## Ми-24



防止尾旋翼座螺絲幹涉到機尾。

- 106.剪下27頁的貼紙,如圖貼在機尾蓋合適位置,然後用 筆做記號。沿着幾號綫內側1mm修剪,然後用砂紙慢 慢打磨到正確位置。
- 107.最後用八個2x5mm止鬆螺絲固定機尾。
- 108.安裝消音器導管并用塑帶固定。調節其外轉30度,并在機身前部相應位置鑽孔安裝消音器導管。
- 109.如圖將舵機綫連接到接收機上,用泡棉,魔術貼(自備)捆綁電池和接收機。
- 110.試着安裝機身前部,在合適的孔位處後鑽至少六個 1.5mm的定位孔,接着用2x5mm螺絲將其固定。
- 111.接着將機身上蓋安裝機身上,相同的方法鑽1.5mm的 孔位,幷用2x5mm螺絲將其固定。

#### 試飛

- 1.檢查陀 螺儀方向,確保尾旋翼作動正確。
- 2. 懸停時盡量保證旋翼速度在1700~1800 RPM。
- 3.每次飛行後檢查機身和機體有無螺絲鬆動。
- 4.如高速飛行則適當修正升降舵參量。

#### 組裝須知

- 1.建議您在開始安裝機身于直升機之前,預先將直升機做好上空飛行調試。
- 2.復查所有螺絲, 然後旋緊并用螺絲防鬆膠固定所有螺絲。
- 3.本篇安裝說明適用于 Raptor Titan 50,若您選擇安裝其它 品牌的直升機,我們將建議您詳細參閱此安裝說明書并 且掌握如何將此機體安裝到雷虎泰坦50直升機上,然後 再根據您的直升機作必要修正。

請依據說明書指示進行組裝,任意的修改可能使這架直升 機的飛行特性改變。

請務必在組裝前確認所有的零件齊全,進行這動作的同時 也幫您熟悉這臺直升機的每一部分細節;如果您發現有零 件缺少的狀况,請您盡快聯系您購買的模型店以進行零件 更換或補償。

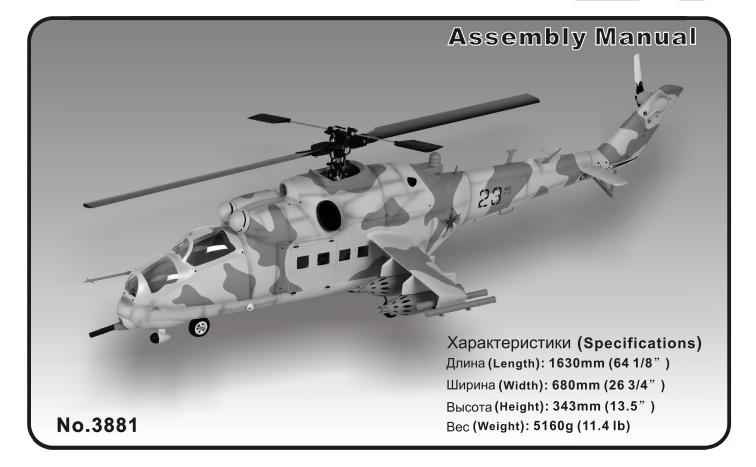
在使用膠水前必須反復確認,因爲一旦您已經使用膠水固定了,就難以復原。

## **MEMO**





# $M_{\rm M}-24$



## Warranty

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

## Notice: Adult Supervision Required

This is not a toy. Assembly and flying of this product requires adult supervision.

Read through this book completely and become familiar with the assembly and flight of this Mu-24. Inspect all parts for completeness and damage. Browse www.thundertiger.com for customer service if you encounter any problems.

## INTRODUCTION



Congratulations on the purchase of our finest scale heli fuselage to date. This famous Mu-24 fits Thunder Tiger Raptor Titan 50, the light fuselage comes factory pre-painted with all necessary hardware. It is very easy to assemble and only takes you few hours of enjoyable installation to put this scale body on your helicopter. This replica Mu-24 is just like a real thing, hovering this Mu-24 will definitely make you stand out at the flying field.

## **PRE-ASSEMBLY NOTES**

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

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

This Mu-24 is designed for intermediate to advanced pilots, and this manual assumes a basic knowledge of R/C model construction.

## **BEFORE YOUR ASSEMBLY**

- 1. Before you start to assemble this fuselage on your helicopter, we suggest you to first fine tune your helicopter in the air.
- 2. Double-check all screws, then secure all screws with Loctite.
- 3. The instruction manual is written for Raptor 50 Titan, if user should choose to install it on other branded helicopters, we would suggest you to study the manual thoroughly and see how it installed on a Raptor 50 Titan.

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

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

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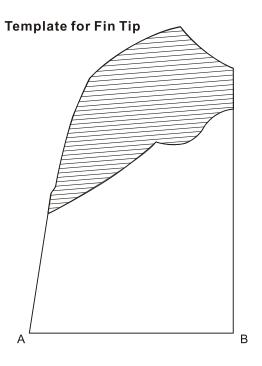




Mu-24

找到10mm球頭和M2螺母,并將其固定在收腳架連接頭 上,參照圖示注意連接頭方向。找出球頭連接杆和推杆 H,將連接杆旋到推杆上,調節中間距離至82mm。

- 58.用一Y形綫連接兩個舵機綫。連接到接收機上,設定 AUX1收腳架動作。
- 59.將球頭連接座扣到球頭上,接着安裝推杆C到主收腳架 上。先將Z字端安裝到收腳架連接頭上,接着將另一頭 穿過舵角片,注意推杆方向。如圖調節下收腳架,首先 調節主收腳架連接,接着調節前輪推杆連接。適當調節 推杆A或推杆H到合適位置後,用3x3mm的止鬆螺絲固定
- 60.相同的方法調節上收腳架舵機。首先調整推杆C的位 置、接着調節推杆B的位置。確保三個舵機能夠同時順 暢工作,稍後將安裝和調節輪罩推杆,
- 61.如圖找出木架組件,用來安裝方向舵機框架
- 62.試着將側面板安裝到木架上,接着安裝側板和底板。調 整合適後用膠水固定。
- 63.將木架朝上, 粘貼另一片底板。
- 64.最後安裝舵機木板幷用膠水固定。將方向舵機安裝到木 板上,用與泰坦50配套的舵機固定片和螺絲將其固定。
- 65.找出機輪組件。將輪轂安裝到輪胎內幷用M2螺母和 2x14mm螺絲固定。接着將襯套安裝到輪轂裏
- 66.先將POM墊片安裝到鋼絲上,接着將輪子安裝到鋼絲幷 用3x3mm的止鬆螺絲將其固定。相同的方法安裝另外兩
- 67.移去尾桁和舊的皮帶安裝新的較短皮帶。
- 68.如圖找出斜齒輪, 惰輪及相關配件。
- 69. 先將斜齒輪以插銷固定于長軸距離端點較長的斜插銷孔
- 70.接着如圖安裝斜齒輪, 惰輪及相關配件。
- 71.相同的方法將斜齒惰輪組安裝于短軸上。
- 72.將斜齒惰輪組安裝于後側板上。
- 73.取套環, 鋁板加強片等零件。如圖安裝後側板及相關配 件于尾管座上,暫以四個3x45mm內六角螺絲,八個套 環,八個3mm的華司及四個3mm防鬆螺帽將其固定。
- 74.試着將50的機體安裝到木架上, 幷用內六角螺絲(前孔 用3x20mm螺絲, 尾孔用3x18mm螺絲), POM墊片, M3自鎖螺帽將其固定。



