°(4.8V)
　　　　　　　　　　　　 0.07sec/60°(6.0V)
4.Dimension/尺寸: 35 x 15 x 29.2mm
5.Weight/重量: 25.9g

## 500HB5B

Socket screw
圓頭內六角螺絲(M2.5x10mm) x2

Washer
華司(φ2.6xφ5.8x0.6mm) x2

Socket screw
圓頭內六角螺絲
M2.5x8mm

## 500HT11

Socket screw
圓頭內六角螺絲(M2.5x8mm) x 8

Washer
華司
φ2.6xφ5.8x0.6mm

Socket screw
圓頭內六角螺絲
M2.5x10mm

## 500HB6

Hex socket self tapping screw
皿頭內六角自攻螺絲 (T3x6mm) x 4

Socket collar screw
圓頭內六角轉套螺絲 (M2.5x19mm) x 1

M2.5 Nut
M2.5防鬆螺帽 x 1

Washer
單向軸承單司 (φ10xφ13x0.9mm) x 1

One-way bearing
單向軸承 (φ10xφ14x12mm) x 1

One-way bearing shaft
單向軸承套 (φ7xφ10x12.6x27.25mm)X1

ALIGN

## 500HZ11

500 Linkage rod (D)
500連桿(D) φ1.96x31mm x 3

Ball link
連桿頭 x 6

M2.5 Nut
M2.5防鬆螺帽

## 500HB5A

Canopy mounting bolt
機頭罩固定柱
(M2.5x25.3mm) x2

## 500HH17

Main shaft spacer(0.5)
主軸墊片(0.5)
φ8.1xφ12x0.5mm

Spare part :
Main shaft spacer(0.3)
備品：主軸墊片(0.3)
φ8.1xφ12x0.3mm

## 500HB5B

M2.5 Set screw
M2.5止洩螺絲 (M2.5x12mm) x 2

Linkage rod (D)
Approx. 47mm x 3
連桿(D)約47mm x 3

31mm 18mm

Standard Equipment :
Main shaft spacer(0.5)
標準品：主軸墊片(0.5)
φ8.1xφ12x0.5mm

Spare part : Main shaft spacer(0.3)
備品：主軸墊片(0.3) φ8.1xφ12x0.3mm

Linkage rod (D)
連桿(D)

Metal anti rotation bracket
金屬十字盤導板

Canopy mounting bolt
機頭罩固定柱

M2.5 Set screw
M2.5止洩螺絲
M2.5x12mm

Socket screw
圓頭內六角轉套螺絲
M2.5x19mm

Main drive gear set
主齒輪組

Autorotation tail drive gear
尾傳動主齒
145T

500PRO Slant thread main drive gear
500PRO 斜主齒盤 134T

One-way bearing
單向軸承
φ10xφ14x12mm

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

Hex socket self tapping screw
圓頭內六角自攻螺絲
T3x6mm

One-way bearing shaft
單向軸承套
φ7xφ10x12.6x27.25mm

Washer
單向軸承單司
φ10xφ13x0.9mm

Main gear case
主齒中心座

Apply grease
塗上潤滑油

**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。

**Apply a little amount of T22 thread lock when fixing a metal part.**
螺絲鎖附於金屬件請使用適量T22（螺絲膠）

# LINKAGE RODS A/B/C/D SIZING AND QUANTITY REFERENCE CHART
A/B/C/D連桿尺寸與數量對照圖

**500 Linkage rod (A)**
500連桿(A) φ1.96x10mm x 2

**500 Linkage rod (B)**
500連桿(B) φ1.96x13.5mm x 2

**500 Linkage rod (C)**
500連桿(C) φ1.96x56mm x 2

**500 Linkage rod (D)**
500連桿(D) φ1.96x31mm x 3

**Ball link**
連桿頭 x 14

**500 Ball link**
500連桿頭 x4



**Main shaft** 主軸
**Swashplate Leveler** 十字盤調整器
**Horizontally Level** 水平
**Swashplate** 十字盤

**Suggest to use the swashplate leveler to calibrate swashplate. Adjust the length of servo linkage rod to make sure the swashplate is leveled before start setting up 3GX to ensure 3GX provides the best performance.**
建議使用十字盤調整器校正十字盤，調整伺服器連桿長度，確保十字盤達到水平狀態，再進行基本機體設定，以確保飛行性能達到最佳效果。

**In order to keep proper travel range and reaction speed for the swashplate, recommend installing the linkage ball at the illustration location on servo horn.**
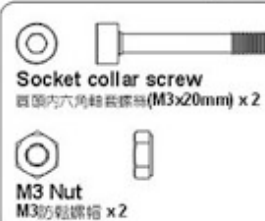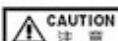為了十字盤動作有足夠行程與反應速度，伺服器臂安裝建議球頭裝於圖示最佳跨距。
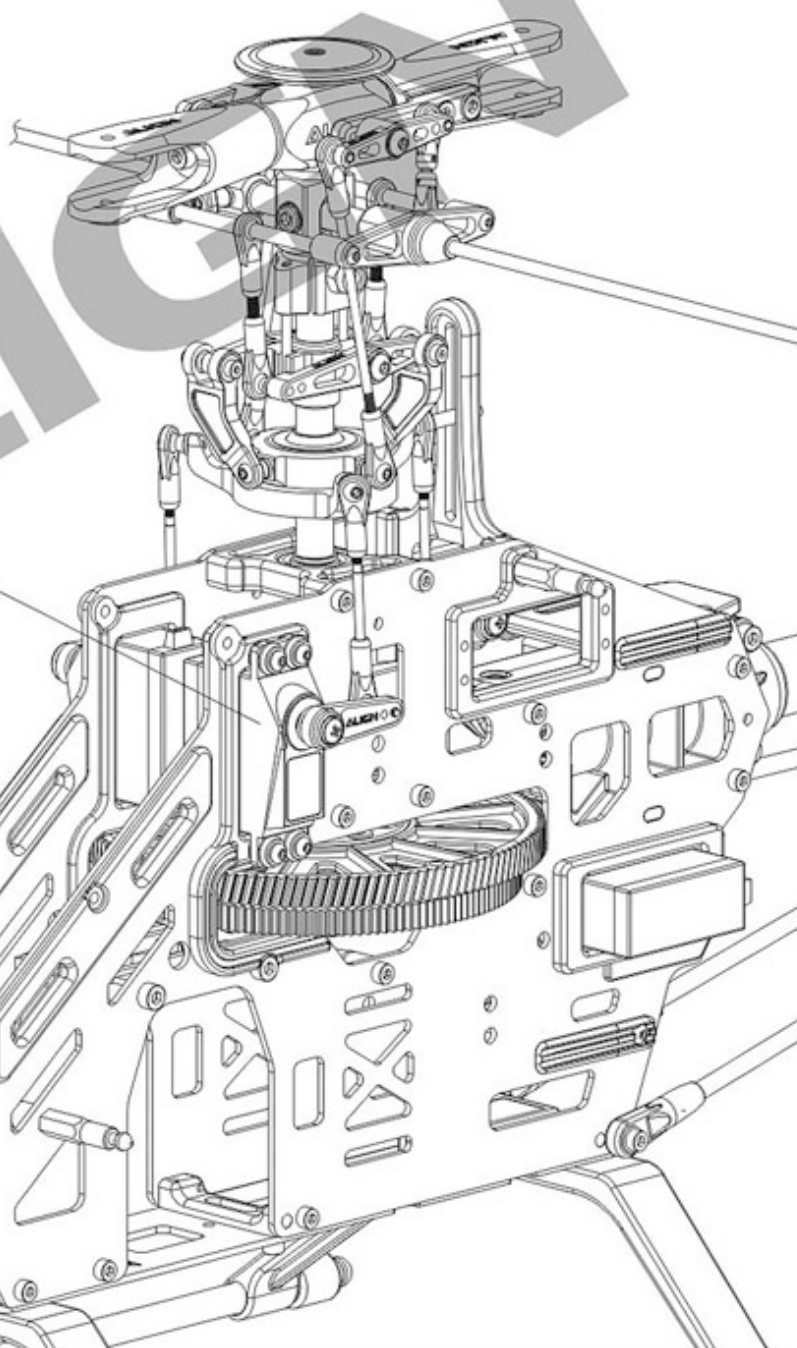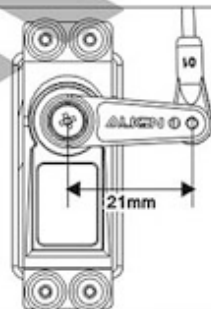
21mm

**500HM1**

M3 Set screw
M3止滑螺絲(M3x3mm) x 2

Socket screw
圓頭內六角螺絲(M3x10mm) x 2

M3 Washer
M3華司
(φ3xφ8x1mm) x 2

**500HH14A**

Socket collar screw
圓頭內六角軸套螺絲(M3x20mm) x 2

M3 Nut
M3防鬆螺帽 x 2

Apply a little amount of T22 thread lock when fixing a metal part.
螺絲鎖附於金屬件請使用適量T22(螺絲膠)

425D Carbon fiber blade
425D 碳纖主旋翼

Socket collar screw
圓頭內六角軸套螺絲
M3x20mm

M3 Nut
M3防鬆螺帽

Socket screw
圓頭內六角螺絲
M3x10mm

For motor fixing
馬達固定螺絲

M3 Washer
M3華司
φ3xφ8x1mm

**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。

Motor pinion gear 12T
馬達齒輪 12T

M3 Set screw
M3止滑螺絲
M3x3mm

Motor
馬達

When fixing the screw of pinion gear, please aim at the fixing point on motor shaft.
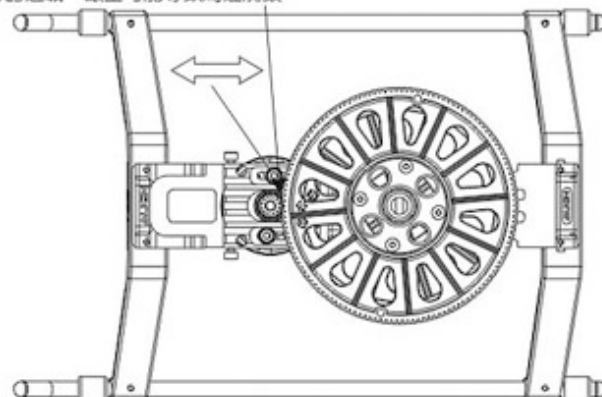馬達齒輪固定螺絲鎖緊時，請對準馬達心軸固定槽。

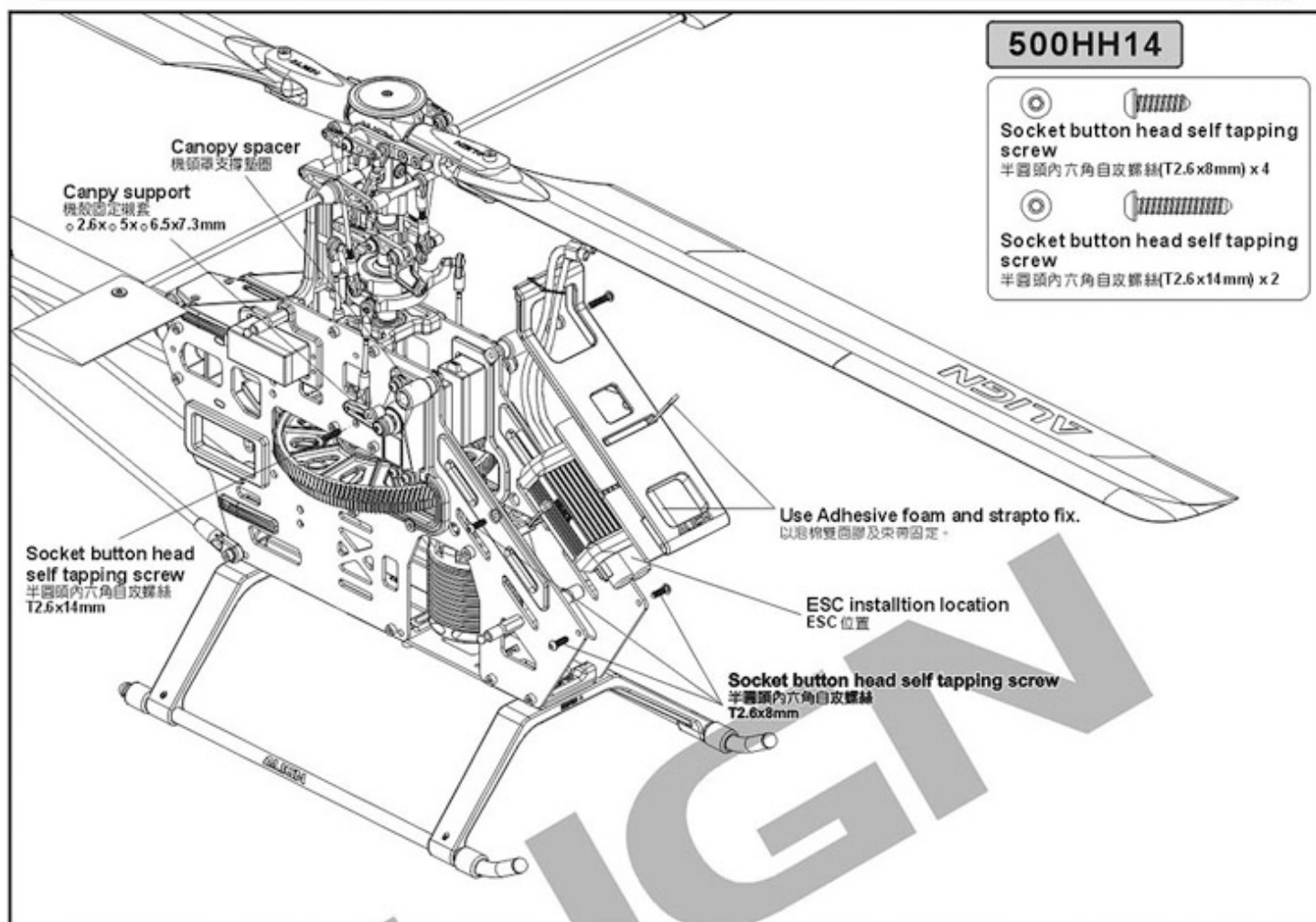After assembling the motor pinion gear and main drive gear, the horizontal distance must be within 1mm.
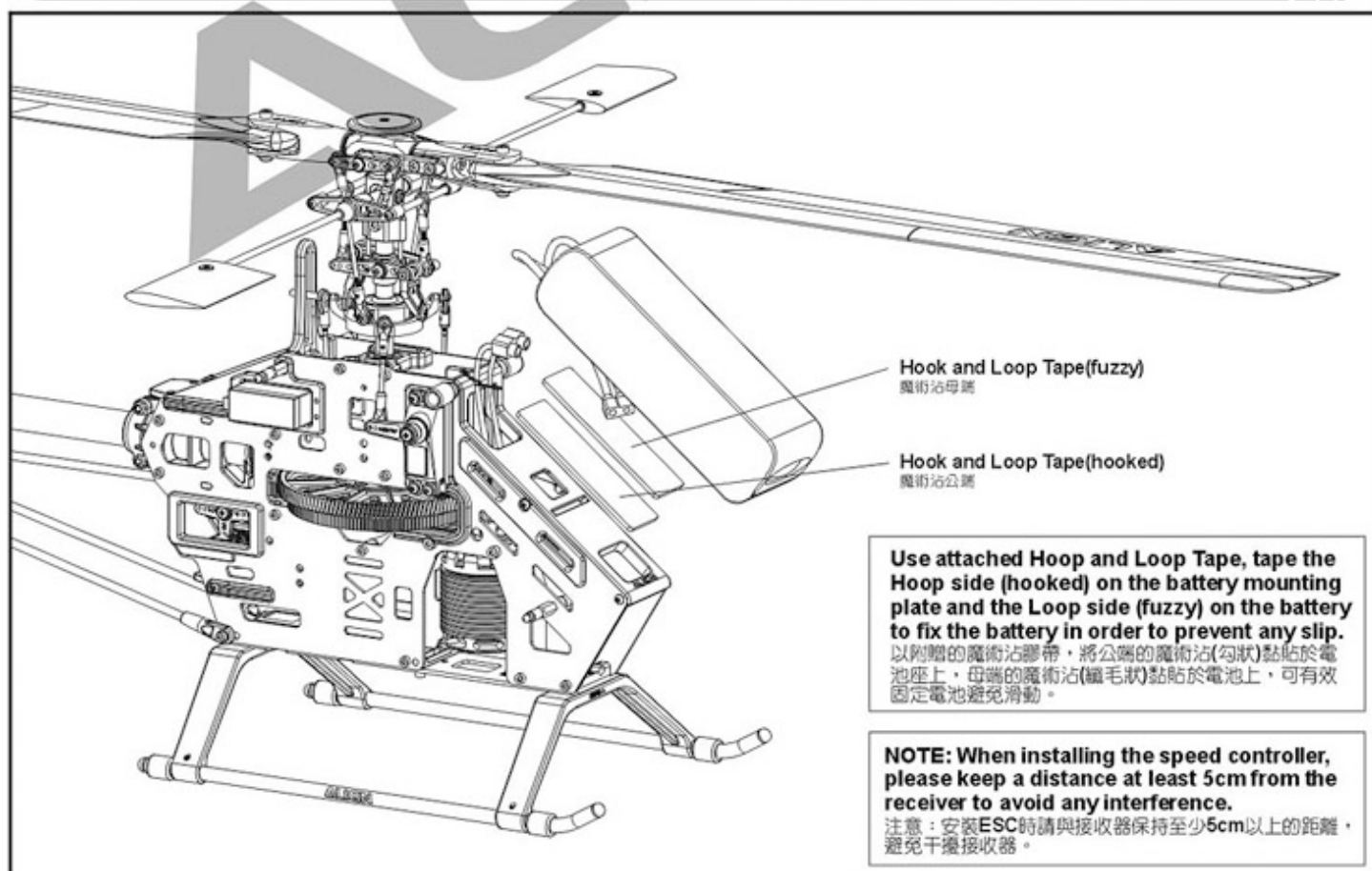馬達齒輪與主齒盤組立後平行距離不可超過1mm。
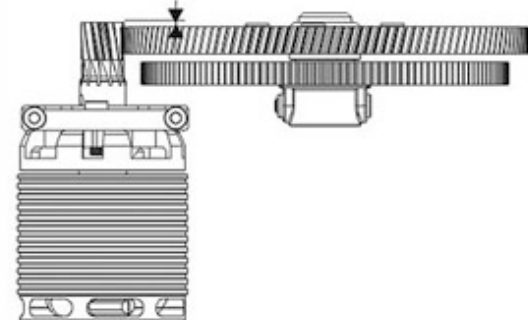
Set the motor pinion gear to main drive gear mesh to approximately 0.1mm to avoid excess power consumption or motor burnt due to overload.
馬達前後可移動以保持兩齒輪咬合處約有0.1mm間隙，過緊齒咬合將造成動力損失或馬達高阻力的過載，嚴重可能導致馬達燒毀。

