

# GENERAL TECHNICAL REGULATIONS 2023

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*The doorway to Sahara*



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## 1. ELIGIBLE VEHICLES

- 1.1. Vehicles must have valid registration and insurance and to be roadworthy for driving on public roads.
- 1.2. The rally does not require homologation / technical passport of the racing vehicles. Never the less such can help speeding up the scrutineering. There are however several safety and technical requirements which must be fulfilled before entering the scrutineering.
- 1.3. All vehicles must have all their registration plates secured to the vehicles.
- 1.4. Should the roll cage / roll bar be damaged during the event then it must be inspected by the Technical Delegate/Chief Scrutineer and the vehicle will only be permitted to continue if the cage is deemed safe by the Chief Scrutineer.
- 1.5. The overall technical requirements are a combination of the following:
  - The General Technical Regulations
  - The Specific Technical Regulations for the vehicle / category
  - The Specific Safety Requirements for the vehicle / category
  - Additional Specific requirements listed in the Supplementary regulations for the event

The combination of all those makes the overall technical regulation for the competing vehicles

## 2. CATEGORIES

### 2.1. General

Detailed description of all available categories and classes for the event will be published in the supplementary regulations.

### 2.2. Categories

#### 2.2.1. Cross country category

Vehicles which are prepared to cover over a total distance between 1200 and 3000km for no more than 8 rally days. A minimum of 1200km are in Selective Sections which are mainly driven on gravel and dirt roads. All vehicles must comply with the Technical Requirements of each vehicle specification. The itinerary of the rally will be drivable with a serial 4wd vehicle.

#### 2.2.2. Extreme category

Vehicles which are prepared to cover a total distance between 900 and 2000km for no more than 8 rally days. A minimum of 800km are in Selective Sections which are driven in various types of terrain including sections for deep water crossing, winching, steep uphill and downhill, rock crawling, etc. Vehicles must be suited for demanding terrain and to be equipped with self-recovery equipment.

#### 2.2.3. Discovery category

A non-racing category for vehicles which covers fully or partially the route of the Cross Country and/or the Extreme Category.

## 3. VEHICLE CLASSES AND SUBCLASSES

### 3.1. General

Detailed description of all eligible classes and subclasses will be published in the event's Supplementary Regulations.

### 3.2. General vehicle classes

CROSS COUNTRY CATEGORY	
Class	Subclass
ENDURO	
ATV	
SSV	
CARS	LIMITED
	OPEN
TRUCKS	Under 7.5t
	Over 7.5t

EXTREME CATEGORY	
Class	Subclass
CARS	LIMITED
	OPEN
TRUCKS	
	Under 7.5t
	Over 7.5t

DISCOVERY CATEGORY*	
Class	
DISCOVERY	ENDURO
	ATV
	SSV
	CARS
* Non-racing category	

Additional subclasses and groups can be added but must be published in the event's Supplementary Regulations.

## 4. DEFINITIONS (SSV, CARS, TRUCKS)

### 4.1. CARS - Series production vehicles

Models of mass production, which are destined for distribution to individual purchasers through the normal commercial channels of the manufacturer. These cars have a maximum of six wheels and a minimum of four driven wheels

### 4.2. CARS - Competition vehicles

Vehicles built singly and intended solely for competition. These cars have a maximum of six wheels and a minimum of four driven wheels

### 4.3. SSV - Side by Side (SXS)

Models of mass production, which are engineered and manufactured with one or two seats side-by-side, running on 4 wheels and are available for distribution to individual purchasers through the normal commercial channels of the manufacturer.

#### 4.4. TRUCKS

Trucks are considered vehicles with a gross weight exceeding 3500kg, with a maximum of eight wheels and a minimum of four driven wheels.

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### 5. GENERAL TECHNICAL REQUIREMENTS – ENDURO and ATV

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- 5.1. Minimum a rear mounted registration plates securely fixed to the vehicles.
- 5.2. Operational head and tail lights.
- 5.3. Operational brake lights.
- 5.4. Operational horn.
- 5.5. First-aid-kit to the present norms.
- 5.6. Warning vest.
- 5.7. Working Garmin GPS device. See appendix 3 for allowed models.
- 5.8. One set of properly installed “+” and “-” power supply cables directly from the vehicle’s battery for the Safety Tracking System. See appendix 4 for details.

