



Competition Vehicle Technical Regulations

USRF Technical committee
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V1.3 Effective January 1st 2022. This version supersedes all previous published versions.

1. Required Personal Safety Equipment

The following items are required for all drivers and co-drivers (check 3. Motorcycles for bike specific safety equipment):

1.1. Helmets

All drivers and co-drivers competing must wear helmets that meet one of the following standards:

- Snell SA2010 or SAH2010 (expire 2023-12-31)
- Snell SA2015
- Snell SA2020
- SFI Spec 31.1/2010 or newer, less than 10 years from manufacture
- FIA 8860-2010
- FIA 8860-2015
- British Standard 6658-85 Type A/FR, including all amendments will be valid for 10 years from the date of manufacture. If no manufacturing date sticker exists, the helmet will be considered expired.

1.2. Head and Neck Restraint Device

Head and neck restraint systems are required for all competitors. These systems shall be mounted per the manufacturer's recommendations. The head and neck restraint system must meet at least one of the following:

- FIA 8858-2002.
- FIA 8858-2010.
- SFI 38.1 less than five years old.

If a device has both FIA and SFI certification, the FIA certification prevails and does not expire.

1.3. Driving suit

All drivers and co-drivers competing must wear driving suits that conform to one of the following standards:

- FIA 1986
- FIA 8856-2000
- FIA 8856-2018
- SFI 3-2A/5
- SFI 3.4/5
- SFI 3-2A/1 driving suits are also permitted if worn with approved fire resistant underwear.

2. Required Vehicle Safety Equipment

The following are the minimum safety requirements for the vehicle. It is expected that safety equipment is installed in a manner consistent with manufacturers' intent.

2.1. Road worthiness

All competing vehicles must be roadworthy and, the following items in particular must be adequate and functioning properly:

- Brakes
- Horn - Windshield wipers
- All legally required exterior lights
- Suspension
- Tires, including all spares
- Exhaust system
- Catalytic Converter (if required)

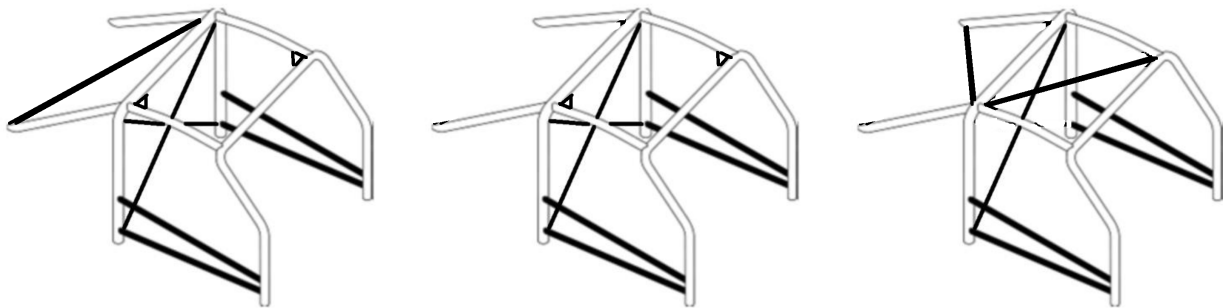
2.2. Roll cages

All vehicles must be fitted with a roll cage. Specific roll over protection is subject to the approval of the scrutineer at each event.

2.2.1. Existing logbooks

Existing log-booked rally vehicles that have a logbook from one of the following sanctioning bodies will generally remain valid for competition as long as they meet the minimum grandfathering rules:

- FIA
- Rally America
- NASA Rallysport
- ARA
- CARS
- SCCA Pro Rally



Examples of accepted grandfathered cage configurations

Grandfathering requires that all cages must be of a minimum:

- six-point mounting design
- two door bars per side
- Diagonals to each corner of the top of the main hoop, whether in the plane of the main hoop or the rear stays
- roof bars or at least one gusset in opposite corners
- minimum tubing size is 1.5"x0.095"

2.2.2. New constructions

The basic purpose of the roll over protection is to prevent serious bodyshell deformation, and so reduce the risk of injury to occupants, in the case of a collision or of a vehicle turning over. The essential features of safety cages are sound construction designed to suit the particular vehicle, adequate mountings and a close fit to the bodyshell. The safety cage must not unduly impede the entry or exit of the driver and co-driver.

