Compass

Odin 90

Assembly Manual

Version 1.0
Created : 11/24/2008

* Electric Cooling System
* Super Light
* Hardened hollow main shaft.
* Dual pin tail rotor pitch system
* Thrust bearings built in tail grips.
* CCPM swash controls
* Quick to build
* Hardcore 3D out of box
* Fully Ball-Raced.
* +/-13° collective pitch range for extreme 3D
* Extra tough frame design.
* Vibration insolation engine mount.
* High efficiency direct belt drive system.
* High CG design.

*电驱动冷却系统
*超轻设计
*加硬空心主轴
*两点支撑尾螺距机构
*尾桨夹含压力轴承
*CCPM 控制系统,反应更快
*拆装维修容易
*无需升级即具备全面3D飞行能力
*全方位轴承润滑
*+/-13度大桨螺距范围
*超强主架结构
*独创避震引擎架
*高效传动系统
*高重心设计

Gear Ratio: 1:8.0:4.8
Blade Length: Up to 710mm
Engine: 91 size
Take-off Weight (no fuel): 4.08kg
Rotor Diameter: 1590mm
Length: 1330mm

传动比: 1:8.0:4.8
大桨: 710mm或以下
引擎: 91 级别
起飞重量: 4.08kg
旋翼直径:1590
全长:1330毫米

As we continue to improve our products. This manual may not reflect all recent product amendments. Please refer to the received product and check our website: www.compassmodel.com
由于产品不断更新,此说明书或有错漏,请参照实物及我公司网页:
www.compassmodel.com
不便之处,敬请原谅.

Introduction / 简介

Thank you for choosing the Odin90 and welcome to Compass Model. The Odin90 has been designed to offer outstanding performance. A unique electric cooling system saves engine horse power which is used for the main blades. The Odin uses anti-viberation system applied in the Knight 3D to minimize the potential damage vibration could cause. With a take-off weight close to 9 pounds, Odin90 is one of the lightest 90 size nitro heli model in the world. Odin inherited the same strong frame design and precise head system shared with all Compass Model products. With one of the best power to weight ratio, Odin90 can easily handle any 3D maneuver. The Odin90 is powerful, stable, agile as well as accurate, all traits shared by all other Compass Model products. The simple layout features light weight, low parts count and raised the centre of gravity. Please read the complete manual before assembly. Please take careful note of all precautions and assembly tips. Please also keep the manual as a reference for part numbers and reassembly following maintenance.

多谢选用Compass的产品。在坚实的单侧板结构基础上，Odin90 采用独创的电风扇冷却系统从而使发动机的马力更多的分配到主旋翼上，发动机架采用减震设计，减小了由于震动造成的各种问题。简洁的机械控制机构设计进一步提高了控制稳定性以及马力体重比。请在装配之前仔细阅读本说明书，并保存以备后用。

AMA Information

We strongly encourage all prospective and current R/C aircraft pilots to join the Academy of Model Aeronautics. The AMA is a non-profit organization that provides services to model aircraft pilots. As an AMA member, you will receive a monthly magazine entitled Model Aviation, as well as a liability insurance plan to cover against possible accident or injury. All AMA charter aircraft clubs require individuals to hold a current AMA sporting license prior to operation of their models.
For further information, you can contact the AMA at:

Academy of Model Aeronautics
5151 East Memorial Drive
Muncie, IN47302

Warning / 重要声明

This radio controlled helicopter model is not a toy. It is a sophisticated piece of equipment for hobby use only.
Improper operation or assembly of this product can cause serious injury or death for both operator and spectators. This product is not recommended for use by children.
Manufacturer and Sellers assume no responsibility for using and operating this product. The customer must take full responsibility for the safe operation of this product.

遥控直升机并非玩具,而是精密复杂的休闲产品.组装,使用或操作不当都会造成严重财产损失,自己或他人身体伤害,甚至死亡.请详细阅读本说明书,切勿忽视安全.
制造商,销售商无法对使用者由于组装,维护,操作及使用不当造成的损失或伤害负任何责任. 产品一经售出,本公司将不负任何操作和使用上的安全责任.

Warranty / 保修原则

Compass Model Limited Warranty

The warranty covers defects in material or workmanship or missing components to the original purchaser for 30 days from the date of purchase. Compass Model will replace or repair, at our discretion, the defective or missing component. Defective components must be returned to us prior to replacement. Any part, which has been improperly installed, abused, crash damaged or altered by unauthorized agencies, is not covered. Under no circumstances will the buyer be entitled to consequential or incidental damages. The components used in this kit are made from special materials designed for special applications and designed strengths. We recommend that all replacement parts be original parts manufactured by Compass Model, to ensure proper and safe operation of your model. Any part used which was manufactured by any other company than Compass Model, VOIDS all warrantees of this product by Compass Model.

Compass 的保修范围包括所有在购买本公司产品时已有的缺失或损坏的零件及整机。保修期为30日，Compass有权选择修理或调换损坏或缺失的零件。该零件必须先送回Compass工厂。所有由于安装错误，过度使用，飞行事故或其他人为因素造成的损坏，Compass将不予保修。 本产品中的零件是在特定环境具有特定使用功能，切勿过度使用。切勿在本产品上使用任何其他公司生产的零件，否则Compass将不予保修。

Warranty Procedures / 保修程序

If service is required, send the component in question (if not missing) together with a photocopy of your bill of sale and an accurate description of the problem and part. Ship components fully insured and prepaid. Compass Model is not responsible for any shipping damages. We will, at our discretion notify you of any costs involved you are required to pay all postage, shipping and insurance charges.

保修时请将有问题的零件连同发票收据的影印件，以及关于问题零件的详细描述发回Compass，请预付运费以保证到达。compass会分析个案并作出妥善处理。

R/C Helicopter Safety / 遥控模型安全提示

A model helicopter must be built exactly in accordance with the assembly instructions. The kit manufacturer has spent much time and effort refining his product to make it reliable in operation and easy to build. Vibration and stress levels are high and all fasteners and attachments must be secure for safe operation. Safe operation is the responsibility of the builder/flyer and starts with careful construction and continues with selection and installation of reliable radio equipment and engine. The need for safety is nowhere greater than at the flying field. A number of guidelines for safe flight have been developed by experienced flyers and are set down here. It is urged that they be read, understood and followed.

请务必按照说明书要求装配遥控模型。 模型直升机运行时产生巨大震动及破坏力。所有零件必须牢固固定。务必使用可靠的电子设备。在飞行场地的安全运作至关重要。以下是一些专业人士给出的安全守则。请务必详细阅读并跟足提示。

Guidelines for Safe R/C Helicopter Flight

- Fly only at approved flying fields and obey field regulations.
- Follow frequency control procedures. Interference can be dangerous to all.
- Obtain assistance from experienced pilots.
- The Guidance provided by experienced pilots is valuable and sometimes necessary.
- Know your radio. Check all transmitter functions before each flight.
- Be aware that rotating blades are very dangerous and can cause serious injury.
- Never fly near or above spectators or other modelers.
- Do not fly r/c helicopter models near buildings, high voltage cables, trees or other obstacles.
- If a beginner, get help trimming the model first and flight training later.
- Don’t “track” the main blades by holding the tail boom. This is a temptation to builders who cannot hover yet and is very dangerous.
- Follow all recommended maintenance procedures for model, radio and motor.
- Only turn off the radio after the engine is shut down.

安全提示：

*务必在已批准的场地飞行，并遵守场地规则。
*务必检查频率，以免干扰，频率干扰对所有人都会造成危险。
*如果你是新手，务必需要有经验的老手的协助。
*老手提供的帮助十分必要。
*熟悉遥控器，在飞行之前熟悉所有功能。
*注意所有旋转部件特别是大桨及尾桨在运行时十分危险，可造成严重伤害。
*决不可在人头顶飞行
*不要在建筑物，高压线，树木，或其他障碍物附近飞行
*如果你是新手，飞行前调机务必要老手协助。
*飞行时与模型保持距离。
*妥善保养模型，动力设备及遥控设备。
*先关闭发动机，然后关闭发射机。

Necessary items / 必备物品

以下必备物品用户需自行购买,本产品没有提供

Inorder to operate this model, you need to purchase the following items which are not included in the package.

Note: a BEC is provided with the kit, please read the BEC manual carefuly. Some servo may require heavy duty BEC which you have to buy extra.

一个调压器已经包括在整机当中，
请仔细阅读说明书，有些舵机可能需要另为购买大电流调压器。

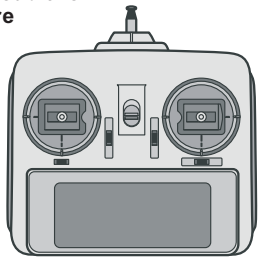
●请使用油动直升机模型专用遥控器，

伺服器5个，陀螺仪一个.

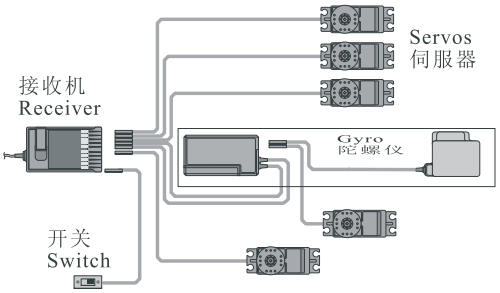
●使用方法请参照遥控器说明书.

● **A R/C Heli Model used Radio, 5 servos and 1 Gyro is needed.**

●For more information of the radio, please refer to the radio sets manual.



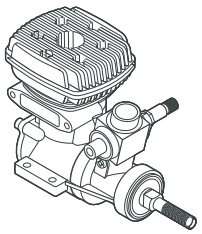
Transmitter
发射机



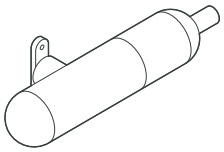
Caution

使用非油动直升机模型专用遥控设备可能造成重大事故.

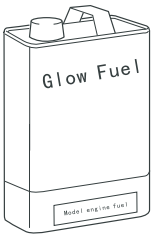
USE ONLY RADIO FOR ENGINE-POWERED HELI MODEL (ANY OTHER RADIO IS PROHIBITED!)



90 size Engine
90 级发动机



90 size Muffler
90 级排气管

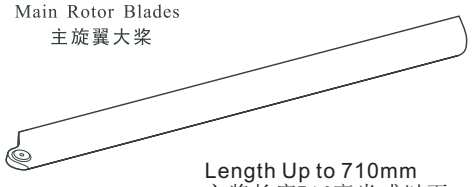


Glow Fuel
遥控模型专用燃料

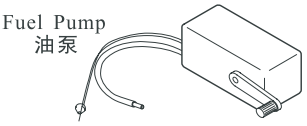
1. Use only GLOW fuel for model engines,
   *Do not use gasoline or kerosine.
   *GLOW fuel is highly flammable and explosive, always use with care!
2. Always keep the fuel and empty fuel cans away from children.
3. Never refuel before the engine has cooled down.
4. Be careful not to drink or allow the fuel in contact with eyes.

