

by The Digital Slot Car Association

1/32 WORLD ENDURANCE CHAMPIONSHIP TECHNICAL REGULATIONS

2020 version 1

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Preamble

These standards are applicable to 1/32 scale models of Le Mans, endurance, and sports racing cars competing in race distances of greater than one hour, or where a team of drivers is necessary. They provision for hand-out motors and tyres and encourage the building of accurate scale model racing cars.

The formula is designed for multi-category racing where cars on track are divisible into categories based on their type and/or technical specification, and that may be classified independently as such.

The technical regulations allow freedom in many areas while requiring a plastic chassis and 'hard' bodyshell. Particular focus is directed at the scale authenticity and appearance of models.

1. Categories

- 1.1. Cars will be grouped and classified by category based on their type
- 1.2. Technical differences between categories are detailed in the following appendices;
 - 1.2.1. Appendix A – Le Mans Prototype P1
 - 1.2.2. Appendix A – Le Mans Prototype P2
 - 1.2.3. Appendix A – Le Mans Prototype Grand Tourisme

2. Body

- 2.1. The body is defined as a removable cover for all mechanical components, such that if it were removed, the chassis and all components referred to in the technical appendix are capable of driving a lap of the circuit
- 2.2. Body shells must be 1/32 scale, $\pm 3.0\text{mm}$, in all dimensions and directions
- 2.3. Body shells must be made from injection moulded plastic, resin, glass-fibre or accepted 'hard-body' construction approved by the organizers
- 2.4. Paint schemes must be authentic. Any paint scheme that does not match a car entered into the Le Mans 24 Hours (or other recognised and approved event) must be approved by the organizers.
 - 2.4.1. Sponsor logos may be changed
 - 2.4.2. In the case of a low-detail body, for example a one-piece moulding, any detail features must be painted and presented sympathetically to place emphasis on the detail
 - 2.4.3. Unpainted or undecorated bodies are illegal
- 2.5. In addition to the paint scheme, the body must be decorated as detailed in Appendix A. Decals for such decoration will be provided by the organization
- 2.6. All windows and light lenses must be clear.
 - 2.6.1. All windows must be present at the start of the race
 - 2.6.2. Windows with any side equal to or longer than 15mm must be fitted at all times
 - 2.6.3. Light lenses may be coloured translucent
- 2.7. Spoilers, wings, and wing mirrors must be made from a plastic or rubber material.
 - 2.7.1. Silicone rubbers are allowed
 - 2.7.2. Spoilers and wings must be fitted at all times
 - 2.7.3. Wing mirrors must be fitted at the start of the race
- 2.8. The organizers reserve the right to request any detached body part be refitted or replaced
- 2.9. A driver's cockpit must be fitted. The driver's cockpit must feature, at the bare minimum;
 - 2.9.1. Dashboard
 - 2.9.2. Three-dimensional (3D) driver's head and/or helmet, bust and arms
 - 2.9.3. Seat back
 - 2.9.4. The driver and cockpit must be painted. Unpainted driver's cockpits are illegal
- 2.10. No mechanical parts of the car, except for the guide flag, wheels and tyres, should be visible from any angle when the car is placed on the circuit.
 - 2.10.1. The guide flag must not extend beyond the front of the car. In other words, the guide flag must not be visible in plan view.
 - 2.10.2. Wireless antenna may be visible
 - 2.10.3. It is not necessary to cover gear teeth protruding from the bottom of the chassis

- 2.11.** Any part of the real car, visible from any angle when the car is on the circuit, that does not include bodywork, must be present on the model. Examples include but are not limited to;
 - 2.11.1.** Floorpan
 - 2.11.2.** Splitter
 - 2.11.3.** Diffuser
 - 2.11.4.** Radiators/grilles
 - 2.11.5.** Exhaust pipe
- 2.12.** Bodies may be mounted to the chassis using threaded screws, or peg-and-cup method (eg HRS) only.
 - 2.12.1.** There is no restriction on the number of threaded screws used for body mounting
 - 2.12.2.** All threaded screws must be covered with a non-conducting material to prevent a short-circuit with the circuit rails
 - 2.12.3.** It is illegal to mount bodies using pins, tape, velcro or other non-specified methods
- 2.13.** The minimum allowed mass for body shells is as follows;
 - 2.13.1.** LM P1 and LM P2 cars 17.5g
 - 2.13.2.** LM GT cars 22.0g
 - 2.13.3.** Bodies are measured without screws
 - 2.13.4.** Any independent interface that permits movement between the chassis and body will not count towards the mass of the body when measured
- 2.14.** The organizers reserve the right to declare any unsuitable body illegal for contravening the spirit of the event