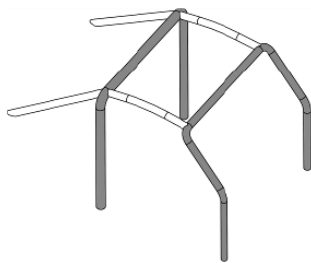
2.2.2.1. Basic design

All new vehicles must be fitted with a safety cage built to FIA Article 253 specifications or be FIA homologated under the latest international regulations and accompanied by original certification documentation (older homologated cages are not all valid for a newly built vehicle).

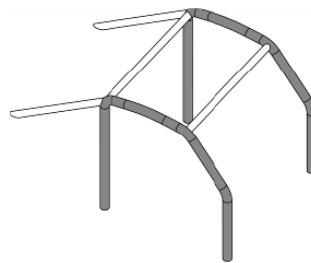
See www.fia.com, under Sport, Regulations, International Sporting Code, Appendix J (at bottom), Article 253, Article 8.

If the build is not FIA homologated, the following requirements will apply:

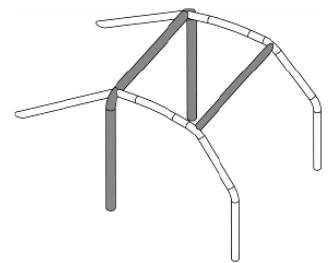
- A base structure following either 253-1, 253-2 or 253-3



253-1

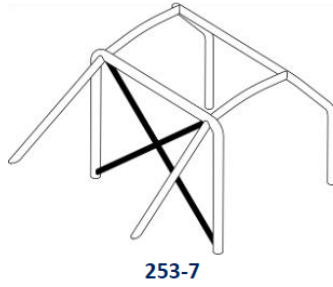


253-2

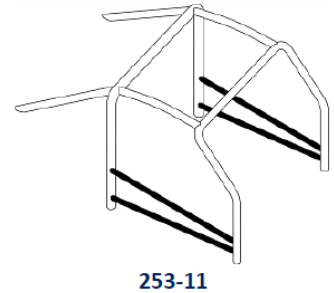
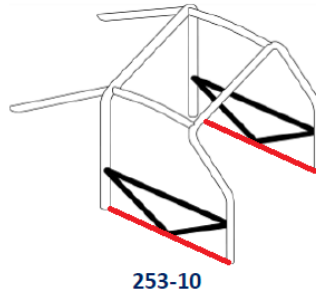
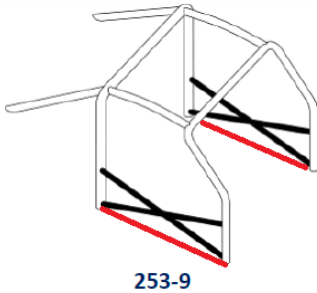


253-3

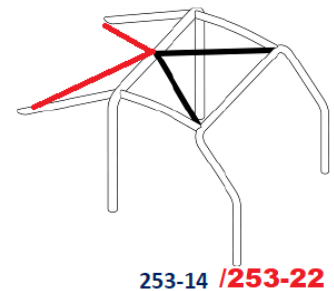
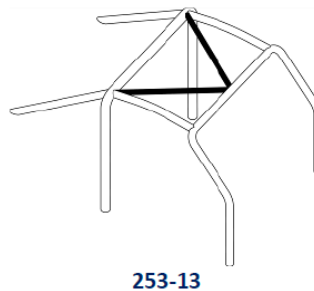
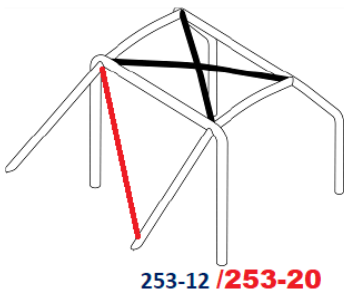
- 2 diagonal members on the main rollbar (253-7)



