Head lock Gyro Manual

# 1. Overview

Lock gyro angle vector of fuzzy PID control system (Fuzzy_PID_AVCS) and inert depolarization techniques. High performance, small size and light weight, designed specifically for helicopters. Control integration with the structure, easy installation, commissioning and simple.
Gyro performance related to the performance machine with the rudder, rudder machine faster response, the gyro sensitivity and the better control performance. POWER GYRO will be available with the digital servo very good performance, recommend the use of speed figures in the 0.1s/60 ° above the steering gear.

## 1.1 Features

- stiffness and steering lock end of the speed independent regulation, stability and flexibility to achieve the perfect unity.
- canceled the regular gyro with the "set switch" and "pot" and other moving parts, can facilitate the achievement of waterproof, dustproof, corrosion, greatly improving the reliability and service life.
Rainbow lighting instructions: easy to clearly reflect the work and set the gyro status at a glance, easy to remember.
-parameter setting process be completed entirely by remote control, with seven-color light instruction, clear thinking, understanding, easy, smooth operation.
inert depolarizationλ technique: using inert depolarization temperature drift of sensor technology for dynamic simulation, effectively reducing the opportunity to offset rudder in flight.
AVCS system: automatically eliminate wind or other weather factors, and helicopters of various attitude shift caused by the rudder, making the rudder control is easy, suitable for 3D flight.

## 1.2 functional

- yaw axis stability control: applied to a model helicopter yaw axis (heading rudder) and Attitude stability control (gyroscope).
-Dual-mode: the sensitivity of the remote control switch to work mode gyro tail lock mode or in normal (non-lock tail) mode.λ
- Stability control: can the sensitivity of the remote control to adjust the gyro set the value of the stability of control performance, to adapt to different states or different aircraft external environment.

1.3 the parameter type

- Servo Type Selection (S-TYPE): Analog (1520uS/70Hz), digital (1520uS/280Hz), narrowband (760uS/560Hz)

Select the direction of anti-twist compensation (DIR): Forward / Reverse

Turn speed adjustment (SPEED): the parameters can be set from 1 to 10

Control delay settings (DELAY): the parameters can be set from 1 to 10

Set the maximum amount of left rudder (LIMIT_L): can be set to range from 50% to 150%

Set the maximum amount of right rudder (LIMIT_R): can be set to range from 50% to 150%

Parameter reset: restore factory default parameter values

1.4 Specifications

Operating voltage: DC 4.0 ~ 8.0V

Current: 5mA@5.0V

Operating temperature: -5 ℃ ~ +45 ℃

Shell Size: 20 × 20 × 11.5 mm

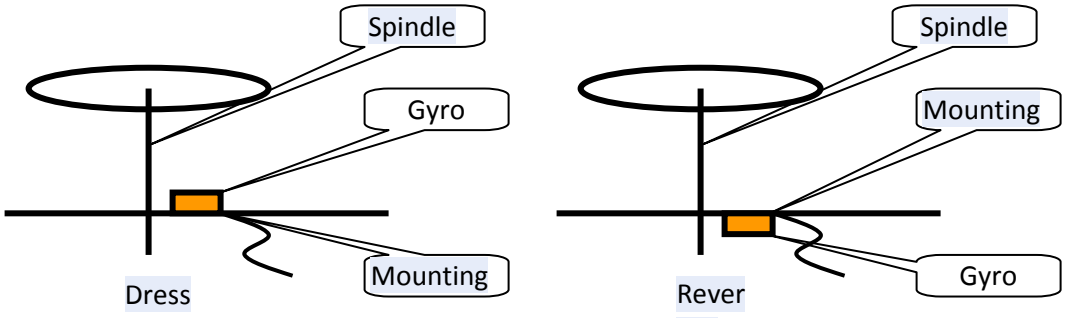
Weight: 8.5g

2 The Installation

1, the mounting surface

Gyro mounting surface (bottom shell) should be the main axis of the helicopter 90 degrees, that the mounting surface must be perpendicular to the main axis of the helicopter, otherwise it is wrong (as shown).

Installed in the correct plane of the gyroscope to point no requirement that the gyro in front (the direction of the text panel) can point in any direction within the mounting surface.

