

This setup guide assumes you have some sort of 'standard setup' to begin with. One should come with your kit. You can also find standard setups on manufacturers' websites. It also assumes your car is in perfect working order. (Bearings spinning freely, nothing dragging the ground, no binding in the suspension,...)

Tires

Tires are **always** the first element in setting up a car. If you've got the right tires and inserts, you're 99% there.

Caster

Caster is a very sensitive adjustment!
Adding or removing a few degrees of caster can transform the steering balance of a car.

More	More caster aids stability, especially at high speeds. More caster generally suits large, open, high-speed tracks.
Less	Less caster increases steering drastically. Steering feels much more direct, the car turns tighter and faster. Small amounts of caster are suitable for tight tracks.

Toe

Rear Toe-in	This is one of the most sensitive adjustments! One degree goes a long way. Stabilizes the car greatly. It makes the rear end 'stick'. The more toe-in you use, the more the rear of the car sticks. This is especially apparent going into and coming out of turns. But more toe-in makes the difference between sticking and breaking loose bigger. Large amounts of toe-in (2.5 ... 3 degrees) scrub off a little speed in the straights.
Rear Toe-out	Rear toe-out is never used. It makes the rear of the car very, very unstable.
Front Toe-in	Stabilizes the car in the straights, and coming out of turns. It smoothes out the steering response, making the car easy to drive. It can make the car turn a little more in the middle and exit parts of a turn.

Front Toe-out	Increases turn-in steering a lot. But can make the car wandery on the straights. Never use more than 2 degrees of front toe-out!
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Camber

Camber is best set so the tires' contact patch is as big as possible at all times. So with a stiff suspension and firm tires you'll need less camber than with a soft suspension or tires with big, flexible sidewalls. If the tires wear evenly across their contact patches, camber is about right.

Pinion/Spur

Smaller Gear Ratio (bigger number means smaller ratio)	More punch and acceleration. More runtime. Lower top speed.
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Bigger Gear Ratio (smaller number means bigger ratio)	Less punch, but more top speed. Less runtime.
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Smaller Pinion Gear	Smaller gear ratio
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Bigger pinion Gear	Bigger gear ratio
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Smaller Spur Gear	Bigger gear ratio
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Bigger Spur Gear	Smaller gear ratio
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Overall Ratio	Overall Ratio = (Spur/Pinion)*Internal Gearbox Ratio
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Rollout (mm/rev)	Rollout = (Pi*Tire Diameter)/Overall Ratio
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Motors

More Turns (e.g. 13x2 or 14x3)	More runtime. Less power, and smoother response. Easy to drive.
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Less Turns (e.g. 9x2 or 8x3)	Less runtime. More power. Harder to drive.
More Winds (e.g. 11x4 or 12x5)	Slightly more runtime. Feels very smooth, has a nice powerband. Very useful on slippery tracks. More top-end.
Less Winds (e.g. 12x1 or 11x2)	Slightly less runtime. Feels very punchy, but has less top-end.

More Timing Advance (e.g. 6 to 8mm)	Less runtime. More punch, and more top speed. More wear on the comm and brushes. Motor gets hotter.
Less Timing Advance (e.g. 4 to 6mm)	More runtime. Easy on the comm and the brushes. Less punch and top speed.

Stiffer Brush Springs	More power at low revs. Slightly lower top speed because of increased friction. Better for high currents and bumpy tracks.
Softer Brush Springs	More power at high revs, but less punchy. Higher top speed. Good for low current draw.

TIP: You get slightly more punch and a slightly more efficient motor if you use a slightly stiffer brush spring on the + side.
The easiest way to do this is to hold one leg of the spring with pliers and gently bend the leg 5 to 10 degrees more.

Springs

Stiffer	Stiffer springs make the car feel more responsive, more direct. The car reacts faster to driver input Stiff springs are suited for tight, high-traction tracks, which aren't too bumpy. Usually, when you stiffen the whole car, you lose a small amount of steering.
Softer	Softer springs are better for bumpy and very large and open tracks. They can also make the car feel as if it has a little more traction in low-grip conditions. Springs that are too soft make the car feel sluggish and slow.