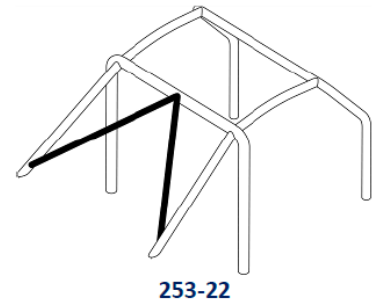
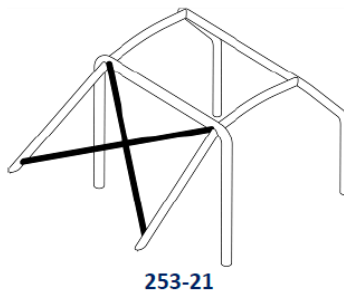
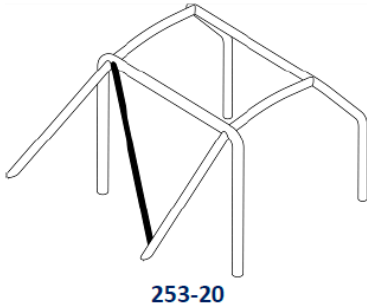
- Door bars: one longitudinal member **MUST** be added to each of the designs shown in Drawings 253-9 and 253-10, 253-11 must be one sill bar and at least one additional bar.



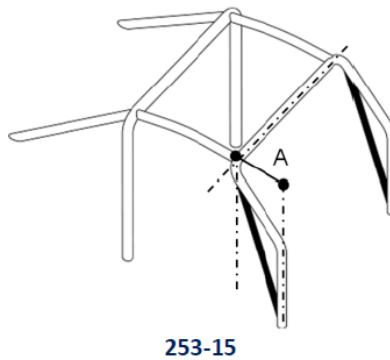
- Roof bars: The upper part of the safety cage must be reinforced with members according to one of Drawings 253-12, 253-13 and 253-14. We strongly discouraged the use of the 253-13 design. When using 253-12 or 253-14, follow the FIA requirements for the rear diagonals (shown in red)



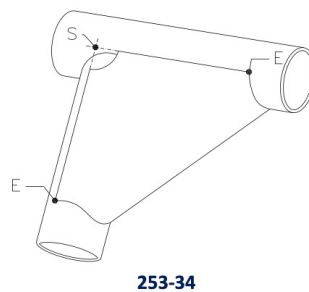
- Backstay diagonals: Design 253-21 is recommended unless 253-14 roof bars are used in which case 253-22 design should be used. 253-20 is the minimum requirement for all other designs.



- Windscreen pillar reinforcement: It must be fitted on each side of the front rollbar if dimension "A" is greater than 200 mm (Drawing 253-15).



- Gussets must follow article 8.2.14 (drawing 253-34)



2.2.2.2. Alternate material to CDS (Cold Drawn Seamless)

Although FIA Article 253.8.3.3 specifies the safety cage material as CDS, DOM (Drawn-Over-Mandrel) or DOCOL R8 tubing may also be used as an alternate material in respect to the following: main roll bar, front roll bar, lateral roll bars, lateral half roll bars, their connections (drawings 253-1-3) and one continuous door bar per side will be at least 1.75"x.095" (1.75"x.083" for DOCOL R8). All other parts of the safety cage will be at least 1.5" x 0.095" (1.5" x 0.065" for DOCOL R8).

2.2.2.3. Padding

Where the occupants' crash helmets could come into contact with the safety cage, the padding must comply with FIA standard 8857 2001, type A (see technical list n 23 "Roll Cage Padding Homologated by the FIA") or SFI 45.1.

2.3. Seats

Driver and co-driver seats shall be firmly mounted to the structure of the vehicle and be installed per the manufacturer's recommendations. Seats must be intended by their manufacturer to be for competition use. The use of hinged-back and OEM seats is prohibited. All non-FIA seats are subject to acceptance by the Chief Scrutineer.

2.4. Harnesses

All vehicles shall be equipped with a five-, six- or seven-point occupant restraint (harness) system meeting the specifications below for both the driver and co-driver. All harness systems shall be capable of releasing with only one latch. The material of all straps shall be in new or perfect condition. All components of the harness must wear the same certification and dates (no mix and match). Harnesses shall be worn at all times while driving or co-driving.

2.4.1. Accepted standards

The following harness homologations are accepted provided that the harness are within their homologation dates:

- FIA 8853/98
- FIA 8853/2016
- SFI 16.1
- SFI 16.5

If only a manufacturing date is available no harness can be used 5 years past its manufacturing date.

