

BARBADOS MOTORING FEDERATION

MINIMUM SAFETY REGULATIONS

1. General

A car, the construction of which is deemed to be dangerous, may be excluded by the Stewards of the meeting.

2. Lines and Pumps

Protection - Fuel, oil and brake lines must be protected externally against any risk of deterioration (stones, corrosion, mechanical breakages, etc.) and internally against all risks of fire.

3. Braking system

Double circuit operated by the same pedal: the pedal shall normally control all the wheels; in case of a leakage at any point of the brake system pipes or of any kind of failure in the brake transmission system, the pedal shall still control at least two wheels.

4. Safety Belts

4.1 - Wearing of two shoulder straps and one lap strap is mandatory. There must be attached to anchorage points on the shell: two for the lap strap, two or possibly one symmetrical about the seat for the shoulder straps. These belts must be equipped with turn buckle or push button release and be manufactured by a recognised seatbelt manufacturer. These belts must have a minimum of 2" web straps.

4.2 - Installation

- A safety harness should be installed on the anchorage points of the production car.

The recommended geometrical locations of the anchorage points are shown in drawing n° 253-42.

In the downwards direction, the shoulder straps must be directed towards the rear and must be installed in such a way that they do not make an angle of more than 45° to the horizontal from the upper rim of the backrest, although it is recommended that this angle should not exceed 10°.

The maximum angles in relation to the centre-line of the seat are 20° divergent or convergent.

For a 4-point harness, the shoulder straps must be installed crosswise symmetrically about the centre-line of the front seat.

A safety harness must not be installed on a seat having no head restraint or having a backrest with integrated head restraint (no opening between backrest and head restraint).

The lap and crotch straps should pass not over the sides of the seat but through the seat, in order to wrap and hold the pelvic region over the greatest possible surface. The lap straps must fit tightly in the bend between the pelvic crest and the upper thigh. Under no conditions must they be worn over the region of the abdomen. Holes may be made in the series seat if this proves to be necessary in order to avoid such an occurrence. Care must be taken that the straps cannot be damaged through chafing against sharp edges.

- If installation on the series anchorage points is impossible for the shoulder and/or crotch straps, new anchorage points must be installed on the shell or the chassis, as near as possible to the centre-line of the rear wheels for the shoulder straps. The shoulder straps may also be fixed to the safety roll cage or to a reinforcement bar by means of a loop, and may also be fixed to the top anchorage points of the rear belts, or be fixed or leaning on a transversal reinforcement welded to the backstays of the roll bar. In this

case, the use of a transversal reinforcement is subject to the following conditions:

- For each new anchorage point created, a steel reinforcement plate with a surface area of at least 40 cm² and a thickness of at least 3 mm must be used.

- Principles of mounting to the chassis/monocoque:

1) General mounting system: see drawing 253-43.

2) Shoulder strap mounting: see drawing 253-44.

3) Crotch strap mounting: see drawing 253-45.

4.3 - Use

A safety harness must be used in it's without any modifications or removal of parts, and in conformity with the manufacturer's instructions. The effectiveness and longevity of safety belts are directly related to the manner in which they are installed, used and maintained. The belts must be replaced after every severe collision, and whenever the webbing is cut, frayed or weakened due to the actions of chemicals or sunlight. They must also be replaced if metal parts or buckles are bent, deformed or rusted. Any harness which does not function perfectly must be replaced.

5. Extinguishers

The use of the following products is prohibited: BCF, NAF.

5.1 Hand-operated extinguishers are compulsory as a minimum requirement.

5.2 - Systems

7.3.2) Any AFFF or dry powder is permitted.

5.3 - Manual extinguishers

All cars must be fitted with one or two fire extinguishers.

One may be plumbed in and one hand-held.

5.4 Permitted extinguishants:

AFFF

Powder

5.5 Minimum quantity of extinguishant:

AFFF: 2.4 liters

Powder: 2.0 kg

5.6 Pressure

All extinguishers must be pressurized according to the contents:

AFFF: 12.0 bar

Powder: 8 - 13.5 bar

Furthermore, each extinguisher when filled with AFFF must be equipped with a means of checking the pressure of the contents.

