



PHA-01 3 IN 1 MIXER BOARD FOR ELECTRIC HELICOPTER

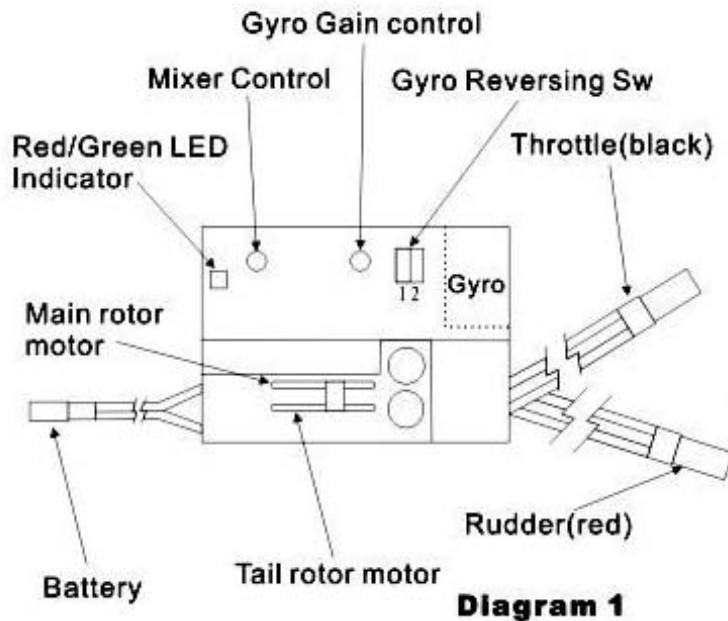


Diagram 1

SPECIFICATION AND FUNCTION:

- SIZE: 1.5"X1"X0.37"
- WEIGHT: 0.43 oz
- CURRENT DRAW: 30mA
- OPERATING VOLTAGE: 5V-8.4V DC
- SAFETY DESIGN: THE MOTOR CAN ONLY BE POWERED ON AT THE MINIMUM THROTTLE.
- NEUTRAL POSITION: AUTOMATIC ADJUSTMENT, LED LIGHT IN GREEN WHEN IT IS SET. (IT TAKES ABOUT 5 SECONDS AT A STEADY STATE.)
- GAIN VALUE ADJUSTMENT OF GYRO
- MIXER SPEED CONTROLLER FOR MAIN ROTOR AND TAIL ROTOR.
- REVERSE SWITCH OF GYRO : EASY CORRECTION OF THE GYRO.
- BEC: 5V/1.2A
- MAIN ROTOR DRIVE CURRENT: 10A/12A(MAX)
- TAIL ROTOR DRIVE CURRENT: 2A/4A(MAX)

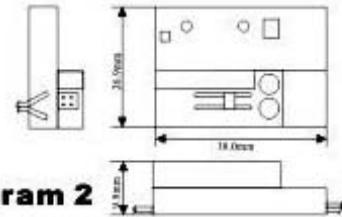


Diagram 2

Thank you for choosing GWS PHA-01 3 in 1 mixer board. This PHA-01 has been specially designed and developed for compact electric helicopter. It combines the function of gyro, mixer and the speed controller. We took the newest electronic technology, which assist the achievement of smallest volume and lightest weight of PHA-01. This features the prevention of the obsession of complicated combination and wiring. Please read the instruction manual carefully before operating your PHA-01.

