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Annexe "J"

au Code Sportif International, 1993 (classification, définitions et spécifications des voitures)

En cas de divergence d'interprétation entre les termes des diverses traductions des règlements officiels de la FISA, le texte français fera seul foi.

LES TEXTES DES DIFFERENTES REGLEMENTATIONS ETABLIES PAR LA FISA (Code Sportif International et ses Annexes et Règlements des Championnats Internationaux de la FIA) **FIGURANT DANS CET ANNUAIRE SONT CEUX ETABLIS AU 15 OCTOBRE 1992.**

TOUTE MODIFICATION PARAITRA A PARTIR DE CETTE DATE DANS LE BULLETIN OFFICIEL MENSUEL DE LA FISA.

Appendix "J"

to the International Sporting Code, 1993 (classification, definitions and specifications of cars)

In the case of differences of interpretation as regards the terms used in the various translations of official FISA regulations, only the French text will be considered authentic.

TEXTS OF THE VARIOUS REGULATIONS DRAFTED BY THE FISA (International Sporting Code and its Appendices and regulations of the FIA International Championships) **APPEARING IN THIS YEAR BOOK ARE THOSE DRAWN UP ON 15 OCTOBER 1992.**

ANY AMENDMENTS WILL BE PUBLISHED AFTER THIS DATE IN THE OFFICIAL FISA MONTHLY BULLETIN.

Appendix "J" to the International Sporting Code

CONTENTS

Art. 251 - **Classification and definitions**

1) CLASSIFICATION

1.1) CATEGORIES AND GROUPS

The cars used in competition shall be divided up into the following categories and groups:

Category I : — Group N: Production Cars
— Group A: Touring Cars
— Group B: Grand Touring Cars
— Group T1: Series Cross-Country Cars
— Group T2: Improved Cross-Country Cars

Category II: — Group T3: Sport Cross-Country Cars
— Group GT : Grand Touring Sports Cars
— Group C: Sports Cars
— Group D: International Formula Racing Cars
— Group E: Free Formula Racing Cars

Category III: — Group F: Racing Trucks
— Group T4: Cross-Country Trucks

1.2) CUBIC CAPACITY CLASSES

The cars will be divided up into the following classes according to their cubic capacity.

1.	Cyl.-capacity lower than or equal to		500 cc
2.	Cyl.-capacity exceed.	500 cc and inf/equal to	600 cc
3.	" " "	600 cc " " "	700 cc
4.	" " "	700 cc " " "	850 cc
5.	" " "	850 cc " " "	1.000 cc
6.	" " "	1,000 cc " " "	1,150 cc
7.	" " "	1,150 cc " " "	1,300 cc
8.	" " "	1,300 cc " " "	1,600 cc
9.	" " "	1,600 cc " " "	2,000 cc
10.	" " "	2,000 cc " " "	2,500 cc
11.	" " "	2,500 cc " " "	3,000 cc
12.	" " "	3,000 cc " " "	3,500 cc
13.	" " "	3,500 cc " " "	4,000 cc
14.	" " "	4,000 cc " " "	4,500 cc
15.	" " "	4,500 cc " " "	5,000 cc
16.	" " "	5,000 cc " " "	5,500 cc
17.	" " "	5,500 cc " " "	6,000 cc
18.	" " over	6,000 cc	

Unless otherwise specified in special provisions imposed by the FISA for a certain category of events, the organisers are not bound to include all the above-mentioned classes in the Supplementary Regulations and, furthermore, they are free to group two or more consecutive classes, according to the particular circumstances of their events.

No class can be subdivided.

2) DEFINITIONS

2.1) GENERAL CONDITIONS

2.1.1) **Series Production cars (Category I) :**

Cars of which the production of a certain number of identical examples (see definition of this word hereinafter) within a certain period of time has been verified at the request of the manufacturer, and which are destined for normal sale to the public (see this expression).

Cars must be sold in accordance with the homologation form.

2.1.2) **Competition cars (Category II) :**

Cars built as single examples and destined solely for competition.

2.1.3) **Trucks (Category III)**

2.1.4) **Identical cars :**

Cars belonging to the same production series and which have the same bodywork (outside and inside), same mechanical components and same chassis (even though this chassis may be an integral part of the bodywork in case of a monocoque construction).

2.1.5) **Model of car :**
Car belonging to a production-series distinguishable by a specific conception and external general lines of the bodywork and by an identical mechanical construction of the engine and the transmission to the wheels.

2.1.6) **Normal sale :**
Means the distribution of cars to individual purchasers through the normal commercial channels of the manufacturer.

2.1.7) **Homologation :**
Is the official certification made by the FISA that a minimum number of cars of a specific model has been made on series-production terms to justify classification in Production Cars (Group N), Touring Cars (Group A), Grand Touring Cars (Group B), Series Cross-Country Cars (Group T1) of these regulations. Application for homologation shall be submitted to the FISA by the ASN of the country in which the vehicle is manufactured and shall entail the drawing up of a homologation form (see below). It must be established in accordance with the special regulations called "Regulations for homologation", laid down by the FISA. Homologation of a series-produced car will become null and void 5 years after the date on which the series-production of the said model has been stopped (series-production under 10 % of the minimum production of the group considered).
The homologation of a model can only be valid in one group, Production Cars (Group N)/Touring Cars (Group A)/Series Cross-Country Cars (Group T1) or Grand Touring Cars (Group B). If a model already homologated in Grand Touring Cars (Group B) passes into Production Cars (Group N)/Touring Cars (Group A)/Series Cross-Country Cars (Group T1), the first homologation is cancelled.

2.1.8) **Homologation forms :**
All cars recognised by the FISA will be the subject of a descriptive form called homologation form on which shall be entered all data enabling identification of the said model.
This homologation form defines the series as indicated by the manufacturer. According to the group in which the competitors race, the modification limits allowed in international competition for the series are stated in Appendix J. (For the Cross-Country Cars, the regulations can be obtained from the ASNs).
The presentation of the forms at scrutineering and/or at the start may be required by the organisers who will be entitled to refuse the participation of the entrant in the event in case of non-presentation.
Should the date for the coming into force of a homologation form fall during an event, this form will be valid for that event throughout the duration of the said event.
With regard to Production Cars (Group N), apart from the specific form for this group, the Touring Cars (Group A) form must also be submitted.
In case of any doubt remaining after the checking of a model of car against its homologation form, the scrutineers should refer either to the maintenance booklet published for the use of the make's distributors or to the general catalogue in which are listed all spare parts.
In case of lack of sufficient accurate documentation, scrutineers may carry out direct scrutineering by comparison with an identical part available from a concessionnaire. It will be up to the competitor to obtain the homologation concerning his car from his ASN.

Description : A form breaks down in the following way :
1) A basic form giving a description of the basic model.
2) At a later stage, a certain number of additional sheets describing "homologation extensions", which can be "variants", or "errata" or "evolutions".

a) **Variants (VF, VO)**
These are either supply variants (VF) (two suppliers providing the same part for the manufacturer and the client does not have the possibility of choice), or options (VO) (supplied on request and available at the concessionnaires).

b) **Erratum (ER)**
Replaces and cancels an incorrect piece of information previously supplied by the constructor on a form.

c) **Evolution (ET-ES)**
Characterises modifications made on a permanent basis to the basic model (complete cessation of the production of the car in its original form in the case of the evolution of the type (ET), or sporting evolution (ES) intended to render a model more competitive.

Use :
1) **Variants (VF, VO)**
The competitor may use any variant or any part of a variant as he wishes, only on condition that all the technical data of the vehicle, so designed, conforms to that described on the homologation form applicable to the car, or expressly allowed by Appendix J.
For example, the fitting of a brake calliper as defined on a variant form is only possible if the dimensions of the brake linings, etc. obtained in this way, are indicated on a form applicable to the car in question. (For Production Cars (Group N), see also Art. 254.2).
2) **Evolution of the type (ET)**
(For Production Cars (Group N), see also Art. 254.2)
The car must comply with a given stage of evolution (independent of the date when it left the factory), and thus an evolution must be wholly applied or not at all.
Besides, from the moment a competitor has chosen a particular evolution, all the previous evolutions should be applied, except where they are incompatible : for example, if two brake evolutions happen one after another, only that corresponding to the date of the stage of evolution of the car will be used.
3) **Sporting evolution (ES)**
Since the ES form refers to a previous extension, or to the basic form, the car must correspond to the stage of evolution corresponding to this reference ; moreover, the
Sporting Evolution must be applied in full.

2.1.9) **Mechanical components**
All those necessary for the propulsion, suspension, steering and braking as well as all accessories whether moving or not which are necessary for their normal working.

2.2) **DIMENSIONS**
Perimeter of the car seen from above :
The car as presented on the starting grid for the event in question.

2.3) **ENGINE**
2.3.1.) **Cylinder capacity :**
Volume V generated in cylinder (or cylinders) by the upward or downward movement of the piston(s).
$V = 0.7854 \times b^2 \times s \times n$
where b = bore
s = stroke
n = number of cylinders.

2.3.2) **Supercharging :**
Increasing the weight of the charge of the fuel-air mixture in the combustion chamber (over the weight induced by normal atmospheric pressure, ram effect and dynamic effects in the intake and/or exhaust systems) by any means whatsoever.
The injection of fuel under pressure is not considered to be supercharging (See Article 3.1 of the General Prescriptions for Groups N, A, B).

2.3.3) **Cylinder block :**
The crankcase and the cylinders.

2.3.4) **Intake manifold :**
— Part collecting the air-fuel mixture from the carburettor(s) and extending to the entrance ports of the cylinder head, in the case of the carburettor induction system.
— Part situated between the valve of the device regulating the air intake and extending to the ports on the cylinder head, in the case of an injection intake system.
— Part collecting the air at the air filter outlet and extending to the cylinder head entrance ports in the case of a diesel engine.

2.3.5) **Exhaust manifold :**
Part collecting together the gases from the cylinder head and extending to the first gasket separating it from the rest of the exhaust system.

2.3.6) For cars with a turbocharger, the exhaust begins after the turbocharger.

2.3.7) **Sump :**
The elements bolted below and to the cylinder block which contain and control the lubrifying oil of the engine. These elements must not have any mounting part of the crankshaft.

2.3.8) **Engine compartment :**
Volume defined by the first structural envelope surrounding the engine.

2.4) **RUNNING GEAR**
The running gear includes all parts totally or partially unsuspended.

2.4.1) **Wheel**
Flange and rim ; by complete wheel is meant flange, rim and tyre.

2.4.2) **Friction surface of the brakes :**
Surface swept by the linings on the drum, or the pads on both sides of the disc when the wheel achieves a complete revolution.

2.4.3) **Mac Pherson suspension :**
Any suspension system in which a telescopic strut, not necessarily providing the springing and/or damping action, but incorporating the stub axle, is anchored on the body or chassis through single attachment point at its top end, and pivots at its bottom end either on a transversal wishbone locating it transversally and longitudinally, or on a single transversal link located longitudinally by an anti-roll bar, or by a tie rod.

2.5) **CHASSIS - BODYWORK**

2.5.1.) **Chassis :**
The overall structure of the car around which are assembled the mechanical components and the bodywork including any structural part of the said structure.

2.5.2) **Bodywork :**
— **externally :** all the entirely suspended parts of the car licked by the airstream.
— **internally :** cockpit and boot.
Bodywork is differentiated as follows :
1) completely closed bodywork
2) completely open bodywork
3) convertible bodywork with the hood in either supple (drop-head) or rigid (hard-top) material.

2.5.3.) **Seat :**
The two surfaces making up the seat cushion and seatback or backrest.

Seatback or backrest :
Surface measured from the bottom of a normally seated person's spine.

Seat cushion :
Surface measured from the bottom of the same person's spine towards the front.

2.5.4) **Luggage compartment :**
Any volume distinct from the cockpit and the engine compartment inside the vehicle.
These volumes are limited in length by the fixed structures provided for by the manufacturer and/or by the rear of the seats and/or, if this is possible, reclined at a maximum angle of 15° to the rear. These volumes are limited in height by the fixed structures and/or by the detachable partitions provided for by the manufacturer, or in the absence of these, by the horizontal plane passing through the lowest point of the windscreen.

2.5.5) **Cockpit :**
Structural inner volume which accomodates the driver and the passengers.

2.5.6) **Bonnet :**
Outer part of the bodywork which opens to give access to the engine.

2.5.7) **Mudguard :**
A mudguard will be considered to be the area defined according to drawing 251-1.

Front mudguard : the area defined by the inner face of the complete wheel of the standard car (C1/C1) and the lower edge of the side window(s) (A/A) and the front edge of the front door (B1/B1).

Rear mudguard : the area defined by the inner face of the complete wheel of the standard car (C2/C2) and the lower edge of the side window(s) (A/A) and the rear edge of the rear door (B2/B2).

In the case of two-door cars (B1/B1) and (B2/B2) will be defined by the front and rear of the same door.

2.6) **ELECTRICAL SYSTEM**

Headlight :any signal the focus of which creates an in-depth luminous beam directed towards the front.

2.7) **FUEL**

Fuel tank :any container holding fuel likely to flow by any means whatsoever towards the main tank or the engine.

Art. 252 - General prescriptions for Production Cars (Group N), Touring Cars (Group A), Grand Touring Cars (Group B)

1) **GENERAL REMARKS**

1.1) All modifications are forbidden unless expressly authorised by the regulations specific to the group in which the car is entered or by the general prescriptions below or imposed under the chapter "Safety Equipment".

The components of the car must retain their original function.

1.2) **APPLICATION OF THE GENERAL PRESCRIPTIONS**

The general prescriptions must be observed in the event that the specifications of Production Cars (Group N), Touring Cars (Group A), Grand Touring Cars (Group B) do not lay down a more strict prescription.

1.3) **MAGNESIUM**

The use of magnesium alloy sheet metal with a thickness less than 3 mm is prohibited.

1.4) It is the duty of each competitor to satisfy the Scrutineers and the Stewards of the Meeting that his automobile complies with these regulations in their entirety at all times during the event.

1.5) Damaged threads can be repaired by screwing on a new thread with the same interior diameter ("helicoil" type).

2) **DIMENSIONS AND WEIGHT**

2.1) **GROUND CLEARANCE**

No part of the car must touch the ground when all the tyres on one side are deflated. This test shall be carried out on a flat surface under race conditions (driver(s) on board).

2.2) **BALLAST**

It is permitted to complete the weight of the car by one or several ballasts provided that they are strong and unitary blocks, fixed by means of tools with the possibility to fix seals, placed on the floor of the cockpit, visible and sealed by the scrutineers.

Application : Touring Cars (Group A), Grand Touring Cars (Group B) ; no kind of ballast is authorised in Production Cars (Group N). In rallies, however, the carrying of tools and spare parts for the car will be allowed under the conditions laid down in Article 253.

3) **ENGINE**

3.1) **SUPERCHARGING**

In case of supercharging, the nominal cylinder-capacity will be multiplied by 1.7 and the car will pass into the class corresponding to the fictive volume thus obtained. The car will be treated in all respects as if its cylinder-capacity thus increased were its real capacity.

This shall particularly be the case for assigning the car to its cylinder-capacity class, its interior dimensions, its minimum number of places, its minimum weight, etc.

3.2) **EQUIVALENCE FORMULA, BETWEEN RECIPROCATING PISTON AND ROTARY ENGINES**

(of the type covered by the NSU Wankel patents)

The cubic capacity equivalent is 1.5 times the volume determined by the difference between the maximum and minimum capacities of the combustion chamber.

3.3) **EQUIVALENCE FORMULA BETWEEN RECIPROCATING PISTON AND TURBINE ENGINES**

This formula is the following:

$$C = \frac{S\,(3.10 \times R) - 7.63}{0.09625}$$

S = High pressure nozzle area — expressed in square centimetres by which is meant the area of the air-flow at the exit from the stator blades (or at the

exit from the first stage if the stator has several stages). Measurement is done by taking the minimum area between the fixed blades of the high pressure turbine first stage. In cases where the first stage turbine stator blades are adjustable, they must be opened to their greatest extent to present the greatest area for the determination of area S.

The area of the high pressure nozzle is thus the product of the height (expressed in cm) by the width (expressed in cm) and by the number of blades.

R = The pressure ratio is the ratio of the compressor of the turbine engine. It is obtained by multiplying together the 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 subsonic stages will be designated to have a pressure ratio of :

$4.25 \times 1.15 \times 1.15 \times 1.15 \times 1.15 \times 1.15 \times 1.15$ or $4{,}25 \times (1{,}15)^6$

C = Equivalent cubic capacity for reciprocating piston engines in cm^3.

3.4) All engines into which fuel is injected or in which fuel is burned after an exhaust port are prohibited for the time being.

3.5) **EQUIVALENCES BETWEEN RECIPROCATING PISTON ENGINES AND NEW TYPES OF ENGINES**

The FISA reserves the right to make modifications on the basis of comparisons established between classic engines and new types of engines, by giving a two year notice from the 1 st January following the decision taken.

3.6) **EXHAUST SYSTEM AND SILENCER**

Even when the specific provisions for a group allow the replacement of the original silencer, the cars competing in an open-road event shall always be equipped with an exhaust silencer complying with the traffic regulations of the country(ies) through which the event is run.

The orifices of the exhaust pipes shall be placed at a maximum of 45 cm and a minimum of 10 cm from the ground. The exit of the exhaust pipe must be situated within the perimeter of the car and less than 10 cm from this perimeter, and aft of the vertical plane passing through the centre of the wheelbase. Moreover, adequate protection must be provided in order to prevent heated pipes from causing burns.

The exhaust system must not be provisional. Exhaust gas may only exit at the end of the system. Parts of the chassis must not be used to evacuate exhaust gasses.

Catalytic exhausts : Should two possible versions of one car model be homologated (catalytic and other exhaust), the cars must comply with one or other version, any combination of the two versions being prohibited.

3.7) **STARTING ON BOARD THE VEHICLE**

Starter with electric or other source of energy on board operable by the driver when seated in the seat.

3.8) **CYLINDERS**

For non-sleeved engines, it will be possible to reparate the cylinders by adding material, but not parts.

4) **TRANSMISSION**

All cars must be fitted with a gearbox including a reverse gear which must be in working order when the car starts the event, and be able to be operated by the driver when he is normally seated.

5) **SUSPENSION**

Suspension parts made partially or entirely from composite materials are prohibited.

6) **WHEELS**

Wheels made partially or entirely from composite materials are prohibited.

Measuring wheel width :

The width is to be measured with the wheel mounted on the car, on the ground, the vehicle in race condition, driver aboard, at any point along the circumference of the tyre, except in the area in contact with the ground.

When multiple tyres are fitted as part of a complete wheel, the latter must comply with the maximum dimensions for the Group in which these tyres are used (See Article 255.5.4 and Article 256.5).

7) **COACHWORK**

7.1) Convertible vehicles must comply in all respects with the specifications applying to open cars.

7.2) **MINIMUM INSIDE DIMENSIONS**

If a modification authorised by Appendix J affects a dimension stated on the homologation form this dimension may not be retained as an eligibility criterion for the car.

7.3) **COCKPIT**

Only the following accessories may be installed in the cockpit : spare wheels, tools, spare parts, safety equipment, communication equipment, ballast (if permitted), windscreen washer water container (Touring Cars (Group A) and Grand Touring Cars (Group B) only). The passenger area and seat of an open car must in no way be covered.

Containers for helmets and tools situated in the cockpit must be made of non-inflammable material and they must not, in case of fire, give off toxic vapours.

7.4) All body panels of the vehicle must be at all times of the same material as those of the original homologated car and must be of the same material thickness as that of the original homologated car (tolerance ± 10 %).

7.5) **HEADLAMP MOUNTING AND PROTECTION**

The boring of holes in the front bodywork for light brackets is authorised, limited solely to mountings.

In rallies, non-reflecting protectors made from flexible material may be mounted on the headlamps ; they must not protrude forwards beyond the headlamp glass by more than 10 cm.

7.6) Any object of a dangerous nature (battery, inflammable products, etc.) must be carried outside the cockpit.

7.7) **MUDFLAPS (in Rallies only)**

If the supplementary regulations of the event authorise them or impose them, transversal mudflaps will be accepted under the following conditions :

— They must be made from flexible material.

— They must cover at least the width of each wheel, but at least one third of the width of the car (see drawing 252-6) must be free behind the front wheels and the rear wheels.

— There must be a gap of at least 20 cm between the right and left mudflaps in front of the rear wheels.

— The bottom of these mudflaps must be no more than 10 cm from the ground when the car is stopped, with nobody on board.

— In vertical projection, these mudflaps must not protrude beyond the bodywork.

Mudflaps to prevent spalshing towards the front, made from flexible material, may ba installed at the front of the vehicle, of the supplementary regulations of the event authorise them or impose them. They must not protrude beyond the overall width of the vehicle, or beyond the original overall length by more than 10 cm, and at least one third of the width of the car must be free in front of the front wheels.

8) **ELECTRICAL SYSTEM**

8.1) **LIGHTING**

A fog light may be changed for another light, and vice versa, provided that the original mounting remains the same.

8.2) **The mounting of the alternator is free.**

9) FUEL - COMBUSTIVE

9.1) The fuel must be commercial petrol which comes from a service station pump, without any additive other than that of a lubricant on current sale. The fuel must comply with the following specifications :

— 102 RON and 90 MON maximum, 95 RON and 85 MON minimum for unleaded fuel.

100 RON and 92 MON maximum, 97 RON and 86 MON maximum for leaded fuel.

The measurements will be made according to the standards ASTM D 2699-86 and D 2700-86, the fuel being accepted or rejected according to the standard ASTM D 3244 with a confidence limit of 95 %.

— Specific gravity between 720 and 785 kg/m³ at 15°C (measured according to ASTM **D 4052**).

— A maximum of **2.8** % oxygen (or 3.7 % if the lead content is less than 0.013 g/l) and 0.5 % nitrogen by weight, the remainder of the fuel consisting exclusively of hydrocarbons and not containing any power-boosting additives.

The measuring of the nitrogen content will be carried out according to the standard ASTM D 3228 and that of the oxygen content by elemental analysis with a tolerance of 0.2 %.

— Maximum content of peroxides and nitrooxide compounds : 100 ppm (ASTM D 3703).

— Maximum lead content : 0.40 g/l or the standard of the country of the event if it is lower **(ASTM D 3341 or D 3237)**.

— Maximum benzene content : 5 % in volume **(ASTM D 3606)**.

— Maximum Reid vapour pressure : 900 hPa (ASTM D 323).

— Distillation at 70°C : 10 % — 47 % (ASTM D 86).

— Distillation at 100°C : 30 % — 70 % (ASTM D 86).

— Distillation at 180° C : 85 % minimum (ASTM D 86).

— Maximum final boiling point : 225°C (ASTM D 86).

— Maximum residue : 2 % volume (ASTM D 86).

If the fuel available locally for the event is not of a sufficient quality for use by competitors, the ASN of the organising country must ask the FISA for a waiver in order to enable the use of fuel not corresponding to the characteristics defined above.

9.2) Only air may be mixed with the fuel as an oxydant.

9.3) **REFUELLING PROCEDURE**

Standardised coupling

— In case of a centralised system provided by the circuit or a system provided by the competitors, the refuelling hose shall be provided with a leak-proof coupling to fit the standardised filler mounted on the car. The dimensions of this fitting are given in the drawing 252-5.

— All cars must be provided with a fuel filler complying with this diagram. This leak-proof fitting must comply with the dead man principle and must not therefore incorporate any retaining device when in an open position (spring-loaded, bayonet, etc.).

— The air vent(s) must be equipped with non return and closing valves having the same closing system as that of the standard filler and having the same diameter. During refuelling the outlets of the air-vents must be connected with the appropriate coupling either to the main supply- tank or to a transparent portable container with a minimum capacity of 20 litres provided with a closing system rendering it completely leak-proof. The venting catch tanks must be empty at the beginning of the refuelling operation. In the cases where the circuits are unable to provide the entrants with a centralised system, they will have to refuel according to the above procedure. The level of the reserve tank may in no case be more than 3 metres above the level of the track where the refuelling is effected. This applies to the whole duration of the event.

The overflow bottles must conform to one of the drawings 252-1 or 252-2.

The reserve tank and all metal parts of the refuelling system from the coupling over the flow meter up to the tank and its rack must be connected electrically to the earth.

The application of the following is recommended :

1. Each pit should be equipped with two aircraft type grounding connections.

2. The refuelling system (including tower, tank, hose, nozzle, valves and vent bottle) should be connected to one of the above grounding connections for the entire duration of the race.

3. The car should be connected, at least momentarily, to the other grounding connection as soon as it stops in the pit.

4. No fuel hose connection (fill or vent) unless and until conditions 2 and 3 have been fulfilled.

5. All fuel-handling pit crew members should wear non-static protective clothing.

The refuelling tank may be one of the following :

— models made of rubber, of the type FT3, built by an approved manufacturer, or

— tanks conforming to one of the diagrams 252-3 or 252-4.

Application : For Touring Cars (Group A), Grand Touring Cars (Group B), refer to the general prescriptions of the FIA Championships.

9.4) **TANK VENTILATION**

It is authorized to equip a tank with ventilation exiting through the car roof.

9.5) **INSTALLATION OF THE FT3 TANK**

The FT3 tank may be placed either in the original location of the tank or in the luggage compartment.

There must be an orifice to evacuate any fuel which may have spread into the tank compartment.

The position and the dimension of the filler hole as well as that of the cap may be changed as long as the new installation does not protrude beyond the bodywork and guarantees that no fuel shall leak into one of the interior compartments of the car.

If the filler hole is situated inside the car, it must be separated from the cockpit by a liquid-tight protection.

10) **BRAKES**

Carbon brake discs are forbidden.

Art. 253 - **Safety equipment (Gr. N, A, B)**

1) A car, the construction of which is deemed to be dangerous, may be excluded by the Stewards of the meeting.

2) If a device is optional, it must be fitted in a way that complies with regulations.

3) LINES

3.1 - PROTECTION

Fuel, oil and brake lines must be protected externally against any risk of deterioration (stones, corrosion, mechanical breakages, etc.) and internally against all risks of fire. If the series production fitting is retained, no additional protection is necessary.

Application : Obligatory for Touring Cars (Group A), Grand Touring Cars (Group B), optional for Production Cars (Group N).

3.2 - SPECIFICATIONS AND INSTALLATION

Series production fittings may be retained. If they are modified, they must comply with the specifications concerning them below :

— Fuel and lubricating oil lines must have a minimum burst pressure of 70 bar (1000 psi) and a minimum operating temperature of 135°C (250°F).

When flexible, these lines must have threaded connectors and an outer braid resistant to abrasion and flame (will not sustain combustion).

— Lines containing hydraulic fluid, with the exception of lines under gravity head only, must have a minimum burst pressure of 70 bar (1000 psi) or higher according to operating pressure, and a minimum operating temperature of 232°C (450°F).

When flexible, these lines must have threaded connectors and an outer braid resistant to abrasion and flame (will not sustain combustion).

— Lines containing cooling water or lubricating oil must be outside the cockpit. Lines containing fuel or hydraulic fluid may pass through the cockpit, but without any connectors inside except on the front and rear bulkheads according to drawings 283-1 and 283-2, and on the braking circuit.

4) BRAKING SAFETY SYSTEM

Double circuit operated by the same pedal : the pedal shall 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 shall still control at least two wheels.

Application : Compulsory fitting on all cars. If this system is fitted in series production, no modifications are necessary.

5) ADDITIONAL FASTENERS

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

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

Application : Obligatory for Touring Cars (Group A) and Grand Touring Cars (Group B). Optional for Production Cars (Group N).

6) SAFETY BELTS

— Wearing of a diagonal strap and one abdominal strap : fixation on the shell : 3.

Application : Compulsory for all Production Cars (Group N) together with Touring Cars (Group A), Grand Touring Cars (Group B) participating in rallies.

— Wearing of two shoulder straps and one abdominal strap : fixation points on the shell : two for the abdominal strap — two or possibly one symetrical in relation to the seat for the shoulder straps.

Application : Compulsory for all Touring Cars (Group A), Grand Touring Cars (Group B) (except in rallies).

— A hole may be made in a series production seat to allow the passage of a safety belt.

7) EXTINGUISHERS - EXTINGUISHING SYSTEMS

7.1 - IN RALLIES

— Group N :

The systems mounted in accordance with Art. 7.3 are recommended.

— Groups A and B :

These systems are compulsory.

Furthermore, hand-operated extinguishers are compulsory for all Groups (see Art. 7.4).

7.2 - IN CIRCUIT EVENTS, SLALOMS, HILLCLIMBS

Hand-operated extinguishers are compulsory.

An automatic extinguisher (see Art. 7.3) may replace the manual extinguisher.

7.3 - SYSTEMS MOUNTED

7.3.1) **Fixation :**

Each extinguisher bottle must be installed in such a way that it is capable of withstanding accelerations of up to 25 g no matter how these are applied.

7.3.2) **Operation — Triggering :**

The two systems must be triggered simultaneously.

Any triggering system is allowed. However a source of energy not coming from the main source must be provided in the case of a triggering system which is not exclusively mechanical. The driver seated normally at his steering wheel with his safety harness attached must be able to trigger the system manually, as must any person outside the car. The means of triggering from the exterior must positioned close to the circuit breaker or combined with it, and must be marked by the letter « E » in red inside a white circle of at least 10 cm diameter with a red edge.

Automatic triggering by heat sensors is recommended.

The system must work in any position, even when the car is upside down.

7.3.3) **Checking :**

The type of extinguishant, its quantity, and the total weight of the bottle must be specified on each bottle.

7.3.4) **Specifications**

Minimum capacities of extinguisher systems :

Closed cars : cockpit : 2.5 kg
engine : 5 kg

Open cars : cockpit : 5 kg
engine : 2.5 kg.

Alternatively a single bottle of 7.5 kg may be used if the extinguishant is distributed according to the above specifications.

In circuit events a single 4 kg bottle will be accepted, the extinguishing agent being shared between the cockpit and the engine.

The extinguishant agent must be Halon 1211 or 1301 (BCF-BTM), **or any other replacement product approved by the FISA.**

Extinguishing equipment must withstand fire and be protected against impacts.

The extinguisher system nozzles must be installed in such a way that they are not directly pointed at the driver (danger of burns caused by cold).

7.3.5) Discharge time

Cockpit : 30 s for Halon 1211
60 s for Halon 1301.

Engine compartment : 10 s.

7.4 - MANUAL EXTINGUISHERS

7.4.1) **Installation :**

Each extinguisher bottle must be installed in such a way that it is capable of withstanding accelerations of up to 25 g no matter how these are applied. Only rapid release metal mountings with metal straps will be accepted.

7.4.2) **Operation — Triggering :**

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

7.4.3) **Checking :**
The type of extinguishant, its quantity, and the total weight of the bottle must be specified on each bottle.

7.4.4) The cars must be equipped with one or two bottles containing a minimum of 4 kg **of powder or** of Halon 1211 or 1301 (BCF-BTM), **or of any other replacement product approved by the FISA.**

8) ROLLBAR
8.1 - DEFINITIONS
8.1.1) **Rollcage :**
A structural framework made up of tubes, connections and fixation points. It is designed to prevent serious deformation in the case of a collision or a car turning over.
8.1.2) **Rollbar :**
Structural framework made up of a main rollbar, connections and fixation points.
8.1.3) **Safety cage :**
Structural framework made up of a main rollbar and a front rollbar, or of two lateral rollbars, connections and fixation points.
8.1.4) **Main rollbar :**
A structure made out of a vertical frame situated in a transversal plane in relation to the car's axis, near the back of the front seats.

8.1.5) **Front rollbar :**
Structure made up of a frame situated in a transversal plane in relation to the centre-line of the car : the shape of this frame must follow the windscreen pillars and the front part of the roof.
8.1.6) Lateral rollbar :
Structure made up of a vertical framework situated in a longitudinal plane in relation to the car's axis placed on the right or the left. The rear pillar must be placed against or behind the back of the driver's seat or that of his co-driver. In case where the main rollbar is used as the rear pillar, the connection must be near the roof. The front bar must be near the windscreen and dashboard. The driver and his co-driver must be able to get in and out of the vehicle without any inconvenient difficulty.
8.1.7) **Longitudinal strut :**
Longitudinal tube which belong neither to the main rollbar nor to the front rollbar.
8.1.8) **Diagonal strut :**
Tube crossing the car from one of the corners of the main rollbar to any fixation point of the other side of the rollbar or of the near longitudinal strut.
8.1.9) **Framework reinforcement :**
Tube fixed to the rollcage improving its efficiency.
8.1.10) **Reinforcement plate :**
Metal plate, fixed to the chassis structure of the car on which the rollbar rests.
8.1.11) **Fixing plate :**
Plate which is attached to the tubes and allow their fixation to the chassis.
8.1.12) **Removable connection :**
Optional connection of lateral or diagonal struts to the main rollbar or the front rollbar. It must be possible to dismantle these pieces of equipment.

8.2 - SPECIFICATIONS
8.2.1) **General comments :**
8.2.1.1 — Safety cages should be designed and constructed in such a fashion that after they have been properly built in, they prevent the bodywork from deforming and thus reduce the risks of injury to people on board the vehicle.
The essential characteristics of safety cages come from a finely detailed construction, suitable adaptation and fixation to the car plus snug fitting against the bodywork. The rollbars must never be used as pipes for liquids.
The safety cage must be constructed in such a way that it does not obstruct access to the front seats and does not encroach on the space provided for the driver and co-driver. However parts of the rollcage may encroach upon the front passenger space by passing through the dashboard and the lateral upholstery as well at the rear by passing through the upholstery or the rear seats. The rear seat may be folded down.

Any modification to the homologated rollbars (see Art. 8.6) is forbidden, even with regard to the fixations and welds.

8.2.1.2 — **Basic rollcage** (drawings 253-3 and 253-4) (For Rallies only).
Rollbar : Production Cars (Group N) and Touring Cars (Group A), Grand Touring Cars (Group B) up to 2,000 cm^3.
Rollcage : Touring Cars (Group A), Grand Touring Cars (Group B) more than 2,000 cm^3 (optional for Production Cars (Group N) and Touring Cars (Group A), Grand Touring Cars (Group B) up to 2,000 cm^3 (drawings 253-5 and 253-6)).

8.2.1.3 — **Different possibilities of installing the obligatory strut (with the exception of rallies) :**
This strut can be fixed to any basic rollcage (drawings 253-3 to 253-7).
The combination of several struts (drawings 253-8 to 253-11) is permitted.

8.2.1.4 — **Different possibilities of installing the optional reinforcements of the rollcage :**
Each type of reinforcement (drawings 253-12 to 253-21) may be used separately or combined with one or several others.
These reinforcements can be installed in each of the basic rollcages (drawings 253-3 to 253-7).

8.2.2) **Technical specifications :**
8.2.2.1 — **Main, front and lateral rollbars :**
The rollbars must be in a single piece. Their construction must be impeccable without unevenness or cracks. The fitting must be done in such á way that it marries the interior shape of the car, or straight if it cannot be directed upwards. If it is necessary for the lower parts of the rollbar to be rounded, these parts must be strengthened and follow the interior shape exactly.
Minimum bending $r = 3 \times$ tube diameter
In order to get an efficient installation of the rollcage, it is allowed to locally modify the original upholstery, directly on the legs of the rollcage, for example by cutting or embedding (deformation).
Only those parts of the interior lining which hinder the passage of the rollbar can be withdrawn.
However, this modification can in no case allow the removal of entire parts of the upholstery.

8.2.2.2 — **Fixation of the rollbars to the body :**
Minimum fixations for the safety rollcage :
1 for each pillar of the main or lateral rollbar.
1 for each pillar of the front rollbar.
1 for each pillar of the rear longitudinal strut.
1 for each pillar of the main rollbar, and each rear pillar of the lateralrollbar at the fixation point for the front seat belt, or in the approximate area of this position.
The fixation of the rollbar pillars must be done with at least three bolts.
The attachment points of the front and main rollbars on the body must be reinforced with a steel plate of at least 3 mm thick and with a surface area of 120 cm^2, welded to the body. The various possibilities are given in drawings 253-22 to 253-36.
Hexagonal bolts or similar, of a minimum diameter of 8 mm (minimum quality 8-8 as per the ISO specifications) shall be used.
The nuts shall be self-locking or fitted with washers.
These fixations represent a minimum. It is possible to increase the number of bolts, to weld the steel rollbar to the bodyshell.
The additional fixations may be bolted and/or welded to the body.

8.2.2.3 — **Longitudinal struts :**
They must be fixed to the left and to the right above and outside the main rollbar, then going directly backwards and as near as possible to the interior side contour. A rounded construction (with a large bend) is allowed if it is placed as near the roof as possible.
The diameter, the thickness and the material of the longitudinal struts should correspond to the norms fixed for the rollcages.
The forces must be efficiently divided and absorbed. The attachment points must be strengthened by plates if their location does not allow them to absorb forces.

8.2.2.4 — **Diagonal struts :**

With the exception of rallies, the installation of at least one diagonal strut is obligatory. Their construction must be carried out in accordance with drawings 253-8 to 253-11 without bends. The attachment points of the diagonal struts must be so located that they cannot cause injuries.

They must preferably have the same diameter as the tubes of the main structure.

8.2.2.5 — **Optional reinforcements of the rollcage :**

The diameter, the thickness and the material of the reinforcements must correspond to the norms fixed for the rollcages. They shall be either welded into position or installed by means of a detachable connection (obligatory for the front transversal reinforcements).

The reinforcement tubes should never be attached to the actual bodywork of the car.

8.2.2.5.1) **Transversal struts :**

The fitting of transversal struts as shown in drawing 253-12 is permitted. The transversal strut fixed to the front bar must not, however, encroach upon the space reserved for the occupants. It must be placed as high as possible under the dashboard and must be detachable.

8.2.2.5.2) **Longitudinal struts (lateral protection) :**

The fixing of a longitudinal strut at the side(s) of the vehicle at door level is permitted. The tube making up this reinforcement must be built into the safety rollcage and its angle with the horizontal tube must not exceed 15° angled downwards towards the front).

No point of the longitudinal strut should be higher than one third of the total height of the door measured from its base.

8.2.2.5.3) **Roof reinforcement :**

The reinforcement of the upper part of the rollcage by the strut(s) as shown in drawing 253-13 is permitted.

8.2.2.5.4) **Angle reinforcement :**

The reinforcement of the upper angles between the main rollbar and the longitudinal connections with the front rollbar is permitted, as is the reinforcement of the upper rear angles of the lateral rollbars, as shown in drawing 253-14 and 253-20.

The upper fixation of these reinforcements shall, under no circumstances, be situated to the fore of the middle of the longitudinal linking tube, and their lower fixation shall, under no circumstances, be situated lower than in the middle of the vertical pillar of the rollbar.

8.2.2.6 — **Padding for protection :**

The padding of the dangerous points on the rollbars is recommended in order to prevent injury.

The rollbar may be covered with a detachable protective casing.

8.2.2.7 — **Removable connections :**

Should removable connections be used in the construction of the rollbar they must comply with or be similar to a type approved by the FISA (see drawings 253-37 to 253-41). The screws and bolts must be of a sufficient minimum diameter, and of the best possible quality (8.8).

8.2.2.8 — **Welding instructions :**

All welding should be of the highest quality possible 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.

When using heat treated steel the special instructions of the manufacturers must be followed (special electrodes, welding under protecting gas).

It must be pointed out above all else that the manufacture of heat treated steel, and high carbon steels may cause certain problems and that bad construction may result in a decrease in strength (crinking) and an absence of flexibility.

8.3 - MATERIAL PRESCRIPTIONS

Specifications of the tubes used :

Minimum : material :	Minimum tensile strength :	Minimum dimensions :
Cold drawn seamless carbon steel	350 N/mm²	38 × 2.5 or 40 × 2 (in mm)

These dimensions represent the minima allowed. **Only steel is authorised.** In choosing the quality of the steel, attention must be paid to the elongation properties and the weldability.

8.4 - REGULATIONS FOR CARS

8.4.1) **Production Cars (Group N) :**
The fitting of a rollbar or rollcage is compulsory for all events.
It is authorised to move the fuse box to enable a rollcage to be fitted.

8.4.2) **Touring Cars (Group A) and Grand Touring Cars (Group B) :**
The fitting of a safety cage is obligatory for all events.
The diagonal strut although not obligatory for rallies, is desirable.
Rules of application are as follows :
— Up to 2,000 cm^3 : Rollbar obligatory, rollcage optional.
— More than 2,000 cm^3 : Rollcage obligatory.

8.5 - EXCEPTIONS

However manufacturers of safety rollcages may propose a rollbar of free conception to an ASN for approval as regards the dimensions of the tubes and the implantation of the braces provided that the construction is certified to withstand stress minima given hereafter (and applied simultaneously) :
— 1.5 w lateral*
— 5.5 w fore and aft
— 7.5 w vertical
* w = weight of the car + 75 kg.
It must be possible to submit a certificate, on a form approved by the ASN, signed by a qualified technician to the event's scrutineers. It must be accompanied by a drawing or photo of the rollbar in question declaring that this rollbar can resist the forces mentioned above.
Rollbars must not be modified.

8.6 - HOMOLOGATION

The FISA being aware of the problem of habitability being raised by the use of safety rollcages proposes that each car manufacturer recommends a type of safety rollcage complying with FISA standards.
This rollbar, made from steel, must be described on a homologation extension form presented to the FISA for approval, and must not be modified (See Article 8.2.1.1).

9) REAR VIEW

This shall be provided by an inside mirror commanding a rear window with at least a 10 cm vertical opening, maintaining 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, the rear view must be efficiently obtained by other means (two outside mirrors or any other system of equivalent efficiency). Furthermore, all these carsshould be equipped with two outside mirrors for circuit events.
Application : Obligatory for all Groups.

10) TOWING-EYE

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

11) WINDOWS

The windows must be certified for road use, their marking standing as proof. The windshield must be made of laminated glass.
The use of silvered or tinted films is authorised in rallies only, on the side and rear windows, and on the following conditions :
— Openings in these films must allow a person outside the car to see the driver as well as the contents of the car.

— This authorisation must be mentioned in the supplementaru regulations of the event.

Application : All groups.

12) SAFETY FIXING DEVICES FOR WINDSHIELD

Such devices may be used freely.

Application : Optional.

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. It must be a spark-proof model, and will be accessible from inside and outside the car. As for the outside, the triggering system of the circuit breaker will compulsorily be situated at the lower part of the windscreen mounting of the driver's side for closed cars. It will 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 events on circuits or hill-climbs. The fitting is recommended for other events.

14) FISA APPROVED SAFETY FUEL TANKS

Whenever a competitor uses a safety fuel tank, it must come from a manufacturer approved by the FISA.

In order to obtain the FISA's agreement, a manufacturer must have proved the constant quality of its product and its compliance with the specifications approved by the FISA.

Safety tank manufacturers recognised by the FISA 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 model, the exact specifications according to which this tank has been manufactured, the date of the manufacturing, and the series number, shall be printed.

14.1 — TECHNICAL SPECIFICATIONS

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

14.2 — SPECIFICATIONS FIA/FT3

The Technical specifications for these tanks are available, on request, from the FISA Secretariat.

14.3 — AGEING OF 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 by new ones at the latest five years after the fabrication date indicated on the cell.

14.4 — APPLICATION OF THESE SPECIFICATIONS

Production Cars (Group N), Touring Cars (Group A) and Grand Touring Cars (Group B) may be equipped with a safety fuel tank if the modifications necessary do not exceed those allowed by the regulations.

As far as Production Cars are concerned, the maximum capacity of the FT3 tanks must be that of the homologated tank, and the original tank must be removed.

The use of safety foam in FT3 tanks is recommended.

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 offire.

Should this screen be formed by the rear seats, it is advisable to cover them with a flameproof coating.

16) SEAT ATTACHMENT/SUPPORT

If the original seat attachments or supports are changed, the new parts must either be made by an FIA approved manufacturer or must comply with the following specifications (see drawing 253-52) :

1) Supports must be attached to the shell/chassis via at least 4 mounting points per seat using bolts with a minimum diameter of 8 mm and counterplates, according to the drawing. The minimum area of contact between support, shell/chassis and counterplate is 40 cm^2 for each mounting point. 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.

2) 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.

3) The minimum thickness of the supports and counterplates is 3 mm for steel and 5 mm for light alloy materials.

The minimum longitudinal dimension of each support is 6 cm.

17) PRESSURE CONTROL VALVES

Pressure control valves on the wheels are forbidden.

Art. 254 - **Specific regulations for Production Cars (Group N)**

1) DEFINITION
Large scale series production touring cars.

2) HOMOLOGATION
At least **2500** identical units must have been produced in 12 consecutive months and homologated by the FISA in Touring Cars (Group A).
The Supply Variants (VF) homologated in Touring Cars (Group A) are also valid in Production Cars (Group N).
The Optional Variants (VO) of the Touring Cars (Group A) form shall not be valid in Production Cars (Group N), unless they refer to :
— fly-wheel for automatic gearboxes ;
— fuel tank ;
— automatic gearboxes ;
— sun roof ;
— safety roll cage ;
— 2/4 doors versions.
The use of tanks homologated in VO on the Touring Car (Group A) form must be carried out under the conditions laid down in Article 5.9.2 of the Touring Car (Group A) regulations, and Article 254.6.8.
Likewise evolutions of the type (ET) or sporting evolutions (ES) homologated in Touring Cars (Group A) are not valid in production Cars (Group N).

3) NUMBER OF SEATS
Cars must have at least 4 places, in accordance with the dimensions defined for Touring Cars (Group A).

4) MODIFICATIONS AND ADJUNCTIONS ALLOWED OR OBLIGATORY
All the modifications which are not allowed by the present regulations are expressly forbidden. The only work which may be carried out on the car is that necessary for its normal servicing, or for the replacements of parts worn through use or accident. The limits of the modifications and fittingsallowed are specified hereinafter. Apart from these, any part worn through use or accident can only be replaced by an original part identical to the damaged one.
The cars must be strictly series production models identifiable by the homologation form data.

5) MINIMUM WEIGHT
Cars must have at least the weight appearing on the homologation form plus the weight of the safety devices.
As far as rollcages or rollbars which cannot be removed from the car and which were manufactured in accordance with Articles 253.8.2, 8.3 and 8.4 of Appendix J are concerned, the following weights will be taken as a basis for the safety cage :
— Rollbar according to drawings 253-3/4 : 15 kg
— Rollcage according to drawings 253-5/6/7/8/9/10/14/15/18/20 : 25 kg
— Rollcage according to drawings 253-11/12/13/16/17/19/21 : 30 kg
This is the real weight of the empty car (without persons or luggage aboard) without tools, jack. All the liquid tanks (lubrication, cooling, braking, heating where applicable) must be at the normal level foreseen by the manufacturer, with the exception of the windscreen wiper or headlight wiper, brake, cooling system, fuel and water injection tanks, which shall be empty. Additional headlights which do not appear on the homologation form must be removed before weighing.

6)
6.1 - ENGINE
The accelerator cable may be replaced or doubled by another one.
— **Ignition :** Make and type of plugs are free as are rev-limiters and high tension cables.

— **Cooling system :** The thermostat is free as is the control system and the temperature at which the fan cuts in.
Locking system for the radiator cap is free.

— **Fuel and air** feed : Carburettor(s) parts or fuel injection system parts regulating the quantity of fuel reaching the engine may be modified, provided that they have no influence on air admission.
The original injection system must be maintained.
The injectors may be changed for injectors which are identical except with regard to the size of the pintle nozzle hole at the end.
Replacement air filter cartridges are accepted in the same way as the original ones.

— **Lubrication : The fitting of baffles in the oil sump is authorised.**
Replacement oil filter cartridges are accepted in the same way as the original ones.
— The material of the elastic part of the engine mountings is free, but not the number of engine mountings.
— The electrical resistances situated in the electronic box may be modified.

— **Exhaust :**
It will be possible :
• either to remove the inside of the original silencer ;
• or to modify the exhaust from the first silencer to the exit, the maximum dimensions of the duct being those of the pipe situated upstream of the first silencer (see drawing 254-3). Should two inlets exist in the first silencer, the section of the modified duct must be less than or equal to the total of the two original sections. Only one pipe may be present at the exit, **unless the original part is used.** The exit should be situated in the same position as that of the series production exhaust system.
These liberties must not entail any bodywork modifications and must respect the laws of the country in which the event is run with regard to noise levels.
Additional parts for the mounting of the exhaust are authorized.
If an exhaust silencer is added, it must be of the original type and must contain noise-absorbing material.
The catalist may be replaced with a conical part of the same length and with the same inlet and outlet diameters. After this part, the exhaust will be free with a tube diameter no greater than that of the outlet from the catalyst.
— **Cylinder head gasket** : The material is free, but not the thickness.
— **Cruising speed controller :** This controller may be disconnected.
— **In rallies only : The number of cylinders is limited to 6.** The cubic capacity is limited as follows for normally aspirated engines :
• 3 l maximum for two valves per cylinder.
• 2.5 l maximum for more than two valves per cylinder.
In the event of supercharged engines being used :
The nominal cylinder capacity is limited to 2500 cm³ maximum.
The supercharged system must comply with that of the homologated engine.
The maximum diameter of the air intake into the compressor must be 36 mm, maintained for a minimum distance of 3 mm measured downstream of a plane perpendicular to the rotational axis situated at a maximum of 50 mm upstream of a plane passing through the most upstream extremities of the wheel blades (see drawing 254-4).
This diameter must be complied with, regardless of the temperature conditions.
The compressors respecting the above dimensions must be retained. The others must be fitted with a restrictor fixed to the compressor housing and coupling with the dimensions defined above. This restrictor must not be an integral part of the compressor housing ; it must be an added part. In case of an engine with two parallel compressors, each compressor must be limited to a maximum intake diameter of 25.5 mm.
All the air necessary for feeding the engine must pass through the restrictor. For the installation of this restrictor, it is permitted to remove material from the compressor housing, and to add it, for the sole purpose of attaching the restrictor onto the compressor housing.
It must be possible to affix seals between the restrictor (or the restrictor/compressor housing attachment), the compressor housing (or the housing/flange attachment) and the turbine housing (or the housing/flame attachment) (see drawing 254-4). It must be easy to inspect it, or possible to dismantle it for inspection. The shape of the restrictor is free, subject to restrictions mentioned above.

This restrictor, which is compulsory is Rallies, is not prohibited in other events, should a competitor decide to use it.

6.2 - TRANSMISSION

— **Clutch :** The disc is free, including the weight, with the exception of the number and diameter.

6.3 - SUSPENSION

— **Springs :**

Coil springs :

The length is free, as is the number of coils, the wire diameter, the type of spring (progressive or not), the external diameter and the form of the spring seats.

Leaf springs :

The length, width, thickness and vertical curvature are free.

Torsion bars :

The diameter is free.

These freedoms on the suspension springs do not authorise one to disregard article 205 of the homologation form (minimum height of the centre of the hubcab, wheel passage opening).

— **Shock absorbers :** Free, provided that their number, their type (telescopic, arm, etc), their working principle (hydraulic, friction, mixed, etc.), and their attachment points remain unchanged. **A silent block may be replaced by a « Uniball » joint, but only on condition that the shock absorber has no guiding function.**

Gas filled dampers, regarding their working principle, will be considered as hydraulic dampers.

If, in order to change the damping element of a Mac Pherson suspension, or a suspension operating in an identical manner, it is necessary to replace the entire Mac Pherson strut, the replacement parts must be mechanically equivalent to the original ones and have the same mounting points.

For Mac Pherson suspensions, the shape of the spring seats is free and these seats are adjustable.

Their material is free.

The reinforcing of the suspension and its anchorage points by the addition of material is allowed.

In the case of oil-pneumatic suspension, the spheres may be changed as regards their dimension, shape and material, but not their number.

A tap, adjustable from outside of the car, may be fitted on the spheres.

6.4 - WHEELS AND TYRES

The wheels are free, respecting the homologated diameter (Article 801.a), and the homologated width (Article 801.b) which is considered as a maximum.

They must be covered by the wings (same checking system as in Group A, Article 255.5.4), and the maximum track given on the homologation form must be respected.

Tyres are free provided that they can be mounted on those wheels.

The spare wheel may be brought inside the driving compartment, on condition that it is firmly secured there and that it is not installed in the space reserved for the driver and the front seat passenger.

Wheels fixations by bolts may be changed to fixations by pins and nuts provided that the number of attachment points and the diameter of the threaded parts as indicated on drawing 254-1 are respected.

Air extractors added on the wheels are forbidden.

6.5 - BRAKING SYSTEM

Brake linings are free, as well as their mountings (riveted, bonded, etc.) provided that the contact surface of the brakes is not increased.

Protection plates may be removed or bent.

In the case of a car fitted with servo-assisted brakes, this device may be disconnected. The same applies for anti-lock braking systems.

Brake lines may be changed for aviation type lines.

6.6 - BODYWORK

6.6.1) **Exterior :**

Hubcaps must be removed.

Protective headlight covers may be fitted provided that their only function is to cover the glass, and that they have no influence on the car's aerodynamics.

The fitting of underbody protections is authorized in rallies only, provided that these really are protections which respect the ground clearance, which are removable and which are designed exclusively and specifically in order to protect the following parts : engine, radiator, suspension, gearbox, tank, transmission, exhaust, extinguisher bottle.

Any locking system may be used for the cap of the petrol tank.

The fitting of external rear view mirrors is authorised, as is the changing of the windscreen wiper blades both front and rear.

6.6.2) **Passenger space :**

All accessories which have no effect on the vehicle's behaviour are allowed without restrictions, such as those concerning the aesthetics or interior comfort (lighting, heating, radio, etc.), on the express condition that they do not influence, even in a secondary manner, the efficiency of the engine, steering, strength, transmission, braking, or road-holding.

Inversion of the driving side is possible, on condition that the original car and the modified car are mechanically equivalent and that the parts used are foreseen by the manufacturer for such a conversion for the model in question. All the passenger seats, if occupied, must be fitted with a headrest.

The carpeting must remain in place.