5.7 Markings

The following information must be visible on each extinguisher:

- Capacity

- Type of extinguishant

- Weight or volume of the extinguishant

5.8 Protection

All extinguishers must be adequately protected. Their mountings must be able to withstand a severe deceleration. Furthermore, only quick-release metal fastenings, with metal straps, will be accepted.

5.9 Access

The extinguishers must be easily accessible for the driver and the co-driver.

6. Rollover Structures

Club scrutineers may accept competition car roll cages if:

- a. The roll cage specifications are as listed in this section and the installation and welding is of satisfactory quality. Roll cage designs must be authorized by the club scrutineer in writing **before fitting**, or,
- b. The roll cage is installed in an FIA homologated car, is in its original specification and the vehicle homologation papers are presented to the scrutineer for confirmation, or,
- c. The roll cage has been homologated by a National Governing Body (ASN) in accordance with FIA regulations regarding same and the homologation form for the roll cage is presented to the scrutineer.

6.1 - Definitions

Safety cage: A structural framework designed to prevent serious body shell deformation in the case of a collision or of a car turning over.

Roll bar: Structural frame or hoop and mounting points.

Roll cage: Structural framework made up of a main roll bar and a front roll bar (or of two lateral roll bars), their connecting members, one diagonal member, backstays and mounting points. (For example, see drawings 253-3 and 253-4).

Main roll bar: Structure consisting of a near-vertical frame or hoop located across the vehicle just behind the front seats.

Front roll bar: Similar to main roll bar but its shape follows the windscreen pillars and top screen edge.

Lateral roll bar: Structure consisting of a near-vertical frame or hoop located along the right or left side of the vehicle.

The rear legs of a lateral roll bar must be just behind the front seats. The front leg must be against the screen pillar and the door pillar such that it does not unduly impede the entry or exit of driver and co-driver.

Door Bar: Bar or bars welded or bolted horizontally between the front and main roll bars. If bolted, bolts must not be in shear.

Longitudinal member: Longitudinal tube which is not a part of the main, front or lateral roll bar and linking them, together with the backstays.

Diagonal member: Transverse tube between a top corner of the main roll bar or upper end of a backstay and a lower mounting point on the other side of the roll bar or backstay.

Framework reinforcement: Reinforcing member fixed to the roll cage to improve its structural efficiency.

Reinforcement plate: Metal plate fixed to the body shell or chassis structure under a roll bar mounting foot to spread load into the structure.

Mounting foot: Plate welded to a roll bar tube to permit its bolting or welding to the body shell or chassis structure, usually onto a reinforcement plate.

Removable members: Structural members of a safety cage which must be able to be removed.

6.2 - Specifications

General comments: Safety cage must be designed and made so that, when correctly installed, they substantially reduce body shell deformation and so reduce the risk of injury to occupants. The essential features of safety cages are sound construction, designed to suit the particular vehicle, adequate mountings and a close fit to the body shell. Tubes must not carry fluids. The safety cage must not unduly impede the entry or exit of the driver and co-driver.

Members may intrude into the occupant's space in passing through the dashboard and front side-trim, as well as

through the rear side-trim and rear seats. Longitudinally, the safety cage must be entirely contained between the top mounting points of the front suspension and the top mounting points of the rear suspension.

Compulsory diagonal member: Different ways of fitting the compulsory diagonal member: see drawings 253-3 to 253-5. The combination of several members is permitted according to drawings 253-3 and 253-5.

The fitting of a second diagonal member, according to drawing 253-4, is recommended.

The connection between the two members must be reinforced by a gusset.

6.3 Mounting of roll cages to the body shell:

Minimum mountings are:

- 1 for each leg of the main or lateral roll bar;

- 1 for each of the front roll bar;

- 1 for each backstay.

Each mounting foot of the front, main and lateral roll bars must include a reinforcement plate, of a thickness of at least 3 mm which must not be less than that of the tube onto which it is welded.

Each mounting foot must be attached by at least three bolts on a steel reinforcement plate at least 3 mm thick and of at least 120 cm² area which is welded to the body shell.

Examples are shown in drawings 253-18 and 253-24. This does not necessarily apply to backstays (see below).

Bolts must be of at least M8 size of ISO standard 8.8 or better.

Fasteners must be self-locking or fitted with lock washers.

These are minimum requirements. In addition to these requirements, more fasteners may be used, the roll bar legs may be welded to reinforcement plates, the roll cage may be welded to the body shell. Roll bar mounting feet must not be welded directly to the body shell without a reinforcement plate.

