



# innovq 450SD/BD/FBL INSTRUCTION MANUAL 使用说明书



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Thank you for buying KDS products. Please read this manual carefully before assembling. We recommend that you keep this manual for future reference regarding tuning and maintenance.

感谢您选购KDS 摇控世界系列产品，谨表谢意。进入遥控世界前必须告诉您许多相关知识与注意事项，以确保您能够在学习的过程中较快得以就手。在开始操作之前，请务必详阅本说明书，相信一定能够给您带来相当大的帮助，也请您妥善保管这本说明书，以作为日后参考。

#### SAFETY PRECAUTIONS

This radio control model is not a toy! It has some technical requirement, you must pay attention to the flying environment and correct operation. Teenagers must fly under the guardian's guide. Beginners must fly under the experiential man's guide.

## 1. INTRODUCTION 前言

Thank you for buying KDS products. The KDS 450SD helicopter is designed as an easy to use, full featured helicopter R/C model capable of all forms of rotary flight. Please read the manual carefully before assembling the model, and follow all precautions and recommendations located within the manual. Be sure to retain the manual for future reference, routine maintenance, and tuning. The KDS 450SD is a new product developed by KDS. It features the best design available on the micro-Heli market to date, providing flying stability for beginners, full aerobatic capability for advanced fliers, and unsurpassed reliability for customer support.

感谢您选购KDS产品，为了让您容易方便的使用KDS 450SD直升机、请您详细的阅读完这本说明书之后再行进行组装以及操作这台直升机，同时请您妥善的保存这本说明书、作为日后进行调整以及维修的参考。KDS 450SD是由KDS自行研发的新产品，不论你是需求飞行稳定性的初学者或是追求性能的飞行爱好者。KDS 450SD将是你最佳的选择。

### IMPORTANT NOTES 重要声明

R/C helicopters, including the KDS 450SD are not toys. R/C helicopters utilize various high-tech products and technologies to provide superior performance. Improper use of this product will result in serious injury, even death. Please read this manual carefully before using and make sure to be conscious of your own personal safety and the safety of others and your environment when operating all KDS products. Manufacturer and seller assume no liability for the operation or the use of this product. Intended for use only by adults with experience flying remote control helicopters. After the sale of this product we cannot maintain any control over its operation or usage.



It is not a Toy!

KDS 450SD 遥控直升机并非玩具，它是结合了许多高科技产品所设计出来的休闲用品，所以商品的使用不当或不熟悉都可能会造成严重伤害甚至死亡，使用之前请务必详读说明书，勿轻忽并注意自身安全！任何遥控直升机的使用，制造商和经销商是无法对使用者于零件使用的损耗异常或组装不当所发生之意外负任何责任，本产品是为提供有操作过模型直升机经验的成人或有相当技术的人员在旁指导，以确保安全无虞下操作使用，产品售出后本公司将不负任何操作和使用控制上的任何性能与安全责任。

### NOTE 声明

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

## 2. SAFETY NOTES 安全注意事项

### • LOCATE AN APPROPRIATE LOCATION 远离障碍物及人群

R/C helicopters fly at high speed, thus posing a certain degree of potential danger. Choose an appropriate flying site consisting of flat, smooth ground, a clear open field, or a large open room, such as gymnasium or warehouse without obstacles. Do not fly near buildings, high voltage cables, or trees to ensure the safety of yourself, others and your model. Do not play your model in inclement weather, such as rain, wind, snow or darkness.

直升机飞行时具有一定的速度，相对的也潜在着一定危险性，场地的选择也相对的重要，请需遵守法规到合法遥控飞行场地飞行。必须注意周围有没有人、高楼、建筑物、高压电线、树木等等，避免操控的不当造成自己与他人财产的损坏。初次练习时，务必选择在空旷合法专属飞行场地并适当搭配练习架飞行，这对飞行失误造成的损伤将会大幅的降低。请勿在下雨、打雷等恶劣天气下操作，以确保本身及机体的安全。



### • OBTAIN THE ASSISTANCE OF AN EXPERIENCED PILOT 避免独自操控

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



至飞行场飞行前，需确认是否有相同频率的同好正进行飞行，因为开启相同频率的发射机将导致自己与他人立即干扰等意外危险。遥控飞机操控技巧在学习初期有着一定的难度，要尽量避免独自操作飞行，需有经验的人士在旁指导，才可以操控飞行。（勤练电脑模拟器及老手指导是入门必要的选择）。

### ● ALWAYS BE AWARE OF THE ROTATING BLADES 远离运转中零件

During the operation of the helicopter, the main rotor will be spinning at a high rate of speed. The blades are capable of inflicting serious bodily injury and damage the environment. Be conscious of your actions, and careful to keep your face, eyes, hands, and loose clothing away from the blades. Always fly the model a safe distance from yourself and others, as well as surrounding objects. Never take your eyes off the model or leave it unattended while it is turned on. Immediately turn off the model and transmitter when you have landed the model.



当直升机主旋翼与尾旋翼运转时，切勿触摸并远离任何物件，以避免造成危险及损坏。

### ● PREVENT MOISTURE 远离潮湿环境

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



直升机内部也是由许多精密的电子零组件组成，所以必须绝对的防止潮湿或水气，避免在浴室或雨天时使用，防止水气进入机身内部而导致机件及电子零件故障而引发不可预期的意外！

### ● KEEP AWAY FROM HEAT 远离热源

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



遥控飞机多半是以PA维修或聚乙烯、电子商品为主要材质，因此要尽量远离热源、日晒以避免因高温而变形甚至熔毁损坏的可能。

### ● PROPER OPERATION 勿不当使用本产品

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

请勿自行改造加工，任何的升级改装或维修，请使用KDS产品目录中的零件，以确保结构的安全。请确认于产品限界内操作，请勿过载使用，并勿用于安全、法令外其它非法用途。



### ● SAFE OPERATION 安全操作

Operate this unit within your ability. Do not fly under tired condition or improper operation, which may cause danger.

请于自己能力内及需要一定技术范围内操作这台直升机，过于疲劳、精神不佳或不当操作，意外发风险将可能会提高。



## 3.SAFETY CHECK BEFORE FLYING 飞行前安全检查重要事项

Before flying, please check to make sure no one else is operating on the same frequency for the safety.

Before flying, please check if the power of transmitter and helicopter are enough for the flight.

Before turn on the transmitter, please check if the throttle stick is in the lowest position, IDLE switch is OFF.

When turn off the unit, please follow the power on/off procedure. Power ON-Please turn on the transmitter first, and then turn on helicopter power. Power OFF-Please turn off the helicopter power first and then turn off the transmitter. Improper procedure may cause out of control, so please to have this correct habit.

Before operation, check every movement is smooth and directions are correct. Inspect servos carefully for interference and broken gear.

Check for missing or loose screws and nuts. See if there is any cracked and incomplete assembly of parts.

Check main rotor blades and rotor holders carefully. Broken and premature failures of parts possibly result in a dangerous situation.

Check all ball links to avoid excess play and replace as needed. Failure to do so will result in poor flight stability.

Check the battery and power plug are fastened. Vibration and violent flight may cause the plug loose and lead to out of control.

Check for the tension of tail drive belt.

每次飞行前应先确认所使用的频率是否会干扰他人，以确保你自身与他人的安全。

每次飞行前确定你发射机与直升机电源的电量是在足够飞行的状态。

开机前确认油门摇杆是否位于最低点，熄火降落开关，定速开关（IDLE）是否于关闭位置。

关机时必须遵守电源开关机的程序，开机时应先开启发射机后，再开启直升机电源：关机时应先关闭直升机电源，再关闭发射机电源。不正确的开关机程序可能会造失控的现象，影响自身与他人的安全，请养成正确的习惯。

开机请先确定直升机的各个动作是否顺畅，及方向是否正确，并检查伺服的动作是否有干涉或崩齿的情形，使用故障的伺服器将导致不可预期的危险。

飞行前确认没有缺少或松脱的螺丝与螺帽，确认没有组装不完整或损毁的零件，仔细检查主旋翼是否有损坏，特别是接近主旋翼夹座的部位。

损坏或组装不完整的零件不仅影响飞行，更会造成不可预期的危险。注意：对损耗、有裂痕零件更新及定期保养检查得要性。

检查所有的连杆头是否有松脱的情形，过松的连杆头应先更新，否则将造成直升机无法操控的危险。

确认电池及电源接头是否固定牢靠，飞行中的震动或激烈的飞行，可以造成接头松脱而造成失控的危险。

# 4.ASSEMBLY PROCESS OF MAIN ROTOR HEAD


## 主旋转头组装步骤(1)


Dosage form of spare parts 零件用量表


No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
001	1165-1-Q	Cruciform slotted screw 十字槽平头螺丝	19	M2*7
002	1165-1-Q	Linkage ball A 球头A	19	Φ4.7*4.2
003	1065-1-Q	Main rotor holder arm 大桨夹摇臂	2	
004	1165-1-Q	Washer 垫片	13	Φ2*Φ3.5*0.5
005	1165-1-Q	Bearing 滚珠轴承	12	Φ2*Φ5*2.5
006	1165-1-Q	Hex socket cap screw 圆柱头内六角螺丝	6	M2*8.5
007	1165-Q	Bearing 滚珠轴承	6	Φ4*Φ8*3
008	1065-Q	Plastic main rotor holder 主翼夹头	2	


No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
009	1003-Q	Feathering shaft 横轴	1	Φ4*42.5
010	1003-1	Damper rubber 横轴胶圈	2	
011	1003-5	Washer 垫片	2	Φ4*Φ6*2.0
012	1003-5	Washer 垫片	2	Φ2.6*Φ5*0.5
013	1003-Q	Hex socket cap screw 圆柱头内六角螺丝	4	M2.5*6
014	1142-72-Q	Main rotor housing 中联	1	
015	1142-72-Q	Pin 固定座插销	2	Φ1.4*16


 **Bearing**  
(005) 滚珠轴承 (Φ2\*Φ5\*2.5) X4


 **Bearing**  
(007) 滚珠轴承 (Φ4\*Φ8\*3) X6

 **Linkage ball A**  
(002) 球头A (Φ4.7\*4.2) X4


 **Hex socket cap screw**  
(006) 圆柱头内六角螺丝 (M2\*8.5) X2

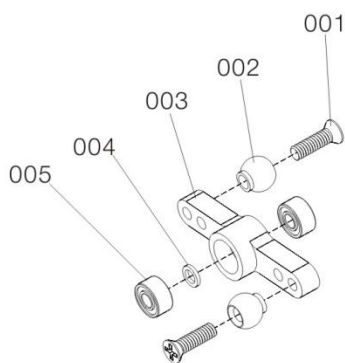
 **Cruciform slotted screw**  
(001) 十字槽平头螺丝 (M2\*7) X4


 **Hex socket cap screw**  
(013) 圆柱头内六角螺丝 (M2.5\*6) X2

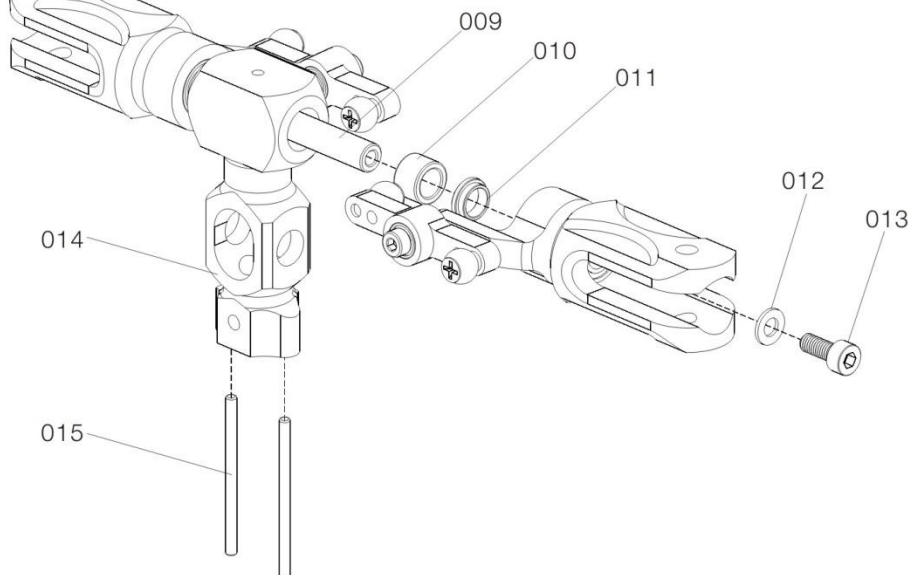
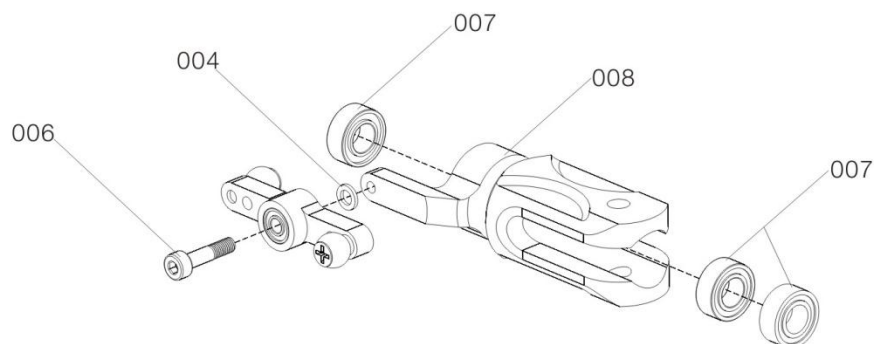
 **Washer**  
(004) 垫片 (Φ2\*Φ3.5\*0.5) X4

 **Washer**  
(011) 垫片 (Φ4\*Φ6\*2.0) X2

 **Washer**  
(012) 垫片 (Φ2.6\*Φ5\*0.5) X2



 Apply a little amount of screw glue when screw is locked into metal part.  
螺丝锁入金属件请使用适量螺丝胶。



