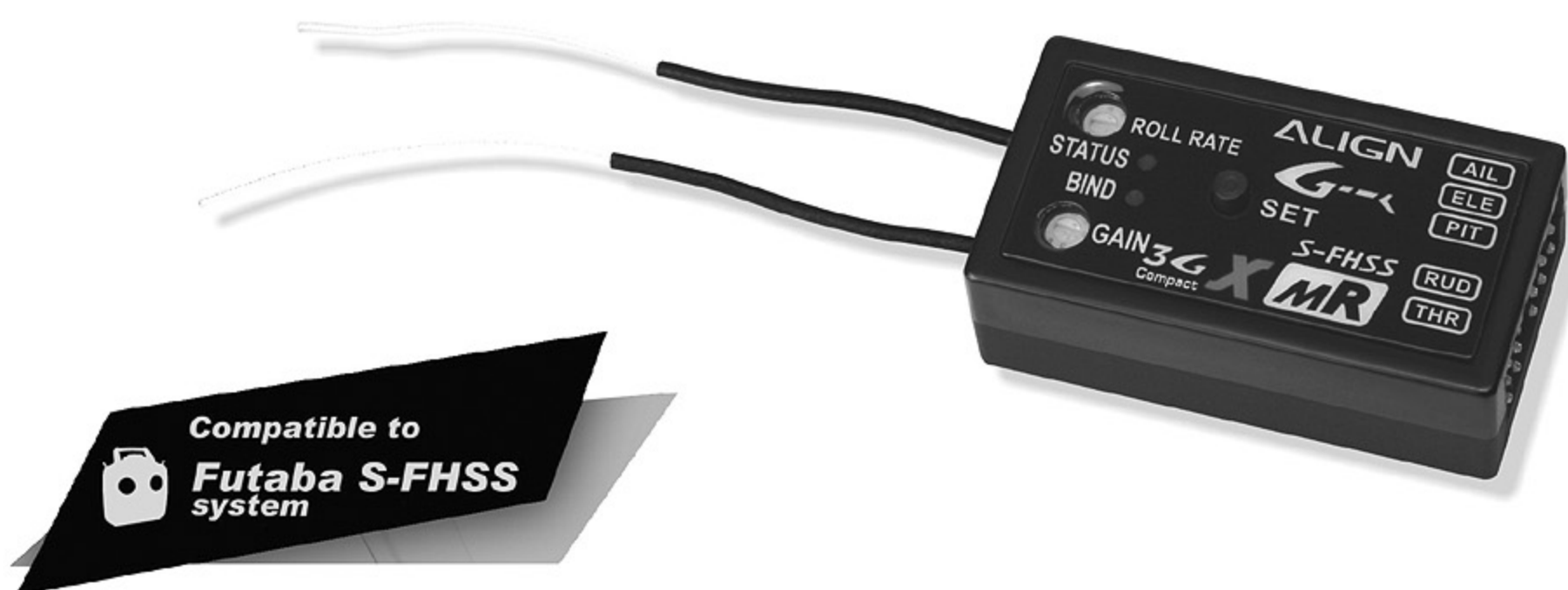


# 3GX MR PROGRAMMABLE FLYBARLESS SYSTEM INSTRUCTION MANUAL 使用說明書

HEG3GX02T

ALIGN

3GX Compact S-FHSS MR



Thank you for buying ALIGN products. The 3GX MR FLYBARLESS SYSTEM is the latest technology in Rotary RC models. Please read this manual carefully before assembling and flying the 3GX MR FLYBARLESS SYSTEM. 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。

3Axis MEMS 12bit S-FHSS Easy Energy Stable T-REX 250~450 3.5V~8.4V 9g RoHS

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# INTRODUCTION

## 前言

ALIGN




3GX MR flybarless system are designed with goals of simple, convenient, light, and ease of adjustment. 3GX MR flybarless system equipped with the embedded brand new S-FHSS 2.4Ghz system; 3GX MR flybarless system is compatible to Futaba S-FHSS system. The 3GX MR flybarless system are more than just a flybarless system; it simplifies installation on small/micro sized helicopters since no receiver is needed. Even easier, more logical setting method, which allows 3GX MR flybarless system settings to be completed with only a few steps achieving even higher stability and control feel suitable for most pilots.

3GX MR 無平衡翼系統主要是以簡單、方便、輕巧、好調整為出發點，特別納入了全新的 Futaba S-FHSS 系統，讓 3GX MR 無平衡翼系統不單單只是無平衡翼系統，它也具備接收機的功能，運用在小型或迷你直昇機上可以節省接收機的空間。

更為簡單、直覺的設定方式，只要幾個步驟就可以輕鬆完成 3GX MR 無平衡翼系統的調整，另外也針對亞拓 T-REX 250 與 T-REX 450 的各機型的飛行性能最佳化，而展現比以往更穩定、更符合絕大部分人的操控手感。簡單來說，3GX MR 無平衡翼系統提供玩家一個更經濟、更可靠的選擇。

## WARNING LABEL LEGEND

### 標誌代表涵義

 <b>FORBIDDEN</b> 禁止	Do not attempt under any circumstances. 在任何禁止的環境下，請勿嘗試操作。
 <b>WARNING</b> 警告	Mishandling due to failure to follow these instructions may result in damage or injury. 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。
 <b>CAUTION</b> 注意	Mishandling due to failure to follow these instructions may result in danger. 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, 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.

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。

**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.**

做為本產品的使用者，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 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。

# SAFETY NOTES

## 安全注意事項

ALIGN

- 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，場地的選擇也相對的重要，請需遵守當地法規到合法遙控飛行場地飛行。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。初次練習時，務必選擇在空曠合法專屬飛行場地並適當搭配練習架練習飛行，這對飛行失誤所造成的損傷將會大幅的降低。

請勿在下雨、打雷等惡劣氣候下操作，以確保本身及機體的安全。



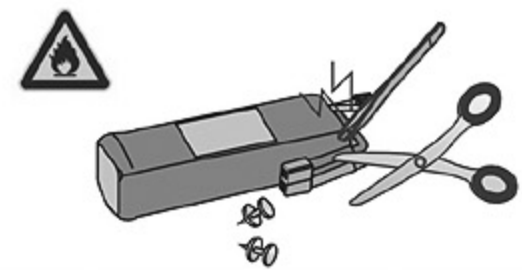
FORBIDDEN  
禁止

## 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！



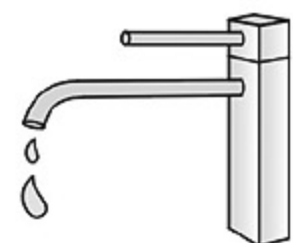
FORBIDDEN  
禁止

## 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！







## 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。



## 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，要盡量避免獨自操作飛行，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)



## 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這台直昇機，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。不可在視線範圍外飛行，降落後也請馬上關掉直昇機和遙控器電源。



## 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。



## 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。



# EQUIPMENT REQUIRED FOR ASSEMBLY

自備設備

ALIGN

## 1

### RADIO TRANSMITTER AND ELECTRONIC EQUIPMENT REQUIRED FOR ASSEMBLY

自備遙控及電子設備

Suitable for below flybarless models

T-REX 250

T-REX 450 SPORT/PLUS DFC

T-REX 450 PRO

適用下列無平衡翼機型

T-REX 250

T-REX 450 SPORT/PLUS DFC

T-REX 450 PRO



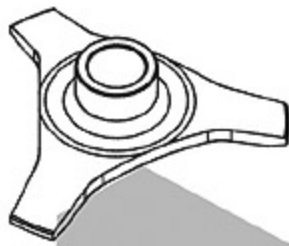
6-channel or more S-FHSS 2.4GHz transmitter

6動以上 S-FHSS 2.4GHz 系統遙控器

## 2

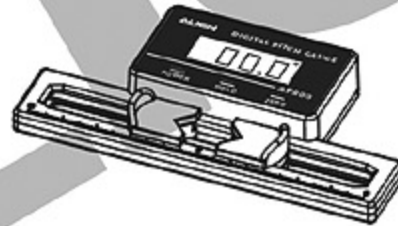
### ADDITIONAL TOOLS REQUIRED FOR ASSEMBLY

自備工具



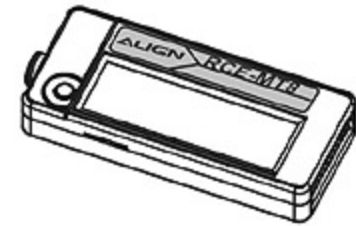
Swashplate Leveler

十字盤調整器



AP-800 Digital Pitch Gauge

AP-800 數位螺距規



Multi-function Tester  
Voltmeter/Servo Diagnosis

多功能檢測計電池電壓/伺服器檢測

# EQUIPMENT ILLUSTRATION

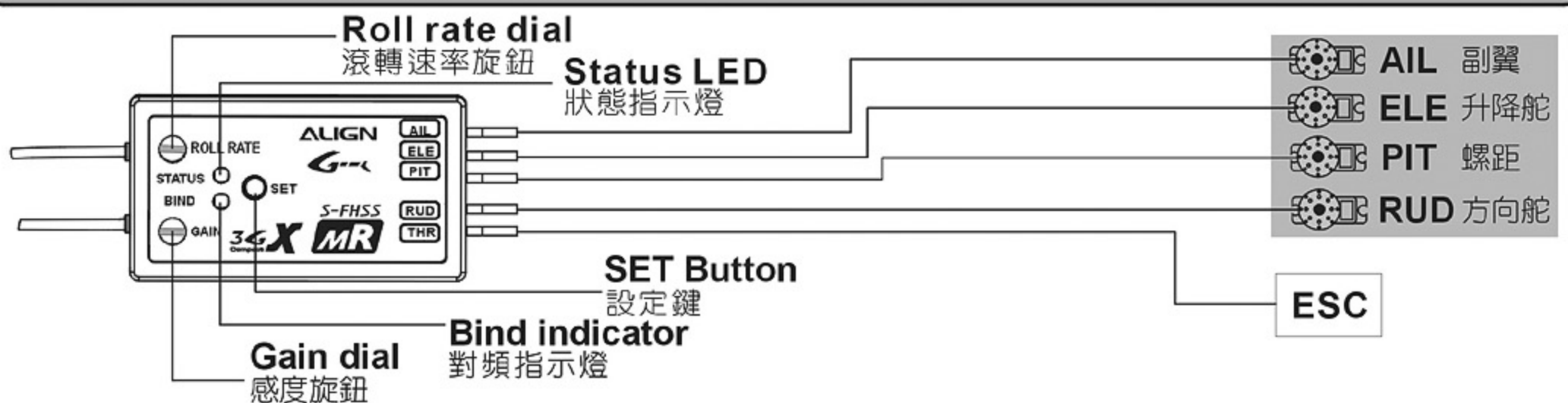
設備建議配置圖示

ALIGN

## 1

### 3GX MR FLYBARLESS SYSTEM WIRING DIAGRAM

3GX MR 無平衡翼系統接線示意圖





Gain and roll rate dials are set to 50% as factory default (dial at 12 o'clock position, same direction as the antenna). Should there be any oscillation on aileron or elevator during flight, reduce the gain by turning the dial counter-clockwise approximately 10 degrees at a time.

Should there be any drift front/rear/left/right during flight, increase the gain by turning the dial clockwise approximately 10 degrees at a time.

Roll rate dial is used to adjust the roll rate of helicopter's elevator and aileron; turning clockwise will increase roll rate, with faster elevator and aileron response; turning counter-clockwise will decrease roll rate, with slower elevator and aileron response. We recommend novice pilots to fly with lower roll rate.

感度與滾轉速度旋鈕，出廠設定值為50%(旋鈕指向12點鐘方向，天線位置為12點鐘方向)，飛行時若機體有左右或前後抖動，表示感度偏高，請逆時針調整感度旋鈕，以每次調整約10度方式，調整至適當位置。

飛行時若機體有左右或前後飄移時，表示感度偏低，請順時針調高感度旋鈕，以每次10度方式調整至適當位置。

滾轉速率旋鈕為調整直昇機升降、副翼滾轉速率，往順時針調大滾轉速率，升降與副翼反應會變快，往逆時針調低滾轉速率，升降與副翼反應會變慢，初階入門者建議把滾轉速率調低飛行。

## SERVO SETTING AND ADJUSTMENT

### 伺服器設定與調整

ALIGN

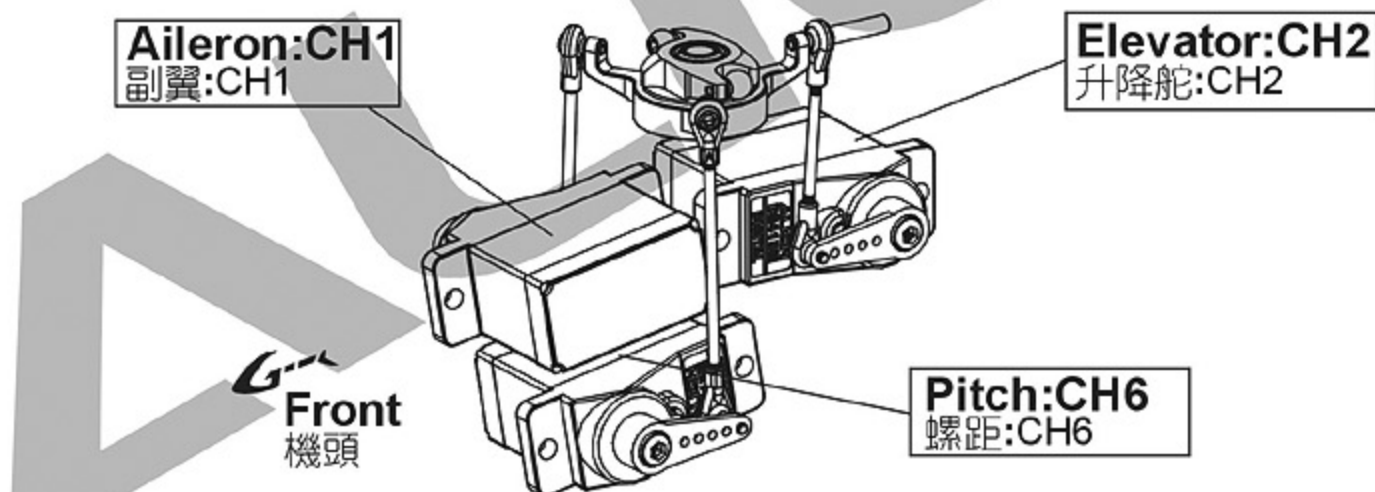
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T-REX 250 PLUS  
T-REX 250 PLUS

