

Borderlands Motor Vehicle Club (BMVC)

REGULATIONS 2023

F24 TECHNICAL REGULATIONS

T1 - MOTOR

T1.1. All vehicles must only be driven by Greenpower supplied 24 volt DC electric motors. Hybrid systems are not permitted.

T1.2. Motors are sealed and must not be opened or modified.

T1.3. Motor cooling is only permissible using passive or forced air, without any prior energy input or power from batteries other than the main vehicle batteries.

T1.4. Motors must be easily accessible for inspection. Greenpower reserves the right to remove motors for return to the supplier for inspection.

T2 - BATTERIES

T2.1. Two 12v batteries, referred to as main batteries, will be used on each vehicle. Only one set of two main batteries will be used in a race. No external energy source may be used. Energy recovery systems are permitted.

T2.2. Auxiliary batteries for powering devices on the car must not exceed one PP3 or six AA cells per car. Coin or button cells are permitted as a power source for brake lights but also to allow control systems to retain settings whilst main batteries are changed. Proprietary unmodified electronics with self contained batteries, e.g. Speedometers, watches, radios are permitted so long as they're not connected to any of the car control systems. All other devices including motor controllers must be powered off the main batteries. If in doubt consult Greenpower.

T2.3. Out of the car, the main batteries should be kept separate and lifted independently of one another.

Safety note - Due to their weight, appropriate safe manual handling practices should be observed when handling batteries. Batteries that are dropped may cause injury or suffer internal damage.

T2.4. Batteries may be charged with the agreement of the Clerk of Course.

T2.5. The main batteries must be firmly secured to the chassis of the vehicle using rigid fixings – i.e. no webbing or elastic straps, and must not be able to move in any direction in those fixings. Plastic threads on fixings are not permitted. Over centre clips must be security pinned.

T2.6. The main batteries may be mounted upright or on any side but must not be inverted, i.e. terminals must not point towards the ground.

T2.7. The main batteries must be separated from the driver by a bulkhead, sufficient to restrain the batteries from the driving compartment. This bulkhead must not be able to short circuit the battery terminals. Batteries must be located inside the vehicle's bodywork.

T2.8. Batteries must have quick release connections to enable rapid disconnection in the event of an emergency. They must not be liable to disconnect or short against metal parts. Quick release connector locations must be clearly labeled, "Battery Disconnect". Connectors must be accessible and operable without the need for tools.

T2.9. The main batteries in vehicles at the start of practice sessions or races will not exceed 25°C or ambient temperature plus five Celsius when ambient is above 20°C as measured by Greenpower.

T3 - WHEELS & TRACK

T3.1. Tyres must not be less than 300 mm nor greater than 520 mm in diameter.

T3.2. There must be four wheels located as a matching front and matching rear pairs, symmetrically about the longitudinal centre line of the vehicle.

T3.3. The track of the vehicle must not be less than 500 mm front or rear. The track is deemed as the measured width between centres of tyres where they contact the ground. The track may vary front to rear.

T3.4. Tyres must be pneumatic.

T3.5. Plastic spoked wheels are not permitted.

T4 - CENTRE OF GRAVITY

T4.1. The base of the main batteries must be at or below 100 mm from ground level. A 6 mm diameter hole should be drilled through any solid floors adjacent to the batteries to allow height measurement. See Fig. 1

T4.2. The driver's seat including any padding must be at or below 100 mm from ground level. A six mm hole should be drilled through the base of the seat to allow height measurement. See Fig. 1

T5 - DIMENSIONS

T5.1. The vehicle must not exceed 2800 mm in length, 1200 mm in width, and 1200 mm in height.

T5.2. Ground clearance must not be less than 30 mm.

T5.3. No part of the vehicle may extend more than 800 mm behind the centre point of the rear wheels.

T6 - DRIVER & SEATING

T6.1. The vehicle will have one seat for the driver firmly fixed to the vehicle chassis.

T6.2. The driver must be seated in a feet forward, reclined position. Drivers may not kneel, sit astride a seat, or lie down in any way such that their chests and head are forward of their waist.

T6.3. The driver must be able to demonstrate a rapid and safe exit from the vehicle unaided.

T6.4. There must be a solid floor under the whole of the driver, to prevent ingress of debris.

T6.5. There must be a padded head rest behind the driver's helmet to prevent whiplash.

T6.6. All parts of the vehicle's seat which are in contact with the driver must have some form of protective padding.

