



KDS Flymentor 3D User Manual

Preparations:

Computer systems not supported: VISTA 64

Before mounting flymentor, bind transmitter and receiver first, the steps are as follows:

First binding shall strictly follow the steps below:

- a. Hold the "BIND button" of transmitter, then turn it on
- b. Plug the 'BIND line' into the 'BIND' slot of receiver and turn on the power, the LED of receiver will flash twice and then turn off.
- c. Turn off transmitter, cut off the receiver power and remove the 'BIND line'
- d. Turn on receiver (do not plug the 'BIND line')
- f. Turn on transmitter (do not hold the 'BIND button'), the LED of receiver will become eternal sparkling after flashing for 3 seconds. (there is no the orders for future starting)

Remarks: Turn on the receiver again if the LED on receiver does not flash. But please turn off transmitter first.

For the first use, please plug the USB adapter into Flymentor . Then install the driver according to the steps showed under the relative menus.

Flymentor using steps:

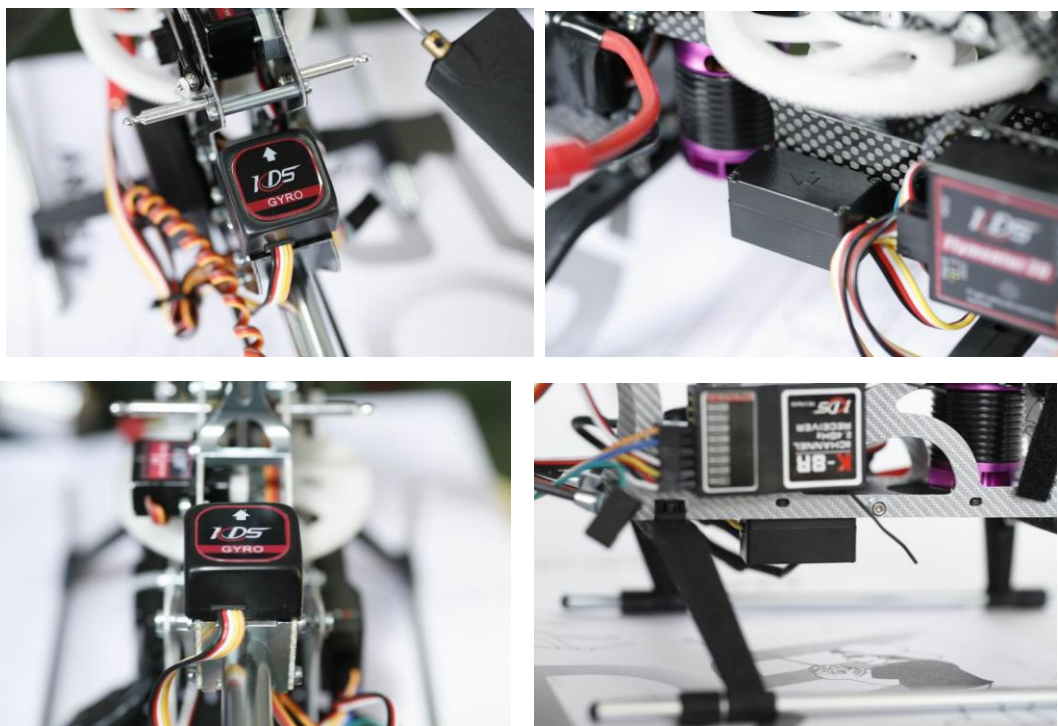
1. Mounting flymentor
2. Connection
3. Setup transmitter
4. Setup mechanism
5. Flight testing

1. Mounting flymentor

When mounting the flymentor, the Sensor and CCD of Flymentor must point to same direction as the arrow printed. Otherwise, the Flymentor can't work properly.

The lens of CCD shall face to the ground, and must see the ground well without any obstruction.

Here we demonstrate for you according to KDS ex-factory configuration standards



2. Connection

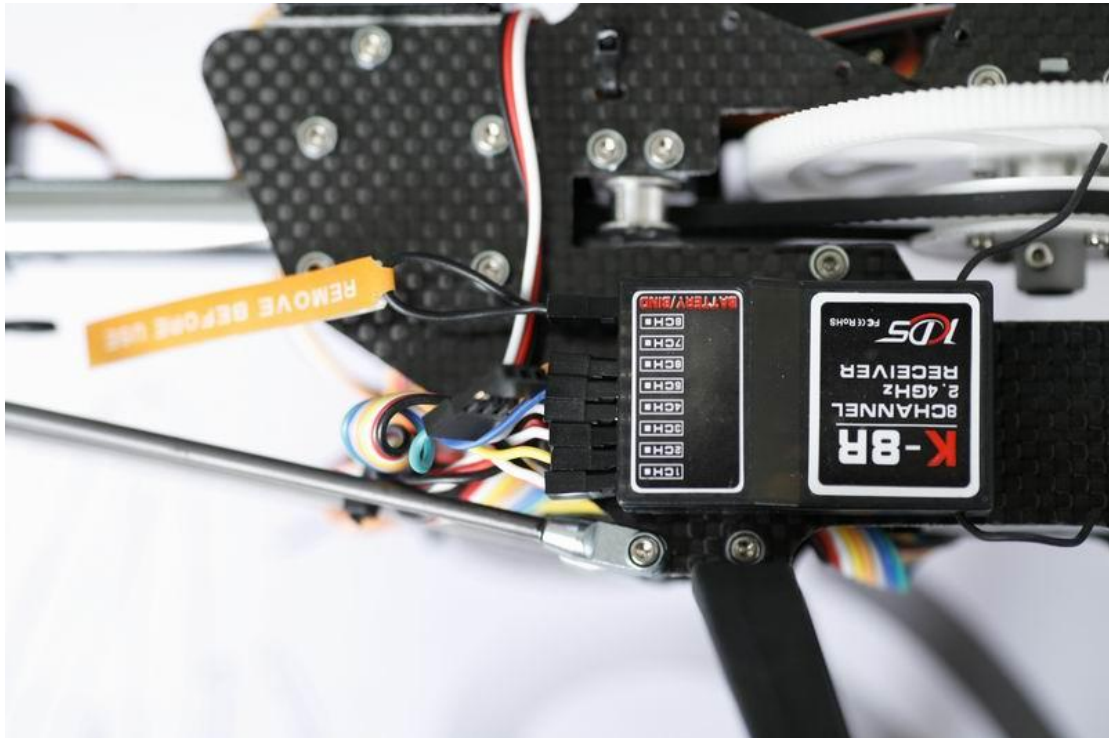
After mounting Flymentor , all electronic devices shall be connected.