# 4.ASSEMBLY PROCESS OF MAIN ROTOR HEAD

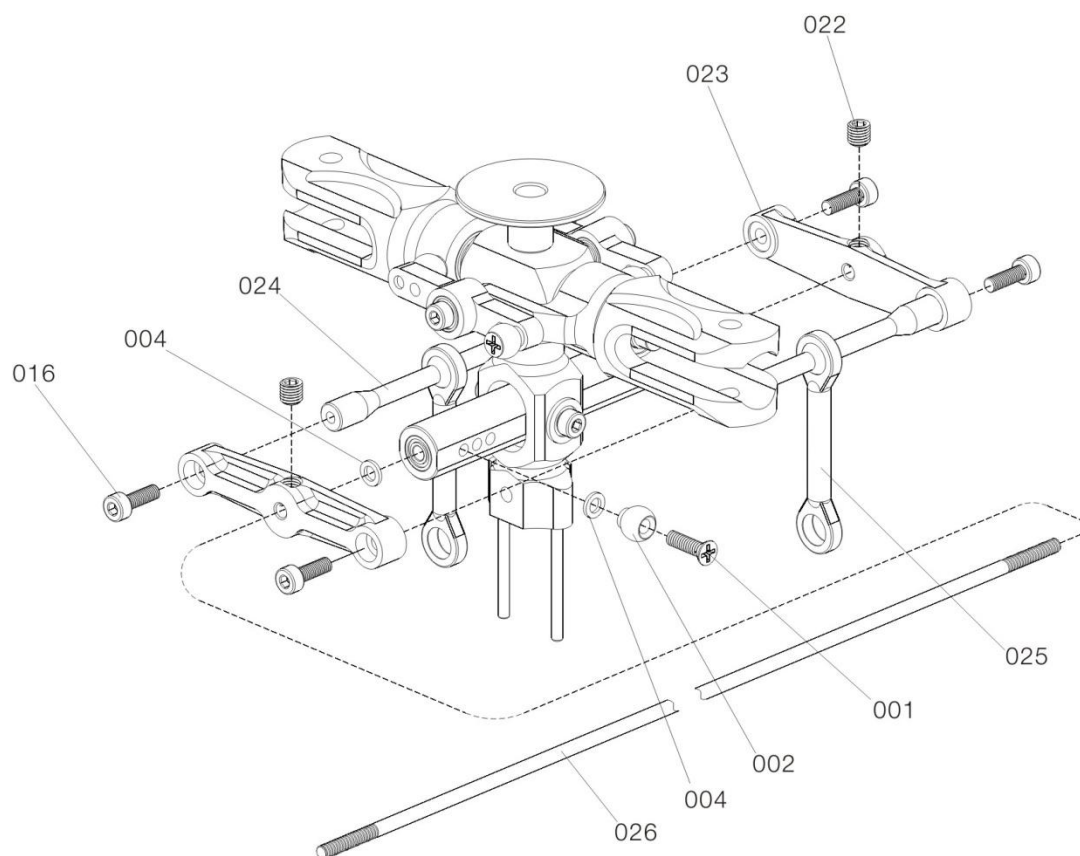
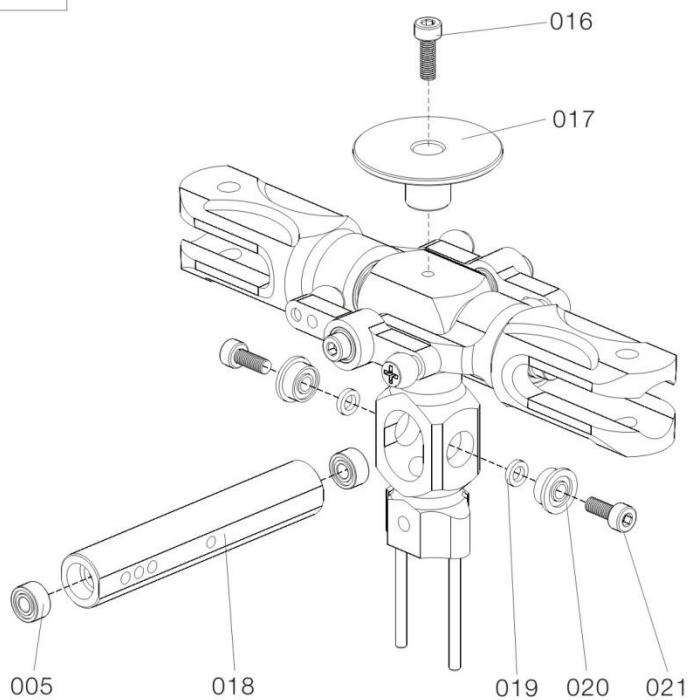
## 主旋转头组装步骤(2)

Dosage form of spare parts 零件用量表

No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
016	1042-Q	Hex socket cap screw 圆柱头内六角螺丝	19	M2*6
017	1042-Q	Rotorbremse 刹车帽	1	
018	1128-Q	Flybar seesaw holder 平衡杆固定座	1	
019	1128-Q	Washer 垫片	2	$\Phi 2 * \Phi 3.5 * 0.7$
020	1142-72-Q	Flange bearing 法兰轴承	4	$\Phi 2 * \Phi 5 * 2.5$
021	1128-Q	Hex socket cap screw 圆柱头内六角螺丝	8	M2*5

No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
022	1081-Q	Set screw 机米螺丝	6	M3*3
023	1081-Q	Ball end flybar 平衡翼控制臂	2	
024	1081-Q	Ball end flybar control rod 平衡翼球型控制杆	2	
025	1043-SD	Dual-bore linkage rod 双孔连杆	2	
026	1104	Flybar rod 平衡杆	1	$\Phi 2 * 220$

Apply a little amount of screw glue when screw is locked into metal part.  
螺丝锁入金属件请使用适量螺丝胶。



Bearing

(005) 滚珠轴承 ( $\Phi 2 * \Phi 5 * 2.5$ ) X2



Kugellager

(020) 滚珠轴承 ( $\Phi 2 * \Phi 5 * 2.5$ ) X2



Linkage ball A

(002) 球头A ( $\Phi 4.7 * 4.2$ ) X2



Hex socket cap screw

(021) 圆柱头内六角螺丝 (M2\*5) X2



Hex socket cap screw

(016) 圆柱头内六角螺丝 (M2\*6) X4



Cruciform slotted screw

(001) 十字槽平头螺丝 (M2\*7) X2



Set screw

(022) 机米螺丝 (M3\*3) X2



Washer

(019) 垫片 ( $\Phi 2 * \Phi 3.5 * 0.7$ ) X2



Washer

(004) 垫片 ( $\Phi 2 * \Phi 3.5 * 0.5$ ) X4



# 4.ASSEMBLY PROCESS OF MAIN ROTOR HEAD



## 主旋转头组装步骤(3)



Dosage form of spare parts 零件用量表



No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
027	1196-72-Q	Washout base 向位器	1	
028	1024-72-Q	Washout control arm 稳定控制摇臂	2	
029	1024-72-Q	Round head cross slots screw 圆柱头十字螺丝	4	M1.5*4
030	1024-72-Q	Bearing 滚珠轴承	4	Φ1.5*Φ4*2
031	1024-72-Q	Shear type arm 剪型臂	2	
032	1142-72-Q	Nut M2 螺母	3	M2



No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
033	1111-Q	Swasplate 倾斜盘	1	
034	1111-Q	Linkage ball B 球头B	1	Φ4.7*17
035	1111-Q	Cruciform slotted screw 十字槽平头螺丝	1	M2*20
036	1142-72-Q	Hex socket cap screw 圆柱头内六角螺丝	3	M2*12
037	1012	Main shaft 主轴	1	Φ5*116




  
 Hex socket cap screw  
 (036)圆柱头内六角螺丝(M2\*12) X1




  
 Hex socket cap screw  
 (006)圆柱头内六角螺丝(M2\*8.5) X2




  
 Cruciform slotted screw  
 (001)十字槽平头螺丝(M2\*7) X8




  
 Cruciform slotted screw  
 (035)十字槽平头螺丝(M2\*20) X1




  
 Round head cross slots screw  
 (029)圆柱头十字螺丝(M1.5\*4) X4




  
 Bearing  
 (030)滚珠轴承(Φ1.5\*Φ4\*2) X4

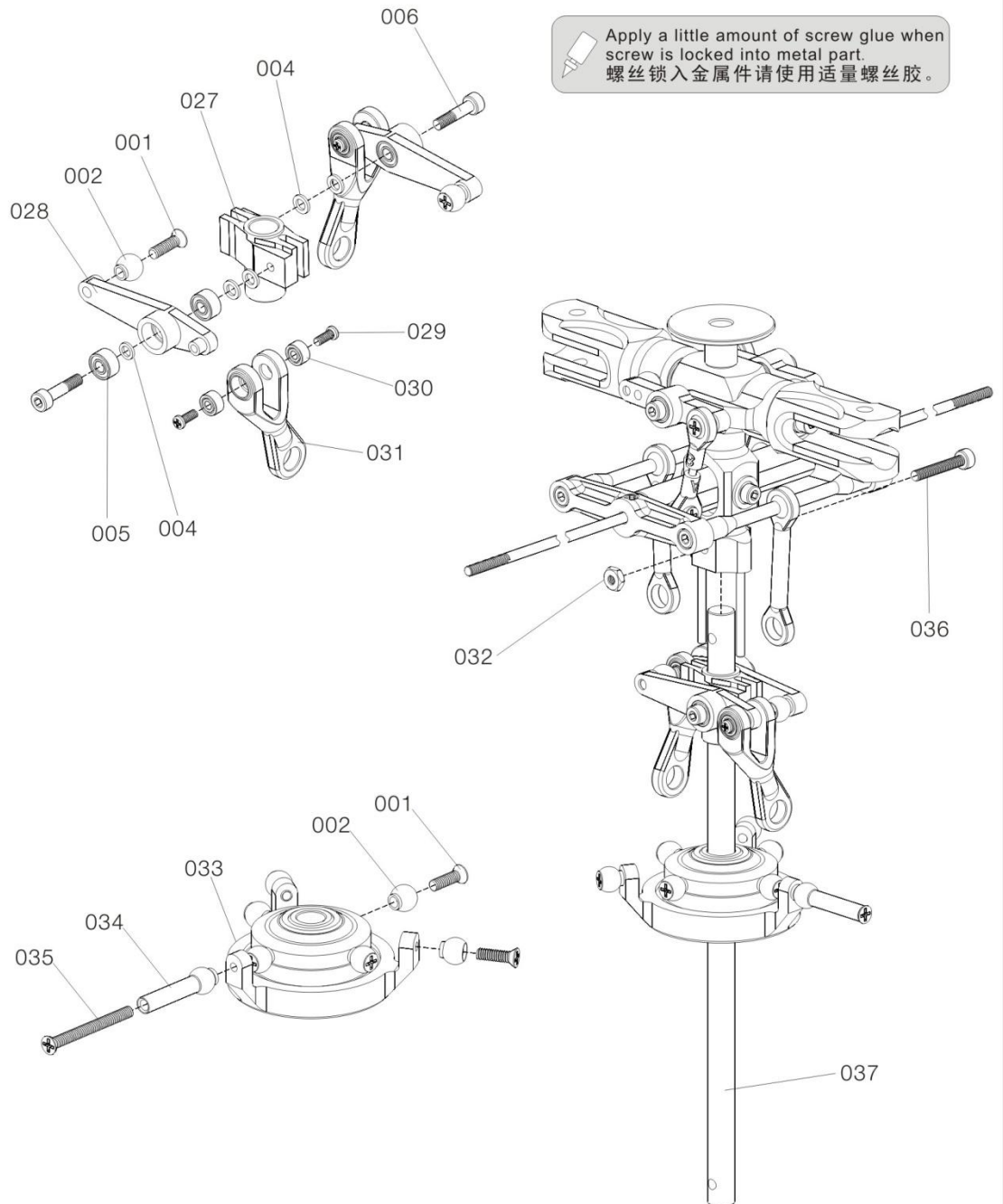

  
 Bearing  
 (005)滚珠轴承(Φ2\*Φ5\*2.5) X4


  
 Washer  
 (004)垫片(Φ2\*Φ4\*0.5) X6


  
 Nut M2  
 (032)螺母(M2) X1


  
 Linkage ball B  
 (034)球头B(Φ4.7\*17) X1


  
 Linkage ball A  
 (002)球头A(Φ4.7\*4.2) X8

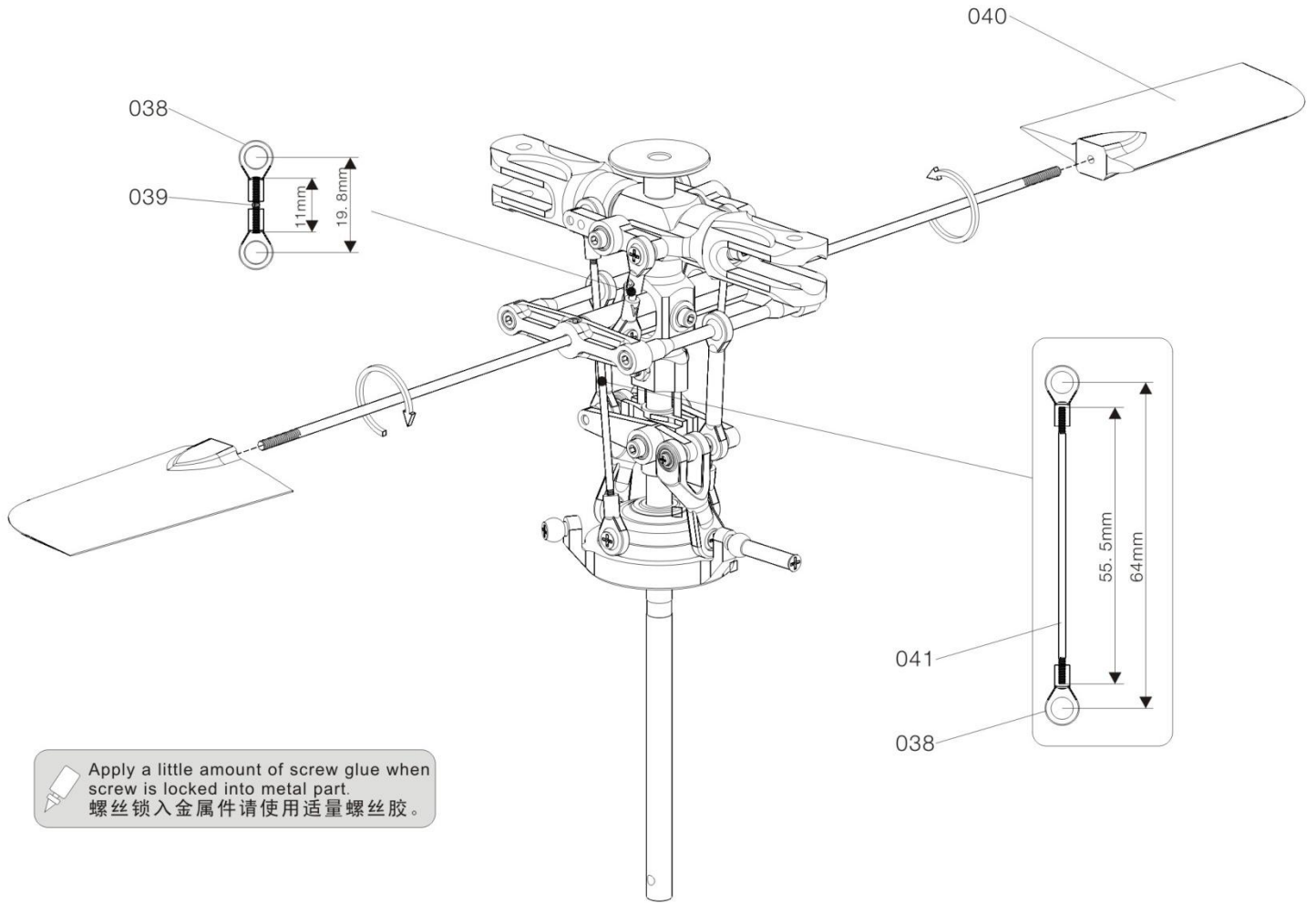


# 4.ASSEMBLY PROCESS OF MAIN ROTOR HEAD

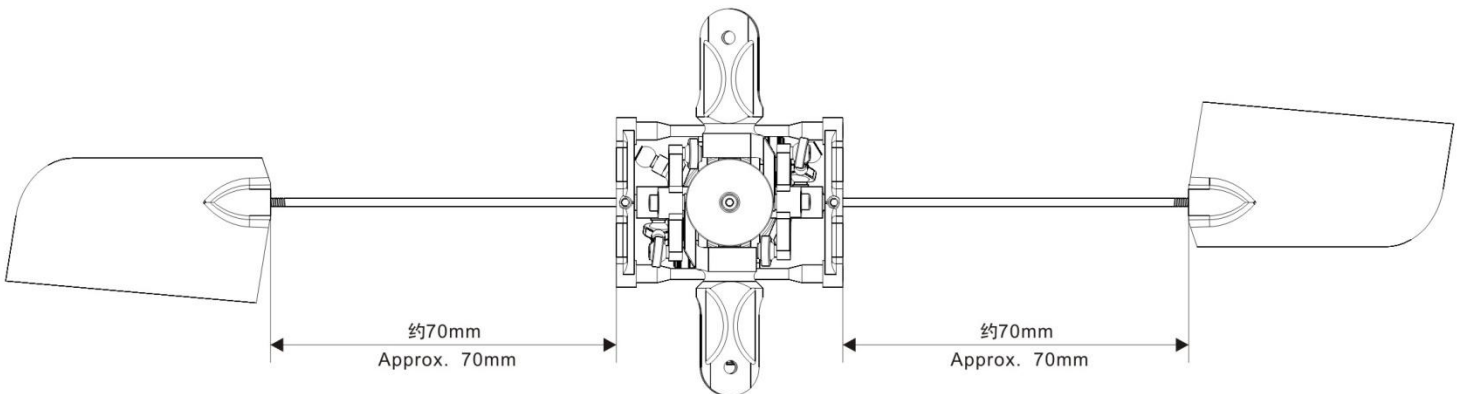
## 主旋转头组装步骤(4)

Dosage form of spare parts 零件用量表

No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
038	1043-SD	Ball link head 拉杆头	16	
039	1043-SD	Linkage rod (A) 连杆(A)	2	Φ1.4*11
040	1191-Q	Flybar paddle 平衡翼	2	
041	1043-SD	Linkage rod (B) 连杆(B)	2	Φ1.4*55.5