Installation

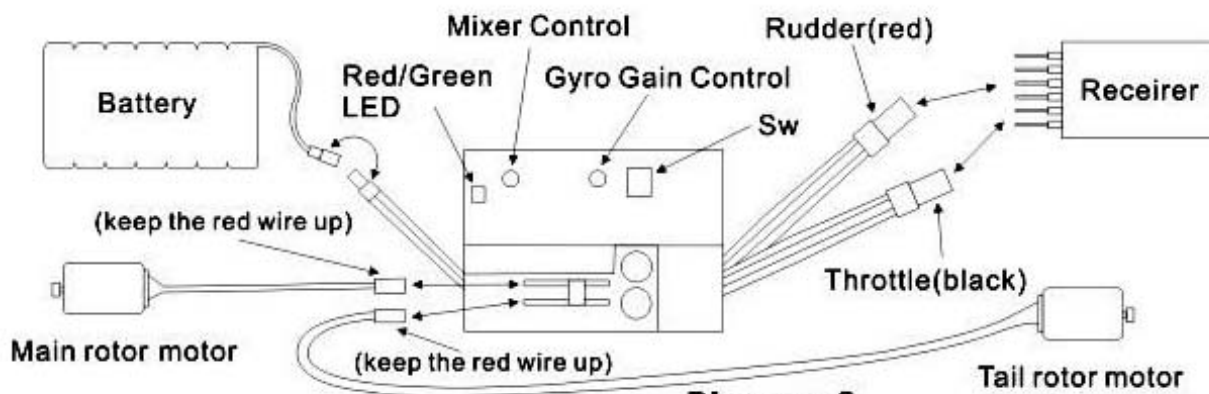


Diagram 3

1. Please make sure your receiver/servo system can normally operate and confirm all the transmission parts can work precisely before your installation.
2. Please refer to the connection diagram 3. And proceed your connection with the battery disconnected. Plug the wires of the main motor and the tail motor, then connect the two signal wires of PHA-01 with the receiver. Attention :the black connector to the throttle control of the receiver and the red one to the rudder control of the receiver.
3. Before plugging the PHA-01 signal wire to receiver, please confirm weather the receiver's socket is compatible. (e.g. Futaba, JR or Sanwa, etc..) If you are using different types of sockets, it may cause a short circuit or even burn-out due to the difference of polarity in the socket.

Allocation of PHA-01

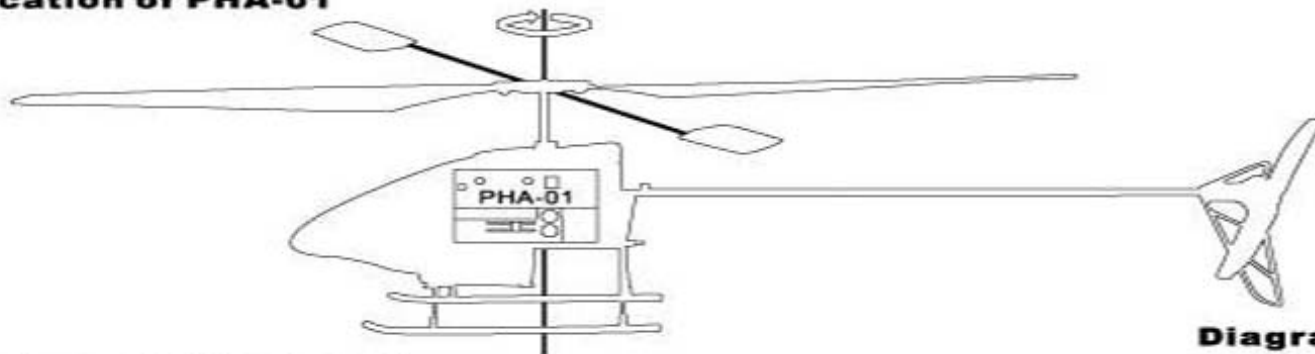


Diagram 4

Tuning and Adjustment

1. When you install PHA-01, receiver and servos into helicopter, please make sure everything is correct before connecting to the battery. PHA-01 has a safety design which can prevent the danger caused by abnormal start. The motor will not be switched "ON" even the battery is plugged. You can only start the power system when the throttle stick is at the lowest position. In normal operation, the model must be absolutely stationary for 5 seconds everytime the system is powered up.

5 seconds after PHA-01 start working, the LED will light in green which means gyro finish the adjustment of neutral position. Then the pre flying adjustment can be carried on. If the green light keeps off, please try to switch the reversing switch and increase/decrease of the throttle in the transmitter and repeat the above procedure.

2. The two main trim pot (as shown in the diagram 1) in the PHA-01 : one is the mixer control trim pot for the main rotor and the tail rotor. When adjusting clockwise, the mixer value will be increased. This will increase the force of the tail rotor, so as to balance the torque of the main rotor.

On the contrary, when adjusting counter-clockwise, the mixer value will be decreased. The tuning is based on actual flying status and individual needs.

Another is the gain control trim pot of the gyro. Turning the pot clockwise will increase the gain of gyro causes the gyro to be more sensitive. Helicopter becomes more stable, but its activity will be decreased. On the contrary, turning the pot counter-clockwise will decrease the gain of gyro. Helicopter becomes less stable but more active. So, the adjustment of gyro gain depends on your requirements and your familiarity of operating helicopter

3. Gyro reversing switch (SW1): It is one of the two dip switches on PHA-01. (SW1) is the gyro reversing switch, (SW2) is not use so far. If you install the PHA-01 as shown in the diagram 4, no adjustment is required. But if you find the gyro is upside-down when the PHA-01 is installed in different type of helicopter, all you have to do is to switch to another position of SW1. You do not have to re-install the PHA-01.
4. Low battery voltage warning: When the voltage drops to around 5.6V, the red warning light will be "ON" which means the battery is close to used up. Once you recognize the LED is in red, you must land the helicopter right away to avoid the crashing.



Grand Wing Servo-Tech Co.,Ltd.
153, Sec.2, Datung Rd.
Shijr City, Taipei 221, Taiwan, R.O.C.
<http://www.gws.com.tw>
email:taipei@gws.com.tw

Grand Wing System U.S.A. Inc.
138 South Brent Circle
City of Industry, CA 91789-3050
TEL:909-594-GWS9 (4979)
FAX:909-594-8051
Business Inquiry:export@gws.com.tw
After Service:service@gws.com.tw