

R= The pressure ratio i.e. the ratio of the compressor of the turbine engine. This pressure ratio is obtained by multiplying together a value for each stage of the compressor, as indicated hereafter:

Subsonic axial compressor=1.15 per stage.

Trans-sonic axial compressor=1.5 per stage.

Radial compressor=4.25 per stage.

Thus a compressor with one radial and six axial stages will be designated to have a pressure ratio of:

$$4.25 \times 1.15 \times 1.15 \times 1.15 \times 1.15 \times 1.15 \times 1.15 \text{ or } 4.25 \times 1.15^6.$$

The CSI reserve their right to modify the basis of comparison established between conventional type engines and new type engines, while giving a previous notice of one year to start from January 1st, following the date on which the decision was made.

k) Coachwork: by coachwork is meant:

- externally: all parts of the car licked by the air-stream and situated above a plane passing through the centre of the wheel hubs.
- internally: all visible parts of the passenger compartment.

Coachworks are differentiated as follows:

- 1) completely closed coachworks,
- 2) completely open coachworks,
- 3) convertible coachworks: with a hood in either supple (drop-head) or rigid (hard-top) material.

l) Use of aerodynamic devices on cars of groups 5, 7 and international racing formulae: in interpreting Art 252(l), shall definitely be considered as coachwork all external parts of the car which extend above the highest point of either the front or rear wheels (with tyres) with the exception of units definitely associated with the functioning of the engine or transmission and the anti-roll bar.

Any specific part of the car which has an aerodynamic influence on the stability of the vehicle must be mounted on the entirely sprung part of the car and shall be firmly fixed whilst the car is in motion.

Neither the safety roll bar, nor any of the units associated with the functioning of the engine or transmission shall have an aerodynamic effect by creating a vertical thrust.

All external projections swinging in a horizontal plane shall have a minimum radius of 1.5 cm. The leading edge of any aerofoil fixed to the front of the car shall not be sharp.

m) Towing-eye: all cars, with the exception of formula cars, will be equipped with a rear and front towing-eye, for all events without any distinction.

This towing-eye will only be used in case the car can move freely, and it must be avoided to use it to lift the car.

Art. 253.—Prescriptions common to all cars of categories A and B.

a) Chassis, ground-clearance, steering lock: no part of the car should touch ground when one of its tyres is deflated.

The maximum steering radius shall be 6.75 m which means that the car must be able to make a complete turn in both directions without the wheels going beyond two parallel lines drawn on the ground 13.50 m apart.

b) Coachwork:

Conditions for recognition:

Coachworks of one same minimum series shall be identical with the only exception of a "sun roof".

However, if a model has its coachwork equipped with a specific number of doors and has been recognized on the basis of a given minimum series, similar recognition may be granted to another coachwork with a different number of doors when its minimum production reaches 50% of the figure necessary for recognition of the basic series, providing that both models have the following common characteristics:

- 1) a coachwork of similar shape, i.e. of which the general appearance is basically the same and which has not been modified beyond what is necessary to change from a four door version to a two door version (or vice-versa);
- 2) exactly identical mechanical parts;
- 3) the same wheelbase, track and number of seats;
- 4) at least the same weight;
- 5) an FIA decision to recognize this variant coachwork and to draw up an additional "variant" recognition form.

As far as convertible cars are concerned, these must comply in all respects with the specifications applying to closed cars if they run an event under this form, or with the specifications concerning open cars if they run with the hood down or the hardtop removed.

Maximum outside dimensions:

The overall width shall be 210 cm for all cars participating in events on circuits.

Minimum inside dimensions and minimum number of seats:

Cars shall be equipped with a minimum of two seats or a minimum of four seats according to the group in which they seek recognition and, within a same group, according to their engine cylinder-capacity.

For each group specified in these regulations, the minimum number of seats is listed hereafter and the minimum inside dimensions for both cases are indicated in the following paragraphs.

1st case (see diagram 1): car equipped with 4 (or more) seats.

The height at the front (B) is measured between the lowest point of the front seat cushion compressed by a standard mass of 60 kgs (see diagram 2) and the ceiling (the padding if any, may be compressed). Should the backrest of the front seat(s) be inclined backwards, the protected height must also be measured at the same angle as the inclination of the backrest.

— If the front seats are separate, the measurement is made in the middle of the two seats. In case of adjustable front seats, the seats will be placed in medium position.

— If there is a common front seat, the measurement is made at 25 cm from the centre line of the car.

The height at the back (D) is measured between the cushion of the rear seat, compressed by the standard mass, and the ceiling (the padding, if any, may be compressed) at 25 cm from the centre line of the car. Should the backrest of the rear seat be inclined backwards, the protected height must also be measured at the same angle as the inclination of the backrest.

The width over the front seats (C) is measured along the vertical plane passing through the centre of the standard mass placed on the seat. The width must be freely maintained over a height of at least 25 cm.

The width over the rear seats (E) is measured along the vertical plane passing through the centre of the standard mass. The width must be freely maintained over a height of at least 25 cm.

The minimum dimensions (in centimetres) are the following:

| Cylinder-capacity | B | C | D | E |
|----------------------|----|-----|----|-----|
| Up to 700 cc | 85 | 100 | | |
| From 700 to 2,000 cc | 85 | 110 | 85 | 110 |
| Over 2,000 cc | 90 | 120 | 85 | 120 |

Moreover, in order to be considered as a four-seater, a model must fulfil certain conditions regarding its rear-seating capacity. These conditions are the following (see diagram 3):

- 1.— l must be at least 90% of L ;
 m must be at least 85% of M ;
 p must be at least 85% of $k+m$.

- 2.— k must measure at least 15 cm and the minimum measures for the foot-space of the rear passengers must be: 32 cm long, 5 cm high and (for each one of the two passengers) 25 cm wide.

- 3.— the space available for the rear passengers must meet the following condition: $k+l+m=95$ cm minimum.

- 4.— cars in which the back of the rear seat(s) is inclined forward beyond the vertical cannot be considered as four-seaters.

The measuring of the above dimensions must be carried out under the following conditions:

— the front seat, if adjustable, must be placed in its normal driving position, i.e.: $K+L+M$ must measure at least 120 cm.

— if the front or rear seats have reclining backrests (by means of either a mechanical device or chocks or any other means) these should be set at an inclination of 15° backwards.

— K is measured horizontally from the brake pedal (at rest) to the foremost point of the front seat; k is measured horizontally at a height equal to l from the back of the front seat to the foremost point of the rear seat.

L and l are measured vertically from the highest point of the cushion of the seat to the floor of the car. At the front L must be measured at the usual resting-place of the driver's heels.

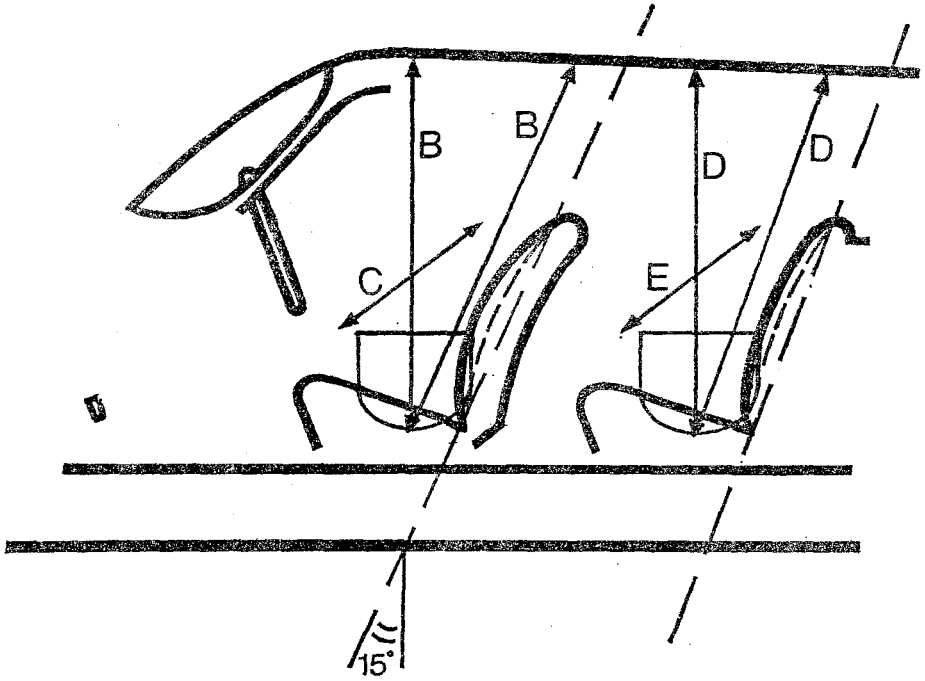
M and m are measured horizontally from the foremost point of the seat to the backrest to be measured at a height of L (l).