1

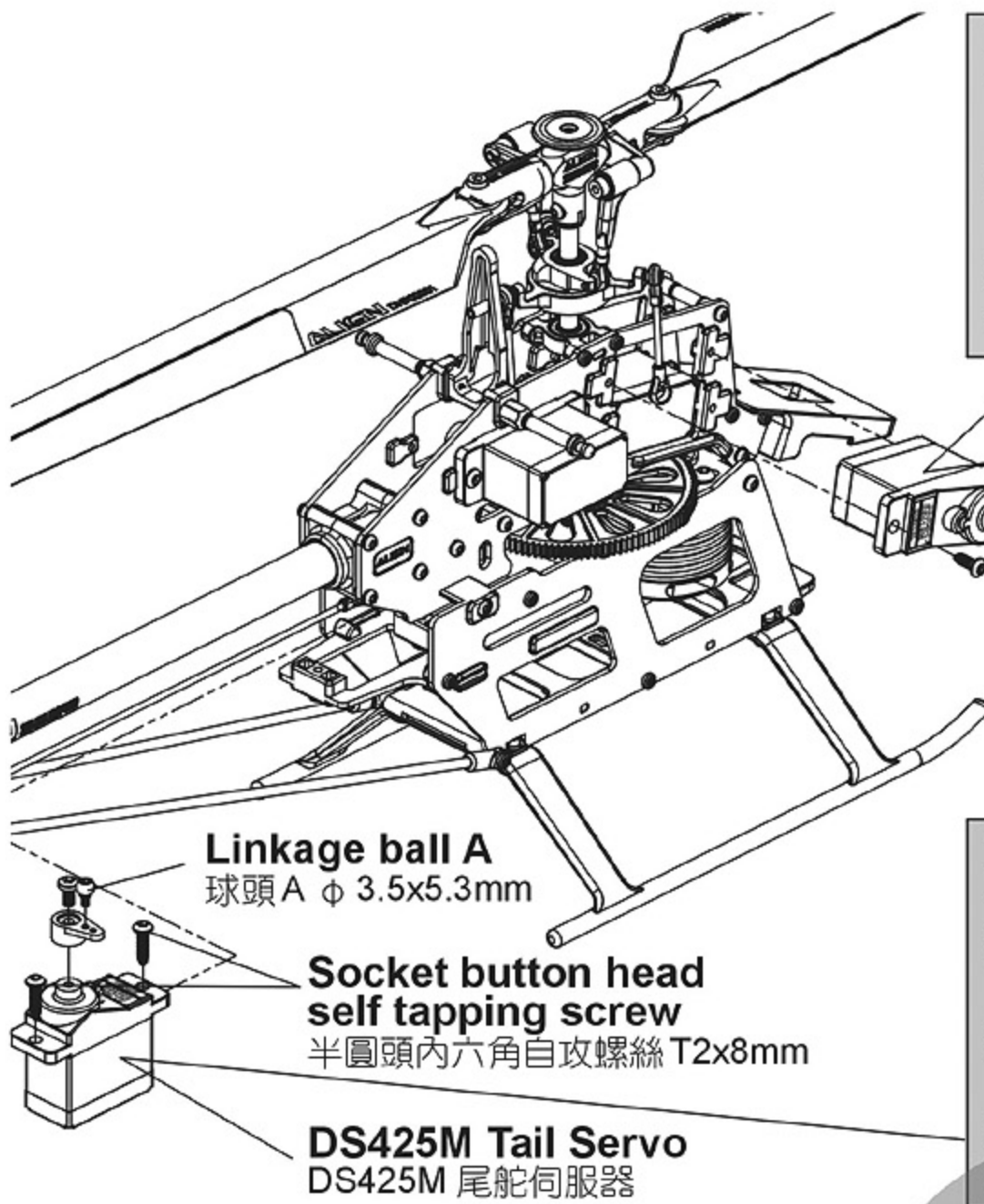
FUTABA/ALIGN T6 TRANSMITTER/SERVO

FUTABA/ALIGN T6 遙控器對應伺服器關係



CAUTION  
注意

1. Servo can only be installed in this orientation when 3GX MR is used: with head point forward, right forward is aileron (CH1), left forward is pitch (CH6), mid-rear is elevator (CH2). CH1 and CH6 cannot be interchanged, otherwise helicopter will not function correctly.
  2. Swashplate type setting on the transmitter should be set to H1 traditional swashplate type. If swashplate movement is incorrect after assembly per instruction, please double check to see if 3GX MR model setting is set to T-REX 250.
1. 使用3GX MR 伺服器的安裝方式只有一種。當機頭朝前時，右前為副翼 (CH1)；左前為螺距 (CH6)；右後為升降 (CH2)。CH1、CH6不可換。如果沒依照圖示連結，直昇機動作會不正確。
  2. 遙控器十字盤設定，必須選擇H1傳統十字盤模式。依照圖示安裝完畢，如果十字盤動作不正確，請檢察3GX MR機型設定是否為T-REX250。



**DS415M Digital Servo:**

1. Stall torque/輸出扭力: 2.0kg.cm(4.8V)  
2.4kg.cm(6.0V)
2. Motion speed/動作速度: 0.1sec/60° (4.8V)  
0.08sec/60° (6.0V)
3. Dimension/尺寸: 22.9 x 12 x 25.8mm
4. Weight/重量: 13.9g

**DS415M Servo**  
DS415M 伺服器

**Socket button head self tapping screw**  
半圓頭內六角自攻螺絲 T2x6mm

**Linkage ball B**  
球頭 B  $\phi$  3.5x7.32mm

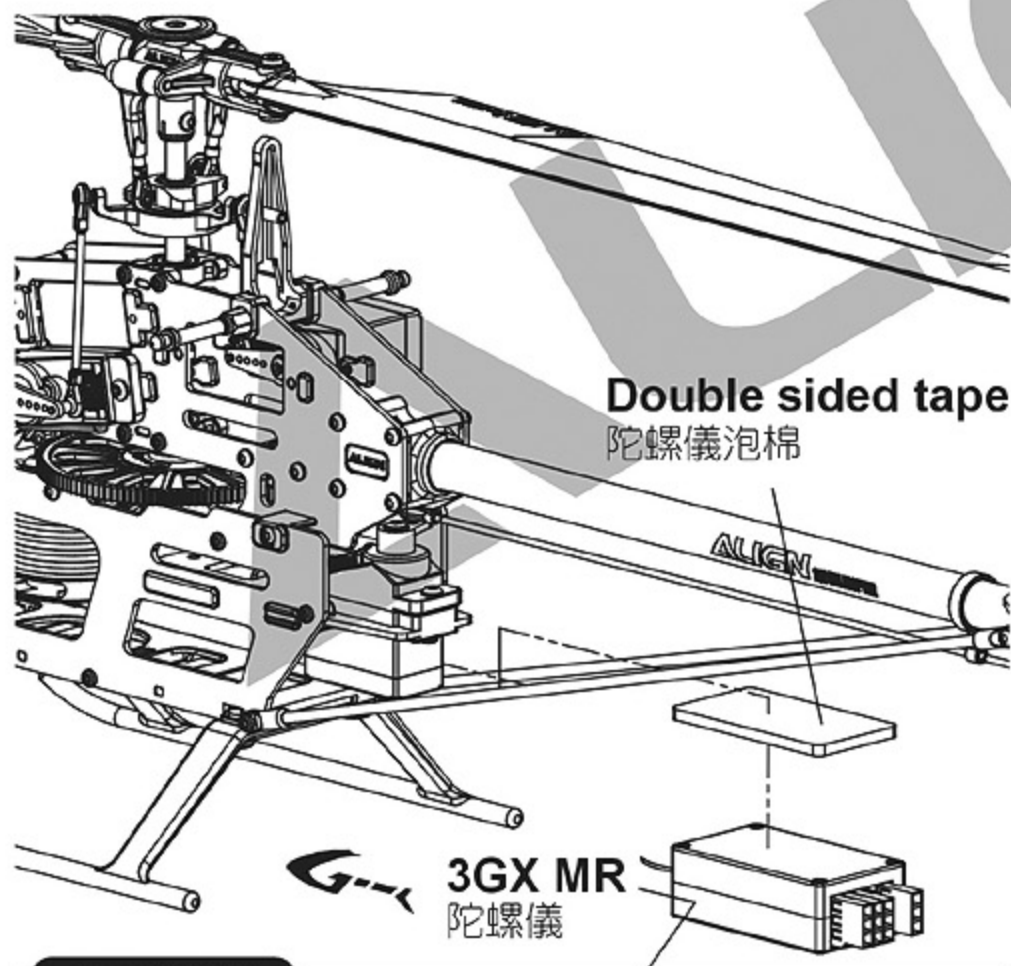
**Linkage ball A**  
球頭 A  $\phi$  3.5x5.3mm

**Socket button head self tapping screw**  
半圓頭內六角自攻螺絲 T2x8mm

**DS425M Tail Servo**  
DS425M 尾舵伺服器

**DS425M Digital Servo:**

1. 1520  $\mu$ s standard band / 1520  $\mu$ s 寬頻系統
2. Stall torque/輸出扭力: 1kg.cm(4.8V)  
1.2kg.cm(6.0V)
3. Motion speed/動作速度: 0.07sec/60° (4.8V)  
0.05sec/60° (6.0V)
3. Dimension/尺寸: 22.9 x 12 x 25.8mm
4. Weight/重量: 13.9g



**WARNING**  
警告

1. 3GX MR can only be installed face down, with antenna point towards front of the helicopter.
2. Incorrect installation will cause incorrect compensation of the helicopter swashplate. Flying with incorrect installation will result in crash.

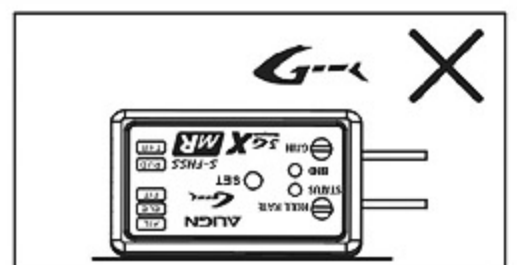
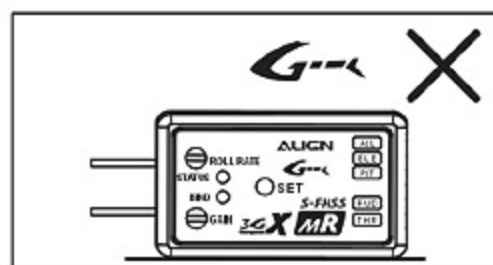
1. 3GX MR的安裝方式只有一種，必須為面板朝下且天線朝向機頭方向。
2. 安裝錯誤會造成直昇機十字盤修正錯誤，強行飛行會有墜機的危險。

**WARNING**  
警告

3GX MR must face down, antenna point forward.  
3GX MR 面板必須朝下，天線朝前安裝

**WARNING**  
警告

Check if the screws are firmly tightened before flight.  
飛行前再次確認螺絲是否鎖固。



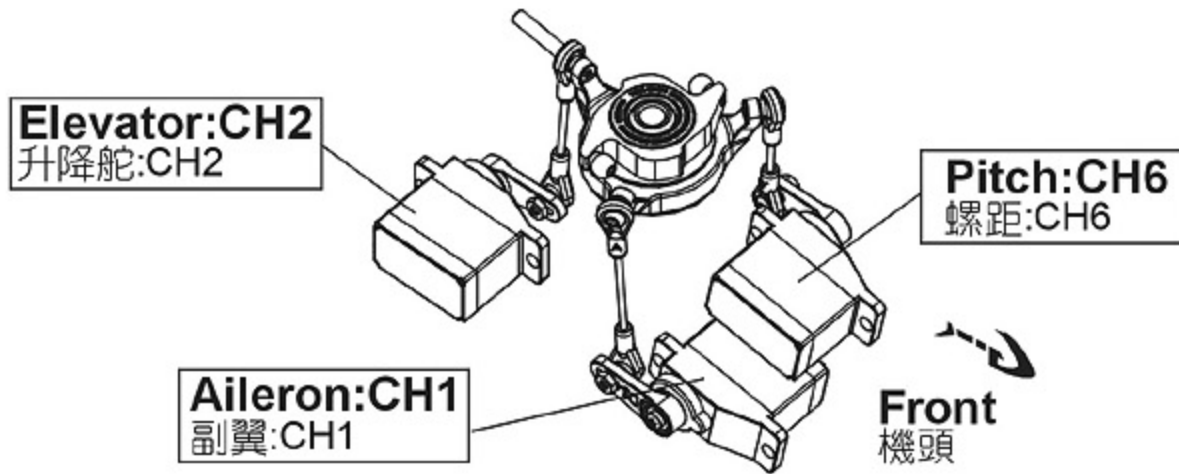


# 2

## T-REX 450 PLUS/SPORT T-REX 450 PLUS/SPORT

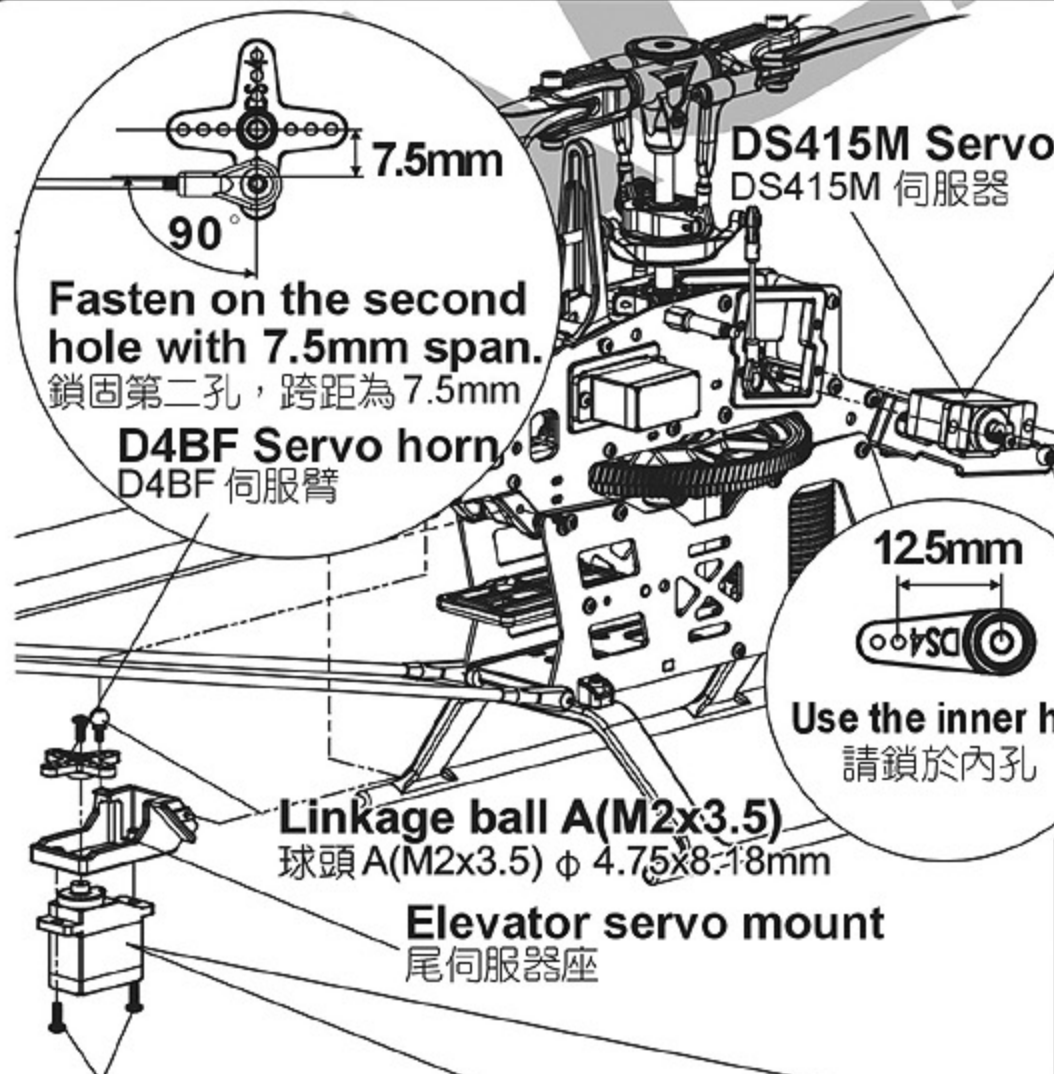
### 1 FUTABA/ALIGN T6 TRANSMITTER/SERVO

FUTABA/ALIGN T6 遙控器對應伺服器關係



1. Servo can only be installed in this orientation when 3GX MR is used: with head point forward, right forward is aileron (CH1), left forward is pitch (CH6), mid-rear is elevator (CH2). CH1 and CH6 cannot be interchanged, otherwise helicopter will not function correctly.
2. Swashplate type setting on the transmitter should be set to H1 traditional swashplate type. If swashplate movement is incorrect after assembly per instruction, please double check to see if 3GX MR model setting is set to T-REX 450 Sport/PLUS DFC.