All the controls must be those provided by the manufacturer and they must retain their original function but they can be worked on to make them more accessible or more easily usable ; for example, the addition of an extension to the handbrake lever, of an additional flange to the brake pedal, etc.

The following is allowed in particular :

1) Additional measuring instruments, counters, etc. may be freely installed, provided that their fitting is not likely to create any danger.

2) **The horn may be changed. Another one, possibly for the passenger's use, may be added.**

3) The mechanism of the handbrake lever may be adapted in order to obtain instant unlocking (fly-off handbrake).

4) Seat supports may be modified, and all kinds of seat-covers may be added including those creating bucket seats.

5) The front seats may be changed for bucket seats.

6) Additional compartments may be added to the glove compartment as well as additional pockets to the doors.

7) Steering wheel is free.

8) It is authorised to replace the electric window winders with manually-operated winders, using corresponding parts which are available for the model concerned. Likewise, the inner door panel may be replaced.

6.6.3) **Reinforcements :**

Reinforcement bars may be fitted on the suspension mounting points to the bodyshell or chassis of the same axle, on each side of the car's longitudinal axis, on condition that they are removable and are attached by means of bolts. The distance between a suspension attachment point and an anchorage point of the bar cannot be more than 100 mm, unless the bar is a transversal strut homologated with the rollbar, and unless there is an upper bar attached to a MacPherson suspension or similar. In the latter case, the maximum distance between an anchorage point of the bar and the upper articulation point will be 150 mm (drawings 255-4 and 255-2).

Apart from these points, this bar must not be mounted on the bodyshell or the mechanical parts.

Strengthening of the suspended part is allowed provided that the material used follows the original shape and is in contact with it.

6.6.4) When the spare wheel is originally set in a closed accomodation, and when this wheel is changed for a thicker one (see Article 6.4), situated in this space, it is possible to remove from the cover of the location of the wheel the surface induced by the diameter of the new wheel (drawing 254-2).

6.7 - ELECTRICAL SYSTEM

— **Battery :** The make, capacity, and battery cables are free.
The tension and the site of the battery must be retained.

— **Generator :** May be replaced by a more powerful one. A dynamo may not be replaced by an alternator and vice-versa.

— **Lighting system :** Additional headlights including the corresponding relays are allowed, provided that the total does not exceed eight (tail and parking lights not included) and that this is accepted by the laws of the country.

They may not be housed within the bodywork. Headlights and other exterior lights must always exist in pairs.

The original headlights can be made inoperative and covered with adhesive tape. They can be replaced by other headlights, in compliance with this article. A reversing light may be fitted provided it can only be used when the gear lever is in the « reverse » position, and provided that the police regulations on this subject are observed.

— Fuses may be added to the electrical system.

6.8 - FUEL CIRCUIT

Providing the original tank is equipped with an electric pump and an interior filter, it is possible when using an FT3 tank to place a filter and a pump with identical characteristics to the homologated one outside. These parts must be protected in adequate fashion.

The filler holes may not be located in the window panels.

Fuel lines must be changed for aviation type lines if an FT3 tank is used, the route of these lines being free. Should a series production tank be used, this changement is optional.

The total capacity of the tanks must not exceed that indicated in Article 401.d of the Group A homologation form.

6.9 - JACK

The jack is free on condition that its lifting points on the car are not modified.

Art. 255 - **Specific Regulations for Touring Cars (Group A)**

1) **DEFINITIONS**
Large scale series production Touring Cars.

2) **HOMOLOGATION**
At least 2,500 identical examples of these cars must have been manufactured in 12 consecutive months.

3) **NUMBER OF SEATS**
Touring cars must have 4 seats minimum.

4) **WEIGHT**
Cars are subject to the following scale of minimum weights in relation to their cubic capacity.

Up to:	1 000 cm³ :	670 kg
"	1 300 cm³ :	760 kg
"	1 600 cm³ :	850 kg
"	2 000 cm³ :	930 kg
"	2 500 cm³ :	1 030 kg
"	3 000 cm³ :	1 110 kg
"	3 500 cm³ :	1 200 kg
"	4 000 cm³ :	1 280 kg
"	4 500 cm³ :	1 370 kg
"	5 000 cm³ :	1 470 kg
"	5 500 cm³ :	1 560 kg
Over:	5 500 cm³ :	1 650 kg

This is the real minimum weight of the car, without driver nor co-driver nor their equipment. At no time during the event may a car weigh less than the minimum weight stated in this article. In case of doubt, the Scrutineers may drain the tanks to check the weight.

The use of ballast is permitted in the conditions provided for under Article 2.2 of the « General Prescriptions for Production Cars (Group N), Touring Cars (Group A), Grand Touring Cars (Group B) ».

5) MODIFICATIONS AND ADJUNCTIONS ALLOWED
GENERAL CONDITIONS

Irrespective of the parts for which the present article lays down freedom of modification, the original mechanical parts necessary for the propulsion, suspension as well as all accessories necessary for their normal functioning, excepting any steering or braking part, having undergone the normal machining operations laid down by the manufacturer for series production may be subjected to all tuning operations through finishing, scraping but not replacement. In other words provided that the origin of the series production part may always be established, its shape may be ground, balanced, adjusted, reduced or modified through machining. Chemical and heat treatment are allowed, in addition to the above. However, the modifications defined by the above paragraph are allowed on condition that the weights and dimensions mentioned on the homologation form are respected.

Nuts and bolts : Throughout the car, any nut, bolt, screw may be replaced by any other nut, any other bolt, any other screw and have any kind of locking device (washer, lock nut, etc.).

Addition of material and parts : Any addition of material or parts is forbidden unless it is specifically allowed by an article in these regulations. Any material removed is not to be reused. Restoration of body shape and chassis geometry, following accidental damage, is permissible by the addition of the materials necessary to effect the repairs (body filler, weld metal, etc.) ; other parts which are worn or damaged are not to be repaired by the addition or attaching of material unless an article in these regulations allows appropriate freedom.

5.1 - ENGINE
5.1.1) **Cylinder-block — Cylinder-head :**
It is permitted to close the unused apertures in the cylinder block and cylinder head, if the only purpose of this operation is that of closing.

A rebore of 0.6 mm maximum is allowed in relation to the original bore without this leading to the capacity class limit being exceeded.

The resleeving of the engine is allowed within the same conditions as for reboring, and the sleeve material may be modified.

Planing of the cylinder-block is allowed.

In the case of rotary engines, on condition that the original dimensions of the intake inlet ports and of the exit of the exhaust are respected, the dimensions of the inlet and exhaust ducts into the engine block are free.

Cylinder head : Planing authorised.

5.1.2) **Compression ratio :** Free.

5.1.3) **Cylinder head gasket :** Free.

5.1.4) **Pistons :**

Free as well as the piston-rings, gudgeon pins and their securing mechanism.

5.1.5) **Connecting rods, crankshaft :**

Besides the modifications laid down in the paragraph « General Conditions » above, the original crankshaft and connecting rods may receive chemical, heat or mechanical treatment different from that laid down for series production parts.

5.1.6) **Bearings :**

Make and material are free ; they must however retain their original type and dimensions.

5.1.7) **Flywheel :**

It may be modified in accordance with the above paragraph « General Conditions » provided that the original flywheel may still be identified.

5.1.8) **Fuel and air** feed :

The accelerator cable and its cable sleeve stop are free.

The air filter, including the filter box and the plenum chamber, is free.

The air filter along with its box may be removed, moved in the engine compartment or replaced by another (see drawing 255.1).

The pipe between the air filter and the carburettor(s) or the air measuring device (injection) is free.

Likewise, the pipe between the air measuring device and the intake manifold or the supercharging device is free.

The air intake may be fitted with a grill.

Anti-pollution parts may be removed provided that this does not lead to an increase in the quantity of air admitted.

Fuel pumps are free. They may not be fitted in the cockpit unless this is an original fitting, in which case they must be well protected.

Petrol filters, with a maximum unit capacity of 0.5 l may be added to the fuel feed circuit.

The accelerator linkage is free.

The original heat exchangers and intercoolers, or any other device fulfilling the same function, must be retained, and remain in their original location, which means that their supports and position must remain original.

The pipes between the supercharging device, the intercooler and the manifold are free, but their only function must be to channel air.

In the case of air-water intercoolers, the pipes connecting the intercooler and its radiator are free, but their only function must be that of channelling water.

Any water injection fitted must be homologated and must not be modified.

The use of any other substance or device to reduce the temperature of the mixture is forbidden.

The drawings on page 14 of the homologation form must be respected.

The inner dimensions of the ports are free in the rotary chambers for rotary engines and for 2-stroke engines.

The drive pulley of the « G » compressor is free.

For African rallies only : It is possible to make a hole, with a maximum diameter of 10 cm, in the engine bonnet in order to provide air for the engine, and to place a pipe, with a maximum internal diameter of 10 cm, in this hole (see drawing 255-13).

5.1.8.1 — **Carburettor :**

The carburettors are free, but the original number of carburettors and their working principle must be retained and they must remain in their original location.

Furthermore, the diameter and number of the butterflies as stated on the homologation form must be respected.

5.1.8.2 — **Injection :**

The original system and its type, as specified on the homologation form of the vehicle (such as K-Jetronic) must be retained, as must its location.

The elements of the injection device regulating the metering of the quantity of fuel admitted to the engine may be modified, but not the diameter of the opening of the butterfly.

The air measuring device is free.

The injectors are free, except for their number, their position, their assembly axis and their operating principle.

The petrol lines feeding them are free.

The electronic box is free, insofar as it does not incorporate more data.

The fuel pressure regulator is free.

5.1.8.3 — **Limitation in rallies :**

The number of cylinders is limited to 6.

The cubic capacity is limited as follows for normally aspirated engines :

— 3 l maximum for two valves per cylinder.

— 2.5 l maximum for more than two valves per cylinder.

In the event of supercharged engines being used :

The nominal cylinder capacity is limited to 2500 cm^3 maximum.

The supercharged system must comply with that of the homologated engine.

The maximum diameter of the air intake into the compressor must be 38 mm, maintained for a minimum distance of 3 mm measured downstream of a plane perpendicular to the rotational axis situated at a maximum of 50 mm upstream of a plane passing through the most upstream extremities of the wheel blades (see drawing 254-4).

This diameter must be complied with, regardless of the temperature conditions.

The compressors respecting the above dimensions must be retained. The others must be fitted with a restrictor fixed to the compressor housing and coupling with the dimensions defined above. This restrictor must not be an integral part of the compressor housing ; it must be an added part.

In case of an engine with two parallel compressors, each compressor must be limited to a maximum intake diameter of 26.9 mm.

All the air necessary for feeding the engine must pass through the restrictor. For the installation of this restrictor, it is permitted to remove material from the compressor housing, and to add it, for the sole purpose of attaching the restrictor onto the compressor housing. It must be possible to affix seals between the restrictor (or the restrictor/compressor housing attachment), the compressor housing (or the housing/flange attachment) and the turbine housing (or the housing/flange attachment) (see drawing 254-4). It must be easy to inspect it, or possible to dismantle it for inspection. The shape of the restrictor is free, subject to restrictions mentioned above.

This restrictor, which is compulsory in rallies, is not prohibited in other events, should a competitor decide to use it.

5.1.9) **Camshaft(s) :**

Free, except the number and number of bearings. Timing is free. The material, type and dimensions of the pulleys, chains and belts for driving the camshafts are free. The material of the gearing and sprockets associated with the camshaft is free. The route and the number of belts and chains are free. The guides and tensioners associated with these chains or belts are also free**, as are protective covers.**

5.1.10) **Valves :**

The material and the shape of the valves are free, but their characteristic dimensions (mentioned on the homologation form) must be retained, including the respective angles of the valves axis. Valve lift is free.

With regard to the cylinder head orifices (inner side of the engine), in the case of rotary engines, only those dimensions which have been entered on the Homologation Form have to be respected.

The cups, cotters and guides (even if they do not exist as original parts) are not subject to any restriction. Shims may be added under the springs.

The material of the seats is free.

5.1.11) **Rocker arms and tappets :**
Rocker arms may only be modified in accordance with Article 5 « General Conditions » above. Tappets are free, provided they are interchangeable with the original ones.
It is possible to use bracking plates to adjust them.

5.1.12) **Ignition**
The ignition coil(s), condenser, distributor, interrupter and plugs are free subject to the ignition system (battery/coil or magneto), remaining the same as provided by the manufacturer for the model concerned.
The fitting of an electronic ignition system, even without a mechanical interrupter, is allowed provided no mechanical part other than those mentioned hereabove is modified or changed, with the exception of the crankshaft, the flywheel or the crankshaft pulley, for which modifications limited to the necessary additions will be possible. In the same conditions, it shall be possible to change an electronic ignition for a mechanical ignition. The number of plugs may not be modified ; that of the coils is free.

5.1.13) **Cooling :**
Provided the original fitting on the car is retained, the radiator and its fixation are free, as are the lines linking it to the engine. A radiator screen may be fitted. The fan and its drive system can be changed freely, or be withdrawn. It is allowed to add a fan per function.
Thermostat is free.
Dimensions and material of the fan/turbine are free, as are their number. The fitting of a water catch tank is allowed. The radiator cap may be locked.
The water injection devices may be disconnected, but not removed.
The expansion chamber may be modified ; if one does not exist originally, one may be added.

5.1.14) **Lubrication :**
Radiator, oil/water exchanger, lines, thermostat, sump and pump filter are free, without modifying the bodywork.
However, the fitting of an oil radiator outside the bodywork is only allowed below the horizontal plane passing through the hub in such a way that it does not protrude beyond the general perimeter of the car seen from above as it stands on the starting line, without modifying the bodywork.
Fitting an oil radiator in this manner does not allow the addition of an enveloping aerodynamic structure. All air openings must have the sole effect of inducing the necessary air for the cooling of the radiator, and must not have any aerodynamic effect.
Oil pressure may be increased by changing the discharge valve spring.
If the lubrication system includes an open type sump breather, it must be equipped in such a way that the oil flows into a catch tank.
This must have a capacity of 2 litres for cars with a cubic capacity equal to or below 2,000 cc, and 3 litres for cars with a cubic capacity of over 2,000 cc. This container shall be made either out of plastic or shall include a transparent window.
An air/oil separator can be mounted outside the engine (maximum capacity 1 litre), in accordance with the following drawing 253-3. The oil must only flow from the oil catch tank towards the engine by the force of gravity.
A fan may be fitted for cooling the engine oil, but must have no aerodynamic effect.

5.1.15) **Engine — Mountings — Angle and position :**
Mountings are free (but not their number) provided that the angle and position of the engine within its compartment are not modified, and that Articles 5.7.1 and 5 - General Conditions are respected. Supports may be welded to the engine and to the bodywork and their position is free.
In Rallies only, it is possible to cut out a part of the bulkhead situated in the engine compartment for the fitting of one or more air filters or for the intake of air ; however, such cut-outs must be strictly limited to those parts necessary for this installation (see drawing 255-6).
Furthermore, if the air intake ventilating the driving compartment is in the same zone as the air intake for the engine, this zone must be isolated from the air filter unit, in case of fire.

5.1.16) **Exhaust :**
Downstream the exhaust manifold exit the exhaust is free provided that the sound levels in the country(ies) crossed are not exceeded if it is an event on open roads. The exhaust exit must be inside the car's perimeter. (See General Prescriptions, Article 3.6).
For cars with turbocharged engines the exhaust can only be modified after the turbocharger.
In the case of rotary engines, and on condition that the original dimensions of the inlet ports of the exhaust manifold are respected, the dimensions of the ducts in the manifold are free.
Thermal screens may be fitted on the exhaust manifold, the turbocharger and on the exhaust device, with, however, the sole function of thermal protection.

5.1.17) **Driving pulleys, belts and chains for ancillaries situated outside the engine :**
The material, type and dimensions of the pulleys, chains and belts for driving the ancillaries are free. The route and the number of belts and chains are free.

5.1.18) **Gaskets :** Free.

5.1.19) **Engine springs :**
Springs are not subject to any restrictions but they must keep their original functioning principle.

5.1.20) **Starter :**
It must be retained, but its make and type are free.

5.1.21) **Supercharging pressure :**
This pressure may be modified by Article 5.1.19 and Article 5 - General Conditions. With this in view, the connection between the housing and the waste-gate may be made adjustable if it is not originally so. The original system of operation of the waste-gate may be modified and be rendered adjustable but this system has to be maintained. A mechanical system has to stay mechanical, an electrical system has to stay electric, etc.

5.2 - TRANSMISSION
5.2.1) **Clutch :**
Clutch is free, but the homologated bell-housing must be retained, together with the operation type.

5.2.2) **Gearbox :**
An additional lubrication and oil cooling device is allowed (circulation pump, radiator, and air intakes situated under the car) in the same conditions as for Article 5.1.14, but the original lubrication principle must be retained.
However, a gearbox homologated as an additional one with an oil pump can be used without this pump.
A fan may be fitted for cooling the gearbox oil, but must have no aerodynamic effect.
The gears of the additional gearbox on the homologation form may be changed, provided that they respect the informations given on this form.
Gearbox supports are free, but not their number.
May be used :
— the series housing with series ratios or one of the two sets of additional ratios ;
— one of the additional housings only with one of the additional sets of ratios.

5.2.3) **Final drive and differential :**
A limited-slip differential is allowed provided that it can be fitted into the original housing without any modification other than those laid down in the above paragraph « General Conditions ». The original differential may also be locked.
The original lubricating principle for the rear axle must be retained. However an additional lubricating and oil cooling device is allowed (circulation pump, radiator, and air intakes situated under the car) under the same conditions as for Article 5.1.14.
The differential supports are free.

5.3 - SUSPENSION

The position of the rotational axles of the mounting points of the suspension to the wheel uprights and to the shell (or chassis) must remain unchanged.

In the case of an oil-pneumatic suspension, lines and valves connected to the spheres (pneumatic parts) are free.

5.3.1) Reinforcement bars may be fitted on the suspension mounting points to the bodyshell or chassis of the same axle, on each side of the car's longitudinal axis. The distance between a suspension attachment point and an anchorage point of the bar cannot be more than 100 mm, unless the bar is a transversal strut homologated with the rollbar, and unless there is an upper bar attached to a MacPherson suspension or similar. In the latter case, the maximum distance between an anchorage point of the bar and the upper articulation point will be 150 mm (drawings 255-4 and 255-2).

Apart from these points, this bar must not be mounted on the bodyshell or the mechanical parts.

5.3.2) Strengthening of the mounting points and of the running gear, by adjunction of material, is allowed.

5.3.3) **Anti-roll bar :**

The anti-roll bars homologated by the manufacturer may be replaced or removed, provided that their mounting points on the chassis remain unchanged.

These anchorage points can be used for the mounting of reinforcement bars.

5.3.4) The joints may be of a different material from the original ones.

The suspension mounting points to the bodyshell or chassis may be modified :

— by using a « Uniball » joint.

The original arm can be cut and a new seat for the « Uniball » welded. Braces will be used next to the « Uniball » itself.

— by using a screw with a greater diameter.

— by reinforcing the anchorage point through the addition of material.

The position of the centre of the articulation cannot be changed (See drawing 255-5).

5.3.5) The material and main spring dimensions are free (but not the type). The spring seats may be made adjustable even if this includes the adjunction of material.

A coil spring may be replaced with two or more springs of the same type, concentric or in series, provided that they are fully interchangeable with the original and can be fitted without any modifications other than those specified in this article.

5.3.6) **Shock Absorbers :**

Make is free, but not the number, the type (arm, etc.), the system of operation (hydraulic, friction, mixed, etc.) nor the supports.

With regard to their principle of operation, gas-filled shock-absorbers will be considered as hydraulic shock-absorbers.

If in order to change the damping element of a Mac Pherson suspension, or suspension working on an identical principle, it is necessary to replace the entire Mac Pherson strut, the replacement part must be mechanically equivalent to the original one, except for the damping element, and the spring cup.

5.4 - WHEELS AND TYRES

Complete wheels are free provided that they may be housed within the original bodywork ; this means the upper part of the **complete** wheel, located vertically over the wheel hub centre, must be covered by the bodywork, when measured vertically. **Wheel fixations by bolts may be freely changed to fixations by pins and nuts.** The use of tyres intended for motor cycles is forbidden. In no case **may** the width of the **complete wheel** in relation to the cubic capacity of the car, exceed the following :

In rallies :

Up to:	**1 000 cm³ :**	**6.5"**
	1 300 cm³ :	**7"**
	1 600 cm³ :	**7.5"**
	2 000 cm³ :	**8.5"**
	2 500 cm³ :	**9"**
	3 000 cm³ :	**9"**
	3 500 cm³ :	**9"**
	4 000 cm³ :	**9"**
	4 500 cm³ :	**9"**
	5 000 cm³ :	**9"**
Over	**5 000 cm³ :**	**10"**

On closed circuits :

Up to:	**1 000 cm³ :**	**6.5"**
	1 300 cm³ :	**7"**
	1 600 cm³ :	**7.5"**
	2 000 cm³ :	**8.5"**
	2 500 cm³ :	**9"**
	3 000 cm³ :	**9"**
	3 500 cm³ :	**10"**
	4 000 cm³ :	**10"**
	4 500 cm³ :	**11"**
	5 000 cm³ :	**11"**
Over	**5 000 cm³ :**	**12"**

The rim diameter may be increased or reduced by up to 2 inches in relation to the original dimensions.

In rallies, the maximum diameter of the complete wheels is 650 mm, not including the studs if studded tyres are used.

The wheels do not necessarily have to be of the same diameter.

Should the wheel be fixed using a central nut, a safety spring must be in place on the nut throughout the duration of the event and must be replaced after each wheel change. The springs must be painted « Dayglo » red. Spare springs must be available at all times.

5.5 - BRAKING SYSTEM

5.5.1) **Brake linings :**

Material and mounting method (riveted or bonded) are free provided that the dimensions of the linings are retained.

5.5.2) **Servo brakes, braking force adjusters, anti-locking devices :**

They may be disconnected but not removed. The adjusting device is free. The braking force adjusters may not be moved from the compartment in which they are originally situated (cockpit, engine compartment, exterior, etc.).

5.5.3) **Cooling of brakes :**

Protection shields may be modified or removed, but material may not be added.

Only one flexible pipe to bring the air to the brakes of each wheel is allowed, but its inside section must be able to fit into a circle with a 10 cm diameter. The air pipes must not go beyond the perimeter of the car, seen from above.

5.5.4) **Brake discs :**

The only operation allowed is rectification.

5.5.5) The handbrake device may be disconnected but only for closed course races (circuit, hillclimbs, slaloms).

5.5.6) **Hydraulic pipes :**

Hydraulic pipes may be replaced by lines of aircraft quality.

5.6 - STEERING

Power steering may be disconnected but not removed.

5.7) **BODYWORK — CHASSIS**

5.7.1) **Lightening and reinforcements :**

Strengthening of the sprung parts of the chassis and bodywork is allowed provided that the material used follows the original shape and is in contactwith it.

Reinforcements by composite materials are allowed in accordance with this article, whatever their thickness, according to the drawing 255-8.

Insulating material may be removed from under the car floor, from the engine compartment, the luggage boot, and the wheel arches.

Unused supports (eg spare wheel) situated on the chassis/bodywork can be removed, unless they are supports for mechanical parts which cannot be moved or removed.

It is possible to close the holes in the cockpit, the engine and luggage compartments, and in the wings. The holes may be closed using sheet metal or plastic materials, and may be welded, stuck or riveted. The other holes in the bodywork may be closed, by adhesive tape only.

5.7.2) **Exterior :**

5.7.2.1 — **Bumpers :**

Overriders may be removed.

5.7.2.2 — **Hub-caps and wheel embellishers :**

Hub-caps may be removed. Wheels embellishers must be removed.

5.7.2.3 — **Windscreen wipers :**

Motor, position, blades and mechanism are free but there should be at least one windscreen wiper provided for the windscreen. The windscreen washer device may be dismounted. The capacity of the washer tank may be increased and the tank may be moved inside the cockpit in accordance with Article 252.6.3.

5.7.2.4 — External decorative strips may be removed. Any parts following external contour of the bodywork and less than 25 mm high will be considered as decorative strips.

5.7.2.5 — Jacking points may be strengthened, moved, and increased in number.

5.7.2.6 — Headlight covers may be fitted provided their sole aim is to protect the headlight glass and they have no effect on the car's aerodynamics.

5.7.2.7 — Taking into account the different police regulations in each country registration plate locations and type are free.

5.7.2.8 — The registration plate mountings may be dismounted but not their lighting system.

5.7.2.9 — Additional safety fastenings for the windscreen and the side windows may be fitted provided they do not improve the aerodynamic qualities of the car.

5.7.2.10 — The fitting of underbody protections is authorised in rallies only, provided that these really are protections which respect the ground clearance, which are removable and which are designed exclusively and specifically in order to protect the following parts : engine, radiator, suspension, gearbox, tank, transmission, exhaust, extinguisher bottles.

5.7.2.11 — It is permitted to fold back the steel edges or reduce the plastic edges of the wings if they protrude inside the wheel housing.

The plastic sound-proofing parts may be removed from the interior of the wheel passages. These plastic elements may be changed for aluminium elements of the same shape.

It is possible to fit plastic protection parts in the wings, on the same ground as aluminium parts.

5.7.2.12 — Removable pneumatic jacks are permitted, but without the compressed air bottle on board (circuits only).

5.7.2.13 — « Skirts » are banned. All non-homologated devices or constructions designed so as to fully or partially fill the space between the sprung part of the car and the ground is forbidden in all circumstances. No protection authorised by Article 255.5.7.2.10 can play a role in the aerodynamics of the car.

5.7.2.14 — It is authorised to remove or replace existing supports between the bodywork and the chassis, but it is not possible to change or add locations.

5.7.2.15 — The external rear-view mirror are free, if they are only rear-view mirrors. However, the external rear-view mirror on the driver's side, if it is modified or changed, must have a reflecting surface of at least 90 cm^2.

5.7.3) **Cockpit :**

5.7.3.1 — **Seats :**

Occupants seats and their mountings are free provided that they comply with Article 253.16, but they must include a headrest. The front seats may be moved

backwards but not beyond the vertical plane defined by the front edge of the original rear seat.

The passenger's seat may be removed as well as the rear seats.

5.7.3.2 — Should the fuel tank be installed in the boot and the rear seats removed, a fireproof and liquid-proof bulkhead must separate the cockpit from the fuel tank.

In the case of twin-volume cars it will be possible to use a non-structural partition wall in transparent, non-flammable plastic between the cockpit and the tank arrangement.

5.7.3.3 — **Dashboard :**

The trimmings situated below the dashboard and which are not a part of it may be removed.

It is permitted to remove the part of the centre console which contains neither the heating nor the instruments (according to the drawing 255-7).

5.7.3.4 — **Doors — Side trim :**

It is permitted to remove the soundproofing material from the doors, provided that this does not modify the shape of the doors. In the case of a two-door car, the trim situated beneath the rear side windows is also subject to the above rule.

It is permitted to replace electric winders with manual ones.

5.7.3.5 — Floor

Carpets are free and may thus be removed.

5.7.3.6 — Other soundproofing materials and trim :

Other padding materials, except for those mentioned under articles 5.7.3.4 (Doors) and 5.7.3.3 (Dashboard), may be removed.

5.7.3.7 — **Heating system :**

The original heating equipment may be replaced by another also provided by the manufacturer, and mentioned in his catalogue as supplied on demand.

It is permitted to blank off the water supply of the internal heating device, in order to prevent water spillage during an accident, providing an electric demist system or similar is available.

5.7.3.8 — Air-conditioning :

May be added or removed but heating must be assured.

5.7.3.9 — Steering wheel :

Free ; the anti-theft device may be removed. The steering can be on either the right or left provided that it is a question of a simple inversion of the steering wheels control, laid down and supplied by the manufacturer without any other mechanical modifications except those made necessary by the inversion.

5.7.3.10 — A rollcage may be fitted. (See Article 253.8).

5.7.3.11 — The rear removable window shelf in two-volume cars may be removed.

5.7.3.12 — Air pipes :

Air pipes may only pass through the cockpit if these are intended for the ventilation of the cockpit.

5.7.3.13 - Inside rear view mirrors :

If there are two efficient outside rear view mirrors (one on each side), the inside rear view mirror is optional.

5.7.4) **Additional accessories :**

All those which have no influence on the car's behaviour are allowed, for example equipment which improves the aesthetics or comfort of the car interior (lighting, heating, radio, etc.). In no case can these accessories increase the engine power or influence the steering, transmission, brakes, or roadholding even in an indirect fashion. All controls must retain the role laid down for them by the manufacturer. They may be adapted to facilitate their use and accessibility, for example a longer handbrake lever, an additional flange on the brake pedal, etc.

The following is allowed :

1) The original windscreen may be replaced by a laminated windscreen with defrosting equipment incorporated.

2) Measuring instruments such as speedometers etc. may be installed or replaced, and possibly have different functions. Such installations must not involve any risk. However, the speedometer may not be removed, if the supplementary regulations of the event prevent this.

3) The horn may be changed or an additional one added, within reach of the passenger. The horn is not compulsory on closed roads.

4) Circuit breakers may be freely changed vis-a-vis their use, position, or number in the case of additional accessories.

5) A « fly-off » hand brake may be installed.

6) Spare wheel(s) is not compulsory. However if there are any, they must be securely fixed, and not installed in the space reserved for the driver and front passenger (if he is on board). No exterior modification of the bodywork must result from this installation.

7) Additional compartments may be added to the glove compartment and additional pockets in the doors provided they use the original panels.

8) Insulating material may be added to the existing bulkhead to protect the passengers from fire.

9) It is permitted to change the joints of gear-box change systems.

5.8 - ELECTRICAL SYSTEM

5.8.1) The nominal voltage of the electrical system including that of the supply circuit of the ignition must be retained.

5.8.2) The addition of relays and fuses to the electrical circuit is allowed as is the lengthening or addition of electric cables. Electric cables and their sleeves are free.

5.8.3) **Battery :**

The make and capacity of the battery(ies) are free. Each battery must be securely fixed and covered to avoid any short circuiting or leaks.

The number of batteries laid down by the manufacturer must be retained.

Should the battery be moved from its original position, it must be attached to the body using a metal seat and two metal clamps with an insulating covering, fixed to the floor by bolts and nuts.

For attaching these clamps, bolts with a diameter of at least 10 mm must be used, and under each bolt, a counterplate at least 3 mm thick and with a surface of at least 20 cm^2 beneath the metal of the bodywork.

The battery must be covered by a leakproof plastic box, attached independently of the battery. Its location is free, however if in the cockpit it will only be possible behind the front seats. In this case, the protection box must include an air intake with its exit outside the cockpit (see drawings 255-10 and 255-11).

5.8.4) **Generator and voltage regulator :**

Free, but neither the position nor the driving system of the generator may be modified. The position of the voltage regulator may be changed but may not be placed in the cockpit unless it was placed there originally.

5.8.5) **Lighting — Indicating :**

All lighting and signalling devices must comply with the legal requirements of the country of the event or with the Convention on international roadtraffic. Taking this comment into account the location of the indicators and parking lights may be modified, but the original orifices must be sealed. The make of the lighting devices is free.

Lighting devices which are part of the standard equipment must be those foreseen by the manufacturer and must comply where their functioning is concerned with what the manufacturer has foreseen for the model in question.

Original headlamps can be replaced by others having the same lighting functions as long as there is no cutout in the bodywork and the original holes are completely closed.

The operating system of the retractable headlights, as well as its energy source, may be modified.

Freedom is granted with regard to the frontal glass, the reflector and the bulbs. The mounting of additional headlights is authorised provided that the total number of headlights equipping the car does not exceed 8 (parking lights and side lights not included) and provided that the total is an even one. They may, if necessary, be fitted into the front part of the coachwork or into the radiator

grille, but such openings as needed in this case must be completely filled by the headlights. Original headlights may be rendered inoperative and may be covered with adhesive tape.

The replacement of a rectangular headlight by two circular ones, or vice-versa, fitted on a support corresponding to the dimensions of the aperture and sealing it completely is allowed.

The fitting of a reverse-light is authorised, if necessary by embedding it into the coachwork, but provided it will only switch on when the reverse-gear is engaged and provided the police regulations are respected.

If a new registration plate support is provided for with lighting, the original system (support + lighting) may be removed. On circuits, plate lighting is not compulsory.

The Supplementary Regulations of an event may give waivers to the above mentioned prescriptions.

5.9 - FUEL TANKS

5.9.1) The total capacity of the fuel tanks must not exceed the following limits, **in relation to the engine capacity** :

Up to 700 cm^3	: 60 l
From 700 cm^3 to 1,000 cm^3	: 70 l
From 1,000 cm^3 to 1,300 cm^3	: 80 l
From 1,300 cm^3 to 1,600 cm^3	: 90 l
From 1,600 cm^3 to 2,000 cm^3	:100 l
From 2,000 cm^3 to 2,500 cm^3	:110 l
Over 2,500 cm^3	:120 l

5.9.2) The fuel tank may be replaced by a safety fuel tank homologated by the FISA (specification FT3) or by another tank homologated by the car manufacturer. In this case, the number of tanks is free and the tank must be placed inside the luggage compartment or in the original location.

The construction of collector tanks with a capacity of less than 1 litre is free.

The various homologated tanks and the FT3 tanks may also be combined (including the standard tank), insofar as the total of their capacities does not exceed the limits determined by Article 5.9.1.

The position of the original tank may only be modified in cars of which the tank has been placed by the manufacturer inside the cockpit or close to theoccupants. In this case it shall be permissible either to install a protective device between the tank and the occupants of the car, or to place the tank in the luggage compartment, and, if need be, to modify its supplementary accessories (refuelling orifice, petrol pump, overflow pipe). In any case, these changes of the position of the tanks should not give rise to any lightenings or reinforcements other than those provided for under Article 5.7.1 but the opening remaining after the removal of the original tank may be closed by the installation of a panel.

The filler holes may be located in the window panels.

It is possible to fit a radiator in the fuel circuit (maximum capacity one litre).

5.9.3) The use of an increased-capacity fuel tank may be authorised by an ASN with the agreement of the FISA for events organised under special geographic conditions (crossing desert or tropical country for example).

Art. 256 - **Specific regulations for Grand Touring Cars (Group B)**

1) **DEFINITION**
Grand Touring Cars.

2) **HOMOLOGATION**
At least 200 identical units (minimum 2 seats) of these cars must have been built in 12 consecutive months.

3) **FITTINGS AND MODIFICATIONS ALLOWED**
All those allowed for Touring Cars (Group A) with the following modifications. However, Article 255.5.1.8.3 (Restrictor) has not to be applied, **but these cars will be accepted in rallies only on condition that their cylinder capacity, after correction if necessary (See Article 252, 3.1 to 3.5), is less than 1600 cc.**

4) **WEIGHT**
Cars are subjected to the following minimum weight scale in relation to their cubic capacity.

Up to	1,000 cm³ :	620 kg
"	1,300 cm³ :	700 kg
"	1,600 cm³ :	780 kg
"	2,000 cm³ :	860 kg
"	2,500 cm³ :	940 kg
"	3,000 cm³ :	1 020 kg
"	3,500 cm³ :	1 100 kg
"	4,000 cm³ :	1 180 kg
"	4,500 cm³ :	1 260 kg
"	5,000 cm³ :	1 340 kg
"	5,500 cm³ :	1 420 kg
Over	5,500 cm³ :	1,500 kg

5) **WHEELS AND TYRES**
Same text as for Touring Cars (Group A - Art. 5.4) except for the rim diameter and the maximum widths (in rallies only).
The total of the widths of two rim-tyre assemblies on one and the same side of the car must be less than or equal to:

Up to	1,000 cm³ :	13"
"	1,300 cm³ :	14"
"	1,600 cm³ :	15"
"	2,000 cm³ :	17"
"	2,500 cm³ :	18"
"	3,000 cm³ :	18"
"	3,500 cm³ :	20"
"	4,000 cm³ :	20"
"	4,500 cm³ :	22"
"	5,000 cm³ :	22"
Over	5,500 cm³ :	24"

In rallies: The rim diameter cannot exceed 16" (or 415 mm for metric dimensions).

Art. 258 - **Sports car technical regulations (GT)**

SUMMARY

ARTICLE 1 : DEFINITIONS

1) Grand Touring(GT) car :
A two seater open or closed automobile, fully legal for road use, modified to ensure suitability for speed races on circuits or closed courses.

2) Automobile :
A land vehicle running on at least four non-aligned complete wheels, of which at least two are used for steering and at least two for propulsion.

3) Land vehicle :
A locomotive device, propelled by its own means, moving by constantly taking real support on the earth's surface, of which the propulsion and steering are under the control of a driver aboard the vehicle.

4) Bodywork :
All entirely sprung parts of the car in contact with the external air stream, except the parts definitely associated with the mechanical functioning of the engine, transmission and running gear. Any air intake shall be considered to be part of the bodywork.

5) Automobile Make :
An automobile make is a complete car. When a car manufacturer fits an engine which it does not manufacture, the car shall be considered a hybrid and the name of the engine manufacturer shall be associated with the name of the car manufacturer. The name of the car manufacturer shall always precede that of the engine manufacturer. Should a hybrid car win a Championship Title, Cup or Trophy, this will be awarded to the manufacturer of the car.

6) Event :
An event shall consist of official practice and the race.

7) Weight :
Is the weight of the car without the driver at all times during the event.

8) Racing weight :
Is the weight of the car in running order with the driver aboard and the fuel tank full.

9) Wheel :
Flange and rim. **Complete wheel :** Flange, rim and tyre.

10) Door :
That part of the bodywork that opens to give access to the driver and passenger compartments.

11) Cockpit :
The volume which accommodates the driver and the passenger.

12) Survival cell :
A continuous closed structure containing all fuel tanks and the cockpit.

13) Cubic capacity :
The volume swept in the cylinders of the engine by the movement of the pistons. This volume shall be expressed in cubic centimetres. In calculating engine capacity the number Pi shall be 3.1416.

14) Supercharging :
Increasing the weight of the charge of the fuel/air mixture in the combustion chamber (over the weight induced by normal atmospheric pressure, ram effect and dynamic effects in the intake and/or exhaust system) by any means whatsoever. The injection of fuel under pressure is not considered to be supercharging.

15) Sprung suspension :
The means whereby all complete wheels are suspended from the body/chassis unit by a spring medium.

16) Active Suspension :
Any system which allows control of the flexibility of the suspension springs, shock absorption and/or trim height when the car is moving.

17) Main Structure :
The fully sprung structure of the vehicle to which the suspension and/or spring loads are transmitted, extending longitudinally from the foremost front suspension mounting on the chassis to the rearmost one at the rear.

18) Mechanical Components :
All those necessary for the propulsion, suspension, steering and braking, as well as all accessories, whether moving or not, which are necessary for their normal working.

ARTICLE 2 : REGULATIONS

1) Role of the FISA :
The following technical regulations for GT cars are issued by the FISA.

2) Vehicle eligibility :
For a vehicle to be eligible it must first be a Grand Touring (GT) car which has been specifically approved by the FISA ; exceptionally a car having different dimensions or specification may be approved. The vehicle must already have been offered for sale as a road car in at least one market recognized as such by the FISA, and at least one road registered car must exist and be inspected before racing commences.
FISA reserves the right to declare ineligible any car the bodywork dimensions of which have not been published before 1 July 1992 and which exceed in any respect those of a similar nature which have.

3) Publication date for amendments :
Each year in October the FISA will publish changes made to these regulations. All such changes will take effect on the second 1 st of January following their publication. Changes for safety reasons may be made without notice.
Changes and adjustments may also be made between races, on a general or particular basis, in order to ensure and maintain reasonable equality of on-track performance.

4) Dangerous construction :
If an automobile is deemed to be dangerous, it may be excluded by the Stewards of the Meeting.

5) Compliance with the regulations :
It is the duty of each competitor to satisfy the Scrutineers and the Stewards of the Meeting that his automobile complies with these regulations in their entirety at all times during an event.

6) Measurements :
All measurements must be made while the car is stationary on a flat horizontal surface or as provided in Article 91 of the Sportscar sportingregulations.

7) Control of performance :
The FISA has developed a device which records and compares a large number of performance parameters during all practice and race laps.
This device may be introduced at short notice as a means of equalising performance.
In which case, Articles 4 ; 5.1.1 ; 5.2 ; 5.3 ; 9.1 ; 9.2 ; 10.2 ; 10.4 ; and 11.4 may no longer be needed and may be deleted.

ARTICLE 3 : BODYWORK AND DIMENSIONS

1) Length :
The overall length of the car must be the same as the road registered FISA inspected car.

2) Width :
The width of the car including the complete wheels must be the same as the road registered FISA inspected car, with the steered wheels in the straight ahead position.

3) Height :
The height measured vertically from the lowest point of the floor pan to the highest point of the glazed part of the windscreen must be the same as the road registered FISA inspected car.

4) Overhang and wheelbase :
The front and rear overhang must remain the same as the road registered FISA inspected car, as must the wheel base.

5) Doors :

5.1 Two non sliding doors are compulsory, incorporating windows of transparent material.

5.2 The dimensions of the doors and windows must be such as to allow free access to the driver and passenger compartments and unrestricted lateral visi-

bility to the driver. The minimum dimensions of doors and windows are those detailed in the Homologation Regulations for Group B cars.

6) Windscreen :
A windscreen made of one piece of laminated glass or equivalent material approved by FISA, is compulsory.

7) Bodywork :

7.1 With the exception of the lower half of the complete wheels, the bodywork must cover all mechanical components in vertical projection seen from above.

7.2 Any air intake higher than the highest point of the windscreen must not be forward of that point.

7.3 Any part of the bodywork, including any part having an aerodynamic influence, must be rigidly secured to the entirely sprung part of the car (chassis/body unit), must not have any degree of freedom, must be securely fixed and remain immobile in relation to this part while the car is in motion.

7.4 Any device or construction that is designed to bridge the gap between the sprung part of the car and the ground is prohibited under all circumstances.

7.5 Any rear wing (including its mountings and end plates) must not protrude beyond the perimeter of the cars bodywork, as seen from above, nor must any part of it form the highest part of the bodywork. It must comprise no more than a single plane aerofoil, but may include a single trim tab. The complete wing, including tab and endplates, must be capable of fitting into an open box measuring no more than the width of the car, by 150 mm deep, by 250 mm across, unless already fitted to an eligible car prior to 1 July 1992.

7.6 Where panels are replaced, they must be at least as strong as the originals. All bodywork panels of the car must be of the same shape and dimensions as the road registered FISA inspected car, other than modifications required to fit additional lighting.

7.7 The cockpit opening of open cars must be symmetrical when viewed in plan or left/right elevation. The passenger area must not be covered.

7.8 There must be at least two safety fasteners securing bonnet/boot/engine covers, which are clearly indicated by red (or contrasting colour) arrows and which allow the removal of the covers without tools.

7.9 All bodywork joints in the vicinity of the refuelling connections must be designed in such a way as to prevent any leakage of fuel into the engine compartment during refuelling.

7.10 No part of the car must touch the ground when both the tyres on one side are deflated. This test will be carried out on a flat surface, in race trim, with the driver on board.

ARTICLE 4 : WEIGHT

1) Minimum weight :
The initial minimum weight of the car is as shown in the table below to achieve approximate power/weight equalisation. Weights (and other criteria) may periodically be adjusted between makes/individual cars to ensure reasonable equality of racing.

Cubic Capacity	Minimum weight
Up to 3000cc	850 kg
3001cc to 3500cc	925 kg
3501cc to 4000cc	1000 kg
4001cc to 4500cc	1075 kg
4501cc to 5000cc	1150 kg
5001cc to 5500cc	1225 kg
5501cc to 6100cc	1300 kg

The equivalent cubic capacities for supercharged, turbocharged or rotary engines can be determined by referring to Appendix J, article 252.3.

2) Ballast :

Provision must be made to secure ballast such that tools are required for its removal and to allow the fixing of seals by he scrutineers. Ballast is to be located using the passenger seat mountings.

3) Adding during the race :

The adding to the car during the race of any solid material whatsoever or the replacement during the race of any part of the car with another which is materially heavier is forbidden.

4) Liquids :

The weight may be checked at any time during the event with the quantity of liquids remaining in the tanks except after the race where the car may be emptied of all the fuel before weighing.

ARTICLE 5 : ENGINE

1) Type of engine :

1.1 Engine capacity must not exceed 6100 cc.

1.2 The make and type of engine used must be approved by the manufacturer of the car and must be the same as fitted to the road registered FISA inspected car.

1.3 The engine power must be sufficient to meet a minimum power to weight ratio of 2.5 kg/hp.

2) Use of superchargers or turbochargers :

If superchargers or turbochargers are used, the maximum diameter of the air intake into the compressor must be (TBD), maintained for a minimum distance of 3 mm measured downstream of a plane perpendicular to the rotational axis situated at a maximum of 50 mm upstream of a plane passing through the most upstream extremities of the wheel blades.(See Appendix J ; drawing number 254-4)

This diameter must be complied with, regardless of the temperature conditions.

The compressors respecting the above dimensions must be retained. The others must be fitted with a restrictor fixed to the compressor housing and coupling with the dimensions defined above. This restrictor must not be an integral part of the compressor housing, it must be an added part.

In case of an engine with multiple compressors, each compressor must be limited to a maximum intake diameter of (TBD).

All the air necessary for feeding the engine must pass through the restrictor. For the installation of this restrictor, it is permitted to remove material from the compressor housing, and add to it, for the sole purpose of attaching the restrictor onto the compressor housing.

It must be possible to affix seals between the restrictor (or the restrictor/compressor housing attachment), the compressor housing (or the housing/flange attachment) and the turbine housing (or the housing/flange attachment). It must be easy to inspect it, or possible to dismantle it for inspection.

The shape of the restrictor is free, subject to restrictions mentioned above.

If a restrictor or restrictors are insufficient to ensure reasonable power/weight equality, then other means will be used. Turbocharged cars are not to be equipped with any device which allows the boost pressure or the electronic management system controlling the boost pressure, to be adjusted or altered by the driver while the car is in motion.

3) Temperature of the charge :

3.1 Only single stage, air to air intercoolers may be used for turbocharger intercooling. Apart from that, any device, system, procedure, construction or design the purpose and/or effect of which is any decrease whatsoever of the temperature of the intake air and/or of the charge (air and/or fuel) of the engine is forbidden.

3.2 Internal and/or external spraying or injection of water or any substance whatsoever is forbidden (other than fuel for the normal purpose of combustion in the engine).

4) Exhaust :

4.1 The exhaust system must incorporate at least one functioning catalytic converter through which all exhaust gases must pass.

4.2 Cars must meet European, North American or Japanese exhaust emission requirements in their road going form.

4.3 The noise from the car must not exceed 108 dB (A) measured at 15 m on either side of the car. All measures which are taken to ensure that the maximum noise limits are not exceeded must be permanent in nature, and must not be removed by the exhaust gas pressure.

4.4 Exhaust pipe outlets must not protrude beyond or be more than 10 cm from the perimeter of the bodywork as seen from above. Furthermore, any exhaust outlet must be aft of the mid point of the wheelbase.

ARTICLE 6 : PIPING AND FUEL TANKS

1) Fuel tanks :

1.1 All cars must be equipped with a single fuel tank unless multiple tanks are fitted as standard to the road car.

1.2 The tanks must be located in the original position as in the car sold for road use, or in the luggage compartment or between the front face of the engine and the drivers back when viewed in lateral projection ; no fuel is permitted in the cockpit.

A maximum of 2 litres of fuel may be kept outside the fuel tanks, but only that which is necessary for the normal running of the engine. Where possible the fuel tanks must be located within 65 cm from the longitudinal axis of the car.

1.3 The fuel tanks must be foam filled rubber bladders conforming to or exceeding the specification of FIA/FT3.

1.4 All rubber bladders must be made by manufacturers recognised by the FISA.

In order to obtain the agreement of the FISA a manufacturer must prove the compliance of its product with the specifications approved by the FISA. These manufacturers must undertake to deliver to their customers exclusively tanks complying with the approved standards. A list of approved manufacturers is available from the FISA.

1.5 All rubber bladders shall have a printed code indicatingthe name of the manufacturer, the specifications to which the tank has been manufactured and the date of manufacture.

1.6 No rubber bladders shall 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 5 years.

1.7 The tank must be isolated by means of bulkheads so that incase of spillage, leakage or accident happening to the tank, the fuel will not pass into the driver or engine compartment or come into contact with any part of the exhaust system.

2) Fittings and piping :

2.1 All fuel fittings in the tank (including air vents, inlets,outlets, tank fillers, inter tank connectors and access openings) must be metal fittings bonded into the fuel tank.

2.2 All connections between the fuel tank and the chassis (including tank fillers, air vents, access openings, inlets and outlets) must be frangible. By frangible it is meant that should the fuel tank move in relation to the chassis in the event of an accident, the connections between the fuel tank and the chassis will fail at a load which is less than 50 % of the load required to pull the bonded metal fitting out of the tank.

2.3 All fuel lines between the fuel tank and the engine must have a self sealing breakaway valve. This valve must separate at less than 50 % of the load required to break the fuel line fitting or to pull it out of the fuel tank.

2.4 All fuel and lubricating oil lines must have a minimum burst pressure of 41 bar (600 psi) and a minimum operating temperature of 135 degrees C (250 degrees F).

When flexible, these lines must have threaded connectors and an outer braid resistant to abrasion and flame (will not sustain combustion).

2.5 All lines containing hydraulic fluid, with the exception of lines under gravity head only, must have a minimum burst pressure of 70 bar (1000 psi) or higher according to the operating pressure, and a minimum operating temperature of 232 degrees C (450 degrees F).

When flexible, these lines must have threaded connectors and an outer braid resistant to abrasion and flame (will not sustain combustion).

Hydraulic fluid lines must have no connections inside the cockpit which are capable of being removed.

2.6 No lines containing fuel, cooling water or lubricating oil may pass through the cockpit.

2.7 No fuel pumps or fuel filters may be fitted inside the cockpit.

2.8 All lines must be fitted in such a way that any leakage cannot result in the accumulation of fluid in the cockpit.

3) Fuel tank fillers :

3.1 All cars must be fitted with fuel tank fillers and vents which must be single or combined units installed on both sides of the car.
Both fillers and air vents must be equipped with leakproof dry break couplings complying with the dead man principle and therefore not incorporating any retaining device when in an open position.
Couplings dimensions are given in the diagrams of Appendix J Article 252.8.3. All filler and vent caps must be designed to ensure an efficient locking action which reduces the risks of an accidental opening following a crash impact or incomplete locking after refuelling.

3.2 The tank fillers, vents and caps must not protrude beyond the bodywork.

3.3 The tank fillers, vents and breathers must be placed where they would not be vulnerable in the event of an accident.

3.4 Unless the tank fillers are connected directly to the tank,there must be a valve, supplied by the tank manufacturer, at the top of the tank which seals in the event of the filler being knocked off during an accident.

3.5 Any breather pipe connecting the tank to atmosphere must exit on the outside of the bodywork, must be fitted with a non return valve and must be designed in such a way as to avoid any liquid leakage when the car is running or upside down.

3.6 All cars must be fitted with a self sealing connector which can be used by the scrutineers to obtain fuel from the tank.
This connector must be the type approved by FISA.

4) Refuelling :
4.1 Refuelling the car by any other means than by gravity with a maximum height of 2 metres above the track where the refuelling takes place is forbidden throughout the event.

4.2 During the race, only one autonomous supply tank complying with the diagram 257-2 must be used per car. This tank must have a simple cylindrical internal shape and must not have any additional internal parts.

4.3 Above the tank there must be either a collector tank of at least 5 litres capacity or a vent at least 1 m above.

4.4 The refuelling pipe, minimum length 250 cm, must be provided ith a leak proof coupling to fit the filler mounted on the car, and during refuelling the outlet of the air vent must be connected with the appropriate coupling to the supply tank.

4.5 All metal parts of the refuelling system from the coupling to the supply tank and its rack must be connected electrically to earth.

4.6 A 90 degree cut off valve, situated on the outlet of the supply tank and controlling the fuel flow must be manned at all times during refuelling.

4.7 All hoses and fittings from the supply tank to the car and back must have a maximum inside diameter of 1.5".

4.8 For refuelling on the starting grid, an unpressurised container not exceeding 12 litres capacity which is vented to air and has a leak proof coupling connecting it to the tank filler on the car or an overflow bottle, which is described in Appendix J Article 252.8.3, can be used.
During practice, the standard supply tank or the 12 litre container as defined above must be used.

4.9 If a meter is used it must be of a FISA homologated type. If an external sight glass is fitted to the tank, it must be fitted with isolating valves as close as possible to the tank.

4.10 The storing of fuel on board the car at a temperature of more than 10 degrees centigrade below the ambient temperature is forbidden.

The use of a specific device, whether on board the car or not, to reduce the temperature of the fuel below the ambient temperature is forbidden.

5) Fuel capacity :

5.1 The maximum amount of fuel which may be carried on board is 100 litres. Any device, system, procedure, construction or design, the purpose and/or effect of which is any increase whatsoever, even temporarily, of the total fuel storage capacity beyond the maximum of 100 litres is forbidden.

5.2 The FISA reserves the right to reduce the fuel capacity from 100 litres on a general or individual basis as one of the means of ensuring equality of on track performance.

ARTICLE 7 : OIL SYSTEM

1) Oil tanks :

1.1 The quantity of oil carried on board must not exceed 20 litres, unless a greater capacity was standard on an eligible car prior to 1 July 1992.

1.2 The oil tank must not be located in the cockpit.

1.3 All oil storage tanks situated outside the main structure of the car must be surrounded by a 10 mm thick crushable structure, as defined in Article 15.3.3.

2) Catch tank :

When a car's lubrication system includes an open type sump breather, it must vent into a catch tank of at least 3 litres capacity.

ARTICLE 8 : ELECTRICAL EQUIPMENT

1) Battery :

The battery or batteries must not be located in the cockpit, must be securely fixed and be completely protected by a box made of insulating material.

2) Windscreen wiper :

The car must be fitted with at least one effective windscreen wiper which must be in working order throughout the event.

