:: Tuning Tips

Tips for Beginners:

Before making any changes to the standard setup, make sure you can get around the track without crashing. Changes to your car will not be beneficial if you can't stay on the track. Your goal is consistent laps.

Once you can get around the track consistently, start tuning your car. Make only ONE adjustment at a time, testing it before making another change. If the result of your adjustment is a faster lap, mark the change on the included setup sheet (make additional copies of the sheet before writing on it). If your adjustment results in a slower lap, revert back to the previous setup and try another change. When you are satisfied with your car, fill in the setup sheet thoroughly and file it away. Use this as a guide for future track days or conditions.

Ride Height:

The standard starting point for ride height is 5.0mm (keep in mind that your local track may have minimum ride height requirements). You can slightly raise the rear relative to the front to give the car more steering. Raise the car slightly for tracks with large bumps.

Battery Placement:

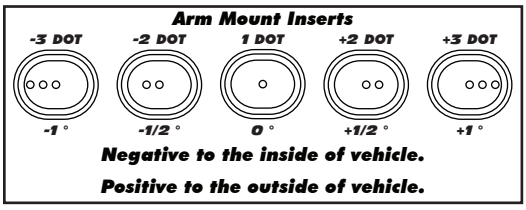
For most cases, run the battery in the standard forward position. Typically this will be the most stable and easiest to drive. Try moving the battery back if you encounter a low traction surface by switching LiPo braces front to back.

Wheelbase:

Lengthening the front will reduce steering, shortening the front will increase steering. Shortening the rear will increase rear grip, lengthening the rear will decrease rear traction.

Rear Toe-In:

Standard rear toe-in angle for inner hinge pin when using same insert front and rear is 3°. Standard insert used is 1 dot. Rear toe-in can be adjusted by 0.5° increments at the inner hinge pin with supplied arm mount inserts (see chart to right).

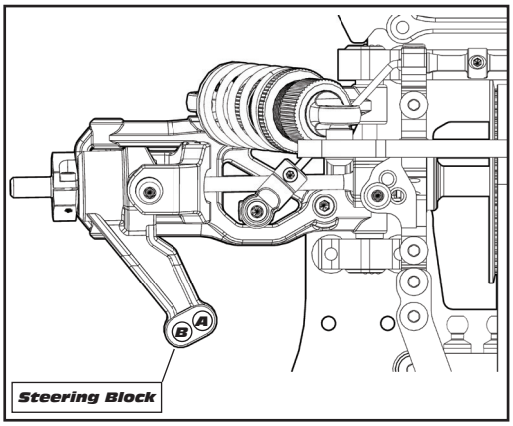


Ackermann:

Ackermann refers to the relative angle difference between the front wheels as they are turned to steer the car. The outside wheel will turn less than the inside wheel in most conditions. Settings with more Ackermann will have a bigger difference in wheel angle, causing the outside wheel to turn less. Likewise, settings with less Ackermann will cause the outside wheel to turn more.

Increasing the Ackermann will smooth out the steering and is used most often on high traction surfaces such as carpet. This is a result of the reduced outside wheel angle. Settings with reduced Ackermann will help to increase corner entry steering, and are typically used when running a spool in the front.

The chart to the right lists the different Ackermann options.



Steering Block Position	Steering Rack Shims	
B	2mm	Less Ackermann
B	1mm	STD
B	0mm	More Ackermann
A	2mm	
A	1mm	
A	0mm	

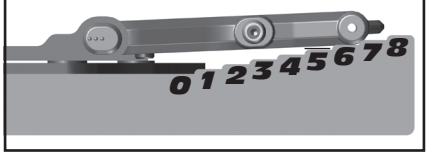
Droop:

The standard settings of 6mm front and 5mm rear will work best in most cases. Droop is measured just underneath the outer hinge pin as shown in the photos to the right.

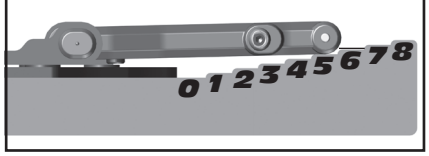
On bumpy or low grip surfaces, increase the droop (going to a lower number on the droop gauge), this will help increase traction and consistency.

