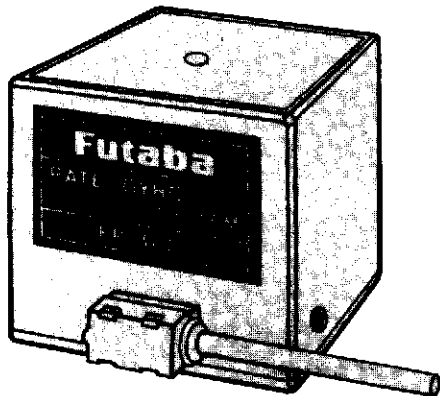


Futaba®

DIGITAL PROPORTIONAL RADIO CONTROL



INSTRUCTION MANUAL

SINGLE AXIS RATE GYRO

FP-G153/G153BB (For J, M, and SG Series)

FP-G133/G133BB (For E, F, G, H, and L Series)



FUTABA CORPORATION
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D60336

The FP-G153/G153BB/G133/G133BB is a single axis rate gyro designed to stabilize aircraft. Like full size aircraft, stabilisation is accomplished by detecting angular acceleration with the rate gyro. Detected motion information is fed to the control amplifier, which then sends a counteraction signal to the appropriate control surface.

FEATURES OF FP-G153 FP-G153BB FP-G133 FP-G133BB

- The FP-G153/G153BB is for Futaba J, M, and SG Series (1520 μ s neutral) digital proportional radio control sets.
- The FP-G133/G133BB is for Futaba E, F, G, H, and L Series digital proportional radio control sets.
- Voltage regulated gyro motor supply maintains constant motor speed and allows consistent gyro performance. The voltage regulator is effective only when used with an external 6V. (five cell Nicad battery).
- Direction of correcting mix can be switched at the control amplifier (internal reverse amp switch).
- Centering of the channel being stabilized can be adjusted by a neutral trimmer built into the control amplifier.

Thank you for buying a Futaba digital proportional radio control set. Please read this manual carefully before using your new set.