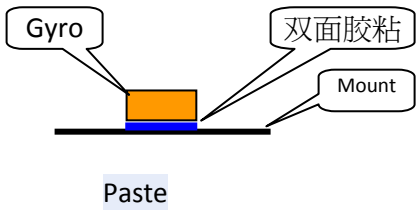



2, Fixation

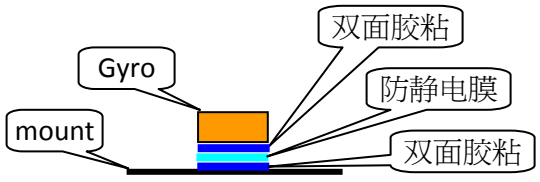
Gyro required special double-sided glue the underside of the body on. Signal lines also need to tie line tie line and the body, preventing shaking of the signal line free gyroscope work.

If the helicopter vibration serious or severe electromagnetic radiation, use two double-sided adhesive, and sandwiched between two pieces of anti-static layer of film (or steel) (as shown).

Double-sided




Paste




Seismic、anti paste

3, gyroscopes and other devices

Gyroscope has two sets of cables and three connectors (as shown).

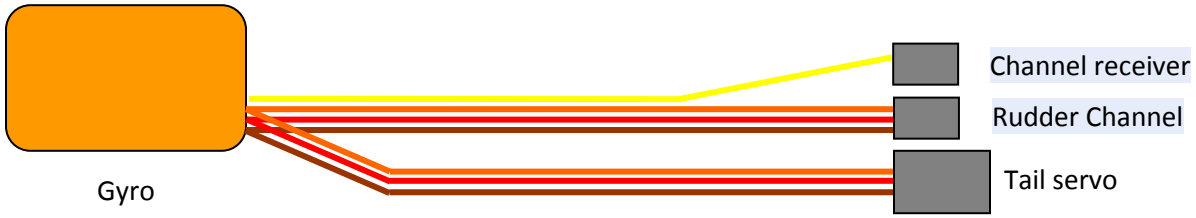
Four-core cable line and the receiver is connected, three-core cable is connected with the rudder.

Three-pin socket for connecting rudder machine; three-pin plug for connection to receiver rudder channel; single plug for connection to the sensitivity of the receiver channel.

Four-core cable has four colors, including brown is the "Ground"; red is the "power"; orange is "the direction of channel input"; yellow is the "sensitivity of channel input."

Three-core cable has three colors, which Brown is the "Ground "; red is the "power"; orange is the "servo signal output."

And receiver and the rudder is connected, note the location and the signal direction connector to avoid INSERT.



3. Remote control Setting

Associated with the remote control gyro set mainly in the following parameters, where the most classic six-channel PCM FUTABA-6EXHP example to illustrate the remote control (remote control, please refer to the relevant manual.)

1, Set the rudder left or right, full rudder volume set to 100%, EPA-CH4R / L = 100.

2, Set the rudder double the rate of 100%, D/R-CH4 = 100.

3, Set the rudder index set to 0%, EXPO-CH4 = 0.

4, Set the amount of rudder the rudder trim set to 0, TRIM-CH4 = 0.

5, Set the default direction of the rudder is, REVR-CH4 = NOR (for debugging and then set the actual turn).

6, gyro mixing switch is set to off, REVO = INH.

7, gyro sensitivity switch is set to open, GYRO = ON.

8, gyro sensitivity value (Head lock mode, the sensitivity switch upward; SWITH-CH5 = UP) The default is 30, GYRO = 30.

9, gyros sensitivity value (non-head lock mode, sensitivity switch down; SWITH-CH5 = DN) default is 35, GYRO = 35.

In addition, remote control at throttle curves, pitch curves, the aircraft's power, tail rotor efficiency, flight mode on the performance of gyro has a large influence, in the debugging pitch curve and throttle curve will be adjusted to fit the parameters in order to fully play gyro performance.

4. Work status

State of the gyro can be divided into “normal state” and “parameter setting” two categories. Parameter setting status indicator display, please refer to the following "Description parameters" section.

This section describes the normal work state gyro mode and light display.

Normal state has two operating modes: head lock model and non –head lock flight mode.