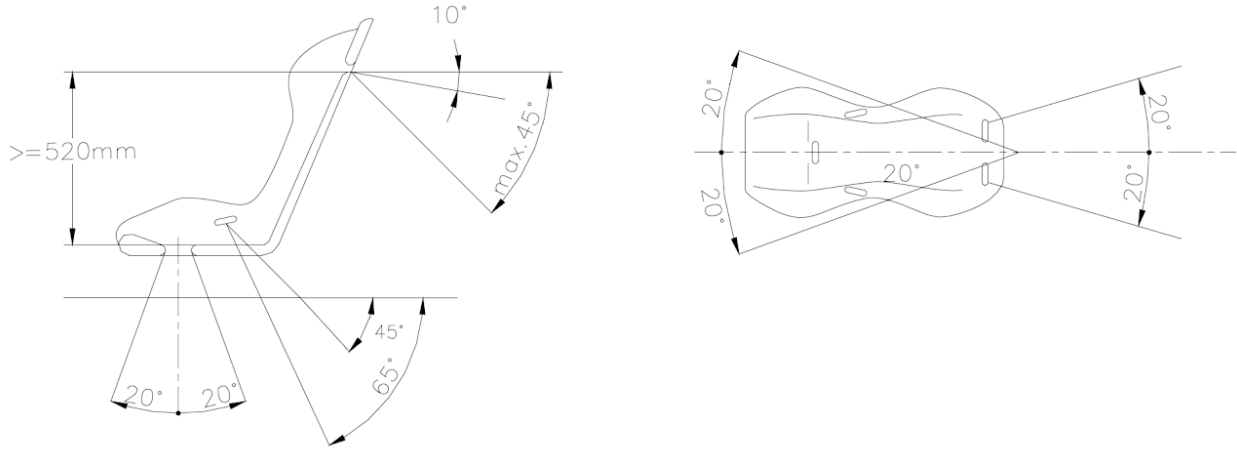
2.4.2. Harness installation

Harnesses should be mounted according to manufacturer's instructions and follow either the FIA Appendix J, Article 353, Section 6.2 (Harness installation) or

the SFI Seatbelt Installation guide. It is prohibited for the seat belts to be anchored to the seats or their supports.

Accepted mounting configurations are listed below:

FIA Belts authorized angles:



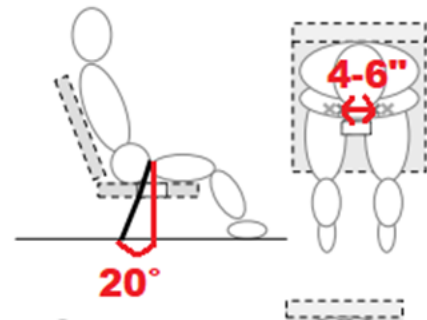
253-61

SFI Foundation installation guide:

CROTCH BELT – 6-POINT

Sports Car “Shell Type Seat” and aluminum seats with single crotch belt hole forward of the inside seat back from 10 to 12 inches: *(NOTE: Seats with a single hole positioned more than 12 inches from the inside seat back are designed for 5 point belt installations and may not be as effective for 6-point installations):*

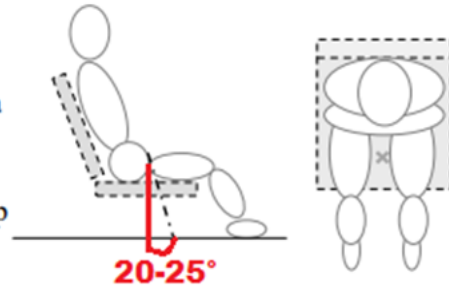
- Crotch Belt Angle: -20° (2” rearward) through the hole
- Two separate anchors 4 to 6 inches apart (x)



NEGATIVE G BELT – (7TH POINT)

Negative G Strap Angle: 20° to 25° (Chest line extension on a 25° seat back angle)

- Used in conjunction with a 6-point crotch belt system as an additional point to maintain the position of the lap belt in “Negative G” i.e. rollovers



2.5. Doors

Driver and co-driver doors must be structurally unaltered. If the original structure has been removed or altered, either a door panel that is compliant with FIA drawing 255-14 must be installed or the safety cage must include a sill bar plus 2 continuous door bars containing four vertical studs.

Inside front door panels or edge trim are required to provide protection from metal edges.

2.6. Roof

Movable metal sunroofs and/or roof panels must be fixed in the closed position. Sunroofs and/or roof panels of any other material must be replaced with metal of equivalent strength of the roof panel and must be fixed in the closed position by welding or steel fasteners.

2.7. Airbags

Airbags and their associated equipment must be disabled or removed during competition in order to eliminate the possibility of the airbag inflating accidentally. It is recommended that passive restraint systems be disabled.

2.8. Windows

The windshield shall be laminated safety glass. Glass side windows may be replaced with polycarbonate material of at least 3mm thickness.