3. Chassis

- 3.1.** Chassis must be made from plastic
- 3.2.** The chassis is defined as; "The carrier of the motor, axels, and guide flag"
- 3.3.** Any independent motor carrier, and associated fixings, is included in the definition of "chassis" and not considered a separate component, for the purposes of rule making

4. Motor

- 4.1.** Motors for endurance racing events are provided by the organization. Detail is given in Appendix A
 - 4.1.1.** Motor cans must be insulated from the circuit rails
 - 4.1.2.** Motor shafts may be shortened under the supervision of a race official
 - 4.1.3.** Any other modification to a supplied motor is illegal

5. Tyres

- 5.1.** Front tyres must be rubber.
 - 5.1.1.** On front tyres only, the application of varnish (or alternative hard-setting fluid only) is allowed
 - 5.1.2.** Dimensions of front tyres are restricted to the following;
 - 5.1.2.1.** Minimum width 8.0mm
 - 5.1.2.2.** Minimum diameter 18.5mm
 - 5.1.2.3.** Maximum width 10.0mm
- 5.2.** Rear tyres for endurance racing events are supplied by the organizers;
 - 5.2.1.** qty.16 x Slot.it PT1207 N18
 - 5.2.2.** qty.4 x Slot.it PT1207 F22
- 5.3.** The tyre manufacturer's marking must be present on the sidewall of rear tyres
- 5.4.** Fixing rear tyres to wheels with glue is illegal

- 5.5. The surface of any tyre may be cleaned with tape or lighter petrol only

6. Light installation

- 6.1. Cars must start the race with two (2) working headlights and two (2) working taillights.
- 6.1.1. A working brake light, even when not lit under acceleration, is considered to be a working taillight
- 6.1.2. A minimum of one (1) working headlight and one (1) working taillight must remain functional at all times
- 6.2. There is no maximum number of headlights or taillights, providing that the light installation mimics the real car
- 6.3. Light from headlights must be coloured as follows;
- 6.3.1. GT category; Yellow
- 6.3.2. Prototype categories; White or bright xenon white (blue tint)
- 6.3.3. White light may be filtered through a coloured lens
- 6.4. Light from all taillights must be red
- 6.5. LEDs fitted to the car for identification purposes are allowed, but must meet the following conditions;
- 6.5.1. ID LEDs may be any colour
- 6.5.2. A single LED 3mm in diameter or smaller may be fitted inside the driver's cockpit
- 6.5.3. A maximum of three LED lights of the specified colour may be fitted to each side of the car. The installation must sympathetic to the purpose of mimicking the "top 3" position light indicators used in the Le Mans 24 Hours, as illustrated in Appendix A.
- 6.5.4. Any ID light installation other than those described above may be declared illegal.
- 6.6. Any manufactured lighting kit is allowed
- 6.7. Custom lighting circuits are allowed
- 6.8. Lights must remain visible on the car for fifteen (15) seconds after the car has stopped or lost power
- 6.9. LEDs do not effect the eligibility of the chassis or body in any way and are not considered illegal when considering regulations that govern either
- 6.10. The organizers reserve the right to declare any light installation illegal on the basis it provides insufficient illumination
- 6.11. The organizers reserve the right to declare any light installation illegal on the basis that it is not installed in a manner which is sympathetic to it's purpose

7. General

- 7.1. The minimum allowed overall mass is as follows;
- 7.1.1. GT category 75.0g
- 7.1.2. Prototype categories 69.0g
- 7.2. The maximum allowed track width for any car is 63.0mm.
- 7.2.1. When viewed from above, tyre edges must be contained within the widest point of the wheel arch.
- 7.2.2. Body shell maximum sizes stated and tolerances stated in 2.2 still apply.
- 7.3. Traction magnets are illegal

