

JR

G410T

Basic Tail Lock™/Rate Gyro Instructions

For Helicopter Use
JRPG410T

FEATURES

- Compact integrated design for easy installation/connection
- No moving parts for a nearly unlimited service life
- Linear dynamic range up to 720° per second
- Tail Lock™ and Rate modes
- Manual gain control for easy setup
- Patented offset drift canceler
- Silver/chrome finish to isolate RF & dissipate heat
- Compatible with JR and other brand radio systems

SPECIFICATIONS

Operating Voltage:	4.8V-6.0V
Operating Current:	20mAh
Dimensions:	24.5H x 30W x 30L
Weight:	19 g
Gyro Gain:	Manual adjustable, single rate
Tail Lock/Rate Modes:	Manual on/off

INTRODUCTION

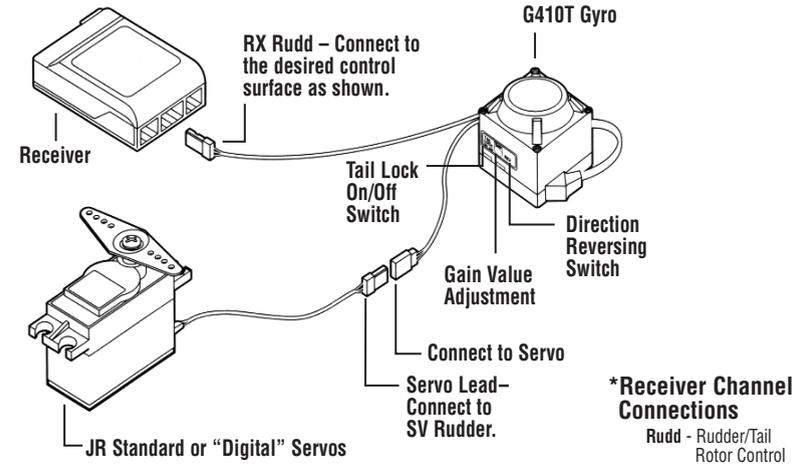
JR's latest Piezo gyro, the G410T, utilizes a new state-of-the-art integrated design for easy installation, while retaining the same performance levels found in the previous JR NEJ-G400.

It is important to note that the operational features of the G410T are very different than that of other gyro systems. Many current settings, including the travel volume, exponential, dual rates, and tail rotor revolution mixing values must all be changed from their previous normal settings in order to achieve the correct tail rotor/control surface response and maximum performance that the G410T has to offer.

JR's new G410T features manually selectable Rate and Tail Lock™ mode options. Tail Lock mode is highly recommended for use in helicopters, as it will hold the tail of the model in position without the need for revolution mixing. The G410T **should not** be used for airplanes, as it does not have a remote gain function.

Carefully read these instructions so you will fully understand and become comfortable with the functions and operating characteristics of the G410T prior to installation and initial test flights.

CONNECTIONS



CONNECTIONS (cont'd)

Radio Type Polarity Connections

JR	Futaba/HRC	Airtronics Z
red to red	red to red	red to red
brown to brown	brown to black	brown to black
orange to orange	orange to white	orange to white

Please note that if the system is connected incorrectly, the G410T will not function, but no damage will occur to any of the radio components. After successful connection, secure the gyro to the servo connection with a small piece of tape to prevent possible disconnection during use.

Servo Selection

In general, the quicker the transit time and the more accurate the centering tendencies of the servo, the better the gyro will perform.

If a servo with a slow transit time is used, the G410T may become too quick for the servo, resulting in a “wag” or “hunting” situation which will require the user to reduce the percentage of gain. This reduction in gain will also reduce the holding power and, therefore, the performance of the G410T.

INSTALLATION & HOOKUP

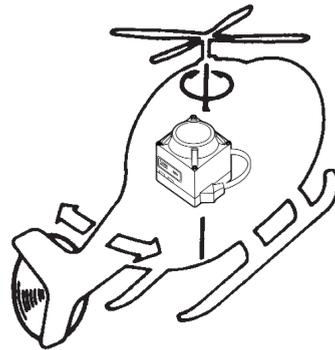
The G410T should be mounted as close to the center of gravity (normally the main shaft) as possible. Many helicopters provide mounting bases near the main shaft. Use them only if they are positioned away from heat-generating sources. If it is not possible to locate the sensor near the main shaft, an alternate location to consider is up front on the servo tray.

Installing the G410T

Refer to the following diagram for proper gyro positioning.

Helicopter Installation (Tail Rotor/Rudder)

Mount the G410T with the label facing upward, as shown in the diagram at right.



SETUP & ADJUSTMENT

Following is the setup and adjustment procedure that must be followed to achieve the highest level of performance from your system.

Setup

Step 1: Set the Tail Lock™ switch located on the side of the G410T to the “off” position

Step 2: Unhook the control linkage from your servo and swing the servo arm out of the way. Lightly grasp the pushrod at the servo end and run the linkage through its entire travel. The linkage should move through its entire range smoothly with very little friction and no rough spots. Work on the linkage system until this is achieved.

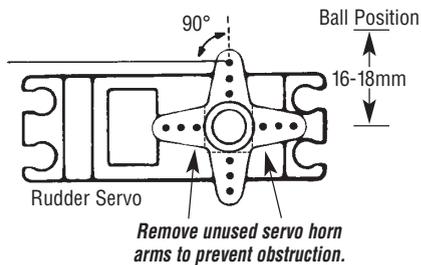
Step 3: On your transmitter, set all trimmers (sub-trim, trim offset, mechanical trim, etc.) to zero. Set the throttle/pitch stick at exactly the hover position (standard hover position is 50%). Turn off or zero out both the revolution mixing up and down and the acceleration mixing.