The connecting way of receiver which comes with KDS K-7X is the same as FUTABA receiver.

平衡仪插头 Flymentor 3D Connector	插头名称 Connector Name	FUTABA 接收机 FUTABA Receiver	JR 接收机 JR Receiver	备注 Comment
黑红白三插头 Black/Red/White Three pins	副翼/供电通道 Aileron/Power connector	第 1 通道 Channel 1	第 2 通道 Channel 2	必须连接 Must connected
黄色单插头 Yellow solo pin	升降通道 Elevator connector	第 2 通道 Channel 2	第 3 通道 Channel 3	必须连接 Must connected
橙色单插头 Orange solo pin	螺距通道 Pitch connector	第 6 通道 Channel 6	第 6 通道 Channel 6	必须连接 Must connected
灰色单插头 Gray solo pin	尾舵通道 Rudder connector	第 4 通道 Channel 4	第 4 通道 Channel 4	必须连接 Must connected
绿色单插头 Green solo pin	陀螺仪感度通道 Gyro sensitivity connector	第 5 通道 Channel 5	第 5 通道 Channel 5	此线可不连接 Optional
蓝色单插头 Blue solo pin	平衡仪感度通道 Flymentor 3D sensitivity connector	第 7 通道 Channel 7	第 7 通道 Channel 7	此线可不连接 Optional

Flymentor connected with receiver diagram:

KDS 450SV:



KDS 450C:



After the connection of flymentor and receiver, connect the central control box of flymentor to servo.

Aileron channel connects to the first socket of central control box

Elevator channel connects to the third socket (fixed)

Pitch channel connects to the second socket

Tail servo connects to the fifth socket (it was fixed)

Central control box can choose fixed position according to the situation of each helicopter, it is recommended to fix central control box after adjusting the helicopter.

3. Setup transmitter

Flymentor has internal mixer, so all transmitters shall be set to HP1, no HP3. The setting is done in the Hide Menu of K-7X. Setup steps are as follows:

Hold UP and DN, turn on transmitter, it will enter Hide Menu. Set S1 to HP1



Once done, turn off transmitter and restart. Then you will enter the main menu of transmitter, set the following items:

Set normal or reverse for 7 channels: (default is normal)

450C

450SV

a)	副翼	Aileron	反	REV	正	NOR
b)	升降	Elevator	正	NOR	正	NOR
c)	油门	Throttle	正	NOR	正	NOR
d)	方向	Rudder	正	NOR	反	
e)	感度	Gyro	正	NOR	正	NOR
f)	螺距	Pitch	正	NOR	正	NOR

A. Gyro sensitivity: G1 30 (Tail sensitivity)

G2 0

The flymentor has three working modes:

a. Positioning mode (central control box is green light, flymentor sensitivity is positive value, about 80)

- b. Full Manual Mode (central control box is red light, flymentor sensitivity is about -80~-100)
- c. Horizontal Model (red light and green light will be eternal sparkling at the same time, flymentor sensitivity is negative value, about -80~-100)

B. Pitch curve setting

PN 1	38
PN 2	46
PN 3	58
PN 4	80
PN 5	100
PI 1	0
PI 2	25
PI 3	50
PI 4	75
PI 5	100

C. Swashplate mixture setting:

PA	70
PE	70
PP	80

4. Setup Mechanism

After setup transmitter, you need to setup some mechanism parts and computer setting. The installation steps of setting software are as follows. Plug the USB adapter into computer, another interface connected to flymentor (power off). Turn on transmitter, power up the receiver, the flymentor needs initialization after powered. Don't move the helicopter at that moment. Just open the setting software in the computer after the initialization finished. In the course of subsequent use, click 'Read' button after flymentor was connected, (see diagram). So the flymentor data won't be eliminated.

