

# JR

SRVS TECHNOLOGY

# G770 3D

INSTRUCTION MANUAL

**Thank you for purchasing the JR G770 3D Gyro.**

Please read manual carefully for safe operation.

## HANDLING CARE

**WARNING** Failure to follow all safety precautions could result in death or serious injury.

### Set Up

This gyro is exclusively designed for use with radio-controlled hobby helicopters. Using it for any other applications may result in an accident.

Do not disassemble or modify the gyro.

### Operating

Check the voltage of battery packs prior to operation. Do not fly in the rain, fog, or in an environment which may cause condensation.

### Maintenance

Should a foreign substance or water enter the gyro, stop using it immediately. Send the gyro to the Horizon Service Center.

If a gyro is dropped it may not work properly. To avoid a potential crash, DO NOT use the gyro. Send the gyro to the Horizon Service Center.

Do not leave the gyro in a place exposed to extreme high/low temperature or high humidity. Performance may deteriorate, resulting in an accident.

Check the airframe prior to every flight. Its failure may result in a serious accident.

## PRECAUTIONS

- If the gyro is used in an area subject to oil, fuel, or exhaust from the engine, plug the openings of the switches and the pots with tape.
- The rudder servo may jitter slightly while sitting on the ground. This is the gyro's characteristic feature, and not a fault.
- To adjust Servo Travel, use the supplied plastic screwdriver. Use of a metallic screwdriver could damage the gyro.
- Install the gyro with some slack in the leads so they are not strained during flight. If the wires are strained and cause the gyro body to move or fall off during flight, the helicopter will become uncontrollable, resulting in a crash.
- To quickly check if you are in tail lock mode or normal mode during adjustment, move the rudder stick. If you are in tail lock mode, the rudder servo will not return to the neutral position when the rudder stick is returned to neutral.

## FEATURES

- All-in-one super compact, lightweight gyro for easier handling and installation.
- Anti-drift sensor allows high-performance flight.
- High-speed output. Capable of outputting signals to the servo in a shorter cycle, for finer control.
- Remote gain adjustment. Capable of adjusting the gain and switching between rate and tail lock modes from the transmitter.
- Aluminum case used for suppressing the effects of electromagnetic noise on the sensor.
- Equipped with an auto trim function allowing a smooth transition from normal mode to tail lock mode.
- Constant pirouette rates.
- Analog or digital servo compatibility.

## SPECIFICATIONS

Operating Voltage:	4.8 to 6.0V (Common for Receiver)
Operating Current:	80 mA
Size (mm):	20 (H) x 27 (W) x 25.5 (L)
Weight:	30 g
Gyro Gain:	Remotely Adjustable
Tail Lock:	Interlocked with Gyro Gain
Others:	Reverse Switch, Servo Output Speed Change, Servo Travel, Auto Trim

This gyro is exclusively designed for controlling the yaw axis of radio-controlled model helicopters.

**CAUTION** An electric helicopter generates strong electromagnetic noise. In order to avoid a malfunction, install the Gyro as far away from the motor and speed control as possible.

## 1 INSTALLATION

1. Mount the gyro to a rigid, surface perpendicular to the main rotor shaft.

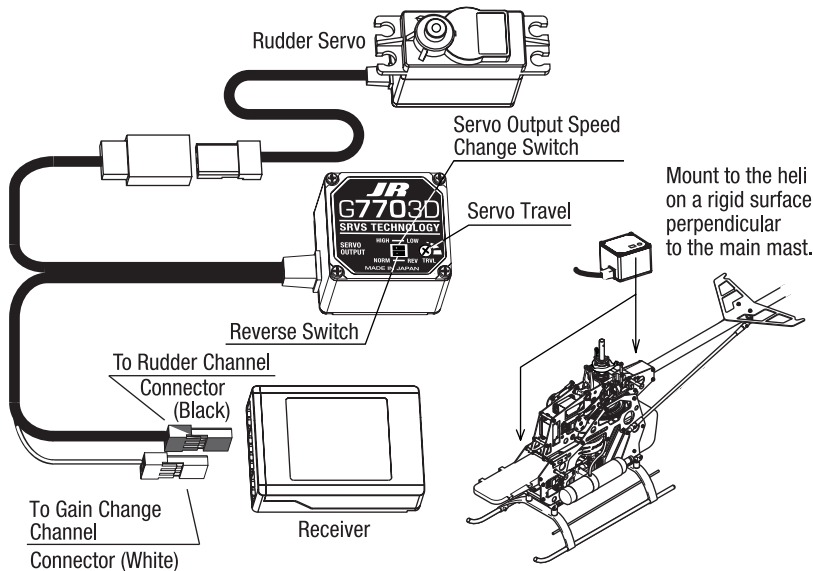
**WARNING** Large vibrations may lead to erratic performance, resulting in a crash.

2. Clean and degrease the mounting surface completely. Use the supplied double-sided tape to securely adhere the gyro. Over time, the double-sided tape may deteriorate due to the effects of fuel and vibration. Check its condition prior to every flight and replace it periodically.

