

# **GULANG MODEL —**

## **GL-450S user handbook**



### **STANDARD EQUIPMENT:**

- Use CCPM control system
- High stability and acuity control level design
- Auto-rotation system
- Rear tail servo
- Belt-driven tail system

Thank you for buying GULANG products. The GL450s is RTF RC helicopter, which is design for 3D beginners. It can finish all kinds of 3D performances.

# INTROUCTION:

Before operating the helicopter, please read the manual carefully which can help you to operate your helicopter. Be sure to remain the manual for future reference, routine maintenance, and turning.

## IMPORTANT NOTES

R/C helicopters, including the GL-450 are not toys ,R/C helicopter utilize various high-tech products and technologies to provide superior performance. Improper use of this product can result in serious injury or even death. Please read this use of this product can result in serious injury or even death. please read this manual carefully before using make sure to be conscious of your own personal safety and the safety of others and your environment when operating all GULANG 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.

We recommend that you obtain the assistance of an experienced pilot befor attempting to fly our products for the first time. The GL-450 requires a certain degree of skill to operate, and is a consumer item. Any damage or dissatisfaction as a result of accidents of modifications are not covered by any warrantee and cannot be returned for repair or replacement.

# 1.SAFETY NOTES:

## 1.1. LOCATE AN APPROPRIATE LOCATION:

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 your model. Do not fly your model in inclement weather, such as rain, wind, snow or darkness.

## 1.2. OBTAIN THE ASSISTANCE OF AN EXPERIENCED PILOT:

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.)

## 1.3. ALWAYS BE AWARE PF THE ROTATING BLADES:

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

the model a safe distance from yourself and others, as well as surrounding objects. 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.

#### 1.4. PREVENT MOISTURE:

R/C models are composed of many precision electrical components. It is critical to keep the model and associated equipment away from 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.

#### 1.5. KEEP AWAY FROM HEAT:

R/C models are made up 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.

#### 1.6. PROPER OPERATION:

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.

#### 1.7. SAFE OPERATION:

Operate this unit within your ability. Do not fly under tired condition and improper may cause in danger.

## 2.CAUTIONITEMS

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

#### 2.1. ENT MOISTURE

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.

## **2.2 . KEEP AWAY FROM HEAT**

R/C models are made up 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.

## **3. WARNING**

### **3.1. SAFE OPERATION**

Operate this unit with your ability. Do not fly under tired condition and improper operation may cause in danger .

### **3.2. OBTAIN THE ASSISTANCE OF AN EXPERIENCED PILOT**

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, turning, trimming, and actual first flight. (Recommend you to practice with computer-based flight simulator.)

## **4. FORBIDDEN**

### **4.1. PROPER OPERATION**

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.

### **4.2. LOCATE AN APPROPRIATE LOCATION**

R/C helicopters fly at high speed, thus posing a certain degree of potential. 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, 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.

### **4.3. ALWAYS BE AWARE OF THE ROTATING BLADES**

During the operation of the helicopter, the main rotor and will be spinning at a high rate of speed. The blades are capable of inflicting serious bodily and damage to the environment. Be conscious of your actions, one else is operateing on the same frequency for the safety.

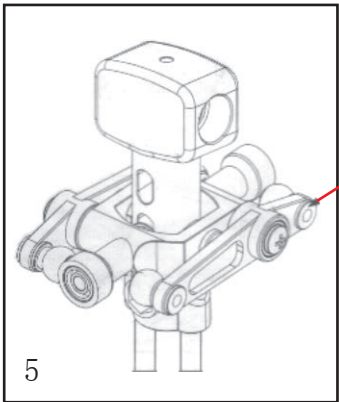
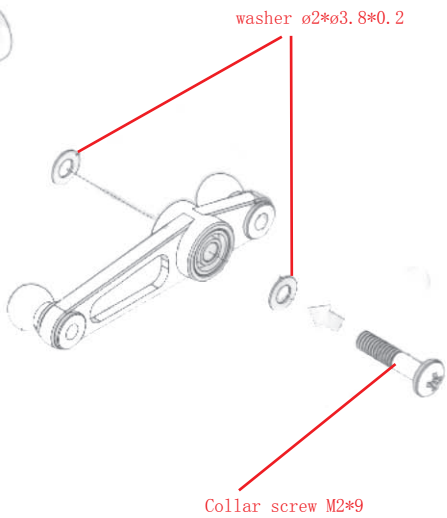
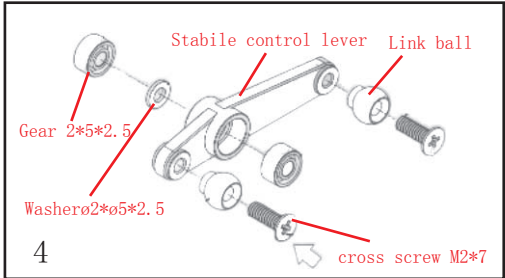
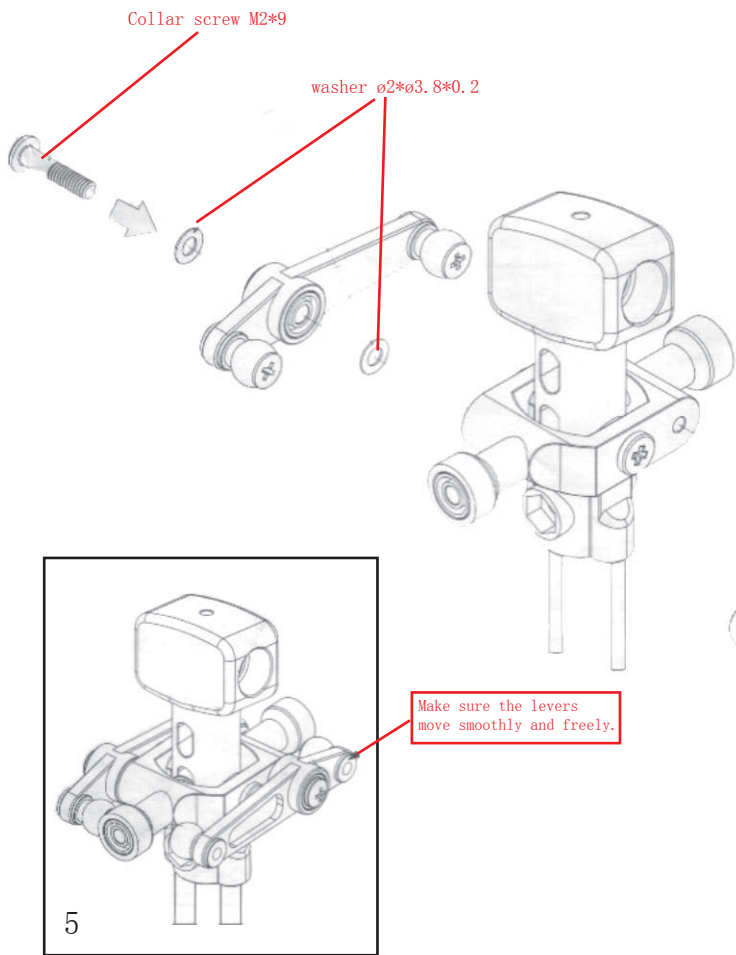
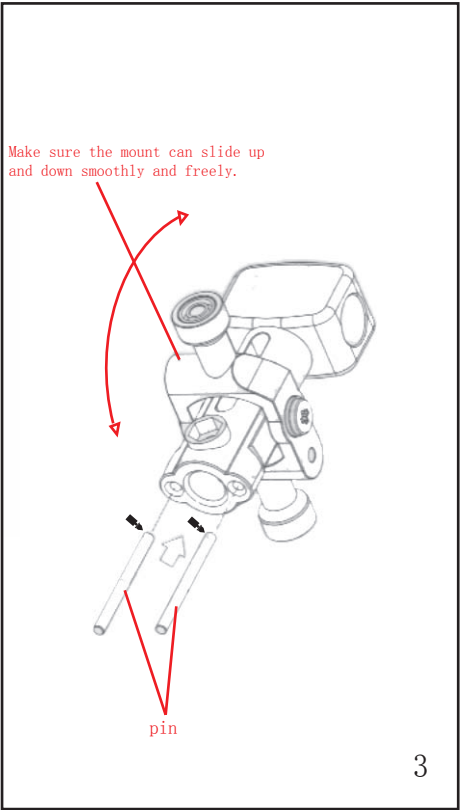
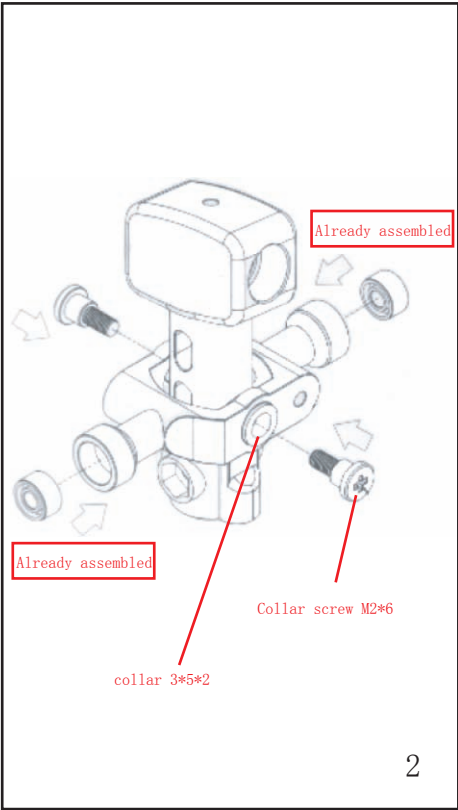
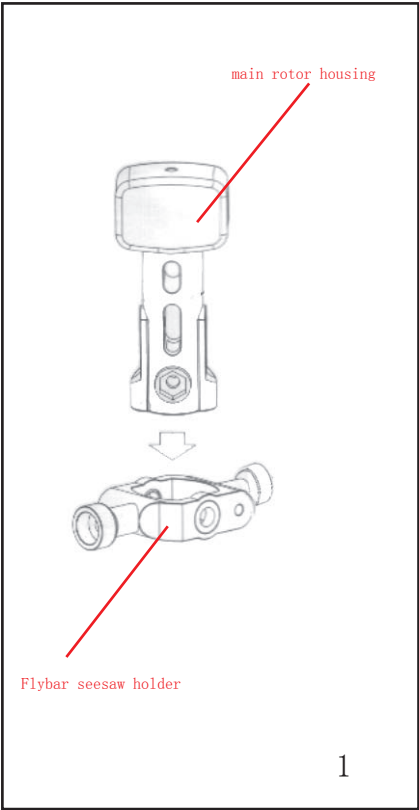
## **5. CAREFULLY INSPECT BEFORE REAL FLIGHT**

