



# BRC Safety Regulations 2016

## 1. General

A car, the construction of which is deemed to be dangerous, may be excluded by the COC or the Stewards of the meeting under scrutineer advisement. Cars may be also excluded from competition if any safety component is deemed to be sub-standard.

## 2. Lines and Pumps

Protection - Fuel, oil and brake lines must be protected externally against any risk of damage (stones, corrosion, mechanical breakages, etc.) and internally against all risks of fire. There must be no contact between electrical cables/wires and fuel lines.

## 3. Braking Systems

A dual circuit operated by the same pedal is required and the pedal shall 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 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.

They must be attached to anchorage points on the bodyshell or rollcage: two for the lap strap, one (central) or two for the shoulder straps.

These belts must be equipped with turn-buckle or push-button release and be manufactured by a recognised seatbelt manufacturer. **Belts must have a minimum of 3" shoulder straps unless they are labeled to be used with a HANS Device and are being worn in conjunction with said device. Lap straps must be 2" minimum**

### 4.2- Installation

A safety harness should be installed on the anchorage points of the production car or on the rollcage. 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 necessary. Care must be taken to avoid chafing against sharp edges.

If installation on the production 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 rollcage 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 rollbar. 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 cm<sup>2</sup> and a thickness of at least 3 mm must be used.

**Principles of mounting to the chassis/monocoque:**

- a) General mounting system: see drawing 253-43.
- b) Shoulder strap mounting: see drawing 253-44.
- c) Crotch strap mounting: see drawing 253-45.

**4.3 - Use**

A safety harness must be used 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**

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

**5.2 - Systems**

**5.2.1** - Permitted extinguishants are AFFF,FX G-TEC,Viro3,dry powder or any other FIA homologated extinguishant.

**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 litres

Powder / FX G-TEC / Viro 3 / Dry Powder = 2.0kg

**5.6 – Pressure**

All extinguishers must be pressurised according to the contents:

Powder = 8 bar min. 13.5 bar max.

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:

- a) Capacity
- b) Type of extinguishant
- c) Weight or volume of the extinguishant
- d) Date the extinguisher was last checked. Extinguishers must be checked at least once every 2 years.

### 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. **UNDER NO CIRCUMSTANCES WILL FIRE EXTINGUISHERS AND/OR BRACKETS HELD IN PLACE WITH CABLE TIES BE PERMITTED.**

### 5.9 - Access

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

## 6. Rollover Structure

Scrutineers may accept competition car rollcages if:

- a) The rollcage design and material specifications are as detailed in this section and the installation and welding is of satisfactory quality;
- b) The rollcage is installed in an FIA homologated car, is in its original specification (main structure) and the vehicle homologation papers are presented to the scrutineer for confirmation;
- c) The rollcage has been homologated by a National Governing Body (ASN) in accordance with FIA regulations regarding same and the homologation form for the rollcage is presented to the scrutineer.

### 6.1 - Definitions

Safety cage: A structural framework designed to prevent serious bodysell deformation in the case of a collision or of a car turning over. Rollbar: Structural frame or hoop and mounting points.

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

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

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

Lateral rollbar: 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 rollbar 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 rollbars. If bolted, bolts must not be in shear.

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



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

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

Reinforcement plate: Metal plate fixed to the bodyshell or chassis structure under a rollbar mounting foot to spread load into the structure.

Mounting foot: Plate welded to a rollbar tube to permit its bolting or welding to the bodyshell 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 bodyshell 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 bodyshell. 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 front and rear axle center-lines. Compulsory diagonal member may be fitted in different ways: 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 rollcages to the bodyshell: Minimum mountings are:

- a) 1 for each leg of the main or lateral rollbar;
- b) 1 for each of the front rollbar;
- c) 1 for each backstay.

Each mounting foot of the front, main and lateral rollbars must include a reinforcement plate of a thickness of at least 3 mm.

Each mounting foot must be attached by at least three bolts onto a steel reinforcement plate at least 3 mm thick and of at least 120 cm<sup>2</sup> area which is welded to the bodyshell. Examples are shown in drawings 253-18 and 253-24.

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 rollbar legs may be welded to reinforcement plates, the rollcage may be welded to the bodyshell. Rollbar mounting feet must not be welded directly to the bodyshell without a reinforcement plate.

Backstays are compulsory and must be attached near the roof line and near the top outer bends of the main rollbar 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 bodyshell.

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 removable. The lower end of the diagonal must join the main rollbar or backstay not further than 100 mm from the mounting foot. The upper end must join the main rollbar 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 rollbar. Reinforcement of bends and junctions: It is permitted to reinforce the junction of the main rollbar or the front rollbar with the longitudinal struts (drawings 253-10 and 253-16), as well as the top rear bends of the lateral rollbars and the junction between the main rollbar and the backstays.

Longitudinal rollcage extensions are allowed up to the level of the suspension mounting points on the shell.

Guidance on welding: All welding must 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.

