

RACEDEPARTMENT

RACINGCOMMUNITY



Version 1.0

Document info

In this RaceDepartment Setup-Guide I will share some of my setup knowledge which can be used for Race 07. I hope this will help some drivers with improving lap times.

Other die-hards can ignore my tips of course.

Input for the topics is gathered from own knowledge, the GTR Engineers handbook, Advanced Formula 1 setup guide, GTR2 Car and Setup guide, Advanced setup matrix, and the make your setup in 21 steps sheet.

Setups, a step-by-step approach

Most people develop a setup step-by-step. Don't ever change too much settings at once, because one setting may affects the other.

For me, I make my setups a bit like it is described in the 'Setup your car in 21 steps guide'.

First of all, the easiest thing;

- Tires (Slicks or Wets)
- Remove some fuel. While I make a setup I left fuel for about 6-10 laps in.
- Change your gear ratio; especially the 6th gear is important.

After this, practice a lot. Try to do 3-5 continues laps within 0.5 second of each other. If you cannot do this, you are not familiar with the track already and need to practice more. It is impossible to make a good setup while you cannot compare it with your best time and you do not know what to change.

After this it's time for the more advanced settings;

- Camber
- Tire pressure
- Brake Bias
- Steering Lock
- Differential
- Wing
- Gear box (again because you may adjusted your Wing which affects top speed)
- Caster
- Toe In
- Ride Height
- Camber (again because Caster/ Toe In can affect your camber)
- Tire Pressure (also again because many settings affect this)
- Anti Roll Bar
- Camber and Tire Pressure (again after Anti Roll Bar)
- Springs
- Ride Height (again after altering the springs)
- Camber and Tire Pressure (pfff, again)
- Bump / Rebound
- Ride Height (again after Bump / Rebound)
- Camber / Tire Pressure (finally)

Again, try to alter only one setting in small steps at a time, because one setting affects others. Also when you are ready with one step, save your setup if you improved your lap time.

(The list above is mostly copy/paste from the 21 steps guide.)

Tire Compound

In Race you have almost no options for Tire Compound. Slick Compound for normal dry races and Full Wet for 100% wet races. It of course depends on your driving style when to use Slick vs Wet tires. Somewhere at 10-100% rain is a point where you need to change tires. This is personally for every driver.



Brake Pressure

The Brake Pressure is used to adjust the amount of pressure which is translated from your input (brake pedal) to the actually brakes. On some tracks you have less precise braking movement. Pressing the pedal slightly will lock up the wheels. On these tracks it is good to lower the brake

pressure to about 90-95%. You have to press the pedal more for the same amount of pressure, resulting in more precise braking.

Don't make a rule of always lowering the brake pressure and try your lap times with and without it.

In wet races, you maybe want to lower the brake pressure to avoid constant lockups. Think about 50% pressure.



Fuel Amount

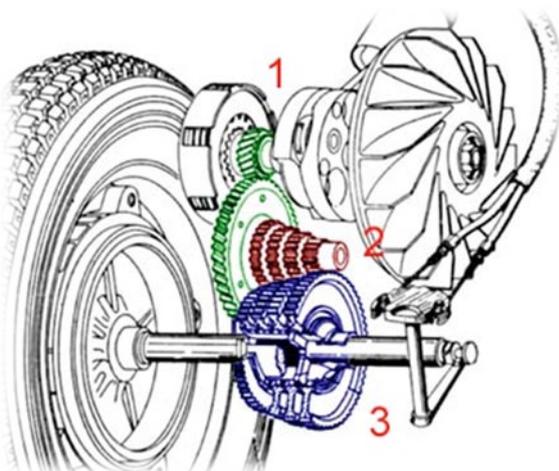
The amount of fuel greatly affects car weight, right height, stability and speed of the car.

Your setup will behave differently with low fuel or with a full fuel tank. In qualify; it is good to change the amount of fuel to 3 or 4 laps. Tires are warmed up in about 2-3 laps. With 4 laps of fuel you can do 2, mostly 3 hot laps.