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### 6. GENERAL TECHNICAL REQUIREMENTS – SSV, CARS and TRUCKS

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- 6.1. Vehicles must have all their registration plates securely fixed to the vehicles.
- 6.2. Motorsport helmets. See appendix 1 for allowed type constructions.
- 6.3. All SSV, Cars and all Trucks must be fitted with a roll cage. Specifications of the roll cage in the FIA Appendix J are highly recommended. See appendix 5 for details.
- 6.4. For all trucks, it is highly recommended an additional massive roll-over bar behind the cabin.
- 6.5. Operational head and tail lights.
- 6.6. Operational brake lights.
- 6.7. Additional 2 stop lights located separately, minimum 0.75m apart, or 1 additional “big” stop light located in the center, in the upper third of the vehicle, minimum 1.25 meters from the ground, shining to the rear (standard 2 + 1 or 2 additional). Must be visible from the car behind.
- 6.8. Operational horn.
- 6.9. Minimum 3 point safety racing harnesses. 4 point safety racing harnesses are highly recommended. See appendix 2 for details.
- 6.10. Seat belt cutters accessible when belted into seat.
- 6.11. All vehicles must be fitted with sport seats (with side support of back rest and seat and neck area).
- 6.12. It is highly recommended for all Cross country category vehicles – SSV, CAR, TRUCK: Mud flaps, covering at least 50% of the wheels (center of the wheel hub) on the back of all wheels.
- 6.13. First-aid-kit to the present norms.
- 6.14. Warning vest.
- 6.15. Working Garmin GPS device. See appendix 3 for allowed models.
- 6.16. One set of properly installed “+” and “-” power supply cables directly from the vehicle’s battery for the Safety Tracking System. See appendix 4 for details.
- 6.17. 2pcs of 2kg fire extinguishers easily reachable by the crew members when seated. Securely fixed.
- 6.18. 2pcs of minimum 9 meters’ tow straps with hooks or shackles.
- 6.19. A breakdown warning triangle.
- 6.20. Extreme category only: Working winch, “tree protector” strap, snatch block, protective gloves. The use of a winch cable dampener/blanket of a minimum 1.5kg is highly recommended no matter the type of winch cable.
- 6.21. Minimum one front and one rear towing hook / tow ball. Both must be painted in highly visible color or identified by an arrow.
- 6.22. Vehicles with no doors or door windows must have window nets installed. The nets must cover at least 70% of the opening and be readily opened from the top or bottom, from inside and outside the vehicle. The net’s mesh size must be no greater than 50mm x 50mm or FIA homologated / expired homologation.

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### 7. GENERAL TECHNICAL REQUIREMENTS – DISCOVERY CATEGORY – All vehicles classes

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- 7.1. Minimum a rear mounted registration plates securely fixed to the vehicles.
- 7.2. Operational head and tail lights.
- 7.3. Operational brake lights.
- 7.4. Operational horn.
- 7.5. First-aid-kit to the present norms.
- 7.6. Warning vest.
- 7.7. Seat belts for each passenger (SSV and Cars only)
- 7.8. Minimum 1pc of 2kg fire extinguisher (SSV and Cars only) easily reachable by the crew members. Recommended 2 pcs of 2kg fire extinguishers.
- 7.9. Minimum 9 meter tow strap with hooks or shackles (SSV and Cars only)
- 7.10. Working Garmin GPS device. See appendix 3 for allowed models.
- 7.11. Properly installed “+” and “-” power supply cables directly from the vehicle’s battery for the Safety Tracking System. See appendix 4 for details.
- 7.12. Obligatory for Enduro, ATV and SSV - Motorsport helmets. See appendix 1 for allowed type constructions. Recommended for Cars and Trucks.

## 8. SPECIFIC SAFETY REQUIREMENTS FOR ENDURO and ATV

- 7.1. Full face or modular type motorsport helmets with visor / glasses. See appendix 1 for allowed type constructions.
- 7.2. Moto-cross clothes with protectors for the back, shoulders and knees.
- 7.3. Moto-cross boots (no others will be allowed).
- 7.4. Gloves.

