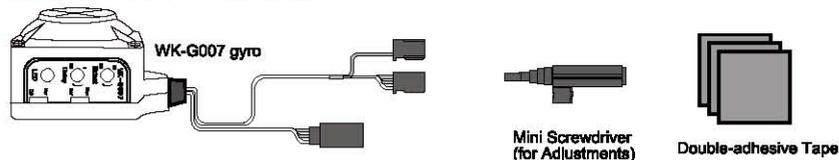


## 1.0 Foreword

The WK-G007 is utilized the AVCS (Angular Vector Control System) and is of high performance, compact dimension and light weight. It is specially designed for the RC helicopter. The integration of sensor section and control circuit makes the installation easy and convenient.

## 2.0 Kit Contents

The WK-G007 comes with the following accessories:

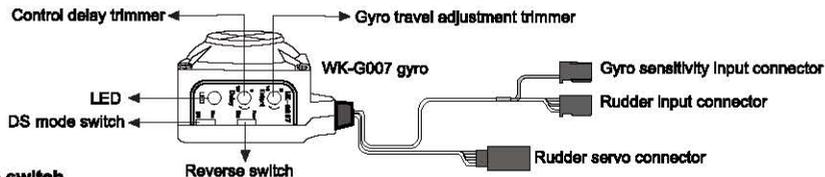


## 3.0 WK-G007 Technical Features

- 3.1 Control system: Digital advanced PI (proportional integration)
- 3.2 Gyro sensor: Mini piezoelectric sensor
- 3.3 Operating voltage: DC 4 ~ 6V
- 3.4 Operating temperature range: -40 ~ +85°C
- 3.5 Dimension: 30 X 30 X 23 mm
- 3.6 Weight: 27g
- 3.7 Functions: reverse switch, AVCS on/off switch, sensitivity trimmer, servo travel adjustment. The gyro sensitivity adjustment, and AVCS mode & normal mode switch can be operated via the transmitter.

## 4.0 WK-G007 Identifications and Functions

### 4.1 Identifications



### 4.2 Reverse switch

Alter the gyro control direction.

### 4.3 AVCS switch

Digital servo model switch. When the DS ON/OFF switch is switched to the ON position, the digital servo is activated; when the DS ON/OFF switch is switched to the OFF position, the traditional servo is activated. Note: If the DS ON/OFF switch is switched to the ON position, damage or burn maybe happen on the low watt servo.

### 4.4 Control delay trimmer

The control delay trimmer is used to adjust the signal speed. If a slow-speed servo is used and found the hunting effect, clockwise tunes the trimmer and increases the delay time to eliminate the effect. If a high-speed servo, such as a digital servo, is used, adjust the trimmer to 0.

### 4.5 Gyro travel adjustment trimmer

Set the maximum travel of the rudder servo. Pull the rudder stick to the full left and right ends respectively and adjust the rudder servo travel within the maximum ranges of the tail rotor sleeve. Clockwise tuning the trimmer increases the rudder travel.

### 4.6 Gyro sensitivity input trimmer

Connects to the receiver sensitivity input channel (usually AUX 2 or AUX 3). The trimmer can be used to switch the gyro sensitivity and mode (AVCS mode and normal mode). Single core is easy to be broken and is forbidden to draw.

### 4.7 Rudder input connector

Rudder input connector connects to the rudder input channel of the receiver.

### 4.8 Rudder servo connector

Rudder servo connector connects to the rudder servo.

## 5.0 LED

**Quick flash:** the gyro is in the process of initialization when the power is turned on.

**LED on:** the gyro is in the AVCS mode.

**LED off:** the gyro is in the normal mode or the power is turned off.

**Slow flash:** the gyro doesn't receive the signal from the transmitter and the rudder servo is out of control.

**Flash twice:** in the AVCS mode, the neutral position of the rudder servo current received signal is different from the neutral position which is previously saved in the gyro. Below are the situations of flash twice:

- a. The rudder servo bellcrank is being adjusted;
- b. The neutral position of the rudder servo has been drifted, and the neutral position has to be reset.