1. 使用3GX MR伺服器的安裝方式只有一種。當機頭朝前時，右前為副翼(CH1)；左前為螺距(CH6)；右後為升降(CH2)。CH1、CH6不可換。如果沒依照圖示連結，直昇機動作會不正確。
2. 遙控器十字盤設定，必須選擇H1傳統十字盤模式。依照圖示安裝完畢，如果十字盤動作不正確，請檢察3GX MR機型設定是否為T-REX450 SPORT /PLUS DFC。



#### DS415M Digital Servo:

1. Stall torque/ 輸出扭力: 2.0kg.cm(4.8V)  
2.4kg.cm(6.0V)
2. Motion speed/ 動作速度: 0.1sec/60° (4.8V)  
0.08sec/60° (6.0V)
3. Dimension/ 尺寸: 22.9 x 12 x 25.8mm
4. Weight/ 重量: 13.9g

Socket button head self tapping screw  
半圓頭內六角自攻螺絲 T2x8mm

Nut  
螺帽 M2

D4AF Servo horn  
D4AF 伺服臂

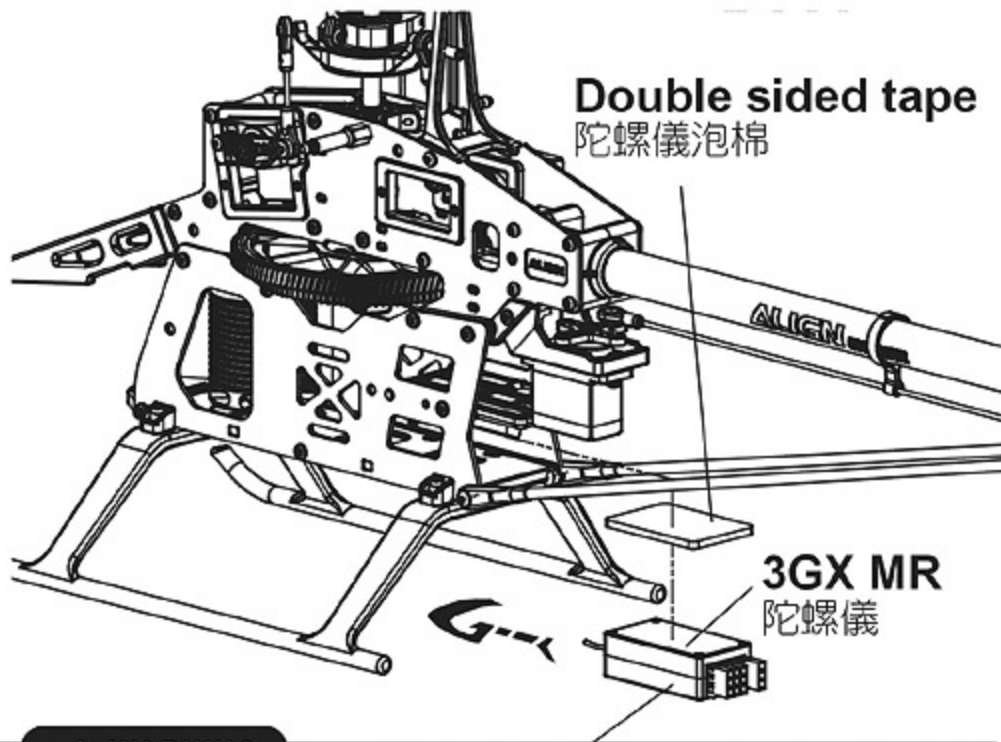
Linkage ball A(M2x3.5)  
球頭 A(M2x3.5) φ 4.75x8.18mm

Socket button head self tapping screw  
半圓頭內六角自攻螺絲 T2x6mm

DS425M Tail Servo  
DS425M 尾舵伺服器

#### DS425M Digital Servo:

1. 1520 μ s standard band /1520 μ s 寬頻系統
2. Stall torque/ 輸出扭力: 1kg.cm(4.8V)  
1.2kg.cm(6.0V)
3. Motion speed/ 動作速度: 0.07sec/60° (4.8V)  
0.05sec/60° (6.0V)
3. Dimension/ 尺寸: 22.9 x 12 x 25.8mm
4. Weight/ 重量: 13.9g



**WARNING**  
警告

1. 3GX MR can only be installed face down, with antenna point towards front of the helicopter.
2. Incorrect installation will cause incorrect compensation of the helicopter swashplate. Flying with incorrect installation will result in crash.

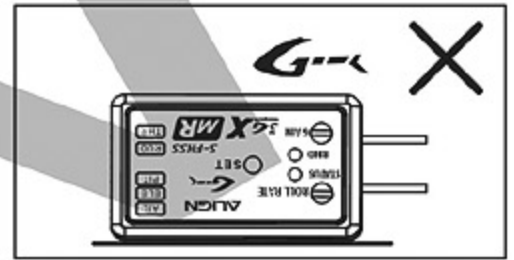
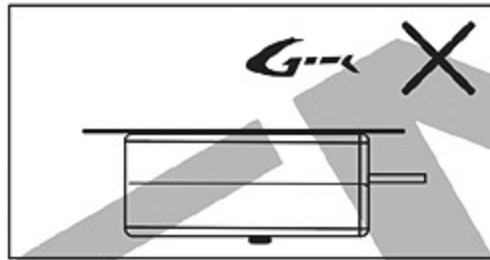
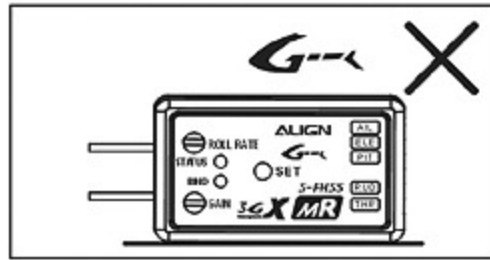
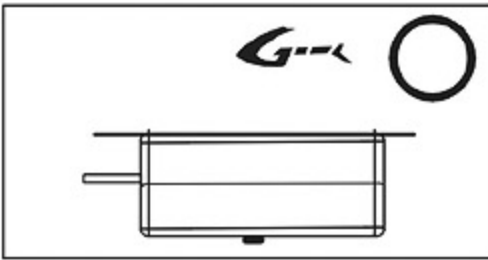
1. 3GX MR 的安裝方式只有一種，必須為面板朝下且天線朝向機頭方向。
2. 安裝錯誤會造成直昇機十字盤修正錯誤，強行飛行會有墜機的危險。

**WARNING**  
警告

3GX MR must face down, antenna point forward.  
3GX MR 面板必須朝下，天線朝前安裝

**WARNING**  
警告

Check if the screws are firmly tightened before flight.  
飛行前再次確認螺絲是否鎖固。



### 3

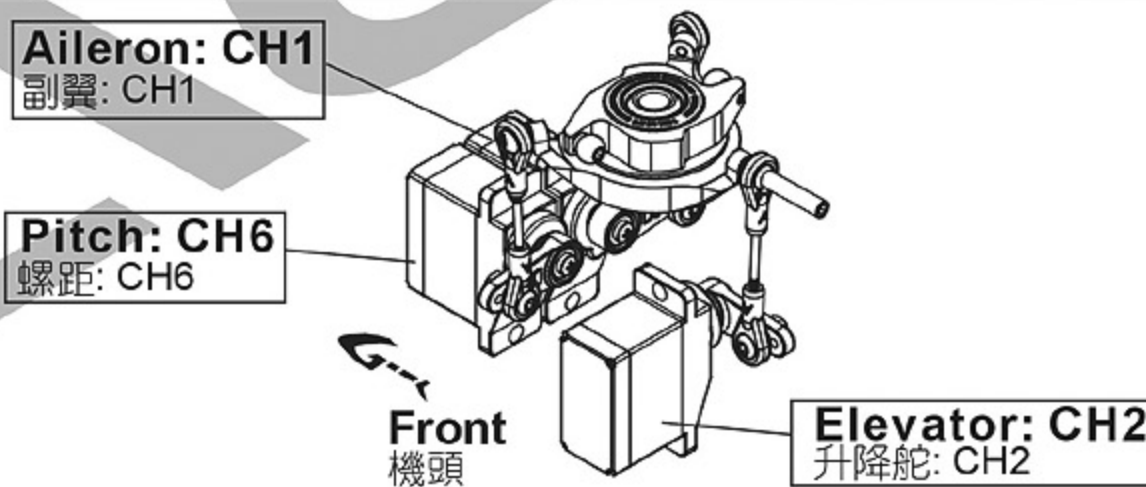
## T-REX 450 PRO

T-REX 450 PRO

### 1

## FUTABA/ALIGN T6 TRANSMITTER/SERVO

FUTABA/ALIGN T6 遙控器對應伺服器關係

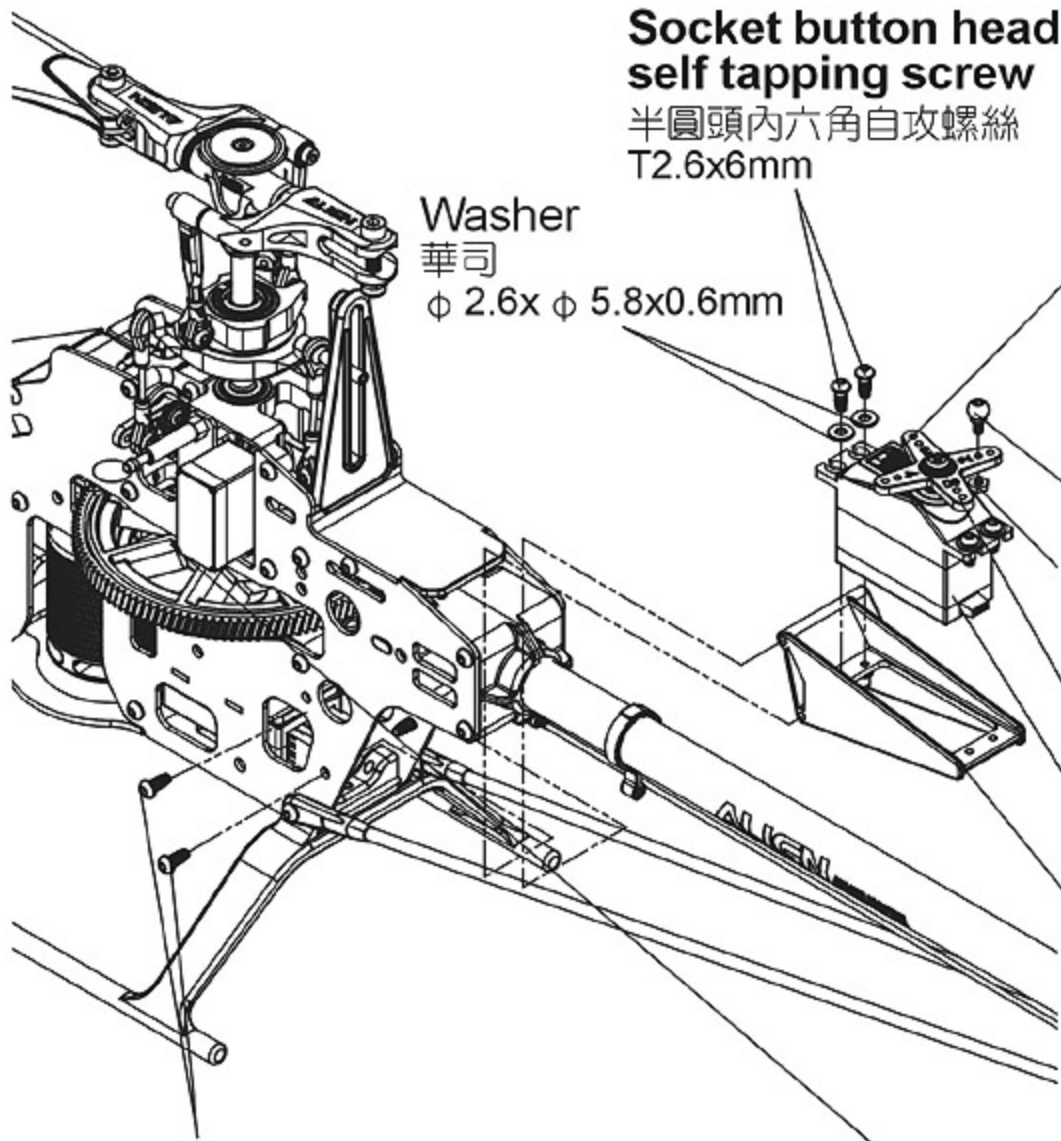


**CAUTION**  
注意

1. Servo can only be installed in this orientation when 3GX MR is used: with head point forward, right forward is aileron (CH1), left forward is pitch (CH6), mid-rear is elevator (CH2). CH1 and CH6 cannot be interchanged, otherwise helicopter will not function correctly.
2. Swashplate type setting on the transmitter should be set to H1 traditional swashplate type. If swashplate movement is incorrect after assembly per instruction, please double check to see if 3GX MR model setting is set to T-REX 450 PRO.

1. 使用 3GX MR 伺服器的安裝方式只有一種。當機頭朝前時，右前為副翼(CH1)；左前為螺距(CH6)；左後為升降(CH2)。CH1、CH6 不可換。如果沒依照圖示連結，直昇機動作會不正確。
2. 遙控器十字盤設定，必須選擇 H1 傳統十字盤模式。依照圖示安裝完畢，如果十字盤動作不正確，請檢察 3GX MR 機型設定是否為 T-REX450 PRO。





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

**Washer**  
華司  
φ 2.6x φ 5.8x0.6mm

**DS525 Digital Servo:**

1. 1520 μ s standard band / 1520 μ s 寬頻系統
2. Stall torque/輸出扭力: 2.4kg.cm(4.8V)  
3.0kg.cm(6.0V)
3. Motion speed/動作速度: 0.08sec/60° (4.8V)  
0.06sec/60° (6.0V)
4. Dimension/尺寸: 35.1 x 15.1 x 29mm
5. Weight/重量: 29g

**Linkage ball A(M2x3.5)**

球頭A(M2x3.5) φ 4.75x8.18mm

**M2 Nut**

M2 螺帽

**D5BF Servo horn**

D5BF 伺服臂

**DS525 Tail Servo**

DS525 尾舵伺服器

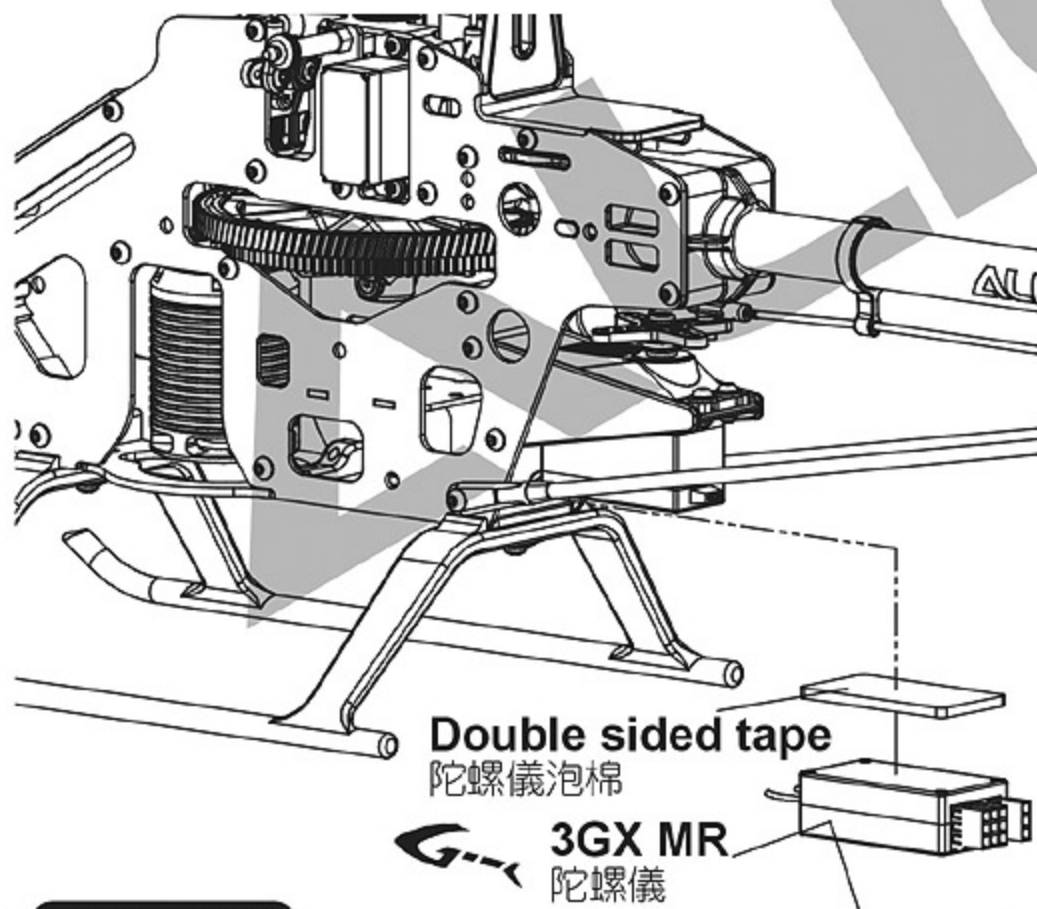
**Tail servo mount**

尾伺服器固定座

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

**DS415M Digital Servo:**

1. Stall torque/輸出扭力: 2.0kg.cm(4.8V)  
2.4kg.cm(6.0V)
2. Motion speed/動作速度: 0.1sec/60° (4.8V)  
0.08sec/60° (6.0V)
3. Dimension/尺寸: 22.9 x 12 x 25.8mm
4. Weight/重量: 13.9g



**Double sided tape**  
陀螺儀泡棉

**3GX MR**  
陀螺儀

**WARNING**  
警告

1. 3GX MR can only be installed face down, with antenna point towards front of the helicopter.
2. Incorrect installation will cause incorrect compensation of the helicopter swashplate. Flying with incorrect installation will result in crash.