500HH14

Socket button head self tapping screw
半圓頭內六角自攻螺絲(T2.6x8mm) x 4

Socket button head self tapping screw
半圓頭內六角自攻螺絲(T2.6x14mm) x 2

Canopy spacer
機頭罩支撐墊圈

Canpy support
機殼固定環套
○2.6x○5x○6.5x7.3mm

Socket button head
self tapping screw
半圓頭內六角自攻螺絲
T2.6x14mm

Use Adhesive foam and strapto fix.
以泡棉雙面膠及束荷固定。

ESC installtion location
ESC 位置

Socket button head self tapping screw
半圓頭內六角自攻螺絲
T2.6x8mm

Hook and Loop Tape(fuzzy)
魔術沾母端

Hook and Loop Tape(hooked)
魔術沾公端

**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(纖毛狀)黏貼於電池上，可有效固定電池避免滑動。

**NOTE: When installing the speed controller, please keep a distance at least 5cm from the receiver to avoid any interference.**
注意：安裝ESC時請與接收器保持至少5cm以上的距離，避免干擾接收器。

1. Consult the following diagram for GP900 installation direction. GP900 needs to be mounted flat on gyro mounting platform, away from vibration sources.
2. Two pieces of foam mounting tape can be used if helicopter experiences vibration induced flight instability. However, if this still doesn't cure the problem, please check the helicopter mechanics and minimize mechanical vibrations, or reduce the headspeed.
3. Please secure with genuine factory issued double sided anti-vibration mounting tape.

※If GP900 was to be mounted inverted, please enter connect anti-rorque compensation section and set it as "reverse" (STATUS LED turns red) to avoid the effect of the performance of gyro lock. (Please refer to Page 31)

1. GP900擺放方向請參照圖示，水平擺放於陀螺儀固定座，並避開震動源。
2. 機體震動會影響陀螺儀偵測，造成飛行不穩定，可於GP900下方貼附2片泡棉減震，若仍未改善，請檢查機體排除震動或降低主旋翼轉速。
3. 請使用原廠提供避震泡棉雙面膠固定。

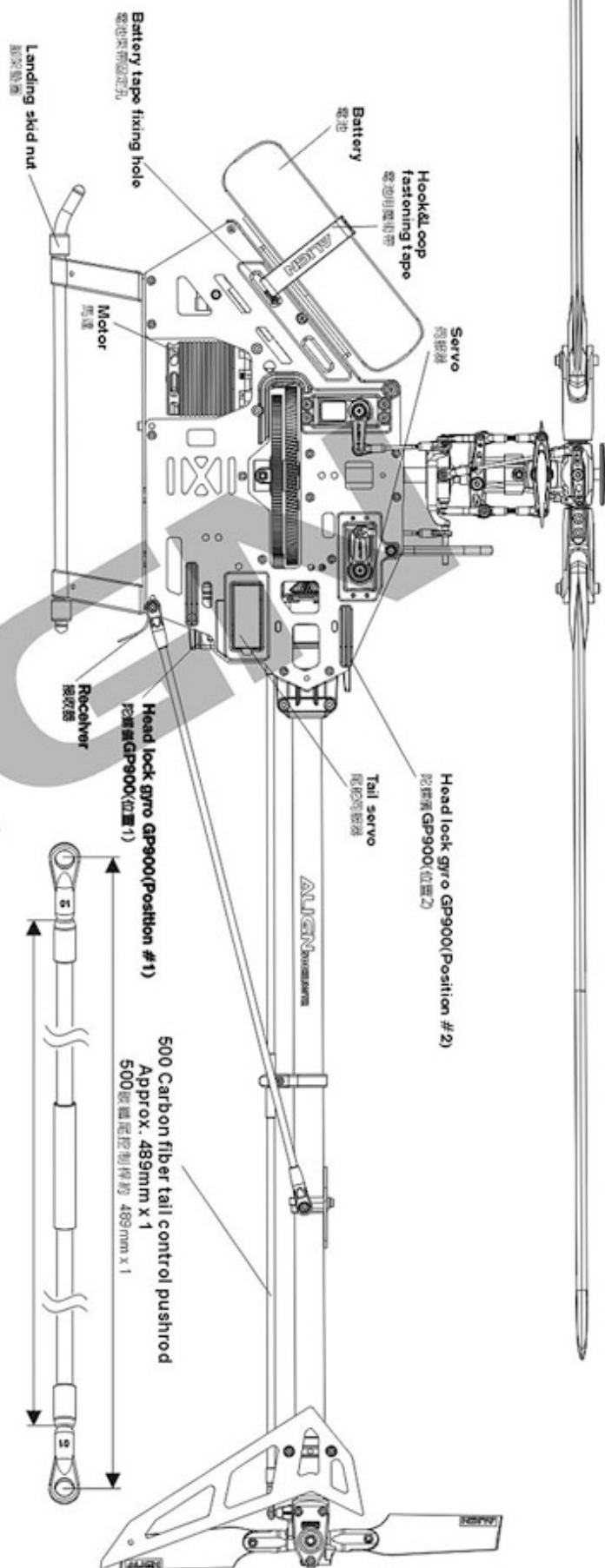※選擇GP900面板朝下的安裝方式時，請進入設定選項中的反扭力補償設定，並將反扭力補償設為"反向"(STATUS 燈為紅燈)，以免影響陀螺儀鎖定效果。(詳細設定請參閱P.31)
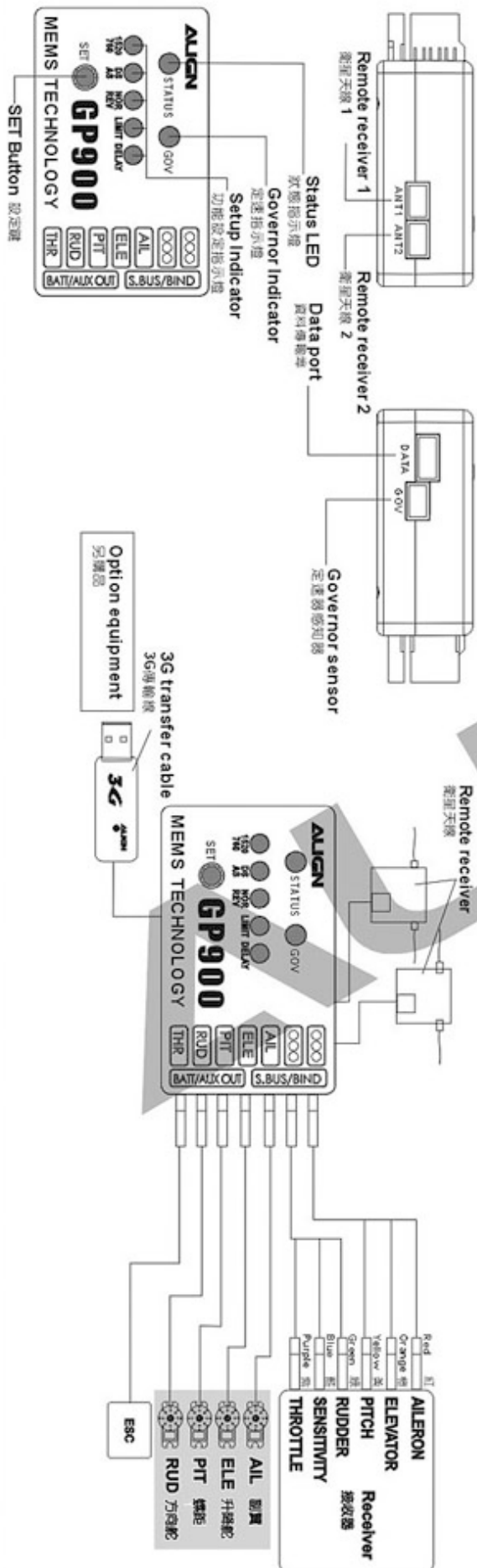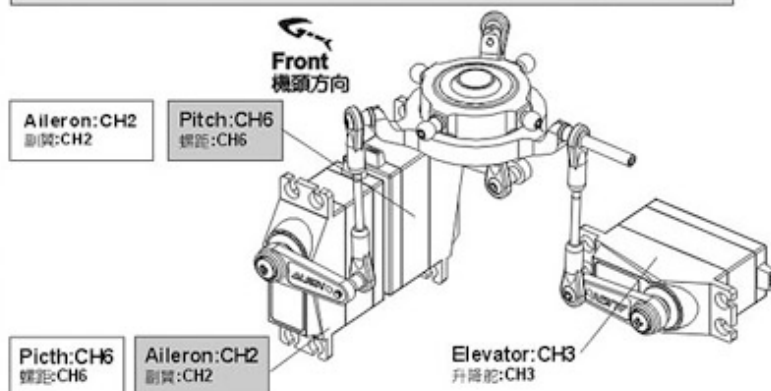
⚠ CAUTION 注意



GP900 (Position #2)
GP900(位置2)

Foam tape
泡棉

GP900 (Position #1)
GP900(位置1)

