The Federation of Motor Sports Clubs of India

2024

FMSCI 4 Wheeler Technical Regulations

Appendix J

Article 253

Safety Equipment (Group N, A)

Member of

2024 FMSCI Article 253 Safety Equipment (Groups N & A)

Art. 1 A car, the construction of which is deemed to be dangerous, maybe excluded by the Stewards of the competition.

Art. 2 If a device is optional, it must be fitted in a way that complies with regulations.
Cameras in Rallies :
Should the competitor intend to use on-board cameras, their installation must comply with the following requirements :
• They must not protrude beyond the surface of the bodywork.
• In the cockpit, they (including their mountings) are forbidden between the vertical transverse plane through the rearmost point of the dashboard and the vertical transverse plane of the rearmost point of the driver/co-driver's seats.
• Mountings must only be done by screwing, metal screw clamp, express clamp, metal inserts (Forbidden : bonding, double-sided tape, adhesive material, suction devices, etc.).
• Mountings must be able to withstand a minimum deceleration of 25 g.
• It must be installed before the scrutineering.
• The camera must not hinder the crew's visibility, exit or extrication in case of emergency.

Art. 3 LINES AND PUMPS
3.1 Protection

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

Application:
Optional for Group N if the series production fitting is retained.
Obligatory for all the Groups if the series production fitting is not retained or if the lines pass inside the vehicle and their protective covering has been removed.
In the case of fuel lines, the metal parts which are isolated from the shell of the car by non-conducting parts must be connected to it electrically.

3.2 Specifications and installation

Obligatory application if the series fitting is not retained.
Lines containing cooling water or lubricating oil must be outside the cockpit.
The fittings of fuel lines, lubricating oil lines and of those containing hydraulic fluid under pressure must be atleast an OE component

3.3 Automatic fuel cut-off

Recommended for all groups:
All fuel feed pipes going to the engine must be provided with automatic cut-off valves located directly on the fuel tank which automatically close all the fuel lines under pressure if one of these lines in the fuel system is fractured or leaks.

Compulsory:
All the fuel pumps must only operate when the engine is running, except during the starting process.

3.4 Fuel cell ventilation

The ventilation line of the fuel cell as far as the valves described below must have the same specifications as those of the fuel lines (Article 3.2) and must be fitted with a system complying with the following conditions:

- Gravity activated roll-over valve
- Float chamber ventilation valve
- Blow-off valve with a maximum over pressure of 200 mbar, working when the float chamber ventilation valve is closed.

If the internal diameter of the fuel tank breather venting tube is greater than 20 mm, a non-return valve homologated by the FIA and as defined in Article 253-14.5 must be fitted.

Art. 4 SAFETY OF BRAKING AND STEERING SYSTEMS

Braking
Double circuit operated by the same pedal:

The pedal must 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 must still control at least two wheels.

Application:
If this system is fitted in series production, no modifications are necessary.

Steering
The locking system of the anti-theft steering lock may be rendered inoperative.
The column adjusting system must be locked and must be operated only with tools.

Art. 5 ADDITIONAL FASTENERS
At least two additional safety fasteners must be fitted for each of the bonnet and boot lids.
The original locking mechanisms must be rendered inoperative or removed.

Application:
Obligatory for all Groups

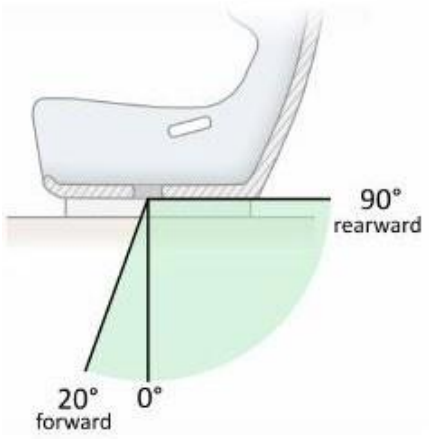
Large objects carried on board the vehicle (such as the spare wheel,tool-kit, etc.) must be firmly fixed.

Art. 6 SAFETY HARNESSES (SAFETY BELTS)

6a.1 Safety harnesses (Safety belts)
Harnesses in compliance with FIA 8853-2016 standard
Recommended
Furthermore, the harnesses used in circuit races must be equipped with turnbuckle release systems.
For rallies, two belt cutters must be carried on board at all times.
They must be easily accessible for the driver and co-driver when seated with their harnesses fastened.
On the other hand, it is recommended that for competitions which include public road sections, the harnesses be equipped with push button release systems.

6a.2 Installation
It is prohibited for the safety harnesses to be anchored to the seats or their supports.
Care must be taken that the straps cannot be damaged through chafing against sharp edges.

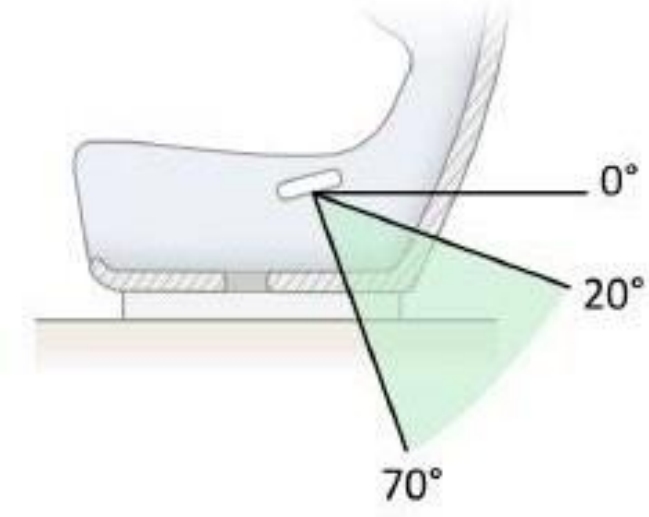
6a.2.1 Crotch straps:
They must pass through the dedicated seat crotch-belt-slots.
Recommended installation angles are specified on Drawing 253-61-a.



253-61-a

6a.2.2 Lap straps

They must not pass over the sides of the seat but through the seat, in order to wrap and hold the pelvic region over the greatest possible surface.
They must fit tightly in the bend between the pelvic crest and the upper thigh and they must not be worn over the region of the abdomen.
Recommended installation angles are represented by the green area
illustrated on Drawing 253-61-b.

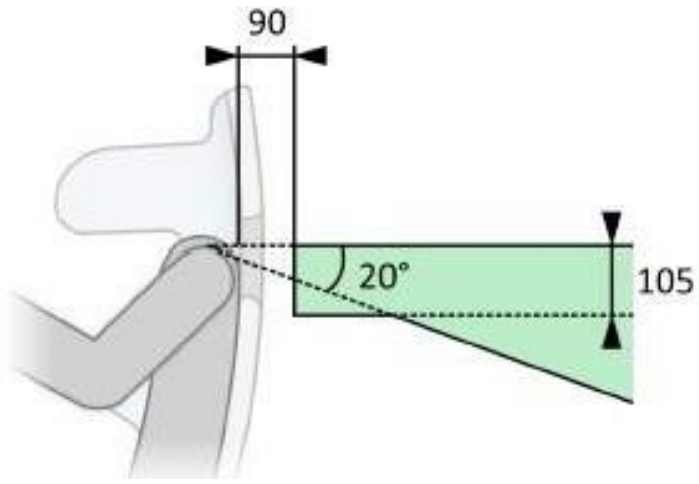


253-61-b

6a.2.3 Shoulder straps

They must be installed in compliance with Drawings 253-61-c and 253-61-d.

Drawing 253-61-c:
The pivot point of the anchorage of the strap must be located in the green area.
The 90 mm distance must be measured from the inside of the backrest to the pivot point.
The shoulder angle to the horizontal is measured by taking as a reference the top of the shoulder of the driver (co-driver) or the top of the belt-bearing-surface on the Frontal Head Restraint device (FHR).



