



www.KCRacing.net

TECH CORNER

Setting Gear and Axle Clearances

There is a major difference between brushed and brushless installation. In a brushed car the drivetrain can be set tight and so long as you're wiring from the guide brushes is heavy enough it will take a bit of time to burn out the motor.

When dealing with brushless installations the microelectronics in the ESC are designed with very specific heat limitations due to their physical size. The wires from the ESC to the motor (typically 26 gauge) are designed to handle the normal operational load of the motor. The windings in the motor also have been designed to handle low currents found in a proper installation. In a brushless installation, clearance is critical. A tight set drivetrain will require increased power demand, causing higher than normal currents to operate resulting in over limit temperatures. This potentially bubbles the enamel on the motor shorting it out and burning out the ESC.

Axle to bushing alignment is important to reduce friction. Install the bushings into the chassis with the axle. In a properly adjusted installation if you rotate the chassis so that the axle is vertical, the axle will simply fall out.

Feeler gauges are used to provide accurate clearances in all sorts of mechanical devices. However, where do I get a feeler gauge to be used in a slot car? The Brushless Mafia has developed a disposable feeler gauge for setting gear mesh. But is it rolling paper? Yes, rolling paper is an excellent feeler gauge. With a consistent 0.02mm [0.001"] thickness you can fold it to obtain a precise thickness, we prefer 0.08-0.10mm [.003-.004"].



Ok Cheech and Chong how do I set the axle bushing to wheel? Set your spur gear location on the axle. Insert the axle/spur sub-assembly into the bushings. Add your shim or as I prefer to call it the friction reducing shim on the axle shaft between the bushing and wheel. Now take your 'feeler gauge' paper fold it again in half twice giving you 0.08mm [.003"] and insert the paper between the friction shim (or bushing if you don't run a friction shim) and the wheel on the off-gear side. Tighten the wheel.

Now your drivetrain is set properly. It is that simple. Fail to do it correctly and your motor and/or ESC will be like Cheech and Chong's car when the window rolls down ...the smoke will pour out.