It is a good rule for race setups to set the total number of laps +2. If the fuel tank is almost empty, the car will stutter and if you spin or go off the track you use extra, not calculated fuel. With fuel for 2 extra laps, you always have enough fuel for off-road driving.



Gears



Gears are the most basic setup option to change.

Most people set the 1st gear for the slowest corner of a track, and the highest gear (5th or 6th) to reach the rev limits in the longest straight. The 2nd to 4th/5th gear can be evenly spaced out between the 1st and highest gear.

On some tracks it can be better to shorten the lower gears for tight corners, and lengthen the higher gears for the straights.

When driving, you have different styles of gear shifting. In some corners it is best to short-shift to avoid under steer/over steer. Short-shift means, you shift gear earlier before the normal shift-point.

Normal shift should be when the engine has the highest BHP. It makes no sense to hold gearing when the rpm is above the maximal BHP. For example, the BMW 320si has 275bhp@8300rpm. The best thing is to shift around 8300rpm. Most engines will lose power right above the maximal rpm.

Some guys are only shifting when the rev limits is reached. This is pointless, shift earlier to maintain your acceleration.

Keep practicing

Camber

Camber isn't that difficult to understand.

Camber means the angle of the wheels related to the tarmac.

Most times you will use negative camber. With negative camber the top of the wheels tilt towards the chassis. This results in better grip through the corners.

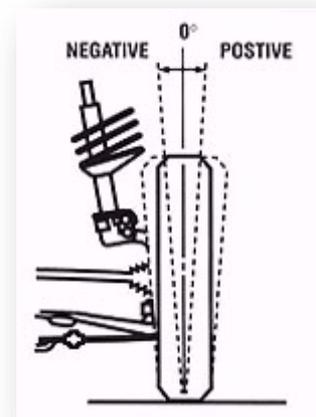
Positive camber gives stability in straight lines and less grip in the corners. This is mostly used for off-road racing.

For race-setups, your camber can be adjusted by watching the tire temperature. Tire temperatures have 3 read-outs per wheel; Inner-Center-Outer.

Normally, the Inner temperature should be about 5-7 degrees Celsius hotter than the outer temperature on the front and slightly less at the rear tires.

If you set the camber correctly, your cornering will improve much.

For qualify-setups when you only have to drive 2-4 laps, the front camber can be increased to give more grip in the corners. The tires won't last many laps, but you are only qualifying; who cares.



Good luck with Cambers...



Tire Pressure

Tire pressure has great effect on grip. In my experience, good tire pressure/temperature means a lot better lap time. I am talking about 1-2 seconds in your lap times.

Tire pressure has influence on car control and also tire wear. A tire has an amount of pressure at which it has the most grip. Decreasing or increasing pressure from this point means less grip. It is best when the center tire temperature is the average of the inner + outer temperature under ideal operating temperature (for GT cars 85-95 Celsius / I think for WTCC it will be pretty much the same). To check the temperature, press escape after a few laps and enter the car setup. The temperature can be read out, three temps for each tire.

It takes usual 2-3 laps before you reach the optimal temperature.

When setting the tire pressure, it is good when you turn symmetrical setup off. You can now adjust the tire pressure for each tire. Most tracks demand different tire pressure for each tire!

As said before, tire pressure also has influence on car control. The higher the pressure, the stiffer the car will be. A stiffer car means better/faster response from your drivers input.

Play with tire pressure and watch your lap times improve. Most people forget this, so take advantage of it.

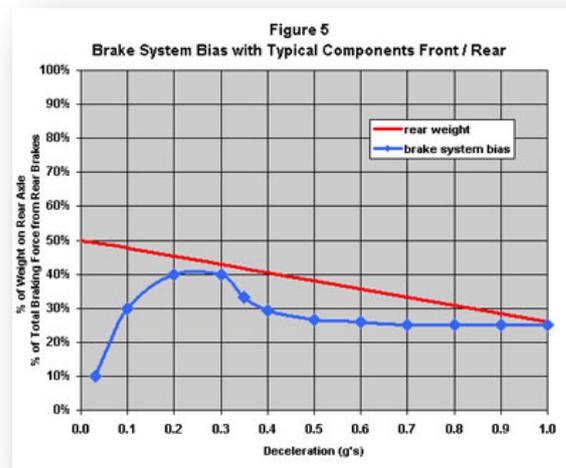
Brake Bias

Brake Bias is easy to understand. Bias to the front means, the front wheels will lock first while braking.