Apply a little amount of screw glue when screw is locked into metal part.  
螺丝锁入金属件请使用适量螺丝胶。



# 5.ASSEMBLY PROCESS OF MAIN FRAME AND POWER SYSTEM

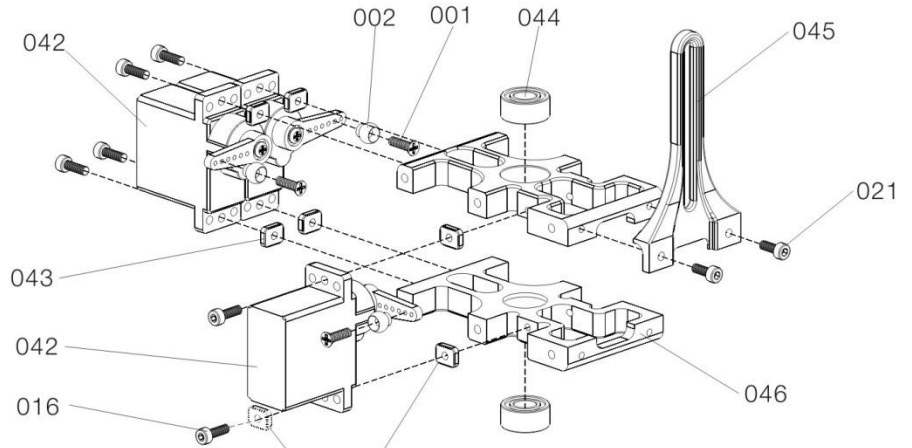
## 主体侧板与动力系统组装步骤(1)

Dosage form of spare parts 零件用量表

No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
042		Servo 伺服器	3	9g
043		Canopy mounting bolt 伺服器垫片	6	
044	1117-2-SD	Bearing 滚珠轴承	2	Φ5*Φ11*5
045	1113-SD	Anti-rotation bracket 十字盘导板	1	
046	1117-2-SD	Washer 主轴轴承座	2	
047	1117-1-SD	Driven gear bearing block 从动齿轮轴承座	1	
048	1117-1-SD	Bearing 滚珠轴承	2	Φ3*Φ8*3

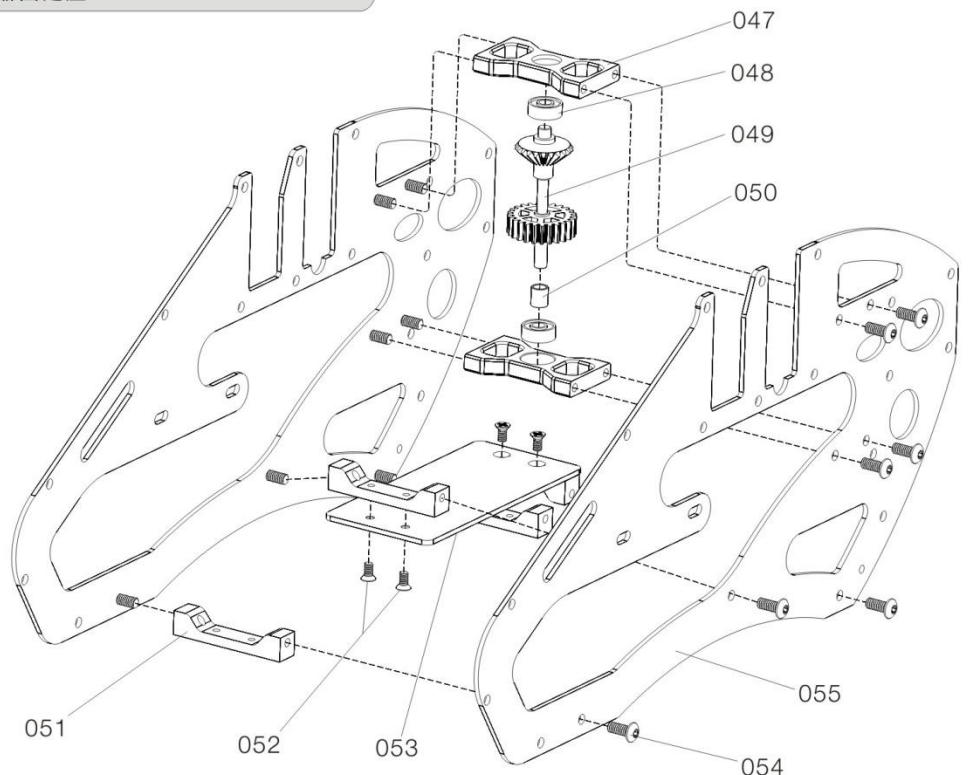
No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
049	1117-3SD	Driven gear 从动齿轮组	1	
050	1117-3SD	Copper sheath 铜套	1	Φ3*Φ4*4.6
051	1188-Q	Skid mount 脚架固定座	4	
052	1188-Q	Countersunk head screw 沉头十字槽螺丝	6	M2*4
053	1139-SD	Copper sheath 接收机固定板	1	
054	1040-SD	Socket button head screw 半圆头内六角螺丝	34	M2. 5*6
055	1137-SD	Carbon fiber main frame 碳纤维主体侧板	2	

Apply a little amount of screw glue when screw is locked into metal part.  
螺丝锁入金属件请使用适量螺丝胶。



Apply a little amount of screw glue when screw is locked into metal part.  
用于调整伺服器球头垂直或保护伺服器固定座。

-  Hex socket cap screw (016) 圆柱头内六角螺丝 (M2\*6) X6
-  Hex socket cap screw (021) 圆柱头内六角螺丝 (M2\*5) X2
-  Socket button head screw (054) 半圆头内六角螺丝 (M2. 5\*6) X34
-  One-way Bearing (052) 沉头十字槽螺丝 (M2\*4) X4
-  Bearing (048) 滚珠轴承 (Φ3\*Φ8\*3) X2
-  Bearing (044) 滚珠轴承 (Φ5\*Φ11\*5) X2
-  Linkage ball A (002) 球头A (Φ4. 7\*4. 2) X3
-  Cruciform slotted screw (001) 十字槽平头螺丝 (M2\*7) X3





## 5.ASSEMBLY PROCESS OF MAIN FRAME AND POWER SYSTEM

### 主体侧板与动力系统组装步骤(2)

Dosage form of spare parts 零件用量表

No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
056	1041-4-SD	Canopy mounting bolt 机壳固定柱	2	
057	1123-SD	Socket button head screw 半圆头内六角螺丝	8	ST2. 5*6
058	1123-SD	Battery mount 电池固定座	1	

No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
059	1014-SD	Hex socket cap screw 圆柱头内六角螺丝	4	M2*8
060	1014-SD	Landing skid 脚架	1	



Proper torque is fine when locking screw into plastic parts, the redundant torque may cause the screw to strip or fracture.  
螺丝锁入塑胶件时请务必注意，适当扭力即可。而过大的扭力可能会导致滑牙，断裂。



Apply a little amount of screw glue when screw is locked into metal part.  
螺丝锁入金属件请使用适量螺丝胶。



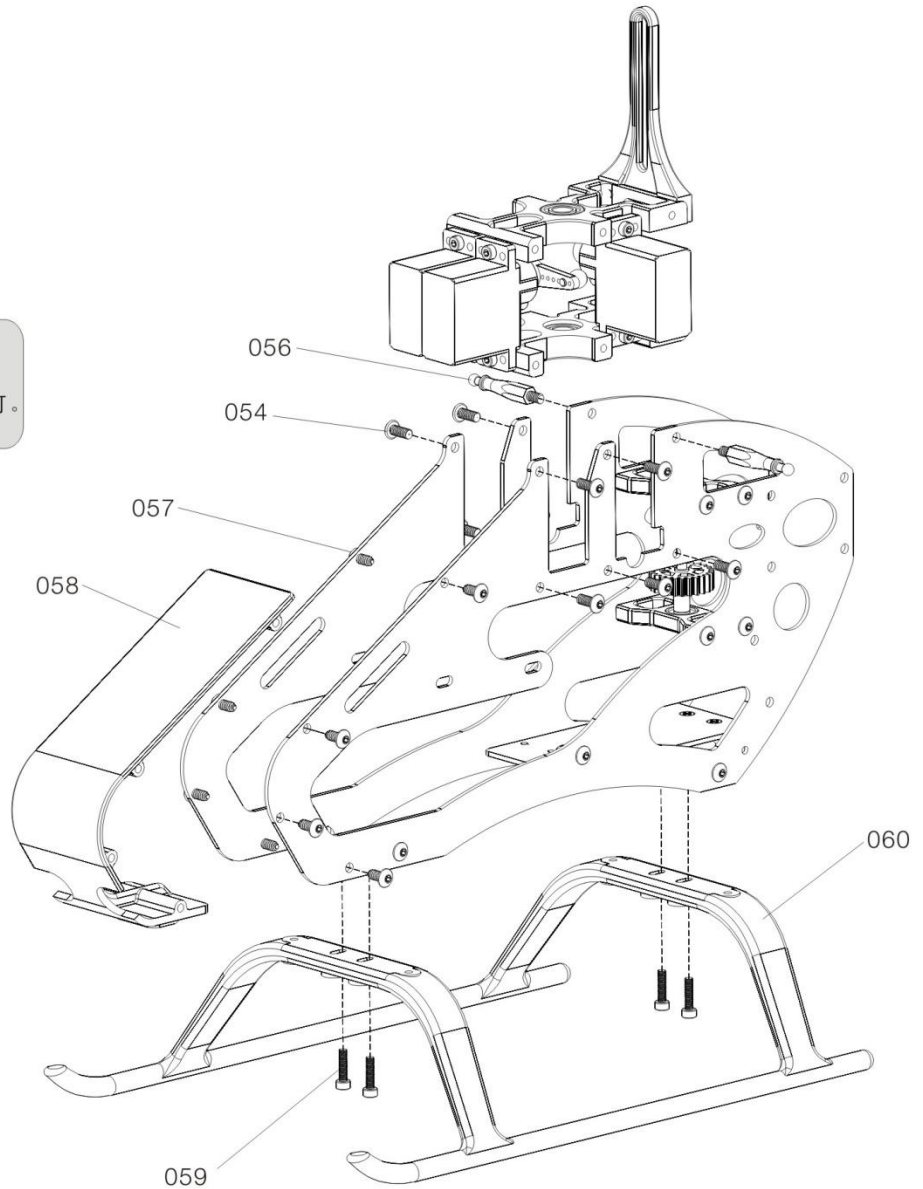
Socket button head screw  
(057)半圆头内六角螺丝(ST2. 5\*6) X8



Socket button head screw  
(054)半圆头内六角螺丝(M2. 5\*6) X10



Hex socket cap screw  
(059)圆柱头内六角螺丝(M2\*8) X4

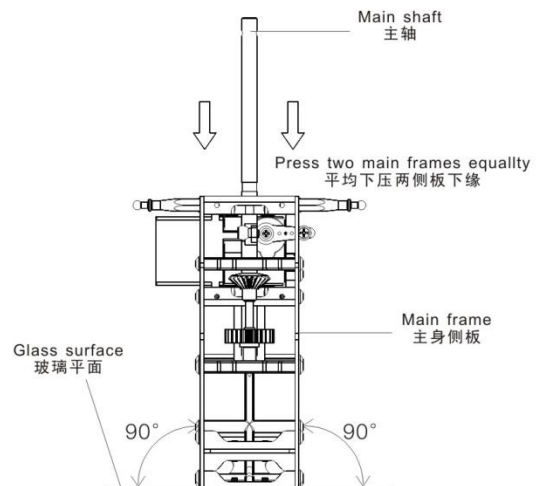


#### Main frame assembly key point:

First do not fully tighten the screws of main frames and put two bearings through the main shaft to check if the movements are smooth. The bottom bracket must be firmly touched the level table top (glass surface): please keep the smooth movements on main shaft and level bottom bracket, then tighten the screws slowly. This assembly can help enhance the power and flight performance.

#### 机身侧板组装重点:

侧板螺丝不完全锁紧，放入主轴贯穿二颗轴承确认上下移动必须滑顺，主体底板必须与水平旧面(玻璃平面)踏实紧贴，请保持主轴滑顺与底板平行旧面后慢慢锁紧螺丝。正确侧板的组装对动力与飞行性能有明显帮助。



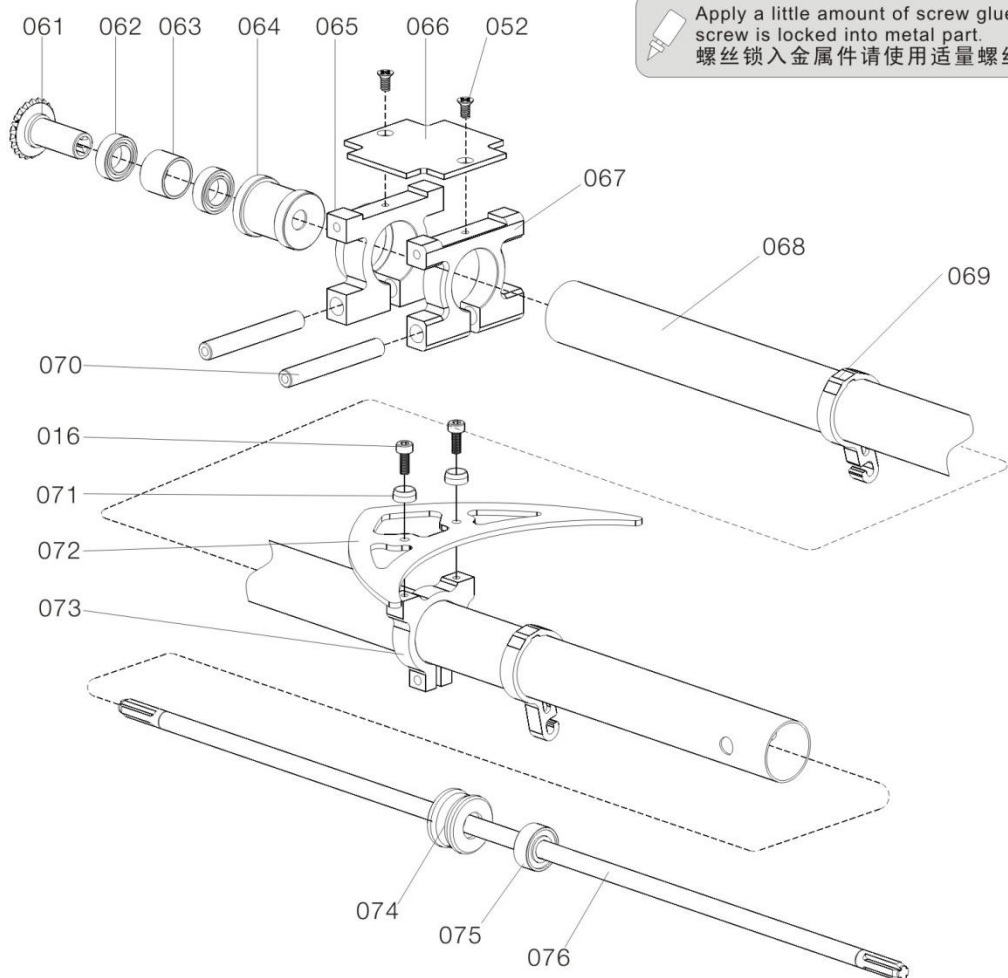
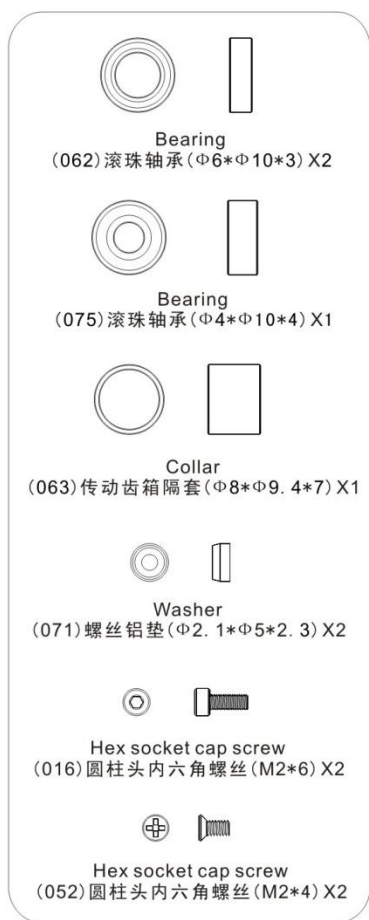
## 6.ASSEMBLY PROCESS OF TAIL ROTOR BLADES