- 7.4.** Ballast is allowed.
 - 7.4.1.** Ballast must not be visible from any view of the car, including when viewed from the bottom
 - 7.4.2.** Ballast must be securely fixed in place at all times
 - 7.4.3.** All ballast must be contained within the boundaries of the chassis
 - 7.4.4.** Ballast must not be used in a manner that it acts as a structural component
- 7.5.** Axels and bearings are free
- 7.6.** Gears and transmission is free
- 7.7.** AWD systems are only permitted on models of cars which ran AWD systems at the Le Mans 24 hours
- 7.8.** Wheels are free, but must be fitted to an axel.
 - 7.8.1.** Wheels must have either a moulded, machined, or 2D colour printed face appropriate to the wheel style of model. Plastic inserts are considered to be a moulded face
 - 7.8.2.** All wheel inserts must be mounted in a position considered 'original' by the organisation and not be mounted inboard or outboard of the original position.
- 7.9.** Suspension is free.
 - 7.9.1.** Suspension may contain metallic parts, but is otherwise considered part of the chassis
 - 7.9.2.** No magnetic force must be felt through the bottom of the chassis from any suspension kit
- 7.10.** Guide blade is free, but must be compatible with the circuit and lane changing mechanism
- 7.11.** Cables, braid and connectors are free.
 - 7.11.1.** Braid must be trimmed to a length shorter than the guide flag
- 7.12.** All cars must be compatible with the relevant technical illustration, as per the relevant appendices

Appendix A: DiSCA World Endurance Championship

P1

1.2.3 Category definition Le Mans Prototype 1 & Technical illustrations

P1 cars must be period 2010-2018. Cars must have a min. body weight of 17,5g and a minimum total weight of 69gr.

The P1 category is the fastest prototype category with the most technical freedom. Motor orientation is free and downforce from the motor can is maximised.

2.4 Off cial sticker placement

2.4.1 Official racing number on front and each side of the car.

2.4.2 National Flag on front of the car. Optional on other locations.

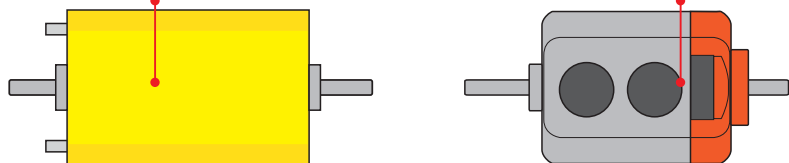
2.4.3 Category badge on each side of the car. Optional on other locations.

2.4.4 oXigen 24hrs decal on each side of the car. Optional on front.

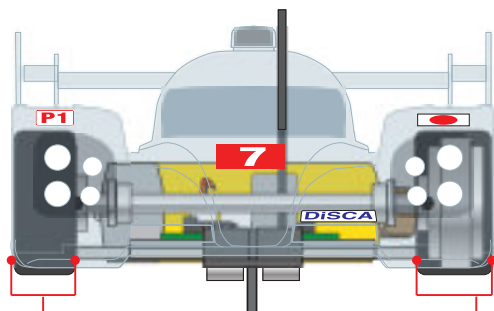
2.4.5 DiSCA decal on front of the car. Optional on other locations.

2.4.6 Any non official racing number must be removed or covered.

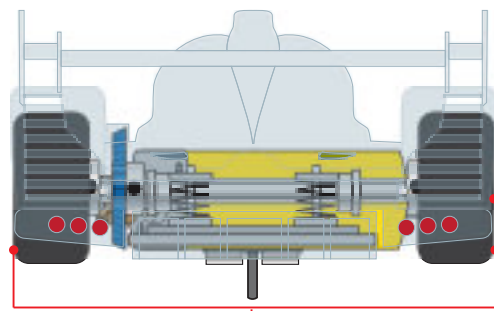
4.1 **Motors:** SIMN09ch closed side up, motor orientation free, or SMX16, motor orientation free.



