

2019 EstRX RALLYCROSS CUP

TECHNICAL REGULATIONS FOR RALLYCROSS CARS



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1. DEFINITION

1.1 Cars must be rigidly-closed non-convertible models.

2. ELIGIBLE CARS

2.1 Type of cars eligible

Cars not homologated with the FIA but produced in series and regularly on sale through a recognised commercial network are eligible.

3. MODIFICATIONS AND ADJUNCTIONS ALLOWED OR OBLIGATORY

3.1 All modifications which are not explicitly allowed by the present regulations are forbidden. An authorised modification may not entail a non-authorised modification.

3.2 Wheelbase and overhangs

The wheelbase and overhangs of the series production car must be respected.

3.3 Material

Unless explicitly authorised by the present regulations, the use of the following materials is prohibited unless they correspond exactly to the material of the original part:

- Titanium alloy
- Magnesium alloy (< 3 mm thick)
- Ceramics
- Composite or fibre-reinforced material.

Housing, covers, mounting brackets and accessories may be in composite material.

Titanium alloy is permitted for quick release connectors of the braking circuit.

3.4 Driving aids

Unless explicitly authorised by the present regulations, any driving aid system is prohibited (ABS / ASR / Traction Control / ESP...).

Supercharged cars must not be equipped with any device which allows the boost pressure, or the electronic management system controlling the boost pressure, to be adjusted by the driver while the car is in motion (except the throttle pedal).

3.5 Energy recovery

Any energy- recovery system other than that provided by the engine is prohibited.

All ERS-H systems are prohibited.

3.6 Telemetry / Voice communications

Any form of wireless data transmission between the vehicle and any person and/or equipment is prohibited while the car is on the track.

This definition does not include:

- Voice radio communications between the driver and his/her team
- Transponder from the official timekeeping, and
- Automatic timing recording.

On-board data recorders are allowed.

On-board TV Cameras are not included in the above definitions. However, the equipment and supports must first be approved by the Technical Delegate.

4. MINIMUM WEIGHT

The weight of the car is measured with the driver on board wearing his/her full racing apparel, and with the fluids remaining at the moment at which the measurement is taken.

The weight must be according to the following table :

Up to 1000 cm ³	770 kg
Over 1000 cm ³ and up to 1400 cm ³	860 kg
Over 1400 cm ³ and up to 1600 cm ³	1000 kg
Over 1600 cm ³ and up to 2000 cm ³	1100 kg
Over 2000 cm ³ and up to 2500 cm ³	1130 kg
Over 2500 cm ³ and up to 3000 cm ³	1210 kg
Over 3000 cm ³ and up to 3500 cm ³	1300 kg
The minimum weight of a SuperCar must be 1300 kg.	

Engines with variable valve lift systems (VTEC, VANOS, MIVEC and etc.)

If engine has variable valve lift system an additional weight of 50 kg has to be added to given weight, for example:

Over 1400 cm ³ and up to 1600 cm ³	1000 kg
If variable valve lift system is used:	1050 kg
Over 1600 cm ³ and up to 2000 cm ³	1100 kg
If variable valve lift system is used:	1150 kg

The volumes are corrected engine capacities, calculated as Article 252.3.

It is permitted to complete the weight of the car by one or several ballasts, provided that they are strong and unitary blocks, fixed by means of tools with the possibility of affixing seals, placed on the floor of the cockpit.

5. ENGINE

5.1 Cylinder capacity

5.1.1 SuperCars

For supercharged engines of SuperCars, the maximum cylinder capacity authorised is 2058 cm³.

Normally aspirated engines are allowed up to the equivalent corrected cylinder capacity of the turbo engines.

5.1.2 Super1600

The cylinder capacity is limited to 1600 cm³.

The engine must have a maximum of 4 cylinders.

The number of fuel injectors must be limited to 1 per cylinder.

5.1.3 TouringCars and Super2000

The cylinder capacity is limited to 2000 cm³.

The engine must have a maximum of 4 cylinders.

The number of fuel injectors must be limited to 1 per cylinder.

5.2 Engine – General

5.2.1 Engine SUPER1600 - TOURINGCARS

The engine is free, but :

- Engine of any manufacturer is allowed, but not exceeding defined cylinder capacity
- the engine must be normally aspirated.

5.2.1.1 Only a direct mechanical linkage between the throttle pedal and the engine load control device is permitted.

5.2.2 Engine SuperCars

Engine of any manufacturer is allowed, but not exceeding defined cylinder capacity

5.2.3 Restrictor

All supercharged cars must include a restrictor attached to the compressor housing.

All the air necessary for feeding the engine must pass through this restrictor, which must respect the following :

See Drawing 254-4. The maximum internal diameter of the restrictor is 45 mm.

- This diameter must be maintained for a minimum length of 3 mm.
- This length is measured upstream of plane A.
- Plane A is perpendicular to the rotational axis of the turbocharger and is at a maximum of 47 mm upstream of plane B, measured along the neutral axis of the intake duct.
- Plane B passes through the intersection between the most upstream extremities of the wheel blades and a cylinder of 45 mm diameter the centreline of which is the rotational axis of the turbocharger.

This diameter must be complied with, regardless of the temperature conditions.

The external diameter of the restrictor at its narrowest point must be less than 51 mm and must be maintained over a distance of 5 mm to each side.

The mounting of the restrictor onto the turbocharger must be carried out in such a way that two screws have to be entirely removed from the body of the compressor, or from the restrictor, in order to detach the restrictor from the compressor.

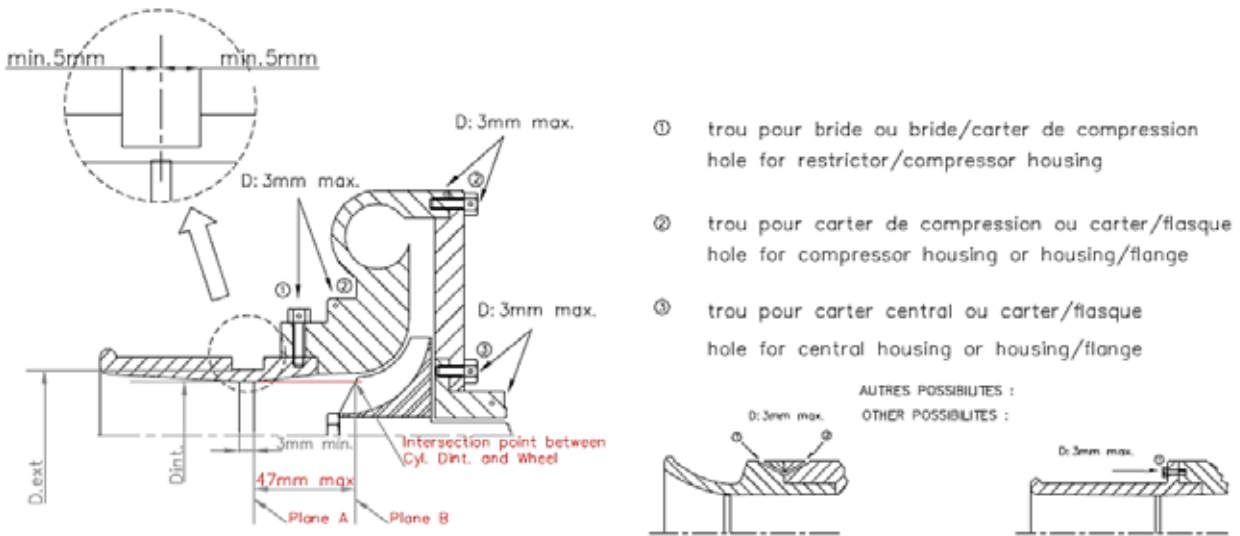
Attachment by means of a needle screw is not authorised.