## 9. SPECIFIC SAFETY REQUIREMENTS FOR SSV (Not applicable for the Discovery category)

- 8.1. A safety net on the doors, following the FIA guides lines must be fitted and stretched when vehicle in motion.
- 8.2. All SSV must have a solid roof firmly fixed to the roll cage. It is highly recommended a firmly fixed metal roof of minimum 1.5mm thickness.
- 8.3. Highly recommended at least one diagonal member on the roll cage.

## 10. SPECIFIC TECHNICAL REGULATIONS FOR “LIMITED” AND “OPEN” SUBCLASSES

The specific technical regulations for “limited” and “open” subclasses are published in separate documents.

## 11. FUEL AUTONOMY

- 10.1. Enduro, ATV around **150 km**.
- 10.2. SSV, Cars & Trucks around **250km**.
- 10.3. Each competitor is responsible of the calculation of his autonomy. He cannot in any case make up against the Organization if his vehicle doesn't reach the coverage of the minimum distance of **150km** respectively **250km**, whichever is the nature of the terrain. For safety reasons, an additional autonomy of 10% is recommended.
- 10.4. **For all Classes:** Carrying of fuel in any type of containers (i.g. jerry cans, bottles, etc.) except in the fuel tanks, subject to scrutineering, is strictly forbidden. Every breach will be reported to penalized.

## 12. RECOMMENDED EQUIPMENT

All the necessary spare parts and tools typical for the vehicle should be brought to the rally, sufficient lights (not only for the marathon stage), a torch, a winch, shackles, a high-lift, a spade, etc.

All vehicles, also the service vehicles and other wheelers, must have a valid registration and insurance and be roadworthy for the participation in the evaluated stages.

## 13. Appendix 1 Helmets

### 1. GENERAL

Each competitor must wear a protective motorsport helmet at all the time running the Selective sections.

The various designs of helmets may differ but they must confirm to the stated below types of construction for to be eligible to the use throughout the event.

### 2. ALLOWED TYPES OF HELMET CONSTRUCTIONS

#### 2.1. Full face / Motocross- ALLOWED FOR ALL CATEGORIES.

A helmet that covers the entire head, the base of the skull, and a protective section over the front of the chin.



#### 2.2. Modular or "flip-up". ALLOWED FOR ALL CATEGORIES.

A hybrid between full face and open face helmets also sometimes termed "convertible" or "flip-face".





**2.3. Open face or 3/4 helmet. ONLY FOR SSV, CARs and TRUCKs.**

A helmet that covers the ears, cheeks, and back of the head, but lacks the lower chin bar of the full-face helmet.

**3. NOT ALLOWED TYPES OF HELMET CONSTRUCTIONS****3.1 Half helmet – NOT ALLOWED**

It has essentially the same front design as an open face helmet but without a lowered rear in the shape of a bowl

**3.2 Others – NOT ALLOWED**

Helmets for boarding, cycling, winter sports, water sports, mountaineering, horse riding, military, etc.

**4. CONFORMITY**

CLASS	FULL FACE	MODULAR	3/4 HELMET
ENDURO	•	•	NOT ALLOWED
ATV	•	•	NOT ALLOWED
SSV	•	•	•
CAR	•	•	•
TRUCK	•	•	•

**5. HOMOLOGATION**

There is no requirement for the helmets to have a FIA-homologation if they confirm to the allowed types of construction shown above. However, we encourage the use of racing FIA-homologated helmets, even with expired homologation for better personal safety.

**6. ACCESSORIES**

There are no limits on the accessories used on the helmets such as action cameras, headphones, etc.

We strongly advice to limit the use of action cameras on Enduro and ATV helmets.

RBI SPORT



## 14. Appendix 2 Safety harnesses

### 1. ALLOWED SAFETY HARNESSSES

#### 1.1. 3 point racing harness



#### 1.2. 4 point racing harness



#### 1.3. 5 and more point racing harness are allowed

### 2. NOT ALLOWED SAFETY HARNESSSES

**THE USE OF THE STANDARD EQUIPPED 3 POINT SAFETY BELTS IS NOT ALLOWED!**



### 3. INSTLATION

The installation of the safety harnesses must comply with the manuals and installation notes of the manufacturer. We encourage the use of the FIA safety guidelines for installation of safety harnesses.