The following table shows the different models and working in the process of indicator displayed.

| Work status | LED color display | display mode | process description |
|---|---|---|---|
| head lock model | Red light | Red light is on | Indicated Gyro in lock (AVCS) mode. |
| | | Continuous flash | Turn on the power for 1 second, being gyro data initialization procedure. |
| | | Flash one time | That mean re-set the rudder neutral point of the remote control. The sensitivity switchof the remote control in the non-head lock mode and head lock mode quickly cutover between at least 3 times, the end of the head lock mode to be stopped。When the indicator light flashes 1 time, the rudder neutral point has been re-configured. |

| | | | |
|---|---|---|---|
| | | flashes twice | In the head lock mode, the current received signal and stored in the rudder control gyro signal neutral point cannot match. The following two conditions are light occurs:<br>1、toggle rudder stick.。<br>2、Remote control of the rudder neutral point has been offset, must be re-set the neutral point。 |
| | | Continued to slow flash | No rudder input signal or sensitivity signal input. |
| Non-head lock mode | Green light | Green light is on | Gyro in the non-head lock (NOR) mode. |

5. Parameters Setting

1, The action names to explain

**Full rudder**: remote control of the rudder (FUTABA-CH4, the same below) played the rudder (can be left and right), the amount of 80 to 100% of the rudder;

**Half rudder**: The rudder of remote control set half rudder (can be left and right), the rudder was 20 ~ 80%.

**Zero rudder**: The rudder of remote control back to central, the rudder of 0 to 20% .

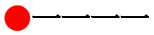
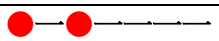
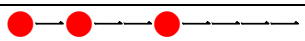
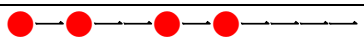
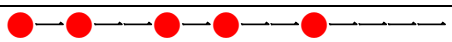
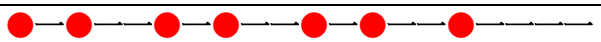
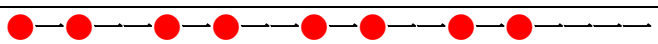
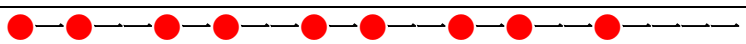
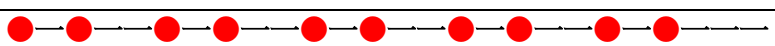
2, The indicator light flashes the number of expressions

In the parameter setting, some parameters of the indicator light flashes the number of items up to 10 times, if we adopt the uniform spacing of successive flashes to express, is bound to give us the trouble to observe and count. In order to facilitate observation and counting, grouping the gyroscope using the concept of flash, two flashes per a group, each group has a medium duration of the pause. If the total number of flashes is a single number, the last set of flashes for the first time. After the completion of all the flashing number, there is a larger duration. The following table shows the number of expressions of each flash.

In addition, set the maximum left and maximum right of rudder, the rudder of the gyroscopes used to express the maximum rudder stroke volume can be directly observed rudder travel. At this point, the flashing light means do not follow the definition of the table, but the speed with flashing to indicate the amount of the size of the rudder, the rudder blink slower, said the smaller, faster, said flashing the bigger rudder.

Table: indicator light flashes the number of expressions

Flashes the number of expressions for the number of flashes

| Flashes number | Flashes number of expressions |
|---|---|
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |
| 7 |  |
| 8 |  |
| 9 |  |
| 10 |  |

Note：● ：indicator light on 0.5 second.

—：light turn off 0.5 seconds.

——：light turns off 1 second.◦

————：light turn off 2 seconds◦

3, The parameter setting mode of entry and exit

Enter the parameter setting mode: First, remote control switch (FUTABA-CH5) select to non-headlock mode (indicator light change to green color), and then full rudder more than 5 seconds to enter setting mode (the indicator light change to red color, while rudder back to central.)