Stiffer Front	The car has less front traction, and less steering. It's harder to get the car to turn, the turn radius is bigger and the car has a lot less steering exiting corners. On very high-grip tracks, if the track itself feels tacky or sticky, very stiff springs are the way to go.
Softer Front	The car has more steering, especially in the middle part and the exit of the corner. Front springs that are too soft can make the car hook and spin.
Stiffer Rear	The car has more steering, in the middle and exit of the turn. This is especially apparent in long, high-speed corners. But rear traction is reduced.
Softer Rear	The car has generally more rear traction, in turns as well as through bumpy sections and while accelerating.

Damping

Heavier	Thicker oil (heavier damping) makes the car more stable, and makes it handle moore smoothly. If damping is too heavy, traction could be lost in bumpy sections. The car will also change direction slower.
Softer	Soft damping makes the car react quicker.
Damping should always be adapted to the spring ratio; the suspension should never feel too 'springy' or too slow.	
Heavier Front or Softer Rear	The turn radius is wider, but smoother. The car doesn't 'hook' suddenly. The car is easier to drive, and high-speed steering feels very nice. Easy to drive.
Softer Front or Heavier Rear	The steering reacts quicker. More and better low-speed steering.

Weight Distribution / Battery Location

More towards the front	More front-end grip, all the time. But the front also feels more inert. If you overdo it, it feels like you're riding on the front tires, and the rear doesn't do anything but follow the front. Rear traction is reduced.
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More towards the rear	More rear-end grip, so the rear feels more planted. But if the rear does swing out, it's usually very sudden and more unpredictable.
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One-way

Without one-way, or tighter setting	<p>You can brake much later and harder.</p> <p>If you brake hard enough to lock the front wheels up, or almost lock them up, the front end slides. (You lose steering.)</p> <p>The car could be slower in tight turns if traction is decent.</p> <p>Much easier to drive on slippery tracks.</p>
With One-way, or looser setting	<p>With a one-way, the car can take corners faster. It rolls through them more easily and freely.</p> <p>Braking can be tricky, and it can result in the rear end sliding out.</p> <p>A one-way *diff* feels very nice coming out of turns: it's very stable while accelerating, and it gives more on-power steering.</p>

Weight Distribution / Battery Location

More towards the front	<p>More front-end grip, all the time. But the front also feels more inert.</p> <p>If you overdo it, it feels like you're riding on the front tires, and the rear doesn't do anything but follow the front.</p> <p>Rear traction is reduced.</p>
More towards the rear	More rear-end grip, so the rear feels more planted. But if the rear does swing out, it's usually very sudden and more unpredictable.

Upper Shock Mounting Location

More Inclined	<p>Has a more progressive, smoother feel.</p> <p>More lateral grip.</p> <p>Having all shocks inclined makes the car very easy to drive, and it feels like the car has more grip, but it's not always fast...</p>
Less Inclined (More Vertical)	<p>More direct feel.</p> <p>Less lateral grip. (side-bite)</p>

Front more inclined than rear	Steering feels very smooth. A little more mid-corner steering. Mounting the rear shocks very much upright can result in the rear end feeling unpredictable. It can also make the rear end jitter in turns.
Rear more inclined than front	Feels aggressive turning in, but for most of the time the car has a little less steering. The car has a lot of side traction in the rear, and the turn radius isn't very tight.

Anti-Roll bar

Anti-roll bars are best used on tracks where traction is consistent.
Adding an anti-roll bar, or stiffening it, reduces traction at that end of the car. So it feels like the opposite end has more grip. If the track is smooth enough, it also makes the grip level feel a little more consistent. Anti-roll bars reduce body roll in turns, so they make the car feel more direct, and make it change direction quicker.

Stiffer Front	An anti-roll bar at the front of the car reduces low-speed steering. The turning radius will be larger, but smoother and very consistent. It reduces 'hooking' by preventing front end roll. The car will have more rear traction in turns.
Stiffer Rear	Adding an anti-roll bar to the rear of the car gives more steering. the car steers tighter, also at low speeds. On a very smooth track, it can make sliding easier.

Anti-Squat

More	More anti-squat generally makes the rear of the car more sensitive to throttle input. The car has more steering while braking, and also a little more powering out of corners.
Less	Less anti-squat gives more side-bite, on-power and while braking. It feels easier to drive in low-grip situations.

Note that anti-squat only works when you're accelerating or braking, it does absolutely nothing when you're coasting through turns.
The harder you brake or accelerate, the bigger the effect of anti-squat is.

