

Electric *YES* - Disturbances *NO*

– please read these guidelines carefully in order to fly safely -

There are powerful electrical components in electric model helicopter that can easily create strong RF-noise if no special care is taken. For flying safety and proper operation of a radio control system, it is essential to avoid any disturbances. Disturbances usually result in unwanted movements of the model, in the worst case losing control of the model totally.

MIKADO has investigated the source of disturbances thoroughly. We have found the main source for disturbances to be in most cases the speed controller with its leads. Many hobbyists have falsely concluded the beltdrive to be the source for problems. After intensive testing we found any RF-noise created by beltdrive not to be picked up by the receiver. Nevertheless this holds true only as long as the beltdrive has the appropriate tension (a regular check is recommended).

For flying your electric helicopter without "glitches", please adhere to the following guidelines:

1. Placement of cables

- The cables connecting the motor with the speed controller should be kept as short as possible. Do NOT shorten the motor cables (you won't be able to resolder the connectors properly due to coating), instead cut the speed controller cables if required;
- Also the cable connecting the speed controller with the battery should be kept as short as possible;
- The cable connecting the speed controller with the receiver should be placed at large distance from the motor and from all other electric leads. If you use a KONTRONIK Tango motor you MUST wrap the lead through the KONTRONIK ferrite ring (this is necessary because Tango motors are operated at a high switching frequency). If you use any other motor, the use of the ferrite ring is still highly recommended.

2. Gyro

- Comparison of several gyros has shown that they react differently to the fields generated by the speed controller. Many piezo gyros, in particular the less expensive ones, are quite likely to pick up disturbances. This may result in continuous wiggling or sudden turns of the tail. At MIKADO we have found FUTABA gyros GY240 and GY401 not to show these problems and also work perfectly in all other respects;
- Gyros will be sensitive to electric fields when they are placed in the neighborhood of the speed controller, or when gyro cables are close to the motor or speed controller. It is therefore recommended that you place the gyro on top of the tailboom holder. You may order a special gyro mounting plate from MIKADO (part no. 2486). The GY401 and GY240, due to their smaller size, may also be placed within the RC-frame below the servos;
- As with all cables, place gyro cables away from motor and speed controller;
- Note that if your heli appears shaky this is not necessarily due to disturbances. Another source could be that tail pitch slider can't move freely. Check regularly (every 10 flights).

3. Antenna (really important!)

- The receiver must be placed in the front of the chassis. Drill a small hole in the front of the canopy and lead the antenna through it. Get a wire tube and attach it to the landing-bow on one side. Lead the antenna back through the tube. The front part of the tube will stick out in front of the landing bow at least 10 inches. Of the antenna, when it comes out of the tube, only 2 to 3 inches will stick out. In other words, if any part of the antenna is hanging loose, it hangs in front of the nose.
- The latest versions of our kits contain landing-bow with attachments for antenna in a lower position in order to achieve even greater distance to motor, speed controller and batteries. If you have an older version, use cable ties or order a new set of landing-bows from MIKADO (item no. 2495). The described placement of antenna additionally improves consistent reception in all positions (inverted, 3d).

4. Receiver

- Use up-to-date and first-rate dual conversion receivers. Here at MIKADO we use the Graupner/JR receiver type DS19 (FM/PPM) or SMC19 DS or SMC20 DS (both SPCM).
- On choice of PCM or PPM: In general, we suggest to use PCM receivers. They have optimal range and allow for flight without disturbances when all of the above guidelines have been followed. If you are uncertain whether your heli is disturbance-free, it is recommended that you fly PPM first. This allows you to diagnose any potential disturbances.

5. Batteries

- General rule: The more voltage, the more potential for disturbances. Thus, the more cells you fly, the more preventive care should be taken against disturbances. You should use inline battery packs (soldered or connected), because they have both cables in the back (which avoids unnecessary wiring in the front of the heli).

For further information please check our website at <http://www.mikado-heli.de/>

For special questions email us: info@mikado-heli.de

Thank you for buying electric. We hope sincerely that you will enjoy all the advantages of electric flying

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Ralf Buxnowitz
MIKADO