Foam tape
泡棉

Mount
固定板

500HC3
Fiberglass Canopy
纖維機頭罩 x1

CA

500HZ1
Canopy nut
機頭罩固定墊圈 x4
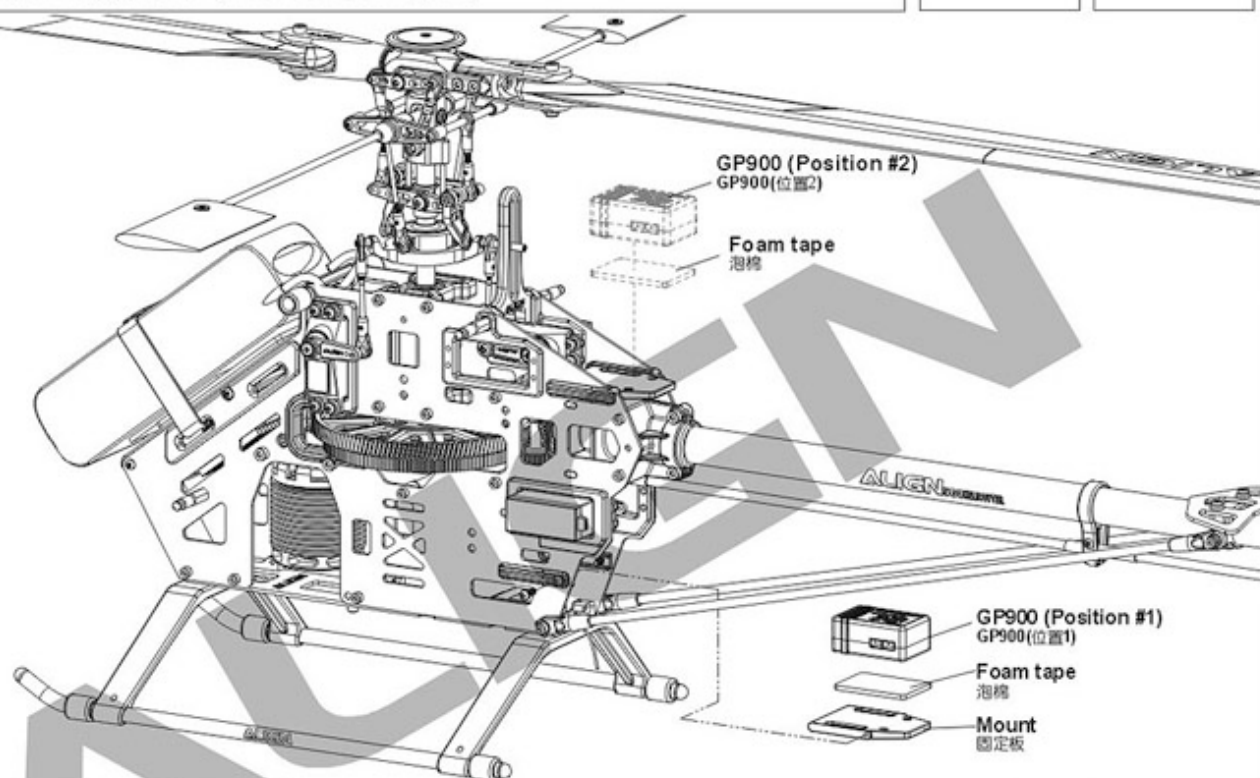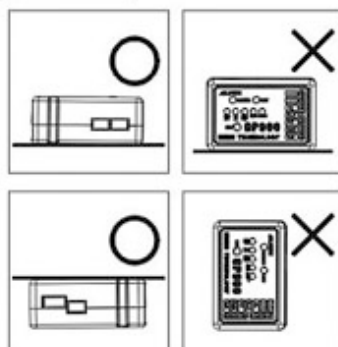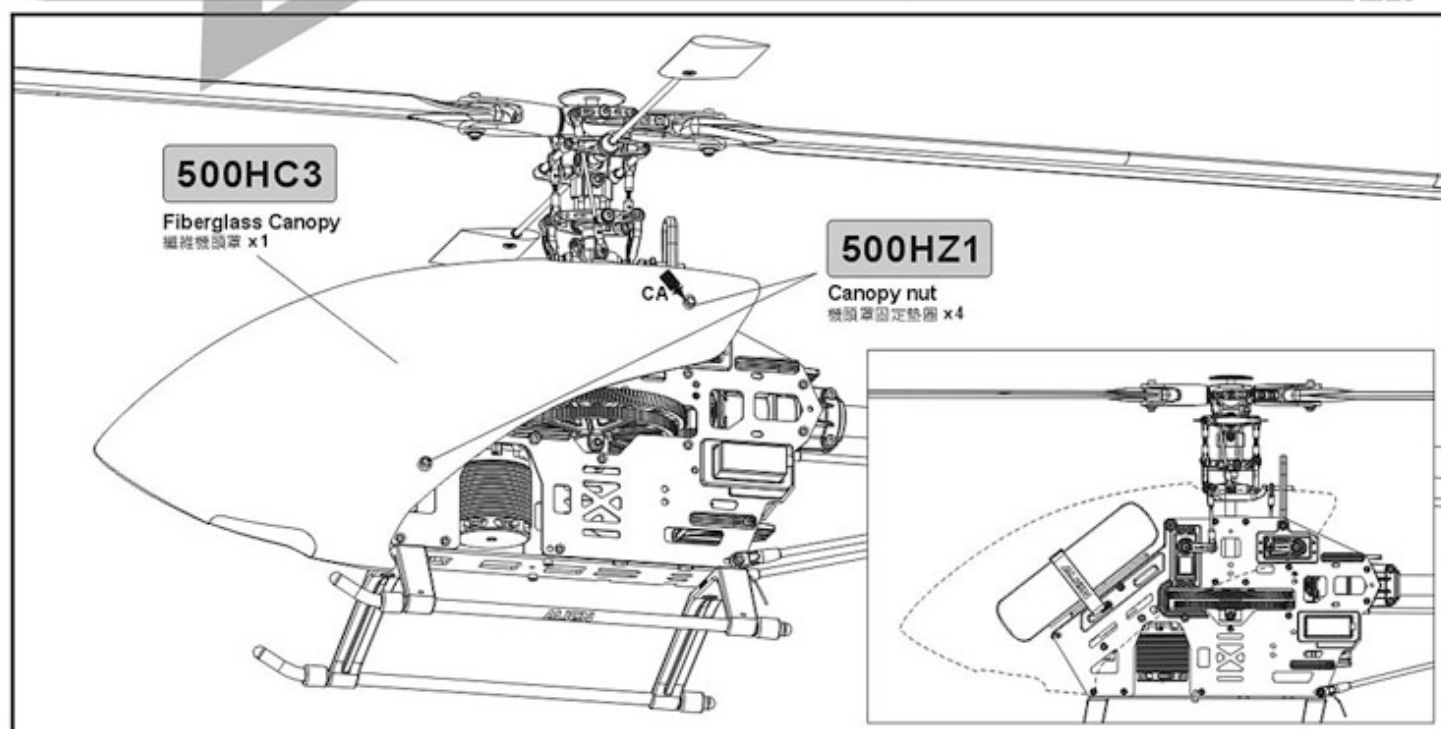
PARTS IDENTIFICATION 各部位名稱

GP900 HEAD LOCK GYRO　GP900 鎖定式陀螺儀

MEMS TECHNOLOGY

GP900

STATUS
GOV

THR RUD PIT ELE AIL
BATT/AUX OUT　S.BUS/BIND

153 D5 740 A3 MODE KEY LIMIT DELAY

SET Button 設定鍵

SET

Status LED 狀態指示燈
Governor Indicator 定速指示燈
Setup Indicator 功能設定指示燈

Remote receiver 1 電眼天線 1

ANT1 ANT2

Remote receiver 2 電眼天線 2

Data port 資料傳輸線

DATA
G.0V

Governor sensor 定速器感知器

Option equipment 另購配件

3G transfer cable 3G傳輸線

3G

Remote receiver 電眼天線

MEMS TECHNOLOGY

GP900

STATUS
GOV

THR RUD PIT ELE AIL
BATT/AUX OUT　S.BUS/BIND

SET

153 D5 740 A3 MODE KEY LIMIT DELAY

Landing skid nut 起落架螺帽

Battery tape fixing hole 電池束帶固定孔

Hook&loop fastening tape 魔術粘貼束帶

Battery 電池

Motor 馬達

Servo 伺服器

Receiver 接收器

Tail servo 尾舵伺服器

Head lock gyro GP900(Position #2) 陀螺儀GP900(位置2)

Head lock gyro GP900(Position #1) 陀螺儀GP900(位置1)

500 Carbon fiber tail control pushrod Approx. 489mm x 1 500碳纖尾控制桿約 489mm x 1

Receiver 接收器

Red 紅
Orange 橙
Yellow 黃
Green 綠
Blue 藍
Purple 紫

AILERON
ELEVATOR
PITCH
RUDDER
SENSITIVITY
THROTTLE

AIL 副翼
ELE 升降舵
PIT 螺距
RUD 方向舵

ESC

20

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.
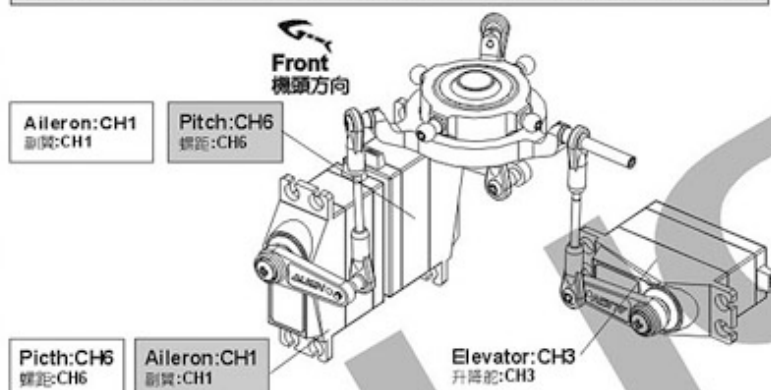此項設定只要開啟發射器，接上直昇機電源即可進行操作。注意：為了安全起見，設定前請先不要將無刷調速器與無刷馬達的三條線接上，以免調整時啟動馬達而發生危險。

## JR TRANSMITTER/SERVO JR遙控器對應伺服器關係

Front
機頭方向

Aileron:CH2
副翼:CH2

Pitch:CH6
螺距:CH6

Picth:CH6
螺距:CH6

Aileron:CH2
副翼:CH2

Elevator:CH3
升降舵:CH3

Positions of CH2、CH6 are exchangeable, After assembly 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 AIL and ELE.

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 PIT 行程量的正負值，使伺服器同時往上平移，副翼與前後動作相反時，同樣調整SWASH AIL、ELE行程量正負值。

## FUTABA/HITEC TRANSMITTER/SERVO FUTABA/HITEC遙控器對應伺服器關係

Front
機頭方向

Aileron:CH1
副翼:CH1

Pitch:CH6
螺距:CH6

Picth:CH6
螺距:CH6

Aileron:CH1
副翼:CH1

Elevator:CH3
升降舵:CH3

Positions of CH1、CH6 are exchangeable, After assembly 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 SWASH AIL and ELE.

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 PIT 行程量的正負值，使伺服器同時往上平移，副翼與前後動作相反時，同樣調整SWASH AIL、ELE行程量正負值。

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

**ALIGN** ///

Turn off Revolution mixing(RVMX) mode on the transmitter, then set the gain switch on the transmitter and the gyro to non-Head lock mode, or disable gain completely. After setting the transmitter, connect the helicopter power and proceed with rudder neutral point setting. Note: When connecting to the helicopter power, please do not touch tail rudder stick and the helicopter, wait for 3 seconds for gyro to enable, and the rudder servo horn should be 90 degrees to the tail control pushrod. Tail pitch slider should be halfway on the tail output shaft. This will be the standard rudder neutral point. After completing this setting, set the gain switch back to heading lock mode, with gain at around 70%.

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"非鎖定模式"或將陀螺儀感度關閉。發射機設定完成後接上直昇機電源，即可進行尾舵中立點設置。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秒陀螺儀開機完成後，尾伺服臂需與尾伺服器約成90度，尾旋翼控制組須正確置於尾橫軸約中間位置，即為標準尾舵中立點設定，設定完成後，切換至"鎖定模式"，感度設約70％左右。

## 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。

Approx. 10mm
約10mm

Tail servo horn
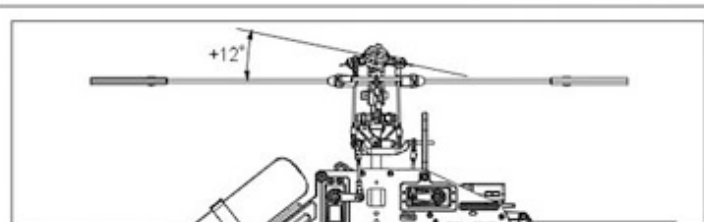尾伺服搖臂

90°

Tail case set
尾齒輪組
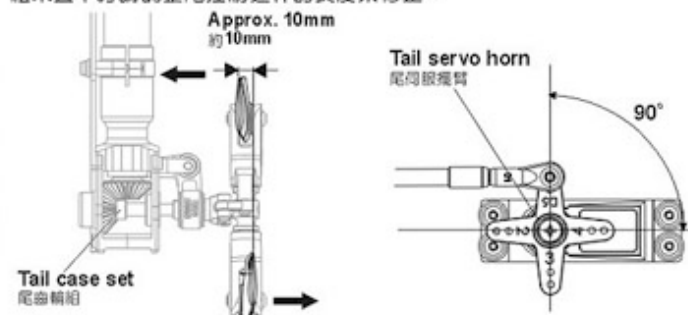
## HEAD LOCK DIRECTION SETTING OF GYRO 陀螺儀鎖定方向設定

To check the head lock direction of gyro is to move the tail counterclockwise and the tail servo horn will be trimmed clockwise. If it trims in the reverse direction, please switchthe gyro to"REVERSE".
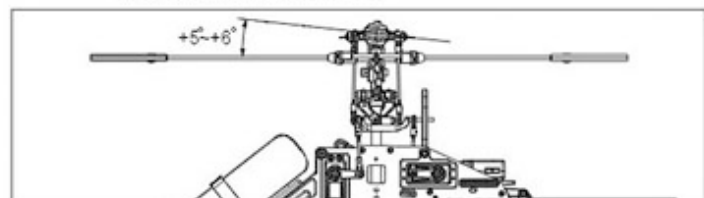陀螺儀鎖定方向確認，當手搖尾部反時鐘擺動，尾伺服臂應逆時鐘修正，反向時請切換陀螺儀上"鎖定反向"開關修正。

Tail moving direction
搖動尾部方向

Trim direction for tail servo horn.
尾伺服臂修正方向
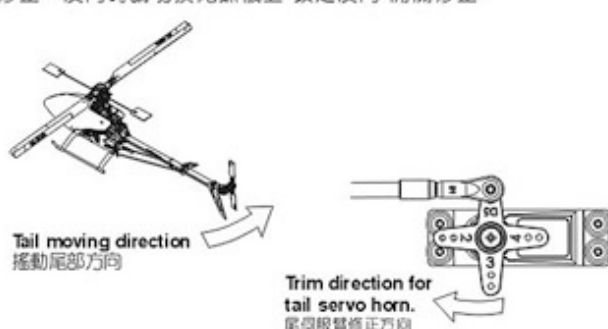
## GENERAL FLIGHT 一般飛行模式



**Stick position at high/Throttle100%/Pitch+12°**
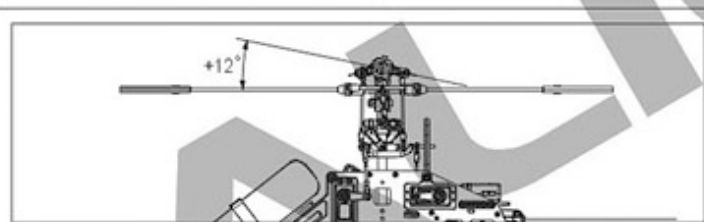搖桿高速/油門100%/Pitch+12°



**Stick position at Hovering/Throttle 65%~70%/ Pitch+5°~+6°**
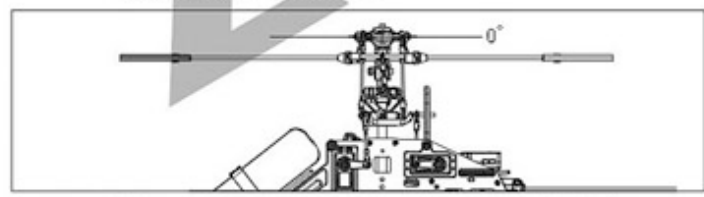搖桿停懸/油門65%~70%/Pitch+5°~+6°