100 MAX TO DRIVER

(T4.2) 100 MAX TO BATTERIES

(T4.1) Figure 1

T7 - DRIVER'S CELL

T7.1. There will be a solid bulkhead rigidly mounted forward of the driver's feet forming the front-most part of the driver's cell. This bulkhead must be vertical and parallel to the front axle centre-line. Securely attached to the front of this bulkhead will be a foam structure at least 200 mm long and with a compressive strength of 300 – 700 kPa. A means of access to this foam must be available at scrutineering.

T7.2. There will be a rigid driver's cell extending from the bulkhead in T7.1 to the driver's back. Between the harness lap strap mounting points and the driver's back, it will extend to a height of 250 mm above the seat base or above the drivers elbows, whichever is greater. The driver's cell height, forwards of the lap strap mounting points, may be less than 250 mm but must exceed the highest part of the driver in this area.

T7.3. The skin of the driver's cell in T7.2 must be constructed of rigid sheet material such as aluminum; rigid plastics; carbon fibre; glass reinforced plastic or other composites of at least 1.5 mm thickness. Plywood products must be at least 3 mm thick with all laminations being hardwood. The skin must form a continuous protective layer and be securely attached directly to the driver's cell so as to be unlikely to fail as a result of an impact.

Note: Some materials such as corrugated plastic and high impact polystyrene (HIPS) are not suitable. **Any form of light plywood, often using a softwood core, must not be used. Acceptable plywood is often referred to as birch or marine ply.** If in doubt, please consult BMVC.

T7.4. The driver's cell opening will accommodate a rectangle of at least 600 x 350 mm with no intrusions.

T7.5. The driver's helmet must be positioned at the rearmost point of the opening in T7.4 to create a clear space in front of the helmet.

T7.6. Inner faces of the driver's cell sides will be lined with a minimum of 25 mm thick closed cell foam from the floor to the driver's cell opening to protect a substantial part of the driver's body.

T7.7. Any sharp edges or protrusions in the driver's cell must be padded.

T7.8. There will be a bulkhead separating the driver from any accidental contact with the wheels.

T8 - BODYWORK

T8.1. Anything forward of the bulkhead in T7.1 must be easily deformable.

T8.2. Bodywork to the front and sides of the driver's helmet will be lower than the bottom of the driver's helmet visor aperture.

T8.3. No bodywork will be higher than 150 mm below the top of the rear roll hoop.

T9 - BRAKES

T9.1. Brakes will be subject to a force test of 300 N applied horizontally forwards from the top of the roll bar with the car situated on a flat tarmac/concrete surface. There must be no movement of the car. All drivers must be capable of producing this braking force. This will be subject to spot checks outside of scrutineering.

T9.2. A minimum of two independent brake systems must be fitted, such that there is still some braking if one system were to fail. These systems may be operated by a single dual system lever.

T9.3. Both wheels on either front or rear axles must have the same type of brake such that the car brakes in a straight line. This is in addition to any electrical braking system that might be incorporated.

T9.4. The driver must be able to operate the brakes without removing either hand from the steering mechanism.

T9.5. Braking systems must be operated by hand only. Foot operated brakes are prohibited.

T10 - ROLL BARS

T10.1. The vehicle must have front and rear roll bars offering protection in accordance with the diagrams shown here – the helmeted head of all drivers must be at least 50 mm below the line A-B as shown. See Fig 2.1

T10.2. Roll bars must be firmly secured to the chassis of the vehicle using mechanical fixings or welding. Roll bar to chassis mountings and points on the chassis to which roll bars connect must be suitably strong and where necessary reinforced to prevent failure in the event of a roll over incident. Gluing/bonding of roll bars to chassis with no mechanical fixings or welding is not permitted.

T10.3. One central triangulated brace or two side triangulated braces must connect the rear roll bar to the chassis. These braces must attach, behind the rear roll bar, to the chassis of the vehicle at one end, to not more than 200 mm from the top of the roll bar at the other, must be capable of taking loading in all directions and must be rigidly mounted. The angle between the rear roll bar and brace(s) must be at least 25 degrees.

Figure 2.1

Figure 2.2

T10.4. All rear roll bars & braces must be produced from circular section steel, with minimum outside diameter of, main hoop - 25mm, braces - 19 mm and minimum wall thickness of 1.5 mm.

Safety note - Greenpower reserves the right to drill a 4 mm diameter hole in any roll bar for the purpose of inspection. Teams should avoid drilling roll bars as it weakens the structure.