4.1.1 Motor cans must be insulated from the circuit rails.



5.1.2 Front tyre min. width 8mm, max. width 10mm, min ϕ 18,5mm.

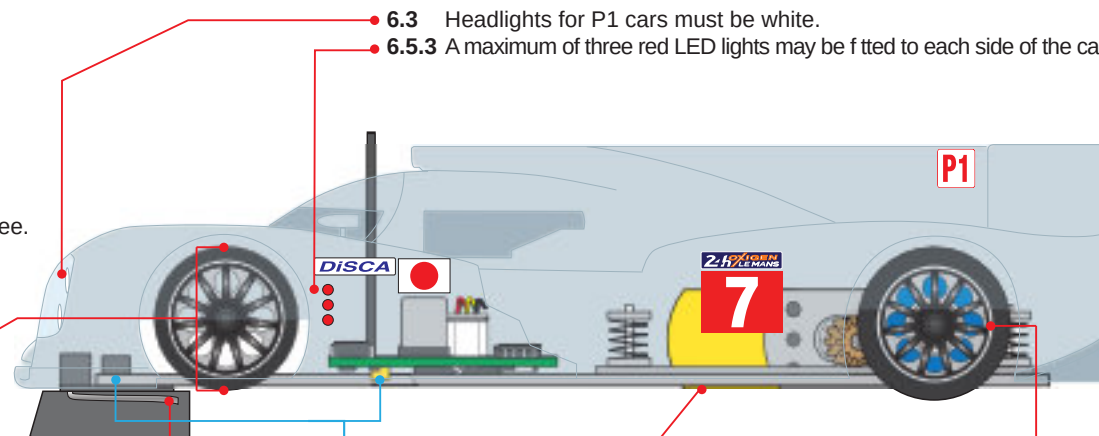


7.2. The maximum allowed track width for any car is 63.0mm. When viewed from above, tyre edges must be contained within the widest point of the wheel arch. Body shell maximum sizes stated and tolerances still apply.

7.3 When viewed from above, tyre edges must be contained within the widest point of the wheel arch

6.3 Headlights for P1 cars must be white.

6.5.3 A maximum of three red LED lights may be fitted to each side of the car.



7.9.2. All wheel inserts must be mounted in a position considered 'original' by the organisation and not be mounted inboard or outboard of the original position.

7.12.1. Braid must be trimmed to a length shorter than the guide flag.

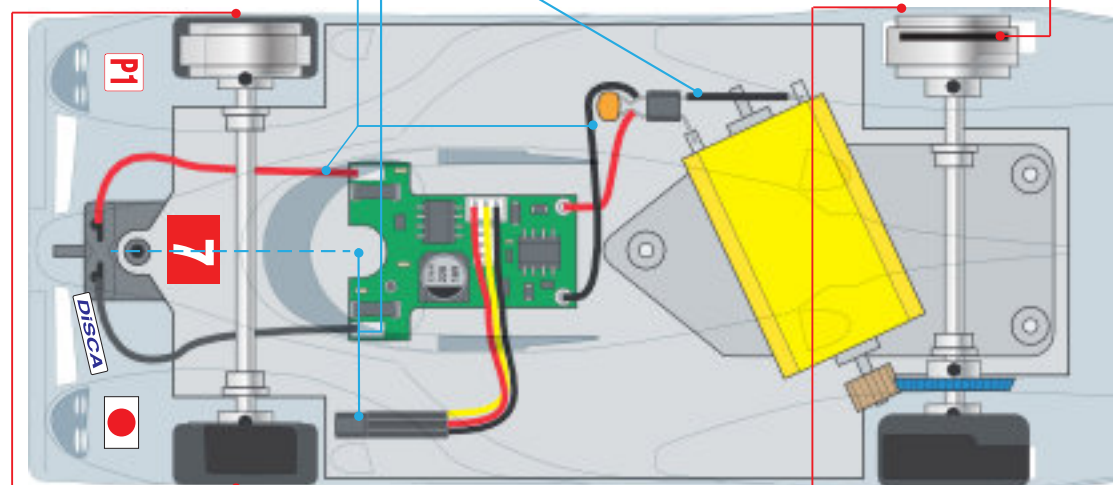
Advised for installation of the O201b & O201b1 chip:

Max. 35 mm distance between center guide & sensor LED.

Insulate ferrite from contact with motor can.

Min. 20 mm distance between centerline chassis & hall sensor.

Route lead, motor and light wires away from hall sensor and antenna.



Appendix A: DiSCA World Endurance Championship

P2

1.2.2 Category definition Le Mans Prototype 2 & Technical illustrations

P2 cars must be period: 2010-2018. Minimum body weight is 17.5g. Minimum total weight is 69.0g.