**Stick position at low/Throttle 0%/Pitch-2°~0°**
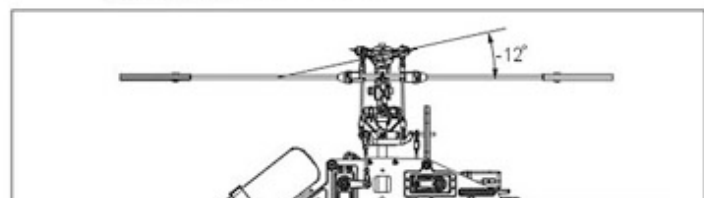搖桿低速/油門0%/Pitch-2°~0°

## 3D FLIGHT 3D特技飛行模式



**Stick position at high/Throttle100%/Pitch+12°**
搖桿高速/油門100%/Pitch+12°



**Stick position at middle/Throttle 85~90%/Pitch 0°**
搖桿中速/油門85~90%/Pitch 0°



**Stick position at low/Throttle 100%/Pitch-12°**
搖桿低速/油門100%/Pitch-12°

⚠ **CAUTION**
注意
1. Pitch range: Approx. 26(±13 )degrees.
2. If the pitch is set too high, it will result in shorter fight 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 26(±13)。
2. 過大螺距設定,會導致動力與飛行時間降低。
3. 動力提昇以較高轉速的設定方式,優於螺距調大的設定。

### GENERAL FLIGHT 一般飛行模式

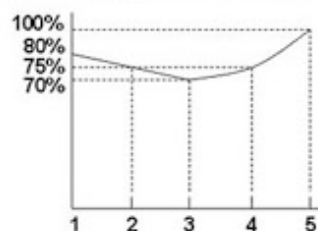| | Throttle 油門 | Pitch 螺距 |
|---|---|---|
| 5 | 100%High speed 100%高速 | +12° |
| 4 | 85% | |
| 3 | 65%~70%Hovering 65%~70%停懸 | +5°~+6° |
| 2 | 40% | |
| 1 | 0% Low speed 0%低速 | -2°~0° |



**Throttle Curve(Hovering Fight)**
停懸模式油門曲線
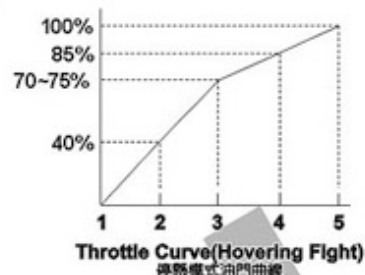
### PITCH AND ROTATION SPEED PITCH與轉速關係

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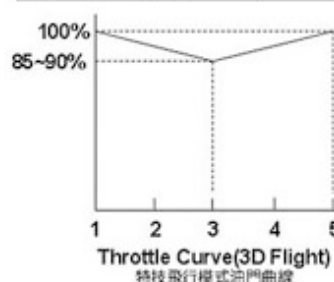搭配要領:如果使用較高轉速馬達動力建議搭配調低 Pitch,將獲得較佳動力效能。

### IDLE 1:SPORT FLIGHT

| | Throttle 油門 | Pitch 螺距 |
|---|---|---|
| 5 | 100% | +12° |
| 4 | 75% | |
| 3 | 70% | +5°~+6° |
| 2 | 75% | |
| 1 | 80% | -5°~-6° |



**Throttle Curve(Simple Aerobatic Flight)**
空中飛行模式油門曲線

### IDLE 2:3D FLIGHT

| | Throttle 油門 | Pitch 螺距 |
|---|---|---|
| 5 | 100% High 100%高 | +12° |
| 3 | 85%~90% Middle 85%~90%中 | 0° |
| 1 | 100% Low 100%低 | -12° |



**Throttle Curve(3D Flight)**
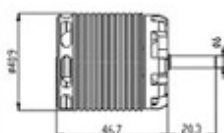特技飛行模式油門曲線

## BATTERY 電池：ALIGN LI-Poly 22.2V 2600mAh

| Motor Pinion Gear 馬達齒輪 | 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 | 425D Carbon Fiber Blades 425D 碳纖主旋翼 | Hover 停懸 | +5° | 14 | 0/50/70/85/100% | 2400 |
| | | Idle | 0° | 15 | 85%Middle中 | 2850 |
| | | | 0° | 19 | 100/100/100/100/100% | 3240 |
| | | | ±12° | 46 | | 2900 |

**NOTE: 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： 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。

## RCM-BL500MX MOTOR RCM-BL500MX 無刷馬達

### SPECIFICATION 尺寸規格     ILLUSTRATION 接線示意圖

**The motor rotates in different direction with different brand ESCs. If the wrong rotating direction happens, please switch any two cables to make the motor rotates in right direction.**
由於各品牌電子變速器的馬達啟動轉向不盡相同，若發生轉向錯誤時，請將馬達與電子變速器的接線任兩條對調即可。



| KV | KV值 | 1600KV(RPM/V) | Input voltage | 輸入電壓 | DC 11.1~25.2V |
|---|---|---|---|---|---|
| Stator Arms | 矽鋼片槽數 | 9 | Magnet Poles | 磁鐵極數 | 6 |
| Max continuous current | 最大持續電流 | 75A | Max instantaneous current | 最大瞬間電流 | 110A (5sec) |
| Max continuous power | 最大持續功率 | 1600W | Max instantaneous power | 最大瞬間功率 | 2300W(5sec) |
| Dimension | 尺寸 | Shaft 5x40.9x46.7mm | Weight | 重量 | Approx. 197g |

## PRODUCT FEATURES 產品特色

1. 5-6V step-less adjustable BEC output allowing custom voltage setting to match servo specification.
2. BEC output utilizing switching power system, suitable for 7.4-22.2V (2s-6s) Li battery, with continuous current rating of 3A, and burst rating of 5A.
3. Three programmable throttle speed settings to support quick throttle response.
4. Include soft start and governor mode.
5. Small and compact PCB design for lightweight and simple installation.
6. Large heat sink for optimum thermal performance.
7. Highly compatible to work with 98% of all brushless motors currently on the market.
8. Ultra-smooth motor start designed to run with all kinds of brushless motors.
9. The power inlet utilizes a Japanese made "Low ESR" capacitor in order to
10. The throttle has more than 200 step resolution that provides great throttle response and control.

1. 5～6伏特無段可調式BEC輸出，可依伺服器規格與所需的特性自行設定電壓。
2. BEC輸入端採用交換式電源設計，適用7.4～22.2V(2S～6S)鋰電，持續制電流3A，瞬間5A。
3. 三段可程式油門反應速度，使動力的反應隨傳隨到。
4. 具緩啟動及Govener Mode定速功能。
5. 體積小，窄型設計，安裝於機身容易。
6. 有散熱片設計，可延長電變壽命。
7. 超高相容性，可對應市面上98%無碳刷馬達。
8. 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。
9. 電池電源端採用日製Low ESR低阻抗電解電容，大幅
10. 油門達200段以上解析度，無格數之油門感覺。

## 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-BL70G | 70A | 110A 5sec | Output voltage: 5-6V step-less adjustment Continuous current 3A; Burst current 5A 輸出電壓:5～6V無段可調式 承受電流:持續3A、瞬間5A | 65x31x18mm | 72g |

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 ~ 25.2V(2~6S Li-Po)
   NOTE: 1. When setting to the Quick throttle response speed, the accelerative peak current will increase.
   2. To minimize possible radio interference induced by switching power system, BEC should be installed at least 5cm away from the receiver.

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碳刷馬達。
3. 支援最高轉速:二極→190,000rpm;六極→63,000rpm。
4. 輸入電壓:5.5V-25.2V(2～6s Li-Po)
   注意:1. 設定為高油門反應速度時，加速瞬間電流會有增大情形。
   2. 內建Switching BEC，安裝時請與接收器保持至少5cm以上的距離以避免干擾接收器(建議使用較穩定的PCM或2.4G系統接收器)。

## 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 (2S~6S). 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 x 3cell=9.6V
Second step protection: 3.0V x 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. **BEC output voltage setting:** 5-6V step-less adjustment.
   This option allows custom voltage setting. Default setting is 5.5V; please adjust the voltage according to the specification of the servo (speed and resistance). Prior to entering the setup mode, a voltmeter needs to be connected to the power inlet of the receiver (as illustration) to monitor the selected voltage. The voltage is set by varying the throttle stick position from low (5V) to high (6V).

**The voltmeter needs to be connected to any un-use inlets "+" and "-" to measure the selected voltage.**
將電壓表連接到任一未使用通道的"+"端及"-"端，以量測所選擇的電壓。

Receiver 接收器

Voltmeter 電壓表

ESC

Illustration (圖1)
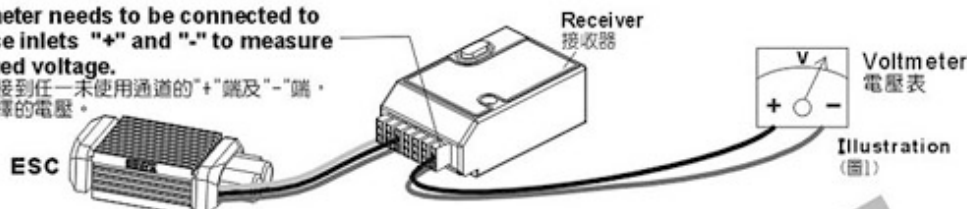
**NOTE: Certain servos are designed to work with high voltage, while other servos are designed for lower voltage.**
　　　**To avoid damage to servos, please follow the servo's factory specification to determine the proper voltage setting.**
注意:部份伺服器不適合較高的電壓下操作，請依原廠適用電壓規格設定，避免造成伺服器燒毀。

7. **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.
8. **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.
9. **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(2~6S)，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壓降達到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鋰電池充飽電壓12.6V，此輸入電壓CPU會自動判定為3cell鋰電。
   第一階段保護:3.2Vx3cell=9.6V 第二階段保護:3.0Vx3cell=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飽電，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**Govener 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，但須注意電流反應速度時，加速瞬間電流與耗電量會有增大的情形。
6. BEC輸出電壓設定:5~6V無段調整
   本功能提供使用者自行設定BEC輸出電壓，初始電壓為5.5V，使用者可依伺服器的規格與所需的特性(速度與扭力)自行更改設定:進入此項設定前，請先將電壓表連接到接收器的電源端(如圖1)，用以監看所選擇的電壓，設定時以油門搖桿的位置來決定輸出電壓，油門搖桿最低為5伏特，最高為6伏特，之間的電壓值可移動搖桿的位置任意設定。
7. 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℃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，並實際使用電流表量測輸出電流，以達到電變之最佳效率。
8. 開機防暴衝提醒功能:當使用者開啟電變電源時，系統會自動偵測發射機之設定，如果發現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。
9. 尋機功能:當飛機降落再長草叢無法以目視定位時，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。

## SETUP MODE 設定模式

1. **Setup mode:** Make sure to connect the ESC to the throttle channel of the receiver. Please refer to the user manual of your radio system. The second step is to connect the 3 power-out signal pins to the brushless motor. Before you turn on the transmitter, please adjust the throttle stick to the maximum full throttle position. Proceed to connect the battery to the ESC. You will hear confirmation sounds as soon as you enter the SETUP MODE. Please refer the attached flow chart for details.
2. **Throttle stick positions in Setup mode:** Setup mode includes six settings: Brake, Electronic Timing, Battery Protection, Aircraft, Throttle Response Speed and BEC output voltage. Every setting has three options. Simply place the throttle stick in the highest, middle, and lowest positions for each setting. For example, first brake setting (Hard): move the stick to the highest position.
Then timing setting (mid): move the throttle stick in the middle position.

1. 進入設定模式:將電變與接收器之油門 Channel 連接，不同之遙控系統請參閱您遙控系統之使用手冊，馬達之三條線必與電變連接，將發射器之油門搖桿推到最高點，使之於全油門狀態，先開啟發射器電源，再將電源連接至電變，進入設定模式後，馬達將有設定模式之提示聲響。請參考第二頁程式化設定模式說明。
2. 設定模式中之動作:設定模式共含有六項設定，分別為煞車、馬達進角、電池保護、飛機模式、油門反應速度級 BEC 輸出電壓等設定，詳細內容請參考產品功能之解說。
   每一項設定中各含三段設定，各項設定以油門搖桿之上、中、下位置來決定其設定值。
   例如:煞車設定時，油門搖桿撥至最高，則設定為急煞車，進入第二項進角設定時，油門搖桿撥至中間，則設定為中進角。

| Mode 設定模式 \ Throttle position 油門搖桿 | Low 低 | Middle 中 | High 高 |
|---|---|---|---|
| Brake 煞車設定 | ●Brake disabled(1-1) 無煞車(1-1) | Soft brake(1-2) 較性煞車(1-2) | Hard brake(1-3) 急煞車(1-3) |
| Electronic Timing 進角設定 | Low-timing(2-1) 低進角(2-1) | ●Mid-timing(2-2) 中進角(2-2) | High-timing(2-3) 高進角(2-3) |
| Battery Protection 電池保護電壓設定 | ●High cutoff voltage protection(3-1) 高截止電壓保護(3-1) | Middle cutoff voltage protection(3-2) 中截止電壓保護(3-2) | — |
| Aircraft 飛機模式設定 | Normal Airpane/Glider(4-1) 一般飛機／滑翔機(4-1) | ●Helicopter 1 (Soft Start)(4-2) 直升機模式1(緩啟動功能)(4-2) | Helicopter 2 (Soft Start+ Governor Mode)(4-3) 直升機模式2(緩啟動+Govener Mode定速功能)(4-3) |
| Throttle response speed 油門反應速度設定 | Standard(5-1) 標準(5-1) | Medium speed(5-2) 中速(5-2) | ●Quick speed(5-3) 快速(5-3) |
| BEC output voltage BEC輸出電壓設定 | 5.0V | ●5.5V | 6.0V |

Note: "●" default setting
註：「●」表示出廠設定值

Chart A
表A

## ESC START-UP INSTRUCTION 開機使用模式

**1** Ensure the throttle stick is at the lowest position. Switch on transmitter.
打開電源，油門搖桿置於最低點，準備進入使用操作模式

**2** Connect battery power to ESC
變速器接上電源，馬達響音提示
♪ ♪ Power on sound 開機確認音
♪♪♪♪ Transmitter detected sound 系統偵測OK

**3** Current Settings Indicator Beeps
升空使用模式聲響提示
First mode sound (Brake)
Second mode sound (Timing)
Third mode sound (Battery protection)
Fourth mode sound (Aircraft)
Fifth mode sound (Throttle response speed)
No sound for BEC output voltage
第一個模式聲音提示(煞車)
第二個模式聲音提示(進角)
第三個模式聲音提示(電池保護)
第四個模式聲音提示(飛機模式)
第五個模式聲音提示(油門反應速度)
BEC輸出電壓不會以聲響提示

## CURRENT SETTINGS INDICATOR BEEPS EXPLANATION 開機模式設定響音提示說明

**First Beep Group Brake Status**
第一個響音 煞車設定狀態提示
♪ = Brake disabled = 無煞車
♪♪ = Soft brake = 較性煞車
♪♪♪ = Hard brake = 急煞車

**Second Beep Group Electronic Timing**
第二個響音 進角設定狀態提示
♪ = Low timing (apply to 2 pole inrunner motors) = 低進角(適合2級內轉子馬達)
♪♪ = Mid timing (apply to 6 pole in/outr unner motors) = 中進角(適合6級內外轉子馬達)
♪♪♪ = High timing (apply to high power output) = 高進角(適用於高功率輸出)
High-timing/big power/power expense 高溫角有較大功率與耗電特性

**Third Beep Group Battery protection Cutoff**
第三個響音 電池保護狀態提示
♪ = High cutoff voltage protection = 高截止電壓保護
♪♪ = Middle cutoff voltage protection = 中截止電壓保護

**Fourth Beep Group Aircraft Status**
第四個響音 飛機模式設定狀態提示
♪ = Normal airplane/Glider = 一般飛機/滑翔機
♪♪ = Helicopter 1 (Soft start) = 直升機模式1(緩啟動功能)
♪♪♪ = Helicopter 2 (Soft start + Governor Mode) = 直升機模式2(緩啟動功能+Govener Mode定速功能)

**Fifth Beep Group Throttle Response**
第五個響音 油門反應速度設定狀態提示
♪ = Standard = 快準
♪♪ = Medium speed = 中速
♪♪♪ = Quick speed = 快速

## INSTRUCTIONS ON AIRCRAFT MODE SETTINGS 飛機模式設定使用說明

**Normal Airplane/Glider Mode (Option 4-1):** This option is applied to general airplanes and gliders.

**Helicopter 1 Mode (Option 4-2):** This option provides a soft start feature and is applied to Helicopters for Normal, Idle Up 1, or Idle Up 2 modes. Please note that the sensitivity of the gyro should be set lower when flying in Idle Up 1 or Idle Up 2 modes if tail hunting (wag) occurs due to higher rotor speed.

