

# JR EXTREME TAIL LOCK SYSTEM

## JR PIEZO GYRO

### G660T GYRO

TO USERS

Thank you for purchasing JR G660T.

Please carefully read these instructions so that you will fully understand and become comfortable with the functions of the G660T.

#### 1. HANDLING CARE

<b>CAUTION</b>	Radio control models are capable of inflicting serious injury or damage to people or property if used incorrectly. Please read and carefully follow the guidelines set out below.
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##### ■ Set Up

- This gyro has been designed for use with RC Helicopters or RC Model Airplanes. Using it for any other application may lead to unexpected problems.
- This gyro has been designed to work perfectly with JR Radios and servos. Using other brands may lead to unexpected problems.
- Do not attempt to disassemble the gyro or modify it in any way. This may lead to unexpected problems.

##### ■ Operation

- Check the voltage of both the transmitter and receiver battery packs prior to operation. Low voltage will cause problems and may result in you crashing your model.
- Do not fly during adverse weather conditions, i.e. rain, fog or lightning. It may cause problems with the operation of your model and result in you crashing your model.

##### ■ Maintenance

- The gyro is not waterproof so you should not use it if it is wet. If water has entered the gyro, please return it to your local service agent for repair or overhaul.
- The gyro may be damaged in a crash so if it has suffered shock loads you

should return it to your local service agent for repair or overhaul.

- Do not keep the gyro in a place where it will suffer from the extremes of temperature or humidity. It may damage the PC board or electronic components.
- Check the gyro, servos, receiver and all the hardware prior to each day's flying and ensure that everything is functioning correctly.

## 2. FEATURES

### • Servo speed select switch

New function. A standard servo or a high speed tail rotor servo can be used with the G660T with no loss in performance from the high speed servo.

### • Low noise and high response sensor

Low noise and high response sensor never loses any motion. It responds at very high speed to the smallest amount of movement.

### Innovative 4-setting tail lock

Tail lock efficiency can be changed with 4 settings so that various flight modes can be utilised. The whole tail lock system can be switched on and off remotely.