The P2 category is a second prototype category with certain restrictions which may be beneficial for the beginner. Motor orientation is limited to inline with reduced down force from the motor can. This will mean it is not on pace with a P1 car, but may trade advantages with a GT car due to its lower centre of gravity.

2.4 Official sticker placement

2.4.1 Official racing number on front and each side of the car.

2.4.2 National Flag on front of the car. Optional on other locations.

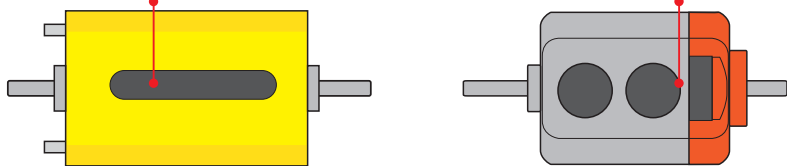
2.4.3 Category badge on each side of the car. Optional on other locations.

2.4.4 oXigen 24hrs decal on each side of the car. Optional on front.

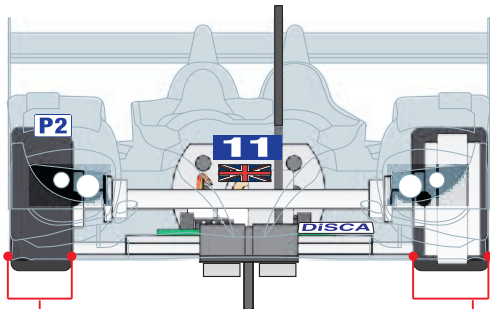
2.4.5 DiSCA decal on front of the car. Optional on other locations.

2.4.6 Any non official racing number must be removed or covered.

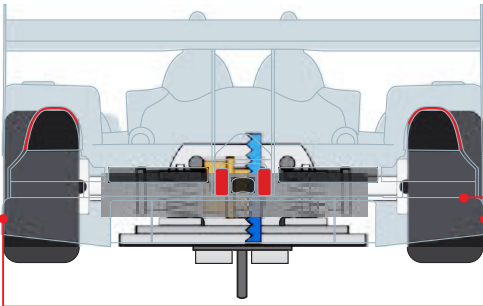
4.1 **Motors:** SIMN09ch open side up, motor orientation inline, or SMX16, motor orientation inline.



4.1.1 Motor cans must be insulated from the circuit rails.

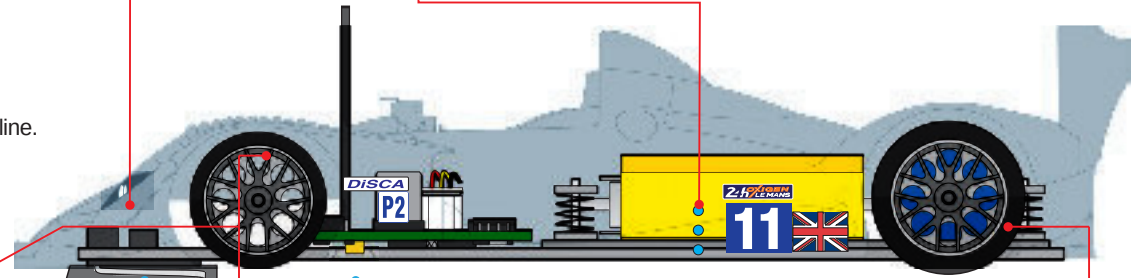


5.1.2 Front tyre min. width 8mm, max. width 10mm, min $\varnothing$ 18,5mm.



6.3 Headlights for P1 cars must be white.

6.5.3 A maximum of three blue LED lights may be fitted to each side of the car.



7.9.2. All wheel inserts must be mounted in a position considered 'original' by the organisation and not be mounted inboard or outboard of the original position.