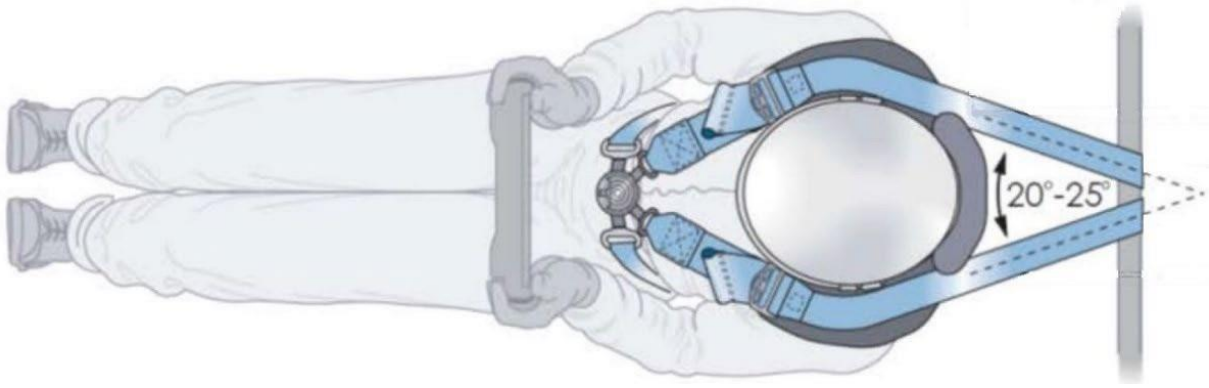
TO BE ADDED
Drawing showing loop type(pivot point at tube ctrl)

Exemples de points de rotation de l'ancrage de sangleExamples of pivot points of the anchorage of the strap

253-61-c

Drawing 253-61-d:

The shoulder strap anchorage points must be symmetrical about the vertical and longitudinal plane passing through the centreline of the seat.
When viewed from above, the angle between the straps must not be out of the 10°-25° range and it is recommended it is approximately 20°-25°.
Straps may touch or even be crossed over each other if necessary.
It is important to make sure that the shoulder straps attachment cannot slide laterally.



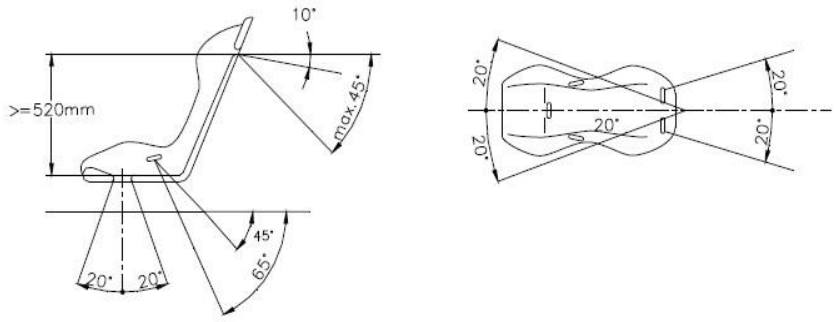
263-61-d

6a.2.4 Anchorage points:
A safety harness may be installed on the anchorage points of the series car.
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.
Anchorage points to the chassis/monocoque homologated by ASNs : They may be used.
Their design is free.
The homologation certificate must attest that their resistance complies with Art. 253-6.2.4.3 and it must specify for which FIA standard the safety harnesses have been homologated.

This must be demonstrated by static load tests or arithmetical proof (carried out by a company approved by the ASN or included in FIA Technical List n°4 or n°35 respectively).
Under these load cases, the stress level of materials of car components under load must remain below their respective ultimate tensile strength.
Furthermore, there should be no structural failure of any part once the load is released.

6.1 Safety harnesses (Safety belts)
Harnesses in compliance with FIA 8853/98 & FIA 8854/98 standards
As per FMSCI regulations
For rallies, two belt cutters must be carried on board at all times.
They must be easily accessible for the driver and co-driver when seated with their harnesses fastened.

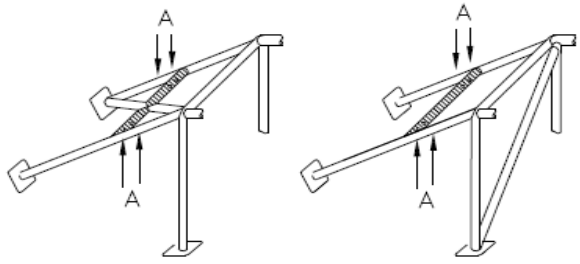
6.2 Installation
It is prohibited for the seat belts to be anchored to the seats or their supports.
A safety harness may be installed on the anchorage points of the series car.
The recommended geometrical locations of the anchorage points are shown in Drawing 253-61.



253-61

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 does not exceed 10°.
The maximum angles in relation to the centre line of the seat are20° divergent or convergent (the shoulder straps may be installed crosswise symmetrically about the centre line of the front seat).
If possible, the anchorage point originally mounted by the car manufacturer on the C-pillar must be used.
Anchorage points creating a higher angle to the horizontal must not be used.
In that case, the shoulder straps may be installed on the rear seat lap strap anchorage points originally mounted by the car manufacturer.
The lap and crotch straps must not pass 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.

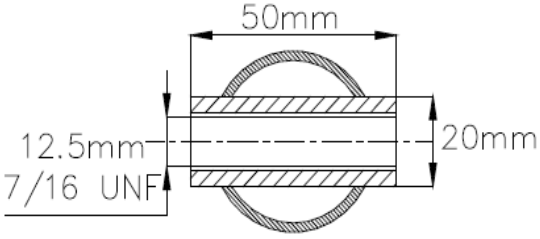
Care must be taken that the straps cannot be damaged through chafing against sharp edges.
If installation on the series anchorage points is impossible for the shoulder and/or crotch straps, new anchorage points must be installed on the shell or the chassis, as near as possible to the centre line of the rear wheels for the shoulder straps.
The shoulder straps may also be fixed to the safety 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 transverse reinforcement welded between the backstays of the cage (see Drawing 253-66) or on transverse tubular reinforcements according to Drawings 253-18, 253-26, 253-27, 253-28 or 253-30.



Ⓐ trous de montage pour harnais
mounting holes for harness

253-66

In this case, the use of a transverse reinforcement is subject to the following conditions:
•The transverse reinforcement must be a tube measuring at least38 mm x 2.5 mm or 40 mm x 2 mm, made from cold drawn seamless carbon steel, with a minimum tensile strength of350 N/mm2
•The height of this reinforcement must be such that the shoulder straps, towards the rear, are directed downward with an angle of between 10° and 45° to the horizontal from the rim of the backrest, an angle of 10° being recommended
•The straps may be attached by looping or by screws, but in the latter case an insert must be welded for each mounting point(see Drawing 253-67 for the dimensions).

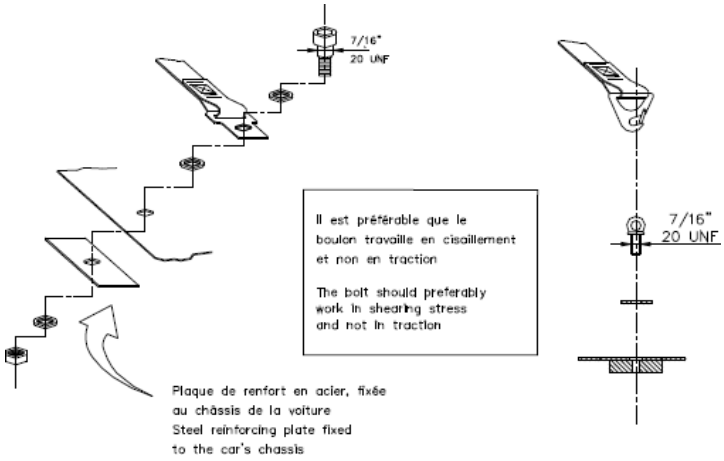


253-67

These inserts must be positioned in the reinforcement tube and the straps must be attached to them using bolts of M12 8.8 or 7/16UNFspecification.
Each anchorage point must be able to withstand a load of 1470daN, or 720 daN for the crotch straps.
In the case of one anchorage point for two straps (prohibited for shoulder straps), the load considered must be equal to the sum of the required loads.
For each new anchorage point created, a steel reinforcement plate with a surface area of at least 40 cm2 and a thickness of at least3 mm must be used.

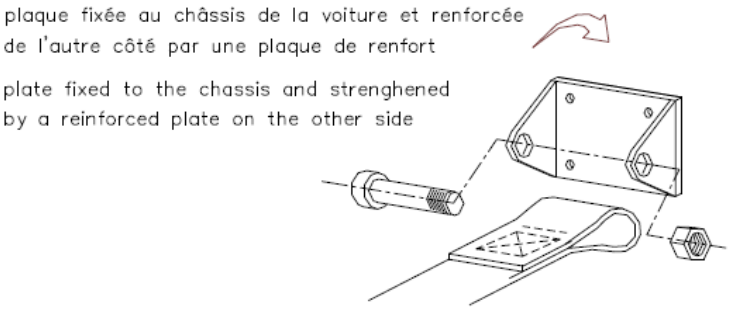
Principles of mounting to the chassis / monocoque

1) General mounting system: Drawing 253-62.



