



FULL DIGITAL PIEZO GYROSCOPE MS-024, MS - 034

Dear customer,

Thank you for choosing this genuine MS Composit product. MS-024 is a highly sophisticated digital device, and it was designed for easy operation and maintenance. Please read the following instructions carefully. Only full understanding of the product features and functions will enable you to get the most out of it.

MS-024 is a fully digital, microprocessor-controlled mini gyro, determined by the small dimensions and weight primarily for use in electric RC helicopters and electric airplane models. MS-034 is intended for larger applications with electric or combustion motors.

MS-024/034 uniquely combines two independent modes of gain setup and control:

1. The traditional "mechanical" gain setup by means of a trim.
2. For multi-channel RC equipment it enables remote gain setup by using one free proportional channel.

MS-024/034 Installation

1. To incorporate the gyro into the RC heli system, connect the gyro cable marked RX RUD into the rudder channel on the receiver. Connect the rudder servo to the gyro output SERVO. If you have one free channel and you would like to use it for gyro sensitivity control, connect the gyro gain control cable marked RX-GAIN to the proper receiver channel. To stabilize any other model function (ailerons on RC plane, for example), the approach is identical. Connect the gyro in between the receiver and the stabilized function's servo.

2. After you set up the gyro, check it's operation. Switch on the transmitter, then the receiver and check if the gyro operates in the proper sense. The proper sense of operation is, when the gyro suppresses (NOT supports) the position deviation.

NOTE - If the gyro operation sense is just reversed, turn the gyro upside down for the sense reversal.

3. For the gyro mount use a flat and clean surface, which must be PARALLEL to the controlled axis. If this condition is not met, the gyro will react on a models movements around an other axis, and will influence the model in a barely predictable way (but not a positive one).

4. After the place for gyro was selected, and the sense of gyro operation was checked, fix the gyro on it's place using the included double-sided adhesive foam.

Attention – neither the gyro itself, nor the gyro cables must come into contact with moveable model parts.

MS-024/034 Gain Setup and Adjustment

The required gyro reaction on an un-wanted position change depends on the controlled model, and the pilot's preferences.

To control the gyro gain, you can use or the trim, or the proportional RC channel.

In the case of using trim to set the gain:

Rotating the trim *clockwise* will *increase* the gain, while turning the trim in the opposite direction (CCW) will decrease the trim.

Attention. For safety reasons, the trim setting is read only once, during the gyro power-on initialisation sequence. This means, if you changed the trim position, to make it active, you must switch the gyro power off and back on again. Such ap-

proach fully eliminates possible problems, caused by trim damaged by vibrations, as the trim value is read when the power is switched on. Once the initialisation is finished, the actual trim value has no influence.

In the case of using the remote gain setup:

The gain is controlled by a proper free proportional control channel – slider, knob. Or - on computerised transmitters - a channel mixed with other functions (flight mode switches e.t.c.).

In this case, the MS-024/034 trim has no influence at all, the channel status is read constantly, so you can easily adjust the gyro gain during flight.

Set the gyro gain initially to 25-30%. If this shows as not sufficient, increase the gain in small steps, until the tail (or any other controlled element) starts to wag. If this point is reached (the tail wags in any flight mode), slightly decrease the gain.

MS-024/034 gyro features another important function – so called Authority Mixing. Authority Mix ensures the gyro does not “counter” to movements, caused by the stick movement even on high gain settings. To achieve this, the Authority Mix automatically decreases the gain proportionally to the stick position. The more the stick deviation, the more the gyro gain is lowered.

Even if the Authority Mixing function is firmly programmed, you can influence how it works by changing the servo travel in the transmitter, or by setting a non-linear (exponential) behaviour of the controlled function. This means, the longer the servo horn, and subsequently the smaller the servo travel way (ATV) in the transmitter, the less the gyro gain decrease caused by the Authority Mix.

Do not forget, that the Authority Mixing and also other gyro functions are influenced by the position of the controlled channel in the moment of the gyro power-on. The gyro with power-on reads the controlled element position, which is further considered as neutral (zero). Remember, that if you use Revo-mix, this will influence the gyro behaviour. If the Revo-mix is set to high values, the gyro sensitivity will be highly influenced by the Authority mixing. Therefore we recommend to power-on the gyro putting the transmitter throttle stick in a position, in which the *highest* gyro gain is required, and adjust the revomix and gain stepwise until the needed setup is reached.

MS-024/034 Operation

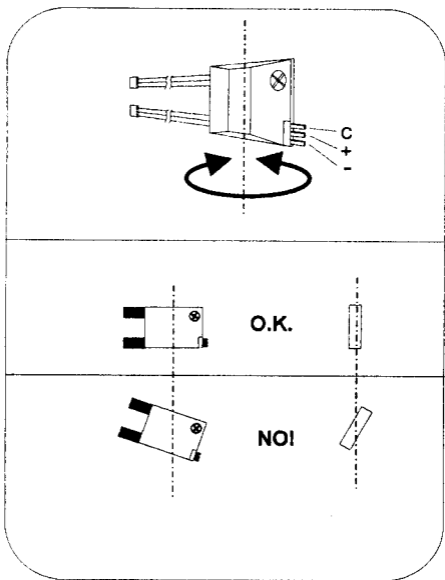
MS-024 Gyro is designed for use in electric RC helicopters and airplanes models. It is NOT designed for use in gas powered models, as the vibrations can damage the gyro.

MS-034 Gyro is designed for use in gas powered models.

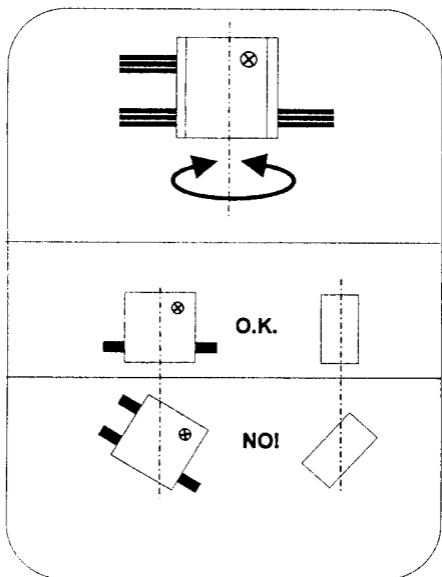
Remember – the MS-024/034 (as any other gyro) is designed to compensate un-willing position deviations around a given axis. It is NOT capable of compensating wrong or inaccurate model setup, wrong setup of revo-mix, or other functions related to the model control.

The gyro must be installed into the model as described above, and special attention must be paid to maximum protection of the gyro against the vibrations. The vibrations will cause the gyro not to be set to the maximum gain possible in the given system, and thus the overall model performance will be lowered. Therefore, take care on proper model setup, and right balancing of rotating elements (main and tail blades etc.).

Do not attach the gyro to other elements besides the receiver and the servo – not only the gyro, but the other equipment may be damaged.



MS-024





The operating voltage must not exceed 6V!

Do not use too much power adjusting the gyro trim!

When switching on the RC equipment always switch the transmitter on, than the receiver!

After the receiver power is on, don't move the transmitter control elements (sticks, trims), nor the model itself for at least 2 sec. The startup read – out of the initial values is done by the microprocessor. Moving the model in this phase will lead to malfunctions until next power – on sequence.

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