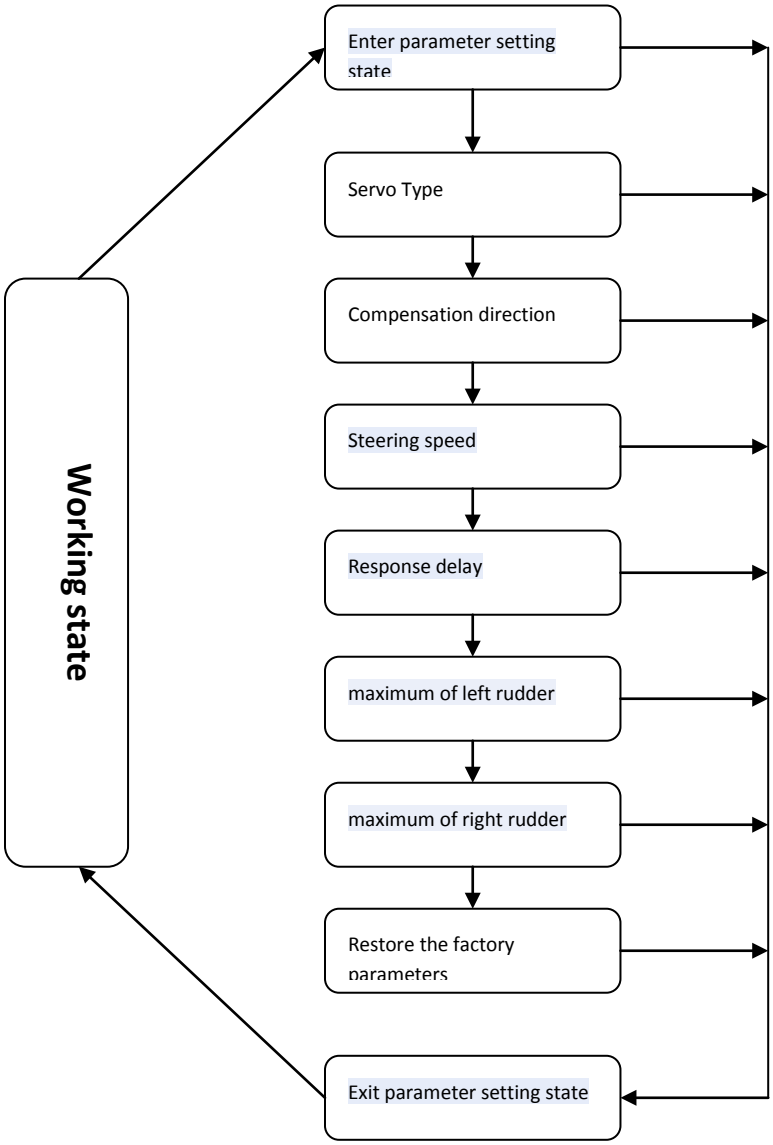
Exit the parameter setting mode: At anytime in the Parameter setting, You can change to head lock model to exit the premaster setting mode at any time, then automatically saves the last set of parameters (if parameters are modified before), and indicator light flashes quickly 1 second.

## 4、Parameter item, the parameter value range, indicator light colors and flashing time

| No. | Parameter item | indicator light colors | parameter value range | indicator light flashing time | Factory setting value |
|---|---|---|---|---|---|
| 1 | Servo Type Selection<br>S-TYPE | red | 1~3： | | 2 |
| | | | 1：Simulate (1520uS/70Hz) | 1 time | |
| | | | 2：number (1520uS/280Hz) | 2 time | |
| | | | 3：Narrowband (760uS/560Hz) | 3 time | |
| 2 | Gyro compensation direction selection<br>DIR | Green | 1~2： | | 2 |
| | | | 1：Forward | 1 time | |
| | | | 2：Reverse | 2 time | |
| 3 | change direction speed settings<br>SPEED | Blue | 1~10： | | 3 |
| | | | 1：Minimum Speed | 1 time | |
| | | | … | … | |
| | | | 10：Maximum speed | 10 time | |
| 4 | Response time delay settings<br>DELAY | cyan-blue | 1~10： | | 3 |
| | | | 1：Minimum delay | 1 time | |
| | | | … | … | |
| | | | 10：maximum delay | 10 time | |

| | | | | | |
|---|---|---|---|---|---|
| 5 | Set the maximum amount of left rudder<br>LIMIT-L | Yellow | 50~150： | | 110 |
| | | | 50：Least amount of rudder | The slow flash | |
| | | | … | … | |
| | | | 150：Largest amount of rudder | The fastest flash | |
| 6 | Set the maximum amount of right rudder<br>LIMIT-R | Pink | 50~150： | | 110 |
| | | | 50：Least amount of rudder | The slow flash | |
| | | | … | … | |
| | | | 150：Largest amount of rudder | The fastest flash | |
| 7 | Restore the factory parameters<br>RESET | white | 1~2： | | 1 |
| | | | 1：Ready state | The slow flash | |
| | | | 2 ： Parameters of the process of implementation of recovery | The fastest flash | |