Backstays are compulsory and must be attached near the roof line and near the top outer bends of the main roll bar on both sides of the car. They must make an angle of at least 30° with the vertical, must run rearwards and be straight and as close as possible to the interior side panels of the body shell.

Their mountings must be reinforced by plates.

Diagonal members: At least one diagonal member must be fitted. Their location must be in accordance with drawings 253-3 to 253-5 and they must be straight, not curved.

The attachment points of the diagonal members must be so located that they cannot cause injuries. They may be made removable but must be in place during events. The lower end of the diagonal must join the main roll bar of backstay not further than 100 mm from the mounting foot. The upper end must join the main roll bar not further than 100 mm from the junction of the backstay joint, or the backstay not more than 100 mm from its junction with the main roll bar.

Reinforcement of bends and junctions: It is permitted to reinforce the junction of the main roll bar or the front roll bar with the longitudinal struts (drawings 253-10 and 253-16), as well as the top rear bends of the lateral roll bars and the junction between the main roll bar and the backstays. Longitudinal roll cage extensions are allowed up to the level of the original suspension mounting points on the shell.

Guidance on welding: All welding should be of the highest possible quality with full penetration and preferably using a gas shielded arc. Although good external appearance of a weld does not necessarily guarantee its quality, poor looking welds are never a sign of good workmanship. When using heat-treated steel the instructions of the manufacturer must

be followed (special electrodes, gas protected welding). It must be emphasized that the use of heat-treated or medium carbon steels may cause problems and that bad fabrication may result in a decrease in strength (caused by brittle heat-affected zones) or inadequate ductility.

6.4 - Material specifications

- (a) Seamless mild steel tubing with specifications of 38 mm by 2.5 mm or 40 mm by 2.0 mm with a minimum yield strength of 350 N/mm².
- (b) 4130 chrome moly tubing, for the main hoop tubing with specifications of 44 mm x 1.4 mm at minimum is required. For the front roll bar, lateral roll bar, rear stays, diagonal and door bars tubing with specifications of 38 mm by 1.6 mm. Minimum yield strength 700 N/mm².
- (c) T45. Main hoop 44 mm by 1.4 mm. Front roll bar, lateral roll bar, rear stays and compulsory diagonal 38 by 1.6 mm. Minimum yield strength 700 N/mm².
- (d) The tubing must be bent by a cold working process and the centerline bend radius must be at least 3 times the tube diameter. If the tubing is ovalised during bending, the ratio of minor to major diameter must be 0.9 or greater. If this ratio is exceeded the bends may be plated or gusseted.
- (e) The welding process must be MIG or TIG only.

Technical specifications: Main, front and lateral roll bars: These frames or hoops must be made in one piece without joints. Their construction must be smooth and even, without ripples or cracks. All joints must be profiled. The vertical part of the main roll bar must be as straight as possible and as close as possible to the interior contour of the body shell. The front leg of a front roll bar or of a lateral roll bar must be straight, or if it is not possible, must follow the windscreen pillars and have only one bend with its lower vertical part. Where a main roll bar forms the rear legs of a lateral roll bar (drawing 253-4), the connection to the lateral roll bar must be at roof level.

For vehicles not fitted with steel doors a double door bar installation is required.

To achieve an efficient mounting to the body shell, the original interior trim may be modified around the safety cages and their mountings by cutting it away or by distorting it.

Where necessary, the fuse box may be moved to enable a roll cage to be fitted.

7. Rear View

This shall be provided by an inside mirror or two wing mirrors.

8. Towing Eye

All cars will be equipped with a rear and front towing-eye for all events. This towing-eye will only be used if the car can move freely. It will be clearly visible and painted in yellow, red or orange.

9. Electrical

9.1 The general circuit breaker must cut all electrical circuits, battery, alternator or dynamo, lights, hooters, ignition,

electrical controls, etc.) And must also stop the engine. It must be a spark-proof model, and will be accessible from inside and outside the car. As for the outside, the triggering system of the circuit breaker will compulsorily be situated at the lower part of the windscreen mounting of the driver's side for closed cars. It will be marked by a red spark in a white-edged blue triangle with a base of at least 12 cm. This outside triggering system only concerns closed cars.

