

JR REMOTE CONTROL

JR GYRO SYSTEM

YAW RATE DAMPER SYSTEM FOR RC HELICOPTER

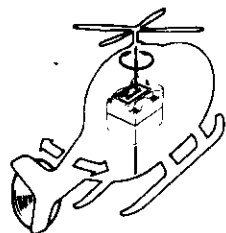
JR GYRO SYSTEM NEJ-130 OPERATION MANUAL

WORDS TO JR GYRO SYSTEM USERS

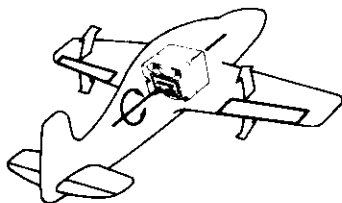
Thank you for your purchase of the JR Gyro System NEJ-130. NEJ-130, developed by a same concept as high performance NEJ-120BB Gyro, is a popular type Gyro for wide use. Single gain adjustment provides easy handling. To enjoy full advantage of the high-performance JR Gyro and to ensure reliable operation, please read this manual carefully before use.

1 WHAT IS A GYRO SYSTEM?

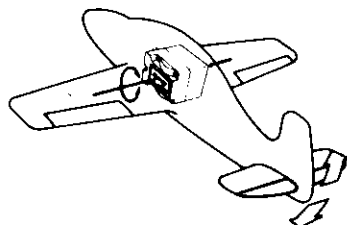
- The JR NEJ-130 is a gyro system known as a rate gyro. Installed on the axis about which stabilization is required, and suppresses variations in the aeroplane's attitude around that axis.
- In the case of a helicopter, the gyro is installed on the rudder (yaw axis) where it works as a yaw damper to reduce the effect of disturbance such as wind and counter-torque force around the yaw axis.
- The NEJ-130 is also suitable for use on a fixed wing aircraft, the most unstable axis being selected for installation. For example, it will act as a roll damper on the aileron (roll axis), a pitch damper on the elevator (pitch axis), or a yaw damper on the rudder (yaw axis).
- In a helicopter, it can be used not only as a yaw damper but also as a roll damper or a pitch damper. The installation method for each axis being illustrated in the figure below.



1 Yaw damper



2 Roll damper



3 Pitch damper

2 FEATURES OF NEJ-130

Power supply	4.8 V (Common power supply for all units)
Current drain	100 mA
Dimensions and Weight	Gyro unit: 33x42x32 mm, 70 g
	Gyro amplifier: 36x52x14 mm, 23 g
Gain adjustment	Single control system

- Provided with two times as wide dynamic range as the conventional gyro systems, the NEJ-120BB Gyro System can control aeroplane's attitude within a wide range of angular velocity.
- An extremely compact and lightweight gyro unit and gyro amplifier are separately mounted in the fuselage to facilitate maintenance.
- The receiver and gyro system are operated from a common power supply to ease maintenance of the battery and eliminate the influence of voltage supply variations.

- The gyro unit and gyro amplifier can be replaced individually. This allows greater flexibility in replacement units and ensures future expandability.
- The extra-compact construction of the Gyro unit makes installation easier allowing. It placed in ideal location in small to large aeroplanes.
- Installation of the gyro amplifier is quite easy as well thanks to its exceptional compactness resetting in the same mounting area as the JR receiver. The inter-connection cables can be neatly arranged by employing plug-in type connectors on one of its sides. Gain is preset by the trimmer on the gyro amplifier.

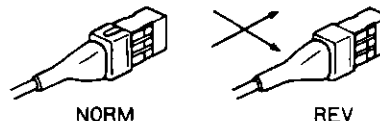
3 NOMENCLATURE AND INTERCONNECTIONS

Gyro Amplifier

- Connect the RX-RUDD cable to channel RUDD of the receiver. (When controlling the aileron or elevator with the gyro, connect the cable to channel AILERON or ELEVATOR as appropriate.)

Gyro Unit

- Connect the cable of the gyro unit to the jack GYRO of the gyro amplifier. If you wish to reverse the output polarity, insert the plug upside down.



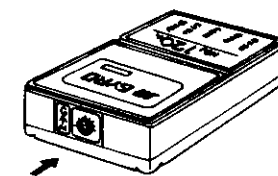
NORM

REV

Rudder Servo

- Connect the cable of the rudder servo to jack RUDD-SV of the gyro amplifier. (When controlling the aileron or elevator with the gyro, connect the aileron servo or elevator servo as the case may be.)