## 15. Appendix 3 Garmin GPS

### 1. GENERAL

- 1.1. It is mandatory that each competitor carry a properly working GARMING GPS device during running of the itinerary.
- 1.2. It is the responsibility of the competitors alone to properly turn on the device at the Prestart of each Leg (power on, GPS settings, track log function enabled, power supply, etc.)
- 1.3. Each crewmember must have a basic knowledge of working with their Garmin GPS device – power on, show current position.
- 1.4. GPS settings:
  - World Geodetic System: WGS84
  - Coordinates format: hddd.ddddd
  - North: True North
  - Track log ON
  - Track recording option – automatic. If no automatic setting is available, a Time interval -5 second must be chosen.
  - “Overwrite when full”

### 2. GPS WAYPOINTS

On certain events, waypoints may be required to be imported to the competitor’s Garmin GPS. The current existing waypoints in the GPS device will be deleted and the organizer’s waypoints will be imported. The competitor’s current GPS Waypoints will not be saved or archived by the organization team.

### 3. ALLOWED GARMIN GPS MODELS

- 3.1. Models with display diagonal no bigger than 9 inch.
- 3.2. Models with TRACK LOG function (memory of 10000 track points).
- 3.3 Models with minimum 1000 Waypoints capacity
- 3.4. Model with working USB connector (Mini/Micro USB interface)



### 3. NOT ALLOWED GARMIN GPS MODELS

- 3.1. GPS devices which do not have TRACK LOG function
- 3.2. GPS devices with SERIAL/COM ports or with no communication ports at all

### 4. LIST WITH SOME OF THE APPROVED GARMIN GPS MODELS

Colorado series, Dakota Series, eTrex Series (color screen), GPSMap Series (color screen), Montana series, Nuvi series, Oregon series, Rino series, Zumo series

Please note that this is just an example list and newer models may be available.

## 16. Appendix 4 Connection of Safety Systems

### 1. General

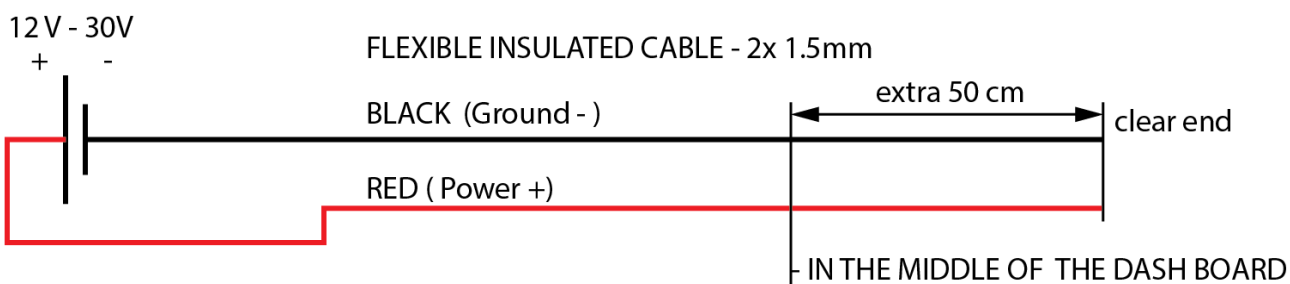
On board of each vehicle, there must be a minimum of one set of properly installed “+” and “-” power supply cables directly from the vehicle’s battery for the Safety Tracking System.

It is the competitor’s responsibility to ensure that the Safety Tracking System(s) always remain permanently connected and switched on with the antenna connected throughout the duration of the competition.

### 2. Electrical diagram

- **IMPORTANT !!!** The battery master cut-off (kill) switch **MUST NOT DISCONNECT** the power supply for the Rally Safety System.
- It is the responsibility of the competitors alone to provide, **DIRECT POWER SUPPLY** from the vehicle’s battery according to the drawings provided.
- The power cables must be “flexible” ( multi wire ), insulated cables – 2 x min 0.5 to 1.25 mm<sup>2</sup> (preferably with **RED and BLACK** insulation color).
- The connection may have an **IN-LINE FUSE** - “**BLADE TYPE**” of 5A.