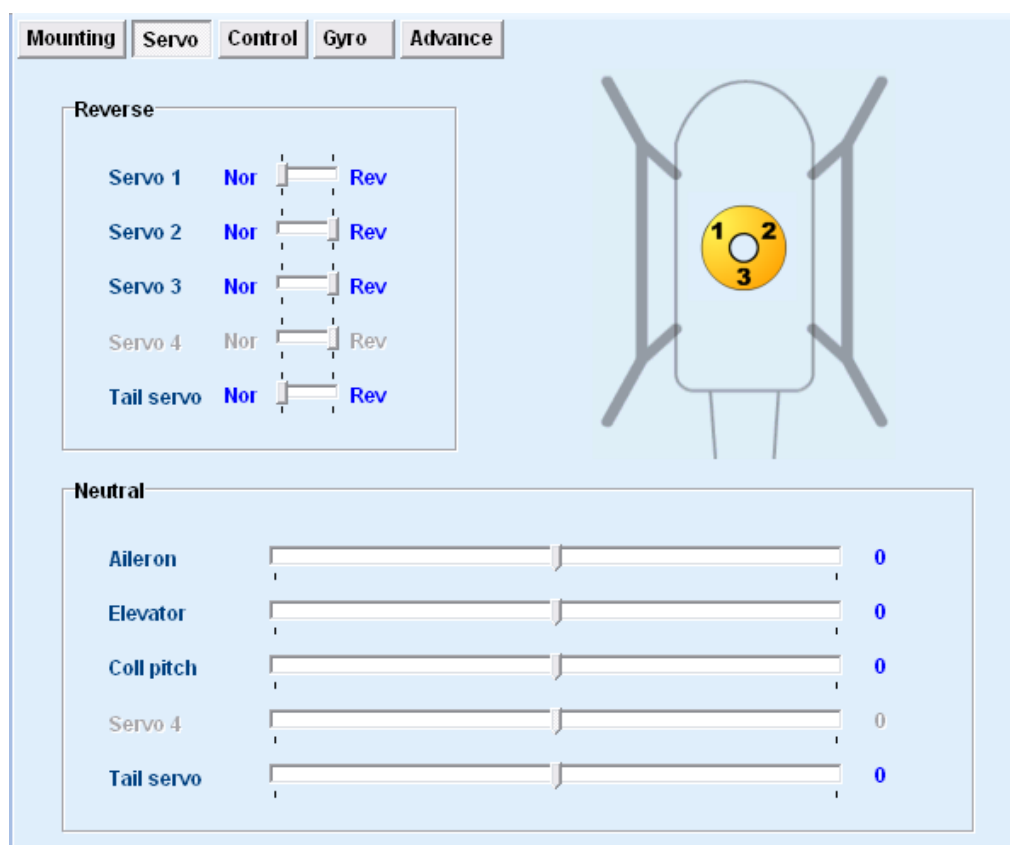


Next is parameter setting after "Read" is finished. Please click "Write" when doing the parameter setting every time, only so flymentor can execute (as showed in the picture below).



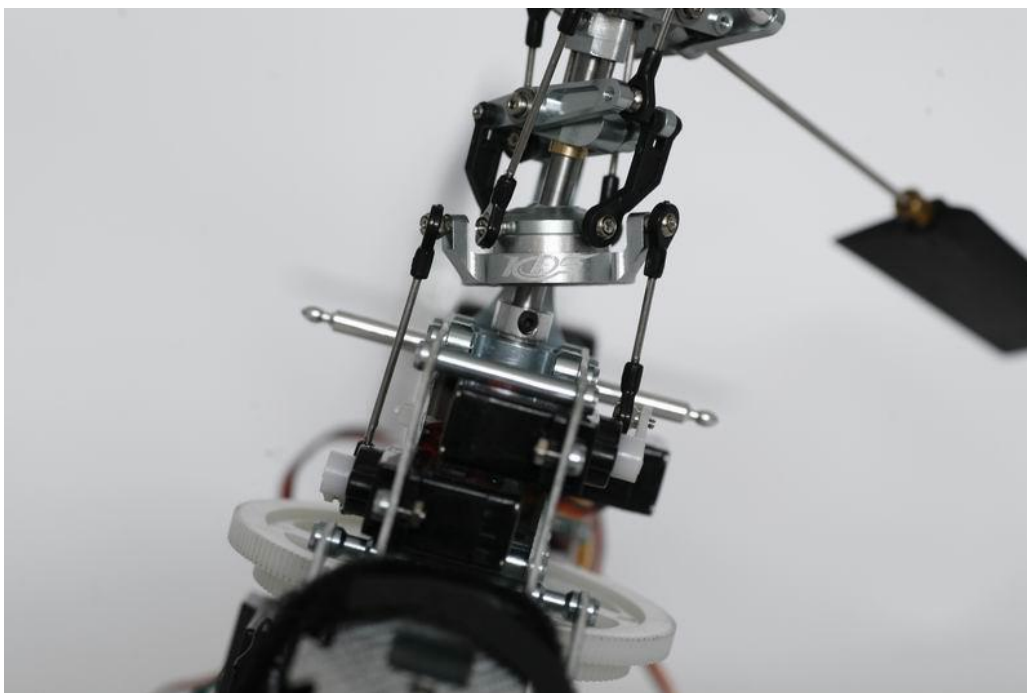
Turning on transmitter, that is normal if the controller LED light is green and maybe flash quickly. Insert the rudder arm into the servo horizontally with main gear, then test each servo to see if the action is normal.

Parameter page is as follow.