#### **6.4 - Material specifications**

Specifications of the tubes used (minimum): 38mm x 2.5mm or 40mm x 2mm seamless steel tubing.

Cars scrutineered for the first time on or after July 1st, 2008 will be required to fit a mainhoop of 45mm x 2.5mm or 50mm x 2mm seamless steel tubing as per the current FIA specifications.

The tubing must be bent by a cold working process and the centreline 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.

Technical specifications of main, front and lateral rollbars:

These frames or hoops must be made in one piece without joints. Their construction must be smooth and even, without ripples or cracks. The vertical part of the main rollbar 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 rollbar should be as straight as possible. Where a main rollbar forms the rear legs of a lateral rollbar (drawing 253-4), the connection to the lateral rollbar must be at roof level.

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

## **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 or be indicated with a red arrow.

## **9. Electrical**

**9.1** - The general circuit breaker must cut all electrical circuits, battery, alternator or dynamo, lights, ignition, electrical controls, etc.) and must also stop the engine. It must be a spark-proof model, and must be accessible from inside and outside the car. The triggering system of the circuit breaker must be situated at the lower part of the windscreen. It must be marked by a red spark in a white-edged blue triangle with a base of at least 12 cm.



## 10. Protection Against Fire

An efficient protective screen must be placed between the engine/fuel tank and the passenger compartment 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 laid out in section 15).

## 11. Cabin, 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 reinforcing plates, according to the drawing. The minimum area of contact between support, shell/chassis and reinforcing plates is 40 cm<sup>2</sup> 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 counterplates 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 (only allowed in Production Group), 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.

Wooden steering wheels are not allowed.

Large objects carried in the vehicle must be firmly secured.

The original locking mechanism on the driver and passenger doors must be rendered inoperative, either permanently or temporarily.

## 12. Driver / Co-Driver Equipment.

**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 SNELL SA 2000 or BS6658-85 A/FR minimum standards. Helmets that are damaged or show signs of repairs and/or repainting may be rejected by the scrutineer.

**Frontal head restraints** – FHR systems must be worn by occupants (FIA Approved).



### **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.

### **14. Windows and Nets**

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 rollcage.

For road events 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.

Open-top vehicles must have nets attached to the rollcage in places where glass and panels would normally fit a saloon car.

### **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.

### **16. Replacement Body Panels**

Where specific regulations allow fiberglass and/or composite panels, the following applies:

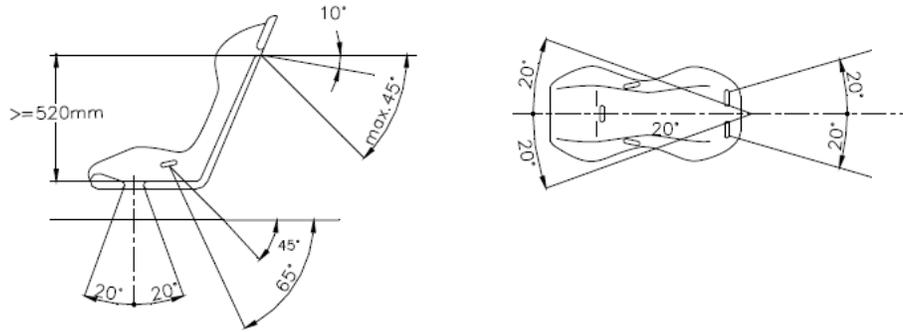
**16.1** - Doors made in fiberglass, the outer door skin must be a minimum of 4mm in thickness. With 3, ¼" (6mm) test holes drilled along the length of the skin in the center position. The test holes can be plugged or covered after testing. The mounting area that door hinges are affixed to must have an internal 3mm aluminium (Or Better) spreader plate made to fit. The door hinge fixing bolts must pass through this plate to secure the door. Four M8 bolts (or greater) must be used. (For examples see drawing 253-53).

**16.2** - Composite Doors MUST be made using carbon / Kevlar material, the outer door skin must be a minimum of 3mm in thickness. With 3 ¼" (6mm) test holes drilled along the length of the skin in the center position. The test holes can be plugged with a silicone based adhesive after testing. The mounting area that door hinges are affixed to must have an internal 3mm aluminium (Or Better) spreader plate made to fit. The door hinge fixing bolts must pass through this plate to secure the door. Four M8 bolts (or greater) must be used. (For examples see drawing 253-53).

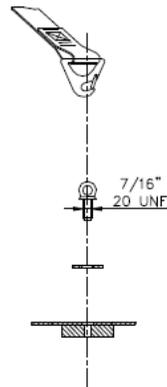
**16.3** – Bonnet and rear trunk panels must maintain a rigid enough structure to maintain their original shape at competition speed.