Windows in the driver and co-driver doors must not be rolled down more than 1 inch during stages. Window safety nets must be used in lieu of having windows rolled up during stages. It is highly recommended that all window nets meet FIA article 253.11 or SFI 27.1.

The use of silvered or tinted anti-shatter films is also permitted as long as the tint allows the driver and codriver to be seen from the outside.

2.9. Tow strap

Each competition vehicle must have an appropriate tow strap in the vehicle.

2.10. Tow points

Each competition vehicle must have front and rear tow points, and marked for easy recognition.

2.11. Mud flaps

Mud flaps are required on all rear wheels and driving wheels.

2.12. Emergency Triangles

Each vehicle will carry 3 emergency triangles with a minimum base of 12 inches.

2.13. Spill Kit

All vehicles must carry a spill kit consisting of at least: a minimum of 2 -15" x 19" (standard) absorbent pads, 1- 3" X 48" Hydrocarbon sock. All items will be contained in a heavy duty plastic bag that is re-sealable.

2.14. First aid kit

A comprehensive first aid kit shall be carried in the passenger compartment. The first aid kit must be easily accessible, clearly identified and the complete kit easily/quickly removable by hand.

2.15. Fuel

2.15.1. Fuel types

Only unleaded fuels are allowed. Leaded fuel and lead additives are expressly prohibited.

2.15.2. Fuel tanks

All fuel tanks and cells must be securely mounted to the vehicle. Any fuel tank or fuel cell surface exposed on the bottom of the vehicle shall be equipped with a shield designed to prevent puncture or damage from stones, debris, and abrasion. A fuel-resistant and fire-retardant plate or shield is required between the passenger compartment and the compartment(s) or area(s) in which the fuel tank, filler tube and fuel pump are located.

The original fuel tank may be used provided it remains in the OEM location secured by original systems.

2.15.3. Fuel lines

If fuel lines are re-routed through the passenger compartment, they shall be in compliance with the following:

- Shall incorporate a metallic casing. (If the metallic casing is not exterior to the line, a verifiable sample must be presented at Scrutineering or be shown to comply with FIA Appendix J Art. 253.3.)
- Shall have a minimum of 200 psi rating
- Shall not be mounted where it could be possibly crushed between a roll cage element and the body shell.

2.15.4. Fuel pump

Fuel pumps shall be isolated from the driver/co-driver by a fireproof metal bulkhead. All the fuel pumps must only operate when the engine is running, except during the starting process.

2.16. Batteries

All batteries must be securely attached to the primary structure of the vehicle. If removed from the original location, all lead-acid batteries shall be mounted inside covered, non-conductive boxes and equipped with leak proof caps. The hot terminal shall be insulated in all vehicles.

2.17. Kill switch

A spark-proof general circuit breaker with the capability of disconnecting all electrical circuits is highly recommended. A means of disconnecting all circuits, including the fuel pump, shall be mounted in the passenger compartment. Additionally, the fuel pump must shut off with the ignition switch. The location of the circuit breaker shall be that which makes it easily operable by either crew member or by persons outside the vehicle through either front door.

2.18. Fire extinguishers

One fire extinguisher with a minimum UL rating of 20 BC or two each with a minimum rating of 10 BC must be installed inside the passenger compartment. One fire extinguisher must be located within easy reach of the driver or co-driver when seated. Extinguisher will be secured using a metal strap and have a fill gauge that is visible for scrutineering. Mounting brackets must be metal.

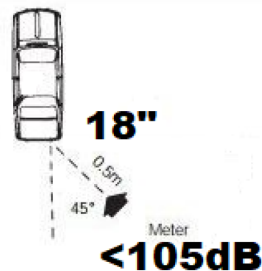
An on-board extinguishing system (FIA 8865 -2015 or SFI Spec 17.1) is highly recommended.

2.19. Hood pins

Hoods shall be fixed closed with hood pins accessible from the outside. Other fastening devices (inside or outside) shall be rendered inoperative, except for the secondary catch, which may be retained.

2.20. Noise limit

Vehicles should not exceed the sound limit set at 105dBa measured at a 45 degree angle and 18" from the tail pipe at 2500rpm.



2.21. Restrictors

Forced induction engines must have an air inlet orifice of 36mm diameter or less either through manufacture or by the use of a restrictor. This restrictor must have a minimum width (parallel to the air flow path) of 3 mm and must be located within 50 mm of the compressor wheel. All air entering the engine must pass through the restrictor. Novices do not have to use smaller restrictors.