### 尾旋翼组装步骤(1)

Dosage form of spare parts 零件用量表

No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
061	1117-4SD	Bevel gear 传动尾锥齿	2	
062	1117-5SD	Bearing 滚珠轴承	4	Φ6*Φ10*3
063	1117-5SD	Collar 传动齿箱隔套	2	Φ8*Φ9.4*7
064	1117-5SD	Drive gear bearing block 传动齿轮轴承座	1	
065	1117-SD	Tail pulley 传动齿轮固定座	1	
066	1139-SD	Gyro mounting plate 陀螺仪固定板	1	
067	1117-SD	Tail boom mount 尾管固定座	1	
068	1102-SD	Tail boom 尾管	1	Φ13*Φ14*357

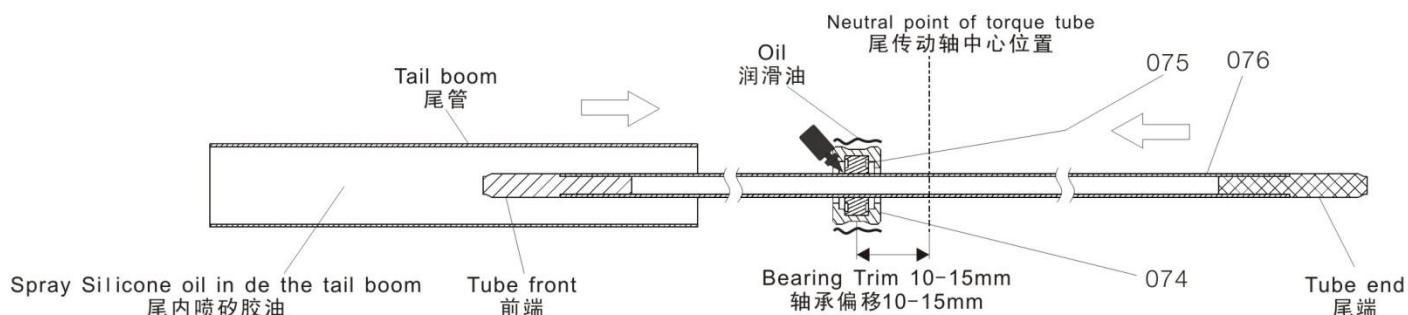
No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
069	1017-1-SD	Tail linkage rod mounting 尾控制杆固定环	2	
070	1117-SD	Tail boom mount bolt 尾管固定柱	2	
071	1208-SD	Washer 螺丝铝垫	8	
072	1208-75-SD	Horizontal fin 水平翼	1	
073	1208-SD	Horizontal fin mount 水平翼固定座	1	
074	1117-7SD	Tail gear bearing block 尾传动轴承座	1	
075	1117-7SD	Bearing 滚珠轴承	1	Φ4*Φ10*4
076	1117-6SD	Tail drive shaft rod 尾传动轴杆	1	



Apply a little amount of screw glue when screw is locked into metal part.  
螺丝锁入金属件请使用适量螺丝胶。

#### Tip to fix the torque tube 传动轴轴承固定要领

Please apply some CA glue to fix 4\*10\*4 bearing on the torque tube, avoid CA glue adhering to the dust cover or it may cause the bearing stuck. When assembling into the tail boom, please apply some oil on the bearing holder and press the holder into the tail boom horizontally.  
请以少量瞬间胶将4\*10\*4轴承固定于尾传动轴上，避免瞬间胶沾到轴承的防尘盖而导致轴承卡死，插入尾管内时，尾传动轴承垫圈外表抹些润滑油，将尾传动轴承垫圈平行压入尾管中不可歪斜。



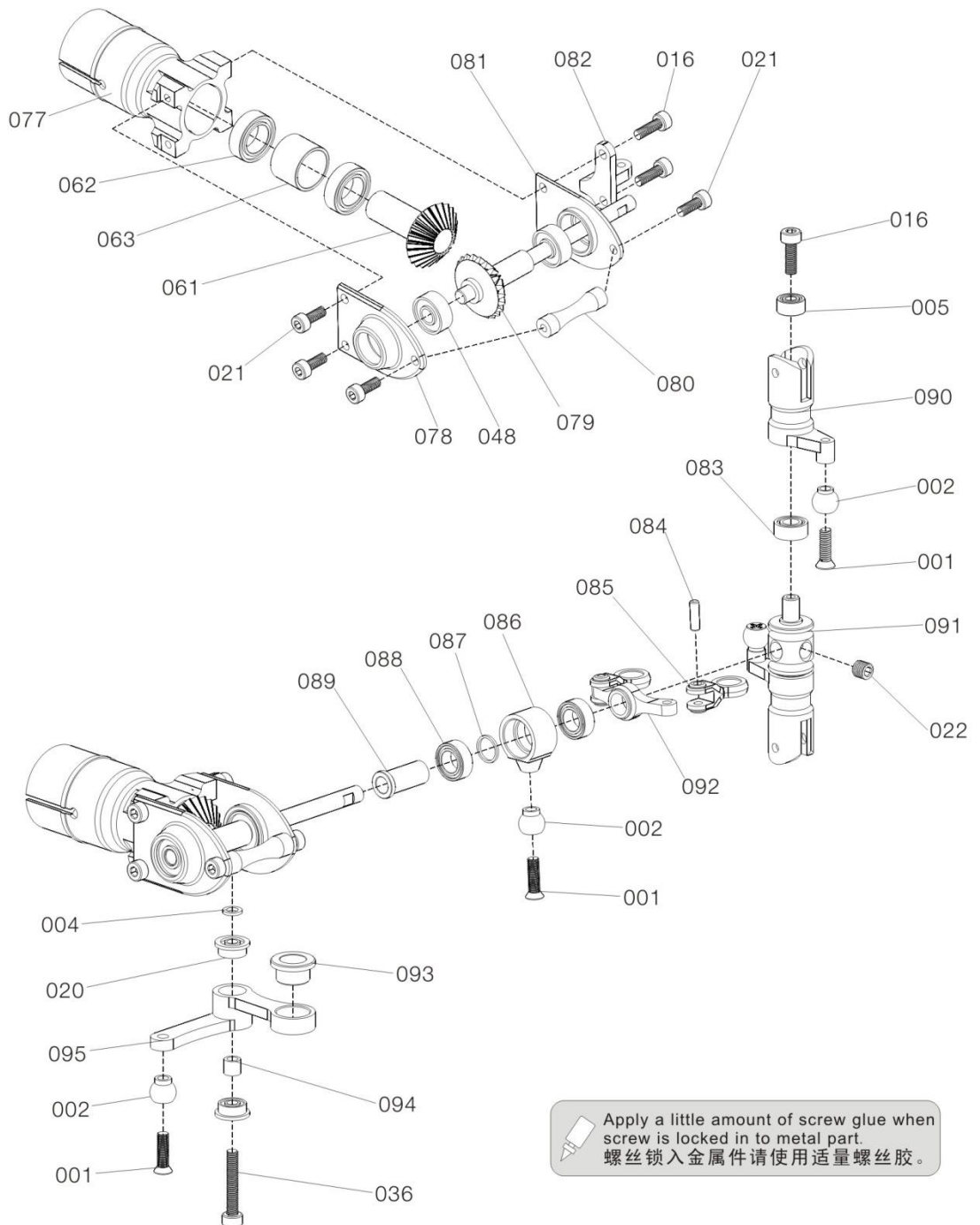
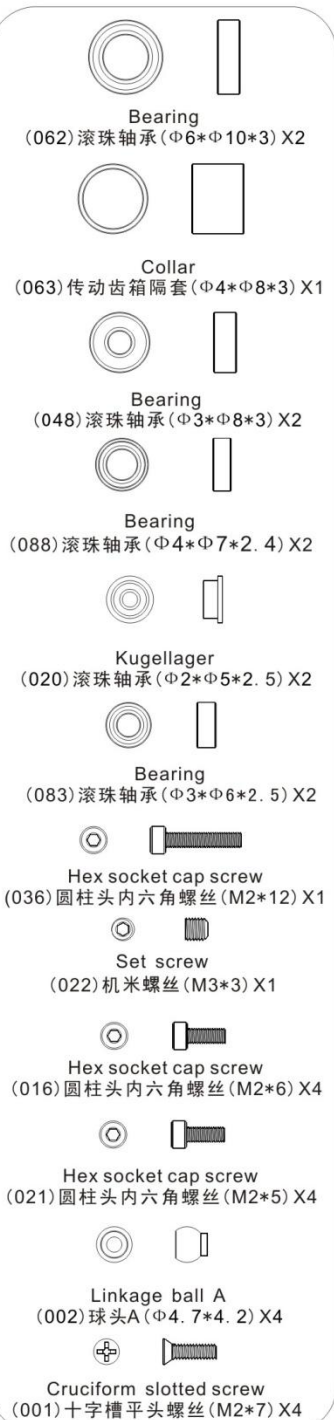
## 6.ASSEMBLY PROCESS OF TAIL ROTOR BLADES

### 尾旋翼组组装步骤(2)

Dosage form of spare parts 零件用量表

No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
077	1108-SD	Metal tail unit set 金属轴传尾齿箱	1	
078	1108-SD	Metal plate (L) of tail unit 金属尾轴传左侧板	1	
079	1140-SD	Tail shaft 尾轴	1	
080	1108-SD	Aluminum bolt 尾齿箱支柱	1	
081	1108-SD	Metal plate (R) of tail unit 金属尾轴传右侧板	1	
082	1135-1-SD	Tail arm holder 尾摇臂固定座	1	
083	1189-72	Bearing 滚珠轴承	2	$\Phi 3 * \Phi 6 * 2.5$
084	1135-3-SD	Pin 销子	2	$\Phi 1.6 * 5.5$
085	1135-3-SD	Tail control link end 尾控制连杆头	2	
086	1135-3-SD	Tail blade control bearing sleeve 尾翼控制轴承套	1	

No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
087	1135-3-SD	Copper sheath 铜套	1	$\Phi 4.2 * \Phi 5 * 0.5$
088	1135-3-SD	Bearing 滚珠轴承	2	$\Phi 4 * \Phi 7 * 2.5$
089	1135-3-SD	Copper sheath 铜套	1	
090	1189-72	Tail rotor holder 尾翼夹头	2	ST2*6
091	1189-72	Tail hub 尾中联	1	
092	1135-3-SD	T type arm 尾推T控制臂	1	
093	1135-2-SD	Tail control rod fixing ring 尾推胶套	1	
094	1135-2-SD	Copper sheath 铜套	1	$\Phi 2 * \Phi 3 * 5.7$
095	1135-2-SD	Tail servo control arm 尾舵控制L臂	1	



Apply a little amount of screw glue when screw is locked in to metal part.  
螺丝锁入金属件请使用适量螺丝胶。

## 6.ASSEMBLY PROCESS OF TAIL ROTOR BLADES

### 尾旋翼组组装步骤(3)

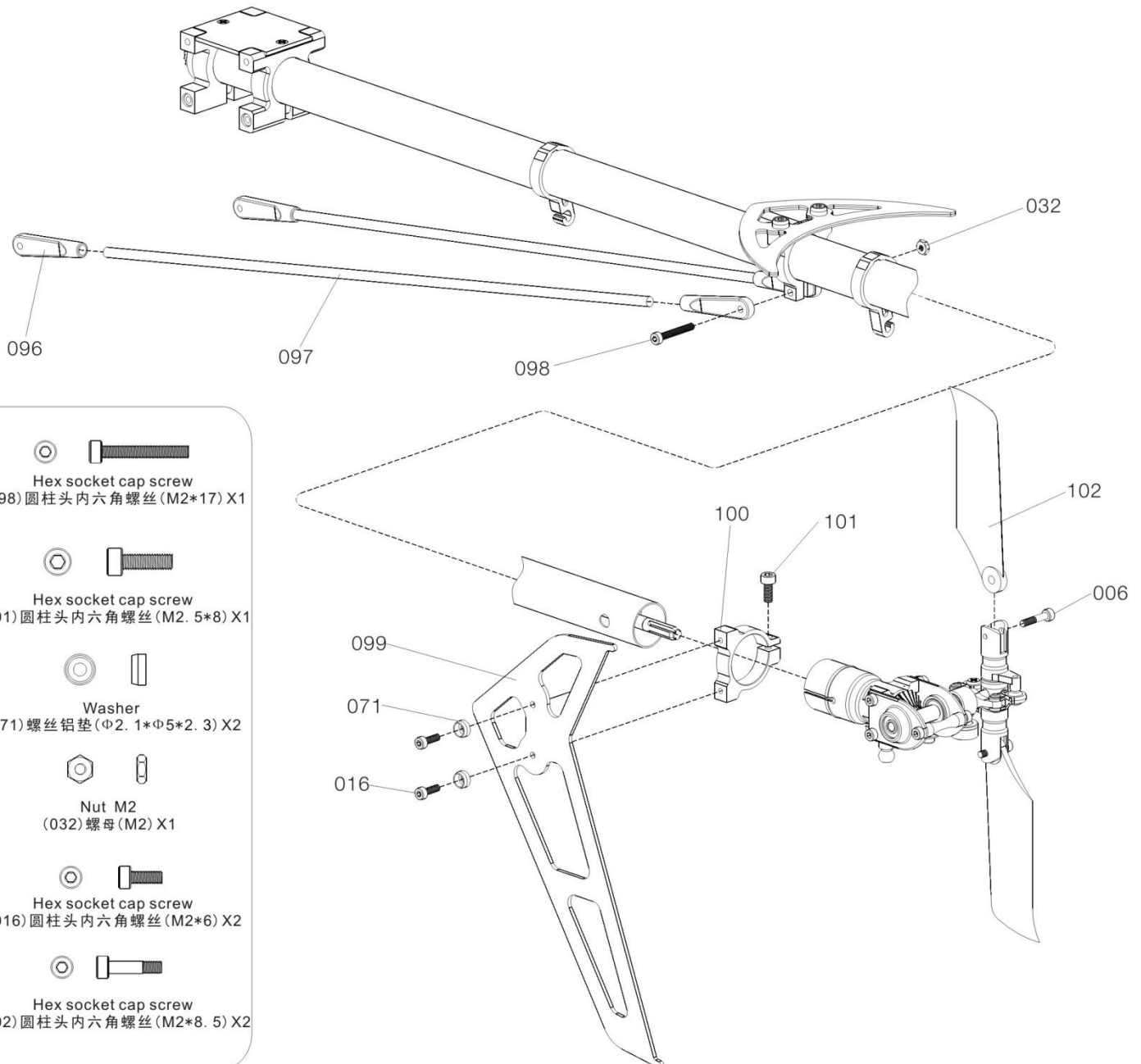
Dosage form of spare parts 零件用量表

No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
096	1061-SD	Tail boom brace connecting head 尾支撑杆接头	4	
097	1061-SD	Tail boom brace 尾支撑杆	2	Φ3*220
098	1208-SD	Hex socket cap screw 圆柱头内六角螺丝	1	M2*17
099	1209-75-SD	Vertical fin 垂直翼	1	

No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
100	1117-8-SD	Vertical fin mount 垂直翼固定座	1	
101	1117-8-SD	Hex socket cap screw 圆柱头内六角螺丝	1	M2.5*8
102	1192	Tail rotor blade 尾旋翼	2	



Apply a little amount of screw glue when screw is locked in to metal part.  
螺丝锁入金属件请使用适量螺丝胶。