**5.1.** Before flying, please check to no make sure to or trees to ensure the safety of yourself, others, and you model. Do not fly you model in inclement weather, such as rain, wind, snow or darkness.

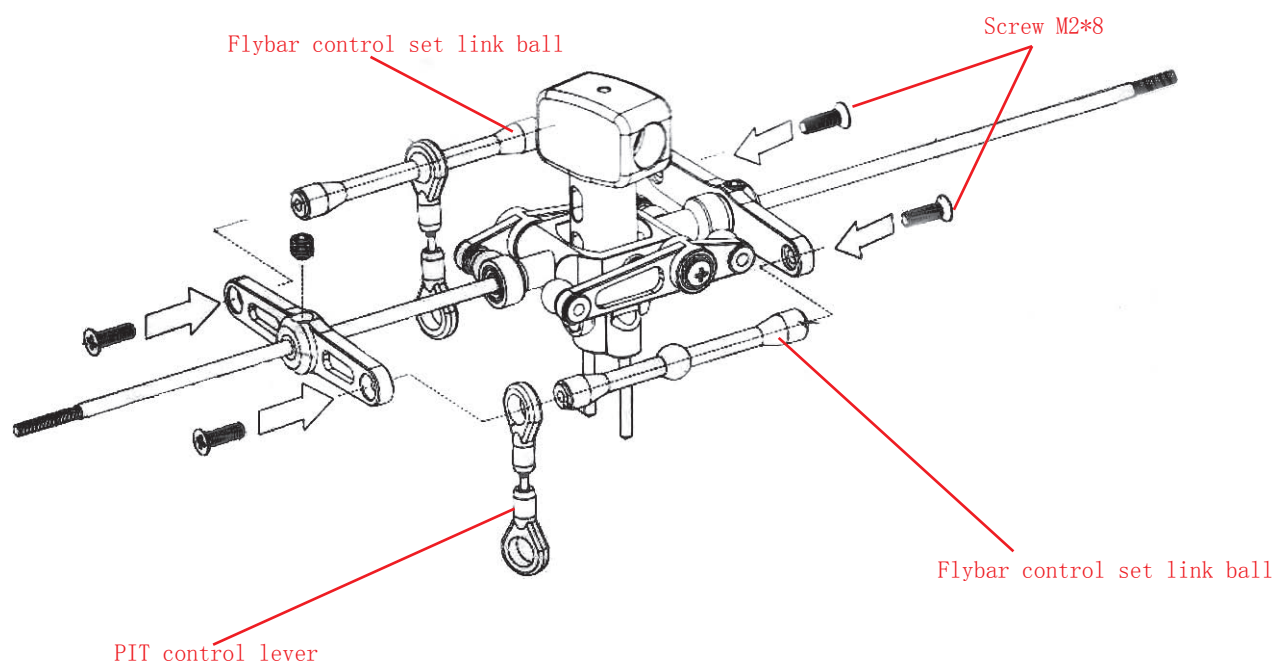


- 5.2 Before flight, please check if the batteries of transmitter and receiver are enough for the flight.
- 5.3 Before turn on the transmitter, please check if the throttle stick is in the lowest position. IDLE switch is OFF.
- 5.4 When turn off the transmitter, please follow the power on/off procedure. Power ON-Please turn on the transmitter first, and then turn on receiver. Power OFF-Please turn off the receiver first and turn off the transmitter. Improper procedure may cause out of control, so please to have this correct habit.
- 5.5 Before operation, checking every movement is smooth and directions are correct. Carefully inspect servos for interference and broken gear.
- 5.6 Check for missing or loose screws and nuts. See if there is any cracked and incomplete assembly of parts. Carefully check main rotor blades and rotor holders. Broken and premature failures of parts possibly cause resulting in a dangerous situation.
- 5.7 Check all ball links to avoid excess play and replace as needed. Failure to do so will result in poor flight stability.
- 5.8 Check the battery and power plug are fastened. Vibration and violent flight may cause the plug loose and result out of control.
- 5.9 Check for the tension of tail drive belt.

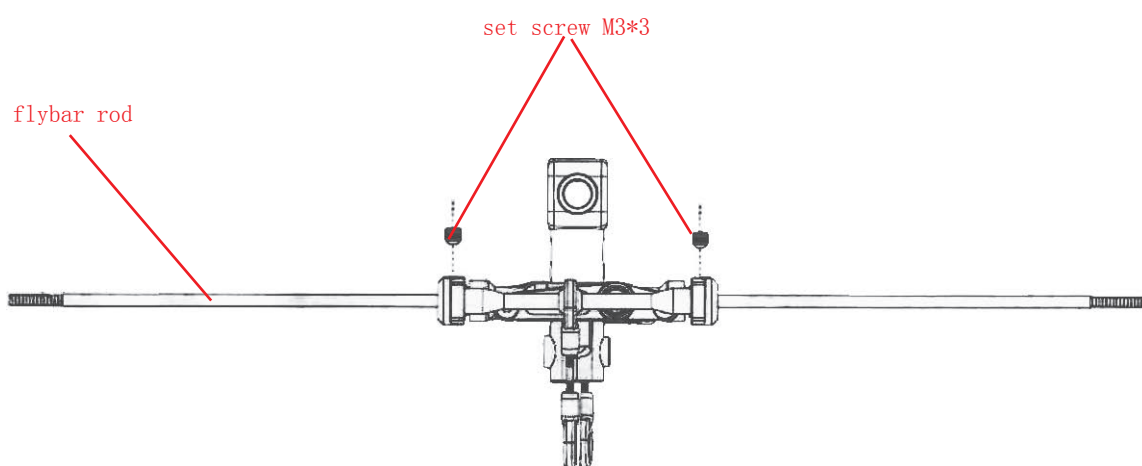
Install illustration of the mail rotor set:



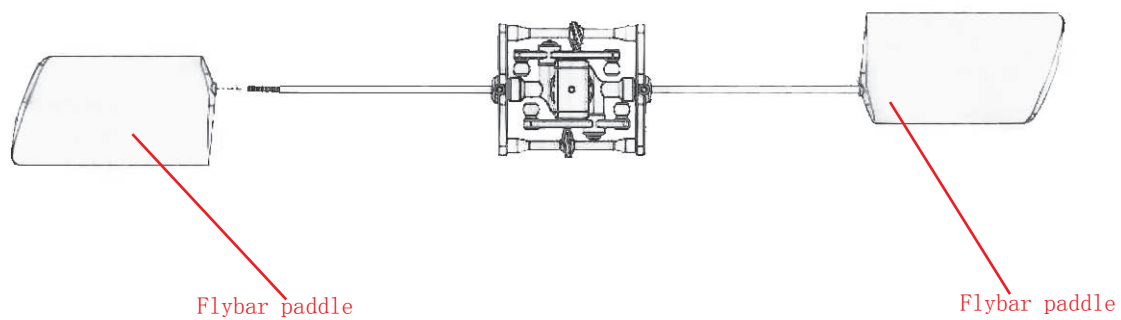
## Installation setps of main rotor:



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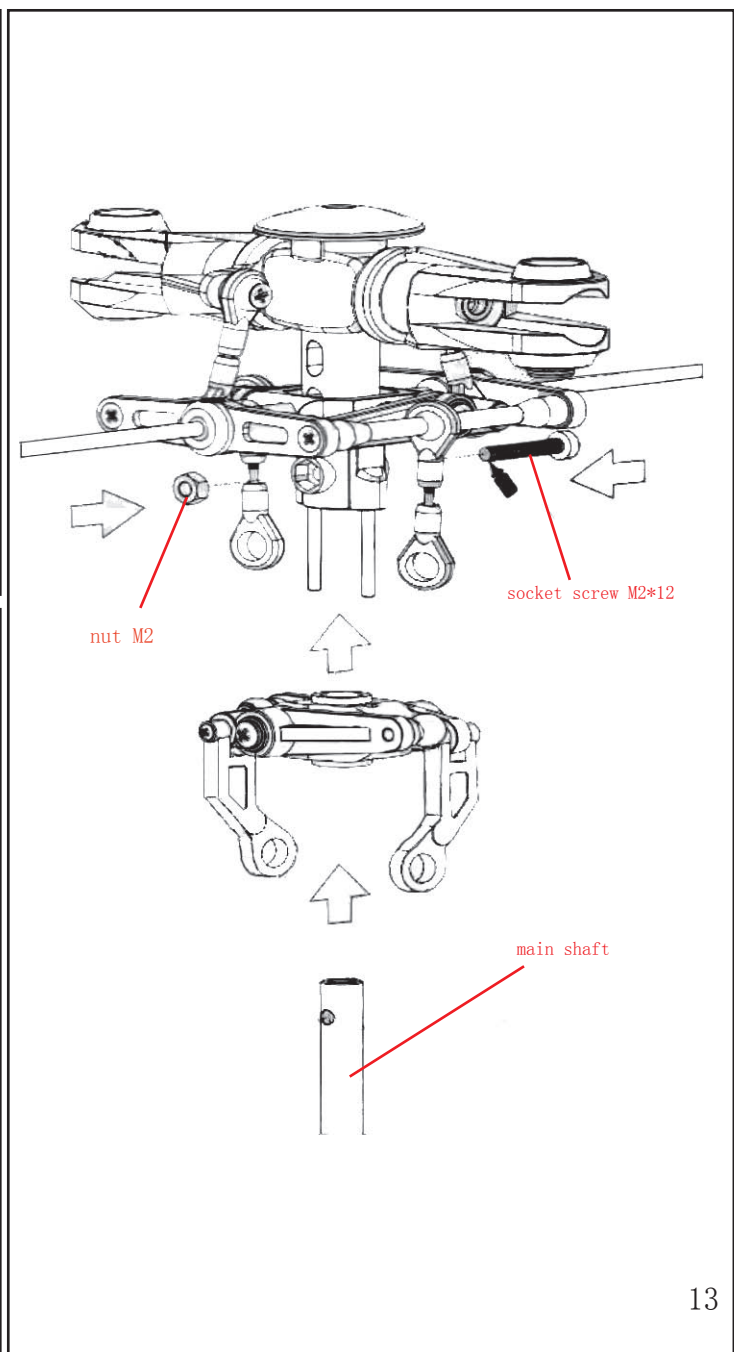
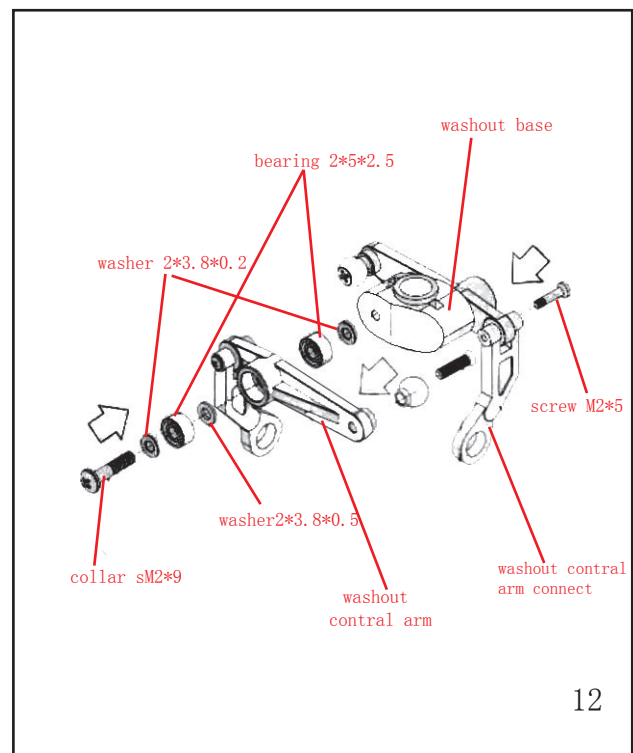
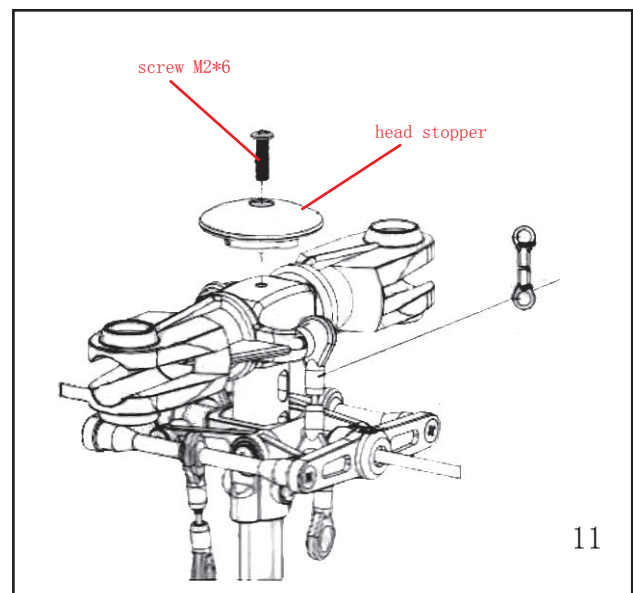
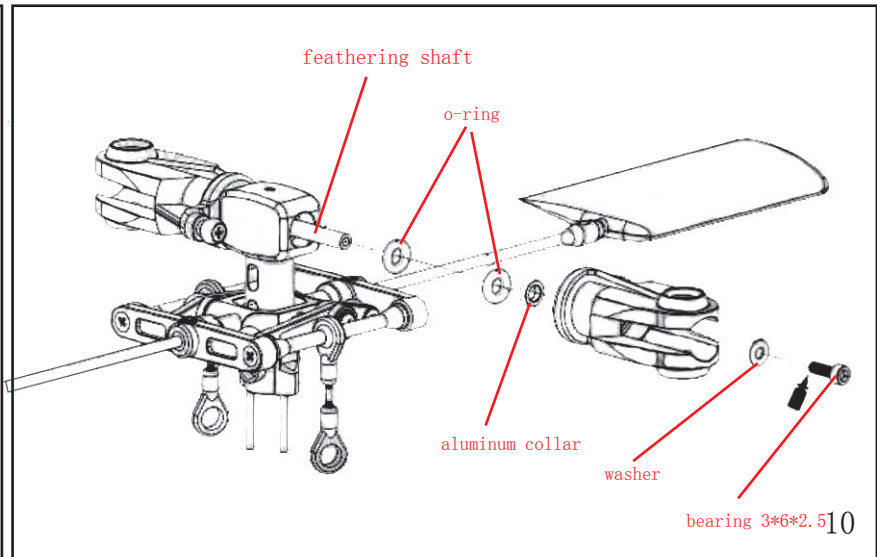
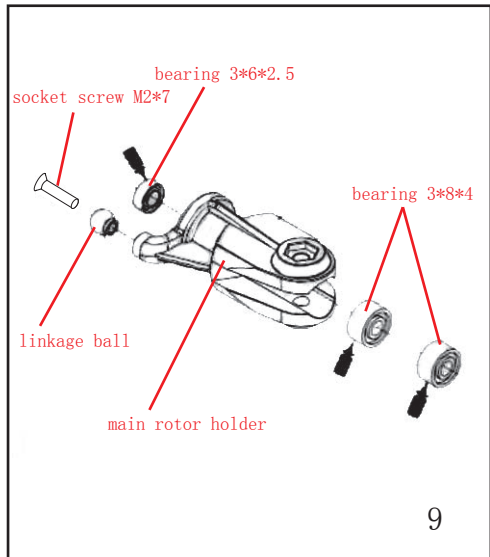