1. 只可以使用遥控模型专用燃料。
   *不可以使用煤油或汽油。
   *此燃料是高挥发性,易燃,易爆物品。使用时务必注意安全。
2. 注意保持燃料及其容器远离儿童。
3. 一定要在发动机冷却后才可加油。
4. 该燃料不可饮用,注意不要使其接触眼睛。

Main Rotor Blades
主旋翼大桨

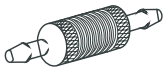


Length Up to 710mm
主桨长度710毫米或以下

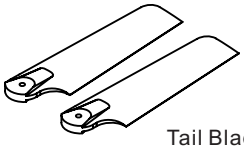


Fuel Pump
油泵

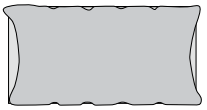
Starter Shaft
启动头



Fuel Filter
滤油器



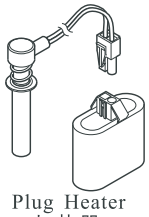
Tail Blades 105mm
尾桨105毫米



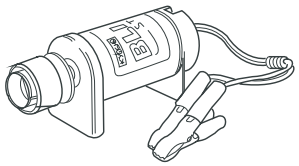
Li-Po Battery 2 or 3 Cells
2100mah or up
锂电 2或3节 2100毫安时以上

Loctite
Loctite 胶水

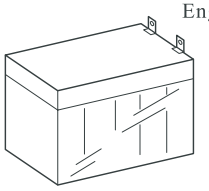
Grease
润滑油



Plug Heater
加热器



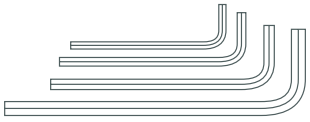
Engine Starter
起动电机



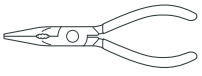
Battery for Engine Starter
蓄电池

Instant Glue
厌氧胶水

六角扳手（1.5mm，2mm，2.5mm，3mm）
Hexagon wrench（1.5mm，2mm，2.5mm，3mm）

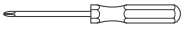


Cutter Knife
裁纸刀



Needle Nose Pliers
尖嘴钳

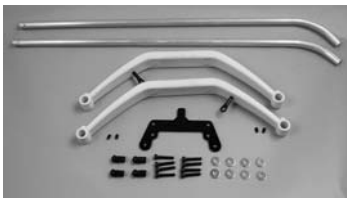
Screw Driver
螺丝刀



In the box / 标准装备

This model is packed according to assembling steps. Do not open all the bags at one time.
Open only one bag for each step of assemply when building.
本产品是按照装配步骤依次包装。不要一次打开所有包装袋。每一步 骤请只打开相关的包装袋。


Canopy


Step 1

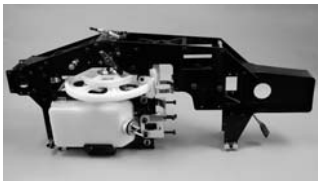

Step2

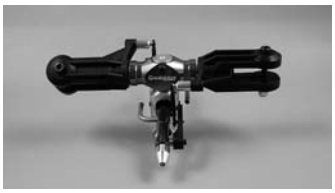

Step 3


Step3


Tool


Step 4


Frame Set


Rotor Head


Step 5


Step 6


Step 9


Esc & Ubec


Long Items

① Landing Gear / 脚架的安装

M3 x10 Self-Tapping Bolt X 4 自攻螺丝

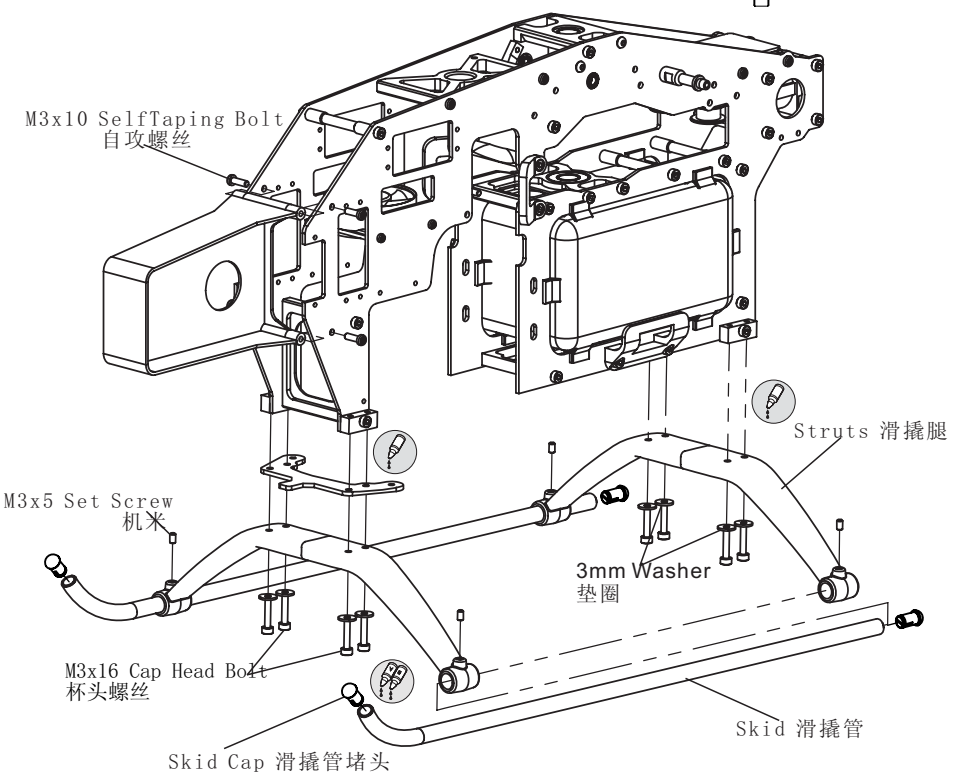
M3x5 Set Screw X 4 机米

M3x16 Cap Head Bolt x8 杯头螺丝

3mm Washer X 8 垫圈

Use AB Glue 环氧胶

Blue Threadlock 螺丝固定胶



② Tail/尾部的装配

M3 Washer x4 垫圈

M3 Nylon Lock Nut x8 尼龙螺母

M2.5x6 Cap Head Bolt x2 杯头螺丝

M3x25 Cap Head Bolt x4 杯头螺丝

M3x35 Cap Head Bolt x2 杯头螺丝

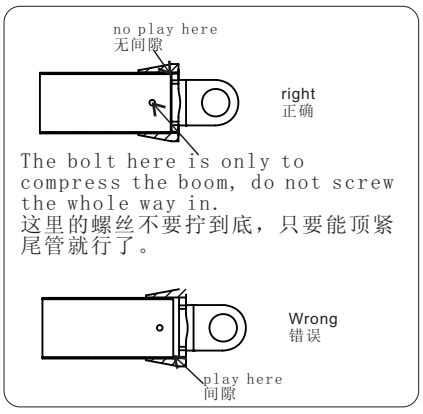
M3x40 Cap Head Bolt x4 杯头螺丝

M2.5 x8 Self-Tapping Bolt X 4 自攻螺丝

Use Threadlock

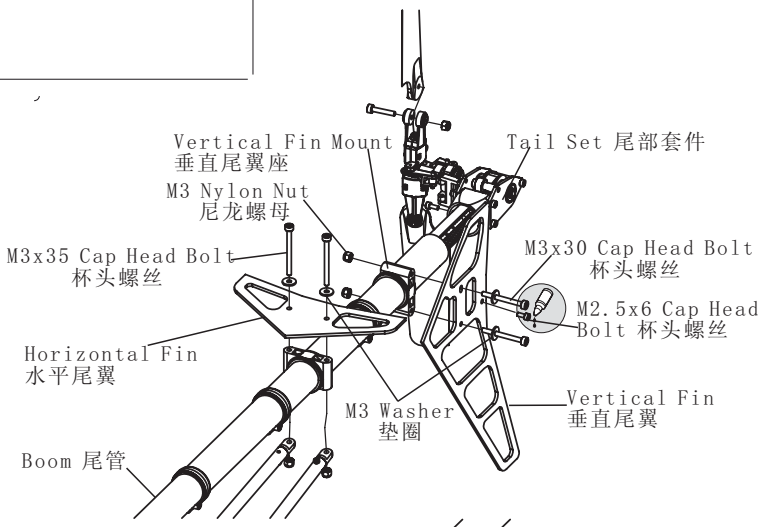
Use AB Glue 环氧胶

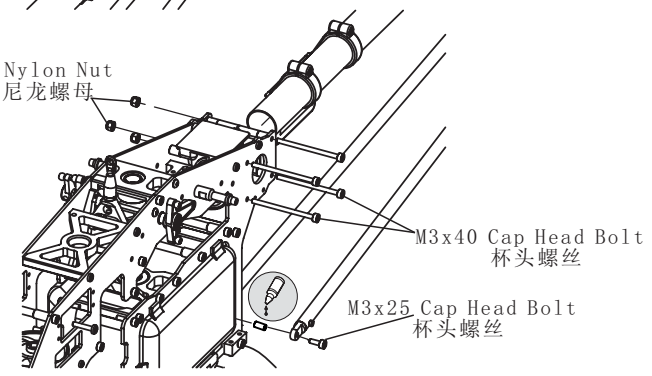
Caution Crimping belt damages the tensile cords and will result in premature failure.
勿折皮带,以免引起损坏.

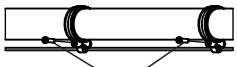


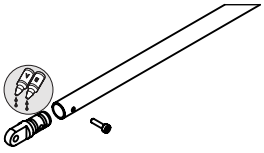
Make sure the Boom is pushed to the bottom of the Gear Box before tighting up the M2.5 Bolt.先将尾管插到齿轮箱底部再用M2.5螺丝上紧。

Washout the Logo direction on the boom.
注意尾管上印字的方向.






M2.5x8 Self-Tapping Bolt 自攻螺丝


Apply AB Glue on Boom Support .
尾撑杆接头处用环氧胶粘好.