7.12.1. Braid must be trimmed to a length shorter than the guide flag.

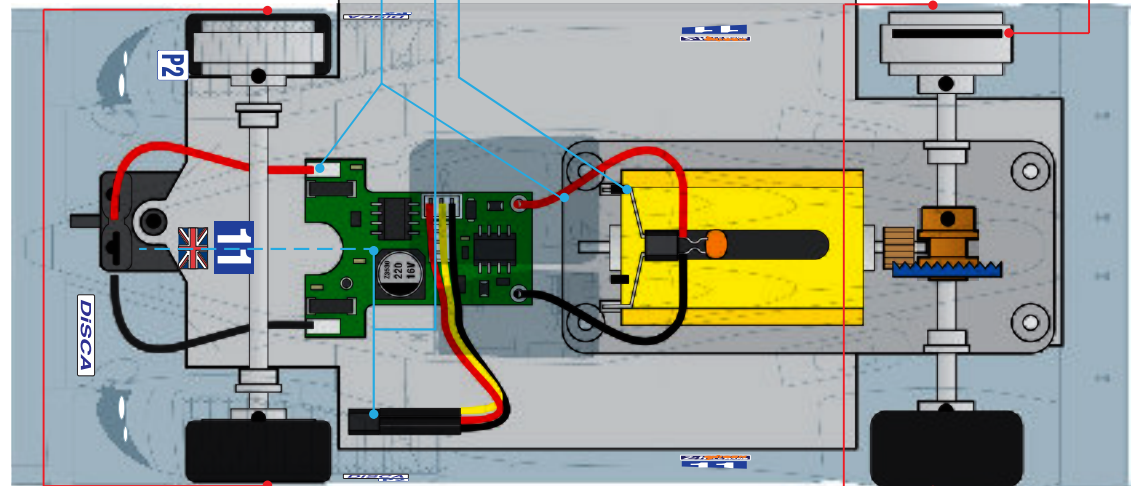
Advised for installation of the O201b & O201b1 chip:

Max. 35 mm distance between center guide & sensor LED.

Insulate ferrite man from contact with motor can.

Min. 20 mm distance between centerline chassis & hall sensor.

Route lead, motor and light wires away from hall sensor and antenna.



7.2. The maximum allowed track width for any car is 63.0mm. When viewed from above, tyre edges must be contained within the widest point of the wheel arch. Body shell maximum sizes stated and tolerances still apply.

7.3 When viewed from above, tyre edges must be contained within the widest point of the wheel arch

Appendix A: DiSCA World Endurance Championship



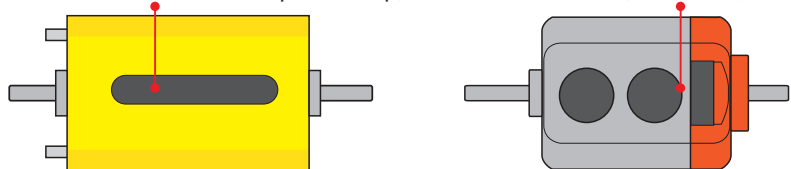
1.2.3 Category definition Le Mans Grand Tourisme & Technical illustrations

The GT category is based around road going sportscars (period 2015-2019) specifically modified for endurance racing. GT min body weight is 22.0g, min total weight is 75.0g. GT has similar technical freedom as P1, but with less downforce from the motor can. The additional mass properties of a GT car will mean it is not on pace with a P1 car. but may trade advantages with a P2 car due to the free motor orientation.

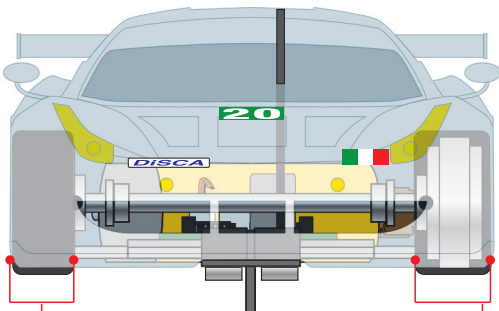
2.4 Official sticker placement

- 2.4.1 Official racing number on front and each side of the car.
- 2.4.2 National Flag on front of the car. Optional on other locations.
- 2.4.3 Category badge on each side of the car. Optional on other locations.
- 2.4.4 oXigen 24hrs decal on each side of the car. Optional on front.
- 2.4.5 DiSCA decal on front of the car. Optional on other locations.
- 2.4.6 Any non official racing number must be removed or covered.

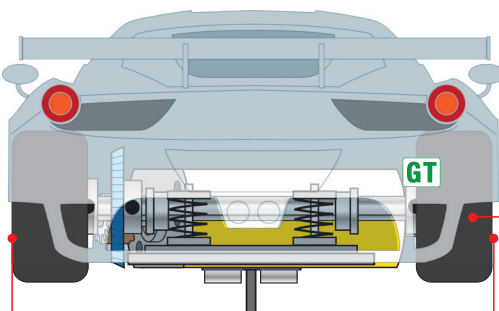
4.1 Motors: SIMN09ch open side up, motor orientation free, or SMX16, motor orientation free.



