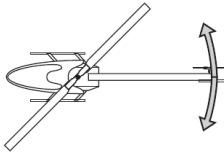


MODELLFUN Heading Hold Gyro



Thank you for the purchase of our product. This gyro is designed to be used in RC Hobby products - helicopters - only. A usage for other than the designated purpose is not recommended. This gyro is to be installed between a receiver and a tail servo of a shaft or belt driven helicopter tail rotor system. Installation and setup require basic mechanical and radio control knowledge. If you are feeling uncertain, please contact in any case a experienced person such as you local hobby store, professional pilots or our product support.

Warning

A RC hobby product is not a toy! If misused, it can cause bodily harm and damage to property. Fly only in open areas, preferably at AMA (Academy of Model Aeronautics) approved flying sites, following all instructions included with your radio. Keep loose items that can get entangled in the rotor blades away from the main and tail blades. Make sure the gyro can't get loose in flight. A loose gyro or disconnected wires will result in failure of the tail rotor control and will lead to an uncontrolled flight or crash.

Before Starting Assembly

Before starting any assembly and preparing your gyro for usage, remove each component from the box for inspection. Closely inspect all components for damage. If you find any damaged or missing parts, contact the place of purchase.

Limited Warranty & Limits of Liability

Pursuant to this Limited Warranty, MODELLFUN will, at its option, (i) repair or (ii) replace, any product determined by MODELLFUN to be defective. In the event of a defect, these are your exclusive remedies. This warranty does not cover cosmetic damage or damage due to act 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 an authorized MODELLFUN service center. This warranty is limited to the original purchaser and is not transferable. In no case shall MODELLFUN's liability exceed the original cost of the purchased product and will not cover consequential, incidental or collateral damage. MODELLFUN reserves the right to inspect any and all equipment involved in a warranty claim. Repair or replacement decisions are at the sole discretion of MODELLFUN. Further, MODELLFUN reserves the right to change or modify this warranty without notice. As MODELLFUN 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 an unused condition to the place of purchase.

Inspection or Repairs

If your product needs to be inspected or repaired, please call for a Return Merchandise Authorization. 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 MODELLFUN is not responsible for merchandise until it arrives and is accepted at our facility. Include your complete name, address, phone number where you can be reached during business days, and a brief summary of the problem. Be sure your name, address are clearly written on the shipping carton.

MODELLFUN, c/o STEMITEC GbR, Karlstr. 2, 86150 Augsburg, Deutschland

Safety, Precautions and Warnings

- As the user of this product you are solely responsible for operating it in a manner that does not endanger yourself or others or result in damage to the product or the property of others.
- Never operate your model with low transmitter batteries
- Always operate your model in an open area away from cars, traffic or people.
- Never operate the model out into the street or populated areas for any reason.
- Carefully follow the directions and warnings for this equipment.
- Keep all chemicals, small parts and anything electrical out of the reach of children.
- Moisture causes damage to electronics. Avoid water exposure to all equipment not specifically designed and protected for this purpose. Never lick or place any portion your gyro in your mount as it could cause serious injury or even death.