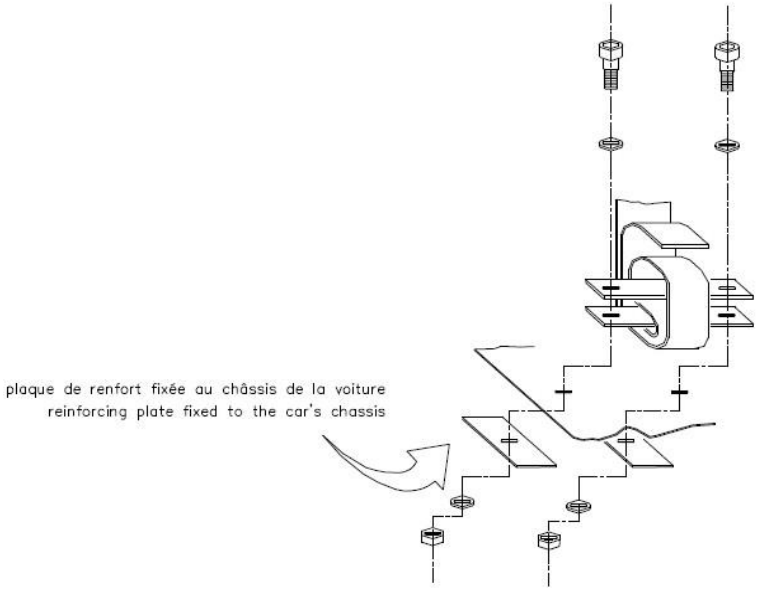
253-62

2) Shoulder strap mounting: Drawing 253-63.



253-6

3) Crotch strap mounting: Drawing 253-64.



253-64

6.3 Use
A safety harness must be used in its homologation configuration 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.

Art. 7 EXTINGUISHERS – EXTINGUISHING SYSTEMS
AS PER FMSCI REGULATIONS- Art 7.3.3 to7.3.7 shall also apply
The use of the following products is prohibited: BCF, NAF.
For FIA homologated cars ART 7 to 7.3.7 will apply
7.1 Application

7.1.1 In rallies:
Articles 7.2 or 7.3 apply.
Extinguishing systems and Manual extinguishers in compliance withFIA Standard 8865-2015 (Technical List n°52) are recommended.
Extinguishing systems in compliance with FIA Standard 8865-2015 (Technical List n°52) are compulsory for cars of the RC1 class of the FIA World Rally Championship.

7.1.2 In circuit competitions, slaloms, hill climbs:
Article 7.2 or 7.3 applies.
Extinguishing systems and Manual extinguishers in compliance withFIA Standard 8865-2015 (Technical List n°52) are recommended.

7.2 Systems mounted

7.2.1 All cars must be equipped with an extinguishing system incompliance with FIA Standard for plumbed-in Fire Extinguisher Systems in Competition Cars (1999) or with FIA Standard 8865-2015.
The system must be used in accordance with the manufacturer's instructions and with Technical Lists n°16 and n°52.
In rallies, the minimum quantity of extinguishant for systems of Technical List n°16 must be 3 kg.

7.2.2 All extinguisher containers must be adequately protected and must be situated within the cockpit.
The container may also be situated in the luggage compartment on condition that it is at least 300 mm from the outer edges of the bodywork in all horizontal directions.
7.2.4 The system must
work in all positions.

7.2.5 Extinguisher nozzles must be suitable for the extinguishant and be installed in such a way that they are not directly It must be secured by a minimum of 2 screw-locked metallic straps and the securing system must be able to withstand a deceleration of 25 g.
Anti-torpedo tabs are required.
The material of the securing system must operate within the -15°C to +80°C temperature range.
All extinguishing equipment must withstand fire.
Plastic pipes are prohibited and metal pipes are obligatory (unless specified otherwise).

7.2.3 The driver (and co-driver where applicable) must be able to trigger the extinguishing system manually when seated normally with his safety belts fastened and the steering wheel in place.
Furthermore, a means of triggering from the outside must be combined with the circuit-breaker switch. It must be marked with a letter "E" in red inside a white circle of at least 10 cm diameter with a red edge.

For WRC type cars, the triggering of an external or internal extinguisher must compulsorily bring about engine and battery cut-off.
pointed at the occupants' heads.

7.3 Manual extinguishers

7.3.1 All cars must be fitted with one or two fire extinguishers incompliance with Articles 7.3.2 to 7.3.5 hereunder or with FIA Standard 8865-2015 (Articles 7.3.2 to 7.3.5 hereunder do not applying the latter case).

7.3.2 Permitted extinguishants:
AFFF, FX G-TEC, Viro3, powder or any other extinguishant homologated by the FIA.

7.3.3 Minimum quantity of extinguishant:
- AFFF 2.4 litres
- FX G-TEC 2.0 kg
- Viro3 2.0 kg
- Zero 360 2.0 kg
- Powder 2.0 kg

7.3.4 All extinguishers must be pressurised according to the contents:
- AFFF in accordance with the manufacturer's instructions
- FX G-TEC and Viro3in accordance with the manufacturer's instructions
- Zero 360 in accordance with the manufacturer's instructions
- Powder 8 bars minimum, 13.5 bars maximum

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

7.3.5 The following information must be visible on each extinguisher:
- Capacity
- Type of extinguishant
- Weight or volume of the extinguishant
- Date the extinguisher must be checked, which must be no more than two years after either the date of filling or the date of the last check, or corresponding expiry date.

7.3.6 All extinguishers must be adequately protected.
Their mountings must be able to withstand a deceleration of 25 g.
Furthermore, only quick-release metal fastenings (two minimum),with metal straps, are accepted.Anti-torpedo tabs are required.

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

Art. 8 SAFETY CAGES

8.1 General

The fitting of a safety cage is compulsory. It may be either:

a) Fabricated in compliance with the requirements of the following articles (as from Article 253-8.2)

b) Homologated or Certified by an ASN according to the homologation regulations for safety cages;
An authentic copy of the homologation document or certificate, approved by the ASN and signed by qualified technicians representing the manufacturer, must be presented to the competition's scrutineers.

Any new cage which is homologated by an ASN and is on sale, as from 01.01.2003, must be identified by means of an identification

plate affixed to it by the manufacturer; this identification plate must be neither copied nor moved (i.e. embedded, engraved or self-destroying sticker).
The identification plate must bear the name of the manufacturer, the homologation or certification number of the ASN homologation form or certificate and the individual series number of the manufacturer.
A certificate bearing the same numbers must be carried on board and be presented to the competition's scrutineers.

c) Homologated by the FIA according to the homologation regulations for safety cages.
It must be the subject of an extension (VO) to the homologation form of the vehicle homologated by the FIA.
The manufacturer's identification and a series number must be clearly visible on all cages homologated and sold after 01.01.1997.
The homologation form of the cage must specify how and where this information is indicated, and the purchasers must receive a numbered certificate corresponding to this.
For the following cars, the cage must compulsorily be homologated by the FIA:
VR5 Variant, Super 1600 Kit Variant, Super 2000 Kit Variant, Super2000 Rally Kit Variant, World Rally Car Variant.
****
Any modification to a homologated or certified safety cage is forbidden.
To be considered as a modification, any process made to the cage by machining, welding, that involves a permanent modification of the material or the safety cage.
All repairs to a homologated or certified safety cage, damaged after an accident must be carried out by the manufacturer of the cage or with his approval.
The chromium plating of all or part of the cage is forbidden.
Tubes of the safety cages must not carry fluids or any other item.
The safety cages must not unduly impede the entry or exit of the driver and co-driver.
Inside the cockpit, the passage of the following elements between the side members of the body shell and the safety cage is forbidden:
- Electric cables
- Lines carrying fluids (except windscreen washer fluid)
- Lines of the extinguishing system.

Members may intrude into the occupant's space in passing throughthe dashboard and trim, as well as through the rear seats.
The rear seat may be folded down.

8.2 Definitions

8.2.1 Safety cage

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

8.2.2 Rollbar

Tubular frame forming a hoop with two mounting feet.

8.2.3 Main rollbar (Drawing 253-1)

Transverse and near-vertical (maximum angle +/-10° 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.

8.2.4 Front rollbar (Drawing 253-1)

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

8.2.5 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.

8.2.6 Lateral half-rollbar (Drawing 253-3)

Identical to the lateral rollbar but without the rear pillar.

8.2.7 Longitudinal member

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

8.2.8 Transverse member

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

8.2.9 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.

8.2.10 Removable members

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

8.2.11 Cage reinforcement

Member added to the safety cage to improve its strength.

8.2.12 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.