4.1.1 Motor cans must be insulated from the circuit rails.

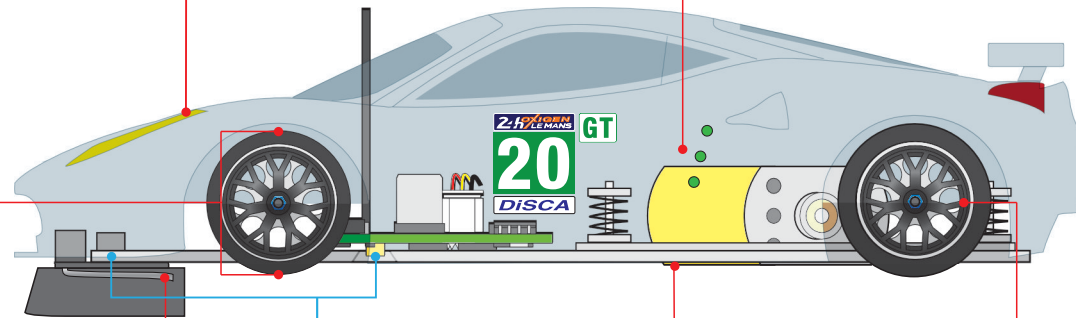


5.1.2 Front tyre min. width 8mm, max. width 10mm, min ø 18,5mm.

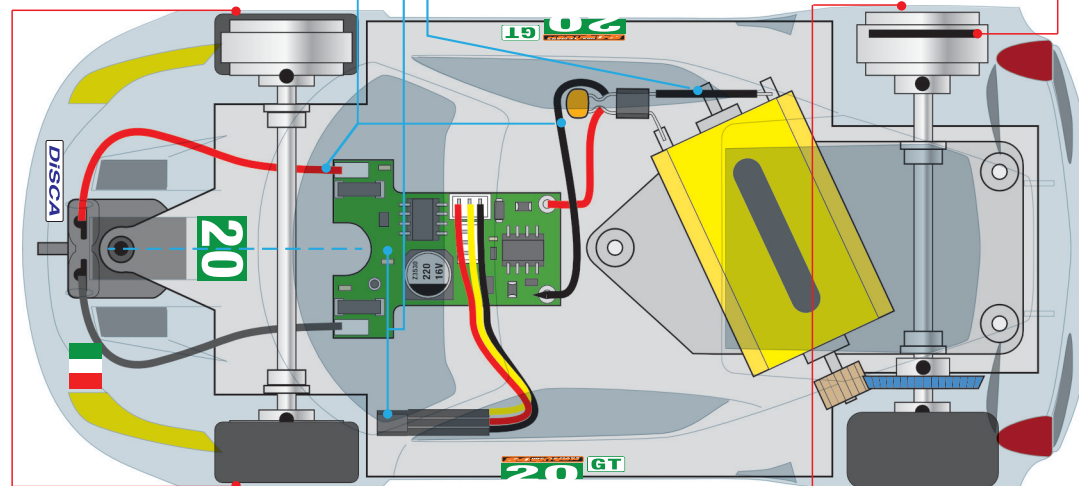


Advised for installation of the O201b & O201b1 chip:
Max. 35 mm distance between centre guide & sensor LED.
Insulate ferrite man from contact with motor can.
Min. 20 mm distance between centreline chassis & hall sensor.
Route lead, motor and light wires away from hall sensor and antenna.

- 6.3 Headlights for GT cars must be yellow.
- 6.3.2 Filtering white light through a coloured lens is allowed.
- 6.5.3 A maximum of three green LED lights may be fitted to each side of the car.



- 7.9.2. All wheel inserts must be mounted in a position considered 'original' by the organisation and not be mounted inboard or outboard of the original position.
- 7.12.1. Braid must be trimmed to a length shorter than the guide flag.



7.2. The maximum allowed track width for any car is 63.0mm. When viewed from above, tyre edges must be contained within the widest point of the wheel arch. Body shell maximum sizes stated and tolerances still apply.

7.3 When viewed from above, tyre edges must be contained within the widest point of the wheel arch