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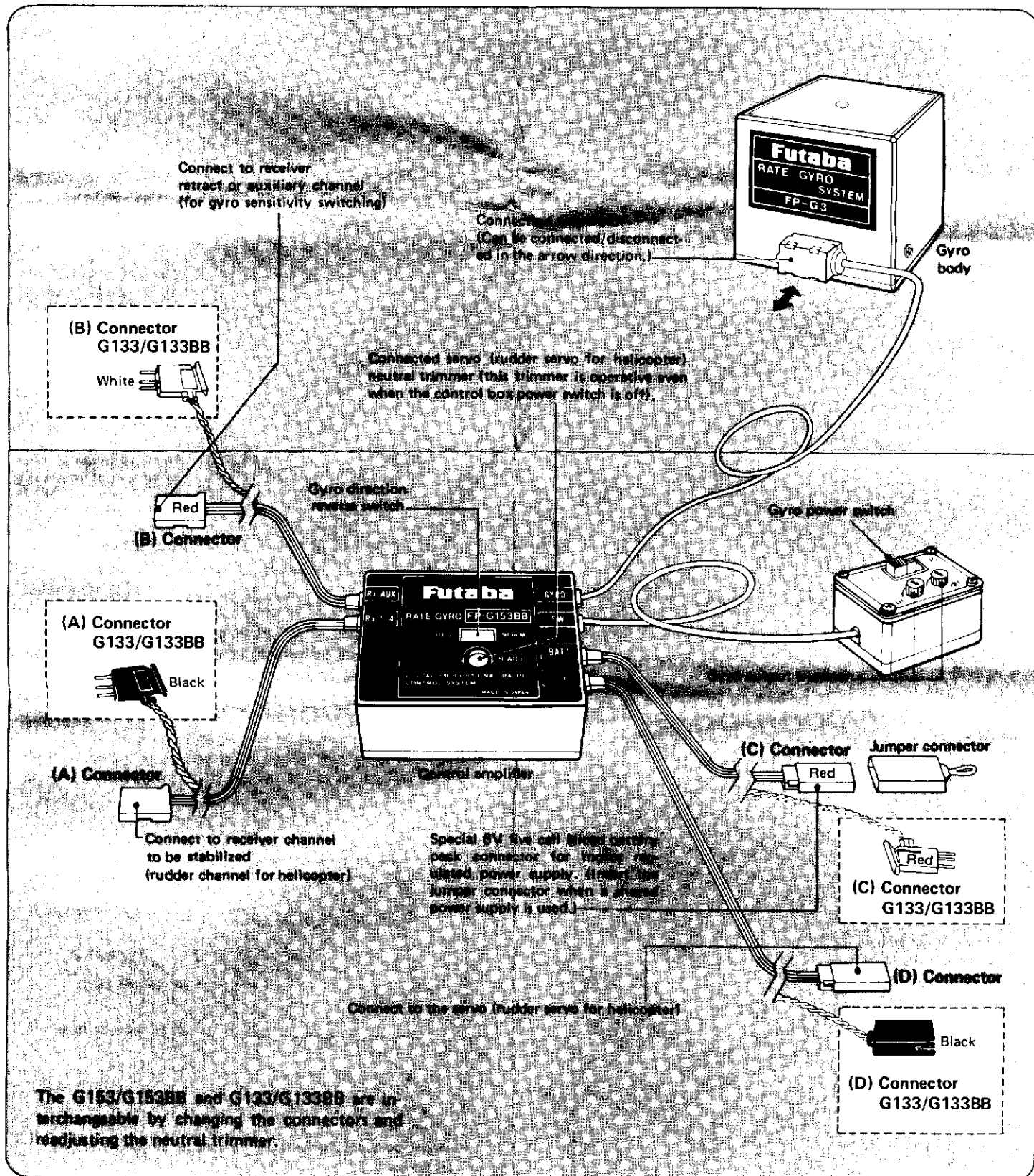
4700-Bayport, Irvine, California 92714, U.S.A.
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- A very sensitive magnetic motion sensor with excellent voltage characteristics, linear sensitivity, high speed response is used. This results in superior neutral characteristics. Such characteristics make it ideal for use with the rudder channel of a model helicopter or in the aileron/elevator channel of a model aircraft.
- Large 2mm diameter gyro motor shaft for long life and strength.
- The highest quality ball bearing is used as the motor bearing. (G153BB/G133BB only)
- The gyro can be bypassed without affecting normal operation by turning the gyro power switch "off".
- Gyro output ("sensitivity") can be switched to one of two preset outputs at the transmitter (use the retract switch if possible, or any avail. channels).

RATEINGS

Power supply voltage	4.8V shared with receiver (6V for external supply)
Current drain	Motor: 100mA, Amplifier: 20mA (at 4.8V)
Dimensions and weight	Gyro body: 1.57 x 1.65 x 1.60 in. (42 x 34 x 39mm) - 2.86 oz (69g)
	Control amplifier: 1.73 x 2.28 x .63 in. (44 x 58 x 16mm) - 1.61 oz. (45g)
	Control box: .94 x 1.34 x .59 in. (24 x 34 x 15mm) - .54 oz. (15g)

CONNECTIONS

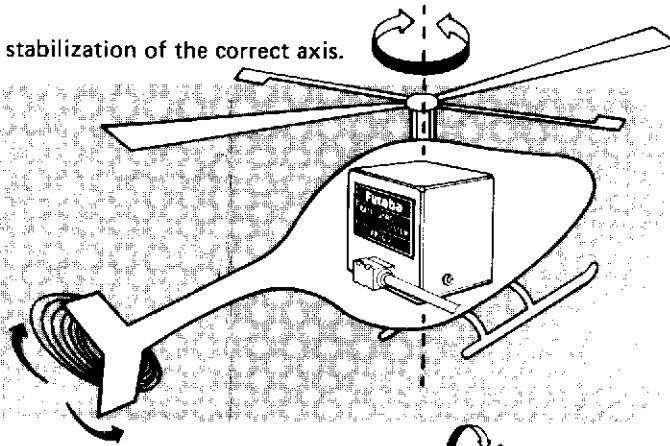


RATE GYRO INSTALLATION

NOTE: Be sure gyro is mounted as shown; for stabilization of the correct axis.