Two specific cases must be distinguished:

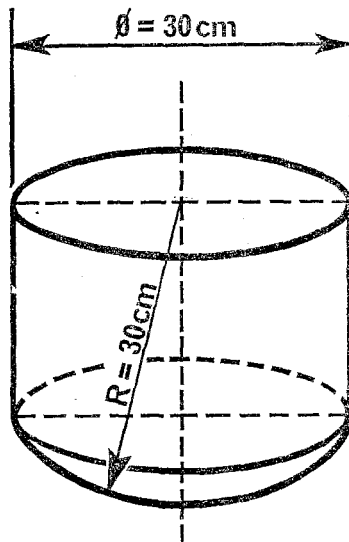
- 1) bucket-seats: the measuring must be taken on the centre line of each seat.
- 2) common seat: measuring must be carried out at 25 cm from the longitudinal axis of the vehicle.

However, for the rear seat(s) measuring must be made in the same vertical plane as for the front seats.

p is measured (in the same vertical plane as m) horizontally from the rearmost point of the backrest of the front seat to the backrest of the rear seat.

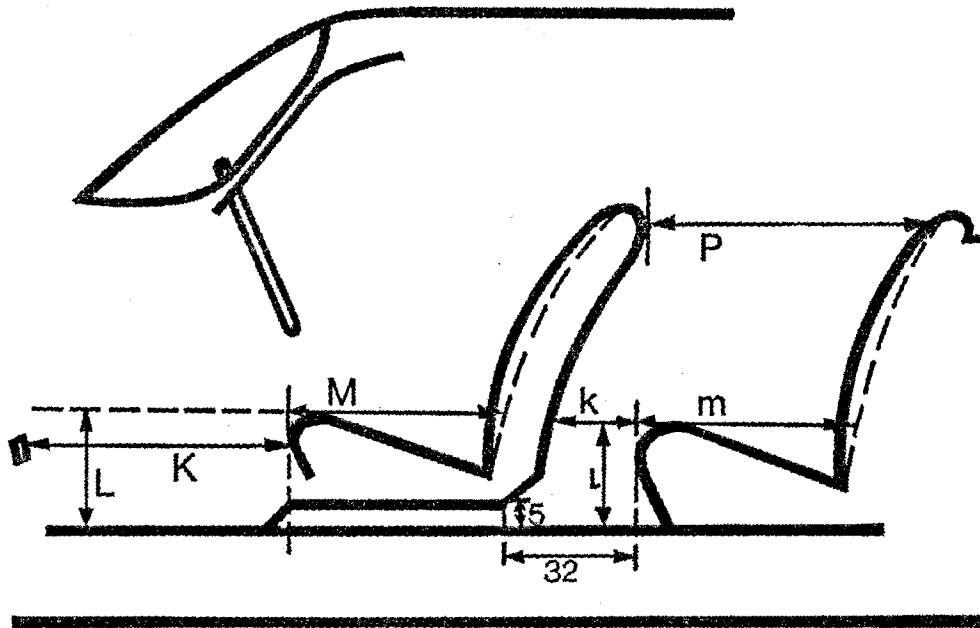


Dessin/drawing No. 1



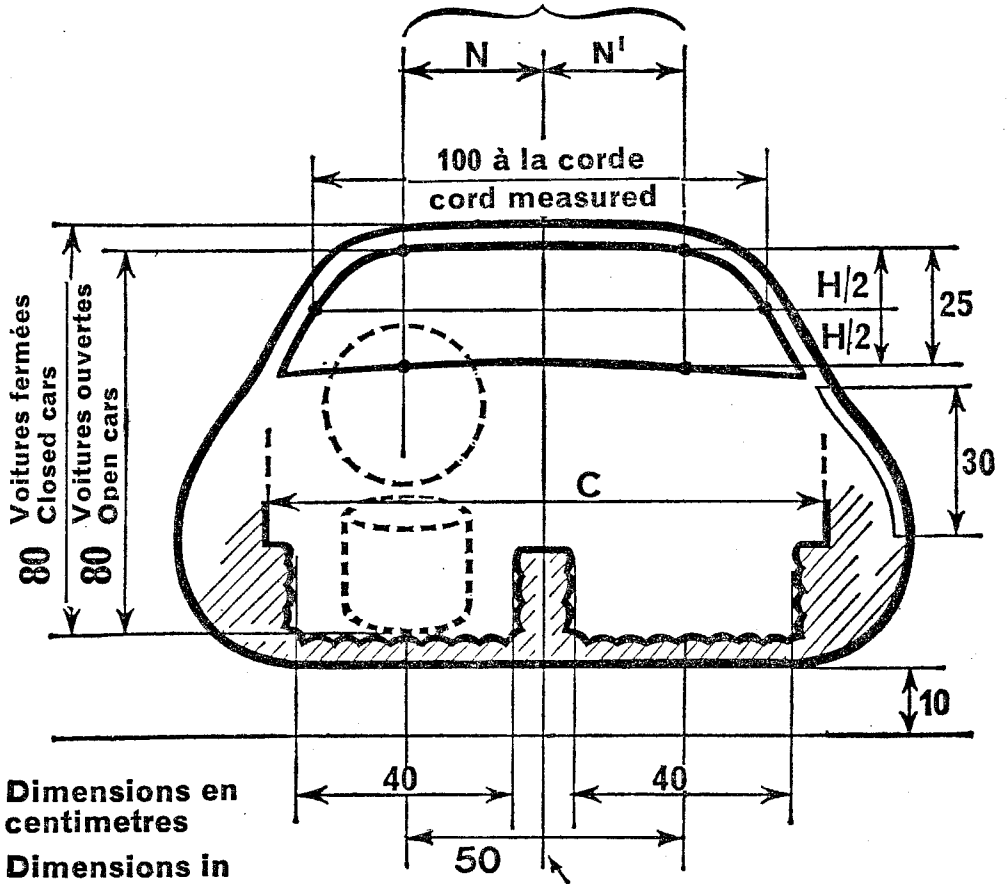
Weight/tare = 60 kgs \pm 200 grms.

Dessin/drawing No. 2



Dessin/drawing No. 3

Largeur sur laquelle la "hauteur protégée" doit être maintenue
Width where the "protected height" must be maintained