- 75.建議安裝泰坦原配消音器,使用其他品牌消音器可能會 幹涉到機身, 木架甚至舵機。從機體上拆下消音器并 將其反向安裝。接着安裝好油管。(泰坦高級版配備黑 色消音器,您需要另購銀色消音器)
- 76.如圖用12個3x8mm內六角螺絲及12個M3墊片安裝固定 長皮帶,軸承座,斜齒輪,惰輪及支柱B。固定側板 時, 試着拉動側板後端以保證短皮帶的鬆緊度。試着 驅動皮帶,保證齒輪順暢工作。
- 77.如圖找出剩下的惰輪配件。
- 78.如圖安裝惰輪中間鋁制隔離片,另取出軸承座及墊片。
- 79.參照圖示例,用八個2.5x8mm的螺絲組裝軸承座組。完 成步驟81後才能完成組裝
- 80.先移去主旋翼頭,小心的將機體裝入機殼內。你也許需 要多裝幾次才能找到合適的位置。打磨木架和機身內 側粘接部位, 待完成步驟83時再用膠水將其固定。
- 81.將機體盡量後移以安裝長皮帶,參照步驟79將皮帶和支 柱裝到軸承座裏。安裝軸承座時適當打磨用來鎖螺絲
- 82.暫時固定軸承座直至前端,注意此步驟爲預調整皮帶鬆 緊度十分重要。
- 83.將木架往前移動使得長皮帶獲得較好的鬆緊度,做好記 號後,移去軸承座。接着粘結木架到機殼內。這種方 式可以保證長皮帶鬆弛後依然通過軸承座調節皮帶鬆 緊度。待膠水凝固後,安裝軸承座幷調節皮帶鬆緊
- 84.去除舊支柱,在支柱A裏旋入先前的止鬆螺絲。
- 85.將上蓋放置到機身上,確保十字盤不會觸碰到機蓋頂 部。否則在下一步驟中通過調節固定座來保證轉盤居
- 86.參照圖示在機體兩側安裝支柱,接着用3x8mm內六角螺 絲固定機體固定座。安裝時配合上蓋調節固定座靠近 機身安裝部位邊緣,接着以固定座孔位做記號,最後 鑽孔幷用螺絲鎖緊固定座。
- 87.如圖打磨尾管座,注意完成96步驟後再粘接塑料圓環。
- 88.將皮帶穿過圓環和尾管座。
- 89.試着如圖安裝尾旋翼座。
- 90.從底部檢查皮帶鬆緊度。選擇合適厚度的圓環來調整鬆
- 91.參照圖示在機尾端鑽孔以安裝推杆。
- 92.參照圖片在曲杆位置安裝球頭軸承和軸套,接着用兩個 M3墊片和3x10mm螺絲將曲杆安裝在曲軸座上, 幷確保 其順暢轉動。接着再用2x8mm螺絲和M2螺母在曲杆上 安裝球頭, 注意兩個球頭有安裝方向區別
- 93.移掉支柱C上的螺絲,如圖安裝曲杆,適當滴入防鬆 膠。接着緊緊固定曲軸到隔板上, 并參照圖示安裝推
- 94.將推杆另一端連接頭扣到舵機上,調節舵機片到中立位
- 95.將另一推杆固定在尾旋翼控制片上,適當調整尾旋翼。
- 96.調整所有部件到合適位置後,用膠水粘接塑料圓環,并 從內部用足夠膠水粘結住尾管座。注意: 不要粘貼到皮
- 97.如圖所示適當修剪機殼,確保收腳架工作時鋼絲和輪子 不會幹涉到機殼。接着用推杆鋼絲連接輪罩和推杆控制
- 98.確保舵機工作時,輪罩動作正確。適當調節鋼絲到圖示 位置,接着用3x3mm的自攻螺絲固定鋼絲。
- 99.如圖顯示輪罩完全閉合狀態。
- 100.如圖顯示輪罩完全打開狀態。
- 101.試着安裝機尾蓋到合適位置,適當修剪後在合適位置 鑽1.5mm的定位孔,接着用2x5mm的螺絲將其固定
- 102.找出兩個水平尾翼和3x10mm的止鬆螺絲。如圖在翼根 中部鑽2.6mm的孔,接着旋入3X10mm止鬆螺絲約
- 103.在機尾相應位置鑽3mm的孔以配合尾翼根部的止鬆螺
- 104.打磨粘貼部位,確保兩半水平尾翼平齊且與垂尾垂 直。從尾部看其須與短翼同角度。
- 105.在機尾模印綫處鑽孔,再用擴孔器擴至合適大小,以



## 中文組裝說明書

- 1.找出機槍,槍管,炮塔,炮塔座木片及兩個2x8mm螺
- 2.如圖沿着模印綫修剪炮塔。
- 3.如圖所示在炮塔上鑽兩個定位孔, 幷將其直徑擴至
- 4.將槍管粘接到機槍上,接着將其安裝到炮塔上。注意機 槍凹口朝下安裝。
- 5.打磨炮塔木片粘接部位,將其粘接到炮塔上。接着在砂 板上輕輕打磨炮塔周邊部位,以確保木片與其周邊平
- 6.如圖用兩個2x8mm的螺絲將機槍組件固定在機頭下方。
- 7.修剪照相機裝飾件幷用四個2x5mm的螺絲固定其于機身 上。修剪預鑽孔幷試着將雷達支柱安裝到孔內。打磨雷 達支柱接觸部分(10mm`~12mm)以增加粘接性。接着 從機身內側用充足的膠水將雷達座固定在合適位置
- 8.修剪機頭罩幷試着將其固定于機身上。找到空速管安裝 模點接着如圖鑽2mm的安裝孔。將空速管安裝到機頭罩 上,內側用膠水將固定圈固定住。粘結空速管時可暫時 將機頭罩安裝在機身上,以保持空速管與機身平行。
- 9.參照圖示鑽2mm的定位孔以安裝空速管頭, 并在內側用 膠水和固定圈將其固定, 防止其鬆動。將機頭罩安裝在 機身上預鑽1.5mm的定位孔,接着用六個2x5mm螺絲將 機頭罩固定在機身上。參照圖示預鑽1mm的定位孔以安 裝雨刷座A,B,注意雨刷座A在下側,B在上側。接着用膠 水將雨刷固定住。
- 10.找到冷卻口裝飾件,用工具刀小心的將中間部分切除。
- 11.如圖所示將風扇粘接到小圓環木片上,接着打磨周邊幷 粘接到冷卻口適當位置。
- 12.將冷卻口組件安裝到機身合適位置, 幷用四個2x5mm螺 絲將其固定住。
- 13.沿着進氣口模印綫小心的切割凹槽。找出兩個大圓環木 片, 幷試着將其安裝在進氣口上。修剪進氣口邊緣以保 持木片與之齊平,接着用膠水將圓環木片固定在進氣口
- 14.將進氣口組件粘結到機身上。接着安裝排氣管,調整排 氣管朝下幷用膠水固定住。
- 15.參照圖片在機尾適當位置鑽2mm的定位孔安裝像真裝飾 件, 導入天綫, 高頻天綫, 超高頻天綫, 架空天綫。內 側用膠水粘接固定環與裝飾件支柱。
- 16.找出圖示木架。
- 17.參照圖示安裝木架,注意隔板上孔位方向。
- 18.輕輕打磨隔板周邊,接着如圖示安裝于機身合適位置。
- 19.打磨粘結位置,參照圖示將隔板粘結到機身內側。接着 在內側安裝金屬網。
- 20.找出旋磁羅盤裝飾件,接着鑽四個1.5mm的孔幷用 2x5mm的螺絲將其固定于機尾下部。
- 21.找出四片凸緣較寬的塑料片用于上艙門, 試着將其安裝 在艙門上,打磨凸緣和艙門粘結部分。
- 22.將塑料片粘貼到窗戶位置。注意:上艙門的塑料片凸緣 較寬的一端朝下。如圖適當修剪塑料片邊角以防止幹涉 到艙門磁鐵。
- 23.找出活頁,如圖修剪活頁邊緣。安裝活頁時確保證其方 向正確且活動順暢。
- 24.修剪機身安裝活頁的地方,參照圖片用小平銼修整記號
- 25.參照圖片將活頁安裝到機身上,以活頁孔定位鑽 0.7mm的孔。確保兩活頁對齊,小心的用膠水將其固定 以方便安裝。適當在活頁轉軸處滴少量潤滑油,以防止 活頁兩邊粘住。
- 26.如圖用銼刀沿着機身底部模印綫修剪收腳架活動部分
- 27.沿着模印綫修剪輪罩, 試着安裝到機身處以參照修剪。
- 28.打磨粘貼部位,將碳纖肋板粘貼到輪罩上。
- 29.用1.2x3mm的自攻螺絲將活頁安裝到機身上。試着將輪 罩安裝到合適位置,根據活頁的位置適當修剪輪罩上開 槽大小和鑽孔位置。
- 30.參照圖示用1.2x3mm的螺絲將輪罩安裝到機身上。確保 輪罩能順暢活動。
- 31.相同的方法安裝艙門活頁。確保艙門安裝到位後,修剪