③ Engine / 发动机的装配

M3 Washer x2
垫圈

M3 Washer x4
垫圈

M3 Nylon Lock Nut
x2 尼龙螺母

M4x16 Cap Head Bolt
x8 杯头螺丝

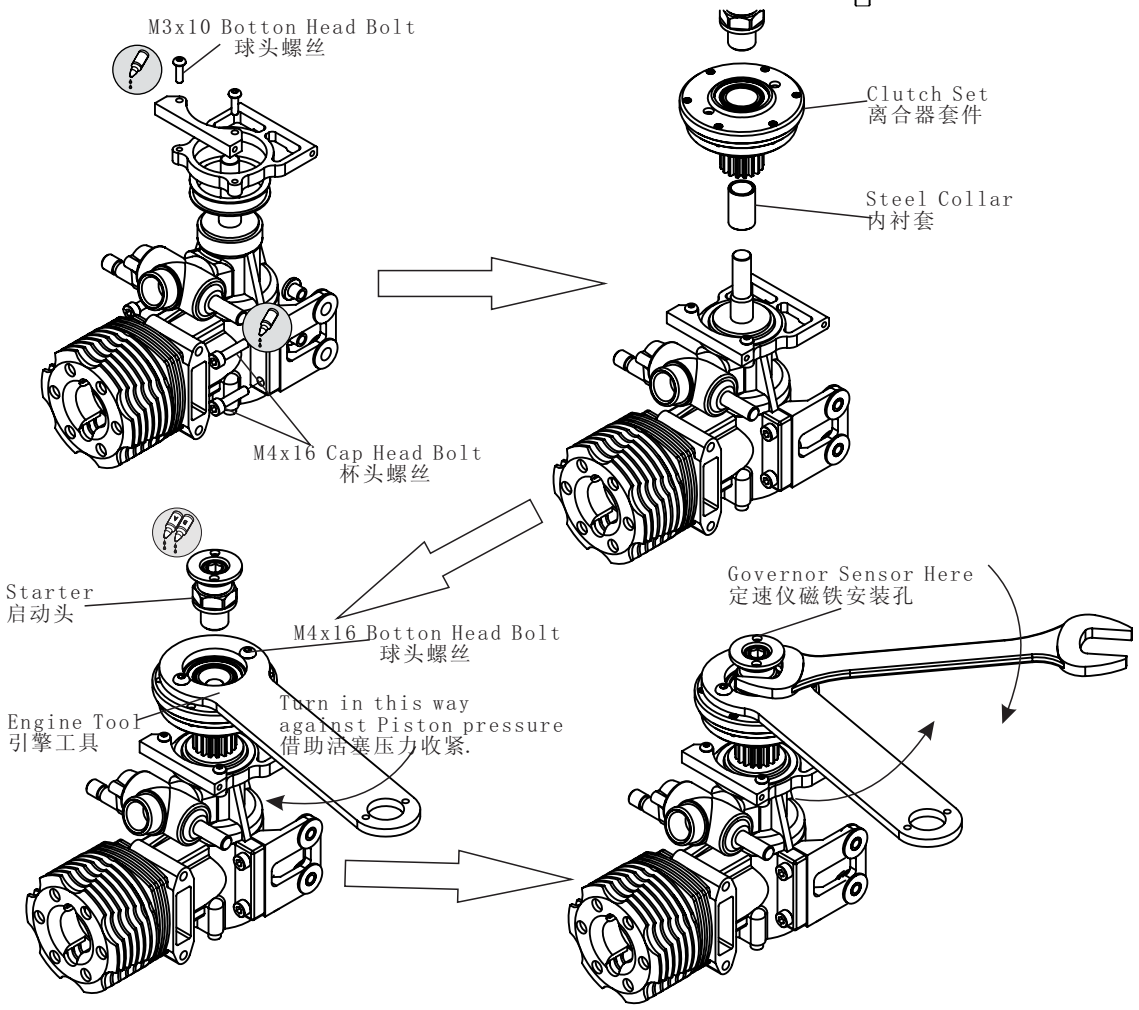
M4x16 Button Head Bolt
x2 杯头螺丝

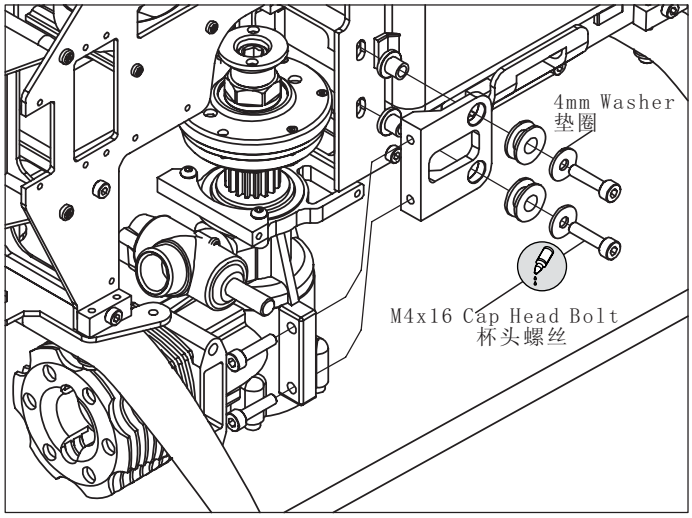
M3x8 Cap Head Bolt
x4 杯头螺丝

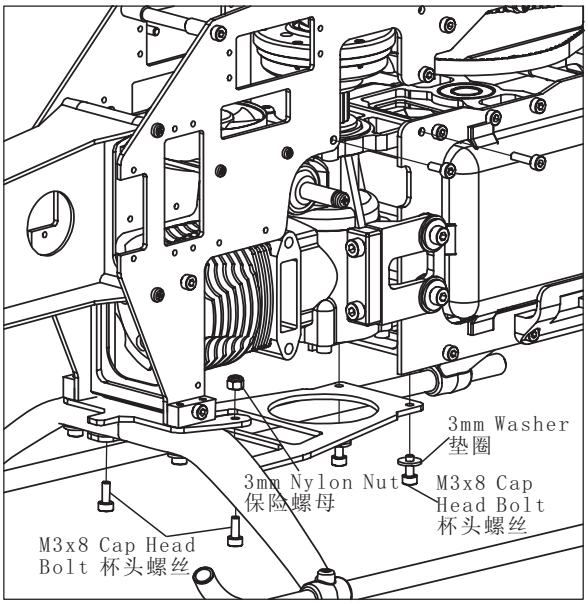
M3x10 Button Head Bolt
x2 杯头螺丝

Use Threadlock

Use AB Glue







④ Main Gear / 齿轮的装配

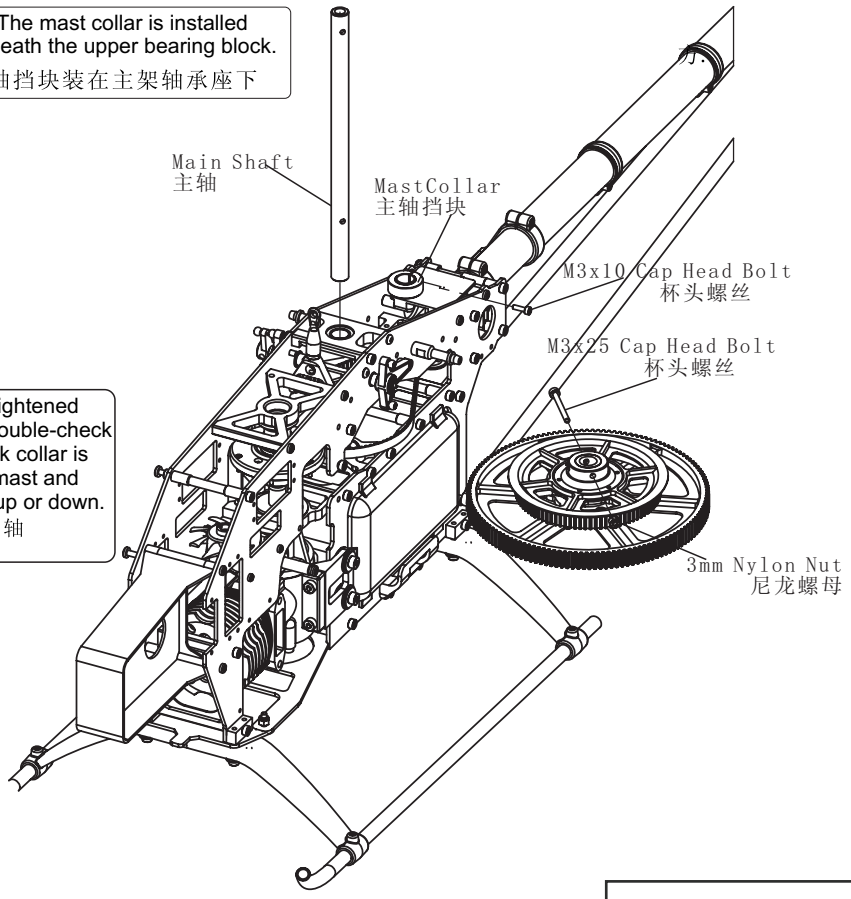
M3 Nylon Lock Nut
x1 尼龙螺母

M3x10 Cap Head Bolt
x1 杯头螺丝

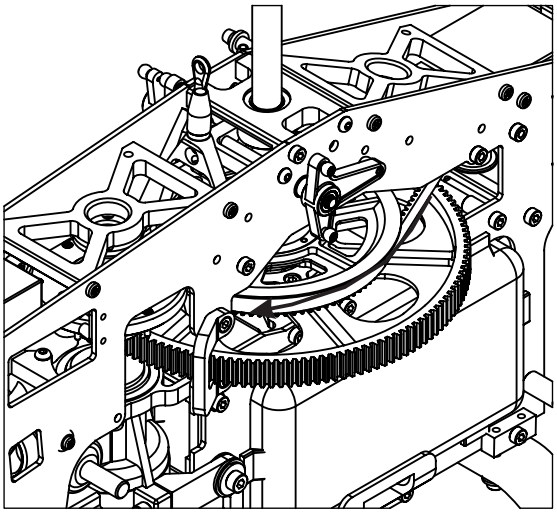
M3x25 Cap Head Bolt
x1 杯头螺丝

Use Threadlock

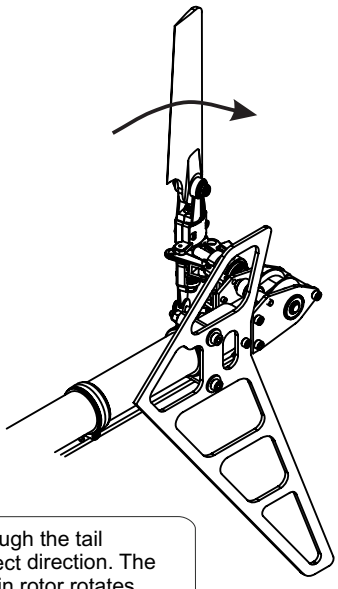
Note : The mast collar is installed underneath the upper bearing block.
主轴挡块装在主架轴承座下



Caution
Make sure mast collar is tightened securely onto the mast. Double-check to make sure the mast lock collar is properly seated onto the mast and main shaft can not move up or down.
主轴挡块务必锁紧以免主轴飞行时上下移动.



Team Tip :
Check tail rotor direction. Top rotor blade moves to rear
尾桨转动方向



Caution
At this point you will notice that the belt twists 90 degrees as it runs trough the tail boom. Care must be taken to assure that the belt is twisted in the correct direction. The key to this is to make sure the tail rotor rotates backward when the main rotor rotates in the proper direction. If the tail rotor rotates incorrectly, simply pull out the main shaft and twist the belt in the other direction.

当同步带如上图方向运行时,尾桨应向后方转动,如右上图示.如尾桨转动方向相反,则同步带的安装方向 错了. 拉出主轴,翻转皮带从新装配.