   
Hex socket cap screw  
(098)圆柱头内六角螺丝(M2\*17) X1

   
Hex socket cap screw  
(101)圆柱头内六角螺丝(M2.5\*8) X1

   
Washer  
(071)螺丝铝垫(Φ2.1\*Φ5\*2.3) X2

   
Nut M2  
(032)螺母(M2) X1

   
Hex socket cap screw  
(016)圆柱头内六角螺丝(M2\*6) X2

   
Hex socket cap screw  
(102)圆柱头内六角螺丝(M2\*8.5) X2


## 5.ASSEMBLY PROCESS OF MAIN FRAME AND POWER SYSTEM


### 主体侧板与动力系统组装步骤(3)

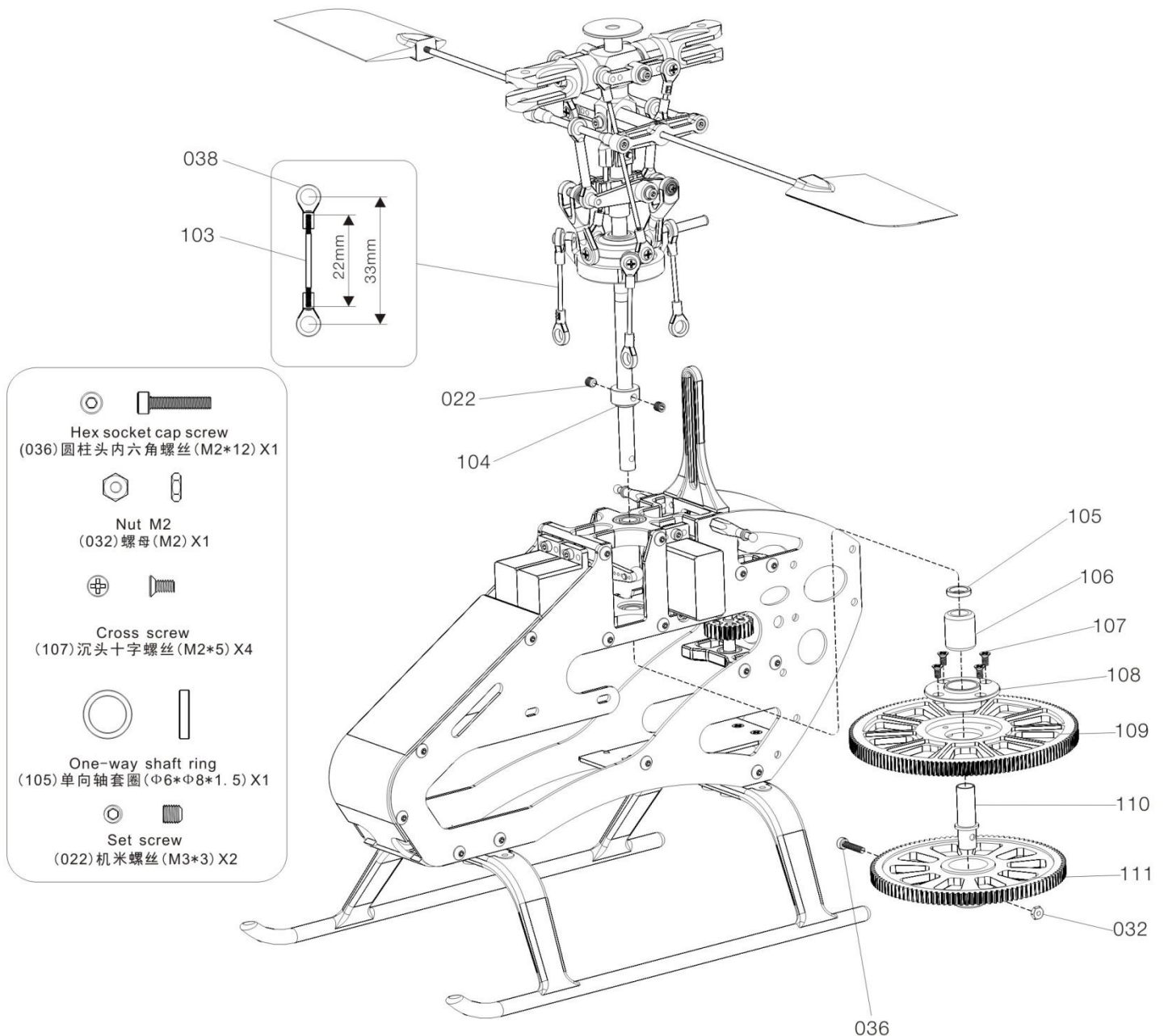
Dosage form of spare parts 零件用量表

No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
103	1043-SD	Linkage rod (C) 拉杆	3	Φ1.4*22
104	1011-4	Main shaft lock collar 主轴固定环	1	
105	1154	One-way shaft ring 单向轴套圈	1	
106	1153-4-3	One-way bearing 单向轴承	1	
107	1153-4-3	Cross screw 沉头十字螺丝	4	M2*5

No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
108	1153-4-3	Main gear base 大齿盘固定座	1	
109	1154-2-SD	Main drive gear 大齿盘	1	
110	1154	One-way bearing bush 单向轴承套	1	
111	1154-1-SD	Tail drive gear 尾齿轮	1	

 Apply a little amount of screw glue when screw is locked in to metal part.  
螺丝锁入金属件请使用适量螺丝胶。

 Proper torque is necessary when locking screw into plastic parts, but the big torque may cause the screw to strip or fracture.  
螺丝锁入塑胶件时请务必注意，适当扭力即可。而过大的扭力可能会导致滑牙，断裂。



## 5.ASSEMBLY PROCESS OF MAIN FRAME AND POWER SYSTEM

### 主体侧板与动力系统组装步骤(4)

Dosage form of spare parts 零件用量表

No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
112	1065-Q	Hex socket cap screw 圆柱头内六角螺丝	2	M3*16
113	1193-2	Main blade 主翼	1	315mm
114	1065-Q	Locknut 防松螺母	2	M3



Locknut  
(114) 防松螺母 (M3) X2



Hex socket cap screw  
(112) 圆柱头内六角螺丝 (M3\*16) X2

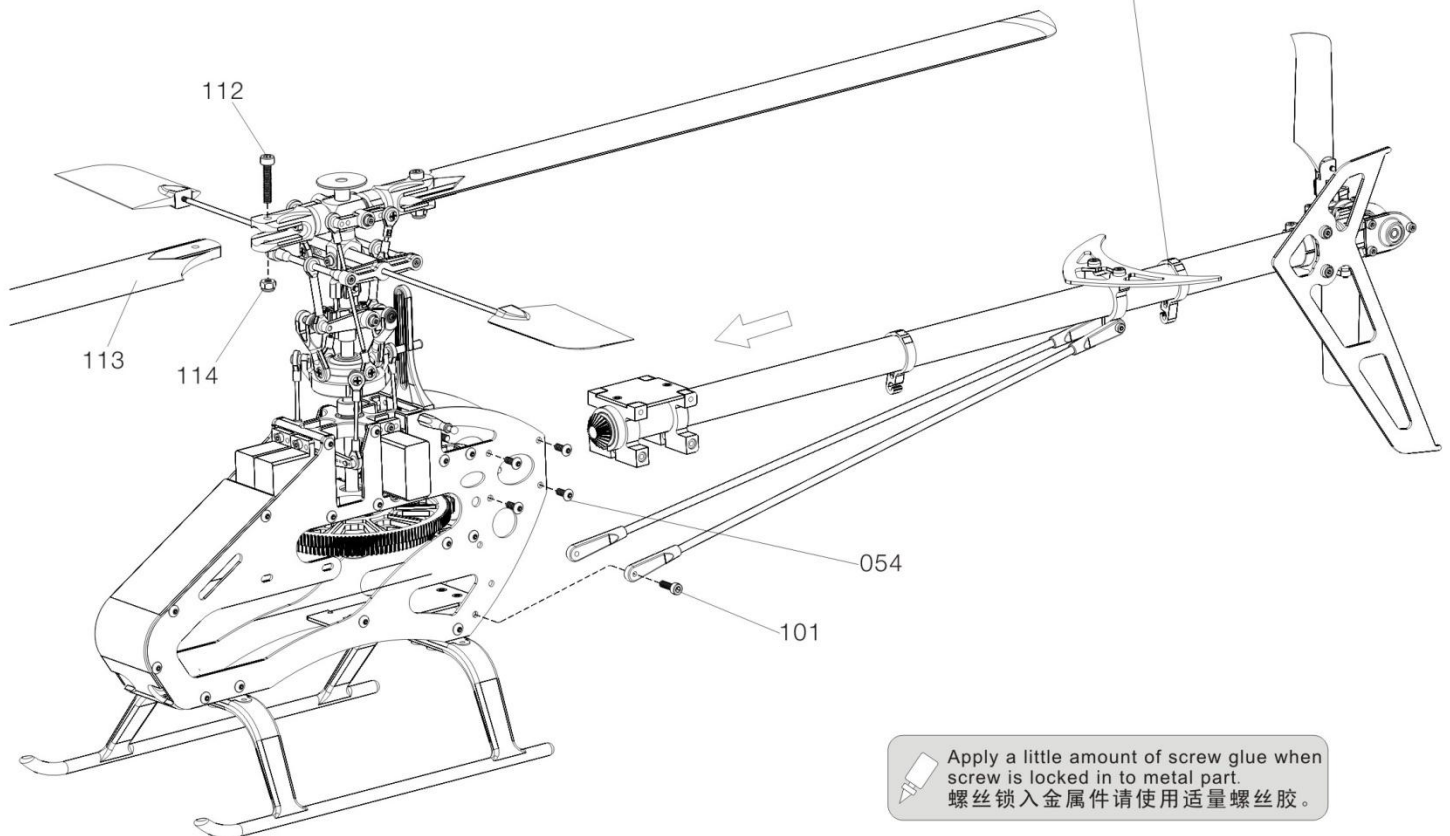
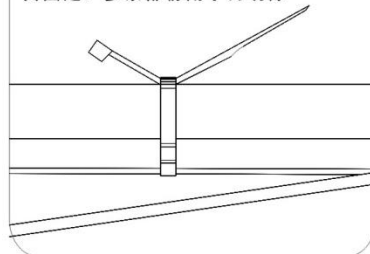


Hex socket cap screw  
(101) 圆柱头内六角螺丝 (M2.5\*8) X2



Socket button head screw  
(054) 半圆头内六角螺丝 (M2.5\*6) X8

Fasten the tail control rod fixing ring with Nylon cable tie and cut the redundant part of the tie.  
使用尼龙扎带穿过尾控制杆固定环，将其固定，多余部份用小刀切除



Apply a little amount of screw glue when screw is locked in to metal part.  
螺丝锁入金属件请使用适量螺丝胶。

## 5.ASSEMBLY PROCESS OF MAIN FRAME AND POWER SYSTEM

### 主体侧板与动力系统组装步骤(5)

Dosage form of spare parts 零件用量表

No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
115	1151-SD	Hex socket cap screw 圆柱头内六角螺丝	2	M3*6
116	2001-1	Motor pinion gear 马达齿轮	1	13T
117	1151-SD	Motor mount 马达固定座	1	
118		Motor 马达	1	3500KV
119	1114-SD	Tail servo mount 尾伺服器固定座	1	

No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
120		Tail servo 尾伺服器	1	
121	1114-SD	Hex socket cap screw 圆柱头内六角螺丝	4	ST2*6
122	1017-SD	Tail linkage rod 尾拉杆	1	
123	1017-SD	Tail linkage rod connecting head 尾拉杆接头	2	



Hex socket cap screw  
(115)圆柱头内六角螺丝(M3\*6) X2



Set screw  
(022)机米螺丝(M3\*3) X1



Linkage ball A  
(002)球头A(Φ4.7\*4.2) X1



Cruciform slotted screw  
(001)十字槽平头螺丝(M2\*7) X1



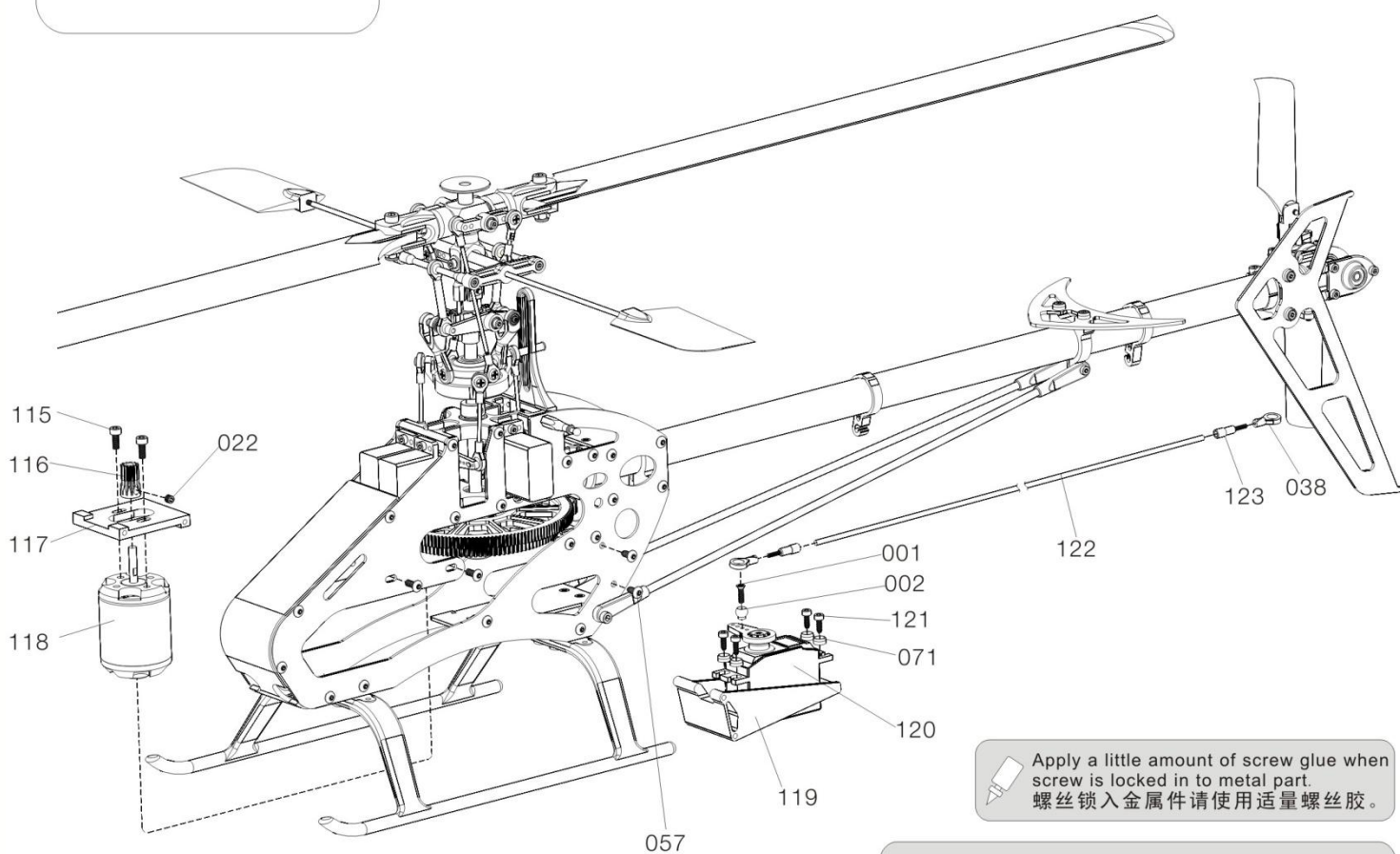
Washer  
(071)螺丝铝垫(Φ2.1\*Φ5\*2.3) X4



Socket button head screw  
(057)半圆头内六角螺丝(ST2.5\*6) X4



Socket button head screw  
(121)半圆头内六角螺丝(ST2\*6) X4



Apply a little amount of screw glue when screw is locked in to metal part.  
螺丝锁入金属件请使用适量螺丝胶。