## 5、Process parameters setting



## 5.1、Prepared

Before the parameters setting, please be sure that the following conditions:

A：Helicopter in a completely static state;

B：Open the throttle lock switch of the remote control, ensure that the process of parameter setting will not malfunction in the throttle lever to activate the Helicopter power

## 5.2、Enter the parameter setting state

When the gyro is in normal state (head lock mode, gyro indicator light is solid red), the helicopter body and power off the premise, the sensitivity of the remote control switch to the end of non-lock mode, when the indicator solid green.
To direction, "full rudder" for about 5 seconds, the gyro indicator light turns on red light, while rudder tail back to neutral position, indicating that gyro has entered a "setting state" and set the parameters of items at this time to " Servo Type "

## 5.3, Servo type setting

If 1, the gyro entre to the parameters of the state item , the first parameter item is the "servo type."

If you need to observe or change the parameters of the contents, Please in the indicator light is solid red , immediately let the rudder returns to neutral point, that is, return to the "zero rudder."

A: At this moment, you can observe the number of flashing lights to understand the current parameters of key values.
Flashing 1 time means "Servo type" as : Analog Servo 1520uS/70Hz;
Flashing 2 times means "Servo type" as: Digital Servo 1520uS/280Hz;
Flashes 3 times means “Servo type” as : Digital servo 760uS/560Hz;

B: If you need to change the " Servo type ", just set the "half-rudder" one time, each time playing the "half-rudder" of the time about 0.3 seconds. "half-rudder" 0.3 seconds later, the gyro "servo type" parameter will automatically increase or decrease the "1", while the number of light flashes also will increase or decrease in time. If your remote control is playing the "left rudder" when increased by 1, then play the "right half of the rudder," will reduce the time 1. The direction of the specific actions based on the remote control to the rudder of the "direction setting" may be.

C: If you need to go to the next parameter entry "compensation direction", direction to play "full rudder" around 2 seconds, gyro indicator light turns green, indicating that gyro has entered a "compensation direction" parameter entry.

D: If you need to "exit parameter setting", directly to the sensitivity of the remote control switch to "head lock model", this time, the indicator light will flash 1 second and then change to red light. Of successful return to normal operation mode of the head lock model.

## 5.4, Set the compensation direction

By 4.3.C into the "compensation direction" parameter entry, the indicator light turns green, immediately let the rudder returns to neutral, that is, return to the "zero rudder."

A: At this moment, you can observe the number of flashing lights to understand the current parameters of key values.

Flashing 1 means "compensation direction" as follows: forward;
Flashing 2 times means "the direction of compensation" as: reverse;

B: If you need to change "the direction of compensation," just playing "half-rudder" one time, each time playing the "half-rudder" of the time about 0.3 seconds. "half-rudder" 0.3 seconds later, the gyro "compensation direction" parameter will automatically increase or decrease the "1", while flashing lights also will increase or decrease the number of time. If your remote control is playing the "left rudder" when increased by 1, then play the "right half of the rudder," will reduce the time 1. The direction of the specific actions based on the remote control to the rudder of the "direction setting".

C: If you need to go to the next parameter entry "change direction speed", can play the direction of "full rudder" for about 2 seconds, gyro indicator light turns blue, indicating that gyro has entered "change direction Speed" parameter item.

D: If you need to "exit setting state", directly to the sensitivity of the remote control switch to "head lock mode", this time, the indicator light will flash one second and then change to red light. Of successful return to normal operation mode of the head lock model.

## 5.5, Change direction setting

By 4.4.C access ", Change direction speed" parameter entry, the indicator light turns blue, and immediately let the rudder returns to neutral, that is, return to the "zero rudder."