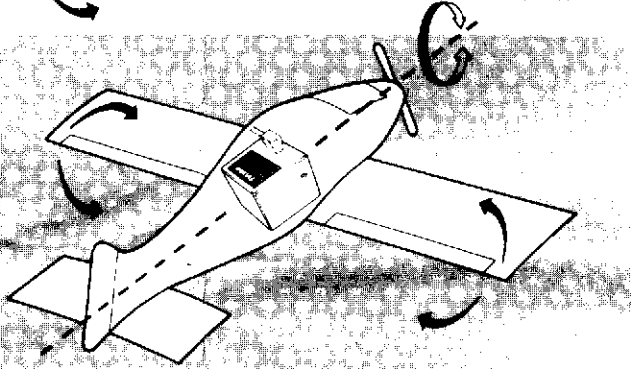
Helicopter - For rudder use

Connect connector (A) to the receiver rudder channel and connector (D) to the rudder servo.



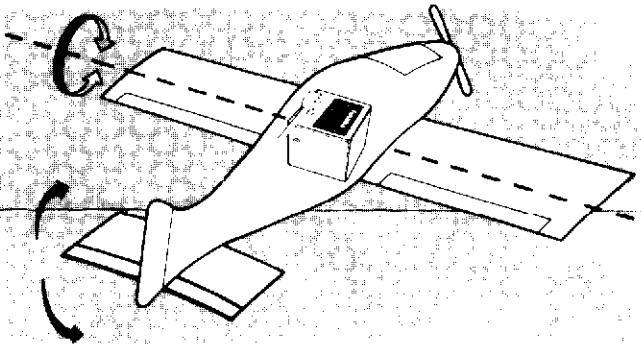
Aircraft - For aileron use

Connect connector (A) to the receiver aileron channel and connector (D) to the aileron servo.



Aircraft - For elevator (pitch shaft) use

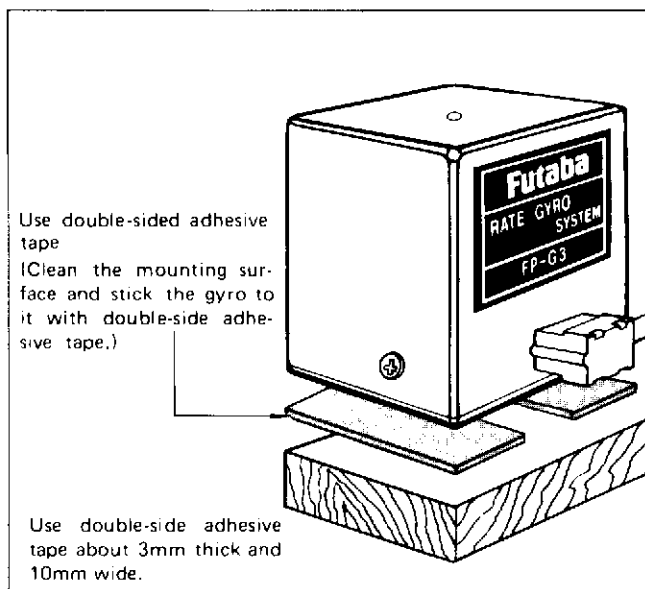
Connect connector (A) to the receiver elevator channel and connector (D) to the elevator servo.