Dimensions en centimetres

Dimensions in centimetres

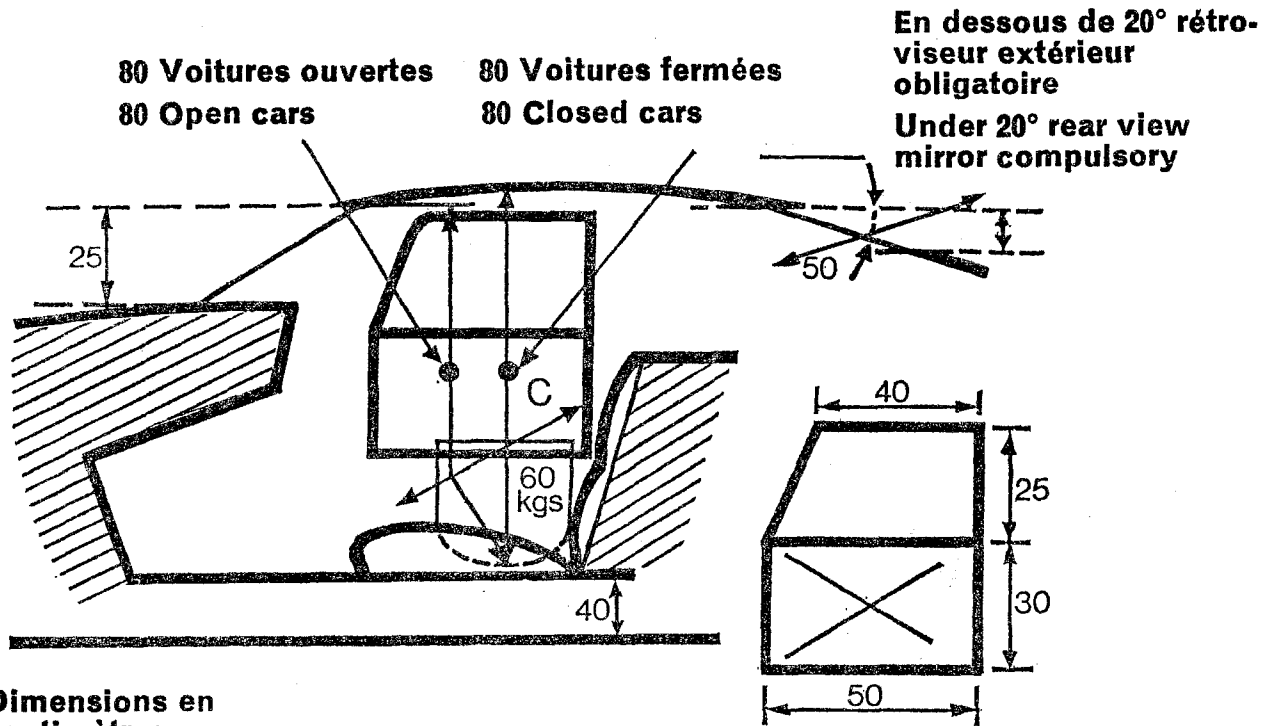
$N = N'$

$N + N' = 60 \text{ cm min}$

Axe de la voiture
Centre line of the car

Dessin/drawing No. 4

| | 0-700 cc | 700- 2,000 cc | 2,000+ cc |
|---|-------------|---------------------|--------------|
| C | 100 | 110 | 120 |



Dimensions en centimètres

Dimensions in centimetres

Dimensions portière
Door dimensions

Dessin/drawing No. 5

The seating cushion, if adjustable in height, must be fixed at half the adjusting range.

For the above-mentioned measurements, seats must not be occupied.

Definition of the term "seat"

— *By seat is meant the two surfaces constituting the seating cushion and the seat back or backrest.*

— *By seat-back or backrest is meant the surface measured upwards from the bottom of the spine of a person normally seated.*

— *By seating cushion is meant the surface measured forwards from the bottom of the spine of the same person.*

These two main parts of the seat must form an homogeneous construction and be entirely covered with upholstery (for example, in natural or synthetic textiles).

When examining a specific car, the rear space reserved for passengers can only be considered as complying with the term "seat" if it offers comfort similar to that of the front seat, ie, the upholstery on it must have approximately the same thickness and the same flexibility as that of the front seats, or, in practical terms: during the measurement, the standard mass (60kg) must compress the seating cushion on the rear to approximately the same extent as on the front seats.

2nd case (see diagrams 4 and 5): cars with a minimum of 2 seats.

The two seats must be distributed equally on either side of the longitudinal centre-line of the car and at the same level, regardless of their normal play for adjusting them to the size of the driver. The location provided for placing or housing the seats must have a minimum width of 40 cm maintained all along the depth of the seat. The seats themselves must have identical dimensions.

The "protected height" shall be at least 80 cm measured from the cushion of the seat compressed by the standard mass (see diagram 2) to the ceiling (any existing padding being compressed) in cars with closed coachwork and 80 cm from the surface of the seat compressed by the standard mass (see diagram 2) to the upper edge of the windscreen (measured vertically through the centre of the standard mass) in case of open cars.

The minimum interior width over the front seats (see measurement C) shall be of 100 cm in cars with a cylinder-capacity inferior or equal to 700 cc, 110 cm in cars with a cylinder-capacity from 700 cc to 2,000 cc and 120 cm in cars with a cylinder-capacity exceeding 2,000 cc. The minimum width of foot-space (for each person) must be at least 25 cm measured perpendicularly to the centre-line of the car, plumb with the pedals.

The distance between the lengthwise centre-lines of the two seats should not be inferior to 50 cm. In case the two centre-lines should not be parallel, measurement should be done from the hollow of the seats.

The passenger's compartment and seat shall remain free throughout the competition and shall not be encroached upon by any element or equipment of the car except when Appendix J specifically provides otherwise. The passenger's compartment and seat of open cars shall not be covered by means of a tonneau cover of any type.

NB: If a modification authorized by Appendix "J" affects a dimension stated on the recognition form, it will not be possible to retain that dimension as an eligibility criterion for the car.

c) Windshield—Windshield wiper: a windshield made of laminated glass is compulsory. It shall be equipped with at least one automatic wiper sweeping a sufficient area to enable the driver to distinctly see the road from his seat.

The windshield shall comply with the following requirements:

- 1) be placed symmetrically with regard to the centre-line of the car;
- 2) have a minimum height of 25 cm, maintained between two points symmetrically placed with regard to the centre-line of the car and of which one is determined by the vertical line passing through the centre of the steering-wheel. There must furthermore be at least 60 cm between the two said points;
- 3) have a minimum width of 100 cm; cord measured at half its vertical height.

Shall be considered as being the windshield, only the glass area through which one has an entirely free vision towards the front, without being limited by any outside opaque projection apart from the bulge of the mudguards which cover the front wheels.

d) Mudguards: shall be of permanent nature and firmly fixed.

They shall project over the wheels and provide efficient covering of at least one third of their circumference, and at least the width of the tyre.

In those cars where mudguards are entirely or partly overhung by the body structure, the combination mudguards-body or the body alone shall nevertheless meet the above protection requirements.

Mudguards must be solid with the body, there being no gap between them.

e) Doors: all vehicles shall be fitted with at least one rigid door on each side, with closing devices and hinges which may not be located on the rear-door post, nor on the door-sill. The outside door handle, in case of closed cars, must be clearly indicated. The dimensions of the lower door panel (the part which is normally opaque) must be such as to allow a rectangle of at least 50 cm wide and 30 cm high being inserted in it. The corners of this rectangle may be rounded to a maximum radius of 15 cm. Cars with sliding-doors will not be allowed unless they include a safety system enabling a quick and easy evacuation of the car's occupants in case of an accident.

Cars with closed or convertible coachwork shall have doors equipped with moveable windows of the material provided by the manufacturer for the considered model, liable to be opened over at least one third of their surface in order to provide for ventilation, each window having a minimum width of 40 cm and a minimum height of 25 cm.

When opened, the doors must give free access to the seats. They must be made in such a way that they never restrict the lateral view of the driver.

By door should be understood the part of the coachwork opening to give access to the seats.

f) Rear view: this shall be provided by an inside mirror commanding a rear window measuring at least 10 cm vertically maintained along a width of at least 50 cm. However, if the straight line connecting the upper and lower edges of the rear window opening makes an angle inferior to 20° with the horizontal, when the car complies with the same specifications as those required for checking the ground-clearance (see art. 253), the rear view must be efficiently obtained by other means (two outside mirrors or any other system of equivalent efficiency).

All closed cars competing in circuit events must be equipped with two external rear-view mirrors.

g) Luggage trunk: a covered space shall be provided which is an integral part of the coachwork but outside the space occupied by the passenger seats.

This space shall be such as to enable to carry without special difficulty a number of suit-cases, sheltered from rain or dirt which varies according to the cylinder-capacity of the engine equipping the car (see below), of the following minimum dimensions: 60 cm×40 cm×20 cm.

Cylinder-capacity inferior or equal to 2,000 cc: 1 suit-case,
Cylinder-capacity superior to 2,000 cc: 2 suit-cases.