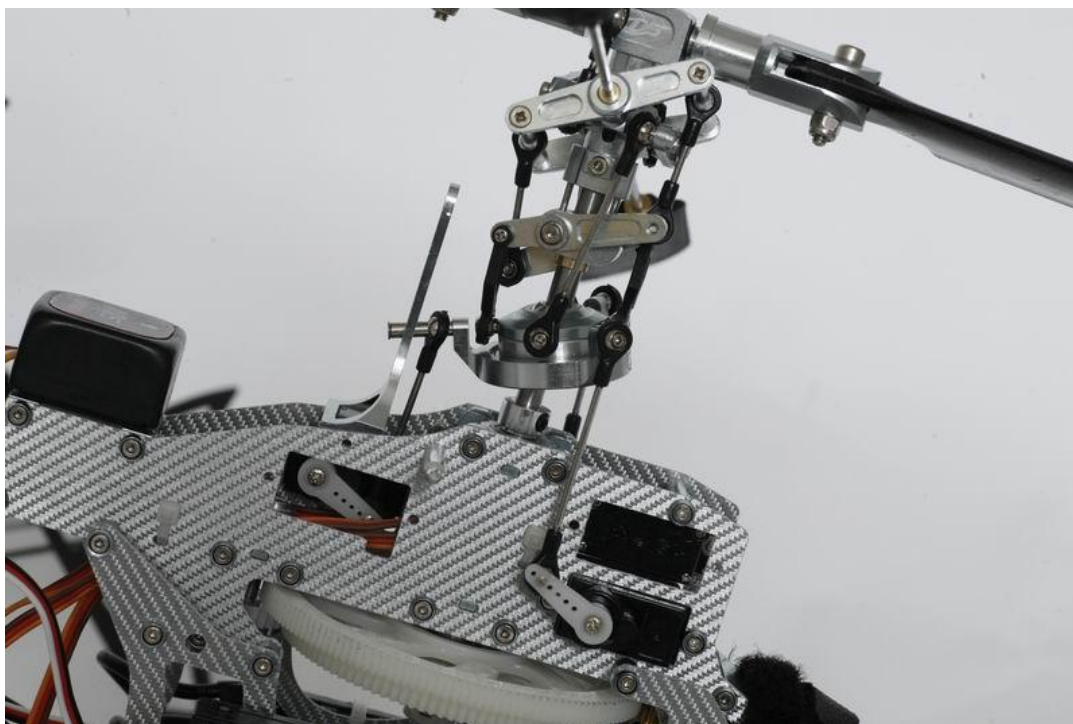
This page is used to adjust the sensor signal` s reverse, including head-lock gyro` s reverse and adjust each servo` s neutral position. You can also setup the servo angle in this page.

First, we should check the flymentor sensor` s reverse, lift the helicopter, make the helicopter tilt left or right, the swashplate would tilt to the opposite direction, see the picture below.



If the swashplate direction is incorrect, then you should adjust it according to the actual situation. For example, when you tilt the helicopter left, the aileron and pitch would tilt down at the same time, then you should set the aileron channel servo's direction to the opposite, drop down the pitch channel servo, pull up the aileron channel servo.

When the aileron's direction is correct, the next job is to test elevator's reverse, make the helicopter yield or rise, the swashplate will move in the opposite direction, showed in picture below.



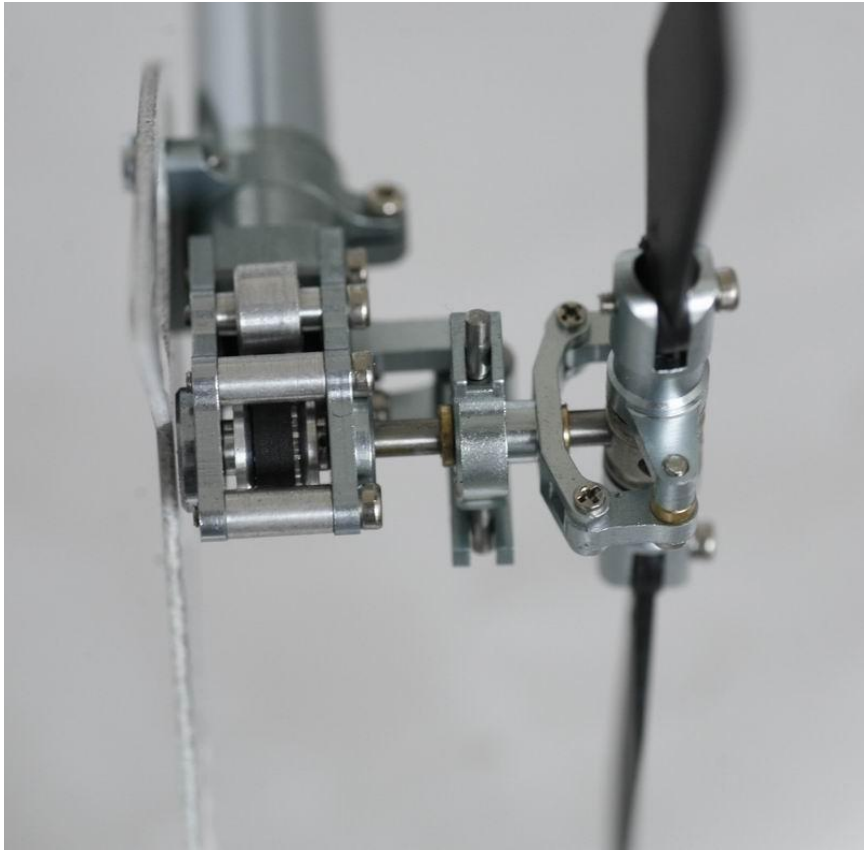
Attention: When adjusting servo reverse with this flymentor setting software, you can not adjust single servo. For example, if helicopter tilt right and swashplate tilt right as well, which means swashplate movement is incorrect, you should adjust the aileron and pitch reverse in the computer at the same time,

otherwise it would occur that two servos move at the same direction. If you can not adjust the aileron and pitch direction well, you can exchange the servo in first and second jack and then adjust it again, normally, there is no need to exchange them.