3. Motorcycles

Moto competitors must be equipped with the following items:

- ECE 22-05 or Snell M rated helmets less than 5 years from manufacture
- Standard 2.25" rollchart holder
- One warning triangle
- First aid kit
- Flashing light and reflective material on rider for night events
- Boots covering the ankle
- Back protector

4. Group X (SxS, Crosscarts - XKT, Buggies, Rails)

4.1. Safety

- All seats must be manufactured as a racing seat
- Safety nets are mandatory on all vehicles. Arm restraints are allowed but only in addition of safety nets. Windows made of polycarbonate material of at least 3mm thickness may be used in lieu of safety nets.
- 5, 6, or 7 point harnesses are required as per 2.4. Harnesses
- An all metal firewall must separate the driver compartment from any danger of fire from the engine and any fuel supplies.
- Fire extinguishers are required as per 2.18. Fire extinguishers.
- A tow strap is required as per 2.9. Tow strap
- Emergency triangles are required as per 2.12. Emergency Triangles
- First aid kit is required as per 2.14. First aid kit
- All occupants must wear a helmet, head and neck restraint and fire suit as per 1.1. Helmets, 1.2. Head and Neck Restraint Device and 1.3. Driving suit.
- Regardless of the presence of a full windscreen or not, all racers must have shatterproof eye protection. The visor of a full face helmet does fulfill this requirement.

4.2. Bodywork

A securely fitted panel of rigid material such as aluminum or GRP shall be fitted to the door opening to restrain limbs within the confines of the vehicle.

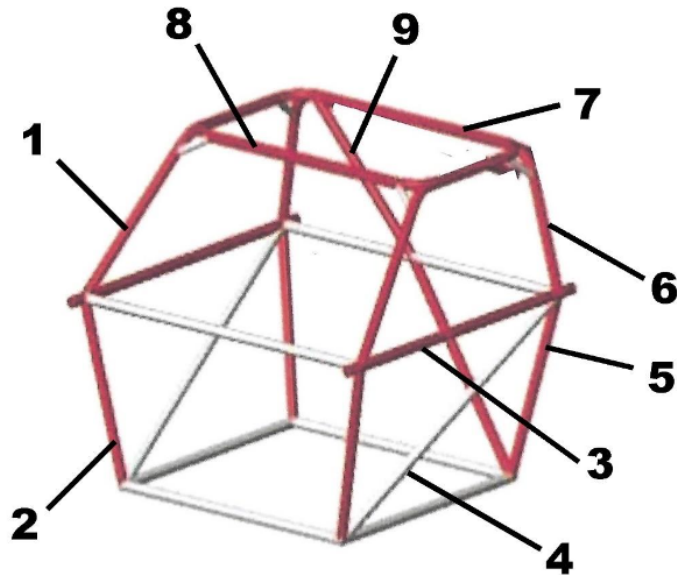
A roof plate covering the entirety of the roll cage must be fitted. It may be made of 0.125" aluminum installed with clamps or made of GRP. No drilling of the roll cage will be allowed to attach the roof plate.

4.3. Roll Cages

We recommend that rollcages follow the construction design described in the SCORE competition regulations:

Typical Roll Cage Construction

Figure 1



Major Cage Components

- | | |
|---------------------|---------------------|
| 1. Upper "A" Pillar | 6. Upper "B" Pillar |
| 2. Lower "A" Pillar | 7. Rear Crossover |
| 3. Elbow Tube | 8. Front Crossover |
| 4. Door Tube | 9. Rear Diagonal |
| 5. Lower "B" Pillar | |



Fig. 2 Corner of Main Hoop Intersection with Gussets

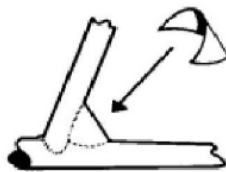


Fig. 3 Front Lower Hoop Intersection with Gusset

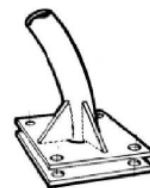


Fig. 4 Roll Cage Mounting using Doubler Plates Note Gussets

Gussets must be installed at all major intersections, including diagonal and rear down braces, where single weld fractures can affect occupant's safety.

Minimum rollcage tubing size is 1.5"x0.095". Other styles of rollcages will be subject to inspection and approval by the USFR Director.