10. Protection against Fire

An efficient protective screen must be placed between the engine and the occupant's seat, in order to prevent the direct passage of flames in case of fire.

Should this screen be formed by the rear seats, it is advisable to cover them with a flameproof coating.

The occupants' compartment must be completely sealed in a fire-proof manner from the engine compartment and the luggage compartment (if it contains an original fuel tank that does not meet the requirement lay out in section 15).

11. Seats, Attachments and Supports

If the original seat or attachments or supports are changed, the new parts must either be approved for that application by the scrutineer or must comply with the following specifications (see drawing 253-52):

Supports must be attached to the shell/chassis via at least 4 mounting points per seat using bolts with a minimum diameter of 8 mm and counter plates, according to the drawing. The minimum area of contact between support, shell/chassis and counter plate is 40 cm² for each mounting point. If rails for adjusting the seat are used, they must be those originally supplied with the car or with the seat.

The seat must be attached to the supports via 4 mounting points, 2 at the front and 2 at the rear of the seat, using bolts with a minimum diameter of 8 mm and reinforcements integrated into the seat.

The minimum thickness of the supports and counter plates is 3 mm for steel and 5 mm for light alloy materials.

The minimum longitudinal dimension of each support is 6 cm.

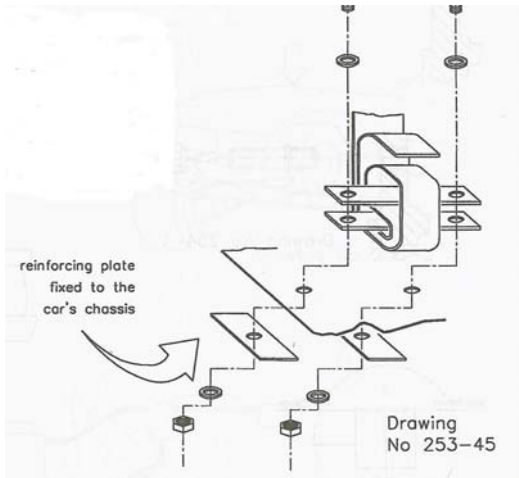
All the occupants' seats must be either original, modified only through the addition of accessories with a registered trade mark, or manufactured by an approved manufacturer and not modified. In all these cases, a headrest must be present for each occupant.

12. Clothing

Driving suits (cars) – occupants must wear one or two piece suits of single layer (minimum) Nomex. Shoes must be worn at all times by all occupants and must be laced and closed. Proban or other chemically treated cotton suits are forbidden. All under-clothing must be cotton or Nomex.

Helmets – occupants must wear helmets that meet SNELL85 or BS6658-85 minimum standards. Helmets that are damaged or show signs of repairs and/or repainting may be rejected by the scrutineer. Names, allergies and blood groups must be clearly marked on helmets.

Driving suits (bikes) – riders must wear riding leathers designed for bike racing that are suitably padded.

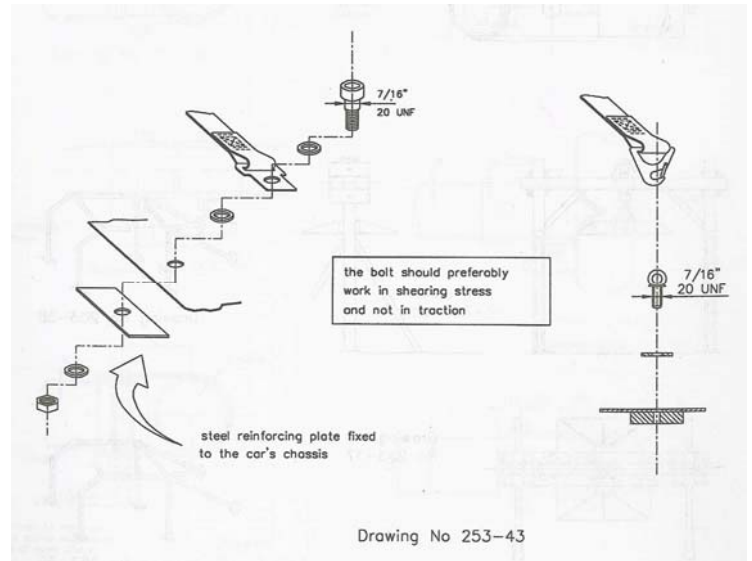


13. Fasteners

At least two external manual fasteners must be fitted to the bonnet and boot lid/hatch. The original locking mechanism must be rendered inoperative or completely removed. The original locking mechanism on the driver and passenger doors must be rendered inoperative, either permanently or temporarily. Large objects carried in the vehicle must be firmly secured.