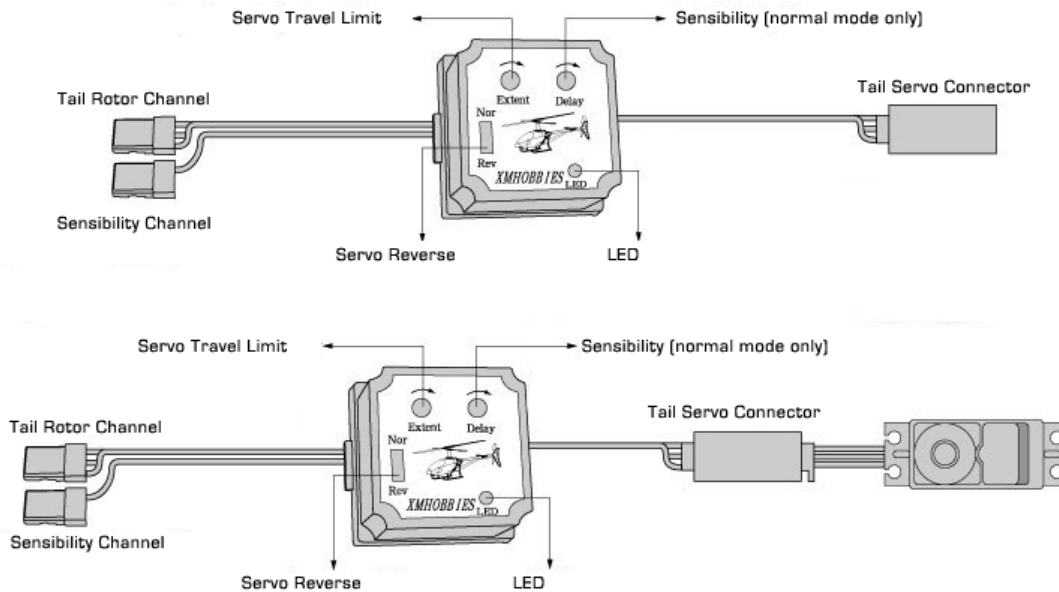
Mounting the Gyro

Mount your gyro as shown in the drawing. The gyro has to be aligned with the main rotor shaft. Slight deviations of the angles between the main shaft and the gyro sense axis will result in bad performance. The acceleration sense mounted inside the gyro can only measure position deviations in one axis. Wrong mounting will let the gyro react to other functions, such as aileron or elevator controls. The gyro should be mounted in a minimum distance of 1.5"/40mm to the main shaft to receive sufficient accelerations. It is not important where you mount the gyro. The gyro will arm some seconds after turning on power, which will be shown through a solid status light. The arming sequence calibrates the actual environment temperature. In order to reach best results, you may turn on the gyro several minutes before flying and shortly before flying dis- and reconnect it to the power source in order to calibrate the warmed up equipment.

- Mount the gyro as shown with the included double side adhesive foam tape at a suitable smooth area. Clean the area to ensure the gyro adheres well. The foam tape provides vibration dampening mounting, you should not glue or screw the gyro directly to the surface. Vibrations will cause the gyro to lose its maximum performance. Please check before every take off that your gyro is not loose. A loose gyro is not working properly and will cause uncontrollable flight situations or crashes.
- Connect the three-wire plug (orange/red/black) with the rudder channel of your receiver.
- If your radio control does provide a auxiliary gyro channel, please connect the one-wire plug (yellow) to it. If your radio control doesn't provide this channel, do not cut the plug and leave it unconnected. Make sure that all cable connections are secured after installing with tape or cable tie. Connect the tail rotor servo with the connector at the the gyro. Please check the plugs for correct polarity. Please make sure that all electrical connections are strain free.

Choice of suitable Tail Servos

MODELLFUNMODELLFUN recommends regarding the choice of suitable tail servos to read the following background information. A gyro requires a rapid acting servo (<0.15s/60°) to work flawlessly. Gyros are controlling units which actually act a lot faster than any mechanical component can do. The inertia of your helicopter is hence a factor which help to determine the required speed of a servo. A helicopter with a main rotor diameter of 800mm or less requires a servo with the described speed or faster. Bigger helicopters may be flown with a slower servo. The continuous correction of the servo position through the gyro also stresses the mechanics of a servo. We suggest to use a ball-bearing servo with metal gears. Plastic gears wear out easier through the continuous load changes and bushed bearings aren't free of play. The gyro can only be used with analog servos. Please do not connect digital servos to the gyro.



MODELLFUN Head Lock and Normal Mode

Your gyro can be run in two modes, the single or normal mode as well as in the dual or head lock mode. The head lock mode is only available if your sender/receiver provides an auxiliary channel and the gyro is connected to it. If you do not connect the auxiliary plug the dual or head lock mode is not accessible and the gyro operates in normal mode only. The head lock mode (almost like an autopilot system) will in any case try to hold or return to the position, whatever wind or flight maneuvers will bring the tail out of its position. It may take some moments to reach the original position again, but as long as there is no input from the pilot the position will be reestablished. To a beginner which needs to steadily control the tail position, it will take a lot of effort. Hence the head lock mode is suitable to them as well as to professionals which want to perform on windy days.

Adjusting the Single or Normal Mode

Prior to a proper adjustment of your gyro your tail mechanics must be properly adjusted. Please check your helicopter's manual to adjust it first. If your helicopter's manual doesn't provide that information, please have a look at the drawing. These rules are commonly suitable for all kinds of helicopters. If you do have an auxiliary channel which you connect the gyro to, please skip the following section and proceed with the head lock mode.

- Disconnect the main motor from the ESC for your own security. Turn on your radio, then connect the battery. Wait until the gyro is initialised. This is necessary in order to compensate temperature shifts of the sense. In this phase the LED will blink. Please do not sway or shake the helicopter while the LED is blinking. If you swayed or shook it, please disconnect and reconnect the battery and repeat the initialisation.
- If you use a programmable radio, please deactivate all eventual used mixers for tail torque (Tailmix).
- If your radio provides a servo travel limiter, please adjust it that the tail servo will not run into one of the two mechanical travel limits.
- Reconnect the helicopter's main motor. Accelerate the main motor until the helicopter becomes light and you may be able to find whether the acting direction is proper or inverted. In case of wrong acting direction your helicopter will easily start twisting into never ending circles. Please use the „REVERSE“ switch to correct the acting direction. Please make sure that your main rotor rpm is not too high while testing this in order to avoid damages on your helicopter. If your helicopter may react inverted on the given input at the radio, please do not use the „REVERSE“ switch but use the inverting function at your radiocontrol.
- Now you can adjust the sensibility of the gyro through the small trim potentiometer „GAIN“. If the tail tends to turn away easily, amend the sensibility by turning the pot clockwise. If the tail starts to swing rhythmically, please decrease the sensibility by turning the pot counterclockwise. The best adjustment for beginners is a sensibility slightly below the point where the tail starts to swing. Any further wandering of the tail in flight you may adjust by using the trim / subtrim function of your radiocontrol.