3) Starting :

A starter must be fitted with electrical or other source of energy carried aboard the car, and able to be controlled by the driver when seated normally.

4) Lighting equipment :

4.1 All lighting equipment must be in working order throughout the event.

4.2 All cars must be fitted with two red stop lights and two red rear lights. They must be located symmetrically on either side of the longitudinal axis of the car and be mounted in a visible position.

4.3 All cars must be fitted with at least two headlights.

4.4 All cars must be fitted with direction indicators mounted at the front and rear of the vehicle.

4.5 All cars must have at least one red rain light of at least 21 watts in working order throughout the event which :

— Faces rearward and is clearly visible from the rear ;
— Is not mounted less than 40 cm from the ground ;
— Is not mounted more than 10 cm from the car centre line or, in case of two lights, are mounted symmetrically on either side of the longitudinal axis of the car and on the bodywork behind the rear wheels in frontal projection.

The measurements being taken to the centre of area of the lens.

— Has a minimum surface area of 50 cm^2 ;
— Can be switched on by the driver when seated normally in the car ;

In addition the lens and reflector must conform to the standards EEC 77/538 or ECE 38 for rear fog lamps of motor vehicles and must carry the corresponding approval marking.

ARTICLE 9 : TRANSMISSION TO THE WHEELS

1) Transmission to the wheels :

Power must be transmitted through no more than two wheels, unless four wheel drive is standard on the road registered FISA inspected car.

2) Type of gearbox :

All cars must have no more than 6 forward gears.

Semi automatic and automatic gearboxes, and differentials with electronic, pneumatic or hydraulic slip control, are forbidden unless standard on the road registered FISA inspected car.

3) Reverse gear :

All cars must have a reverse gear which, at any time during the event, can be selected while the engine is running and used by the driver when seated normally.

ARTICLE 10 : SUSPENSION AND STEERING

1) Sprung suspension :

Cars must be fitted with sprung suspension.

The springing medium must not consist solely of bolts located through flexible bushes or mountings.

There must be movement of the wheels to give suspension travel in excess of any flexibility in the attachments.

2) Active suspension :

Active suspension is forbidden unless standard on the road registered FISA inspected car.

3) Chromium plating :

Chromium plating of steel suspension members is forbidden.

4) Suspension members :

All suspension members must be made from a homogeneous metallic material.

5) Steering :

5.1 The steering must consist of a mechanical link between the driver and the wheels unless an alternative method is standard on the road registered FISA inspected car.

5.2 Four wheel steering is forbidden unless standard on the road registered FISA inspected car.

ARTICLE 11 : BRAKES

1) Separate circuits :

All cars must have a brake system which has at least two separate circuits operated by the same pedal.

This system must be designed so that if leakage or failure occurs in one circuit, the pedal shall operate the brakes on at least two wheels.

2) Brake discs :

Brake discs must be made from ferrous material.

3) Air ducts :

Brake cooling ducts must not protrude beyond the perimeter of the car, as seen from above.

4) Anti lock braking systems :

Anti lock brake systems are not permitted unless standard on the road registered FISA inspected car.

ARTICLE 12 : WHEELS AND TYRES

1) Dimensions :

The total of the widths of the two complete wheels on one side of the car must not exceed 24". These widths will be measured horizontally, at axle height, with the tyre at normal running pressure, with the complete wheel mounted on the car which is resting on the ground in running order, with the driver aboard.

2) Location :

The complete wheel above the hub centre line must be able to be housed within the wheel arch. The internal arch may be modified to accommodate the wheel as long as it does not affect the structural integrity of the vehicle, or change the external appearance or dimensions from that of the road registered FISA inspected vehicle.

3) Wheel material :

All wheels must be made from a homogeneous metallic material unless a different material is standard on the road registered FISA inspected car.

4) Number of wheels :
The maximum number of wheels is four.
5) Number of tyres :
The maximum number of tyres per car to cover official practice and the start of the race is six.
6) Wheel attachment :
A safety spring must be in place on the wheel nut throughout the event and must be replaced after each wheel change. These springs must be painted dayglo red or orange. Alternatively, another method of retaining the wheels may be used, provided it has been approved by FISA.
7) Pressure control valves :
Pressure control valves on the wheels are forbidden.
8) Pneumatic jacks :
Pneumatic jacks may be fitted to the car, but compressed air bottles are not to be carried on board.

ARTICLE 13 : COCKPIT
1) Minimum interior dimensions :
The minimum interior cockpit dimensions are those detailed in the Homologation Regulations for Group B Cars.
2) Equipment permitted in the cockpit :
2.1 The only components which can be fitted in the cockpit are :
— Safety equipment and structures
— Tool kit
— Seat and controls necessary for the driving
— Electronic equipment
— Driver cooling system.
— Ballast secured to passenger seat mounting points.

2.2 None of the above items may encroach upon the minimum dimensions specified nor hinder cockpit exit within the time required.

2.3 The above components must be covered where necessary by a rigid protective material to minimize injury and must be attached such that they are able to withstand 25 g deceleration.

3) Cockpit exit time :
3.1 The cockpit must be designed so as to allow the driver to get out from his normal driving position in 7 seconds through the drivers door and in 9 seconds through the passenger's door.

3.2 For the purposes of the above tests, the driver must be wearing all normal driving equipment, the seat belts must be fastened, the steering wheel must be in place in the most inconvenient position, and the doors must be closed.

4) Ventilation :
A fresh air inlet to the cockpit and a used air outlet must be fitted to all cars. An effective demisting system must be provided.

5) Pedals :
Unless specifically excepted by FISA, when seated normally, the soles the driver's feet, resting on the pedals in the inoperative position, shall not be situated to the fore of the vertical plane passing through the centre line of the front wheels.
Should the car not be fitted with pedals, the driver's feet at the maximum forward extension shall not be situated to the fore of the vertical plane referred to above.

6) Dashboard :
The driver, seated normally with his seat belts fastened and with the steering wheel removed must be able to raise both legs together so that his knees are past the plane of the steering wheel in the rearward direction. This action must not be obstructed by any part of the car.

7) Steering wheel :
The steering wheel must be fitted with a quick release mechanism. Its method of release must be by pulling a concentric flange installed on the steering column behind the wheel.

8) Steering lock :
If a steering lock is fitted as original equipment, it must be made inoperative.

ARTICLE 14 : SAFETY EQUIPMENT

1) Fire extinguishers :

1.1 Permitted extinguishing products are :
BCF (CF2ClBr) or any other extinguishing product approved by FISA.

1.2 Minimum capacity :
Cockpit : 2.5 kg
Engine compartment : 5.0 kg

1.3 The extinguisher bottles must be adequately protected, must be mounted in the cockpit and must not be mounted forward of the centre line of the front wheels.

In all cases, the mountings of the extinguishers must be capable of withstanding a deceleration of 25 g.

All extinguishing equipment must withstand fire.

1.4 Discharge time :
Engine compartment : 30 seconds (± 5 seconds)
Cockpit : 10 seconds minimum.
Both bottles must be released simultaneously.

1.5 Any triggering system having its own source of energy is permitted provided it is possible to operate all extinguishers in case of failure of the car's main electric circuits.

The driver must be able to trigger all extinguishers 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 described in Article 14.5.2. It must be marked with a letter « E » in red inside a white circle of at least 10 cm diameter with a red edge.

1.6 The following weights shall be clearly marked on each bottle :
— Weight of the empty bottle ;
— Weight of the extinguishing agent ;
— Total charged weight.

1.7 The system must work in any position even when the car is inverted.

1.8 The extinguisher nozzles must be installed in such a wa ythat they are not directly pointed at the driver.

2) Safety belts :

2.1 The wearing of two shoulder straps, one abdominal strap and two straps between the legs is compulsory. These straps must comply with FIA standard 8853-85.

2.2 A static test of the anchorages must be performed with loads and procedures as defined in FIA standard 8853-85, in the presence of a FISA technical delegate.

This test will not be compulsory if a crash test of the complete car has been carried out in accordance with appendix J Article 257.14.5.4.2.

3) Rear view mirrors :

The car must be fitted with two rear view mirrors, one fitted on each side of the car in order to give an efficient view to the rear. Each mirror must have a minimum area of 100 cm^2.

4) Seats, headrest and interior trim :

4.1 Passenger seat, interior trim, door and roof lining, carpets and sound insulating material are to be removed to reduce combustible material.

4.2 All cars must be equipped with a headrest which cannot eflect more than 5 cm when a rearward force of 85daN is applied.

The headrest surface must not be less than 400 cm^2 and must be continuous and without protruding parts.

It must be positioned so that it is the first point of contact for the driver's helmet in the event of an impact projecting his head backwards when he is seated normally.

4.3 The driver's seat must either be original equipment, as rash tested in accordance with Article 15.5, or a competition seat and mounting frame of adequate strength and proven standard, attached to the original seat mounting points in accordance with Appendix J ; Article 253.16.

5) Master switch :

5.1 The driver, when seated normally with the safety belt fastened and the steering wheel in place, must be able to cut off the all electrical circuits by means of a spark proof circuit breaker switch. This switch must be located on the dashboard and must be clearly marked by a symbol showing a red spark in a white edged blue triangle.

5.2 There must also be an exterior switch, with a handle which is capable of being operated from a distance by a hook. This switch must be located at the lower part of the windscreen pillar on the driver's side.

6) Towing eye :

6.1 A towing eye with a minimum inner diameter of 80 mm must be securely fitted to the front and rear structures of all cars.

6.2 They must be positioned in such a way that they can be used should the car be stopped in a gravel bed.

6.3 The towing eye must be clearly visible and painted in yellow, red or orange and must be located inside the contour of the bodywork when viewed from above.

ARTICLE 15 : SAFETY STRUCTURES

1) Magnesium sheet :

The use of magnesium sheet less than 3 mm thick is forbidden.

2) Rollover structures :

The car must be fitted with a rollcage complying with Appendix J Article 253.8, 1994 Regulations,(see Bulletin No. 255) or a rollover structure complying with Article 257.14.2.3.

Longitudinal struts, or an alternative acceptable to FISA, providing lateral protection, must be included in both cases.

3) Crushable Structures :

3.1 The bottom and the sides of the fuel tank in lateral projection, must be protected by a crushable structure at least 1 cm thick.

Radiators can be used as crushable structures.

3.2 If the fuel tank is situated less than 20 cm from the lateral flanks of the car, the entire surface must be protected by a crushable structure at least 10 cm thick.

3.3 The crushable structure must be a sandwich construction based on a fire resistant core with a minimum crushing strength of 18N/cm², and two sheets of at least 1.5 mm thickness and having a tensile strength of minimum 225N/mm².

3.4 Only water pipes may pass through the crushable structure, but not fuel, oil or electrical lines.

4) Firewall and floor :

4.1 Cars must be equipped with a firewall between the driver and engine to prevent the passage of flames from the engine compartment to the cockpit. Any holes in the firewall must be of the minimum size for the passage of controls and wires and must be completely sealed.

4.2 A crushable structure of 1 cm thick similar to that detailed in Article 14.3.3, must be the basis of the cockpit floor.

5) Survival cell and frontal protection :

5.1 All cars must meet the requirements of Appendix J Article 257.14.5.4, or they must have been subjected to and passed the relevant European, North American or Japanese road car crash tests, regardless of the number of cars produced.

5.2 A dossier defining the structure, test methods and results of all tests must be submitted to FISA before the use of the relevant model of car in the GT event.

5.3 Any significant modification introduced into any of the structures tested will require that part, or the whole car, to undergo further tests.

ARTICLE 16 : FUEL

1) Fuel specification :

1.1 Only fuel provided by the supplier designated by the FISA may be used.

1.2 The fuel is petrol without any additive other than that of a lubricant on current sale which cannot increase the octane number.

1.3 The fuel has the following characteristics :

100 RON maximum, 98 RON minimum, 90 MON maximum, 88 MON minimum, the measurements being made according to the standards ASTM D2699-86 and D2700-86, the fuel being accepted or rejected according to ASTM D3244 with a confidence limit of 95 %.

Specific gravity between 720 and 785 kg/m³ at 15 degrees C (the measurement being made according to the standard ASTM D4052).

A maximum of 2.8 % oxygen and 0.5 % nitrogen by weight, the remainder of the fuel consisting exclusively of hydrocarbons and not containing any power boosting additives.

The measurement of the nitrogen will be carried out according to the standard ASTM D3228, that of the oxygen by elemental analysis with a tolerance of 0.2 %.

Maximum content of peroxides and nitrooxide compounds of 100 ppm (ASTM D3703).

Maximum lead content of 0.013 g/l (ASTM D3237).

Maximum benzene content of 5 % in volume (ASTM D3606).

Maximum Reid vapour pressure of 700hPa (ASTM D323).

2) Air :

Only air may be mixed with the fuel as an oxidant.

ARTICLE 17 : FINAL TEXT

The final text of these regulations is the English version which will be used should any dispute arise over their interpretation.

Art. 259 - **Technical regulations for production sports cars (Group CN)**

ARTICLE 1 : DEFINITIONS

1.1) Production sports car :
Two-seater competition automobile, open or closed, constructed especially for speed races.

1.2) Automobile :
Land vehicle running on at least four non-aligned complete wheels, of which at least two are used for steering and two used for propulsion.

1.3) Land vehicle :
Locomotive device, propelled by its own motive power by constantly taking real support from the ground surface, with propulsion and steering controlled by a driver on board the vehicle.

1.4) Bodywork :
All those parts of the automobile which are wholly sprung, in contact with the external airstream, excepting those parts clearly associated with the mechanical function of the engine, the transmission or the running gear. All air intakes shall be considered to be part of the bodywork.

1.5) Automobile make :
An automobile make corresponds to a complete vehicle. When a manufacturer fits an engine not manufactured by himself, the vehicle shall be considered as a hybrid and the name of the engine manufacturer shall be associated with the name of the car manufacturer. The name of the car manufacturer shall always precede that of the engine manufacturer. Should a hybrid win a Championship Title, Cup or Trophy, this will be awarded to the manufacturer of the automobile.

1.6) Event :
An event shall consist of the official practice sessions and the race itself.

1.7) Weight :
The weight is held to be that of the car without the driver at any moment during the event.

1.8) Wheel : Flange and rim.
Complete wheel : Flange, rim and tyre

1.9) Door :
That part of the bodywork which opens to give access to the driver and passenger compartments.

1.10) Cockpit :
Inner structural volume used to accommodate the driver and passenger.

1.11) Engine :
Assembly constituted by the cylinder block, cylinders and cylinder heads.

1.12) Cylinder capacity :
The volume swept by the movement of the pistons inside the cylinders of the engine. In calculations of cylinder capacity, the number pi is held to be 3.1416.

1.13) Supercharging :
Increasing the weight of the charge of the fuel-air mixture in the combustion chamber (over the weight induced by normal atmospheric pressure, ram effect and dynamic effects in the intake and/or exhaust system) by any means whatsoever. The injection of fuel under pressure is not considered to be supercharging.

1.14) Main structure :
This is the fully sprung part of the structure to which the suspension and/or spring loads are transmitted, extending longitudinally from the foremost front suspension mounting on the chassis to the rearmost rear mounting.

1.15) Mechanical elements :
All the elements necessary for propulsion, suspension, steering and braking, together with all the accessories, moving or not, which are necessary for the normal function of the above.

ARTICLE 2 : REGULATIONS

2.1) The following regulations governing the construction of Production Sports Car automobiles are issued by the FISA.

2.2) In October each year, the FISA will publish any changes made to these regulations. All such changes will take effect on the second January 1 following their publication. Changes made for safety reasons may come into force without notice.

2.3) Any automobile which is deemed to be dangerous may be excluded by the Stewards of the event.

2.4) It is the duty of each competitor to satisfy the Scrutineers and Stewards that his car complies with the regulations in their entirety at all times during the event. The competitor must be able to show the Scrutineers the Group A and N homologation form corresponding to the reference vehicle for the engine used, whenever the Scrutineers so request.

2.5) All measurements must be taken while the car is stationary on a flat horizontal surface.

2.6) The use of titanium is prohibited.

2.7) Only chassis made exclusively of metal, whether monocoque or tubular, are authorised ; as far as the chassis is concerned, metal honeycomb constructions are authorised only for the flat bottom (see article 3.7.4).

2.8) All modifications not explicitly authorised are prohibited.

Apart from these authorisations, the engine must be strictly series production and identifiable from the information given in the corresponding articles of the FISA homologation form. Therefore, any engine part damaged through wear or through an accident may only be replaced with an original part identical to the damaged part.

ARTICLE 3 : BODYWORK AND EXTERIOR DIMENSIONS

3.1) Length :

The overall length of the car must not exceed 4800 mm.

3.2) Width :

The overall width of the car including the complete wheels shall not exceed 2000 mm, when the steered wheels are in the straight ahead position.

3.3) Height :

The height measured vertically from the lowest point of the flat surface as defined in Article 3.7.4 to the highest part of the vehicle, shall not exceed 1030 mm, except as regards the rollover bar which must not constitute an aerodynamic element.

3.4) Overhangs :

Front plus rear overhangs must not exceed 80 % of the wheelbase. The difference between the front and rear overhangs must not exceed 15 % of the wheelbase.

3.5) Doors :

3.5.1 - **Closed cars :**

Two doors are compulsory.

The doors when opened must afford free access to the seats. No mechanical element may hinder access to the seats. The external door handle on closed cars must be clearly indicated.

The dimensions of the lower panel (the part which is normally opaque) must be such as to allow a rectangle or a parallelogram at least 500 mm wide and 300 mm high, measured vertically, to be affixed. The corners of this rectangle or parallelogram may be rounded with a maximum radius of 150 mm.

Cars with sliding doors will be admitted only if they are fitted with a safety device enabling the occupants of the car to be evacuated quickly and easily.

The doors must include a window distinct from the panel mentioned above, made of transparent material, and capable of containing a parallelogram with horizontal sides measuring at least 400 mm. The height measured on the surface of the window perpendicular to the horizontal sides shall be at least 250 mm. The corners of the parallelogram may be rounded to a maximum radius of 50 mm. Measurements shall be taken on the chord of the arc.

The doors must be designed in such a way that the lateral vision of the driver is never restricted.

Each door must have only one outside handle which must be of a lever type, operated by being pulling upwards, and which must be clearly indicated by an arrow in red or in another contrasting colour.

Door hinges must be designed in the form of pins which can be removed, without using tools, from the outside of the car.

3.5.2 - **Open cars :**
Doors are optional.
If doors are fitted, they must comply with the dimensions stipulated in Article 3.5.1 above (closed cars) as regards the opaque element.
If doors are not fitted, the bodywork at the side of the cockpit must comply with these same dimensions.

3.6) Windscreen :
3.6.1 - **Closed cars :**
A windscreen made of one piece of laminated glass or equivalent FISA approved material is compulsory.
The shape of the windscreen must be such that at a distance of 50 mm measured vertically downwards from the highest point of the transparent part, the glazed surface is at least 250 mm wide measured across the chord of the arc on either side of the longitudinal axis of the car.
The shape of the windscreen must be such that its upper edge forms a regular, continuous convex line.
It must be possible to affix to the windscreen a vertical band 100 mm high and 950 mm long (measured horizontally) across the chord of the arc between the inner faces of the windscreen, the centre of which shall be 300 mm (measured vertically downwards) from the highest point of the roof, excluding air intakes.

3.6.2 - **Open cars :**
The windscreen is optional and dimensions are free, on condition that Article 3.3 of these regulations is complied with.

3.7) Bodywork :
3.7.1 - The use of carbon fibre and/or kevlar for the manufacturing of the bodywork is prohibited.
3.7.2 - The bodywork shall cover all the mechanical components : only the exhaust and air intake piping, and the top of the engine, may project.
3.7.3 - On closed cars, the height of the air intakes must not exceed that of the highest point of the roof ; open cars must comply with Article 3.3.
3.7.4 - The bottom of all cars, rearward of the vertical plane tangent to the rear of the complete front wheels, and forward of the vertical plane tangent to the complete rear wheels, must be fitted with a continuous solid, flat (tolerance ± 5 mm), hard, impervious and rigid surface within which it would be possible to draw a rectangle 1000 mm (measured along the transverse axis of the car) by 800 mm (measured along the longitudinal axis of the car).
The whole of this surface must form an integral part of the chassis/body unit and must have no freedom of movement or provision for adjustment in relation to this unit. No space may exist between this « flat bottom » as defined above and the chassis/body unit.
To help overcome any manufacturing difficulties, a tolerance of ± 5 mm will be permitted for the « flat bottom » defined above. The aim of this tolerance is not to permit designs which go against the spirit of the « flat bottom ».
3.7.5 - No part having an aerodynamic effect, and no part of the bodywork may under any circumstances be located below the geometric plane of the flat surface provided for in Article 3.7.4.
3.7.6 - Any part having an aerodynamic effect, and all parts of the bodywork must be rigidly secured to the entirely sprung part of the car (chassis/body unit), must have no freedom of movement, must be solidly fixed and must remain immobile in relation to this part while the car is in motion.
i3.7.7 - Any device or contrivance designed to bridge the gap between the sprung part of the car and the ground is prohibited in all circumstances.
3.7.8 - Behind the rear wheels, the bodywork must descend below the rear axle.
Any cooling holes in the bodywork which are directed rearward must be fitted with louvres or other similar devices to ensure that the tyres will not at any time be visible from the rear.
The bodywork shall project over the complete wheels in such a way as to cover at least one third of their circumference and their entire width.
3.7.9 - All elements of the bodywork shall be completely and cleanly finished, with no temporary or makeshift elements.
3.7.10 - In the case of open cars, the opening above the seats must be symmetrical in relation to the longitudinal axis of the car.

An open car must respect the following prescriptions :
— The shape of the bodywork seen from one side must be identical to the shape seen from the other side.
— Seen from above, the existence of a central element separating the driver from the passenger, even if this element is not connected to the bodywork at the backs of the seats, may be accepted as long as the cockpit opening is of the same size for both driver and passenger.
— The bodywork may be made of transparent material, but the rules regarding the windscreen must be complied with (see also Article 13.8).
3.7.11 - The clips fastening the front and rear covers must be clearly indicated by arrows in red or in another contrasting colour, and it must be possible to manipulate them without using tools.
3.7.12 - The engine cover and its junction with the bodywork/cockpit must be designed so as to prevent any leakage of fuel into the interior of the engine compartment during refuelling.

ARTICLE 4 : WEIGHT

4.1) Cars must weigh at least the following weights, according to their engine capacity :

Up to 1000 cm^3	: 460 kg
From 1000 cm^3 to 1300 cm^3	: 480 kg
From 1300 cm^3 to 1600 cm^3	: 500 kg
From 1600 cm^3 to 2000 cm^3	: 520 kg
From 2000 cm^3 to 2500 cm^3	: 560 kg
From 2500 cm^3 to 3000 cm^3	: 600 kg.

4.2) Ballast may be used provided that it is secured in such a way that tools are required for its removal. It must be possible to affix seals if this is deemed necessary by the Scrutineers.

4.3) The adding of any solid material whatsoever to the car, or the replacement of any part of the car by a heavier part, is strictly prohibitedduring the race.

4.4) The weight of the car may be checked at any time during the event with the quantity of fluids remaining in the tanks. In case of doubt, the Scrutineers may drain the fuel tanks to check the weight.

ARTICLE 5 : ENGINE

5.1) Type of engine allowed :
The engine must come from a model of car homologated by the FISA in Group N.
Cylinder capacity : less than or equal to 3000 cm^3.
Maximum number of cylinders : 6.
Cars with rotary piston engines covered by NSU-Wankel patents will be admitted on the basis of a piston displacement equivalence. This equivalence is 1.5 times the volume determined by the difference between the maximum and minimum capacities of the working chamber.

5.2) Supercharging of any kind whatsoever is prohibited.

5.3) Injection and spraying of water :
Internal and/or external spraying or injection of water or any substance whatsoever is prohibited (other than fuel for the normal purpose of combustion inside the engine).

5.4) Temperature of the charge :
Any device, system, procedure, construction or design the purpose and/or effect of which is to decrease in any way the temperature of the intake air and/or the charge (air and/or fuel) of the engine is prohibited.

5.5) Engine mountings — Position :
The material, type and number of engine mountings are free, as are the position and incline of the engine in its compartment.

5.6) Ignition :
The original ignition system (battery/coil or magneto) must be maintained. The make and type of plugs, the rev limiter and the high tension cables are free. Electronic control of the engine is free.

5.7) Lubrication :
The lubrication system is free, on condition that it complies with articles 3.7.2 and 7.

5.8) Cooling :
The cooling radiator and the lines connecting it to the engine are free, as are the thermostat and the fan, and their location.

5.9) Fuel feed :
Carburettor parts or fuel injection system parts regulating the quantity of fuel reaching the engine may be modified, provided that they have no influence on air admission. The original injection system must be maintained. The injectors may be changed for injectors which are identical except with regard to the size of the pintle nozzle hole at the end. Electronic control of the engine is free.
The air filter, along with its box, the plenum chamber and the lines connecting it to the engine, are free. The air filter and its box may therefore be removed, moved to a different position, or replaced. The air measuring device is free.

5.10) Exhaust :
5.10.1 - The exhaust is free after the cylinder head, but the interior dimensions of the exit from the original manifold must be maintained, and the maximum interior dimensions of the duct must be those of the exit from the manifold. This freedom must not enable the maximum sound levels permitted by the laws of the country in which the event is run to be exceeded.
5.10.2 - The exhaust pipe outlets must be directed either rearwards or sideways. If the exhaust pipes are directed rearwards, their outlets shall be situated between 450 mm and 100 mm above the ground. If the exhaust pipes are directed sideways, their outlets must be located to the rear of a vertical plane passing through the wheelbase centre plane and may not project beyond the bodywork in any way.

5.11) Cylinder head gasket :
The material is free, but not the thickness.

5.12) The accelerator control cable may be replaced or doubled, using another of unrestricted origin.

5.13) The engine flywheel is free on condition that its minimum weight (including the starter ring) according to the homologation form is respected.

ARTICLE 6 : FUEL SYSTEM
6.1) Fuel specification :
6.1.1 - **For petrol engines :**
The fuel must be commercial petrol which comes from a service station pump, without any additive other than that of a lubricant on current sale. The fuel must comply with the following specifications :
— 102 RON and 90 MON maximum, 95 RON and 85 MON minimum for unleaded fuel.
100 RON and 92 MON maximum, 97 RON and 86 MON minimum for leaded fuel.
The measurements will be made according to the standard ASTM D 2699-86 and D 2700-86, the fuel being accepted or rejected according to the standards ASTM D 3244 with a confidence limit of 95 %.
— Specific gravity between 720 and 785 kg/m³ at 15°C (measured according to ASTM D4052).
— A maximum of 2.8 % oxygen (or 3.7 % if the lead content is less than 0.013 g/l) and 0.5 % nitrogen by weight, the remainder of the fuel consisting exclusively of hydrocarbons and not containing any power-boosting additives.
The nitrogen content will be measured according to standard ASTM D3228, and the oxygen content by elemental analysis with a tolerance of 0.2 %.
— Maximum content of peroxides and nitrooxide compounds : 100 ppm (ASTM D3703).
— Maximum lead content : 0.40 g/l or the standard of the country of the event if this is lower (ASTM D3341 or ASTM D3237).
— Maximum benzene content : 5 % in volume (ASTM D3606).
— Maximum Reid vapour pressure : 900 hPa (ASTM D 323).
— Distillation at 70°C : 10 % — 47 % (ASTM D 86).
— Distillation at 100°C : 30 % — 70 % (ASTM D 86).
— Distillation at 180°C : 85 % minimum (ASTM D 86).
— Maximum final boiling point : 225°C (ASTM D 86).
— Maximum residue : 2 % volume (ASTM D 86).

If the fuel available locally for the event is not of a sufficient quality for use by competitors, the ASN of the organising country must ask the FISA for a waiver in order to allow the use of fuel not corresponding to the characteristics defined above.

6.1.2 - **For diesel engines :**
Fuel must meet the following specifications :
— hydrocarbon content, % in weight — minimum 99.0
— density — maximum 0.860
— cetane index (ASTM D 613) or calculated cetane index (ASTM D 976/80) — maximum 60

6.1.3 - Storage of fuel on board the car at a temperature of more than 10°C below the ambient temperature is prohibited.
The use of any device (whether on board the car or not) to reduce the temperature of the fuel below the ambient temperature is prohibited.

6.1.4 - Only air may be mixed with the fuel as an oxidant.

6.2) Fuel lines, pumps and filters :
6.2.1 - All fuel lines must have a minimum burst pressure of 41 bars (600 psi) and a minimum operating temperature of 135°C (250°F).
When flexible, these lines must have threaded connectors and an outer braid resistant to abrasion and flame (will not sustain combustion).
6.2.2 - No lines containing fuel may pass through the cockpit.
6.2.3 - No fuel pumps or fuel filters may be fitted inside the cockpit.
6.2.4 - All fuel lines, filters and pumps must be positioned in such a way that any leakage cannot result in fuel entering the cockpit.

6.3) Fuel tank :
6.3.1 - Fuel tanks may not be positioned more than 65 cm from the longitudinal axis of the car and must be located within the limits defined by the front and rear wheel axes. The tank must be insulated by means of bulkheads preventing the fuel from passing into the cockpit or engine compartment or coming into contact with exhaust piping, in the event of spillage, leakage or any other accident occurring to the tank. Fuel tanks must be properly protected (see Article 15.2).
6.3.2 - For hill-climbs and slaloms if the total capacity of the fuel tanks is not greater than 20 l, the safety tank will not be compulsory on condition that the position of the tank does not protrude beyond 30 cm in any direction from the longitudinal axis of the car, and that it is surrounded by a crushable structure 1 cm thick. The safety tank is also optional for circuit races of less than 100 km under the same conditions of installation.
In other cases, cars must be equipped with fuel tanks which comply with or exceed FIA/FT3 safety specifications. Tanks must be supplied by an approved manufacturer.
6.3.3 - On all tanks of this type, the name of the manufacturer, the specifications to which the tank has been manufactured and the date of manufacture must be printed.
6.3.4 - No tank of this type may be used more than five years after the date of manufacture.

6.4) Tank fillers and caps :
6.4.1 - All filler and vent caps must be designed to ensure an efficient locking action which reduces the risks of accidental opening following a crash impact or incomplete closing after refuelling.
6.4.2 - The tank fillers, vents and caps must not protrude beyond the bodywork.
6.4.3 - The tank fillers, vents and breathers must be placed where they would not be vulnerable in the event of an accident.

6.5) Refuelling :
(Only for circuit races where refuelling is necessary)
The refuelling hose must be provided with a leakproof coupling to fit the standardised filler mounted on the car. The dimensions of this filler are given in drawing 252-5.

Fillers and air vents must be equipped with leakproof dry break couplings complying with the dead man principle and therefore not incorporating any retaining device when in an open position (spring loaded balls, bayonet, etc.).

The air vent(s) must be equipped with non-return and closing valves having the same closing system as that of the standard filler, and the same diameter. During refuelling, the outlets of the air vents must be connected with the appropriate coupling, either to the main supply tank or to a transparent portable container with a minimum capacity of 20 litres provided with a closing system rendering it completely leakproof.

Should the circuits be unable to provide the entrants with a centralised system, these will have to refuel according to the above procedure. In no case may the level of the reserve tank exceed two metres above the track where the refuelling takes place, for the entire duration of the event.

The overflow bottles and the independent storage tanks must comply with drawings 252-1 or 252-2 and 252-3 or 252-4.

All metal parts of the refuelling system from the coupling over the flow meter to the tank and its rack must be connected electrically to the earth.

A 90° cut off valve situated close to the main supply tank, controlling the fuel flow, must be manned at all times during refuelling.

All hoses, valves, fittings and couplings used must have a maximum inner diameter of 1 1/2".

6.6) Fuel capacity :

The maximum amount of fuel which may be carried on board is 100 litres. Any device, system, procedure, construction or design the purpose and/or effect of which is to increase in any way, even temporarily, the total fuel storage capacity beyond 100 litres, is prohibited.

ARTICLE 7 : OIL SYSTEM

7.1) Oil tanks /

The quantity of oil carried on board must not exceed 20 litres.

7.2) No part of the car containing oil may be **situated behind the complete rear wheels.**

7.3) All oil tanks must be properly protected. All oil tanks situated outside the main structure of the car must be surrounded by a 10 mm thick crushable structure as defined in Article 15.2.3.

7.4) Oil catch tank :

If a car has a lubrication system which includes an open type sump breather, this must vent into a catch tank of at least 3 litres capacity. The catch tank must either be made of transparent material or include a transparent panel.

7.5) Oil lines :

7.5.1 - All lubricating oil lines must have a minimum burst pressure of 41 bars (600 psi) and a minimum operating temperature of 135°C (250°F).

When flexible, these lines must have threaded connectors and an outer braid resistant to abrasion and flame (will not sustain combustion).

7.5.2 - No lines containing lubricating oil may pass through the cockpit.

ARTICLE 8 : ELECTRICAL EQUIPMENT

8.1) Batteries :

Batteries must be located outside the cockpit. They must be securely fixed and completely protected inside a box made of insulating material.

8.2) Windscreen wiper :

If the car has a windscreen, it must be fitted with at least one windscreen wiper which is in working order throughout the event.

8.3) Starting :

A starter with an electrical or other power source must be carried on board the car : it must be possible for the driver to operate it when seated normally in the car.

8.4) Lighting equipment :

8.4.1 - All lighting equipment must be in working order throughout the event, even if the event is run entirely in daylight.

8.4.2 - All cars must be fitted with two red stop lights and two red rear lights. They must be located symmetrically on either side of the longitudinal axis of the car and must be mounted in a visible position.

8.4.3 - For night races, all cars must be fitted with at least two headlights, and with direction indicators mounted at the front and rear of the vehicle (with side indicators mounted to the rear of the front wheel axle).

8.4.4 - All cars must have at least one red rain light of at least 21 watts which must be in working order throughout the event, and which :

- faces rearward and is clearly visible from the rear ;
- is mounted not less than 40 cm from the ground ;
- is mounted not more than 100 mm from the car centre-line or, in the case of two lights, are mounted symmetrically on either side of the longitudinal axis of the car on the bodywork behind the rear wheels in frontal projection ;
- has a minimum surface of 50 cm^2 ;
- can be switched on by the driver when he is seated normally in the car.

In addition, the lenses and reflectors must conform to standards EEC 77/538 or ECE 38 for rear fog lamps of motor vehicles and must carry the corresponding approval marking.

8.5) Cables :

All electrical circuits must be enclosed in fire-resistant material.

ARTICLE 9 : TRANSMISSION

9.1) Gearbox :

Free, but the maximum number of gearbox ratios is 5, not including the reverse gear.

All cars must have a reverse gear which must be in working order throughout the event. It must be possible for the driver to select reverse gear while seated normally at the wheel and with the engine running.

Transverse gearboxes and semi-automatic and automatic gearboxes are prohibited.

9.2) **Clutch :**

Free, but with a maximum of two discs. These discs must not be made from carbon.

9.3) **Differential :**

Free, but electronically, pneumatically or hydraulically controlled slip differentials are prohibited.

9.4) Four-wheel drive cars are prohibited.

ARTICLE 10 : SUSPENSION

10.1) All road wheels/axles must be suspended from the chassis/body unit by a springing medium (i.e. axles or wheels must not be connected directly to the chassis/body unit). The springing medium must not consist of bolts located through flexible bushes or flexible mountings. There must be independentmovement of the axles/hub carriers/stub axles giving suspension travel from « bump » to « droop » in excess of the flexibility of the mounting location attachments.

10.2) Active suspension :

Active suspension systems are prohibited, as are all systems enabling the flexibility of springs, shock absorbers and the ground clearance height of the car to be controlled while the car is in motion.

10.3) Chromium-plating of steel suspension elements is prohibited.

10.4) Suspension parts made partially or completely from composite materials are prohibited.

ARTICLE 11 : BRAKES

11.1) All cars must have a braking system which has at least two separate circuits operated by the same pedal. The system must be designed in such a way that in case of leakage or failure on one of the circuits, the pedal continues to operate the brakes on at least two wheels.

11.2) Carbon brake disks are prohibited.

ARTICLE 12 : WHEELS AND TYRES, STEERING

12.1) The maximum width of the complete wheel is 16".
This measurement shall be taken horizontally at the height of the axle with the tyre at normal running pressure and with the car in running order with the driver on board.

12.2) The number of wheels is fixed at four.

12.3) A safety spring must be in place on the wheel nut throughout the duration of the event and must be replaced after each wheel change. These springs must be painted dayglo red or orange.
Alternatively, any other wheel-retaining device which has been approved by FISA must be used throughout the event.

12.4) Cars equipped with four-wheel steering systems are prohibited.

12.5) Pressure control valves on the wheels are prohibited.

12.6) The use of wheels equipped with a tyre-retaining device is recommended.

12.7) There must be a continuous mechanical connection between the steering wheel and the steered wheels.

12.8) Wheels made partially or entirely from composite materials are prohibited.

ARTICLE 13 : COCKPIT

13.1) The structural volume of the cockpit must be symmetrical about the longitudinal centre-line of the car.

13.2) Up to a height of 300 mm from the floor, the driver in his normal driving position must be located on one side of the longitudinal centre-line of the car.

13.3) Elbow width :
The minimum elbow width in the cockpit must be 110 cm, maintained over a height of 10 cm and a length of 25 cm. This measurement shall be taken horizontally, and perpendicular to the longitudinal centre-line of the car.

13.4) Footwells :
13.4.1 - The car must have two footwells, defined as two free symmetrical volumes on either side of the longitudinal centre-line of the car, each one having a minimum vertical cross-section of 750 cm^2.
This cross-section must be maintained from the pedal faces to the vertical projection of the centre of the steering wheel.
13.4.2 - The minimum width of each footwell is 250 mm and this width must be maintained over a height of at least 250 mm.

13.5) Equipment permitted in the cockpit :
13.5.1 - The only components which can be fitted in the cockpit are the following :
- Safety equipment and structures
- Electronic equipment
- Driver cooling system
- Tool kit
- Seat and controls required to drive the car.

13.5.2 - Each and all of these elements must nevertheless respect the 750 cm^2 free footwell sections on each side of the centre-line of the car, and must not restrict access through the doors.
13.5.3 - These components must be covered by a rigid protection if they have sharp edges which may cause injury. Their fastenings must be able to withstand a 25 g deceleration.

13.6) Ventilation :
The cockpits of all closed cars must be fitted with a fresh air inlet and a used air outlet.

13.7) Pedals :
The soles of the driver's feet, when he is seated in the normal driving position with his feet on the pedals and with the pedals in the inoperative position, shall not be situated forward of the vertical plane passing through the centre-line of the front wheels. Should the car not be fitted with pedals, the driver's feet at the maximum forward extension shall not be situated forward of the vertical plane mentioned above.

13.8) Cockpit opening :
In open cars, the openings which correspond to the driver and passenger seats must enable the horizontal template defined in drawing 259-2 to be placed vertically within the cockpit, with the steering wheel removed.

It must be possible to lower the template to a point 25 mm below the lowest point of the cockpit opening.

13.9) Lines in the cockpit :

No lines containing fuel, cooling liquid, lubricating oil or hydraulic fluid may pass through the cockpit. Only brake lines with no connectors installed within the cockpit may pass through the cockpit.

All lines containing hydraulic fluid, with the exception of lines under gravity head only, must have a minimum burst pressure of 70 bars (1000 psi) or higher according to the operating pressure, and a minimum operating temperature of 232°C (450°F).

When flexible, these lines must have threaded connectors and an outer braid resistant to abrasion and flame (will not sustain combustion).

13.10) Steering wheel :

The steering wheel must be fitted with a quick release mechanism. Its method of release must be by pulling a concentric flange installed on the steering column behind the wheel.

ARTICLE 14 : SAFETY EQUIPMENT

14.1) Fire extinguishers :

14.1.1 - **The extinguishing agent must be halon 1211 (BCF), or any other replacement product approved by the FISA.**

14.1.2 - Minimum capacities are :

- Cockpit : 2.5 kg (closed cars)
  5 kg (open cars)
- Engine compartment : 5 kg (closed cars)
  2.5 kg (open cars)

14.1.3 - Extinguisher bottles must be adequately protected, and must not be mounted forward of the front wheel axis. In all cases the extinguisher mountings must be capable of withstanding a deceleration of 25 g. The extinguishing equipment must be fire-resistant.

14.1.4 - In the event of discharge, both bottles must be triggered simultaneously.

Discharge time must be as follows :

- Engine compartment : 10 seconds minimum
- Cockpit : 30 +/— 5 seconds

14.1.5 - Any self-powered triggering system is authorised, provided that it remains possible to activate all extinguishers in the event of failure of the car's main electrical circuits.

The driver must be able to activate all the extinguishers manually while seated normally in the car with his safety belts fastened and the steering wheel in place.

In addition, a means of activating the extinguishers must be situated on the outside of the car near the circuit-breaker or combined with the circuit-breaker handle (see Article 14.5). This must be clearly marked with the letter « E » in red inside a white circle with a red outline at least 10 cm in diameter.

14.1.6 - The following weights shall be clearly marked on each bottle :

- Weight of the empty bottle
- Weight of the extinguishing agent
- Total charged weight

14.1.7 - The system must function in any position even when the car is upside down.

14.1.8 - The extinguisher nozzles must be installed in such a way that they are not directly pointed at the driver.

14.2) Safety belts :

14.2.1 - The wearing of a safety belt comprising two shoulder straps, one lap strap and two straps between the legs is compulsory. These straps must comply with FIA standard n° 8853-85.

14.2.2 - Points of anchorage to bodyshell : two anchorage points for the lap strap, two (or one anchorage point symmetrical about the seat) for theshoulder straps, two for the straps between the legs.

14.3) Rear-view mirrors :

The car must be fitted with two rear-view mirrors, one fitted on each side of the car in order to give an effective view to the rear. Each mirror must have a minimum area of 100 cm^2.

14.4) Headrest :

14.4.1 - A headrest with a minimum area of 400 cm^2 must be fitted to all cars.

Its surface must be continuous, without any protruding parts.

14.4.2 - The headrest must not deflect more than 5 cm under an 85 kgf rearward force.

14.4.3 - The headrest shall be located in a position such that it will be the first point of contact with the driver's helmet in the event of an impact projecting the driver's head rearwards when he is in the normal driving position. The distance between the driver's helmet and the headrest should be kept to a minimum so that the helmet will move less than 5 cm under the above-mentioned force.

14.5) Circuit breaker :

The driver, when seated normally with his safety belts fastened and the steering wheel in place, must be able to shut off all the electrical circuits and stop the engine by means of a spark-proof circuit-breaker.

The internal switch must be marked by a symbol showing a red spark in a white-edged blue triangle.

There must also be a clearly indicated external handle which emergency service personnel can operate from a distance by means of a hook. For closed cars, this handle must be located at the lower part of the windscreen pillar on the driver's side, and for open cars, at the lower part of the pillar of the rollover structure on the driver's side.

14.6) Towing eye :

14.6.1 - A towing eye with minimum inner diameter of 80 mm must be securely fitted to the front and rear structures of the car.

14.6.2 - The towing eye must be placed in such a way that it can be used should the car be stopped in a gravel bed.

14.6.3 - The towing eye must be clearly visible and painted yellow, red or orange, and must be located within the contour of the bodywork as viewed from above.

ARTICLE 15 : SAFETY STRUCTURES

15.1) Rollover structures :

15.1.1 - **Closed cars :**

The car must be fitted with two rollbars, one to the front and one behind the chest of the driver and passenger. Both rollbars must correspond in shape to the inner profile of the upper part of the cockpit, and must be connected at the top by at least one tubular member (preferably two, with junctions as far apart as possible) or a box member. In addition, the rear rollbar shall comprise at least one diagonal reinforcing member and two backstays directed rearwards (see drawing 257-1).

The various authorised diagonal members are MQ, MS, NP, and NR, but it is preferable that the upper extremity of the diagonal of the main rollbar should be situated on the driver's side.

This structure must be made exclusively of steel tubing with the following minimum characteristics :

Cold drawn seamless carbon steel	Diam. 45
Yield strength : 300 N/mm²	x 2.5 mm
Alloy steel type 25 CD4	Diam. 40
SAE 4125, SAE 4130, CDS 110	x 2.5 mm
Yield strength : 500 N/mm²	

Rollbars must be covered with protective fire-resistant anti-shock foam.

15.1.2 - **Open cars :**

Included as open cars, are all cars which do not possess a supporting structure between the top of the windscreen pillars and those of the rear window (if fitted).

The main rollbar behind the front seats must be symmetrical about the longitudinal axis of the car, and meet the following dimensional criteria :

— Height : the top of the rollbar must be 5 cm higher than the top of the driver's helmet when the driver is seated normally at the wheel.

— Width : measured between the inside faces of the vertical members of the rollbar, the width should be at least 20 cm measured 60 cm above the driver's and passenger's seats (on a straight line perpendicular to the vertebral column) from the longitudinal axis of the seat towards the outside.

— Longitudinal position : the longitudinal distance between the top of the rollbar and the helmet of the driver seated normally at the wheel must not exceed 25 cm.

The rollbar structure should conform to drawing 259-1, to the table given in article 15.1.1, to the specifications relevant to removable connections and

to the general remarks, as well as to those concerning the diagonal strut of the main rollbar and the presence of anti-shock foam. The fitting of frontal struts directed forward and designed to protect the driver is authorised for open cars, provided that the struts are removable.

15.2) Crushable structures :

15.2.1 - The bottoms of fuel tanks must be protected by a crushable structure at least 1 cm thick.

15.2.2 - If the fuel tank is situated less than 20 cm from the sides of the car, the entire lateral surface must be protected by a crushable structure at least 10 cm thick.

15.2.3 - The crushable structure must be of a sandwich construction incorporating a fire-resistant core with a minimum crush strength of 18 N/cm², and of two sheets at least 1.5 mm thick, one of which is made from aluminium alloy with a minimum tensile strength of 225 N/mm² and minimum elongation of 5 %, or, alternatively, two sheets at least 1.5 mm thick with a minimum tensile strength of 225 N/mm².

15.2.4 - Only water pipes may pass through the crushable structures ; fuel or oil lines or electrical cables must not.

15.3) Firewall and floor :

15.3.1 - Cars must be fitted with a firewall placed between the driver and the engine to prevent flames passing from the engine compartment into the cockpit. Any openings made in the firewall must be the minimum size necessary to allow the passage of controls and cables, and must subsequently be completely sealed.

15.3.2 - The floor of the cockpit must be designed in such a way as to protect the driver against gravel, oil, water or any other debris thrown up from the road or coming from the engine.

15.3.3 - The floor panels or separation bulkheads must be properly vented to avoid the accumulation of fluids.

15.4) Frontal protection :

The chassis must include an impact-absorbing structure installed in front of the driver's and passenger's feet. This structure must be independent of the bodywork and, if it is removable, it must be securely fixed to the edges of the side box members of the main chassis (i.e. by means of bolts requiring the use of tools for removal).

The structure must have a minimum length of 30 cm, a minimum height of 15 cm at any vertical cross section and a minimum total section of 800 cm².

The structure must be made from a metallic material with a minimum tensile strength of 225 N/mm² ; construction should be of the sandwich and honeycomb type with a skin thickness of at least 1.5 mm. It must constitute a box the panels of which must be at least 15 mm thick, or, if the radiator(s) is (are) incorporated into the structure, two continuous box members with a minimum section of 100 cm² on either side of the radiator(s).

ARTICLE 16 : FINAL TEXT

The final text of these regulations is the French text, which shall be referred to in the event of any disagreement as to interpretation.

Art. 260 - **Technical regulations junior sports cars (Group C3)**

1) DEFINITION

Two seater competition automobiles built specially for races on closed circuits.

2) SPECIFICATIONS

2.1) Engine

The whole made up by the block, cylinders and cylinderheads. All modifications are allowed, but the engine must compulsorily be a reciprocating engine, without supercharging, with a maximum cubic capacity of 2.5 litres, or Wankel type (coefficient 1.8). Oval pistons and water injection are forbidden.

2.2) Weight

The cars must have the following minimum weight :

Engine capacity	less than or equal to 1000 cc :	500 kg
"	from 1000 cc to 1300 cc :	535 kg
"	from 1300 cc to 1600 cc :	560 kg
"	from 1600 cc to 2000 cc :	600 kg
"	from 2000 cc to 2500 cc :	640 kg

This is the real weight of the empty car, with no persons or bagage on board, the car being fully equipped. All the safety parts normally prescribed are included in this weight.

The weight may be checked at any time during an event with the quantity of liquid remaining in the tanks and after emptying the car of all the fuel (on the understanding that it is forbidden to add oil, water or any other liquid before the weighing).

The weight of the car may be completed by means of one or several ballasts incorporated in the material of the car provided that these are solid and unitary blocks, fixed by means of tools and offering the possibility for seals to be affixed if the Scrutineers deem it necessary.

2.3) Main structure

The fully sprung structure of the vehicle to which the suspension and/or spring loads are transmitted, extending longitudinally from the foremost front suspension mounting on the chassis to the rearmost one at the rear.

3) OTHER PRESCRIPTIONS

3.1) Exterior dimensions

Maximum width : 200 cm.

Maximum length : 480 cm.

The height measured vertically from the lowest point of the flat surface as defined under Article 3.8 to the highest point of the car must not exceed 1030 mm, except with regard to the rollbar which must not give rise to an aerodynamic structure.

— Front plus rear overhangs must not exceed 80 % of the wheelbase.

— The difference between the front and rear overhangs must not exceed 15 % of the wheelbase.

3.2) Doors

— Closed cars :

Two doors are obligatory. The word door should be taken as meaning that part of the bodywork which opens to give access to the seats. The doors, when open, must afford free access to the seats. No mechanical part should obstruct access to the seats.

The outside door handle on 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 parallelogram of at least 50 cm wide and 30 cm height, measured vertically, to be inserted in it. The corners of the parallelogram 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 accident.

The doors should have a window of transparent material into which a parallelogram should be able to be inscribed, the horizontal sides of which shall measure at least 40 cm. The height measured on the surface of the window per-

pendicularly to the horizontal sides, shall be at least 25 cm. The angles may be rounded with a maximum radius of 5 cm. The measurements shall be taken across the chord of the arc. The doors should be designed in such a way as to never restrict the lateral vision of the driver.

— Open cars :
Doors are optional. If they exist, they must respect the dimensions laid down in the previous paragraph (closed cars), as far as the opaque part is concerned. If they do not exist, the bodywork at the sides of the cockpit must respect these dimensions.

3.3) Windscreen
— Closed cars :
A windscreen of a single piece, made of laminated glass, is compulsory.
The shape of the windscreen must be such that at a distance of 5 cm measured vertically downwards from the highest point of the transparent part, the width of the glazed surface is at least 25 cm measured across the chord of the arc on either side of the longitudinal axis of the car.
The shape of the screen must be such that its upper edge forms a regular, continuous convex line.
It must be possible to fit on the windscreen a band 10 cm high (measured vertically) by 95 cm (measured horizontally) across the chord of the arc between the inner faces of the windscreen, the centre of which will be 30 cm vertically from the highest point of the roof.

— Open cars :
A windscreen is optional and its dimensions are free.

3.4) Cockpit
3.4.1) Cockpit : Inner volume in which the driver and the passenger sit.
3.4.2) The structural volume of the cockpit must be symmetrical on either side of the longitudinal centre line of the car.
3.4.3) Up to a height of 30 cm from the floor, the driver in his normal driving position must be located on one side of the longitudinal centre line of the car.
3.4.4) The minimum elbow width above the seat is 130 cm, measured horizontally and perpendicularly to the longitudinal centre line of the car between the inner faces of the doors.
3.4.5) The car must have two footwells defined as two free volumes, symmetrical on either side of the longitudinal centre line of the car. The only components allowed to intrude into the footwells are the steering column and its joints.
These footwells will be defined by the following :
— its vertical section perpendicular to the longitudinal centre line of the car, which has a minimum cross section of 750 cm^2 and its minimum width of 25 cm maintained up to a height of minimum 25 cm.
— its length from the pedals to the vertical projection of the centre of the steering wheel.
3.4.6) Only the following components can be fitted in the cockpit : a communication system, fire extinguishers, driver cooling system, rollbar, tool kit, seat, ignition box and other electronic equipment.
These components must not reduce the access defined by the doors and must respect the free sections of the footwells defined above.
They must be covered by a rigid protection if they have sharp edges that could cause injury.
Their fixations must withstand a 25 g deceleration.
3.4.7) An efficient ventilation system with a fresh air inlet and a used air outlet must be provided for.
3.4.8) For open cars, it must be possible to insert vertically the horizontal template shown on drawing 259-2, into the bodywork and chassis openings corresponding to the volume for the driver and the passenger. This verification will be done with the steering wheel removed, down to the seat back rests.

3.5) Wheels and tyres
The number of wheels is fixed at four. The use of wheels with a device to hold on the tyres is recommended. Should « knockoff » nuts be used, these should never protrude beyond the rims.
The maximum width of the complete wheel is limited to 16".

The width shall be measured with the tyre at normal running pressure, and the wheel mounted on the car resting on the ground in running order with the driver aboard. This measurement of the width will only be taken at the widest point of the tyre, above the hub-level. In no case can the width measured where the beads join the rim exceed the width of the tyre.

The fitting of multiple tyres on one and the same rim is authorised.

A safety spring must be in place on the nut throughout the duration of the event and must be replaced after each wheel change. These springs must be painted dayglo red or orange. Spare springs must be available at all times.

Pressure control valves on the wheels are forbidden.

3.6) Transmission

The maximum number of gearbox ratios is set at 5, not including the reverse gear.

This reverse gear is obligatory, and the driver must be able to operate it from his seat.

3.7) Suspension parts

It is forbidden to chromium-plate steel suspension parts.

3.8) Bodywork

All elements of the bodywork shall be completely and neatly designed and finished, with no temporary or makeshift elements.

The body shall cover all mechanical components ; the only parts which may protrude are the exhaust and intake pipes and the top of the engine.