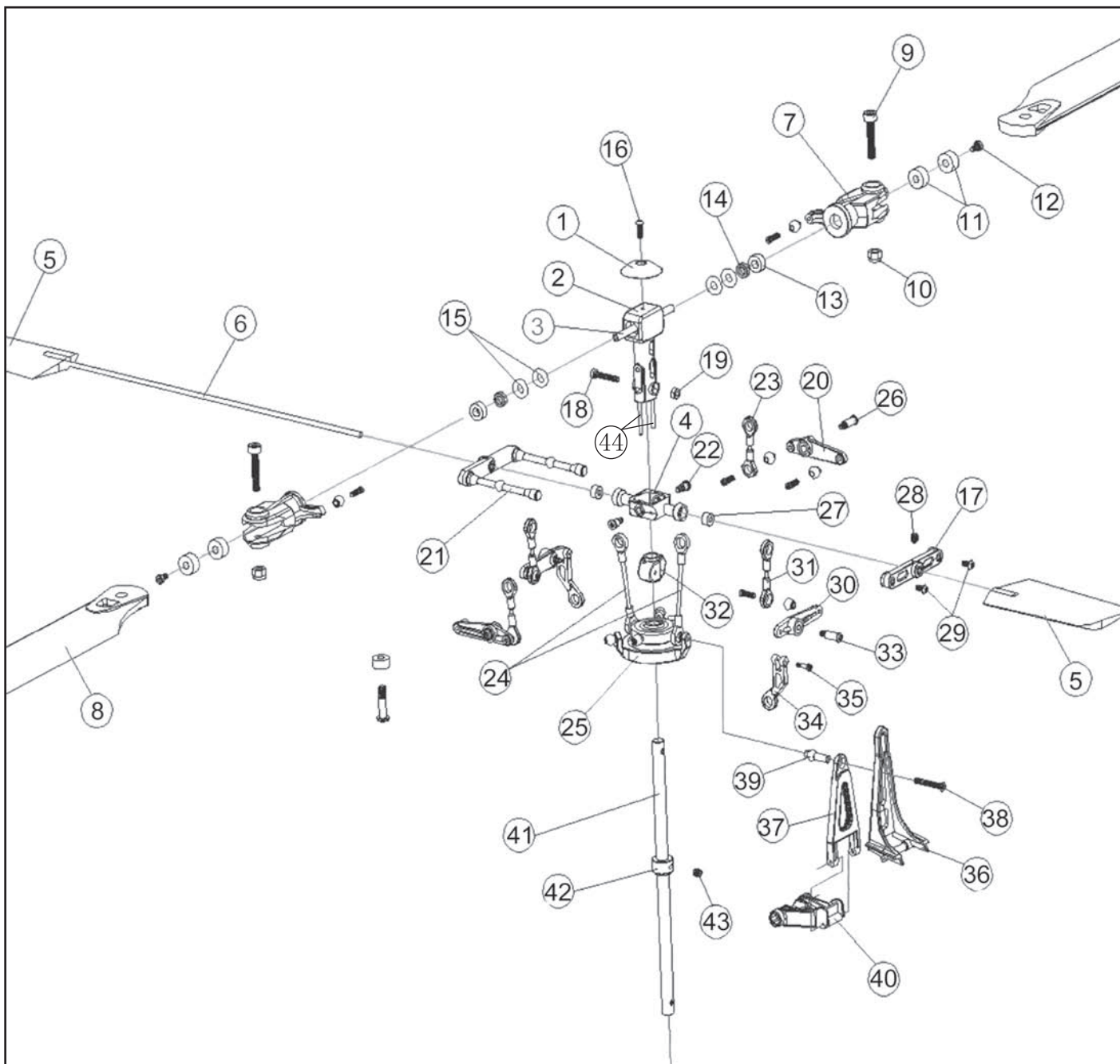
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主旋翼组装步骤:

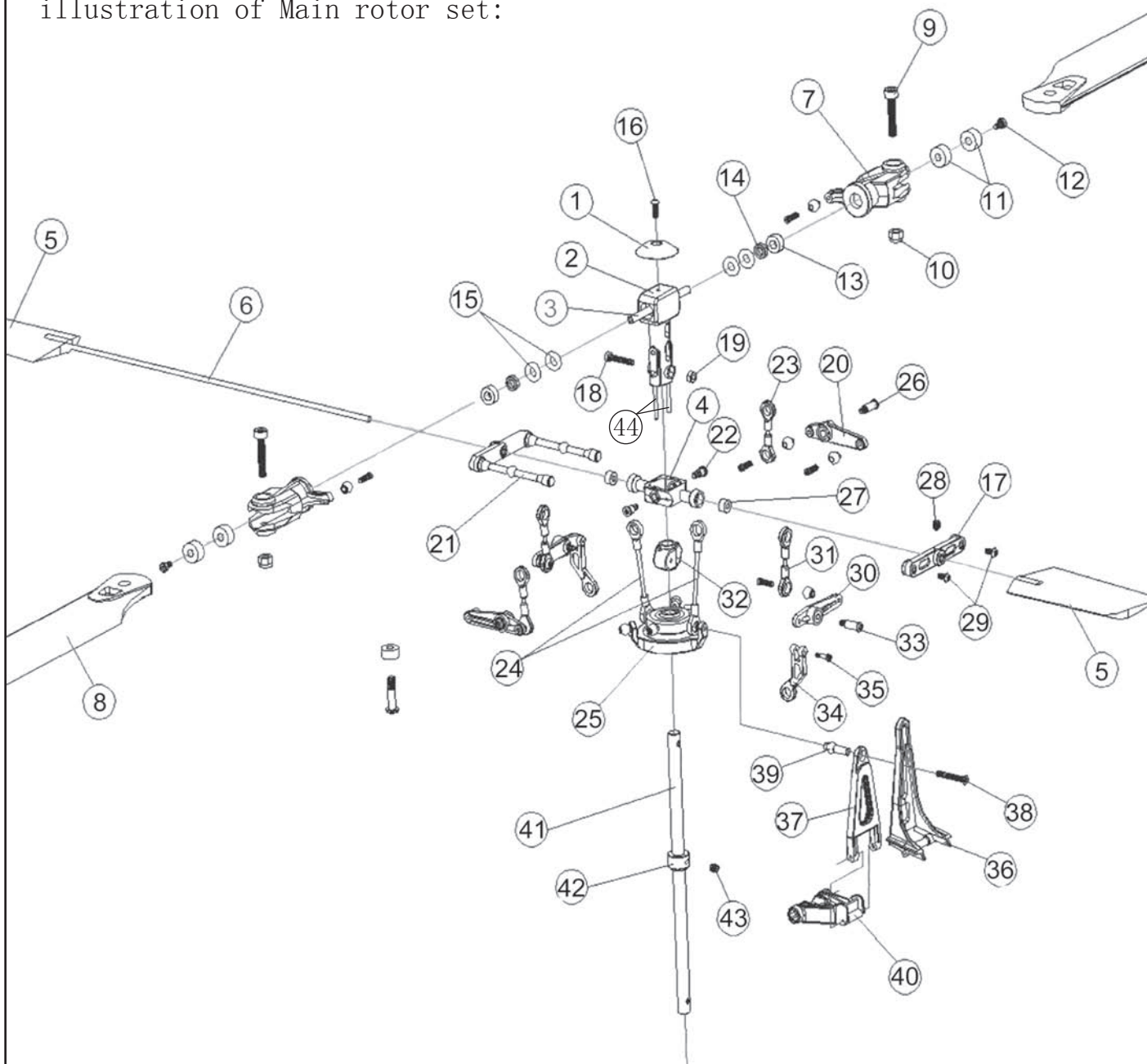




序号	名称	序号	名称	序号	名称
1	brack plate	16	screw M2*6	31	ball linkage
2	main rotor housing	17	Flybar control lever	32	washout case
3	main rotor feathering set	18	socket screw M2*12	33	screw M2*9
4	flybar seesaw holder	19	nut M2	34	linkage
5	flybar paddle	20	PIT control lever	35	screw M1.4*6.5
6	flybar rod	21	ball part connection part	36	anti-rotation bracket
7	main rotor holder	22	screw M2*6	37	ELE lever
8	main rotor	23	ball linkage rod	38	long ball linkage
9	socket screw M3*16	24	PIT ball linkage rod	39	screw M2*14
10	nut M3	25	Swashplate set	40	ELE lever
11	bearing 3*8*4	26	screw M2*9	41	main shaft
12	socket screw M2*5	27	bearing 2*5*2.5	42	main shaft mount ring
13	bearing 3*6*2.5	28	set screw M3*3	43	set screw M3*3
14	aluminium washer	29	screw M2*8	44	pin
15	0 shape circle	30	washout case stabilizer control set		