Bias to the rear will be no surprise

It is best if you can balance your bias on the entire track. Most people will adjust one bias for the entire track which will be a compromise for some brake zones.

The profi's will adjust the brake bias constantly while driving. In simulation games I don't think there are many drivers which will actually do this during a race. In the real world you saw Michael Schumacher adjusting his Brake bias while driving. During Qualify and Race.



To set the bias in balance is easy. My experience is to constantly set the bias more to the rear until my rear end of the car brake away when braking into a corner. When this happens just make 2 clicks to the front and you're there. Braking bias is very personally. Some drivers want under steer in the car, other like over steer. Adjust the bias exactly for your driving style.

A good balanced brake bias will deliver about .1 - .3 seconds for each sharp corner.

Tip: don't go back to the pits/garage to change your bias. Press [for more front bias or] for more rear bias while driving. Don't forget to remember your setting because it will be lost when you enter the garage again when you have adjusted it while driving. Uh... in GTR2 this is.

Another tip: You can actually see the effect of brake bias. Drive on the track and after braking press R (Replay), press the outside view button (PgUp) and watch your car from one side. Play the replay, and press one of the slow motion keys (Ins or Del on keypad).

Steering Lock

To control the amount of movement in your wheel thus adjusting how precise your steering input will be, change the steering lock.

A good rule is:

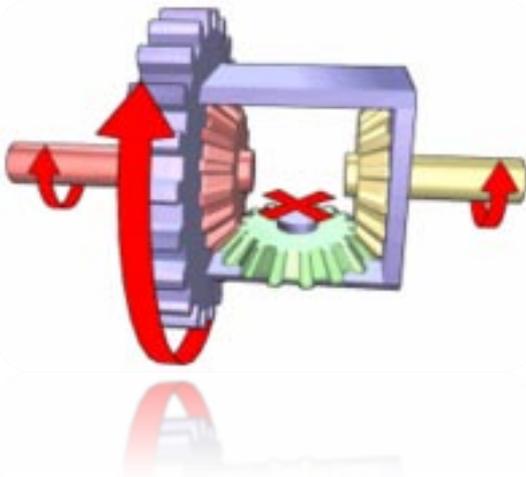
- If you only steering at 50% in the sharpest turn -> decrease your steering lock.
- If steering reaches the end stop of your wheel in the sharpest turn -> increase steering lock.
- About 90% steering in the sharpest turn will be good for most drivers.

Of course steering lock is again personally. Use it well, especially if you own a very precise wheel like the Momo Force of the G25.

Differential

Differential settings can be adjusted for Power (Lock), Coast and Preload.

A differential controls your wheels in corners. In corners the inner wheels rotate slower than the outside wheels. The differential settings can be changed to distribute the amount of torque to the wheels (Fwd or Rwd) for traction and speed.



Differential Power (Lock) means the amount of force (as percentage) used to lock the inside and outside tires together when accelerating mostly when exiting a corner.

If your car under steers (FWD cars) or over steers (RWD cars) you must decrease the power (lock). If you have no good acceleration when exiting corners, try increasing it. Try to balance it.

Coast means the amount of force (percentage) is used to lock the inside and outside tires together when off of the throttle, as when entering a corner (braking). If your car is stable while braking and slightly under steer while lift off the throttle, try to decrease the coast.

If you experience unstable braking and over steer while lift off the throttle, try to increase the coast. Again find a good balance.

With the Pre-Load setting you can adjust the amount of lock built in before acceleration/deceleration effects take place, mostly when you are in a neutral throttle position (holding speed).

If the car has a bad transition from braking-acceleration try to decrease the preload.

If the car is not responsive enough from braking-acceleration try to increase preload.