Completing the swashplate adjusting, the next job is to adjust the rudder reverse, methods are as follows: Set the gyro sensitivity to 0 or complex value(Not head-lock mode) in the computer, then insert the rudder arm into the rudder in 90 degree when powering on, if there are some deviations, you can adjust the servo neutral in the software.



Slide the rudder control rod left and right and check tail fork slider` s travel, view the central travel as the neutral (showed in picture below), and view it as standard, fix the rudder.



When fixing the rudder, do not bend the tail boom brace.



After complicating the adjusting of neutral point, let's adjust the reverse of gyro. Regard the main shaft as the center, let the helicopter tail turn left to do circular movement. Then please watch the movement direction of tail pitch sliding part, if it also do left movement, it means the reverse setting of gyro is wrong. The helicopter will spin ceaselessly if you do not adjust it. So please adjust the reverse in computer. If the reverse of gyro is correct, the tail pitch sliding part goes right when the tail goes left; while the tail goes right, the sliding part goes left.

See the picture below.

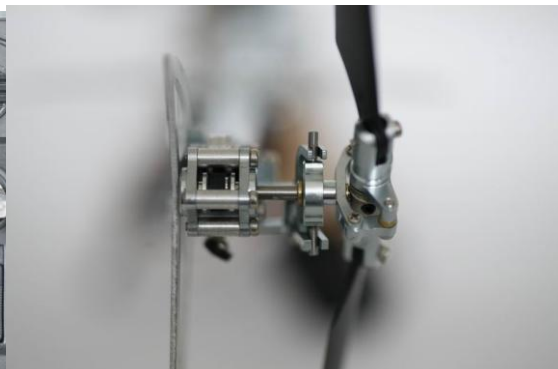


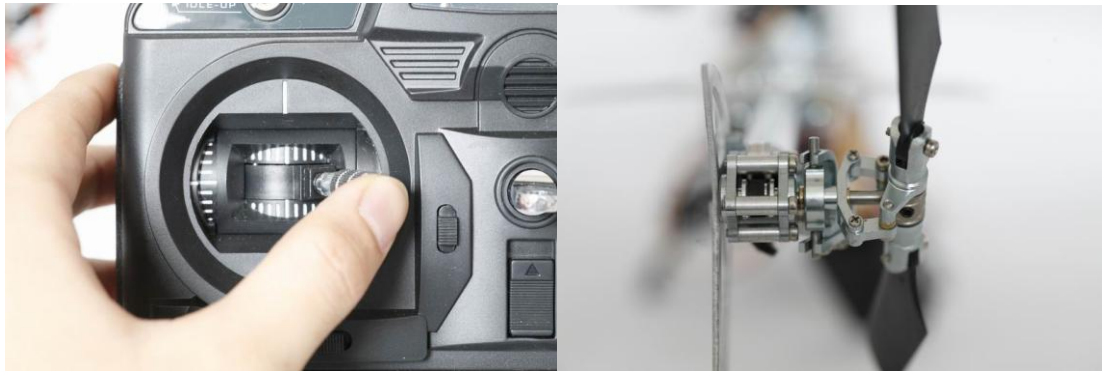
Turn left



turn right

After completing the adjusting of gyro, the next job is to adjust the transmitter signal. Let the helicopter tail is towards yourself, let's set the aileron first, move the aileron stick left on the transmitter, then you can see the swashplate will tilt left. If it tilts right, please set reverse of first channel under transmitter reverse setting. Now let's set the elevator, push the aileron stick forward, the swashplate will tilt forward. If it tilts backward, please set reverse of second channel under transmitter reverse setting. Finally, let's set the rudder. Move the rudder stick left, the tail pitch sliding part shall do right movement (see the below picture). If not, please set reverse of third channel under transmitter reverse setting.

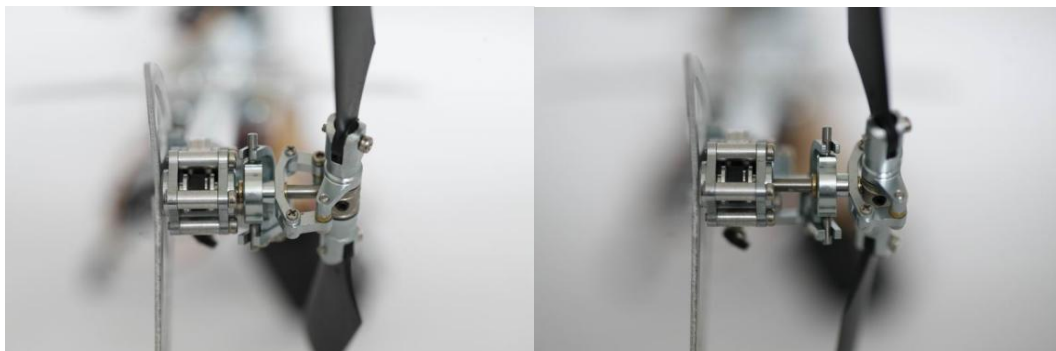




Finally, you need to adjust the travel of tail servo. The tail Gyro in the computer software: setup the travel limit of servo.