• When the gyro is mounted 180° out of phase, the direction of the correcting mix will be reversed. To correct this situation, switch the internal reverse amp switch to "REV". After mounting the gyro to the fuselage, recheck its direction of operation.

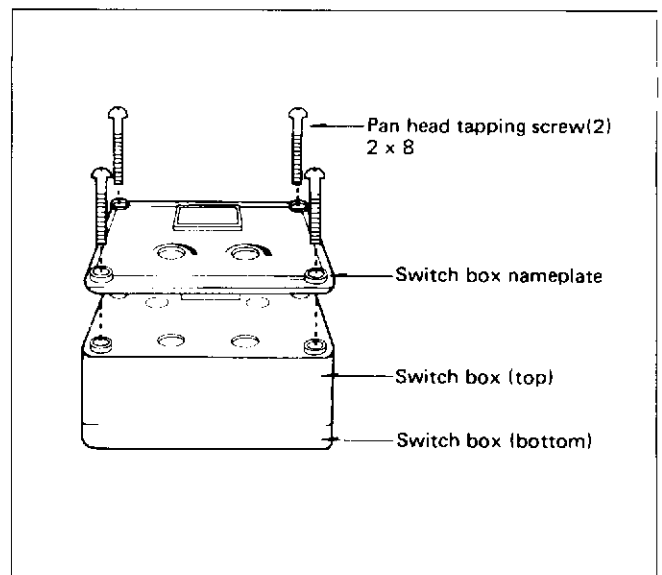
INSTALLING THE GYRO BODY

- The best mounting position is at the center of gravity of the aircraft; however, it may also be installed a short distance away from the center of gravity.
- Install the gyro where there is little engine vibration.
- Attach the gyro to the fuselage with double-side adhesive tape.



INSTALLING THE CONTROL BOX

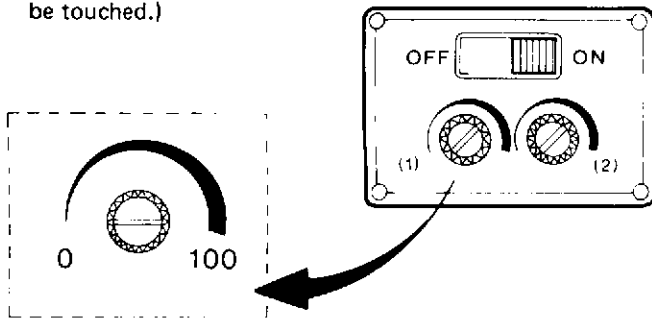
Using the control box nameplate as a template, drill four holes and cut an opening for the slide power switch. Mount the control box on the fuselage, away from engine exhaust and where there is minimal vibration.



• Wrap the control amplifier in sponge, to prevent vibration problems.

OUTPUT ADJUSTMENT

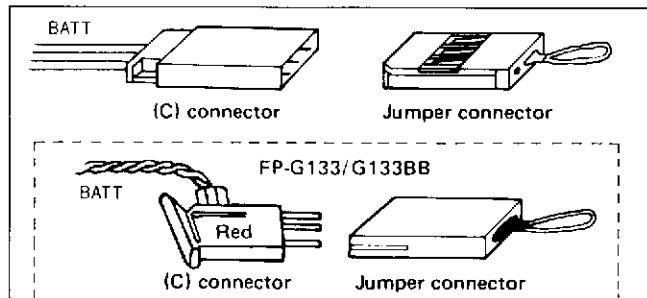
- When using the switchable gyro output sensitivity feature, connect connector (B) to the retract channel if possible. However, a proportional channel can be used. The output sensitivity switching point will then be at the center or neutral area.
- * When the transmitter landing gear switch is pulled forward (or down), the output sensitivity can be adjusted from 0 to 100% with trimmer (1).
- * When the transmitter landing gear switch is pushed back (or up), the output sensitivity can be adjusted from 0 to 100% with trimmer (2). In this case, trimmers (1) and (2) do not interfere with each other, and can be adjusted independently.
- When the output is fixed or there is no spare channel (as with 4 channel set), do not connect connector (B). In this case, adjust the output with control box trimmers (1) and (2). (Insulate the terminals with vinyl tape so they cannot be touched.)