14. Windows and nets

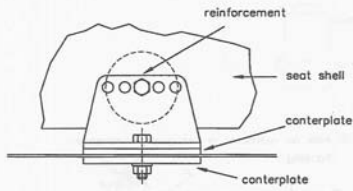
Vehicle windows must be certified for road use and clearly marked as such. Where specific regulations allow the replacement of glass with polycarbonate or nets: The replacement polycarbonate windows must have a ¼" test hole drilled in a convenient location. Window nets must be attached to either the original door/window frame or, in the case of a composite door, must be secured to the roll cage. The windshield must be made of laminated glass. If side windows are tinted there must be a clear area of at least 700cm squared positioned in such a way that the occupants can be seen from outside the vehicle.



15. Fuel Tanks

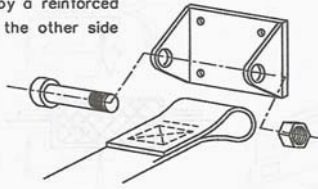
Original fuel tanks may be replaced by foam-filled fuel cells (manufactured by a recognized manufacturer) either in the original location of the tank or in the luggage compartment. There must be an orifice to evacuate any fuel which may have spread into the tank compartment. The position and the dimension of the filler hole as well as that of the cap may be changed as long as the new installation does not protrude beyond the bodywork and guarantees that no fuel shall leak into the interior compartments of the car. If the filler hole is situated inside the car, it must be separated from the cockpit by a liquid-tight protection.

Tanks may be ventilated through the car roof.

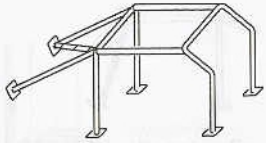


Drawing No 253-52

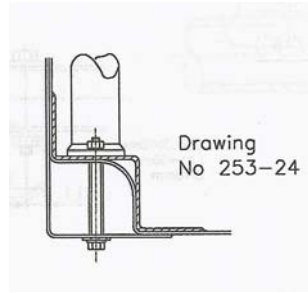
strengthened by a reinforced plate on the other side



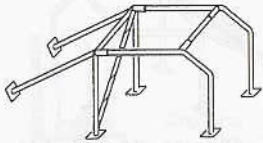
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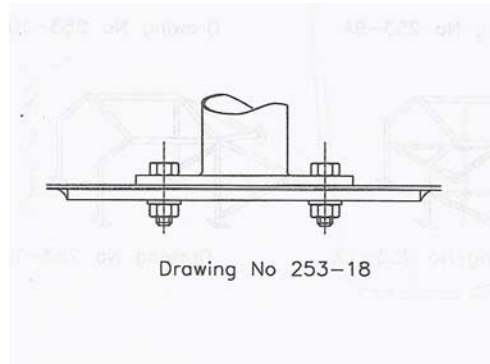
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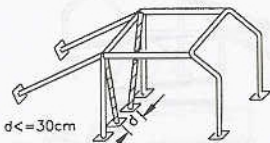
Drawing No 253-24



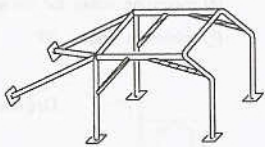
Drawing No 253-4



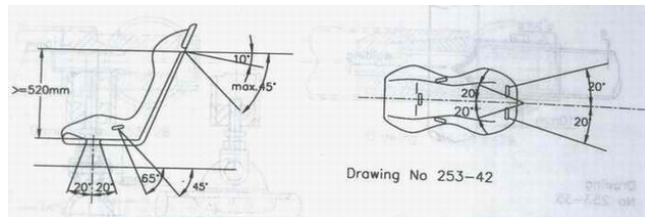
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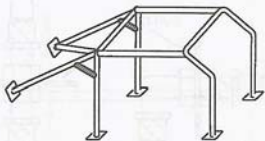
Drawing No 253-5



Drawing No 253-10



Drawing No 253-42



Drawing No 253-16