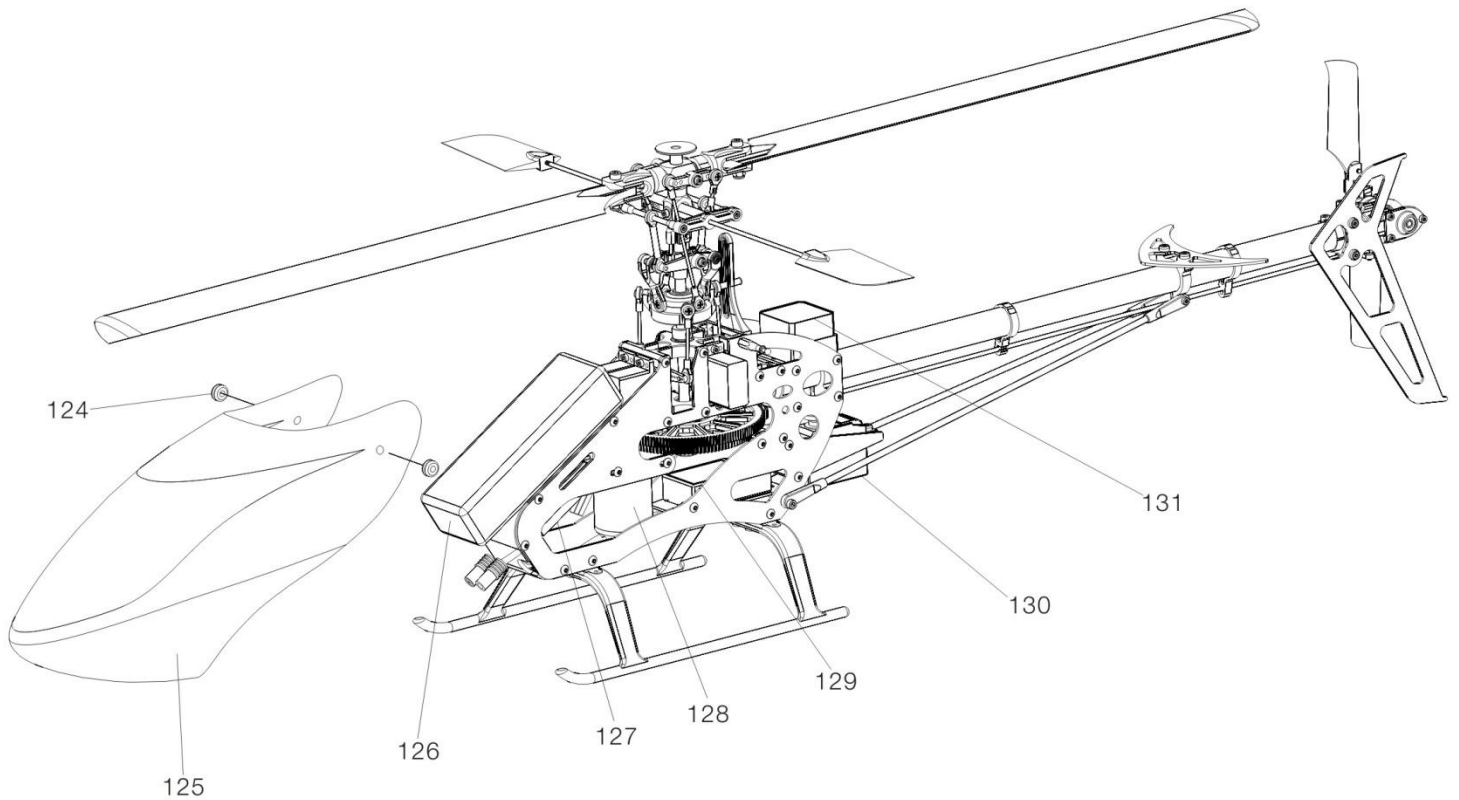
Proper torque is necessary when locking screw into plastic parts, but the big torque may cause the screw to strip or fracture.  
螺丝锁入塑胶件时请务必注意,适当扭力即可。而过大的扭力可能会导致滑牙,断裂。

## 5.ASSEMBLY PROCESS OF MAIN FRAME AND POWER SYSTEM

### 主体侧板与动力系统组装步骤(6)

Dosage form of spare parts 零件用量表

No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
124	1002-1	Canopy rubber gasket 头罩胶圈	2	
125	1047-2-SD	Canopy 机头罩	1	
126		Battery 电池	1	
127		Canopy rubber gasket 电调	2	
128		Motor 马达	1	
129		Receiver 接收器	1	
130		Tail servo 尾伺服器	2	
131		Gyro 陀螺仪	1	





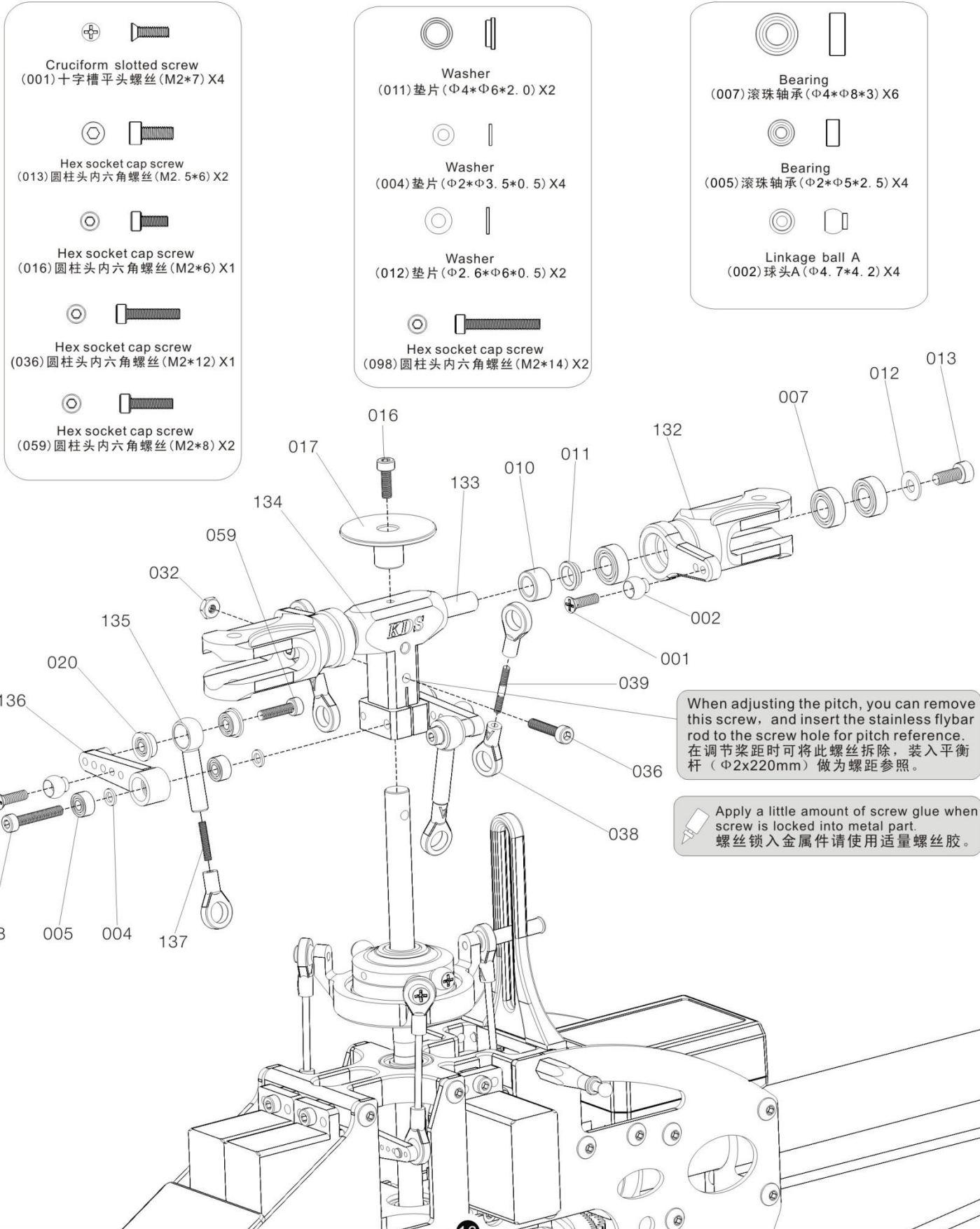
# 4.ASSEMBLY PROCESS OF FBL MAIN ROTOR HEAD

## 无副翼旋转头组装步骤

Dosage form of spare parts 零件用量表

No.序号	Part No. 零件编号	Description 名称	Quantity 数量	Specification 规格
132	1065-SD	FBL Main rotor holder 无副翼主翼夹头	2	
133	1003-FBL	FBL Feathering shaft 无副翼横轴	1	Φ4*47.6
134	1142-72-SD	FBL Main rotor housing 无副翼中联	1	

No.序号	Part No. 零件编号	Description 名称	Quantity 数量	Specification 规格
135	1024-72-SD	FBL Control arm 无副翼摇臂	2	
136	1024-72-SD	FBL Rotor head 无副翼连杆	2	
137	1024-74-SD	Linkage rod set 拉杆	2	



Cruciform slotted screw  
(001) 十字槽平头螺丝 (M2\*7) X4

Hex socket cap screw  
(013) 圆柱头内六角螺丝 (M2.5\*6) X2

Hex socket cap screw  
(016) 圆柱头内六角螺丝 (M2\*6) X1

Hex socket cap screw  
(036) 圆柱头内六角螺丝 (M2\*12) X1

Hex socket cap screw  
(059) 圆柱头内六角螺丝 (M2\*8) X2

Washer  
(011) 垫片 (Φ4\*Φ6\*2.0) X2

Washer  
(004) 垫片 (Φ2\*Φ3.5\*0.5) X4

Washer  
(012) 垫片 (Φ2.6\*Φ6\*0.5) X2

Hex socket cap screw  
(098) 圆柱头内六角螺丝 (M2\*14) X2

Bearing  
(007) 滚珠轴承 (Φ4\*Φ8\*3) X6

Bearing  
(005) 滚珠轴承 (Φ2\*Φ5\*2.5) X4

Linkage ball A  
(002) 球头A (Φ4.7\*4.2) X4

When adjusting the pitch, you can remove this screw, and insert the stainless flybar rod to the screw hole for pitch reference.  
在调节桨距时可将此螺丝拆除, 装入平衡杆 (Φ2x220mm) 做为螺距参照。

Apply a little amount of screw glue when screw is locked into metal part.  
螺丝锁入金属件请使用适量螺丝胶。

## 5.ASSEMBLY PROCESS OF BELT DRIVING TALT UNIT

### 皮带传动尾旋翼组装步骤(1)

Dosage form of spare parts 零件用量表

No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
138	1031	Drive belt皮带	1	
139	1117-3BD	Copper sheath铜套	1	$\Phi 3 * \Phi 4 * 2$
140	1040-BD	Tail shaft尾轴	1	



Washer

(071) 螺丝铝垫 ( $\Phi 2.1 * \Phi 5 * 2.3$ ) X4



Hex socket cap screw

(016) 圆柱头内六角螺丝 (M2\*6) X6



Hex socket cap screw

(052) 圆柱头内六角螺丝 (M2\*4) X2



Hex socket cap screw

(101) 圆柱头内六角螺丝 (M2.5\*8) X1



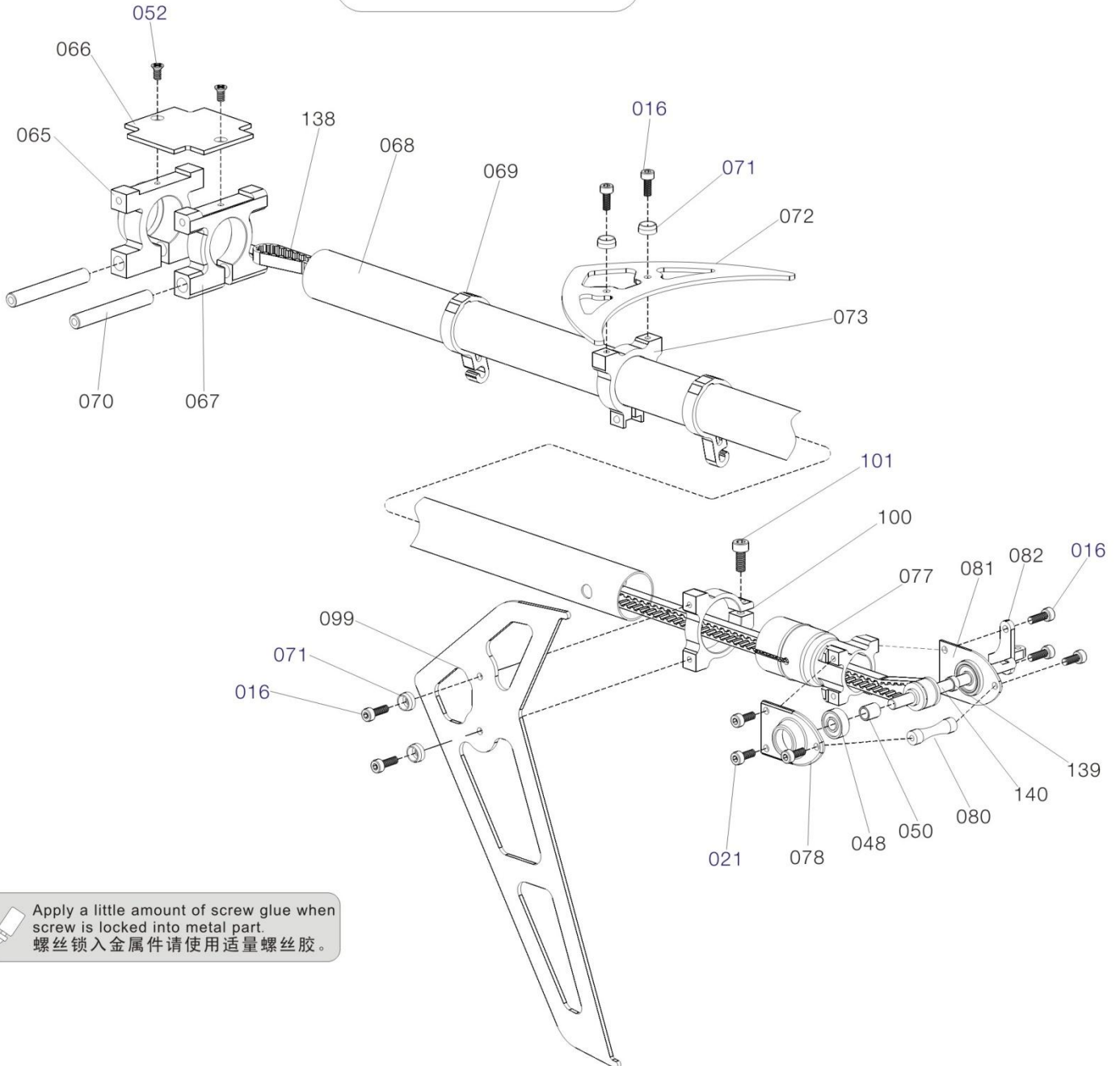
Hex socket cap screw

(021) 圆柱头内六角螺丝 (M2\*5) X4



Bearing

(048) 滚珠轴承 ( $\Phi 3 * \Phi 8 * 3$ ) X2



## 5.ASSEMBLY PROCESS OF BELT DRIVING TALT UNIT

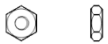
### 皮带传动尾旋翼组步骤(2)

Dosage form of spare parts 零件用量表

No.序号	Part No.零件编号	Description名称	Quantity数量	Specification规格
141	1117-3BD	Copper sheath 铜套	1	Φ3*Φ4*4.2
142	1117-3BD	Driven gear set 从动齿轮组	1	