A: At this moment, you can observe the number of flashing lights to understand the current parameters of key values.
Blinks 1 time said " Change direction speed" as: the slowest;
...
Flashes 10 times, said " Change direction speed " as: quickest;

B: If you need to change " Change direction speed ", just hit the "half-rudder" once, each time playing the "half-rudder" of the time about 0.3 seconds. "half-rudder" 0.3 seconds later, the gyroscope "to speed" parameter will automatically increase or decrease the "1", while flashing lights also will increase or decrease the number of time. If your remote control is playing the "left rudder" when increased by 1, then play the "right half of the rudder," will reduce the time 1. The direction of the specific actions based on the remote control to the rudder of the "direction setting".

C: If you need to go to the next parameter entry "response delay", to play the direction of "full rudder" for about 2 seconds, gyro indicator light turns green, indicating that gyro has entered the "response delay" parameter entry .

D: If you need to "exit parameter setting ", directly to the sensitivity of the remote control switch to "head lock mode", this time, the indicator light will flash one second and then change to red light. Of successful return to normal operation mode of the head lock mode.

## 5.6, The response time delay settings

By 4.5.C into the "response delay" parameter entry, the light turned green, and immediately let the rudder returns to neutral, that is, return to the "zero rudder."
A: At this point, you can observe the number of flashing lights to understand the current parameters of key values.

Flashing 1 means "response delay" is: the fastest;
...
Flashes 10 times, means "response delay" as: the slowest;

B: If you need to change the "response delay", just hit the "half-rudder" once time, each time playing the "half-rudder" of the time about 0.3 seconds. "half-rudder" 0.3 seconds later, the gyro " Change direction speed" parameter will automatically increase or decrease the "1", while flashing lights also will increase or decrease the number of time. If your remote control is playing the "left rudder" when increased by 1, then play the "right half of the rudder," will reduce the time 1. The direction of the specific actions based on the remote control to the rudder of the "direction setting".

C: If you need to go to the next parameter entry, "the largest amount of left rudder," the direction to play "full rudder" for about 2 seconds, gyro indicator light turns yellow, indicating that gyro has entered "the largest amount of left rudder" parameter entry.

D: If you need to " exit parameter setting ", directly to the sensitivity of the remote control switch to "head lock mode", this time, , the indicator light will flash one second and then change to red light. Of successful return to normal operation mode of the head lock mode.

## 5.7, Set the maximum amount of left rudder

By 4.6.C into "the largest amount of left rudder" parameter entry, the indicator light turns yellow, and

immediately let the rudder returns to neutral, that is, return to the "zero rudder."
A: At this moment, you can travel by observing the rudder and the speed of light flicker to understand the value of the current parameter entry.
The slow continuous flashes that "the greatest amount of left rudder," as follows: 50%;
...
Medium-speed continuous flashes that "the greatest amount of left rudder": 100%;
...
Flashes in rapid succession, said the "the greatest amount of left rudder" is: 150%;

B: If you need to change "the greatest amount of left rudder," just playing "half-rudder" once, each time playing the " half-rudder " of the time about 0.3 seconds. " half-rudder " 0.3 seconds later, the gyro "the greatest amount of left rudder" parameter will automatically increase or decrease, rudder stroke also increases or decreases, while light is flashing speed will speed up or slow down. If your remote control is playing the "left rudder" the increase, then playing the "right half of the rudder" when will be reduced. The direction of the specific actions based on the remote control to the rudder of the "direction setting".

C: If you need to go to the next parameter entry, "the greatest amount of right rudder," the direction to play "full rudder" for about 2 seconds, gyro indicator light turns pink, indicating that gyro has entered "the greatest amount of right rudder "parameter entry.

D: If you need to "exit parameter setting ", directly to the sensitivity of the remote control switch to "lock tail model", the indicator light will flash one second and then change to red light this time. Of successful return to normal operation mode of the head lock mode.