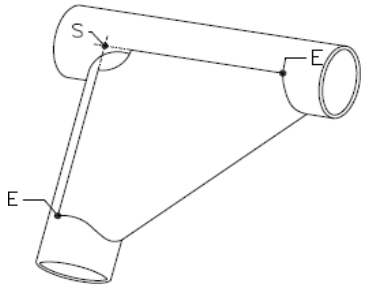
8.2.13 Reinforcement plate

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

8.2.14 Gusset (Drawing 253-34)

Reinforcement for a bend or junction made from bent sheet metal with a U shape the thickness of which must not be less than1.0 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 mandatory** 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.(for the inspection of the weld at the intersection)**OR**
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.(The weld should be clearly visible)

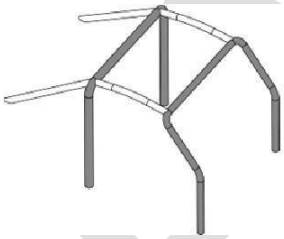


253-34

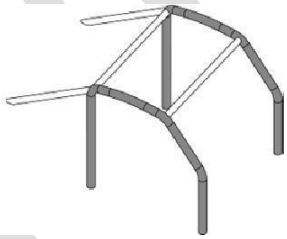
8.3 Specifications

8.3.1 Basic structure

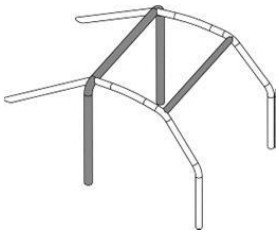
The basic structure must be made according to one of the following designs:
•1 main rollbar + 1 front rollbar + 2 longitudinal members + 2backstays + 6 mounting feet (Drawing 253-1)
Or
•2 lateral rollbars + 2 transverse members + 2 backstays + 6mounting feet (Drawing 253-2)
Or
•1 main rollbar + 2 lateral half-rollbars + 1 transverse member + 2backstays + 6 mounting feet (Drawing 253-3)



253-1



253-2



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.
In order to build the safety cage, the connections of the transverse members to the lateral rollbars, the connections of the longitudinal members to the front and main rollbars, as well as the connection of a semi-lateral rollbar to the main rollbar must be situated at the roof level.
In all cases, there must not be more than 4 removable connections at the roof level.
The backstays must be attached near the roofline and near the top outer bends of the main rollbar, on both sides of the car, possibly by means of removable connections.
They must form 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.

8.3.2 Design

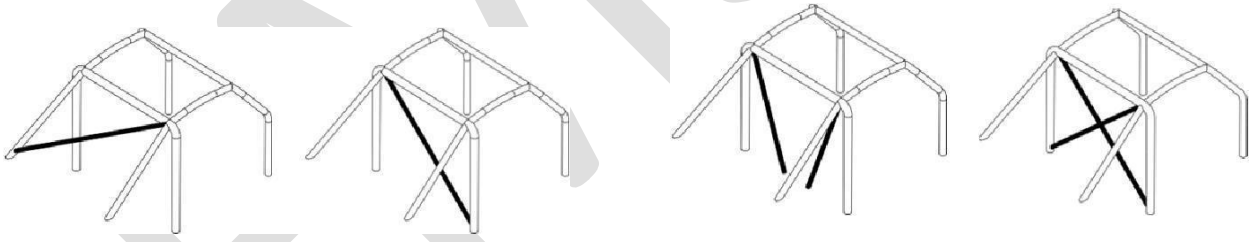
Once the basic structure is defined, it must be completed with compulsory members and reinforcements (see Article 253-8.3.2.1), to which optional members and reinforcements may be added (see Article 253-8.3.2.2). Unless explicitly permitted and unless dismountable joints are used in compliance with Article 253-8.3.2.4, all members and tubular reinforcements must be single pieces.

8.3.2.1 Compulsory members and reinforcements

8.3.2.1.1 Diagonal member

Cars homologated before 01.01.2002:
The cage must have one of the diagonal members defined by Drawings 253-4, 253-5, 253-6.
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 than300mm.
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 back stay no more than 100 mm from its junction with the main rollbar (see Drawing 253-52 for the measurement).
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).

Cars homologated as from 01.01.2002:
The cage must have two diagonal members on the main rollbar according to Drawing 253-7.
Members must be straight and may be removable.
The lower end of the diagonal must join the main rollbar no further than 100 mm from the mounting foot (see Drawing 253-52 for the measurement).
The upper end of the diagonal must join the main rollbar no further than 100 mm from its junction with the backstay.

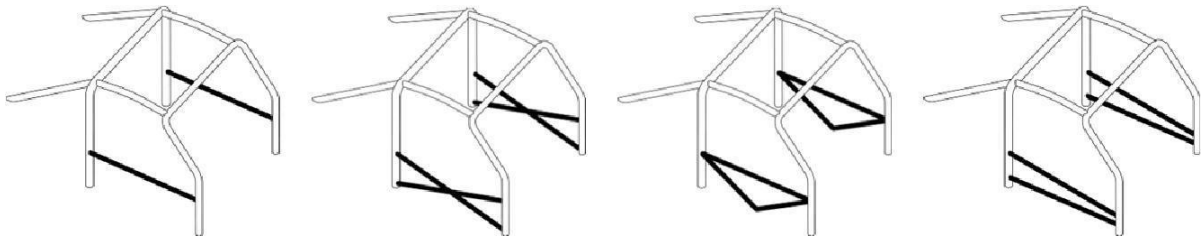


253-4 **253-5** **253-6** **253-7**

8.3.2.1.2 Doorbars

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 253-9, 253-10 and 253-11 for cars homologated as from01.01.2007).
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.
In the case of door bars in the form of an "X" (Drawing 253-9), it is recommended that the lower attachment points of the cross-struts be fixed directly onto the longitudinal member of the bodyshell/chassis and that at least one part of the "X" be a single piece bar.
The connection of the door bars to the windscreen pillar reinforcement (Drawing 253-15) is authorised.

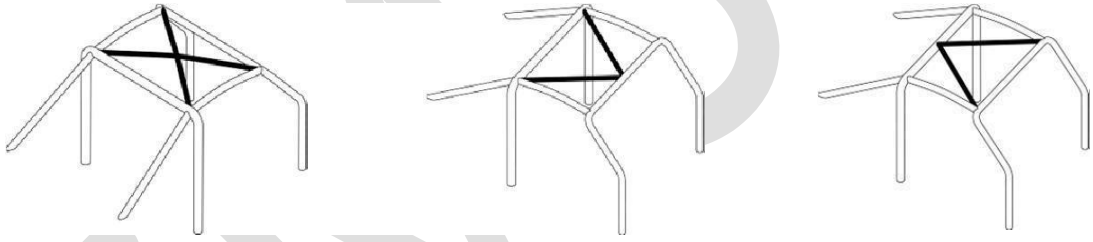
For competitions without co-driver, members may be fitted on the driver's side only and it is not compulsory for the design to be identical on both sides.



253-8 **253-9** **253-10** **253-11**

8.3.2.1.3 Roof reinforcement

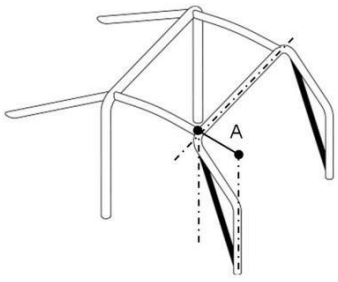
Cars homologated as from 01.01.2005 only:
The upper part of the safety cage must comply with one of Drawings 253-12, 253-13 and 253-14.
The reinforcements may follow the curve of the roof.
For competitions without co-drivers, in the case of Drawing 253-12only, only one diagonal member may be fitted but 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).
Junction of tubes at the top of the V:
If the tubes do not join each other, the distance between them must not be more than 100 mm at their connection with the rollbar or the transverse member.



253-12 **253-13** **253-14**

8.3.2.1.4 Windscreen pillar reinforcement

Cars homologated as from 01.01.2006 only:
It must be fitted on each side of the front rollbar if dimension "A" is greater than 200 mm (Drawing 253-15).
It may be bent on condition that it is straight in side view and that the angle of the bend does not exceed 20°.
Its upper end must be less than 100 mm from the junction between the front (lateral) rollbar and the longitudinal (transverse) member (see Drawing 253-52 for the measurement).
Its lower end must be less than 100 mm from the (front) mounting foot of front (lateral) rollbar.



253-15

8.3.2.1.5 Reinforcement of bends and junctions

The junctions between:
- The diagonal members of the main rollbar
- The roof reinforcements (configuration of Drawing 253-12 and only for cars homologated as from 01.01.2007)
- The door bars (configuration of Drawing 253-9)
- The door bars and the windscreen pillar reinforcement (Drawing253-15)

Must be reinforced by a minimum of 2 gussets complying with Article 253-8.2.14.
If the door bars and the windscreen pillar reinforcement are not situated in the same plane, the reinforcement may be made of fabricated sheet metal, provided it complies with dimensions in Article 253-8.2.14.

8.3.2.2 Optional members and reinforcements

Except other indications given in Article 253-8.3.2.1, members and reinforcements shown in Drawings 253-12 to 253-21 and 253-23 to
253-33 are optional and may be installed as desired by the constructor.
They must be either welded or installed by means of dismountable joints.
All members and reinforcements mentioned above may be used separately or combined with one another.

8.3.2.2.1 Roof reinforcement (Drawings 253-12 to 253-14)

Optional only for cars homologated before 01.01.2005.