Mounting	Servo	Control	Gyro	Advance
<div> <div>Gyro sense</div> <div> <div>normal</div> <div>heading hold</div> </div> <div> <div></div> <div></div> </div> <div>70</div> </div>				
<div> <div>Yaw rate</div> <div></div> <div></div> <div>9</div> </div>				
<div> <div>Yaw expo</div> <div></div> <div></div> <div>3</div> </div>				
<div> <div>Pitch to tail mix</div> <div></div> <div></div> <div>0</div> </div>				
<div> <div>Servo travel limit</div> <div></div> <div></div> <div>100</div> </div>				
<div>Expert settings</div>				
<div> <div>Sensor gain</div> <div></div> <div></div> <div>4</div> </div>				
<div> <div>Tail delay</div> <div>hard</div> <div>soft</div> <div></div> <div></div> <div>6</div> </div>				
<div> <div>Heading hold angel range</div> <div>0°</div> <div>+/-30°</div> <div></div> <div></div> <div>6</div> </div>				

Set to minimum first, increase gradually until the margin of two sides is the same, to make the most of ram stroke. See diagram



Then, in order to do the next adjustment, we need to turn off the equilibrium function of flymentor . The method is: Turn on the IDLE switch on the top left corner of the transmitter. See diagram

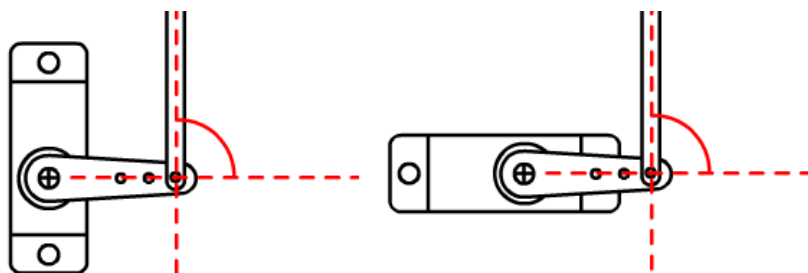


After turn on the IDLE switch, the sensitivity of flymentor will be 0 which is the setting parameters of G2. The flymentor does not work at this moment, you also need to turn on the locking switch of throttle at the same time, and put the throttle stick to the middle of travel, see diagram:



Next, Correct the rudder arm of swashplate servo to make the rudder arm and the stick perpendicular.

See the below diagram

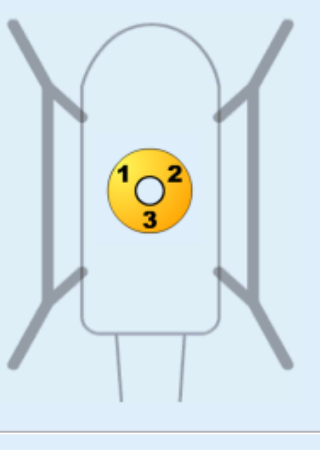


Setup referenced page: (Sub trim)

Mounting
Servo
Control
Gyro
Advance

Reverse

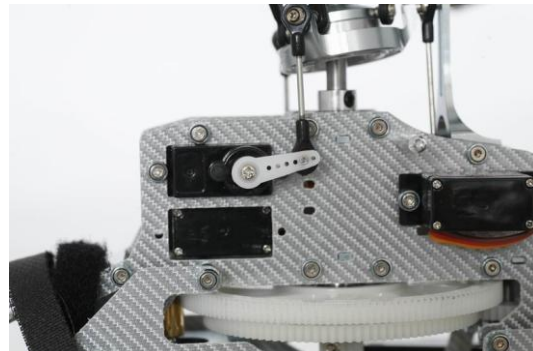
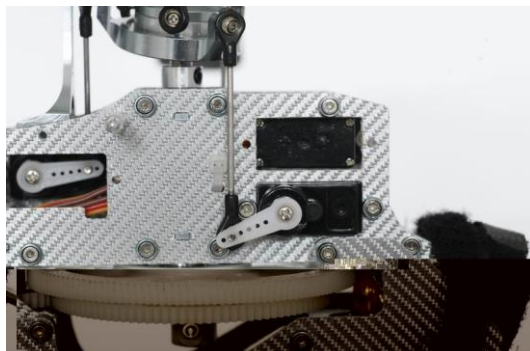
Servo 1	Nor					Rev
Servo 2	Nor					Rev
Servo 3	Nor					Rev
Servo 4	Nor					Rev
Tail servo	Nor					Rev



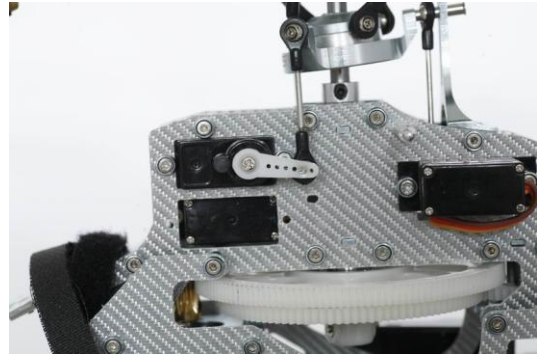
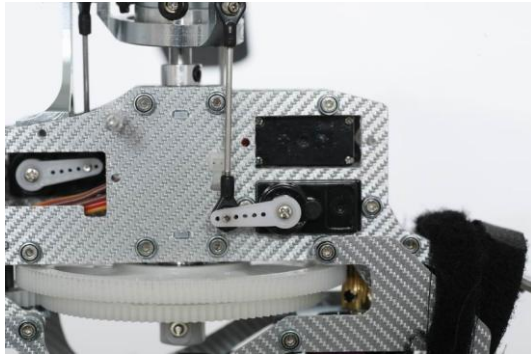
Neutral