**Helicopter 2 Mode (Option 4-3):** This option supports soft start as well as Governor Mode features and is applied to Helicopters for Idle Up 1 and Idle Up 2 modes(not suitable for Normal Flight Mode). When Governor Mode is in use, the throttle should be set between 75% and 85%. Again if tail wag occurs, lower the sensitivity of the gyro to eliminate the hunting effect. The Governor Mode may not work properly in cases of insufficient rotor speed (due to improper gear ratio), poor battery discharge capability, and improper setting of gyro sensitivity and the blade pitch, etc. Please make sure all the proper adjustments have been done when using Governor Mode.
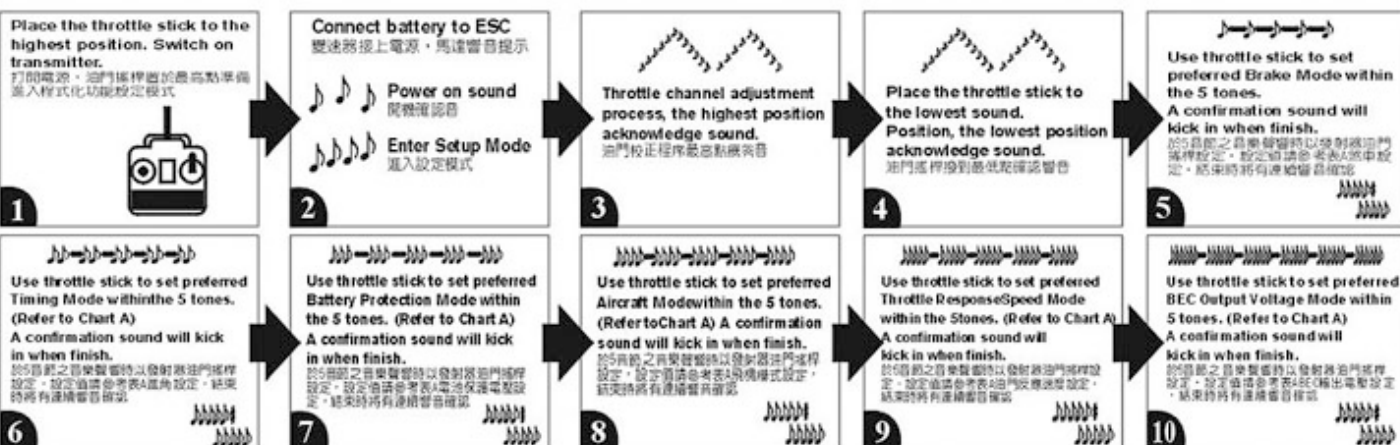
一般飛機模式(選項4-1)：適用於一般飛機及滑翔機。

直昇機模式1(選項4-2)：具有緩啟動功能，適用於Normal、Idle1、Idle2等飛行模式，當切換至Idle1或Idle2模式,如有較高轉速造成陀螺儀有輕微的過蹤現象，此時應將陀螺儀的感度設定分別降低。

直昇機模式2(選項4-3)：具有緩啟動及Govener Mode定速功能，適用於Idle1、Idle2特技飛行模式(不適合Normal飛行模式下選用)，選擇定速功能時，油門應定速在75%~85%之間，如果飛行時發現有輕微的過蹤現象時，應降低陀螺儀的感度；由於轉速不足(齒比搭配不當)，電池效能不佳，陀螺儀感度設定不當，Pitch設定錯誤，皆會導致無法發揮定速的功能，甚至產生尾部偏擺的情形，所以選擇此模式時應針對相關條件進行確認。

## SETUP MODE 程式化設定模式

### MINIMUM 4 CHANNEL RADIO IS REQUIRED 四動以上標準發射器均可執行設定

**1** Place the throttle stick to the highest position. Switch on transmitter.
打開電源，油門搖桿置於最高點準備進入程式化功能設定模式

**2** Connect battery to ESC
變速器接上電源，馬達響音提示
♪♪ Power on sound 開機確認音
♪♪♪♪ Enter Setup Mode 進入設定模式

**3** Throttle channel adjustment process, the highest position acknowledge sound.
油門校正程序最高點確認聲音

**4** Place the throttle stick to the lowest sound. Position, the lowest position acknowledge sound.
油門搖桿撥到最低點確認響音

**5** Use throttle stick to set preferred Brake Mode within the 5 tones. A confirmation sound will kick in when finish.
於最後之音樂聲響響起時以發射器煞車煞車設定，設定追請參考表A中煞車設定，結束時將有連續響音確認

**6** Use throttle stick to set preferred Timing Mode within the 5 tones. (Refer to Chart A) A confirmation sound will kick in when finish.
於最後之音樂聲響響起時以發射器油門搖桿設定，設定追請參考表A進角設定，結束時將有連續響音確認

**7** Use throttle stick to set preferred Battery Protection Mode within the 5 tones. (Refer to Chart A) A confirmation sound will kick in when finish.
於最後之音樂聲響響起時以發射器油門搖桿設定，設定追請參考表A電池保護電壓設定，結束時將有連續響音確認

**8** Use throttle stick to set preferred Aircraft Mode within the 5 tones. (Refer to Chart A) A confirmation sound will kick in when finish.
於最後之音樂聲響響起時以發射器油門搖桿設定，設定追請參考表A飛機模式設定，結束時將有連續響音確認

**9** Use throttle stick to set preferred Throttle ResponseSpeed Mode within the 5tones. (Refer to Chart A) A confirmation sound will kick in when finish.
於最後之音樂聲響響起時以發射器油門搖桿設定，設定追請參考表A油門反應速度設定，結束時將有連續響音確認

**10** Use throttle stick to set preferred BEC Output Voltage Mode within 5 tones. (Refer to Chart A) A confirmation sound will kick in when finish.
於最後之音樂聲響響起時以發射器油門搖桿設定，設定追請參考表A BEC輸出電壓設定，結束時將有連續響音確認

## FEATURES  產品特色

**[MEMS]** Utilizes MEMS gyro sensors, which feature small footprint, high reliability, and excellent stability.
採用MEMS（Micro Electro Mechanical Systems）微機電系統技術感測器，具有體積小，可靠性高，穩定性佳的優點。

**[12bit]** Sensor with 12 bit ultra high resolution, resulting in highly precise controls.
感測器12位元超高解析度，控制細膩精準。

Supports Spektrum and JR satellite receivers.
支援SPEKTRUM與JR衛星天線。

**[S.BUS]** Supports Futaba S.Bus architecture.
支援Futaba S.BUS功能。

Software upgradable through PC interface adapter.
具備可升級程式化介面，可透過傳輸線更新軟體。

**[Stable]** Highly sensitive gyroscopic sensors combined with advanced control detection routine providing higher hovering and aerobatic stability.
高感度陀螺感測器及先進環路設計，可提供更佳的靜態及動態穩定性。

**[GOV]** Built in speed governor function.
內建定速器功能。

**[3.5V-8.4V]** Capable to operate between 3.5V to 8.4V, compatible with high voltage servos.
適用電壓3.5V～8.4V，支援高電壓伺服器。

**[11g]** Small footprint, light weight, minimalists and reliable design.
體積小、重量輕、構造簡單可靠，提供操控者高性能的飛行樂趣。

**[RoHS]** RoHS certified.
符合RoHS限用規章。

## GP900 HEAD LOCK GYRO SETUP INDICATORS  GP900鎖定式陀螺儀功能設定指示燈說明

### T-REX500 STANDARD SETTING  T-REX500 標準設定



**STEP 1** 步驟1
Green: 1520μs standard band
設定為綠燈：1520μs寬頻
Standard/Narrow band setting
寬頻/帶頻設定

**STEP 2** 步驟2
Green: Digital Servo
設定為綠燈：數位伺服器
DS/AS Setting
數位/類比設定

**STEP 3** 步驟3
Green: Normal rotation. Red: Reverse rotation.
設定為綠燈：NOR反轉 設定為紅燈：REV反轉
Servo NOR/REV Setting
伺服器正/反轉設定

**STEP 4** 步驟4
The STATUS LED color does not indicate any setting here.
此項設定"STATUS"燈號不代表任何設定值。
Travel Limit Setting
行程量設定

**STEP 5** 步驟5
Green: Suitable for T-REX 500 or other medium to large helicopters.
設定綠燈：適用T-REX500直昇機。
Helicopter mode /DELAY Setting
大小型直昇機模式/DELAY設定

**STEP 6** 步驟6
Green : right side up mounting. Red : upside down mounting
綠燈:GP900正裝 紅燈:GP900反裝
Anti-torque compensation direction setting
反扭力補償正反向設定

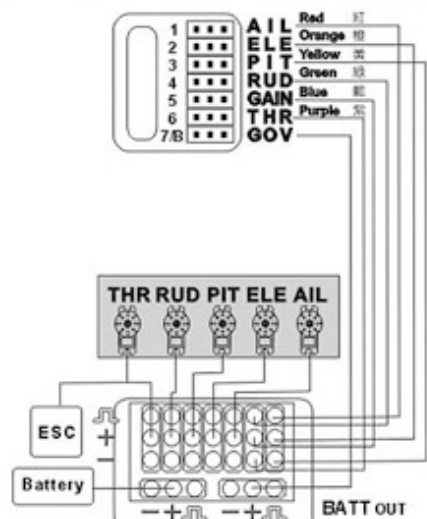| Setting type 設定項目 | 1520/760μs | DS/AS | NOR / REV | LIMIT | Helicopter mode / DELAY 直昇機模式/DELAY | Anti-torque compensation 反扭力補償正反向 |
|---|---|---|---|---|---|---|
| "STATUS"green "STATUS"綠燈 | ▲Standard 1520μs Servo ▲標準1520μs伺服器 | ▲Digital servo ▲DS數位伺服器 | ▲Normal rotation ▲NOR正轉 | Left(Right)Travel limit 左(右)行程量 | Medium/ large heli, suitable for T-REX 500/600/700 中型/大型直昇機 適用T-REX 500/600/700 | Right side up mounting: Installed with GP900 label facing up 正裝:安裝時GP900面板朝上 |
| "STATUS"red "STATUS"紅燈 | Narrow band 760μs Servo 窄頻760μs伺服器 | Analog Servo AS類比伺服器 | Reverse rotation REV反轉 | Right(Left)Travel limit 右(左)行程量 | Mini/ Micro heli, suitable for T-REX250/450 小型/迷你型電直 適用T-REX 250/450 | Upside down mounting: Installed with GP900 label facing down 反裝:安裝時GP900面板朝下 |
| Setting instruction 設定方式說明 | Please refer to point 1 in Rudder Gyro Setup (page 28) 請參照尾陀螺儀設定第一項(第28頁) | Please refer to point 2 in Rudder Gyro Setup (page 29) 請參照尾陀螺儀設定第二項(第29頁) | Please refer to point 4 in Rudder Gyro Setup (page 30) 請參照尾陀螺儀設定第四項(第30頁) | Please refer to point 5 in Rudder Gyro Setup (page 30) 請參照尾陀螺儀設定第五項(第30頁) | Please refer to point 6 in Rudder Gyro Setup (page 30) 請參照尾陀螺儀設定第六項(第30頁) | Please refer to point 7 in Rudder Gyro Setup (page 31) 請參照尾陀螺儀設定第七項(第31頁) |

NOTE: 1. "▲"Default setting。    2. Wrong heli mode will affect the performance of gyro. Do not fly before the complete setting.
註: 1. "▲"表示出廠設定值。    2. 錯誤的直昇機模式將影響陀螺儀性能，未完成設定前請勿飛行。

# GP900 CONNECTIVITY METHOD   GP900接線方式

## METHOD 1:STANDARD RECEIVER CONNECTIVITY METHOD   方式一:傳統接收器接線法

AIL Red 紅
ELE Orange 橙
PIT Yellow 黃
RUD Green 綠
GAIN Blue 藍
THR Purple 紫
GOV

THR RUD PIT ELE AIL

ESC

Battery

BATT OUT

1. Connect all wires as shown in diagram. Receiver and Gp900 wires are color coded to distinguish the different connection channels. Care should be taken to ensure proper wire color to channel connection.
2. While using the speed controller that not including BEC, you need to connect the BEC power with GP900 "BATT"port.
3. Receiver power is achieved by connecting the GP900 "S.BUS/BIND" port to the ch7 or BATT port on receiver using supplied signal wire.
4. GP900 has built in speed governor function which can be utilized by purchasing the optional speed sensor. Governor setting is done through channel 7 on the receiver.