For the installation of this restrictor, it is permitted to remove material from the compressor housing, and to add it, for the sole purpose of attaching the restrictor onto the compressor housing.

Local modifications (machining and/or addition of a sleeve/connector) to the outside of the compression housing are permitted at the level of the air outlet in order to improve the connection with the charge pipe.

The heads of the screws must be pierced so that they can be sealed.

The restrictor must be made from a single material and may be pierced solely for the purpose of mounting and sealing, which must be carried out between the mounting screws, between the restrictor (or the restrictor/compressor housing attachment), the compressor housing (or the housing/flange attachment) and the turbine housing (or the housing/flange attachment) (see Drawing 254-4).



In case of an engine with two parallel compressors, each compressor must be limited to a maximum internal intake diameter of 32 mm and 38 mm for the external diameter.

5.2.4 Sensor

Cylinder pressure sensors are not permitted.

Knock sensors:

Only piezoelectric technology is permitted.

5.2.5 Supercharging system

The use of an air compressor as an air source for the air injection system is forbidden.

5.3 Engine of the make

- Connecting rods must be manufactured from a single piece, no welded or joined assemblies (other than a bolted big end cap and a small end bush) are permitted.
- Crankshaft must be manufactured from a single piece, no welded or joined assemblies (except timing gear or auxiliary drive) are permitted.

Internal and/or external spraying or injection of water or any substance whatsoever is forbidden (other than fuel for the normal purpose of combustion in the engine).

5.4 Injectors

At any point of the fuel circuit, the maximum pressure authorised is 200 bars average on one cycle.

The body of the injector must come from a Manufacturer's commercial catalogue.

Only solenoid injectors are allowed.

Only the spray pattern may be modified.

5.5 Normally aspirated engine

5.5.1 The engine is free.

5.5.2 Ceramic materials are permitted for spark plugs.

5.6 Engine position

5.6.1 SuperCars / TouringCars and Super1600

The engine must be located in the original engine compartment.

Twin-engine configurations are not permitted unless homologated in that form.

5.6.2 Super Cars

The engine can be turned 90° in relation to the original engine position (transverse to longitudinal or vice versa).

Longitudinal engines :

Minimum 50% (with a tolerance of 5 mm to the back) of the engine block length must be located forward of the vertical plane passing through the front wheel centreline.

Transverse engines :

The crankshaft axis between its extremities must be located forward of the vertical plane passing through the front wheel centreline.

The minimum distance between these 2 points must be 120 mm (X direction, with a tolerance of 5 mm to the back).

Angle of inclination: The engine can be tilted by a maximum of 35° to the vertical around its crankshaft.

5.6.3 Touring cars

The engine can be turned 90° in relation to the original engine position (transverse to longitudinal or vice versa) to transform from front-to rear-wheel drive.

The following options are applied for longitudinal engines :

- Original as in the production car according to the homologation form and the manufacturer's information; or
- Minimum 38% (with a tolerance of 5 mm to the back) of the engine block length must be located forward of the vertical plane passing through the front wheel centreline.

The following options are applied for transverse engines :

- Original as in the production car according to the homologation form and the manufacturer's information; or
- Minimum 50% (with a tolerance of 5 mm to the back) of the engine block width must be located forward of the plane passing through the front wheel centreline.

5.7. Water radiator

Provided that they are fitted in the original location without any modification to the bodywork, the radiator and its attachments are free, as are the air ducts upstream of the radiator.

Air ducts may be made of composite material. Maximum material thickness 2.0 mm.

A radiator screen may be fitted, provided that no reinforcement of the bodyshell results therefrom.

5.7.1 Water radiator (SuperCars and TouringCars only)

The water radiator and its location are free, provided that it does not encroach upon the cockpit.

The air intake and outlet of the radiator through the bodywork may have, as a maximum, the same surface as the radiator.

Air ducts upstream and downstream of the radiator are permitted and may pass through the cockpit.

Air ducts may be made of composite material. Maximum material thickness 2.0 mm.

The engine water expansion chamber may encroach upon the cockpit by maximum of 200 mm in Z direction.

The floor must not be modified for the passage of air ducts.

5.7.2 Engine oil cooling

The oil radiators and their connections are free, provided that they do not give rise to any modifications to the bodywork and are situated within the perimeter of the bodywork.

5.7.3 Oil tanks, engine water expansion chambers, oil and water radiators

They must be isolated from the driver's compartment by means of bulkheads so that in the case of spillage, leakage or failure of a tank / radiator, no liquid may enter into the cockpit.

5.8 Fuel – combustive

Fuel supplier is free.

5.9 Exhaust system

All vehicles must be equipped with a homologated catalytic converter, the position of which is free.

The exhaust gases must, at all times, pass through the catalytic converter.

The exit of the exhaust pipe must be situated at the rear of the car, within the perimeter of the car, and be less than 10 cm from this perimeter. The position of the exhaust exit may be modified relative to the series car.

The exhaust exit must be horizontal.

The section of the catalyst itself must always be round or oval.

Exhaust system heat shielding is allowed either directly on the exhaust and/or on components in close proximity to the exhaust for the sole purpose of preventing excessive heat build-up.

5.10 Sound level

For all the divisions :

A limit of 100 dB/A is imposed for all cars.

The noise must be measured in accordance with the FIA noise measuring procedure using a sonometer regulated at „A“ and „SLOW“, placed at an angle of 45° to and a distance of 500 mm from the exhaust outlet, with the car's engine running at 4500 rpm.

6. FUEL CIRCUIT

6.1 Fuel pumps (except high pressure pumps)

Fuel pumps (including their number) are free provided that they are installed either :

- Inside the fuel tank, or
- Outside the fuel tank, protected by a leak-proof and flameproof cover.

Petrol filters with a maximum unit capacity of 0.5 l may be added to the fuel feed circuit.

6.2 Petrol lines

Flexibles lines must be of aviation quality.

The installation is free, provided that the prescriptions of Article 253-3 of Appendix J are respected.