Step 4: Turn on your receiver and allow the model to remain totally motionless for 3 seconds. This procedure is necessary to allow the G410T time to establish and record the center or neutral positions.

Step 5: Remove the servo arm and replace it so that it is exactly 90° to the tail rotor pushrod (see diagram at right). You may find that the splines in the screw output shaft are just offset enough on your servo arm so as to not allow 90° positioning. Rotate the servo arm to another arm and try again. Find the arm that is closest to 90° and secure it in place with the provided screw.

SETUP AND ADJUSTMENT (cont'd)

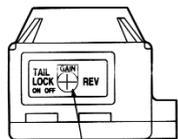
Step 6: Move the Tail Lock™ switch back to the “on” position. When in Tail Lock mode, the servo arm may “creep” or move slightly. This movement is normal, and can be corrected by changing the sub trim value for the rudder channel.



SETTING THE MANUAL GAIN VALUE

Set the required gain value as shown using the included screwdriver.

Hover Only (Beginner)	Gain	80%
Hover and Forward Flight	Gain	60% 70%



Set the gain value using this adjustment.

Gain values will need to be fine-tuned on the initial test flights. Please refer to the flight adjustment section for more information.

CONTROL BALL PLACEMENT

For best performance, attach the tail control rod ball to the servo arm at a distance of approximately 16–18 mm from the center mounting screw of the servo arm. The performance of the G410T will be greatly reduced if the tail control rod ball is attached at a distance of less than 16mm, as this position will not make full use of the G410T's sensing abilities.

Initial Transmitter Settings

Travel Adjust	Left Rudder	150%
	Right Rudder	150%
Dual Rates	Hover Mode/Low Rate	80%
	Stunt Mode/High Rate	100%
Exponential Values	Hover Mode/Low Rate	30%
	Stunt Mode/High Rate	40%
Gyro Gain Values		70-80%
Revolution Mixing (Rate Mode/Heli Only)	Hover Mode	5%L
	Stunt Mode	5%L

After some experience and flight time is gained, these values can be adjusted to suit your preference.

TEMPERATURE STABILIZATION

Please note that like with all Piezo style gyros, sudden changes in temperature can affect the neutral position of the gyro. Before the first flight of the day, please allow the gyro 10–15 minutes to adjust to the outside flying environment. The gyro should remain in the off position during the period.

FLIGHT ADJUSTMENT

Gain Value Adjustments

On initial test flights it will be necessary to adjust the mechanical control linkage/tail rotor blade pitch so the helicopter will have no tendency to rotate while in the hover position. Minor “fine tuning” adjustments can be made using sub trim. Once this has been achieved, increase the hover gain until the helicopter starts to oscillate (hunt). Back down the value just below the hunting point. The value should be between 65 and 95%. If so, proceed to the next step. If not, do the following:

Hunting occurs at less than 65% gain in hover—move the rudder pushrod connection at the servo inward one hole on the servo arm.

No hunting occurs even at 100% gain in hover—move the rudder pushrod connection at the servo outward one hole on the servo arm.

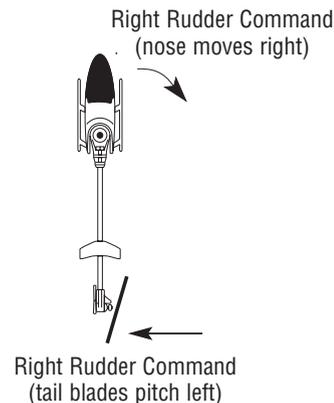
Advanced Pilots—fly the helicopter in fast forward flight and increase the gyro gain value until oscillation (hunting) occurs. Reduce the value slightly, just below the point of hunting. Try a few high speed passes and see if hunting occurs. Reduce the gain if necessary.

CONFIRMING GYRO/SERVO DIRECTION

Step 1: Be sure the rudder servo is moving in the proper direction. A right rudder command should move the nose to the right (if you're unsure, seek help from someone more experienced). Reverse the servo direction in the transmitter if necessary.

Step 2: Give a right rudder command and note the direction the rudder servo moves (clockwise or counter-clockwise). Now pick up the helicopter and quickly move the nose to the left. The servo should move in the same direction as a right rudder command. If it moves in the opposite direction, switch the small reverse switch located on the G410T gyro in the opposite direction.

Important: When the reversing switch on the gyro is changed, this will also reverse the direction of the tail servo. If the gyro reversing switch is changed, it will be necessary to reverse the direction of the servo using the transmitter's servo reversing function.



WARRANTY COVERAGE

Your new equipment is warranted to the original purchaser against manufacturer defects in material and workmanship for 1 year from the date of purchase. During this period, Horizon Service Center will repair or replace, at our discretion, any component that is found to be factory defective at no cost to the purchaser. This warranty is limited to the original purchaser of the unit and is not transferable.

This warranty does not apply to any unit which has been improperly installed, mishandled, abused, or damaged in a crash, or to any unit which has been repaired or altered by any unauthorized agencies. Under no circumstances will the buyer be entitled to consequential or incidental damages. This limited warranty gives you specific legal rights; you also have other rights which may vary from state to state. As with all fine electronic equipment, do not subject your unit to extreme temperatures, humidity or moisture. Do not leave it in direct sunlight for long periods of time.

REPAIR SERVICE INSTRUCTIONS

Warranty Repair

To receive warranty service, you must include a legible photocopy of your original dated sales receipt to verify your proof-of-purchase date. Providing that warranty conditions have been met, your equipment will be repaired without charge.

Normal Non-Warranty Repairs

Should your repair cost exceed 50% of the retail purchase cost, you will be provided with an estimate advising you of your options.

Within your letter, advise us of the payment method you prefer to use. Horizon Service Center accepts VISA or MasterCard. Please include your card number and expiration date. Mail your system to:

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