1. 請依照圖示進行接線，接收器與GP900的接線使用不同的顏色來區分不同的通道，接線時請注意各顏色所對應的通道。
2. 使用無BEC輸出的調速器時，須額外由GP900的"BATT"孔位接入BEC電源。
3. 接收器電源請以隨附的訊號線由GP900的"S.BUS/BIND"孔位接至第七通道或BATT通道。
4. GP900內建定速器功能，可另購定速器感知器使用，轉速設定由接收器的第七通道設定。

## METHOD 2: FUTABA S.BUS CONNECTIVITY METHOD   方式二:FUTABA S.BUS接線法

S.BUS

THR RUD PIT ELE AIL

ESC

Battery

BATT OUT
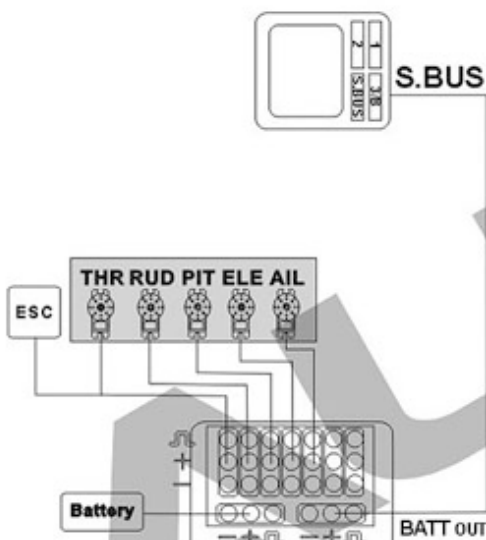
1. For Futaba S.BUS receivers, connect wires as shown in diagram.
2. While using the speed controller that not including BEC, you need to connect the BEC power with GP900 "BATT"port.
3. Receiver power is supplied through S.BUS signal wire connected to GP900's "S.BUS/BIND" port.
4. The default channel/function mapping when using S.BUS are:
(1)AIL  (2)ELE  (3)THR
(4)RUD  (5)GAIN  (6)PIT  (7)GOV

1. 具備S.BUS功能的Futaba接收器，請依照圖示進行接線。
2. 使用無BEC輸出的調速器時，須額外由GP900的"BATT"孔位接入BEC電源。
3. 接收器電源共同由S.BUS訊號線接至GP900的"S.BUS/BIND"孔位。
4. 使用S.BUS功能時,內部通道已指定為:
(1)AIL (2)ELE (3)THR (4)RUD (5)GAIN (6)PIT (7)GOV

⚠ CAUTION
注意
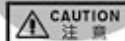
If channel 3 is set as PIT and channel 6 set as THR on transmitter, such as 8FG, 12Z, 14MZ,nd etc, please reprogram the transmitter to utilize channel3 as THR and channel6 as PIT.
若所使用的遙控器內部指定(3)通道為PIT (6)通道為THR時，例如8FG、12Z、14MZ等，請更改遙控器上的設定為(3)通道 THR (6)通道 PIT。

5. GP900 has built in speed governor function which can be utilized by purchasing the optional speed sensor. Governor setting is done through channel 7 on the receiver.

5. GP900內建定速器功能，可另購定速器感知器使用，轉速設定由接收器的第七通道設定。

## METHOD 3: JR/SPEKTRUM SETELLITE CONNECTIVITY METHOD   方式三:JR/SPEKTRUM衛星天線接線法

BIND

THR RUD PIT ELE AIL

ESC

Battery
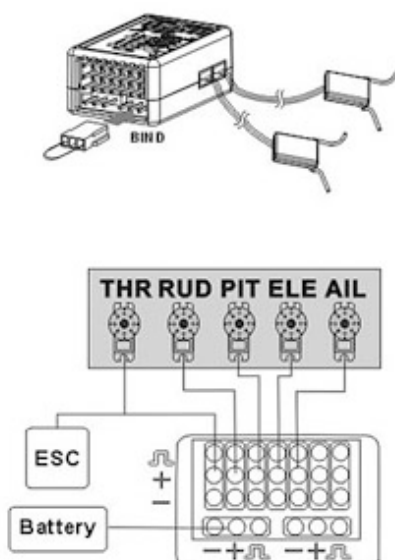
1. For JR or Spektrum satellite receivers, connect wires as shown in diagram.
2. While using the speed controller that not including BEC, you need to connect the BEC power with GP900 "BATT"port.
3. GP900 has built in speed governor function which can be utilized by purchasing the optional speed sensor. Governor setting is done through channel 7 on the receiver. Channel5/GEAR controls RPM of speed governor, channel7/AUX2 controls rudder gyro gain. For radios with less than 6 channels, please use the standard receiver connectivity method.
4. For radios with less than 6 channels, channel5/GEAR is used for rudder gyro gain. Speed governor cannot be used. For safety concern, two satellite receives should be used, with each antenna perpendicular (90 degrees) from each other. A satellite receiver should be installed on each side of the frame, separate by minimum distance of 5cm.
5. Should both satellite receivers loose connectivity during flight, LED1 ~ LED5 will flash continuously as warning. A single power cycle of the system will not clear this error. The system need to be power cycled the second time to reset.
6. Default channel/function mapping when using satellite receiver are:
(1)THR  (2)AIL  (3)ELE
(4)RUD  (5)GOV  (6)PIT  (7)GAIN
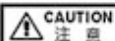
1. Do not mix satellite receivers of different makes.
2. Even under correct startup sequence, if transmitter is powered off first, LED1~LED5 will also flash. Thus the receiver should always be powered off before the transmitter.
3. 3GX supports satellite receiver models currently available on the market. Should new receiver version comes out with compatibility issues, firmware will be updated to resolve any incompatibility that may arise.

1. 不同廠牌的衛星天線請勿交叉對頻。
2. 正常開機的情況下，如果先關發射機，也會發生LED1～LED5持續閃爍情況，所以請養成先關接收機，再關發射機的良好習慣。
3. 如有新型號衛星天線產生不相容情形，將以韌體更新方式解決。

1. 請依照圖示進行接線，GP900支援Spektrum與JR系統衛星天線。
2. 使用無BEC輸出的調速器時，須額外由GP900的"BATT"孔位接入BEC電源。
3. GP900內建定速器功能，可另購定速器感知器使用。七動及七動以上遙控器 (5)GEAR控制定速器轉速，(7)AUX2控制尾舵陀螺儀感度。六動以下遙控器請使用傳統接線方式。
4. 為安全起見，請盡量安裝兩個衛星天線，兩個衛星天線角度除必須呈90度之外，且須安裝於機身兩側，相隔至少5公分以上。
5. 如果飛行途中有兩個衛星天線同時失連的情形，LED1～LED5會持續閃爍警告，在此情形下就算重新開機，LED1～LED5會持續閃爍而無法開機，必須再重新開機一次，才可正常運作。
6. 使用衛星天線接線時，內部通道已指定為：
(1)THR  (2)AIL  (3)ELE  (4)RUD  (5)GOV  (6)PIT  (7)GAIN

## FAILSAFE(LAST POSITION HOLD)　失控保護(保留最後指令)：

When helicopter lost connectivity with your radio under this setting, all channels will hold at the last command position, except throttle channel which goes to a preset position.
1. Push throttle stick to the desired fail safe position.
2. Plug the binding plug into GP900's BIND port, and perform radio binding steps.
3. After successful binding, do not power off the GP900, unplug the binding plug and allow GP900 to enter initializing process. The last position hold function will be active after the GP900 initializes.
4. Test Method: Power off transmitter. The throttle channel should move to preset position, while all other channels should hold in their last position.

在此模式下，若您的直昇機與遙控器失連，除油門頻道為預設位置，其餘頻道皆為最後指令位置。
1. 將油門搖桿放置於您所需要的預設安全位置。
2. 將對頻接頭插在GP900的BIND插座，執行與遙控器的對頻動作。
3. 與遙控器完成對頻動作後，不要關閉GP900電源，先將對頻接頭拔除，GP900會進入開機狀態，待GP900開機完成後，即完成保留最後指令。
4. 測試方法：將遙控器關機，除了油門頻道為預設安全位置外，其餘頻道都為失連前的最後命令指令位置。

## FAILSAFE (PRE-SET POSITION HOLD)　失控保護(回復預設值)：

When helicopter lost connectivity with your radio under this setting, all channels will move to the pre-set position.
1. Plug the binding plug into GP900's BIND port, and power up the GP900. After the rapid flash of satellite's LEDs, pull the binding plug off.
2. Power up radio transmitter, and perform radio binding steps. After radio is bound, LED on the satellite antennas will end the rapid flash, following by slower flash.
3. Move the transmitter sticks to the desired failsafe position while the LED is flashing in slower mode.
4. Satellite antenna's LED will lit up after 5 seconds, and GP 900 goes through initializing process. The failsafe position will be set after the GP900 initializes.
5. Test Method: Power off transmitter, and all channels should move to the pre-set failsafe position.

在此模式下，若您的直昇機與遙控器失連，所有頻道為預設安全位置。
1. 將對頻接頭插在GP900的BIND插座，先開啟GP900電源，待衛星天線上LED快速閃爍後，將對頻接頭拔除。
2. 開啟遙控器電源，執行與遙控器的對頻動作，對頻完成瞬間，衛星天線上LED會由快速閃爍狀態熄滅，之後再亮起改為慢速閃爍。
3. 在慢速閃爍狀態時，將遙控器上的所有搖桿放置於您所需要的預設安全位置。
4. 5秒後衛星天線LED燈為恆亮，GP900進入開機狀態，待GP900開機完成後，即完成失控保護設定。
5. 測試方法：將遙控器關機，所有頻道為預設安全位置。

## RUDDER GYRO SETUP　尾舵陀螺儀設定

Push and hold the SET button for 2 seconds to enter the rudder gyro setup mode.
If your transmitter has the following settings, please disable it or set the value to zero.
於待機狀態下持按"SET"鍵2秒進入尾舵陀螺儀設定。
如果您的遙控器有下列功能時，請設定為關閉(OFF)或數值設定為零。

● ATS
● Pilot authority mixing
● Throttle to rudder mixing
● Rudder to gyro mixing
● Pitch to rudder mixing
● Revolution mixing

GP900 rudder gyro has the factory setting of 1520 $\mu$ s and DS digital servo. Double check your servospec and change the gyro setting as needed to avoid damages to the servo.
GP900 尾舵陀螺儀出廠設定值為：1520 $\mu$ s寬頻與DS數位伺服器模式，安裝時請確認您的伺服器規格，避免設定值不同而造成伺服器損壞。

### 1. 1520 $\mu$ S (STANDARD) OR 760 $\mu$ S(NARROW BAND) SERVO FRAME RATE SETUP　1520 $\mu$ s(標準)或760 $\mu$ s(窄頻)伺服器設定

GP900 is compatible with both the 760 $\mu$ s narrow frame rate servos (such as Futaba S9256, S9251, BLS251), as well as the standard 1520 $\mu$ s frame rate servos (most others). Proper frame rate must be selected based on your servo's specifications.

To enter the setup mode：Press and hold the SET button for 2 seconds until STATUS LED flashes. The 1520/760 LED will light up indicating servo frame rate setup mode. Push the transmitter rudder stick left or right to select the frame rate. For example, if rudder is pushed to the left (or right) and STATUS LED turns green, the frame rate is set to 1520 $\mu$ s. To set it to 760 $\mu$ s, the rudder stick need to be pushed from the center to the opposing end 3 times for the STATUS LED to turn red, indicating frame rate set to 760 $\mu$ s.

GP900 panel：Each setting value is labeled on the 3G flybarless control unit with either green or red lettering, which corresponds to the STATUS LED color. Subsequent setup mode is entered by a single press of the SET button. Setup mode will exit if no activity is detected in 10 seconds.

GP900相容兩種波寬控制系統，若您使用的伺服器屬於760μs系統（如Futaba S9256、S9251、BLS251），則必須將GP900設定於760的模式，其他未標示760μs規格的伺服器，一般皆為1520μs系統，須設定為1520的模式。

進入功能設定模式：持按面板上的"SET"設定鍵約2秒，此時"STATUS"狀態指示燈會開始閃爍，且"1520/760"的功能設定指示燈會亮起，表示進入標準／窄頻伺服器選項，利用遙控器方向舵搖桿的左右方向來選擇設定值，例如方向舵搖桿 往左（或右）時，"STATUS"指示燈為綠色，表示設定值為1520μs系統；若要設定為窄頻760μs系統時，必須將搖桿由中立點往相反方向連續撥動3次，使"STATUS"指示燈亮紅色，才會進入760μs系統。
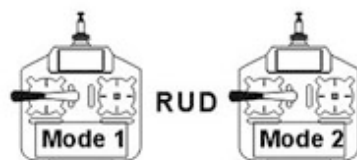
GP900的面板：標籤上已使用綠／紅色的字體提示"STATUS"燈色所代表的設定值。設定完成後按"SET"鍵一次可進入下一個設定，或是10秒內不做任何設定，系統會自動離開設定模式。

Green LED : 1520 μs standard band
Red LED : 760 μs narrow band
綠燈：1520μs寬頻伺服器
紅燈： 760μs窄頻伺服器



Standard/Narrow band mode
寬頻/窄頻 模式

Select by moving the rudder stick left and right
左右撥動方向舵選擇

RUD
Mode 1    Mode 2

## 2.DS (DIGITAL) / AS (ANALOG) SERVO SELECTION　DS數位／AS類比伺服器選擇

There is a direct correlation between servos' speed to gyro's performance. Faster servos are able to execute commands from the gyro at faster and higher precision. Due to the high performance gyro sensors used in the GP900, premium high speed digital rudder servos are mandatory for optimal tail performance.

Setup method：Press and hold the SET button for 2 seconds to enter the setup mode, then press the SET button to select DS/AS setup mode, as indicated by the lighting of DS/AS LED. Using the transmitter's rudder stick, select either digital servo DS mode (STATUS LED is green), or analog servo AS mode (STATUS LED is red).

伺服器動作速度攸關陀螺儀的性能，伺服器動作愈快，就能立即反應陀螺儀送出的指令，發揮快速精準的效能；由於GP900具有相當快速的反應時間與靈敏度，所以建議您搭配高速型數位伺服器，以獲得最佳效能。

設定方式：持按"SET"鍵2秒進入功能設定模式，再按"SET"鍵選擇DS／AS選項，（DS／AS指示燈亮起），利用方向舵搖桿選擇數位DS(STATUS為綠燈)或類比AS(STATUS為紅燈)伺服器。

Green LED : DS digital servo
Red LED : AS analog servo
綠燈：DS數位伺服器
紅燈：AS類比伺服器
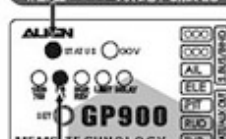


digital / analog mode
數位/類比 模式

⚠ CAUTION 注意
Using an analog servo in DS mode will cause damages to the servo.
在DS模式下連接"AS類比伺服器"將導致伺服器燒毀。

Select by moving the rudder stick left and right
左右撥動方向舵選擇

RUD
Mode 1    Mode 2
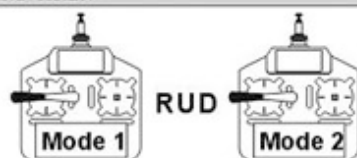
## 3. RUDDER SERVO DIRECTION CHECK AND LINK ADJUSTMENT　檢查尾舵伺服器正逆轉方向與調整連桿

Move the transmitter rudder stick left/right, and check for the correct direction of the rudder servo. If needed, servo reverse is done from the transmitter's REV (reverse) function.

For tail pitch adjustment, center the rudder servo by either setting the GP900 to normal rate mode (non-heading lock), or press and hold the SET button for 2 seconds. With the rudder servo centered and servo horn at 90 degrees, adjust the linkage length until tail pitch slider is centered on the tail output shaft as shown in diagram.