The automatic fuel cut-off system described in Article 253-3.3 is compulsory.

6.3 Fuel tank

It is prohibited to use non autosport usage fuel tank.

It is prohibited to use self-made fuel tank.

It is allowed to use FIA homologated fuel tank.

It is allowed to use non valid FIA homologates fuel tank in 2019. Starting from year 2020 - must be homologated and valid to one of the following FIA standards:

FT3-1999, FT3.5-1999, FT5-1999.

It must be in accordance with the specifications of Article 253-14.

It is recommended that the tank be filled with MIL-B-83054 type safety foam.

Maximum capacity of the fuel tank:

Free.

The location of the fuel tank must respect the following conditions:

- The floor of the cockpit may be modified in order to install the fuel tank in the rear seats area; the maximum dimensions of the resulting hole in the floor are 500 x 500 mm
- The side rails cannot be modified
- The fuel tank may be with a single tunnel for the transmission and the exhaust system
- It must be aft of a horizontal line tangent to the most rearward radii of the main rollbar at the mounting points to the bodyshell.
- It must be forward of the rear wheel centreline
- The buffer tanks must be placed in the tank
- The fuel tank must be located at least 300 mm from the bodywork in both lateral and longitudinal directions
- The bottom of the tank must be minimum 80 mm from the lowest point of the chassis
- A 1 mm thick steel screen between the tank and the cockpit is compulsory
- One airtight and watertight inspection hatch (in addition to the inspection hatch for checking the tank's validity date) is allowed in the cockpit, with a total surface of 400 cm²
- The tank must be contained in a leak-proof box (minimum specification : GRP+Kevlar base, with an intermediate layer of impact-absorbing material, wall thickness 10 mm) attached to the floor
- The height of the assembly (tank + leak-proof box) must not exceed 500 mm
- A liquid-proof shield between the tank and the occupants is mandatory.

The fuel circuit must only comprise the following parts :

- One fuel supply outlet for the engine
- One fuel return into the tank
- Two quick-action couplings for refuelling (these couplings must be situated inside the vehicle)
- One breather in conformity with Article 253 of Appendix J
- The attachment of two petrol gauges at most.

The storing of fuel on board the car at a temperature of more than 10° centigrade below the ambient temperature is forbidden.

6.4 Filling and venting

It is mandatory that refuelling only be carried out by means of a fast connector.

The location of the filler holes is free, apart from windows and door panels, and they must not protrude beyond the perimeter of the bodywork.

The fast connectors must be easy to access.

If the original filler hole is not used, it must be sealed.

7. TRANSMISSION

7.1 Sensors

Any sensor, contact switch or electric wire on the four wheels, gearbox or front, middle or rear differentials is forbidden. A gear cut sensor is allowed.

Exception:

Only one sensor for displaying the ratio engaged and one electronically controlled reverse locking actuator are authorised on the gearbox, on condition that the „sensor+electric wire+display“ assembly and the “reverse locking actuator+electric wire+switch” assembly are completely independent of the engine control system.

Furthermore, these wires must not be included in the car's main wiring loom and must be independent. It is also preferable for them to be of different colour, as this makes them easier to identify.

7.1.1 Transmission system – SuperCars

Free, but traction control is prohibited.

Conversion to four-wheel drive is permitted.

Front and rear mechanical limited slip differentials are authorised.

Negative preload prohibited.

Definition of negative preload: The negative preload differential uses a spring which the ramp separating force has to overcome before the ramp can act onto the friction faces.

„Mechanical limited slip differential“ means any system which works purely mechanically, i.e. without the help of a hydraulic or electric system. A viscous clutch is not considered to be a mechanical system.

The differential housings must be made from aluminium alloy.

Closing plates or caps may be made from steel and/or aluminium alloy (minimum thickness 2 mm).

The minimum general casing thickness is 5 mm for aluminium.

NB: Localised thinning for clearance or as a result of machining (localised) is allowed.

If series production housing is used, the original series production material is allowed.

The use of bronze or copper alloys for the bearings is authorised.

Discs in composite material are authorised.

In the case of a 4-wheel drive vehicle with a central differential, the addition of a mechanical limited slip differential, or a viscous clutch to the central differential is allowed in order to limit the slip, but this system must not be adjustable when the vehicle is in motion.

In the case of a 4-wheel drive vehicle with no central differential, a rear final drive disconnect device mounted on the propeller shafts is allowed.

The actuation of the rear final drive disconnect must be manually controlled by the driver, either pneumatically or hydro-mechanically or by use of an electric or mechanical pumped pressurised hydraulic system, which disconnects the front and rear transmission directly controlled by the handbrake and the driver. It must be symmetrical in acceleration and deceleration.

In launch mode (while the car is not in motion), the brake may be locked without activating the rear final drive disconnect device.

7.1.2 Type of gearbox – SuperCars

The gearbox housing must be made from aluminium alloy.

Closing plates or caps may be made from steel and/or aluminium alloy (minimum thickness 2 mm).

The minimum general casing thickness is 5 mm for aluminium.

NB: Localised thinning for clearance (clutch, engine flywheel, etc.) or as a result of machining (localised) is allowed.

If a series production housing is used, the original series production material is allowed.

A maximum of six (6) forward gears and one (1) reverse gear are authorised. The gearbox may be sequential and must be mechanically controlled.

Only dog engagement is allowed; no synchronising or secondary clutch mechanisms are permitted.

The minimum number of dogs is 5 / minimum angle is 2° (no negative angle is allowed).

Every gear must be able to be engaged and in working order.

Gear changes must be made mechanically.

Each individual gear change must be separately and solely initiated and commanded by the driver.

Any system that permits more than one gear pair to be engaged to the drive train at any time is prohibited.

Instantaneous gearshifts are forbidden.

Gearshifts must be distinct sequential actions where the extraction of the current dog gear is subsequently followed by the insertion of the target dog gear.

The dog gear is considered extracted when its position is not able to transmit any torque to any gear, in any direction.

7.2 Transmission system – Super1600

Free, but traction control is prohibited.

Front mechanical limited slip differentials are authorised.

„Mechanical limited slip differential“ means any system which works purely mechanically, i.e. without the help of a hydraulic or electric system. A viscous clutch is not considered to be a mechanical system.

7.2.1 Type of gearbox – Super1600

The gearbox housing must be made from aluminium alloy.

Closing plates or caps may be made from steel and/or aluminium alloy (minimum thickness 2 mm).

The minimum general casing thickness is 5 mm for aluminium.

NB Localised thinning for clearance (clutch, engine flywheel, etc.) or as a result of machining (localised) is allowed.

If a series production housing is used, the original series production material is allowed.

A maximum of six (6) forward gears and one (1) reverse gear are authorised. The gearbox may be sequential and must be mechanically controlled.

7.3 Transmission system – TouringCars

Free, but traction control is prohibited.