## 6.0 Gyro Sensitivity Setting Via Transmitter

### 6.1 The relationship between the transmitter sensitivity setting value and the gyro sensitivity

When the receiver sensitivity channel sends the signal of neutral position, the gyro sensitivity value is 0. When the signal sent is above the neutral position, the gyro is in the AVCS mode; when the signal sent is below the neutral position, the gyro is in the normal mode. If the transmitter, such as the WALKERA WK-1001, is of gyro sensitivity adjustment function, the gyro sensitivity can be adjusted via the GYRO function in the transmitter; if the value is set at 50%, the gyro sensitivity is 0. If the value is set at 0 ~ 50%, the gyro sensitivity is ranged from 100% to 0% (normal mode); if the value is set at 50 ~ 100%, the gyro sensitivity is ranged from 0 to 100% (AVCS mode). The transmitter sensitivity switch can simultaneously control over the gyro sensitivity and operation mode. The ATV value of the transmitter sensitivity switch can also take control of the gyro sensitivity. When the ATV is at 90%, for example, the gyro sensitivity is 100%.

### 6.2 The gyro sensitivity setting via the transmitter sensitivity switch

Take the WALKERA WK-1001 transmitter as an example. In the Function Menu, select the MODEL and access by pressing the ENT key, and then select the GYRO and access by pressing the ENT key again. Respectively set the normal flight mode (sensitivity at 75% for the AVCS mode), ST-1 and ST-2 flight modes (sensitivity at 40% for the normal mode). Switch the gyro sensitivity using the mode switch.

### 6.3 The gyro sensitivity setting by using ATV

If the transmitter is not of the gyro sensitivity setting function, choose an activity switch, which is switchable, in the transmitter (e.g.: GEAR/ INVERT switch in the WALKERA WK-1001) and adjust the gyro sensitivity via ATV setting mode. In the example of WALKERA WK-1001, enter the TRVADJ function item and respectively the ATV of the GEAR as normal flight mode (sensitivity at 75% for AVCS mode, the switch is switched forward), ST-1 and ST-2 flight modes (sensitivity at 40% for the normal mode, the switch is switched backward). Alter the gyro sensitivity by switching the GEAR / INVERT switch.

### 6.4 Setting step

1. Enter the TRVADJ menu to set the GEAR ATV by pressing the EXT/ ENT, UP or DN (Refer to the transmitter user's manual).
2. Switch GEAR/ INVERT forward to set ATV value at 75%.
3. Switch GEAR/ INVERT backward to set ATV value at 40%.

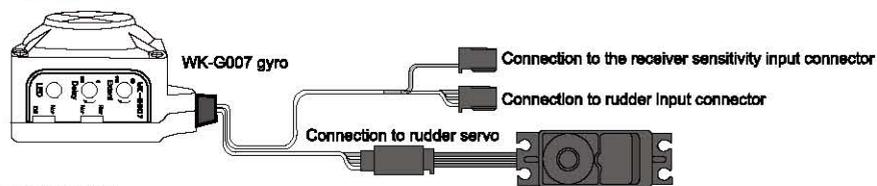
**Note:** while using the GEAR/ INVERT to switch the gyro sensitivity, it is impossible to simultaneously set the normal flight mode, ST-1 and ST-2 as AVCS mode. One end of the GEAR/ INVERT is normal mode, and the other end is the AVCS mode. The GEAR/ INVERT should be set as NORM in the REVERS function.

## 7.0 Use Method

### 7.1 Mounting to the fuselage

Be careful when operating the switch and trimmer, because a small switch and trimmer are used. Always operate the switch and trimmer with the mini screwdriver supplied. When mounting the WK-G007 gyro to the helicopter gyro bed, please use the double adhesive tape with the WK-G007. At the same time, please check the bottom of the gyro body is perpendicular to the main shaft of your helicopter. When used with a motor helicopter, mount the WK-G007 at least 10 cm away from the drive motor.

### 7.2 Wiring diagram

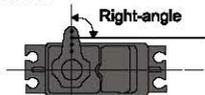


### 7.3 Servo selection

While using the digital servo as the rudder servo, switch the DS ON/OFF switch to the ON position. While using the traditional servo as the rudder servo, switch the DS ON/ OFF switch to the OFF position. **Note:** when using a traditional servo and switching the DS ON/ OFF switch to the ON position, damage or even burn may happen on the low watt servo.