Aileron			0
Elevator			0
Coll pitch			0
Servo 4			0
Tail servo			0

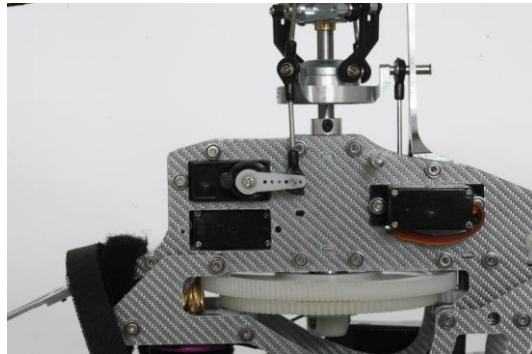
It is recommended to adjust aileron servo first.



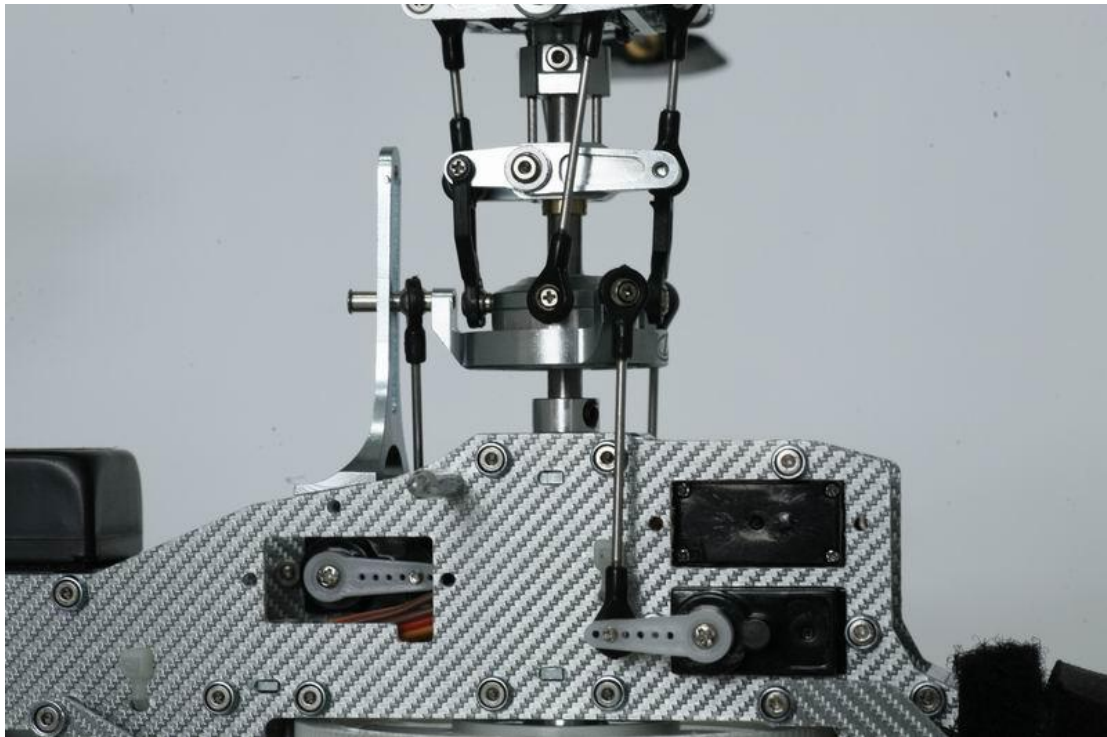
As the above pictures shown, the servo for aileron falls towards, and the servo for pitch tilts up. So please adjust the servo arm of the two servos balance according to the adjustment of Neutral point. (see the below pictures).



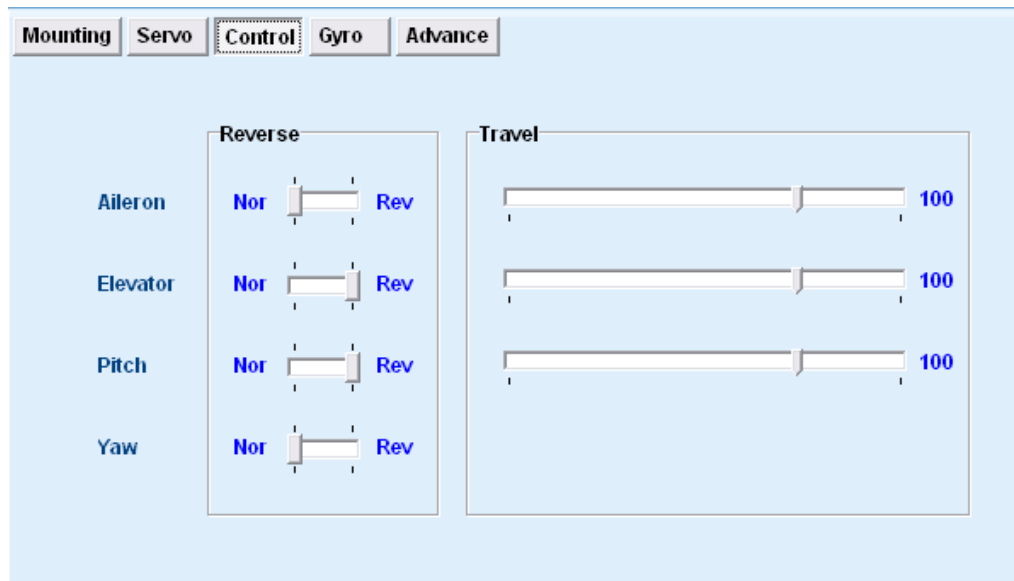
Now we can adjust the neutral point of the elevator. When the servo arms of aileron servo and pitch servo move upward simultaneously, the servo arm of elevator shall move downward. After adjusting the neutral point of elevator, the servo arm of the three servos shall be perpendicular to ball linkage rod.