- * When trimmer (1) is 0, the output can be adjusted from 0 to 50% with trimmer (2).
- * When trimmer (1) is 100%, the output can be adjusted from 50 to 100% with trimmer (2).

POWER SUPPLY

- When using the rate gyro with a separate power supply (utilizing the motor voltage regulator), connect the five cell Nicad battery pack (6V) to connector (C). Thereby, maintaining constant motor speed and consistent gyro performance. A four cell Nicad (4.8V) battery pack cannot be connected to connector (C).
- Whenever a four cell Nicad battery pack (4.8V) is used, it must be as a common power supply for the receiver and gyro. Connect the accessory jumper connector to connector (C), when using a 4.8 volt power supply.
- When the receiver and gyro use a common power supply, rudder/servo power consumption and the power consumed by the gyro, increases the total power consumption. This decreases the number of permissible flights. The use of a high capacity (4.8/1,000mA) Nicad battery is recommended. (The Futaba NR-4I (4.8V/1000mA) Nicad battery pack can be purchased separately.)



Connect the following to the (C) connector (control amplifier BATT):

- * Five cell Nicad battery pack (6V) Our optional NR-5PB (6V/450mAH) Nicd battery pack, etc. is recommended.
- * Jumper connector, when the gyro and receiver use a common power supply

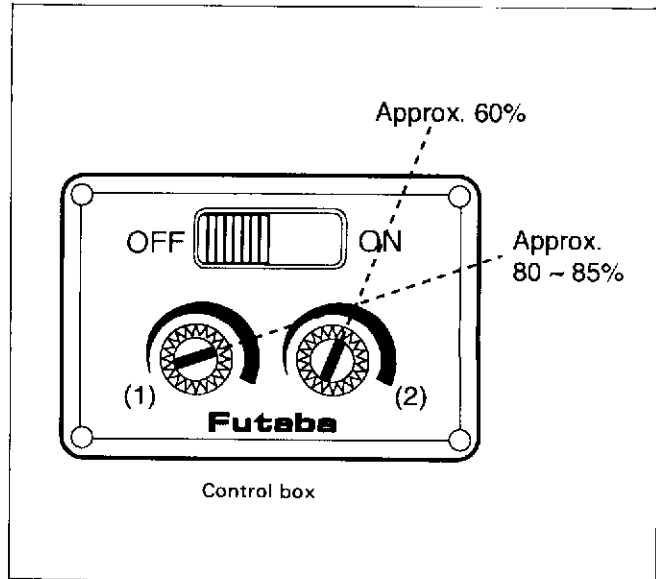
EXAMPLE

Adjustment when installed in a helicopter:

When using the switchable output sensitivity:

Set trimmer (1) to about the 80% of maximum output sensitivity position (100% is full clockwise) as a starting point. Hover with the wind and readjust trimmer (1) so that "tail hunting" does not occur. However, do not reduce output sensitivity to a point where the nose will turn upwind when "lifting off".

Set trimmer (2) to about the 60% position when a large rudder travel is unnecessary, such as 540° stall turns, etc.



PRECAUTIONS

- Do not expose the rate gyro to shock and vibration
- Do not disassemble or modify the rate gyro
When the inside of the gyro must be inspected, remove the three screws on the side of the case and remove the cover. Do not loosen the screws on the bottom of the case. If these screws are loosened, the neutral position may change at sensitivity or polarity switching.
- This gyro is not interchangeable with other gyros or control amps.

When requesting repair after long use, accident, or if any other trouble has occurred, describe the problem in as much detail as possible. This will allow us to isolate the trouble point quickly and reduce the repair time.