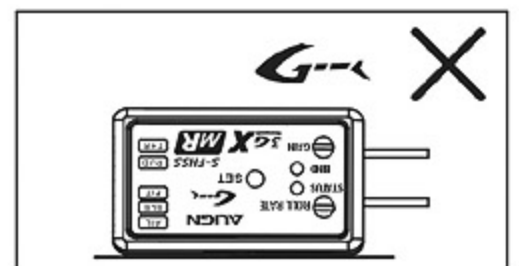
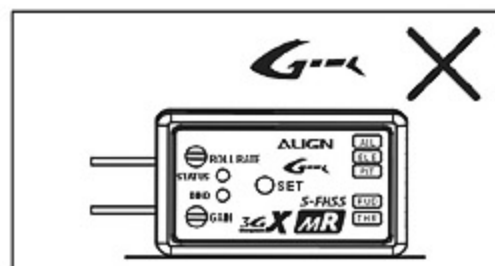
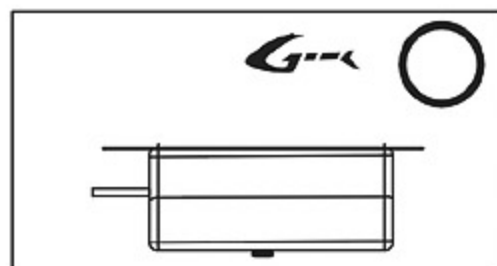
1. 3GX MR的安裝方式只有一種，必須為面板朝下且天線朝向機頭方向。
2. 安裝錯誤會造成直昇機十字盤修正錯誤，強行飛行會有墜機的危險。

**WARNING**  
警告

3GX MR must face down, antenna point forward.  
3GX MR面板必須朝下，天線朝前安裝

**WARNING**  
警告

Check if the screws are firmly tightened before flight.  
飛行前再次確認螺絲是否鎖固。



# TRANSMITTER USAGE AND SETTING INSTRUCTION

遙控器使用與設定說明

ALIGN

## 1 COMPATIBLE TRANSMITTER

適用遙控器



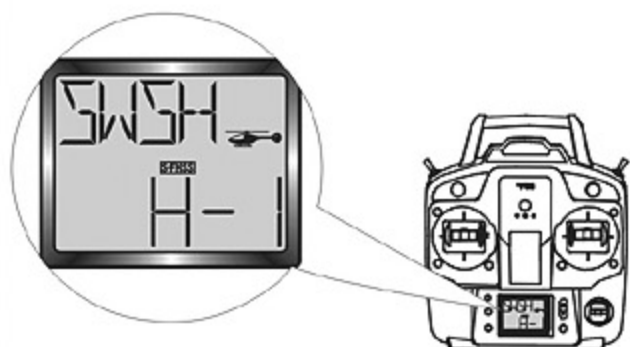
Use S-FHSS 2.4 GHz transmitter  
使用S-FHSS 2.4GHz遙控器

The 3GX MR flybarless system contains a built in S-FHSS 2.4GHz receiver, and is compatible only with similar S-FHSS system transmitter. 3GX MR is not compatible with other non S-FHSS transmitters.

3GX MR無平衡翼系統，內建S-FHSS 2.4GHz接收模組，必須選擇一樣為S-FHSS 2.4GHz系統的遙控器才能對頻使用。3GX MR不支援S-FHSS系統以外的遙控器。

## 2 SELECT H-1 SWASHPLATE TYPE

選擇H-1十字盤類型



3GX MR supports H-1 type swashplate layout. Set the swashplate mode to H-1 in the transmitter's setting. If swashplate type is not setup properly, the control movement will not be correct, making the helicopter unflyable.

3GX MR 支援的十字盤類型為H-1 十字盤。這裡要將遙控器的十字盤選項，設定為H-1十字盤類型。如果十字盤選擇錯誤，會造成直昇機動作不正確無法飛行。

## 3 TRANSMITTER SETUP PARAMETERS DIAGRAM

遙控器設定表

Relative 3GX MR parameters setting information is provided for customers to fairly simple use and operate on the unit. The parameters in diagram below is suitable for beginners and general 3D flying, but can be adjusted to suit personal flying preference.

為了方便玩家更容易使用3GX MR，以下提供使用3GX MR遙控器的相關參數與設定。下表參數適用初學基礎飛行以及一般3D飛行使用，您也可以依照個人飛行習慣來調整遙控器參數。

	AIL 副翼	ELE 升降	THR 油門	RUD 尾舵	GYRO 感度	PIT 螺距		
<b>Servo Reverse</b> 伺服器正反轉	<b>Normal</b> 正向	<b>Normal</b> 正向	<b>Reverse</b> 反向	<b>Normal</b> 正向	<b>Normal</b> 正向	<b>Normal</b> 正向		
<b>D / R</b> 雙重比率	▲ 100 % ▼ 100 %	▲ 100 % ▼ 100 %		▲ 100 % ▼ 100 %				
<b>EXP</b> 動作曲線	▲ -30 % ▼ 0 %	▲ -30 % ▼ 0 %		▲ -15 % ▼ 0 %				
<b>End Point Adjust</b> 伺服器行程量	▲ 100 % ▼ 100 %	▲ 100 % ▼ 100 %	▲ 100 % ▼ 100 %	▲ 100 % ▼ 100 %	▲ 100 % ▼ 100 %	<b>250 PLUS</b>	<b>450 PLUS</b>	<b>450 PRO</b>
						▲ 50% ▼ 50%	▲ 60% ▼ 60%	▲ 60% ▼ 60%



Swash type 十字盤類型	H-1					
Gyro gain 尾舵感度	Normal flight / 一般飛行			3D flight / 3D飛行		
	250 PLUS	450 PLUS	450 PRO	250 PLUS	450 PLUS	450 PRO
	45%( AVCS )	45%( AVCS )	45%( AVCS )	40%( AVCS )	40%( AVCS )	40%( AVCS )
Normal Throttle Curves 一般飛行油門曲線	P1 0 %	P2 44 %	P3 65 %	P4 85 %	P5 100 %	
Normal Pitch Curves 一般飛行螺距曲線	P1 44 %	P2 52 %	P3 74 %	P4 84 %	P5 93 %	
IDLE-UP Throttle Curves 3D飛行油門曲線	P1 90 %	P2 90 %	P3 90 %	P4 90 %	P5 90 %	
IDLE-UP Pitch Curves 3D飛行螺距曲線	P1 0 %	P2 25 %	P3 50 %	P4 75 %	P5 100 %	

## FEATURES

### 產品特色

ALIGN

- 3Axis** 3-axis gyroscopic flybarless system to simulate the stability of mechanical flybar system, yet at the same time achieving agile 3D performance.  
3軸陀螺儀無平衡翼系統，可模擬有平衡翼系統的穩定性，更有靈活的3D性能。
- 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。
- S-FHSS** Supports Futaba S-FHSS 2.4Ghz transmission protocol.  
支援Futaba S-FHSS 2.4GHz 傳輸系統。
- Easy** Simplistic setup process without the need of external devices. Setup is done through 6 steps and 2 sensitivity adjustments.  
設定簡單不需額外的介面，只需六個步驟、兩個感度調整即可完成所有設定。
- Energy** Flybarless system dramatically improves 3D power output and efficiency, resulting in reduced fuel or electricity consumption.  
無平衡翼系統，可大幅降低3D大動作飛行能量消耗，提供直昇機更大的動力輸出且更加節省燃油或電力。
- Stable** Highly sensitive gyroscopic sensors combined with advanced control detection routine providing higher hovering and aerobatic stability than other flybarless system.  
高感度陀螺感測器及先進環路設計，可提供比一般平衡翼系統更佳的靜態及動態穩定性。
- T-REX 250~450** Designed specifically for T-REX 250 and 450, contains optimal flight parameters, no adjustments is needed out of the box to achieve superior flight performance.  
針對T-REX 250、T-REX 450設計，內建最佳飛行參數，不需調整即有優異性能表現。
- 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。
- 9g** 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。

# 1

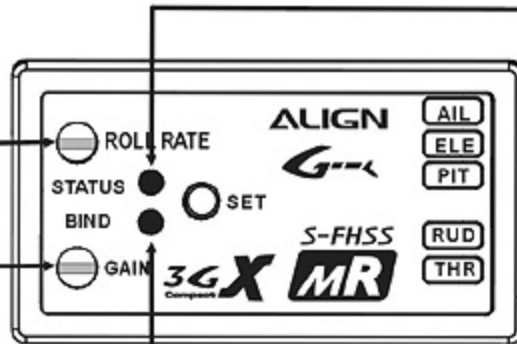
## 3GX MR FLYBARLESS SETUP INDICATORS

功能設定指示燈說明

### FLYBARLESS SYSTEM SETUP MODE 無平衡翼系統設定模式

Flash 1 time: Aileron neutral point  
Flash 2 times: Elevator neutral point  
Flash 3 times: Pitch neutral point  
Flash 4 times: Rudder neutral point  
Flash 5 times: Rudder left travel limit setting  
Flash 6 times: Rudder right travel limit setting

閃爍頻率一次：副翼伺服器中立點設定  
閃爍頻率二次：升降伺服器中立點設定  
閃爍頻率三次：螺距伺服器中立點設定  
閃爍頻率四次：尾舵陀螺儀正反向設定  
閃爍頻率五次：尾舵左舵行程設定  
閃爍頻率六次：尾舵右舵行程設定



### BIND LED 對頻燈號

STEADY LIT GREEN LED : Radio binding successfully  
FLASHING GREEN LED : Radio binding failed  
STEADY LIT RED LED : No signal detected

綠燈恆亮：對頻成功  
綠燈閃爍：對頻失敗  
紅燈恆亮：無發射訊號



### ROLL RATE ADJUSTMENT DIAL 滾轉速率調整鈕

Roll rate dial is used to adjust the roll rate of helicopter's elevator and aileron; turning clockwise will increase roll rate, with faster elevator and aileron response; turning counter-clockwise will decrease roll rate, with slower elevator and aileron response. We recommend novice pilots to fly with lower roll rate.

滾轉速率旋鈕為調整直昇機升降、副翼滾轉速率，往順時針調大滾轉速率，升降與副翼反應會變快，往逆時針調低滾轉速率，升降與副翼反應會變慢，初階入門者建議把滾轉速率調低飛行。



### GAIN ADJUSTMENT DIAL 感度調整旋鈕

Should there be any oscillation on aileron or elevator during flight, reduce the gain by turning the dial counter-clockwise approximately 10 degrees at a time. Should there be any drift front/rear/left/right during flight, increase the gain by turning the dial clockwise approximately 10 degrees at a time.

飛行時若機體有左右或前後抖動，表示感度偏高，請逆時針調整感度旋鈕，以每次調整約10度方式，調整至適當位置。飛行時若機體有左右或前後飄移時，表示感度偏低，請順時針調高感度旋鈕，以每次10度方式調整至適當位置。



# 2

## SETUP PRE-CHECK

### 設定前注意事項

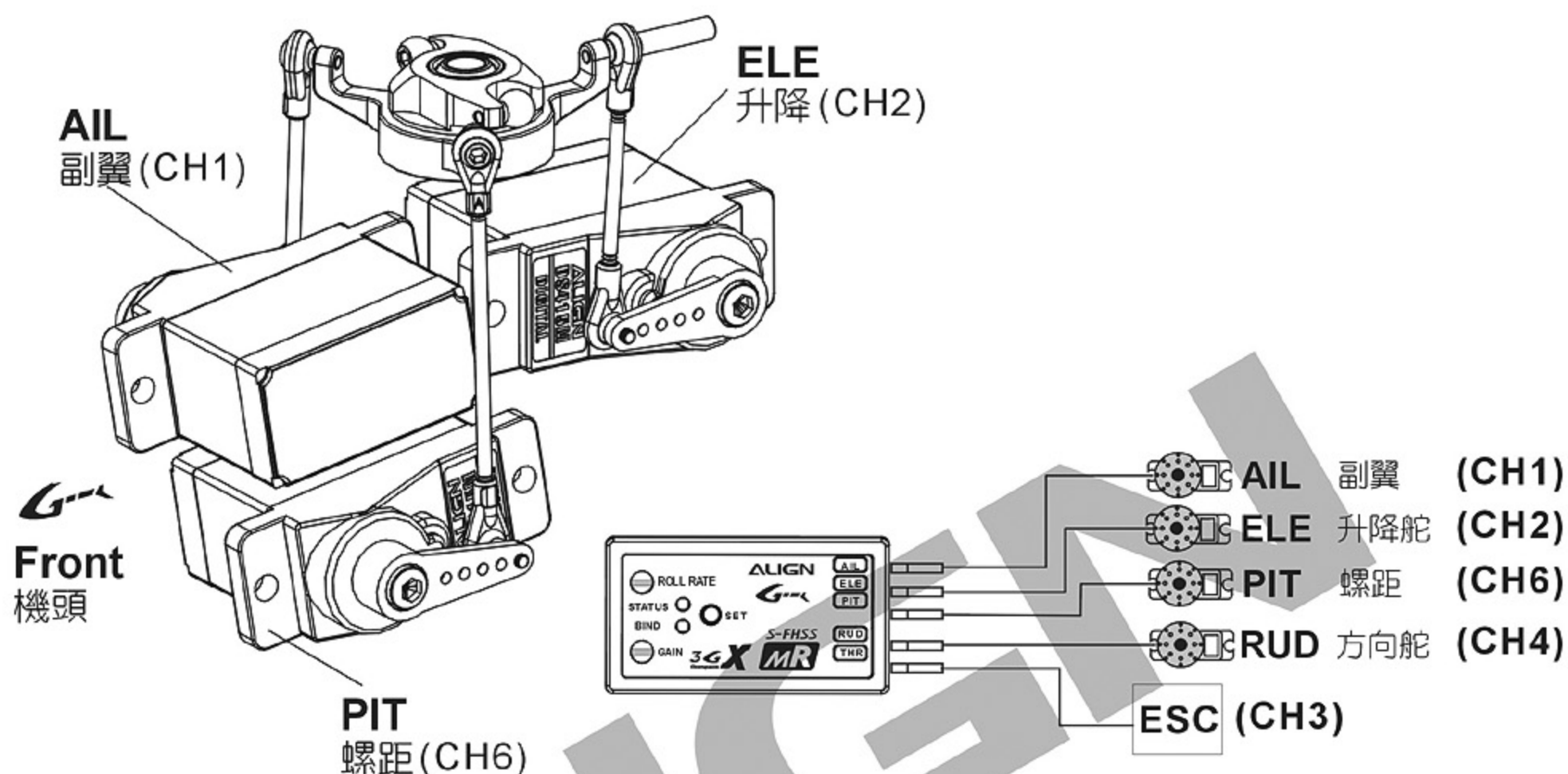
1. During pre-flight check, please ensure 3GX MR is securely mounted, and there are sufficient battery in the transmitter.
  2. There is only one way to mount 3GX MR on the helicopter. Do not alter the mounting direction, otherwise incorrect compensation may result in danger of crashing.
  3. After 3GX MR has bounded with transmitter, please ensure 3GX MR power indicator is lit correctly, and that swashplate and rudder is compensating the correct direction.
  4. To ensure proper initialization of 3GX MR, please keep the helicopter stationary during power up, do not move any transmitter sticks.
  5. **3GX MR supports transmitters compatible with 2.4Ghz S-FHSS transmission type. Please ensure the swashplate setting in transmitter is set to H-1 prior to making any setting changes.**
  6. While setting neutral position of servos, all steps must be completed before power is turned off, otherwise servos neutral setting will fail. To ensure optimal flight performance, please ensure swashplate is level during swashplate neutral setting.
  7. Adjustment of elevator and aileron roll rate must be done with the dials on 3GX MR, do not adjust elevator and aileron travel end points on transmitter. On the other hand, rudder speed is adjusted through rudder end points.
  8. **To achieve optimal flight performance, pitch(CH6) and rudder (CH4)travel can be adjusted on the transmitter, but do not adjust elevator and aileron end points on transmitter.**
  9. **Elevator and Aileron gyro gain must be adjusted through the dials on 3GX MR unit. Rudder gyro gain is adjusted through transmitter's GYRO SENS function.**
  10. To ensure optimal signal reception, 3GX MR antennas should be at least 1/2 inch away from conductive material, and should not be bent excessively. Try to keep the transmitter close to 3GX MR during binding. Should it unintentionally bind to another transmitter, just perform binding process again.
- 
1. 在每次飛行之前，請確認3GX MR是否固定良好，並且檢查發射器電力是否足夠。
  2. 3GX Mr安裝在直昇機上的方式只有一種，請勿任意更改安裝方向，以免修正錯誤造成危險。
  3. 發射器和3GX MR完成對頻後，請確認3GX MR開機燈號以及十字盤和尾舵的修正是否正確。
  4. 開機時請保持直昇機靜止，且不要動發射器任何搖桿，以免3GX MR初始化錯誤。
  5. **3GX MR支援的發射器類型為2.4GHz S-FHSS，在進入所有設定之前，請確認發射器的十字盤類型須為H-1模式。**
  6. 在設定伺服器中立點位置時，必須把全部步驟完成才可將電源關閉，否則設定值將不被記憶。設定伺服器中立點位置時請將十字盤調成水平以獲得最佳飛行性能。
  7. 調整升降及副翼的滾轉速率時只能用3GX MR上的旋鈕來調整，不可利用發射器上的升降和副翼行程選項來調整。調整尾舵速率時則必須利用發射器上的尾舵行程來調整。
  8. 為獲得最佳飛行性能，可以調整發射器上的螺距(CH6)以及尾舵(CH4)的行程，但不可調整發射器上的升降和副翼行程。
  9. 升降及副翼的陀螺感度必須用3GX MR上的旋鈕調整，尾舵的陀螺感度請利用發射器的GYRO SENS選項來調整。
  10. 3GX MR的天線位置應遠離導電材料至少半英吋的距離，且不要過度彎曲，以獲得最佳的射頻信號。發射器和3GX MR對頻時，請盡量靠近。若對到別組發射器時，重新對頻即可。