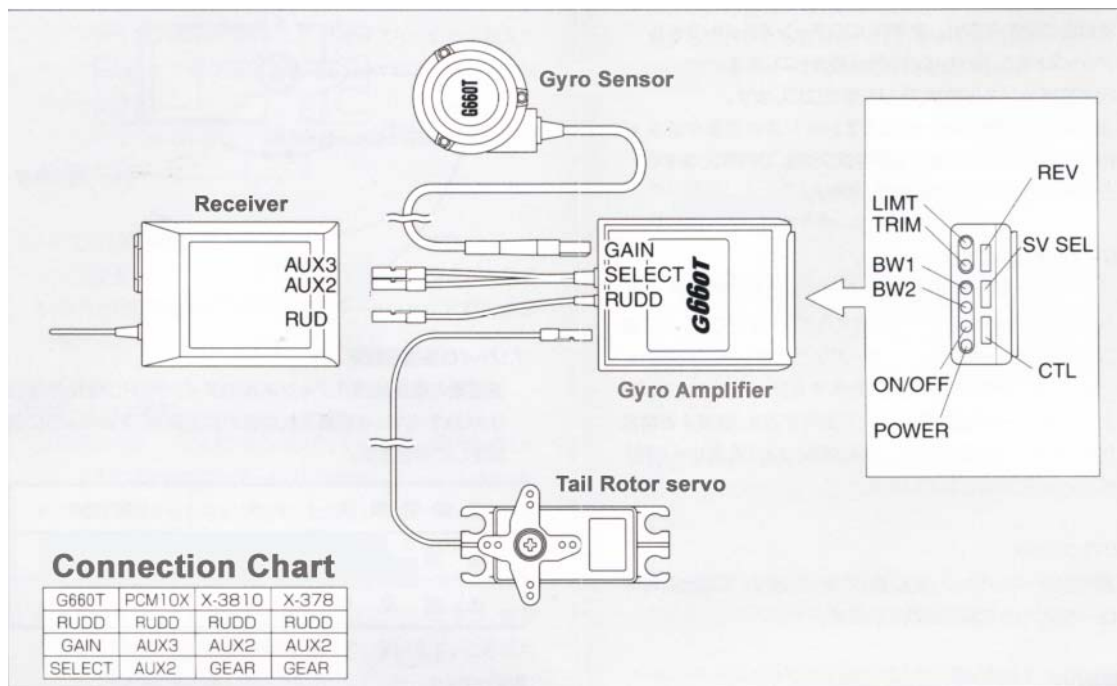
### • Offset drift canceling

G660T has remarkably less drift than those gyros currently in use.

## 3. SPECIFICATIONS

G660T SPECIFICATIONS	
Operating Voltage	4.8 V Ni-cad battery (through RX)
Operating Current	60mA
Size	Amplifier : 52L x 40W x 19H Gyro Sensor : 33 $\phi$ (x36) x 24H
Weight	Amplifier : 30g Gyro Sensor : 18g
Gyro Sensitivity	Remote control
Tail Lock	Remote On/Off w/four-settings
Other functions	Total gain 2-setting switch, Limiter volume Trim Adjustable volume Servo speed select switch

## 4. CONNECTING CHART (for PCM10)



- **Power**

Right after you switch on the receiver, the green LED will come on and 3 seconds later change to a red color. **Please do not move the rudder stick while green LED is on.** Also note that the gyro is not faulty if the light turns on and off while flying.

- **Tail Lock On/Off:**

Green turned on when tail lock is on.

Red turned on when it is off (Normal mode)

- **Tail Lock BW1&BW2**

It shows the efficiency or sensitivity of the tail lock mode

- **TRIM:**

The servo travel can be adjusted when tail lock is off.

- **LIMIT:**

Limiter volume. Movement of the tail rotor servo can be adjusted to prevent any pressure or loads that may be caused by excess travel of the linkage.

- **CTL:**

Amplifier switch for Control (efficiency of rudder).

Efficiency is twice as strong as usual at a high position (right) so be sure to start from low dual rate and then adjust to suit your flying style.

- **REV:**

Reverse switch. Reverse the direction of the gyro output.

• **SV SEL**

Select depending on which type of servo is used. A standard servo should be set on the right side and a high speed servo, like a digital servo or a super servo, should be on the left side. Please do not use a standard servo on the left side.

<b>CAUTION</b>	<b>Do not use a standard servo on the left side, otherwise the servo amplifier may burnout.</b>
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## 5. INSTALLATION

The following instructions until No. 7 (Flight-setting) are for when you use the G660T to control the tail rotor in a model Helicopter.

### ■ INSTALLING THE GYRO SENSOR

- ① Please mount the gyro in a rigid and low vibration location. Do not forget to mount it as close to the center of gravity (normally the main shaft) as possible.
- ② Thoroughly clean the bottom of the gyro sensor and the mounting area with rubbing alcohol. Use the supplied double-sided tape to securely mount the unit in position. Do not use thick foam tape or multiple layers of double-sided tape as is common practice with other gyros.

### ■ INSTALLING THE AMPLIFIER

Fasten the receiver and amplifier to the radio tray using rubber bands, making sure they are securely held in place. Or using foam, wrap the amplifier and the receiver together, making sure that at least one thickness of foam is between the receiver and amplifier. If space restrictions don't permit the amplifier and receiver to be mounted together, wrap them individually in foam and mount each in a convenient location. Use an optional servo extension lead, if necessary.

### ■ INSTALLING SERVO

Securely mount the servo taking care that it will not touch the body.

### ■ CONNECTION

Please follow the connecting chart.