Conversion from front- to rear-wheel drive is obligatory.

Rear mechanical limited slip differentials are authorised.

„Mechanical limited slip differential“ means any system which works purely mechanically, i.e. without the help of a hydraulic or electric system. A viscous clutch is not considered to be a mechanical system.

7.3.1 Type of gearbox – TouringCars

The gearbox housing must be made from aluminium alloy.

Closing plates or caps may be made from steel and/or aluminium alloy (minimum thickness 2 mm).

The minimum general casing thickness is 5 mm for aluminium.

NB :

Localised thinning for clearance (clutch, engine flywheel, etc.) or as a result of machining (localised) is allowed.

If a series production housing is used, the original series production material is allowed.

A maximum of six (6) forward gears and one (1) reverse gear are authorised. The gearbox may be sequential and must be mechanically controlled.

Only dog engagement is allowed, no synchronising or secondary clutch mechanisms are permitted.

The minimum number of dogs is 5 / minimum angle is 2° (no negative angle is allowed).

Every gear must be able to be engaged and in working order.

Gear changes must be made mechanically.

Each individual gear change must be separately and solely initiated and commanded by the driver.

Any system that permits more than one gear pair to be engaged to the drive train at any time is prohibited.

Instantaneous gearshifts are forbidden.

Gearshifts must be distinct sequential actions where the extraction of the current dog gear is subsequently followed by the insertion of the target dog gear.

The dog gear is considered extracted when its position is not able to transmit any torque to any gear, in any direction.

7.4 Transmission shafts

7.4.1 Longitudinal (between engine / gearbox and rear differential).

Free design.

7.4.2 A minimum of two steel safety loops must be fitted to each longitudinal shaft, to prevent it from hitting the ground in case of breakage. They must be fitted so that they are positioned one on either side of the midpoint of the propeller shaft.

For propeller shafts of less than 500 mm total length, only one safety loop is mandatory.

Should any tank be close to a longitudinal shaft, it is recommended that the tank has extra protection in the walls close to the shaft.

The steel safety loops are optional if each longitudinal shaft is adequately covered by a protection in compliance with Art. 10.3.15.

7.4.3 Transverse (between differential and wheels)

Free design.

8. SUSPENSION

8.1 Cars must be fitted with a sprung suspension.

The operating method and the design of the suspension system are free.
The use of active suspension is forbidden.
Coil springs are compulsory. They must be made from metallic material.

8.2 Front axle

Modifications to the shell (or chassis) are limited to :

- The reinforcement of the existing anchorage points
- The addition of material for the creation of new anchorage points
- The modifications necessary to provide clearance for suspension components, drive shafts, and wheel and tyre.

Front Shock absorber turret :

It is possible to recreate a shock absorber turret to allow the mounting of the suspensions.

With the exception of subframes connecting the front to the rear, the front subframe is free as regards the material and the shape, provided that :

- The maximum number of anchorage points to the body shell is 6
- The subframe is detachable from the bodyshell (not welded)
- The subframe is made exclusively from steel

Exception – if the subframe which derives from the series production car is used.

- The wheel arches must comply with Art. 10.3.12.

All suspension members must be made from a metallic material.

They must be made exclusively from the following manufacturing technologies: fabricated steel sheet, steel tubing, metallic material machined from mass.

Chromium plating of steel suspension members is forbidden.

Moving the anchorage points of the subframe is allowed (only for SuperCars and TouringCars).

8.3 Rear axle – SuperCars and TouringCars

With the exception of subframes connecting the front to the rear, the rear subframe is free as regards the shape, provided that :

- There are a maximum of six mounting points and these points are situated in the area authorised by Drawing 279-1 : 400 x 200 mm in relation to the centreline of the rear wheels
- The subframe is detachable from the bodyshell (not welded)
- The subframe is made exclusively from steel.

All suspension members must be made from a metallic material.

They must be made exclusively from the following manufacturing technologies : fabricated steel sheet, steel tubing, metallic material machined from mass.

Chromium plating of steel suspension members is forbidden.

8.3.1 Rear axle – Super1600

The original rear axle may be modified as follows :

- Strengthening is allowed provided that the metallic material used follows the original shape and is in contact with it.
- The addition of two reinforcing rods is permitted.
- The removal of unused supports is authorised.
- Modifications to adjust the geometry are permitted.
- An integrated antiroll bar system is permitted.

It is possible to make the necessary modifications for using a McPherson type suspension or a semi-trailing arm type suspension.

Drawings 279-1 and 279-2 do not apply to this division.

Complete rear suspensions homologated for Kit Cars / Super1600 cars may be used.

Necessary adjustments to the bodywork are allowed.

All suspension members must be made from a metallic material.

They must be made exclusively from the following manufacturing technologies : fabricated steel sheet, steel tubing, metallic material machined from mass.

Chromium plating of steel suspension members is forbidden.

8.4 Shock absorbers

Only one shock absorber per wheel is authorised.

All shock absorbers must be independent of each other.

Inertia shock absorber systems are prohibited.

The checking of the operating principle of the shock absorbers must be carried out as follows :

Once the springs are removed, the vehicle must sink down to the bump stops in less than 5 minutes.
With regard to their principle of operation, gas-filled shock absorbers are considered as hydraulic shock absorbers.
If the shock absorbers have separate fluid reserves located in the cockpit, or in the boot if this is not separated from the cockpit, these (including hoses and joints) must be securely fastened and be protected by a liquid-and flame-proof cover.
A suspension travel limiter may be added.
Only one cable per wheel is allowed, and its sole function must be to limit the travel of the wheel when the shock absorber is not compressed.
Water cooling or heating systems are prohibited.
Whatever the type of the shock absorbers, the use of ball or roller bearings with linear guidance is prohibited.
Changes to the spring and shock absorber settings from the cockpit are prohibited.

8.5 Antiroll bars

They must respect the following :

- Their operating principle must be solely mechanical
- The antiroll bars and their links must be made from metallic material and must not be adjustable from the cockpit
- Under no circumstances may the antiroll bars be connected to one another.

9. RUNNING GEAR

9.1 Wheels and tyres

9.1.1 Wheels

For SuperCars, Super1600 and TouringCars

The complete wheel (flange + rim + inflated tyre) must always fit inside a U-shaped gauge of which the extremities are 250 mm apart, the measurement to be made on an unloaded part of the tyre.

The diameter of the rim is free but may not exceed 18".

Under no circumstances may the „rims / tyres“ assembly exceed a diameter of 650 mm.

- Permitted rim material and production method :

- Cast and forged aluminium
- Cast and forged magnesium

- The minimum weight of a rim is :

- 7.5 kg for SuperCars and TouringCars
- 6.5 kg for Super1600

9.2 Tyres

Can be used tyres of any manufacturer. Full slick type tyres are prohibited. Tyres, that has grooving rate not less than 15% are allowed. Gravel tyres are prohibited.