Hex socket cap screw  
(098)圆柱头内六角螺丝(M2\*14) X1



M2 Nut  
(032)螺母(M2) X1



Hex socket cap screw  
(101)圆柱头内六角螺丝(M2.5\*8) X2



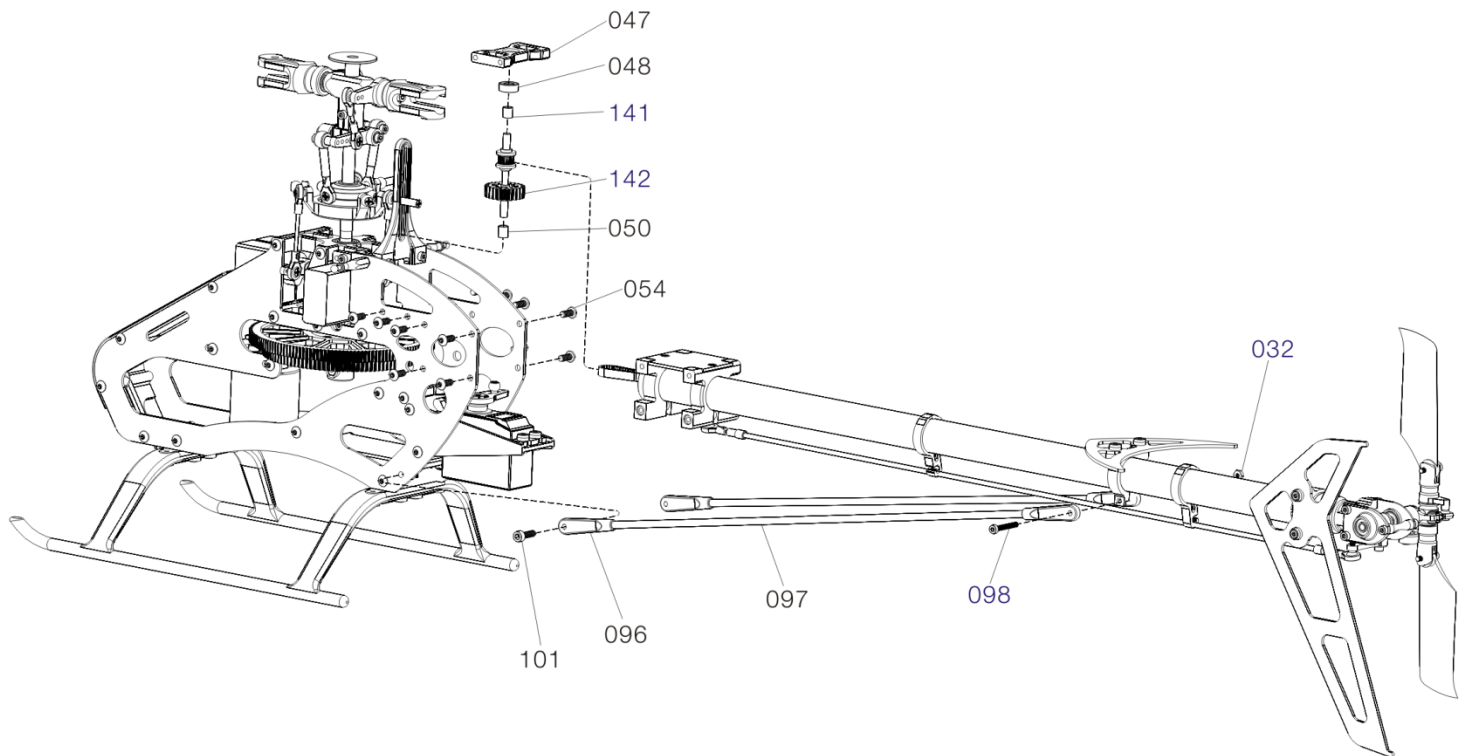
Bearing  
(048)滚珠轴承(Φ3\*Φ8\*3) X2



Socket button head screw  
(054)半圆头内六角螺丝(M2.5\*6) X12



Apply a little amount of screw glue when screw is locked into metal part.  
螺丝锁入金属件请使用适量螺丝胶。

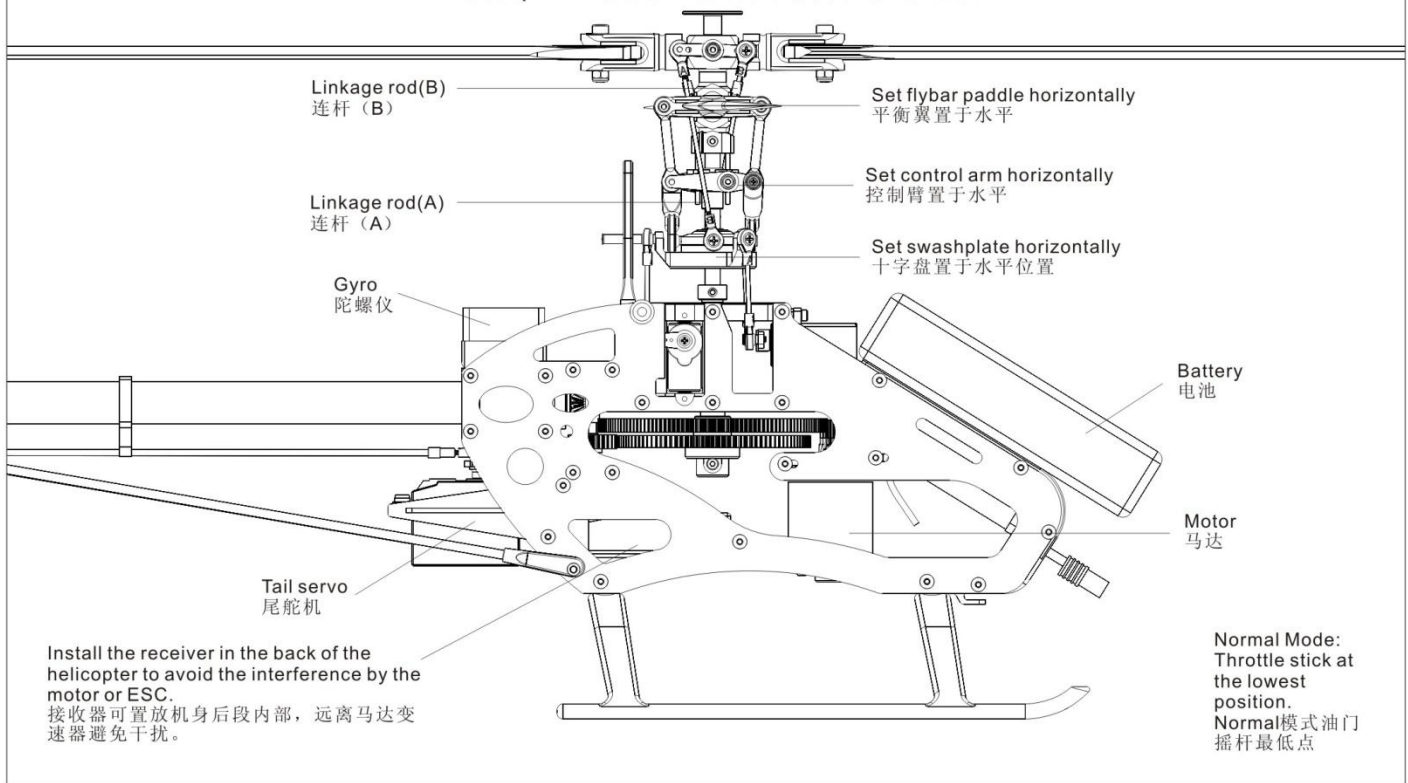


## 6.EQUIPMENT ILLUSTRATION 设备建议配置图示

### PARTS AND EQUIPMENT ASSEMBLY ILLUSTRATION 零件与组件的组装图

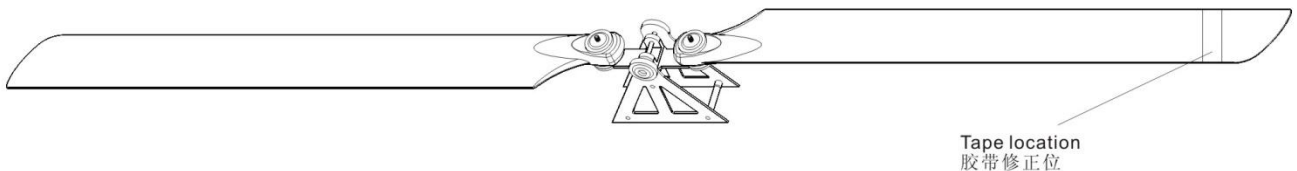
#### Illustration of Main Rotor's Pitch at 0 degree

主旋翼pitch 0度角，各相关结构摆位示意图



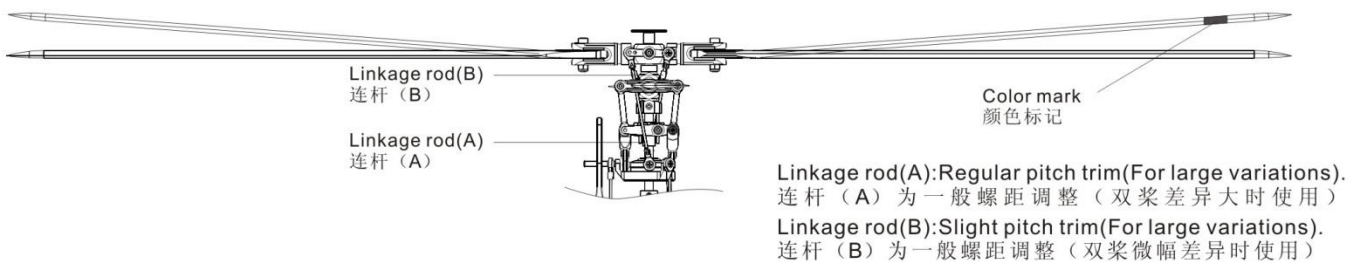
## 7.MAIN ROTOR BLADE BALANCING AND CORRECTION

### 设备建议配置图示



Important-Before flying it is necessary to balance the blades. Screw the rotor blades together as in the illustration. The rotor blades are properly balanced when they are suspended exactly horizontally. If not, the blades are not in equilibrium. This is corrected by applying tape to lighter blade.

当主旋翼转动时，请先执行平衡校正将两支主旋翼使用M3螺丝固定保持两支将成一直线，至于测试跨台后可以用胶带修正达两支主旋翼成水平最佳状态。

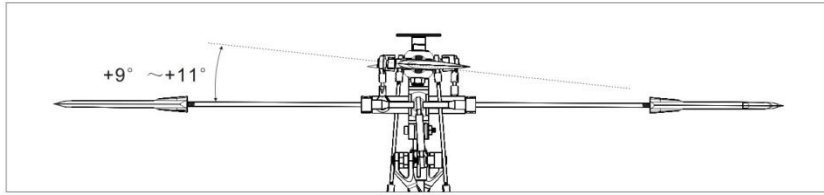


Apply a red piece of tape on one blade, or paint a red stripe with a marker or paint to identify one blade. Run the helicopter at a safe distance and have someone look at the spinning blades at the reference angle shown in the photo. If the blade tracking is not set correctly, you will be able to identify the blade with the red identifying mark rotating higher or lower than the other blade. Adjust the linkage rod length shorter or longer to make both blades track level.

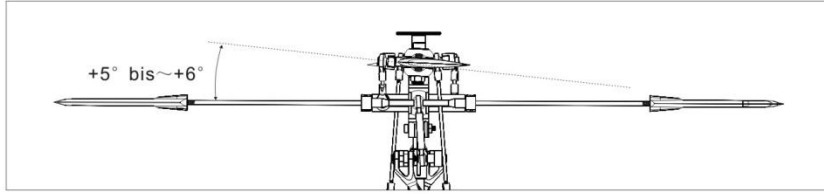
可使用螺旋桨附赠的红、蓝贴纸分别贴于两桨翼端，或于单桨翼端处画上颜色记号，方便双桨调整辨记。标示颜色桨偏高（螺距过大）请调整连杆（A）修正，或需要更小螺距微调修正请调短连杆（B）修正。

# 8. PITCH AND THROTTLE SETTING 主旋翼螺距与油门设定

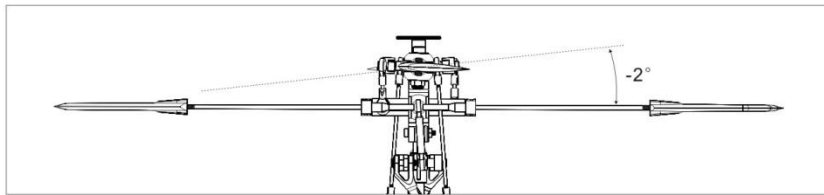
## GENERAL FLIGHT 一般飞行模式



Stick position at high/Throttle 100%/Pitch+9° ~+11°  
摇杆高速/油门100%/螺距+9° ~+11°

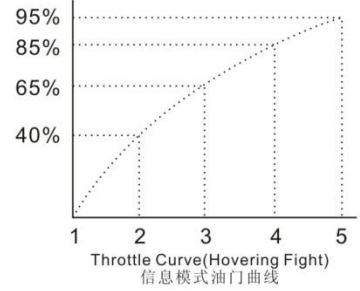


Stick position at high/Throttle 65%~70%/Pitch+5° ~+6°  
摇杆停息/油门65%~70%/螺距+5° ~+6°



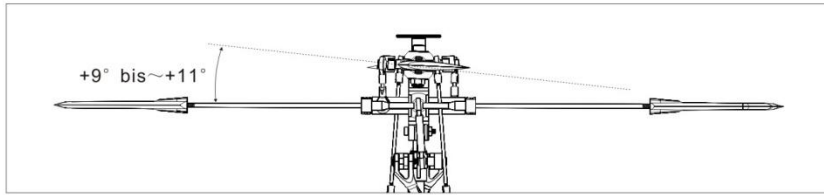
Stick position at low/Throttle 0%/Pitch 0°  
摇杆低速/油门0%/螺距 0°

Standard-Flug		Pitch 螺距
Throttle 油门		
5	100%High speed 100%高速	+9° ~+11°
4	85%	
3	65%Hovering 100%停息	+5° ~+6°
2	40%	
1	0%LOW SPEED 100%低速	-2°

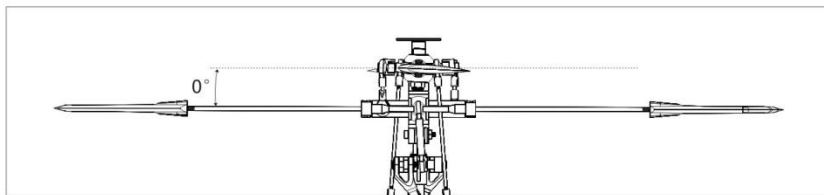


Pitch and Rotation Speed 螺距与转速关系  
TIP:It is recommended to use a lower pitch setting when using higher RPM/Head speed. This will allow for better power.  
搭配要领: 如果使用较高转速马达动力建议搭配调低螺距, 将获得较佳传动力效能。

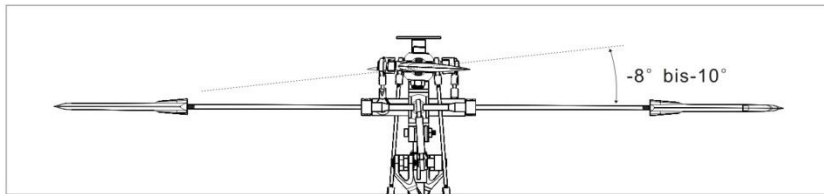
## 3D FLIGHT 3D特技飞行模式



Stick position at high/Throttle 100%/Pitch+9° ~+11°  
摇杆高速/油门100%/螺距+9° ~+11°

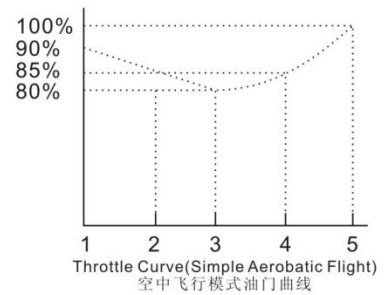


Stick position at high/Throttle 90%/Pitch 0°  
摇杆高速/油门90%/螺距 0°

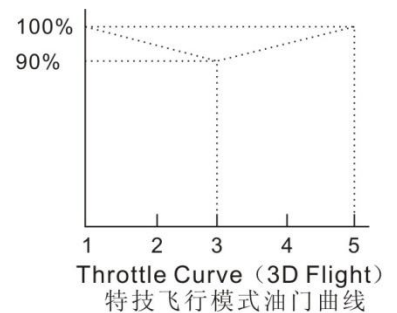


Stick position at low/Throttle 100%/Pitch-8° ~-10°  
摇杆低速/油门100%/螺距-8° ~-10°

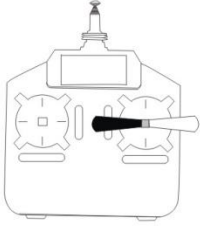
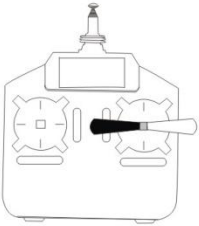