#### VEHICLE’S BATTERY



- The wires must be prepared in advance and connected to the vehicle’s battery when the vehicle is presented for scrutineering.
- The cable must have minimum 50cm extra usable length from the middle of the dash board (See installation position).
- The connection to the Rally Safety System will be done with a simple connector terminals supplied by the organizer.

### 3. Connectors

- The power supply cables (Power+ and Ground-) must be equipped with **FULLY INSULATED FEMALE Crimp Spade Terminal Connector** - 6.3 x 0.8mm.

See the graphic for example:



### 4. Additional connectors

Additional connectors and sets may be required but must be published in the supplementary regulations.

## 17. Appendix 5 Roll cage – FIA Guidelines

### 1. GENERAL

**1.1.** The following material is a quote from the FIA Appendix J Article 283 – Safety equipment for Cross-country vehicles. For Trucks please refer to FIA Appendix J Article 287 - Cross-Country Truck Technical Regulations. The texts have guidance purposes only.

**1.2.** The roll cage does not require any homologation/ technical passport.

**1.3.** Acceptable roll cage for the cars will be the one which have “the basic structure” stated in p.3.1 plus “diagonal members” stated in p.3.3.1. The chief scrutineer will inspect each roll cage for compliance considering the vehicle weight, class and category.

**1.4.** External roll cages are allowed for extreme class and Cross-country Trucks category

**1.5.** The complete information regarding the FIA Appendix J can be found on the following link:

<http://www.fia.com/regulation/category/100>

### 2. DEFINITIONS

#### 2.1. Safety cage

Multi-tubular structure installed in the cockpit and fitted close to the bodyshell, the function of which is to reduce the deformation of the bodyshell (chassis) in case of an impact.

#### 2.2. Rollbar

Tubular frame forming a hoop with two mounting feet.

#### 2.3. Main rollbar (Drawing 253-1)

Transverse and near-vertical (maximum angle  $\pm 10^\circ$  to the vertical) single piece tubular hoop located across the vehicle just behind the front seats. The tube axis must be within one single plane.

#### 2.4. Front rollbar (Drawing 253-1)

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

#### 2.5. Lateral rollbar (Drawing 253-2)

Near-longitudinal and near-vertical single piece tubular hoop located along the right or left side of the vehicle, the front pillar of which follows the windscreen pillar and the rear pillar of which is near-vertical and located just behind the front seats. The rear pillar must be straight in side view.

#### 2.6. Lateral half-rollbar (Drawing 253-3)

Identical to the lateral rollbar but without the rear pillar.

#### 2.7. Longitudinal member

Near-longitudinal single piece tube joining the upper parts of the front and main rollbars.

#### 2.8. Transverse member

Near-transverse single piece tube joining the upper parts of the lateral half-rollbars or of the lateral rollbars.

#### 2.9. Diagonal member

Transverse tube between : One of the top corners of the main rollbar, or one of the ends of the transverse member in the case of a lateral rollbar, and at the lower mounting point on the opposite side of the rollbar, or The upper end of a backstay and the lower mounting point of the other backstay.

#### 2.10. Removable members

Members of a safety cage which must be able to be removed.

#### 2.11. Cage reinforcement

Member added to the safety cage to improve its strength.

**2.12. Mounting foot**

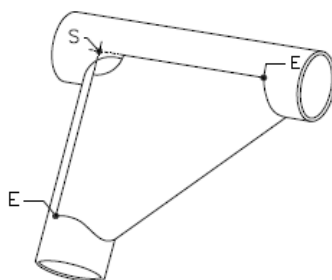
Plate welded to the end of a rollbar tube to permit its bolting to the bodyshell/chassis, usually onto a reinforcement plate. This plate may be welded to the bodyshell/chassis in addition to the bolts.

**2.13. Reinforcement plate**

Metal plate fixed to the bodyshell/chassis under a rollbar mounting foot to better spread the load onto the bodyshell/chassis.

