

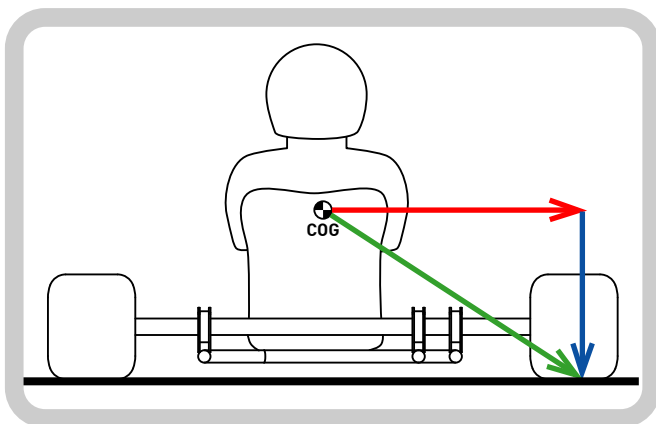
TECH: SEAT POSITION

MOVING THE COG VERTICALLY (cont.)

with a short spanner can be turned easily with a long spanner. Likewise, a kart that is difficult to “tip” with a short blue arrow, can be tipped easily with a long blue arrow. How do we change the length of the blue arrow? Move the COG!

The second diagram shows the kart with the seat position moved up. Note the length of the blue arrow now. The length of the imaginary “spanner” is longer, so the kart will tip more easily. Obviously, had we reduced the length of the blue arrow (by lowering the COG), the kart would be more reluctant to tip.

RAISED CENTRE OF GRAVITY



Those of you with your thinking caps on can probably see why rear track width plays such a large role in kart setup by looking at these diagrams too, but we will cover that in greater depth in the next article.

Now, if getting the inside rear wheel off the ground is important, and a longer blue arrow (achieved with a higher COG) helps attain that lift, why don't we all mount our seats really high in the kart? Firstly, once the rear wheel is a millimetre off the ground, we don't gain any more “release” by lifting it further. Utilising energy to lift the wheel higher and higher is simply a waste. Secondly, go-kart tyres are of cross-ply construction, not radial like a car tyre. Cross-ply tyres have much stiffer side-walls than radials, so the tyre is more reluctant to

alter its shape. If the inside rear lifts too high, the kart can end up on such an angle that the inside of the contact patch of the outside tyre can start to lift off the track too! This obviously causes a large loss in grip, which causes that tyre to slide. This can result in a Grip-Slide-Grip-Slide situation.

HOW HIGH IS “JUST RIGHT”?

A kart with the COG in the right vertical position will hold the inside wheel JUST off the track as it negotiates a corner. If the COG is too low, the kart will tend to struggle to lift the wheel at all, or will drop it back onto the track too early, resulting in poor corner exit as the engine struggles to overcome the binding that occurs with two wheels on the track while cornering. If the COG is too high, the kart may lift the wheel too quickly, causing it to “crash” back onto the track, much like a kart with too much caster. Karts with a COG that is too high also tend to be unstable and unpredictable through the corner, as the outside contact patch struggles to retain consistent grip.

MOVING THE COG HORIZONTALLY

The corner weights of a kart are directly effected by the location of the COG. If the COG is not exactly in the middle of the kart, then the corner weights will be different from side to side. This can have a dramatic effect on handling. Let's look at the diagram from the rear of the kart again, with the COG offset to one side.

OFFSET CENTRE OF GRAVITY