# 3 CONNECTIVITY METHOD

## 3GX MR 接線方式

### 1 T-REX 250 CONNECTIVITY METHOD

#### T-REX 250 接線方式



#### CAUTION 注意

Please ensure the swashplate setting in transmitter is set to H-1 prior to making any setting changes.

請確認發射器的十字盤類型須為H-1模式。

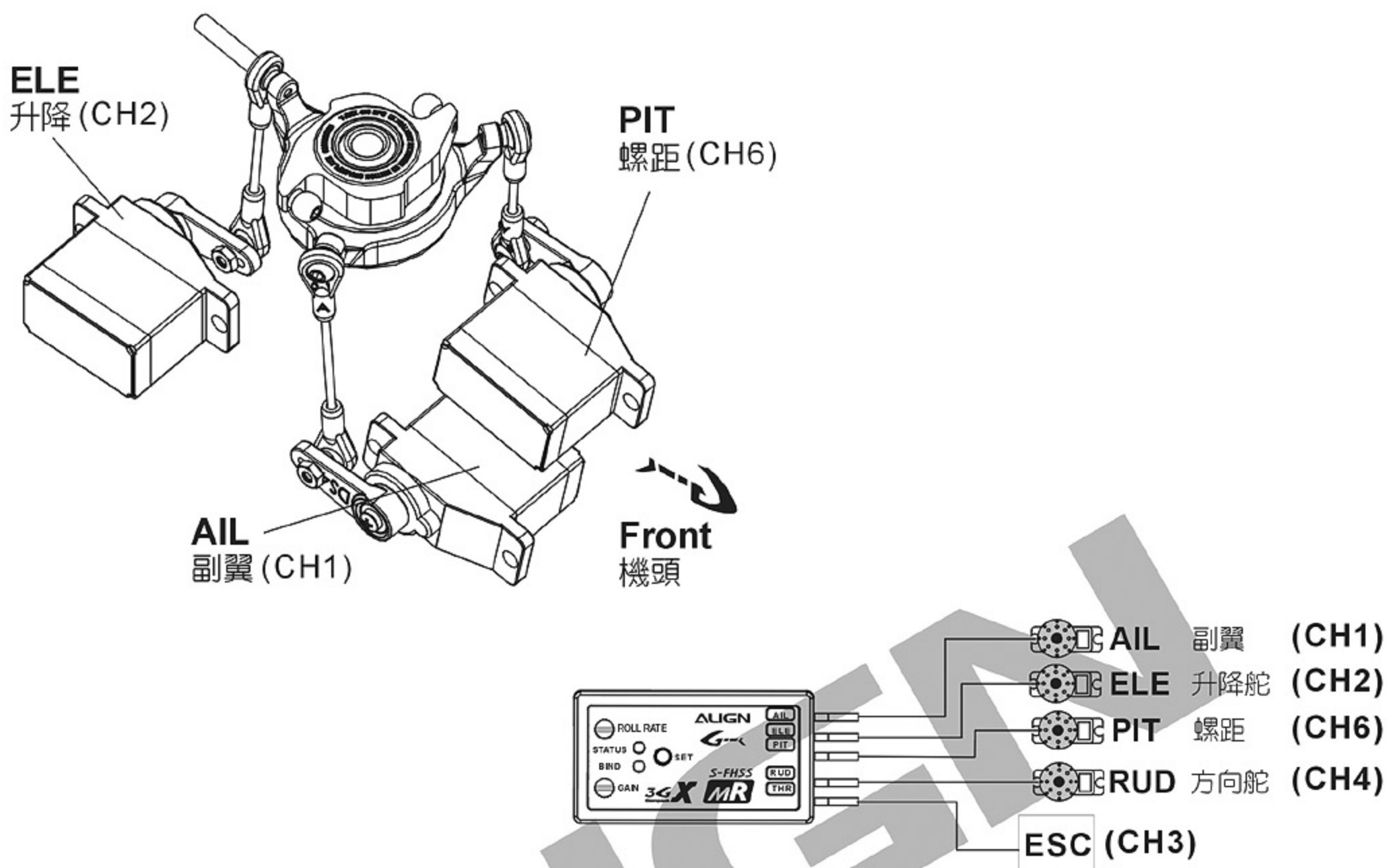
1. Servo can only be installed in this orientation when 3GX MR is used: with head point forward, right forward is aileron (CH1), left forward is pitch (CH6), right-rear is elevator (CH2). CH1 and CH6 cannot be interchanged, otherwise helicopter will not function correctly.
2. Swashplate type setting on the transmitter should be set to H1 traditional swashplate type.
3. If swashplate movement is incorrect after assembly per instruction, please double check to see if 3GX MR model setting is set to T-REX 250.
4. To avoid damages to system, digital servos must be used for swashplate. Recommend servo specification: speed of 0.09s/60 degrees or faster; torque 2.2kg or higher.

1. 使用3GX MR 伺服器的安裝方式只有一種。當機頭朝前時，右前為副翼(CH1)；左前為螺距(CH6)；右後為升降(CH2)。CH1、CH6不可換。如果沒依照圖示連結，直昇機動作會不正確。
2. 遙控器十字盤類型，必須選擇H1十字盤模式。
3. 依照圖式安裝完畢，如果十字盤動作不正確，請檢察3GX MR機型設定是否為T-REX 250。
4. 十字盤必須安裝數位伺服器，否則會造成損壞。  
建議規格：速度0.09秒/60度以內；扭力2.2kg以上。



## 2 T-REX 450 PLUS/SPORT CONNECTIVITY METHOD

T-REX 450 PLUS/SPORT 接線方式



### CAUTION 注意

Please ensure the swashplate setting in transmitter is set to H-1 prior to making any setting changes.

請確認發射器的十字盤類型須為H-1模式。

1. Servo can only be installed in this orientation when 3GX MR is used: with head point forward, right forward is aileron (CH1), left forward is pitch (CH6), right-rear is elevator (CH2). CH1 and CH6 cannot be interchanged, otherwise helicopter will not function correctly.
2. Swashplate type setting on the transmitter should be set to H1 traditional swashplate type.
3. If swashplate movement is incorrect after assembly per instruction, please double check to see if 3GX MR model setting is set to T-REX 450 Sport/PLUS DFC.
4. To avoid damages to system, digital servos must be used for swashplate. Recommend servo specification: speed of 0.09s/60 degrees or faster; torque 2.2kg or higher.

1. 使用3GX MR 伺服器的安裝方式只有一種。當機頭朝前時，右前為副翼(CH1)；左前為螺距(CH6)；右後為升降(CH2)。CH1、CH6不可換。如果沒依照圖示連結，直昇機動作會不正確。

2. 遙控器十字盤類型，必須選擇H1十字盤模式。

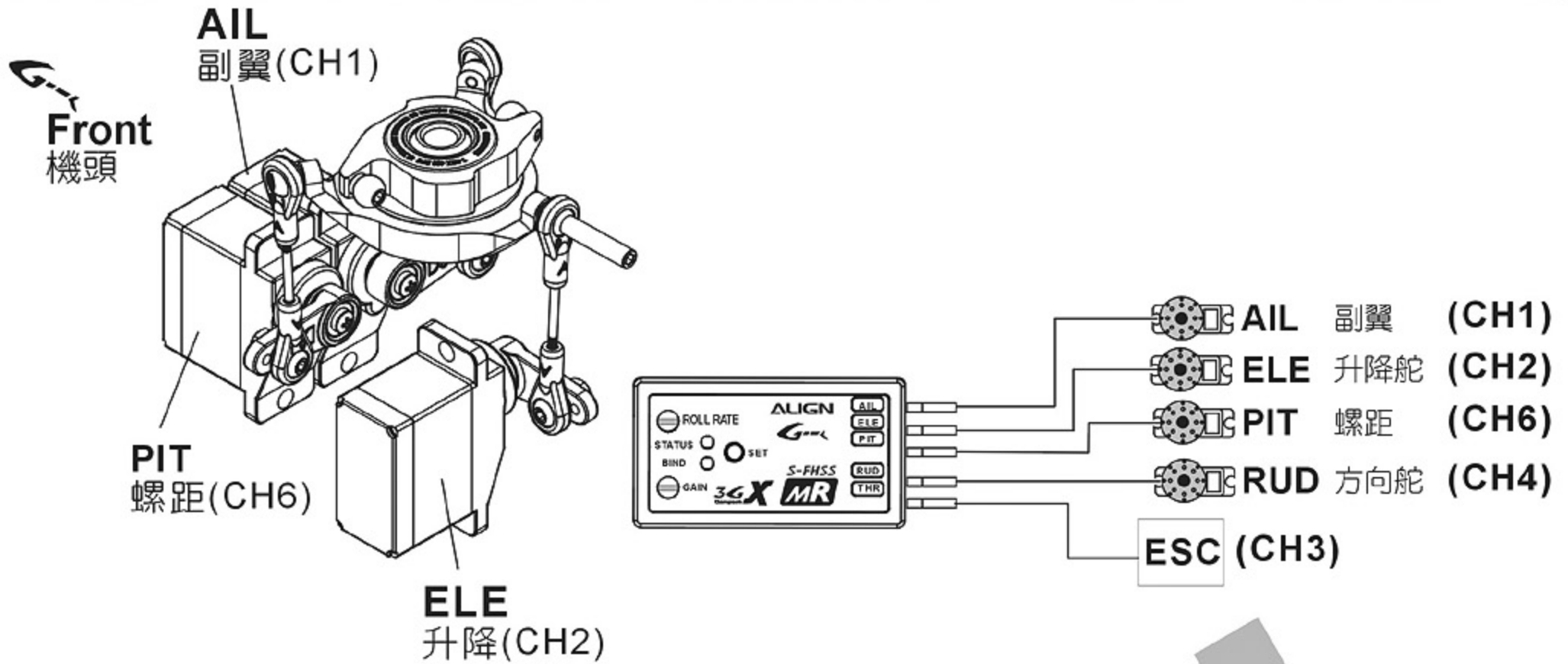
3. 依照圖式安裝完畢，如果十字盤動作不正確，請檢察3GX MR機型設定是否為T-REX450 SPORT /PLUS DFC。

4. 十字盤必須安裝數位伺服器，否則會造成損壞。

建議規格：速度0.09秒/60度以內；扭力2.2kg以上。

### 3 T-REX 450 PRO CONNECTIVITY METHOD

T-REX 450 PRO 接線方式



CAUTION  
注意

Please ensure the swashplate setting in transmitter is set to H-1 prior to making any setting changes.

請確認發射器的十字盤類型須為H-1模式。

1. Servo can only be installed in this orientation when 3GX MR is used: with head point forward, right forward is aileron (CH1), left forward is pitch (CH6), left-rear is elevator (CH2). CH1 and CH6 cannot be interchanged, otherwise helicopter will not function correctly.
2. Swashplate type setting on the transmitter should be set to H1 traditional swashplate type.
3. If swashplate movement is incorrect after assembly per instruction, please double check to see if 3GX MR model setting is set to T-REX 450 PRO.
4. To avoid damages to system, digital servos must be used for swashplate. Recommend servo specification: speed of 0.09s/60 degrees or faster; torque 2.2kg or higher.

1. 使用 3GX MR 伺服器的安裝方式只有一種。當機頭朝前時，右前為副翼 (CH1)；左前為螺距 (CH6)；左後為升降 (CH2)。CH1、CH6 不可換。如果沒依照圖示連結，直昇機動作會不正確。
2. 遙控器十字盤類型，必須選擇 H1 十字盤模式。
3. 依照圖式安裝完畢，如果十字盤動作不正確，請檢察 3GX MR 機型設定是否為 T-REX450 PRO。
4. 十字盤必須安裝數位伺服器，否則會造成損壞。  
建議規格：速度 0.09 秒 / 60 度以內；扭力 2.2kg 以上。

### 4 MODEL SELECTION

機型選擇

3GX MR is a flybarless stabilization system designed specifically for Align's smaller helicopters, with integrated basic setup parameters for T-REX 250、T-REX 450 SPORT/PLUS DFC、T-REX 450 PRO. The 3GX MR unit bundled with T-REX 450 PLUS DFC comes already configured for the specific helicopter. Follow the steps below to reconfigure the helicopter type.