A good differential setup greatly improves your car balance when exiting/braking corners and on/off throttle situations.

Tip: As with all the setup options only change one setting at a time, because it can affect the other.

Rear Wing

With your rear wing you can adjust the level of down force at the rear of the car. The rear is the main adjustment for aerodynamic balance together with your splitter. Unfortunately the splitter cannot be changed in Race and I think in the real WTCC cars.

Change the wing setting which is best for each track. The greater the wing setting, the more aero drag you have which slows top speed.



Another indication to change your rear wing is:

- If you have under steer in a fast corner (>120Km/h) try decreasing your rear wing
- Over steer in a fast corner, try increasing your rear wing.

Find a good combination of top speed and drag for each track. A fast track like Monza needs less rear wing.

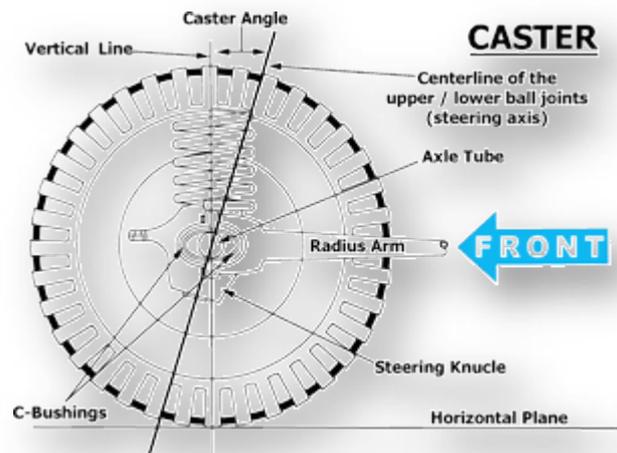
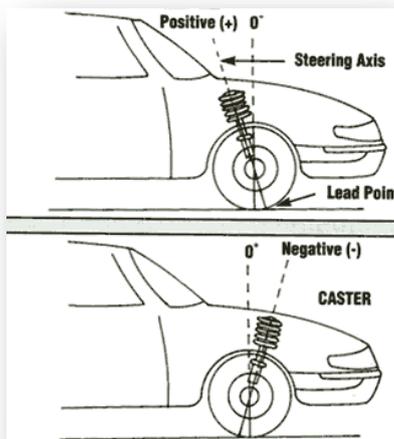
Don't forget to check your gear ratio, especially highest gear because your wing affects top speed.

Caster

Caster means how much (degrees) a tire leans forwards or back at the top of the wheel. Caster is used to increase or decrease directional stability.

Most drivers prefer positive caster which provides directional stability. Too much caster makes steering difficult. Negative caster requires less steering effort but the car will wander down the straights.

In Race, negative caster is not possible.



Caster is difficult to judge. To adjust caster this are the rules:

- Increase caster if steering is too soft and has too much under steer.
- Decrease caster if steering is too firm and the car is unstable in fast corners.

Toe In

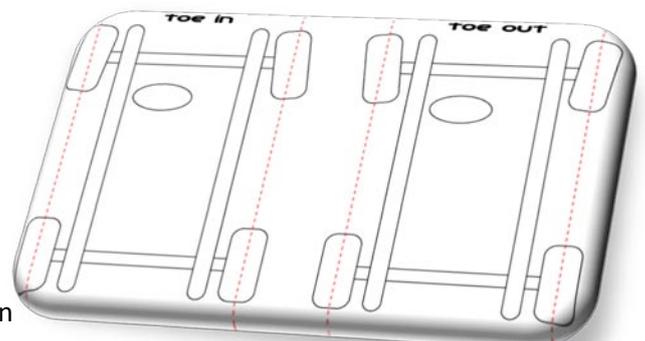
With Toe-in at the front or rear you can adjust the degree the front of the wheels angle towards or away from each other.

Toe-in is used for directional stability and initial corner turn-in.

For the front wheels, the preferred setting is a slight amount of toe-out (negative setting), which helps turning in.

For the rear wheels, the preferred setting is toe-in (positive setting) because toe-out creates instability.