Grooved tyres are authorised on the basis of a tread pattern design homologated by the FIA.

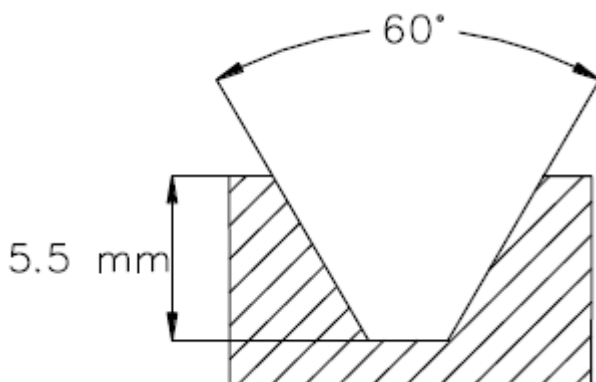
For tyres with a grooving rate of over 25%, the design is free.

9.2.1 Definition of the control surface

Tread pattern with a width of 170 mm (85 mm each side of the tyre centreline) and a circumference of 140 mm.

In this area, the surface taken up by grooves at least 2 mm wide must occupy at least 17% of the total surface.

The depth of the grooves must be at least 5.5 mm for moulded tyres when new (see Drawing 279-5).



- 9.2.2 The sum of the width of the grooves encountered by a circumferential line in the area described above must be at least 4 mm.
- 9.2.3 The sum of the width of the grooves encountered by a radial line must be at least 16 mm.
- 9.2.4 The bridge blocks and sipes must be considered as part of the tread pattern if they are less than 2 mm.
- 9.2.5 At least 2 circumferential lines / Minimum total width of circumferential lines = 12 mm.
- 9.2.6 Hand-cutting is not authorised.
- 9.2.7 At any time during the race, the depth of the grooves must be at least 2 mm regardless of the type of tyres used and must cover no less than 75% of the surface.
- The tyre manufacturer must provide visible control marks.
- 9.2.8 Spare wheels
Prohibited.

9.3 Brakes

- Free, but must comply with Article 253-4.
- Titanium alloy is permitted for pistons and fixings inserts.
- Brake discs must be made from iron-based alloy.
- Brake lines must comply with Article 253-3.
- A hydraulic handbrake system is authorised; it must be efficient and simultaneously control the two front wheels or the two rear wheels.

9.3.1 Brake fluid tanks

If inside the cockpit, they must be securely fastened and protected by a liquid-proof cover.

9.4 Steering

- The steering system and its position are free, but only a direct mechanical linkage between the steering wheel and the steered wheels is permitted.
- The steering column must be fitted with a retractable device in case of impact, coming from a series vehicle.
- Four-wheel steering is forbidden.

9.4.1 Steering column

- Free, but it must be fitted with a series-produced energy absorbing device.
- The adjusting system must be locked and must be unlocked only with tools.
- Any locking system for the anti-theft device is forbidden.
- The steering wheel must be fitted with a quick release mechanism in compliance with Article 255-5.7.3.9.

10. BODYWORK – CHASSIS

10.1 Interior

10.1.2 Dashboard

- The material of the dashboard is free, but the general shape of the original model must remain unchanged.
- With the sole object of improving forward visibility, the height of the dashboard hump(s) may be reduced by 50 mm maximum over a maximum width of 400 mm.
- The resulting opening must be closed.
- The dashboard must have no protruding angles.
- The anchorage points may be modified for the sole purpose of installing the safety rollbar.

10.1.3 Dashboard trims / Centre console

- The trimmings situated below the dashboard and which are not a part of it may be removed.
- It is permitted to remove the part of the centre console according to Drawing 279-6.

10.1.4 Pedal box

Must comply with Article 253.4.

10.1.5 Cooling of the cockpit

- The heating system may be removed.
- It is permitted to install one or two roof vent(s) on the roof of the car, in the following conditions :
- Total maximum height 100 mm
 - Movement within the first third of the roof
 - Maximum total width 500 mm
 - Overhang in relation to the upper edge of the windscreen limited to 50 mm

10.2 Bodywork

10.2.1 Exterior

The original bodywork must be retained, except as concerns the fenders and the aerodynamic devices allowed.

Trim strips, mouldings, etc. may be removed.

The split lines between bodywork panels must remain as on the original bodywork, except over those surfaces that may explicitly be different from the original.

10.2.2 Glazing

Windscreen

The windscreen must be of laminated glass or of a polycarbonate or PMMA ensuring the same transparency as the original glass.

If of polycarbonate or PMMA, the thickness must not be less than 4.75 mm.

Tinted glass screens are only permitted if they are original for this car.

Windscreens which are damaged to such an extent that visibility is seriously impaired or that there is a likelihood of their breaking further during the competition will be rejected.

The addition of a maximum of 6 protective transparent films on its external face is permitted.

Stickers and spraying are not allowed, except those authorised by the Sporting Code Article 15.7.

Side and rear windows

Glass must be replaced with polycarbonate or PMMA ensuring the same transparency as the original glass (minimum thickness 4.5 mm).

It must be possible for the side windows to be removed without the use of tools.

A sliding window in the side windows of the driver's and co-driver's doors must be fitted. The opening must be a minimum of 130 mm x 130 mm and a maximum of 150 mm x 150 mm.

The sliding windows must be closed at the start of the race.

A frame may be added to the door if it is originally frameless.

Window lifts

It is permitted to replace an electric window lift with a manual lift, or with a device that locks the window in the closed position.

A pivoted rear window may be replaced with a fixed one.

In the case of cars with 4 or 5 doors, the lift mechanism for the rear windows may be replaced with a device that locks the rear windows in the closed position.

Synthetic screens must not be tinted.

10.2.3 Windscreen wipers, motor and mechanism

Windscreen wipers are free, but there must be at least one in working order.

The fitting of an additional windscreen washer tank or of one with a greater capacity is authorised. This tank must be strictly reserved for the cleaning of the windscreen.

10.2.4 Windscreen lower trim

A windscreen lower trim may be modified on the following conditions :

- Material : Composite authorised
- The general shape of the series part must remain unchanged
- It must be mounted on the original position
- Additional fixings may be added for its mounting on the bodyshell
- Additional openings may be made up to a maximum total surface of 250 cm², for the sole purpose of :

- cooling the driver

- extracting the heat created by the turbocharger

The openings must be fitted with wire netting with a mesh of maximum 10 mm.

10.2.5 Rear view mirrors

External rear-view mirrors :

Number : 2 (left and right)

Each rear-view mirror must have a reflecting surface of at least 90 cm².

Composite material authorised.

A cut-out (max. 25 cm²) is authorised for cockpit ventilation.

Internal rear-view mirror :

Number : 1

10.2.6 Engine bonnet

Material : Composite authorised.

Outer surface shape unchanged from the original car.