For competitions without co-drivers, in the case of Drawing 253-12only, one diagonal member only may be fitted but its frontconnection must be on the driver's side.

8.3.2.2.2 Windscreen pillar reinforcement (Drawing 253-15)

Optional only for cars homologated before 01.01.2006.

It may be bent on condition that it is straight in side view and that the angle of the bend does not exceed 20°.

8.3.2.2.3 Backstay diagonals (Drawing 253-21)

The configuration of Drawing 253-21 may be replaced with that of Drawing 253-22 if a roof reinforcement complying with Drawing253-14 is used.
For cars homologated as from 01.01.2014:
The configuration of Drawing 253-22 is compulsory if a roof reinforcement complying with Drawing 253-14 is used.

8.3.2.2.4 Front suspension mounting points (Drawing 253-25)

The extensions must be connected to the front suspension top mounting points.

8.3.2.2.5 Transverse members (Drawings 253-26 to 253-30)

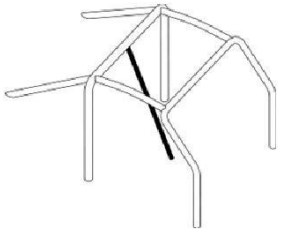
Transverse members fitted on the main rollbar or between the backstays may be used for the safety harness mountings in accordance with Article 253-6.2 (use of dismountable joints prohibited).
For members shown on Drawings 253-26 and 253-27, the angle between the central leg and the vertical must be at least 30°.
The transverse member fixed to the front rollbar must not encroach upon the space reserved for the occupants.

It may be placed as high as possible but its lower edge must not be higher than the uppermost point of the dashboard.

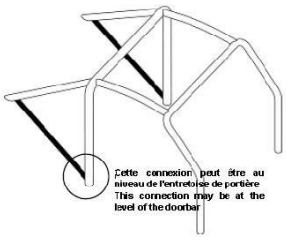
For cars homologated as from 01.01.2007:
It must not be positioned below the steering column.

8.3.2.2.6 Reinforcement of bends or junctions (Drawings 253-31 to 253-34)

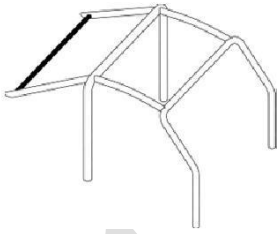
Reinforcements must be made of tubes or bent-sheet metal with U shape complying with Article 253-8.2.14.
The thickness of the components forming a reinforcement must not be less than 1.0 mm.
The ends of the tubular reinforcements must not be more than halfway down or along the members to which they are attached, except for those of the junction of the front rollbar, which may join the junction of the door strut/front rollbar.



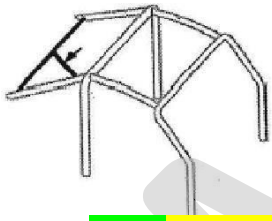
253-16



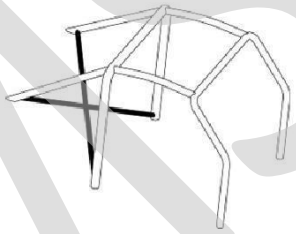
253-17



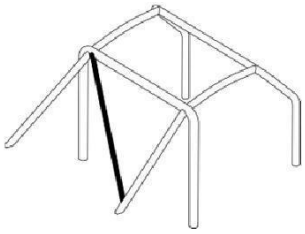
253-18



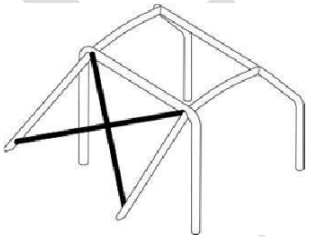
!! 253-18B Provisional !!



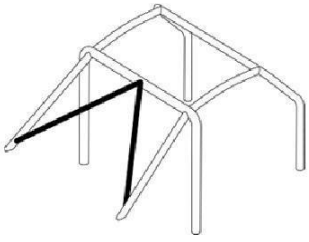
253-19



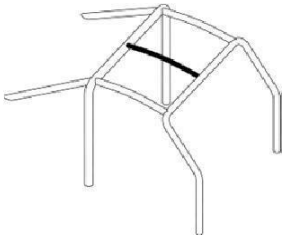
253-20



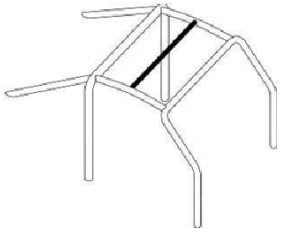
253-21



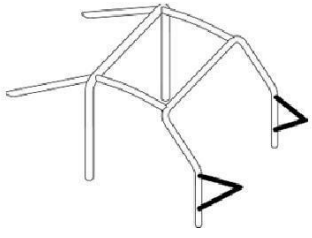
253-22



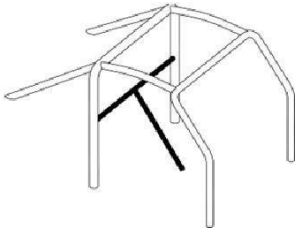
253-23



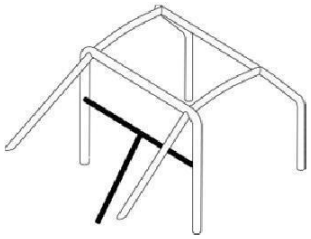
253-24



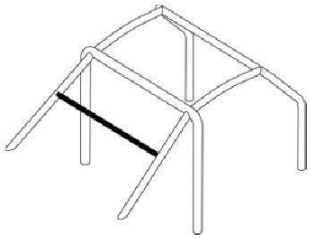
253-25



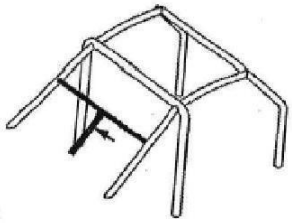
253-26



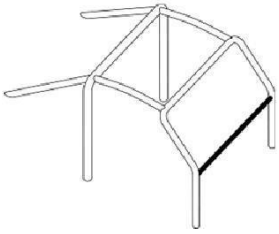
253-27



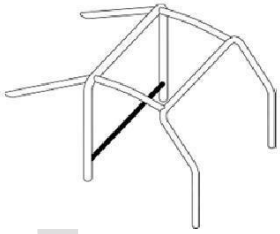
253-28



253-28B Provisional

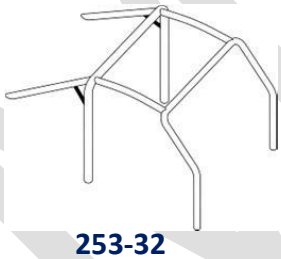


253-29



253-30

253-31



253-32

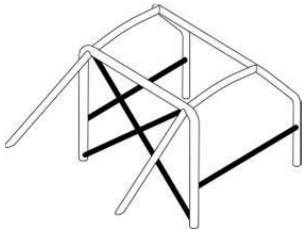
253-33

8.3.2.3 Minimum configuration of the safety cage

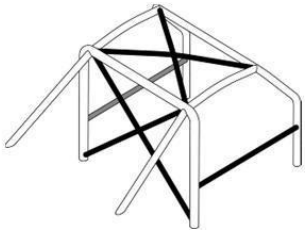
The minimum configuration of a safety cage is defined as follows:

Cars homologated	With co-driver	Without co-driver
between 01.01.2002 and 31.12.2004	Drawing253-35A	Drawing 253-36A or symmetrical
between 01.01.2005 and 31.12.2005	Drawing 253-35B	Drawing 253-36B or symmetrical
As from 01.01.2006	Drawing 253-35C	Drawing 253-36C or symmetrical

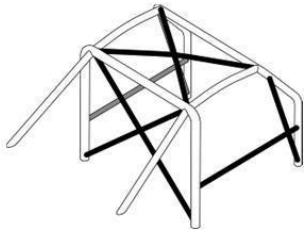
Door bars and roof reinforcement may vary according to Articles253-8.3.2.1.2 and 253-8.3.2.1.3.



