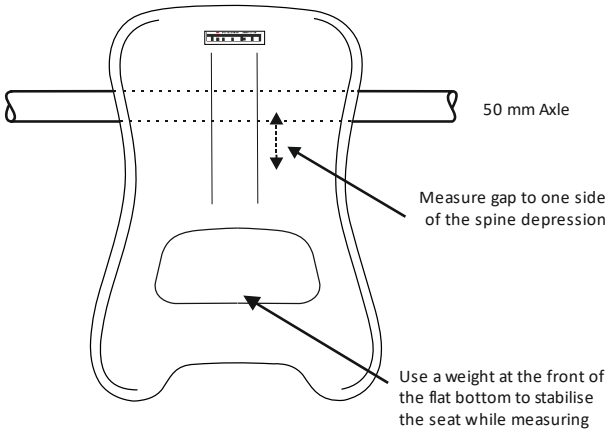
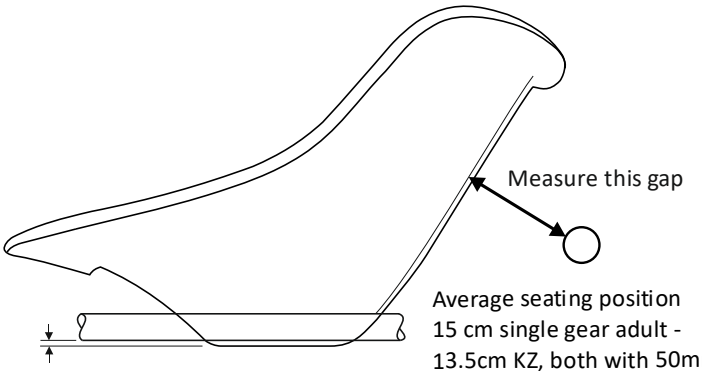
Kart seat positioning

Kart seat positioning is a difficult but important job. The driver is half the weight of the vehicle and if their weight is out of position the kart will be unbalanced and difficult to set up. Many manufacturers will give you a set of dimensions, which can be confusing unless you are using the exact shape and size of the seat that was used to get their positional information in the first place. Therefore, to get the correct balance in the chassis, it is important to understand where the drivers back is in relation to the rear axle. These instructions are to help with attaining the most common position for the average 70kg driver. Sometimes a compromise position will have to be used for smaller or larger drivers.

To accurately fit a kart seat, place a flat sheet of plywood, or something similar, on your kart stand, then space the chassis tubes from the wood to give you the correct ground clearance.
(For ultimate accuracy use the Tillett T Board TRACK fitting jig. Please see below for information.)
5mm is usually the maximum dimension that you can set the base of the seat below the tubes with a modern chassis. If you do not have this low point information, set your kart up on a very flat piece of ground with the correct tyre pressures. Take a note of the distance the seat protrudes below the chassis tubes when you have around 15mm clearance between the floor and the seat base. Next place the seat back on the chassis sitting on the wooden board or the T Board track fitting jig. Held like this it is stable and easy to hold in the ideal position. (Tip: A weight placed inside the seat will help keep it stable and upright.) As most seats have a flat on the bottom it is usually best to use the set angle provided by this.

Using both the height of the seat flat and the important “axle to drivers back” dimension shown below, you can put any seat in any kart and the driver will always be exactly in the same position in relation to the rear axle. The current average seating position for a 70kg 1.80m tall driver is 15 cm, whereas with a KZ chassis the dimension would be further back at 13.5cm. A shorter junior would use around 18cm.



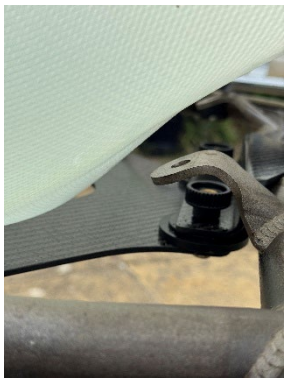


Average seating position
15 cm single gear adult -
13.5cm KZ, both with 50mm axles
16cm Cadet/Minikart 25mm axle

The seat should protrude below the tubes no more than 5mm maximum

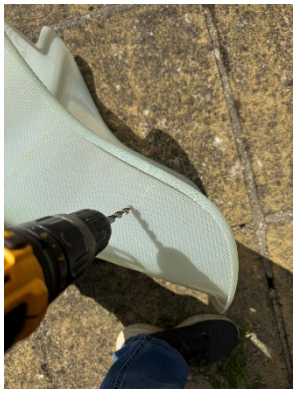
Be aware that historic karts always needed the seat set further away from the axle. Pre-2005 chassis with a 40mm diameter axle used around a 21.5cm gap and karts aged from 2005 to 2009 with a 50mm axle approximately 18 cm. If the kart has a 30 or 40mm axle you will need to compensate for this. Please note that bolting a substantial amount of lead weight to the back of the seat can make a difference to the seat position. It forces you to position the seat further forward to achieve the same balance.

• With the seat in position, check that all seat stays are parallel to the composite. If the flat metal tabs are set at a different angle, bend them with a large adjustable spanner until they exactly match the angle of the seat surface.