ATTENTION	Piano wire is not preferable to use for tail drive. Securely adjust the linkage and the tail boom stay.
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## 6. PRE-SETTING

### 1. Setting the transmitter

- After all the installations are completed, turn on the transmitter and set the travel adjust for the rudder to 150% left and 150% right (to its extremes)
- Set the sub-trim of RUDD channel to 0
- Set the rudder trim to the center
- Turn off or zero out both the revolution mixing (up and down) and the acceleration mixing.

### 2 Setting the gyro amp

- SV SEL switch can be set depending on which type of servo is used. The right side is the position for a standard servo. The left side is the position for a high speed servo, like a digital servo or a super servo. A high speed servo is desirable for rudder control. If you use a standard servo in the left position, it may cause the amplifier to burnout. The initial setting is right position (for a standard servo).

- CTL switch

Normally, set the CTL to low position (left side). The initial position is low.

### 3. Power on

After turning on the receiver, please make sure the helicopter and the rudder stick remain totally motionless for 3 seconds. This is to store the exact neutral position digitally. If the gyro is moved accidentally within 3 seconds, please turn off the receiver SW and start the procedure again.

### 4. Gyro output

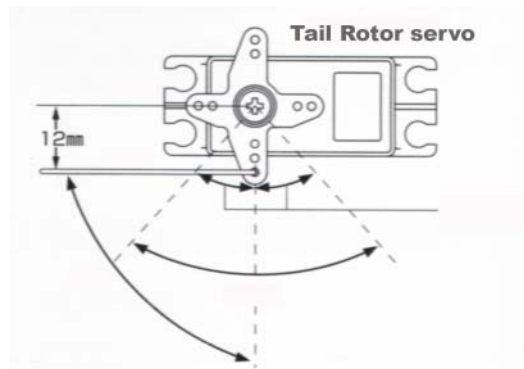
Confirm the direction of the gyro output. Take off the canopy of the helicopter to see the rudder servo clearly. Hold the helicopter and start spinning to the right (clockwise) while holding the helicopter and watching the rudder servo. If the rudder servo comes back opposite to the direction of the input to the right rudder command, the setting is correct. If not, adjust this by using the REV switch on the gyro.

### 5. Rudder stick

Be sure the rudder servo is moving in the correct direction. Reverse the servo direction in the transmitter's programming if necessary.

#### 6. Setting the linkage

Set the channel connected with SELECT (AUX2 for PCM10) to -100% and turn off the tail lock. Adjust the rudder servo linkage. Remove the servo arm (if necessary) and replace it so it is exactly at 90 degrees to the tail rotor pushrod. Ensure the tail rotor has the proper pitch value when the linkages are connected. Also make sure to adjust the length of the servo arms and LIMIT volume to prevent an excess travel of the linkages. Generally, when a longer horn (12mm) is used and the LIMIT volume is reduced, the sensitivity becomes critical at higher settings. If possible the use of a 12mm horn is highly recommended.



#### 7. Setting the gyro sensitivity temporarily

When the sensitivity SW (AUX3 SW for PCM10) on the transmitter is set, set the sensitivity temporarily as follows:

Sensitivity SW	Sensitivity Value
High sensitivity side	80%
Low sensitivity side	50%

#### 8. Setting the dual rate.

Set the dual rate as follows:

Purpose	Setting Value	
Normal	60% EXP 40%	Hovering
Stunt 1	100% EXP 60%	540° stall turn
Stunt 2	60% EXP 60%	Roll etc

#### 9. Trim rate

If you use a transmitter with a trim rate (or trim step), set the rate of Rudd

channel to "1"(minimum).

#### 10. Setting the tail lock efficiency temporarily

Set the travel adjustment temporarily when the switch (AUX2 SW for PCM10) of the channel connected with SELECT is set.

If Reverse is set to the channel, the marks of the rate are opposite.