Air intakes must not be higher than the highest points of the roof or windscreen. In the case of open cars, the opening above the seats must be symmetrical in relation to the longitudinal axis of the car.

An open car must respect the following prescriptions :

— The shape of the bodywork seen from one side must be identical to the shape seen from the other side.

— Seen from above, a central part separating the driver from the passenger, even if this part is not connected to the bodywork at the seat-back level, can be accepted, considering that the opening is of the same size for the driver and for the passenger.

— The bodywork can be made from transparent material, but the rules concerning the windscreen must be respected.

The bodywork shall project over the wheels so as to provide efficient covering of at least a third of their circumference, and at least the whole width of the tyre. Behind the rear wheels, the bodywork must terminate below the axis of the rear wheels.

Cooling holes directed to the rear must be fitted with louvres or any other device to prevent the tyre being visible from the rear.

Any parts having an aerodynamic influence and all parts of the bodywork must be rigidly secured to the entirely sprung part of the car (chassis-body unit), must not have any degree of freedom, must be securely fixed and remain immobile in relation to this part while the car is in motion.

On the bottom of any car, rearward of the vertical plane tangent to the rear of the complete front wheels, and forward of the vertical plane tangent to the fore of the complete rear wheels, a solid, flat (tolerance ± 5 mm), hard, rigid and continuous surface must be provided in which a rectangle of 100 cm (measured along the transverse axis of the car) by 80 cm (measured along the longitudinal axis of the car) can be inscribed. The entire surface of this plate, which must be an integral part of the chassis-body unit, must not have any degree of freedom or any provision for adjustment in relation to this unit. No space may exist between the flat bottom defined above and the chassis-body unit.

No part having an aerodynamic influence and no part of the bodywork may, under any circumstances, be located below the geometrical plane produced by the surface as defined above.

Any transverse, longitudinal or other flexible, retractable, pivoting or sliding device bridging the gap between the body and the road surface is forbidden.

3.9) Lighting equipment

At the rear, the cars will be equipped with at least two « stop » lights, as well as two rear red lights. They will be situated symmetrically on either side of the car's longitudinal axis in a visible position. All cars will be equipped with a rear red rain light, of which the optical seen from the rear will have a flat vertical

surface of at least 50 cm² (minimum 21 Watts) and will be clearly visible from the rear.

The bulb and reflector must conform to EEC 77/538 or ECE 38 standards for the rear fog lamps or motor vehicles and must carry the corresponding approval marking.

In addition, for night racing, the cars must be equipped with at least two headlights as powerful as those with which touring cars are usually fitted plus direction indicators (with side indicators mounted to the rear of the axis of the hub of the front wheels) mounted at the front and rear.

The lighting equipment must be in working order throughout the whole duration of the race.

3.10 — Battery

It must be fitted outside the cockpit and be firmly fixed and completely protected by a box in insulating material.

3.11 — Windscreen wiper

If the car is equipped with a windscreen, at least one windscreen wiper, in working order, is obligatory.

3.12 — Oil tanks

The quantity of oil carried on board may not exceed 20 litres. All oil tanks must be efficiently protected.

All oil storage tanks situated outside the main structure of the car must be surrounded by 10 mm thick crushable structure.

No part of the car containing oil may be situated aft of the gearbox or final drive casing on any rear wheel driven car. In the case of front wheel drive, no part containing oil may be situated behind the complete rear wheels.

All oil lines external to the cockpit, with the exception of lines permanently mounted on the engine, must be capable of withstanding a pressure of 70 kg/cm² (1000 psi) and a temperature of 230°C (446° F).

3.13 — Starting

Only the on-board source of energy and starter may be used to start the engine, operated by the driver from his seat.

3.14 — Fuel

— For petrol engines :

The fuel must be commercial petrol which comes from a service station pump, without any additive other than that of a lubricant on current sale. The fuel must comply with the following specifications :

— 102 RON and 90 MON maximum, 95 RON and 85 MON minimum for unleaded fuel.

100 RON and 92 MON maximum, 97 RON and 86 MON minimum for leaded fuel.

The measurements will be made according to the standard ASTM D 2699-86, the fuel being accepted or rejected according to the standard ASTM D 3244 with a confidence limit of 95 %.

— Specific gravity between 720 and 758 kg/m³ at 15°C measured according to ASTM **D4052**.

— A maximum of **2.8** % oxygen (or 3.7 % if the lead content is less than 0.013 g/l) and 0.5 % nitrogen by weight, the remainder of the fuel consisting exclusively of hydrocarbons and not containing any power-boosting additives.

The measuring of the nitrogen content will be carried out according to the standard ASTM D3228 and that of the oxygen content by elemental analysis with a tolerance of 0.2 %.

— Maximum content of peroxides and nitrooxide compounds : 100 ppm (ASTM D3703).

— Maximum lead content : 0.40 g/l or the standard of the country of the event if this is lower **(ASTM D3341 or D3237)**.

— Maximum benzene content : 5 % in volume **(ASTM D3606)**.

— Maximum Reid vapour pressure : 900 hPa (ASTM D 323).

— Distillation at 70°C : 10 % — 47 % (ASTM D 86).

— Distillation at 100°C : 30 % — 70 % (ASTM D 86).

— Distillation at 180°C : 85 % minimum (ASTM D 86).

— Maximum final boilong point : 225°C (ASTM D 86).

— Maximum residue : 2 % volume (ASTM D 86).

If the fuel available locally for the event is not of a sufficient quality for use by competitors, the ASN of the organising country must ask the FISA for a waiver in order to enable the use of fuel not corresponding to the characteristics defined above.

The storing of fuel on board the car at a temperature more than 10 degrees centigrade below the ambient temperature is forbidden.

The use of a specific device (either on board or otherwise) to reduce the fuel temperature below the ambient temperature is forbidden.

— For diesel engines :

The fuel must correspond to the following specifications :

— Hydro-carbon content, % in weight	99.0 min
— Density	0.860 max
— Cetane n° (ASTM D613) or calculated Cetane index (ASTM D976/80)	60 max

3.15 Only air may be mixed with the fuel as an oxydant.

4) SAFETY EQUIPMENT

4.1) Cables, lines and electrical equipment

Unless the cables, lines and electrical equipment such as batteries, fuel pumps, etc. are in compliance with the requirements of the aircraft industry as regards their location, material and connections, they must be placed or fitted in such a way that any leakage cannot result in :

— Accumulation of liquid,
— Entry of liquid into the cockpit,
— Contact between liquid and any electrical line or equipment.

Should the cables, lines or electrical equipment pass through or be fitted in the cockpit, they must be fully enclosed in a cover of liquid-tight and fireproof material.

All fuel lines external to the cockpit, with the exception of lines permanently mounted on the engine, should be of a reinforced construction, attached by screw-on connectors.

They must withstand a 70 kg/cm² pressure (1,000 psi) and a 230°C (446°F) temperature.

All electrical circuits should be enclosed in fire-proof material.

4.2) Additional protection of the pipes

An additional protection of fuel pipes and brake lines outside the coachwork against any risk of damage (stones, corrosion, breaking of mechanical parts, etc.) and inside the cockpit against any risk of fire (fuel pipes only) is compulsory.

4.3) Safety harnesses

The wearing of two shoulder straps, one abdominal strap and two straps between the legs is obligatory ; fixation points on the bodyshell : two for the abdominal strap, two, or else one symmetrical in relation to the seat for the shoulder straps, two for the straps between the legs. This harness must comply with FIA Standard n° 8853-1985.

4.4) Extinguishing systems

Installation : Each extinguisher bottle must be installed in such a way that it is capable of withstanding accelerations of up to 25 g no matter how these are applied.

Extinguisher bottles must not be located forward of the front wheel axis.

Operation — Triggering :

The two systems must be triggered simultaneously.

Any triggering system is allowed. However a source of energy not coming from the main source must be provided in the case of a triggering system which is not exclusively mechanical.

The driver seated normally at his steering wheel with his safety harness attached must be able to trigger the system manually ; the same applies to any person outside the car. The means of triggering from the exterior must be positioned close to the circuit breaker or combined with it, and must be marked by the letter « E » in red inside a white circle of at least 10 cm diameter with a red edge.

Automatic triggering by heat sensors is recommended.

The system must work in any position, even when the car is upside down.

Checking : The type of extinguishant, its quantity, and the total weight of the bottle must be specified on each bottle.

Minimum capacities of extinguisher system :

— Closed cars :	cockpit :	2.5 kg
	engine :	5 kg
— Open cars :	cockpit :	5 kg
	engine :	2.5 kg.

The extinguishant must be halon 1211 or 1301 (BCF-BTM) **or any other replacement product approved by the FISA.**

Extinguishing equipment must withstand fire and be protected against impacts.

The extinguisher system nozzles must be installed in such a way that they are not directly pointed at the driver (danger of burns caused by cold).

Discharge time :

Cockpit :	30 secs for Halon 1211,
	60 secs for Halon 1301,
Engine compartment :	10 secs.

4.5) Safety Rollbars

4.5.1) **Closed cars**

Two rollbars, to the front and to the rear of the chest of the driver and the passenger must be provided. They shall correspond in shape to the inner profile of the upper part of the cockpit, shall be connected at their base by the chassis of the car and linked at the top by at least one tubular strut or boxmember. In addition, the rear rollbar shall comprise a diagonal reinforcement bar and two braces directed rearwards (see drawing n° 257-1).

The various authorised diagonal struts are the following : MQ, MS, NP, NR.

The safety rollbars must be covered with non-combustive shock absorber foam.

This structure shall be built with tubes with at least the following characteristics :

— Cold-drawn seamless Carbon steel E-30 daN	Diam. 45 x 2.5 mm
— Alloy steel Type 25 CD4 SAE 4125 etc E-50 daN	Diam. 40 x 2.5 mm

Steels tubes of Diam. 1.75 inch × 0.090 are also accepted.

4.5.2) **Open cars**

The main rollbar behind the front seats must be symmetrical in relation to the longitudinal axis of the car, and must respect the following dimensions :

— **Height :** the top of the rollbar must protrude at least 5 cm beyond the height of the driver's helmet when he is normally seated behind the steering wheel.

— **Width :** measured within the limits of the vertical pillars of the rollbar, the width should be at least 20 cm, measured at a point 60 cm above the driver's and forward passenger's seats (on the straight line perpendical to the vertebral column) from the longitudinal axis of the seat towards the outside.

— **Longitudinal position :** the longitudinal distance between the top of the rollbar and the driver's helmet when he is normally seated at the wheel must not exceed 25 cm. Will also be considered as open cars, cars which do not have a supportive structure between the top of the windscreen side posts and those of the rear window (if there is one).

The structure of the rollbar must conform to the drawing n° 259-1, or to the drawing n° 257-1, and to the foregoing table, to the specifications concerning removable connections, and to the General Considerations.

The fitting of frontal struts, facing forward, intended for the protection of the driver is authorised for open cars, on condition that these struts are removable.

— Cold-drawn seamless Carbon steel E-30 daN	Diam. 45 x 2.5 mm
— Alloy steel Type 25 CD4 SAE 4125 etc. E-50 daN	Diam. 40 x 2.5 mm

The various authorized diagonal struts are the following : MQ, MS, NP, NR.

4.6) General circuit breaker

The general circuit breaker must cut all electrical circuits (battery, alternator or dynamo, lights, hooters, ignition, electrical controls, etc.). It must be of a spark-proof model, and will be accessible from inside and outside the car. As

for the outside, the triggering system must be situated at the lower part of the windscreen pillar on the driver's side for closed cars, or at the lower part of the main hoop of the rollbar, either on the right or on the left, for open cars. It will be marked by a red spark in a white-edged blue triangle with a base of at least 12 cm.

4.7) Oil catch tank

Any car with a lubrication system which includes an open type sump breather, must be equipped in such a way as to prevent oil spillage. The oil catching device shall have a minimum capacity of 3 litres. The container shall either be made out of translucent plastic or include a transparent panel.

4.8) Towing-eye

A towing-eye (minimum inner diameter : 80 mm) must be securely fitted to the front and the rear of the cars.

This towing-eye will only be used if the car can move freely.

It shall be clearly visible and painted in yellow, red or orange. It must be located inside the contour of the bodywork.

4.9) Tank fillers and air-vents

The tank fillers and their caps must not protrude beyond the coachwork.

The caps must be designed in such a way as to ensure an efficient locking action which reduces the risks of accidental opening following a crash impact or incomplete locking after closing.

The fillers must be placed away from points which are vulnerable in case of accident. The air-vents must be located at places which present no danger.

4.10) Standardised coupling

— The refuelling hose must be provided with a leak-proof coupling to fit the standardised filler mounted on the car. The dimensions of this filler are given in the drawing 252-5.

- All cars must be provided with a fuel filler complying with this diagram. This leak-proof filler must comply with the dead-man principle and must not therefore incorporate any retaining device when in an open position (spring loaded, bayonet, etc.).

— The air-vent(s) must be equipped with non return and closing valves having the same closing system as that of the standard filler, and the same diameter.

During refuelling the outlets of the air-vents must be connected with the appropriate coupling, either to the main supply-tank or to a transparent portable container with a minimum capacity of 20 litres provided with a closing system rendering it completely leak-proof.

— Should the circuits be unable to provide the entrants with a centralised system, these will have to refuel according to the above procedure. In no case may the level of the reserve tank exceed two metres above the track where the refuelling takes place, for the entire duration of the event.

The overflow bottles and the independent storage tanks must comply with the drawings 252-1 or 252-2 and 252-3 or 252-4.

- All metal parts of the refuelling system from the coupling over the flowmeter to the tank and its rack must be connected electrically to the earth.

A 90° cut off valve situated close to the main supply tank, controlling the fuel flow, must be manned at all times during refuelling.

All hoses, valves, fittings and couplings used must have a maximum inner diameter of 50 mm (2 inches).

4.11) Petrol tanks

All the cars must be equipped with safety fuel tanks conforming to the specifications FIA/FT3 and supplied by an approved manufacturer.

The maximum outer diameter of the lines going from the engine to the tanks is 20 mm and their path must be as direct as possible.

The tank(s) may not be placed more than 65 cm from the longitudinal axis of the car and must be located within the limits defined by the front and rear axles of the wheels.

It shall be isolated by means of bulkheads so that in case of spillage, leakage or accident happening to the tank, the fuel will not pass into the cockpit or engine compartment or come into contact with any part of the exhaust system.

The fuel tanks must be efficiently protected (see Article 4.14).

Competitors must provide an illustration of the entire fuel circuit of the vehicle.

Low points must be provided for in the circuit enabling all the fuel to be speedily drained when the vehicle is positioned on a horizontal surface.

For hill-climbs and slaloms if the total capacity of the fuel tanks is not greater than 20 l, the safety tank will not be compulsory on condition thatthe position of the tank does not protrude beyond 30 cm in any direction from the longitudinal axis of the car, and that it is surrounded by a crushable structure 1 cm thick.

The safety tank is also optional for circuit races of less than 100 km under the same conditions of installation.

The maximum amount of fuel which may be carried on board is 100 l.

4.12) Headrest

Headrest of a minimum area of 20 x 20 cm must be fitted, covered with non-combustive shock absorber foam.

It must be designed in such a way that the driver's head may not become trapped between the safety structure and the headrest.

4.13) Firewall and floor

Cars shall have an adequate firewall to prevent the passage of fire from the engine compartment or under the car to the cockpit. Openings in the firewall for the passage of engine controls, wires and lines shall be of the minimum size necessary. The cockpit floor shall be constructed to protect the driver by preventing the entry of gravel, oil, water and debris from the road or from the engine. Bottom panels or belly panels shall be adequately vented to prevent the accumulation of liquid.

4.14) Crushable structures

The bottom of the tanks licked by the airflow shall be protected by a crushable structure, the entire surface of which shall be 1 cm thick.

All the petrol tanks shall be at least 20 cm from the lateral flanks and must be protected by a crushable structure, the entire surface of which shall be 10 cm thick.

The crushable structure should be a sandwich construction based on a fire-resistant core of a minimum crushing strength of 18 N/cm². Water pipes may be passed through this core, but not fuel, oil or electrical lines.

The sandwich construction must include two sheets of 1.5 mm thickness, one of which shall be aluminium alloy sheet having a tensile strength of 225 N/mm² and minimum elongation of 5 per cent, or, alternatively, two sheets of 1.5 mm thickness having a tensile strength of 225 N/mm².

4.15) Survival cell and frontal protection

The chassis must include an impact-absorbing structure fitted ahead of the feet of the driver and passenger. This structure must be independent of the bodywork and, if it is detachable, it must be solidly fixed to the extremities of the side box members of the main chassis (i.e. using bolts requiring the use of tools for removal).

It must have a minimum length of 30 cm, a minimum height of 15 cm in any vertical section, and a total minimum cross section of 800 cm². This structure must be made from a metallic material with a minimum tensile strengh of 225 N/mm² and be of a honeycomb sandwich construction with a minimum skin thickness of 1.5 mm. It must constitue a box, the panels of**which will have a minimum thickness of 15 mm, or if the radiator(s) is(are) incorporated into the structure, two continuous box members of a minimum cross section of 100 cm² on either side of the radiator(s).**

4.16) Rear-view

Rear-view mirrors giving an efficient view towards the rear must be fitted on both sides. (minimum surface 100 cm² for each one).

4.17) Brakes

The braking system must be designed in such a way that the brake pedal controls all wheels normally. In the event of any kind of failure in the brake transmission, the pedal shall still control at least two wheels.

4.18) Exhaust system

It shall be directed either rearwards or sideways. If the outlet pipes are pointing rearwards, their orifices shall be placed between 45 cm and 10 cm above the ground. If the exhaust pipes are directed sideways, their orifices must be located aft of a vertical passing through the wheelbase centre plane and may not project in any way beyond the bodywork.

4.19) Position of the pedals

The axis of the pedals must never be situated to the fore of the axis of the front wheels.

N.B. : The prescriptions under Art. 4.15, 4.19, 3.1, 4.5.1 and 4.5.2 are compulsory for any new car built as from 1 st January 1987. The cars which were built before this date are admitted, provided that proof of the date of construction is supplied.

In the case of the latter :

— Art. 3.1 : The prescriptions concerning the sum and the difference of the overhangs are not to be respected, nor is the maximum width of 200 cm, which is then fixed at 210 cm.

— Art. 3.3.4 : The minimum width can be reduced to 110 cm, and to 100 cm for cars of less than 1000 cm^3.

— Art. 4.5.1 and 4.5.2 : The dimensions of the tubes for the rollbars should then be respectively :

- 42.4 x 2.6 for carbon steel
- 35 x 2 for alloy steel.

Art. 261 - **Touring car technical regulations (Class I)**

1) **DEFINITIONS**

1.1) **SERIES MODELS**
Any **passenger** car built by a manufacturer. At least 2500 identical units must have been produced in 12 consecutive months. Series **models** must be available through the normal commercial channels of the manufacturer.

1.2) **MODEL LINE**
Different series **models** belonging to a production series of one manufacturer. At least 25,000 cars with identical external general lines of the bodywork **in accordance with** article 2.1.1 must have been produced in 12 consecutive months.

1.3) **BASIC MODEL**
The series **production** car of the line chosen as the basic model for the competition car. At least 2,500 identical units must have been produced in 12 consecutive months. The basic model defines the bodyshell of the competition car.

1.4) **COMPETITION CAR**
The race car originating from the basic model and prepared in compliance with the present regulations.

1.5) **MANUFACTURER**
Car manufacturer **recognised** by the appropriate national official body.

1.6) **POWER TRANSMISSION VERSION**
The drive unit construction between engine and wheels.
It is distinguished between two-wheel drive and four-wheel drive. The drive version chosen determines the vehicle type and the ASN vehicle identity form.

1.7) **BASIC ENGINE**
The engine of a manufacturer installed in **series** models of the same manufacturer in a quantity of at least 2,500 engines .

1.8) **ENGINE COMPARTMENT**
Volume defined by the **first** structural envelope surrounding the engine. **The structural envelope is part of the engine compartment.** The bulkhead separates the engine compartment from the passenger compartment.

1.9) **GENERAL**
The definitions given in article 251 of Appendix J of the International sporting Code shall apply to these regulations.

1.10) **COCKPIT**
Structural inner volume of the basic model which accomodates the passengers.
For cars without a fixed bulkhead between the cockpit and the luggage compartment, the cockpit will be deemed to end at the rearmost point of the seats when they are reclined at a maximum angle of 15° to the rear in the basic model.

1.11) **MUDGUARDS**
Front : The area defined by the inner face of the complete wheel of the basic model (C1/C1) and the lower edge of the side window(s) (A/A) and the front edge of the front door (B1/B1).
Rear : The area defined by the inner face of the complete wheel of the basic model (C1/C1) and the lower edge of the side window(s) (A/A) and the front edge of the rear door (B1/B1).
In the case of two-door cars (B1/B1) and (B2/B2) will be defined by the front and rear of the same door.
(See drawing 261-1)

1.12) **MATERIAL FAMILY**
Is defined according to the main constituent of the basic alloy of the corresponding series part.

1.13) **CONSUMABLE MATERIAL**
Substances carried on board primarily for the purpose of consumption during the competition. Lubricating, coolant, brake and hydrodynamic fluid used for the competition car are not counting among these.

2) ELIGIBILITY

2.1) **ELIGIBLE CARS**

Eligible cars are series production Touring cars complying with the following requirements :

2.1.1) **Origin of the car**

The series model chosen as the basis for the competition car must originate from a manufacturer's model line in which at least 25,000 identical examples (with the minimum length of 4.30 m) have been produced in twelve consecutive months. All models must be available through the normal commercial channels of the manufacturer.

The term « model line » describes a series of cars with the same three-dimensional bodywork shape. They may vary in the following details :

— shape and material of front and rear bumpers,

— removable aerodynamic devices (spoilers, wings, sill mouldings),

— control and comfort **equipment** (sun roof, auxiliary lamps, door handles, exterior mirrors, etc.),

— decorative strips and mouldings,

— left and right hand drive versions,

— 2- and 4-door versions provided that these differ only with regard to the doors, door openings and B-pillar.

2.1.2) **Basic model**

The **series model must have** been produced in a quantity of at least 2,500 identical units in 12 consecutive months and **must** originate from the model line described in article 2.1.1.

2.1.3) **Interior dimensions**

The basic model must have at least 4 seats (two front, two rear) and the following minimum interior dimensions :

B = 93 cm, C = 120 cm, D = 93 cm, E = 120 cm, H = F + G = 210 cm. **(See drawing 261-2).**

The heights B and D must be determined **according to the FISA homologation regulations.**

2.1.4) **Minimum length**

The basic model and the competition car must have a minimum length of 4.30 m.

2.1.5) **Technical variations**

The following technical variations are permitted provided that within the 25,000 cars of the model line at least 2,500 cars of one model are built in a period of 12 consecutive months with the technical variations below :

— Four wheel steering.

— Non metallic wheel suspension parts

All parts coming under this definition must be functioning and in compliance with EEC standards.

If a minimum number of 2.500 engines from the same type with cylinder heads having more than 4 valves per cylinder are built in any models of the manufacturer in a period of 12 consecutive months, the cylinder head of the competition engine may have the same number of valves per cylinder.

2.2) **APPROVAL OF A MODEL**

Applications for approval of a model must be submitted to the ASN, accompanied by the homologation form and the certificates of all required minimum production quantities. Approval will be given by the ASN after the verification of all the details.

2.3) **ELIGIBILITY OF THE COMPETITION CAR**

The competition cars must comply with all points of the present regulations and be in conformity with the corresponding ASN homologation form. The use of standard parts in the competition car which are not in conformity with the present regulations is not allowed.

All modifications which are not expressly allowed or prescribed by the present regulations are forbidden.

3) ENGINE

3.1) **TYPE OF ENGINE ELIGIBLE**

The engine must originate from the basic model or from other models not necessarily in the same model line but made by the same manufacturer. However, at least 2,500 identical units must have been mounted in vehicles produced by the same manufacturer in 12 consecutive months. **The basic engine determines the distance between each cylinder axis,the cylinder angle and the type of material used for the engine block of the competition engine.**

The following requirements are **mandatory** for the competition engine :
— 4-stroke, reciprocating piston engines.
— Max. cylinder capacity : 2500 cm^3.
— Max. number of cylinders : 6.
— Max. 4 valves per cylinder or in accordance with article 2.1.5.
— Supercharging is not allowed.

3.2) **ENGINE BLOCK**
The engine block as specified in article 3.1 must be used. It may be modified as follows :
— Bore and stroke are free.
The bore must be cylindrical and the stroke linear.
— Sleeving or resleeving of the cylinders is allowed.
— The distance between each cylinder axis, the cylinder angle and the material type of the engine block must correspond to the basic engine.
— Material may be removed from or added to the engine block.
The addition or removal of a maximum of 2 cylinders also through technical casting is permitted. (See drawing 261-3)

3.3) **CYLINDER HEAD**
The cylinder head is free **within the provisions of article 2.1.5.**

3.4) **ENGINE PARTS**
Engine parts other than the block and cylinder head are free.
However, the connecting rods and crankshaft must be made of the same **material family** as the original parts of the basic engine.
Connecting rods made from titanium are not allowed.
Crankshaft and connecting rod bearings are free but the original **operating** principle (e.g. sliding bearings) must be retained. The **distances between the** crankshaft bearings must not be altered.

3.5) **INTAKE, FUEL FEED AND IGNITION**
Free.
Water injection and the use of any device or substance to reduce the temperature of the fuel-air mixture are forbidden.
Any internal or external spraying or injection of water or any other substances is prohibited with the exclusions of the fuel injection to the combustion in the engine.

3.6) **EXHAUST**
Free. **An ASN-homologated catalytic converter** is required. All exhaust gases must at all times pass through the catalytic converter(s).
The underbody and bulkhead may be modified for the installation of the exhaust system, but these modifications may only serve to accommodate or provide clearance for the exhaust system.
The exit point of the exhaust gases must be within 10 cm of the rear of the car. **(See drawing 261-4)**
Maximum exhaust noise must not exceed 95 + 2 dB(A) + 3, measured according to the ASN close-range checking procedure.

3.7) **COOLING AND LUBRICATION**
Free. Dry sump lubrication is permitted.
However, all radiators must be fitted in the same compartment as in the basic model (for example in the engine compartment). Coolers must not protrude beyond the bodywork of the car.
No other coolants apart from water, ambiant air and oil may be used. Spraying of the coolers with water and/or the use of any other substances such as dry ice is not allowed.
Anti-freeze and anti-corrosive additives are permitted. If the lubrication system includes an open type sump breather, it must be equipped in such a way that the oil flows into a catch tank of a minimum capacity of 3 litres. This container shall be made either out of plastic or shall include a transparent window.

3.8) **ENGINE ANCILLARIES**
All engine ancillaries are free including their position and type of drive. However, they must not be placed in the passenger compartment (except electronic control elements). **Ancillaries are : starter, alternator, servo pumps and tanks, oil pumps, oil filters and oil tanks, water and fuel pumps, ventilators, parts of the electrical system of engine.**

3.9) **ENGINE INSTALLATION**

The engine orientation and its position within the original engine compartment are free. **All necessary modifications in the engine compartment to mount the engine, its ancillaries, fuel feed and exhaust system are free.** The **original** bulkhead separating the engine from the passenger compartment must remain in its original position (with regard to the basic model), **except for the modifications allowed for the exhaust, transmission, steering and pedals as defined in articles 3.6, 4.2 and 9.4.**

3.10) **STARTER**

Compulsory starter with electrical or other source of energy on board operable by the driver when seated in his seat.

The starter must be capable of starting the engine at all times.

3.11) **OTHER ENGINE COMPONENTS**

Gaskets, springs and **mounting brackets** on the engine are free.

4) TRANSMISSION

4.1) **CLUTCH**

The clutch and its control system are free but automatic clutch mechanisms are forbidden.

Lubrication, air and oil cooling devices are allowed, but they must **not have** an aerodynamic effect.

4.2) **GEARBOX**

The gearbox is free. The maximum number of forward gears is six. **Only mechanical gear-shift systems are allowed.**

The car must have a reverse gear **in working order.** The gear-shift system is free **but any change of gear must be actuated mechanically by the driver. No automatic assistance is allowed.**

The gearbox must be mounted in front of or behind the wheelbase centre according to its original location in the basic model. Modifications of the transmission tunnel and the **bulkhead** are permitted provided that the modifications are made for the sole purpose of installating the gearbox and the drive shafts.

The drive flange at the gearbox output must be located in front of the wheelbase centre line except in competition cars with **the same** transaxle design **as** the basic model.

The gearbox mountings are free.

Lubrication, air and oil cooling devices are allowed, but they must **not have an** aerodynamic effect.

4.3) **DRIVE TRAIN**

The drive train layout (front-wheel drive, rear-wheel drive or four-wheel drive) **is free.** If a four-wheel drive version is used, **the car is also permitted to run in either front- or rear-wheel drive form.**

Final drive, final drive ratios and differentials are free.

The drive shafts between the engine and the final drive(s) as well as to the wheels are free. The car underbody may be modified to allow their mounting.

Lubrication, air and oil cooling devices are allowed but they must **not have an** aerodynamic effect.

5) SUSPENSION

5.1) **WHEEL SUSPENSION**

The wheel suspension includes all parts necessary for the wheel control with the exception of the suspension springs and damping. Springs, shock absorbers and stabilizers are free.

The mounting points of the suspension and their components may be strengthened.

The installation of the necessary mounting points is allowed.

5.2) FRONT SUSPENSION

The type of front suspension of the basic model must be retained. The **pivot** points on the bodyshell may be moved **by ± 50 mm.**

5.3) **REAR SUSPENSION**

The type of rear suspension must be **that of** the basic model or **that of** another **series** model not necessarily in the same model line but made by the same manufacturer.

5.4) **OTHER MODIFICATIONS ALLOWED**

The suspension components and **the type of bearings used** are free.

The frame side members may be modified locally for the installation of the wheel drive mechanism.

The use of suspension components made of a non-metallic material is not allowed **subject to article 2.1.5.**

Anti-roll bars, including their mounting points, are free.

Reinforcement bars may be installed on the suspension mounting points.

6) STEERING

The steering, including its location, suspension mountings and links, steering column and steering wheel, is free.

For the installation of the steering system and its mountings, local modifications of the bulkhead are allowed **but these modifications may only be made so as to allow the installation of the steering, and to permit it to function.**

The number of steered wheels must correspond to the number on the basic model or on a variant model **in accordance with** article 2.1.5.

7) BRAKING SYSTEM

The braking system is free.

The car must have a dual circuit braking system.

Brake discs of a non-metallic material are not allowed.

The cooling of brakes is free but ambient air is the only cooling medium allowed. One air duct with a maximum area of 80 cm^2 is allowed **for each brake.**

This area must not be exceeded for at least 2/3 of the distance between the intake and outlet orifices **(See drawing 261-6).**

The intake orifice near the bumpers and the outlet orifice near the brake are free. The ducts, however, must not protrude outside the perimeter of the bodywork as seen from above.

Hydraulic lines must be in conformity with the specifications of Article 253.3 of Appendix J.

8) WHEELS AND TYRES

The wheels and tyres are free. Wheels must be made of a metallic material.

The maximum diameter of the complete wheel is 650 mm.

The maximum width of the complete wheel is 10 inches **wheels with a central locking system must be equipped with a safety device.**

The wheel width is to be measured with :

1) The complete wheel mounted on the competition car resting on the ground, the car in race condition with the driver aboard at the steering wheel. The measurement can take place at any point of the complete wheel except in the area of the tyre in contact with the ground.

2) The complete wheel disassembled, with the tyre at normal **operating** pressure.

The complete wheel must be housed in such a way that the upper part of the rim and tyre located vertically over the wheel hub centre is covered by the wing in vertical projection as seen from above **(See drawing 261-5).**

9) BODYWORK

9.1) **GENERAL**

The strengthening of the bodywork is allowed provided that the material used follows the original shape and is in contact with it. Reinforcements **using** composite materials, whatever their thickness, are allowed in compliance with this article and according to drawing n° 261-14 **for those parts which are screwed to the body.** All nuts, bolts and screws are free provided that they are not specifically defined by the present regulations.

Insulation materials and corrosion preventatives may be removed.

It is allowed to **seal** holes in the cockpit, the engine compartment and the wings by using metal or fire-proof plastic material. This may be done by welding, bonding or riveting. The other holes in the exterior bodywork may be closed by adhesive tape only.

Unused **mounting points** situated on the bodywork can be removed.

The tolerances for the sheet metal thickness are ± 0.15 mm.

9.2) **BODYWORK**

— The material of the bonnet, boot **lid**, bumpers, aerodynamic devices at the front, **rear and the sides, the rear doors of four door cars and the side**

attachments are free (except wings). The shape of the bonnet, boot lid and the parts of the bumpers located above the wheel hub centre must correspond to the basic model.

— Aerodynamic modifications at the front, **the sides** and rear below the wheel hub centre are free subject to the requirements for ground clearance, overall length and overal width.

The aerodynamic modifications may not protrude into the car's floor from the sides by more than 100 mm and they must be flush with the car's floor in an angle of maximum 135 degrees.

The aerodynamic modifications may extend from the front as far as the front edges of the front tyres and from the rear as far as the rear edges of the rear tyres **(See drawing 261-7).**

These aerodynamic devices may exceed the overall width and length of the basic model as laid down in the homologation form by **a maximum of 3 %. (See drawing 261-8)**

— Notwithstanding the silhouette of the basic car, aerodynamic devices at the rear of the car and above the wheel hub centre are permitted subject to the following requirements :

• They must be within the frontal projection and the **total length** of the basic model.

• Their lateral projection, including all mountings, must fall within a square of 20 cm by 20 cm, viewed along a line parallel with the car' transverse axis **(See drawing 261-9).**

Any parts having an aerodynamic influence and any part of the bodywork must be rigidly secured to the entirely sprung part of the car (chassis/body unit) and must not have any freedom of movement.

— Modifications to the original wheel arches and the installation of wheel arch extensions are permitted subject to the following conditions :

• The original wings must be retained.

• The external contour of the original wings may be modified underneath the wheel arch extensions up to a radius of 400 mm maximum measured from the wheel hub centre.

The radius of the upper edge of the wheel arch extension (transition section to the car body) is limited to 500 mm measured from the wheel hub centre **and must be kept within an angular range of 60 degrees to the front and rear of the vertical plan through the wheel hub centre. (See drawing 261-10).**

Outside of this range, the edge of the wheel arch extensions may pass over into the vehicle body beyond the 500 mm radius.

The upper edge may not protrude above the **profile** of the original wing.

• The wheel arch extensions may exceed the overall width of the basic model as laid down in the homologation form by a maximum of 3 %.

• The inner wheel arches may be modified.

All measurements and controls must be taken on the car in racing condition and without the driver.

— External decorative strips and protective mouldings may be removed.

— There must be at least one windscreen wiper in working order. **(Its mechanism is free).**

— Pneumatic jacks are permitted.

— The engine bonnet and boot cover must at all times remain in their original and completely closed position as determined by the basic model. It is prohibited to raise the bonnet or cover. The **means of attaching** the bonnet and boot lid are free.

9.3) WINDOWS

The use of safety glass panels with a thinner glass than in the basic model is permitted provided that the glass panels are homologated for road use (no plastics). The principle of mounting is free.

The windscreen must be of laminated glass. **Window** safety fixing devices may be used, provided they do not improve the aerodynamic qualities of the car. **The following maximum dimensions for the clips must be respected : width 33 mm, material thickness 3 mm, length 75 mm.**

9.4) INTERIOR

— The driver's seat is free. It must have a headrest, the dimensions of which are such that the driver's head with its helmet is retained with no possibility of the head being trapped between the headrest and the rollbar.

The seat and the mountings must comply with the FISA regulations. An appropriate certification by the seat manufacturing company must be submitted. All

other seats must be removed. The driver's seat must bear a test certification mark showing the seat serial number and the year of **manufacture**. Seats which are more than three years old may not be used.

It must be possible to move the driver's seat backwards but the rear edge of the front seat must not go beyond the line determined by the front edge of the rear seat in the basic model. **(See drawing 261-11)**

— The form of the dashboard must be identical to that of the basic model. The material is free. The trimmings situated below the dashboard and the centre console may be removed **(See drawing n° 261-12).**

The instruments are free.

— It is permitted to remove insulating and padding materials, roof lining, side trim and floor coverings.

The door interior trim and soundproofing material may be replaced by non-flammable material.

The doorside hinges of the rear doors are free. There must be 2 hinges per door.

Window winders are free provided that their original function is maintained in the front doors.

— Heating and ventilation are free but an effective demisting for the windows must be provided. Fresh air may be routed into the passenger compartment via a maximum of two additional **intakes** and extracted from it via a maximum of two additional **outlets.** The area of these intakes and outlets must not be more than 80 cm^2 and they must only be intended for the ventilation of the cockpit. The car's external shape must not be altered by **these installations**.

— **Lines containing fluid** may only pass through the cockpit **provided that** they have no connections inside the cockpit with the exception of brake lines and brake components (see drawing n°261.13). The lines must be in accordance with the Article 253.3 of appendix J.

— All additional accessories which have no influence on the car's handling are allowed. **Under no circumstances** must such accessories affect, either directly or indirectly, the engine power, the steering, the transmission, the brakes or the roadholding.

— The pedals including their mountings are free. A local modification of the bulkhead and of the car underbody is permitted provided that the sole purpose is the installation and operation of the pedals.

— The fitting of assembly openings on the inside of the body is permitted provided that they are reclosed with the same material and form.

— The horn is not compulsory.

9.5) **GROUND CLEARANCE**

No part of the car except the tyres must touch the ground when both tyres on one side are deflated. Both valves on one side will be removed to check this point. The test will be carried out with the car in race trim with full tanks and the driver on board.

10) ELECTRICAL SYSTEM

The nominal voltage of the electrical system of the basic model must be retained. Otherwise, the electrical system is free.

Electronic equipment may be mounted in the cockpit.

The battery is free. **Batteries** must be securely fixed and covered to avoid any short circuit or leak. Their location is free, but they must not be located in the cockpit.

The lighting system is free but the system must be in conformity with the basic model with regard to its optical characteristics and its exterior **profiles.** The basic functions **including** dipped beams, indicators, **hazard warning lights,** rear lamps, **rear** fog lights and stop **lights** must be operational. Fog **rear** lights must be installed on each side of the car, **and must** have a minimum power rating of 21w.

The registration plate lights may be **removed.**

The operating system of retractable headlights must be operational.

11) FUEL SYSTEM

11.1) FUEL TANKS

The capacity of the **complete fuel system (tank, lines, filter, cooler, etc.)** must not exceed 110 l.

Only safety fuel tanks complying with the specifications of article 253.14 of Appendix J (FT3) are admitted. They must be placed inside the luggage compartment or in the original location of the basic model. The mounting of an underbody protection **to cover the fuel tank** is permitted provided that it does not have an aerodynamic effect.

The refuelling orifices must be placed in the luggage compartment.

The fuel pumps are free.

It is permitted to place a collector tank with a maximum capacity of 1 litre in the engine compartment.

A fireproof and liquid-tight bulkhead must be installed between fuel tank and passenger compartment.

11.2) FUEL CIRCUIT

All fuel lines must be changed for aviation type lines (metal or metal armoured), **in accordance with the article 253.3 of Appendix J.**

A filter with the maximum capacity of 0.5 l is permitted.

It is allowed to integrate in the fuel circuit a fuel cooler with a maximum capacity of 1 l but ambient air is the only cooling medium permitted.

11.3) AUTOMATIC FUEL CUT-OFF

All fuel feed lines going to the engine and return lines from the engine must be provided with automatic cut-off valves located directly on the fuel tank which close all fuel lines under pressure automatically if one of these lines in the fuel system is fractured or **starts to leak**.

The vent lines must be fitted with a **non-return valve** which prevents any liquid leakage when the car is running or upside down.

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

12) SAFETY DEVICES

12.1) EXTERIOR MIRRORS

Free. However, the car must be fitted with two rear view mirrors one fitted on each side of the car. Each mirror must have a minimum reflective area of 90 cm^2.

12.2) ROLLOVER STRUCTURE

The minimum rollover structure must be a rollcage in compliance with article 253.8 of Appendix J. The members in the vicinity of the driver must be padded.

A **longitudinal member** in the vicinity of the front doors, between the front and rear rollover bars, is compulsory.

All **longitudinal members** as per article 253 of Appendix J, both single and in combination, are allowed. This area may also be reinforced with additional longitudinal or vertical members.

Reinforcements of up to 1/3 of the door opening are allowed.

The only members permitted above **1/3 of the height** of the door opening shall be the upper attachment points of a cross-member between the front and rear roll-over bars. These upper attachment points must not be placed higher than the centre of the door opening. The lower attachment point must be placed directly on the side members. The cross-members may be curved towards the outside. **If the rollover structure is located in front or behind the door cut-out, this height limitation is also valid for the corresponding intersection of the cross-strut and door cut-out.** Reinforcements in the doors are recommended for all cars, for instance as per U.S. standard SMV SS214.

With all these permitted reinforcement measures, the door and window opening mechanism as per art. 9.4 must not be altered.

(See drawing n° 261-15).

12.3) SAFETY BELTS

The safety belts must be six-point harnesses **conforming to FIA standard n° 8853-1985** with six anchorage points on the car. The shoulder and abdominal straps must engage in the buckle separately.

12.4) **FIRE EXTINGUISHING SYSTEM**

A fire extinguishing system with a capacity of at least 4 kg is compulsory as specified in article 253.7.3 of Appendix J. The system must discharge into the engine compartment and cockpit. The extinguishing system nozzles must be installed in such a way that they are not directly pointed at the driver.

The **extinguishant** container must be installed outside the cockpit.

12.5) **ADDITIONAL FASTENERS**

At least two additional safety fasteners must be fitted for each of the bonnet and boot lids. The original locking mechanisms of the basic model must be rendered inoperative or removed. Objects carried on board the vehicle must be firmly fixed.

12.6) **GENERAL CIRCUIT BREAKER**

The general circuit-breaker must cut all electrical circuits **and stop the engine.** It must be a spark-proof model and accessible from inside and outside the car.

As for the outside, the triggering system of the circuit-breaker must compulsorily be situated on the lower part of the windscreen pillar on the driver's side and be accessible at all times.

The triggering system must be marked by a red spark in a white-edged blue triangle with a base of at least 12 cm.

12.7) **TOWING EYES**

A towing eye **(eye bolt, round or oval)** with a minimum inner clear diameter of 50 mm must be securely fitted to the front and rear structures of the car. It must be marked and accessible even if the car is in a gravel bed.

A hinged version is permitted.

12.8) **FIRE BULKHEAD**

An efficient protective screen must be placed between the engine and the passenger compartment in order to prevent the passage of flames and liquids.

13) WEIGHT OF THE CAR

The minimum weight of the car in race condition but without driver and without **consumable material** (i.e. fuel, **windscreen-washer fluid**, etc.) is 1000 kg **for two-wheel driven cars and 1040 kg for four-wheel drive cars**. The car must comply with this minimum at all times during the event.

A car classified as a four-wheel drive car used in two-wheel drive form shall be regarded as a four-wheel drive car. Ballast is permitted in conformity with article 252.2 of Appendix J.

14) FUEL, OXIDANT

All cars must run on the unleaded fuel provided by the ASN. At no moment during the event **following scrutineering may any other fuel be used**.

The fuel **to be made available on payment comply will be Super Plus complying with DIN 51607.** Any change of the prescribed fuel is forbidden. It is for example not **permitted** to add or extract any substances or to change their concentration. The mixture with any other fuel is prohibited, even **if** this were a fuel **provided** by the ASN at one of the preceeding events.

Only unchanged ambient air may be mixed with the fuel as an oxidant.

After each official timed practice session, after the qualification heats and after the races, there must be enough fuel in the tank of the car for the extraction of at least 3 litres.

Art. 262 - **Touring car technical regulations (Class II)**

1) **GENERAL**

These Technical Regulations apply to large-scale series production touring cars of a minimum overall length of 4.20 metres and a maximum engine capacity of 2 litres, **and having the engine installed in the front part of the car**. The cars are required to retain a close identity with the Appendix J Group A regulations of the FIA Year Book, but have some additional freedoms, particularly with respect to engines.

Two-doors versions will not be accepted unless at least one 4-door version of the model concerned is homologated on the same homologation form. All cars must be **FISA** Group A homologated.

2) FISA APPROVAL

2.1 - The vehicle must comply with all the dimensional and other FISA Group A **homologation** requirements, except for those additional modifications allowed in these regulations.

2.2 - The vehicle (Art. 2.1) and engine (Art. 5.1) must be in production and freely on sale for retail purchase through dealer outlets, at the time of the application.

2.3 - Homologation of a series produced car will become null and void 5 years after the date on which the series production of the said model has been stopped.

2.4 - Any manufacturer who applies for **FISA** homologation will, where necessary, be required to arrange and pay for the verification of quantities produced. The manufacturer is required to agree to provide any reasonable access to information relevant to the verification procedure.

2.5 - An homologation form (available from the **ASN)** must be presented, specifying the standard vehicle/engine for which approval is being requested.

2.6 - If requested by **FISA**, the entrant is required to provide a standard vehicle/engine or parts for comparison purposes.

3) NUMBER OF SEATS

All cars in original condition must have a minimum of four seats, i.e. 2 front seats and 2 rear seats, and comply with Group A internal dimensions.

4) WEIGHT

4.1 - All cars using front wheel drive only must not weigh less than 950 kg.

4.2 - All cars using rear or four wheel drive must not weigh less than 1050 kg.

These minimum weights are the weight of the vehicle in the condition which it crosses the finishing line, or at any time during the **event** (excluding the driver).

The use of ballast is permitted in accordance with Appendix J of the FIA Yearbook, Article **252.2.2** — General Prescriptions.

Weight is used as the only controlling element between front, rear, and 4-wheel drive cars.

5) MODIFICATIONS ALLOWED

General conditions :

a) The **FISA** reserves the right to consider the engineering integrity and safety of any modifications carried out, and require corrective action to be taken if appropriate.

b) Any nut, bolt or screw throughout the car may be replaced by any other nut, bolt or screw and have any kind of locking device (washer, lock-nut, etc.).

c) **Apart from the parts for which the present article lays down freedom of modification, the original mechanical parts necessary for the propulsion, suspension as well as all accessories necessary for their normal functioning, excepting any steering or braking part, having undergone the normal machining operations laid down by the manufacturer for series production may be subjected to all tuning operations through finishing, scraping but not replacement.**

In other words provided that the origin of the series production part may always be established, its shape may be ground, balanced, adjusted, reduced or modified through machining. Chemical and heat treatment are allowed, in addition to the above. However, the modifications defined by the

above paragraph are allowed on condition that the weights and dimensions mentioned on the homologation form are respected.

d) Addition of material and parts :

Any addition of material or parts is not permitted unless it is specifically allowed by an article in these regulations. Any material removed is not to be reused.

Restoration of body shape and chassis geometry, following accidental damage, is permissible only using original panels or parts or by the addition of the materials necessary to effect the repairs (body filler, weld metal, etc.) ; other parts which are worn or damaged are not to be repaired by the addition or attaching of material unless an article in these regulations allows appropriate freedom.

5.1) **ENGINE**

The engine must come from the FISA homologated car, or another model of the same make produced by the same manufacturer. If the engine comes from another model, at least 2500 of these engines must have been produced in 12 consecutive months ending not later than 12 months after the application is submitted. Evidence of production must be given at the time of **FISA** homologation.

The axis of the original engine relative to the homologated bodyshell must be retained.

2-stroke engines are prohibited.

5.1.1) **Engine block and cylinder head**

The engine must have no more than 6 cylinders, in any configuration. Bore and stroke may be changed to achieve a maximum capacity of 2000 cc. The bore is required to be cylindrical and the stroke linear. The engine block must be from the FISA homologated vehicle or engine as in Art. 5.1.

Sleeving or resleeving of the cylinder bores is allowed ; material of the sleeves is free. Machining of all surfaces is allowed ; material may be added. Steel (or other material) main caps are allowed, as are ladder reinforcement frames.

Cylinder Head :

The cylinder head must be from the FISA homologated vehicle or the same engine as in Art. 5.1. The position and the axis of the cylinders and ports must be retained, as must the axis and angle of the valves. Port sizes may be changed, but the port centres at the manifold face must remain original ($\pm$ 2 mm). The addition or removal of material is allowed subject to other restrictions in these regulations. The number of valves cannot be changed (see also Art. 5.1.10).

5.1.2) **Compression ratio :** Free.

5.1.3) **Cylinder head gasket :** Free.

5.1.4) **Pistons :** Free, as well as the piston rings, gudgeon pins and their securing mechanism.

5.1.5) **Connecting rods, Crankshaft :** Free, but they must be made of ferrous materials.

5.1.6) **Bearings :**

Make, **dimensions** and material are free, but the original type must be retained, e.g. thin wall shell or roller bearings.

5.1.7) **Flywheel :** Free.

5.1.8) **Fuel feed and Induction system :**

Free, except it is forbidden to use any type of water injection system. The use of any other substance or device to reduce the temperature of the mixture is forbidden (other than the fuel radiator permitted by Art. 5.9.1). The induction system, location of the injectors, number of injectors, air filter assemblies and pipes are free to be changed or modified. Fuel electronics and injector types are free. It is not permitted to inject any fuel or additive other than that specified under Art. 5.1.22.

Variable intake trumpets are forbidden.

5.1.9) **Camshaft(s) :**

Free, except position and number must remain as in the original head. Number of bearings is free. Belts, pulleys, chains are free, as are their layout.

5.1.10) **Valves :**

The material, **dimensions** and the shape of the valves are free, but their pinciple of operation (coil springs, hydraulic) mentioned on the homologation form

must be retained (including the respective angles of the valve axes). Cups, cotters, guides and springs are all free. Shims may be added under the springs. Hydraulic cam followers may be changed for solid ones. Valve lift is free. The material of the seats is free. The maximum number of valves is four per cylinder ; the number of valves cannot be changed from that homologated.

5.1.11) **Rocker arms and Tappets :**
Free, including the respective leverages of the rocker arms.

5.1.12) **Ignition :**
Free, but must include the **FISA** approved RPM limiting device which must be installed so as to limit engine RPM TO 8,500 maximum.
This RPM limiting device must be installed in such a manner so as to provide direct and easy access to it, to facilitate inspection and testing procedures which are to be carried out by the Technical **Scrutineer** or other approved **FISA** personnel. The RPM limiter must be installed and wired up strictly in accordance with the limiter manufacturer's instructions and any wiring diagrams issued. The regulation wiring plug seal must always be intact. The limiter will be checked and certified as and when deemed necessary **throughout the event.**
The number of sparks plugs may not be modified.

5.1.13) **Cooling :**
The method of cooling must be as on the homologated car or engine (i.e. air cooled/water cooled). Provided the original location in the car is retained, the radiator and its attachments are free, as are all its connections to the engine. A radiator screen may be fitted. Cooling fans and their method of operation are free. Thermostats are free. The water pump must retain its original housing and location, but the internals are free. A water catch-tank may be fitted. **The expansion chamber is free.**

5.1.14) **Lubrication :**
Lubrication is free. A dry sump system is permissible.
The position of the oil tank is free other than it must not be located within the cockpit, unless positioned in the luggage area of a hatch-back **car** and then enclosed within a fluid/flame-proof bulkhead. Additional oil pumps, **fans** and coolers are allowed. Air ducts and mounting brackets under the car to these coolers and pumps are allowed, but no aerodynamic benefits may be derived from them, and the external appearance of the car must remain unchanged ; oil pumps, coolers and ducts must not protrude beyond the perimeter of the **bodywork** as seen from above. If the lubrication system includes an open type sump breather, it must be equipped in such a way that the oil can flow into a catch-tank of at least 2 litres capacity. This catch-tank must be made out of plastic or must include a transparent window.

5.1.15) **Engine moutings :**
The engine position and its moutings are free, provided the crankshaft retains its same orientation within the engine bay as in the homologated car, and the metal sheet forming the engine/gearbox **bay** remains as in the FISA homologated car. The bulkhead must be capable of preventing the passage of fluid or flame into the cockpit.

5.1.16) **Exhaust :**
Exhaust manifold and system are free but the noise from the car is not to exceed 110 dB(A) at 6300 RPM (or 3/4 max RPM, if less), when measured at 0.5 mm distance and at a 45 degree angle to the point of exit of the exhaust. No exhaust-pipe or pipes may protrude beyond the perimeter of the car's bodywork as seen from above ; furthermore the outlet for the exhaust-pipe must be **at the rear of the car** ; the outlet must be not more than 10 cm from the perimeter of the car.
A catalytic convertor must be used if required by the ASN.
It is permitted to modify the floor pan for the purposes of providing exhaust-pipe clearance, but at no point may this result in a duct larger than 21 cm in diameter, and only one such duct per vehicle is allowed ; the exhaust system must be adequately isolated from the driver compartment. All measures which are taken to ensure that the maximum noise limit is not exceeded, must be permanent in nature, and must not be removed by the exhaust gas pressure.

5.1.17) **Driving belts and pulleys for ancillaries :**
These are free, in number, location and design.

5.1.18) **Gaskets :** Free.

5.1.19) **Engine springs :**
Springs are not subject to any restrictions but they must keep their original functioning principle.

5.1.20) **Starter :**
A starter must be retained, but its make and type are free ; it must be capable of starting the engine **at any time** using energy stored on board.

5.1.21) **Supercharging :**
Any system of forced induction is prohibited. Ram effects which are entirely produced by the forward motion of the vehicle or the tuning of induction or exhaust pipe length, are permitted.