T10.5. Non-structural bodywork along with front and rear wheels must not be regarded as part of the roll protection. The top 150 mm of the roll bar must not have any fairing or other aerodynamic aid. See Fig 2.2

T10.6. The rear roll bar and bracing structure must extend down into the car to at least the level of the driver's shoulder strap mounting points.

T11 - SAFETY EQUIPMENT

T11.1. Two mirrors, each with a minimum area of 2250 mm² will be fitted in clear air outside the bodywork and must be able to be adjusted with a wide field of view. Fairings are permitted, but must only be attached to the reverse (non-reflective) side of the mirror itself. Camera systems to replace rear view mirrors are not permitted.

T11.2. The vehicle must have a clearly audible single-tone horn.

T11.3. A 24 volt, minimum 100 amp, rated isolation switch must be fitted. It must be clearly visible and be easily accessible to the driver, and from outside the vehicle. Two switches may be fitted if needed. On/Off positions must be clearly marked. Indirect operation of the isolator is not permitted.

T11.4. The vehicle must be fitted with a minimum four fixing point, 50 mm width safety harness, with secure fixing points on the roll bar or chassis. Harness shoulder strap fixing points should be close to shoulder height and neck width (approx. 150 mm). Lap straps must be able to be fully tightened before shoulder straps and must fully tighten around the driver's lap without additional padding in front of the driver.

Safety note – Harness ends should protrude at least 100 mm beyond the buckle for all drivers, and be folded and sewn at the ends to act as a stopper.

T11.5. Where the seat back has an angle of 45 degrees or more a minimum 4 point harness is required. See Fig. 3.1 Where the seat back has an angle of 30 degrees or more combined with a front lip of 15 degrees or more a minimum 4 point harness is required.

See Fig. 3.2

Figure 3.1

Figure 3.2

Figure 3.3

Where the seat back has an angle of less than 45 degrees with a front lip of less than 15 degrees a minimum 5 point harness is required. See Fig. 3.3. If in doubt, use a 5 point harness.

T11.6. A non-flashing, red brake light will be fitted so it is clearly visible to following vehicles.

T11.7. The drive train must be guarded to prevent fingers, hair and clothing becoming trapped at any time.

T11.8. The use of locking nuts on safety critical components is mandatory, including but not limited to: safety harnesses, roll bars, wheels, steering and braking systems.

Safety note - if in doubt, use locking nuts.

T12 - STEERING

T12.1. Steering systems must have minimal play.

T12.2. Steering must be able to operate smoothly from lock to lock, without wheels making contact with bodywork.

T12.3. Steering must be by mechanical linkages only.

T12.4. Steering must be by front wheels only.

T12.5. Steering must be operable by hand only.

T13 - ELECTRICS

T13.1. The accelerator must be spring loaded to the Off position.

T13.2. Electronic motor controllers must not be capable of boosting battery voltage, i.e. at any time the voltage across the motor terminals may not exceed the voltage across the battery terminals.

T13.3. A fused link/cut-out must be in place in the main power circuit, rated at 70 amps or less.

T13.4. All wires and terminals on the vehicle must be neatly run, secured and unable to chafe, away from moving parts.

T13.5. All wiring and electrical components must be correctly rated for their use.

T13.6. Low current ancillary circuits must have their own fuse (normally 5A or less).

T14 - OTHER

T14.1. Transmission of any form of electronic data to the car/driver by whatever means is prohibited. Communication with the car/driver is only allowed via verbal (e.g. radio) or visual (pit board) means.

T14.2. Telemetry and all communication systems must operate at national legal frequencies and power levels.

T14.3. Driver to pit audio communication systems must be hands free. Any item, other than primary vehicle controls, in the driver's cell must be adequately and securely restrained. No items shall be attached to the safety harness.

T14.4. Delete

T14.5 Delete

T14.6. Cameras must not be attached to the crash helmet. Cameras must be attached to the car with secure mechanical fixing. Suction mounted cameras are not permitted.

T14.7. Provision must be made for a minimum of 8 partner stickers, each of 200 mm x 75 mm. Partner stickers supplied by Event Organiser must be applied to the vehicle in prominent positions.

T14.8. Lift points, for use by recovery marshals, must be clearly marked. Lift points must provide for a balanced lift of the vehicle in race ready condition excluding driver.

T15 - KIT CAR REGULATIONS

T15.1. The main Kit Car chassis frame must remain unmodified other than those permitted modifications identified below.

T15.2. Sheet metal that forms the seat may be removed/modified or adapted.

T15.3. Battery retaining posts and sheet metal forming the battery tray may be removed/relocated/modified.