Switch	Setting Value
TAIL LOCK OFF SIDE	- 100 %
TAIL LOCK ON SIDE	50 %

Ensure that the LED lamp turns on as follows:

Travel adjust	ON/OFF	BW2	BW1
+100%	Green	Green	Green
+ 75%	Green	Green	Red
+ 50%	Green	Red	Green
+ 25%	Green	Red	Red
-100%(tail lock off)	Red	Red	Red

## 7. FLIGHT-SETTING

### 1. Trim center setting

With the tail lock off on the ground, set the trim of the gyro amp to keep the rudder servo motionless even you switch REV. The TRIM functions when the tail lock is off. (Adjusted initially)

### 2. Linkage setting

On the first test flight it might be necessary to adjust the trim of the tail rotor if the model pirouettes slowly in either direction whilst hovering the model with the G660T set in the standard Rate mode. As with all Heading Hold type gyros, make any tail trim adjustments in Rate mode by adjusting the Tail Rotor control rod mechanically. Do not use Sub Trim or the transmitter trim to make these fine trim adjustments, as this will cause an out of trim situation when the Tail Lock mode is in use.

### 3. Rudder trim setting

Hovering with 50% tail lock and adjust the rudder trim of the transmitter to be neutral. When you adjust the trim of the transmitter, you have to adjust little by little. The power lamp of the Gyro amp is on when the rudder stick is at neutral position. If you adjust the trim suddenly, the lamp will be turned off. In this case, please set the trim to the original position or turn the receiver off

and then on again. The power lamp will be turned on again. Don't fly with the power lamp off to avoid trim offset. When the trim is out of zero, adjust it with the linkage.

#### 4. Trim setting

Turn off the tail lock and adjust the trim to reduce the servo travel.

#### 5. Gyro sensitivity setting

Continue to make fine adjustment until the helicopter is adjusted correctly.

Tune high at hovering, and tune low in the air to prevent hunting.

FLIGHT (switch)	SENSITIVITY VALUE
HOVERING (high sensitivity side)	70% - 100%
MID-AIR (low sensitivity side)	40% - 70%

#### 6. Travel adjust setting

Lift the model into a stationary hover. If you are comfortable, perform a full stick pirouette to the left, and then to the right while noting the speed in which the model rotates. If the model rotates more quickly in one direction than the other, adjust the travel adjust down on the fast side and retest. When completed the model should pirouette at an equal rate in both directions.

#### 7. Adjustment for tail lock efficiency

With tail lock on, adjust the efficiency. Adjust the tail lock efficiency considering a helicopter's capability, flight purpose, and wind. Too much efficiency may cause a problem in trimming while flying.

### **8. CAUTION**

1. Please cover the openings for T.Lock/Rev SW with adhesive tape, etc to protect them from the oil of the engine.
2. The G660T gyro doesn't like sudden temperature changes. Please place it outside of the car/house for 10 minutes before using.
3. After turning on the transmitter and the receiver, please make sure the helicopter and the rudder switch remain totally motionless for 3 seconds. This is to store the exact neutral position digitally. If the gyro is moved accidentally within 3 seconds, please turn off the receiver SW and try it again.
4. The rudder servo may move (1 degree) on the ground. This is because of

the high sensitivity of the gyro. This is not a fault.

5. When the tail lock is turned off on the ground, the servo may move slowly. This is not a fault.
6. During flight, the power LED might turn on and off. This is not a fault.
7. If you fly with CTL SW high positioned (right), please start from the half dual rate setting and gradually increase. It is dangerous to start from 100%.

## **9. REPAIR SERVICE INSTRUCTIONS**

This unit is warranted to be free from all defects in material and workmanship in normal use. The warranty, however, does not cover consequential damages of any kind resulting from an accident, misuse, or other incorrect operation. If a malfunction occurs not covered by the warranty, you may be asked for the repair cost. Depending on the degree of the damage, your unit may be beyond economical repair.

- Faulty units should be directly returned to the JR sales agent in your country for repair. If you are sending your unit, please include a memo giving a detailed reason for return and your request to us, if you have any. Please don't forget to write your zip code and phone number in addition to your name and address.

***O'Reilly Model Products, Keswick, South Australia***