- 安裝槽, 并用1.2x3mm的自攻螺絲將其固定。
- 32.適當調整或修剪艙門以確保其能順暢活動,磁鐵能緊緊 閉合艙門。
- 33.找出機尾隔板,支撑座,3x10mm螺絲,M3防鬆螺母和
- 34.如圖打磨側邊,將支撑座固定在隔板上,試着如圖安裝 隔板,注意安裝方向。接着用膠水將其固定。
- 35.找出機尾蓋,尾橇,M2螺母,2x14mm螺絲。
- 36.如圖用螺絲和螺母組裝尾橇
- 37.將尾橇放置在機尾蓋上,參照圖示在記號處鑽孔。
- 38.建議現在記號處鑽3mm的孔,接着試着將尾橇安裝在機 尾蓋上。適當修剪前面兩個孔成橢圓形以安裝尾橇,接 着在內側用膠水固定住。
- 39.找出導彈組件,用2x10mm的自攻螺絲將導彈上下蓋鎖 緊,接着將其粘結到導彈座上。
- 40.找出挂架, 試着安裝到短翼上, 參照圖片打磨其外側以 保證各挂架之間平行安裝。 注意此時不要用膠水固
- 41.試着將挂架A安裝到導彈架中心位置,接着用膠水固 定。確保挂架A平行于導彈,垂直于導彈架。以導彈架 孔定位,在挂架A上鑽1mm的孔,接着用2x10mm的自攻 螺絲將其固定在導彈架上。
- 42.如圖找出四套火箭筒組件,適當修剪後用膠水粘接在一
- 43.在火箭筒正面畫一條正中直綫,在圖示位置處鑽 1.5mm的孔位。相同方法在火箭筒反面劃綫并鑽4mm的 孔位,用以螺絲刀安裝螺絲。
- 44.找到挂架B和肋板, 試着將肋板放置到挂架B裏, 打磨粘 接部位,幷用足夠的膠水將其粘接到挂架B裏。確保肋 板與挂架B邊緣齊平。粘接時可以用膠帶暫時包覆在挂 架B周圍,以防止弄臟表面。接着參照圖示劃綫并鑽 1mm的孔。
- 45.用2x10mm的自攻螺絲將火箭筒固定在挂架B上,使用磁 性螺絲刀可以方便安裝。相同方法安裝其他三套火箭
- 46.打磨短翼和挂架粘接部位、試着將火箭筒組件和導彈組 件安裝到短翼上。確保相互平行後用膠水粘結。注意: 參照步驟40,挂架并非垂直于短翼。
- 47.用砂紙打磨短翼安裝處和短翼根部
- 48.將機身放置在水平桌面上,試着安裝短翼。確保兩邊短 翼安裝角度相同(可以用泡沫和書本墊底),接着用膠 水將其固定住。你可以用布膠帶包覆周邊,以免多餘膠
- 49.膠水凝固後,在機身內側相應位置鑽2mm的孔。用 3x10mm的螺絲將短翼固定在機身上。
- 50.找出三個收腳架,如圖拆開其中兩個收腳架,將拉杆反 向安裝。
- 51.鎖住收腳架上蓋前,確保收腳架能順暢工作。注意,如 果收腳架安裝不當則無法工作。
- 52.找出收腳鋼絲,將其安裝到收腳架裏。鋼絲需裝入底部 且用兩個自鎖螺絲固定住鋼絲。注意: 滴入適當放鬆 膠,以防飛行中螺絲鬆動。
- 53.用3x12mm螺絲及POM墊片將旋轉座固定在木架上。接 着將推杆A的Z字端穿過推杆控制片最外端的孔位,最後 用3x8mm螺絲和POM墊片將推杆控制片固定在旋轉座 上,確保控制片能順暢移動。
- 54.安裝收腳架舵機(建議使用Futaba S3170),參照圖示 注意舵機輸出軸安裝方向。接着將舵角片一最外孔擴至 2mm,安裝推杆固定座,幷用M2螺母固定。將舵角片 安裝到舵機上,接着連接上推杆C。暫時用3mm止鬆螺 絲固定推杆A,待稍後調整。相同方法安裝另一個舵
- 55.在圓盤推杆控制片上安裝兩個推杆固定座, 用M2螺母 固定。接着用相同的方法將其和旋轉座,POM墊片,內 六角螺絲固定于木架上。
- 56.用沉頭螺絲分別固定三個收腳架,注意底座較薄木板處 用3x10mm的螺絲,較厚的木塊處用3x16mm的螺絲。主 收腳架連接頭如有幹涉到木架,則稍作修剪。
- 57.找出球頭,2x8mm螺絲和M2螺母,接着將球頭安裝到 前輪推杆控制片左側最外孔。

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## PRE-ASSEMBLY NOTES

#### **RECOMMENDED TOOLS & MATERIALS**

#### Adhesives:

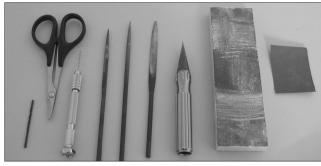
Instant setting Cyanoacrylate adhesive (thin CA) Slow setting Cyanoacrylate adhesive (thick CA) 5 Minute Epoxy (fast) 20~30 Minute Epoxy (slow)



You will need two types of adhesives for the Mu-24, Epoxy and Instant (cyanoacrylate) adhesives. We recommend that you purchase both 5-minute and 30minute epoxy to cut down on assembly time, but you can get by with only 30-minute epoxy if time is not important. You will also need a small bottle of both "Thick" and "Thin" instant CA adhesive.

#### Tools:

Model Knife, 1/2" MASK Tape, Small & Medium crew-0.7, 1,1.5 ,2 ,3 mm(1/32", 5/128", 1/16", 5/64", 1/8"), 150~200 Grid Sand Paper, Rat Tail and half-round file, Fine Felt Tip Pen & Soft Lead Pencil, Reamer, Hex Wrenches.



Model assembly can be much easier if the proper tools are used. Therefore, we have included in our checklist as left, a complete listing of all the tools we used to assemble our prototype models.

## **ITEMS YOU MAY NEED**



No.AT6078 Remote Glow Plug Extension



No.1115 - Precision Valve



No.2980 4-cell 3600mAh Battery

#### R/C System:

Helicopter:

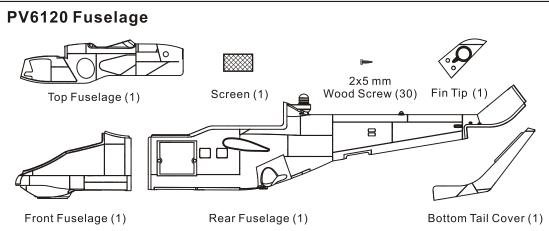
6 Channel Heli radio reg'd GYRO system reg'd



## **PARTS DRAWINGS**



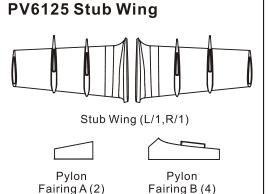


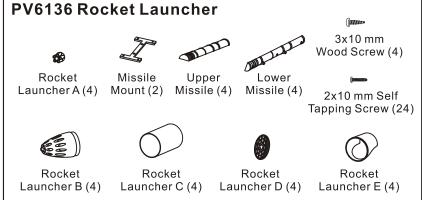




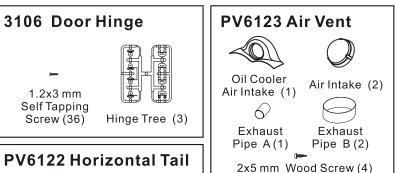


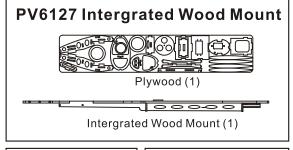
Fuel Line (1)

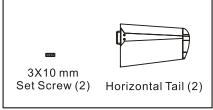




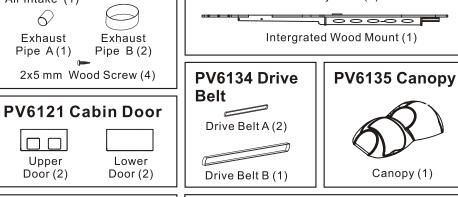


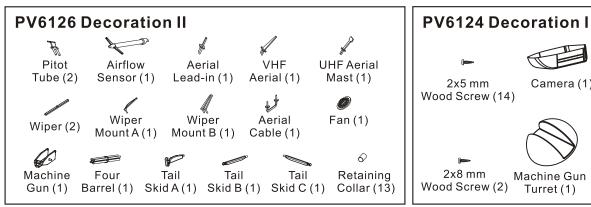




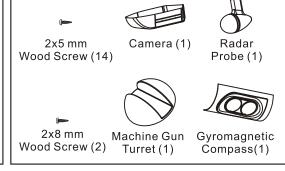


Fairing A (2)

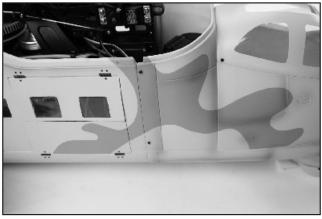




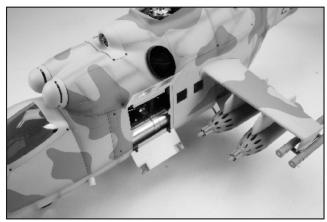
4



**Mu-24** 



110. Trail fit the front fuselage in place, decide the mounting holes( at least 6) then drill 1.5mm(1/16") holes. Secure the front fuselage in place with 2x5mm wood screws.



111. Finally place top fuselage in place, decide eight mounting holes. Same way to drill 1.5mm(1/16") holes and secure with 2x5mm wood screws.

#### **TEST FLIGHT**

- 1. Check the Gyro and make sure the tail pitch works correctly.
- 2. Try to keep rotor speed at approximately 1700~1800 RPM when hovering.
- 3. Check the helicopter and fuselage to see if any screw loosened after each fight.
- 4. Trim the elevator when switch on the idle for speed flight if necessary.

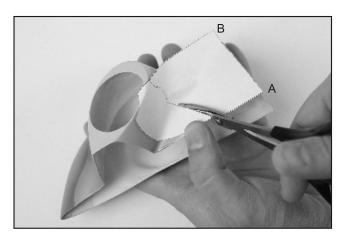


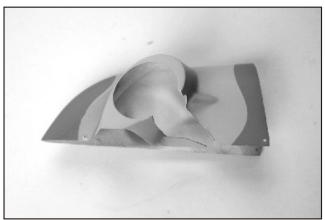


105.Use reamer to drill two holes at the molded lines of the fin tip, these holes are for the screws on tail transmission box which contact the fin tip.

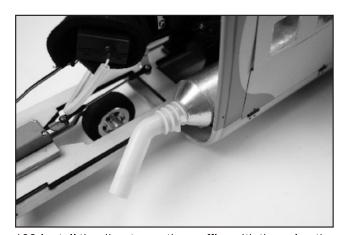


107. Finally secure the fin tip in place with eight pieces 2x5mm setscrews.

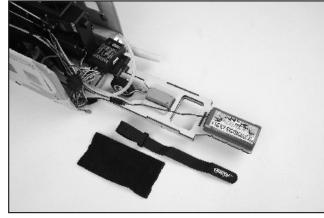




106. Use the template at page 27, place the template as indicated position then use pencil to make marks on the fin tip. Trim the fin tip along with the marks about 1mm inside then fit to the fuselage. Do this step for times to get a neat job.