However, in cars having inside dimensions which are inferior to the minima laid down in article 253 b to allow classification as a four-seater, but which contain a compartment behind the front seats liable to receive passengers, this compartment may be taken into account as luggage space whether or not it has been equipped for this purpose but without modifying any of the original parts.

It is specified that the luggage capacity for FIA recognized cars is checked at the moment of recognition. Therefore race scrutineers need not worry about minimum luggage space for all cars benefiting from an FIA recognition in Groups 1, 2, 3 and 4.

h) Starting: cars must be equipped with a device and its source of power for automatically starting the engine and able to be actuated by the driver sitting at the wheel.

i) Fuel tanks: the total capacity of the fuel tanks (main and additional) must not exceed the following limits:

| | | |
|---|-----|----------|
| Cars up to 700 cc of engine cylinder-capacity | : | 60 l. |
| Cars from 700 cc to 1,000 cc | " " | : 70 l. |
| " " 1,000 cc to 1,300 cc | " " | : 80 l. |
| " " 1,300 cc to 1,600 cc | " " | : 90 l. |
| " " 1,600 cc to 2,000 cc | " " | : 100 l. |
| " " 2,000 cc to 2,500 cc | " " | : 110 l. |
| Cars over 2,500 cc | " " | : 120 l. |

Will be considered as a fuel tank any container holding fuel which can flow out by any method either to the main-tank or directly to the engine.

The filling-port(s) (and vents) of each tank must always be outside the passenger-compartment and be entirely leak-proof.

Location of fuel tanks: The emplacement foreseen by the manufacturer for the fuel tank(s) and the feeding system towards the engine, constitutes one of the principles of series-production, and this implies that no change can be made, unless an authorization is explicitly stated in Appendix J.

However, a derogation to the above rule shall be made for cars in which the manufacturer has placed the fuel tank inside the passenger compartment, and close to the occupants.

In this specific case, and for the sake of safety, it will be possible, whatever the group of cars, to mount a leak-proof protective barrier between the tank and the passengers, or to change the place of the tank and, if necessary, its accessory parts (filling port petrol pump, outlet tube).

j) Safety Fuel Tanks approved by the FIA

Generalities

Safety fuel tanks are made of a reinforced elastomer bladder manufactured to fit inside a smooth skinned surrounding structure.

Their fitting in a car is only compulsory if Appendix J explicitly prescribes it for the Group concerned.

Technical specifications

Three sets of specifications have retained the FIA recognition. The FIA reserves its right to approve any other set of technical specifications after study of the dossier submitted by the manufacturer(s) concerned.

Specifications FIA/Spec/FT3

1—Material

The flexible tank skin must be manufactured from a woven fabric in polyamide, polyester or equivalent impregnated and coated with a fuel resistant elastomer.

2—Minimal physical properties

- Tensile strength: 450 lbs min. Spec MIL-CCC-T-191b Method 5102;
- Tear strength: 50 lbs min. Spec MIL-CCC-T-191b Method 5134;
- Puncture test: 175 lbs min. Spec MIL-T-6396-C Article 4.5.17.

These physical properties must be maintained throughout all areas of the finished fuel cell, including seams, joints and fittings.

3—General remarks regarding fittings and connections

All fittings in elastomer shall be vulcanized on the skin and therefore be integral part of it.

All metal fittings shall be:

- either coated with elastomer and vulcanized on the skin,
- or integrated to the skin, by heating under pressure,
- or mechanically bound to the skin by a system of ring and counterring, the sealing being ensured either by a flat joint, or with an "O" ring.

In all cases, if there is a connection with bolts, it is recommended to fit steel inserts in the light alloy plates.

The hose clamp area of all nipple fittings shall be covered either with fabric, or with protection laths, in order to avoid cold flow of rubber when under clamp pressure.

Specifications FIA/Spec/FT5

This specification will be published in the CSI Sporting Bulletin and be enforced 6 months after the publication date.

Specification FIA/Spec/FTA

1— The fuel tank should consist of three zones:

(A) Outside zone:

The extinguishing liquid should be located on the outside of the fuel cell, around the fuel tank, so the fuel tank partition in contact with the air should be entirely in contact on the inside with the extinguishing liquid and never with the fuel.

(B) Fuel zone:

The fuel should be contained in cells of a 2L maximum capacity; the cells communicating with each other only to permit the filling and the emptying of the fuel tank.

(C) Zone of the extinguishing liquid:

Is the zone situated between each fuel cell and which surrounds the cells with the extinguishing liquid.

2— Material of the fuel tank:

The fuel tank can be conceived in any material: metal, plastic, rubber.

The material used should not be fragile, so as to avoid any ruptures due to the vibrations of the car, and the engine.

3— For reasons of vibrations, the fuel tank, if it is not made of rubber or of another elastic material, should be suspended from the chassis by means of elastic supports (of a type similar to those used for the water radiators).

4— If the tank is made of metal, it should be treated in an epoxy resin F 90 bath which, by penetrating the cavities intended for the extinguishing product and the fuel, will prevent any possible leakage due to porosity, welding, etc.

5— The cap of the refuelling orifice of the extinguishing liquid must be conceived like a radiator filler-cap, so that, should pressures exceed 0.2 kg/cm^2 or be inferior to -0.2 kg/cm^2 , the excess of pressure may escape and permit a balance between the inside and outside pressures.

6— The minimum relation in volume between gas and extinguishing liquid is the following:

30 litres of extinguishing liquid for 100 litres of gas.

7— Physical characteristics of the extinguishing liquid:

— Minimum ebullition temperature, under a pressure of 1 kg/cm^2 : 45°C .

Note: In case that tank specification would be used on cars of Group 7 (See Art. 292) and Formulae 1 and 2 (See Art. 293 and 294), the fitting of crushable structures would become optional.

Safety tank manufacturers recognized by the FIA

Entrants must use safety fuel tanks made by a manufacturer recognized 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 there shall be a printed code indicating the name of the manufacturer, the exact specifications according to which this tank has been manufactured and the date of manufacturing.

Ageing of safety fuel tanks

The ageing of safety tanks entails a considerable reduction in the strength characteristics after approximately five years.

Therefore, all fuel cells must be replaced at the latest five years after the fabrication date indicated on the cell.

Fuel cells which are not codified such as to show their date of fabrication will be considered to date from before January 1st 1970.

List of recognized manufacturers

Federal Republic of Germany

Uniroyal, 5100 Aachen, Postfach 410

United States

Aero Tec Laboratories, 20 Beldon Place, Norwood, New Jersey 07648

Donn Allen Inc, 5730 Bankfield Drive, Culver City, California 90230

Firestone Coated Fabrics Co, 1200 Firestone Parkway, Akron, Ohio 44301

Fuel Safe Corporation, 15545 Computer Lane, Huntington Beach, California 92649.

Goodyear Fuel Cell Labs, The Goodyear Tire & Rubber Company, Akron, Ohio 44316

France

Kléber-Colombes-division Marston, BP22,
4 rue Lesage Maille, 76-Caudebec-les-Elbeuf
Superflexit SA, 45 Rue des Minimes, 92 Courbevoie

Great Britain

FPT Industries Ltd, The Airport, Portsmouth, Hants
Marston Excelsior Ltd, Wobaston Rd, Wolverhampton, Staffs

Italy

Pirelli, Viale Rodi 15, Milano
Autodelta SpA (Alfa Romeo), Via Enrico Fermi 7, 20019 Settimo-Milanese

Japan

Bridgestone Tyre Co Ltd, 1-1 Chome Kyobashi, Chuo Ku, Tokyo 104
Kojima Press Ltd, 3-30 Shimoichibacho Toyota, Aichiken
Sakura Rubber Co Ltd, 48-14-1 Chome Sasazuka, Shibuya Ku, Tokyo
Sumitomo Electric Industries Ltd, 15-5 Chome Katahama, Migashi Ku,
Osaka

For cars of groups 1 and 3 of Appendix J, the fitting of safety tanks, of an FIA approved type or others, will be allowed only if the manufacturer of the car has recognised them as such and provided they do not exceed the capacity of the original tanks as stated on the recognition form.