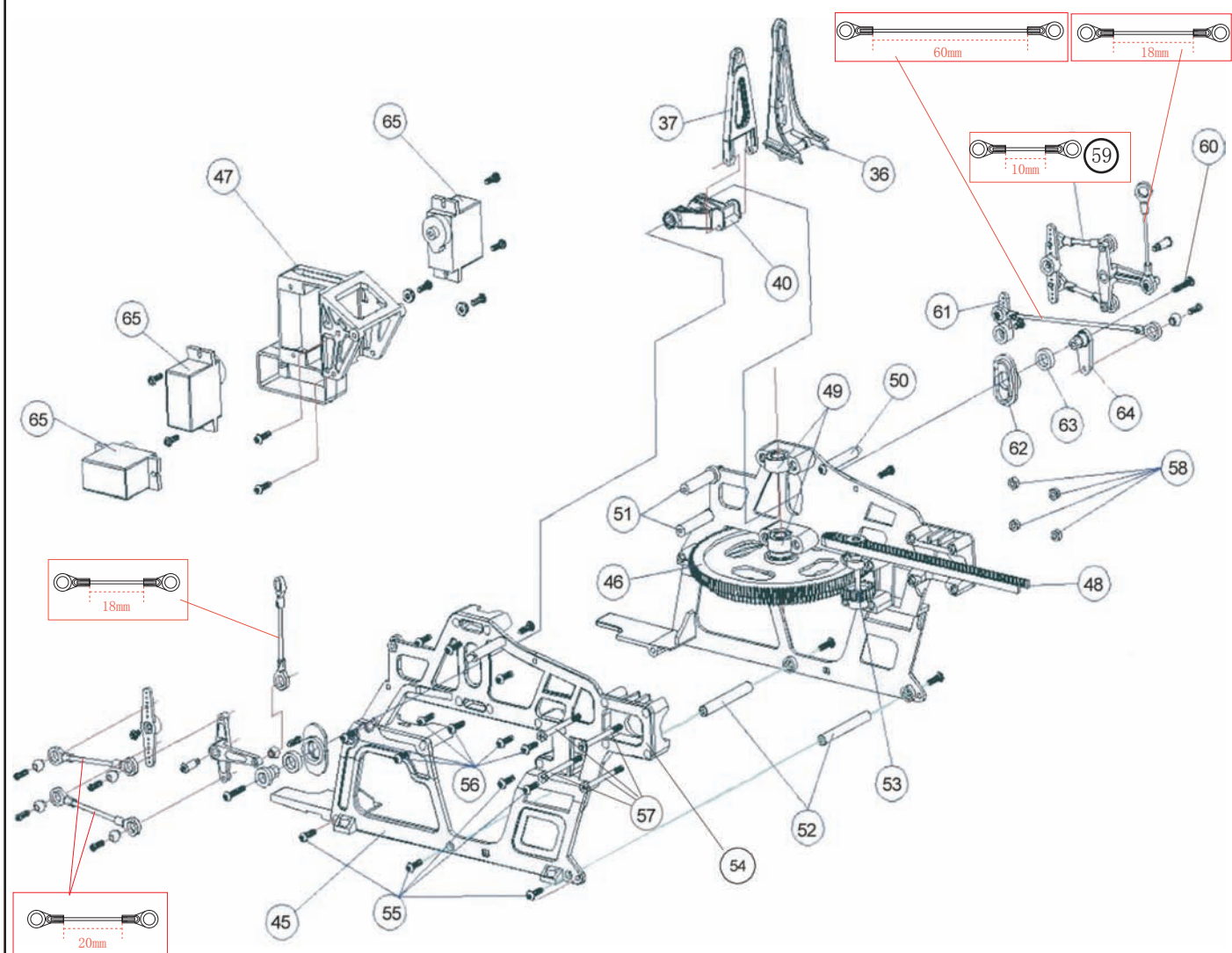
illustration of Main rotor set:



N0. and Name:

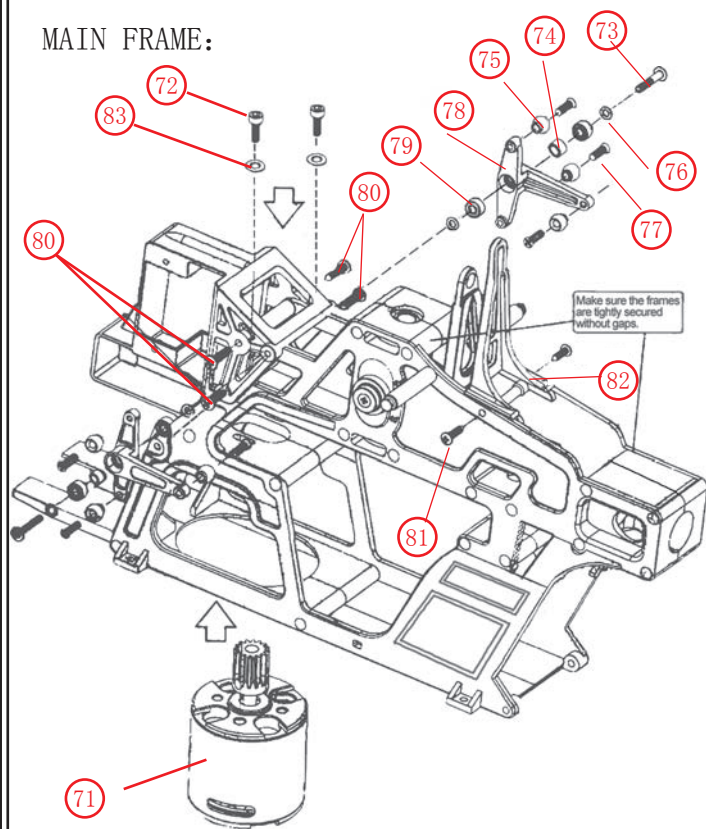
1. Head stopper	16. screw m2*6	31. Ball linkage rod
2. Main rotor housing	17. flybar control lever	32. Washout base
3. Feathering shaft	18. Socket screw m2*12	33. Collar screw m2*9
4. Flybar seesaw holder	19. Nut m2	34. Washout linkage
5. Flybar paddle	20. PIT control lever	35. Collar screw m1.4*6.5
6. Flybar rod	21. Flybar control set	36. Anti rotation bracket
7. Main rotor holder	22. Collar screw m2*9	37. ELE control arm
8. Main rotor	23. Ball linkage rod	38. Long ball linkage
9. Socket screw m3*16	24. PIT ball linkage	39. Collar screw m2.14
10. Nut m3	25. Swashplate set	40. ELE control arm
11. Bearing ø3*ø8*4	26. Collar screw M2*9	41. Main shaft
12. Socket screw m2*5	27. Bearing ø 2* ø 5*2.5	42. Main shaft lock ring
13. bearing ø 3*6* ø 2.5	28. Set screw m3*3	43. Set screw m3*3
14. Aluminum collar	29. Collar screw m2*8	44. pin
15. O-ring	30. SF mixing lever	

## Installation illustration of main frame:

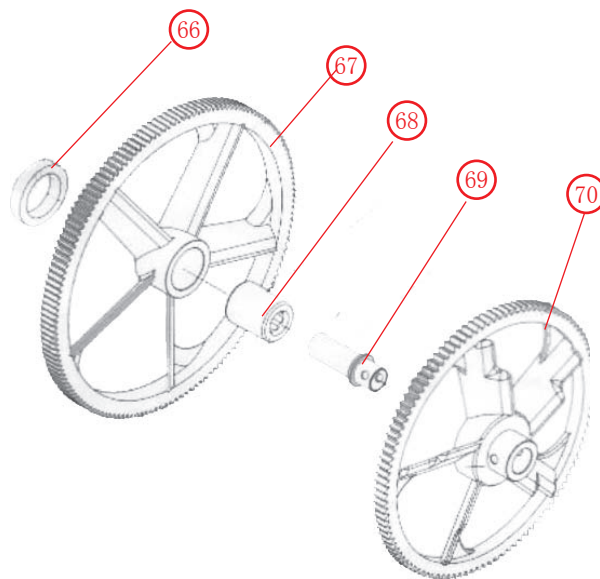


No.	Name	No.	Name
36	Anti-rotation bracket	54	Tail boom stiffener
37	ELE control lever	55	Tapping screw m2*12 pa
40	ELE control lever	56	
45	Main frame	60	
46	Big gear set	57	screw M2*26
47	Servo mount	58	M2 nut
48	Belt	59	Control lever
49	Bearing 5*11*5	61	The servo control lever
50	The canopy mount	62	The lever bearing holder
51	The frame link (short)	63	Bearing 4*8*3
52	The frame link (long)	64	ELE control lever
53	Tail drive gear	65	Servo