4.4. Lights

All vehicles should be equipped with the following:

- One headlight minimum
- A red rear light and brake light
- Two front and two rear turn signals when participating in any events where the vehicle transits on public roads.

The headlight and taillight must be switched on throughout the race so as to facilitate overtaking of and by other competitors or organizers vehicles. Failure to respect this regulation will result in a one minute penalty per stage or transit where it is observed.

4.5. Wheels and Tires

Wheel rules (wheels are otherwise unrestricted):

- Each rim must have a maximum diameter of 15".
- Wheels made from forged magnesium are forbidden (including OEM magnesium wheels).

Tire Rules:

- Gravel/Sand/Unpaved Events
 - no "Blade" or "Sand" tires are permitted otherwise unrestricted
 - Each tire must be a maximum of 33" in diameter.
 - Inner tubes are allowed.
 - The use of studded tires is forbidden for non-snow/ice events.
- Tarmac Events Only Tarmac
 - All tires must be designed to work in a rain environment. Examples of legal tarmac tires are: Pirelli MT 90 A/T Scorpion, Michelin Anakee, Metzeler Tourance, Continental TKC-80, Pirelli MT60-R.
 - No racing slicks
 - No knobbies
 - No DOT knobbies
 - The stock tire pattern must have grooves that begin within three quarters of an inch of the usable edge of the tire.
 - Inner tubes are allowed
 - Use of studded tires is forbidden.
 - Tarmac tires that are "full-dirt" or "100% dirt" are forbidden.

- Snow/Ice Events Only
 - Choice of tire is free
 - Inner tubes are allowed
 - Use of studded tires is allowed at certain events based on local laws and authorizations. Refer to the supplemental regulations of the event.
 - Stud length, as measured from the outer surface of the tire, is unrestricted.
 - Studs must be installed from the outside of the tire without piercing the inner wall of the tire.
 - The quantity of studs installed is unrestricted.

4.6. Wheels and Tires

Mufflers are required. Exhaust systems must not be of a temporary nature. Exhaust gases must exit at the extremity of the system. Parts of the frame may not be used to carry exhaust gases. Spark arrestors are not required. Noise limit must comply to 2.20. Noise limit.

4.7. Identification

Each vehicle shall provide a 8" high by 8" wide space on each side for identification numbers. The organizer will provide numbers to be affixed to these spaces. Any other large numbers on the vehicle must be covered. No indication of class is required.

4.8. Miscellaneous

- A horn with a 90 Db minimum noise level is required (Air horns accepted).
- A rear view mirror is required.

5. Vehicle technical passport (log book)

5.1. Issuing new technical passport

A standard USRF Vehicle Technical Passport shall be issued as requested for any new vehicle builds. Technical passports remain with the vehicle, including changes of ownership. Only one technical passport is issued for each vehicle (other than by way of extension or replacement).

The technical passport is issued by an USRF authorized Technical Inspector. Contact usrf.rally@gmail.com for a list of inspectors near you.

Prior to painting the builder/owner shall request, from the USRF Technical Inspector an initial inspection of the completed fixed components including, roll cage, seat rails, seat belt attachments & unibody. Upon successful inspection, the USRF designated inspector shall sign off the initial inspection report and submit the completed inspection report to the USRF Technical Director who will review the inspection report and assign a USRF technical passport identification number.

5.2. Technical passport administration

5.2.1. Surrender At Scrutineering

At each event, the technical passport (or log book if issued by a different sanctioning body) must be surrendered to the Chief Scrutineer at Scrutineering with the signature of the driver/entrant for that event in the space provided.

5.2.2. Scrutineer Responsibilities

During Scrutineering, any deviations should be noted by the Chief Scrutineer. All technical passports may be retained by the Chief Scrutineer.

5.2.3. Damage to be noted in technical passports

If, during an event, the vehicle is involved in an accident or is damaged due to mechanical failure, the damage may be noted in the Vehicle technical passport by the Chief Scrutineer. The Chief scrutineer may hold the technical passport until the damages are repaired.

5.2.4. Collect technical passport at end of event

It is the responsibility of the entrant to collect the technical passport at the end of the event.

6. Post-season rules revisions

After the conclusion of the final event of the season, the USRF technical committee will meet to discuss any competitor suggestions regarding technical rules and will issue any updates or revisions no less than 45 days prior to the first event of the next season, if possible. Contact the technical committee at any time via the USRF website contact form or by email at usrf.rally@gmail.com.