Besides, cars from Groups 1 to 4 taking part in events qualifying for a World Championship may be equipped with a safety tank in so far as the necessary internal modifications do not affect the structural parts and the suspension mountings.

k) Minimum weight: is the real minimum weight of the empty car (without persons or luggage aboard) fully equipped and ready for delivery to the purchaser. It shall consequently include a spare-wheel equipped with a tyre similar to those mounted on at least 2 of the 4 wheels, and all the accessories normally mounted on the least expensive model of the series concerned being removed, except for the normally supplied repair kit (jack, tool-kit). All liquid tanks (of lubrication, cooling system, braking, heating system, if need be), except for the fuel tank, must be full.

By full it will be understood : to the normal level recommended by the manufacturer.

The minimum weight of the car mentioned on the recognition form shall be strictly respected. Any lightening of the car by removal or replacement of parts, aiming at reducing its weight, is prohibited.

Cars must maintain their minimum weight during all the duration of an event. Scrutineers can therefore take a car on the finish line and weigh it.

Note: For cars of Groups 2, 4, 5, 7, it is permissible to complete the weight of the car through one or several ballasts incorporated to the materials of the car provided that solid and unitary blocks are used, and that they are fixed by means of a tool and offer the opportunity of being sealed on should the officials entrusted with the scrutineering of the car deem it necessary.

l) Spare-wheels: all cars shall be equipped with at least one spare wheel with its tyre occupying the position provided for by the manufacturer which may not encroach upon the space provided for luggage.

The spare wheel must be equipped with a tyre of the same dimensions as those fitted on at least two wheels of the car.

By same dimensions it will be understood : same nominal tread circumference.

m) Silencer (muffler) and exhaust system: even when the specific provisions for a group allow replacement of the original muffler, cars competing in an open road event shall always be equipped with an exhaust muffler complying with the road regulations of the country(ies) through which the event is run.

For events run exclusively on closed circuits, the supplementary regulations may authorize modification, replacement or removal of the exhaust muffler.

The outlet pipes of the muffler shall be directed either rearwards or sideways. If the outlet pipes are pointing rearwards, their orifices shall be placed at a height neither superior to 45 cm nor below 10 cm; they shall not protrude by more than 15 cm beyond the overall length of the car. If the exhaust pipes are directed sideways, their orifices must be located aft of a vertical line passing through the wheelbase centre and may not project in any way beyond side of the coachwork. Adequate protection shall be provided in order to prevent heated pipes from causing burns.

n) Safety devices: for all cars competing in events entered on the FIA International Sporting Calendar:

- a supplementary locking device for engine bonnet, boot lid, and any other important objects carried on board of the vehicle, such as spare wheel, tool set, etc;
- a supplementary protection of all fuel pipes and brake lines outside the coachwork against any risk of damage (stones, corrosion, breaking of mechanical pieces, etc) and inside the cockpit against any risk of fire (fuel pipes only);
- additional safety attachments for windscreen and back window;
- anchor fittings for safety harness;
- for cars of Groups 1 to 4, the extinguishing system will have a capacity of 5 kg, carried in one or two units maximum. CO₂ will be considered as unacceptable as an extinguishant; BCF (Freon 12B1) is given as an example to be at least equalled in terms of capability and non-toxicity.

The extinguisher(s) will have to be immediately accessible to the driver and co-driver.

All categories of cars competing in Hill Climbs must be equipped with the same extinguishing systems as are obligatory for the **same** categories competing in circuit events.

o) Roll-over bars:

General considerations

1 — The basic purpose of such devices is to protect the driver if the car turns over or is involved in a serious accident. This purpose should always be borne in mind.

2 — Whenever bolts and nuts are used, they should be of a sufficient minimum diameter, according to the number used. They should be of the highest possible quality (preferably aircraft). Square head bolts and nuts should not be used.

3 — One continuous length of tubing should be used for the main structure with smooth continuous bends and no evidence of crimping or wall failure.

4 — All welding should be of the highest possible quality with full penetration (preferably arc welding and in particular heliarc). Although good outside appearance of a weld does not necessarily guarantee its quality, poor looking welds are never a sign of good workmanship.

5 — Braces should preferably be of the same size tubing as used for the main structure.

6— For space-frame constructions it is important that crash-bar structures are attached to cars in such a way as to spread the loads over a wide area. It is not sufficient to simply attach the roll-bar to a single tube or junction of tubes. The roll-bar should be designed in such a way as to be an extension of the frame itself, not simply an attachment to the frame.

Considerable care should be attached to the necessary strengthening of the basic structure, for instance by adding reinforcement bars or plates so as to properly distribute the loads.

7— For monocoque constructions, consideration should be given to using a roll-bar hoop of 360 degrees completely around the inside of the car, and attached with suitable mounting plates. This type of roll-bar then becomes a substitute for the frame.

I Cars of Groups 1 to 4

It is compulsory to fit a safety roll-bar or cage for all speed events (on circuits).

For regularity events (rallies), hill-climbs, slaloms the fitting is compulsory for special cars (Groups 2 and 4), and optional for series-production cars (Groups 1 and 3). However, should the organisers of a rally or hill-climb deem that the driving conditions during their event are comparable to those of a speed event, they are entitled to prescribe the compulsory fitting of a safety roll-bar or cage, even for cars of Groups 1 and 3. This obligation must, in that case, be clearly mentioned in the Supplementary Regulations of the event.

The attention of racing drivers is drawn to the fact that a safety roll-bar can be efficient only if the driver is firmly maintained in his seat by a safety harness. In the opposite case, the safety roll-bar, instead of protecting the driver, constitutes a dangerous obstacle inside the passenger compartment.

The exact weight of the device shall be subject to a statement from the competitor, to be appended to the entry form. This weight must be added to that indicated for the vehicle on the recognition form.

Closed Cars

As a general rule, the safety cage must be made of two main hoops, one behind the front seats and one following the windscreen pillars.

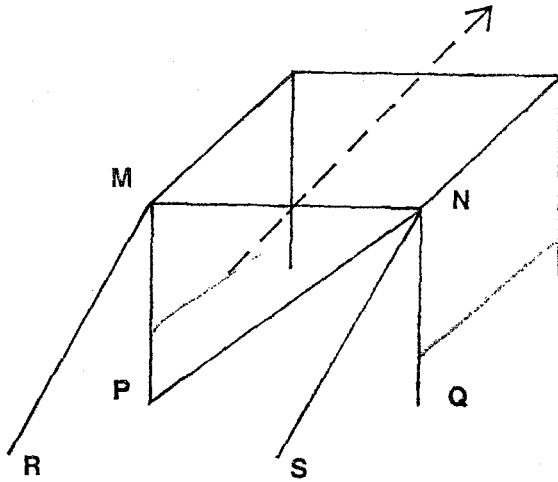
However, for practical reasons, the fitting of such a cage is made compulsory only for cars of which the weight declared on the recognition sheet is superior to 1,200 kg. For the cars under 1,200 kg the windscreen hoop is not compulsory. The general designing must comply with drawings 6 and 7. For regularity events (rallies) the diagonal is optional.

The safety roll-bar or cage must be conceived in such a way as not to obstruct the access to the front seats and not to encroach on the space provided for the driver and the passenger. On the other hand, it is allowed that the elements of the roll-bar or cage encroach on the space of the rear passengers, and pass through the upholstery of the rear seat(s).

The main roll-bar hoop(s) must be placed as near as possible to the roof in order to limit its crushing in the event of a somersault.