**WARNING** If the Gyro comes loose during the flight, the helicopter will become uncontrollable, resulting in a crash.

3. Connect the gyro according to the figure shown in the next step.

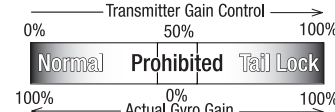
## 2 CONNECTION



## 3 SETTING GYRO GAIN

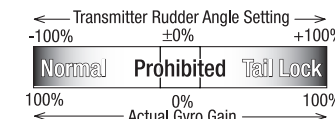
### When Using Gyro Gain Control

Gyro gain control is as shown in the figure below. Above the gyro gain control value of 51% is tail lock mode, and below 49% is rate mode, with zero gain at 51% and the maximum gain 0% and 100%. Do not use a range between 49% and 51% because it is unstable.



### When Using Travel Adjust to Change the Gain

Gyro gain control is as shown in the figure below. Positive values are tail lock mode and negative values are rate mode, with zero gain at +/-1% and the maximum gain at both ends (+/-100%). Do not use a range between -1% and +1% because it is unstable.



## 4 SETTING UP THE G770 3D

Setting up the G770 3D gyro is different than other gyros, and properly setting up the gyro is important to maximize the performance of the G770 3D gyro.

1. Select the servo speed switch to high or normal depending on the type of servo you are using. For digital servos and JR gyro servos, select "High". If using an analog servo, select "Norm".

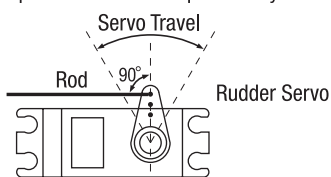
**CAUTION** If a normal servo is set to "High", it could cause damage to the servo resulting in an accident.

2. Set the rudder channel travel adjust settings in the transmitter to 150% in both directions, set all trims to zero (including sub trim, trim offset, and the trim levers), and turn revolution mixing off.

Rudder Travel Adjust L	150%
Rudder Travel Adjust R	150%
Sub-Trim	0%
Trim	Center
Revolution Mix	0%
Tail Lock	OFF

## 4 (continued)

3. Turn on the transmitter followed by the receiver. Do not touch the model or the transmitter stick or switches for 3 seconds while the gyro initializes.
4. Install the servo arm 90 degrees to the tail control rod.
5. Adjust the servo travel on the gyro to set the end points of the servo to prevent any binding.



6. Check the rudder servo direction to be sure it is correct. A right rudder command should move the nose to the right (if you're unsure, seek help from someone more experienced). Reverse the rudder channel direction in the transmitter if necessary.

## 5 FLIGHT SETTING

1. Adjust the Gyro sensitivity after initially flying your helicopter. Adjust the pirouetting (rotational) speed of the tail by changing the dual rate on both right and left rudder until you are happy with the speed of rotation. If the neutral tends to be too sensitive, use some exponential on the rudder channel starting at approximately 50% and adjust it up or down to suit your flying style. **Note:** Generally, if the sensitivity of the Gyro is increased, pirouetting speed will be reduced, and if the sensitivity of the Gyro is

## 5 (continued)

- decreased, pirouetting speed will increase. In summary, this Gyro system requires you to re-adjust the rudder adjustments, (i.e. rudder dual rate, rudder ATV) when you change the Gyro sensitivity.
2. In case you need to reset the neutral position of the Gyro, be sure not to switch the power off and on quickly as the Gyro will recognize a false pulse and will keep the previous neutral position. To erase the existing neutral position, turn off the power and wait for 5 seconds before turning the power back on.
3. If using normal mode, set the revolution mix as instructed in the instruction manual for the airframe. Fly the helicopter to adjust the rudder trim and the revolution mix of the transmitter. If there is too much trim required, readjust the linkage.
4. If you move the rudder stick or turn the airframe when changing from normal mode to tail lock mode, the auto trim may be cancelled. In this case, the previously stored trim position becomes the neutral.

## 6 PRO TIPS

1. It is normal to have different pirouette rates with left versus right rudder due to helicopter set up. Use travel adjust for each direction to make the rotation speed match in each direction, increasing travel adjust speeds up the pirouette rate, while decreasing it slows the pirouette rate.
2. Use the Dual Rate function to set the overall pirouette rate.
3. It is normal to have high expo values, 40% will give a linear feel, 50% adds roughly 10% expo. Adjust to suit your flying style.
4. Servo arm length is critical for best performance. If you go too far out on the servo arm, it will be necessary to reduce the gain, in turn it will give less gyro effect, it will be oversensitive, and won't have as strong of hold. If the servo arm is too short, the gain will need to be set to high, and may not have enough gain for the heli.
5. The ideal gain setting will be below the gain at which the tail hunts or wags. Increasing the gain will increase the holding strength and the stopping speed, however the tail hold is very

- strong with this gyro. Adjust the gain to get the desired stop speed. Too high of a gain setting can cause damage to the heli and the tail servo.
6. The G770 3D and the 8900G are zero deadband, which provides immediate performance and allows for very strong tail hold. Due to this, on the ground it is normal for the servo to oscillate.
7. For best performance, it is critical that all linkages and pushrods are slop free, and free moving with no binding.
8. This gyro is optimized to work with the 8900G tail servo and will give the best performance. Other servos including analog and digital servos will work, but will not give as high of performance as the 8900G.

