

# KDS 450S MANUAL



Thank you for choosing our 450 helicopter. It is latest technology which design by ourselves. Please read the manual carefully which can help you to operate your helicopter before operating the helicopter. Be sure to remain the manual for future reference regarding maintenance and turning.

# Foreword

Thank you for buying our helicopter product. Please read this manual carefully before assembling and operating the helicopter, in order to use 450 series helicopters more conveniently. At the same time, please keep this manual for future reference regarding adjusting and maintaining. (450 is the product that researched by Gulang themselves, it's the best choice to the beginners who demand steady flight and advanced fliers who pursue full aerobatic capability.

R/C helicopters, including the 500heli are not toys, R/C helicopter utilize various high-tech products and technologies to provide superior performance.

We recommend that you obtain the assistance of an experienced pilot before attempting to fly our products for the first time. A local expert is the best way to properly assemble, setup, and fly your model for the first time. The 450 heli requires a certain degree of skill to operate, and is a consumer item. Any damage or dissatisfaction as a result of accidents or modifications are not covered by any warrantee and cannot be returned for repair or replacement

Notice:

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 of result of R/C aircraft models.

## UTION ITEMS

### 1.KEEP AWAY FROM BARRIER

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.

### 2. ALWAYS BE AWARE OF THE ROTATING BLADES

During the operation of the helicopter, the main rotors 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 operating on the same frequency for the safety.

### 3. 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. 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 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.

#### 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.

#### 6. CAREFULLY INSPECT BEFORE REAL FLIGHT

Before flying, please check to make sure to no 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. Before fl, please check if the batteries of transmitter and receiver 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 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.

Before operation, checking every movement is smooth and directions are correct.

Carefully inspect servos for interference and broken gear.

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. 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 result out of control. Check for the tension of tail drive belt.