Inner surface shape free provided that it does not protrude from the outer surface more than 50 mm inwards.

Openings may be made up to a maximum total surface of 1050 cm², including any original opening.

The openings must be fitted with wire netting with a mesh of maximum 10 mm.

Removable trims can be added to the openings provided that they do not protrude from the outer surface more than 15 mm outwards and 50 mm inwards.

Trims are not taken into account to calculate the maximum total surface of openings.

At least two safety fasteners must be fitted.

Minimum number of fixing points to the bodyshell = 4.

The original locking mechanisms must be rendered inoperative or removed.

Opening from the outside must be possible (without tools).

10.2.7 Boot lid

Material : Composite authorised.

Outer surface shape unchanged from the original car.

Inner surface free.

At least two safety fasteners must be fitted.

Minimum number of fixing points to the bodyshell = 4.

The original locking mechanisms must be rendered inoperative or removed.

Opening from the outside must be possible (without tools).

10.2.8 Fenders

As per the definition of a fender (see Article 251-2.5.7 of Appendix J), the lateral part of the front and rear bumpers is included in the fender up to the inner face of the complete wheel of the standard car and must follow the volume of the fender.

The fenders must comply with the following conditions :

- The material and shape of the fenders are free, provided that they do not give rise to any additional aerodynamic effect. However, the material must have a minimum thickness of 1.0 mm and 5.0 mm maximum
- In all cases, the maximum extension authorised at the level of the front and rear wheel axis is 140 mm in relation to the dimensions of the series production car
- The fenders must be continuous, only the air intakes and outlets mentioned below are permitted.
- No part of the fender must protrude from the main external surface of the fender.
- Removable aerodynamic devices are not allowed.
- Seen from above, section by section, the new fender must cover the fender of the homologated car.

Further, the fender must cover the whole of the complete wheel in radial projection, the eye being situated at a maximum distance of 400 mm from the centre of the wheel.

This radial projection must sweep across an arc of a circle situated from 90° in front of to 90° behind the vertical axis passing through the centre of the wheel.

This measurement must be carried out at 0° camber with a complete wheel measuring 650 mm in diameter, with the height of the bodywork set at the first point of tangency of the wheel with the fender in profile view.

The track must be set at its maximum usable position.

NB : To carry out this measurement, we take a 400 mm measuring rod which we sweep across 180° (90° to the front, 90° to the rear), one end of this rod must be positioned at the centre of the wheel.

This rod, perpendicular to the centreline of the wheel on that arc must be in constant contact with the bodywork and must never touch the complete wheel.

- When the car is seen from above with the wheels aligned to proceed straight ahead, the complete wheels must not be visible above the wheel centreline
- It is permitted to install mechanical components within the fenders, but their installation may under no circumstances be used as a pretext for reinforcing the fenders.

No modification to the standard production door sills is allowed, except :

- The necessary modification to fit the anchorage points of the jacks.
- Modifications in accordance with Article 255-5.7.1.
- The fender may extend downwards to cover the door sill for the sole purpose of joining the wheel arch.

- For the front fender, this modification must not extend aft the most forward point of the front door opening.

- For the rear fender :

On 3-door cars, this modification must not extend beyond the most rearward point of the door opening.

On 4/5-door cars, these modifications must not extend more than 1000 mm in front of the rear axle centreline.

10.2.9 Fenders – Air inlets or outlets

Openings may be made in each fender.

Max. area = 300 cm².

In X direction = behind the wheel axis.

In Y direction = wheel arch – 10 mm minimum.

However, louvers must make it impossible to see the tyre from the rear along a horizontal plane.

10.2.10 Mud flaps

The fitting of mud flaps is compulsory.

They must respect the following :

- They must be made of a flexible plastic material at least 4mm thick (minimum density = 0.85g/cm³).
- They must be fitted to the bodywork.
- They must cover at least the width of each wheel, but at least one third of the width of the car (see Drawing 252-6) must be free behind the front wheels and the rear wheels.
- The bottom of these mud flaps must be no more than 10 cm from the ground when the car is stopped, with nobody on board.
- Above and over the entire height of the tyre, the entire width of the tyre must be covered (seen from behind).
-

10.2.11 Wheel housing liners

Material : Composite or softer materials authorised.

Metallic materials are not permitted.

However, the material must have a maximum thickness of 3.0 mm.

Wheel housing liners are authorised so that at least the top half of the complete wheel is not visible when seen from :

- The engine compartment, for the front wheels
- The boot, for the rear wheels.

Ducts may be fitted between the wheel housing liners and the authorised fender air outlets.

10.2.12 Doors

Except for the driver's door, the material is free, provided that the original outside shape is retained.

Door hinges and outside door handles are free. The original locks may be replaced but the new ones must be efficient.

It must be possible to open the front doors from the outside and from the inside.

The original driver's door must be retained.

The removal of door soundproofing material and trims is allowed. The decorative strips may be removed.

The removal of the side protection bars is allowed only if the foam to protect against lateral collisions is fitted.

With the aim of installing foam to protect against lateral collisions, it is obligatory to use the following :

- Modification of the interior part of the driver's door
- Door trims (6-ply of carbon or carbon-Kevlar)
- Minimum volume of foam : 60 l (see document in Appendix 1 entitled : „Specification for 2011 Super 2000 Door foam“)
- The minimum density of the door foam must be 50 g/l.

For 4/5 door cars

Localised modifications to the rear doors are authorised to allow the passage of the wheel.

These modifications must not extend by more than 1000 mm in front of the axis of the rear wheels.

The rear doors may be :

1. shut by welding;
2. glued in the case of composite doors;
3. replaced by a panel providing that :
 - a. the original outside shape is retained;
 - b. the door closing shut lines are retained;
 - c. the glazed area is retained.

10.2.13 Doors - Inner trim panels

Original inner trim panels must be replaced and be made from composite at least 1 mm thick.

The panels must totally cover the door, its handles, locks and window winding mechanisms.

10.2.14 Front bumper for SuperCars, Super1600 and TouringCars

a. Material : Composite authorised.

b. Shape free design, limited by :

- The vertical plane passing through the axis of the front wheels and the horizontal plane passing through the lowest point of the door opening (Drawing 279-3) of the homologated car
- The overall length of the homologated car
- To the front, the vertical projection of the bumper of the homologated car.
- Parts situated above the plane passing through the lowest point of the door opening of the homologated car :

Between Yref left and Yref right, the shape of the series model must be preserved, but in order to connect it up with the free parts, a local tolerance of +/- 5 mm in relation to the original surface is accepted.

Outside Yref left and Yref right, the shape is free but must not protrude beyond the vertical plane passing at 45° to the car centreline starting at the intersection of Yref and the forward edge of the original front bumper.

- Part situated below the plane passing through the lowest point of the door opening of the homologated car :

The shape must not protrude beyond the forward edge of the original front bumper, or the vertical plane passing at 45° to the car centreline starting at the intersection of Yref and the forward edge of the original front bumper.