T15.4. Upper and lower motor mounting tabs and stud may be modified / removed.

Note:

Notwithstanding T1 & T2, any items other than the main Kit Car chassis may be modified/replaced/discarded. Greenpower race officials reserve the right to prevent any modified Kit Car chassis that is deemed unsafe from taking part in an event.

GOBLIN SPORTING REGULATIONS

These regulations are in addition to those detailed in the Motorsport Year Book to allow the relaxation of the regulations

S1 - SPORTING REGULATIONS

S1.1. Drivers must wear helmets with visor or goggles at all times during practice and competition. It is the responsibility of the driver and team manager to ensure helmets fit properly and are in serviceable condition. In use helmets must be securely fastened. Helmets must be full-face style compliant with one of the following standards:

British Standard BS 6658:1985 (BSI Kite marked)

UNECE Regulation 22.05 (E marked)

FIA 8860-2004 (Not valid after 31.12.2020)

FIA 8860-2010

FIA 8859-2015

SNELL SA2010 (Not valid after 31.12.2023)

SNELL SA2015 (Not valid after 31.12.2023)

SNELL SAH2010 (Not valid after 31.12.2023)

SNELL K2010 (Not valid after 31.12.2023)

SNELL K2015

SNELL – FIA CMR2007

SNELL – FIA CMS2007

SNELL - FIA CMR2016

SNELL - FIA CMS2016

S1.2. Full overalls or long sleeved tops and trousers and full fingered gloves must be used whilst driving. Overalls must be of a suitable thickness to provide protection. Paper overalls are not acceptable.

S1.3. All team members must wear stout closed toe footwear, ideally with toe protection.

S1.4. Drivers must be aged 9 – 11 (inclusive) only.

S1.5. All drivers must know about all aspects of the car, especially how to isolate the power.

S1.6. It is recommended that all drivers have experience in driving before arriving at an event.

S1.7. Battery charging at events is prohibited. Only a single pair of batteries is permitted to be used per event day. On two day events the batteries may be charged with the agreement of the Clerk of Course.

F24 SPORTING REGULATIONS

S1 - TEAM CLOTHING

S1.1. Drivers must wear helmets with visor or goggles at all times during practice and competition. It is the responsibility of the driver and team manager to ensure helmets fit properly and are in serviceable condition. In use helmets must be securely fastened. Helmets must be full face style compliant with one of the following standards:

British Standard BS 6658:1985 (BSI Kite marked)
UNECE Regulation 22.05 (E marked)
FIA 8860-2004 (Not valid after 31.12.2020)
FIA 8860-2010
FIA 8859-2015
SNELL SA2010 (Not valid after 31.12.2023)
SNELL SA2015 (Not valid after 31.12.2023)
SNELL SAH2010 (Not valid after 31.12.2023)
SNELL K2010 (Not valid after 31.12.2023)
SNELL K2015
SNELL – FIA CMR2007
SNELL – FIA CMS2007
SNELL - FIA CMR2016
SNELL - FIA CMS2016

S1.2. Full overalls and full-fingered gloves must be worn whilst driving. Overalls must be of a suitable thickness to provide protection. Paper overalls are not acceptable.

S1.3. All team members must wear stout closed toe footwear, ideally with toe protection.

S1.4. Team members in the pit lane must wear overalls or long trousers.

S2 - LOGBOOKS AND SCRUTINEERING

S2.1. Teams are responsible for their vehicles logbook and must make the logbook available at scrutineering. For new cars, a logbook will be created at their first event. Any Scrutineer's requirements must be completed before your next event; otherwise the vehicle will not be allowed to participate.

S2.2. Cars must pass scrutineering before being permitted on track.

S2.3. Cars presented for scrutineering must be in ready to race condition with all covers, bodywork and electrical items in place. Teams should be prepared to remove covers and or bodywork if requested to permit access to all areas of the car.

S2.4. Tallest and shortest drivers, with helmets, must be present at scrutineering.

S2.5. Once cars have passed scrutineering team members must exchange their scrutineering paperwork for a timing transponder at Race Admin. Transponders **MUST** be returned to Race Admin before leaving the event. Failure to do so may result in a ú300 charge.

S2.6. Any car involved in an on track incident may be subject to inspection before being permitted to continue. Any corrective measures identified during this inspection must be completed before the car will be permitted to return to the track.

S2.7. Prior to exiting the pit lane each car/driver will undergo safety checks including, correct clothing, safety harness fitment, helmet & chin strap and brake operation.