108.Install the diverter on the muffler with the nylon tie. Turn about 30-degree to the side fuselage then trial fit the front fuselage and drill a hole for diverter to go out the fuselage.



# **Mu-24**

**PV6129 Retract** 

Shim

Window

Side Window (F/4,B/4)

Socket Screw (2)

## **PARTS DRAWINGS**

3x8 mm

Socket Screw (1)

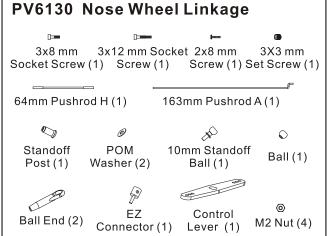
3x12 mm Socket

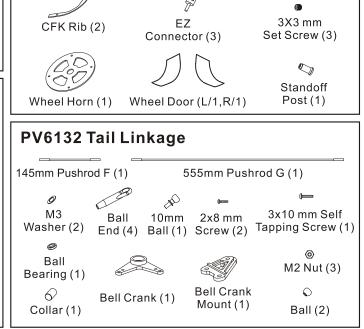
Screw (1)

**PV6131 Wheel Linkage** 

150mm Pushrod B (1)

M2 Nut (6)

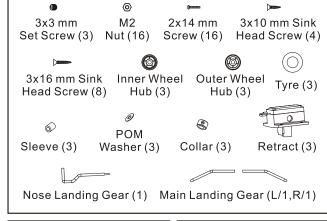




Pushrod C (2) 70mm Pushrod D (1) 102mm Pushrod E (1)

POM

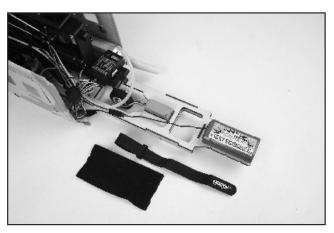
Washer (2)



(0)

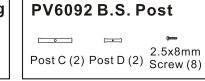
Lock





109. Correctly connect the servo wires to the receiver as shown. Next secure the battery and receiver with the belt and foam pad(Not included).

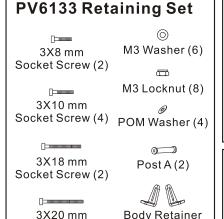




**Bevel Gear** 

**PV6089 Tail Drive** 

Pin (2) Bevel Gear (2)



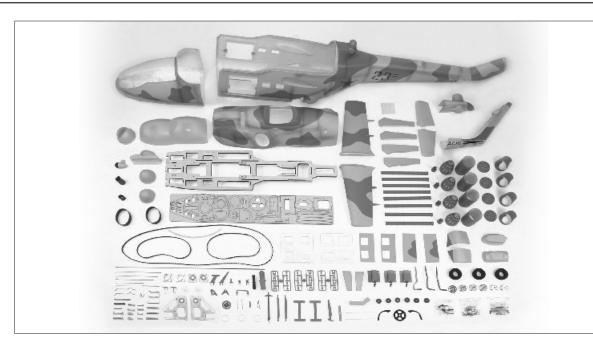
(L/1,R/1)











#### **Kit Contents**

Fin Tipr (1)

Screen (1)

Nylon Tie (1)

Fuselage Top Fuselage (1) Front Fuselage (1) Rear Fuselage (1) Bottom Tail Cover (1)

**Exhaust Diverter** 

Diverter (1) Silicone Fuel Line

Fuel Line (1) **Door Hinge** 

1.2x3 mm Self Tapping Screw (36) Pom Washer (4) Hinge Tree (3)

Horizontal Tail

3X10 mm Set Screw (2) Horizontal Tail (2) Air Vent

Oil Cooler Air Intake (1) Air Intake (2) Exhaust Pipe A (1)

Exhaust Pipe B (2) 2x5 mm Wood Screw (48)

Cabin Door

Upper Door (2) Lower Door (2)

**Rocket Launcher** 

Missile Mount (2) Upper Missile (4) Lower Missile (4) Rocket Launcher A (4) Rocket Launcher B (4) Rocket Launcher C (4)

Rocket Launcher D (4) Rocket Launcher E (4) 3x10 mm Wood Screw (4)

2x10 mm Self Tapping Screw (24)

**Drive Belt** 

Drive Belt A (2) Drive Belt B (1) Tail Linkage

Ball (2) 10mm Ball (1) Ball End (4) Ball Bearing (1) Collar (1) Bell Crank (1) Bell Crank Mount (1) M2 Nut (3) M3 Washer (2) 2x8 mm Screw (2) **Retaining Set** 

Body Retainer(L/1,R/1) Post A (2) M3 Locknut (8) M3 Washer (6) 3X8 mm Socket Screw (2)

3X10 mm Socket Screw (4) 3X18 mm Socket Screw (2) 3X20 mm Socket Screw (2)

Retract Inner Wheel Hub (3) Outer Wheel Hub (3)

Tyre (3) Sleeve (3) POM Washer (3) Collar (3)

Retract (3) Nose Landing Gear (1) Main Landing Gear (L/1,R/1) M2 Nut (16)

2x14 mm Screw (16) 3x3 mm Set Screw (3) 3x10 mm Sink Head Screw (4) 3x16 mm Sink Head Screw (8)

Stub Wing Stub Wing (L/1,R/1) Pylon Fairing A (2) Pylon Fairing B (4)

Canopy Canopy (1) Linkage

163mm Pushrod A (1) 150mm Pushrod B (1) Pushrod C (2) 70mm Pushrod D (1) 102mm Pushrod E (1) 145mm Pushrod F (1) 555mm Pushrod G (1) 64mm Pushrod H (1) 2x8 mm Screw (1) 3X3 mm Set Screw (4) 3x10 mm Self Tapping Screw (1) 3x8 mm Socket Screw (2) 3x12 mm Socket Screw (2) Support Mount (1) M2 Nut (10)

POM Washer (4) EZ Connector (4) Standoff Post (2) 10mm Standoff Ball (1) Ball (1)

Ball Ènd (2) Control Lever (1) CFK Rib (2) Wheel Horn (1) Wheel Door (L/1,R/1)

**Decoration II** 

Pitot Tube (2) Airflow Sensor (1) Aerial Lead-in (1) VHF Aerial (1) UHF Aerial Mast (1) Wiper (2) Wiper Mount A (1) Wiper Mount B (1) Aerial Cable (1) Fan (1) Machine Gun (1)

Four Barrel (1) Tail Skid A (1) Tail Skid B (1) Tail Skid C (1) Retaining Collar (13)

Side Window Side Window (F/4,B/4) Hardware

Shaft (L/1) Shaft (M/1) Shaft (S/1) Pin (6) Bearing Support (2) Bearing Block (2)

Pulley (4) Flange (2) Metel Flange (1) Pipe (1) Lock Collar (2) Bevel Gear (2) Spacer Ring (1.8, 1.9,

2.0mm thickness) Spacer Ring (1) Rear B.B Frame (2) Doubler (4)

Standoff (8) Post B (2) Post C(2)

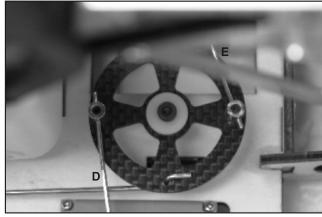
Post D(2) Shim Washer (2) M3 Washer (26) M3 Locknut (6)

2.5x8mm Screw (8) 3x3 mm Set Screw (4) 3x8mm Socket Screw (12) 3x10mmSocket Screw (2) 3x45mm Socket Screw (4)

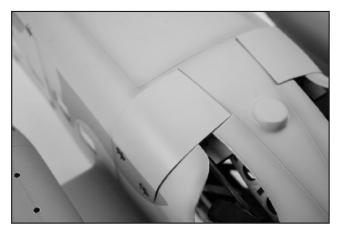
**Decoration I** 

Camera (1) Radar Probe (1) Machine Gun Turret (1) Gyromagnetic Compass(1) 2x8 mm Wood Screw (2)

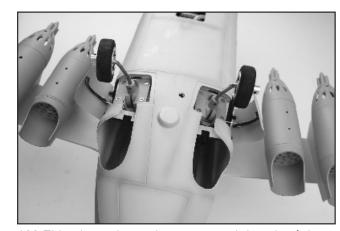
**Intergrated Wood Mount** Plywood (1) Intergrated Wood Mount (1)



98. Check the action of the wheel doors if they are works fine with retract. Adjust the pushrod to reach this setting. Secure the 3x3mm set screws when satisfied.



99. This photo shows the wheel doors are will closed.



100. This photo shows the retract and the wheel doors are will opened.



101. Trail fit the tail cover in place, trim it if necessary. Decide the mounting position then drill 1.5mm(1/16") pilot holes. Next secure the tail cover in place with 2x5mm wood screws at least 6 pieces.



102.Locate two horizontal tail halves and 3x10mm setscrews. Drill 2.6mm holes in the middle position of the tail root as shown. Screw in the 3x10mm setscrew and leave about 5~6mm outside the tail.



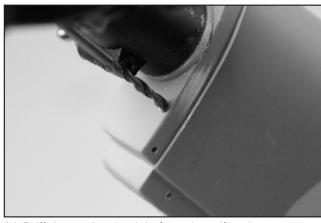
103.Drill 3mm( 1/8") hole at the tail fuselage well so it will accommodate to the setscrew on the horizontal tail halves.



