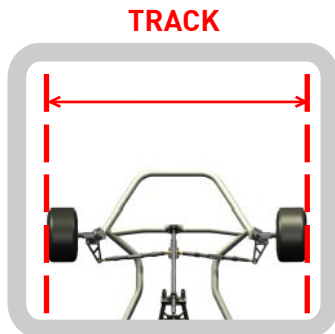


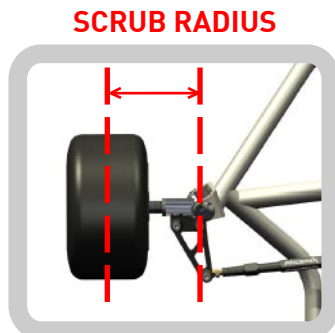
## TECH: FRONT END SETUP

### GLOSSARY OF TERMS (CONT)

Track: Track is the overall width of the tyres.



Scrub Radius: Scrub radius describes the distance from the kingpin to the centreline of the front tyre.



Ackerman: Ackerman is a term used to describe the toe-out that occurs in the front end when the steering wheel is turned. That is, the inside front wheel turns more than the outside front wheel. The greater the difference in turn-in for a given steering wheel input, the more Ackerman we have.

Note that this is actually quite a simplification of Ackerman steering geometry (which is used quite differently in kart design than in the auto-industry). A complete explanation of Ackerman could take the next four paragraphs, but for clarity we'll leave it there. Should you wish to learn more about it there are many more thorough explanations to be found on the web.

### HOW FRONT END GEOMETRY EFFECTS HANDLING

There are two major differences between kart design and car design. Karts lack both suspension, and a rear differential. With no differential,

the two back tyres are spinning at the same rate, always. But when turning a corner, the inside wheel is running around a shorter arc than the outside wheel. When both of those wheels are touching the ground, a conflict is created.

Your kart uses a combination of front end geometry, and flex in the chassis, to lift that inside rear wheel off the ground while cornering.

With the negative caster built into your kart, when you turn the steering wheel the inside front wheel moves down, towards the track surface, relative to the plane of the kart. The outside front wheel moves up, away from the track. The result is that the kart becomes like a wobbly table, which tips up onto three wheels, releasing the inside rear tyre. Without this effect (which we call "jacking"), the two rear tyres would overpower the fronts, and the kart would understeer.

Increasing the amount of caster increases this effect. The greater the caster angle, the more wobbly our "three legged table" becomes, and the faster the inside rear wheel is lifted.

Increasing the amount of ackerman also increases this effect, as the inside front wheel "drops" more relative to the kart with the same amount of steering input.

Track is probably the easiest, and most commonly adjusted setting, to fine-tune the jacking effect. The further the front wheel is from the king pin (the larger the scrub-radius), the greater leverage it has at any given steering input. As a result, a wider front track will give a kart more steer, a narrower front track will reduce front steer.

Camber is adjusted mainly to keep the largest possible contact patch of the tyre on the track. Large amounts of negative camber (the wheels leaning into the kart) mean that the inside of the tread wears much faster than the outside, and therefore also that not all of the tyre is doing the job it is supposed to – provide grip to steer the kart. It's worth noting that when you adjust the camber in your kart you are in reality altering the