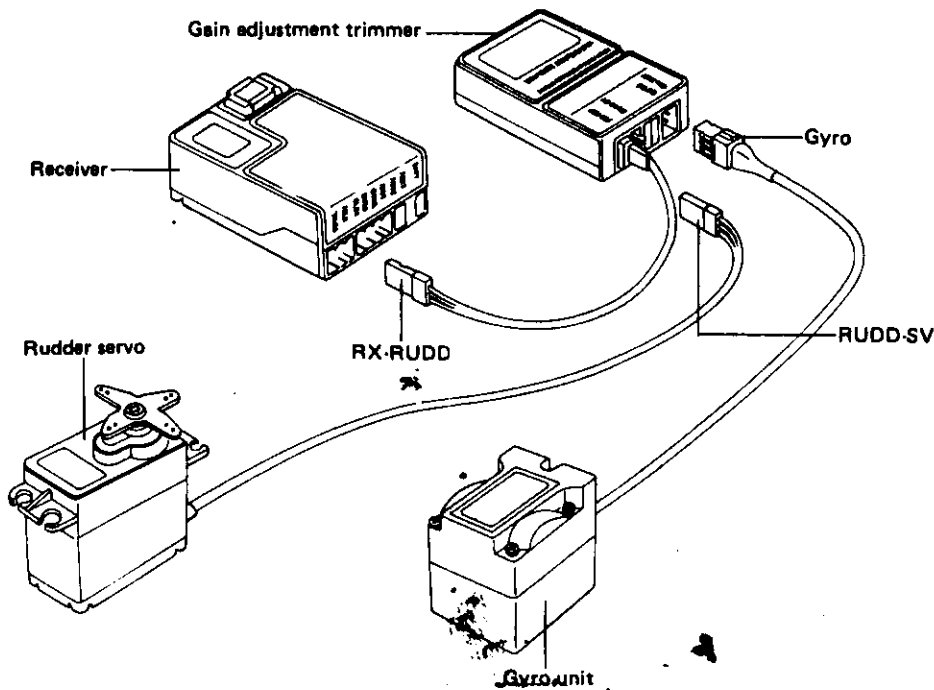
Gain Adjustment



Gain adjustment trimmer

- Gain can be adjusted by the trimmer on the gyro amplifier. Gain is factory-preset to the standard setting. Further adjustment can be done by accessory driver if necessary.

Interconnection of NEJ-130



4 OPERATION

Installation of Gyro Unit

● Install the gyro to be axis to be controlled referring to the illustration. It should be mounted as close as possible to the center of gravity and at a position where vibration is minimal.

The mounting base should be arranged at right angles with the axis and made as sturdy as possible (using plywood thicker than 3 mm or aluminum plate thicker than 2 mm, for example). Fix the mounting base on the inner bottom or side of the fuselage with the double-sided adhesive tape, etc.

Installation of Gyro Amplifier

- Combine the gyro amplifier with the receiver, or wrap the gyro amplifier with sponge and install it near the receiver. If they need to be placed apart from each other due to the limits of space in the aircraft, use the optional lead harness.
- Fix the gyro amplifier on top of the receiver with the double-sided adhesive tape supplied, or wrap the gyro amplifier with

System Check

- Upon completing all the connections, turn on the power switch of the receiver.
- Put the engine control stick at the center position and confirm that the rudder servo control stick is at the neutral position. It doesn't matter if the neutral position of the rudder stick is offset when the gyro is operated. Align the neutral position by using the serration of the servo horn (or the setting of the transmitter's sub-trim function if available).
- Operate the rudder stick and check the servo response in the correct directions.
- Tilt the fuselage in various attitudes and check the direction of output of the gyro unit. Determine the mating direction of the connector of the gyro unit so that the servo output works in the opposite direction to the tilt of the fuselage.

- Gain is factory-preset to a standard setting which will not require further adjustment should the aircraft have normal characteristics.

Note: The NEJ-130 is designed for use at an extremely higher gain range than conventional gyro systems. Be aware that each trimmer will not provide zero gain at its minimum position since they are preset to avoid a too sensitive trimmer adjustment.

5 FLIGHT CONTROL

Provided with a highly accurate linearity and a wide dynamic range, the NEJ-130 can be adapted to a higher limit of hunting and extremely higher gain than the conventional gyro systems. As a result, if used as a yaw damper for a helicopter, there will be cases where the linearity of thrust of the tail rotor becomes critical.

More exactly, behavior of the craft in stationary condition when the stick has been released after making a right turn would differ from that when the stick has been released after making a left turn.

If the helicopter having a clockwise turning main rotor flicks back after stopping a left turn, its tail rotor blades are too long. If it flicks back after a right turn, its tail rotor blades are too short.

Since conventional types of competition helicopters especially tend to have too long tail rotor blades, adjust them to an optimum length for the normal revolving speed of the hovering rotor.

You are recommended to fly aircraft with high sensitivity (increase Gain upto just before hunting position) for easier flight.

6 CAUTIONS

- Do not open the gyro unit. Otherwise, the neutral position will be offset. If the neutral position has been offset (when switching the range of gain or adjusting the gain) after an extended period of use, return your gyro system to your JR Service Department for adjustment.

- The battery is common for all the units. Use a battery with a current capacity of at least 1000 mA.