104. Sand the glue area then epoxy the two halves in place, make sure the tail halves are even and perpendicular to the vertical tail and same angle to the stab wing if you see from the rear.







91. Drill the pushrod exit hole at the tail end.



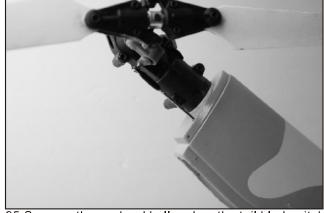
92.Install the ball bearing and collar in the Bell Crank next secure the bell crank on the Bell Crank Mount with two M3 washers and 3x10 self tapping screw. Make sure bell crank moves freely. Next install the two balls on the bell crank with 2x8mm screw and M2 nuts. Two balls are on the different sides as shown.



93.Remove the two screws on post C then install the bell crank on the bearing support as shown. Now you can secure the bearing support firmly in place. Do not forget to apply Loctite. Next assemble the pushrods and snap onto the balls on bell crank.



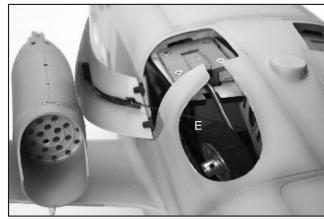
94. Snap on the pushrod ball end on the rudder servo. Adjust it at the servo neutral position.



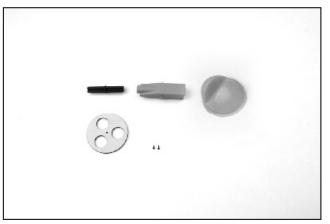
95. Snap on the pushrod ball end on the tail blade pitch control level. Adjust tail pitch as you test flight the Titan.



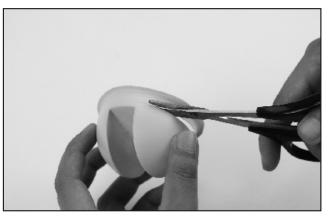
96.Once satisfied with all set up and rear belt tension, apply the thick CA to secure the ring and pipe in place and apply enough epoxy to fix the pipe in place from the inside of the tail. Note: do not apply any glue on the belt.



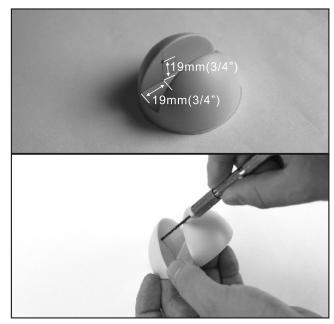
97.Check the retract gear make sure the wire and wheel are not contact the fuselage when it works. Trim it if necessary. Now you can install the wheel door pushrod(D,E), insert the Z-bent end of the pushrod to the hole then connect to the wheel horn. Do the same on the other door.



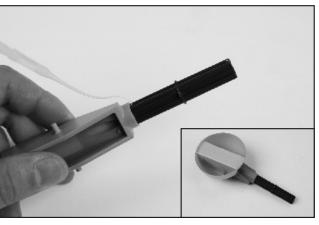
1.Locate the Machine Gun, Four-Barrel, Gun Turret, Turret Base, 2x8mm wood screws (2pcs) as shown.



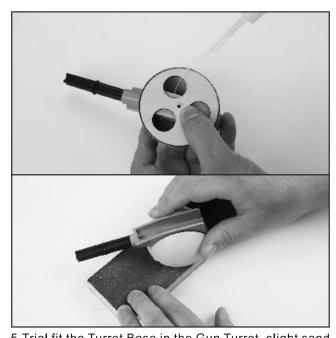
2. Trim the Gun Turret along with the molded line.



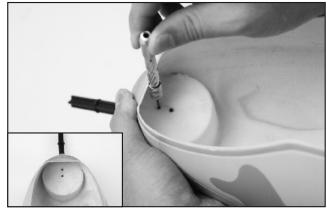
3. Drill two pilot holes on the Turret as indicated position then enlarge up to 3mm(1/8") in diameter.



4. Glue the Four-Barrel on the Machine Gun then install the machine gun in the Turret. Note the orientation that machine gun opening is facing down.



5. Trial fit the Turret Base in the Gun Turret, slight sand the contact area to improve the adhesion. Then epoxy the base in the turret. You may need to sand the base to make sure it is level with the rim.

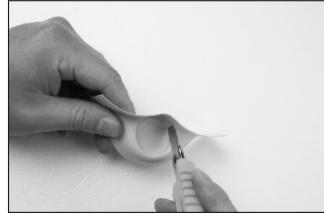


6.Secure the Machine Gun assembly onto the nose bottom of the front fuselage with two 2x8mm wood screws.

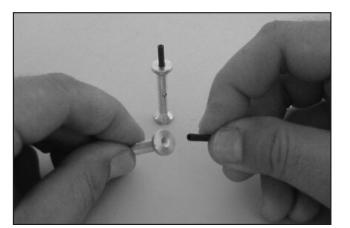




7.Trim the Camera and trial fit to the position, secure it in place with four 2x5mm wood screws. Trim the predrilled hole and trail fit the Radar brace in the hole. Sand the glue area of Radar brace (at least 10~12mm suggested) to increase the adhesion. Apply enough epoxy from the inside of front fuselage at the area to secure the Radar in place properly.



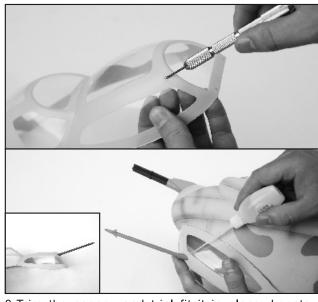
10.Locate a Oil Cooler Air Intake, carefully cut away the middle portion with hobby knife.



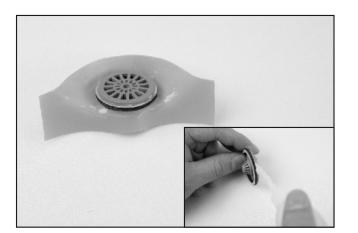
84.Remove the old post and thread old setscrew in the new post A.



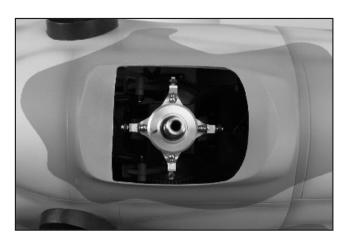
87. Sand the pipe so it can enhance the adhesion. Do not glue the ring until step 96.



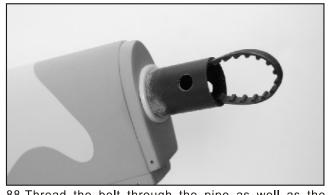
8. Trim the canopy and trial fit it in place. Locate a molded dot then drill 2mm hole on the canopy for the airflow sensor. Install the airflow sensor in place and secure with a collar by CA instant glue. Make sure airflow sensor is level with the fuselage when canopy is on the fuselage.



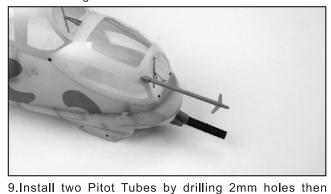
11.CA the plywood Ring on the plastic Fan first then glue the fan assembly in the Oil Cooler. Slightly sand the glue area of these parts before gluing.



85.Place the top fuselage in position and check if swash plate contacts the top fuselage. If yes then you need to adjust retainer in next step to keep swash plate in the middle.

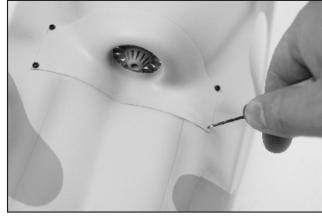


 $88. \mbox{Thread}$  the belt through the pipe as well as the spacer ring in place.

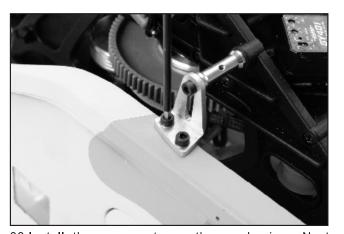


insert the pitot tube in place and secure it with collars by CA instant glue. Drill mounting holes on the canopy and fuselage with 1.5mm drill bit then secure the canopy with six 2x5mm wood screws. Drill 1mm holes for the wiper mount A and B. Note the Wiper Mount A is installed on the lower windshield of the canopy and the mount B is on the upper windshield. CA the wipers in

place.



12. Trail fit the Air Intake assembly on the top fuselage. Next drill 1.5mm holes then secure it in place with four 2x5mm wood screws.



86.Install the new posts on the mechanism. Next secure the body retainer with 3x8mm socket screw then make marks on top fuselage. Adjust the retainer just contact the fuselage then make marks at the retainer mounting holes. Drill holes on the marks you drew then secure the retainer in place with two 3x10mm socket screws. Do the same on the other side.

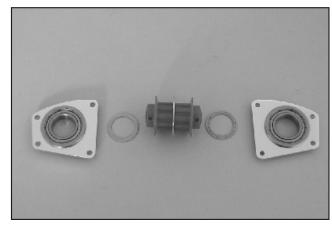


89. Trail fit the tail case in place as photo shown.



90.Exam the belt tension from the bottom. Change different thickness of the ring if belt tension is not good enough.

