

PDMCC

Pendle District Model Car Club

www.pdmcc.co.uk

Setup Guide

Stop Radio Glitching

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A "glitch" is any type of interference that reduces (or eliminates) your ability to control your car or truck. This interference can come in many forms and levels of severity; it might be a slight hesitation to respond to a radio input, or a severe glitch that causes your RC car to twitch and jerk like Michael Jackson after 10 cups of coffee. Hunting down the cause of a bad glitch can be frustrating, but don't lose patience; the glitch "hot spots" are well known, and most can be eliminated by methodically checking them all.

RADIO GEAR

1. Check receiver and transmitter voltage. First things first: does the transmitter have enough juice to pump out a strong signal? Always keep fresh batteries in your radio, and if you run nitro, be sure your receiver pack is topped off.

2. Protect the receiver from vibration. When it comes to preventing glitches, vibration is enemy number one. Most people have no idea how much abuse a receiver takes during a race weekend. Cushion your receiver by stuffing foam rubber inside the receiver box. If your receiver is simply stuck to the chassis, apply two or three layers of servo tape to the mounting area to damp vibration.

3. Keep the receiver away from the motor or engine. Receivers are great "listeners," so keep them as far away from electric motors and nitro engines as you can. It's also best to mount the receiver on its side with the antenna side facing upward.

4. Test the receiver crystals. Cracked or damaged crystals immediately cause problems. Crystals are fragile, and if dropped or jarred, they can break or crack inside their metal housings (where you can't see the damage). If you have an extra set of crystals, pop 'em in. If the glitches disappear, you'll know you had a bad set. To avoid damaging them when they are not in use, store your crystals in a crystal case or in a

box padded with foam rubber. For in-vehicle protection, pad the receiver as described previously.

5. Use grommets! Like receivers, servos are also prone to glitching because of vibration-induced damage, particularly in nitro-powered cars. Whenever possible, install the rubber grommets included with your servos to reduce the vibration that is transmitted to the servo case.

6. Route servo wires away from danger and check the plugs. Exposed servo-lead wires and broken connectors are easy to overlook. Over time, the insulation around the servo wires may be rubbed off or torn if the wires rub against the chassis (and if they're in contact with moving parts, they'll be shredded almost instantly). Check the wire harnesses for wear, and carefully inspect the plugs; sometimes, the internal metal sleeves that interface with the receiver's pins may get pushed out of the plug. If this happens, they'll make only intermittent or partial contact with the receiver pins, and this will cause glitching.

7. Inspect the receiver and transmitter antennas. Run your model with the transmitter antenna fully extended and with the receiver antenna wire at the factory length. If the receiver antenna is cut or damaged, have it replaced (the manufacturer should be able to provide this service for a small fee). For best reception, you should also avoid bundling the receiver's antenna wire.

8. Time for a tune-up? If you've ever looked inside a receiver, you've seen tiny dials inside the circuitry. These dials are used by the manufacturer to tune the receiver. Over time, vibration and crash forces can shift a receiver's settings and throw it out.

ENGINE

9. Watch out for clutch wobble. Even though they represent a lot of metal in motion, an engine's internal parts are lubricated by a fuel bath and generally don't contribute to electrical noise. The clutch is a different story; if the clutch bell contacts the flywheel, is spinning on dry bearings, or wobbles on the pilot shaft, it could be a source of interference. Keep all the moving parts properly spaced and lubed to avoid trouble.

Motor

10. Replace worn brushes. As a motor's brushes wear, they generate more electrical "noise." If you can see sparks jumping between the brushes and commutator, what you're seeing represents a cacophony of electrical "noise." Replace the brushes, and if the commutator's surface is grooved, pitted, or blackened, have it trued.

11. Install or replace motor capacitors. Capacitors are included with most motors and all ESCs, and to ensure glitch-free running, you should always use them. Install the capacitors recommended for or supplied with your ESC and/or motor, and replace any that are broken or cracked or seem to be otherwise damaged. When in doubt, solder one 0.1-microfarad capacitor from the positive motor tab to the center tab, another from the negative tab to the center and a third from the positive tab to the negative tab.

ESC

12. It might be the speed control! In a vehicle equipped with an electronic speed control, the onboard battery doesn't just power the motor; it also powers the receiver and steering servo. Since the receiver operates on less than 7.2 volts, the ESC reduces the voltage sent to the receiver. If the voltage-reducing circuitry is damaged or fails, it may cause glitching. Likewise, a glitch that is limited to the throttle channel in an ESC-equipped car is likely to be the result of an ESC or motor problem.

13. Twist the motor wires together. If the ESC and motor check out, but you still have throttle trouble, try twisting the positive and negative leads together. At the very least, keep them close together; if you separate them, electrical noise will radiate between them.

CHASSIS

14. Eliminate metal-on-metal vibration. If your car rattles like a bag of pop cans, you have guaranteed glitches. Have you ever seen your car's servos twitch when you touched a screwdriver to the chassis while its radio gear was switched on? The same type of interference can occur when loose metal parts vibrate on your vehicle. Tighten all screws where metal touches metal, check for worn and loose fittings, and replace rattling parts with new ones. Hot spots to watch out for include clutch-bell/flywheel contact, steel washers and linkages that pass through metal eyelets (these can be insulated with heat-shrink tubing).

15. The environment. Because your radio's frequency is not exclusive to you, there's always a chance that you'll have glitches even when nothing is wrong with your equipment. Are you the only one on your frequency? Are you under fluorescent lighting? Could large metal utility poles, chain-link fences, metal buildings, or other large structures in your driving area "confuse" your car? All of these environmental factors can cause glitching. When in doubt, run your car elsewhere and check again. Sometimes, it's the environment—not the equipment.