## 7 SETUP EXAMPLES

Heli	Servo	Arm length	Gain	Travel Adjust	D/R	EXPO
JR Vibe 90	JR8900G	14mm	71	150/150	85%	45%
Synergy 90	JR8900G	14mm	67	150/150	75%	45%
T-Rex 450	JR3400G	8mm	63	150/150	65%	47%
T-Rex 600	JR8900G	11mm	75	150/150	80%	50% (electric)
T-Rex 600	JR8900G	11mm	62	150/150	85%	50% (nitro)

**Note:** The gyro gain listed is taken from the gyro sensitivity function in JR transmitters. If using travel adjust to set the gyro gain you will need to adjust the percentage accordingly. 50% gain in the gyro sensitivity function is equal to 0% in travel adjust.

## WARRANTY AND REPAIRS

**Exclusive Warranty-** Horizon Hobby, Inc. (Horizon) warrants that the Products purchased (the "Product") will be free from defects in materials and workmanship for a period of 3 years from the date of purchase by the Purchaser.

### Limited Warranty

(a) This warranty is limited to the original Purchaser ("Purchaser") and is not transferable. REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. This warranty covers only those Products purchased from an authorized Horizon dealer. Third party transactions are not covered by this warranty. Proof of purchase is required for warranty claims. Further, Horizon reserves the right to change or modify this warranty without notice and disclaims all other warranties, express or implied.

(b) Limitations- HORIZON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCT. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

(c) Purchaser Remedy- Horizon's sole obligation hereunder shall be that Horizon will, at its option, (i) repair or (ii) replace, any Product determined by Horizon to be defective. In the event of a defect, these are the Purchaser's exclusive remedies. Horizon reserves the right to inspect any and all equipment involved in a warranty claim. Repair or replacement decisions are at the sole discretion of Horizon. This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or modification of or to any part of the Product.

This warranty does not cover damage due to improper installation, operation, maintenance, or attempted repair by anyone other than Horizon. Return of any goods by Purchaser must be approved in writing by Horizon before shipment.

### Damage Limits

HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCT, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY. Further, in no event shall the liability of Horizon exceed the individual price of the Product on which liability is asserted. As Horizon has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability. If you as the Purchaser or user are not prepared to accept the liability associated with the use of this Product, you are advised to return this Product immediately in new and unused condition to the place of purchase.

Law: These Terms are governed by Illinois law (without regard to conflict of law principals).

### Safety Precautions

This is a sophisticated hobby Product and not a toy. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the Product or other property. This Product is not intended for use by children without direct adult supervision. The Product manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or injury.

### Questions, Assistance, and Repairs

Your local hobby store and/or place of purchase cannot provide warranty support or repair. Once assembly, setup or use of the Product has been started, you must contact Horizon directly. This will enable Horizon to better answer your questions and service you in the event that you may need any assistance. For questions or assistance, please direct your email to [productsupport@horizonhobby.com](mailto:productsupport@horizonhobby.com), or call 877.504.0233 toll free to speak to a service technician.

### Inspection or Repairs

If this Product needs to be inspected or repaired, please call for a Return Merchandise Authorization (RMA). Pack the Product securely using a shipping carton. Please note that original boxes may be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as Horizon is not responsible for merchandise until it arrives and is accepted at our facility. A Service Repair Request is available at [www.horizonhobby.com](http://www.horizonhobby.com) on the "Support" tab. If you do not have internet access, please include a letter with your complete name, street address, email address and phone number where you can be reached during business days, your RMA number, a list of the included items, method of payment for any non-warranty expenses and a brief summary of the problem. Your original sales receipt must also be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

### Warranty Inspection and Repairs

To receive warranty service, you must include your original sales receipt verifying the proof-of-purchase date. Provided warranty conditions have been met, your Product will be repaired or replaced free of charge. Repair or replacement decisions are at the sole discretion of Horizon Hobby.

### Non-Warranty Repairs

Should your repair not be covered by warranty the repair will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost. By submitting the item for repair you are agreeing to payment of the repair without notification. Repair estimates are available upon request. You must include this request with your repair. Non-warranty repair estimates will be billed a minimum of 1/2 hour of labor. In addition you will be billed for return freight. Please advise us of your preferred method of payment. Horizon accepts money orders and cashiers checks, as well as Visa, MasterCard, American Express, and Discover cards. If you choose to pay by credit card, please include your credit card number and expiration date. Any repair left unpaid or unclaimed after 90 days will be considered abandoned and will be disposed of accordingly. Please note: non-warranty repair is only available on electronics and model engines.

Electronics and engines requiring inspection or repair should be shipped to the following address:  
Horizon Service Center  
4105 Fieldstone Road  
Champaign, Illinois 61822

All other Products requiring warranty inspection or repair should be shipped to the following address:  
Horizon Product Support  
4105 Fieldstone Road  
Champaign, Illinois 61822

Please call 877-504-0233 with any questions or concerns regarding this product or warranty.