⑤ Rotor,Washout & Swashplate/旋翼头的安装

M3x12 Cap Head Bolt x2 杯头螺丝

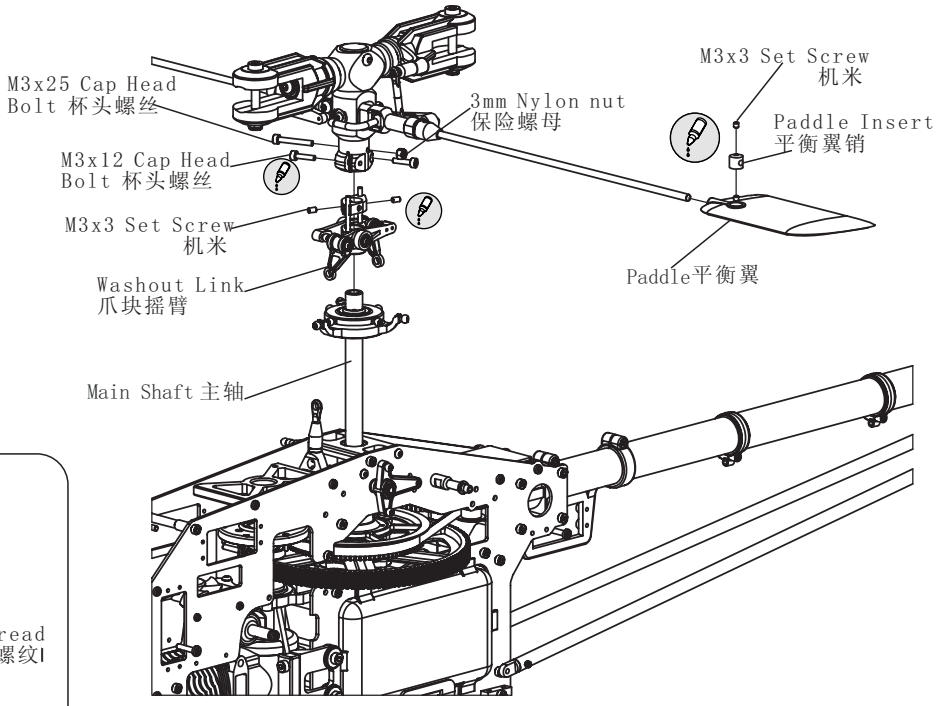
M3x5 Set Screw x2 机米

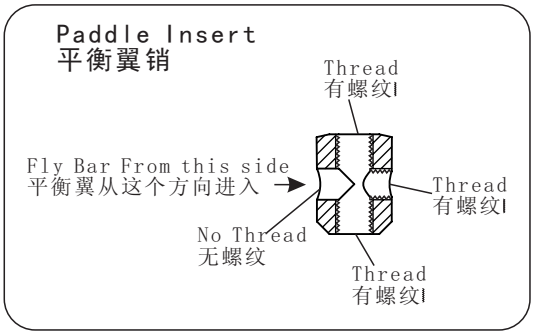
M3x3 Set Screw x2 机米

M3 Nylon Lock Nut x1 尼龙螺母

M3x25 Cap Head Bolt x1 杯头螺丝

Use Threadlock



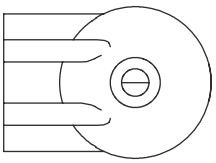


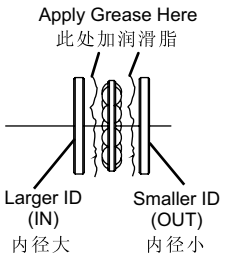
Thrust Bearing Direction

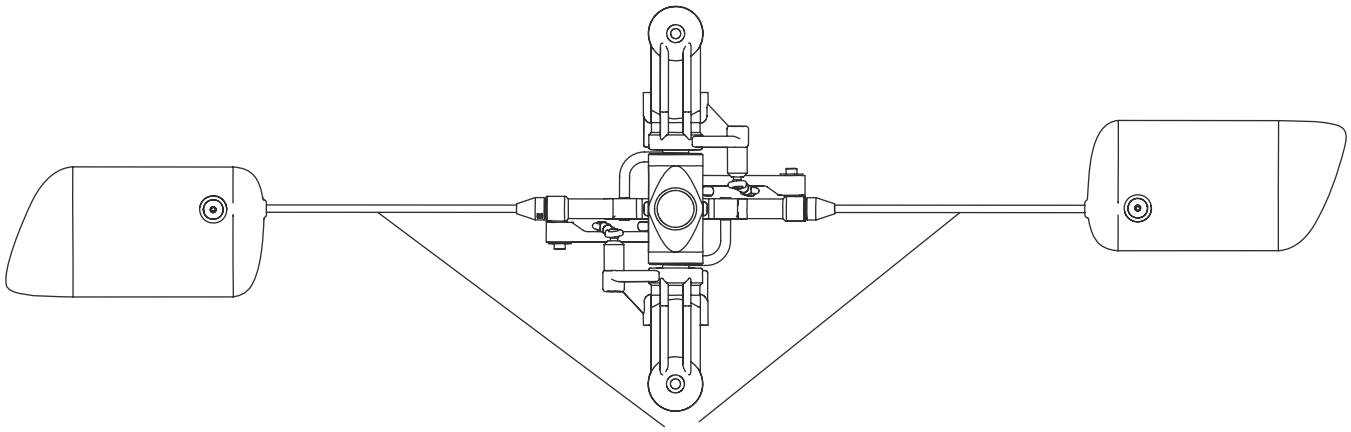
Main grips are factory preassembled, in case of reassembling, be sure to note correct placement of large/small I.D. washers during assembly.

大桨夹已经预先装配好,如果要重新装配.务必注意压力轴承的安装方向

压力轴承的安装



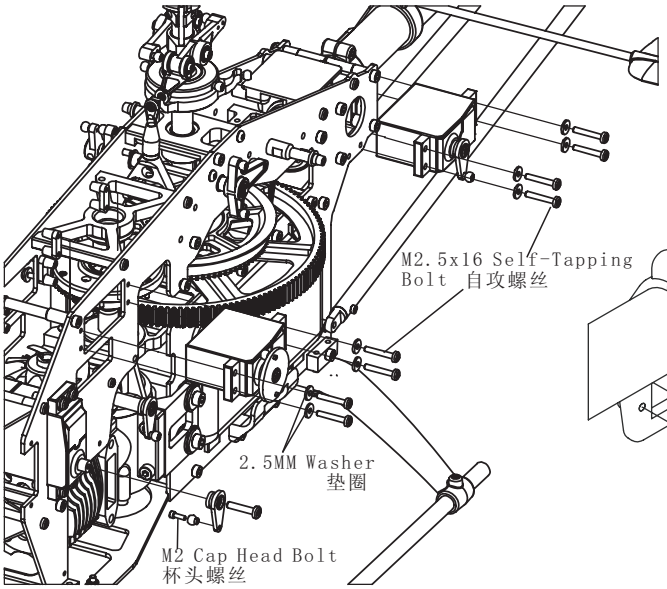


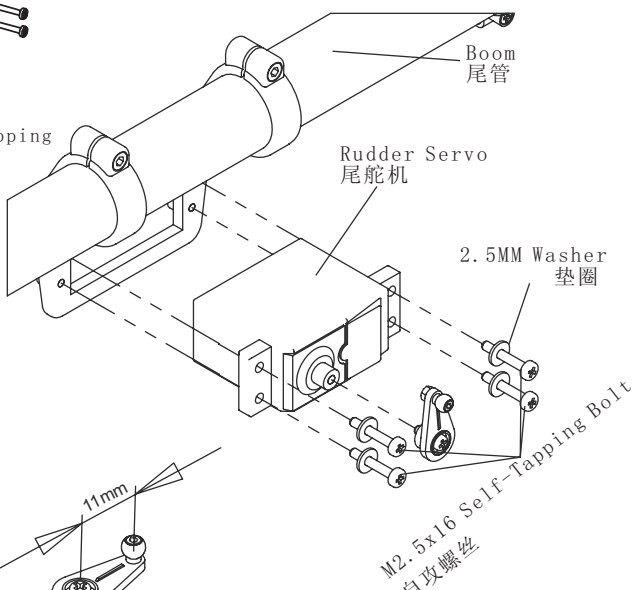


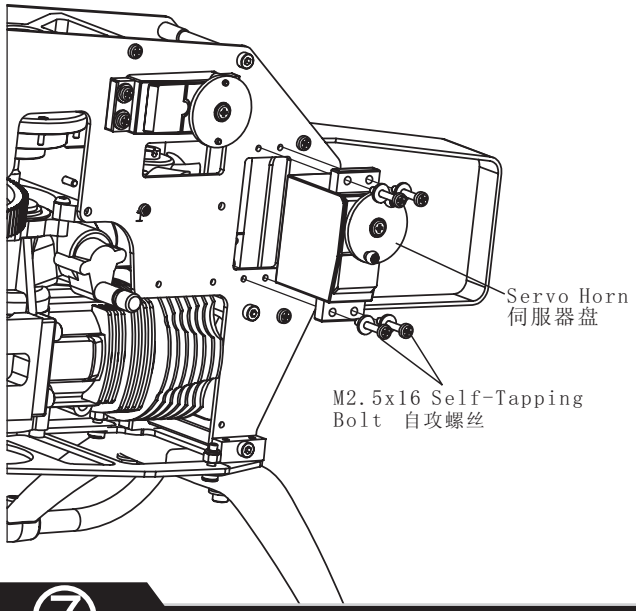
Adjust so that each side has exactly the same length