5.1.22) **Fuel :**
5.1.22.1 - The fuel must be petrol without any additive other than that of a lubricant on current sale which cannot increase the octane number.
The fuel must be approved by the ASN and must have the following characteristics :
— 100 RON maximum, the measurement being made according to the standard ASTM D 2699-86, the fuel being accepted or rejected according to ASTM D 3244 with a confidence limit of 95 %.
— Specific gravity between 720 and 785 kg/m³ at 15°C (measured according to ASTM D4052).
— A maximum of 2.8 % oxygen (or 3.7 % if the lead content is less than 0.013 g/l) and 0.5 % nitrogen by weight, the remainder of the fuel consisting exclusively of hydrocarbons and not containing any power-boosting additives.
The measuring of the nitrogen content will be carried out according to the standard ASTM D3228 and that of the oxygen content by elemental analysis with a tolerance of 0.2 %.
— Maximum content of peroxides and nitrooxide compounds : 100 ppm (ASTM D3703).
— Maximum lead content : 0.40 g/l or the standard of the country of the event, if it is lower (ASTM D3341 or D3237).
— Maximum benzene content : 5 % in volume (ASTM D3606).
If the fuel available locally for the event is not of a sufficient quality for use by competitors, the ASN of the organising country must ask the FISA for a waiver in order to enable the use of fuel not corresponding to the characteristics defined above.

5.1.22.2 - Only air may be mixed with the fuel as an oxidant.

5.2) **TRANSMISSION**
5.2.1) **Clutch :**
The clutch **and its control are free but automatic operation of the clutch is not allowed.**The clutch must be activated by the driver's feet.

5.2.2) **Gearbox :**
Gearbox is free. Gear selection mechanisms must be mechanically operated, (electronic, hydraulic or pneumatic mechanisms are not permitted). The maximum number of forward gears allowed is 6. The drive train concept, i.e. FWD, RWD or 4WD must be retained. However 4WD cars can disconnect either front or reardrive and run at the respective weight subject to the Article 4.1 or 4.2. A reverse gear must be retained and be operational at all times. Additional oil pumps and coolers are allowed. Air ducts and mounting brackets under the car to these coolers and pumps are allowed, but no aerodynamic benefits may be derived from them, and the external appearance of the car must remain unchanged ; oil pumps, coolers and ducts must not protrude beyond the perimeter of the **bodywork** as seen from above. Gearbox supports are free. The

gearbox location relative to the other transmission/drive train components must be retained.

5.2.3) **Final-drive assembly, differentials, prop-shafts and drive-shafts :**
Free, subject to Art. 5.2.2.
Electronically controlled systems are not permitted.

5.3) **SUSPENSION**
The position of the rotational axis of the mounting points of the suspension to the shell (or chassis) must remain the same (within + or — 20 mm), as must the operating and design layout of the suspension system (i.e. McPherson strut, Double A arms, etc.) remain as per the homologated car. The materials from which the suspension **components are** made **and their design** are free, except composite components are not permitted.

5.3.1) Reinforcing bars on the suspension mounting points of the body shell (or chassis) may be installed as follows : the distance between the suspension attachment point and the attachment point of the reinforcing bar must not exceed 100 mm, unless the bar is a transverse strut homologated with the rollcage, or unless there is an upper bar associated with a MacPherson suspension, or similar. In the latter case, the maximum distance between the attachment point of the reinforcing bar and the upper articulation point of the strut must not exceed 150 mm. The attachment points at not more than 100 mm/150 mm are the only points on or within the car to which the reinforcing bars are to be affixed.

5.3.2) Strengthening of the mounting points, suspension parts, and the running gear is allowed.

5.3.3) Active suspension and any system which allows control of the spring flexibility, shock absorption and trim height when the car is moving are not allowed.
Only adjustable anti-roll bars are permitted and these may be adjusted from the cockpit. If anti-roll bars are fitted as standard, their removal is allowed, and their mounting points may be used **as suspension attachment points.**

5.3.4) « Uniball » suspension joints may be used, or joints of a diffeent material from original.

5.3.5) **Road springs :**
The material and main spring dimensions are free but not the type. The spring seats may be made adjustable even if this includes the addition of material. The road springs must retain their original operating principle. A coil spring may be replaced with two or more springs of the same type, concentric or in series, provided they can be fitted without any modifications other than those specified in these regulations. Combined spring/shock-absorber units are permissible subject to Art. 5.3.6.

5.3.6) **Shock absorbers :**
Make and type are free, but not the number. It is permissible to replace the McPherson strut with another make or type including coil spring **seats**, but this must not result in a change of their working principle. Eccentric top-mounts for McPherson struts are permissible. In this case the articulation point of the strut is not subject to the + or – 20 mm restriction as per article 5.3. Notwithstanding the foregoing, the position in the bodywork to which the eccentric top-mount is attached must remain as original, subject tothe article 5.3.2.

5.4) **WHEELS AND TYRES**
The complete wheel (rim, flange and tyre) width for all cars is a maximum of 9 inches ; the complete wheel diameter is not to exceed 650 mm. The complete wheel above the hub centre-line must be able to be housed within the wheel arch. The internal arch may be modified minimally to accomodate the wheel as long as it does not affect the structural integrity of the vehicle, change the external appearance or contravene Art. 5.3 and Art. 5.7.2.11.

5.4.1) **Wheels :**
The design and diameter are free, as is the type of attachment, but wheels made partially or entirely from composite materials are prohibited. If the wheel design is of the centre lock type using a central nut, then a safety spring must be in place **on the nut** at all times during the event. These springs must be

painted « dayglo red » and each car must have spare springs available at all times.

5.4.2) **Tyres :**
See Sporting Regulations.

5.4.3) **Ground clearance :**
No part of the car must touch the ground when both the tyres on one side are deflated. This test will be carried out on a flat surface, in race trim, with the driver on board.

5.5) **BRAKES**
5.5.1) **Brake linings :**
Material, **dimensions** and mounting method are free.

5.5.2) Brake servos, callipers and adjusters **are free**. Anti-lock devices **are not allowed**.

5.5.3) **Brake cooling :**
Protection shields may be modified or removed. Flexible ducts to bring the air to the brakes of each wheel are allowed, but its cross-sectional area must total less than **80** cm^2 and the maximum dimension less than 25 cm. The air ducts must not protrude beyond the perimeter of the **bodywork** seen from above.

5.5.4) **Brake discs :**
Brake discs are free, subject to them being made from ferrous material.

5.5.5) **Handbrake :**
May be removed.

5.5.6) **Hydraulic lines :**
Hydraulic lines may be replaced by lines of aircraft quality.

5.6) **STEERING**
Free, providing the type fitted to the homologated vehicle is retained, and that the steering mechanism operates only the front wheels. Power steering may be disconnected and/**or** removed, or added.

5.7) **BODYWORK - BODYSHELL**

5.7.1) **Lightening and reinforcement :**
All bodywork panels of the vehicle must be of the same shape, material and thickness as the original homologated car. Windows must be made of glass, be approved for road use and marked accordingly. Strengthening of the chassis and bodywork is allowed provided that the material used follows the original shape and is in direct contact with it. New supports and mounting brackets may be added as required subject to Art. 5.3. Reinforcement by composite materials is allowed in accordance with this article. Insulating material may be removed from under the car floor, from the engine compartment, the luggage boot and the wheel arches. Unused supports (eg for spare wheel) situated on the chassis/bodywork may be removed unless they are required for mechanical parts which cannot be moved or removed. Any holes in the cockpit, engine bay and luggage compartment, must be closed in such a way as to prevent the passage of fluid or flame. Any other holes may be closed off using adhesive tape.

5.7.2) **Exterior :**

5.7.2.1 - Bumpers and all external bodywork must remain as on the homologated vehicle.

5.7.2.2 - Hub caps and wheel embellishers must be removed.

5.7.2.3 - Windscreen wipers and washers : **The wiper is free but** it must be operational and clear the screen directly in front of the driver. The capacity of the washer tank may be increased and it may be moved in position or removed.

5.7.2.4 - External decorative strips and mud flaps may be removed. Any parts following the external contour of the bodywork and less than 25 mm high will be considered as decorative strips.

5.7.2.5 - Jacking points may be strengthened, moved and increased in number.

5.7.2.6 - Headlights covers may be fitted provided that their sole aim is to

protect the headlight glass and that they have no effect on the car's aerodynamics.

5.7.2.7 - Registration plates may be removed.

5.7.2.8 - Registration plates mountings may be dismounted as well as their lighting system.

5.7.2.9 - Additional safety fastenings for the windscreen and the side windows may be fitted provided that they do not improve the aerodynamic qualities of the car.

5.7.2.10 - The fitting of any underbody protection is prohibited except for undertrays installed as original equipment on the homologated car.

5.7.2.11 - The metal or plastic edges of the wing panels may be folded back or trimmed if they protrude inside the wheelhousing. The plastic sound-proofing parts may be removed from the interior of the wheel bays (see also Art. 5.4).

5.7.2.12 - Pneumatic jacks are permitted, but compressed air bottles are not to be carried on board.

5.7.2.13 - « Skirts » are banned. All non-homologated devices or constructions designed so as to fill, fully or partially, the space between the sprung parts of the car and the ground are forbidden in all circumstances.

5.7.2.14 - It is authorised to remove or replace existing supports between the bodywork and the chassis, but it is not possible to change or add locations.

5.7.2.15 - The external rear-view mirrors are free. However one must be fitted to each side of the car and have no other function. Each of external rear-view mirror must have a reflecting surface of at least 90 cm².

5.7.3) **Cockpit :**

5.7.3.1 - **Seats :**

The driver's seat and its mountings are free, but the seat must include a head restraint. The head restraint must be capable of restraining a 17 kg mass decelerating at 5 g. Its dimensions must be such that the driver's head/helmet is retained and cannot move past it under rearward acceleration, or be trapped between the roll-over bar and the head restraint. The driver's seat may be moved backwards but not beyond the vertical plane defined by the front edge of the original rear seat. Passengers' seats are to be removed to reduce combustible material.

5.7.3.2 - If the fuel tank is installed in the boot, a fireproof and liquid proof bulkhead must separate the cockpit from the fuel tank.

5.7.3.3 - Dashboard : The trim situated below the dashboard, and which is not part of it, may be removed. It is also permitted to remove the part of the centre console which contains neither the heating nor the instruments.

5.7.3.4 - Doors : All door interior-trim and sound-proofing material may be removed and replaced with panels of non-combustible material (e.g. aluminium) in order to obscure the door and window mechanisms. Manual winders may replace electric ones.

5.7.3.5 - Roof : All padding, insulating material and roof lining are to be removed from the underside of the roof. Sun roofs are not permitted.

5.7.3.6 - Floor : Insulating and padding materials and carpets are to be removed.

5.7.3.7 - Any other padding and interior trim may be removed.

5.7.3.8 - The cockpit heating system may be removed ; however an adequate system of de-misting must be fitted.

5.7.3.9 - Air conditioning may be added or removed, but de-misting must be assured.

5.7.3.10 -

— Steering wheel :

Free ; the anti-theft steering-lock device must be made inoperative. The steering may be either right or left-hand, provided this is achieved by a simple inversion of the steering wheel controls, specified and supplied by the manufacturer, without any other mechanical modifications except those made necessary by the inversion.

— Pedals :

The pedals may be either right or left provided this is achieved by a simple inversion of the pedals controls, specified and supplied by the manufacturer, without any other mechanical modifications except those made necessary by the inversion.

5.7.3.11 - A steel rollcage must be fitted to conform with Art. 253.8 - Safety **of Appendix J.**

5.7.3.12 - The removable rear window shelf in two volume cars may be removed.

5.7.3.13 - Air pipes : Air pipes may only pass through the cockpit if these are intended for the ventilation of the cockpit or air jacks.

5.7.3.14 - The inside rear view mirror is optional.

5.7.4) **Additional accessories :**
All those which have no influence on the car's behaviour are allowed, e.g. equipment which improves the aesthetics or comfort of the car interior (lighting, radio, etc.). In no case are these accessories permitted to increase the engine power or influence the steering, transmission, brakes or roadholding, even in an indirect fashion. All controls must retain the role laid down for them by the manufacturer. They may be adapted to facilitate their use and accessibility, e.g. a longer hanbdbrake lever, an additional pad on the brake pedal, etc.

The following are allowed :
1) The original windscreen may be replaced by a laminated windscreen with defrosting equipment incorporated.
2) Measuring instruments such as speedometer, etc. may be installed, removed or replaced. Data logging/time-keeping equipment may be fitted.

3) The horn is not compulsory.
4) Circuit breakers may be freely changed regarding their use, position or number in the case of additional accessories.
5) A « fly-off » hand brake may be installed.
6) A spare wheel is not compulsory. However, if there is one, it must be securely fixed and not installed in the cockpit. No exterior modification of the bodywork is to result from its installation.
7) Insulating material may be added to the existing bulkheads to provide additional protection for the driver from fire.

5.8) **ELECTRICAL SYSTEM**

5.8.1) The nominal voltage of the electrical system, including that of the supply circuit of the ignition, must be retained.
Relays, fuses and cables are free.

5.8.2) **Battery :**
The make, number and capacity of the battery(ies) are free. Each battery must be securely fixed and covered to avoid any short-circuits or leaks. Their location is free ; however it(they) must not be placed in the cockpit.

5.8.3) **Generator and voltage regulator :**
Free, **including position and drive system.**

5.8.4) **Lighting and indicating :**
All lighting and signalling devices, as homologated, must be operational (with the exception of the number-plate lights and reversing lights) in order to preserve vehicle identity. The make of the lighting devices is free. The operating system of the retractable headlights, as well as its energy source, may be modified. If a reversing light is operational, it must only operate when reverse gear is selected. Fog lights may be removed and the subsequent apertures must be blocked off. In this case, it is not permissible to use the apertures for any purpose.

5.9) **FUEL TANKS**
5.9.1) The fuel tank must be replaced by safety fuel tank(s) homologated by FISA (specification FT3). The tank(s) must be placed inside the luggage compartment, or in the original location, provided that it is not in the cockpit. The construction of collector-tanks with a capacity of less than 1 litre is free. A fluid/flame-proof bulkhead is to be installed between the tank(s) compartment and the **cockpit**, and if needs be, suitable protection provided for the supplementary accessories (refuelling orifice, petrol pump, overflow pipe). The chan-

ges of the position of the tanks should not give rise to any lightening or reinforcement other than provided for under article 5.7.1. In the case of the fuel tank being fitted below the floor of the car, it must be contained in a close fitting flame proof housing that has no aerodynamic advantage. The opening remaining after the removal of the original tank may be closed by the installation of a panel of the same dimensions as the fuel tank aperture. The position and the dimension of the filler hole, as well as that of the cap may be changed as long as the new installation does not protrude beyond the bodywork, and is effected in such a way that no fuel will leak into the interior compartments of the car. If the filler hole is situated inside the car, it must be separated from the cockpit by a liquid-tight protection. It is permitted to fit a radiator in the fuel circuit.

The total capacity of the fuel tank must not exceed 100 litres.

5.10) **GENERAL PRESCRIPTIONS AND SAFETY**

5.10.1) Cars must also comply with the relevant requirements of **Appendix J** Article 252 — General Prescriptions and Article 253 — Safety, as published in the FIA Yearbook and which are not already covered in these regulations.

6) FINAL TEXT

The final text for these regulations shall be the French version which will be used should any dispute arise over their interpretation.

Art. 274 - F3000 technical regulations

SUMMARY

ARTICLE 1 : DEFINITIONS

1) Formula 3000 car :
Automobile designed solely for speed races on circuits or closed courses.

2) Automobile :
Land vehicle running on at least four non-aligned complete wheels, of which at least two are for steering and at least two for propulsion.

3) Land vehicle :
A locomotive device propelled by its own means, moving by constantly taking real support on the earth's surface, of which the propulsion and steering are under the control of a driver aboard the vehicle.

4) Bodywork :
All entirely sprung parts of the car in contact with the external air stream, except the rollover structures and the parts definitely associated with the mechanical functioning of the engine, transmission and running gear. Airboxes and radiators are considered to be part of the bodywork.

5) Wheels :
Flange and rim. **Complete wheel :** Flange, rim and tyre.

6) Automobile Make :
In the case of Formula racing cars, an automobile make is a complete car. When the car manufacturer fits an engine which it does not manufacture, the car shall be considered a hybrid and the name of the engine manufacturer shall be associated with that of the car manufacturer.
The name of the car manufacturer must always precede that of the engine manufacturer.
Should a hybrid car win a Championship Title, Cup or Trophy, this will be awarded to the manufacturer of the car.

7) Event :
An event shall consist of official practice and the race.

8) Weight :
Is the weight of the car without the driver at all times during the event.

9) Racing weight :
Is the weight of the car in running order with the driver aboard and all fuel tanks full.

10) Cubic capacity :
The volume swept in the cylinders of the engine by the movement of the pistons. This volume shall be expressed in cubic centimetres. In calculating engine cubic capacity, the number Pi shall be 3.1416.

11) Supercharging :
Increasing the weight of the charge of the fuel/air mixture in the combustion chamber (over the weight induced by normal atmospheric pressure, ram effect and dynamic effects in the intake and/or exhaust system) by any means whatsoever. The injection of fuel under pressure is not considered to be supercharging.

12) Sprung suspension :
The means whereby all complete wheels are suspended from the body/chassis unit by a spring medium.

13) Cockpit :
The volume which accommodates the driver.

14) Survival cell :
A continuous closed structure containing all fuel tanks and the cockpit.

15) Active suspension :
Any system which allows control of the flexibility of the suspension springs, shock absorption and/or trim height when the car is moving.

ARTICLE 2 : REGULATIONS

1) Role of the FISA :
The following technical regulations for F3000 cars are issued by the FISA.

2) Publication date for amendments :
Each year, in October, the FISA will publish all changes made to these regulations. All changes affecting the manufacturing of engines will take effect on

the fourth 1 st January following their publication. All other changes will take effect on the third 1 st January following their publication. Changes for safety reasons may be made without notice.

3) Dangerous construction :
If an automobile is deemed to be dangerous, it may be excluded by the Stewards of the Meeting.

4) Compliance with the regulations :
Automobiles must comply with these regulations in their entirety at all times during **an** event.

5) Measurements :
All measurements must be made while the car is stationary on a flat horizontal surface or as provided in Article 66 of the F3000 sporting regulations.

6) Duty of competitor :
Is it the duty of each competitor to satisfy the scrutineers and the Stewards of the Meeting that his automobile complies with these regulations in their entirety at all times during **an** event.

ARTICLE 3 : BODYWORK AND DIMENSIONS

1) Width :
Overall width of the car, including complete wheels shall not exceed 200 cm, with the steered wheels in the straight ahead position.

2) Width ahead of the front wheels centre line :
The bodywork ahead of the front wheel centre line is limited to an overall width of 150 cm. Nevertheless, any part of the bodywork ahead of the front wheel centre line exceeding an overall width of 110 cm must not extend above the height of the front wheel rims with the driver aboard seated normally, and irrespective of the fuel load.

3) Width and shape between the front and rear wheels :
The maximum width of the bodywork behind the centre line of the front wheels and in front of the centre line of the rear wheels is 130 cm.
Between the rear edge of the complete front wheels and the front edge of the complete rear wheels all sprung parts of the car visible from directly beneath the car must lie on one plane. All these parts must produce a uniform, solid, hard, rigid (no degree of freedom in relation to the body/chassis unit), impervious surface, under all circumstances. The periphery of the surface formed by these parts may be curved upwards with a maximum radius of 5 cm.
To help overcome any possible manufacturing problems, a tolerance of $\pm$ 5 mm is permissible across this surface.
No part of the bodywork in front of the rear wheel centre line and extending above the height of the complete rear wheels may project beyond 45 cm each side of the longitudinal axis of the car.

4) Width behind the rear wheel centre line :
Bodywork behind the centre line of the rear wheels must not exceed 90 cm in width.

5) Overhangs :
No part of the car shall be more than 60 cm behind the centre line of the rear wheels or more than 120 cm in front of the centre line of the front wheels.
The centre line of any wheel shall be deemed to be half waybetween two straight edges, perpendicular to the surface on which the car is standing, placed against opposite sides of the complete wheel at the centre of the tyre tread.

6) Height :
Except for the rollover structures, no part of the car can be higher than 90 cm from the ground with the car in normal racing trim with the driver aboard seated normally.
Any part of the rollover structures higher than 90 cm from the ground must not be shaped to have a significant aerodynamic influence on the performance of the car.

7) Aerodynamic influence :
Any specific part of the car influencing its aerodynamic performance must :
— must comply with the rules relating to bodywork ;
— must be rigidly secured to the entirely sprung part of the car (rigidly secured means not having any degree of freedom) ;
— must remain immobile in relation to the sprung part of the car.

Any device or construction that is designed to bridge the gap between the sprung part of the car and the ground is prohibited under all circumstances.

No part having an aerodynamic influence and no part of the bodywork may under any circumstance be located below the geometrical plane generated by the flat surface described in Article 3.3.

No part of the bodywork in front of the front wheel axis and more than 20 cm from the longitudinal centre line of the car may be closer than 25 mm to the geometrical plane referred to above.

8) Roll hoop access :

The second rollover structure must be designed to provide a clearly visible unobstructed opening in order that a strap whose section measures 6 cm × 3 cm can pass through it to lift the car.

ARTICLE 4 : WEIGHT

1) Minimum weight :

The weight of the car must not be less than 540 kg.

2) Ballast :

Ballast can be used provided it is secured in such a way that tools are required for its removal. It must be possible to fix seals if deemed necessary by the scrutineers.

3) Adding during the race :

The adding to the car during the race of any liquid or other material whatsoever or the replacement during the race of any part with another materially heavier is forbidden.

ARTICLE 5 : ENGINE

1) Types of engine permitted :

Only 4-stroke engines with reciprocating pistons are permitted.

The angle between the cylinder banks must be 90 degrees.

Engines with more than 4 valves per cylinder are forbidden.

Variable valve timing is forbidden.

2) Maximum capacity :

Engine capacity must not exceed 3000 cc.

3) Intake system :

Variable length engine inlet trumpets are forbidden.

4) Supercharging :

Supercharging is forbidden.

5) Number and type of cylinders :

The maximum number of cylinders is 8 and the normal section of each cylinder must be circular.

6) Limitation of the engine rev speed :

6.1. Maximum crankshaft rotational speed is 9000rpm.

6.2. In order to ensure this figure is respected, an electronic limiter, supplied by FISA must be fitted to the car at all times during the event.

6.3. It is the responsibility of the competitor to use an ignition system which is compatible with the FISA limiter.

6.4. The limiter must be wired in strict accordance with the wiring instructions which are available from FISA.

7) Temperature of the charge :

7.1. Any device, system, procedure, construction or design the purpose and/or effect of which is any decrease whatsoever of the temperature of the intake air and/or of the charge (air and/or fuel) of the engine is forbidden.

7.2. Internal and/or external spraying of water or any substance whatsoever is forbidden (other than fuel for the normal purpose of combustion in the engine).

ARTICLE 6 : FUEL SYSTEM AND PIPING

1) Fuel tanks :

1.1. The fuel tank must be a single rubber bladder conforming to or exceeding the specifications of FIA/FT3.

1.2. All the fuel stored on board the car must be situated between the front face of the engine and the driver's back when viewed in lateral projection.

Furthermore, no fuel can be stored more than 30 cm forward of the highest point at which the driver's back makes contact with his seat.

However, a maximum of 2 litres of fuel may be kept outside the survival cell, but only that which is necessary for the normal running of the engine.

1.3. Fuel must not be stored more than 40 cm from the longitudinal axis of the car.

1.4. All rubber bladders must be made by manufacturers recognised by the FISA. In order to obtain the agreement of the FISA, the manufacturer must prove the compliance of his product with the specifications approved by the FISA. These manufacturers must undertake to deliver to their customers exclusively tanks complying with the approved standards.
A list of approved manufacturers is available from the FISA.

1.5. All rubber bladders shall be printed with the name of the manufacturer, the specifications to which the tank has been manufactured and the date of manufacture.

1.6. No rubber bladders shall 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 5 years.

2) Fittings and piping :
2.1. All fuel fittings (including air vents, inlets, outlets, tank fillers and access openings) must be metal fittings bonded into the fuel tank.

2.2. All connections between the fuel tank and the survival cell (including tank fillers, air vents, access openings, inlets and outlets) must be frangible.
By frangible is meant that should the tank move in relation to the survival cell during an accident, the connection between the fuel tank and the survival cell will fail at a load which is less than 50 % of the load required to pull the bonded metal fitting out of the tank.

2.3. All fuel lines between the fuel tank and the engine must have a self sealing breakaway valve. This valve must separate at less than 50 % of the load required to break the fuel line fitting or to pull it out of the fuel tank.

2.4. No lines containing fuel, cooling water or lubricating oil may pass through the cockpit.

2.5. All lines must be fitted in such a way that any leakage cannot result in accumulation of fluid in the cockpit.

2.6. All fuel and lubricating oil lines must have a minimum burst pressure of 41 bar (600 psi) and a minimum operating temperature of 135 degrees C (250 degrees F).
When flexible, these lines must have threaded connectors and an outer braid resistant to abrasion and flame (will not sustain combustion).

2.7. All lines containing hydraulic fluid, with the exception of lines under gravity head, must have a minimum burst pressure of 70 bar (1000 psi) or higher according to operating pressure, and a minimum operating temperature of 232 degrees C (450 degrees F).
When flexible, these lines must have threaded connectors and an outer braid resistant to abrasion and flame (will not sustain combustion).
Hydraulic fluid lines must have no connections inside the cockpit which are capable of being removed.

3) Crushable structure :
The fuel tank must be completely surrounded by a crushable structure, which is an integral part of the survival cell and must be able to withstand the loads required by the tests in Articles 15.5.6 and 15.5.8.

4) Tank fillers :
4.1. Tank fillers must not protrude beyond the **bodywork**. Any breather pipe connecting the fuel tank to the atmosphere must be designed to avoid liquid leakage when the car is running and its outlet must not be less than 25 cm from the cockpit opening.
All tank fillers must be designed to ensure an efficient locking action which reduces the risk of accidental opening following a crash impact or incomplete locking after refuelling.

4.2. All cars must be fitted with a self sealing connector which can be used by the scrutineers to obtain fuel from the tank.
This connector must be the type approved by FISA.

5) Refuelling :

5.1. Refuelling during the race is forbidden.

5.2. Refuelling the car on the grid by any other means than by gravity from a maximum head of 2 metres above the ground is forbidden.

5.3. Any storage of fuel on board the car at a temperature of more than ten degrees centigrade below the ambient temperature is forbidden.

5.4. The use of any specific device, whether on board or not, to decrease the temperature of the fuel below the ambient temperature is forbidden.

ARTICLE 7 : OIL SYSTEM

1) Location of oil tanks :

All oil storage tanks must be situated between the front wheel axis and the rearmost gearbox casing longitudinally, and must be no further than the lateral extremities of the survival cell are from the longitudinal axis of the car.

2) Longitudinal location of oil system :

No other part of the car containing oil may be situated behind the complete rear wheels.

3) Catch tank :

When a car's lubrication system includes an open type sump breather, this breather must vent into a catch tank of at least 3 litres capacity.

4) Transversal location of oil system :

No part of the car containing oil may be more than 65 cm from the longitudinal centre line of the car.

5) Oil replenishment :

No oil replenishment is allowed during a race.

ARTICLE 8 : STARTING

1) Starter :

A starter must be fitted with electrical or other source of energy carried aboard the car, and able to be controlled by the driver when seated normally.

The starter must be capable of starting the engine at all times.

2) Starting the engine :

A supplementary device temporarily connected to the car may be used to start the engine both on the grid and in the pits.

ARTICLE 9 : TRANSMISSION TO THE WHEELS

1) Four wheel drive :

Four wheel drive cars are forbidden.

2) Type of gearbox :

All cars must have no more than five forward gears.

Semi automatic and automatic gearboxes and differentials with electronic, pneumatic or hydraulic slip control are forbidden.

3) Reverse gear :

All cars must have a reverse gear which, at any time during the event, can be selected while the engine is running and used by the driver when seated normally.

ARTICLE 10 : SUSPENSION AND STEERING

1) Active suspension :

Active suspension is forbidden.

2) Chromium plating :

Chromium plating of any steel suspension is forbidden.

3) Sprung suspension :

Cars must be fitted with sprung suspension.

The springing medium must not consist solely of bolts located through flexible bushes or mountings.

There must be movement of the wheels to give suspension travel in excess of any flexibility in the attachments.

4) Suspension members :

All suspension members must be made from an homogeneous metallic material.

5) Steering :

5.1. The steering must consist of a mechanical link between the driver and the wheels.

5.2. Four wheel steering is forbidden.

ARTICLE 11 : BRAKES

1) Separate circuits :

All cars must have a brake system which has at least two separate circuits operated by the same pedal. This system must be designed so that if leakage or failure occurs in one circuit, the pedal shall still operate the brakes on at least two wheels.

2) Brake discs :

Brake discs must be made from ferrous material.

3) Air ducts :

Air ducts for the purpose of cooling the front brakes shall not protrude beyond :

— A plane parallel to the ground situated at a distance of 140 mm above the horizontal centre line of the wheel.

— A plane parallel to the ground situated at a distance of 140 mm below the horizontal centre line of the wheel.

— A vertical plane parallel to the inner face of the front rim and displaced from it by 120 mm toward the centre line of the car.

Furthermore, when viewed from the side the ducts must not protrude forwards beyond the periphery of the tyre or backwards beyond the wheel rim.

ARTICLE 12 : WHEELS AND TYRES

1) Location :

Complete wheels must be external to the bodywork in plan view, with the rear aerodynamic device removed.

2) Dimensions :

2.1. Maximum complete wheel width : 16 inches.

Maximum complete wheel diameter : 24.5 inches.

Compulsory wheel diameter : 13 inches.

2.2. These measurements will be taken horizontally at axle height.

3) Wheel material :

All wheels must be made from an homogeneous metallic material.

4) Maximum number of wheels :

The number of wheels is fixed at four.

5) Number of tyres :

5.1. The tyre manufacturer shall be obliged to supply three sets of tyres per car per event, six front and six rear tyres, all of which have the same technical characteristics and specifications.

5.2. Each tyre must bear on its wall and in block letters the reference « Formula 3000 », the date of manufacture and the name or logo of the manufacturer which must not exceed 16 cm in length.

5.3. A section of the tyre wall, measuring 12 cm × 6 cm, must be reserved for the positioning of a code. This code will serve the purpose of individualizing the tyres according to the events in which they are used, in order that the tyres distributed for one event may, under no circumstances, be used again for another event.

6) Wheel attachment :

A safety spring must be in place on the wheel nut throughout the event and must be replaced after each wheel change. These springs must be painted dayglo red or orange.

Alternatively, another method of retaining the wheels may be used, provided it has been approved by FISA.

7) Pressure control valves :

Pressure control valves on the wheels are forbidden.

ARTICLE 13 : COCKPIT

1) Cockpit opening :

The opening giving access to the cockpit must allow the horizontal template, shown in Appendix J/Drawing 274-5, to be inserted vertically, from above the car into the survival cell and bodywork, with the steering wheel removed. It must be possible to lower the template 25 mm below the lowest point of the cockpit opening.

The driver must be able to enter and get out of his seat without it being necessary to open a door or move any part of the car. Sitting at his steering wheel, the driver must be facing forward.

The cockpit must be so conceived that the maximum time necessary for the driver to get out from his normal driving position does not exceed 5 seconds with all driving equipment being worn, the safety belts fastened and the steering wheel in place in the most inconvenient position.

2) Steering wheel :

The steering wheel must be fitted with a quick release mechanism. Its method of release must be by pulling a concentric flange installed on the steering column behind the wheel.

3) Internal cross section :

The internal cross section of the cockpit from the soles of the driver's feet to behind his seat shall at no point be less than 700 cm^2. The only things which **can** encroach on this area are the steering column and padding for driver comfort.

A free vertical cross section, having a minimum width of 25 cm, maintained over a minimum height of 25 cm and with corner radii of a maximum of 5 cm, must be maintained along the whole length of the cockpit with the steering wheel removed.

The driver, seated normally with his seat belts fastened and with the steering wheel removed, must be able to raise both legs together so that his knees are past the plane of the steering wheel in the rearward direction. This action must not be obstructed by any part of the car.

ARTICLE 14 : SAFETY EQUIPMENT

1) Fire extinguishers :

1.1. Permitted extinguishing products are :
BCF (CF_2ClBr) and BTM ($CBrF_3$) or any other extinguishing product approved by FISA.

1.2. Minimum capacity :
Cockpit : 2.5 kg.
Engine compartment : 5.0 kg.

1.3. All extinguisher bottles must be adequately protected and must be situated within the survival cell. In all cases, the bottle mountings must be able to withstand a deceleration of 25 g.

All extinguishing equipment must withstand fire.

1.4. Discharge time :
Engine compartment : 30 seconds ($\pm$ 5 seconds)
Cockpit : 10 seconds minimum.
Both bottles must be released simultaneously.

1.5. Any triggering system having its own source of energy is permitted, provided it is possible to operate all extinguishers should the main electrical circuits of the car fail.

The driver must be able to trigger all extinguishers manually when seated normally with his safety belts fastened and steering wheel in place.

Furthermore, a means of triggering from the outside must be combined with the circuit breaker switch described in Article 14.2.2.

It must be marked with a letter « E » in red inside a white circle of at least 10 cm diameter with a red edge.

1.6. The following weights shall be indicated on each bottle :
— Weight of the empty bottle ;
— Weight of the extinguishing agent ;
— Total charged weight.

1.7. The system must work in any position, even when the car is inverted.

1.8. The extinguisher nozzles must be installed in such a way that they are not directly pointed at the driver.

2) Master switch :

2.1. The driver, when seated normally with safety belt fastened and steering wheel in place, must be able to cut off all electrical circuits to the ignition, all fuel pumps and the rear light by means of a spark proof circuit breaker switch.

This switch must be located on the dashboard and must be clearly marked by a symbol showing a red spark in a white edged blue triangle.

2.2. There must also be an exterior switch, with a horizontal handle, which is capable of being operated from a distance by a hook. This switch must be situated at the base of the main rollover structure on the right hand side.

3) Rear view mirrors :
All cars must have at least two mirrors mounted so that the driver has visibility to the rear and both sides of the car.
The reflective surface of each mirror must be at least 10 cm wide and at least 5 cm high, with a maximum corner radius of 1 cm.
The height from the ground to the centre of area of each mirror must be at least 62 cm.

4) Safety belts :
The wearing of two shoulder straps, one abdominal strap and two straps between the legs is mandatory. These straps must be securely fixed to the car and must comply with FIA standard 8853-1985.

5) Rear light :
All cars must have a red light of at least 21 watts, in working order throughout the event which :
— Faces rearwards at 90 degrees to the car centre line ;
— Is clearly visible from the rear ;
— Is not mounted more than 10 cm from the car centre line ;
— Is at least 40 cm from the ground ;
The two measurements being taken to the centre of area of the lens.
— Has a minimum surface area of 50 cm^2 ;
— Can be switched on by the driver when seated normally in the car.
In addition the lens and reflector must conform to the EEC standards and must carry the corresponding approval marking.

6) Headrest :
All cars must be equipped with a headrest which **cannot** deflect more than 5 cm when a rearward force of 85 daN is applied.
The headrest surface must not be less than 400 cm^2 and must be continuous and without protruding parts.
It must be positioned so that it is the first point of contact for the driver's helmet in the event of an impact projecting his head backwards, when he is seated normally.

ARTICLE 15 : SAFETY STRUCTURES
1) Magnesium sheet :
The use of magnesium sheet less than 3 mm thick is forbidden.

2) Titanium :
The use of titanium is forbidden, except in the engine.

3) Rollover structures :
3.1. The basic purpose of these structures is to protect the driver. This purpose is the primary design consideration.

3.2. All cars must have at least two rollover structures :
The first structure must be in front of the steering wheel, not more than 25 cm forward of, and at least as high as the top of the steering wheel rim.
The second structure must not be less than 50 cm behind the first and high enough for a line extended from the top of the first structure to the top of the second to pass 5 cm over the driver's helmet when he is seated normally in the car with his helmet on and seat belts fastened.
If the second structure is not located behind the driver, there must be a structure behind him which is high enough so that a line extended from its top to the top of either structure in front of him will pass over the top of his helmet by 5 cm when he is seated normally with his helmet on and seat belts fastened.

3.3. Both rollover structures required by Article 15.3.2 must, when attached to the car, be capable of withstanding three loads applied simultaneously to the top of the structure which are 1.5w laterally, 5.5w longitudinally, and 7.5w vertically, w being 740 kg.

3.4. The second rollover structure shall be subjected to a static load test by applying the combined loads described in 3.3 on top of the structure through a rigid flat pad perpendicular to the loading axis.

During the test, the rollover structure must be attached to the survival cell which is supported on its underside on a flat plate, fixed to it through its engine mounting points and wedged laterally by the static load test pads described in Article 15.4.5.

Under the load, the deformation must be less than 50 mm, measured along the loading axis and any structural failure limited to 100 mm below the top of the rollover structure, measured vertically.

3.5. The design concept of the rollover structures required by Article 15.3.2 shall be free. However, the second rollover structure must have a minimum structural cross section, in vertical projection, of 100 cm^2, across a horizontal plane passing 5 cm lower than the highest point of the second rollover structure.

4) Structure behind the driver :

All cars must have a structure immediately behind the driver's seat which is wider than and extends above his shoulders when he is seated normally with his seat belts fastened. This structure must be capable of sustaining a lateral load of 1.5w applied to its top, w being 740 kg.

5) Survival cell and frontal protection :

5.1. The survival cell must extend from behind the fuel tank in a rearward direction to a point at least 15 cm in front of the driver's feet, with his feet resting on the pedals and the pedals in the inoperative position.

The survival cell must have an opening for the driver, the minimum dimensions of which are given in Article 13.1. Any other openings in the survival cell must be of minimum size to allow access to mechanical components.

The safety structures described in Articles 15.3.2 and 15.4 must be a part of the survival cell or solidly attached to it.

5.2. When he is seated normally, the soles of the driver's feet, resting on the pedals in the inoperative position, shall not be situated to the fore of the vertical plane passing through the centre line of the front wheels. Should the car not be fitted with pedals, the driver's feet at their maximum forward extension shall not be situated to the fore of the above mentioned vertical plane.

5.3. In front of the survival cell, an impact absorbing structure must be fitted. This structure need not to be an integral part of the survival cell but must be solidly attached to it.

5.4. The minimum external width of the survival cell is 30 cm.

This width must be maintained for a minimum height of 25 cm along the whole length of the survival cell. The minimum height of the survival cell between the two rollover structures is 40 cm.

5.5. The survival cell and frontal absorbing structure shall be subjected to an impact test against a solid vertical barrier placed at right angles to the longitudinal axis of the car. The entire crash structure must be solidly fixed to the trolley through its engine mounting points but not in such a way as to increase its impact resistance.

The fuel tank must be fitted and must be full of water.

A dummy weighing at least 75 kg must be fitted with the safety belts defined in Article 14.4 fastened. However, with the safety belts unfastened, the dummy must be able to move forwards freely in the cockpit.

The extinguishers, as described in Article 14.1. must also be fitted.

For the purposes of this test, the total weight of the trolley and test structure shall be 740 kg and the velocity of impact 11 metres/sec.

The resistance of the test structure must be such that during the impact the average deceleration of the trolley does not exceed 25 g and the peak deceleration in the chest of the dummy does not exceed 60 g for more than 3 ms.

Furthermore, all structural damage must be contained in the zone ahead of the driver's feet and there must be no damage to the mountings of the safety belts or fire extinguishers.

This test must be carried out in the presence of a FISA technical delegate in an approved testing centre.

5.6. In addition, the survival cell must be subjected to three separate static lateral load tests :

1) In the cockpit area on a vertical plane passing through the centre of the seat belt lap strap fixing.

2) In the fuel tank area on a vertical plane passing through the centre of area of the fuel tank in side elevation.

3) On a vertical plane passing halfway between the front wheel axis and the top of the first rollover structure.

For the tests described above, a pad 10 cm long and 30 cm high, with a maximum radius on all edges of 3 mm and conforming to the shape of the survival cell, shall be placed against the outermost sides of the survival cell with the lower edge of the pad at the lowest part of the survival cell at that section. Rubber 3 mm thick may be used between the pads and the survival cell.

A constant transverse horizontal load of 2000 daN shall be applied, in less than 3 minutes, to the pads at their centre of area through a ball jointed junction, and maintained for a minimum of 30 seconds.

Under these load conditions, there shall be no structural failure of the inner or outer surfaces of the survival cell and permanent deformation must be less than 1 mm after the load has been released for 1 minute. The deformation will be measured at the top of the pads across the inner surfaces. In test 1, deflection across the inner surfaces of the survival cell must not exceed 2 cm.

5.7. To test the attachments of the frontal impact absorbing structure to the survival cell, a static side load test shall be performed on a vertical plane passing 40 cm in front of the front wheel axis.

A constant transversal horizontal load of 2000 daN must be applied to one side of the impact absorbing structure using a pad identical to the one used in the lateral tests in Article 15.5.6. The centre of area of the pad must pass through the plane mentioned above and the mid point of the height of the structure at that section. After 30 seconds of application, there must be no failure of the structure or of any attachment between the structure and the survival cell.

During the test the survival cell must be resting on a flat plate and secured to it solidly but not in a way that could increase the strength of the attachments being tested.

5.8. A further static load test must be carried out on the survival cell from beneath the fuel tank. A pad of 20 cm diameter must be placed in the centre of area of the fuel tank and a vertical upwards load of 1000daN applied in less than 3 minutes through a ball jointed junction. The load must be maintained for a minimum of 30 seconds.

Under these loads conditions, there must be no structural failure of the inner or outer surfaces of the survival cell and permanent deformation must be less than 0.5 mm after the load has been released for 1 minute the measurement being taken at the centre of area of the pad.

5.9. The static load tests in Article 15.3.4 ; 15.5.6 ; 15.5.7 and 15.5.8 must be carried out in the presence of a FISA technical delegate and using measuring equipment verified by FISA.

Any significant modification introduced into any of the structures tested shall require that part to undergo a further test.

6) Lateral protection structures :

Continuous panels, whose projections on a vertical plane parallel to the longitudinal axis of the car, shall be at least 20 cm high, shall extend between the transverse planes passing through the front rollover structure and the fuel tank rear face on either side and at least 55 cm from the car's longitudinal centre line.

These panels shall be made from a composite material of 10 mm minimum thickness with a honeycomb core in metal or nomex giving adequate resistance to compression. The external covering shall be of aluminium alloy, plastic, or carbon fibre of minimum thickness of 0.5 mm or made up of another assembly of materials of equivalent efficiency.

The panels must be securely attached to the flat bottom and to the main structure of the car in such a manner as to ensure absorption of a lateral impact.

The radiators may play the role of protective panels or of transversal struts.

ARTICLE 16 : FUEL

1) Fuel :

1.1. Only fuel provided by the supplier designated by the FISA may be used.

1.2. The fuel is petrol without any additive other than that of a lubricant on current sale which cannot increase the octane number.

1.3. The fuel has the following characteristics :

100 RON maximum, 98 RON minimum, 90 MON maximum, 88 MON minimum,the measurements being made according to the standards ASTM D 2699-86 and D 2700-86, the fuel being accepted or rejected according to ASTM D3244 with a confidence limit of 95 %.

Specific gravity between 720 and 785 kg/m³ at 15 degrees C (the measurement being made according to the standard ASTM D4052).

A maximum of 2.8 % oxygen and 0.5 % nitrogen by weight, the remainder of the fuel consisting exclusively of hydrocarbons and not containing any power boosting additives.

The measurement of the nitrogen will be carried out according to the standard ASTM D3228, that of the oxygen by elemental analysis with a tolerance of 0.2 %.

Maximum content of peroxides and nitrooxide compounds : 100 ppm (ASTM D3703).

Maximum lead content : 0.013 g/l (ASTM D3237).

Maximum benzene content : 5 % in volume (ASTM D3606).

Maximum Reid vapour pressure : 700hPa (ASTM D323).

2) Air :

Only air may be mixed with the fuel as an oxidant.

ARTICLE 17 : FINAL TEXT

The final text of these regulations shall be the French version which will be used should any dispute arise over their interpretation.

ARTICLE 18 : CHANGES FOR 1994

1) Add to Article 3 :

Bodywork around the front wheels :

With the exception of brake cooling ducts, in plan view, there must be no bodywork in the area formed by two longitudinal lines parallel to and 40 cm and 100 cm from the car centre line and two transversal lines, one 5 cm forward of the front edge and one 20 cm behind the rear edge of the complete front wheel.

2) Replace Article 14.1.1 with :

1.1. Permitted extinguishing products are :

BCF (CF2ClBr) or any other extinguishing gas approved by FISA.

3) Delete Article 15.6. - « Lateral protection structures »

Art. 275 - **Formula 3 technical regulations**

SUMMARY

ARTICLE 1 : DEFINITIONS

1) Formula 3 car :
Automobile designed solely for speed races on circuits or closed courses.

2) Automobile :
Land vehicle running on at least four non aligned complete wheels, of which at least two are for steering and at least two for propulsion.

3) Land vehicle :
A locomotive device propelled by its own means, moving by constantly taking real support on the earth's surface, of which the propulsion and steering are under the control of a driver aboard the vehicle.

4) Bodywork :
All entirely sprung parts of the car in contact with the external air stream, except the rollover structures and the parts definitely associated with the mechanical functioning of the engine, transmission and running gear. Airboxes and radiators are considered to be part of the bodywork.

5) Wheel :
Flange and rim. Complete wheel : Flange, rim and tyre.

6) Automobile make :
In the case of Formula racing cars, an automobile make is a complete car. When the car manufacturer fits an engine which it does not manufacture, the car shall be considered a hybrid and the name of the engine manufacturer shall be associated with that of the car manufacturer. The name of the car manufacturer must always precede that of the engine manufacturer. Should ahybrid car win a Championship Title, Cup or Trophy, this will be awarded to the manufacturer of the car.

7) Event :
An event shall consist of official practice and the race.

8) Weight :
Is the weight of the car without fuel or driver at all times during the event.

9) Racing weight :
Is the weight of the car in running order with the driver aboard and all fuel tanks full.

10) Cubic capacity :
The volume swept in the cylinders of the engine by the movement of the pistons. This volume shall be expressed in cubic centimetres. In calculating engine cubic capacity, the number Pi shall be 3.1416.

11) Supercharging :
Increasing the weight of the charge of the fuel/air mixture in the combustion chamber (over the weight induced by normal atmospheric pressure, ram effect and dynamic effects in the intake and/or exhaust system) by any means whatsoever. The injection of fuel under pressure is not considered to be supercharging.

12) Intake system :
All the elements between the cylinder head and the external side of the air restrictor.

13) Main structure :
The fully sprung structure of the vehicle to which the suspension and/or spring loads are transmitted, extending longitudinally from the foremost front suspension on the chassis to the rearmost one at the rear.

14) Sprung suspension :
The means whereby all complete wheels are suspended from the body/chassis unit by a spring medium.

15) Active suspension :
Any system which allows control of the flexibility of the suspension springs, shock absorption and/or trim height when the car is moving.

16) Cockpit :
The volume which accommodates the driver.

17) Survival cell :
A continuous closed structure containing all fuel tanks and the cockpit.

ARTICLE 2 : REGULATIONS

1) Role of the FISA :

The following technical regulations for Formula 3 cars are issued by the FISA.

2) Publication date for amendments :

Each year, in October, the FISA will publish all changes made to these regulations. All such changes will take effect on the third 1 st January following their publication.

Changes made for safety reasons may come into force without notice.

3) Notice for change in the air restrictor :

The FISA reserves its right to modify the dimensions of the air restrictor with one years notice.

4) Dangerous construction :

If an automobile is deemed to be dangerous, it may be excluded by the Stewards of the Meeting.

5) Permanent compliance with regulations :

Automobiles must comply with these regulations in their entiretyat all times during an event.

6) Measurements :

All measurements must be made while the car is stationary on a flat horizontal surface.

ARTICLE 3 : BODYWORK AND DIMENSIONS

1) Width :

Overall width of the car, including complete wheels shall not exceed 185 cm, with the steered wheels in the straight ahead position,

2) Width ahead of front wheels :

The bodywork ahead of the front edge of the complete front wheels is limited to an overall width of 130 cm.

Nevertheless, any part of the bodywork ahead of the front wheels exceeding an overall width of 95 cm, must not extend above the height of the front wheel rims with the driver aboard seated normally, and irrespective of the fuel load.

3) Width and shape between the front and rear wheels :

The maximum width of the bodywork behind the forward edge of the complete front wheels and in front of the centre line of the rear wheels is 130 cm.

Between the rear edge of the complete front wheels and the front edge of the complete rear wheels all sprung parts of the car visible from directly beneath the car must lie on one plane. All these parts must produce a uniform, solid, hard, rigid (no degree of freedom in relation to the body/chassis unit), impervious surface, under all circumstances. The periphery of the surface formed by these parts may be curved upwards with a maximum radius of 5 cm.

To help overcome any possible manufacturing problems, a tolerance of ± 5 mm is permissible across this surface.

No part of the bodywork in front of the rear wheel centre line and extending above the height of the rear complete wheels may project beyond 45 cm each side of the longitudinal axis of the car.

4) Width behind the rear wheel centre line :

Bodywork behind the centre line of the rear wheels must not exceed 90 cm in width.

5) Overhangs :

No part of the car shall be more than 60 cm behind the centre line of the rear wheels or more than 100 cm in front of the centre line of the front wheels.

The centre line of any wheel shall be deemed to be half way between two straight edges, perpendicular to the surface on which the car is standing, placed against opposite sides of the complete wheel at the centre of the tyre tread.

6) Height :

Except for the rollover structures, no part of the car can be higher than 90 cm from the ground with the car in normal racing trim with the driver aboard seated normally.

Any part of the rollover structures higher than 90 cm from the ground must not be shaped to have a significant aerodynamic influence on the performance of the car.

7) Aerodynamic influence :

Any specific part of the car influencing its aerodynamic performance :

— must comply with the rules relating to bodywork ;

— must be rigidly secured to the entirely sprung part of the car (rigidly secured means not having any degree of freedom) ;

— must remain immobile in relation to the sprung part of the car.

Any device or construction that is designed to bridge the gap between the sprung part of the car and the ground is prohibited under all circumstances.

No part having an aerodynamic influence and no part of the bodywork may under any circumstances be located below the geometrical plane generated by the flat surface described in Article 3.3.

No part of the bodywork in front of the front wheel centre line and more than 20 cm from the longitudinal centre line of the car may be closer than 25 mm to the geometrical plane referred to in Article 3.3.

8) Wheelbase and track :

Minimum wheelbase : 200 cm.
Minimum track : 120 cm.

ARTICLE 4 : WEIGHT

1) Minimum weight :

The weight of the car must not be less than 455 kg.

2) Ballast :

Ballast can be used provided it is secured in such a way that tools are required for its removal. It must be possible to fix seals if deemed necessary by the scrutineers.

3) Adding during the race :

The adding to the car during the race of any liquid or other material whatsoever or the replacement during the race of any part with another materially heavier is forbidden.

ARTICLE 5 : ENGINE

1) Types of engine permitted :

1.1 Engines with reciprocating pistons :

The maximum number of cylinders is 4.

Two stroke engines are forbidden.

1.2 Engines with rotary pistons :

Cars with rotary piston engines covered by NSU-Wankel patents will be admitted on the basis of a piston displacement equivalence. This equivalence is 1.8 the volume determined by the difference between the maximum and minimum capacity of the working chamber.

2) Maximum capacity :

Engine capacity must not exceed 2000cc.

3) Supercharging :

Supercharging is forbidden.

4) Engine modifications :

4.1 The engine block and engine head castings, machining completed, must be those of a car engine equipping a car model of which the FISA has ascertained the series production of at least 2500 units in 12 consecutive months.

This engine must be homologated by the FISA, and described on an homologation form for Formula 3 engines.

4.2 The original engine block and cylinder head may be modified by the removal of material, but addition of material is not permitted. However, it is permitted to sleeve an engine block, by welding if necessary, that originally is not fitted with sleeves, to modify or close the lubrication holes in the cylinder head, close standard injector holes or to use Is.

Unused apertures in the cylinder head or block may be closed provided the only purpose is that of closing.

Any parts added to the intake system must be permanently attached only to the intake manifold, not to the cylinder head.

4.3 Crankshaft bearings may not be modified or replaced with another type.

4.4 Mechanical components from the original engine do not have to be used.

4.5 The intake system is free but must be fitted with an air restrictor 3 mm long and having a maximum diameter of 24 mm.

All the air feeding the engine must pass through this air restrictor, which must be made of metal or metal alloy.

4.6 The material of the air box is free, provided that it is not porous.

The entire intake system including manifolds, injectors, airbox and restrictor must fit into a box 100 cm long × 50 cm wide × 50 cm high.

It must be possible to remove the entire intake system from the engine as one unit with the cylinder head.

4.7 Provided Article 5.2 is respected, the bore and stroke are free.

4.8 Internal and/or external spraying or injection of water or any substance whatsoever is forbidden (other than fuel for the normal purpose of combustion in the engine).

5) Vacuum tightness control of the intake system :

The control apparatus described hereafter represents the ultimate method of verification of the vacuum tightness ofintake systems, without the possibility of appeal. All event organisers will have to put such an apparatus at the disposal of the scrutineers for verification purposes, both before and after the race.

The apparatus aims to create artificially a vacuum in the intake system and includes :

— A membrane suction pump, with a nominal output of 25 to 28 litres/minute, and capable of obtaining a vacuum of 55 to 65 cm Hg for zero air flow.

— A rubber tubular stop perfectly adjusted to the flange.

— A vacuum gauge connected to the piping between the rubber stop and the section-pump.

The procedure to be respected for the checking is the following :

a) Rotate the engine into such a position that, in each cylinder, at least one of the valves is closed.

b) Open the injection slide or the carburettor butterflies.

c) Check on the vacuum gauge that the suction pump creates in the induction system a depression superior or equal to 15 cm Hg.

d) If condition a) cannot be met, disconnect the rocker arms or remove the camshaft, in order to shut all inlet valves.

If one or several valves have been damaged during the event, the entrant may repair them under the steward's control before undergoing the testing procedure.

In these last cases, the minimum vacuum to be obtained shall be 20 cm Hg instead of 15 cm Hg.

6) Exhaust pipes :

The outlet orifices of the exhaust pipes, when directed to the rear, must be less than 60 cm from the ground.