#### 7.4 Inspect the rudder bellcrank

Switch the gyro AVCS switch to the normal mode. Turn on the transmitter power and then turn on the receiver power. Don't move the servo bellcrank or the helicopter for about 3 seconds because the WK-G007 gyro is initializing. LED will intermittently flash. When the rudder servo is in neutral position, it must be linked at a position to which the servo bellcrank and servo push rod are perpendicular. Adjust the length of the rudder servo bellcrank in accordance with the helicopter manual. Try moving the rudder stick to the left and right, and check the direction of the rudder servo operation. If the rudder servo moves in the opposite direction, use the transmitter reverse function to reverse it.



**Note:** if the rudder revolution mixing function is activated, put the throttle stick at the neutral position when setting the neutral position at initialization. For the safety purpose, when setting the motor, turn off the motor power or switch off the rudder revolution mixing function, and set the value to zero.

#### 7.5 Gyro sensitivity adjustment

The gyro sensitivity depends on the rudder servo and helicopter. In principle, the faster the rudder servo speed is, the higher the gyro sensitivity has to be set. The faster the main rotor blade rotation is, the higher the rudder servo sensitivity has to be increased. So adjusting the gyro sensitivity is a must. For example, the sensitivity for the aerobatic maneuvers (ST-1, ST-2) must be lower than that at hovering flight. Set the gyro sensitivity trimmer to the approximately 60 – 70% for aerobatic maneuver, and 70 – 80% for hovering flight.

#### 7.6 Inspection of the gyro operation direction

Lift off and hover the helicopter, and shake the helicopter head leftward. The drift direction of the rudder servo should be same with the rudder stick of the transmitter, which moves rightward. Otherwise, reverse the reverse switch in the gyro. **Note:** if setting the gyro operation direction wrong, the helicopter will auto rotate at high speed and result in serious danger!

#### 7.7 Adjustment of rudder servo travel

Pull the rudder stick to the full left and right ends respectively and adjust the rudder servo travel within the maximum ranges of the tail rotor sleeves. During flight, the rudder servo movement is within the maximum travel and protect the servo and its bellcrank. Don't set the rudder servo travel too narrow to decrease the gyro performance.

#### 7.8 Flying adjustment

In the AVCS mode, the WK-G007 automatically sets the rudder neutral position and stops any tail drift. For the first flight or correcting the bellcrank, turn off the AVCS function and adjust the mechanical neutral position. AVCS mode is recommended during flight.

#### 7.9 Rudder neutral adjustment

1. Turn off the transmitter revolution mixing or set the transmitter revolution mixing (pitch or rudder) to 0%.
2. Switch the transmitter sensitivity switch to the normal mode. Turn on the transmitter power and receiver power in sequence. Don't move the helicopter for approximately three seconds because the WK-G007 initiates the data when the power is turned on.
3. Lift off and hover the helicopter, and then adjust the rudder neutral position with the transmitter trim.
4. Gradually adjust the gyro sensitivity just before the helicopter tail starts to hunt.

**Note:** after the neutral setting is finished, don't adjust the rudder trim again. Otherwise, the neutral position has to be re-adjusted.

#### 7.10 Lock mode adjustment

1. Switch the flight mode. After the flight, observe the LED. LED on means normal; LED flash twice means the neutral position has been drifted and need to be reset.
2. Hover the helicopter and adjust the gyro sensitivity to just before the helicopter begins to hunt. In principle, the gyro sensitivity in the AVCS mode is less than that in the normal mode.
3. Adjust the transmitter dual rate (D/R) to accord with your hand feeling.
4. Control the high-speed auto rotation via adjusting the helicopter rudder servo. When the helicopter stops auto rotation and begins to hunt, increase the delay trimmer. Low-speed servo will easily hunt. Don't adjust the delay trimmer at a big rate. Otherwise, the rudder servo will drift and its reaction will be slow. When a high-speed servo is used, set the delay trimmer to 0 position.
5. With an AVCS gyro, when the helicopter encounters a cross-wind and the tail drifts, a control signal from the gyro stops the drift. At the same time, the gyro computes the drift angle and constantly outputs a control signal that resists the cross-wind. Therefore, drifting of the tail can be stopped even if the cross-wind continues to affect the helicopter. The gyro itself automatically corrects changes in helicopter tail trim by cross-wind.

**Note:** after the neutral setting is finished, don't adjust the rudder trim again. Otherwise, the neutral position has to be re-adjusted.