• The stay tabs only have to be parallel to the composite; any gap can be filled with nylon or aluminium spacers without a performance penalty. However, do not use rubber spacers, not only will this allow uncontrolled flexing which will break the edges, but the bolt will be effectively loose, acting like a saw, moving in and out as the seat twists, cutting a slot and allowing the seat to drop.





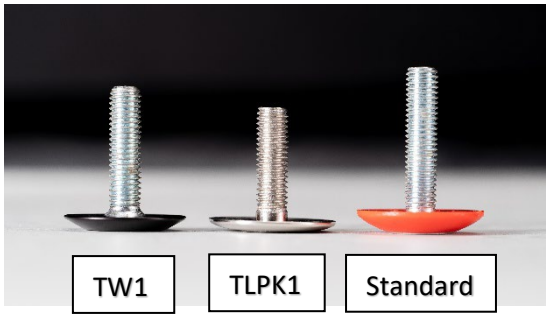
• To mark the holes either use a marker, or if there is a larger gap, place a blob of paint on the end of a long bolt and pass it through the four main stays to make a spot on the seat perpendicular to the seat stay without moving the seat. Take the seat out and drill all four holes accurately.

• When fitting the seat bolts use the correct thickness of spacers to keep the composite from being twisted out of its naturally moulded shape. Make sure to maintain the seat in the desired position, then tighten the bolts until very tight.

• If you use a flexible VG or VTi seat in an adult kart only using the four main chassis stays without any extra seat stays, it is advised to pop rivet aluminium Tillett TK7 support plates against the composite on the main upper two stays. The plates have a six hole array, designed so that when set parallel to the floor and using the top middle hole, the plate can thereafter be used to quickly lift the seat for the wet, or to make an adjustment forward or backwards 10 mm either way.

• This will help to adjust the understeer or oversteer on fast corners where the steering wheel is reasonably straight. Move forward if you have understeer and back if you have oversteer. It should be noted that other factors such as width of wheels, chassis/axle/seat flex and steering geometry can affect the handling on tight corners such as a hairpin and can mask this effect.

• Keep the head of the extra seat stay bolts away from the top edge of the seat. Fasteners that are fitted too near the upper edge will bruise the ribs or point load a hard shell rib protector. Try and use either the aluminium TW1 Tillett countersunk washers, or the Tillett TLPK1 low profile bolt and washer kit especially around the rib area. This will not only help the body but also prevent a hard rib protectors from damaging the race suit. These lead fittings should also be kept away from the places where the pelvis and femur bones contact the seat.

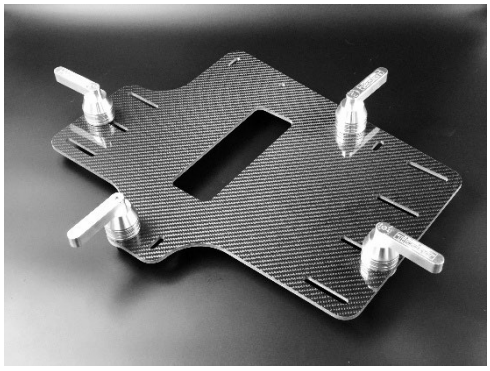


● The seat is then in place, and you can then fit any extra seat stays and lead weight required. Ballast bolted on the sides and under the front between the legs should be slightly spaced away from the seat with nylon washers. This helps the seat flex around the rigid lead and stops breakages. Also bend the lead in an arc under the front, this is done so as not to pull the composite out of its naturally moulded shape.

● If water pipes and data cables are to be fitted, make sure that any hole drilled for a cable tie is more than 5mm away from the edge. Holes drilled too close to the edge can cause a crack.

● When you are fully satisfied with the performance of the kart, record the position of your correctly fitted seat. Keep the “seat to axle surface” gap and the seats lowest point dimension. For a specific driver setup, it also helps to keep a measurement from the centre of the Tillett badge to the top of the steering wheel and one from the front toes of the seat to the pedals. Finally, make a note of the size, shape and rigidity that you have used. To prepare the seat for wet weather, drill two holes for water drainage at the lowest point of the seat. Your seat is then ready for use on the track.

T Board Track



The T Board TRACK has been designed to speed up the accurate fitting of a kart seat whilst at the circuit.

● Totally adaptable on any chassis.

● Drops quickly into place without lifting the chassis.

● Adapts to cope with obstructions like battery boxes and fuel pipes.

● Converts to suit 28, 30 and 32mm chassis diameters.

● Can be flipped upside down to suit engines on the left.

Fitting a kart seat is one of the most time consuming jobs for a mechanic, but it is also one of the most important elements of setup to get right. This is because the driver is around half the overall weight of the vehicle. Therefore, their position within the chassis needs to be fully understood and correct every time. The lap times are likely to increase if the seat is set just 5mm out. Understanding the optimum position is made even more difficult when you consider the many different seat shapes, sizes and driver seating preferences.

The T Board TRACK uses a lightweight but rigid carbon plate and four magnetic height setting bar assemblies. These assemblies hold the plate in a precise location which sets the low point of the seat. The jig can then be easily dropped onto the chassis in seconds. The seat is then placed on the board and by using the magnetic carbon slide rule, you can measure and hold it accurately at a set distance from the axle, all future seats are then easy to fit in exactly the same place every time.