ARTICLE 6 : PIPING AND FUEL TANKS

1) Fuel tanks :

1.1 All fuel tanks must be rubber bladders conforming to or exceeding the specifications of FIA/FT3.

1.2 Fuel must not be stored more than 55 cm from the longitudinal axis of the car.

1.3 All rubber bladders must be made by manufacturers recognised by the FISA. In order to obtain the agreement of the FISA, the manufacturer must prove the compliance of his product with the specifications approved by the FISA. These manufacturers must undertake to deliver to their customers exclusively tanks complying with the approved standards.

A list of approved manufacturers is available from the FISA.

1.4 All rubber bladders shall have a printed code indicating the name of the manufacturer, the specifications to which the tank has been manufactured and the date of manufacture.

1.5 No rubber bladders shall 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 5 years.

2) Fittings and piping :

2.1 No lines containing fuel, cooling water or lubricating oil may pass through the cockpit.

2.2 All lines must be fitted in such a way that any leakage cannot result in the accumulation of fluid in the cockpit.

2.3 All fuel and lubricating oil lines must have a minimum burst pressure of 41bar (600 psi) and a minimum operating temperature of 135 degrees C (250 degrees F).

When flexible, these lines must have threaded connectors and an outer braid resistant to abrasion and flame (will not sustain combustion).

2.4 All lines containing hydraulic fluid, with the exception of lines under gravity head, must have a minimum burst pressure of 70 bar (1000 psi) or higher according to operating pressure, and a minimum operating temperature of 232 degrees C (450 degrees F).
When flexible, these lines must have threaded connectors and an outer braid resistant to abrasion and flame (will not sustain combustion).
Hydraulic fluid lines must have no connections inside the cockpit which are capable of being removed.

3) Crushable structure :
The chassis must include a crushable structure surrounding the fuel tank with the exception of the access hatches, this structure being an integral part of the car main structure and of the survival cell, and conforming to the following specifications :

3.1 The crushable structure must be a honeycomb sandwich construction based on a fire resistant core of a minimum crushing strength of 18 N/cm² (25 lb/in2). It shall be permitted to pass water pipes through this core, but not fuel, lubricating oil or electrical lines. The sandwich construction must include two skins of 1.5 mm thickness having a tensile strength of minimum225 N/mm² (14 tons/in2).

3.2 The minimum thickness of the sandwich construction must be 1 cm.

4) Tank fillers :
4.1 Tank fillers must not protrude beyond the bodywork. Any breather pipe connecting the fuel tank to the atmosphere must be designed to avoid liquid leakage when the car is running and its outlet must not be less than 25 cm from the cockpit opening.
All tank fillers must be designed to ensure an efficient locking action which reduces the risk of accidental opening following a crash impact or incomplete locking after refuelling.

4.2 All cars must be fitted with a self sealing connector which can be used by the scrutineers to obtain fuel from the tank.
This connector must be the type approved by FISA.

5) Refuelling :
5.1 Refuelling during the race is forbidden.

5.2 Refuelling the car on the grid by any other means than by gravity from a maximum head of 2 metres above the ground is forbidden.

5.3 Any storage of fuel on board the car at a temperature of more than ten degrees centigrade below the ambient temperature is forbidden.

5.4 The use of any specific device, whether on board or not, to decrease the temperature of the fuel below the ambient temperature is forbidden.

ARTICLE 7 : OIL SYSTEM
1) Location of oil tanks :
All oil storage tanks must be situated between the front wheel axis and the rearmost gearbox casing longitudinally, and if situated outside the main structure of the car they must be surrounded by a 10 mm thick crushable structure.

2) Longitudinal location of oil system :
No other part of the car containing oil may be situated behind the complete rear wheels.

3) Catch tank :
When a car's lubrication system includes an open type sump breather, this breather must vent into a catch tank of at least 2 litres capacity.

4) Transversal location of oil system :
No part of the car containing oil may be more than 55 cm from the longitudinal centre line of the car.

5) Oil replenishment :
No oil replenishment is allowed during a race.

ARTICLE 8 : STARTING

1) Starter :

A starter must be fitted with electrical or other source of energy carried aboard the car, and able to be controlled by the driver when seated normally.

The starter must be capable of starting the engine at all times.

2) Starting the engine :

A supplementary device temporarily connected to the car may be used to start the engine both on the grid and in the pits.

ARTICLE 9 : TRANSMISSION TO THE WHEELS

1) Four wheel drive :

Four wheel drive cars are forbidden.

2) Type of gearbox :

All cars must have no more than five forward gears.

Transversal gearboxes or gearboxes forward of the rear wheelaxis are forbidden.

Semi automatic and automatic gearboxes and differentials with electronic, pneumatic or hydraulic slip control are forbidden.

3) Reverse gear :

All cars must have a reverse gear which, at any time during the event, can be selected while the engine is running and used by the driver when seated normally.

ARTICLE 10 : SUSPENSION AND STEERING

1) Active suspension :

Active suspension is forbidden.

2) Chromium plating :

Chromium plating of any steel suspension components is forbidden.

3) Suspension members :

All suspension members must be made from an homogeneous metallic material.

4) Sprung suspension :

Cars must be fitted with sprung suspension.

The springing medium must not consist solely of bolts located through flexible bushes or mountings.

There must be movement of the wheels to give suspension travel in excess of any flexibility in the attachments.

5) Steering :

5.1 The steering must consist of a mechanical link between the driver and the wheels.

5.2 Four wheel steering is forbidden.

ARTICLE 11 : BRAKES

1) Separate circuits :

All cars must have a brake system which has at least two separate circuits operated by the same pedal. This system must be designed so that if leakage or failure occurs in one circuit, the pedal shall still operate the brakes on at least two wheels.

2) Brake discs :

Brake discs must be made from ferrous material.

3) Air ducts :

Air ducts for the purpose of cooling the front brakes shall not protrude beyond :

— A plane parallel to the ground situated at a distance of 140 mm above the horizontal centre line of the wheel.

— A plane parallel to the ground situated at a distance of 140 mm below the horizontal centre line of the wheel.

— A vertical plane parallel to the inner face of the front rim and displaced from it by 120 mm toward the centre line of the car.

Furthermore, when viewed from the side the ducts must not protrude forwards beyond the periphery of the tyre or backwards beyond the wheel rim.

ARTICLE 12 : WHEELS AND TYRES

1) Location :

Complete wheels must be external to the bodywork in plan view, with the rear aerodynamic device removed.

2) Wheel material :
All wheels must be made from an homogeneous metallic material.

2) Dimensions :
2.1 Maximum complete wheel width : 11.5 inches.
Compulsory wheel diameter : 13.0 inches.
2.2 These measurements will be taken horizontally at axle height.

3) Maximum number of wheels :
The number of wheels is fixed at four.

4) Wheel attachment :
A safety spring must be in place on the wheel nut throughout the event and must be replaced after each wheel change. These springs must be painted dayglo red or orange.
Alternatively, another method of retaining the wheels may be used, provided it has been approved by FISA.

5) Pressure control valves :
Pressure control valves on the wheels are forbidden.

ARTICLE 13 : COCKPIT

1) Cockpit opening :
The opening giving access to the cockpit must allow the horizontal template, shown in Appendix J/Drawing 274-5, to be inserted vertically, from above the car into the survival cell and bodywork, with the steering wheel removed. It must be possible to lower the template 25 mm below the lowest point of the cockpit opening.
The driver must be able to enter and get out of his seat without it being necessary to open a door or move any part of the car. Sitting at his steering wheel, the driver must be facing forward.
The cockpit must be so conceived that the maximum time necessary for the driver to get out from his normal driving position does not exceed 5 seconds with all driving equipment being worn, the safety belts fastened and the steering wheel in place in the most inconvenient position.

2) Steering wheel :
The steering wheel must be fitted with a quick release mechanism. Its method of release must be by pulling a concentric flange installed on the steering column behind the wheel.

3) Internal cross section :
The internal cross section of the cockpit from the soles of the driver's feet to behind his seat shall at no point be less than 700 cm^2. The only things which can encroach on this area are the steering column and padding for driver comfort.
A free vertical cross section, having a minimum width of 25 cm, maintained over a minimum height of 25 cm and with corner radii of a maximum of 5 cm, must be maintained along the whole length of the cockpit with the steering wheel removed.
The driver, seated normally with his seat belts fastened and with the steering wheel removed, must be able to raise both legs together so that his knees are past the plane of the steering wheel in the rearward direction. This action must not be obstructed by any part of the car.

ARTICLE 14 : SAFETY EQUIPMENT

1) Fire extinguishers :
1.1 Permitted extinguishing products are :
BCF (CF_2ClBr) and BTM ($CBrF_3$) or any other extinguishing product approved by FISA.
Dry powder is also permitted but only on cars being used in or coming from countries where national regulations preclude the use of the above products.

1.2 Minimum capacity :
Cockpit : 2.5 kg.
Engine compartment : 5.0 kg.

1.3 All extinguisher bottles must be adequately protected and the bottle for the engine compartment must be situated within the survival cell. In all cases, the bottle mountings must be able to withstand a deceleration of 25 g.
All extinguishing equipment must withstand fire.

1.4 Discharge time :
Engine compartment : 30 seconds (± 5 seconds)
Cockpit : 10 seconds minimum.
Both bottles must be released simultaneously.

1.5 Any triggering system having its own source of energy is permitted, provided it is possible to operate all extinguishers should the main electrical circuits of the car fail.
he driver must be able to trigger all extinguishers manually when seated normally with his safety belts fastened and steering wheel in place.
Furthermore, a means of triggering from the outside must be combined with the circuit breaker switch described in Article 14.2.2. It must be marked with a letter « E » in red inside a white circle of at least 10 cm diameter with a red edge.

1.6 The following weights shall be indicated on each bottle :
— Weight of the empty bottle ;
— Weight of the extinguishing agent ;
— Total charged weight.

1.7 The system must work in any position, even when the car is inverted.

1.8 The extinguisher nozzles must be installed in such a way that they are not directly pointed at the driver.

2) Master switch :
2.1 The driver, when seated normally with safety belt fastened and steering wheel in place, must be able to cut off all electrical circuits to the ignition, all fuel pumps and the rear light by means of a spark proof circuit breaker switch.
This switch must be located on the dashboard and must be clearly marked by a symbol showing a red spark in a white edged blue triangle.

2.2 There must also be an exterior switch, with a horizontal handle, which is capable of being operated from a distance by a hook. This switch must be situated at the base of the main rollover structure on the right hand side.

3) Rear view mirrors :
All cars must have at least two mirrors, each with a minimum surface area of 55 cm^2, mounted so that the driver has visibility to the rear and both sides of the car.

4) afety belts :
The wearing of two shoulder straps, one abdominal strap and two straps between the legs is mandatory. These straps must be securely fixed to the car and must comply with FIA standard 8853-1985.

5) Rear light :
All cars must have a red light of at least 21 watts, in working order throughout the event which :
— Faces rearwards at 90 degrees to the car centre line ;
— Is clearly visible from the rear ;
— Is not mounted more than 10 cm from the car centre line ;
— Is at least 40 cm from the ground ;
The two measurements being taken to the centre of area of the lens.
— Has a minimum surface area of 50 cm^2 ;
— Can be switched on by the driver when seated normally in the car.
In addition the lens and reflector must conform to the EEC standards and must carry the corresponding approval marking.

6) Headrest :
All cars must be equipped with a headrest which cannot deflect more than 5 cm when a rearward force of 85 daN is applied.
The headrest surface must not be less than 400 cm^2 and must be continuous and without protruding parts.
It must be positioned so that it is the first point of contact for the driver's helmet in the event of an impact projecting his head backwards, when he is seated normally.

ARTICLE 15 : SAFETY STRUCTURES

1) Magnesium sheet :
The use of magnesium sheet less than 3 mm thick is forbidden.

2) Titanium :
The use of titanium is forbidden, except in the engine.

3) Rollover structures :

3.1 The basic purpose of safety structures is to protect the driver. This purpose is the primary design consideration.

3.2 All cars must have at least two rollover structures.

The first structure must be in front of the steering wheel, not more than 25 cm forward of, and at least as high as the top of the steering wheel rim.

The second structure must not be less than 50 cm behind the first and high enough for a line extended from the top of the first structure to the top of the second to pass 5 cm over the driver's helmet when he is seated normally in the car with his helmet on and seat belts fastened.

The second structure behind the seat must be symmetrical about the lengthwise centre line of the car and its top must be at least 95 cm measured vertically from the base of the monocoque.

The vertical projection of the second rollover structure made on a horizontal plane passing 5 cm lower than the top of the second rollover structure must have a minimum area of 100 cm^2.

3.3 The rollbar, of entirely free conception, must be capable of withstanding the following loads applied simultaneously to the top of the structure, which are 1.5 w laterally, 5.5 w longitudinally in both directions and 7.5 w vertically, w being the racing weight of the car, the induced loads being carried over into the primary structure of the chassis.

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 rollover structure, and state that this rollbar can withstand the above mentioned loads.

4) Survival cell and frontal protection :

4.1 The chassis structure must include a survival cell formed from two continuous box members, one on each side of the driver. These box members can be coupled at the car's centre line but they must be connected by at least one closed bulkhead at the main rollbar level, one hoop at the front rollbar level and a closed bulkhead in front of the pedal box. Openings in the closed bulkheads must be of a minimum size to allow the passage of controls.

4.2 Each box member shall extend from behind the driver to a plane at least 10 cm in front of the soles of his feet with the driver seated normally and with his feet on the pedals in the inoperative position.

When he is seated normally, the soles of the driver's feet, resting on the pedals in the inoperative position, shall not be situated to the fore of the vertical plane passing through the centre line of the front wheels. Should the car not be fitted with pedals, the driver's feet at their maximum forward extension shall not be situated to the fore of the above mentioned vertical plane.

4.3 Throughout its length from behind the driver to the sole sof his feet, each box must have a minimum cross sectionalarea of 150 cm^2 and a minimum structural material cross section of 10 cm^2 (the thickness measured in a non vertical direction of the box member areas located at more than 12.5 cm from the car's centre line must be 20 mm minimum). Forward of this, the boxes may taper to a minimum cross section of 100 cm^2 and a minimum structural material cross section of 5 cm^2.

4.4 The chassis must include an impact absorbing structure fitted ahead of the survival cell. This structure must be independent of the bodywork and if detachable must be solidly fixed to the extremities of the survival cell box members (i.e. with bolts requiring tools for removal).

It must constitute a box of 30 cm minimum length, 15 cm minimum height in any vertical section and 400 cm^2 minimum total cross section. It must use honeycomb sandwich construction with a minimum panel thickness of 15 mm.

4.5 Throughout the length of each box member or panel, these tructural material shall have a minimum tensile strength of 310 N/mm^2 for composite materials or 225 N/mm^2 for metallic materials and the total of the skin thicknesses across the section of each box member or panel must be minimum 3 mm. The skins must be stabilized.

4.6 All holes and cut outs in the boxes shall be strongly reinforced and all material sections through these holes shall still comply with the minimum material area requirements.

4.7 The minimum height of the box member between the front and rear

rollover bar structures shall at no point be less than 40 cm, and 30 cm between the front rollover bar and the soles of the driver's feet.

5) Lateral protection structures :

5.1 Continuous panels whose projections on a vertical plane parallel to the longitudinal axis of the car shall be at least 15 cm high, shall extend on either side of the car, at a minimum distance of 55 cm from the car's longitudinal centre line between at least the transversal planes passing through the fuel tank rear face and the frontal extremity of the minimum cockpit opening (art. 13.1), and at a minimum distance of 35 cm from the car's longitudinal centre line between at least the transversal planes passing through the above extremity and the front rollover bar hoop.

5.2 These panels shall be made from a composite material of 30 cm^2 minimum cross section with a honeycomb core in metal or nomex giving adequate resistance to compression. The external skins shall be of aluminium alloy, plastic, or carbon fibre of a minimum thickness of 0.5 mm or made up of another assembly of materials of equivalent efficiency.

The panels must be securely attached to the flat bottom and at their upper extremity to the main structure of the car in such a manner as to ensure absorption of a lateral impact.

The radiators may play the role of protective panels or of transversal struts.

ARTICLE 16 : FUEL

1) Fuel :

The fuel must be commercial petrol which is available from service stations and must contain no additive other than that of a lubricant on current sale.

The fuel must have the following characteristics :

— 102 RON/90 MON maximum ; 95 RON/85 MON minimum for unleaded fuels and 100 RON/92 MON maximum ; 97 RON/86 MON minimum for leaded fuels, the measurements being made according to the standards ASTM D2699-86 and D2700-86, the fuel being accepted or rejected according to ASTM D3244 with a confidence limit of 95 %.

— Specific gravity between 720 and 785 kg/m^3 at 15 degrees C (measured according to ASTM D4052).

— A maximum of 2.8 % oxygen for leaded fuel or 3.7 % if the lead content is less than 0.013 g/l, and 0.5 % nitrogen by weight, the remainder of the fuel consisting exclusively of hydrocarbons and not containing any power boosting additives.

The measurement of the nitrogen content will be carried out according to the standard ASTM D3228, and that of the oxygen by elemental analysis with a tolerance of 0.2 %.

— Maximum content of peroxides and nitrooxide compounds : 100 ppm (ASTM D3703).

— Maximum lead content : 0.40 g/l or the standard of the country of the event, if this is lower (ASTM D3341 or D3237).

— Maximum benzene content : 5 % in volume (ASTM D3606).

— Maximum Reid vapour pressure : 900 hPa (ASTM D323).

— Distillation at 70 degrees C : 10 % - 47 % (ASTM D86).

— Distillation at 100 degrees C : 30 % - 70 % (ASTM D86).

— Distillation at 180 degrees C : 85 % minimum (ASTM D86).

— Maximum final boiling point : 225 degrees C (ASTM D86).

— Maximum residue : 2 % volume (ASTM D86).

2) Air :

Only air may be mixed with the fuel as an oxidant

ARTICLE 17 : FINAL TEXT

The final text for these regulations shall be the French version which will be used should any dispute arise over their interpretation.

ARTICLE 18 : CHANGES FOR 1994

1) Add to Article 3 :

Bodywork around the front wheels :

With the exception of brake cooling ducts, in plan view, there must be no bodywork in the area formed by two longitudinal lines parallel to and 40 cm and 90 cm from the car centre line and two transversal lines, one 5 cm forward of the front edge and one 20 cm behind the rear edge of the complete front wheel.

2) Replace Article 14.1.1 with :

1.1 Permitted extinguishing products are :

BCF (CF2ClBr) or any other extinguishing product approved by FISA.

Dry powder is also permitted but only on cars being used in or coming from countries where national regulations preclude the use of the above products.

3) Replace Article 14.1.3 with :

1.3 All extinguisher bottles must be adequately protected and must be situated within the survival cell. In all cases, the bottle mountings must be able to withstand a deceleration of 25 g.

All extinguishing equipment must withstand fire.

4) Replace Article 15.3. with :

Rollover structures :

3.1 The basic purpose of safety structures is to protect the driver. This purpose is the primary design consideration.

3.2 All cars must have at least two rollover structures.

The first structure must be in front of the steering wheel, not more than 25 cm forward of, and at least as high as the top of the steering wheel rim.

The second structure must not be less than 50 cm behind the first and high enough for a line extended from the top of the first structure to the top of the second to pass 5 cm over the driver's helmet when he is seated normally in the car with his helmet on and seat belts fastened.

3.3 Both rollover structures required by Article 15.3.2 must, when attached to the car, be capable of withstanding three loads applied simultaneously to the top of the structure which are 1.5 w laterally, 5.5 w longitudinally, and 7.5 w vertically, w being 560 kg.

3.4 The second rollover structure shall be subjected to a static load test by applying the combined loads described in 3.3 on top of the structure through a rigid flat pad perpendicular to the loading axis.

During the test, the rollover structure must be attached to the survival cell which is supported on its underside on a flat plate, fixed to it through its engine mounting points and wedged laterally, but not in a way as to increase the resistance of the structure being tested.

Under the load, the deformation must be less than 50 mm, measured along the loading axis and any structural failure limited to 100 mm below the top of the rollover structure, measured vertically.

This test must be carried out in the presence of a FISA technical delegate and using measuring equipment verified by FISA.

3.5 The design concept of the rollover structures required by Article 15.3.2 shall be free. However, the second rollover structure must have a minimum structural cross section, in vertical projection, of 100 cm^2, across a horizontal plane passing 5 cm lower than the highest point of the second rollover structure.

ARTICLE 19 : CHANGES FOR 1995

1) Replace Article 15.4 with :

Survival cell and frontal protection :

4.1 The chassis structure must include a survival cell formed from two continuous box members, one on each side of the driver. These box members must be connected by at least one closed bulkhead at the main rollbar level, one hoop at the front rollbar level and a closed bulkhead in front of the pedal box. Openings in the closed bulkheads must be of a minimum size to allow the passage of controls.

4.2 Each box member shall extend from behind the driver to a plane at least 40 cm in front of the soles of his feet with the driver seated normally and with his feet on the pedals in the inoperative position.

When he is seated normally, the soles of the driver's feet, resting on the pedals in the inoperative position, shall not be situated to the fore of the vertical plane passing through the centre line of the front wheels. Should the car not be fitted with pedals, the driver's feet at their maximum forward extension shall not be situated to the fore of the above mentioned vertical plane.

4.3 Throughout its length from behind the driver to the soles of his feet, each box must have a minimum cross sectional area of 150 cm^2 and a minimum structural material cross section of 10 cm^2.

Forward of this, the boxes may taper to a minimum cross section of 100 cm^2 and a minimum structural material cross section of 5 cm^2.

All these areas must be calculated by considering only that part of the box members more than 12.5 cm from the centre line of the car.

4.4 The forward 30 cm of the box members need not to be an integral part of the survival cell but must be solidly attached to it.

4.5 Throughout the length of each box member or panel, the structural material shall have a minimum tensile strength of 310 N/mm^2 for composite materials or 225 N/mm^2 for metallic materials and the total of the skin thicknesses across the section of each box member or panel must be minimum 3 mm. The skins must be stabilized.

4.6 All holes and cut outs in the boxes shall be strongly reinforced and all material sections through these holes shall still comply with the minimum material area requirements.

4.7 The minimum height of the box member between the front and rear rollover bar structures shall at no point be less than 40 cm, and 30 cm between the front rollover bar and the soles of the driver's feet.

Art. 277 - **Technical regulations Free Formula (Group E)**

It is permitted to organise sporting competitions open to other racing cars than those defined in one of the previous Groups of Appendix J.

All specifications concerning the vehicles and particularly the limitations of the cylinder-capacity are in this case at the discretion of promoters and it rests with them to list clearly these specifications in the Supplementary Regulations of the event, which anyway have to be approved by the National Sporting Authority answerable to the FISA.

However, racing cars, which do not comply with any of the International Racing formulae, must for security reasons be in conformity with the General Prescriptions listed under articles 259.6.2, 259.8.5, 259.14.2.1, 253.13, 253.14, 253.4, 253.9, 257.7.2, 258.6.3.1, 258.6.3.2, 258.6.3.3, 258.6.3.5, 259.7.4, 274.14.1, 275.14.3, 275.3.5, 275.10.3, 275.12.2, 275.7.2, 175.14.6.

1) The dimensions of the rollbars must be as follows :

The minimum height must be at least 36 inches (92 cm) measured along the straight line following the driver's spine, from the seat's metal shell to the top of the rollbar. The top of the rollbar must also be at least at 5 cm above the driver's helmet when the driver is sitting in normal driving position. The width must be at least 38 cm measured inside the rollbar between the two vertical pillars of the sides.

It must be measured at 60 cm above the seat's metal shell on the perpendicular to the straight line following the driver's spine.

Strength :

In order to obtain a sufficient strength for the rollbar, two possibilities are left to the manufacturers :

a - The rollbar, of entirely free structural conception, must be capable to withstand the stress minima indicated in article 274.15.3.3.

b - The tubes and brace(s) must have a diameter of at least 1 3/8 inch (3.5 cm) and at least 0.090 inc (2 mm) wall thickness. The material should be molybdenum chromium SAE 4130 or SAE 4125 (or equivalent in DIN, NF, etc.).

There must be at least one brace from the top of the bar rearwards at an angle not exceeding 60° to the horizontal.

The diameter and material of the brace must be the same as those of the rollbar itself.

In the case of two braces, the diameter of each of them may be reduced to 20/26 mm. Removable connection between the main hoop and the brace must comply with drawings articles 253.37 to 253.41. Forward fitted stays are allowed.

2) The extinguisher system is left up to the ASNs. However the directives laid down article 274.14.1 are strongly recommended.

Art. 278 - **Technical regulations National Formulae**

REGISTRATION OF NATIONAL FORMULAE

The FISA will accept to study the registration of « National » formulae, in order to have their technical prescriptions known at an international level and to ensure a certain stability and a standardisation of the regulations which rule them.

1) In persuance of article 251, any ASN has the right to define regulations applying to given types of « Formula libre » racing cars denominated hereafter : « National Formulae ».

2) Are eligible for registration only the applications presented by at least two National Sporting Authorities and concerning a National Formula used in at least two countries.

3) The FISA will accept, in compliance with the preceding article 2 to register on a voluntary basis any set of prescriptions defining such National Formulae.

The regulations thus registered by the FISA will be applicable in countries the ASNs of which have declared to abide by them.

The declaration made by the National Sporting Authority to adopt the regulations of a determined National Formula is exclusively valid for the regulations such as they were originally deposited at the FISA, and this National Sporting Authority is entitled to withdraw this declaration if the regulations are altered afterwards.

The withdrawal of a declaration for another reason that the one hereabove mentioned, must compulsorily be communicated to the FISA before December 31 st in order to be valid as from the following year.

4) From the time when such National Formula is registered, its appellation can be used in those countries where the ASNs have adopted the registered regulations, only for cars entirely complying with the regulations deposited at the FISA.

5) Any application for the registration of regulations for a National Formula should be addressed to the FISA at the latest on October 1 st, to be valid as from January 1 st of the following year. The National Formulae can (but is not compulsory) form the subject of restrictions as regards the engine or other manufacturing elements, in order to allow exclusively the use of parts of a given make. Such a one-make Formula may have a distinct commercial name related to the imposed design restrictions.

6) The National Sporting Authorities which have adopted a determined National Formula may file an application at the FISA in view of the organisation of an ward including several countries.

Any application of that kind will be submitted to the appreciation of theFISA whose decision will depend on the number of countries interested by the organisation of an event included in that award and on the advisability or the necessity, for the general interest of Automobile Sport, to introduce such a form of competition.

7) The organisation of any type of international award without the FISA's agreement will entail the application of penalties.

Art. 281 - **Classification and definitions of cross country vehicles**

1) CLASSIFICATION

1.1) CATEGORIES AND GROUPS

The vehicles used in cross country rallies will be divided up into the following categories and groups:

Category I : Series Cross Country cars (Group T1)
Improved Cross Country cars (Group T2)
Category II: Prototype Cross Country car (Group T3)
Category III: Cross Country Trucks (Group T4)

1.2) CUBIC CAPACITY CLASSES

The cars will be divided up into the following classes according to their cubic capacity.

1.	Cyl.-capacity	lower than or equal to	500 cc					
2.	Cyl.-capacity	exceeding	500 cc	and inf/equal to	600 cc
3.	"	"	600 cc	"	"	700 cc
4.	"	"	700 cc	"	"	850 cc
5.	"	"	850 cc	"	"	1,000 cc
6.	"	"	1,000 cc	"	"	1,150 cc
7.	"	"	1,150 cc	"	"	1,300 cc
8.	"	"	1,300 cc	"	"	1,600 cc
9.	"	"	1,600 cc	"	"	2,000 cc
10.	"	"	2,000 cc	"	"	2,500 cc
11.	"	"	2,500 cc	"	"	3,000 cc
12.	"	"	3,000 cc	"	"	3,500 cc
13.	"	"	3,500 cc	"	"	4,000 cc
14.	"	"	4,000 cc	"	"	4,500 cc
15.	"	"	4,500 cc	"	"	5,000 cc
16.	"	"	5,000 cc	"	"	5,500 cc
17.	"	"	5,500 cc	"	"	6,000 cc
18.	"	over	6,000 cc			

Unless otherwise specified in special provisions imposed by the FISA for a certain category of events, the organisers are not bound to include all the above-mentioned classes in the Supplementary Regulations and, furthermore, they are free to group two or more consecutive classes, according to the particular circumstances of their events.

No class can be subdivided.

2) DEFINITIONS

2.1) GENERAL CONDITIONS

2.1.1) **Series Production cars (category I)**

Cars of which the production of a certain number of identical examples (see definition of this word hereinafter) within a certain period of time has been verified at the request of the manufacturer, and which are destined for normal sale to the public (see this expression).

Cars must be sold in accordance with the homologation form.

2.1.2) **Competition cars (category II)**

Cars built singly and intended solely for competition.

2.1.3) **Trucks (category III)**

Trucks will be considered to mean vehicles with a gross weight exceeding 3500 kg.

2.1.4) **Identical cars**

Cars belonging to the same production series and which have the same mechanical components and same chassis (even though this chassis may be an integral part of the bodywork in the case of a monocoque construction).

2.1.5) **Model of car**

Car belonging to a production-series distinguishable by a specific conception and external general lines of the bodywork and by an identical mechanical construction of the engine and the transmission to the wheels, with the same wheelbase and the same cubic capacity.

2.1.6) **Normal sale**

Means the distribution of cars to individual purchasers through the normal commercial channels of the manufacturer.

2.1.7) **Homologation**

Is the official certification made by the FISA that a minimum number of cars of a specific model has been made on series-production terms to justify classification in Series Cross Country Cars (Group T1) of these regulations.

Application for homologation shall be submitted to the FISA by the ASN of the country in which the vehicle is manufactured and shall entail the drawing upof a homologation form (see below). It must be established in accordance with the special regulations called « Homologation Regulations », laid down by the FISA. Homologation of a series-produced car will become null and void 5 years after the date on which the series-production of the said model has been stopped (series-production under 10 % of the minimum production of the group considered).

2.1.8) **Homologation forms**

All cars recognised by the FISA will be the subject of a descriptive form called homologation form on which shall be entered all data enabling identification of the said model.

This homologation form defines the series as indicated by the manufactuer. According to the group in which the competitors race, the modification limits allowed in international competition for the series are stated in Appendix J.

The presentation of the forms at scrutineering and/or at the start may be required by the organisers who will be entitled to refuse the participation of the entrant in the event in case of non-presentation.

Should the date for the coming into force of a homologation form fall during an event, this form will be valid for that event throughout the duration of the said event.

Should any doubt remain after the checking of a model of car against its homologation form, the scrutineers should refer either to the maintenance booklet published for the use of the make's distributors or to the general catalogue in which are listed all spare parts.

In the case of a lack of sufficient accurate documentation, scrutineers may carry out direct scrutineering by comparison with an identical part available from a concessionnaire. It will be up to the competitor to obtain the homologation concerning his car from his ASN.

Description : A form breaks down in the following way :

1) A basic form giving a description of the basic model.

2) At a later stage, a certain number of additional sheets describing « homologation extensions », which can be « variants », or « errata » or « evolutions ».

a — **Variants (VF, VO)**

These are either supply variants (VF) (two suppliers providing the same part for the manufacturer and the client does not have the possibility of choice), or options (VO) (supplied on request and available from the concessionnaire).

b — **Erratum (ER)**

Replaces and cancels an incorrect piece of information previously supplied by the constructor on a form.

c — **Evolution (ET)**

Characterises modifications made on a permanent basis to the basic model (complete cessation of the production of the car in its original form).

Use :

1) **Variants (VF, VO)**

The competitor may use any variant or any part of a variant as he wishes, only on condition that all the technical data of the vehicle, so designed, conforms to that described on the homologation form applicable to the car, orexpressly allowed by Appendix J. For example, the fitting of a brake calliper as defined on a variant form is only possible if the dimensions of the brake linings, etc. obtained in this way, are indicated on a form applicable to the car in question.

2) **Evolution of the type (ET)**

The car must comply with a given stage of evolution (independent of the date when it left the factory), and thus an evolution must be wholly applied or not at all. Besides, from the moment a competitor has chosen a particular evolution, all the previous evolutions should be applied, except where they are incompatible : for example, if two brake evolutions happen one after another, only

that corresponding to the date of the stage of evolution of the car will be used.

2.1.9) **Mechanical components**
All those necessary for the propulsion, suspension, steering and braking as well as all accessories whether moving or not which are necessary for their normal working.

2.2 - DIMENSIONS
Perimeter of the car seen from above :
The car as presented on the starting grid for the event in question.

2.3 - ENGINE
2.3.1) **Nominal cylinder capacity**
Volume generated in cylinder (or cylinders) by the upward or downward movement of the piston(s). For all calculations relating to cylinder capacity Pi will be regarded as equivalent to 3.1416.
2.3.2) **Supercharging**
Increasing the weight of the charge of the fuel-air mixture in the combustion chamber (over the weight induced by normal atmospheric pressure, ram effect and dynamic effects in the intake and/or exhaust systems) by any means whatsoever. The injection of fuel under pressure is not considered to be supercharging (See Article 3.1 of the General Prescriptions).
2.3.3) **Cylinder block**
The crankcase and the cylinders.
2.3.4) **Intake manifold**
— Part collecting the air-fuel mixture from the carburettor(s) and extending to the entrance ports of the cylinder head, in the case of the carburettor induction system.
— Part situated between the valve of the device regulating the air intake and extending to the ports on the cylinder head, in the case of an injection intake system.
— Part collecting the air at the air filter outlet and extending to the cylinder head entrance ports in the case of a diesel engine.
2.3.5) **Exhaust manifold**
Part collecting together the gases from the cylinder head and extending to the first gasket separating it from the rest of the exhaust system.
2.3.6) For cars with a turbocharger, the exhaust begins after the turbocharger.
2.3.7) **Sump**
The elements bolted below and to the cylinder block which contain and control the lubricating oil of the engine. These elements must not include any mounting part of the crankshaft.

2.4 - RUNNING GEAR
The running gear is made up of all parts of the car which are totally or partially suspended.
2.4.1) **Wheel**
Flange and rim ; by complete wheel is meant flange, rim and tyre.
2.4.2) **Friction surface of the brakes**
Surface swept by the linings on the drum, or the pads on both sides of the disc when the wheel achieves a complete revolution.
2.4.3) **Mac Pherson suspension**
Any suspension system in which a telescopic strut, not necessarily providing the springing and/or damping action, but incorporating the stub axle, is anchored on the body or chassis through a single attachment point at its top end, and is pivoted at its bottom end either on a transversal wishbone locating it transversally and longitudinally, or on a single transversal link located longitudinally by an anti-roll bar, or by a tie rod.

2.5 - CHASSIS — BODYWORK
2.5.1) **Chassis**
The overall structure of the car around which are assembled the mechanical components and the bodywork including any structural part of the said structure.

2.5.2) **Bodywork**

— externally : all the entirely suspended parts of the car licked by the airstream.

— internally : cockpit and boot.

Bodywork is differentiated as follows :

1) completely closed bodywork

2) completely open bodywork

3) convertible bodywork with the hood in either supple (drop-head) or rigid (hard-top) material.

2.5.3) **Seat**

The two surfaces making up the seat cushion and seatback or backrest.

Seatback or backrest :

Surface measured from the base of a normally seated person's spine, towards the top.

Seat cushion :

Surface measured from the base of the same person's spine towards the front.

2.5.4) **Luggage compartment**

Any volume distinct from the cockpit and the engine compartment inside the vehicle.

This volume is limited in length by the fixed structure provided for by the manufacturer and/or by the rear of the seats and/or, if this is possible, reclined at a maximum angle of 15°.

This volume is limited in height by the fixed structure and/or by the detachable partition provided for by the manufacturer, or in the absence of these, by the horizontal plane passing through the lowest point of the windscreen.

2.5.5) **Cockpit**

Structural inner volume which accomodates the driver and the passenger(s).

2.5.6) **Bonnet**

Outer part of the bodywork which opens to give access to the engine.

2.5.7) **Mudguard**

A mudguard is the part defined according to drawing 251-1.

Front mudguard :

The area defined by the inner face of the complete wheel of the standard car (C1/C1) and the lower edge of the side window(s) (A/A) and the front edge of the front door (B1/B1).

Rear mudguard :

The area defined by the inner face of the complete wheel of the standard car (C2/C2) and the lower edge of the side window(s) (A/A) and the rear edge of the rear door (B2/B2).

In the case of two-door cars (B1/B1) and (B2/B2) will be defined by the front and rear of the same door.

2.5.8) **Engine compartment :**

Volume defined by the first structural envelope surrounding the engine.

2.6) ELECTRICAL SYSTEM

Headlight : any signal the focus of which creates an in-depth luminous beam directed towards the front.

2.7) FUEL

Fuel tank : any container holding fuel likely to flow by any means whatsoever towards the main tank or the engine.

Art. 282 - **General prescriptions for cross country cars**

1) GENERAL REMARKS

1.1 - All modifications are forbidden unless expressly authorised by the regulations specific to the group in which the car is entered or by the general prescriptions below or imposed under the chapter « Safety Equipment ».

The components of the car must retain their original function.

1.2 - APPLICATION OF THE GENERAL PRESCRIPTIONS

The general prescriptions must be observed in the event that the specifications of Cross Country cars (Groups T1, T2, T3) do not lay down a more strict prescription.

1.3 - MAGNESIUM

The use of magnesium alloy sheet metal with a thickness less than 3 mm is prohibited.

1.4 - It is the duty of each competitor to satisfy the Scrutineers and the Stewards of the Meeting that his automobile complies with these regulations in their entirety at all times during the event.

1.5 - Damaged threads can be repaired by screwing on a new thread with the same interior diameter (« helicoil » type).

2) DIMENSIONS AND WEIGHT

2.1 - GROUND CLEARANCE

No part of the car must touch the ground when all the tyres on one side are deflated. This test shall be carried out on a flat surface under race conditions (driver(s) on board).

2.2 - BALLAST

No kind of ballast is authorised on Series Cross Country (Group T1). The carrying of tools and spare parts for the car will be allowed under theconditions laid down in Article 283.

3) ENGINE

3.1 - SUPERCHARGING

In the case of supercharging, the nominal cylinder-capacity will be multiplied by 1.7 and the car will pass into the class corresponding to the fictive volume thus obtained. The car will be treated in all respects as if its cylinder-capacity thus increased were its real capacity. This shall particularly be the case for assigning the car to its cylinder-capacity class, its interior dimensions, its minimum number of places, its minimum weight, etc.

3.2 - EQUIVALENCE FORMULA BETWEEN RECIPROCATING PISTON AND ROTARY ENGINES (of the type covered by the NSU Wankel patents)

The cubic capacity equivalent is 1.8 times the volume determined between the maximum and minimum capacities of the combustion chambers.

3.3 - EQUIVALENCE FORMULA BETWEEN RECIPROCATING PISTON AND TURBINE ENGINES

This formula is the following :

$$C = \frac{S\,(3.10 \times R) - 7.63}{0.09625}$$

S = High pressure nozzle area — expressed in square centimetres by which is meant the area of the air-flow at the exit from the stator blades (or at the exit from the first stage if the stator has several stages). Measurement is done by taking the minimum area between the fixed blades of the high pressure turbine first stage. In cases where the first stage turbine stator blades are adjustable, they must be opened to their greatest extent to present the greatest area for the determination of area S.

The area of the high pressure nozzle is thus the product of the height (expressed in cm) by the width (expressed in cm) and by the number of vane spaces.

R = The pressure ratio is the ratio of the compressor of the turbine engine. It is obtained by multiplying together the 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 subsonic stages will be designated to have a pressure of :
$4.25 \times 1.15 \times 1.15 \times 1.15 \times 1.15 \times 1.15 \times 1.15$ or $4.25 \times (1.15)^6$.
C = Equivalent cubic capacity for reciprocating piston engines in cm^3.
3.4 - All engines into which fuel is injected or in which fuel is burned after an exhaust port are prohibited.

3.5 - EQUIVALENCES BETWEEN RECIPROCATING PISTON ENGINES AND NEW TYPES OF ENGINES
The FISA reserves the right to make modifications on the basis of comparisons established between classic engines and new types of engines, by giving a two year notice from the 1 st January following the decision taken.

3.6 - EXHAUST SYSTEM AND SILENCER
Even when the specific provisions for a group allow the replacement of the original silencer, the cars competing in an open-road event shall always be equipped with an exhaust silencer complying with the traffic regulations of the country(ies) through which the event is run. The exhaust system must not pass through the cockpit.
The exhaust outlet must be horizontal or directed upwards.
The orifices of the exhaust pipes shall be placed at a maximum of 80 cm and a minimum of 10 cm from the ground. The exit of the exhaust pipe must be situated within the perimeter of the car and less than 10 cm from this perimeter, and aft of the vertical plane passing through the centre of the wheelbase.
Moreover, adequate protection must be provided in order to prevent heated pipes from causing burns.
The exhaust system must not be provisional. Exhaust gas may only exit at the end of the system. Parts of the chassis must not be used to evacuate exhaust gases.
Catalytic exhausts : Should two possible versions of one car model be homologated (catalytic and other exhaust) the differences characterising the catalytic model shall be included under « additional information » on the basic form. The cars must comply with one or other version, all combinations of the two versions being prohibited.

3.7 - STARTING ON BOARD THE VEHICLE
Starter with electric or other source of energy on board operable by the driver when seated in the seat.

4) TRANSMISSION
All cars must be fitted with a gearbox including a reverse gear which must be in working order when the car starts the event, and be able to be operated by the driver when he is normally seated.

5) SUSPENSION
Suspension parts made partially or entirely from composite materials are prohibited.

6) WHEELS
Wheels made partially or entirely from composite materials are prohibited.
Measuring wheel width :
The width is to be measured with the wheel mounted on the car, on the ground, the vehicle in race condition, driver aboard, at any point along the circumference of the tyre, except in the area in contact with the ground.
When multiple tyres are fitted as part of a complete wheel, the latter must comply with the maximum dimensions for the group in which these tyres are used.

7) COACHWORK
7.1 - Convertible vehicles must comply in all respects with the specifications applying to open cars.
7.2 - MINIMUM INSIDE DIMENSIONS
If a modification authorised by Appendix J affects a dimension stated on the homologation form, this dimension may not be retained as an eligibility criterion for the car.

7.3 - COCKPIT

Only the following accessories may be installed in the cockpit — spare wheel(s), spare parts, tools, safety equipment, electronic equipment, materials and controls necessary for driving, windscreen washer water container, ballast (if permitted). The passenger area and seat of an open car must in no way be covered.

Containers for helmets and tools situated in the cockpit must be made of non-inflammable material and they must not, in case of fire, give off toxic vapours.

In the case of a car with a crew of three and in which the back of the rearmost seat is situated more than 20 cm to the rear of the back of the seat which is furthest forward, the car must respect the following conditions :

— it must have four side doors equipped with transparent windows and allowing free access to the seats.

— it must have a specific rollbar as defined in article 283.8.2.1.2

— the front of the rear seat(s) must be positioned more than 20 cm to the rear of the back(s) of the front seat(s).

7.4 - All body panels of the vehicle must be at all times of the same material as those of the original homologated car and must be of the same material thickness as that of the original homologated car, with a tolerance of ± 10 %.

7.5 - HEADLAMP MOUNTING AND PROTECTION

The boring of holes in the front bodywork for light brackets is authorised, limited solely to mountings.

Non-reflecting protectors made from flexible material may be mounted on the headlamps ; they must not protrude forwards beyond the headlamp glass by more than 10 cm.

7.6 - Any object of a dangerous nature (inflammable products, etc.) must be carried outside the cockpit.

8) ELECTRICAL SYSTEM

8.1 - LIGHTING

A fog light may be changed for another, and vice versa, provided that the original mounting remains the same.

8.2 - The mounting of the alternator is free.

9) FUEL — COMBUSTIVE

9.1 - The fuel must be commercial petrol which comes from a service station pump, without any additive other than that of a lubricant on current sale. The fuel must comply with the following specifications :

— 102 RON and 90 MON maximum, 95 RON and 85 MON minimum for unleaded fuel.

100 RON and 92 MON maximum, 97 RON and 86 MON minimum for leaded fuel.

The measurements will be made according to the standards ASTM D 2699-86 and D 2700-86, the fuel being accepted or rejected according to the standard ASTM D 3244 with a confidence limit of 95 %.

— Specific gravity between 720 and 785 kg/m³ at 15°C (measured according to ASTM D 4052).

— A maximum of **2.8** % oxygen (or 3.7 % if the lead content is less than 0.013 g/l) and 0.5 % nitrogen by weight, the remainder of the fuel consisting exclusively of hydrocarbons and not containing any power-boosting additives.

The measuring of the nitrogen content will be carried out according to the standard ASTM D 3228 and that of the oxygen content by elemental analysis with a tolerance of 0.2 %.

— Maximum content of peroxides and nitrooxide compounds : 100 ppm (ASTM D 3703).

— Maximum lead content : 0.40 g/l or the standard of the country of the event, if this is lower **(ASTM D 3341 or D 3237)**.

— Maximum benzene content : 5 % in volume **(ASTM D 3606)**.

— Maximum Reid vapour pressure : 900 hPa (ASTM D 323).

— Distillation at 70°C : 10 % — 47 % (ASTM D 86).

— Distillation at 100°C : 30 % — 70 % (ASTM D 86).

— Distillation at 180°C : 85 % minimum (ASTM D 86).

— Maximum final boiling point : 225°C (ASTM D 86).

— Maximum residue : 2 % volume (ASTM D 86).

If the fuel available locally for the event is not of a sufficient quality for use by competitors, the ASN of the organising country must ask the FISA for a waiver in order to enable the use of fuel not corresponding to the characteristics defined above.

9.2 - DIESEL OIL

For Diesel engines, the fuel must be gas oil corresponding to the following specifications :

- **Hydrocarbon level, % by weight 99.0 min.**
- **Specific gravity, kg/m³ 860 max.**
- **Cetane number (ASTM D613) 55 max.**
- **Calculated cetane number 55 max.**

(ASTM 976-80)

9.3 - Only air may be mixed with the fuel as an oxidant.

9.4 - REFUELLING

Prior to any refuelling operation, it is necessary to establish earthing common to the vehicle and to the refuelling device.

9.5 - TANK VENTILATION

The tank must be equipped with ventilation complying with Article 283.14.5, unless the series production tank and ventilation are retained.

10) BRAKES

Carbon brakes discs are forbidden.

Art. 283 - **Safety equipment for cross country cars**

1) A car, the construction of which is deemed to be dangerous, may be excluded by the Stewards of the meeting.

2) If a device is optional, it must be fitted in a way that complies with regulations.

3) CABLES, LINES AND ELECTRICAL EQUIPMENT

3.1 - GROUP T1

Series production fittings may be retained. If they are modified, they must comply with the paragraphs concerning them below.

Additional protections are authorised on the inside against risks of fire or of the projection of fluids.

3.2 - GROUPS T2 AND T3

3.2.1) Fuel and lubricating oil lines must have a minimum burst pressure of 70 bar (1000 psi) and a minimum operating temperature of 135°C (250°F).

When flexible, these lines must have threaded connectors and an outer braid resistant to abrasion and flame (will not sustain combustion).

3.2.2) Lines containing hydraulic fluid, with the exception of lines under gravity head only, must have a minimum burst pressure of 70 bar (1000 psi) or higher according to operating pressure, and a minimum operating temperature of 232°C (450°F).

When flexible, these lines must have threaded connectors and an outer braid resistant to abrasion and flame (will not sustain combustion).

3.2.3) Lines containg cooling water and lubricating oil must be outside the cockpit. Lines containing fuel or hydraulic fluid may pass through the cockpit but without any connections except on the front and rear bulkheads in accordance with the diagrams 253-1 and 253-2, and **on the braking circuit.**

3.2.4) Fuel pumps and taps must be outside the cockpit.

3.2.5) Only the intakes, exits and lines for air for ventilating the cockpit are allowed inside the cockpit.

3.2.6) Electrical cables must be protected by a fire-resistant covering.

3.3 - ALL GROUPS

The lines must be protected externally against any risk of deterioration (stones, corrosion, mechanical breakage, etc.).

4) BRAKING SAFETY SYSTEM

Double circuit operated by the same pedal :

The pedal shall normally control all the wheels ; in the event of a leakage at any point of the brake system pipes or of any kind of failure in the brake transmission system, the pedal shall still control at least two wheels.

The vehicle may be fitted with a handbrake system acting on the brakes of one and the same axle and completely independent of the main system (hydraulic or mechanical).

5) ADDITIONAL FIXATIONS

At least two additional fasteners must be fitted for each of the bonnet and boot lids. The original locking mechanisms may be rendered inoperative or removed. These fasteners must be « American fasteners », a bayonet passing through the lid, and the latter being locked by a pin also attached to the lid. If plastic parts are used, metal reinforcements must be provided for, to prevent wrenching. Large objects carried on board the vehicle (such as the spare wheel, tool kit, etc.) must be firmly fixed. The use of elasticated cord is forbidden.

6) SAFETY BELTS

All the belts must be industrial brand products and must not include inertia reels.

Wearing of two shoulder straps and one abdominal strap.

Fixation points on the shell or the chassis : two for the abdominal strap - two or possibly one symmetrical in relation to the seat for the shoulder straps.

A hole may be made in a series production seat to allow the passage of a safety belt.

The anchorpoints of the serie car (Groups T1 and T2) must be used. If the installation on these anchorpoints is impossible, new anchorpoints must be installed on the shell or the chassis, one separate for each strap and as near as possible to the rear wheel axle for the shoulder straps. If this last mounting is impossible, the shoulder straps must be fixed or leaning on a rear transversal tube fixed to the rollbar or to the top anchorpoints of the front belts.

Installation and use :

The effectiveness and longevity of safety belts are directly related to the manner in which they are installed, used and maintained.

The belts should be replaced after every severe collision.

Seat belts must be replaced immediately whenever the webbing is cut, frayed or weakened due to the actions of chemicals or sunlight. They should also be replaced if hardware or buckles are bent, deformed or rusted. Replace a harness whenever it does not function properly.

Shoulder straps should not be mounted so as to make an angle of more than 20° to the horizontal from the wearer's shoulders.

The lap and crotch straps must be mounted in such a way that they wrap and hold the pelvic region over the greatest possible surface, the lap straps crossing it below the antero-superior iliac spines. Under no conditions must they be worn over the region of the abdomen. Holes may be made in the seat if this proves necessary in order to avoid such an occurence.

Care must be taken that the belts cannot be damaged through chafing against sharp edges.

Principles of mounting to the chassis/monocoque :

1) General fixing system (see drawing 283-3).
2) Shoulder strap mounting (see drawing 283-4).
3) Crutch strap mounting (see drawing 283-5).

7) EXTINGUISHERS

7.1 - MANUAL EXTINGUISHERS

(compulsory for all vehicles)

7.1.1) **Installation**

Each extinguisher bottle must be installed in such a way that it is capable of withstanding decelerations of up to 25 g no matter how these are applied. Only rapid release metal mountings (with metal straps) will be accepted.

7.1.2) **Operation — Triggering**

The extinguisher(s) must be easily accessible to the driver and co-driver.

7.1.3) **Checking**

The type of extinguishant, its quantity, and the total weight of the bottle must be specified on each bottle, as well as the date on which it was brought into service or checked.

7.1.4) The cars must be equipped with one or two bottles containing a minimum of 4 kg **of powder, or** of halon 1211 or 1301 (BCF-BTM), **or of any other replacement product approved by the FISA.**

7.2 - SYSTEMS MOUNTED

Optional for Series Cross Country Cars (Group T1).

Compulsory for Improved Cross Country Cars (Group T2) and Prototype Cross Country Cars (Group T3).

7.2.1) **Fixation**

Each extinguisher bottle must be installed in such a way that it is capable of withstanding decelerations of up to 25 g no matter how these are applied.

7.2.2) **Operation — Triggering**

The two systems must be triggered simultaneously.

Any triggering system is allowed. However a source of energy not coming from the main source must be provided in the case of a triggering system which is not exclusively mechanical. The driver seated normally at his steering wheel with his safety harness attached must be able to trigger the system manually ; the same applies to any person outside the car. The means of triggering from the exterior must be positioned close to the circuit breaker and not combined with it, and must be marked by a letter « E » in red inside a white circle of at least 10 cm diameter with a red edge.

One single external trigger switch is compulsory for T1 and T2 vehicles using an installed system, but cars in group T3 must be equipped with two external switches, one on each side of the windscreen.

Automatic triggering by heat sensors is recommended.

The system must work in any position, even when the bottle is upside down.

7.2.3) **Checking**

The type of extinguishant, its quantity, and the total weight of the bottle must be specified on each bottle, as well as the date on which it was brought into service or checked.

7.2.4) **Specifications**

Minimum capacities of extinguisher systems :

— Closed cars (including covered cars) :	Cockpit 2.5 kg Engine 5 kg
— Open cars :	Cockpit 5 kg Engine 2.5 kg

Alternatively a single bottle of 7.5 kg may be used if the extinguishant is distributed according to the above specifications.

The extinguishing agent must be halon 1211 or 1301 (BCF-BTM), or any other replacement product approved by the FISA.

Extinguishing equipment must withstand fire and be protected against impacts.

The extinguisher system nozzles must be installed in such a way that they are not directly pointed at the driver (danger of burns caused by cold).

7.2.5) **Discharge time**

Cockpit : 30 secs for Halon 1211
60 secs for Halon 1301.
Engine : 10 secs.

8) ROLLBAR

8.1 - DEFINITIONS

8.1.1) **Safety cage**

A structural framework made up of tubes, connections and fixation points. It is designed to prevent serious deformation in the case of a collision or a car turning over.

8.1.2) **Rollbar**

Structural framework made up of a main rollbar, connections and fixation points.

8.1.3) **Rollcage**

Structural framework made up of a main rollbar and a front rollbar, or of two lateral rollbars, connections and fixation points.

8.1.4) **Main rollbar**

A structure made out of a vertical frame situated in a transversal plane in relation to the car's axis, near the back of the front seats.