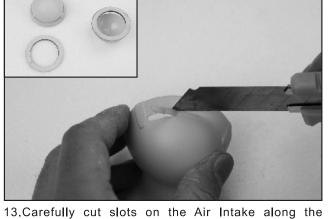




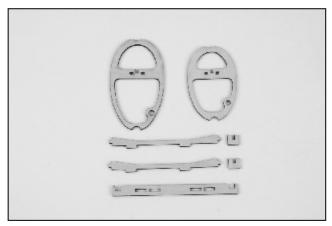
78.Install the dual pulleys as shown. Locate the Bearing Support and shim washers.



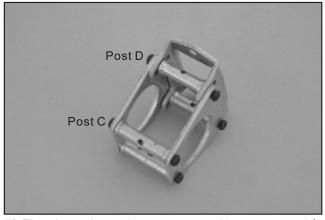
81. Move the mechanism all the way in then try to get the long belt. Refer to step 79 and assemble the pulley with the belt in the bearing support. Before securing the bearing support in place you will need trim four holes on the tail at the molded line. These holes are for screw drivers to go through to secure the screws.



13. Carefully cut slots on the Air Intake along the molded lines. Locate the two big plywood rings then trail fit in the air intake. Trim the ring and fit it in the air intake so the ring is level with the rim. Next glue the ring in place with instant CA glue.



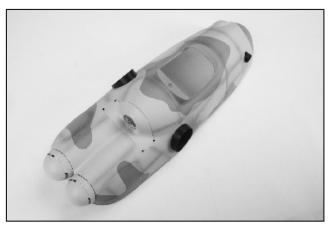
16.Locate plywood parts as photo illustrated.



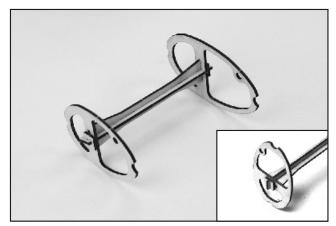
79. The photo shows the structure and how to assemble the posts (C, D) on the bearing support. (The photo shown without bearing) You will have to finish the step 81 before assembling the posts.



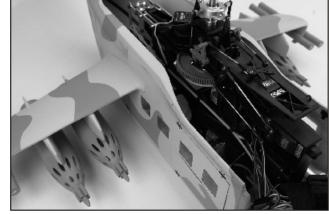
82. Temporally secure bearing support all the way to the front in place. This step is very important before you glue the integrated wood mount in place.



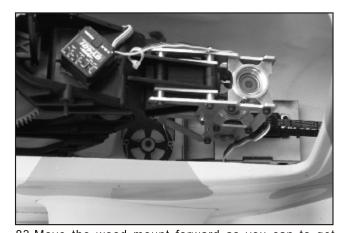
14.Glue the air intake assemblies on the top fuselage in place. Next locate the exhaust pipes and use the same way to fit them in place then secure the pipes in place with epoxy. Note the pipes are toward down when gluing.



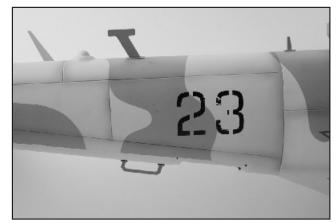
17. Trail fit the plywood parts then glue them together firmly as shown. Note the orientation of the bulkhead.



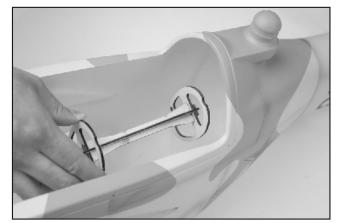
80.Remove the main rotor head before doing this step. Carefully slide the mechanism into the fuselage and trial fit in the place. You will need do this step couple times and try to locate the right position. Sand the wood mount and contact area of fuselage but do not glue at this moment until finish the step 83.



83. Move the wood mount forward as you can to get good tension of the long belt. Make marks then remove the bearing support. Now you can glue the integrated wood mount in place. This way is to ensure once long belt is extended then you still have room to adjust the tension at the bearing support. Once cured, temporally secure the bearing support and adjust the belt at good tension.



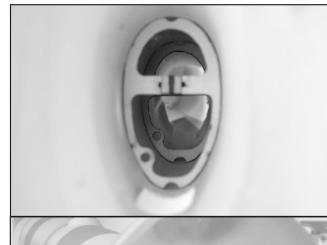
15.Install the scale fittings on tail fuselage includes Aerial Lean-in, VHF Aerial, UHF Aerial Mast and Aerial Cable. Drill 2mm holes at the proper position then secure the fittings firmly with collars as shown. Then glue them in place.



18.Slightly Sand off the black burn area of the bulkheads then trail fit the tail bulkhead assembly in the fuselage.

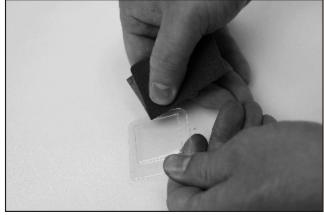




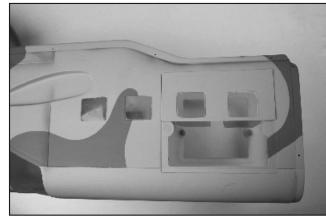




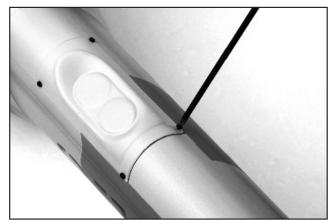
19.Positioned behind the side opening of the tail fuselage. Slightly sand the glue area to increase the adhesion then epoxy the bulkhead assembly in place as shown. Epoxy the metal screen in place from the inside of the side fuselage.



21.Locate the side windows, note there are four pieces with wider flange for front cabin door. Trail fit the windows in the place then slightly sand the flange, glue area on the fuselage and side door to increase the adhesion.



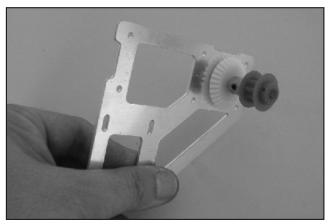
22. Epoxy the windows in place firmly. Note the front windows with wider flange should be toward down as shown. Trim away the flange where might contact the magnet.



20.Locate the Gryomagnetic Compass vacuum part, then drill 1.5mm holes at the four corners then secure the compass in place with four 2x5mm wood screws.



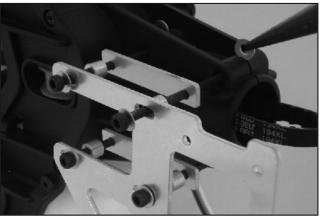
23.Locate the Door Hinge tree, remove the hinges from the tree and trim the flashing of the hinges. Assemble the hinge together as shown. Note the orientation and make sure each hinge moves freely after assembly.



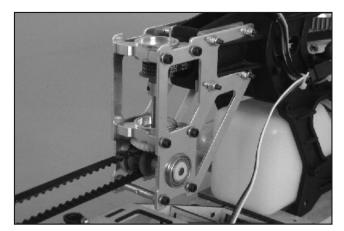
72.Install the gear/pulley on the Rear Bearing Frame.



75.Suggested to use the muffler(PV0109) which comes with Titan, if user use other brand muffler then the muffler may contact the fuselage or wood mount, even contact the servos. Remove the muffler and install the muffler reversely. Well connect the pressure tube to the fuel tank. (Titan SE includes a black muffler which will contract the servo and need to replace a silver one)



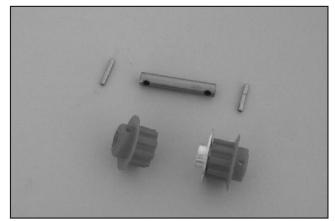
73.Install rear frame on the Titan with furnished the aluminum doublers, standoff. Do not secure at this moment. You will need four 3x45mm socket screws, eight standoffs, eight M3 washers and four M3 locknuts.



76.Install the long belt, bearing block, bevel gears, pulley and post B as shown. You will need twelve 3x8mm socket screws, twelve M3 washers. Try to move backward of the frame when securing the rear frame so the short belt has good tension. Test driven the belt and make sure the gear works smoothly.



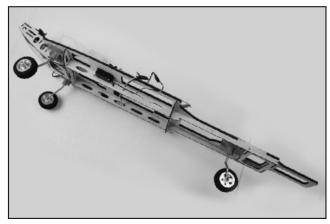
74. Trail fit the Titan 50 mechanism on the integrated wood mount, secure the mechanism with Socket Screws( 3x20mm for the front holes, 3x18mm for the rear holes), POM washers and M3 Locknuts.



77.Locate the rest pulley parts includes two pulley, one AL. flange, 2 pins and short shaft.



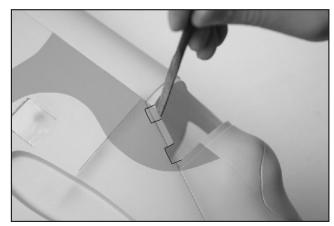




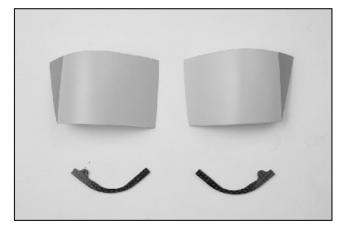
66.Install the POM washer then the wheel on the wire. Secure the wheel with wheel collar and 3x3mm setscrew. Same procedure on the other two wheels.



69.Install the bevel gear on the long shaft with the pin.