Yref = Inner face of the complete front wheels of the homologated car (vertical-longitudinal plane)

c. Openings

Additional openings may be made in the front bumper together with the side elements of the front bumper, but the total surface of openings in the front bumper must be no more than 2500 cm².

These openings must not affect the structural integrity of the bumper. Original openings may be closed.

d. Front bumper – Mountings

The original mountings, beams and low speed energy-absorbing devices may be replaced provided that the main structural elements of the bodyshell are not weakened.

One beam or tube made from steel may be used on the following conditions:

- The shape of the section is free on condition that the cross section is always smaller than that of a tube of 50 mm diameter. The thickness of the material must not be greater than 1.5 mm
- The position of the new beam or tube, including the front bumper mountings, must not be further forward than the maximum forward position of the original mountings, beams and low-speed energy-absorbing devices
- The mounting positions of the original beam to the front side-members must be retained
- The lateral width of the new beam or tube is restricted by the maximum width of the front bumper
- To prevent the lateral part of the tube/beam from bending outward, the tube/beam must be connected to the bodyshell with a steel cable (min. Ø 7 mm, max. Ø 8 mm)

The new beam or tube must be covered by the front bumper

- The series shock-absorbing device may be modified or removed.

10.2.15 External lights

May be removed, provided that any resultant openings in the bodywork are covered and that the prescriptions of Article 11.5 are respected. Covers must conform to the original general silhouette. In each cover, a hole with an area of 30 cm² may be left for cooling purpose

10.2.16 Rear bumper

Material :Composite authorised. As per the definition of a fender (see Article 251-2.5.7 from Appendix J), the lateral part of the rear bumper is included in the fender up to the inner face of the complete wheel of the standard car and must follow the volume of the fender. The lowest point of the lateral part of the rear bumper has to meet the fender line with a radius of maximum 100 mm. Rear bumper parts which are situated below the plane passing 25 mm above the lowest point of the rear bumper of the series model may be removed. Alternatively, it is permitted to remove any vertical section of the rear bumper situated above the plane passing through this point. This vertical section must have a constant height of no more than 25 mm. The entire part of the bumper situated below this section must be moved up accordingly in order to join the upper part of the bumper. The general shape of the series model must be preserved, but in order to connect it with the free parts, a local tolerance of +/- 5 mm in relation to the original surface is accepted. The thickness of the rear bumper must be 1.0 mm minimum and 5.0 mm maximum.

The safety elements allowing impacts to be absorbed between the bumper and the chassis may be removed.

The systems for attaching the rear bumper may be replaced.

It is possible :

- To enlarge the original cut-out in the rear bumper for the exhaust or to create one or more new cut-outs, solely in order to allow the exhaust and to exit
- To create one or more new cut-outs (Max. area = 500 cm²) for the sole purpose of extracting the heat created by the silencer. This/these cut-out(s) must be covered by a wire mesh (max. section size 10 x 10 mm).

10.2.17 Rear aerodynamic device for SuperCars, Super1600 and TouringCars

The standard production aerodynamic device must be replaced if removable.

A trim covering the part exposed after the removal of the standard production aerodynamic device must be added.

It must follow as closely as possible the shape of this part.

The material and shape are of free design.

It must have the maximum dimensions defined in Drawing 279-4.

Even if the vehicle has original dimensions bigger than those maximum dimensions, it must comply with this drawing.

At its extremities, this device must join the bodywork, and it must be entirely contained within the frontal projection of the car without its rear-view mirrors.

The wing must be checked with the car horizontal (as defined by the production car).

The base of the box including the drawing must be the one with the largest dimensions. It must be positioned horizontally.

Further, this volume may be extended section by section, with a part of the largest base remaining in contact with the bodywork, which means that at any point of the rear aerodynamic device, each section must not exceed the section 450 x 290 x 190 mm, supports included.

This aerodynamic device must be contained within the frontal projection of the car, and within the projection of the car seen from above.

It must have no cooler.

It must include at least 2 mountings.

It must have only one main profile.

It may be adjustable on the following conditions:

- The aerodynamic device must not be adjustable when the vehicle is in motion
- The aerodynamic device must not be adjustable from the cockpit.

The support may have a secondary profile.

10.3 Bodyshell / Chassis

10.3.1 Strengthening

The series-production bodyshell and chassis must be retained, but the original basic structure may be reinforced in accordance with Article 255-5.7.1.

10.3.2 Upper radiator support

The upper front cross member may be cut or modified between the headlamps. This cutting or modification must not affect the rigidity of the chassis structure. This cross member may be removed or replaced with a different support.

10.3.3 Intercooler installation (for SuperCars only)

It is permitted to cut out the necessary parts situated between the front bumper and the chassis for the sole purpose of installing the exchanger. In this case, the structural resistance of the parts which have been cut out must be recreated (see front bumper).

Air ducts upstream and downstream of the intercooler are permitted.

Air ducts may be made of composite material. Maximum material thickness 2.0 mm.

10.3.4 Removal of the scuttle panel

Scuttle panel may be removed.

10.3.5 Engine mountings

Free.

10.3.6 Mountings and bearings of antiroll bars

The main rails may be modified to integrate the antiroll bar bearings.

The new mountings of the antiroll bars must not have any other function.

10.3.7 Mounting of pedal box and master cylinders

Modifications are authorised provided they have no other function than to allow the fixing of the master cylinders and/or the pedal box.

10.3.8 Bulkhead in engine compartment

The bulkhead separating the cockpit from the engine compartment must retain its original place within a tolerance of ± 100 mm in X direction.

The shape is free.

The bulkhead material must be the same or stronger than the material of the homologated car. In any case, the materials added must be iron-based alloys and must be welded to the bodywork.

Installing components up against or passing through the bulkhead is permitted, provided that they do not protrude into the cockpit by more than 200 mm (as measured horizontally from the original bulkhead position). This possibility does not apply to the engine block, sump, crankshaft or cylinder head.

Local modifications are authorised for the passage of the steering column and gearshift control.

10.3.9 Bulkhead in boot compartment

The bulkhead separating the cockpit from the boot must retain its original place.

10.3.10 Central tunnel and rear part of floor

For SuperCars only :

The bodywork may be modified in accordance with Drawing 279-1.

The dimensions of the transmission tunnel must be equal to or smaller than the dimensions shown on Drawing 279-1.

The location of the transmission tunnel may have a tolerance of ± 100 mm in Y direction.

The tunnel opening as shown in Drawing 279-1 must remain on the car centreline.

The materials added must be iron-based alloys and must be welded to the bodywork.

Tunnel opening : The front edge of the tunnel is defined as the most forward point of the homologated production car bulkhead. In order to install the catalytic converter and/or exhaust silencer, a hollowing out in the central tunnel, either on the left or right hand side, is permitted (see Drawing 279-2).