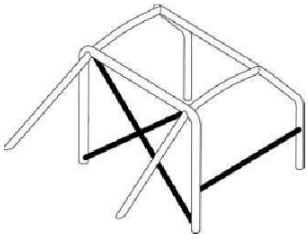
253-35A



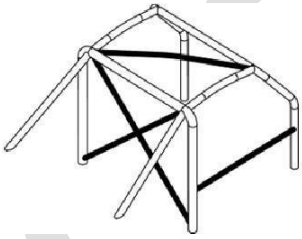
253-35B



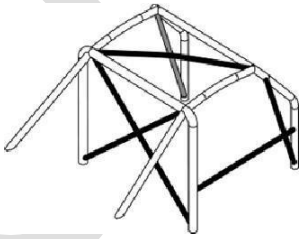
253-35C



253-36A



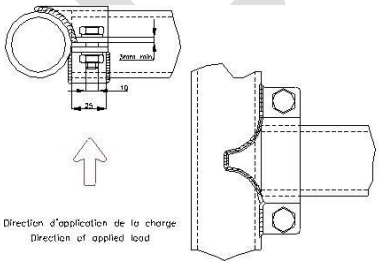
253-36B



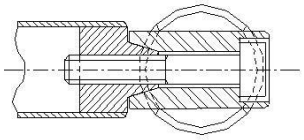
253-36C

8.3.2.4 Removable members

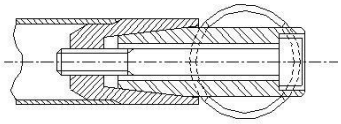
Should removable members be used in the construction of a safety cage, the dismountable joints used must comply with a type approved by the FIA (Drawings 253-37 to 253-47).
They must not be welded once assembled.
The screws and bolts must have a minimum quality of 8.8 (ISO standard).
Dismountable joints complying with Drawings 253-37, 253-40, 253-43, 253-46 and 253-47 are solely for attaching optional members and reinforcements described by Article 253-8.3.2.2, and are forbidden for joining the upper parts of the main rollbar, of the front rollbar, of the lateral half-rollbars and of the lateral rollbars.



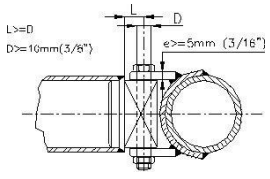
253-37



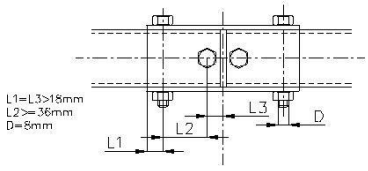
253-38



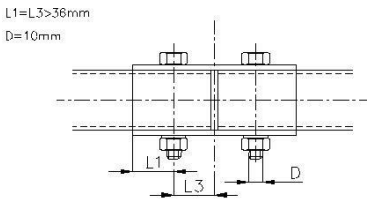
253-39



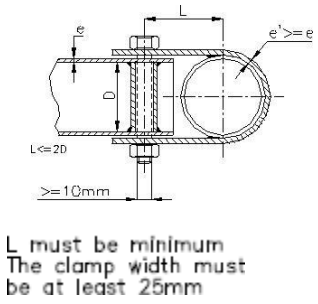
253-40



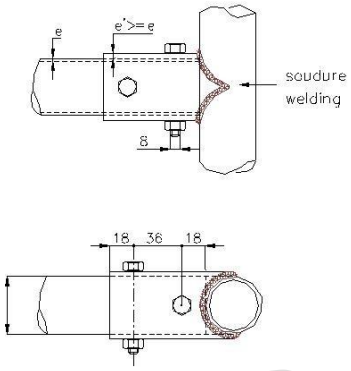
253-41



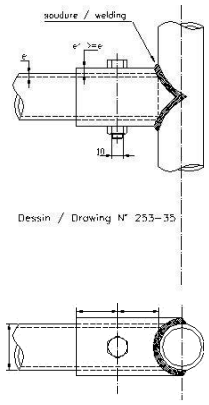
253-42



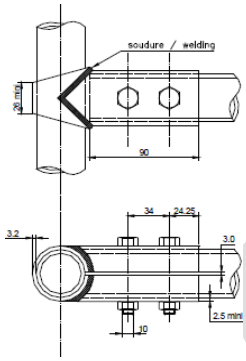
253-43



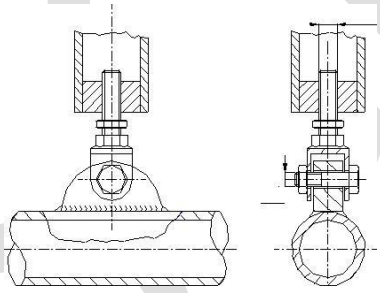
253-44



253-45



253-46



253-47

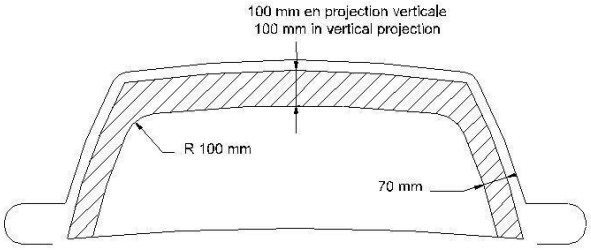
8.3.2.5 Additional constraints

Longitudinally, the safety cage must be entirely contained between the mounting points of the front and rear suspension elements carrying the vertical loads (springs and shock absorbers).
Supplementary reinforcements exceeding these limits are authorised between the safety cage and the anchorage points of the rear antiroll bars on the bodyshell/chassis.
Each of these anchorage points may be connected to the safety cage by a single tube with dimensions of 30 x 1.5mm.

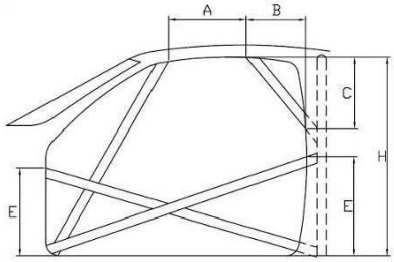
For cars homologated as from 01.01.2002:
In frontal projection, reinforcements of bends and junctions of the upper corners of the front roll-cage must be only visible through the area of the windscreen described by Drawing 253-48.

For all the safety cages for "Super 2000" cars homologated as from01.01.2000 and for all the safety cages for rally cars homologated as from 01.01.2001:

The presence of the cage reinforcements in the door aperture must comply with the following criteria (Drawing 253-49):
- Dimension A must be a minimum of 300 mm
- Dimension B must be a maximum of 250 mm
- Dimension C must be a maximum of 300 mm
- Dimension E must not be more than half the height of the door aperture (H).



253-48



253-49

8.3.2.6 Mounting of safety cages to the bodyshell/chassis

Minimum mounting points are:
- 1 for each pillar of the front rollbar
- 1 for each pillar of the lateral rollbars or lateral half-rollbars
- 1 for each pillar of the main rollbar
- 1 for each backstay

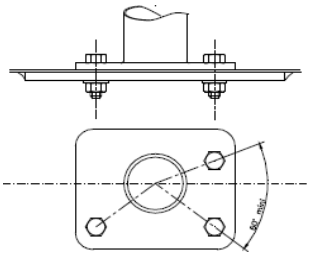
To achieve an efficient mounting to the bodyshell, the original interior trim may be modified around the safety cages and their mountings by cutting it away or by distorting it.
However, this modification does not permit the removal of complete parts of upholstery or trim.
Where necessary, the fuse box may be moved to enable a safety cage to be fitted.

Mounting points of the front, main, lateral rollbars or lateral half-rollbars:
Each mounting point must include a reinforcement plate at least3 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 least120 cm2 area which is welded to the bodyshell.
For cars homologated as from 01.01.2007, the area of 120 cm2must be the contact surface between the reinforcement plate and the bodyshell.
Examples according to Drawings 253-50 to 253-56.
For Drawing 253-52, the reinforcement plate need not necessarily be welded to the bodyshell.
In the case of Drawing 253-54, the sides of the mounting point maybe closed with a welded plate.
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 (measured from the tube axis at the level of the mounting foot cf. Drawing 253-50) must not be less than 60 degrees.

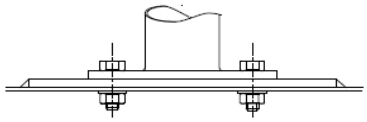
Mounting points of the backstays:
Each backstay must be secured by a minimum of 2 M8 bolts with mounting feet of at least 60 cm2 area (Drawing 253-57), or secured by a single bolt in double shear (Drawing 253-58), provided it is of adequate section and strength and provided that a bush is welded into the backstay.

These are minimum requirements.
In addition, more fasteners may be used, the support plates of the mounting feet may be welded to reinforcement plates, the safety cage (as defined by Article 253-8.3.1) may be welded to the bodyshell/chassis.

Special case:
For non-steel bodyshells/chassis, any weld between the cage and the bodyshell/chassis is prohibited, only the bonding of the reinforcement plate on the bodyshell/chassis is permitted.