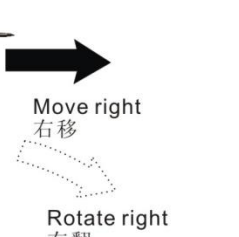
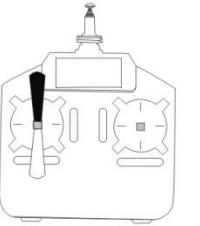
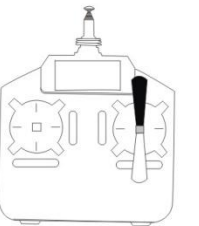
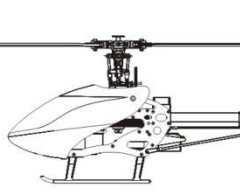

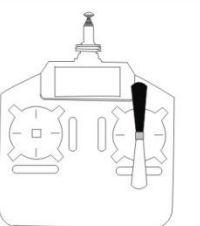
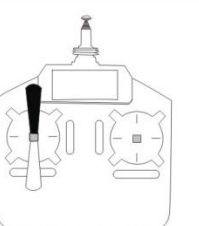
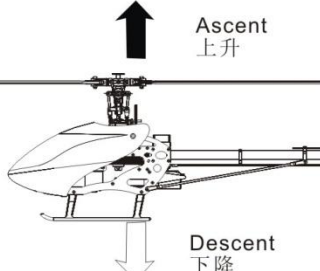
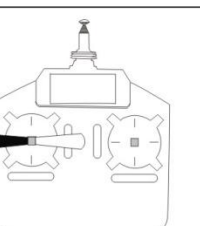
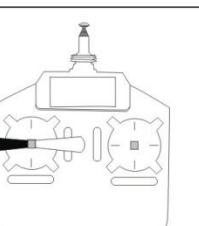
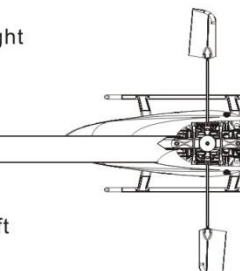
IDLE1:SPORT FLIGHT		Pitch 螺距
Throttle 油门		
5	100%	
4	85%	
3	80%	+5° ~+6°
2	85%	
1	90%	-5°



IDLE1:SPORT FLIGHT		Pitch 螺距
Throttle 油门		
5	100%	+9° ~+11°
3	90%	-5°
1	100%	+8° ~+10°



1. Pitch range: approx.25 degrees.
  2. If the pitch is set too high, it will result in shorter flight duration and poor motor performance.
  3. Setting the throttle to provide a higher speed is preferable to increasing the pitch too high.
1. 螺距 (Pitch) 总行程约25°
  2. 过大螺距设定, 会导致动力与飞行时间降低。
  3. 动力提升以较高转速的设定方式, 位于螺距调大的设定。

Mode 1	Mode 2		
 <p>Aileron副翼</p>		 <p>Move left 左移</p> <p>Rotate left 左翻</p>	 <p>Move right 右移</p> <p>Rotate right 右翻</p>
 <p>Elevator升降/前后</p>		 <p>Fly forward 前进</p> <p>Forward rotate 前翻</p>	 <p>Fly backward 后退</p> <p>Rotate backward 后翻</p>
 <p>Throttle油门</p>		 <p>Ascent 上升</p> <p>Descent 下降</p>	
 <p>Rudder方向</p>		 <p>Turn right 右旋</p> <p>Turn left 左旋</p>	

# 10.PARTS LIST 零件明细(1)



1042-Q  
Metal head button  
刹车帽



1065-Q  
Main rotor holder  
大桨夹



1065-1-Q  
Main rotor holder  
arm  
大桨夹摇臂



1142-72-Q  
Main rotor housing  
中联



1081-Q  
Flybar control set  
日字框



1128-Q  
Flybar seesaw  
holder  
副翼固定座



1024-72-Q  
SF mixing arm  
SF摇臂



1024-73-SD  
Shear type arm  
剪形臂



1196-72-Q  
Washout base  
向位器



1111-Q  
CCPM swashplate  
CCPM十字盘



1113-SD  
Anti rotation  
bracket  
十字盘导轨



1104  
Flybar rod  
副翼杆



1003-Q  
Feathering shaft  
横轴



1003-5  
Aluminium backing  
横轴铝垫片



1012  
Main shaft  
主轴



1011-4  
Lock ring  
主轴限位环



1117-1-SD  
Tail drive gear  
mount  
尾传动齿轮固定座



1117-2-SD  
Main shaft bearing  
block  
主轴轴承座



1117-3SD  
Tail drive gear  
assembly  
尾传动齿轮



1117-3BD  
Tail drive gear  
assembly  
尾传动齿轮



1117-4SD  
Cone gear  
传动轴锥形齿轮



1117-5SD  
Cone gear mount  
锥形齿固定座



1117-6SD  
Drive shaft  
传动轴



1117-7SD  
Drive shaft damper  
传动轴减震圈



1140-BD  
Tail rotor shaft  
尾轴



1140-SD  
Tail rotor shaft  
尾轴



1031  
Drive belt  
皮带



1151-SD  
Motor mount  
马达固定座



1154-2-SD  
Main drive gear  
大齿轮



1154-1-SD  
Tail drive gear  
小齿轮



1154  
Center shaft sleeve  
of small gear  
小齿轮中心轴套



1153-4-3  
Main gear mount  
大齿轮固定座



2001-1  
Motor Pinion  
马达齿轮 13T



1139-SD  
CF mounting plate  
of electronics  
碳纤电子板



1137-SD  
CF Frame  
碳纤侧板



1138-SD  
CF Main frame set  
碳纤机架组



1208-75-SD  
CF Horizontal fin  
水平翼



1209-75-SD  
CF vertical fin  
垂直翼



1108-SD  
Tail unit  
尾波齿轮箱



1189-72  
Tail rotor holder  
尾桨夹



1189-70  
Tail rotor hub  
尾中联



1135-1-SD  
Tail rotor control  
arm mount  
尾推摇臂固定座



1135-2-SD  
Tail rotor control  
arm  
尾推摇臂



1135-3-SD  
Tail pitch assembly  
尾推滑块



1117-SD  
Tail boom stiffener  
尾管固定座



1117-8-SD  
Vertical stabilizer  
mount  
垂直翼固定座



1208-SD  
Stabilizer mount  
水平翼固定座



1114-SD  
Rudder servo mount  
尾舵机架



1102-SD  
Tail boom  
尾管

# 10.PARTS LIST 零件明细(2)



1016-SD  
Tail boom brace  
尾撑杆



1017-SD  
CF Tail linkage  
rod  
碳纤尾推杆



1017-1-SD  
Tail control guide  
尾推杆固定环



1188-SD  
Frame mounting block  
机身固定座



1040-SD  
Screws  
整机螺丝包



1048-1  
Copper ball parts  
bag  
球头包



1123-SD  
Battery mount  
电池固定座



1191-Q  
Flybar paddle  
副翼



1192  
Tail rotor blade  
尾旋翼



1193-2  
325mm CF Blade  
325mm碳纤桨



1014-SD  
Landing skid  
脚架



1002-1  
Canopy rubber  
gasket  
头罩固定胶圈



1003-1  
Feathering shaft  
plastic ring  
横轴减震圈



1041-4-SD  
Canopy mounting  
bolt  
头罩固定座



1043-SD  
Ball Linkage rod  
Set  
球头扣拉杆包



1065-SD  
FBL Main rotor  
holder  
无副翼大桨夹



1142-72-SD  
FBL Main rotor  
housing set  
无副翼中联



1024-72-SD  
FBL control arm  
无副翼摇臂



1024-74-SD  
Control linkage rod  
无副翼连接杆



1003-FBL  
FBL Feathering  
shaft  
无副翼横轴



1047-2-SD  
FG Hand-painted  
canopy  
手绘玻纤头罩



## 11.REGULAR MAINTENANCE 常规维修

Regular maintenance is required to keep the KDS 450SD helicopter in optimal and safe flying condition. The model requires precise configuration of the components and settings to be kept by the owner. Maintain regular maintenance on the model to avoid accidents or loss, and optimum performance.

请定期检查: KDS 450SD 电动遥控直升机为精密零组件构成之精细模型商品。所以飞行者须注意确保各控制组件及结构之性能良好, 使能发挥优异稳定飞行特性。如果您的维护不当, 飞行时将可以导致意外或任何损失, 建议您注意养成直升机定期检查的习惯, 以确保让您的爱机随时保持最佳性能。

### MAIN ROTOR CHECKLIST 主旋翼机构检查重点

1. Main Rotor Housing: when the main rotor housing is worn or faulty, there will be obvious vibration and poor flight control. Check the main rotor, main shaft, and feathering shaft for wear or deformity. Replace parts as necessary to eliminate imbalance.
  2. O-Rings: the O-Rings will lose their elasticity over time. This will cause excess play on rotor and cause instability. Replace them as needed.
  3. Main Rotor Holder: when the helicopter does not fly or reacts sluggishly, even after checking for proper setting of pitch and throttle, check the following items: Plastic parts, Bearings, Ball bearings, Rotor Blades. Check for excess play or broken parts, or binding or restricted movement. It is important to check for main rotor balance before each flight. Operating the model when out of balance will cause excessive wear and premature failure of parts, possibly resulting in a dangerous situation.
  4. Control Arm Assembly: check regularly for cracked, worn, bent or binding control arms and pushrods. Smooth movement of control arms and linkages is required for stable, vibration free flight.
  5. Swashplate: check for excess slop in the main ball where the main shaft rides on, and slop or looseness between the plastic and metal surfaces. Swashplate wear will result in poor stability and lack of control during flight. Replace them as necessary.
1. 主旋翼固定座: 当主旋翼运转发生异常时, 飞行当中发生的震动情形, 请检查主旋翼、横轴、主轴是否有变形或平衡不良, 必要时请将主旋翼头固定座更新。
  2. 主旋翼缓动油封: 缓动油封长期使用会发生弹性疲乏, 会影响飞行稳定性, 此时建议更新。
  3. 主旋翼夹座: 主旋翼夹座一般飞行前虽然确认过螺距, 但实际飞行时仍需增加螺距行程才足够使用, 如果飞行时升降动作迟缓情形: 检查重点包含了塑胶件以及轴承、球轴承等, 塑胶件及球轴承若发现明显间隙, 轴承钢轴脱落均需要更换新品。注意: 飞行前主旋翼必须详细的做好动平衡的动作, 并请修正双桨不良的状况, 以提升升力效能, 注意因平衡不佳将各导致零件损坏与松脱。
  4. 控制臂组: 定期检查各控制臂控制滑顺, 减少左右摇晃虚位可确保停态稳定性能。
  5. 十字盘组: 当十字盘组发生严重虚位时, 会导致停态时稳定性能不稳定, 操控性能也会劣化, 并可能发生不明原因的双桨现象, 严重时则必须更新。

### FUSELAGE/CHASSIS 机身组检查重点

1. Main Shaft Bearing: Normal replacement interval for proper operation is between 60-100 flights. If flying 3D or extreme aerobatics often, inspect the bearing more frequently and shorten the interval as necessary.
  2. One-way Bearing: One-way bearings have longer lifetimes. Failure is not common. To keep the one-way bearing in good operation, remove it to clean and lubricate after every 50 flights. If the main drive gear is loose, you should replace the one-way bearing.
  3. Drive Belt: KDS uses only top quality, stretch-proof belts. It is however, impossible to prevent the belt from stretching or wearing out. Check belt tension regularly, and check for the wear on the teeth. Replace it as necessary.
1. 主轴轴承: 主轴轴承经长期重负载运作, 正常飞行约60-100趟必须更换新品以维持动作顺畅度。但是若经常进行激烈的3D飞行, 建议您必须时常检查主轴轴承, 当发现主轴轴承有明显的间隙或是转动有明显的阻碍都必须更换新品。
  2. 单向轴承组: 单向轴承级并不常发生损坏的情形。但是为了保持良好的顺畅的运作, 建议您约50趟的周期当中请拆卸下来上油。如果发生主齿轮明显异动, 请立即更换单向轴承盘。
  3. 尾转动皮带: 尾转动皮带虽然采用日制原装纤维耐变形皮带, 长时间使用时仍然会产生延展的现象。请随时检查施以心向尾管重新拉伸修正调整, 以维持良好的尾舵控制机能。如果当您发现皮带的边缘磨损严重现象或是断齿的状况, 为了维护飞行的安全建议您将它更新。

### LINKAGE RODS & CONNECTING PARTS 控制杆组头检查重点

During assembly, take special care to keep the connecting parts in smooth operation, and avoid excess play or binding. Failure to do so will result in poor flight stability. The linkage rods and ends will break and wear due to normal usage, crashing, and poor maintenance and environment. Check for wear and proper operation regularly, replace them as needed. 控制连杆、控制臂连接座、升降舵连接座组装时请特别注意各连接部位需保持滑顺且尽量减少轴向左右摇晃间隙, 此要点将严重影响飞行稳定性各连接杆如因跌机损坏之外。因自然磨损或是因飞行场地恶劣因素也会发生磨损或松脱的情形。当您发现任何连接杆发生间隙或是轻推即可脱出, 建议您立即更新, 确保飞行性能与安全。

### TAIL ROTOR SYSTEM 尾旋翼系统检查重点

1. Tail Rotor Control Set: Check the tail rotor bearing regularly. If there is excess play or gaps, replace it immediately. Avoid any binding or improper contact on the tail components and bearings as this will cause excess wear and heat, potentially melting or deforming the tail system.
  2. Tail Unit Assembly: Avoid flying in tall grass or weeds. If grass or weed becomes lodged in the tail rotor unit, it will interfere with the operation, and cause the helicopter to lose control. Always check for foreign objects in the tail and clean them off immediately. Avoid using lubricants on the exposed surfaces of the model as it will attract and collect dirt and debris, and cause failure.
  3. Tail Rotor Housing: Disassemble tail rotor housing for cleaning and maintenance after every 50 flights. If the tail does not operate smoothly or shows any signs of stress or wear, please replace it immediately.
  4. Tail Rotor: Check the tail rotor blades regularly for damage, especially if the helicopter ever strikes the ground while flying, or after hard landings. Damaged tail rotor blades will induce vibration.
1. 尾齿轮组: 尾齿轮组请注意尾旋翼轴承的检查, 当您发现轴承有明显的间隙时请更新, 避免轴承咬死, 并注意尾舵轮不可将它锁死。必须能保持顺畅运动以免发生塑胶件熔毁的情形。
  2. 尾旋翼控制滑座: 当您于草地飞行时, 请注意避免尾旋翼滑座是否有发生落地时卷入杂草的状况, 若有必须立即将它清除再进行下一次飞行, 否则可能会因为杂草纤维阻碍动作。造成尾旋翼控制失常的情形, 平常保养尽量避免使用润滑油于外部结构, 避免沾染灰尘等杂物, 严重时甚至会发生其它部位轴承磨损及尾旋翼滑座无法运作的情形。
  3. 尾旋翼固定座: 尾旋翼固定座飞行约50趟左右请拆卸进行清洁保养, 确认轴承间隙是否正常。如转动不顺或间隙过大请更换轴承, 确保控制系统完善。
  4. 尾旋翼: 飞行时发生触地的情形请立即检修。若发现尾旋翼有明显的外观损坏时请立即更换。以避免发生尾部震动并因此损坏其它零件, 确保飞行品质。



SPECIFICATION (规格)	450SD Parameter
Length (机身長)	640mm
Width (机身寬)	120mm
Height (机身高)	240mm
Main Rotor (主旋翼長)	315mm
Main Rotor Diameter (主旋翼直径)	Φ710mm
Tail Rotor Diameter (尾旋翼直径)	Φ155mm
Motor Pinion (马达主齿)	13T
Main Gear (传动主齿轮)	150T
Autorotation Tail Drive Gear (尾驱动主齿)	106T
Tail Drive Gear (尾翼传动齿)	25T
Drive Gear Ratio (齿轮传动比)	11.5:1:4.25
Weight(w/motor) (飞行重量)	870g

## KDS MODEL

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