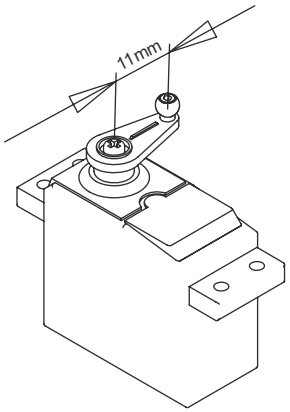
两边距离要一致

⑥ SERVO /舵机的装配



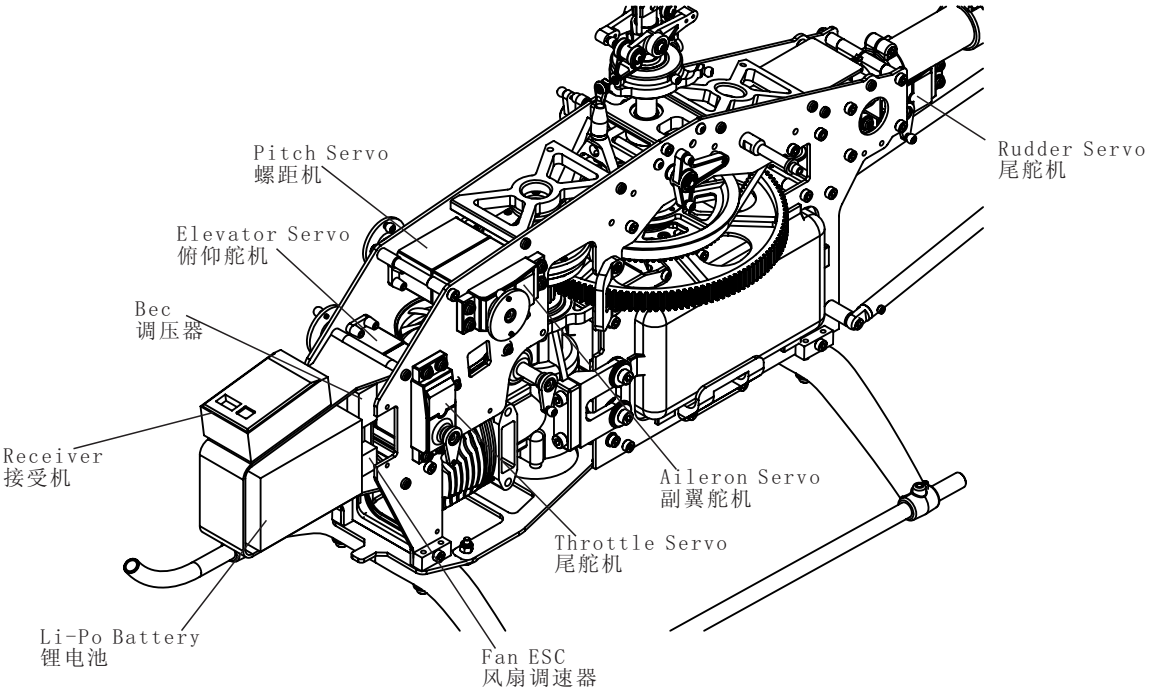


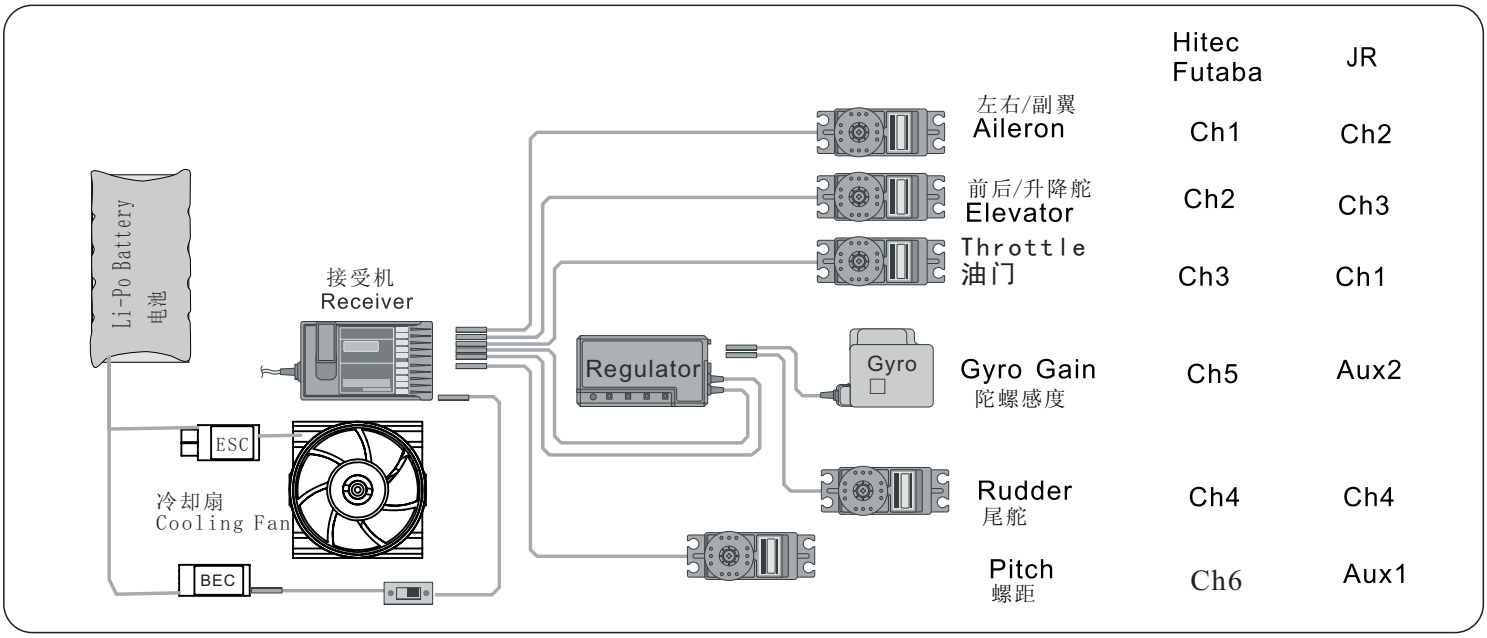




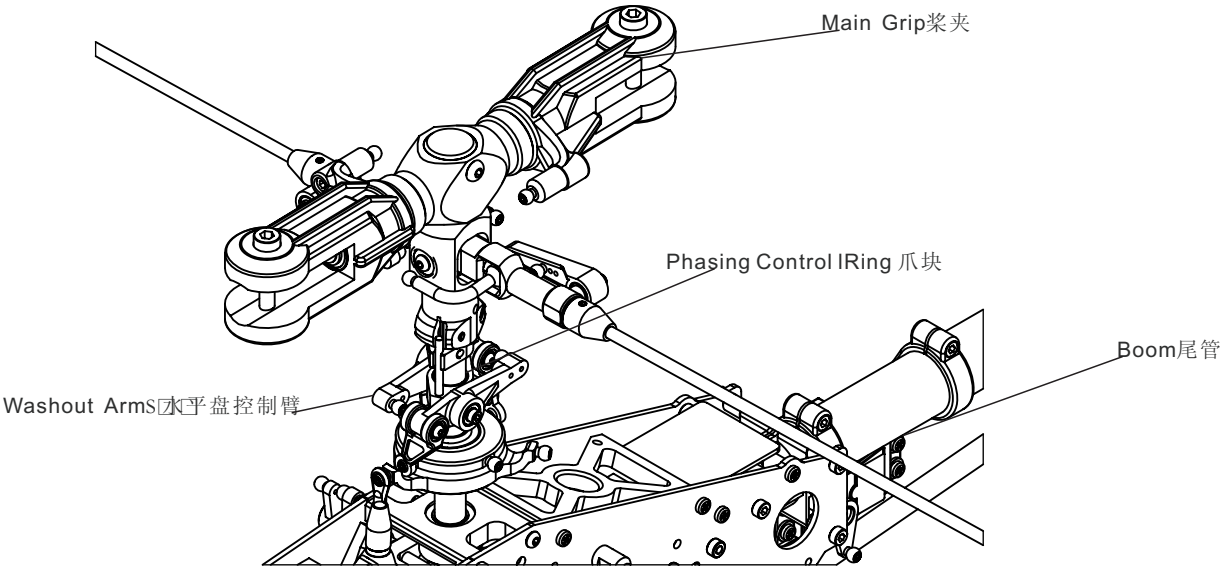
All control balls should to set at 11mm to the center of the servo horn.
所有舵机上的球头应设在离中心11毫米的距离上.

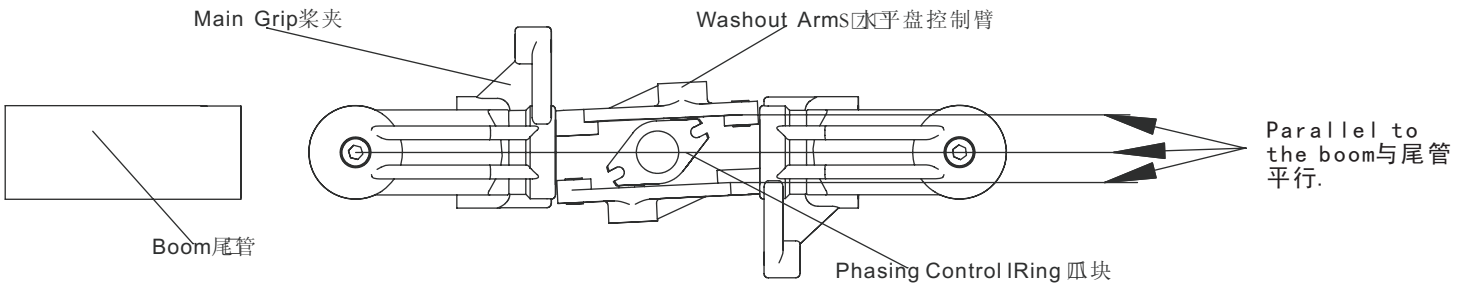
⑦ Equipment illustration / 设备建议配置





⑧ Phasing Setting / 相位角度设定

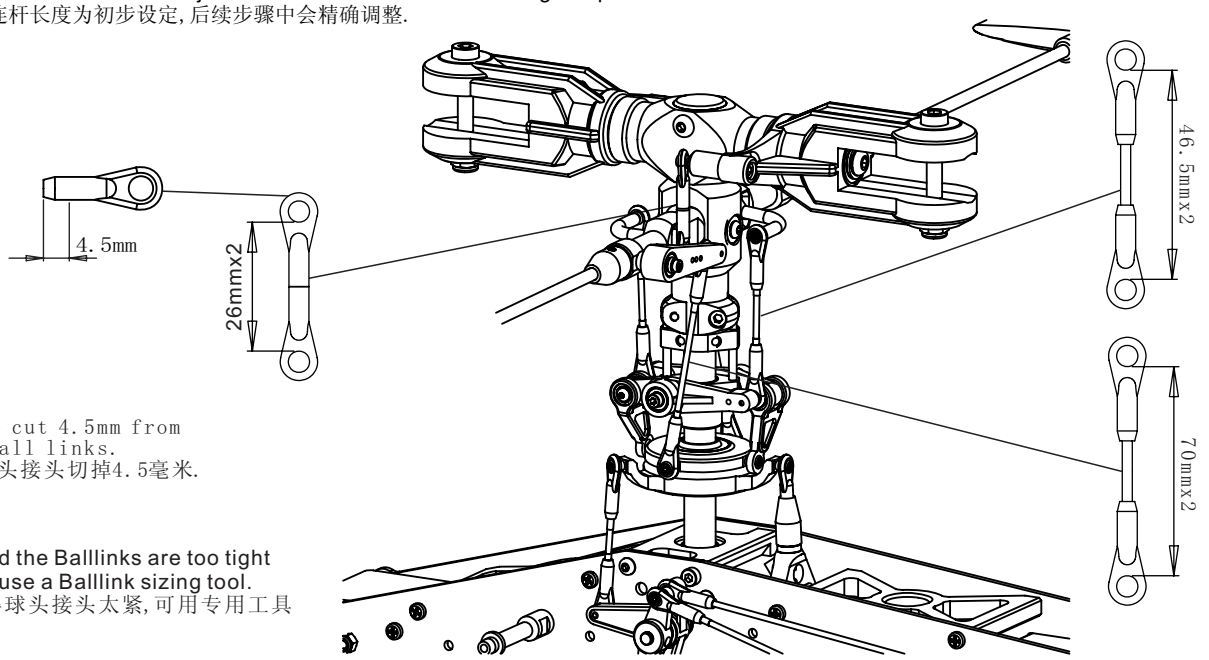




爪块控制组设置的角度应保证水平盘控制臂与桨夹同时平行于尾管.
Get the right phasing adjustment by turning the phasing control ring until the Washout Arms and Main Grips both parallel to the Boom.