253-50



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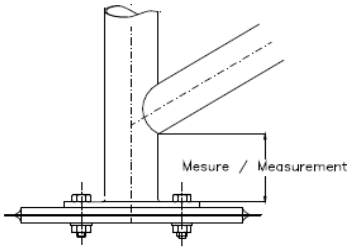

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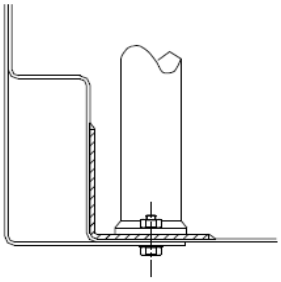

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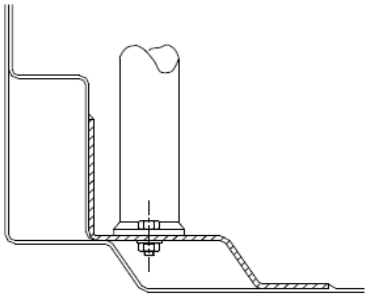

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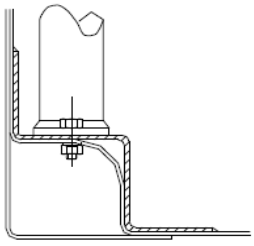
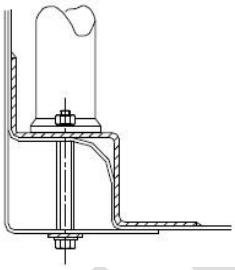
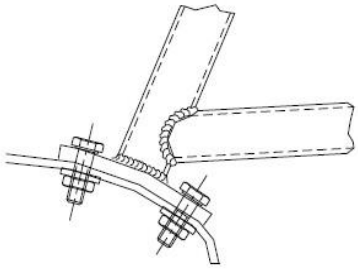


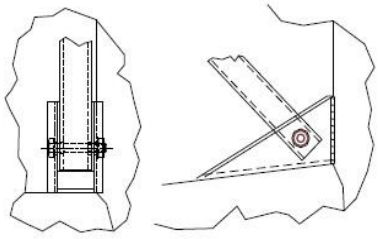
253-55



253-56



253-57



253-58

8.3.3 Tube specifications

Only tubes with a circular section are authorised.
Specifications of the tubes used:

Material	Minimum Tensile Strength	Minimum Dimensions (mm)	Use
Cold drawn seamless unalloyed		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

carbon steel (see below) containing a maximum of 0.3 % of carbon	350 N/mm²		(Drawing 253-2)
		38 x 2.5 (1.5"x0.095") Or 40 x 2.0 (1.6"x0.083")	Lateral half-rollbars and other parts of the safety cage (unless Otherwise indicated in the articles above)

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

8.3.4 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.
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 special instructions of the manufacturers must be followed (special electrodes, gas protected welding).

8.3.5 Protective padding

Where the occupants' bodies could come into contact with the safety cage, flame retardant padding must be provided for protection.
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") and must be permanently fixed to the cage.
Application: For all categories.

Art. 9 REAR VIEW

Rearward visibility must be ensured by two external rear-view mirrors (one on the right and one on the left).
These rear-view mirrors may be as standard.
Each rear-view mirror must have a reflecting surface of at least 90 cm².
An inside rear-view mirror is optional.

Application: Groups N, A, R,

Art. 10 TOWING-EYE

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

Art. 11 WINDOWS / NETS

Windows
The windows must be certified for road use, their marking standing as proof.
For cars with 4 or 5 doors, an intermediate part may be fitted between the upper part of the window and the upper part of the rear door window opening, provided that it has no function other than to ventilate the cockpit and that it does not protrude beyond the exterior surface of the window.
The windscreen must be made of laminated glass.
It may be fitted with one or several transparent and colourless films (maximum total thickness of 400 microns) on its outer surface, through which the competition is run.
A sun strip for the windscreen is authorised, on condition that it allows the occupants to see the road signs (traffic lights, traffic signs…).
The use of tinted glass and/or safety film is permitted in side and rear windows. In such cases it must be possible for a person situated 5 m from the car to see the driver as well as the contents of the car.

In rallies only:
If silvered or tinted films are not used or if the side windows and the glass sunroof are not made from laminated glass, the use of transparent and colourless anti-shatter films on the side windows and the glass sunroof is mandatory.
The thickness of these films must not be greater than 100microns.
The use of silvered or tinted films is authorised, on the side and rear windows and on the glass sunroof, and on the following conditions:
•Silvered or tinted films fitted on front side windows and rear side windows must have an opening equivalent to the surface of a circle of 70 mm in diameter so that the driver as well as the contents of the car may be seen from the outside
•This authorisation must be mentioned in the supplementary regulations of the competition.

Nets

For competitions on circuits, the use of nets affixed to the safety cage is mandatory.
These nets must have the following characteristics:
•Minimum width of the strips : 19 mm
•Minimum size of the meshes : 25 x 25 mm
•Maximum size of the meshes : 60 x 60 mm.
and must close up the window opening to the centre of the steering wheel.

Art. 12 SAFETY FIXING DEVICES FOR WINDSCREEN
Such devices may be used freely.
Application: Groups N, A.

Art. 13 GENERAL CIRCUIT BREAKER

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.
For Diesel engines having no electronically controlled injectors, the circuit breaker must be coupled with a device cutting off the intake into the engine.
It must be a spark-proof model, and must be accessible from inside and outside the car.
Application:
Compulsory fitting for all cars taking part in speed races on circuits, in rallies or hill-climbs.

The fitting is recommended for other competitions.

For FIA homologated cars-
As for the outside, the triggering system of the circuit breaker must compulsorily be situated at the lower part of the windscreen mountings for closed cars. It must 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.
Application:
Compulsory fitting for all cars taking part in speed races on circuits, in rallies or hill-climbs.
The fitting is recommended for other competitions.

Art. 14 FIA APPROVED SAFETY FUEL TANKS

Whenever a competitor uses a safety fuel tank, it must come from a manufacturer approved by the FIA.
In order to obtain the FIA's agreement, a manufacturer must have proved the constant quality of its product and its compliance with the specifications approved by the FIA.
Safety tank manufacturers recognized by the FIA must undertake to deliver to their customers exclusively tanks complying with the norms approved.
To this end, on each tank delivered the name of the manufacturer, the exact specifications according to which this tank has been manufactured, the homologation date the date of the end of validity, and the series number, must be marked.
The marking process must be indelible and must have been approved beforehand by the FIA according to the prevailing standard.

14.1 Technical specifications

The FIA reserves the right to approve any other set of technical specifications after study of the dossier submitted by the manufacturers concerned.

14.2 Specifications FT3-1999, FT3.5- or FT5-1999

The technical specifications for these tanks are available, on request, from the FIA Secretariat.

14.3 Ageing of tanks

The ageing of safety tanks entails a considerable reduction in the strength characteristics after approximately five years.
No bladder may be used more than 5 years after the date of manufacture, unless inspected and recertified by the manufacturer for a period of up to another two years.
A leak-proof cover, made from non-flammable material, easily accessible and removable only with the use of tools, must be installed in the protection for FT3-1999, FT3.5-1999 or FT5-1999 tanks, in order to allow the checking of the validity expiry date.

14.4 Applications of these specifications

Group N and Group A cars may be equipped with an FT3-1999, FT3.5-1999 or FT5-1999 safety fuel tank if the modifications necessary do not exceed those allowed by the regulations.
The use of safety foam in FT3-1999, FT3.5-1999 or FT5-1999 tanks is recommended.

14.5 Fuel tanks with filler necks, Groups A and N

All cars fitted with a fuel tank with filler neck passing through the cockpit must be equipped with a non-return valve homologated by the FIA.
This valve, of the type "with one or two flaps", must be installed in the filler neck on the tank side."

The filler neck is defined as being the means used to connect the fuel filler hole of the vehicle to the fuel tank itself.

Art. 15 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.

Art. 16 SEATS, ANCHORAGE POINTS AND SUPPORTS

If the original seat attachments or supports are changed, the new parts must either be approved for that application by the seat manufacturer or must comply with the specifications mentioned below:

1) Seats
All the occupants' seats must be homologated by the FIA (8855-1999, 8855-2021 or 8862-2009 standards), and not modified.
They must be situated ahead of the main rollbar (or the rear pillar of the lateral rollbar) of the safety cage (Cf. Art. 253-8).
The surfaces or cladding materials of components added to the homologated seat must be non-flammable (e.g. flammability test in accordance with ISO standard 3795 with a speed of combustion less than or equal to 75 mm/min).

- Seats in compliance with 8855-1999 FIA standard

The seat must be used in accordance with the seat manufacturer's instructions and with Technical List n°12.
The limit for use is 5 years from the date of manufacture indicated on the mandatory label.
An extension of 2 further years may be authorised by the manufacturer and must be indicated by an additional label.
If there is a cushion between the homologated seat and the occupant, the maximum thickness of this cushion is 50 mm.

- Seats in compliance with 8855-2021 or 8862-2009 FIA standard

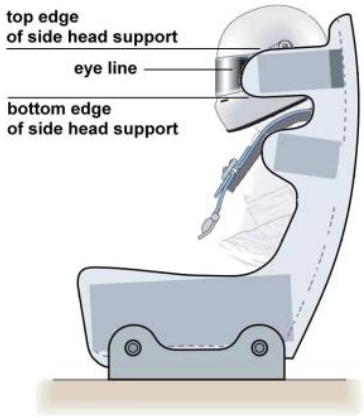
The seat must be used in accordance with the seat manufacturer's instructions and with Technical List n°91 (resp. 40).
The limit for use is 10 years from the year of manufacture.

