

## Keeping it simple!

In racing everyone is always looking for that tenth of a second, the little tweak that will give you an advantage to win the race. Sometimes in the search for the last tenth of a second it is easy to overlook the small things that end up sabotaging your race. The biggest difference between the guys who consistently run up front and the guys who struggle to run consistent is just that, consistency. Not in driving, though that is obviously a huge part of racing, but in chassis prep and mechanical work. When I help a racer that is struggling with their kart it is almost always something small that is causing them big issues. Weight percentage, seat position, clogged carburetor. There is no magic pixie dust that will get you to the checkered flag first. It is all hard work and paying attention to the details. Here is a list of things to check and to always maintain, in no particular order, to keep your program heading in the right direction.

**Weight Percentage** - Some will say scaling is not important, some will say it is everything. I tend to side towards the everything group. Having your kart scaled out with the proper nose weight, side to side weights and corner weights (and cross weight) is an important part of having a fast kart. Not all manufacturers want the same percentages and not all classes use the same percentages. The percentages we use on a TaG kart is extremely different than a Junior Sportsman kart. I don't think you have to scale your kart before every race but it needs to be done if you are taking a bunch of weight off or putting a bunch of weight on. Having your kart scaled at least once a year by someone competent and knowledgeable with your particular chassis and class will go a long way in making sure you have a good baseline. I've seen karts with 20-30 lbs. of weight difference between the front tires, it turns great one way and almost pushes off the track the other way, if you have a young and inexperienced driver you may not get good feedback to know that is even happening.

**Stagger** - In oval racing stagger is a good way to make the kart turn left. In a road course kart it's a great way to scrub speed down the straightaways. Stagger (one tire bigger than the other tire) also affects your cross weights and how the kart turns one way compared to the other. Take a tape measure and measure your tires circumference. Make sure the rears are the same size and the fronts are the same size. If they aren't find a different tire or you can try to stretch the smaller tire by putting the max pressure the manufacturer recommends and letting the tire sit for a while. I would try to keep your tires within 1/8" of circumference. Maximum a 1/4".

**Axle Binding** - Make sure your axle rolls smoothly. I've seen axles that have a lot of friction even if the bearings are in good condition. Then you take the bearing grub screws loose on one side of the axle and the entire frame releases. The axle was binding up the entire kart! A good example of why this might happen is if the grub screws are tightened before the cassette bolts are fully tightened. Another way this can happen is after an axle ride height change, sometimes the angles change enough that the bearing grub screws are putting stress on the axle.

**Axle Shifting/Brake Rubbing** - Another way to scrub speed and not realize it is if the axle is shifting as you go through corners. It doesn't take much for the axle to shift one direction and have the brake disk start rubbing without you completely realizing it. Make sure your brake disk is always perfectly centered and there is no back and forth slop in your bearings/cassettes. If there is you may need to tighten the cassettes if they are the split type or your cassettes might be worn out and need changed.

**Fuel Delivery** - One thing that is overlooked and can cause a ton of headaches is your fuel tank, line and filter. Even a almost microscopic pin hole in the line can cause a lot of grief. Check your line going down into the fuel tank. Make sure the line is air tight around the fitting. It shouldn't pull off easily in your hand. Safety wire it if you need to. Make sure your fuel line can't suck air anywhere all the way to the engine. Safety wire or tie wraps around the fuel line will help minimize this. Also make sure your fuel filter is in good shape, no leaks. We recommend a fuel filter in all the KPV and Yamaha classes. The Walbro carbs have a very small filter screen in the carb that easily gets clogged without an inline fuel filter. If you pull the line on and off the engine the fuel line will stretch and will start sucking air after a while, snip off the stretched end.

**Track Widths** - Track width is the overall width of your front end or the rear end of your kart measured from the outside of the tire to the outside of the other tire. There is typically a fairly small window where a particular chassis will run it's best. I've had racers tell me their kart won't turn, then you go and check the kart and the back end is 2 inches narrower than we would run it on a cold day on SL tires! Know the range your kart works in and check those widths regularly. The chassis importer or manufacturer should be able to give you the range. Don't rely on looking at competitors width to give you an idea where to run. Different offset wheels, different length axles and hubs can drastically change how many spacers or how much key is showing on a kart.

**Seat Position** - Seat position, in my opinion, can make or break a kart. If the seat is improperly positioned to far back or to far forward for a particular chassis then it probably won't matter how you tune the rest of the kart, the seat will be causing all your issues. Finding the correct seat position for your particular kart should be available from the manufacturer or ask a dealer. The other option is to find a karter that runs up front with your type of kart and ask if you can measure their seat position. Hard to argue with results!

**Pill Position** - Camber/Caster pills are easy to get wrong, especially if your kart uses offset pills on the top and bottom of the spindle C. The laser aligners that are available are a great tool for your team and we use them constantly. The only problem is you can set your toe and camber properly with the laser aligner and if you are not paying attention you can still have the castor out on one spindle and in on the other, the laser gauge won't be able to tell the difference. Always double check your pill position in regard to the other side of the kart. If the thin side of the pill is facing forward on the left front, make sure the thin side of the pill is facing forward on the other side. Same goes for the bottom pills. Always double check yourself.

**Clutch Air Gap** - If you run a Yamaha class then you need to keep an eye on your air gap between the disks and the floaters. If this number gets to big through constant wear and tear you will lose

acceleration out of the corner and even down the straightaway as the clutch will have a harder time fully compressing the disks. Check with the clutch manufacturer or your engine builder to find out the maximum air gap they suggest and put thicker floaters in the clutch as the disks wear down.

**Incorrect Needle Settings** - Know where your engine builder wants you to run the carburetor and make sure you maintain those numbers. Carb settings can get changed by accidentally bumping the needle working on the kart or by vibration on the track. Make sure the carb is set correctly.

**Carb Diaphragms** - Keep your carburetor in top working condition by changing your pumper diaphragm regularly. That thin piece of rubber is working every time you start the engine and after a while it will stretch to much and wear out. It's no different than stretching a rubber band, eventually it will lose its elasticity. Learn how to properly change your carb diaphragms and learn the order that it goes back together. Keep the carb fuel screens clean as well.

**Ride Height** - New karts typically come with the proper ride height set from the factory. In the event that you move the ride height on the front or rear or you buy a used kart, make sure the left side ride height is the same as the right side. It's easy to have one spindle up and one spindle down or have the axle in two different settings on one side than the other. This will affect your corner weights dramatically.

These are the major, simple mistakes we commonly see at the race track. Just keep paying attention to the little things and it will keep your program heading to the front of the pack!

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