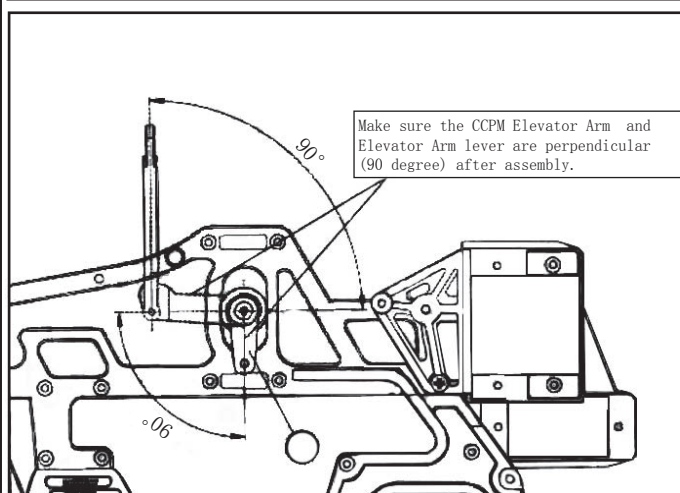
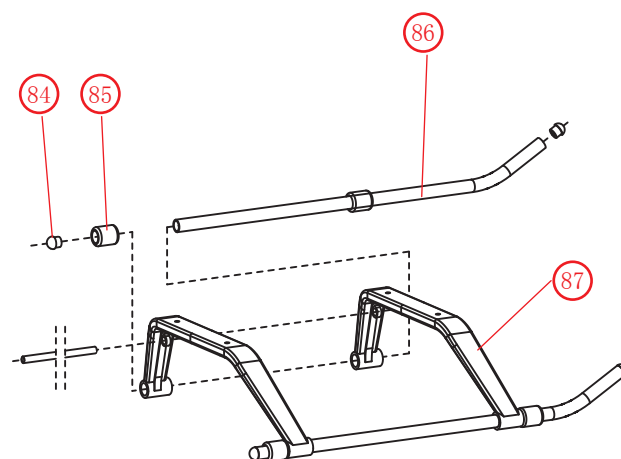
## MAIN FRAME:



## BIG GEAR SET:

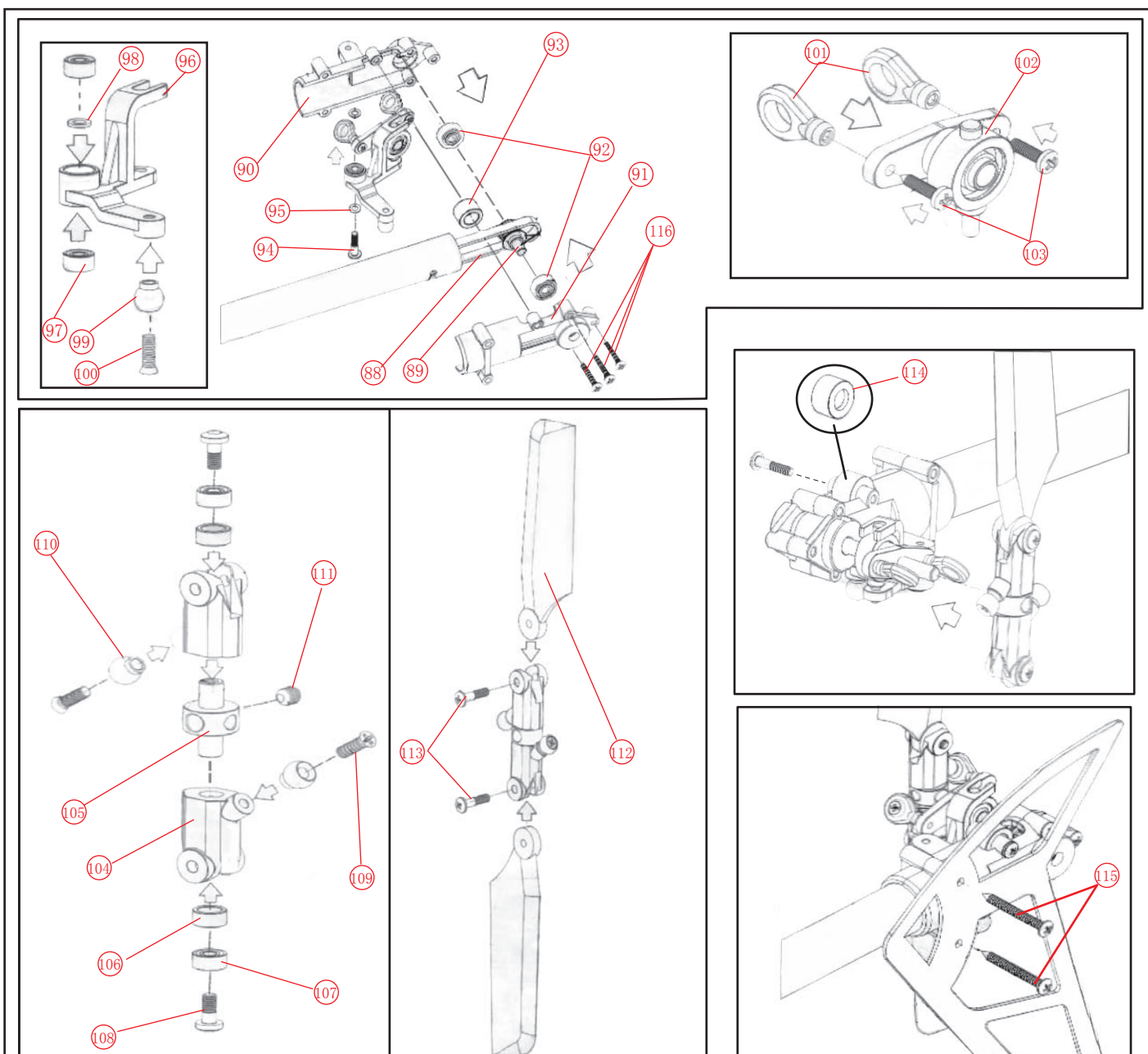


## LANDING SKID:



No.	Name	No.	Name
66	Shaft ring $\varnothing 6 \times 1.5$	77	Cross screw m2*6.5
67	Main drive gear	78	T-type control lever
68	One-way bearing	79	Bearing $\varnothing 2 \times \varnothing 5 \times 2.5$
69	One-way bearing shaft	80	Tapping screw m2*8
70	Tail drive gear	81	Tapping screw m2*6
71	Motor	82	Anti rotation bracket
72	Socket screw $\varnothing 2.5 \times 6$	83	Washer $\varnothing 2 \times \varnothing 3.8 \times 0.2$
73	Collar screw m2*12	84	Skid pipe end cup
74	Aluminum collar	85	Landing skid nut
75	Linkage ball	86	Skid pipe
76	Washer $\varnothing 2 \times \varnothing 3.8 \times 0.2$	87	Landind skid