high buildings



crowd



hurricane



night



rain









snow

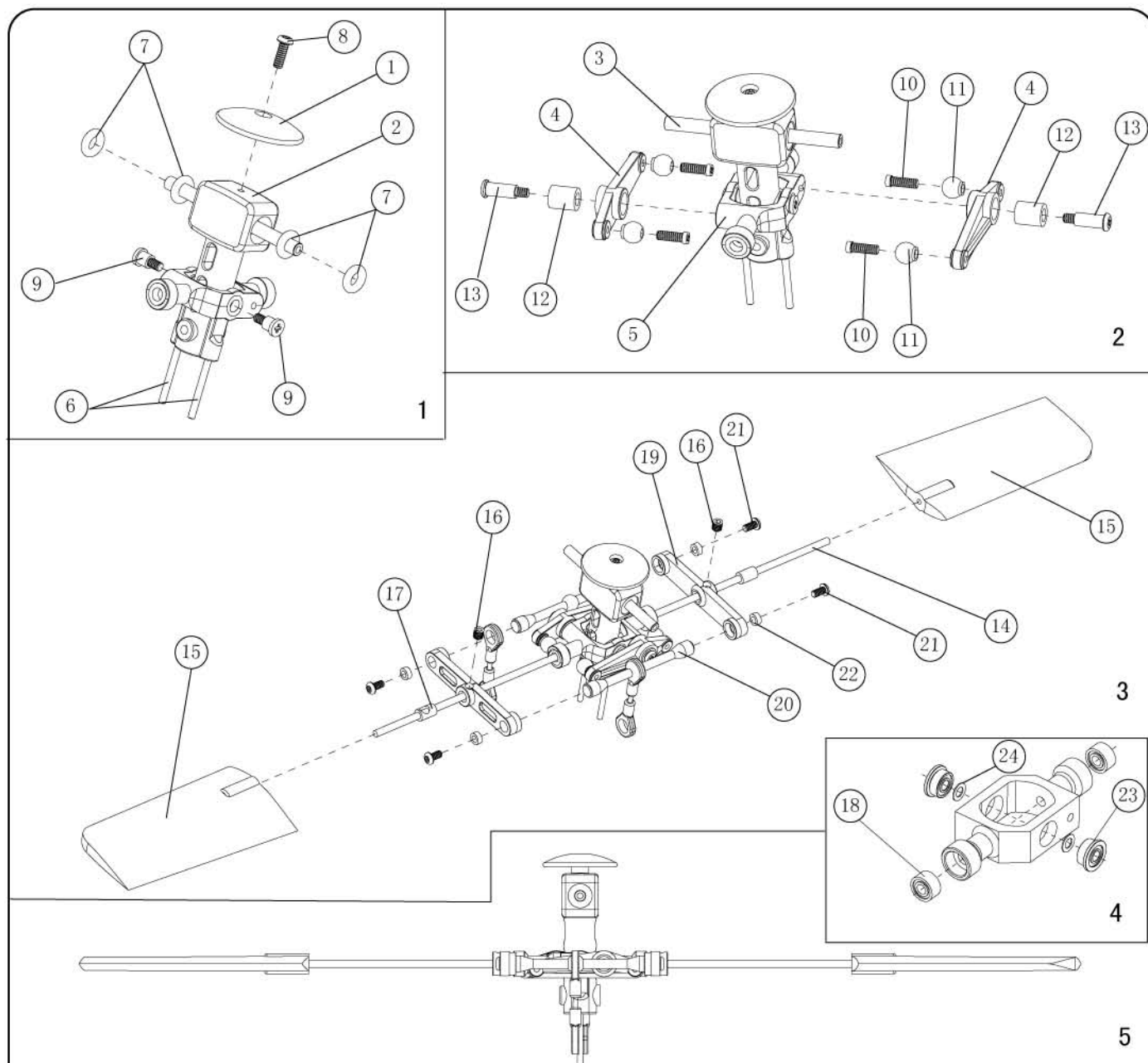


thermometer hot

### Tools Required for assembly

					
Lubricant	knife	Scissors	Nipper	Ball Link Pliers	screwdriver

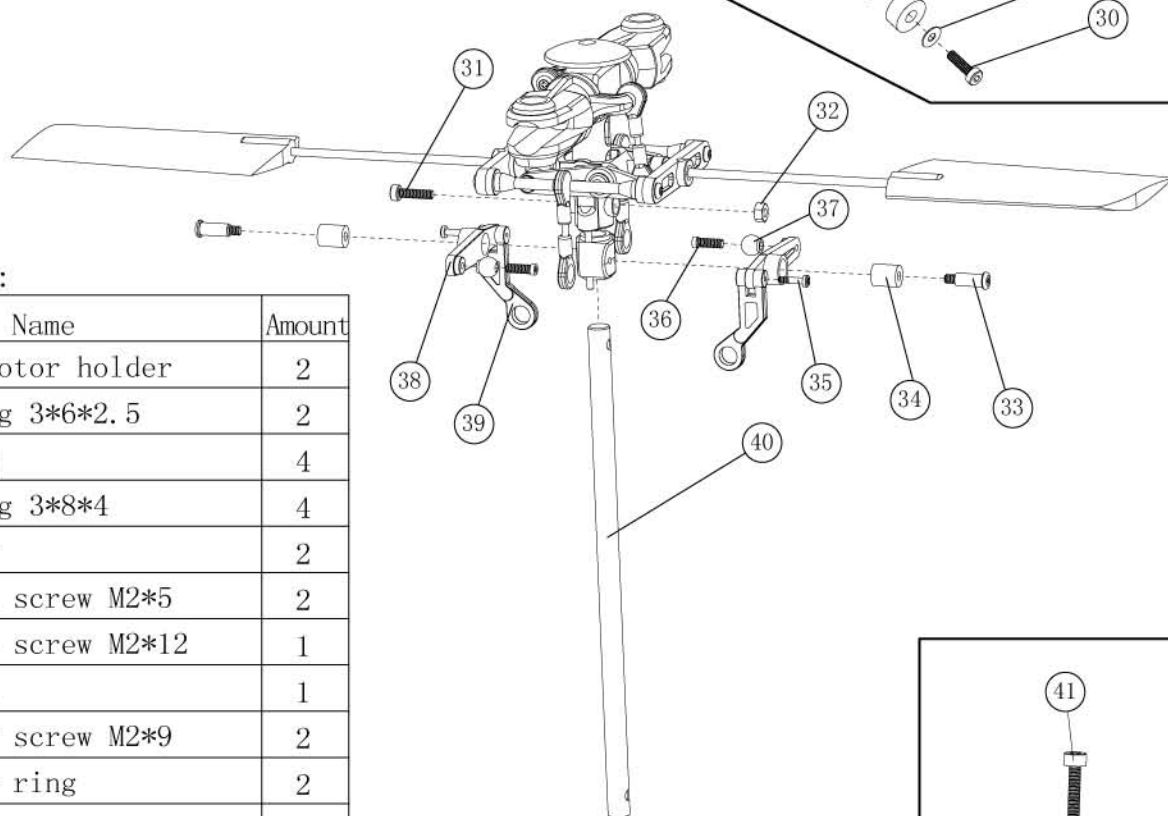
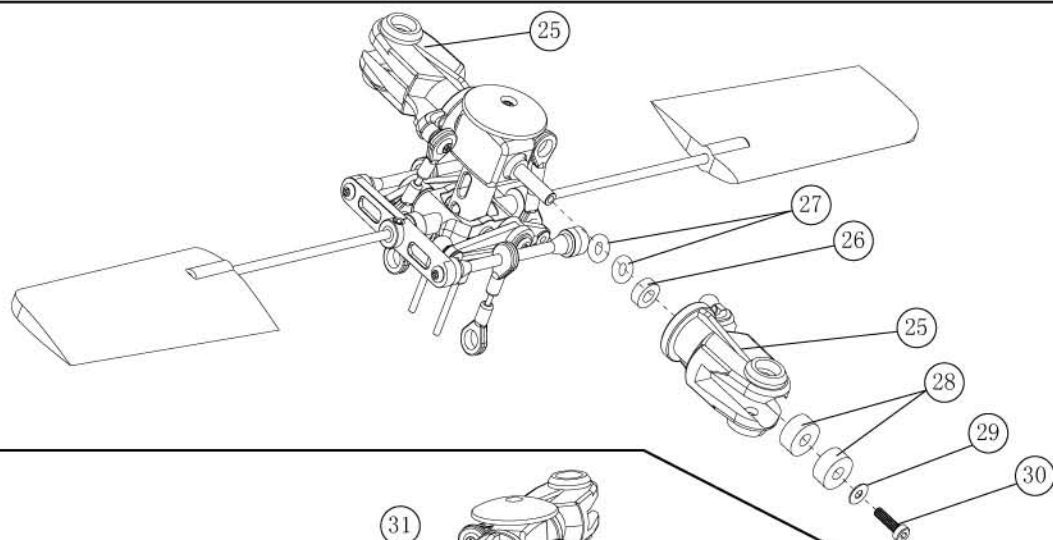
## MAIN ROTOR INSTALLATION:



Name and NO. :

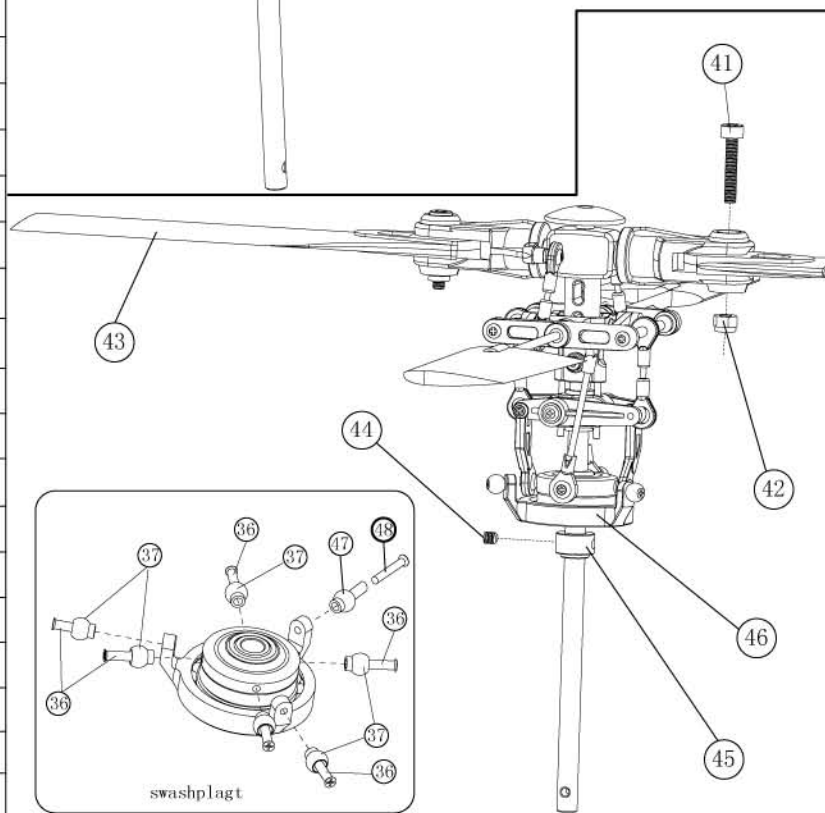
NO.	Name	Amount	NO.	Name	Amount
1	Metal head stopper	1	13	Collar screw	2
2	Main rotor housing	1	14	Flybar rod	1
3	Feathering shaft	1	15	Flybar paddle	2
4	Mixing arm -1	2	16	Set screw	2
5	Flybar seesaw holder	1	17	Copper ring	2
6	Pin	2	18	Bearing	2
7	O circle	4	19	Flybar seesaw holder -2	2
8	Socket screws M2*8	1	20	Flybar control rod	2
9	Collar screw M2*6	2	21	Cross screw FM2*5	4
10	Cross screw FM2*7	4	22	Washer	4
11	Ball part	4	23	Flange bearing	2
12	Copper ring	2	24	Washer	2