The use of supports homologated with the seat in accordance with the Technical List n°91 (resp. 40) is compulsory.

1.1 Seating position (FIA 8855-2021 and 8862-2009 seats) :
The driver must choose a seat that fits well.
When seated in the normal racing position, the seat must support comfortably at the pelvis, shoulder and head as follows :
- the eye line must be below the top edge of the side head support and above the bottom edge of the side head support;
- the shoulder must fit within the side shoulder support of the seat;
- the pelvis must be adequately supported by the side pelvis support.

The lateral distance between the helmet and the side head support (measured at 150 mm from the forward face of the side head support) must not be greater than 40 mm 50 mm and may be adjusted by means of additional foam properly fixed to the seat.

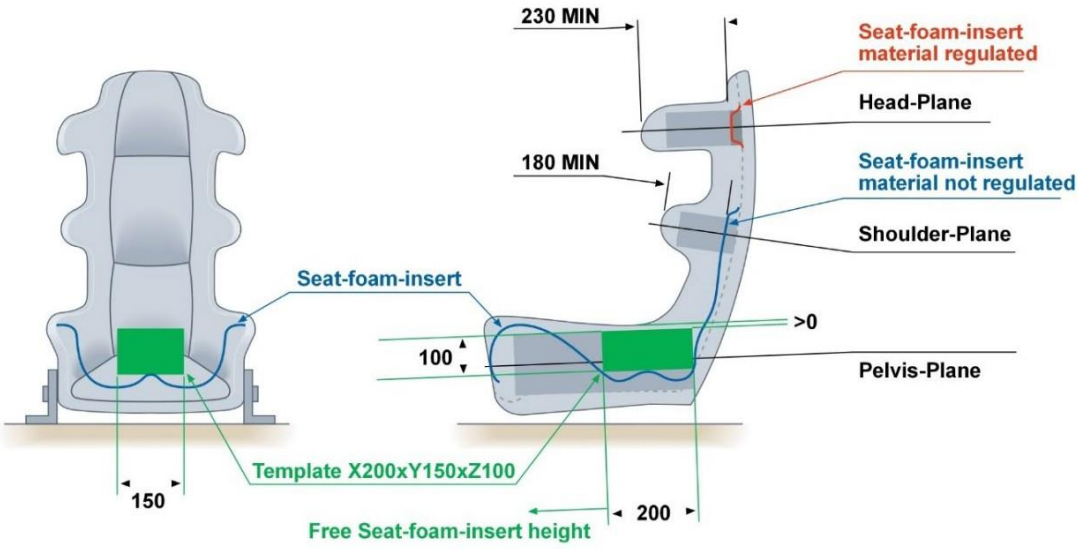
The material of the foam extension must be the same as the one in the head support of the given seat.



If a foam insert is used between the homologated seat and the driver, minimum lateral support to the driver's head, shoulders and pelvis must be guaranteed as follows :

- 230mm min. at seat-side-head support along the head-plane.
- 180mm min. at seat-side-shoulder support along the shoulder- plane.
- 100mm min. in height at seat-side-pelvis support along the pelvis- plane over a length of 200 mm min.

This requirement must be verified using a parallelepiped template of dimensions X 200 x Y 150 x Z 100 mm

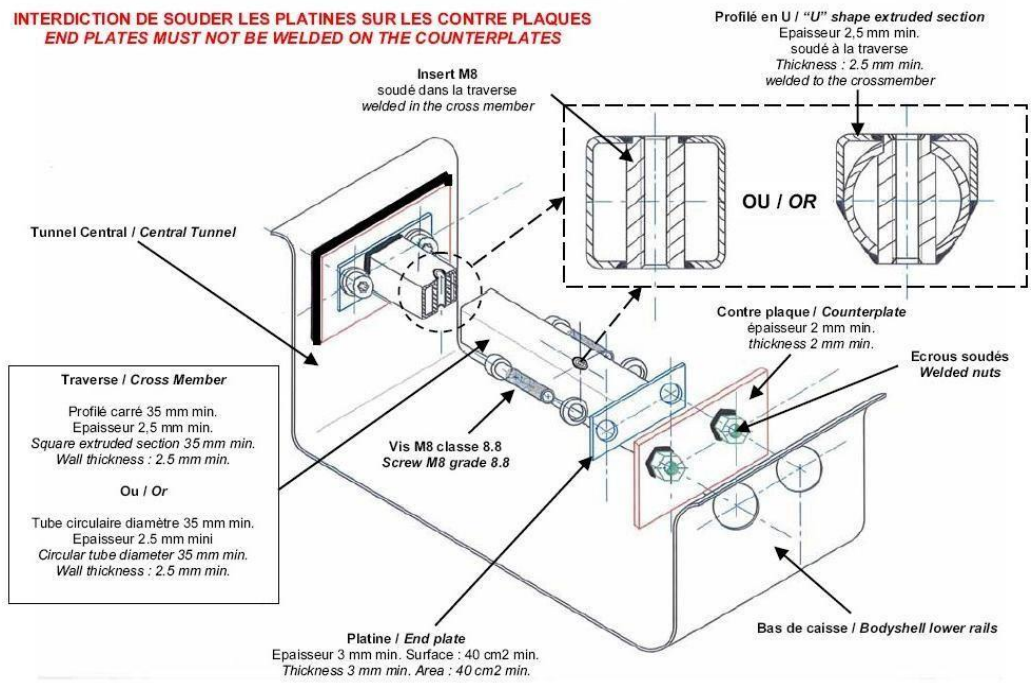


2) Anchorage points for fixing the seat supports

The seat supports must be fixed either:

- On the anchorage points for fixing seats used on the original car
- On the anchorage points for fixing seats homologated by the manufacturer as an Option Variant (in which case the original anchorage points may be removed)
- On anchorage points for fixing seats in conformity with Drawing253-65B.

The seat supports must be fixed to the anchorage points for fixing seats via at least 4 mounting points per seat, using bolts measuring at least 8mm in diameter and in accordance with the indications mentioned on the applicable Technical List (cf. “supports to be used” or “brackets to be used”).



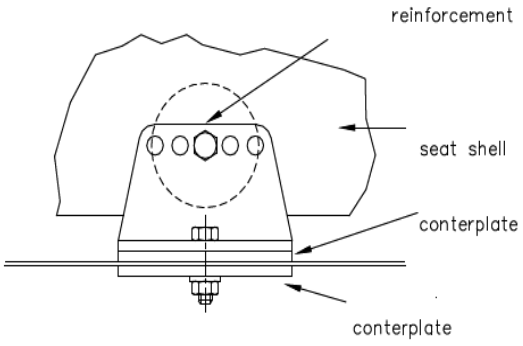
253-65B

FITTING INSTRUCTIONS

1- Drill holes (larger than nut outer diameter) in the bodyshell lower rail and in central tunnel wall.
2- Weld the nuts on the counter plates, then weld these on the bodyshell lower rail on the central tunnel wall.
3- Weld the 2 threaded inserts in the cross member, then weld the endplates at each end of the cross member.
4- Fix the assembly through 4 M8screws of grade 8.8 which are screwed in the welded nuts.

3) Fixing of the seat supports directly onto the shell/chassis

Supports must be attached to the shell/chassis via at least 4mounting points per seat using bolts with a minimum diameter of 8mm and counter plates, according to the Drawing 253-65.
The minimum area of contact between support, shell/chassis and counterplate is 40 cm2 for each mounting point.



253-65

4) If quick release systems are used, they must capable of withstanding vertical and horizontal forces of 18000 N, applied non-simultaneously.
If rails for adjusting the seat are used, they must be those originally supplied with the homologated car or with the seat.

5) 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.
Each mounting point must be capable of withstanding a force of 15000 N applied in any direction.

6) 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.

7) If there is a cushion between the homologated seat and the occupant, the maximum thickness of this cushion is 50 mm.
All the occupants' seats must be homologated by the FIA (8855- 1999 or 8862-2009 standards), and not modified.

Seats in compliance with 8855-1999 FIA standard
The seat must be used in accordance with the seat manufacturer's instructions and with Technical List n°12.
The limit for use is 5 years from the date of manufacture indicated on the mandatory label.
An extension of 2 further years may be authorised by the manufacturer and must be indicated by an additional label.

Seats in compliance with 8862-2009 FIA standard
The seat must be used in accordance with the seat manufacturer's instructions and with Technical List n°40.
The limit for use is 10 years from the year of manufacture.
The use of supports homologated with the seat is compulsory. For Rallies only, seats may be used with supports homologated by the car manufacturers in option variant.

Art. 17 PRESSURE CONTROL VALVES

Pressure control valves on the wheels are forbidden.