左右撥動尾舵搖桿，確認尾舵伺服器移動的方向是否正確，若不正確請更改遙控器上的尾舵伺服器正逆轉方向。

將GP900 切換成非鎖定模式或持按"SET"鍵2秒，使尾舵伺服器保持在中立點的位置上，調整伺服舵片，盡可能使尾舵連桿與伺服擺臂呈90度，接著調整連桿長度使尾Pitch 控制組置中。

Tail servo horn
尾伺服擺臂

90°

13mm



Approx. 10mm
約10mm

Tail case set
尾齒輪組
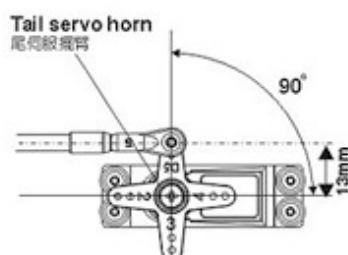
Utilizing Ds520 rudder servo as an example, the recommended location of linkage connection is the third hole from the center on the servo horn. The ideal distance from linkage connection to servo center is 13mm.

以DS520尾舵伺服器為例，建議將球頭鎖附於伺服舵片由內算起的第三孔， 使尾舵控制桿與伺服器平行距離13mm左右為最佳。
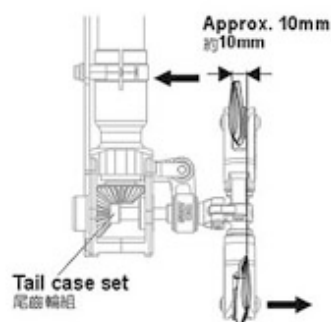
## 4. GYRO NOR/REV SETTING　NOR／REV陀螺儀正反向開關設定

Lift up the helicopter by hand, and turn it to the left (yaw).  Check if the rudder servo is applying correct compensation to the right.  If reversed, set the NOR/REV setting as follow.

Setup method：Press and hold the SET button for 2 seconds to enter the setup mode, then press the SET button to select NOR/REV setup mode, as indicated by the lighting of NOR/REV LED.  Using the transmitter's rudder stick, select either NOR (STATUS LED is green),or REV (STATUS LED is red).

提起直昇機，將機頭往左擺動，若尾舵伺服器的擺動方向與遙控器的方向舵搖桿打右舵同方向時，表示陀螺儀的動作方向設定正確，若不正確時請更改正反向設定。
設定方式：持按"SET"鍵2秒進入功能設定模式，選擇NOR／REV選項，以方向舵選擇NOR( STATUS為綠燈 )或REV（ STATUS為紅燈 ）。

Green LED：normal direction
Red LED：reverse direction
綠燈：NOR正向
紅燈：REV反向
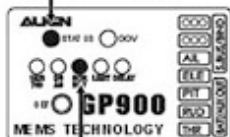
gyroscope direction settings
陀螺儀正反向設定

Select by moving the rudder stick left and right
左右撥動方向舵選擇

RUD

Mode 1　　Mode 2
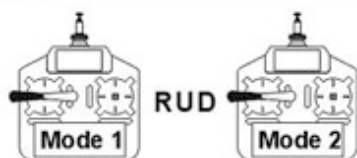
## 5. LIMIT RUDDER SERVO ENDPOINT SETTING　LIMIT尾舵伺服器行程量調整

Press and hold the SET button for 2 seconds to enter the setup mode, then press the SET button repeatedly to select LIMIT setup mode, as indicated by the lighting of LIMIT LED.  Push the transmitter rudder stick left until tail pitch slider reaches the end, then center the rudder stick and wait 2 seconds for the STATUS LED to flash red.  Then push the rudder stick right until tail pitch slider reaches the end, then center the rudder stick and wait 2 seconds for the STATUS LED to flash red.  This completes the left and right endpoint limit adjustment of servo travel.  Insufficient servo travel will degrade helicopter performance, while excessive travel will cause binding and damage rudder servo.

持按"SET"鍵2秒進入功能設定模式，此時尾伺服器會保持在中立點的位置上，選擇LIMIT選項，接著將方向舵搖桿慢慢的往左移動，使尾控制組達到該側的大行程限度後，將搖桿回歸中立點不動，待2秒後"STATUS"指示燈會亮紅燈閃爍，表示左側行程量已記憶；接著將尾舵搖桿往右移動至控制組最大行程限度後，再將搖桿回歸中立點不動，待2秒後 "STATUS"指示燈亮紅燈閃爍，即完成左右行程量設定，行程量不足時會影響陀螺儀與直昇機的性能，行程量過大易造成伺服器損壞。
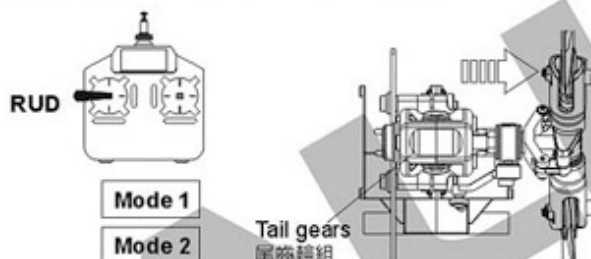
RUD

Mode 1
Mode 2
Tail gears
尾齒輪組

Push the transmitter rudder stick left until tail pitch slider reaches the end, then center the rudder stick and wait 2 seconds for the STATUS LED to flash red.  This completes the rudder endpoint limit adjustment for the left side.

將方向舵慢慢往左撥動，使控制組達到左舵最大行程限度後，將搖桿回歸中立點不動，待2秒後"STATUS"紅燈閃爍表示左舵行程記憶量完成。
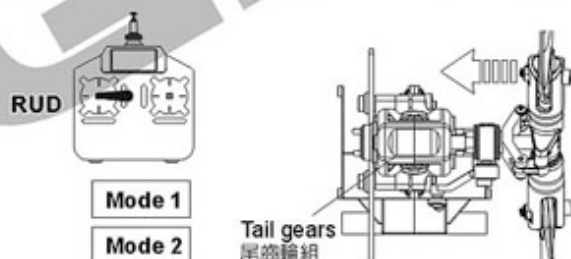
RUD

Mode 1
Mode 2
Tail gears
尾齒輪組

Push the rudder stick right until tail pitch slider reaches the end, then center the rudder stick and wait 2 seconds for the STATUS LED to flash red.  This completes the rudder endpoint limit adjustment for the right side.

將方向舵慢慢往右撥動，使控制組達到右舵最大行程限度後，將搖桿回歸中立點不動，待2秒後"STATUS"指示燈表示右舵行程記憶量完成。

Flashing red LED indicates settings have been registered
紅燈閃爍時表示記憶完成
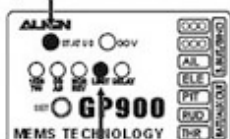
Endpoint limit settings
行程量設定

⚠ CAUTION
注 意

To avoid degraded gyro performance as result of insufficient travel range, rudder travel limit setting should not be set to below 50%.
尾舵行程量設定不可低於50%，避免行程不足影響陀螺儀性能。

## 6. HELICOPTER SIZE AND DELAY SETTINGS　直昇機模式與DELAY控制延遲量調整

This setting includes two functions：
(1) For small helicopters such as T-Rex 250/450, set this setting to small helicopter (STATUS LED red).  For larger helicopters such as T-Rex 500/550/600/700 set this setting to large helicopter (STATUS LED green).

此設定結合兩項功能：
(1) GP900支援小型／迷你型室內電直，請依您直昇機的類型選擇適合的模式， 如：T-REX250/450請選擇小型／迷你型模式（設定時"STATUS"指示燈為紅色）；T-REX500/550/600/700請選中大型直昇機模式（設定時 "STATUS"指示燈為綠色）。

Green LED: suitable for larger helicopters such as T-REX500/550/600/700
Red LED: suitable for smaller helicopter such as T-REX 250/450
綠燈：適用T-REX500/550/600/700大型直昇機
紅燈：適用T-REX250/450小型直昇機

Helicopter size selection and servo delay settings
大小直升機模式與延遲量設定

Select by moving the rudder stick left and right
左右撥動方向舵選擇

(2) The DELAY function is utilized when slower rudder servo causes tail hunting (wagging). This can be observed after a hovering pirouette comes to a stop. If tail hunting occurs, gradually increase DELAY value to eliminate it. For best performance, DELAY value should be kept as low as possible without tail hunting.

Setup method : Press and hold the SET button for 2 seconds to enter the setup mode, then press the SET button to select DELAY setup mode, as indicated by the lighting of DELAY LED. The choice of small or large helicopter is done by moving the transmitter rudder stick left or right while observing the color of the STATUS LED. For small helicopters STATUS LED will be red, and large helicopter will be green. The amount of servo delay is set by how far you push the rudder stick, followed by pushing the SET button.

(2) 使用速度較慢的尾舵伺服器較容易產生追蹤現象，當直昇機停懸時，打方向舵使直昇機快速自轉，當方向舵回到中立點使直昇機停止自轉時，此時若發生追蹤現象，請增加控制延遲的設定量，一般而言在不產生追蹤現象的原則下控制延遲的設定量愈小愈好，否則尾舵的動作會變得遲緩。

設定方式：持按"SET"鍵2秒進入功能設定模式，選擇至DELAY選項，以方向舵搖桿選擇小型／迷你型電直，如：T-REX 250/450（STATUS為紅燈），或中大型直昇機如T-REX500/550/600/700（STATUS為綠燈），若要同時設定DELAY控制量時，則利用方向舵搖桿的位置來設定，搖桿由中立點推至"DELAY"燈開始閃爍時為0%，推至最大行程時控制量為100%，將搖桿推至所需的延遲量時保持不動，並按下"SET"鍵確認，即可同時設定直昇機模式與延遲量。

Green LED for T-REX500
T-REX500設定為綠燈

0% when DELAY LED begins flashing
DELAY燈開始閃爍時為0%

Gradually move the transmitter rudder stick until DELAY LED begins to flash, the delay value is 0% at this point.
輕推方向舵搖桿至"DELAY"燈開始閃爍時，延遲量為0%

Green LED for T-REX500
T-REX500設定為綠燈

Continue to move the rudder stick until desired delay value is needed, then press the SET button to register the setting. Maximum is 100% delay, with rudder stick pushed to the end.
方向舵推至最大行程時，延遲量為100%，將搖桿推至所需的延量，按下"SET"鍵確認
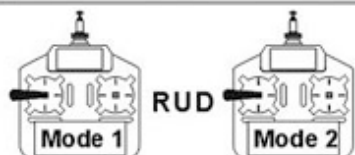
## 7. ANTI TORQUE COMPENSATION DIRECTION SETTING 反扭力補償正反向設定

To achieve consistent gyro gain on left and right, GP900 has built in anti-torque compensation function. User need to confirm if GP900 is mounted right side up or upside down.
Right side up: Installed with GP900 label facing up, anti-torque compensation set to positive (green STATUS LED).
Upside down: Installed with GP900 label facing down, anti-torque compensation set to negative (red STATUS LED).

為使陀螺儀左右感度一致，GP900內置反扭力補償功能，使用者需確認GP900為正裝或反裝。
正裝：安裝時GP900面板朝上，反扭力補償設為正向(STATUS綠燈)。
反裝：安裝時GP900面板朝下，反扭力補償設為反向(STATUS紅燈)。

Setup method: Press and hold the SET button for 2 seconds to enter setup mode, select until anti-torque compensation section, as indicated by lighting of all 5 setup mode LEDs. Using the rudder stick to select either positive anti-torque compensation (green STATUS LED) for right side up mounting, or negative anti-torque compensation (red STATUS LED) for upside down installation.
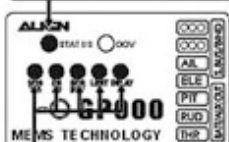
設定方式：持按"SET"鍵2秒進入功能設定模式，選擇至反扭力補償設定項，此時5顆功能設定指示燈全亮，接著以方向舵搖桿選擇，當GP900正裝，須設定為正向(STATUS綠燈)；當GP900反裝時，須設定為反向(STATUS紅燈)。

Green : Right side up mounting
Red : Upside down mounting
綠燈：GP900正裝，反扭力補償正向
紅燈：GP900反裝，反扭力補償反向

Anti Torque Compensation direction setting
反扭力補償正反向設定

Select by moving the rudder stick left and right
左右撥動方向舵選擇

## 8. SENSITIVITY ADJUSTMENT　感度調整

For radio with built in gyro gain settings, gain can be adjusted directly. For example, 50%-100% setting on the radio translates to 0% - 100% gain in the heading lock mode;50%-0% setting on the radio translates to 0%-100% gain in the normal (non-heading) lock mode.

Actual gain value differs amongst servos and helicopters. The goal is to find the maximum gain without tail hunting. This can only be done through actual flight tests.

The recommended starting point for transmitter's gyro gain setting should be 70~80% for hovering, 60~70% for idle-up. Value should be tuned under actual flight conditions by increasing to the maximum gain without tail hunting.

一般具有陀螺儀感度設定功能的遙控器,可直接進入GYRO功能選項進行感度值的設定,設定值50%則陀螺儀的感度為0,設定值50%~100%,則陀螺儀感度值為鎖定狀態的0~100%;設定值50%~0%,則陀螺儀感度值為非鎖定狀態的0~100%。

感度值的大小會隨著伺服器與直昇機的不同而有所差異,一般而言,在不產生追蹤現象(直昇機尾部出現左右搖擺的情況)的前提下感度值愈高愈好,所以只能透過實際飛行的狀況來進行調整。

進入遙控器感度設定的選項,剛開始停懸時建議先設定在70~80%左右,ldle up飛行時設定在60~70%左右,之後再依實際飛行的狀態再行修正,如果沒有追蹤現象發生時可再調整高感度,若發生追蹤現象時,則調低感度。
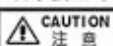
> ⚠ **CAUTION 注意**
> For radios (IE Futaba) using 0-100% as heading lock gain scales, the recommended gain setting is 30% to 35%.
> For radio that uses the 50 -100% scale(such as JR and Hitec), the recommended gain setting is 70% to 75%.
> 鎖定感度值為0~100%的遙控器,如Futaba,建議設定在30~35%左右;鎖定感度值為50~100%的遙控器,如JR、HITEC、建議感度值設定在70~75%左右。

## GP900 GYRO SPECIFICATIONS　GP900陀螺儀產品規格

- ●Operating Voltage: DC 3.5~8.4V
- ●Current Consumption: <80mA @ 4.8V
- ●Angular Detection Speed: ±300 degrees/sec
- ●Operating Temperature: -20℃~65℃

- ●Operating Humidity: 0%~95%
- ●Size: 36.5x25.2x15.6mm
- ●Weight: 11g
- ●RoHS compliant

- ●適用電壓: DC 3.5V~8.4V
- ●消耗電流: <80mA @4.8V
- ●偵測角速度±300度/sec
- ●操作溫度: -20℃~65℃

- ●操作濕度: 0%~95%
- ●尺寸: 36.5x25.2x15.6mm
- ●重量: 11g
- ●符合RoHS限用規章

# 18.FLIGHT ADJUSTMENT AND SETTING　飛行動作調整與設定　**ALIGN** ///

## PLEASE PRACTICE SIMULATION FLIGHT BEFORE REAL FLYING　飛行前請事先熟練模擬飛行

Do a simulation flight until you familiarize your fingers with the movements of the rudders, and keep practicing until the fingers move naturally.
1. Place the helicopter in a clear open field ( Make sure the power OFF ) and the tail of helicopter point to yourself.
2. Practice to operate the throttle stick(as below illustration) and repeat practicing "Throttle high/low", "Aileron left/right", "Rudder left/right", and "Elevator up/down".
3. The simulation flight practice is very important, please keep practicing until the fingers move naturally when you hear operation orders being call out.
4. Another safe and effective practice method is to use the transmitter flying on the computer through simulator software sold on the market.