8.1.5) **Front rollbar**

Structure made up of a frame situated in a transversal plane in relation to the centre-line of the car : the shape of this frame must follow the windscreen pillars and the front part of the roof.

8.1.6) **Lateral rollbar**

Structure made up of a vertical frame situated in a longitudinal plane in relation to the car's axis placed on the right or the left. The rear pillar must be placed against or behind the back of the driver's seat or that of his co-driver.

In cases where the main rollbar is used as the rear pillar, the connection must be near the roof. The front pillar must be near the windscreen and dashboard. The driver and his co-driver must be able to get in and out of the vehicle without any inconvenient difficulty.

8.1.7) **Longitudinal strut**

Longitudinal tubes which belong neither to the main rollbar nor to the front rollbar.

8.1.8) **Diagonal strut**

Tube crossing the car from one of the corners of the main rollbar to any fixation point of the other side of the rollbar or of the rear longitudinal strut.

8.1.9) **Framework reinforcement**

Tube fixed to the safety cage improving its efficiency.

8.1.10) **Reinforcement plates**
Metal plates, fixed to the chassis structure of the cars on which the rollbar rests.
8.1.11) **Fixing plates**
Plates which are attached to the tubes and allow their fixation to the chassis.
8.1.12) **Removable connections**
Optional connection of longitudinal or diagonal struts or reinforcements to the tubes of the safety cage. It must be possible to dismantle these pieces of equipment.

8.2 - SPECIFICATIONS

8.2.1) **General comments**
8.2.1.1 - Safety cages should be designed and constructed in such a fashion that after they have been properly built in, they prevent the bodywork from deforming and thus reduce the risks of injury to people on board the vehicle.
The essential characteristics of safety cages come from a finely detailed construction, suitable adaptation and fixation to the car plus snug fitting against the bodywork. The safety cages must never be used as pipes for liquids.
The safety cage must be constructed in such a way that it does not obstruct access to the front seats and does not encroach on the space provided for the driver and co-driver.
However, parts of the safety cage may encroach upon the front passenger space by passing through the dashboard and the lateral upholstery, as well as at the rear by passing through the upholstery of the rear seats. The rear seat may be folded down.
Any modification to the homologated rollbars (see Article 8.6) is forbidden, even with regard to the fixations and welds.

8.2.1.2 - All cars must be fitted with a six-point safety cage made up of longitudinal reinforcements of the side protection, a diagonal strut and a front transversal strut (drawing 283-6).
In the case of a car with a crew of three, the safety cage must comply with drawing 253-17 A, with a second main rollbar situated close to the back(s) of the rear seat(s).
8.2.1.3 - Possibilities for installing the compulsory diagonal strut (See drawing 283-6).
It must join either points A and C, or B and D, either A and E, or D and F, **or comply with drawing 283-6 A.**
The combination of **these different** types of struts is permitted.
The strut of an intermediate main rollbar (see drawing 253-17 A) may also comply with drawing 283-6 A.
8.2.1.4 - Possibilities for installing the reinforcements of the safety cage
Each type of reinforcement (drawings 283-7 to 253-17) may be used separately or combined with one or several others.
8.2.1.5 — **Safety cages**
All the bars making up the rollcage must be rectilinear, except for those of :
— the lateral, main and front rollbars
— the longitudinal struts.
8.2.2) **Technical specifications**
8.2.2.1 - **Main, front and lateral rollbars**
The main rollbars must be in a single piece. **The rear face of the headrest subjected to the regulation load will define the position of the tube of the main rollbar which may not protrude beyond it in vertical projection. The minimum free height below the rollbar tube will be 900 mm, measured vertically from the bottom of the uncrushed seat.** Their construction must be impeccable without unevenness or cracks. The fitting must be done in such a way that it marries the interior shape of the car, or straight if it cannot be installed directly (particularly for the pillars of the front rollbar). If it is necessary for the lower parts of the rollbar to be rounded, these parts must be strenghtened and follow the interior shape exactly.
Minimum bending r = 3 × tube diameter.
Counter-bends are prohibited.
In order to get an efficient installation of the rollbar, it is allowed to locally modify the original upholstery, for example by cutting or embedding (deformation).
However, this modification can in no case allow the removal of entire parts of the upholstery.

8.2.2.2 — **Fixation of the safety cage to the body or the chassis**

Minimum fixations for the safety cage :

1 for each pillar of the main or lateral rollbar.

1 for each pillar of the front rollbar.

1 for each pillar of the rear longitudinal strut.

1 for each pillar of the main rollbar, or of each rear pillar of the lateral rollbar at the top fixation point for the front seat belt, or in the approximative area of this position is recommended.

The fixation of the rollbar pillars must be done with at least 3 bolts.

The attachment points of the front and main rollbars on the body must be reinforced with a steel plate at least 3 mm thick and with a surface area of 120 cm^2, welded to the body.

The various possibilities are given in drawings **253-22 to 253-36.**

Hexagonal bolts or similar, of a minimum diameter of 8 mm (minimum quality 8-8 as per the ISO specifications) shall be used.

The nuts shall be self-locking or fitted with washers.

These fixations represent a minimum. It is possible to increase the number of bolts, or to weld the steel cage to the bodyshell.

The additional fixations may be bolted and/or welded to the body.

The safety rollcages must be fixed directly to the steel bodyshell or the main chassis, i.e. onto the structure to which the suspension loads are transmitted.

Only those parts of the interior lining which hamper the passage of the roll-cage may be removed.

Tubular or semi-tubular space frame :

Rollcages equipping vehicles with a tubular space frame must be integrated where the tubes join, either at floor level or at the level of the entranceto the cockpit. In the latter case, at least one tube of the same section and quality as those of the chassis must extend each foot of the rollbar downwards (another diagonal is recommended, as well as a horizontal tube at floor level).

The tubes making up the rollbar above the level of the chassis must have at least the dimensions recommended by the FISA.

Only those parts of the interior lining which hinder the passage of the safety cage may be withdrawn.

8.2.2.3 — **Longitudinal struts**

They must be fixed to the left and to the right above and outside the main rollbar, then going directly backwards and as near as possible to the interior side contour.

A rounded construction (with a large bend) is allowed if it is placed as near the roof as possible.

The diameter, the thickness and the material of the longitudinal struts should correspond to the norms fixed for the rollcages.

The forces must be efficiently divided and absorbed.

The attachment points must be strengthened by plates if their location does not allow them to absorb forces.

8.2.2.4 — **Diagonal struts**

The installation of at least one diagonal strut is obligatory.

The attachment points of the diagonal struts must be so located that they cannot cause injuries.

They must have the same diameter as the tubes of the main structure.

8.2.2.5 — **Optional reinforcements of the safety cage**

The diameter, the thickness and the material of the reinforcements must correspond to the norms fixed for the rollcages.

They shall be either welded into position or installed by means of a detachable connection.

The reinforcement tubes should never be attached to the actual bodywork of the car, except with regard to those shown in drawings 253-11 and 253-12.

8.2.2.5.1) **Transversal struts**

The fitting of transversal struts as shown in illustration 283-8 is permitted. The transversal strut fixed to the front bar must not, however, encroach upon the space reserved for the occupant(s).

They must be placed as high as possible but its lower edge must not be higher than the upper part of the dashboard.

8.2.2.5.2) **Longitudinal struts (lateral protection)**

The fixing of one of the longitudinal struts at the sides of the vehicle at door level is compulsory. The tube(s) making up this reinforcement must be built into the rollcage and its (their) angle with the horizontal tube must not exceed 15° (angled downwards towards the front).

The longitudinal strut must be situated no higher than one third of the vertical height of the door opening, and at least 10 cm from the bottom of the seat.

8.2.2.5.3) **Roof reinforcement**

The reinforcement of the upper part of the rollcage by the strut(s) as shown in illustrations 283-7 and 283-9 is permitted.

8.2.2.5.4) **Angle reinforcement**

The reinforcement of the upper angles between the main rollbar and the longitudinal connections with the front rollbar is permitted, as is the reinforcement of the upper rear angles of the lateral rollbars, as shown in illustration 253-10.

The upper fixation of these reinforcements shall, under no circumstances be situated to the fore of the middle of the longitudinal linking tube, and their lower fixation shall under no circumstances be situated lower than the middle of the vertical pillar of the rollbar.

8.2.2.6 — **Padding for protection**

The padding of the dangerous points of the safety cages is recommended in order to prevent injury.

The safety cage may be covered with a detachable protective casing.

8.2.2.7 — **Removable connections**

Should removable connections be used in the construction of the safety cage they must comply with or be similar fo a type approved by the FISA (see drawings 253-37 to 253-41).

The screws and bolts must be of a sufficient minimum diameter, and of the best possible quality (8-8).

The removable connections are prohibited for the construction of the main rollbar (see Article 8.1.4) but may be used for attaching on this structure, and outside of the main rollbar.

8.2.2.8 — **Welding instructions**

All welding must be of the highest quality possible, 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.

When using heat treated steel the special instructions of the manufacturers must be followed (special electrodes, heliarc welding).

It must be pointed out above all else that the manufacture of heat treated steel and high carbon steels may cause certain problems, and that bad construction may result in a decrease in strength (crinking) and an absence of flexibility.

8.3 - MATERIAL PRESCRIPTIONS

Specifications of the tubes used :

Minimum compulsory material :	Minimum tensile strength :	Minimum dimensions (in mm)
Cold drawn seamless carbon steel	350 N/mm²	38 x 2,5 or 40 x 2

These dimensions represent the minima allowed. **Only steel is authorised.**

In choosing the quality of the steel, attention must be paid to the elongation properties and the weldability.

8.4 - ROLLBAR INSTALLATION VARIANT FOR PICK-UPS

With regard to pick-up type vehicles, the cockpit of which is not large enough to allow the fitting of a full six-point safety cage, it shall be possible to mount the rollbar(s) as per one of the sketches 283-38 to 283-41. Of course, this possibility is open to pick-ups only, to the exclusion of all other types of bodywork and all the points of the installation must comply with the prescriptions of the preceding paragraphs.

Sketch 283-38 : One diagonal strut compulsory.

Sketch 283-39 : Two diagonal struts compulsory, one for the four-point rollbar inside the cockpit (AE on drawing 283-6), one for the four points outside rollbar (AE or AC on drawing 283-6).

Sketch 283-40 : One diagonal strut compulsory AE or AC (drawing 283-6).

Sketch 283-41 : Two diagonal struts compulsory, one for the interior four-point rollbar, one for the exterior six-point rollbar.

8.5 - EXCEPTIONS

However, manufacturers of safety cages may also propose a safety cage of free conception to an ASN for approval as regards the dimensions of the tubes and the implantation of the braces provided that the construction is certified to withstand stress minima given hereafter (and applied simultaneously) :

— 1.5 w lateral
— 5.5 w fore and aft
— 7.5 w vertical

w = weight of the car + 500 kg.

It must be possible to submit a certificate, on a form approved by the ASN, to the event's scrutineers.

It must be accompanied by a drawing or photo of the rollbar in question declaring that this rollbar can resist the forces mentioned above.

These rollbars must not be modified.

8.6 - HOMOLOGATION

The FISA, aware of the problem of habitability being raised by the use of safety cages, proposes that each car manufacturer recommends a type of steel safety cage complying with FISA standards (paragraph 8.5).

This safety cage must be described on a homologation extension form presented to the FISA for approval, and must not be modified (see Article 8.2.1.1).

9) REAR VIEW

The rear view must be efficiently obtained by means of two outside mirrors (one on each side of car).

10) TOWING-EYE

All cars will be equipped with a rear and front towing-eye. This towing-eye must be very firmly fixed and it must not be used to lift the car. It will be clearly visible and painted in yellow, red or orange, and must be located within the perimeter of the car. Minimum inside diameter : 50 mm.

11) WINDSHIELD

A windshield made of laminated glass is compulsory. In the event of breakage of a windscreen, the wearing of a crash helmet with a visor (or motorcycle type goggles) shall be compulsory, otherwise the vehicle shall not be admitted to the start.

12) SAFETY FIXING DEVICES FOR WINDSHIELD

Such devices may be used freely.

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. It must be a spark-proof model, and will be accessible from inside and outside the car. As for the outside, the triggering system of the circuit breaker will compulsorily be situated at the lower part of the windscreen mounting of the driver's side. It will be marked by a red spark in a white-edged blue triangle with a base of at least 12 cm.

One single external switch is compulsory in Groups T1 and T2, but Group T3 cars must be equipped with two external switches, one on either side of the windscreen.

For Diesel engines, the circuit breaker must be coupled with a device cutting off the intake into the engine.

14) FISA APPROVED SAFETY FUEL TANKS

Whenever a competitor uses a safety fuel tank, it must come from a manufacturer approved by the FISA.

In order to obtain the FISA's agreement, a manufacturer must have proved the constant quality of its product and its compliance with the specifications approved by the FISA. Safety tank manufacturers recognised by the FISA 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 manufactuer, the exact specifications according to which this tank has been manufactured, the date of the manufacturing, and the series number, shall be printed.

14.1 — TECHNICAL SPECIFICATIONS

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

14.2 — SPECIFICATIONS FIA/FT3

The Technical specifications for these tanks are available, on request, from the FISA Secretariat.

14.3 — AGEING OF 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 by new ones at the latest five years after the fabrication date indicated on the cell.

A leakproof window made from non-flammable material, installed in the protection for FT3 tanks must make it possible to check the use-by date.

14.4 — INSTALLATION OF TANKS

The tank may be replaced by a safety tank homologated by the FISA (FT3 specification), or by another tank homologated by the manufacturer of the car. The number of tanks is free. It is also possible to combine the various homologated tanks (including the standard tank) and FT3 tanks.

Any tank which is not homologated must be an FT3 tank. The competitor must submit the certificate of conformity or FISA approval certificate, bearing the tank number and the year of manufacturer (maximum 5 years).

Collecting tanks with a capacity of less than 1 litre are of free construction, but their number is limited by that of the main tanks equipping the vehicule.

The original tank may be conserved in its original position. An increased capacity FT3 tank may be fitted in the position of the original tank ; **a panel may be used to close off the opening left by the removal of the original tank.**

For cars in respect of which the manufacturer has provided for a closed compartment for luggage (front or rear luggage space) which is an integral part of the bodywork, this compartment must be used to house the additional tank. Holes must be provided for in the floor of the boot in order to allow the out-flow of the fuel in the event of a leak. For cars in respect of which the manufacturer has not provided for a specific luggage compartment, as an integral part of the bodywork, the additional tank may be situated inside the cockpit to the rear of the **rearmost seat.**

In all cases, the tank including the filling pipes, must be totally insulated by means of flameproof and liquid-tight bulkheads, preventing the infiltration of fuel into the cockpit or contact with the exhaust pipes. Should the tank be installed in the luggage compartment, and when the rear seats are removed, the cockpit must be separated from the tank by a fire- resistant, flameproof and liquid-tight bulkhead. In the case of a two-volume car, it will be possible to use a non-structural, non-flammable bulkhead made from transparent plastic between the cockpit and the location of the tank. Tanks must be efficiently protected and very firmly attached to the bodyshell or the chassis of the car.

The use of safety foam in FT3 tanks is recommended.

The location and dimension of the filler hole and cap may be changed on condition that the new installation does not protrude beyond the bodywork and gives every guarantee against a possible leakage of fuel into one of the inner compartments of the car. These holes may be situated in the location of the rear windows.

The filler hole and the air vent must always be situated outside the cockpit on a metal part. If there is a filler hole inside the bodywork, it must be surrounded by a receptacle with outflow to the outside. The air vent must either come out on the roof of the vehicle or make a loop as high as possible inside the vehicle and come out under the vehicle on the opposite side to its connection to the tank. For pick-up cars the cockpit of which is totally separated from the rear platform (completely closed metal cabin), the tank must either originate of a series production vehicle, or be an FT3-type tank and the platform must be modified in order to allow the out-flow of the fuel in the event of a leak.

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.

16) LIGHTING EQUIPMENT

The lighting equipment must comply on all points with the International Convention on Road Traffic.

Each car must be fitted with at least :

— 2 headlights (combined passing lights/headlights)
— 2 rear lamps and number plate lighting
— 2 stop lights
— 2 flashing indicators at the front and at the rear
— distress lights.

The two headlamps and the additional lamps must be located in front of the axis of the front wheels, at a maximum height corresponding to that of the line of the bonnet/bottom of the windscreen (8 lamps maximum).

Each car must also be equipped with two red rear fog lamps, twinned or placed side by side with two « stop » lights. Each of these lamps will have a minimum power of between 21 and 55 watts. They will be situated at a minimum height of 1.50 m from the ground, visible from the rear and attached to the outside of the vehicle. They must be fixed to both rear sides of the vehicle or, for pick-up type vehicles, to the upper angles of the rear part of the cabin. These lights must be constantly switched on during the running of the selective section upon the directions of the Clerk of the Course.

All the lighting equipment must be maintained in perfect working order throughout the entire duration of the event. A crew may not be allowed to start a stage until the electric circuit has been mended should it have been ascertained as being faulty.

The fitting of a reverse light is authorised, provided that it only operates when the gear lever is in the reverse position.

17) AUDIBLE WARNING DEVICE

Each car must be equipped with a compressor audible warning device, in working order throughout the entire duration of the event.

18) SPARE WHEELS

Each vehicle shall include at least two spare wheels, identical to those with which the car is fitted, which must be very firmly secured throughout the entire duration of the event.

19) MUDFLAPS

Transversal mudflaps will be accepted under the following conditions :

— They must be made from flexible material.

— They must cover at least the width of each wheel, but at least one third of the width of the car (see drawing 252-6) must be free behind the front wheels and the rear wheels.

— There must be a gap of at least 20 cm between the right and left mudflaps in front of the rear wheels.

— The bottom of these mudflaps must be no more than 10 cm from the ground when the car is stopped, with nobody on board.

— In vertical projection, these mudflaps must not protruyde beyond the bodywork.

These mudflaps are compulsory to the rear of the rearmost wheels and to the rear of the driven wheels : they must fulfil the preceding conditions, must be made from rubberised canvas or plastic (minimum thickness 5 mm) and be continuous with the bodywork.

Mudflaps to prevent splashing towards the front, made from flexible material, may be installed at the front of the vehicle. They must not protrude beyond the overall width of the vehicle, or beyond the original overall length by more than 10 cm, and at least one third of the width of the car must be free in front of the front wheels.

20) SEATS

In T3, and in T1 and T2 if the original seat attachments or supports are changed, these parts must either be made by an FIA approved manufacturer or must comply with the following specifications (see drawing n° 253-52) :

1) Supports must be attached to the shell/chassis via at least 4 mounting points per seat using bolts with a minimum diameter of 8 mm and counterplates, according to the drawing. The minimum area of contact between support, shell/chassis and counterplate will be 40 cm² for each mounting point.

If quick release systems are used, they must be 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 (T1, T2) or with the seat.

2) 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.

3) The minimum thickness of the supports and counterplates will be 3 mm for steel and 5 mm for light alloy materials.

The minimum longitudinal dimension of each support will be 6 cm.

Unless the original series production seats are retained, a headrest with a minimum surface area of 400 cm^2 must be installed for each occupant of the car. The surface must be continuous and have no protruding parts. Its position will be such that it will be the first point of contact with the driver's or passenger's helmet in the event of an impact projecting the heads of the vehicle's occupants rearwards, when they are seated in their normal position.

This headrest must not deflect by more than 5 cm when a rearward force of 850 N is applied to it. The distance between the helmet and the headrest must be minimal, such that the distance moved by the helmet, when the above-mentioned force is applied and the occupant is in his normal driving position, is less than 5 cm.

Art. 284 - **Specific regulations for series cross crountry cars (Group T1)**

1) **DEFINITION** Series production Cross Country cars.

2) HOMOLOGATION
At least 1000 identical units must have been produced in 12 consecutive months and homologated by the FISA in Series Cross Country Cars (Group T1).

3) NUMBER OF SEATS
Cars must have room to accomodate at least two persons.

4) MODIFICATIONS AND ADJUNCTIONS ALLOWED OR OBLIGATORY
All the modifications which are not allowed by the present regulations are expressly forbidden.
The only work which may be carried out on the car is that necessary for its normal servicing ; or for the replacements of parts worn through use or accident. The limits of the modifications and fittings allowed are specified hereinafter. Apart from these, any part worn through use or accident can only be replaced by an original part identical to the damaged one.
The cars must be strictly series production models identifiable by the homologation form data.

5) MINIMUM WEIGHT
Cars must have at least the weight appearing on the homologation form plus the weight of the safety equipments.
As far as rollcages or rollbars which cannot be removed from the car and which were manufactured in accordance with Article 283.8.2, 8.3 and 8.4 are concerned, the following weight will be taken as a basis for the safety cage :
— Rollcage manufactured according to drawing 283-6 : 30 kg.
This is the weight of the car including the weight of the safety equipment, but without persons, luggage, tools, jack, spare parts, portable survival, navigation or communication equipment, provisions, etc. All theliquid tanks (lubrication, cooling, braking, heating where applicable) must be at the normal level foreseen by the manufacturer, with the exception of the windscreen wiper or headlight wiper, brake cooling system, fuel and water injection tanks, which shall be empty. Additional headlights which do not appear on the homologation form must be removed before weighing.

6)
6.1 - ENGINE
— Ignition :
Make and type of plugs are free as are rev-limiters and high tension cables.
— Cooling circuit :
The capacity of the tank containing the coolant is free, as is the type of thermostat which may be removed. The original location and attachment points of the series production radiator must be conserved.
— Fuel feed :
Carburettor parts or fuel injection system parts regulating the quantity of fuel reaching the engine may be modified, provided that they have no influence on air admission.
The original injection system must be maintained.
The accelerator cable may be replaced or doubled by another one regardless of whether it comes from the manufacturer or not.
The injectors may be changed for injectors which are identical except with regard to the size of the pintle nozzle hole at the end.

— Camshaft :
The profile of the cams is free, as are the valve lift and valve springs.

— Feed pump :
The number and the operating principle of the feed pump(s) are free.
— The elastic material of the engine mountings is free, but not the number.
— Exhaust :

It will be possible :

• either to remove the inside of the original silencer ;

• or to modify the exhaust from the first silencer to the exit (drawing 254-3), the maximum dimensions of the duct being those of the pipe situated upstream of the first silencer. The exit should be situated either to the rear or to the side.

Should two inlets exist in the first silencer, the section of the modified duct must be less than or equal to the total of the two original sections.

These liberties must not entail any bodywork modifications and must respect the laws of the country in which the event is run with regard to noise levels.

If an exhaust silencer is added, it must be of the original type and must contain noise-absorbing material.

— Cruising speed controller :

This controller may be disconnected.

Additional parts for the mounting of the exhaust are authorised.

6.2 - TRANSMISSION

— Clutch :

The disc is free, including the weight, with the exception of the number and diameter.

6.3 - SUSPENSION

— Springs :

Coil springs :

The length is free, as is the number of coils, the wire diameter, the external diameter, the type of spring (progressive or not), the external diameter and the form of the spring seats.

Leaf springs :

The length, width, thickness and vertical curvature are free. The fitting of shackle protection pads is strongly recommended.

The number of leaves is free.

Torsion bars :

The diameter is free.

These freedoms on the suspension springs do not authorise one to disregard article 205 of the homologation form (minimum height of the centre of the hubcap, wheel passage opening).

— Shock absorbers :

Free, provided that their type (telescopic, arm, etc.), their working principle (hydraulic, friction, mixed, etc.), and their attachment points remain unchanged.

Gas filled dampers, regarding their working principle, will be considered as hydraulic dampers.

If, in order to change the damping element of a MacPherson suspension, or a suspension operating in an identical manner, it is necessary to replace the entire MacPherson strut, the replacement parts must be mechanically equivalent to the original ones and have the same mounting points. The form of the spring seats in Mc Pherson suspensions is free.

The number of shock absorbers is limited to **two** per wheel. No other part, apart from those whose only function is to permit the fitting of an additional shock absorber, may be added to or removed from the suspension.

The fluid tanks for the shock absorbers may be attached in the wheel arches as well as to the chassis.

— Straps :

Suspension travel straps are allowed at the front and rear.

— Rigid axle :

If a rigid axle is used, the original parts may be strengthened in such a way that the original part can be still recognised.

6.4 - WHEELS AND TYRES

The wheels are free, respecting the homologated width (Article 801.b) which is considered as a maximum, and the homologated diameter with, in the latter case, a tolerance of ± one inch.

They must be covered by the wings, and the maximum track given on the homologation form must be kept.

Tyres are free provided that they can be mounted on these wheels, but studded tyres are forbidden.

The spare wheel may be brought inside the driving compartment, on condition that it is firmly secured there and that it is not installed in the space reserved for the driver and the front seat passenger.

Wheel fixations by bolts may be changed to fixations by pins and nuts provided that the number of attachment points and the diameter of the threaded parts as indicated on the drawing 254-1 are respected.

6.5 - BRAKING SYSTEM

Brake linings are free, as well as their mountings (riveted, bonded, etc.) provided that the contact surface of the brakes is not increased.

Protection plates may be dismantled or bent.

In the case of a car fitted with servo-assisted brakes or an anti-locking device, this device may be disconnected. The same applies for anti-lock braking systems.

Brake lines may be changed for aviation type lines.

6.6 - BODYWORK

6.6.1) **Exterior**

Hubcaps must be removed.

Protective headlight covers may be fitted provided that their only function is to cover the glass, and that they have no influence on the car's aerodynamics.

The fitting of underbody protections is recommended but only authorised provided that these really are protections which respect the ground clearance, which are removable and which are designed exclusively and specifically in order to protect the following parts : engine, radiator, suspension, gearbox, tank, transmission, exhaust.

A frontal protection, **mounted in addition to the bumper and** intended for limiting the consequences of possible collisions with animals, is recommended. This protective grill must be independent of the structure of the car and must reinforce it to contribute to its rigidification. The side and rear windows situated behind the driver may be made from non-transparent material or replaced by transparent material. Their fixation is free, the mechanisms may be removed, several panes filling an opening may be replaced by just one panel, and the same applies for the windows of the side doors.

The glass panel of a sun roof may be replaced by a metal sheet with a minimum thickness of 1.5 mm, with additional attachments if necessary.

Any locking system may be used for the cap of the petrol tank.

If the spare wheel is fixed to the bodywork, (i.e. if it is licked by the airflow) or inside the engine compartment, it may be brought inside the cockpit, on condition that it is firmly secured and that it is not installed in the space reserved for the driver and the front-seat passenger.

In this case, if the original support constitutes a hazard on the outside of the bodywork, it may be removed. The fitting of external rear-view mirrors is permitted, as is the changing of the windscreen wiper blades, front and rear.

Only electric winches, fitted without making any modifications to the structure of the vehicle other than a modification allowing the winch to be attached by means of bolts, are authorised.

6.6.2) **Passenger space**

All accessories which have no effect on the vehicle's behaviour are allowed without restrictions, such as those concerning the aesthetics or interior comfort (lighting, heating, etc.), on the express condition that they do not influence, even on a secondary manner, the efficiency of the engine, steering, strength, transmission, braking, or road-holding.

All the passenger seats, if occupied, must be fitted with a headrest.

The cockpit carpeting situated behind the front seats may be removed in the event of an FT3 tank being fitted in this area.

All the controls must be those provided by the manufacturer and they must retain their original function but they can be worked on to make them more accessible or more easily usable ; for example, the addition of an extension to the handbrake lever, of an additional flange to the brake pedal, etc.

The following is allowed in particular :

1) Additional measuring instruments, counters, etc. may be freely installed, provided that their fitting is not likely to create any danger.

2) **The horn may be changed. Another one, possibly for the passenger's use, may be added.**

3) The mechanism of the handbrake lever may be adapted in order to obtain instant unlocking (fly-off handbrake).

4) Seats supports may be strengthened, and all kinds of seat-covers may be added including those creating bucket seats. The rear seats may be removed on condition that a liquid-tight bulkhead separates the cockpit from the engine compartment and/or the fuel tank.

5) The seats of the occupants may be changed for bucket seats.

6) Additional compartments may be added to the glove compartment as well as additional pockets to the doors.

7) Steering wheel is free.

8) It is authorised to replace the electric windows by manually-operated windows.

6.6.3) **Reinforcements**

Strenghtening of the suspended part is allowed provided that the material used follows the original shape and is in contact with it.

It is permitted to fit front reinforcement bars, on condition that they are removable and are bolted onto the attachment points of the suspension to the bodyshell or onto the suspension spring mounts. A hole may also be bored in the upper suspension trim to fit these rods.

These bars may also be fitted at the rear, on each side, at a maximum of two points. The distance between these two points must be inferior to 10 cm. The distance between one of these points and the suspension attachment is at most 10 cm.

6.6.4) When the spare wheel is originally placed in a closed housing and when this wheel is changed for a wider one from the running gear (see Article 6.4), situated in this space, it is possible to remove from the cover of the location of the wheel the surface induced by the diameter of the new wheel.

6.7 - ELECTRICAL SYSTEM

— Battery :

The make, capacity, and battery cables are free.

The tension and the site of the battery must be retained.

— Generator :

May be replaced by a more powerful one. A dynamo may not be replaced by an alternator and vice-versa.

— Lighting system :

Additional headlights including the corresponding relays are allowed, on condition that the total does not exceed eight (tail and parking lights not included) provided that this is accepted by the laws of the country. They may not be housed within the bodywork.

Headlights and other exterior lights must always exist in pairs. The original headlights can be made inoperative and covered with adhesive tape. They can e be replaced by other headlights, in compliance with this article. A reversing light may be fitted provided it can only be used when the gear lever is in the « reverse » position, and provided that the police regulations on this subject are observed.

— Fuses may be added to the electrical system.

— Flashing lights are forbidden.

6.8 - FUEL CIRCUIT

Fuel lines must be changed for aviation-type fuel lines if an FT3 tank is used, the route of these lines being free.

Should a series production tank be used, this change is optional.

6.9 - JACK

The jack is free on condition that its lifting points on the car are not modified.

Art. 285 - **Specific regulations for improved cross country cars (Group T2)**

1) DEFINITIONS
Cars derived from cars homologated in the Series Cross Country Group.

2) HOMOLOGATION
At least 1000 identical examples of these cars must have been manufactured in 12 consecutive months.
The up-to-date homologation form must be presented at scrutineering.

3) NUMBER OF SEATS
Improved Cross Country cars must have room to accomodate at least two persons.

4) WEIGHT
Cars must respect a minimum weight equal to that of the homologated car multiplied by a factor of 0.9.
This is the weight of the car including the weight of the safety equipment, but without persons, luggage, tools, jack, spare arts, portable survival, navigation or communication equipment, provisions, etc. At no time during the event may a car weigh less than the minimum weight stated in this article. In case of doubt, the Scrutineers may drain the tanks to check the weight.
It is permitted to complete the weight of the car by one or several ballasts provided that they are strong and unitary blocks, fixed by means of tools, with the possibility to fix seals, placed on the floor of the cockpit, visible and sealed by the scrutineers.

5) MODIFICATIONS AND ADJUNCTIONS ALLOWED
GENERAL CONDITIONS :
Irrespective of the parts for which the present article lays down freedom of modification, the original mechanical parts necessary for the propulsion, suspension as well as all accessories necessary for their normal functioning, excepting any steering or braking part, having undergone the normal mechaningoperations laid down by the manufacturer for series production may be subjected to all tuning operations through finishing, scraping but not replacement. In other words provided that the origin of the series production part may always be established, it may be grounded, balanced, adjusted, reduced or modified through machining. Only chemical and heat treatment are allowed, in addition to the above. However, the modifications defined by the above paragraph are allowed on condition that the weights and dimensions mentioned on the homologation form are respected.
Nuts and bolts :
Throughout the car, any nut, bolt, screw may be replaced by any other nut, any other bolt, any other screw and have any kind of locking device (washer, lock nut, etc.).
Adjonction of material :
Any adjunction of material or parts is forbidden unless it is specifically allowed by an Article in these regulations.
All modifications authorised for Series Cross Country Cars (Article 284 - Group T1) are authorised.

5.1 - ENGINE
The engine must originate from the homologated base car or from a car of the same make homologated in Group A (Touring Cars) or in the Series Cross Country Group (Group T1). For engines homologated in Group A, evolutions of the type (ET) valid in rallies will be accepted, but not sporting evolutions (ES). The eligible engines must be in their integral and complete homologated versions, according to Article 3 of the homologation form.
The nominal cubic capacity of the engines is limited to :
For petrol engines :
— 5000 cm^3 for normally aspirated engines with 2 valves per cylinder, homologated in Group T1 and defined as in Article 3 of the homologation form, with modifications strictly limited to those authorised for Group T1 (See Article 284.6.1).
— 4000 cm^3 for engines with 2 valves per cylinder, homologated in Group T1.

— 3000 cm³ for :
• engines with more than 2 valves per cylinder, homologated in Group T1.
• engines homologated in Group A.
For Diesel engines :
— 6000 cm³ for normally aspirated Diesel engines with 2 valves per cylinder, homologated in Group T1 and defined by Article 3 of the homologation form, with modifications strictly limited to those permitted for Group T1 (see Article 284.6.1).
— 5000 cm³ for Diesel engines, 2 valves per cylinder, homologated in Group T1.
— 4000 cm³ for Diesel engines with more than 2 valves per cylinder, homologated in Group T1.

5.1.1) **Cylinder-block — Cylinder head**
It is permitted to close the unused apertures in the cylinder block and cylinder head, if the only purpose of this operation is that of closing.
A rebore is allowed in relation to the original bore, as long as the original cylinder block is retained. The resleeving of the engine is allowed within the same conditions as for reboring, and the sleeve material may be modified.
Planing of the cylinder-block is allowed.
Cylinder head : planing authorised.
In the case of rotary engines, and provided that the original dimensions of the openings of the intake into the block and the exhaust outlet from the block are respected, the dimensions of the intake and exhaust ports in the cylinder are free.

5.1.2) **Compression ratio :** free.

5.1.3) **Cylinder head gasket :** free.

5.1.4) **Pistons :** free as well as the piston-rings, gudgeon pins and their securing mechanism.

5.1.5) **Connecting rods, crankshaft**
Besides the modifications laid down in the paragraph « General Conditions » above, the original crankshaft and connecting rods may receive chemical, heat or mechanical treatment different from that laid down for series production parts.

5.1.6) **Bearings**
Make and material are free ; they must however retain their original type and dimensions.

5.1.7) **Flywheel**
It may be modified in accordance with the above paragraph « General Conditions » provided that the original flywheel may still be identified.

5.1.8) **Fuel feed**
The air filter, including the filter box and the plenum chamber, is free.
The air filter along with its box may be removed, moved in the engine compartment or replaced by another.
The pipe between the air filter and the carburettor(s) or the air measuring device (injection) is free.
Likewise, the pipe between the air measuring device and the intake manifold or the supercharging device is free.
The air filter may be fitted with a grill.
It is possible to make a hole, with a maximum diameter of 10 cm, in the engine bonnet in order to provide air for the engine, and to place a pipe, with a maximum internal diameter of 10 cm, in this hole (see drawing 255-13).
Anti-pollution parts may be removed provided that this does not lead to an increase in the quantity of air admitted.
Fuel pumps are free. They may not be fitted in the cockpit unless this is an original fitting, in which case they must be well protected.
It is possible to fit a radiator in the fuel circuit.
Petrol filters, with a maximum unit capacity of 0.5 l may be added to the fuel feed circuit.
The accelerator linkage is free.
The original heat exchangers and intercoolers, or any other device fulfilling the same function, must be retained, and remain in their original location **(petrol engines only). In the case of a petrol engine originating from Group A, or of another model from Group T1 (see the first sentence of article 5.1), these exchangers must not be modified and must remain in their original compartment. For Diesel engines, without modifying the bodywork and in the engine compartment only, it is permitted to modify the existing exchanger or to fit an exchanger.**
The pipes between the supercharging device, the intercooler and the manifold are free, but their only function must be to channel air.

Any water injection fitted must be homologated and must not be modified.
The use of any other substance or device to reduce the temperature of the mixture is forbidden.
The drawings on page 18 of the homologation form must be respected.
The inner dimensions of the ports are free in the rotary chambers for rotary engines and for 2-stroke engines.

5.1.8.1 — **Carburettor**
The elements of the carburettor(s) regulating the metering of the quantity of petrol admitted to the engine may be modified, but not the diameter of the venturi.

5.1.8.2 — **Injection**
The original system and its type, as specified on the homologation form of the vehicle (such as K-Jetronic) must be retained, as must its location.
The elements of the injection device regulating the metering of the quantity of fuel admitted to the engine may be modified, but not the diameter of the opening of the butterfly.
The air measuring device is free.
The injectors are free, except for their number, their position, their assembly axis and their operating principle.
The petrol lines feeding them are free.
The electronic box is free, insofar as it does not incorporate more data.
The fuel pressure regulator is free. In the case of a Diesel engine, the injection pump is free.

5.1.8.3 — **Restrictor** (petrol engines only)
In the event of supercharged petrol engines being used :
The supercharged system must comply with that of the homologated engine.
The maximum diameter of the air intake into the compressor must be 43 mm, maintained for a minimum distance of 3 mm measured downstream of a plane perpendicular to the rotational axis situated at a maximum of 50 mm upstream of a plane passing through the most upstream extremities of the wheel blades (see drawing 285-1).
The compressors respecting the above dimensions must be retained. The others must be fitted with a non-detachable restrictor fixed to the compressor housing and coupling with the dimensions defined above.
This restrictor must not be an integral part of the compressor housing, but must be an added part.
All the air necessary for feeding the engine must pass through the restrictor. For the installation of this restrictor, it is permitted to remove material from the compressor housing, and to add it, for the sole purpose of attaching the restrictor onto the compressor housing. It must bepossible to affix seals to the restrictor attachment, and to the compressor housing. It must be easy to inspect it, or possible to dismantle it for inspection. The shape of the restrictor is free, subject to the restrictions mentioned above.
In case of an engine with two parallel compressors, each compressor must be limited to a maximum intake diameter of 30 mm.

5.1.9) **Camshaft(s)**
Free (except the number and number of bearings).
Timing is free. The material, type and dimensions of the pulleys, chains and belts for driving the camshafts are free. The route and the number of belts and chains are free.
The guides and tensioners associated with these chains or belts are also free.

5.1.10) **Valves**
The material and the shape of the valves are free, but their characteristic dimensions (mentioned on the homologation form) must be retained (including the respective angles of the valve axles). Valve lift is free.
The cups, cotters or guides (even if they do not exist as original parts) are not subject to any restriction. Shims may be added under the springs.
The material of the seats is free.
With regard to the cylinder head orifices (inner side of the engine), in the case of rotary engines, only those dimensions which have been entered on the homologation form have to be respected.

5.1.11) **Rocker arm and tappets, push rods**

Rocker arms may only be modified in accordance with Article 5 « General Conditions » above. Tappets are free, provided they are interchangeable with the original ones ; the same applies to push rods. It is possible to use shims to adjust them.

5.1.12) **Ignition**

The ignition coil(s), condenser, distributor, interrupter and plugs are free subject to the ignition system (battery/coil or magneto) remaining the same as laid down by the manufacturer for the model concerned.

The fitting of an electronic ignition system, even without a mechanical interrupter, is allowed provided no mechanical part other than those mentioned above is modified or changed, with the exception of the crankshaft, the flywheel or the crankshaft pulley, for which modifications limited to the necessary additions will be possible. In the same conditions, an electronic ignition may be changed for a mechanical ignition. The number of plugs may not be modified ; that of the coils is free.

5.1.13) **Cooling**

Provided the original fitting on the car is retained, the radiator and its fixations are free, as are the lines linking it to the engine. A radiator screen may be fitted.

The fan and its drive system can be changed freely, or be withdrawn. It is allowed to add a fan per function. The thermostat is free, the dimensions and material of the fan/turbine are free, as is their number.

The fitting of a water catch tank is allowed. The radiator cap may be locked.

The water injection devices may be disconnected, but not removed.

The expansion chamber may be modified ; if one does not exist originally, one may be added.

5.1.14) **Lubrication**

Radiator, oil/water exchanger, lines, thermostat, sump and filter, are free.

However, the fitting of an oil radiator outside the bodywork is only allowed if it does not protrude beyond the general perimeter of the car seen from above as it stands on the starting line.

Fitting an oil radiator in this manner does not allow the addition of an enveloping aerodynamic structure.

All air openings must have the sole effect of inducing the necessary air for the cooling of the radiator, and must not have any aerodynamic effect.

Oil pressure may be increased by changing the discharge valve spring.

If the lubrication system includes an open type sump breather, it must be equipped in such a way that the oil flows into a catch tank.

This must have a capacity of 2 litres for cars with a cubic capacity equal to or below 2,000 cc, and 3 litres for cars with a cubic capacity of over 2,000 cc. This container shall either be made of plastic or include a transparent window.

An air/oil separator can be mounted outside the engine (maximum capacity 1 litre), in accordance with the drawing 255-3.

The oil must flow from the oil catch tank towards the engine by the force of gravity alone.

5.1.15) **Engine : Mountings — Angle and position**

Mountings are free provided that the position of the engine respects the original layout (longitudinal, transversal) and the original engine compartment. The only possible modifications to this compartment are those made necessary by the difference in space requirement between the homologated engine and the engine used. The incline may be modified.

Supports may be welded to the engine and to the bodywork and their position is free.

It is possible to cut out a part of the bulkhead situated in the engine compartment for the fitting of one or more air filters or for the intake of air ; however, such cut-outs must be strictly limited to those parts necessary for this installation.

Furthermore, if the air intake ventilating the driving compartment is in the same zone as the air intake for the engine, this zone must be isolated from the air filter unit, in case of fire.

5.1.16) **Exhaust**

Below the exhaust manifold exit the exhaust is free provided that the maximum sound levels permitted in the country(ies) crossed are not exceeded if it is an event on open roads. The exhaust exit must be inside the car's perimeter. (See General Prescriptions, Article 3.6).

For cars with turbocharged engines the exhaust can only be modified after the turbocharger.

In the case of rotary engines, and on condition that the original dimensions of the inlet ports of the exhaust manifold are respected, the dimensions of the ducts in the manifold are free.

Thermal screens may be fitted on the exhaust manifold, the turbocharger and the exhaust device, with, however, the sole function of thermal protection.

5.1.17) **Driving pulleys and belts for ancillaries situated outside the engine**
The material, type and dimensions of the pulleys, chains and belts for driving the ancillaries are free. The route and the number of belts and chains are free.

5.1.18) **Gaskets :** free.

5.1.19) **Engine springs**
Springs are not subject to any restrictions but they must retain their original functioning principle.

5.1.20) **Starter**
It must be retained, but its make and type are free.

5.1.21) **Supercharging pressure**
This pressure may be modified by Article 5.1.19 and Article 5 — General Conditions.

The connection between the housing and the waste-gate may be made adjustable if it is not originally so. The original operating system of the waste-gate may be modified and made adjustable, but this system must be retained. A mechanical system must remain mechanical, an electric system must remain electric, etc.

5.2) **TRANSMISSION**
The number of driven wheels of the homologated base car must be retained.

5.2.1) **Clutch**
Clutch is free.

5.2.2) **Gearbox and transfer box :** free.
An additional lubrication and oil cooling device is allowed (circulation pump, radiator, and air intakes situated under the car) in the same conditions as for Article 5.1.14. Gearbox supports are free.

5.2.3) **Final drives, differentials and their casings**
Free. An additional lubricating and oil cooling device is allowed (circulation pump, radiator, and air intakes situated under the car) under the same conditions as for Article 5.1.14. The drive shafts are free.

5.3 - SUSPENSION
Free.
The axles are also free and can be substituted.
Reinforcement bars on the suspension mounting points to the body shell (or chassis) may be installed. The distance between a suspension fixation point and the anchorage point of the bar cannot be more than 100 mm, unless the bar is a transversal strut homologated with the rollbar, and unless there is an upper bar fixed to a MacPherson suspension or similar. In the latter case the maximum distance between the anchorage point of the bar and the upper articulation point will be 150 mm (drawing 255-4).
Apart from these two points, this bar must not be mounted on the bodyshell or the mechanical parts. One and the same bar may only be fixed to two of these points situated on the original chassis (bodyshell) (drawing 255-2).

5.4 - WHEELS AND TYRES
Complete wheels are free provided that they may be housed within the original bodywork, with the authorised wing extensions (see Art. 5.7.2.11).
The use of tyres intended for motor cycles is forbidden.
The fitting of intermediary parts between the wheels and the tyres is forbidden.
The rim diameter may be increased or reduced by up to 2 inches in relation to the original dimensions.
The wheels do not have to be of the same diameter.

Wheel fixations by bolts may be freely changed to fixations by pins and nuts.
Should the wheel be fixed using a central nut, a safety spring must be in place on the nut throughout the duration of the event and must be replaced after every wheel change.
The springs must be painted « Dayglo » red. Spare springs must be available at all times.

5.5 - BRAKES
Free, except with regard to the following point.

5.5.1) **Cooling of brakes**
Only one flexible pipe to bring the air to the brakes of each wheel is allowed, but its inside section must be able to fit into a circle with a 10 cm diameter.
The air pipes must not go beyond the perimeter of the car, seen from above.

5.6 - STEERING
The housing is free but the operating principle must be retained.
Power steering may be disconnected.

5.7 - BODYWORK — CHASSIS
5.7.1) **Lightening and reinforcements**
Modifications to the chassis/shell/interior bodywork made necessary exclusively by the installation of modified parts such as the engine (Art. 5.1.15), transmission (Art. 5.2) and suspension (Art. 5.3) are allowed.
Strenghtening of the sprung parts of the chassis and bodywork is allowed provided that the material used follows the original shape and is in contact with it. Reinforcements by composite materials are allowed in accordance with this article, whatever their thickness, according to the diagram 255-8.
Insulating material may be removed from under the car floor, from the engine compartment, the luggage boot, and the wheel arches.
Unused supports (eg spare wheel) situated on the chassis/bodywork can be removed.
It is recommended that the holes in the cockpit, the engine and luggage compartment, and in the wings be closed. The holes may be closed using sheet metal or plastic materials, and may be welded, stuck or riveted.
The other holes in the bodywork may be closed by adhesive tape only.

5.7.2) **Exterior**
5.7.2.1 — **Bumpers**
Bumpers may be removed if they are not an integral part of the bodywork. In this case, the mountings must also be removed.

5.7.2.2 — **Hub-caps and wheel embellishers**
Hub-caps may be removed. Wheels embellishers must be removed.
5.7.2.3 — **Windscreen wipers**
Motor, position, blades and mechanism are free but there should be at least one windscreen wiper provided for the windscreen. The windscreen washer device may be dismounted. The capacity of the washer tank may be increased and the tank may be moved inside the cockpit in accordance with Article 282.6.3.

5.7.2.4 - External decorative strips may be removed. Any parts following the external contour of the bodywork and less than 25 mm high will be considered as decorative strips.

5.7.2.5 - Lifting points may be strenghtened, moved, and increased in number.

5.7.2.6 - Headlight covers may be fitted provided their sole aim is to protect the headlight glass and they have no effect on the car's aerodynamics.

5.7.2.7 - Taking into account the different police regulations in each country, registration plate locations and types are free.

5.7.2.8 - The registration plate mountings may be dismounted but not their lighting system.
If a new mounting is provided for with lighting, the original system (mounting + lighting) may be removed.

5.7.2.9 - Additional safety fastenings for the windscreen and the side windows may be fitted provided they do not improve the aerodynamic qualities of the car.

5.7.2.10 - The fitting of underbody protections is authorised, provided that these really are protections which respect the ground clearance, which are removable and which are designed exclusively and specifically in order to protect the following parts : engine, radiator, suspension, gearbox, tank,transmission, exhaust.

5.7.2.11 - The fitting of wing extensions is authorised ; these must cover the wheels over their entire width and at least one third of their circumference (including the hub disconnecting device if there is one). These wing extensions will consist of deflectors of at least 120°, maximum width 5 cm, maximum height 10 cm. They will cover the rearward opening of the wheel passage over at least 60° in relation to the vertical, passing through the hub. The plastic sound-proofing parts may be removed from the interior of the wheel passages. Plastic protection parts may be fitted in the wings, on the same grounds as aluminium parts.
The metal or plastic edges of the wing panel may be folded back if they protrude inside the wheel housing.

5.7.2.12 - Removable pneumatic jacks are permitted.

5.7.2.13 - « Skirts » are banned. All non-homologated devices or constructions designed so as to fill the space between the sprung part of the car and the ground, fully or partially, is forbidden in all circumstances.

5.7.2.14 - It is possible to remove or replace existing supports between the bodywork and the chassis, but it is not possible to change or add their locations.

5.7.2.15 - The material of the doors, bonnet and boot-lids, handles and hinges is free, but their external appearance and operation must be retained.
The material of the front lateral windows is free, but it must be transparent. Their opening systems are free.

5.7.3) **Cockpit**
No mechanical part may protrude into the interior of the cockpit.

5.7.3.1 — **Seats**
Occupant's seats and the corresponding seat mountings are free, subject to Article 283.20, but they must include a headrest. The front seats may be moved backwards but not beyond the vertical plane defined by the front edge of the original rear seat.
The rear seats may be removed (including their backrests).

5.7.3.2 — **Dash board**
The dashboard is free, but its parts must not have any projecting angles.

5.7.3.3 — **Roof**
All padding and insulating material may be removed from the underside of the roof.

5.7.3.4 — **Floor**
Insulating and padding materials may be removed. Carpets are free and may thus be removed.

5.7.3.5 — **Other insulating and padding materials**
May be removed.

5.7.3.6 — **Heating system**
The original heating equipment may be removed or replaced by another.
It is permitted to blank off the water supply of the internal heating device in order to prevent water spillage during an accident, provided that an electric demist system or similar is available.

5.7.3.7 — **Air-conditioning**
May be added or removed.

5.7.3.8 — **Steering wheel**
Free, the anti-theft device may be removed.
The steering can be on either the right or left provided that it is a question of a simple inversion of the steered wheels controls, laid down and supplied by the manufacturer without any other mechanical modifications except those made necessary by the inversion.

5.7.3.9 - The rear removable window shelf in two-volume cars may be removed.

5.7.4) **Additional accessories**

All those which have no influence on the car's behaviour are allowed, for example equipment which improves the aesthetics or comfort of the car interior (lighting, heating, etc.). In no case may these accessories increase the engine power or influence the steering, transmission, brakes, or roadholding even in an indirect fashion. All controls must retain the role laid down for them by the manufacturer. They may be adapted to facilitate their use and accessibility, for example a longer handbrake lever, an additional flange on the brake pedal, etc.

The following is allowed :

1) The original windscreen may be replaced by a laminated windscreen with defrosting equipment incorporated.

2) Measuring instruments such as speedometers, etc. may be installed or replaced, and possibly have different functions. Such installations must not involve any risk. However, the speedometer may not be removed.

3) The horn may be changed and/or an additional one added, within reach of the passenger.

4) Circuit breakers may be freely changed vis-a-vis their use, position, or number in the case of additional accessories.

5) A « fly-off » hand brake may be installed.

6) The spare wheels must be securely fixed, and not installed in the space reserved for the driver and front passenger (if he is on board). No exterior modification of the bodywork must result from their installation.

7) Additional compartments may be added to the glove compartment and additional pockets in the doors provided that they use the original panels.

8) Insulating material may be added to the existing bulkhead to protect the passengers from fire.

9) It is permitted to change the joints of gear-box change systems.

5.8 - ELECTRICAL SYSTEM

5.8.1) The nominal voltage of the electrical system including that of the supply circuit of the ignition must be retained.

5.8.2) The addition of relays and fuses to the electrical circuit is allowed as is the lengthening or addition of electric cables.

Electric cables and their sleeves are free.

5.8.3) **Battery**

The make and capacity of the battery(ies) are free. Each battery must be securely fixed and covered to avoid any short circuiting or leaks. The number of batteries laid down by the manufacturer must be retained.

Should the battery be moved from its original position, it must be attached to the body using a metal seat and two metal clamps with an insulating covering, fixed to the floor by bolts and nuts. For attaching the battery, clamp securing bolts with a diameter of at least 10 mm must be used, and under each bolt, a counterplate at least 3 mm thick and with a surface of at least 20 cm^2 beneath the metal of the bodywork.

The battery must be covered by a leakproof plastic box, attached independently of the battery. It will be possible to place the battery in the cockpit but only behind the front seats. In this case, the protection must include an air intake with its exit outside the cockpit (see drawings 255-10 and 255-11).

5.8.4) **Generator and voltage regulator**

Free, but neither the position nor the driving system of the generator may be modified. The position of the voltage regulator may be changed but it may not be placed in the cockpit unless it was placed there originally.

5.8.5) **Lighting — Indicating**

All lighting and signalling devices must comply with the legal requirements of the country of the event or with the International Convention on Road Traffic.

Taking this into account, the location of the indicators and parking lights may be modified, but the original orifices must be sealed. The make of the lighting devices is free.

Lighting devices which are part of the standard equipment must be those laid down by the manufacturer and must comply where their functioning is concerned with what the manufacturer has laid down for the model in question. However, the operating system of the retractable headlights, as well as its energy source, may be modified.

Freedom is granted with regard to the frontal glass, the reflector and the bulbs. The mounting of additional headlights is authorised provided that the total number of headlights equipping the car does not exceed 8 (parking lights and side lights not included) and provided that the total is an even one.

They may, if necessary, be embedded in the front part of the coachwork or in the radiator grille, but such openings as needed in this case must be completely filled by the headlights. Additional original headlights may be rendered inoperative and may be covered by adhesive tape. The replacement ofa rectangular headlight by two circular ones, or vice-versa, fitted on a support corresponding to the dimensions of the aperture and sealing it completely is allowed. The fitting of a reverse-light is authorised, if necessary by embedding it in the coachwork, provided that it will only switch on when the reverse-gear is engaged and that the police regulations are respected.

If a new registration plate support is provided for with lighting, the original system (support + lighting) may be removed.

5.9 - FUEL TANKS

5.9.1) The changes in the position of the tanks should not give rise to any lightenings or reinforcements other than those provided for under Article 5.7.1.