Attachment of safety roll-bars on the chassis

The attachment points of the struts of the main roll-bar hoop(s) on the chassis must be locally reinforced by means of a steel-plate—2 mm thick at least—welded, riveted or bolted on the shell, with a prolongation along a vertical member of the chassis (for example: door pillar—see drawing 8). The total surface of this plate must be of 35 sq cm at least, of which a third at least ensures the connecting with the vertical chassis-member. The fixing of the main roll-bar hoop(s) must be



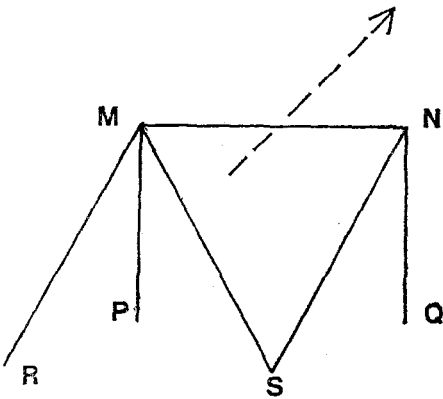
Dessin/drawing No. 6

Groupes 1 à 4

Le montage d'un renfort diagonal est obligatoire. Les différentes variantes autorisées sont: MQ, MS, NP, NR. (NP est indiqué sur le dessin no 6 comme un exemple.)

Groups 1 to 4

Fitting of a diagonal strut is compulsory. The various authorized alternatives are: MQ, MS, NP, NR. (NP is shown on drawing 6 as an example.)



Dessin/drawing No. 7

Groupes 1 à 4

Le montage d'un renfort diagonal est obligatoire. Les différentes variantes autorisées sont: MQ, MS, NP, NR. (MS est indiqué sur le dessin no 7 comme un exemple.)

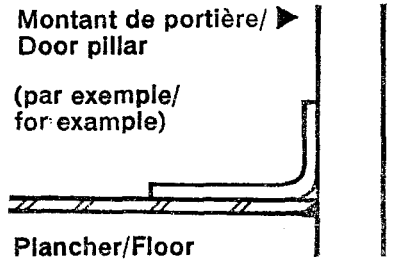
Groups 1 to 4

Fitting of a diagonal strut is compulsory. The various authorized alternatives are: MQ, MS, NP, NR. (MS is shown on drawing 7 as an example.)

Montant de portière/ Door pillar

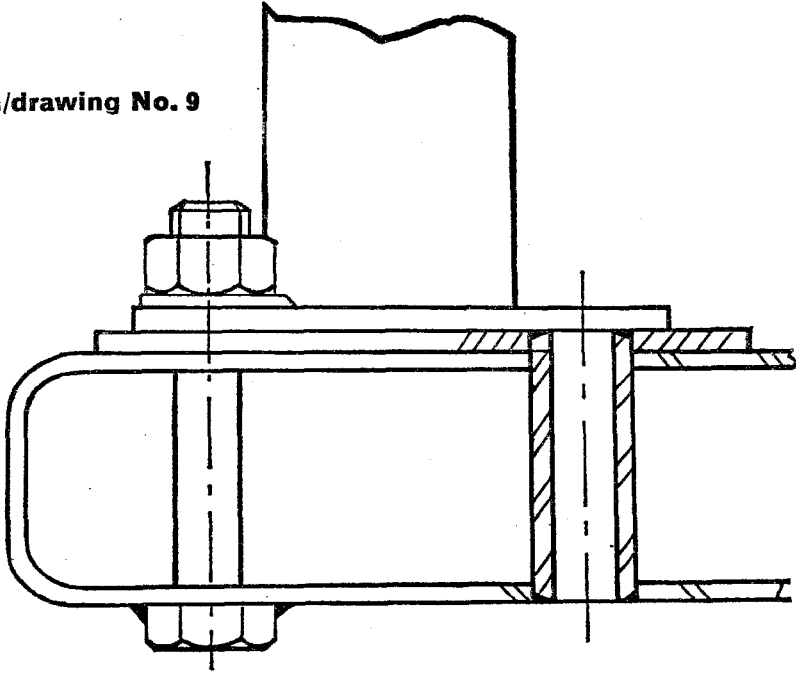
(par exemple/ for example)

Plancher/Floor

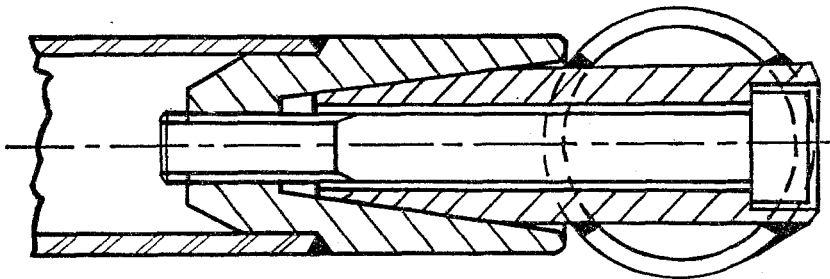


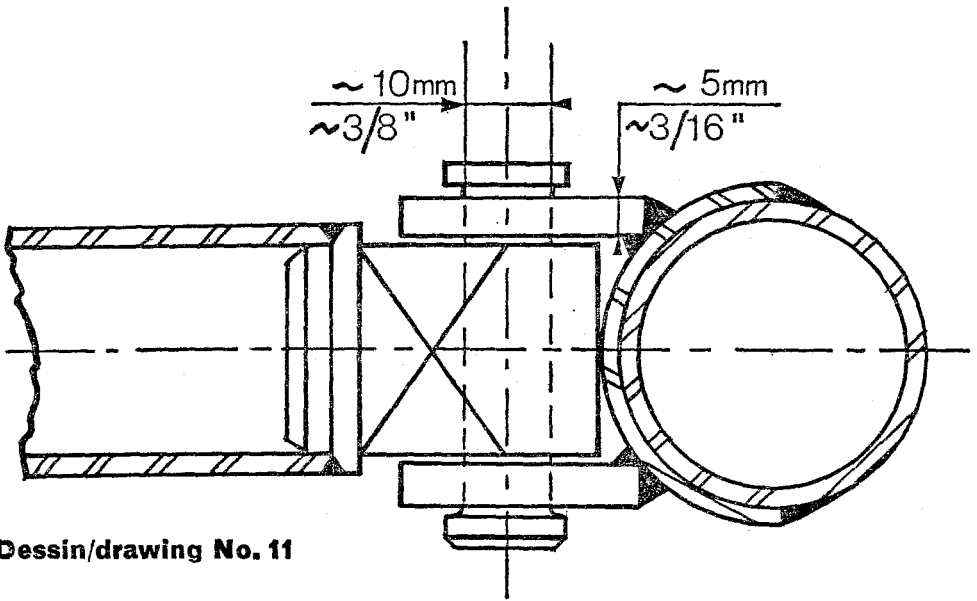
Dessin/drawing No. 8

Dessin/drawing No. 9

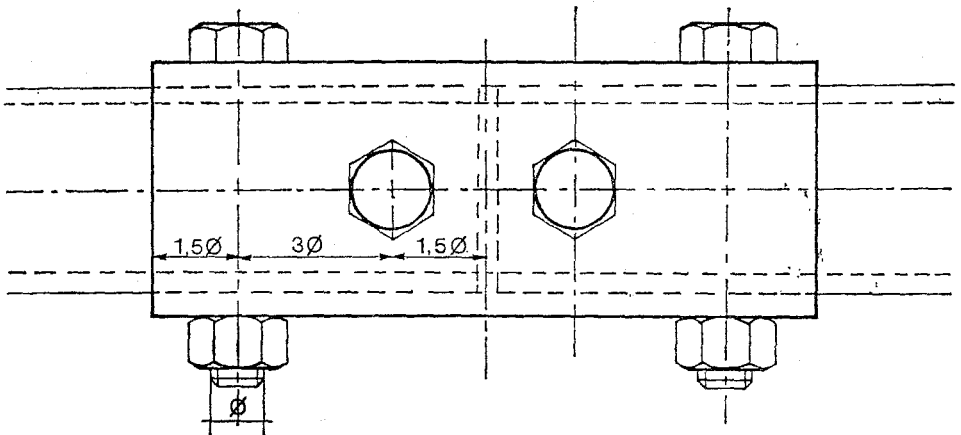


Dessin/drawing No. 10



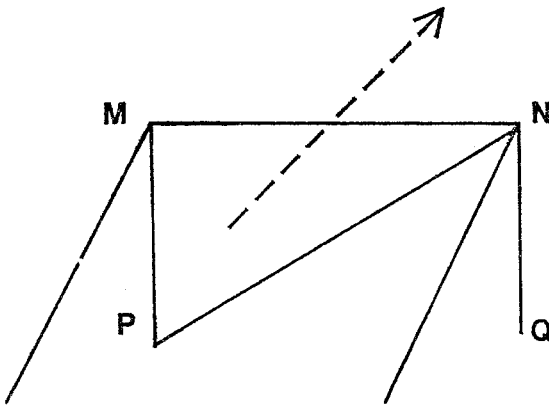


Dessin/drawing No. 11



Dessin/drawing No. 12

$\phi = 12 \text{ mm}$ (tube $< 40 \text{ mm}$ diam. ext)
 $\phi = 14 \text{ mm}$ (tube $\geq 40 \text{ mm} < 50 \text{ mm}$ diam. ext)
 $\phi = 16 \text{ mm}$ (tube $\geq 50 \text{ mm}$ diam. ext)