S3 - TEAM MEMBERS

S3.1. Drivers must be aged:

IET Formula 24, 11-16 years (inclusive) at the start of the race season.

IET Formula 24+, 16-25 years (inclusive) at the start of the race season.

S3.2. All drivers must have signed the event registration form that must also be countersigned by a responsible adult. This must be handed to Race Admin before participating.

S3.3. Drivers must be aware of the following flags that will be used on track:

- **RED STOP!** The event has been stopped due to an incident or blockage on the track. Slow right down, and stop at the next marshal post where a red flag is displayed. Drivers must remain in their cars and await further instructions.

S3.4. Drivers must at all times maintain a steady line. They must not move to block other cars. Tailgating is prohibited - drivers must not follow closely in line behind other cars, maintaining at least a 1 second gap.

S3.5. All drivers must be able to read (with glasses or contact lenses, if necessary) a road car number plate from 20 metres.

S3.6. All drivers must be fully conversant with the Supplementary Regulations for each event, must be knowledgeable about their vehicle, and must attend the Team Briefing at events.

S3.7. It is the responsibility of the team manager to ensure all drivers are able to drive safely with adequate all round visibility.

S3.9. At pit entry all cars must switch off their isolator switch. One team member is required to meet cars at pit entry to push them at walking pace to their pit. Running in the pit lane will be penalised.

Drivers must not unbuckle their safety harness / helmet or remove gloves until stopped at their pit. Cars must not be pushed away from the pit to re-join the track until the driver is correctly harnessed and clothed.

S4 - EVENT FORMAT

Not required as a sprint and one car on the track at a time

DEFINITIONS

Adult A person aged 18 or over who is not a Driver or Mechanic.

Controlled Area That area of the venue designated for racing to include the pit lane.

Driver A participant registered at Race Administration intending to operate a vehicle at an event.

Event An event organised by BMVC for which supplementary regulations have been issued.

Entrant A person who, acting on behalf of a team, applies to enter an event.

Official Officials of the meeting are identified in the Supplementary Regulations and may be contacted via Race Administration.

Participant Any member of a team present at an Event.

Race Administration Team A designated, permanently manned location at an event. May also be known as Race Admin or Race Control.

Team Leader The nominated Adult responsible for a team and registered. A deputy may attend an Event but must register with Race Administration.

Team An organised group comprising at least one responsible Adult identified as Team Leader. A team may be associated with one or more Vehicles.

Vehicle An assembly of components compliant to the rules set out in this document which the entrant intends to race. A vehicle may also be referred to as a car.