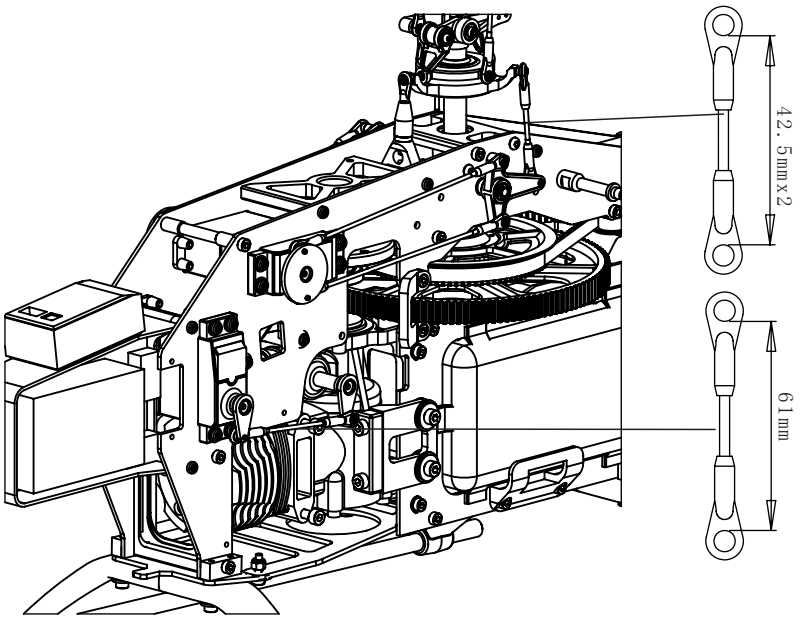
⑨ Linkage/连杆的设定

The following linkage lengths indications are basic values which could vary depend on used servos. Some fine adjustments are still needed in following setup steps. 图中所示连杆长度为初步设定, 后续步骤中会精确调整.



Please cut 4.5mm from each ball links.
请将球头接头切掉4.5毫米.

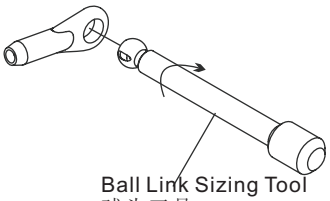
If you find the Balllinks are too tight suggest use a Balllink sizing tool.
如果觉得球头接头太紧, 可用专用工具刨松.



切勿用钳子夹球头, 以免造成潜在损伤

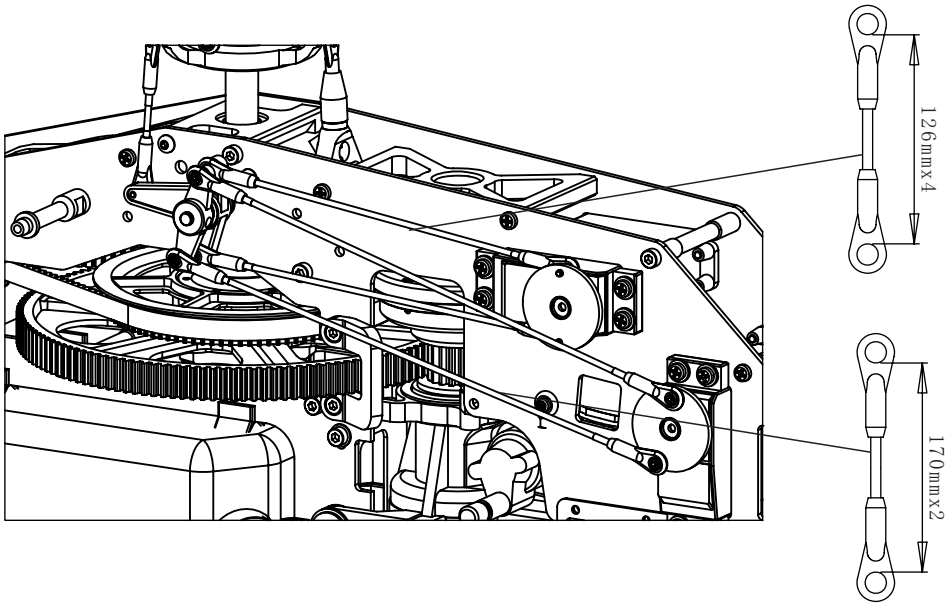
Caution

Do not apply plier to resize Ball Links. Pliers could cause hidden damage to Ball Links and hence result in failure when operation.
切勿用钳子夹球头接头，以免造成潜在损伤。

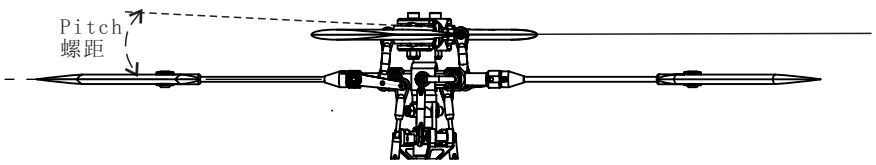


Ball Link Sizing Tool
球头工具

Be aware that the Ball Link Sizing Tool is very sharp.
Do not oversize the ball link.
球头工具十分锋利, 使用时注意不要过度扩大球头接头尺寸.



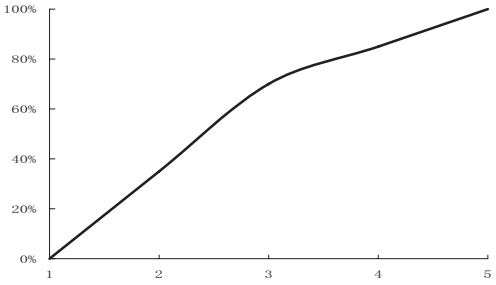
⑩ Electronic Setup/电子设备设定



General Flight 一般飞行

	Throttle	Pitch
5	100%	13 deg
4	85%	
3	70%	4~5deg
2	35%	
1	0%	-5deg

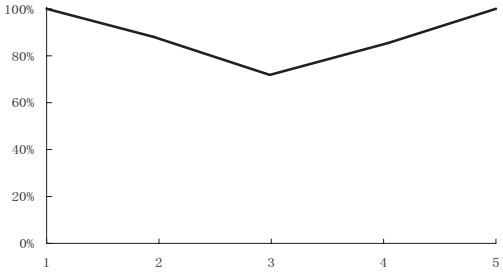
Throttle Curve



3D Style 3D 飞行

	Throttle	Pitch
5	100%	13deg
4	87%	6.5deg
3	75%	0 deg
2	87%	-6.5deg
1	100%	-13deg

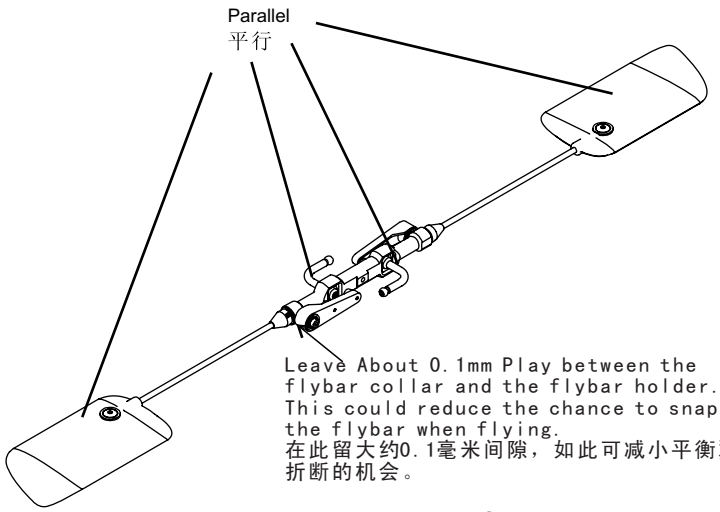
Throttle Curve

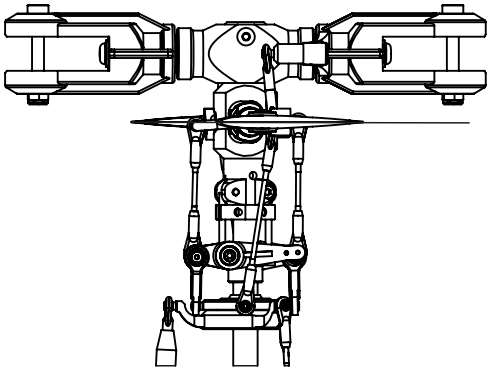


Swash Type Setting
水平盘混合比

JR		Futaba
Swash Type		SWH
S3 120		SR3
Aile	Elev	Pitch
60%	60%	55%

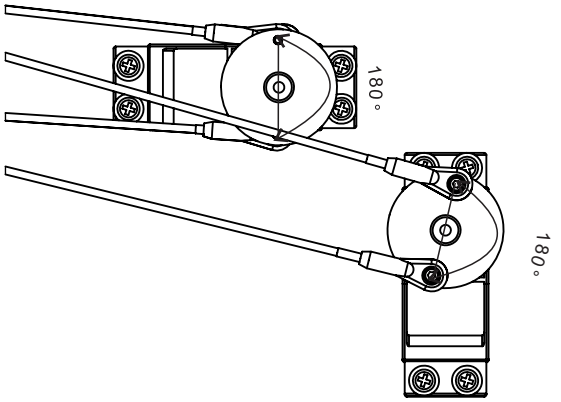
⑪ Setup / 设定





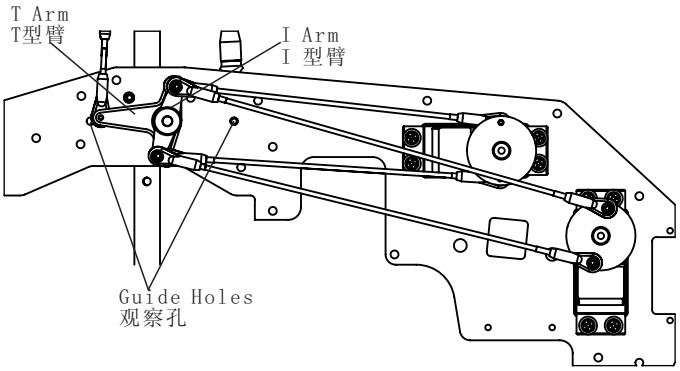
Make sure the flybar control arm and paddle are in line as in the diagram.
保证平衡翼控制臂和平衡翼相互平行,开始设定.

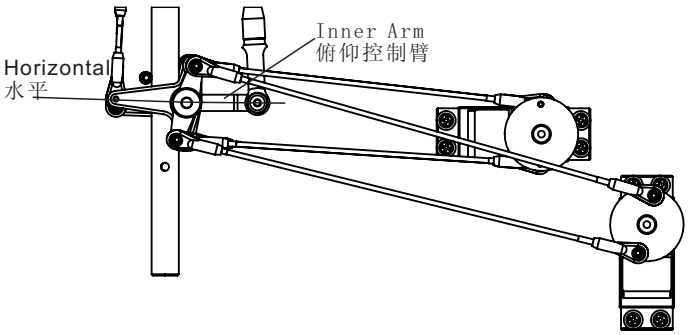
A) Turn on the radio, set throttle to middle position for 0 degree. Use the subtrim in radio program to adjust all the servo to get control horn to the right angle.
打开遥控器,在0度螺距时,油门控制杆在中位.用遥控器设定功能中的 **"SUBTRIM"**微调各个舵机使其达到下图的角度。



Note: The 2 Push-pull link rods are not necessarily parallel, but must be the same length. 注意:双推拉连杆不一定要平行,但长度一定要一致.

