

TC TIPS

ACKERMAN

LESS ANGLE - more aggressive steering = good for tight corners or technical track. less ackerman will cause the inside wheel to gain less camber than the outside wheel.
MORE ANGLE (inside wheel is turning in more compared to the outside wheel) - less aggressive = good for wide open corners and sweepers. Smooth, predictable steering. More ackerman will make the inside tire gain more camber than the outside. Adding ackerman to a car that has caster will give the car more steering especially on turn in. Can make car traction roll easier.

CASTER

MORE VERTICAL - more off-power steering into corner / less on-power steering out of corner. Can reduce traction rolling on high grip tracks. Increased suspension efficiency. Decreased wheel centering. Need less camber (less camber change).

MORE ANGLED- less off-power steering into corner / more on-power steering out of corner. Increased mid-corner control. better mid-corner control. Typically suits large, open, hi-speed tracks. Generally, more caster = more steering. Decreased suspension efficiency. Increased wheel centering. Decreased straight line stability. Need more camber (more camber change).

CAMBER

FRONT - More Negative (1-2 deg) – increase steering. Need more with steerper caster. Need less with vertical caster.

REAR – More Negative (.5-3 deg) – increase stability and traction in corners but decrease hi-speed stability.

TOE

FRONT:

IN – car reacts slower but has more steering from middle and exit of turn. Smoothes out steering. Easier driving car.

OUT – turn into corner better, but less middle and exit

REAR:

IN – 1 deg goes long way. Stabilizes car. More toe = more rear end sticks going into and coming out of turns. Car turns in more due to drag brake effect.

INBOARD PIN ANGLE

FRONT:

DECREASE (0 deg) – results in more stability by decreasing steering into the turn

INCREASE (+x deg) – [angled out] more aggressive feel to steering

REAR:

IN – wt xfers to front end easily. Increases off-power steering and decreases on-power steering (more forward traction). Versus toe-in@hub which provides less wt xfer so provides less initial steering but more on-power steering (less forward traction).

ROLL CENTER

FRONT:

HIGHER roll center = more on-power steering and less off-power steering. car less responsive.

LOWER roll center = more low-speed steering (more camber change) - better into corner, less high-speed steering. More roll.

REAR:

HIGHER roll center = more steering as long as front roll center is lower.

LOWER roll center = less steering as long as front roll center is lower. More roll.

Low speed tracks: lower roll center (front and rear) to get more roll out of chassis

High speed tracks: higher roll center to keep car flatter through turns

Roll slope - The higher the front is the less it will force the rear to roll so less steering and flatter cornering.

[roll axis: slope flat/level]

- More steering entering and less change in handling coming off. With the front wanting to roll less than before more weight will stay on the front.

- Car is more responsive because it isn't rolling as far. Takes less time to come back to center after a turn.

[roll axis: slopes down to the front (higher rear roll center)]

- Causes car to roll more into turn instead of out of turn.

- Less steering entering and more steering on power coming off. The front wants to roll more forcing weight transfer to the outside rear. The car will drive off the outside rear on power giving an abrupt gain in steering.

- Combined with stiffer springs (and damping) up front, and softer ones in the rear. This makes for a very stable car: it will turn in sharply at first, because of the stiff springs up front, but then, it will understeer a little, because with the stiff springs and heavy damping up front, it takes some time to transfer the weight onto the outside front tire. This happens a lot faster in the rear. But eventually, when the weight is fully transferred, the car will steer very well.

[roll axis: slopes down to the rear (higher front roll center)]

- The rear will try to roll the front more off power loading the outside front more giving ok turn in. On power the car will try to drive initially off the outside front but will transition to a hard push coming off because the rear bite will be more balanced than the front.

- Car may push badly on power and spin-out off power

CAMBER LINK

more PARALLEL - lower roll center and increase roll of the car. More traction at that end of the car. Less camber change.

more ANGLED - raise roll center and less roll of the car. Less traction at that end of the car. Can use softer shock settings. More camber change.

SHORTER - less traction. Car rolls less. Reacts quicker initially and less overall.

REAR: more steering (but can cause rear to lift)

FRONT: less steering

LONGER - more traction. Car rolls more to outer edge of tire and gives you more side bite. Reacts slower initially but will react more.

REAR: less steering - need more camber

FRONT: more steering

Overall upper a-arm height - raising it will make the car a bit more sensitive but actually stay flatter in the corner. Lowering it gives it more roll/steering in the center of the corner but a less twitchy feel....

LOWER ARM

HIGHER – higher roll center, less roll. Can use softer springs/oil.

LOWER – lower roll center, more roll. Typically used on high traction. Need stiffer springs/oil. Adds laziness to car (reduces traction roll).

SHOCKS

♦ POSITION

STANDING UP - less roll through the corners with more stability. "stiffer overall"

LEANING IN - more forward bite and make the springs more progressive through the corner. Which means the initial cut will be softer and it will stiffen up as you go through the corner and lean into it. Overall suspension softens up as you lean shocks in. Best used with long parallel links. "Soften overall"

FRONT:

IN – smoother transition entering turns & improve consistency. BUT less total steering and slower reaction. More steering in hi-speed corners.