## MAIN ROTOR INSTALLATION:



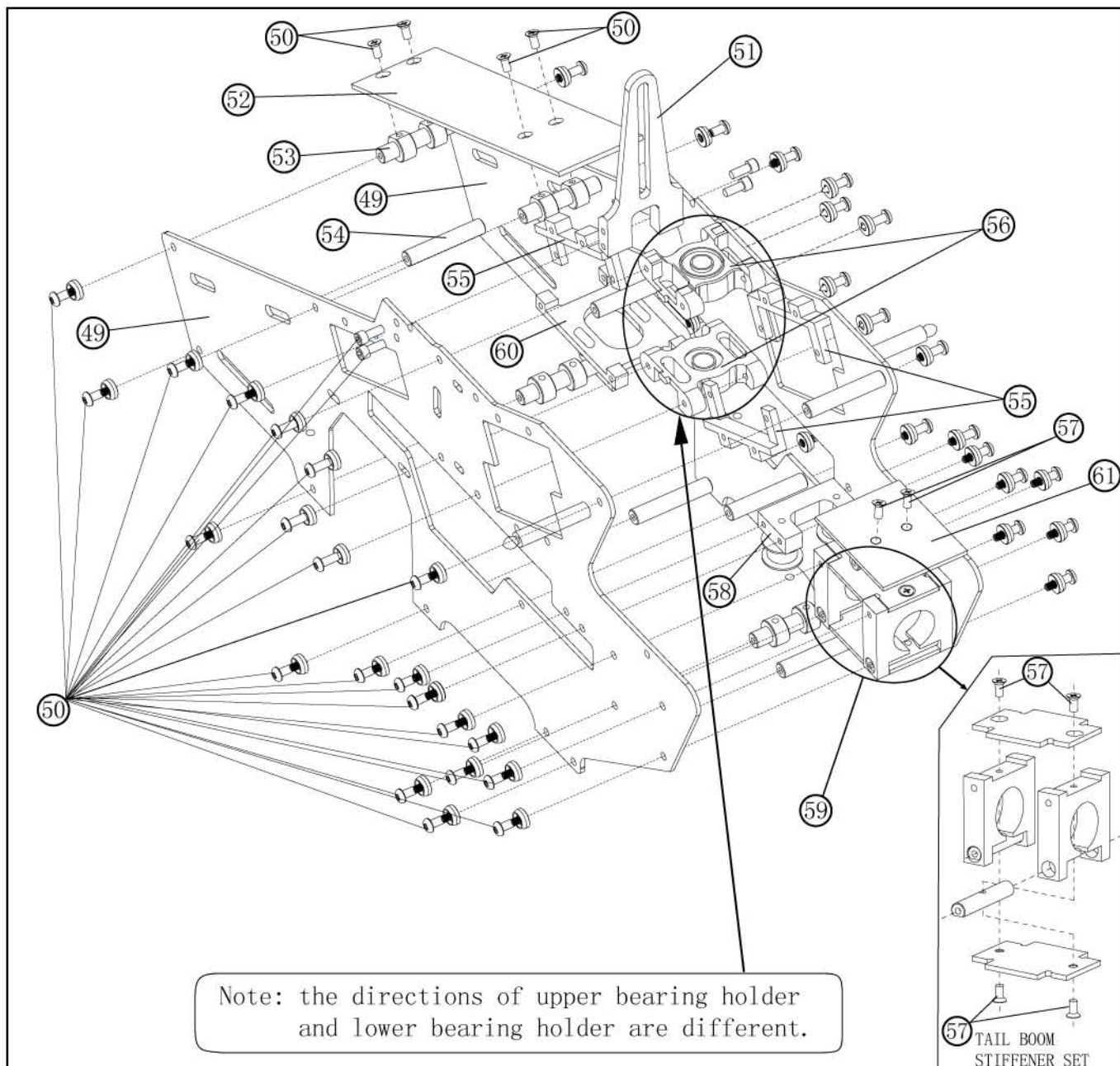
Name and NO. :

NO.	Name	Amount
25	Main rotor holder	2
26	Bearing 3*6*2.5	2
27	O-ring	4
28	Bearing 3*8*4	4
29	Washer	2
30	Socket screw M2*5	2
31	Socket screw M2*12	1
32	M2 nut	1
33	Collar screw M2*9	2
34	Copper ring	2
35	Collar screw M1.4*6.5	2
36	Cross screw FM2*7	2
37	Linkage ball	2
38	SF mixing lever	2
39	Washout linkage	2
40	Main shaft	1
41	Socket screw M3*16	2
42	M3 nut	2
43	Main rotor	2
44	Set screw	2
45	Main shaft lock ring	1
46	Swashplate	1
47	Long linkage ball	1
48	Cross screw FM2*13	1