**2.14. Gusset**

Reinforcement for a bend or junction made from bent sheet metal with a U shape the thickness of which must not be less than 1.0 mm. The ends of this gusset (point E) must be situated at a distance from the top of the angle (point S) of between 2 to 4 times the outer diameter of the biggest of the tubes joined. A cut-out is permitted at the top of the angle but its radius (R) must be no greater than 1.5 times the outer diameter of the biggest of the tubes joined. The flat sides of the gusset may have a hole the diameter of which must not be greater than the outer diameter of the biggest of the tubes joined.

**3. SPECIFICATION****3.1. Basic structure**

The basic structure must be made according to one of the following designs:

- 1 main rollbar + 1 front rollbar + 2 longitudinal members + 2 backstays + 6 mounting feet (Drawing 253-1)
- or
- 2 lateral rollbars + 2 transverse members + 2 backstays + 6 mounting feet (Drawing 253-2)
- or
- 1 main rollbar + 2 lateral half-rollbars + 1 transverse member + 2 backstays + 6 mounting feet (Drawing 253-3)



The vertical part of the main rollbar must be as close as possible to the interior contour of the bodyshell and must have only one bend with its lower vertical part. The front pillar of a front rollbar or of a lateral rollbar must follow the windscreen pillars as closely as possible and have only one bend with its lower vertical part.

**3.2. Design**

Once the basic structure is defined, it must be completed with compulsory members and reinforcements to which optional members and reinforcements may be added

**3.3. Compulsory members and reinforcements****3.3.1. Diagonal members**

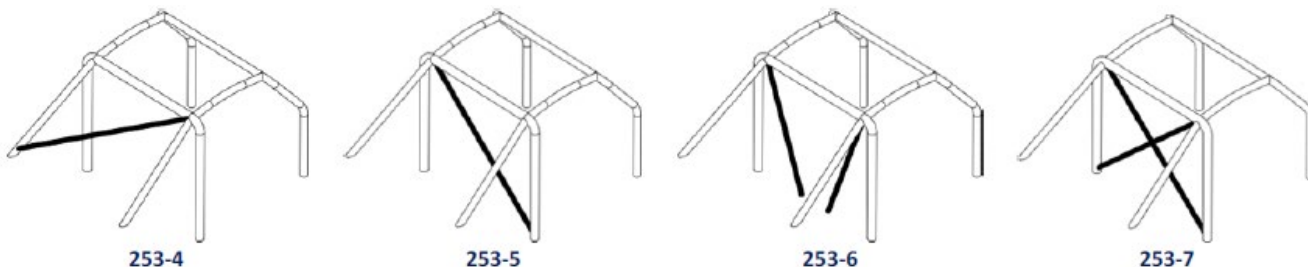
The cage must have one of the diagonal members defined by Drawings 253-4, 253-5, 253-6, 253-7.

The orientation of the diagonal may be reversed. In the case of Drawing 253-6, the distance between the two mountings on the bodyshell/chassis must not be greater than 300mm.

Members must be straight and may be removable.

The upper end of the diagonal must join the main rollbar no further than 100 mm from its junction with the backstay, or the backstay no more than 100 mm from its junction with the main rollbar.

The lower end of the diagonal must join the main rollbar or the backstay no further than 100 mm from the mounting foot (except for the case of Drawing 253-6).

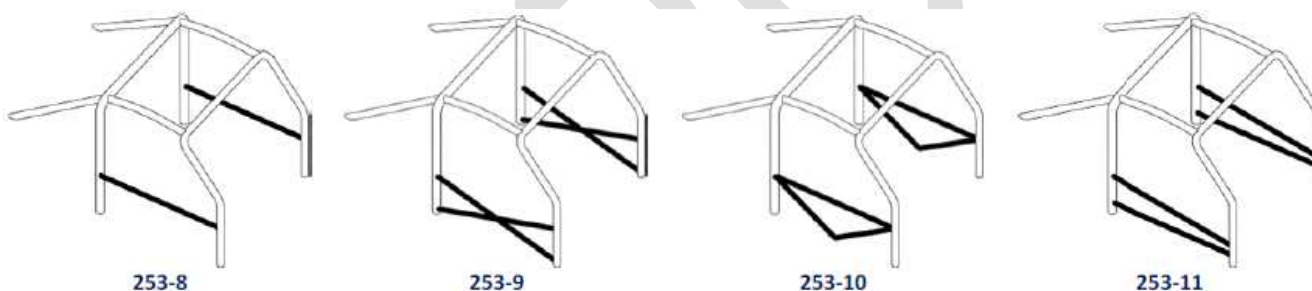


### 3.3.2. Door members

One or more longitudinal members must be fitted at each side of the vehicle according to Drawings 253-8, 253-9, 253-10 and 253-11