3GX MR 是特別針對亞拓小型直昇機設計的無平衡翼系統，內建 T-REX 250、T-REX 450 SPORT/PLUS DFC、T-REX 450 PRO 三種機型的基本參數設定，並為此三種機型專用的無平衡翼系統，可以參照下列方式來做機型更改。



# 1 MODEL DISPLAY

## 機型顯示

**Binding Plug**  
對頻金鑰

**4.8V~6.0V power input**  
輸入4.8V~6.0V 電源

**Hold The Set Button.**  
按SET鍵不放

Insert binding plug into AIL port, press and hold SET, then insert 4.8~6V power into RUD of THR port.  
對頻金鑰接上AIL端，按著SET鍵不放。接著從RUD或THR端送入4.8V~6.0V 電源。

**1. Red LED lit**  
亮紅燈

**2. Release SET button**  
放開SET鍵

When STATUS LED is lit steady red, release SET button and 3GX MR will display current model.  
當STATUS燈呈現紅燈恆亮後，放開SET鍵3GX MR就會開始顯示目前機型。

**Status LED indicator for the existing model.**  
STATUS燈號顯示目前的機型

STATUS LED flashes RED once, 250  
STATUS LED flashes RED twice, 450SPORT/PLUS  
STATUS LED flashes RED thrice, 450PRO  
STATUS 紅燈閃爍頻率1次，250  
STATUS 紅燈閃爍頻率2次，450 SPORT / PLUS  
STATUS 紅燈閃爍頻率3次，450 PRO

# 2 MODEL SELECTION

## 選擇機型

**Choose heli model and hold the set button**  
選擇機型後，按SET鍵不放

**T-REX 450**

Pull out the binding plug, connect to the channel corresponding to the model.  
AIL : T-REX 250  
ELE : T-REX 450SPORT / PLUS  
PIT : T-REX 450PRO  
將對頻金鑰拔下，接到對應機型的頻道上。  
AIL : T-REX 250  
ELE : T-REX 450SPORT / PLUS  
PIT : T-REX 450PRO

**1. Flash alternately in red and green, model changing**  
紅、綠交錯閃爍，更改機型中

**2. Release The Set Button**  
放開SET鍵

When STATUS and BIND LED's flash alternately in red and green, release the SET button.  
選擇好機型後按SET鍵不放，當STATUS與BIND燈紅、綠交錯閃爍，表示更改機型設定完成，設定完成後就可放開SET鍵。

**Status LED indicator for the existing model.**  
STATUS燈號顯示目前的機型

STATUS LED flashes RED once, 250  
STATUS LED flashes RED twice, 450SPORT/PLUS  
STATUS LED flashes RED thrice, 450PRO  
STATUS 紅燈閃爍頻率1次，250  
STATUS 紅燈閃爍頻率2次，450 SPORT / PLUS  
STATUS 紅燈閃爍頻率3次，450 PRO

STATUS LED will flash to indicate the selected model type. Pull out power and binding plugs to complete setting.  
此時STATUS燈就會呈現所選機型的燈號，最後拔掉電源與對頻金鑰就完成設定。

# 5 TRANSMITTER BINDING

## 遙控器對頻

3GX MR flybarless system contains a built in S-FHSS 2.4GHz system, and is compatible only with similar S-FHSS 2.4GHz system transmitter. please follow the instruction below to bind your radio to the 3GX MR.

3GX MR 無平衡翼系統內建 S-FHSS 2.4GHz 系統，具備接收功能一定要搭配 S-FHSS 2.4GHz 系統遙控器才能使用。您可以依照下列式來與 3GX MR 對頻。

## STEP 1

Turn on transmitter, connect 3GX MR to power source. If signal is detected, BIND LED will flash green, otherwise it will flash red. If transmitter is turned on, but BIND is still steady red, then power cycle 3GX MR so it will restart transmitter signal search.

打開遙控器，將 3GX MR 接上電源後，若偵測到遙控器訊號，但未完成對頻 BIND 燈號會綠燈閃爍。若已開啟發射器，但 BIND 燈為紅燈恆亮，請將 3GX MR 重新給電源，重新尋找遙控器訊號。



### WARNING 警告

If the LED status appears steady lit green, it mean the binding is successfully. Please skip Step 2.

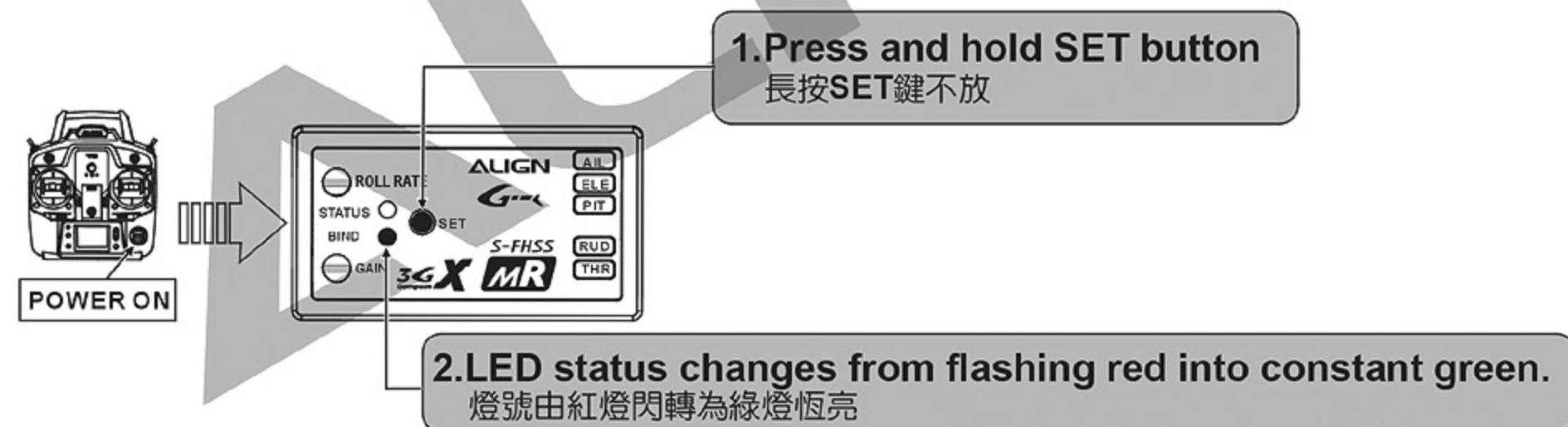
If the LED status appears flashing green or steady lit red, it means the binding is failed. Please proceed Step 2 for rebind.

若燈號為綠燈恆亮，代表對頻成功，不須進行步驟2重新對頻；  
若燈號為綠燈閃爍或紅燈恆亮，代表對頻失敗，則進行步驟2重新對頻。

## STEP 2

Press and hold SET button, at this time BIND LED will be flashing red, hold the SET button until BIND LED shows steady green, then release SET button to complete binding.

按著SET鍵不放，此時BIND燈號會紅燈閃爍，直到BIND燈號顯示綠燈恆亮後，放開SET鍵即完成對頻。



# 6

## 3GX MR SETTINGS

### 3GX MR設定

### CAUTION 注意

In order for the settings to stick, all 6 setting parameters for 3GX MR must be completed followed with a press of SET button, regardless if any changes are made for each settings.

3GX MR 的六項設定，不論有無更動，皆須逐一完成，並按下 SET 鍵退出設定，否則 3GX MR 將不會記憶設定。

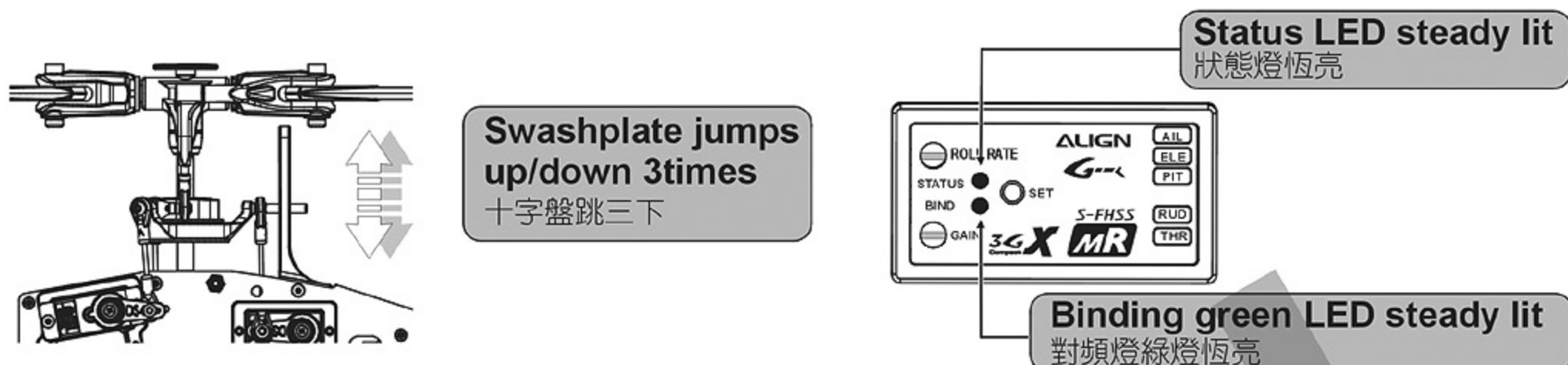


# 1 3GX MR INITIALIZATION

## 3GX MR 開機

Connect power, if transmitter binding is successful, BIND LED will light solid green; otherwise it will flash green. At this time, STATUS LED lights green indicates successful power up, steady green means rudder is in heading lock mode; steady red means rudder is in non-heading lock mode. Swashplate will jump up and down 3 times after power up.

接上電源，若和遙控器對頻成功後，BIND 燈為綠燈恆亮，否則綠燈閃爍。此時 STATUS 燈號亮起代表開機成功，綠燈恆亮，代表尾舵為鎖定。紅燈恆亮，代表尾舵為非鎖定。開機完成時，十字盤會跳三下。



# 2 ENTERING 3GX MR SETUP

## 進入 3GX MR 設定

Power up transmitter, connect power to 3GX MR. When STATUS and BIND LEDs are light steady green, SET button is used to enter setup mode.

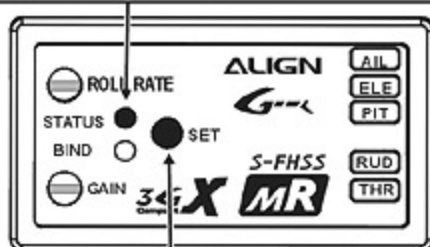
先打開遙控器，將 3GX MR 接上電源後，當 STATUS 和 BIND 燈號為綠燈恆亮時，表示開機完成，此時按 SET 鍵一次即可進入設定。

After system initializes, press SET once to enter 3GX MR setup mode. While in setup mode, STATUS LED will flash a number of times indicating the current setting selection. Press SET button to skip to next setting selection. 3GX MR must complete all 6 setting selections before the settings are memorized.

開機完成後，按 SET 鍵一次就會進入 3GX MR 設定。進入設定後 STATUS 燈會以閃爍次數代表所進入的設定選項。接續按 SET 鍵就會跳往下個設定選項，3GX MR 必須完成 6 項設定才會記憶設定內容。

- Flash 1 time: Aileron neutral point
- Flash 2 times: Elevator neutral point
- Flash 3 times: Pitch neutral point
- Flash 4 times: Rudder neutral point
- Flash 5 times: Rudder left travel limit setting
- Flash 6 times: Rudder right travel limit setting

- 閃爍頻率一次：副翼伺服器中立點設定
- 閃爍頻率二次：升降伺服器中立點設定
- 閃爍頻率三次：螺距伺服器中立點設定
- 閃爍頻率四次：尾舵陀螺儀正反向設定
- 閃爍頻率五次：尾舵左舵行程設定
- 閃爍頻率六次：尾舵右舵行程設定



**Press SET button to enter Setup**  
按 SET 鍵進入設定

**Throttle stick fixed position**  
油門搖桿固定



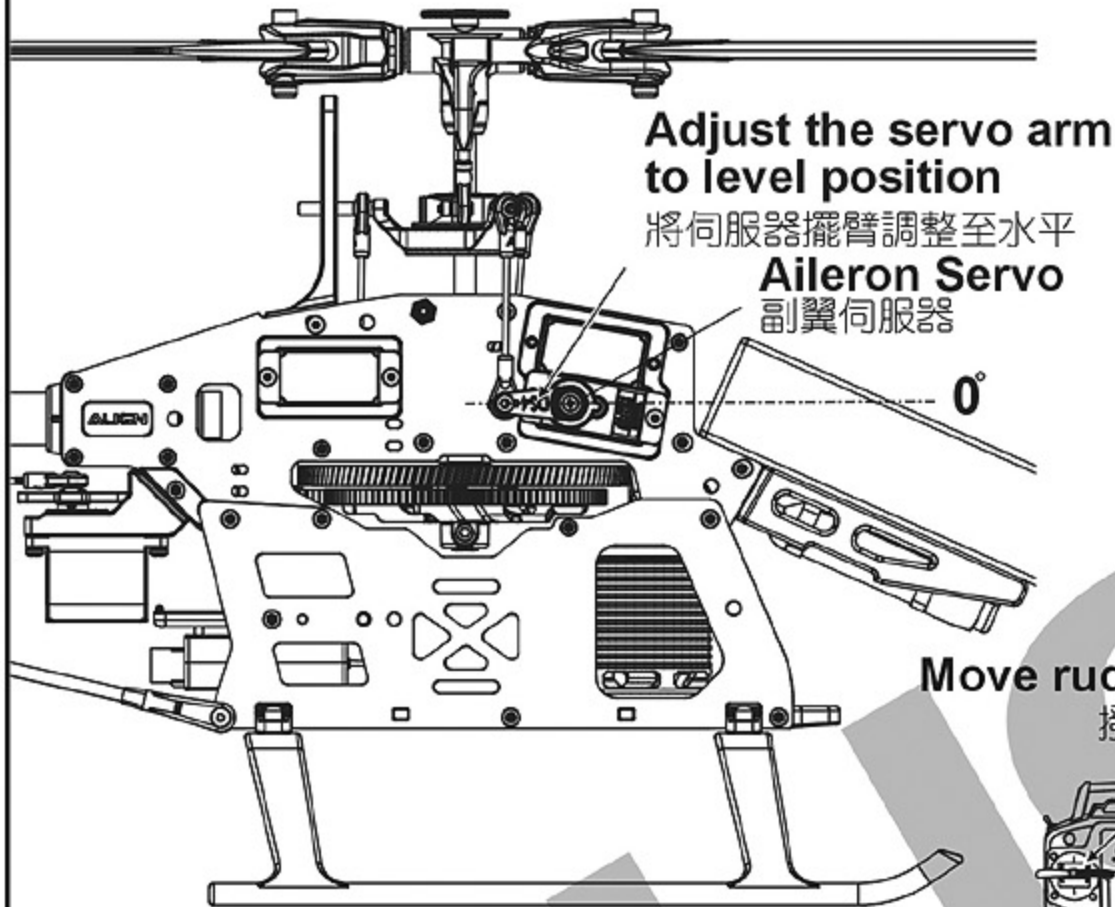
**CAUTION**  
注意

1. Disconnect motor to ESC to prevent accidental startup during setup.
2. The throttle stick must remain in center position during setup(or Switch HOLD), pitch curve must be at 50% position and remain fixed.

1. 設定前先拔除馬達線，避免設定中使馬達運轉造成危險。
2. 設定時油門搖桿需置於中間，螺距曲線 50% 輸出的位置 (或切入 HOLD 模式)，不可再移動。

## AILERON SERVO NEUTRAL POINT SETTING

副翼伺服器中立點設定



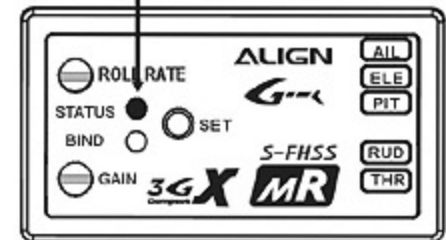
Momentarily press SET button first time, if STATUS LED flashes once continuously and BIND LED is off, this indicates you are in neutral setting mode of servo 1. At this time you can use RUD on transmitter to trim the neutral position of servo 1. After completing this setting it will proceed into next step.