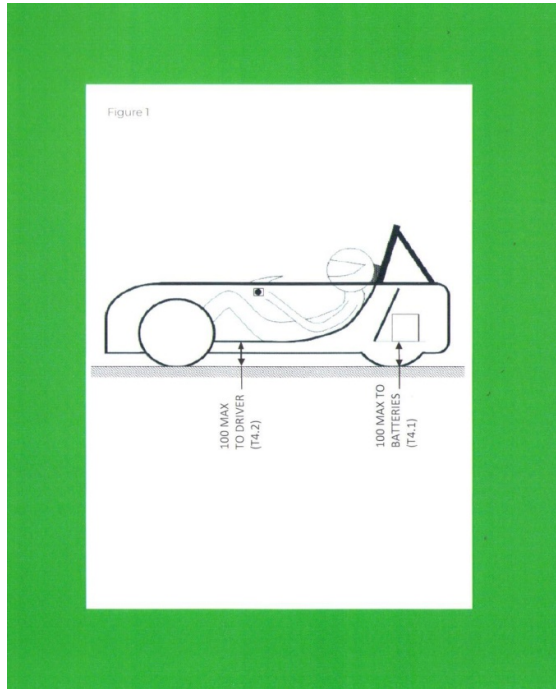


Fig 1

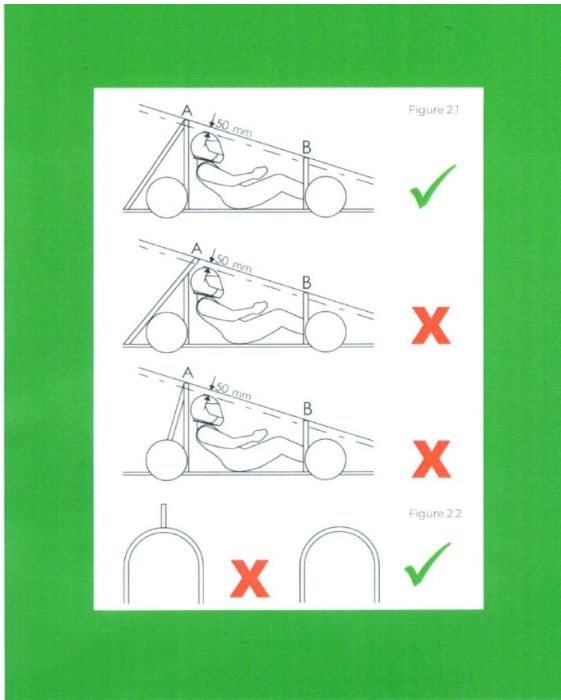


Fig 2.1

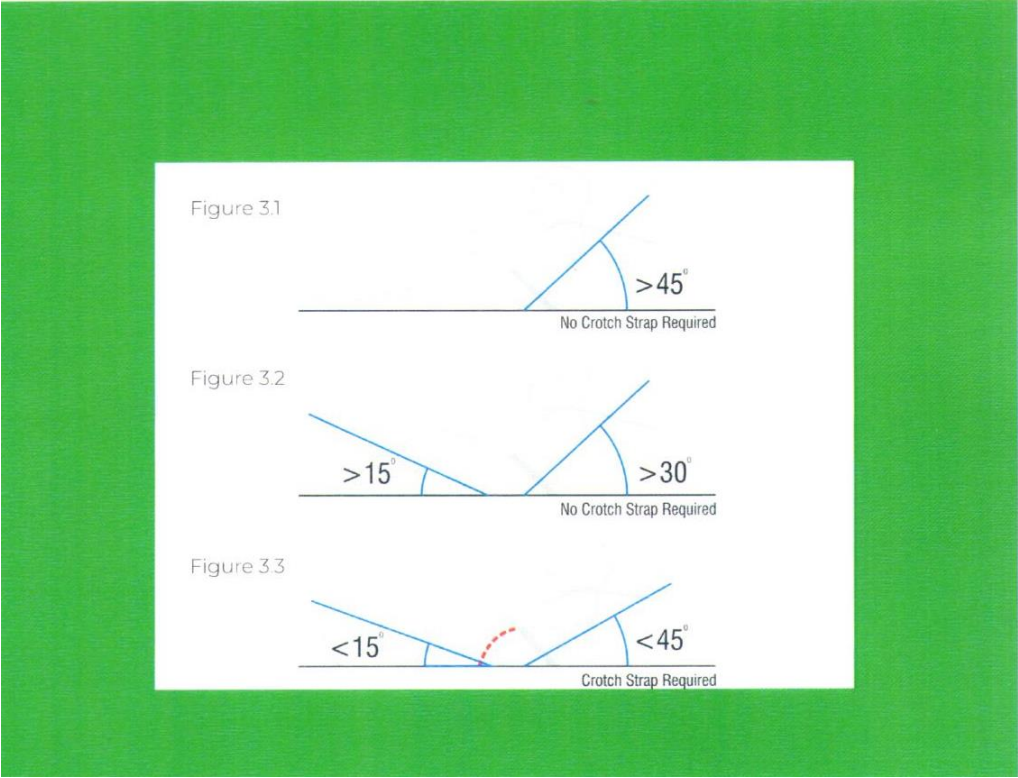


Fig 3.1, 3.2 and 3.3

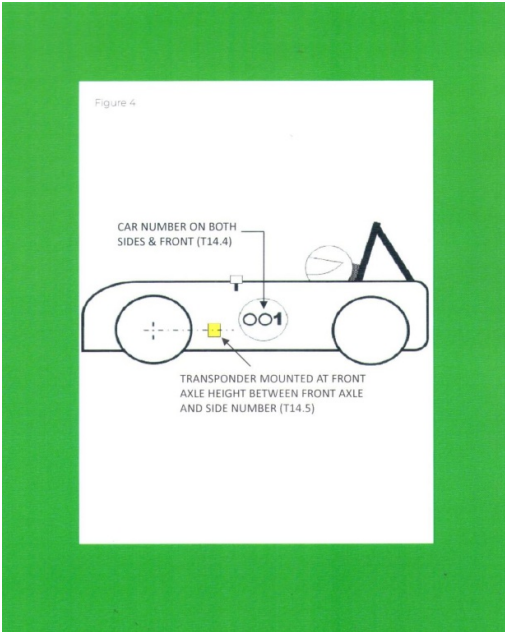


Figure 4