Don't changes too much toe (positive or negative) because it slows the car down with increased rolling



drag. Too much toe-in in either direction also causes under steer and tire wear. Mostly the default settings are good. Don't change too much.

The rules for front Toe:

- Increase opening (more negative value) if turning in is hard
- Decrease opening if straight line stability is too much affected

The rules for rear Toe:

- Increase opening if the rear-end stability in a straight line is not good
- Decrease opening for better top speed

Ride Height

Ride Height means how high the bottom of the car is off the ground. The lower the ride height, the tighter the suspension and the lower the car's center of gravity will be.

Too low ride height affects stability of the car on bumpy tracks/high curves because the car can bottom out. With WTCC cars, it is not easy to bottom out. The lowest setting will often be the best. For most cars, the rear must set higher for better down force/stability of the car. Think about 1-2 cm difference between front and rear.

As always, its drivers experience to change it to your driving style.



Anti Roll Bar

Rolling/leaning of the car in corners can be controlled with the anti roll bar. The effect of the anti roll bar is noticed in slow corners only.

Basically lower/softer anti roll bar means more grip but less steering accuracy.

If you need more grip in slow corners, decrease the front anti roll bar.

If steering in slow corners is imprecise, try to increase the front anti roll bar.

If the car under steers in slow corners, increase rear anti roll bar. (increasing the rear means less grip in the rear. Less grip in the rear means more 'grip'* in the front thus less under steer).

If the car over steers in slow corners, decrease rear anti roll bar.



*When you cut grip from the rear, you change the grip balance of the whole car. You can't just get more grip at the front, because you make less grip at the rear.

It is also that a soft overall anti roll bar setting gives more overall grip, but increase body roll. You must find a compromise between that, because more body roll isn't very good.

Springs

The spring's settings can be adjusted for in Nm/mm.

A softer spring (lower value) gives better grip but slows response time to driver input.

A stiffer spring (higher value) makes the car respond more quickly to driver input, but gives less grip.

If the car does not react immediate to your driver input, stiffen the front and rear springs.

If the car is too nervous and overall lacks grip, soften the front and rear springs.

The springs are basically linked with each other. If the car is under steering in the middle of a corner, with no gas or brakes applied, try to stiffen the rear springs OR soften the front springs.

If the car is over steering in the middle of a corner, with no gas or brakes applied, try to soften the rear springs OR stiffen the front springs.



Most default setups are too soft, but of course, you guessed it.... it's personally. Happy bouncing...

Bump / Rebound

Bump and Rebound is divided in Fast and Slow.

The Fast Bump/Rebound settings have to do with movement of the track (bumps/curbs). Slow Bump/Rebound settings is affected by driver input (steering, braking, throttle)



Bump means the upwards movement of the suspension, Rebound the downwards movement.

Fast Bump (upwards) controls the suspension following bumps and curbs. It is describe fast because the damper is moving up in a rapid motion. Adjustment of the Fast Bump controls how a tire behaves on the track after bumps/curbs. The Fast Rebound settings are linked to the Bump settings. If the Fast Bump setting is changed, mostly it is good the change the rebound in a similar manner.

Slow Bump controls the suspension caused by driver input. Slow Bump has effect on balance while going into and out corners. Decreasing Slow Bump will speed up how quickly a corner accepts weight transfer while transitioning (braking/steering/throttling). Slow Rebound is also linked with Slow Bump, so change it in a similar manner like the Fast Bump/Rebound.

The rules for Slow Bump/Rebound settings:

- If weight transfer is too fast which result in lost of grip, try to increase front and rear and vice versa.
- If the car under steers in corner entry and exit, increase rear OR decrease front.
- If the car over steers in cover entry and exit, decrease rear OR decrease front.

Fast Bump/Rebound settings:

- On a bumpy track where you lack grip over bumps and curbs, try to decrease front and rear.
- If the car bounces over bumps resulting in lost of grip, increase front and rear.
- If the car under steers over bumps, increase rear OR decrease front.
- If the car over steers over bumps, decrease rear OR increase front.

Good luck with your own made setups