進入 3GX MR 設定的第一個設定為副翼伺服器中立點設定，STATUS 燈為持續閃爍綠燈一次且 BIND 燈號為恆暗。此時可用遙控器尾舵搖桿微調副翼伺服器中立點位置，完成後進入下個步驟。

Move rudder stick to adjust  
撥動尾舵調整

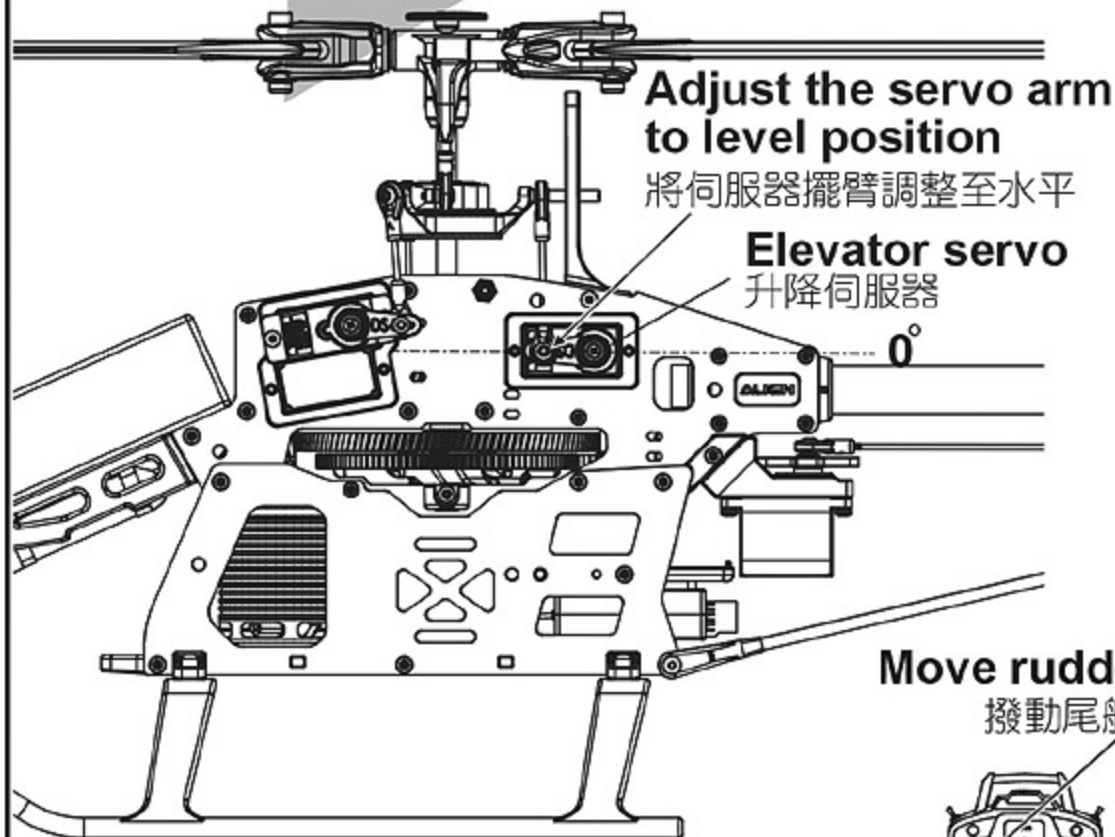


Flash green once  
閃爍綠燈一次



## ELEVATOR SERVO NEUTRAL POINT SETTING

升降伺服器中立點設定



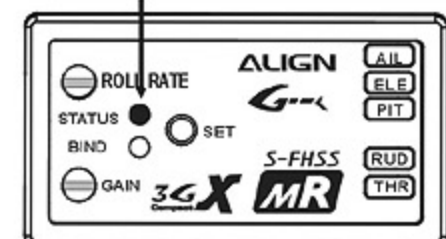
Momentarily press SET button second time, if STATUS LED flashes twice continuously and BIND LED is off, this indicates you are in neutral setting mode of servo 2. At this time you can use RUD on transmitter to trim the neutral position of servo 2. After completing this setting it will proceed into next step.

接著按 SET 鍵一次進入升降伺服器中立點設定，STATUS 燈號為持續閃爍綠燈二次且 BIND 燈號為恆暗。此時可用遙控器尾舵搖桿微調升降伺服器中立點位置，設定完成後進入下個步驟。

Move rudder stick to adjust  
撥動尾舵調整



Flash green twice  
閃爍綠燈二次



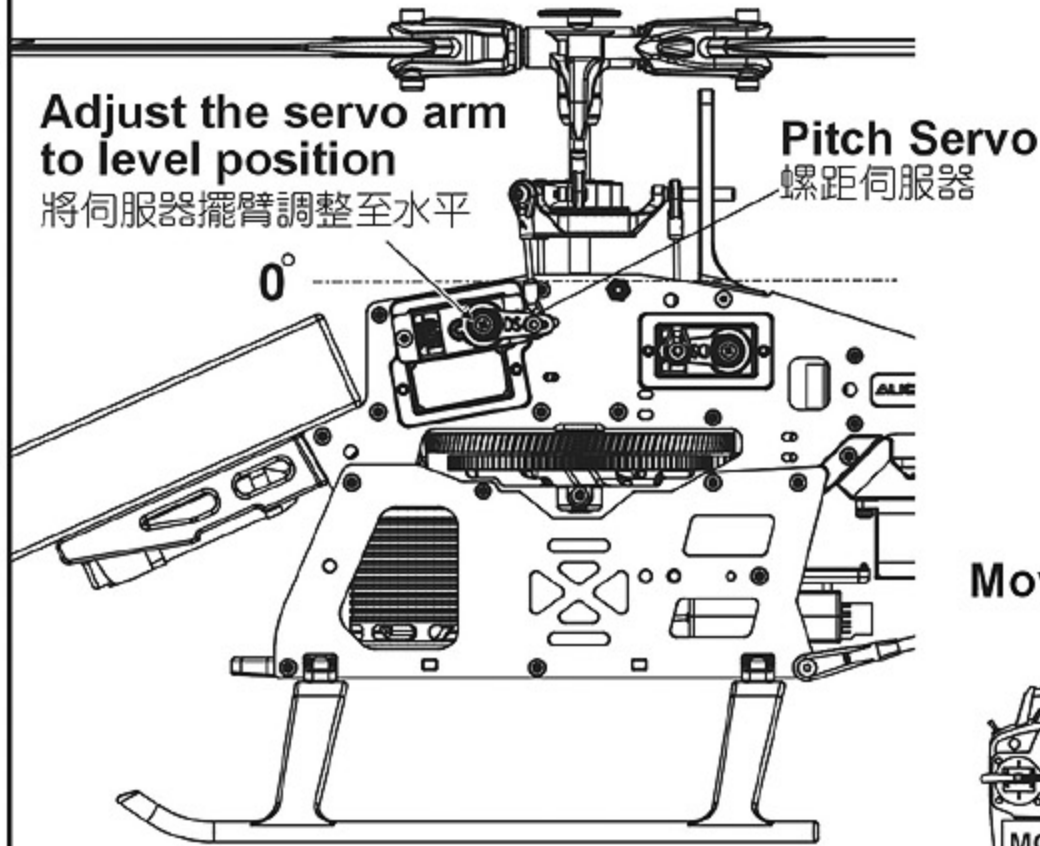


## PITCH SERVO NEUTRAL POINT SETTING

### 螺距伺服器中立點設定

Momentarily press SET button third time, if STATUS LED flashes three times continuously and BIND LED is off, this indicates you are in neutral setting mode of servo 3. At this time you can use RUD on transmitter to trim the neutral position of servo 3. After completing this setting it will proceed into next step.

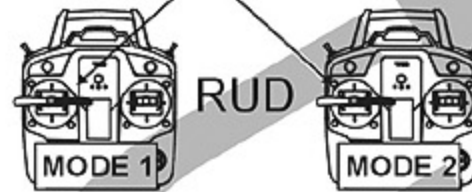
接著按 SET 鍵一次進入螺距伺服器中立點設定，STATUS 燈號為持續閃爍綠燈三次且 BIND 燈號為恆暗。此時可用遙控器尾舵搖桿微調螺距伺服器中立點位置，設定完成後進入下個步驟。



Adjust aileron, elevator, and pitch servos' neutral point so that servo arms and swashplate remain horizontal (with throttle stick at 50% position). How level your swashplate is will directly affect how well the flight characteristic of 3GX MR is.

調整副翼、升降、螺距伺服器中立點，使伺服器擺臂與十字盤皆保持水平位置（此時油門搖桿須置於 50% 位置），十字盤的水平與與否將會直接影響 3GX MR 的飛行表現與穩定性。

Move rudder stick to adjust  
撥動尾舵調整



Flash green thrice  
閃爍綠燈三次

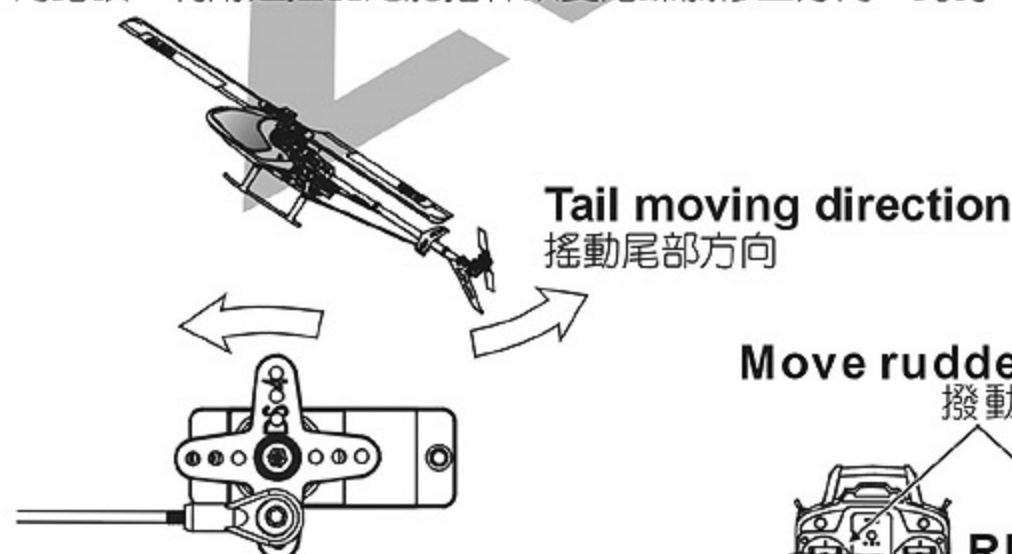


## RUDDER GYRO DIRECTION SETTING

### 尾舵陀螺儀修正方向設定

Momentarily press SET button fourth time, if STATUS LED flashes four times continuously and BIND LED is steady lit green, this indicates you are in rudder compensation direction setting mode. If compensation direction is correct, then skip this step. If compensation direction is reversed, use RUD on transmitter to reverse the direction, and BIND LED will change to steady lit red. After completing this setting it will proceed into next step.

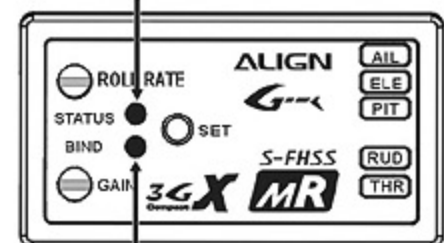
接著按 SET 鍵一次進入尾舵陀螺儀修正方向設定，STATUS 燈號為持續閃爍綠燈四次且 BIND 燈號為綠燈恆亮。修正方向錯誤，利用遙控器尾舵搖桿改變陀螺儀修正方向，此時 BIND 燈號改變為紅燈恆亮，設定完成後進入下個步驟。



Move rudder stick to adjust  
撥動尾舵調整



Flash green 4 times  
閃爍綠燈四次



Green LED : normal direction  
Red LED : reverse direction  
450 PLUS DFC is green light  
綠燈：正向 紅燈：反向  
450 PLUS DFC 為綠燈



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

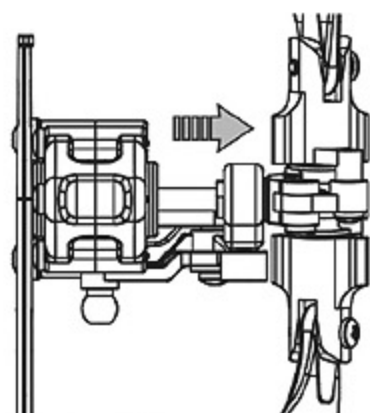
尾舵陀螺儀修正方向確認；當手搖直昇機尾部朝逆時鐘方向移動時，尾舵伺服器應往逆時鐘修正，修正錯誤時，撥動尾舵搖桿改變尾舵陀螺儀修正方向。

## RUDDER LEFT TRAVEL LIMIT SETTING

### 尾舵左舵行程設定

Momentarily press SET button fifth time, if STATUS LED flashes five times continuously and BIND LED is off, this indicates you are in left rudder end point adjustment mode. At this time rudder will drift to one side. Use RUD on transmitter to set the maximum end point on left side. After completing this setting it will proceed into next step.

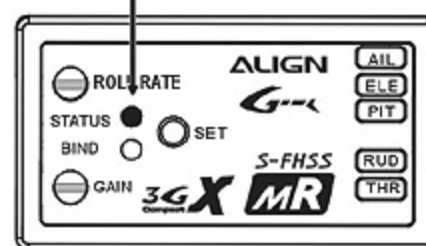
接著按 SET 鍵一次進入尾舵左舵行程設定，STATUS 燈號為持續閃爍綠燈五次且 BIND 燈號為恆暗。此時尾舵會偏向單邊，利用遙控器尾舵搖桿設定尾舵伺服器向左最大的行程，設定完成後進入下個步驟。



Move rudder stick to adjust  
撥動尾舵調整



Flash green 5 times  
閃爍綠燈五次



Adjust the rudder travel limit to the maximum without mechanical binding will result in better rudder gyro compensation effect.

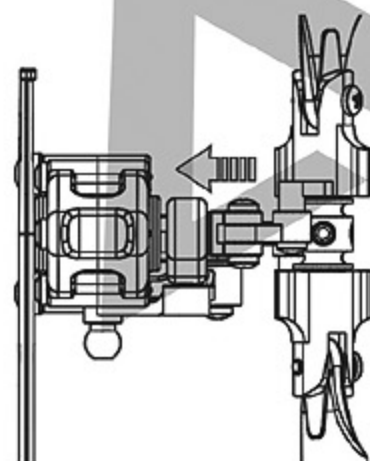
在機構不干涉的情形下，設定較大的尾舵行程可使尾舵陀螺儀有較好的修正反應。

## RUDDER RIGHT TRAVEL LIMIT SETTING

### 尾舵右舵行程設定

Momentarily press SET button sixth time, if STATUS LED flashes six times continuously and BIND LED is off, this indicates you are in right rudder end point adjustment mode. At this time rudder will drift to one side. Use RUD on transmitter to set the maximum end point on right side. After completing this setting it will proceed into next step.

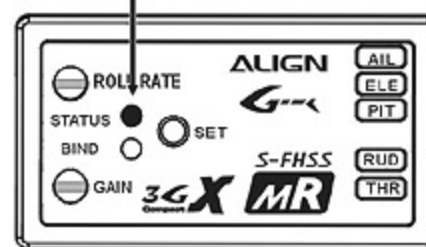
再按 SET 鍵一次進入尾舵右舵行程設定，STATUS 燈號為持續閃爍綠燈六次且 BIND 燈號為恆暗。此時尾舵會偏單邊，利用遙控器尾舵搖桿設定尾舵伺服器向右最大的行程，設定完成後按 SET 鍵完成 3GX MR 設定。



Move rudder stick to adjust  
撥動尾舵調整



Flash green 6 times  
閃爍綠燈六次



Adjust the rudder travel limit to the maximum without mechanical binding will result in better rudder gyro compensation effect.

在機構不干涉的情形下，設定較大的尾舵行程可使尾舵陀螺儀有較好的修正反應。



In order for the settings to stick, all 6 setting parameters for 3GX MR must be completed followed with a press of SET button, regardless if any changes are made for each settings.