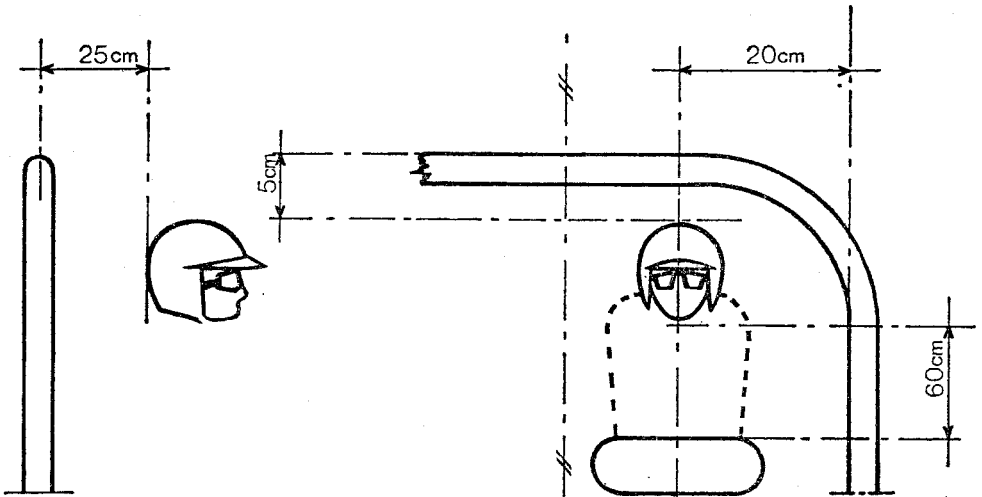
Dessin/drawing No. 13

Groupe 5

Le montage d'un renfort diagonal est obligatoire. Les 2 variantes autorisées sont MQ et NP. (NP est indiqué sur le dessin no 13 comme un exemple.)

Group 5

Fitting of a diagonal strut is compulsory. The 2 authorized alternatives are MQ and NP. (NP is shown on drawing 13 as an example.)



Dessin/drawing No. 14

realised with at least 3 bolts and nuts—diameter: at least 8 mm—with hexagonal head. The attachment plate integrated to the roll-bar struts shall have the same thickness as the wall of the tube on which it is fixed.

When the roll-bar rests on a box-member, the latter must be locally reinforced by a structure constituted of either welded bolts or welded tubing ends (see drawing 9).

Removable connections

In case removable connections are used in the roll-bar construction, they must comply with a type approved by the FIA.

Are approved up to now: a tapered connection and a twin lug connection with axis working under double shearing conditions and a muff-connection complying with drawings 10, 11 and 12.

The twin lug connection may however be used only for longitudinal brace-rods and not for the basic frame of the roll-bar(s).

Open Cars

Conception and realization identical to those prescribed for closed cars. Moreover, the main hoop behind the front seats must be symmetrical about the lengthwise centre-line of the car and comply with the following figures (see drawing 14):

Height: the top of the roll-bar must be at least 5 cms (2") over the helmet of the driver normally sat at his wheel.

Width: measured on the inside of the vertical struts of the roll-bar; there must be at least 20 cms (8") measured at 60 cms (28") above the driver's and passenger's seats (on the line perpendicular to the driver's vertebrae from the lengthwise centre-line to the outside).

Lengthwise location: the lengthwise distance between the top of the roll-bar and the helmet of the driver normally sitting at his steering wheel must not exceed 25 cm.

Will also be considered as open cars, cars which have no structural parts between the upper part of the windshield framework and that of the rear window, if any.

Specifications of the tubes utilized

| | Closed Cars | | Open Cars | |
|--|--------------------------------|-----------------------------|-----------------------------|-----------------------------|
| | <1200 kg | ≥ 1200 kg | <1200 kg | ≥ 1200 kg |
| | Ext. \varnothing × Thickness | | | |
| Cold drawn seamless carbon steel E~30 daN | \varnothing 38 × 2,6 | \varnothing 48,3 × 2,6 | \varnothing 44,5 × 2,6 | \varnothing 57 × 2,9 |
| Alloy steel type 25 CD4 SAE 4125 etc E~50 daN | \varnothing 33,7 × 2,3 | \varnothing 42,4 × 2,6 | \varnothing 38 × 2,6 | \varnothing 48,3 × 2,6 |

These dimension figures represent in mm the minimum figures admissible. They correspond to standardized tubes (International Standards ISO R 64).

In the case of cars weighing more than 1200 kg, the dimension figures prescribed for cars weighing less than 1200 kg may be used for tubular elements other than the main hoop located behind the front seats.

For rallies, the diagonal strut will not be compulsory.

Furthermore, for closed or open cars of Groups 1 to 4, to avoid an important deformation of the coachwork and consequently to protect more efficiently the driver in case of a lateral impact, it is permissible to complete the efficiency of the safety roll-bar, thanks to the mounting of a longitudinal support at the door level.

The pipe constituting this support should be integrated in the safety framework, the front and rear hoops of which it connects, and to which it is fitted, either by welding or with a removable coupling; it cannot be fixed on the coachwork itself.

Its diameter, its thickness and its material correspond to the specifications of the hereunder table. Its angle with the horizontal should not exceed 5°.

It should divide the height of the opening of the door in the relation 2:1, ie, it is fitted on the framework at a height equal to $\frac{1}{3}$ of the total height of the door above the door sill. This position does not create any problems when going into or leaving cars taking part in competitions, and the relation 2:1 is acceptable for almost all types of cars.

NB: The CSI, conscious of the problem of habitability raised by the use of roll cages, suggests that each **car manufacturer** recommends a type of roll-bar complying with FIA specifications.

This roll-bar will have to be entered on a recognition sheet amendment and submitted to the CSI for approval.

II Cars of Group 5 (open and closed)

Compulsory fitting, for speed events as well as for rallies. Manufacturing of roll-bars, in conformity with the following table and drawings 13 and 14. (International Standards ISO R 64 except for $\varnothing 35 \times 2$), and to previous specifications concerning the removable connections and the general considerations.

The mounting of front stays to protect the driver is accepted on condition that they are removable, for open cars.

It is recalled that the safety roll-bar must be symmetrical about the lengthwise centre line of the car.

| | Closed and Open Cars | |
|--|-----------------------------|-----------------------------|
| | < 700 kg | ≥ 700 kg |
| Cold drawn seamless carbon steel E~30 daN | $\varnothing 42,4$ × 2,6 | $\varnothing 48,3$ × 2,6 |
| Alloy Steel type 25 CD4 SAE 4125 etc E~50 daN | $\varnothing 35$ × 2 | $\varnothing 42,4$ × 2,6 |

However, recognized and traditional manufacturers may also present a roll-bar of free conception as regards the material used, the dimensions of the tubes and the implantation of the braces, providing that the construction is certified to withstand stress minima given hereafter.

The weight being that of the car in starting order (driver aboard, full tanks), the roll-bar must be able to withstand three simultaneously applied loads:

- 1.5 G lateral,
- 5.5 G fore and aft
- 7.5 G vertical, the induced loads being carried over into the primary structure.