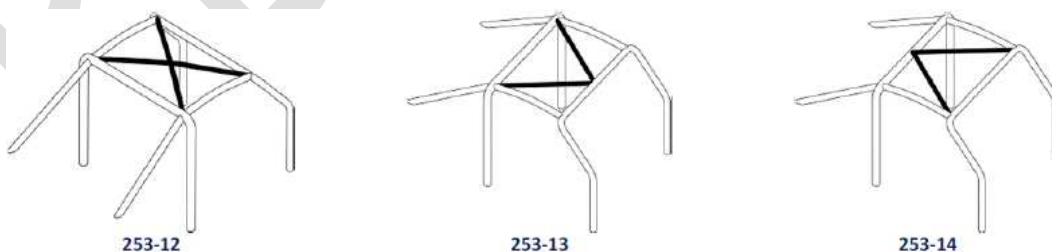
Drawings may be combined. The design must be identical on both sides. They may be removable. The side protection must be as high as possible, but its upper attachment point must not be higher than half the height of the door opening measured from its base.

If these upper attachment points are located in front of or behind the door opening, this height limitation is also valid for the corresponding intersection of the strut and the door opening.



### 3.3.3. Roof reinforcement

The upper part of the safety cage must comply with one of Drawings 253-12, 253-13 and 253-14. The reinforcements may follow the curve of the roof. For competitions without co-drivers, in the case of Drawing 253-12 only, only one diagonal member may be fitted but its front connection must be on the driver's side. The ends of the reinforcements must be less than 100 mm from the junction between rollbars and members (not applicable to the top of the V formed by reinforcements in Drawings 253-13 and 253-14).



### 3.3.4. Additional reinforcement

See the FIA Appendix J for details.

### 3.3.5. Mounting of safety cages to the bodyshell/chassis

#### 3.3.5.1. Mounting points of the front, main, lateral rollbars or lateral halfrollbars

Each mounting point must include a reinforcement plate at least 3 mm thick.

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 cm<sup>2</sup> area which is welded to the bodyshell.



Fixing bolts must have a minimum diameter of M8 and a minimum quality of 8.8 (ISO standard).

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

The angle between 2 bolts must not be less than 60 degrees.

### 3.3.5.2. Mounting points of the backstays

Each backstay must be secured by a minimum of 2 M8 bolts with mounting feet of at least 60 cm<sup>2</sup> area, or secured by a single bolt in double shear, provided it is of adequate section and strength and provided that a bush is welded into the backstay.

### 3.4. Tube specification

Only tubes with circular cross section are authorised.

Material	Minimum tensile strength	Minimum Dimensions (mm)	Use
Cold drawn seamless Unalloyed carbon steel (see below) containing a maximum of 0.3 % of carbon	350 N/mm <sup>2</sup>	45 x 2.5 (1.75"x0.095") or 50 x 2.0 (2.0"x0.083")	Main rollbar (Drawings 253-1 and 253-3) or Lateral rollbars and Rear Transverse member (Drawing 253-2)
		38 x 2.5 (1.5"x0.095") or 40 x 2.0 (1.6"x0.083")	Lateral halfrollbars and other parts of the safety cage (unless otherwise indicated in the articles above)

For unalloyed steel, the maximum content of additives is 1.7 % for manganese and 0.6 % for other elements.

In selecting the steel, attention must be paid to obtaining good elongation properties and adequate weldability.

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.

The surface at the level of the bends must be smooth and even, without ripples or cracks.

### 3.5. Guidance on welding

These must be carried out along the whole perimeter of the tube. All welds must be of the highest possible quality with full penetration and preferably using a gas-shielded arc.

### 3.6. Protective padding

Where the occupants' bodies could come into contact with the safety cage, flame retardant padding must be provided for protection.



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