3GX MR 的六項設定，不論有無更動，皆須逐一完成，並按下 SET 鍵退出設定，否則 3GX MR 將不會記憶設定。



# 7

## MAIN ROTOR PITCH ADJUSTMENT

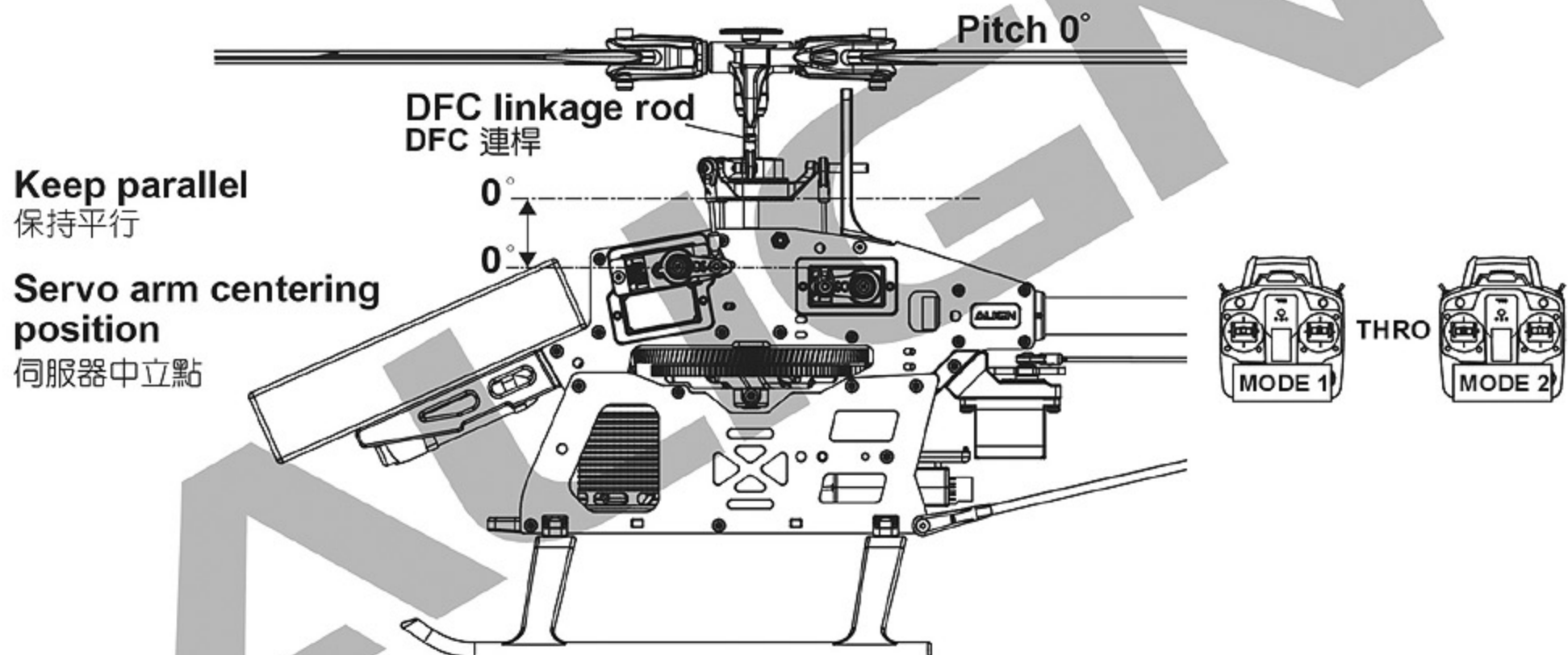
### 主旋翼螺距調整

1. Press SET button to enter 3GX MR setup mode. This setting will eliminate any swashplate interaction which may affect pitch precision.
  2. Move throttle stick to enter, pitch curve at 50% position. Pitch should be at 0 degrees during this setting.
  3. If servo arms and swashplate is already level at 0 degrees, but main rotor blades pitch is not at 0 degree, please adjust the length of DFC linkage rods to achieve 0 degrees pitch.
1. 按SET鍵進入3GX MR設定，此時會關閉3GX MR的陀螺儀，以避免對十字盤的修正而影響螺距的量測。  
2. 將油門搖桿置中，螺距曲線50%輸出位置，請調整主旋翼螺距為0度。  
3. 如果伺服器擺臂及十字盤已經是水平0度，但主旋翼螺距不為0度時，請調整DFC連桿長度使螺距為0度。



CAUTION  
注意

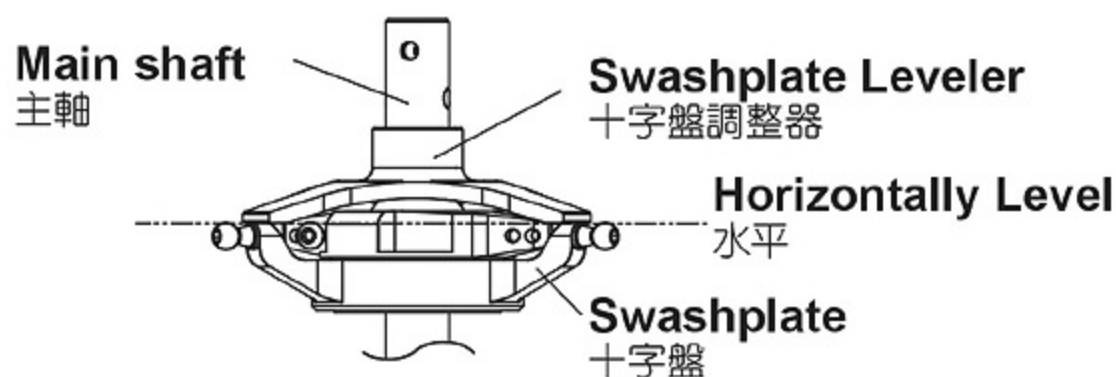
Disconnect motor from ESC prior to setup.  
設定前，請先將馬達線拔除。



CAUTION  
注意

Before setting up the 3GX MR FBL system, please use a swashplate leveler to level out the swashplate to make sure the swashplate is leveled to ensure 3GX MR provides the best performance.

使用3GX MR無平衡系統，請務必使用十字盤調整器校正十字盤，確保十字盤達到水平狀態，這樣才能確保3GX MR飛行性能達到最佳效果。



# 8 COLLECTIVE PITCH ADJUSTMENT

## 集體螺距調整

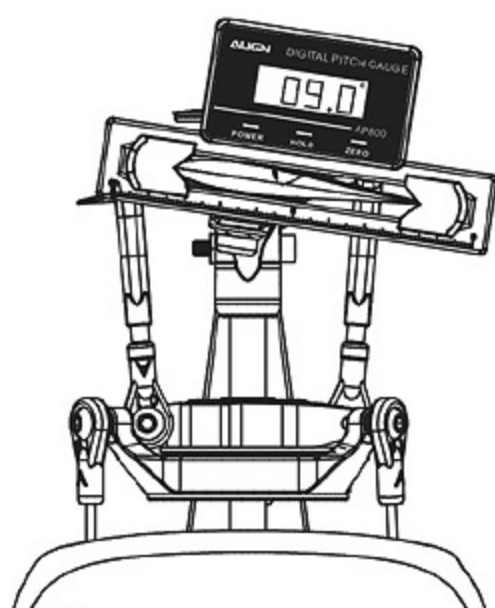
The collective pitch for 3GX MR must be adjusted in radio's EPA (End Point) function.  
3GX MR 集體螺距必須從遙控器 CH6 通道的 EPA (END POINT) 功能中調整。

### 1 MAX. COLLECTIVE PITCH ANGLE

#### 最大集體螺距角度

Push the throttle stick to the maximum, adjust maximum collective pitch value through radio's EPA function on CH6.

將遙控器油門遙桿推至最高，使用 EPA 功能調整 CH6 通道的最大集體螺距角度。



THRO



CAUTION  
注意

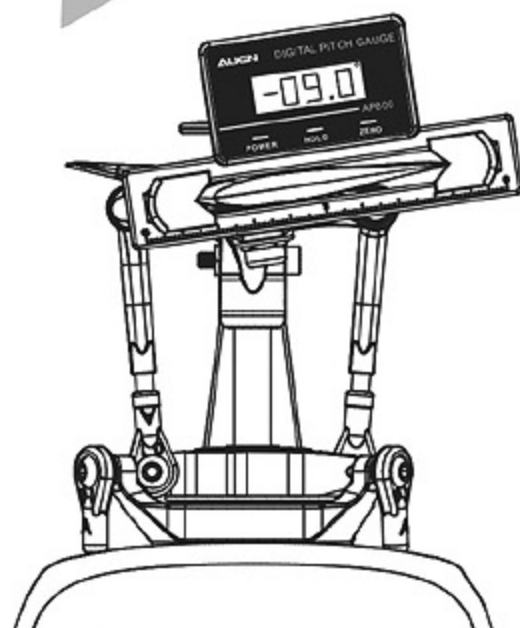
Disconnect motor from ESC prior to setup.  
設定前，請先將馬達線拔除。

### 2 MIN. COLLECTIVE PITCH ANGLE

#### 最小集體螺距角度

Push the throttle stick to the minimum, adjust minimum collective pitch value through radio's EPA function on CH6.

將遙控器油門遙桿推至最低，使用 EPA 功能調整 CH6 通道的最小集體螺距角度。



THRO



CAUTION  
注意

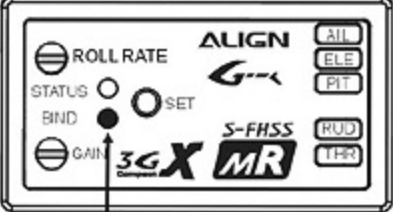
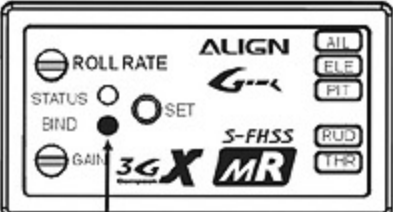
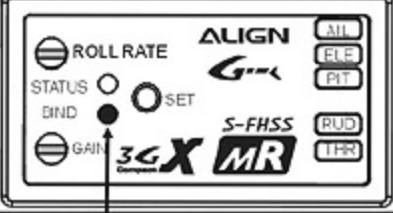
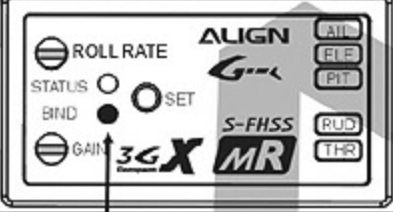
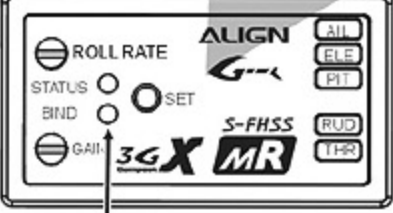
Disconnect motor from ESC prior to setup.  
設定前，請先將馬達線拔除。



# 3GX MR INDICATOR LED

## 3GX MR 指示燈說明

ALIGN

STATUS BIND	STATUS constant green STATUS 綠燈恆亮	STATUS constant red STATUS 紅燈恆亮	STATUS off STATUS 不亮
 <p><b>BIND constant green</b> BIND 綠燈恆亮</p>	<p>Successful initialization and radio bounded, rudder in heading lock mode.</p> <p>完成對頻且開機成功，尾舵為鎖定狀態</p>	<p>Successful initialization and radio bounded, rudder in non-heading lock mode.</p> <p>完成對頻且開機成功，尾舵為非鎖定狀態</p>	<p>—————</p>
 <p><b>BIND flashing green</b> BIND 綠燈閃爍</p>	<p>Revert back to original transmitter signal that was lost during usage, rudder is in head locking mode, and detected other transition signals.</p> <p>使用過程中失去原本發射器訊號，尾舵為鎖定狀態，且偵測到其它發射訊號</p>	<p>Revert back to original transmitter signal that was lost during usage, rudder is in non-head locking mode, and detected other transition signals.</p> <p>使用過程中失去原本發射器訊號，尾舵為非鎖定狀態，且偵測到其它發射訊號</p>	<p>3GX MR detects radio signal, but is not bound to the radio.</p> <p>3GX MR 偵測到發射器訊號，但未完成對頻</p>
 <p><b>BIND constant red</b> BIND 紅燈恆亮</p>	<p>Successful initialization but radio binding failed, rudder in heading lock mode.</p> <p>3GX MR 對頻失敗，但開機成功，尾舵為鎖定</p>	<p>Successful initialization but radio binding failed, rudder in non-heading lock mode.</p> <p>3GX MR 對頻失敗，但開機成功，尾舵為非鎖定</p>	<p>No signal detected from radio, please check if transmitter is powered on.</p> <p>3GX MR 未偵測到發射訊號，請確認發射器是否開啟</p>
 <p><b>BIND flashing red</b> BIND 紅燈閃爍</p>	<p>—————</p>	<p>—————</p>	<p>Signal detected from radio, and set button was pressed for binding.</p> <p>3GX MR 偵測到發射器訊號，且使用者正按SET鍵對頻中</p>
 <p><b>BIND off</b> BIND 不亮</p>	<p>—————</p>	<p>—————</p>	<p>No power connecting to 3GX MR</p> <p>3GX MR 未連接電源</p>

## 1 SPECIFICATIONS 產品規格

Operating voltage range  
Operating current consumption  
Rotational detection rate  
Rudder yaw detection rate  
Sensor resolution  
Operating temperature  
Operating humidity  
Swashplate support  
Receiver support

操作電壓範圍  
工作電流  
側滾及前滾角速度範圍  
尾舵角速度範圍  
感測器解析度  
操作溫度  
操作濕度  
支援十字盤類型  
支援發射機類型

DC 3.5 ~ 8.4V  
<100mA @ 4.8V  
± 300°/sec  
± 600°/sec  
12位元 (12 BIT)  
-20°C ~ 65°C  
0% ~ 95%  
Mode H-1  
2.4GHz S-FHSS

# TROUBLESHOOTING

## 飛行中狀況排除

ALIGN

	Problem 狀況	Cause 原因	Solution 對策
<b>Blade Tracking</b> 雙槳平衡	Tracking is Off 雙槳	DFC linkage rods are not even length DFC 連桿長度調整不平均	Adjust length of pitch linkage rods (A) 調整 DFC 連桿頭長度
<b>Hover</b> 停懸	Headspeed too low 主旋翼轉速 偏低	Excessive pitch 主旋翼的 PITCH 偏高	Adjust pitch linkage rods (A) to reduce pitch by 4 to 5 degrees. Hovering headspeed should be around 2800RPM. 調整連桿頭調低 Pitch 約 + 4~5 度 (停懸時主旋翼需為約 2800RPM)
		Hovering throttle curve is too low 停懸點油門曲線過低	Increase throttle curve at hovering point on transmitter (around 65%) 調高停懸點油門曲線 (約 65%)
	Headspeed too high 主旋翼轉速 偏高	Not enough pitch 主旋翼的 PITCH 偏低	Adjust pitch linkage rods (A) to increase pitch by 4 to 5 degrees. 調整連桿頭調高 PITCH 約 + 4~5 度
		Hovering throttle curve is too high 停懸點油門曲線過高	Decrease throttle curve at hovering point on transmitter (around 65%) 調低停懸點油門曲線 (約 65%)
<b>Rudder Response</b> 尾舵反應	Drifting of tail occurs during hovering, or delay of rudder response when centering rudder stick. 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。	Rudder neutral point improperly set 尾中立點設定不當	Reset rudder neutral point 重設尾中立點
	Tail oscillates (hunting, or wags) at hover or full throttle 停懸或全油門時尾翼左右來回搖擺	Rudder gyro gain too low 尾舵陀螺儀感度偏低	Increase rudder gyro gain 增加尾舵陀螺儀感度
<b>Oscillation during flight</b> 飛行抖動	Helicopter oscillates forward/backward/left/right while performing cyclic maneuvers. 升降舵或副翼打舵動作時，機體前後左右抖動	Rudder gyro gain too high 尾舵陀螺儀感度偏高	Reduce rudder gyro gain 降低尾舵陀螺儀感度
	Helicopter front bobbles (nods) during forward flight. 直線飛行時，機頭點頭	Swashplate gyro gain is slightly too high. 十字盤陀螺儀感度偏高，產生追蹤現象	Turn the gain dial on 3GX MR counterclockwise, 10 degrees at a time until oscillation is eliminated. 逆時針調整 3GX MR 上的感度調整旋鈕，以每次調整約 10 度的方式，調整至適當位置
<b>Drifting during flight</b> 飛行飄移	pitching up or aileron drift during forward flight 直線飛行機頭上揚或副翼飄移	Worn servo, or slack in control links 伺服器老化，控制結構有虛位	Replace servo, ball link, or linkage balls. 更換伺服器、連桿頭、球頭
		Swashplate gyro gain is slightly too low 十字盤陀螺感度偏低	Turn the gain dial on 3GX MR clockwise, 10 degrees at a time until drifting is eliminated. 順時針調整 3GX MR 上的感度調整旋鈕，以每次調整約 10 度的方式，調整至適當位置
<b>Control Response</b> 動作反應	Slow Forward /Aft/Left/Right input response 前後左右飛行動作反應偏慢	Roll rate too low 滾轉速率偏低	Adjust 3GX MR roll rate dial clockwise . 順時針調整 3GX MR 滾轉速率旋鈕
	Sensitive Forward/Aft/Left/Right input response 前後左右飛行動作反應偏快	Roll rate too high 滾轉速率偏快	Adjust 3GX MR roll rate dial counter . 逆時針調整 3GX MR 滾轉速率旋鈕

If above solution does not resolve your issues, please check with experienced pilots or contact your Align dealer.

※在做完以上調整後，仍然無法改善情況時，應立即停止飛行並向有經驗的飛手諮詢或連絡您的經銷商。



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