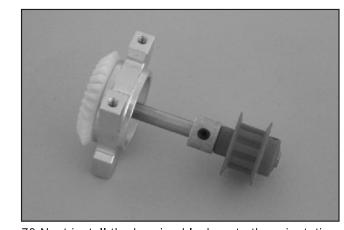
24. You will need to trim the area where is going to install the hinge. Look into the photo and use small flat file to do the Cut-out.



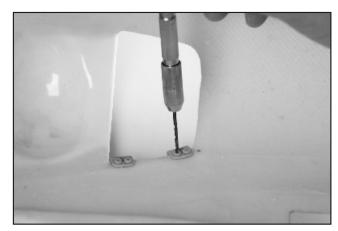
27.Locate the wheel door then trim along the molded line. Trail fit them to the fuselage bottom and trim the door if necessary.



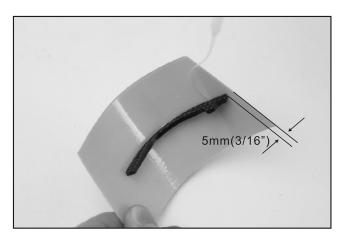
67.Remove the tail boom and old belt. Install the new short belt as shown.



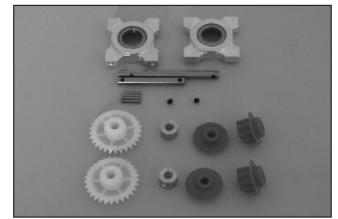
70.Next install the bearing block, note the orientation. Insert a collar then the pulley. Insert the pin on pulley, make sure pulley and pulley flange join together then secure the collar with 3x3mm setscrew.



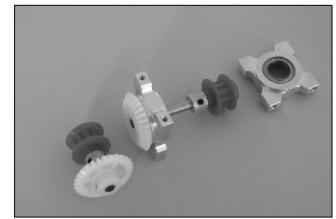
25.Place hinges in place and use the hole on hinge as the drill guide to drill 0.7mm( 1/32")holes. Carefully apply CA the hinge in place for easy assembly. Make sure the hinges are aligned. You may need to seep lubricant oil in the hinge pivot so two hinge halves will not be glued together.



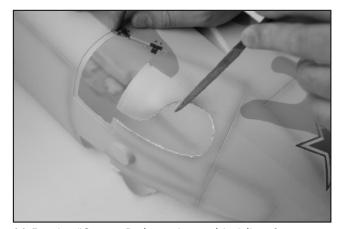
28.CA the Carbon Fiber Rib to reinforce the wheel door. Sand the glue area before you apply the CA. Note the orientation of the CFK rib and the rib end must be located away from the hinge line 5 mm(3/16).



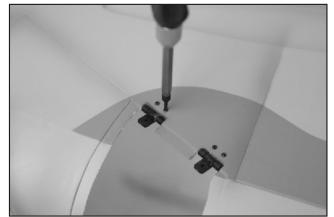
68.Locate all the transmission bevel gear, pulleys, shafts, pin, bearing blocks and stop collars as shown.



71. Same way to install the bevel gear and pulley on shaft(middle length).



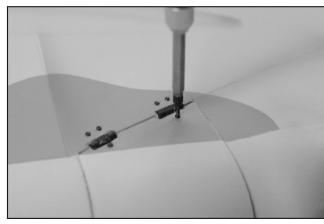
26.Do the "Cut-out" along the molded line for retract gear on the bottom fuselage. A half-round file will help on doing this. Do the same way on the other retract gear area.



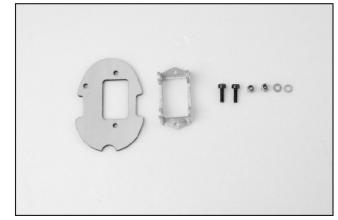
29. Secure the hinges on the fuselage with 1.2x3mm self tapping screws. Next place the wheel door in the position so you can use the hinge as the guide to determine the "Cut-out" and mounting holes.



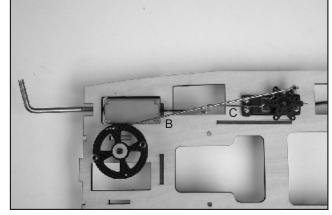




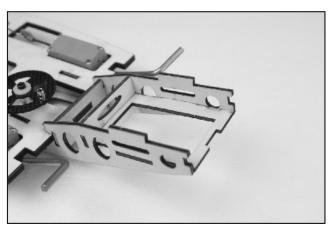
30.Trim two "Cut-outs" and drill the pilot hole for the wheel door. Secure the wheel door on the fuselage with two 1.2x3mm self tapping screws. Make sure the wheel door works freely. Do the same procedure on the other wheel door.



33.Locate the tail bulkhead, Support Mount, 3x10mm Socket Screws, M3 Locknut and washers as shown.



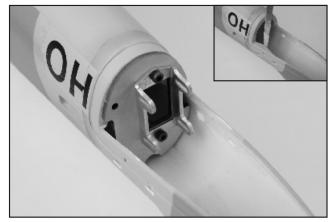
60.Same way to adjust the upper retract servo. Link retract first with pushrod C then the wheel horn with pushrod B. We will install the wheel door pushrod and adjust them later. Make sure three retracts work simultaneously.



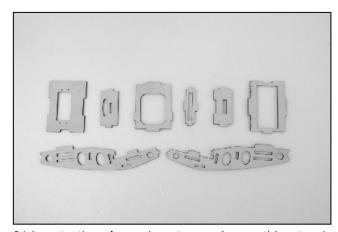
63. Turn over the integrated wood mount then glue the other piece of bottom frame as shown.



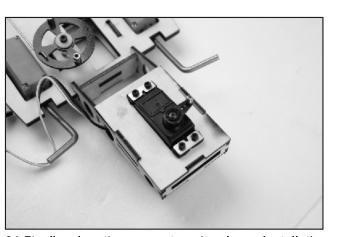
31.Same way to install the hinges on the fuselage and side doors. Make sure the side doors fit to the position. Do the "cut-outs" for hinges both on the fuselage and side door then secure the hinges with 1.2x3mm self tapping screws.



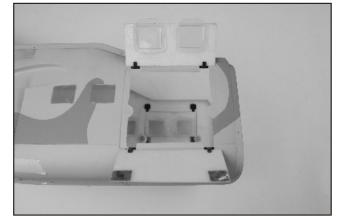
34. Sand the area as shown. Secure the support mount on the tail bulkhead with the socket screws, washers and locknuts. Next trial fit in the place as shown. Epoxy the support mount in place. Note the orientation and sand the glue area before applying the epoxy.



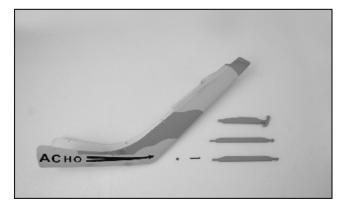
61.Locate the plywood parts as shown, this step is going to do the rudder servo frame.



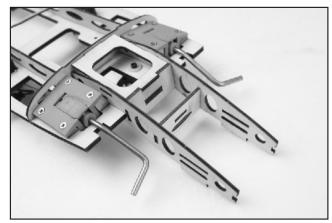
64. Finally glue the servo tray in place. Install the rudder servo in the servo tray and secure with the servo plate and the screws which comes with Titan.



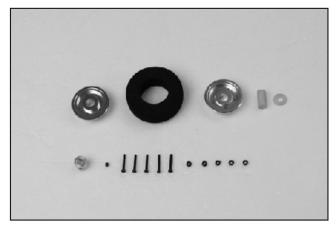
32. Make sure the side doors works freely and the magnets could keep the door close firmly. If the door is not close firmly then you will need to adjust or trim the side door. Do the same procedure on the other side doors.



35.Locate the Bottom Tail Cover, Tail Skids, one M2 Nut and one 2x14mm screw.



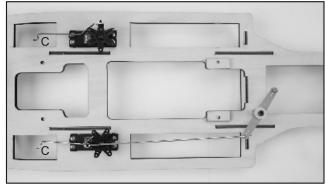
62. Trail fit the two side frames to the integrated wood mount then the bulkheads and bottom frame as shown. Glue them in place when satisfied either with epoxy or thick CA.



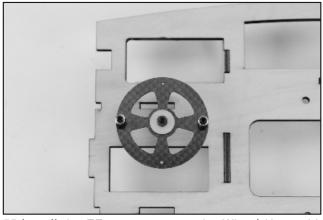
65.Locate the wheel parts as shown. Install the hub in the tire with 2x14mm screws and M2 nuts. Insert the sleeve in the hub.



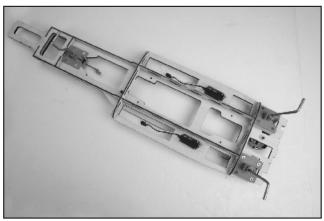




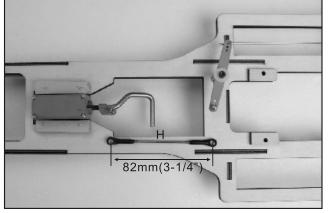
54.Install the retract servo( suggested Futaba S3170G), use the grommets, eyelet and wood screws to secure the servo in place. Note the orientation of the servo output shaft. Install the EZ connector on the servo horn, you may need to enlarge the hole on the servo horn to 2mm in diameter then secure with two M2 nuts. Attach the horn to the servo and connect the pushrod C. Temporally secure the pushrod A with 3x3mm setscrew. We will adjust it the linkage later. Same way to install the other servo.