A certificate signed by a qualified technician must be submitted to the Scrutineers of an event. It must be accompanied by a drawing or a photograph of the said roll-bar and state that this roll-bar can withstand the above mentioned loads.

p) General circuit breaker: all cars, open or closed, participating in speed races on closed circuits or in hill-climbs must be equipped with a general electric circuit breaker, clearly marked by a spark in a blue triangle, accessible from inside or outside the car. This circuit breaker will cut all electrical circuits (battery, alternator or dynamo, lights, hooters, ignition, electrical controls, etc). The fitting of such a circuit breaker, which is compulsory for speed events on circuits and hill-climbs, is authorised and even recommended for rallies.

q) Safety harness: The following prescriptions are mandatory:

All cars of Groups 1 to 4 taking part in speed events and rallies: 4 points harness minimum.

All cars of Group 5: 6 points harness.

It is pointed out that the 4 points belt will be set as follows:

— one point for each extremity of the abdominal belt.

— one point for each extremity of the shoulder straps eventually common behind the neck.

For rallies, only the 3 points safety belt is compulsory.

r) Oil catch tank: when cars are running in events which are entered on the FIA Sporting Calendar and when their lubrication system includes an open type sump breather, they must be equipped in such a way as to prevent oil from spilling on the track. In cars of a cylinder-capacity inferior or equal to 2,000 cc, the oil catching device shall have a minimum capacity of 2 litres and of 3 litres for cars with a cylinder-capacity exceeding 2,000 cc.

The container shall either be made out of translucent plastic or include a transparent panel.

s) Minimum lighting equipment:

— for all types of races, cars must be equipped with two "Stop" lights plus two red tail lights, each fitted with a bulb of at least 15 w. In addition all cars in Groups 1 to 5 should be fitted with two headlamps as powerful as those normally found on Touring or Grand Touring cars. These headlamps should be in working order throughout the race, even if the race takes place exclusively in the daytime. Two direction indicators must be fitted at the rear.

— for events run on open roads (rallies), cars must comply with the legal requirements of the country of the event; cars from other countries must comply in this respect with the Convention on international road traffic.

t) External rear-view mirrors: All Touring and Grand Touring cars competing in circuit events must be equipped with two external rear-view mirrors.

u) Supercharging: if the engine of a car includes a separate device used for supercharging it, the nominal cylinder-capacity will be multiplied by 1.4 and the car will pass into the class corresponding to the fictive volume thus obtained. The new cylinder-capacity of the car shall always be considered as the real one. This shall particularly be the case for assigning the car to its cylinder-capacity class, and the car will be treated in all respects as if its cylinder-capacity thus increased was its real capacity. Especially in regard to its classification per cylinder-capacity class, its inside dimensions, its minimum number of seats, etc.

A dynamic air inlet for ducting the air from the atmosphere into the engine intake will not be considered as a supercharging device.

v) Limits of authorized modifications: certain modifications to the original parts, certain additions and/or removal of accessories normally mounted by the manufacturer of the model concerned, are explicitly authorized by the present regulations. The limits of these modifications are set out for each of the 6 groups of categories A and B. All those not explicitly mentioned as permissible for the group in which the car claims classification and which affect, even secondarily, the mechanical efficiency of the engine, the steering, the transmission, the road-holding and/or the braking, will render the car ineligible for the Group requested.

If these modifications or additions have been the subject of a previous statement by the entrant, the car may be allowed to compete in the event in one of the other groups provided in the supplementary regulations and with the prescriptions of which it complies. Should there be however an obvious case of wilful misrepresentation, the entrant should not be authorized to start or should be stopped if he had already started, with request to the ACN concerned to pronounce his suspension for at least 12 months.

w) Fuel:

Rallies: a commercial fuel freely sold in the country(ies) traversed by the event. If in one of the countries the standards of the best commercial fuel are inferior to the fuel having the lowest octane number in one of the three following countries: France, Great Britain, Italy, a special waiver may be granted to the promoters with the approval of the CSI.

Upper-cylinder or two-stroke engine lubricants are authorized on condition there is no increase of the fuel octane number.

Speed events:

1) for all piston engines (reciprocating and rotary): by "commercial fuel" to be used in motor car speed events, the Federation Internationale de l'Automobile intends to designate a "motor" fuel produced by an Oil Company and currently distributed at road refuelling stations throughout one same country.

May therefore be used, in all speed races for which the use of commercial fuel is compulsory, all commercial fuels of the country in which the event takes place, with no other additive except that of a lubricant of current sale which cannot increase the octane number, or water.

May also be used, under the same conditions, any commercial fuel(s) which—in France, Germany, Great Britain and Italy—is (are) of the highest octane rating, according to the Research Method.

If the above-mentioned fuel could not be easily imported into the country where the event is taking place, it may be replaced by another one of similar quality and with the same octane number (RM)—with a tolerance of +1—specially made by an Oil Company.

Whenever—in France, Great Britain, Germany and Italy—a new commercial fuel is made available which has a higher octane-rating than those sold so far, the Oil Company producing this said fuel shall give notice to the FIA by a registered letter and this new commercial fuel (or its equivalent as specified hereabove) may be used for racing 30 days after the registered letter has been mailed.

The Oil Companies who supply fuel directly to the entrants of a race shall have to send to the promoters the characteristics and a sample of the fuel delivered in such quantity as is sufficient to carry out the necessary analyses, and also a declaration stating that the fuel complies with the present specifications.

2) for vehicles propelled by turbine engines: kerosene used by commercial aviation companies for turbo-prop or jet engines or the fuel used by

vehicles with conventional type engines and complying with the here-above definition of "commercial fuel".

x) Application of general prescriptions: the general prescriptions must be complied with if the particular specifications of groups of cars of categories A and B do not mention them or do not provide for any stricter prescription.

y) Anti-pollution legislation: it is specified that the freedom left for the modifications of anti-pollution equipment is valid only as far as these modifications are not forbidden by the national laws of the country traversed.

Art. 253 bis.—Prescriptions common to all cars of categories A, B and C: refuelling procedure valid as from 1/1/73: please refer to paragraph 16 of the General Prescriptions applicable to all FIA Championships, Trophies or Cups.

Art. 254.—Rule for changing from one group to another and authorized amalgamation of groups: cars originally belonging to a certain group but which have been subject to duly declared modifications and/or additions that exceed the limits specified for the group concerned, may pass into a higher group, provided for in the supplementary regulations, with the prescription of which it complies and under the following conditions:

| | |
|------------------|----------------------|
| Group 1 | passes into group 2. |
| Group 3 | passes into group 4. |
| Group 4 (or 3+4) | passes into group 5. |

TITLE III

SERIES PRODUCTION TOURING CARS (Group 1)

Art. 255.—Definition: touring cars built on large series production terms. These cars shall compete in an event without having undergone any preparation likely to improve their performances or their conditions of use. The only working authorized is normal maintenance or the replacement parts damaged through wear or accident and the modifications and additions explicitly authorized hereafter under article 257. Except for what is explicitly authorized any part damaged through wear or accident may only be replaced by an original part which must be exactly the same as the one for which it is substituted.

Art. 256.—Minimum production and number of seats: series-production touring cars shall have been manufactured in a quantity of at least 5,000 identical units and offer at least 4 seats, except if their engine cylinder-capacity is inferior or equal to 700 cc. In which case the manufacturer may deliver them as two-seaters.

Art. 257.—Mountings and modifications authorized:

a) Lighting devices: all lighting and signalling devices must comply with the legal requirements of the country of the event; cars from abroad must comply in this respect with the Convention on International road traffic.

Lighting devices which are part of the standard equipment must remain those foreseen by the manufacturer and must comply as far as is concerned their functioning with what the manufacturer has foreseen for the considered model. Thus, if changing from a road beam to a passing beam is produced by merely deflecting the beam inside one same reflector, this system may not be altered.

Freedom is granted with regard to the frontal glass, the reflector and the bulbs.