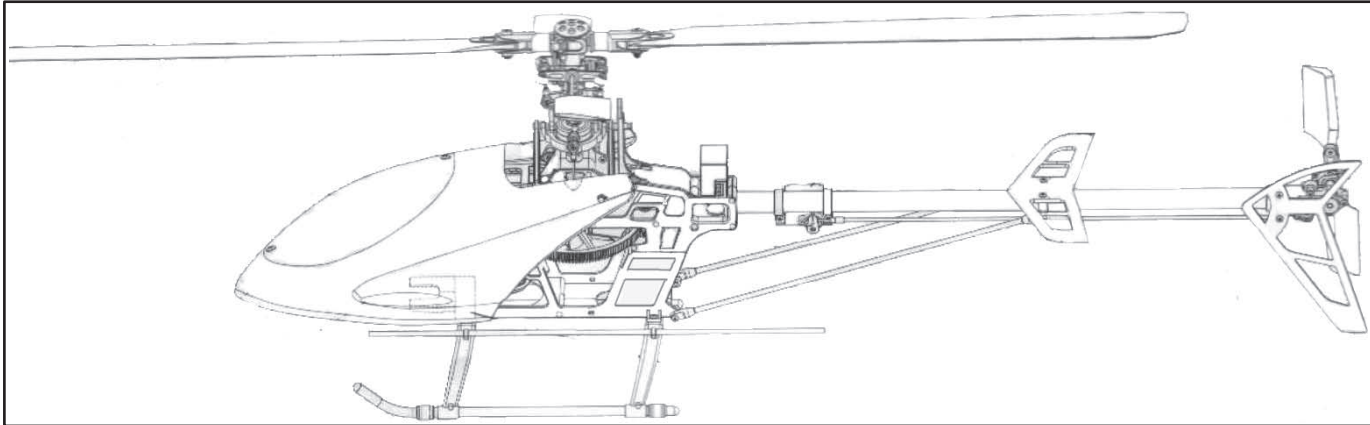
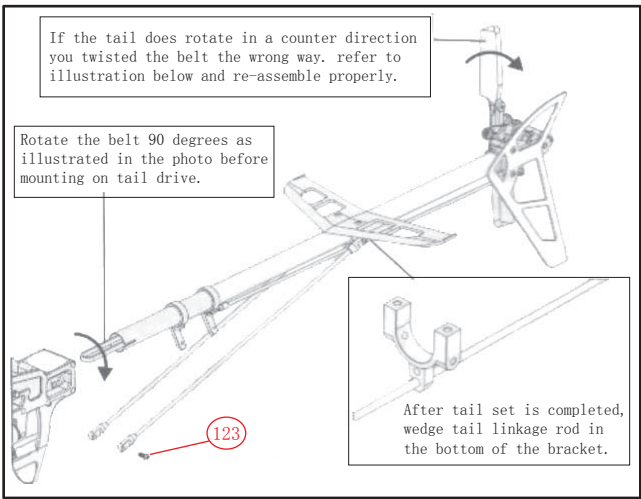
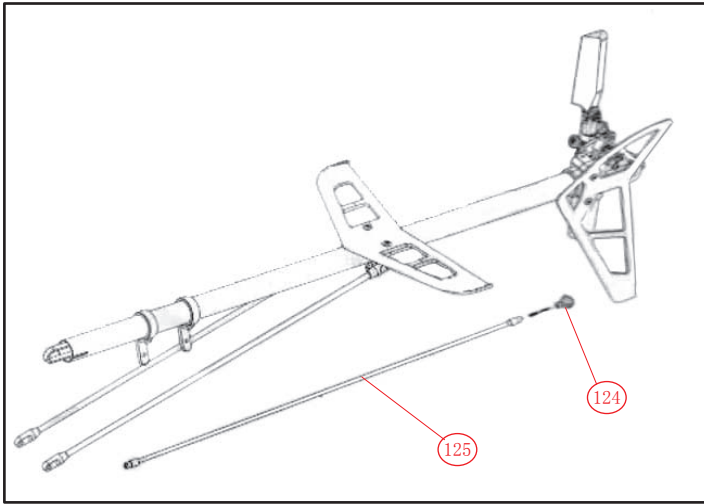
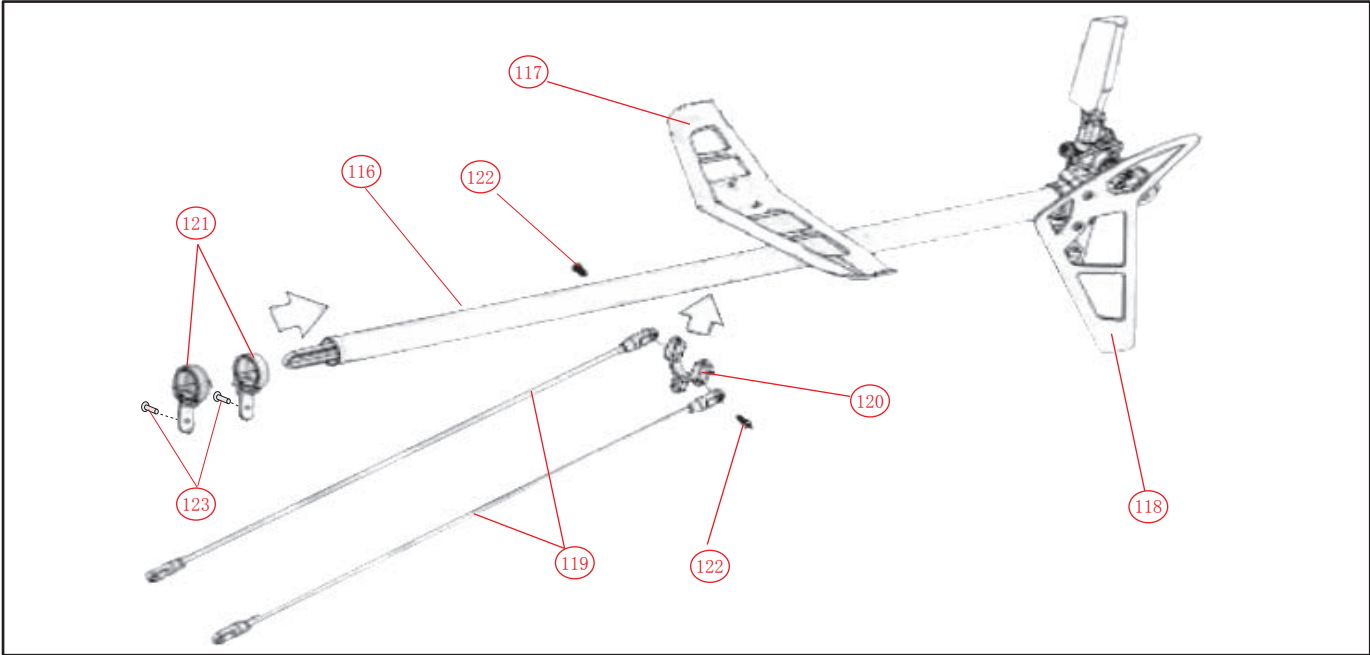




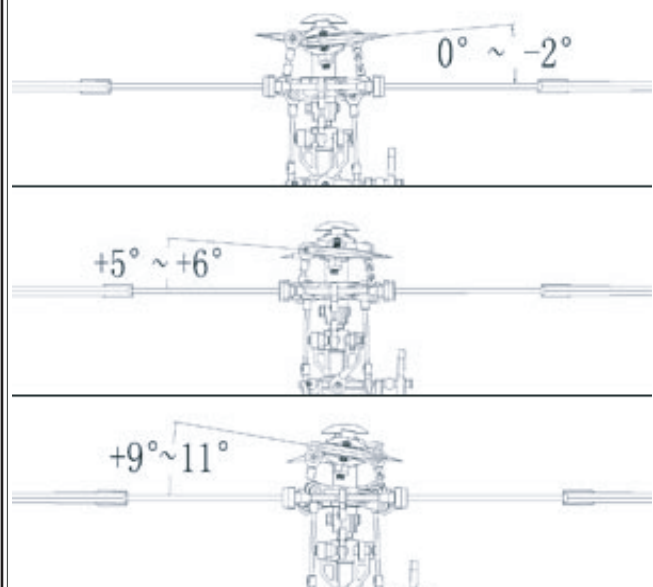
NO.	name	NO.	name
88	drive blut	102	tail rotor control set
89	tail rotor shaft assembly	103	tapping screw M1.4*7
90	tail ount housing ( R )	104	tail rotor holder
91	tail ount housing ( L )	105	tail rotor hub
92	bearing 3*8*3	106	collar 5*3.5*2.5
93	tail pulley assembly	107	bearing 2*5*2.5
94	collar screw M2*9	108	socket screw M2*6.5
95	washer	109	cross screw M2*6.5
96	tail rotor control arm	110	linkage ball
97	bearing 2*5*2.5	111	set screw M3*3
98	washer 2*3.8*0.5	112	tail rotor blade
99	linkage ball	113	collar screw M2*8
100	cross screw M2*6.5	114	tail pulley assembly
101	ball link	115	tapping screw M2*16

Installation illustration of tail gear holder set:

NO.	NAME	NO.	NAME
116	tail boom	121	tail servo mount
117	horizontal stabilizer	122	tapping screw M2*6
118	vertical stabilizer	123	tapping screw M2*8
119	tail boom brace	124	ball link
120	bracket	125	tail linkage rod

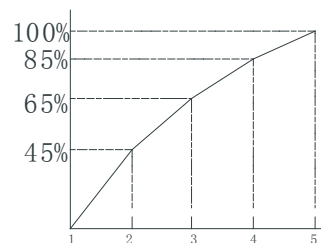


## General Flight mode



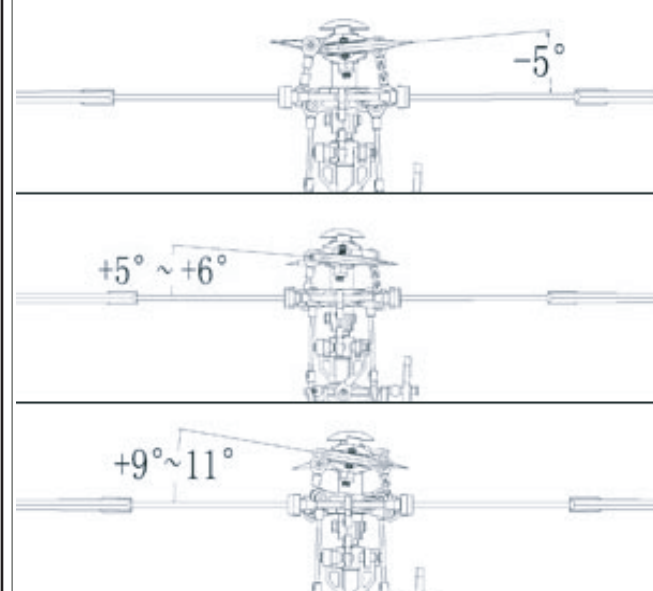
## General Flight

	Throttle	Pitch	Current	Rotation speed
1	0%	0~-2		0
2	40%			
3	50%	+4~+5		1500
4	85%			
5	100%	+9		1800