## 5.8, Set the maximum amount of right rudder

By 4.7.C into "the greatest amount of right rudder" parameter entry, the indicator becomes pink, immediately to the rudder returns to neutral, that is, return to the "zero rudder."
A: At this moment, you can travel by observing the rudder and the speed of light flicker to understand the value of the current parameter entry.
The slow continuous flashes that "the maximum amount of right rudder," as follows: 50%;
...
Medium-speed continuous flashes that "the maximum amount of right rudder": 100%;
...
Flashes in rapid succession, said the "maximum amount of right rudder" is: 150%;

B: If you need to change "the greatest amount of right rudder," just playing "half-rudder" once, each time playing the " half-rudder " of the time about 0.3 seconds. " half-rudder " 0.3 seconds later, the gyro "the greatest amount of right rudder" parameter will automatically increase or decrease, rudder stroke also increases or decreases, while light is flashing speed will speed up or slow down. If your remote control is playing the "left rudder" the increase, then playing the "right half of the rudder" when will be reduced. The direction of the specific actions based on the remote control to the rudder of the "direction setting".

C: If you need to go to the next parameter entry "to restore the factory parameters", to play the direction of "full rudder" for about 2 seconds, gyro indicator light turns white, indicating that gyro has entered the "Restore factory parameters" parameter entry .

D: If you need to " exit parameter setting ", directly to the sensitivity of the remote control switch to "lock tail model", this time, the indicator light will flash one second and then change to red light this time. Of successful return to normal operation mode of the lock tail.

## 5.9, restore the factory parameters

By 4.8.C into "restore the factory parameters" parameter entry, the light becomes white, and immediately so that the rudder returns to neutral, that is, return to the "zero rudder."
A: At this moment, the indicator light flashes slowly, said gyro in a "ready state";
B: If you need to "restore the factory parameters", just hit the "half-rudder" once, each time playing the "half-rudder" of the time about 0.3 seconds. Playing the "half-rudder" is based on the direction of the remote control to the rudder of the "direction setting".
If you play the "half-rudder" in the direction of the parameter value increases, then the gyro immediately "restore the factory parameters" operation, in the process indicator light flashes quickly. After the implementation of gyro back to the "ready state", the indicator light flashes slowly. If you play the "half-rudder" in the direction of reducing the value of the parameter, gyroscopes will continue to be in the "readiness" and does not return to perform "restore the factory parameters" of the operation.

C: If you need to go to the next parameter entry "servo type" (item back to the first argument, to complete a cycle), the direction to play "full rudder" for about 2 seconds, gyro indicator light turns red, Description gyroscope has entered a "steering type" parameter entry.

D: If you need to "exit set state", directly to the sensitivity of the remote control switch to "lock tail model", this time, the indicator light will flash one second and then change to red light this time. Of successful return to normal operation mode of the lock tail.

# 6, operation and commissioning

Head Lock gyro helicopter in the model's main role is to lock the helicopter heading, the rudder in the

center of the remote location, it always makes the forward direction of the helicopter model remains unchanged. So it's another name is "a model helicopter yaw axis attitude stabilization control instrument."
Gyro and rudder servo performance of the play, mechanical transmission of movement quality, tail rotor efficiency, active power of the state of the system are closely related. Therefore, when debugging gyroscope related equipment to ensure in good working condition.

1, To choice and adjustment of rudder machine

In general, the gyro on rudder requirements are: adequate torque, speed is the faster the better. In the case of conditional 0.08S/60 ° above the recommended number of steering gear (1520uS/280Hz) or faster narrowband digital servos (760uS/560Hz). Has already been introduced to support the three types of gyro servo, you can choose according to their own conditions, any of them one by one type steering gear, and set the correct type of parameter steering gyroscope.

Rudder servo is installed, be sure to note the following three points: First, the amount must be zero rudder arm and the end of putting the rudder vertical; the second is to adjust the amount of zero tail rudder push rod length, so that the formation of about 5 ° of the tail rotor Anti-twist pitch angle; third is the minimum radius of the rudder arm should ensure that the maximum left and right rudder volume (LIMIT-L / R) case, to have maximum tail rotor pitch, on the other hand should not be too radius of the rudder arm large, otherwise easily lead to control the step size is too large due to the emergence of instability.