Roll Center / Camber links

Long Link	<p>A long link gives a lot of body roll in turns. It feels as is the body is willing to keep on rolling, until in the end, the springs prevent it from rolling any further. The car has more grip in corners, especially the middle part. But: if there already is a lot of traction, long camber links can slow the car down in turns.</p>
Short Link	<p>A short link makes that the body doesn't roll as far, its tendency to roll drops off as it rolls. It feels as is the car generates a little less grip.</p>
More Parallel Link (More Parallel to lower arm)	<p>A parallel link gives a little more roll than an angled one. It feels very smooth, and consistent as the body rolls in turns.</p>
Angled Link (Distance between arm and link is smaller on the inside)	<p>An angled link makes it feel as if the car has a tendency to center itself (level, no roll), other than through the springs or anti-roll bar. It gives a little more initial grip, steering into corners. It makes it very easy to 'throw' the car. The body rolls a little less than with parallel links. It's possible to use softer settings for damping and spring rate than with parallel links, without destabilising the car.</p>

Beware that you should always keep an eye on the balance of your car; large differences in roll center front vs. rear will make the car feel less consistent and less confidence-inspiring.

Longer Front	<p>The front rolls and dives more in turns. Lots of steering in mid-corner. Could make the car hook.</p>
Shorter Front	<p>The front feels very stable. A little more turn-in, but less steering in mid-corner.</p>
Longer Rear	<p>More rear traction in turns, and coming out of them. Rear end slide is very progressive, not unpredictable at all. Make sure that there's enough rear camber though, or you could lose rear traction in turns.</p>
Shorter Rear	<p>The rear feels very stable. It breaks out later and more suddenly, but if it does, the slide is more controllable. It makes the front dive a little more, which results in more steering, especially when braking.</p>

More Angled Front	Turn-in is very aggressive. The front feels as if it wants to roll less than the rear.
More Angled Rear	The rear end is rock-solid while turning in. It feels very confident.

Internal Travel Limiters / Droop / Downtravel

Less Droop (more internal limiters)	The car changes direction faster, and corners flatter. It feels generally more responsive and more direct. Adding a lot of travel limiters is only advisable on smooth, high-traction tracks. Reducing droop is the most effective way to stop your car from traction rolling on high grip tracks, you can use as little as 2 or 3 mm.
More Droop (less internal limiters)	Less internal shock spacers give better handling on bumpy tracks, and more and more consistent traction on difficult tracks.
Less droop in front, more at the rear	The car changes direction faster. It turns in very well, but it could lose front traction halfway through the turn.
More droop in front, less at the rear	Makes the car brake better. Rear traction feels consistent.

Ride Height

Higher	The car feels better in bumpy sections. It can feel tippy, or even flip over in high-grip conditions.
Lower	The car feels more direct, and it can potentially corner a bit faster. It's also harder to flip the car over.
Lowering one end of the car, or putting the other end higher up, gives a little more grip at the lowest end, but try to avoid big differences in ride height between the front and the rear.	

Kickup / Anti-dive

The assumption is made that if kickup is changed, caster stays the same. (This usually requires different caster blocks.)

More Kickup - Less anti-dive	Much better through bumps. More forgiving to drive.
Less Kickup - More anti-dive	More turn-in steering. The car dives less while braking, and the front lifts less while accelerating. Maybe a little more braking traction, and a little more on-power steering too.

Wheelbase

Shorter	A short wheelbase makes the car feel very nimble, and good in tight turns. This is a good idea for very small and tight tracks.
Longer	The car becomes a lot more stable, and better in wide, high-speed turns. This is good on wide-open tracks.

Shock Pistons

The assumption is made that if pistons are changed, the viscosity of the oil is also adapted, to give the same static feel. (Same low-speed damping)

Smaller Holes	Smaller holes mean more 'pack'. Pack means the damping gets very stiff, or almost locks up, over sharp bumps. Small holes are good for smooth tracks.
Bigger Holes	Bigger holes mean less pack. The point at which the damping gets stiff (where the shock 'packs up') occurs a lot later, at higher shock shaft speeds. Big holes are very good for bumpy tracks. The car is more stable and has more traction in the bumpy sections. It won't be thrown up over sharp bumps, the suspension will soak them up a lot better.

Bump Steer

Bump steer is generally undesirable. If the angle of the wheels does change as the suspension is compressed, the wheels should move outward. (steering less)
More bump steer can make a car have less steering, and be a little bit more stable in bumps.