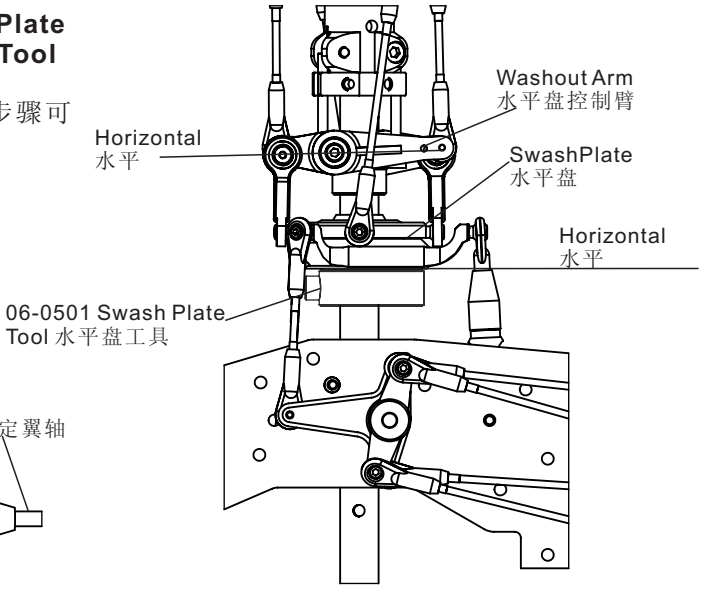
B)Next is to adjust the link from servo to the T Arm and I Arm so that the T Arm is Horizontal and the Inner Arm is Horizontal. Use the 2 Guide Holes on the frame to make sure the 2 Arms are Horizontal.
下一步,调节连杆长度使**T**型臂及俯仰臂水平. 可以用侧板上的观察孔确认**T**型臂及俯仰臂是否水平.

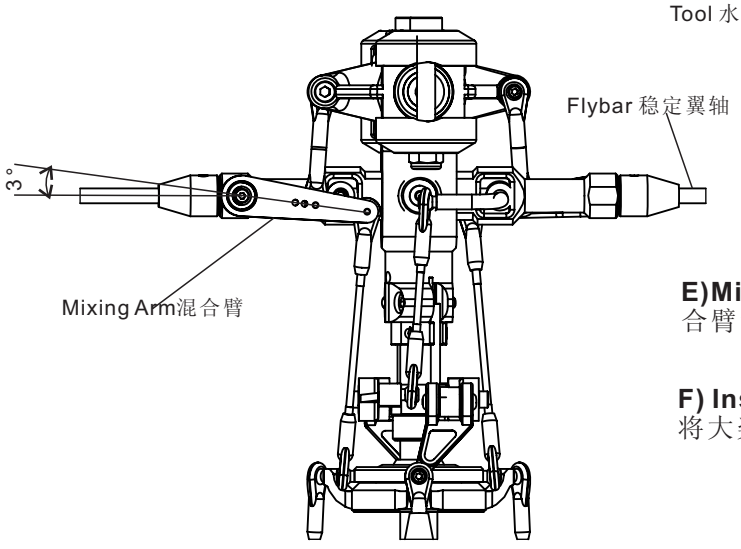




c)Next adjust the links from T Arms to Swash Plate to level Swash Plate. A compass Swash Plate Tool can be applied here as a guide.
调节**T**型臂与水平盘之间的连杆使水平盘水平.此步骤可以采用水平盘工具作为协助.

D)Set theWashout Arms horizontal.
设定水平盘控制臂为水平.

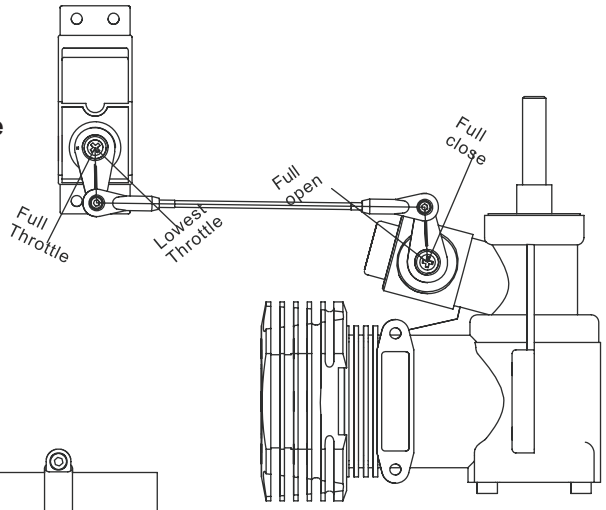


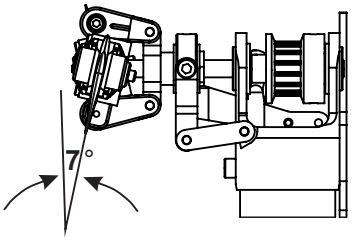


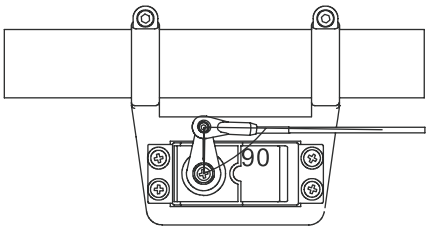
E)Mixing Arm is set 3deg down to the flybar. 混合臂设为3度于稳定翼轴

F) Install the main blade and set it to 0 deg pitch.
将大桨设为0度螺距.

G) At the low throttle stick and the throttle trim, the carburetor hole should be completely close. At full throttle stick, carburetor hole should be completely open. Adjust the ATV in radio, or/and the control horn position on the engine to achieve above requirement. Make sure the servo does not bind at any traveling point.
在油门控制杆最低时，化油器的入油口应全闭合。控制杆最高时，入油口应全开。详细调节以达到上述要求。



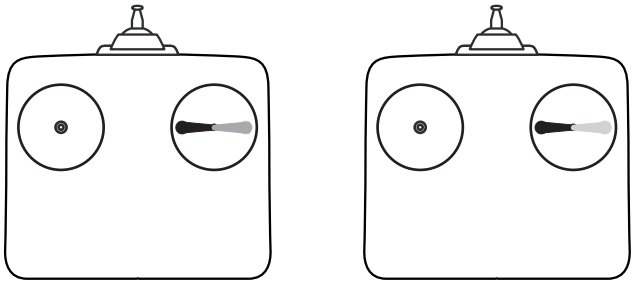
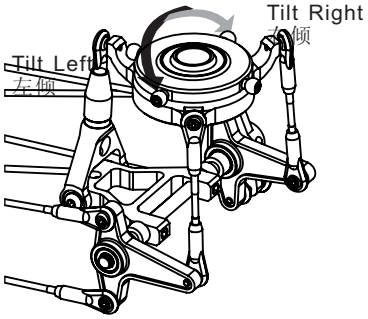
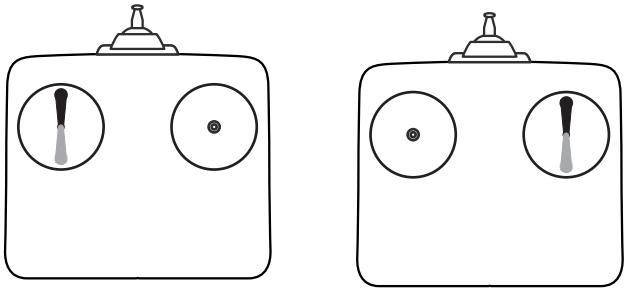
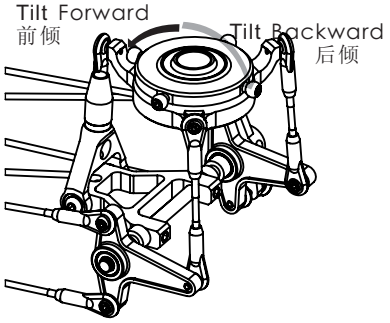




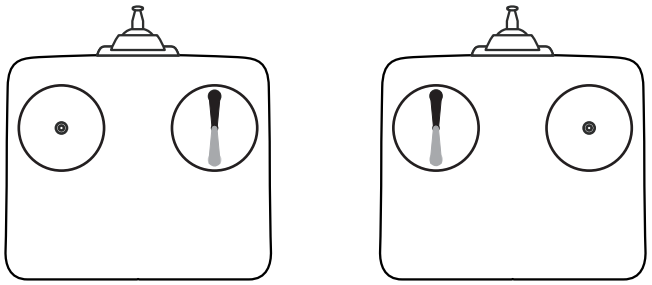
H)At Rudder Middle Stick, Set Rudder Servo 90 degree to the tail link And Set Tail Blade to 7 deg Pitch.
当尾转向控制杆在中位时,设定尾舵机摇臂与尾推杆成90度,同时尾桨螺距为7度.

⑫ Servo Direction Check/舵机方向的检查

Turn on the radio, position the heli tail point to yourself. Make sure radio is set to 120 degree CCPM mode. Move the stick and check the reaction of the Swash Plate, Throttle and Tail Pitch Plate. Adjust radio settings accordingly.
打开遥控器,将直升机尾部指向自己.注意将遥控器设为120度ccpm模式. 如下图摇动控制杆检查各个舵机运动是否正常.