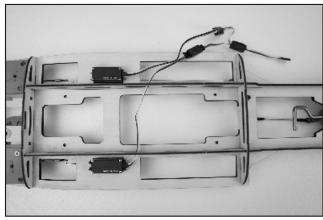
55.Install the EZ connectors on the Wheel Horn with M2 nuts. Next similar way to install the nose gear control level, secure the wheel horn on standoff post with POM washers and socket screws.



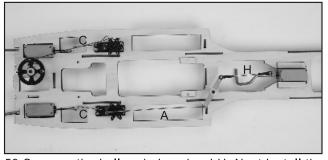
56. Now you can secure the three retracts in place with sink screws. There are two different size sink screws, for lower wood mount use the 3x10mm; for higher wood mount use the 3x16mm. The connector of main retract may very close to the plywood, trim it if the connector contacts.



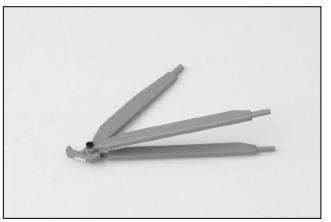
57.Locate the Ball, 2x8mm screw and M2 Nut then install the ball on the nose gear lever at the left outmost hole. Locate the Standoff Ball and M2 Nut then install the standoff ball on the retract connector. Note the connector orientation as photo shown. Locate the Ball Ends and 64mm pushrod H, thread in the ball ends at the pushrod two ends and adjust the two ball end is about 82mm(3-1/4") of two ball end center.



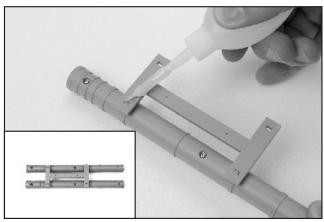
58. You will need a Y horn to connect two retract servo wire. Connect to receiver CH Aux 1 and set up Aux 1 with the retract function and choose a tackle switch to control retract in your transmitter.



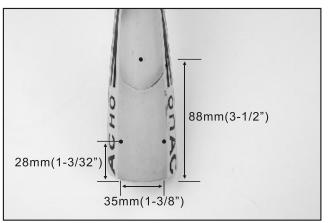
59.Snap on the ball ended pushrod H. Next install the main retract gear pushrod C. Thread the Z bent end to the connector of the retract first then the servo horn. Note the pushrod orientation. Adjust the bottom retract servo in the photo, first check the main gear retract and you may adjust the link of retract to reach a good connection without binding. Next check the nose gear retract, either adjust the pushrod A near the servo or the ball end pushrod H. Once satisfied secure the pushrod with 3x3mm setscrews.



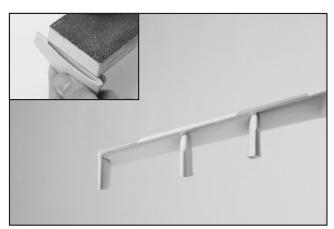
36.Assemble the Tail Skid as shown, secure the skids with 2x14mm screws and M2 nut.



39.Locate the Missile halves, secure the upper and lower halves together with three 2x10mm self tapping screws. CA the missiles on the missile mount.



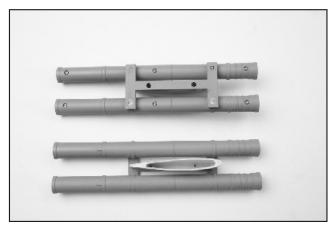
37.Place the tail skid assembly on the tail cover at the proper position. Make marks for the drilling holes.



40.Locate the Pylon Fairings, trial fit to stub wing and you will need to trim the pylon fairing A make sure fairings are parallel with each other. Don't glue at this mount.



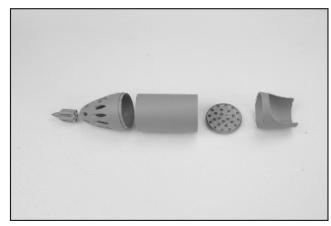
38.Suggest to drill 3mm(1/8") holes first then trial fit the skid assembly on the cover. Due to the skids are not vertical, you may need to trim the front two holes as the ellipse for easy access. Apply enough amount of epoxy on the inside of tail cover to secure the tail gear in place firmly.



41.Now trail fit the pylon fairing A in the center of the missile mount then apply CA. Make sure the pylon is parallel to the missiles and perpendicular to the missile mount. Use the holes on the missile mount as the guide and drill 1mm pilot hole on the pylon, secure the pylon with 2x10mm self tapping screws.







42.Locate the Rocket Launcher parts as shown, trim and fit each parts before applying the CA glue. Total 4 sets of rocket launchers.

25mm(1")

Top

drivers and screw head can go through.

30mm(1-3/16")

43. Draw a center line on the top of rocket launcher, drill 1.5mm(1/16") holes on the top as indicated. Same way

to draw a center line on the bottom of rocket launcher

but drill 4mm(5/32") holes on the bottom so the screw

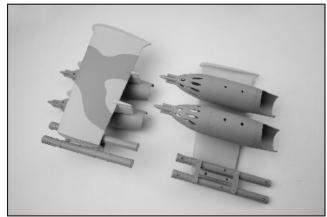
**Bottom** 



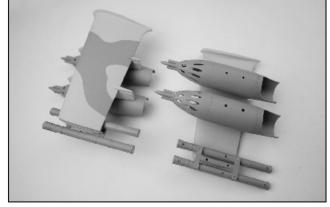
two 2x10mm self-tapping screws. A magnetic Phillips screw driver will help to reach the hole inside the rocket



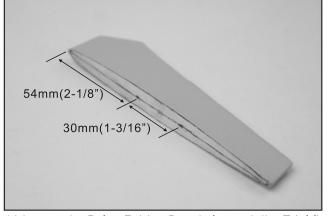
launcher. Do the same procedure on the other three.



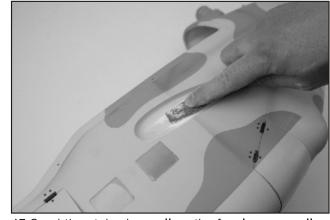
46.Both sand the glue area of Stub Wing and Pylon the rocket launchers and missiles properly.



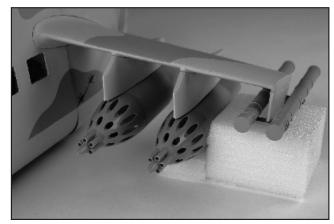
Fairing. Trail fit the rocket launcher assemblies and missile assembly under the stub wing. Take times to epoxy the pylons and make sure the pylons are parallel with each other. Note the pylons are not perpendicular to the stub wing, check the photo of step 40 and glue



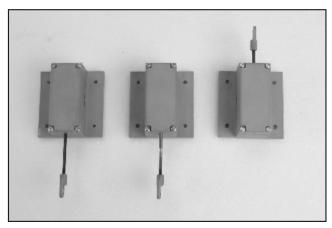
44.Locate the Pylon Fairing B and plywood rib. Trial fit and sand the glue area of the rib and pylon fairing. Remove the rib and apply enough amount of epoxy then glue the rib in place. Make sure the rib is level with the opening edge of pylon fairing. User may use the mask tape to circle the pylon fairing, this will help to keep the fairing clean. After it cured, draw a center line and drill two 1mm (1/32") pilot holes at the indicated position.



47. Sand the stub wing well on the fuselage as well as the glue area on the stub wing root.



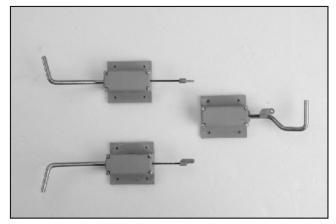
48.Let the fuselage sit on the table, trail fit both two stub wings in place. Adjust the two wings are at the same angle (use some blocks or books to hold the wing in place) then apply enough epoxy and secure them in place. Wipe off the excess epoxy. User may use the mask tape to keep model clean.



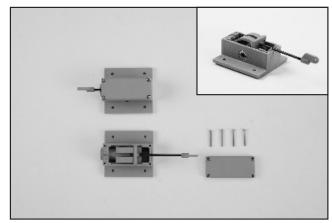
51. Place the cover back and make sure it works freely before you secure the cover. Note: it will not work freely if the pushrod is not installed properly.



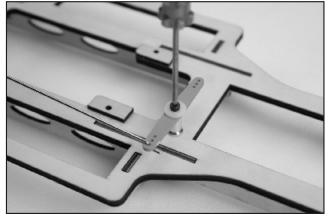
49.After epoxy cured, drill 2mm holes in the well as shown. Use short screw driver and secure the stub wings firmly with pour 3x10mm Wood Screws.



52.Locate the retract gear wires then push the wire all the way in. Secure the wire with the two setscrews which are in the shaft of the retract with 2mm hex wrench. Do not forget to apply Loctite to make sure set screws will not loose in the flight.



50.Locate three retracts, user needs to change the pushrod direction of two retracts. Remove the cover then change the pushrod to the other side.



53. Secure the Standoff Post in place with 3x12mm Socket Screw and POM Washer. Next insert the z bent end of the nose gear pushrod A to the outmost hole of the control lever. Finally secure the lever on the post with 3x8mm Socket Screw and POM Washer. Make sure control level move freely.