在還沒瞭解直昇機各動作的操控方式前,嚴禁通電飛行,請先進行模擬飛行的練習,並不斷的重複,直到手指可熟練的控制各個動作及方向。
1. 將直昇機放在空曠的地方(確認電源為關閉),並將直昇機的機尾對準自己。
2. 練習操作遙控器的各搖桿(各動作的操作方式如下圖),並反覆練習油門高/低、副翼左/右、升降舵前/後及方向舵左/右操作方式。
3. 模擬飛行的練習相當重要,請重複練習直到不需思索,手指能自然隨著喊出的指令移動控制。
4. 另外一種最有效、最安全的練習方式,就是透過市面販售的模擬軟體,以遙控器在電腦上模擬飛行,熟悉各種方向的操控。



| Mode 1 | Mode 2 | Illustration 圖示 |
|---|---|---|
| Aileron 副翼 | | Move left 左移 / Move right 右移 / Rotate left 左翻 / Rotate right 右翻 |
| Elevator 升降/前後 | | Fly forward 前飛 / Fly backward 後退 / Forward rotate 前翻 / backward rotate 後翻 |
| Throttle 油門 | | Ascent 上升 / Descent 下降 |
| Rudder 方向 | | Turn right 右變 / Turn left 左變 |

## FLIGHT ADJUSTMENT AND NOTICE FOR BEGINNERS　初學飛行調整與注意

> ⚠ **CAUTION 注意**
> · Check if the screws are firmly tightened.
> · Check if the transmitter and receivers are fully charged.
> · 再次確認→螺絲是否鎖固?
> · 發射器和接收器電池是否足夠。

· **When arriving at the flying field.**
· 當抵達飛行場



> ⚠ **CAUTION 注意**
> If there are other radio control aircraft at the field, make sure to check their frequencies and tell them what frequency you are using.
> Frequency interference can cause your model, or other models to crash and increase the risk of danger.
> 假使飛行場有其他遙控飛機,請確認他們的頻率,並告知他們你正在使用的頻率,相同的頻率會造成干擾導致失控和大大地增加風險。

## STARTING AND STOPPING THE MOTOR 啓動和停止馬達
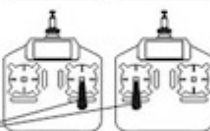
Mode 1    Mode 2

⚠ CAUTION 注意

First check to make sure no one else is operating on the same frequency. Then place the throttle stick at lowest position and turn on the transmitter.
首先確認附近沒有其他相同頻率的使用，然後打開發射器將油門搖桿推到低點。

⚠ CAUTION 注意

Check if the throttle stick is set at the lowest position.
確認油門搖桿是在最低的位置。

· Check the movement.
· 動作確認

· Are the rudders moving according to the controls?
· Follow the transmitter's instruction manual to do a range test.
· 方向舵是否隨著控制方向移動？
· 根據發射器說明書進行距離測試。

ON! Step1
First turn on the transmitter.
先開啓發射器
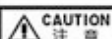
ON! Step2
Connect to the helicopter power
接上直昇機電源

OFF! Step3
Reverse the above orders to turn off.
關閉電源時請依上述操作動作反執行。

## MAIN ROTOR ADJUSTMENTS 主旋翼雙槳平衡調整

⚠ CAUTION 注意

Tracking adjustment is very dangerous, so please keep away from the helicopter at a distance of at least 10m.
調整軌跡非常危險，請於距離飛機最少10公尺的距離。

1. Before adjusting, apply a red piece of tape on one blade, or paint a red stripe with a marker or paint to identify on blade.
2. Raise the throttle stick slowly and stop just before the helicopter lifts-off ground. Look at the spinning blades from the side of the helicopter.
3. Look at the path of the rotor carefully. If the two blades rotate in the same path, it does not need to adjustment. If one blade is higher or lower than the other blade, adjust the tracking immediately.

1. 調整前先在其中一支主旋翼的翼端，貼上有顏色的貼紙或畫上顏色記號，方便雙槳調整辨識。
2. 慢慢的推起油門搖桿到高點並且停止，在飛機離開地面前，從飛機側邊觀察主旋翼轉動。
3. 仔細觀察旋翼軌跡(假如兩支旋翼移動都是相同軌跡，則不需要調整；可是如果一支旋翼較高或較低產生〝雙槳〞的情形時，則必須立刻調整軌跡)。

A. When rotating, the blade with higher path means the pitch too big. Please shorten pitch linkage rod (C) for slight trim.
B. When rotating, the blade with lower path means the pitch too small. Please lengthen pitch linkage rod (C) for slight trim.

A. 旋翼轉動時較高軌跡的主旋翼表示螺距(PITCH)過大，請調短連桿(C)修正。
B. 旋翼轉動時較低軌跡的主旋翼表示螺距(PITCH)過小，請調長連桿(C)修正。

⚠ CAUTION 注意
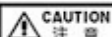
Incorrect tracking may cause vibrations. Please repeat adjusting the tracking to make sure the rotor is correctly aligned. After tracking adjustment, please check the pitch angle is approx. +5~6° when hovering.
不正確的旋翼軌跡會導致震動，請不斷重複調整軌跡，使旋翼軌跡精準正確。在調整軌跡後，確認一下Pitch角度在停懸時應為大約+5～6°。

Color mark 有標示記號的主旋翼

## FLIGHT ADJUSTMENT AND NOTICE FOR BEGINNERS 初學飛行調整與注意

· Please stand approximately 10M diagonally behind the helicopter.
· 練習時，請站在直昇機後方10公尺。

Beginner may install a training landing gear to avoid any crash caused by offset effect while landing.
必要時初學者可以在腳架下方安裝練習架，可避免降落時因重心偏移導致主旋翼或直昇機損毀。

⚠ CAUTION 注意
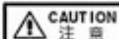
· Make sure that no one or obstructions in the vicinity.
· You must first practice hovering for flying safety. This is a basic flight action. (Hovering means keeping
· 確認鄰近地區沒有人和障礙物。
· 為了飛行安全，您必須先練習停懸，這是飛行動作的基礎(停懸：直昇機滯留空中並保持固定位置)。

## STEP 1 THROTTLE CONTROL PRACTICE 油門控制練習

Mode 1    Mode 2

· When the helicopter begins to lift-off the ground, slowly reduce the throttle to bring the helicopter back down. Keep practicing this action until you control the throttle smoothly.
· 當直昇機開始離地時，慢慢降低油門將飛機降下。持續練習飛機從地面上升和下降直到您覺得油門控制很順。

## STEP 2 AILERON AND ELEVATOR CONTROL PRACTICE　副翼和升降控制練習

1. Raise the throttle stick slowly.
2. Move the helicopter in any direction back, forward, left and right, slowly move the aileron and elevator sticks in the opposite direction to fly back to its original position.

1. 慢慢升起油門搖桿。
2. 使直昇機依指示:移動向後/向前/向左/向右,慢慢的反向移動副翼和升降搖桿並將直昇機開回到原來位置。

Mode 1　Mode 2

⚠ CAUTION 注 意
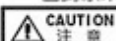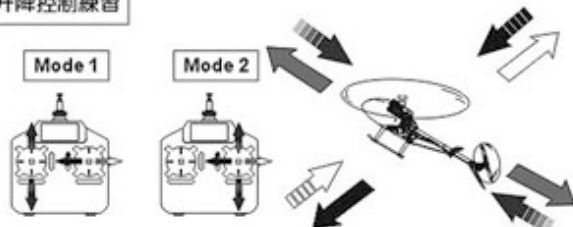
· If the nose of the helicopter moves, please lower the throttle stick and land the helicopter. Then move your position diagonally behind the helicopter 10M and continue practicing.
· If the helicopter flies too far away from you, please land the helicopter and move your position behind 10M and continue practicing.
· 當直昇機機頭偏移時,請降低油門並且降落,然後移動自己的位置到直昇機的正後方10公尺再繼續練習。
· 假如直昇機飛離你太遠,請先降落直昇機,並到直昇機後10公尺再繼續練習。

## STEP 3 RUDDER CONTROL PRACTICING 方向舵操作練習

1. Slowly raise the throttle stick.
2. Move the nose of the helicopter to right or left, and then slowly move the rudder stick in the opposite direction to fly back to its original position.

1. 慢慢升起油門搖桿。
2. 將直昇機機頭移動左或右,然後慢慢反向移動方向舵搖桿並將直昇機飛回原本位置。
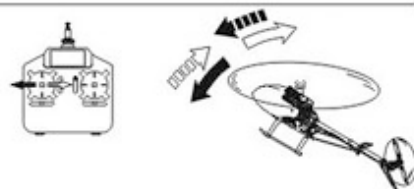
## STEP 4

After you are familiar with all actions from Step1 to 3, draw a circle on the ground and practice within the circle to increase your accuracy.

當你覺得 step1~3 動作熟悉了,在地上畫圈圈並在這個圈圈的範圍內練習飛行,以增加你操控的準確度。

· You can draw a smaller circle when you get more familiar with the actions.
· 當你更加習慣操作動作,你可以畫更小的圈圈。

## STEP 5 DIRECTION CHANGE AND HOVERING PRACTICE 改變直昇機方向和練習停懸

After you are familiar with Step1 to 4, stand at side of the helicopter and continue practicing Step1 to 4. Then repeat the Step1 to 4 by standing right in front of the helicopter.

當你覺得step1~4動作熟悉了,站在面對直昇機側邊並繼續練習step1~4。
之後,站在直昇機機頭右邊重複步驟練習。

## ADJUSTMENT OF EACH TRIM 飛行動作微調

Slowly raise the throttle stick and just as the helicopter lift-off the ground, you can use the trim to correct the action if the helicopter leans in a different direction.
慢慢升起油門搖桿,當直昇機剛剛離開地面時,若直昇機傾向不同方向,可使用微調修正動作。

Mode 1　Mode 2

1. Adjustment of elevator trim 調整升降舵微調
   Just before the helicopter lift-off, the nose lean forward/backward...
   When leans forward, adjust the trim down.
   When leans backward, adjust the trim up.
   在直昇機正要起飛時,機頭朝前/後方向偏移...
   向前偏移時,微調向下調整。
   向後偏移時,微調向上調整。

   Forward 前移　　Backward 後移

2. Adjustment of Aileron trim 調整副翼微調
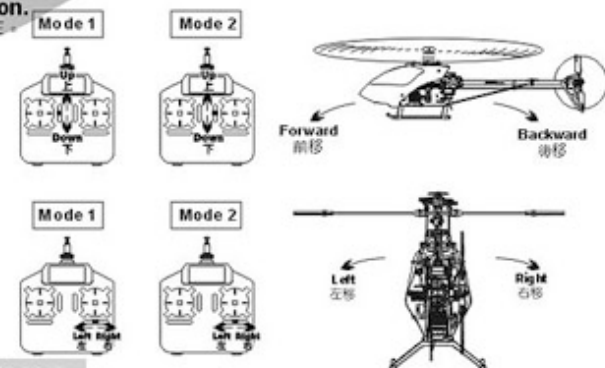   Just before the helicopter lift-off, the body lean left/right...
   When leans right, adjust the trim to left side.
   When leans left, adjust the trim to right side.
   在直昇機正要起飛時,機身朝左/右方向偏移...
   向右偏移時,微調向左調整。
   向左偏移時,微調向右調整。

   Left 左移　　Right 右移

## TROUBLE SHOOTING DURING FLIGHT 如何排除飛行中的狀況

| | Situation 狀況 | Cause 原因 | Way to deal 對策 |
|---|---|---|---|
| Blade Tracking 雙槳平衡 | Out of tracking 雙槳 | Adjustment of pitch rod has not been done. PITCH連桿長度調整不平均 | Adjust the length of linkage rod(C) 調整連桿(C)長度 |
| During Hovering 停懸 | Low rotation of the rotor 主旋翼轉速偏低 | · Pitch of main blade is high. · 主旋翼的PITCH偏高 · Throttle curve is too low during hovering. · 停懸點油門曲線過低 | · Lower the pitch about 5~6° during hovering(The rotation should be about 2,200~2,400rpm during hovering). · 調低Pitch停懸時約5~6 (停懸時主旋翼需為約2200~2400RPM) · Heighten the throttle curve during hovering. · 調高停懸點油門曲線 |
| | High rotation of the rotor 主旋翼轉速偏高 | · Pitch of main blade is low. · 主旋翼的PITCH偏低 · Throttle curve is too high during hovering. · 停懸點油門曲線過高 | · Heighten the pitch about 5~6° during hovering(The rotation should be about 2,200~2,400rpm during hovering). · 調高Pitch停懸時約5~6 (停懸時主旋翼需為約2200~2400RPM) · Lower the throttle curve during hovering. · 調低停懸點油門曲線 |
| Sensitivity of the gyro 陀螺儀感度 | The tail leans to one side during hovering, or when trim the rudder and return to the neutral, the tail lags and cannot stay in a control position. 停懸時尾翼向某一邊偏移,或撥動方向舵並回復到中立點時,尾翼產生延遲,無法停頓在所控制位置上。 | · Failure setting of tail neutral point. · 尾中立點設定不當 · The sensitivity of the gyro is low. · 陀螺儀敏感度偏低 | · Reset tail neutral point. · 重設尾中立點 · Increase the sensitivity. · 增加感度 |
| | The tail wags left and right during flight at hovering or full speed. 停懸或全油門時尾翼左右來回搖擺。 | The sensitivity of the gyro is high. 陀螺儀敏感度偏高 | Decrease the sensitivity. 降低感度 |

※ If the problem is still there even after tried above, stop flying and contact with your seller.
※ 在做完以上調整後,仍然無法改善情況時,應立即停止飛行並連絡您的經銷商。

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## Specifications & Equipment/規格配備：

Length/機身長：868mm
Height/機身高：308mm
Main Blade Length/主旋翼長：425mm
Main Rotor Diameter/主旋翼直徑：978mm
Tail Rotor Diameter/尾旋翼直徑：206mm
Motor Pinion Gear/馬達齒輪：12T
Main Drive Gear/傳動主齒：134T
Autorotation Tail Drive Gear/尾驅動主齒：145T
Tail Drive Gear/尾翼傳動齒：36T
Drive Gear Ratio/齒輪傳動比：11.7:1:4.03
Weight(With Motor)/空機重(含馬達)：1295g
Flying Weight/全配重：Approx. 1915g

161mm
978mm
308mm
868mm

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2012.Jul.07 G00569