## Drawings

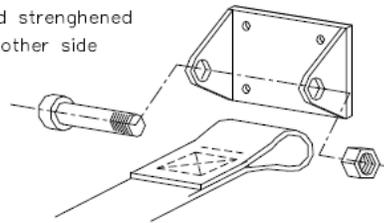


253-42

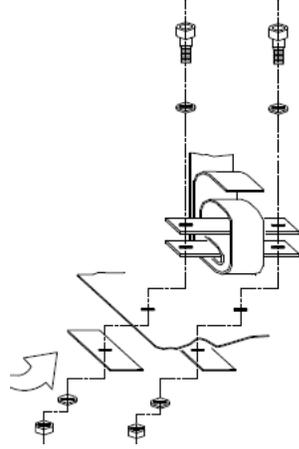


253-43

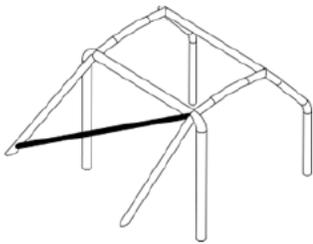
plate fixed to the chassis and strengthened  
by a reinforced plate on the other side



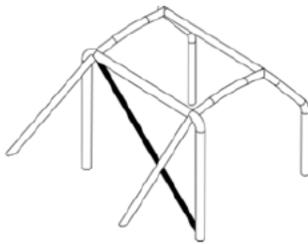
253-44



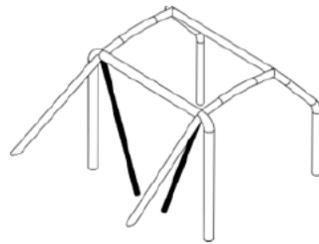
253-45



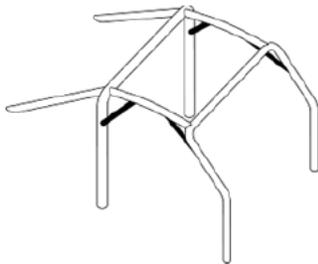
253-3



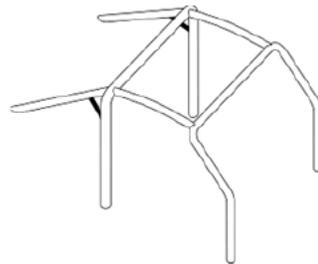
253-4



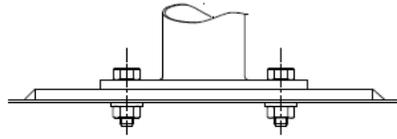
253-5



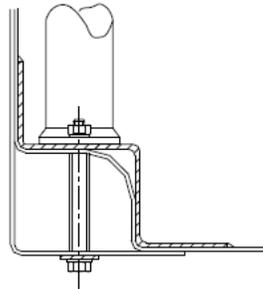
253-10



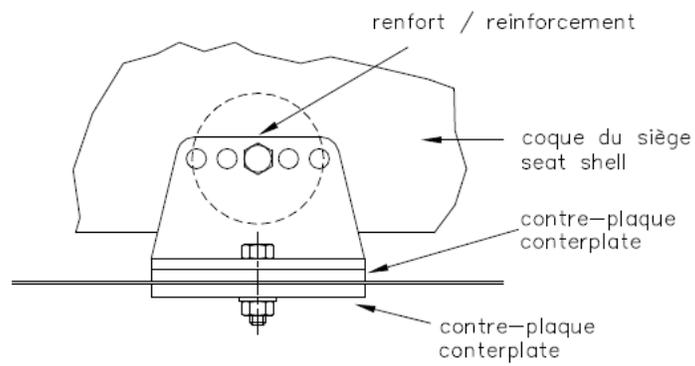
253-16



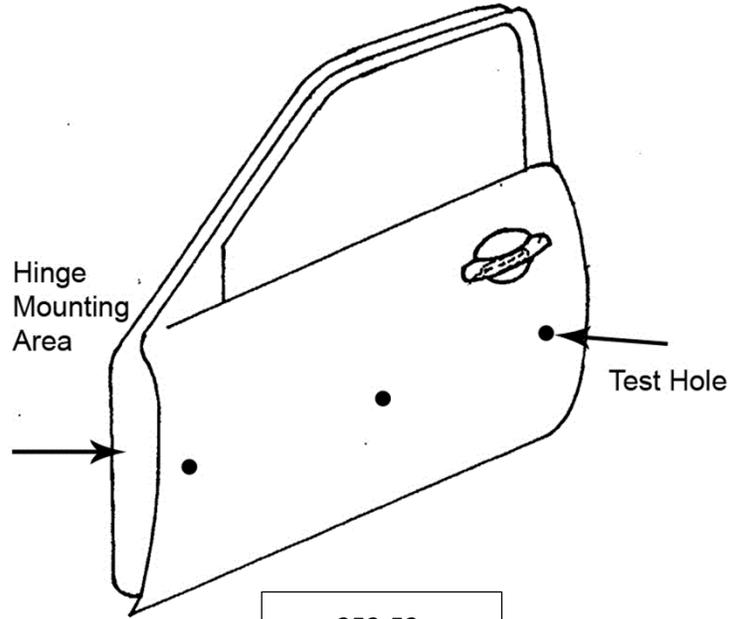
253-18



253-24



253-52



253-53