OUT – increases responsiveness and gives more total steering. Increase forward traction and on-power steering. May have to soften springs to smooth out the reaction.

REAR:

IN – frees up back end of car. Easier rotation in turn. Fast flowing tracks (helps w/corner speed).

OUT – more forward traction but slows initial reaction in the turn w/a more abrupt rear rotation. For tight tracks.

Front in more than rear – steering feels very smooth. A little more mid steering. Rear end can jitter in turns.

Rear in more than front – aggressive turning in, but car overall has less steering. Turn radius not very tight.

♦ PISTONS

We use the smaller pistons and lighter oil to keep the car from dumping over. Usually, if you go from a #2 to a #3 in the rear of a TC it will - go over a bump a little worse, change directions much quicker and usually gives a little more steering.

♦ SPRINGS

FRONT

Stiffer – less front traction, less steering. Harder to get into turn, turn radius is bigger, and lot less steering exiting corner. Use on very hi-grip tracks to reduce steering.

Softer – more steering – esp at mid and exit. However, too soft and car can hook and spin.

REAR

Stiffer – car has more steering in mid and exit – esp in long, hi-speed corners.

Softer – car has more rear traction in turns and while accelerating.

♦ DAMPING

HEAVIER – more stable car, handles smoother, but change direction slower

THINNER – car reacts quicker

Heavier Front/Softer Rear – turn radius is wider but smoother. Car doesn't hook suddenly. Car easier to drive & hi-speed steering is smoother.

Softer Front/Header Rear – steering reacts quicker. More and better low speed steering.

SHOCK TOWER HEIGHT

RAISED – less camber gain.

DROOP

FRONT:

increasing: smooth car out going into turn (less in) & gain steering on exit

decreasing: initiate turn quicker (more in) but less steering out. more responsive feel.

REAR:

increasing: gain more side bite and traction - less steering.

decreasing: more responsive & less side bite - more steering.

Less front, more rear: car changes direction faster. turns in very well, but can lose front traction halfway through turn. allows rear of car to rise more during deceleration which transfers more weight to front.

More front, less rear: car bakes better. rear traction feels consistent.

6 front and 4 rear droop seems more like a carpet setup. Typical TC split of 4/2 or 5/3. If you wanted to pivot better then you could do 5/4 droop.

WHEELBASE

Adjusting wheelbase at an end of car affects traction at that end (ie: REAR shorter: more rear traction, FRONT shorter: more front traction)

SHORTER: nimble and good in tight turns. Increased steering response – tighter, more technical tracks.

LONGER: more stable, better in wide, high-speed turns. good on wide-open tracks. Adds stability and slows down initial reaction.

TRACK WIDTH

wide front, narrow rear – more steering

narrow front, wide rear - less steering

FRONT KICK-UP/ANTI-DIVE

INCREASE kick-up: better through bumps, more forgiving to drive. smooth car out on turn-in and thru corner. smooth car out on high traction surfaces.

DESCREASE kick-up/anti-dive (negative kick-up): turn in more.. Front dives less while braking and lifts less while accelerating. a little more on-power steering.

REAR ANTI-SQUAT

MORE - increases on-power steering and forward traction. stiffens rear suspension when accelerating. car can be loose entering corners (more steering while braking). car more sensitive to throttle input. Easier car rotation. Less side-bite.

LESS - more stable entering corners. reduces on power steering. easier to drive in low-grip situations.

ANTI-ROLL BAR

FRONT – reduces low speed steering. Larger turn radius, but smoother & consistent. Reduces hooking by reducing front end roll. More rear traction in turns.

REAR – gives more steering. Car steers tighter, also at low speeds. Can make sliding easier on smooth track.

OVER-DRIVE/UNDER-DRIVE

OVERDRIVE – front tires turn faster – less off-power steering, more steering exiting turn

UNDERDRIVE – front tires turn slower – more steering entering, less steering exiting

DIFF HEIGHT

HIGH – car will stay flatter and have more responsive feel.

LOW – car will roll more and keep car in turn longer, increasing on-power steering

Low front diff, high rear – maximum total steering

High front diff, low rear – lowest total steering

Low front, low rear – less overall traction

High front, high rear – more overall traction

BATTERY POSITION

FORWARD – more steering and less rear traction

BACK – increase traction and diminish steering slightly

DIFF VS ONE-WAY

DIFF – most consistent feel and more off-power steering while sacrificing some on-power steering

ONE-WAY – high traction asphalt/carpet with no hairpin turns. Greater off-throttle steering and increased acceleration.

CENTER ONE-WAY – increase overall steering off-power

BODY REAR WING

FORWARD or LOWER – less downforce. More steering.

BACK or HIGHER – more downforce. Less steering.

tight track/low speeds – wing mounted forward, use larger wing

high speed sweepers & long straights – wing further back, slightly smaller, and large spill plates. Can trim rear kick-up to help straightaway speed and stability.

NOTE: A wing w/large spill plates and mounted too far back will hinder car from rotating quickly on tight tracks.

BODY POSITION

1/8th of an inch change can make a big difference. More effect on high speed corners.

FORWARD – more steering

BACK – less steering