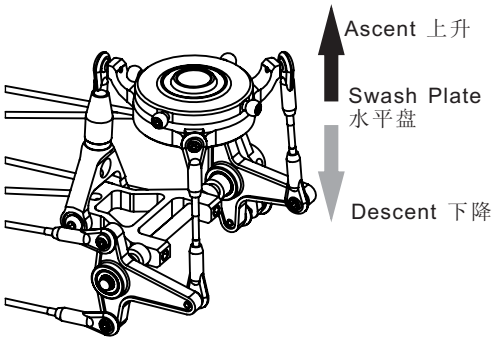
Mod 1	Mod 2	Swash Plate Reaction 水平盘反应
 Aileron Check 副翼检查		
 Elevator Check 升降检查		

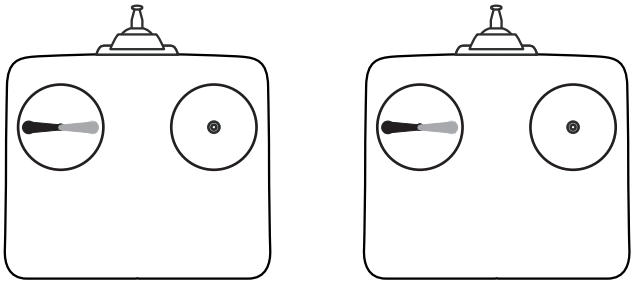
Mod 1 Mod 2



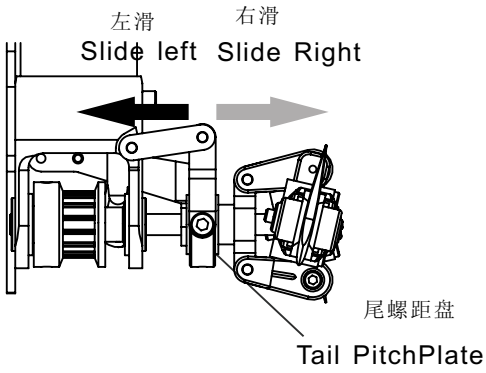
Pitch Check 螺距检查

Swash Plate Reaction
水平盘反应

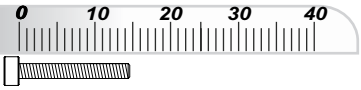




Rudder Check 尾舵检查



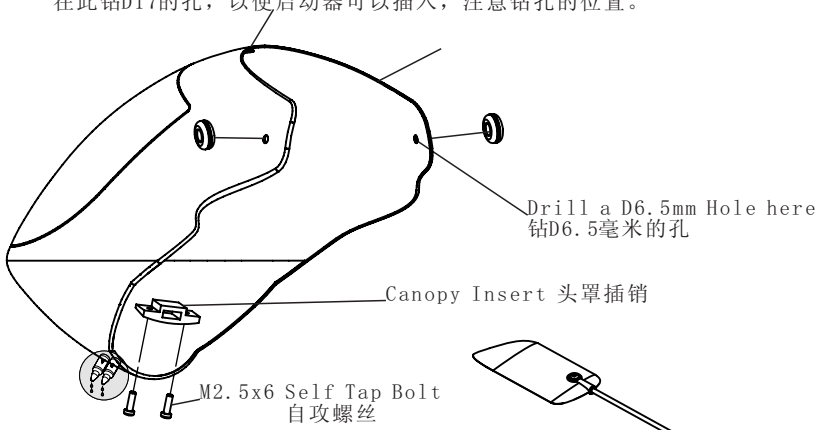
13 Canopy/头罩的装配



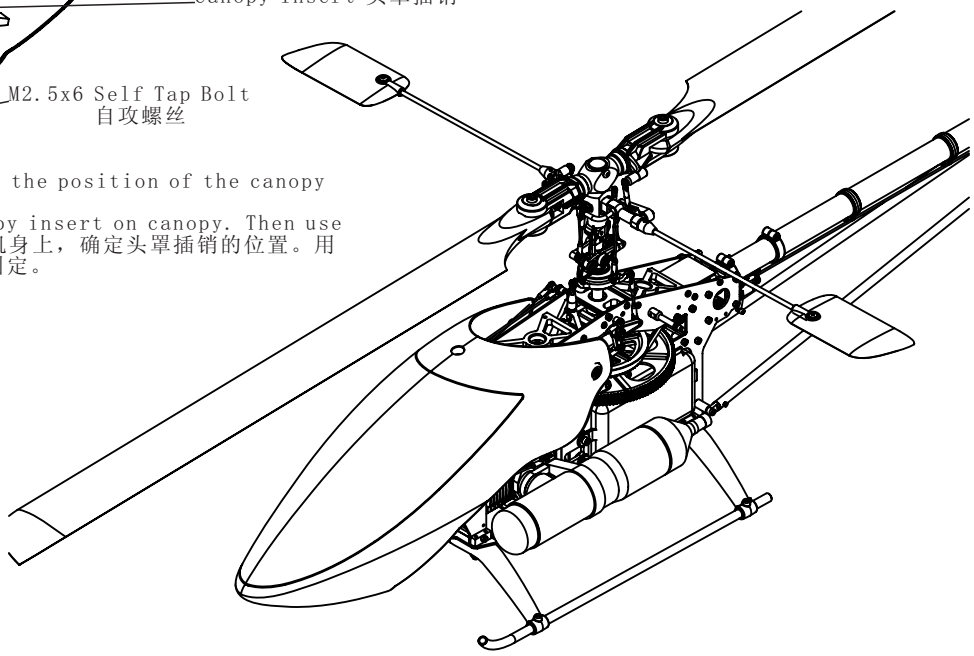
M2.5x6 Self-Tapping Bolt X 2 自攻螺丝

Use AB Glue

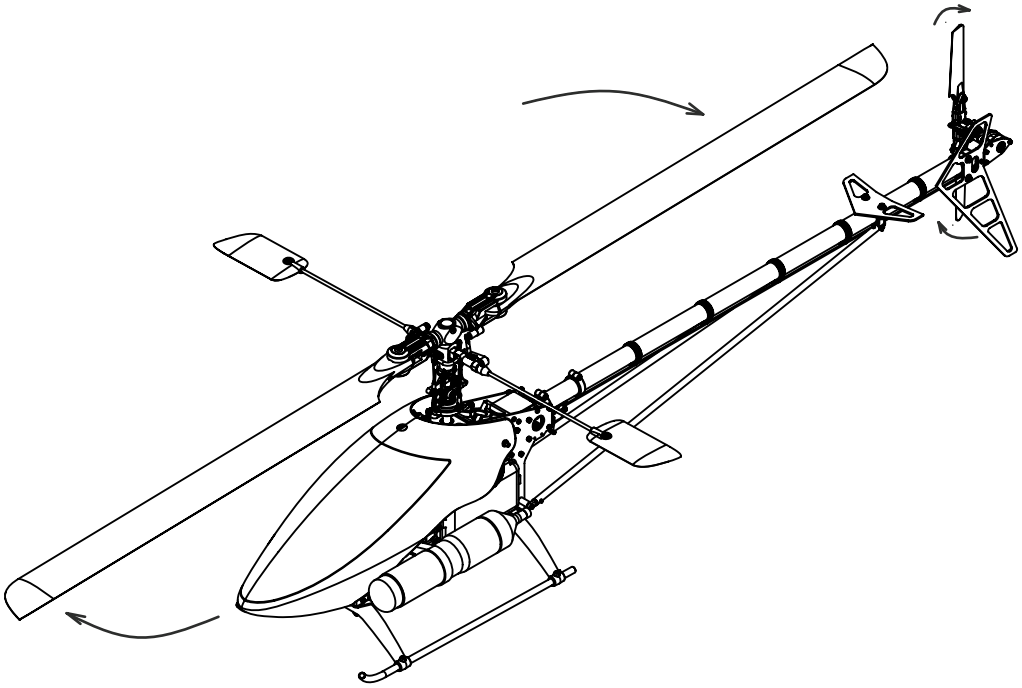
Drill a D17 hole here for Starter, watch out the position.
在此钻D17的孔，以便启动器可以插入，注意钻孔的位置。



Put the canopy on the body and mark the position of the canopy insert.
Apply ab glue to attached the canopy insert on canopy. Then use Self Tap Bolt fix it. 把头罩试装到机身上，确定头罩插销的位置。用环氧胶粘牢头罩插销，然后用自攻螺丝固定。



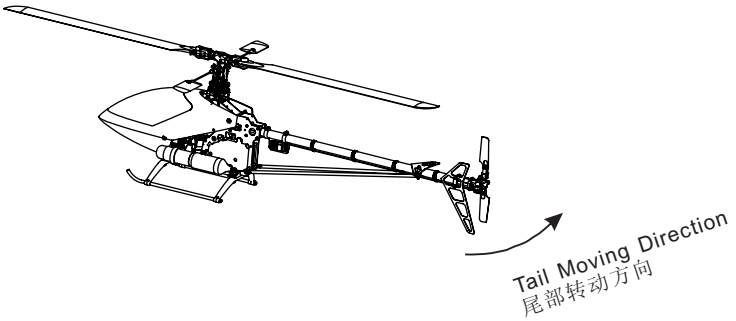
⑭ Rotor Direction /皮带安装方向检查

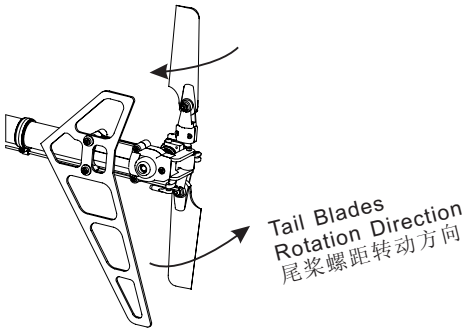


When Main Blades turn clockwise, tail blades should turn clockwise when view from the Tail Fin side. If not the belt is installed incorrectly.
当大桨顺时针旋转时,从垂直尾鳍方向看去,尾桨应顺时针旋转.如果不是,皮带的安装方向不对.

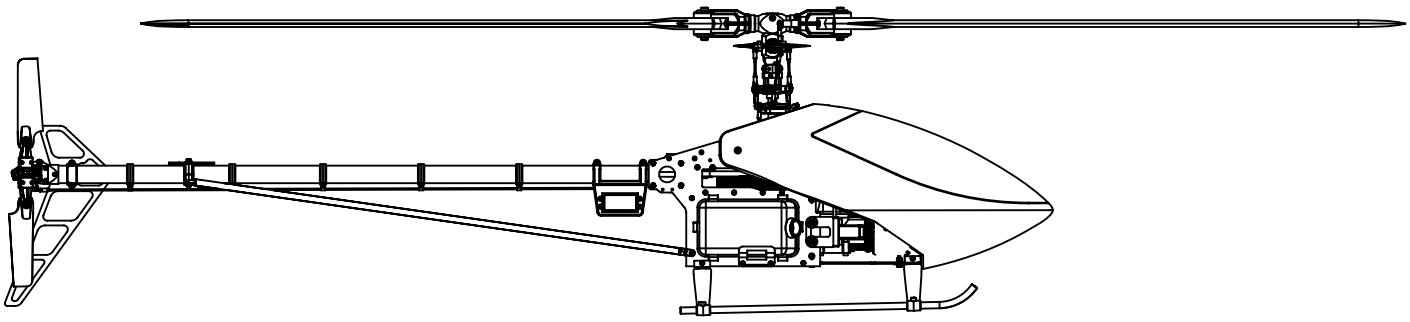
Pre-flight Check /飞行前安全检查

1. **Ensure that receiver & transmitter battery are fully charged**.确认接受机及发射机的电池充满电.
2. **Check all bolts and screws are tight**.检查所有螺丝已上紧并已上胶.
3. **Repeat step 11 to check all Servo functions are correct**. 照第12步再次检查各舵机工作正常.
4. **Ensure Tail + Gyro direction are correctly set**.确认尾舵机及陀螺仪的方向正确.





5. **Check that the Main Blades, Paddles and Tail Blades are installed in the right direction**.
   检查大桨,平衡翼及尾桨的安装方向是否正确.
6. **Always hold the Rotor Head when starting the engine**.
   启动引擎时务必用手抓住旋翼头.
7. **Check that there are no missing or damaged parts, never fly with any damaged parts**.
   检查有无损坏或缺失的零件.如有此情况立即更换.切勿强行起飞.
8. **Make sure all electronic devices are firmly fastened and connected**.
   确认所有电子元件都已连接妥当,固定妥当.
9. **Only turn off the transmitter after turning off the receiver**.
   只在关闭接受机电源后才关闭发射机电源.



Compass Model（Hong Kong）Ltd.

康柏模型(香港)有限公司

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