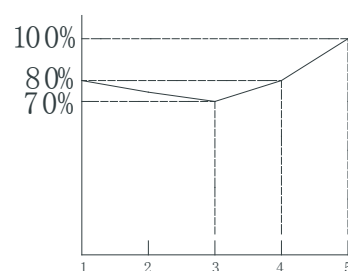
Throttle Curve (Hovering Flight)

## Aerobic Flight mode:



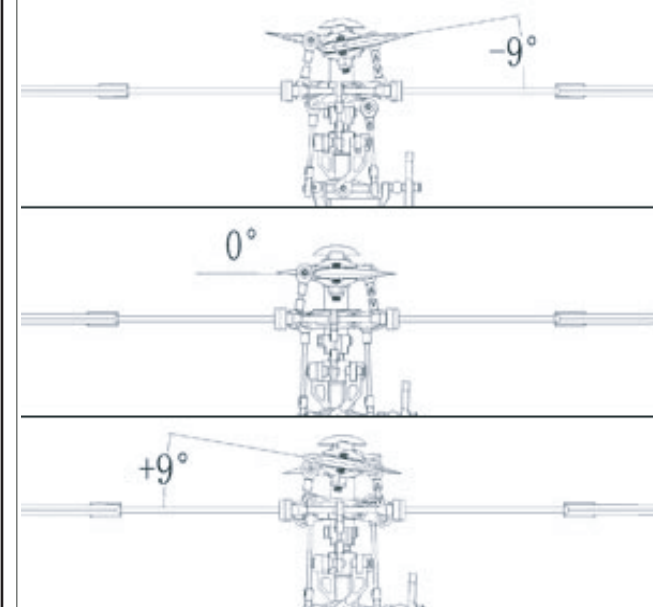
## Aerobic Flight

	Throttle	Pitch	Current	Rotation speed
1	80%	-5		1700
2	75%			
3	70%	+4~+5		1500
4	75%			
5	100%	+9		1800



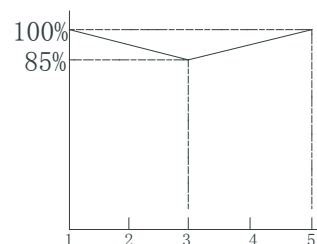
Throttle Curve (Simple Aerobic Flight)

## 3D Flight mode:



## 3D Flight

	Throttle	Pitch	Current	Rotation speed
1	100%	-9		2000
2	95%			
3	85%	0		1800
4	95%			
5	100%	+9		2000



Throttle Curve (3D Flight)

## Flight adjustment and setting

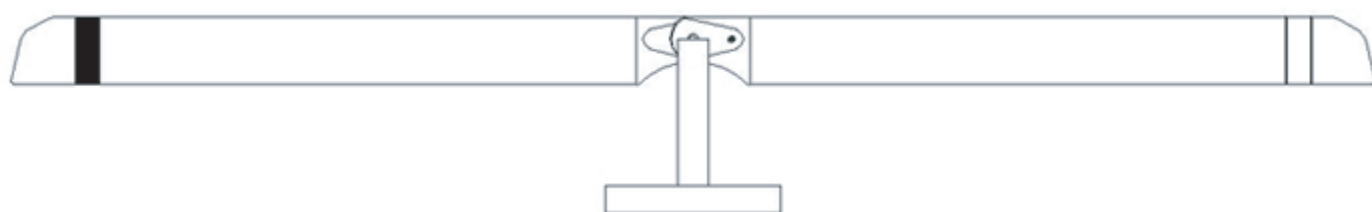
### Esc setting(25A) :

- ◆ 1-1 Brake : Off
- ◆ 2-\* Battery type : Battery choice: li-ion/li-poly
- ◆ 3-1 Cutoff mode : Reduce power
- ◆ 4-3 cutoff threshold : high
- ◆ 5-3 Startup mode : Super soft
- ◆ 6-3 Timing : High

**Caution:** as to the specific setting way, you can refer to the user handbook of ESC.

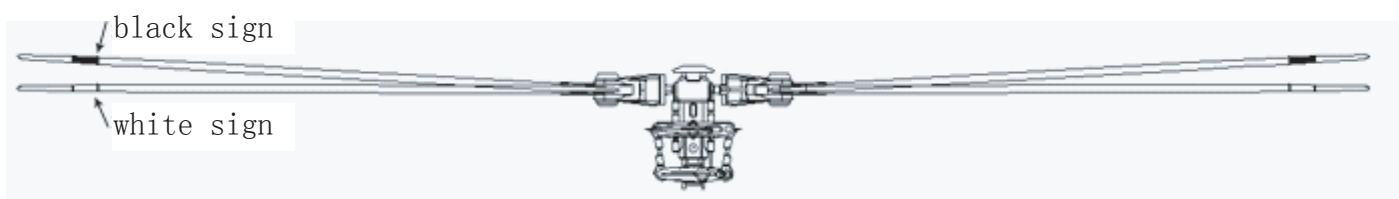
### Main rotor adjustments

**Caution:** It is very dangerous to adjust rotor blade, please keep a certain distance to adjust them.



Before flying, balancing of the blades is very important.

Screw the rotor blades together as illustration, apply or paint different colors mark on the blades. When they are suspended exactly horizontally, the rotor blades are properly balanced. If not, you need to adjust them.



### THE ADJUSTING OF ROTOR BLADES IN FLIGHT.

1. Slowly adjust throttle to certain position, before the heli taking off, through the lateral of the heli, you can watch the run of big rotor blade.
2. If the blade tracking is correct, a line will be shaped. If not, you should adjust the higher one or lower one.
3. Short pitch linkage rod is used for adjusting general pitch (when the rotor blades are bigger). Long pitch is used for trimming (when the difference of two blades is small).
  - A. Rotating blades, the higher rotor indicates that the pitch is bigger. You can adjust short linkage rod A, if it needs smaller pitch trimming, please adjust long linkage rod A.
  - B. Rotating blades, the lower blade indicates that the pitch is smaller. You can adjust long linkage rod B, if it needs smaller pitch trimming, please adjust long linkage rod B.

# GL450S PARTS



GL-1036  
Main blade holder



GL1137S Main  
frame set



GL1194  
Wood rotor blade



GL1193  
Fiberglass  
rotor blade



GL1191  
Flybar paddle



GL-1189S-72  
Tail blade holder



GL-1128S  
Flybar seesaw holer



GL-1108S Tail  
gear holer set



GL1209-S Tail  
horizontal stabilizer



GL1208-S Tail  
vertical stabilizer



GL-1121S  
Main rotor set



GL-1024S-72 Washout  
case stabilizer  
control set



GL-1129S  
Flybar seesaw  
lever set



1022S  
Elevator control  
arm



GL1113S  
Anti rotation  
bracket



GL1104  
stainless flybar rod



GL1041  
Stainless  
mouting pin



GL1103  
Feathring shaft



GL1011-s  
Main shaft 3pcs



GL1140  
Tail rotor blade  
gear shaft



GL1031  
Drive belt 2pcs



GL-1154-1  
Small gear



GL-1154S-2  
Big gear



GL1114-S Tail  
servo mount



GL1023s  
Servo mount



GL-1111S  
Swashplate set



GL-1196S-72  
Washout case



GL-1173S  
Tail gear set



GL1135s  
Tail blade  
control set



GL1021s  
Left & Right  
T-arm



GL1042s  
Ball link bag



GL1040  
Whole heli  
hardware bag



GL1042  
Ball part



GL1043-1s  
ball link



GL-1081S  
Flybar control set

# **GULANG MODEL**

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## **GL450S EP-HELICOPTER**

### **Specifications & Equipment:**

Length:650mm  
Height:220mm  
Main rotor diameter:700mm  
Tail rotor diameter:150mm  
Motor drive gear: 13T  
Main drive gear: 150T  
Autorotation tail drive gear:105T  
Tail drive gear:25T  
Drive gear ratio: 1:11.5:4.24  
Weight (w/o power system):370g  
weight (w/ power system):700g.

### **Recom mended Power Equipment (Not included in kit):**

Transmitter: 6 channels  
Receiver: 6 channels  
Servo: 9g \*4pcs  
Gyro: GM700 or Gm730 \* 1pcs  
Battery: 11.1V 2200mAh 15C  
Brushless motor: 3500KV  
Brushless ESC: 30A

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