## 1.1, the rudder angle between the arm and putting the precise adjustment of the end.

Must first gyro in a "non-head lock mode", and the remote location of the rudder in the mid-point and fixed the rudder arm and the tail servo push rod to an angle of about 90 degrees. And then by adjusting the rudder of the fine-tuning the remote control "TRIM" putting the rudder arm and the vertical tail.
The fine-tuning "TRIM" changed the rudder neutral point the remote control, gyro need to re-confirm that the remote control the rudder neutral point. There are two implementations: One is to re-power to the gyroscope; second, fast switching (within 1 second to switch at least 3 times) the sensitivity of the remote control switch, and switch to the end of the last stops in the lock mode.

## 1.2, the rudder servo to adjust the maximum amount of rudder

The gyro provides the left and right parameters of the two largest amount of rudder, rudder servo can be set left and right rudder in both directions of the maximum amount of rudder machine after each installation must be re-adjusting these two parameters. The goal is to make the tail to adjust the slider left and right are the largest travel in both directions, at the same time contradict the phenomenon can not appear. Please refer to the specific adjustment method 4.7,4.8 section.

## 1.3, the "response delay" parameter adjustment

Gyro rudder machine performance and stability of the response speed are closely related. When the

rudder servo moves slower than the speed of the gyro control, the helicopter tail will be a serious " step shock." The shock turned to action after you make your rudder gyrus was especially evident when the representation. When you debug the aircraft, such as the above shocks, increase the "response delay" parameter value to remove. Please refer to the specific adjustment method Section 4.6.

## 2, Mechanical parts and lubrication clearance

In a number of flights, due to excessive friction and wear make machine parts, imaginary place. Usually, one can clearly feel the virtual end of the lock bit will be a serious impact on performance, this time will show low-frequency tail swinging back and forth, commonly known as the "gold fish tail"; sometimes realized as a slight directional drift (with the temperature drift phenomenon is very similar).
It is therefore recommended prior to each flight control components required to check whether there is a tail rotor clearance, if they have a clearance corresponding parts should be replaced. Need to pay attention to the usual maintenance, lubrication, remove oil, to maintain smooth movement and flexible components, not to obstruct or contradict.

## 3, the efficiency of tail rotor

Gyro angle by adjusting the tail rotor pitch to achieve a stable course, the premise must be the tail rotor must have sufficient speed and blade area, or even if the pitch and then can not produce large enough to balance the main rotor anti-torque generated by the spin force ; the other hand, can not pitch too much, once more than its critical point does not increase its efficiency has declined.
In order to improve the efficiency of tail rotor, the commonly used approach is certainly the main blade pitch curve, where appropriate, increase the throttle curve, throttle curve or in certain circumstances an appropriate increase in the main blade pitch curve. Another approach is to replace the propeller blade surface is large (such as "knife" tail rotor.)

## 4, the stiffness and steering lock flexible tail

In general, as long as there are no "rear-end", the greater the sensitivity the greater the stiffness of the end of the lock, heading the stability of the capacity will be. However, the greater the steering sensitivity will reduce the flexibility to shift slow, severe action will affect the coherence controller.
The gyroscope is different from most other characteristics of the gyroscope is the stiffness and steering speed can be adjusted independently. This will be able to easily lock the end of high stiffness and can be turned to the right degree of flexibility.

## 5, sensitivity settings

Sensitivity settings and remote control on the brand and model, some manufacturers of products are

"bilateral" sensitivity (such as FUTABA), while some product manufacturers have adopted the "unilateral" sensitivity (as JR). Sensitivity setting, please refer to the relevant remote control manual.
"Bilateral" sensitivity is 0 as the center, forward and reverse full-scale value of 100, which can set the sensitivity range is -100 ~ 100.
"Unilateral" is a sensitivity of 50 as the center, forward and reverse full-scale value of 50, which can set the sensitivity range of 0 to 100.
The gyro sensitivity when receiving positive, the work in the "tail lock mode"; when receiving the reverse sensitivity, the work in the "non-lock tail model."
If you are a "bilateral" sensitivity of the remote control, head lock mode, the sensitivity of the normal value should be set to 30 near the head lock mode of non-sensitivity should be set at -34 Fujin.
If it is a "unilateral" sensitivity remote control, lock the end of the normal sensitivity mode, the value should be set to 65 near the end of non-lock mode, the sensitivity should be set at 33 nearby.
The figure indicates the different values of the sensitivity of the case setting (only for reference, with the aircraft performance related).