

# Kart Weight Distribution

To obtain optimal performance a kart must be scaled and balanced. The desired weight distribution is achieved by scaling and adjusting the chassis and moving around weights. Improper weight distribution can cause front end push (understeer), excessive or insufficient load on any one tire, chassis binding, and lack of side bite in cornering among many other problems. An improper weight distribution can also lead to incorrect diagnosis of handling problems at the track.

The following weight distributions is a good target:

<b>Front Weight</b>	<b>43%</b>
<b>Rear Weight</b>	<b>57%</b>
<b>Left</b>	<b>50%</b>
<b>Cross</b>	<b>49.50%</b>

Weight can be moved at the track to change the handling characteristics of the chassis. Moving weight to the front of the kart will provide more front grip while moving weight to the rear of the kart will provide more rear grip. Weight can also be moved vertically up or down. Moving the weight vertically upwards will provide more grip in the location of the weight while lowering the vertical position of the weight will have the opposite effect. Keep the side to side weight distribution as close to 50%:50% as possible.

## Seat Placement/Adjustment

The seat placement is the single most important weight adjustment on the kart and is done before weight distribution analysis. Perfect seat placement may result in almost perfect weight distribution before any weight is even added to the kart. Consult your local dealer for specifications for your specific model.

## Factors to Check Prior to Performing Weight Distribution Analysis

The following processes are all very important to ensuring accurate weight distribution analysis.

- Ensure your scales are level. Using a scale level pad is a necessity. Use a level to check from pad to pad. Also, best to check cross wise as well.
- Set toe and insure the steering wheel is pointing straight. You can use snippers to check this by placing them on top of the spindles.
- If the wheels are not cantered during weighing, the geometry of the kart, mostly the castor, will cause the corners of the kart to be loaded incorrectly. The readings on your scales will then be false
- Set castor and camber

- Set spindle heights at desired height.
- Check tires to make sure they are at race air pressure settings.
- Add weight in appropriate places to approximate fuel and/or oil.
- Zero the scales before putting the kart on.

Remember, however, that fuel weight is dynamic. It will change during a race. However, being centered in the kart will not have much impact. Best to set the weight on the scales with fuel mirror what you want at the end of a race. Then mark this spot with a black marker on your fuel tank indicating the weight.

Zero all scales.

### **Adjusting Kart Weight**

Kart weights are usually not at the desired specifications upon the first weighing. If distribution is off, and weight is needed, begin to place the appropriate amounts in the appropriate places. Placing weight under the front of the seat on both sides is a good place to put your first weights. It is likely you will then want to add weights on the left hand side of seat as usually the motor on the right will affect side to side balance.

If you are way off on your side to side weight distribution than recheck your factors effecting weight distribution. You might have to move the seat just a little bit to obtain the correct weight distribution. If you are over the limit of your specific weight class you are going to want to look for ways to reduce the weight. Titanium parts or carbon fiber floor pans are the best options. If you are under your specific class weight limit, add weight to the appropriate locations. Do not place any lead shot inside the frame. The weight will shift during cornering and cause handling problems.

Although overall side to side weight distribution may be correct, individual front or rear side to side distribution may be skewed. Your front wheels should weigh within 2lbs of each other while the same applies to the rear wheels. If this is not the case, recheck all of the factors effecting weight distribution given above and reweigh. If the problem still exists, you may have a chassis problem.

Once final weight placement is determined, secure all weight properly. Be sure to cross drill and safety wire or safety clip each weight. Most sanctioning bodies require double nutting of ballast as well. Be sure to consult your rule book. If your weight is not secure, this can cause serious problems for other drivers at the track if your weight comes loose. Not only does this have the potential to cause injury and equipment damage, it is basis for disqualification during a race.