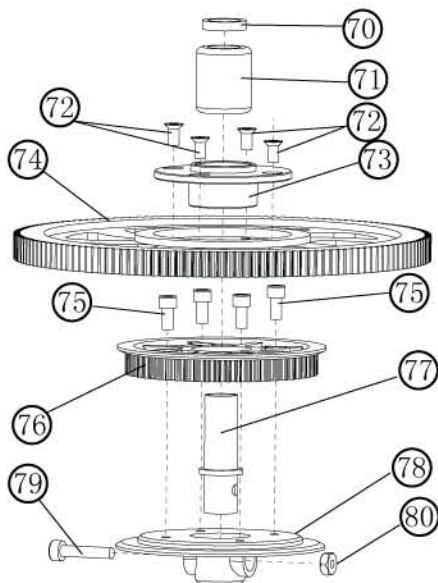
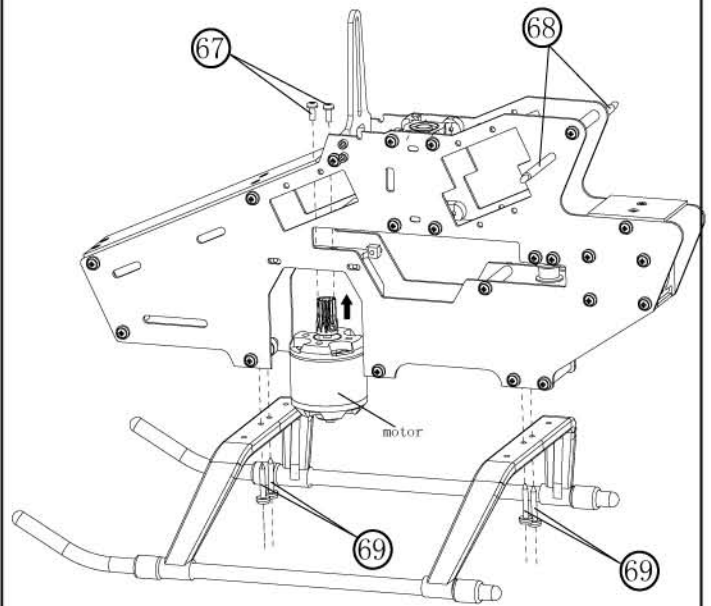
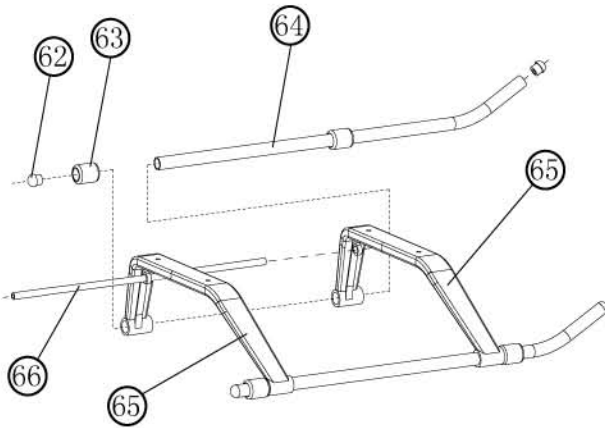
## MAIN FRAME INSTALLATION:



NO. & Name:

NO.	NAME	AMOUNT	NO.	NAME	AMOUNT
49	Main frame	2	56	Main shaft bearing mount	2
50	Socket screw M2*5 & washer	48	57	Cross screw FM2*4	10
51	Anti-rotation bracket	1	58	Front belt wheel set	1
52	Battery plate	1	59	Tail boom mount	1
53	Airframe connecting part	4	60	Motor mount	1
54	Airframe connecting part	6	61	assistant board	1
55	Servo mount	3			2

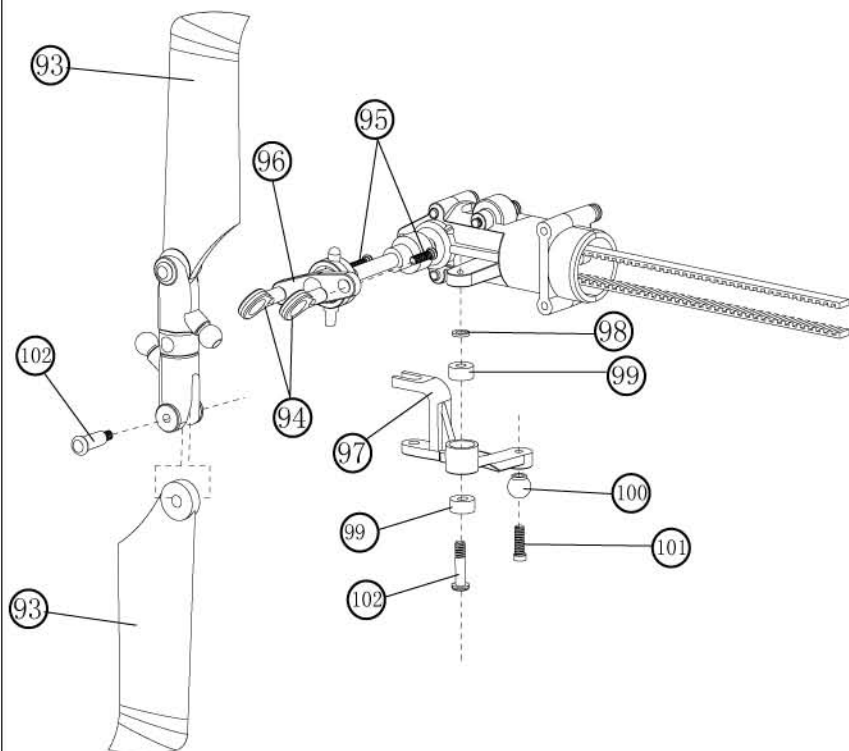
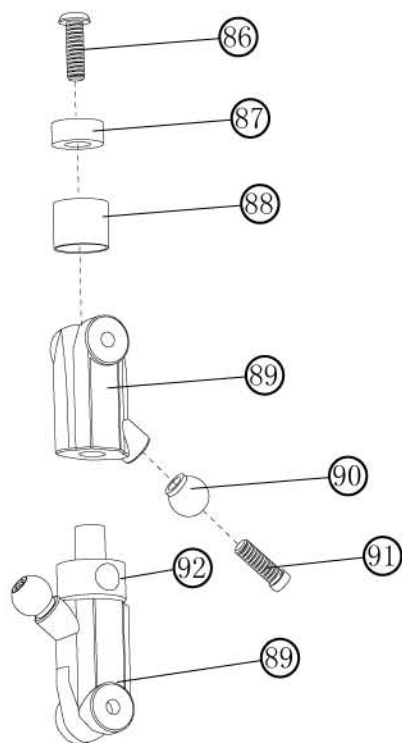
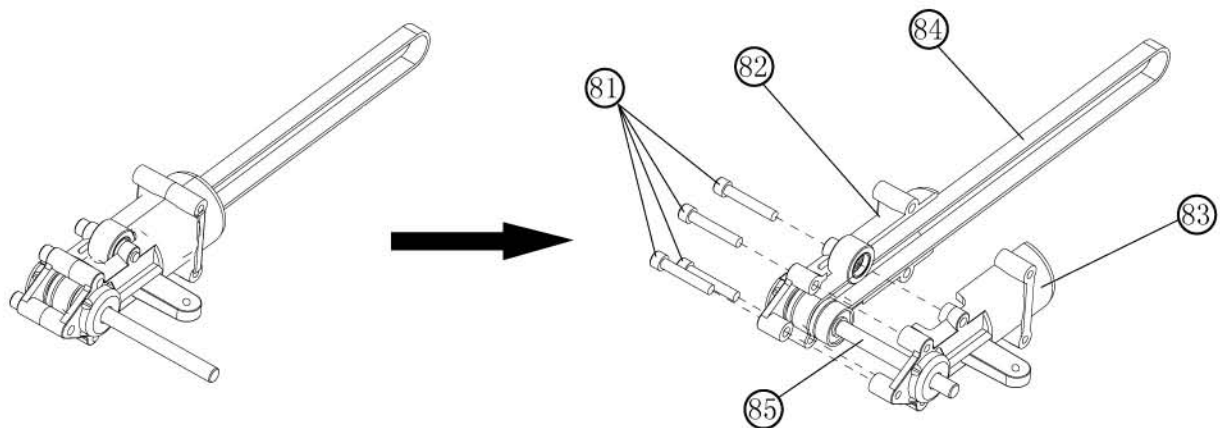
# LANDING SKID ILLUSTRATION:



Big gear set

## NAME AND NO. :

NO.	NAME	AMOUNT	NO.	NAME	AMOUNT
62	Skid pipe end cap	4	72	cross screw	4
63	Landing skid nut	4	73	Main gear case	1
64	Skid pipe	2	74	Big gear	1
65	Landing skid	2	75	Socket screw	4
66	Antenna pipe	1	76	Belt wheel	1
67	Socket screw	2	77	One-way gear bearing set	1
68	canopy mount	2	78	Belt wheel mount	1
69	Tapping screw	4	79	Socket screw	1
70	shaft ring	1	80	Nut	1
71	One-way bearing	1			



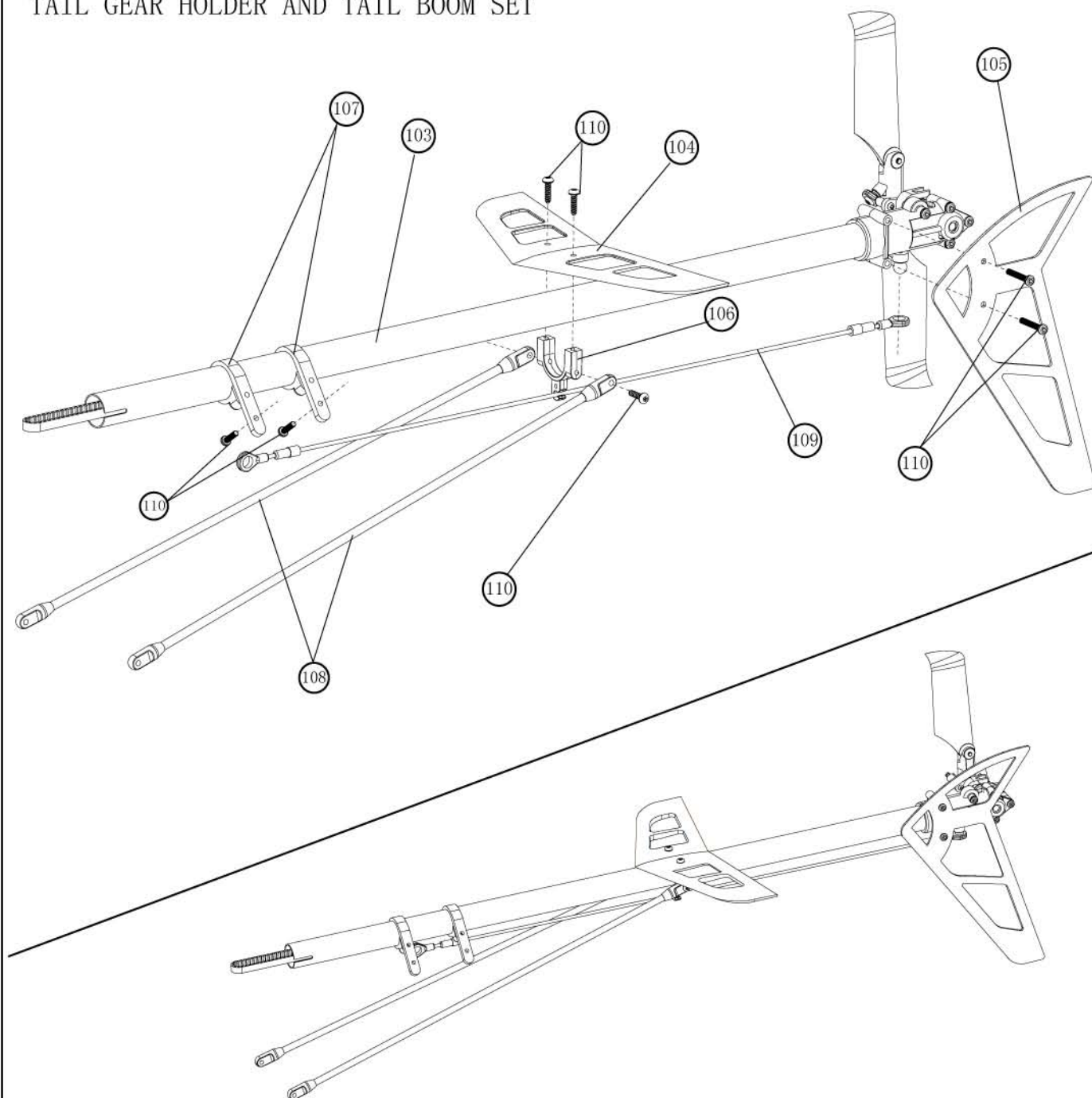
### NO. and Name:

NO.	Name	Amount	NO.	Name	Amount
81	Socket screw m2*10	4	92	Tail rotor hub	1
82	Tail unit housing (L)	1	93	Tail rotor blade	
83	Tail unit housing (R)	1	94	Ball link (short)	
84	Belt	1	95	Socket screw	
85	Tail shaft set	1	96	Tail rotor control set	
86	Socket screw	2	97	Tail rotor control arm	
87	Bearing	2	98	Washer	
88	Collar	2	99	Bearing	
89	Tail rotor holder	2	100	Linkage ball	
90	linkage ball part	2	101	Cross screw	
91	Cross screw	2	103	Collar screw	



## INSTALLATION ILLUSTRATION OF TAIL ROTOR:

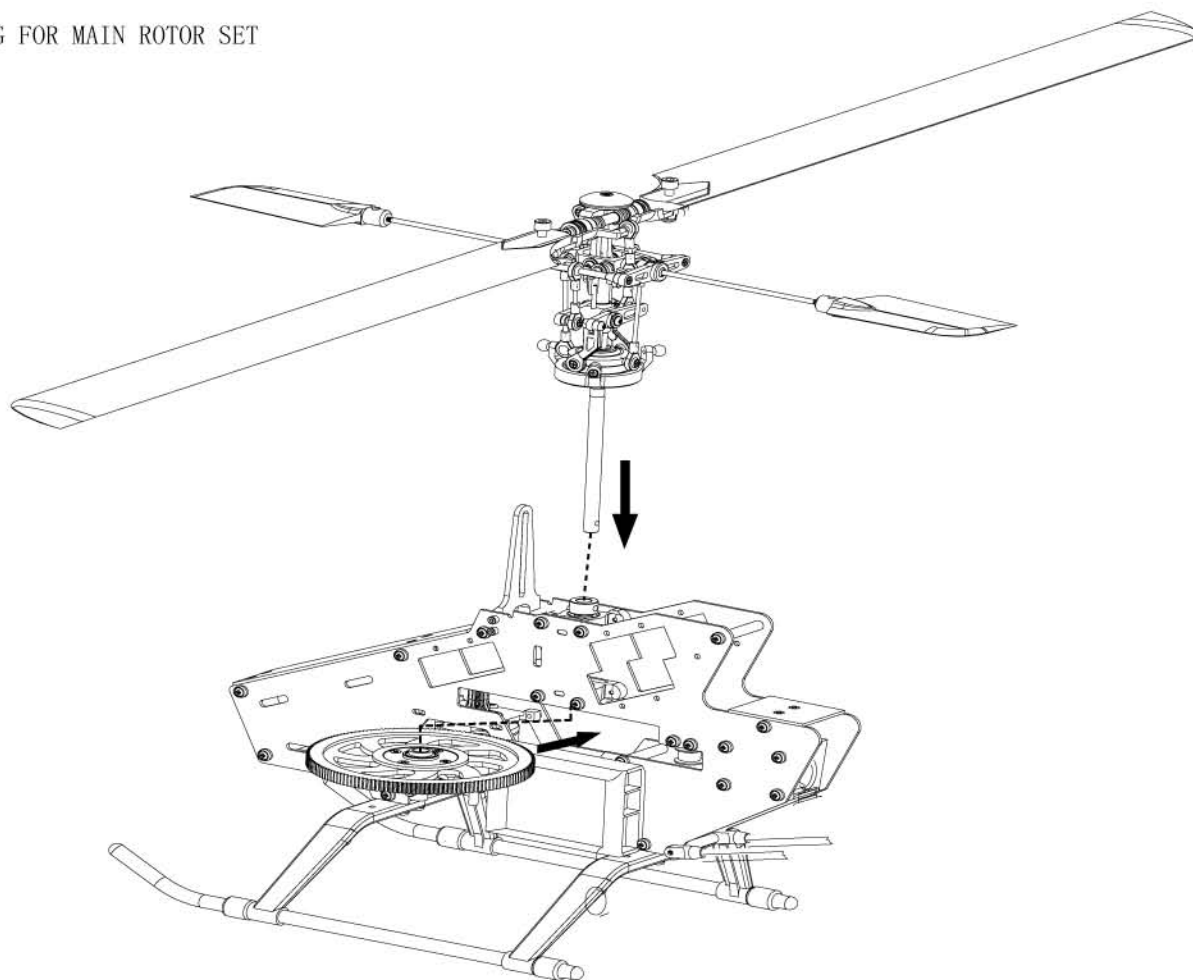
### TAIL GEAR HOLDER AND TAIL BOOM SET



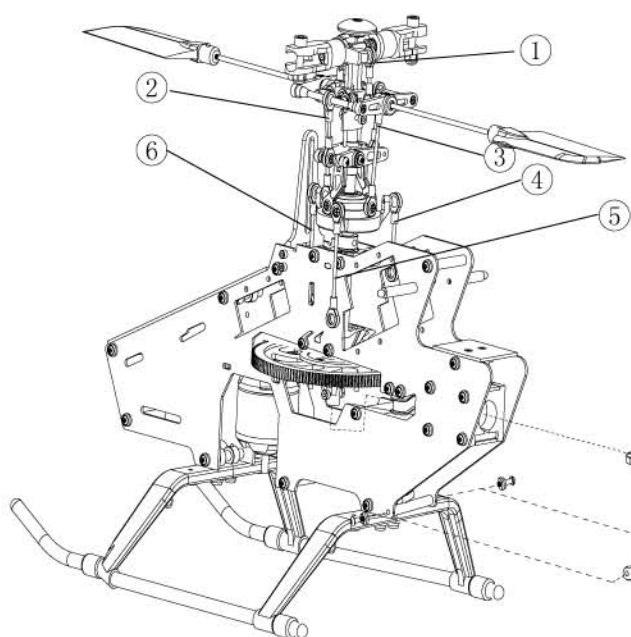
### NO. & Name

NO.	NAME	AMOUNT	NO.	NAME	AMOUNT
103	Tail boom	1	107	Tail servo mount	2
104	Horizontal stabilizer	1	108	Tail boom brace	2
105	Vertical stabilizer	1	109	Tail servo linkage rod	2
106	Horizontal stabilizer bracket	1	110	Socket screw M2*6	8