After finishing the adjusting of the three servos, then we need to make swashplate horizontal according to adjusting the length of the three ball linkage rods. (see the below picture)

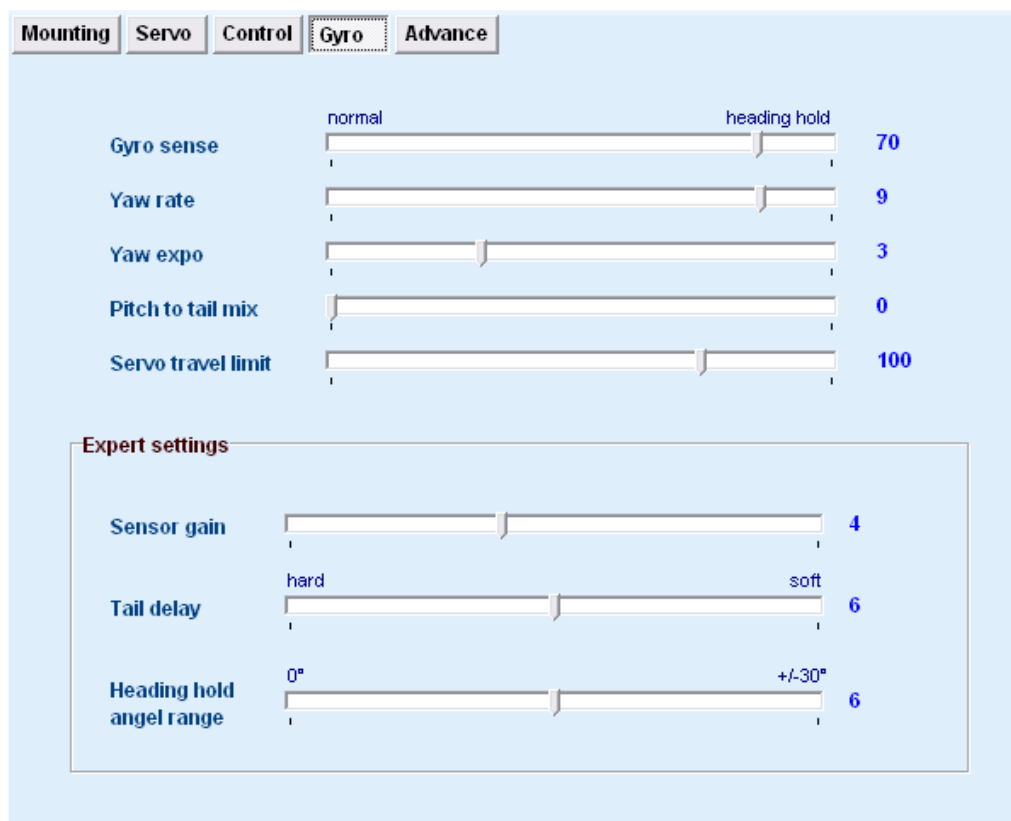


After the adjusting of swashplate, please move the throttle stick to the lowest position, then turn off the switch of the throttle lock and IDLE, and adjust the pitch to -2 degree by using pitch gauge. The degree of the right and left main blades shall be the small.



As the above picture shown, the flipflop signal for the transmitter can be adjusted under the menu. Of course, you can adjust the travel of aileron servo, elevator servo and pitch servo according to the real request. It is recommended to set the travel 100.

The below picture shows the parameters of the setting of head lock gyro and tail servo.



The helicopter from our factory (KDS) comes with 7ch transmitter. The sensitivity of head lock gyro is controlled by computer. The servo with the helicopter is digital servo, and the Pre-set sensitivity is 30-40. If the servo is analogue, please set the sensitivity lower. For others, please keep default value, there is no need to reset.

5. Testing flying

Please check if all screws are assembled on servo arms, and ensure devices do not loose. Then cut off power, connect motor to ESC, and then set the ESC preliminary: turn on the transmitter, and then move the throttle stick to the top position, connect to the power of helicopter. Then a long whistle sounded from motor (Di.....), then Di.... Di....sounded. At this time, move the throttle stick to lowest position quickly, then Di.....Di.....Di.....sounded. Now the setting is completed, cut off the power of helicopter.

When helicopter is connected to power, the flymentor needs self-check, please don't touch helicopter at that time. Turn off the flymentor (The control light is red) when testing helicopter flying. Please watch the hovering when helicopter is flying. If the helicopter shifts, please adjust the linkage rod of swashplate until the helicopter can hover stably. (do not use the trim on transmitter panel to adjust). After the helicopter landing, please turn on the flymentor switch (the control light is green). Testing the helicopter flying again, if the helicopter can hover, but the body shakes obviously, please low the sensitivity of flymentor; If the helicopter can not hover, please increase the sensitivity of flymentor. Generally, the sensitivity is 65-85.