10.3.11 Floor / Rear part

The rear part of the floor may be modified by removing the spare wheel housing and adding a steel sheet in its place.

10.3.12 Front wheel arches and housings

New front wheel housings (inner and outer) may be allowed on the following conditions :

- The wheel housings are modified in order to house the authorised wheels
- It is permitted to fold back the steel edges if they protrude inside the wheel housing
- In order to install the suspension mounting points, within the context of the freedom of the wheel arch, it is permitted to partially cut the upper side rail at the level of the wheel arch. This cut-out side rail must be reconstituted in such a way as to ensure that the resistance of the car in case of impact is at least equal to the original resistance
- Modifications of the lower side rail so as to allow the driveshaft and steering rod travel and for the sole purpose of installing the gearbox or for the opening of the gearbox cover for gear ratio change
- The material of the wheel arches must not be modified compared to the series model, except in front of the wheel centreline and above the lower side rail.
- The cockpit front bulkhead may be hammered or modified for the sole purpose of allowing the passage of the wheel
- The modification of the reinforcing hollow bodies is forbidden.

10.3.13 Front lower side rails

Modifications of the front lower side rails may be allowed on the following conditions :

- To allow the driveshaft travel (maximum cut out dimension $Z = 60$ mm, $X = 130$ mm)
- To allow the steering rod travel (maximum cut out dimension $Z = 35$ mm, $X = 60$ mm)
- For the sole purpose of installing the transverse gearbox housing and/or allowing the opening of the gearbox cover for gear ratio changes (maximum cut out dimension $Z = 60$ mm, $X = 220$ mm).

The materials added must be iron-based alloys and must be welded to the bodywork.

10.3.14 Rear wheel arches and housings

New rear wheel housings (inner and outer) may be allowed on the following conditions :

- The wheel housings are modified in order to house the authorised wheels
- It is permitted to fold back the steel edges if they protrude inside the wheel housing
- It is possible to modify the side members only within the area authorised by Drawing 279-1 : 400x200 mm in relation to the centreline of the rear wheels
- See Drawing 279-1 for the possible modifications of the body shell (no opening is authorised in the zone defined by Drawing 279-1)
- The material of the new wheel housings must not be modified compared to the series model.

10.3.15 Underbody protection

The fitting of underbody protections is authorised provided that these really are protections which respect the ground clearance, which are removable and which are designed exclusively and specifically in order to protect the following parts : Engine, radiator, suspension, gearbox, tank, transmission, exhaust, extinguisher bottles.

These protections must be made from either aluminium alloy or steel, or composite material.

Minimum thickness for aluminium alloy and composite material is 4 mm and 2 mm for steel.

The total weight of the protections must be 40 kg maximum (front, including gearbox protection, 25 kg; rear 15 kg).

10.3.16 Mechanical components

No mechanical component may protrude beyond the car's original bodywork, except inside the fenders.

10.3.17 Underfloor protection

The fitting of underfloor protections is authorised provided that these are truly protections which respect the ground clearance, are removable and are designed exclusively and specifically in order to protect the underfloor of the bodyshell in the cockpit area, except the inner tunnel.

These protections must be made from composite material. The protection must follow the original underfloor contour and must be in contact with it (no hollow sections).

Maximum allowed thickness of the underfloor protections is 5 mm.

10.3.18 Roof hatch for access to the cockpit

One removable hatch is recommended on the roof on driver's side to allow free access to the driver from outside the cockpit.

When the hatch is removed, the opening on the roof must comply with the dimensions specified on drawing below.

The outer side edge must be as close as possible to the safety cage upper side member.

The hatch must be secured to the roof panel only by means of a maximum of 8 quick fasteners operated by a 4 mm Allen key.

The original roof panel may be replaced with a panel in composite material if it is proven that this renders the integration of the hatch easier and on condition that the new panel fitted with the hatch is not lighter than the original panel.

11 SAFETY

11.1 Safety cage

Must be fitted as defined in Appendix J, Article 253-8.

11.1.1 Safety cage – Head protection

The safety cage must be fitted with paddings in compliance with Art. 253-8.3.5.

11.2 Seat and safety harness

11.2.1 Driver's safety seat

The passenger seats and the back shelf of hatchback cars must be removed.

Seats : see Article 253-16.1.

If the original seat attachments or supports are changed, the new parts must either be approved for that application by the seat manufacturer or comply with the specifications of Articles 253-16.2 to 253-16.5.

11.2.2 Driver's seat position

Longitudinally :

The front seats may be moved backwards but not beyond the vertical plane defined by the front edge of the original rear seat.

The limit relating to the front seat is formed by the height of the seat without the headrest, and if the headrest is incorporated into the seat, by the rearmost point of the driver's shoulders.

Transversally :

Seat centreline must not be less than 250 mm from the car's centreline.

11.2.3. Clothing

Drivers' clothing (overalls, underwear, helmet, gloves etc.) – complies with the current FIA safety regulations.

11.2.4 Safety harness

The original seatbelts must be replaced by a valid safety harness homologated according to FIA 8853/98 standard. It must have a minimum of six (6) anchorage points conforming to the specifications of Article 253-6 of Appendix J.

The two shoulder straps must have separate anchorage points.

11.3 Extinguisher systems

A system in accordance with Article 253-7.2 of Appendix J is compulsory.

11.4 Towing device

One front and one rear towing device is compulsory.

They must :

- Be clearly visible and marked in yellow, red or orange
- Allow the passage of a cylinder with a diameter of 60 mm
- Be a belt type, made from soft material
- Allow the car to be towed on a dry surface (concrete or asphalt), by applying traction on a plane parallel to the ground, with an angle of plus or minus 15 degrees to the longitudinal centreline of the car.

This check must be carried out with the wheels blocked by means of the main braking system.

The car must be fitted with tyres of a type identical to that used during the competition.

It may take place during preliminary scrutineering.

11.5 Rear lights

Each car must be fitted with a minimum of two red rear lights of the fog lamp type (minimum illuminated area of each light : 60 cm²; bulbs of minimum 15 watts each) or with two rain lights approved by the FIA (Technical List n°19) working whenever the brakes are on.

They must be placed symmetrically in relation to the longitudinal axis of the car and in the same transverse plane.

In addition to the two rear brake lights mentioned above, there must be one rearward facing red light of at least 20 watts (maximum 30 watts).

- The lighted area of this lamp must not exceed 70 cm² but must be greater than 60 cm²
- It must be situated at the vehicle centreline
- It must be kept switched on throughout all practice sessions, qualifications and finals
- It must be kept switched on even with the master switch in the "off" position
- The use of rain lights of a type approved by the FIA (Technical List n°19) is highly recommended.
- The brake lights and the rear light must be positioned between 1,000 mm and 1,500 mm above ground level, must be visible from the rear and must be mounted behind a vertical plane of the rear axle centre line.