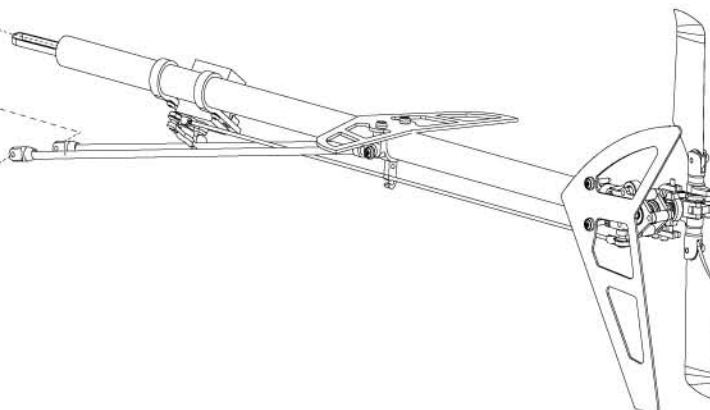
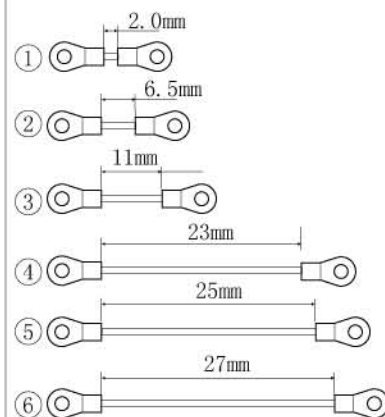
# FIXING FOR MAIN ROTOR SET



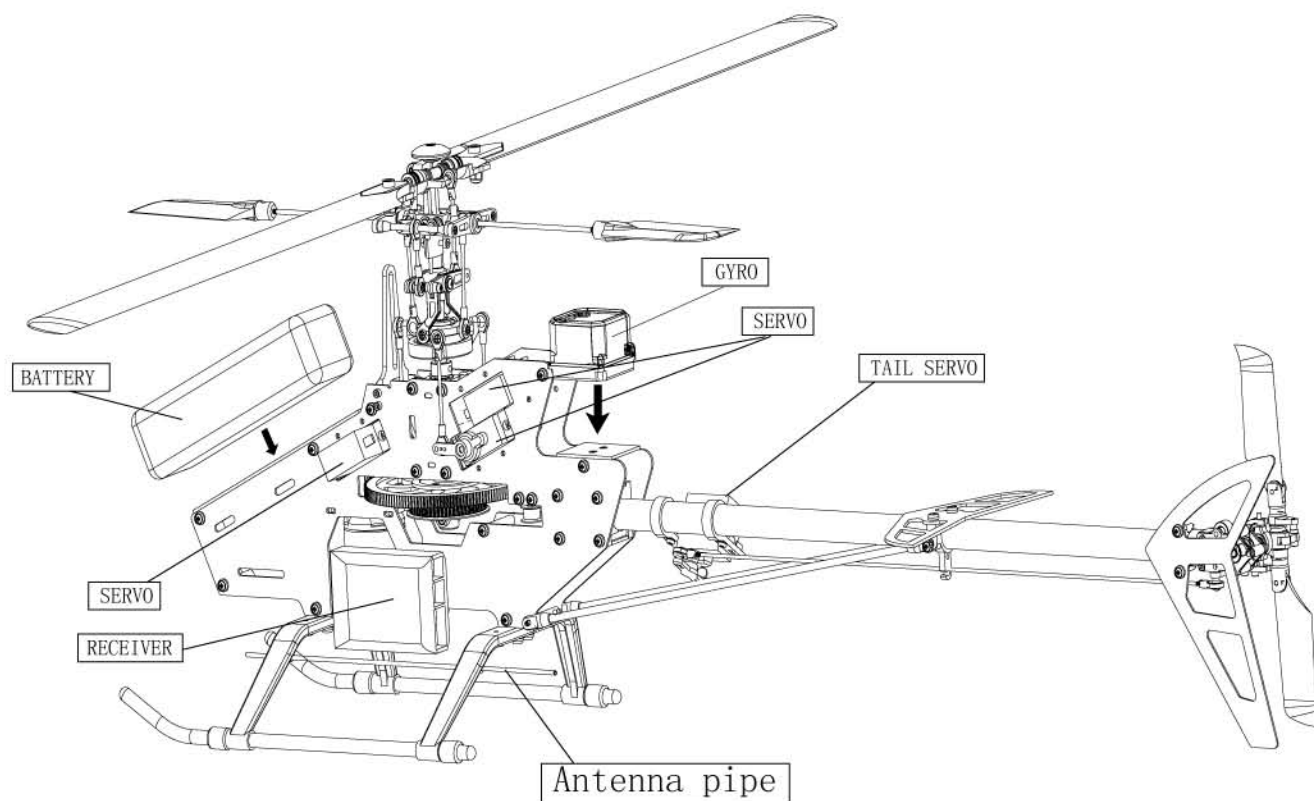
## FIXING FOR TAIL BOOM



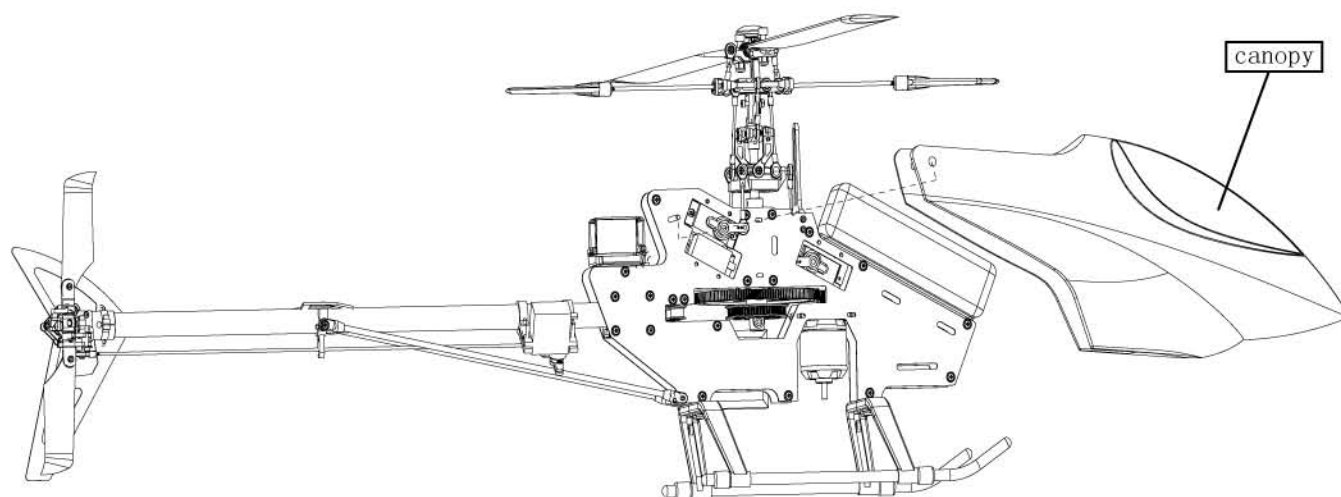
### Linkage rod:



## FIXING FOR ELECTRONIC EQUIPMENT

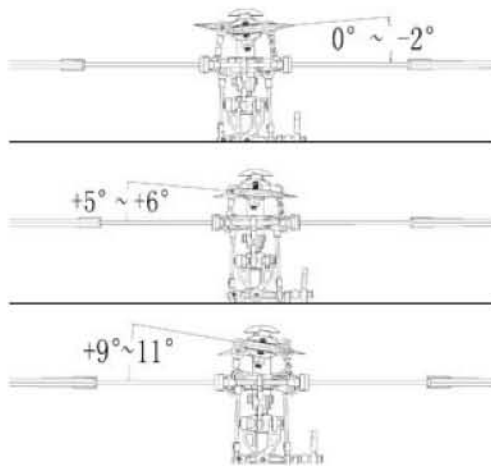


## FIXING FOR CANOPY



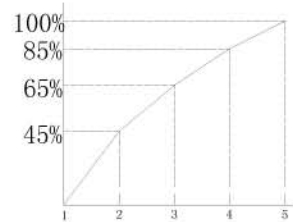
# Pitch and throttle setting

## General Flight mode



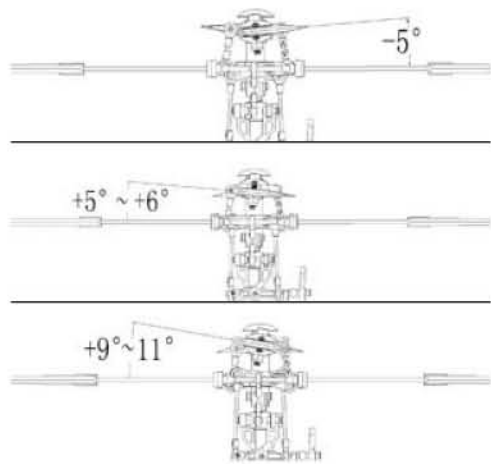
## General Flight

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



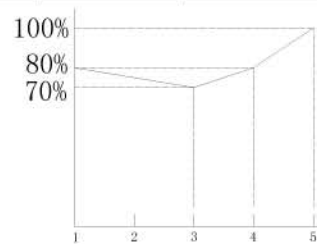
Throttle Curve (Hovering Flight)

## Aerobatic Flight Mode



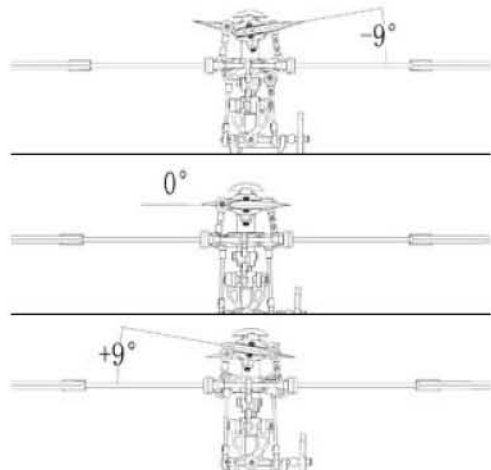
## Aerobatic flight mode

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



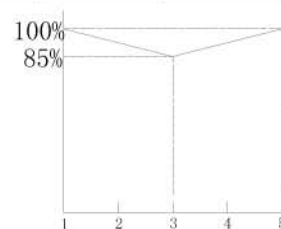
Throttle Curve (Simple Aerobatic Flight)

## 3D Flight Mode



## 3D Fright Model

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

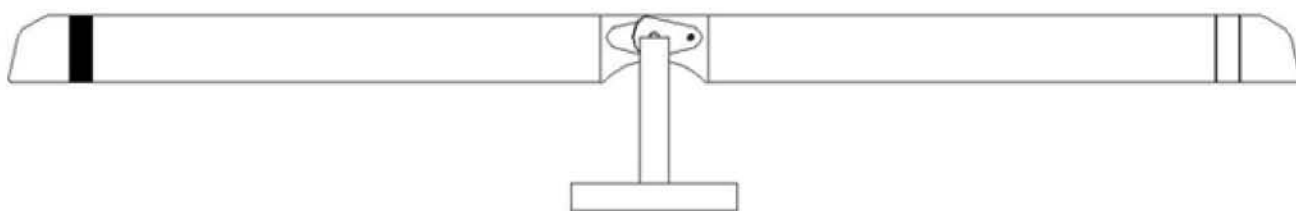
### Esc setting (35A) :

- ◆ 1-1 Brake: Off
- ◆ 2-1 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.

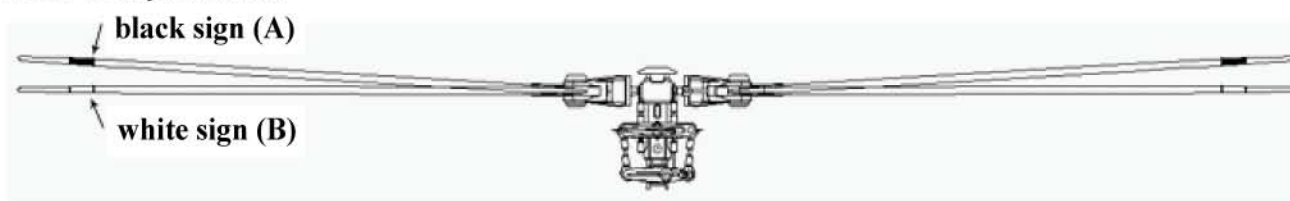
### Main rotor adjustments

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 correctly, 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.



## Specifications & Equipment:

Length: 710mm

Height: 225mm

Main rotor diameter: 705mm

Tail rotor diameter: 150mm

Motor drive gear: 13T

Main drive gear: 150T

Tail drive gear: 106T

Drive gear ratio: 1:120.5:4.24

Kit weight (w/o power): 450g

Takeoff Weight (w/power): 790g

Transmitter: 6 channels or 9 channels

Receiver: 6-channels or 9 channels

Li-Poly battery: 11.1V 2200mah 20C

Gyro: dual rate and head lock gyro KDS800

Servo: 9g×4pcs

Brushless motor 3500KV×1pc

Brushless ESC: 40A×1pc

Simple charger

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