Droop adjustments of 0.5mm to 1mm can be very effective on the track!

Front Droop Setting: 6mm



Rear Droop Setting: 5mm



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Anti-Roll Bar:

Anti-roll bars are only effective during roll (when the chassis leans from side to side when cornering). Because of this they isolate a change in the suspensions spring rate in the corners only, and can be a very useful tuning option.

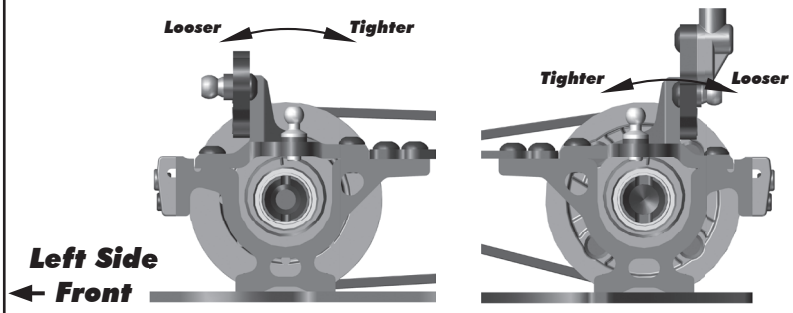
Anti-roll bars stiffen the spring rate of the suspension during roll movements when cornering. The larger the roll bar wire, the stiffer the spring rate will be in roll. The chart on the right shows the available anti-roll bar sizes (as well as their corresponding colors) from the softest on the top, to the stiffest on the bottom.

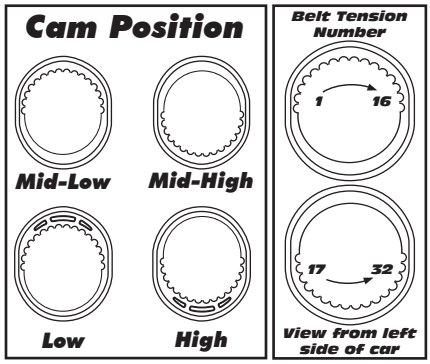
Anti Roll Bar Color/Size Chart	
Green	1.1mm
White	1.2mm
Gray	1.3mm
Blue	1.4mm
Yellow	1.5mm

The standard setup with a blue front anti-roll bar (1.4mm) and a white rear anti-roll bar (1.2mm), is a balanced starting point. Changing the size of the front or rear anti-roll bars can help to make the chassis more consistent through the corner. Decreasing the size of the front anti-roll bars will help to increase mid-corner steering, but will tend to be less stable in sweepers. This is a typical setup for smaller tracks with tighter turns. Increasing the size of the front anti-roll bars will give more stability in the sweepers, and is better for larger tracks with high speed corners. Increasing the size of the rear ant-roll bars will help add stability into and through the corner in high traction conditions, but can make the car inconsistent in low traction, or bumpy, surfaces.

Belt Tension:

When altering the differential height, you will need to adjust the tension of the belt. The following chart shows suggested starting positions.





Front	Height	Pos.
	High	31
	Mid-High	28
	Mid	8
	Low	5

Rear	Height	Pos.
	High	18
	Mid-High	20
	Mid	7
	Low	9

Note! Charts show left side cam positions from the left side of the car. Match right side cam position to left side cam position.

Motor Gearing:

The gear charts on the following page show final drive ratio numbers for the TC7. Refer to motor manufacturer's suggested gear ratio for starting point. You may need to adjust the gearing according to your track size.

The following formula's can also be helpful in determining final drive ratios and pinion size.

TC7 Internal Ratio = 2.0

$$\text{Final Drive Ratio} = \frac{(\#\text{ of Teeth Spur}) \times (\text{Internal Ratio})}{\#\text{ of Teeth on Pinion}}$$

$$\#\text{ of Teeth on Pinion} = \frac{(\#\text{ of Teeth on Spur}) \times (\text{Internal Ratio})}{\text{Final Drive Ratio}}$$