Adjustment of the Dual or Head Lock Mode

If you are using the auxiliary channel and it is connected to your gyro, please follow these instructions:

- Disconnect the main motor from the ESC for your own security. Turn on your radio, then connect the battery. Wait until the gyro is initialised. This is necessary in order to compensate temperature shifts of the sense. In this phase the LED will blink. Please do not sway or shake the helicopter while the LED is blinking. If you swayed or shook it, please disconnect and reconnect the battery and repeat the initialisation.
- If you use a programmable radio, please deactivate all eventual used mixers for tail torque (Tailmix).
- Your radiocontrol should provide a way to switch or adjust the auxiliary channel's value. Please check the manual of your radiocontrol to get used to the usage of this switching function. Actually the auxiliary channel is interpreted by the gyro both as a switch between normal and head lock mode and as the gyro sensibility adjustment as well. If the servo signal is between -100% to 0%, it operates in the normal mode, if between 0% to +100% it operates in the head lock mode. Have a look at the drawing, it explains how the gyro is interpreting the sensibility from the auxiliary channel input. If e.g. the by the radiocontrol given auxiliary channel is at -50%, the gyro will interpret it as 50% sensibility, normal mode. If e.g. the by the radiocontrol given auxiliary channel is at +25% the gyro will interpret it as 25% sensibility, head lock mode. To find out in which mode you are, just look what the servo is doing if the tail control lever is centered. If it slowly creeps into one of the two mechanical travel limits, you are in the head lock mode. In the normal mode it will stand still.
- If your radio provides a servo travel limiter for the tail channel, please adjust it that the tail servo will not run into one of the two mechanical travel limits on given command by the tail control lever.
- Reconnect the helicopter's main motor. Accelerate the main motor until the helicopter becomes light and you may be able to find whether the acting direction is proper or inverted. In case of wrong acting direction your helicopter will easily start twisting into never ending circles. Please use the „REVERSE“ switch to correct the acting direction. Please make sure that your main rotor rpm is not too high while testing this in order to avoid damages on your helicopter. If your helicopter may react inverted on the given input at the radio, please do not use the „REVERSE“ switch but use the inverting function at your radiocontrol.



- Now switch your gyro through the auxiliary channel into the head lock mode (0% to 100%). Adjust the trim of the tail channel, not the auxiliary channel, that the servo creep will be minimised. It will not come to a total standstill which is normal. But it is yet essential that you adjust the trim so the creeping will be minimal.

- Now adjust the sensitivity as done in the normal mode section. But this time you can't use the trim pot on the gyro. You must adjust the auxiliary channel's value in order to setup the sensitivity properly. Your radio might provide channel travel limiters for the switched channel, so you will need to adjust the positive one. Or your radio might provide defined points, so you might need to adjust it. The lower the value, the lower the sensitivity. If your tail is swinging, lower the value. If it tends to hold the position badly, rise it. If your radio doesn't provide the feature to adjust the aux channels value, it is not suitable to control this gyro in head lock mode.

- Now switch into the normal mode (the auxiliary channel is between -100% to 0%). If your tail now is moving in flight into one direction, please do not use the trims on your radiocontrol to center the movement, but adjust the tail rotor's mechanics in order to avoid offset effects while switching between normal and head lock in flight.

- Now you may adjust the sensitivity for the normal channel. This time you can't use the trim pot on the receiver either. You must adjust the auxiliary channel's value in order to setup the sensitivity properly. Your radio might provide channel travel limiters for the aux channel, so you will need to adjust the negative one. Or your radio might provide defined points, so you might need to adjust the second switch point. The lower the value, the higher the sensitivity. If your tail is swining, rise the value. If it tends to hold the position badly, lower it. As you might see at the drawing, the sensitivity is mirrored at the 0% line. Actually the sensitivity is depending on your helicopter's inertia and your servo's speed. Therefore the sensitivity can be mirrored as well for basic setup (both channel limiters or the switch points should be at, e.g. -20% and +20%). More experienced pilots may choose different sensitivity settings in normal and head lock mode

Technical Data:

Operating Voltage: DC 4-6V

Size: 22x22x19.5mm

Weight: 10.5g

Funktion of LED:

Blinks while initialising. Turns of in normal Mode, stays solid in AVCS Mode. Double Flashing shows differ from neutral position, please restart in this case.