Art. 286 - **Specific regulations for prototype cross country cars (Group T3)**

Mechanical propelled single-engined land vehicles with 4 to 8 wheels, propelled by their own means, taking continually a real bearing on the ground, and of which the propelling device and steering are controlled by a driver on board each vehicle. These cars may be unit-built, but must comply with the International Convention on Road Traffic, particularly with regard to the following points : windscreen wipers and washers, speedometer.

Automobile Make :

An « automobile make » is a complete car. When the car manufacturer fits an engine which it does not manufacture, the car shall be considered a hybrid and the name of the engine manufacturer shall be associated with that of the car manufacturer. The name of the car manufacturer must always precede that of the engine manufacturer. Should a hybrid car win a Championship Title, Cup or Trophy, this will be granted to the manufacturer of the car.

1) OBLIGATIONS

Group T3 must comply with the general prescriptions and with the safety equipment defined in articles 282 and 283 respectively. Furthermore, they must comply with articles 285.5.1.14, 5.2.2, 5.2.3, 5.4, 5.7.2.13 and 5.8.3.

Any tank containing oil or fuel must be situated in the main structure of the vehicle.

2) BODYWORK

The bodywork shall be designed so as to provide the driver and possible co-drivers with comfort and safety. The materials are free.

A windscreen is optional. However, should it be provided for, it must be of laminated glass regardless of its shape and surface. In the event of the breakage or absence of a windscreen, the wearing of a crash helmet with a visor (or motor-cycle type goggles) shall be compulsory, otherwise the vehicle shall not be admitted to the start.

All parts of the bodywork must be carefully and fully finished, with no temporary or makeshift parts and no sharp corners. The minimum radius of the angles and corners must not be less than 15 mm. The front bodywork of each car must be made from a hard, non-transparent material extending upwards to at least the centre of the steering wheel without being less than 42 cm above the plane determined by the fixation of the driver's seat, and providing protection against loose stones.

No part of the bodywork may present sharp edges or points on the inside or on the outside.

Seen in vertical projection, the bodywork shall cover all the mechanical components ; only the exhaust pipes may project rearwards. **The bodywork must terminate at, or be extended rearwards to, at least the level of the upper edge of the rim.**

An opening for cooling the engine transmission unit may be made in the rear or in the side.

The width of the bodywork may not exceed 210 cm.

No mechanical part may protrude into the interior of the cockpit.

Any equipment which could involve a risk must be protected or insulated and must not be situated in the cockpit.

The cars must have lateral openings allowing the passage of the driver and possible co-drivers.

The dimensions of these openings must be such that it is possible to fit into them a rectangle at least 50 cm wide and 50 cm high, measured vertically, the corners of which may be rounded with a maximum radius of 15 cm.

Each location provided for **each** seat must have a minimum width of 45 cm maintained over the complete depth of the seat. The cockpit opening shall be at least 60 cm long.

The minimum vertical protected height shall be 80 cm between the bottom of the flattened seat and a line joining (on the outside) the two main rollbars or the inside of the roof. The minimum width of the footwell must be 25 cm, maintained to a height of 25 cm, measured horizontally and perpendicularly to the longitudinal axis of the chassis, plumb with the pedals.

The axis of the pedal box must be situated behind or plumb with the axis of the front wheels.

Cars without side windows must be fitted with lateral protection nets which unfasten at the bottom.

Doors with windows must have an opening made of transparent material into which a parallelogram should be able to be inscribed, the horizontal sides of which shall measure at least 40 cm. The height measured on the surface of the window perpendicularly to the horizontal sides, shall be at least 25 cm. The angles may be rounded in accordance with a maximum radius of 5 cm. The measurements shall be taken across the chord of the arc.

All parts having an aerodynamic influence and all parts of the bodywork must be rigidly secured to the entirely sprung part of the car (chassis/body unit), must not have any degree of freedom, must be securely fixed and remain immobile in relation to this part when the car is in motion.

3) MINIMUM WEIGHT

3.1) — For a corrected cylinder capacity less than or equal to 2,000 cm^3 :

- 2 wheel drive cars : 900 kg
- 4 wheel drive cars : 1,000 kg.

— For a corrected cylinder capacity greater than 2,000 cm^3 :

- 2 wheel drive cars : 1,200 kg
- cars with 4 or more driven wheels : 1,300 kg.

— For cars equipped with a normally aspirated engine with a cylinder capacity between 4000 and 5000 cm^3 : 1400 kg.

— For cars equipped with a normally aspirated engine greater than 5,000 cm^3 : minimum weight : 1,600 kg.

3.2) This is the minimum weight of the car including the weight of the safety equipment, but without persons, luggage, tools, jack, spare parts, portable survival, navigation or communication equipment, provisions, etc. At no time during the event may a car weigh less than the minimum stated in this article. In case of doubt, the Scrutineers may drain the tanks to check the weight. It is permitted to complete the weight of the car by one or several ballasts provided that they are strong and unitary blocks, fixed by means of tools with the possibility of affixing seals, and placed on the floor of the cockpit, visible and sealed by the Scrutineers. A spare wheel may be used as ballast, under the conditions given above.

4) ENGINE

Free. Maximum compressor air intake diameter (supercharged engines) : 45 mm.

The maximum diameter of the air inlet of the compressor housing must be maintained for a minimum distance of 3 mm measured downstream of the plane defined by the most upstream point of the compressor wheel blades (See the diagram 286-1).

In case of an engine with two parallel compressors, each compressor must be limited to a maximum air intake diameter of 32 mm.

Volumetric compressors will be accepted if they have an air intake with a maximum section of 80 cm^2.

The compressors will undergo marking and/or sealing during the event.

5) CHASSIS

The car must have a structure immediately behind the driver's seat which is wider and extends above his shoulders when he is seated normally in the car with his seat belts fastened. This structure must be capable of withstanding a sustained lateral load of 1.5 w applied to its top, w being the racing weight of the car, i.e. with persons, fuel and equipment.

Art. 287 - **Cross country truck technical regulations (Group T4)**

1) **GENERAL**

1.1) **DEFINITIONS**

1.1.1) The definitions featured in Article 281 of Appendix J must be applied to these technical regulations.

1.1.2) The expression « Constructor » (of vehicles) must be considered as covering only those firms who hold or who have held a coded « world constructor identification » for identifying the vehicle (V.I.N.).

1.2) **AUTHORISED MODIFICATIONS**

All modifications which are not expressly authorised are forbidden. The only work which may be carried out on the vehicle is that which is necessary for its normal maintenance, or in replacement of damaged parts. The limits of the authorised modifications and assemblies are specified below. Outside these authorisations, any damaged part may only be replaced by an original part identical to the damaged part. The vehicles must be strictly series production and identifiable from the information given in the articles of the documents listed in Article 2.3.

1.3) **TRAFFIC**

1.3.1) The vehicles must comply with the International Road Traffic Convention.

1.3.2) The vehicles submitted for examination must be clean, dry and free of grease.

2) ELIGIBILITY

2.1) **GENERAL**

The present technical regulations govern competitions between 2- to 4-axle trucks. With the exception of the authorised modifications specified in these regulations, the vehicles must comply with a FISA homologation form for Group T4. Optional equipment or additional accessories which do not modify the vehicle's performance are authorised.

2.2) **ELIGIBLE VEHICLES**

Series production 2- to 4-axle trucks (chassis-cab) produced by a recognised constructor, with a permissible total laden weight of minimum 3,500 kg and fitted with conventional bodywork are eligible. The competitor is responsible for providing all the proof requested by the scrutineers, such that they may check that the submitted vehicle is or has been produced in series and that it is on normal sale to the public, and **is homologated in Group T4.**

2.3) **DOCUMENTATION**

2.3.1) The following documents must be presented by the competitor :

1) FISA homologation form.

2) Report of the annual technical inspection.

3) Registration certificate (provisional or temporary registrations are forbidden).

4) Certificate of « homologation » of the conventional type bodywork in the case of a separate homologation.

2.3.2) Homologation :

Is the official certification made by the FISA that a sufficient number of trucks of a specific model has been made on series-production terms to justify classification in Group T4. The application for homologation shall be submitted to the FISA by an ASN of the country in which the vehicle is manufactured and shall entail the drawing up of a homologation form (see below).

It must be established in accordance with the special regulations called « Homologation Regulations », laid down by the FISA.

The homologation of a series-produced model will become null and void 5 years after the date on which the series-production of the said model has been stopped (annual production below 10 % of the minimum production of Group T4.)

2.3.3) Homologation forms :

All models of T4 trucks homologated by the FISA will be the subject of a descriptive form called homologation form on which shall be entered all the data enabling identification of the said model.

This homologation form defines the series as indicated by the manufacturer. The modification limits allowed in international competition for the series are stated in Appendix J.

The presentation of the forms at scrutineering and/or at the start may be required by the organisers who will be entitled to refuse the participation of the entrant in the event in the case of non-presentation.

Should any doubt remain after the checking of a model of truck against its homoloation form, the scrutineers should refer either to the maintenance booklet published for the use of the make's distributors or to the general catalogue in which are listed all spare parts.

In the case of a lack of sufficiently accurate documentation, scrutineers may carry out direct scrutineering by comparison with an identical part available from a concessionnaire, or with a vehicle of the same type. It will be up to the competitor to obtain the homologation form concerning his vehicle from his ASN.

Description : A form breaks down in the following way :

1) A basic form giving a description of the basic model.

2) At a later stage, a certain number of additional sheets describing « homologation extensions », which can be « variants », « errata » or « evolutions ».

a — **Variants (VF, VO)**

These are either supply variants (VF) (two suppliers providing the same part for the manufacturer and the client does not have the possibility of choice), or options (VO) (supplied on request and available from the concessionnaire).

b — **Erratum (ER)**

Replaces and cancels an incorrect piece of information previously applied by the constructor on a form.

c — **Evolution (ET)**

Characterises modifications made on a permanent basis to the basic model (complete cessation of the production of the car in its original form).

Use :

1) **Variants (VF, VO)**

The competitor may use any variant or any part of a variant as he wishes, only on condition that all the technical data of the vehicle, so designed, conforms to that described on the homologation form applicable to the truck, or expressly allowed by Appendix J.

2) **Evolution of the type (ET)**

The truck must comply with a given stage of evolution (independent of the date when it left the factory), and thus an evolution must be wholly applied or not at all.

Furthermore, from the moment a competitor has chosen a particular evolution, all the previous evolutions should be applied, except where they are incompatible, for example, if two brake evolutions happen one after another, only that corresponding to the date of the stage of evolution of the truck will be used.

3) SAFETY REQUIREMENTS

3.1) **ROLLCAGE**

3.1.1) **Cab :**

An internal cab rollcage must be fitted. The basic purpose of such a rollcage is to protect the driver and passengers if the vehicle is involved in a serious accident.

Minimum acceptable rollcage requirements are detailed in these regulations but the following observations should be noted :

The essential characteristics of a rollcage come from a finely detailed construction, suitable fixation to the cab and snug fitting against the bodywork. It is recommended that mounting feet be made as large as possible in order to spread loads over the maximum area. It is also advisable toattach the cage to the cab structure (e.g. to the screen and door pillars) wherever possible. This greatly increases strength and rigidity. All welding should be of the highest quality possible, with full penetration (preferably arc welding and in particular under protecting gas).

A longitudinal member (door reinforcement) must be fitted at each side of the vehicle. These members may be removable. This lateral protection must

as high as possible but not higher than one third of the total height of the door measured from its base.

The requirements are a minimum. It is permitted to fit extra elements or reinforcements in addition to the basic requirements (See Appendix J Article 283.8 and drawings 287-1 and 287-2).

In addition to the internal rollcage, it is permitted to fit an external rollcage, subject to the following conditions :

— To the front, no part of the cage may extend beyond the projection of the base vehicle over the ground.

— No part of the external cage may project beyond the side and the upper extremities of the load-bearing bodywork of the base vehicle.

— To the rear, no part of the external cage may be located more than 0.5 metres behind the back of the bodywork of the cab.

3.1.2) **Load-bearing bodywork** (See drawing 287-3)

The rear part of the vehicle (the part intended to carry the merchandise) must be reinforced in front (the panel of the bodywork situated behind the cab) by a completely closed rollbar ABCD made rigid by a diagonal AD or BC which must follow exactly the contour of the inside of the bodywork and its minimum height must be at least equal to that of the highest part of the cab or of its external rollbar (air intakes **and exhaust outlets** are not taken into consideration).

This rollbar will be fixed on the one hand by steel plates welded to the tube and bolted to counterplates at floor level, as near as possible to corners C and D, and on the other hand, in the same fashion, to the vertical wall of the bodywork (except in tarpaulin type trucks) near corners A and B. **If the floor is not strong enough, this attachment must be carried out on the chassis.** The rollbar must be held up by two rectilinear tension rods fixed at A and B and bolted to the floor of the vehicle with plates and counterplates (AE and BF). If the floor is not sufficiently resistant, these rods must be bolted onto the chassis.

The plates and counterplates used above must have a surface area of 200 cm^2 and a minimum thickness of 3 mm, and be fixed by 4 bolts of 12 mm diameter.

3.1.3) **Minimum acceptable rollcage specifications**

The minimum acceptable rollcage is shaped as shown in diagram 287-1. **Each rollbar** must be in one piece and must be free from uneveness and cracks. All the parts **of the rollcage** must be welded together or be connected by the connections defined in Article 283.8 of Appendix J.

Note : The rear diagonal must have its top fixing on the driver's side of the cab.

It is permissible, and even recommended, to fit additional struts to the rollcage. An example is shown in diagram 287-2. Such additional struts may be welded, or **fixed by removable connections**.

The minimum fixation of the cage to the cab consists of four mounting plates, one for each vertical pillar of the cage. Each mounting foot must have an area of at least 200 cm^2 and a thickness of 3 mm. Reinforcing plates with an area of at least 200 cm^2 and a minimum thickness of 3 mm must be fitted such that the cab floor is sandwiched between the mounting feet and the reinforcing plates. At least three bolts must clamp each mounting foot to its reinforcing plate, such bolts to have a minimum specification of 8.8 (« S » Grade) and diameter of 12 mm. This mouting represents a minimum. It is permitted to increase the number of bolts and to attach the rollcage to the cab shell. (e.g. to windscreen and door pillars). (See texts and diagrams in Appendix J, Art. 283.8).

Minimum material specification for all mandatory tubes is as follows :

Cold drawn **seamless** steel tube with a minimum tensile strength of 340 N/mm^2.

Minimum permitted tube sizes are as follows :

57 mm outside diameter × 4.9 mm wall thickness

or

60 mm outside diameter × 3.2 mm wall thickness

or

70 mm outside diameter × 2.4 mm wall thickness.

Every tube in diagram 287-1 must have an inspection hole of 5 mm diameter, drilled in an easily visible position.

Note : The tube sizes quoted above are standard sizes which should be easily available. However if one of these sizes cannot be obtained, the tube will be acceptable if its dimensions exceed the dimensions shown above ; for exam-

ple 60 mm × 4.9 mm or 57 mm × 5.0 mm are acceptable in place of the 57 mm × 4.9 mm tube.

3.2) **SEAT BELTS**

3.2.1) **General**

All seat belts must be of unmodified proprietary manufacture. They must not include any inertia reels and must be securely attached to the vehicle's cab structure or roll cage (it is **not** acceptable for seat belts to be anchored to seats). Anchorage points on the cab structure must be reinforced to ensure adequate strength.

Belts will have at least two shoulder straps and one abdominal strap. There must be two mounting points for the abdominal strap and two behind the driver's seat for the shoulder straps.

Minimum : 4-point harness.

Note : It is not allowed to mix parts of seat belts. Only complete sets, of proprietary manufacture, may be used.

3.2.2) **Installation and use**

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.

Seat belts must be replaced immediately whenever the webbing is cut, frayed or weakened due to the actions of chemicals or sunlight. They must also be replaced if hardware or buckles are bent, deformed or rusted, or if the seatbelt does not function properly.

Shoulder straps must not be mounted so as to make an angle of more than 20° to the horizontal from the wearer's shoulders.

The shoulder straps must be fixed or supported on a rear transversal tube fixed to the rollbar or to the top anchorpoints of the front belts.

The lap and crotch straps must be located in such a way that they wrap and hold the pelvic region over the greatest possible surface, the lap straps crossing it below the antero-superior iliac spines. Under no conditions must they be worn over the region of the abdomen. Holes may be made in the seat if this proves necessary in order to avoid such an occurence.

Care must be taken that the belts cannot be damaged through chafing against sharp edges.

3.2.3) **Principles of mountings to the monocoque**

1) General fixing system :
See drawing 283-3 of the car regulations.
2) Shoulder straps mounting :
See drawing 283-4 of the car regulations.
3) Crutch strap mounting :
See drawing 283-5 of the car regulations.

3.3) **FIRE EXTINGUISHERS**

3.3.1) **Equipment**

Each truck must be equipped with two bottles, each containing a minimum of 4 kg of halon 1211 or 1301 (BCF-BTM) **or of any other replacement product approved by the FISA.**

3.3.2) **Installation**

Each extinguisher bottle must be securely fixed inside the vehicle's cab. It is not permitted to fit any extinguishers outside the cab. Only metallic straps with metallic buckles will be used for fixation.

3.3.3) **Operation — Triggering (manual)**

The extinguishers must be easily accessible to the driver and co-driver and easily detachable from their fixation.

3.3.4) **Checking**

The type of extinguishant, its quantity, the total weight of the bottle and the date of its last inspection must be specified on each bottle.

3.3.5) **Automatic systems**

As a replacement for one of the two extinguishers mentioned above, it is permitted to fit an automatic extinguishing system complying with Article 253.7, Cross-Country cars, of Appendix J.

3.4) **CIRCUIT BREAKER**

Vehicles must be fitted with a circuit breaker and a choker device which shuts down the engine and disconnects the batteries from all electrical circuitry (except

any automatic fire extinguisher system). This switch mustbe painted yellow and identified by a red spark on a white edged, blue triangle. A prominent notice not less than 20 cm in width should be affixed to indicate the location of the switch. The circuit breaker and the choker device must be placed on the outside, in the middle of the front face of the cab, beneath the windscreen. The circuit breaker must be easily accessible at all times, even if the vehicle is lying on its side or roof.

In addition, an engine shut-down switch must be fitted in the cab, with its on-off positions clearly marked. It must be operable by the driver when normally seated and wearing his seat belt. The switch must also isolate any electric fuel pumps.

Note : In the case of vehicles which use a mechanical engine shut-down system, a shut-down device may be fitted on the outside, separate to the electrical circuit breaker. However, the device must be fitted close to the circuit breaker, be clearly marked and have clear operating instructions (e.g. pull knob to stop engine).

3.5) **REAR WARNING LIGHTS**

Each vehicle must be equipped with two red rear fog lights, of a minimum power of 21 watts and a maximum of 55 watts, situated at a minimum height of 1.5 m from the ground, visible from the rear and attached to the outside of the vehicle, to the left and right rear of the truck.

Two other « stop » lights of a minimum power of 21 watts and a maximum of 55 watts must be situated at the same position and the same height as the red rear fog lights, in order to indicate braking in the dust.

The lighted area of these lamps must not exceed 100 cm^2.

3.6) **HEAD RESTRAINT**

The driver's and passengers' seats must be equipped with a head restraint, capable of supporting a 17 kg mass under a rearward acceleration of 5 g. Its dimensions must be such that the driver's head is restrained and cannot move to the rear under this acceleration, or be trapped between the head restraint and the rollcage.

3.7) **CAB AND BONNET LOCK DOWN**

Vehicles with tilt cabs must have an additional device which bridges the normal tilt lock mechanism and will prevent cab tilt in the event of that mechanism disengaging. The weakest part of the device will be either one steel bolt or pin of at least 16 mm diameter or two steel bolts or pins of at least 12 mm diameter.

Steel cables are allowed on each side of the cab, with a minimum diameter of 12 mm (or equivalent section). They will be of a sufficient length to allow movement between the cab and the chassis.

Vehicles with bonnets must be fitted with an additional locking device, in addition to the normal bonnet lock, to prevent the bonnet from opening in case of failure of the normal lock (attachment by means of « American » steel pins).

These additional devices must be positively engaged while the vehicle is in motion.

3.8) **PROPELLER SHAFT**

For each longitudinal transmission shaft over 1 m long, a rollbar or a safety loop made from steel must be installed close to the front extremity.

3.9) **WHEELS AND TYRES**

3.9.1) **Wheel rims, spacers**

Split rim wheels are forbidden.

It is prohibited to fit any spacers or adaptors between the road wheels and the hub.

3.9.2) **Wheel nut covers**

Wheel nut covers must be fitted to all wheels if nuts or studs extend beyond the complete wheel.

3.9.3) **Wheel balance weights**
It is prohibited to have removable balance weights fitted to any wheel.

3.9.4) **Tyres**
Any tyre which the scrutineers consider to be dangerous or in breach of the regulations, for one reason or another, shall be refused.

3.9.5) **Spare wheel/tyre**
Two wheels or two tyres, depending on the type of wheels used, are compulsory.

3.10) ISOLATION FROM ENGINE AND TRANSMISSION (Firewall)
All vehicles must have a protective bulkhead of non-flammable material between the engine/transmission and the driver's compartment capable of preventing the passage of fluid or flames in the event of fire. Gaps must be sealed with glass fibre.
Magnesium is prohibited for bulkheads.

3.11) LINES
3.11.1) **Fuel lines**
It is prohibited to run any fuel lines within the cab.

3.11.2) **Oil lines**
The only oil lines which may run within the cab are those leading solely to temperature and pressure gauges. Such lines must be metallic, or be aviation type lines.

3.11.3) **Coolant lines**
The only coolant lines which may run within the cab are those leading to temperature/pressure gauges or the cab heater.

3.12) WINDSCREEN AND BODY GLAZING
A windscreen of laminated glass must be fitted, bearing a mark to verify the fact. All other windows may be of any type of homologated safety glass. All window operating mechanisms must function as designed by the manufacturers (e.g. manufacturers' wind-down windows must remain as wind-down windows).
The wearing of visors or motorcycle type goggles is compulsory for all members of the crew, in case the windscreen breaks.

3.13) STEERING LOCK
Any steering lock system fitted to the vehicle may be removed.

3.14) PARK BRAKE
The location of the park brake control must be clearly indicated by a notice inside the cab at least 20 cm in width. The park brake control must be operable by the driver while normally seated with the seat belt fastened.

3.15) WINDSCREEN WIPER AND WASHER
All vehicles must be fitted with at least one windscreen wiper and a washer. These must be maintained in a working condition at all times.

3.16) OIL CATCH TANK
All engine breathers venting to the atmosphere must lead into a catch tank, arranged in such a way as to prevent oil from spilling onto the ground. If a single catch tank is used, it must have a volume of at least four litres. It is permitted to use multiple tanks, but each tank must be at least two litres. Tanks may be made of any material, but it must be possible to view the contents of the tank (e.g. a sight glass is required in a metal tank, and plastic tanks must be translucent). All tanks must be capable of being readily emptied.

3.17) TOWING EYE
All vehicles must be fitted with a front towing attachment of strength and size adequate for towing the vehicle on the itinerary of a raid. It must be painted in a contrasting colour (yellow, red or orange) for easy identification and

be available for immediate use when required. It must not project forward beyond the front face of the bumper.

3.18) LAMPS

The number of headlamps is limited to 8. They must be fitted in accordance with the International Road Traffic Convention, at a maximum height not exceeding that of the lowest part of the windscreen.

All forward facing lamps of more than 32 cm² surface area must be adequately protected and secured in case of glass breakage, by a grille or additional translucent panel.

3.19) WARNING TRIANGLE

This is compulsory, in case of a breakdown or an unscheduled stop. The triangle must be placed on the track, in such a way that it is clearly visible, 100 m before the immobilised vehicle.

3.20) AUDIBLE SIGNALLING DEVICES

Each vehicle must be equipped with a **powerful** audible signalling device, in working order throughout the event.

3.21) MUDFLAPS

The fitting of efficient mudflaps behind every wheel of the vehicle is compulsory ; they must be fixed as far back as possible. Each flap must stop at most 10 cm above the ground and it must be wider than the tyres.

For vehicles with more than 4 driven wheels, the only wheels to be taken into consideration will be the rearmost wheels on the front and rear axles.

3.22) REAR VIEW MIRRORS

It is permitted to fit additional rear view mirrors, but the standard mirrors must be retained and kept in working order, at all times.

4) CHASSIS

Only local modifications of the chassis frame are permitted in order to comply with the safety requirements described in Art. 3 of these regulations.

With the exception of the items covered in Art. 7.1, the chassis frame must be exactly to manufacturer's standard specification. Manufacturers' options on chassis shape and material are prohibited.

5) BODYWORK

5.1) **CAB INTERIOR**

5.1.1) **Door locks**

Door locks must be kept in the unlocked position while the vehicle is on the route.

5.1.2) **Tool kits**

All tool kits and other equipment not rigidly secured must be removed from inside the cab.

5.1.3) **Seats**

All seats must be rigidly fixed and must not slide, tilt, hinge or fold. Any sliding seat runners and seat back hinges must be locked. All seats must face forward.

Passenger seat may be removed. Non-standard seats of proprietary manufacture (designed for use in trucks or cars) may replace original seats. All joints between any seat and the cab (i.e. seat to subframe (if fitted) and subframe to floor) must have at least four 8 mm diameter or six 6 mm diameter bolts, minimum Grade 8.8 (« S » Grade).

Minimum thickness of material used for the seat attachments, reinforcement plates, etc. : 3 mm for steel, 5 mm for light alloy.

Minimum surface area for each attachment point (attachments and plates) : 40 cm².

5.1.4) **Trim**

Carpet and floor coverings may be removed. Any loose floor coverings must be removed.

5.1.5) **Steering wheel**

A non-standard steering wheel of proprietary manufacture may be fitted.

5.1.6) **Pedals**
The pads of the pedals may be modified as long as this does not involve any lessening to their resistance.

5.2) **CAB INTERIOR**
5.2.1) **Mudguards**
All vehicles must be equipped with mudguards on the rear wheels. They must have no sharp edges and must cover the full width of the tyre over a continuous arc of 120°. This minimum coverage must be achieved with a continuous surface of rigid material uninterrupted by any gaps, holes, slots or vents.
The mudguards must extend forward of the relevant axle centre line in vertical projection.
The trailing edge of the mudguard must be no **higher than the top of the corresponding rim.**
The front mudguards will remain those of the cabin of the homologated vehicle.

5.2.2) Winches
Only electric winches, fitted without making any modifications to the structure of the vehicle other than a modification allowing the winch to be attached by means of bolts, are authorised.

5.3) **LOAD-BEARING BODYWORK**
5.3.1) **Outside**
Modifications or adjustments carried out after homologation (Article 2) must respect the road regulations and the present regulations.

5.3.2) **Inside**
The transporting of « merchandise » is entirely the responsibility of the competitor. However, the Scrutineers may check the quality of the load, with regard to safety.
The transporting of certain quantities of dangerous materials is governed by official regulations.
Any dangerous liquids must be held in tanks similar to those of the vehicle (FT3 safety tank or truck tank).

6) ENGINE
6.1) GENERAL
With the exception of permitted modifications detailed hereunder the engine and all ancillaries must be exactly to manufacturer's standard specification.

6.2) **ENGINE SPEED**
Maximum engine speed may be changed.

6.3) **WATER COOLING SYSTEM**
The original number of water cooling radiator units must be retained. They must be fitted to their original mounting points on the chassis. However, it is permitted to change the size and shape of these radiators, and associated piping, as long as this does not cause any change in body or chassis shape.

6.4) **AIR INDUCTION SYSTEM**
The air filter(s) and tubing upstream of it(them) may be modified.
No part of the air induction system may project more than 300 mm beyond the side or top extremities of the cab.
— no more than two air induction pipes may be fitted.
— the total cross-sectional area of the air induction pipes or ram air collector boxes must not exceed 1,000 cm^2.

6.5) **FUEL INJECTION SYSTEM**
Only the settings on the fuel injection pump may be modified.

6.6) **FUEL**
The fuel must be **gas oil** with the following specifications :

— Hydro-carbon content, % w/w	99.0 min.
— Specific gravity, kg/m^3	860 max.
— Cetane number (ASTM D613)	55 max.
— Calculated Cetane number (ASTM D976/80)	55 max.

Only atmospheric air may be mixed with fuel as an oxidant.

6.7) **SMOKE**
It is forbidden to produce excessive smoke from the engine. Smoke levels will be measured to E.E.C. standards or equivalent and a Judge of Fact will determine unacceptable smoke levels.

6.8) **EXHAUST**
After the final muffler, the exhaust pipe may be modified. A vertical exit pipe, or two at the most, may be installed without exceeding by more than 300 mm the top of the cab, or of the load-bearing bodywork if this is higher.

7) SUSPENSION

7.1) **DAMPERS**
No more than four damper units may be fitted to any one axle. However, the damper units may be of any proprietary make and type. Their supports are free but must have no other function than that of support.

7.2) **RIGID AXLES**
Rigid axles may be strenghtened, but in such a manner that the original parts may be recognised.

7.3) **SPRINGS**
The number of spring leaves is free.

7.4) **TRAVEL LIMITATION**
Travel straps may be fitted.

8) TRANSMISSION

8.1) **CLUTCH**
The clutch plate(s) is(are) free.

9) ELECTRICS

9.1) **LIGHTING SYSTEM**
All lamps required for normal legal road use must be functional at all times and must not be concealed.
No lamp other than those provided for by the International Road Traffic Convention and the present regulations (Article 3.18) may be fitted.

9.2) BATTERIES
Vehicle batteries must be to original specification or equivalent. They must not be positioned inside the cab. They must be securely fastened, each battery to be held down by at least two steel bolts of 10 mm minimum diameter. They must be protected to prevent short circuiting of terminals.
Batteries must not be visible from outside the vehicle.

10) BRAKES

10.1) BRAKING SYSTEM
The entire braking system must remain original (except for Art. 5.1.1.6 - Pedals).
The material and attachment system of the brake linings are free.

10.2) BRAKE COOLING
Brake cooling is permitted using ducted air only. Cooling ducts must be fed by air intakes (one per wheel) which can fit within a circle of 150 mm diameter, fixed below the axis of the wheels and not extending beyond the vertical projection of the vehicle.

11) WHEELS

11.1) SPECIFICATION
These must be of unmodified proprietary manufacture and must be such that no part of a rim or tyre fouls on any part of the vehicle under extremes of steering or suspension movements.
The wheel nuts and studs must match the wheel rims being used, to ensure adequate fixing strength. Wheel nuts must be of unmodified proprietary manufacture.

11.2) RIM DIMENSIONS

Maximum allowed wheel rim width is 14".

Split rims are forbidden.

Different rims from the original ones may be authorised by the supplementary regulations of the event, according to the type of terrain.

11.3) WHEEL TRACK AND VEHICLE WIDTH

The combination of axles and wheels/tyres fitted must not cause the vehicle width to exceed 2,500 mm, nor increase the front or rear wheel track by more than 150 mm beyond manufacturer's standard specification.

Note also the requirements of Section 11.1 concerning wheels/tyres fouling on the bodywork.

12) TYRES

12.1) SPECIFICATION

— Maximum permitted section width : 19".

— All tyres fitted to the vehicle must have a tread depth complying with relevant national legal requirements for the duration of the event.

— Re-cut and/or hand grooved tyres are not permitted.

— Tyres fitted must be available through normal retail outlets for all-weather use on roads and/or tracks. Special tread compounds and/or patterns are not allowed, nor are any externally applied chemical compounds which may affect tyre grip.

— All tyres must have a speed index of « F » or more.

— No cover may have undergone serious repairs.

12.2) APPROVED MANUFACTURERS

All tyres used must be to E.E.C. Type Approval standard (E.E.C. regulation 54) or equivalent.

12.3) RETREATED TYRES

Retreated tyres are forbidden.

13) VEHICLE WEIGHT

The minimum allowed vehicle weight at any time is the weight of the vehicle, emptied of fuel, without persons, luggage, tools, jack, spare parts, portable survival, navigation or communication equipment, provisions, etc., but with the safety devices, and its bodywork as defined hereabove. It must not be less than the weight of the chassis-cab stated in the certificate of receipt by type modified by the multiplicating coefficient 1.33.

14) FUEL TANK

14.1) TYPE

Additional fuel tanks are free in respect of capacity. They must be of unmodified proprietary manufacture, of a type normally used in trucks ; they must be without modification, and fully proofed against accidental fuel spillage or leakage from fillers and vents. Filler caps must have a positive closure action and must not project beyond the line of the vehicle's bodywork.

Note : It is recommended to fit FIA/FT3 safety fuel tanks as described in Article 253.14, Cross Country Cars, of Appendix J.

14.2) POSITION

Subject to the following requirements, fuel tank position is free :

— Tank(s) must be firmly fixed to the chassis. They must have underbody protection against flying stones and lateral protection against impact.

— Tank(s) may not be fitted inside the cab.

14.3) ADDITIONAL TANKS (Other than those feeding the vehicle)

No reserves containing fuel may be situated on the outside of the vehicle (jerrycans or other cans). Containers for water or lubricants will be tolerated on the outside of the vehicle, must be firmly secured and must not project beyond the perimeter of the vehicle.

15) TACHOGRAPHS

The tachographs record vehicle speed. Competitors are reminded that any change to the vehicle which may affect the calibration of the tachograph (e.g. a change of tyre make or tyre size) must be approved by the Scrutineers.

It is specifically forbidden to conceal, or interfere in any way with, the approved tachograph or any associated wiring, cable drive or sender units.

If any change is made to the vehicle specification which may affect tachograph calibration, or if the system is interfered with in any way, it is the competitor's responsibility to have the tachograph re-calibrated and recertified. Failure to comply with this requirement may cause the vehicle to be rejected at Scrutineering.

Competitors are reminded that tachographs are extremely accurate measuring devices.

16) FINAL TEXT

In the event of any dispute over the interpretation of the terms used in the various translations of these regulations, the French version will be used.

Liste des laboratoires d'analyses de carburant reconnus par la FISA/List of fuel analysis laboratories recognised by the FISA

LISTE TECHNIQUE N° 2/TECHNICAL LIST N° 2

Autriche/Austria (A)

1. Institut für Vebrennungskraftmaschinen und Kraftfahrzeugbau der Technischen Universität Wien Vorstand Prof. Lenz, Getreidemarkt 9, 1060 WIEN (Pour détermination du taux d'octane/ For determination of octane rate)
2. Institut für Chemische Technologie für Erdölprodukte der Universität Wien, Vorstand Prof. Schindlbauer, Getreidemarkt 9, 1060 WIEN

Australie/Australia (AUS)

Mr. Mike Tuminello — Chief Chemist BHP Petroleum Laboratory 245 Wellington Road, Mulgrave 3170, VICTORIA

Belgique/Belgium (B)

FINA RESEARCH S.A. Zone Industrielle C - B 7181 SENEFFE (Feluy) Tel. : (64) 51.41.11 Fax : (64) 55.89.77

Suisse/Switzerland (CH)

EMPA - Service/Abteilung N° 133 Ueberlandstrasse 139 - 8600 DÜBENDORF Tel. : 1/823.41.33 - Tlx. : 825.345 Fax : 1/821.62.44

Tchécoslovaquie/Czechoslovakia (CS)

Chemopetrol, Korytna 47, PRAHA 10 - Strasnice

Allemagne /Germany (D)

1. GC-GERMAN CONTROL Internationale Kontrollgesellschaft mbH E7, 16 und 21, 6800 MANNHEIM 1 Tel. : 0621/151049 - Fax : 0621/151026
2. SGS Control - COMBH Petrochemisches Labor Am Neuen Rheinafen 12 A 6720 SPEYER - Tel. : 06232 /130140
3. PHL Vorhoelzerstr.3, 8000 MÜNCHEN 71 Postfach 710 626 Tel. : 089/79 89 77 - 089/3 54 25 41 Fax : 089/7 91 88 89

Espagne/Spain (E)

CAMPSA Laboratorios Mendez Alvaro, 44 MADRID 28045 Tel. : 582.52.33

France/France (F)

1. ATEPE Parc d'Activité de la Tuilerie Saint-Benoît AUFFARGIS 78610 LE-PERRAY-EN-YVELINES
2. Institut Français du Pétrole CEDI, BP3, 69390 VERNAISON Tel. : 78022020 - Tlx. : 340257
3. PLAS ZI La Vigne aux Loups 23, rue Bossuet 91160 LONGJUMEAU

Royaume-Uni/United Kingdom (GB)

1. Caleb Brett International Limited Laboratory and Technical Services Unit « A », 734 London Road, West Thurrock, Essex, RM16 1HN Tel. : (0708) 869960 Fax : (0708)861496
2. SGS Redwood Ltd. Old Station Approach London Road, PURTLEET, Essex, RM16 1QS Tel. : 0708 866 855 - Tlx. : 897 361 Fax : 0708 864 137

Grece/Greece (GR)

Générale Chimie de l'Etat Rue A. Tsoha 16 Ampelokipi - ATHENES

Italie/Italy (I)

1. Stazione Sperimentale Combustibili Via Galileo Galilei 1 20097 SAN DONATO MILANESE - MI Tel. : 02/510031
2. Ecocontrol Via della Scafa 121 00054 FIUMINCINO (ROMA) Tel. : 06/6453840
3. S.E.L.M. Litoranea Priolese - Statale 114 96010 PRIOLO (SIRACUSA) Tel. : 0931/731111

Japon/Japan (J)

Shin Nihon Kentei Kyokai Shinken Building 12-13, Shin Yokohama 2 Chome ; Kohoku-ku, YOKOHAMA 222

Pays-Bas/Netherlands (NL)

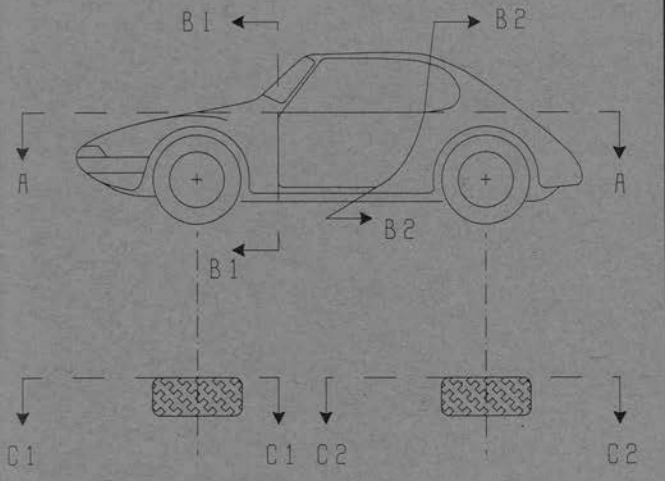
1. Caleb Brett Nederland BV Po Box 7455 3000 HL ROTTERDAM/HOOGVLIET Tel. : 10-4902702 - Fax : 10-4723225 Tlx : 62090
2. Laboratory SGS Redwood Nederland B.V. Hornweg 8, 1045 AR AMSTERDAM Tel. : (20) 6114848 Fax : (20)6118963

Nouvelle-Zélande/New Zealand (NZ)

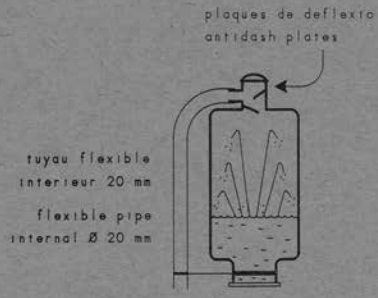
New Zealand Refining Co. Ltd. Marsden Point Whangarei

Dessins

Drawings



Dessin/drawing n° 251-1



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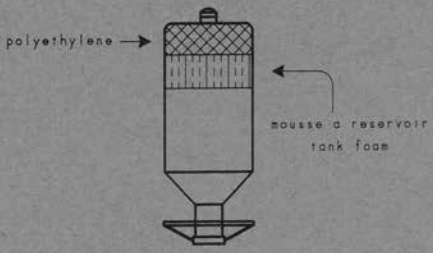

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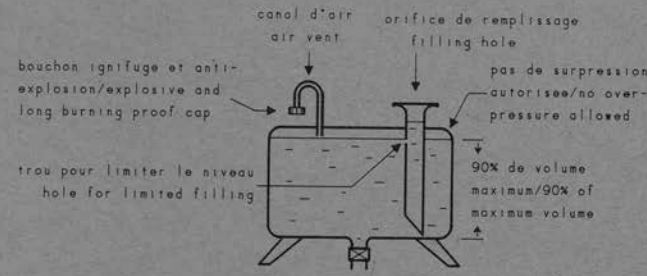
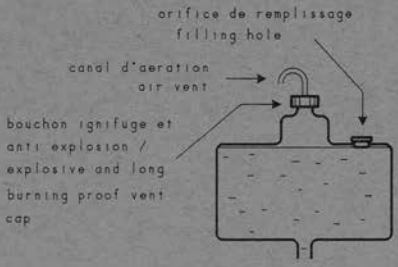


Dessin/drawing n° 252-3



Dessin/drawing n° 252-4

Orifice de remplissage standardisé pour voitures/Standardised car fuel filter
Alliage recommandé/Recommanded material : AU4G (aluminium, cuivre/copper, magnesium)

Usinage/Machining 

μ = Micron, Ra = Rugosité admise
average roughness of a surface.
Toutes cotes en mm/All dimensions in mm.

A : Position du clapet au repos/position of the released valve.
Clapet normalement fermé et étanche à la pression de 100 m. bar (1.5 psi)/Valve normally shut and leak proof under 100 m. bar of pressure (1.5 psi).

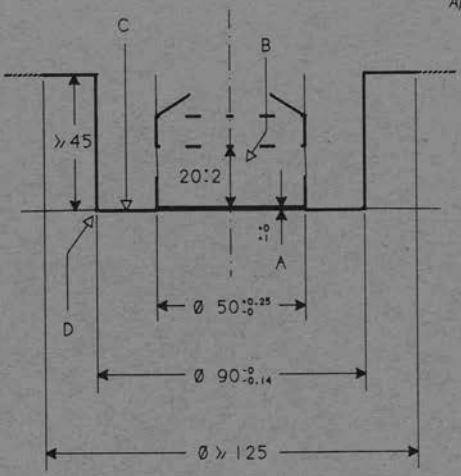
B : Ouverture du clapet/valve lift (20 ± 2 mm).

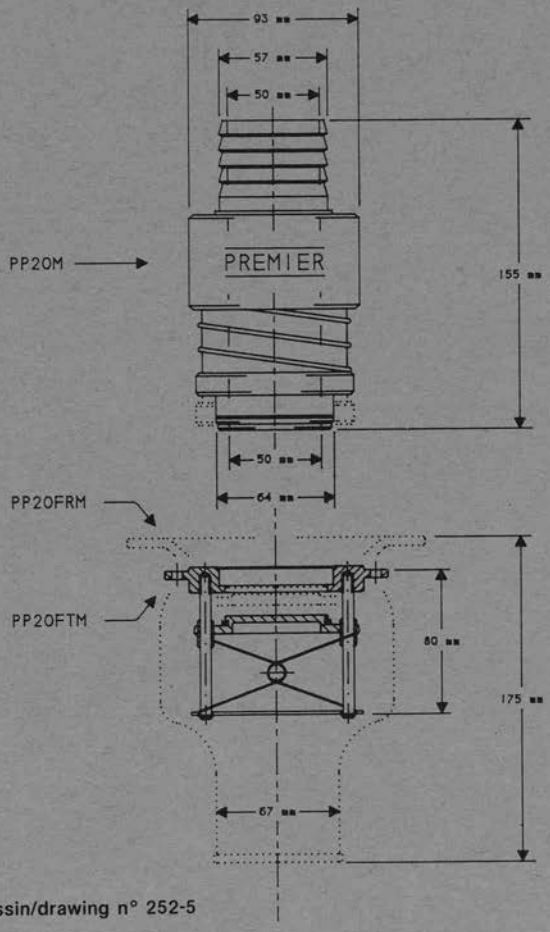
C : Plan de joint ; tolérance de surfaçage : 0,05 mm/Gasket facing plane, unswerving tolerance : 0.05 mm.

D : Chanfrein 1^{+1}_{+0} à 45° ou arrondi (rayon 1 mm)/
Bevel cut 1^{+1}_{+0} at 45°, or rounded at 1 mm radius.

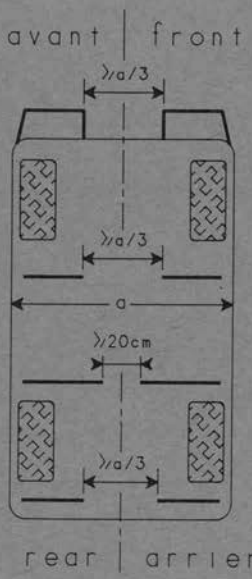
L'attention des fabricants de l'accoupleur (côté-stands) est attiré sur le fait que la partie en contact avec la surface C de l'orifice de remplissage doit être munie d'un joint Vitton. Aussi, il est recommandé de ne pas dépasser un guidage initial, avant l'ouverture des soupapes, de 18 mm, de telles sorte qu'à l'ouverture maximale autorisée de la soupape (22 mm) la pénétration totale ne dépasse pas 40 mm, laissant ainsi 5 mm minimum de tolérance.

The attention of the manufacturers of the coupling (pit-side) is drawn to the fact that the part in contact with the area C of the filler must be provided with a Vitton joint. It is advised not to exceed an initial locating penetration of 18 mm, before the opening of the valve, so that, with the valve open to the authorised maximum (22 mm), the total penetration does not exceed 40 mm leaving thus a minimum of 5 mm tolerance.

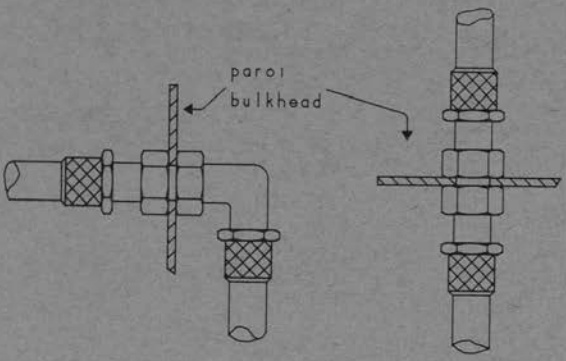




Dessin/drawing n° 252-5



Dessin/drawing n° 252-6



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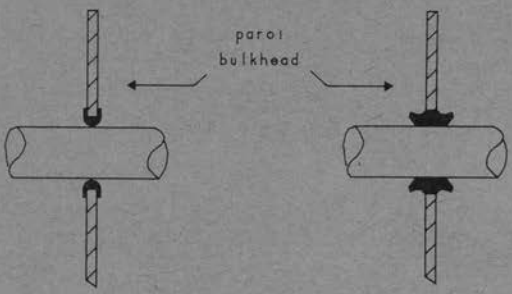

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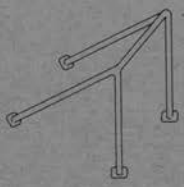

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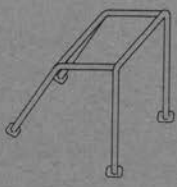

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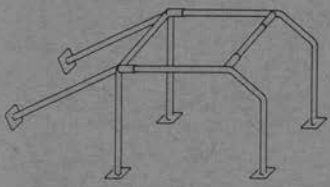

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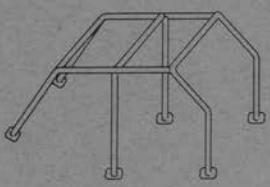

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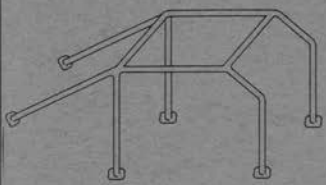

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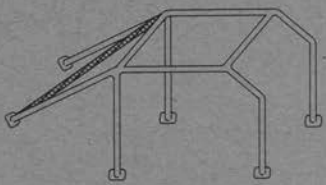

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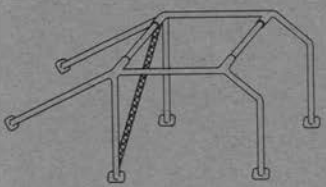

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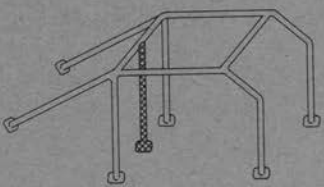

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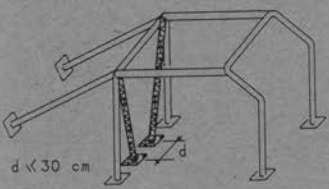

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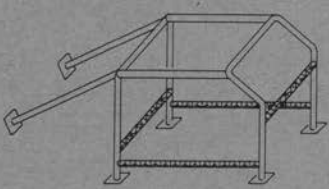

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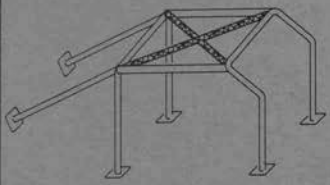
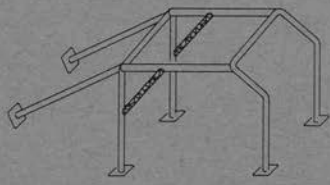


Dessin/drawing n° 253-13



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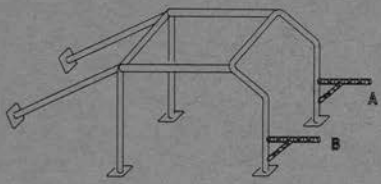
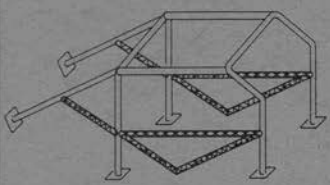


A et B sont les ancrages de suspension
A and B are the suspension anchorage points

Dessin/drawing n° 253-15



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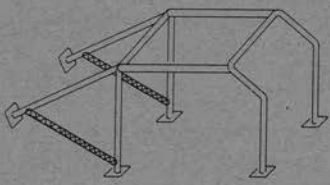

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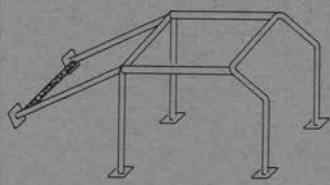

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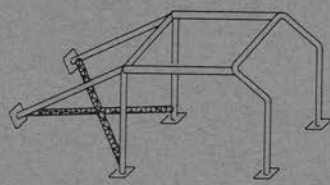

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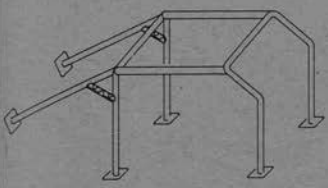

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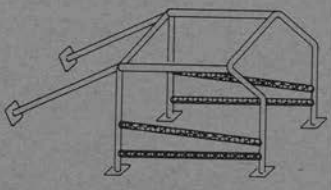

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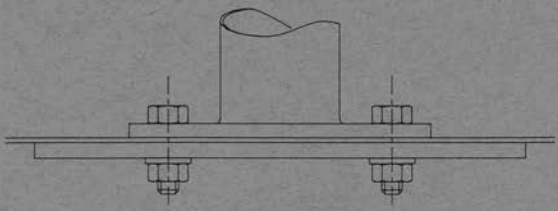
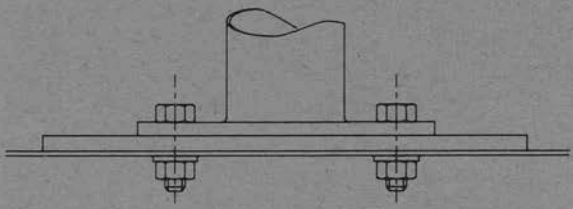


Dessin/drawing n° 253-22



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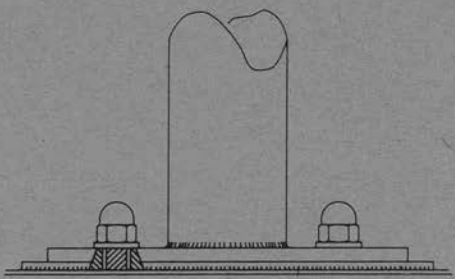

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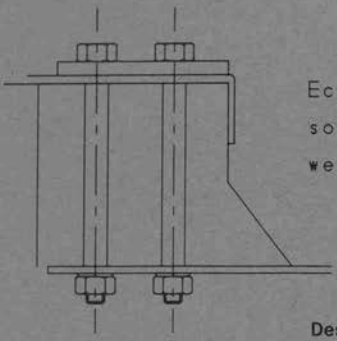
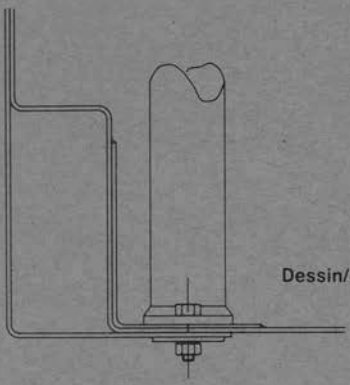


Ecrous rivetes ou soudes/Rivetted or welded nuts

Dessin/drawing n° 253-25



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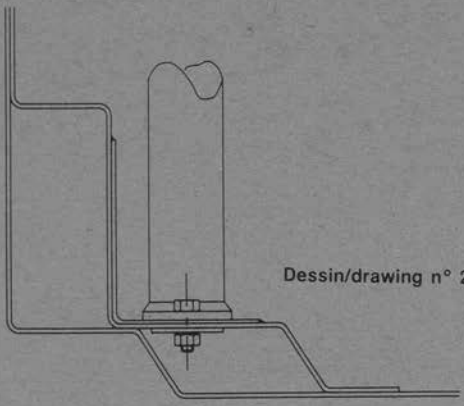

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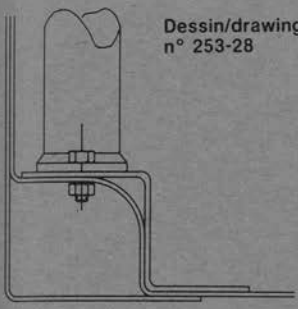

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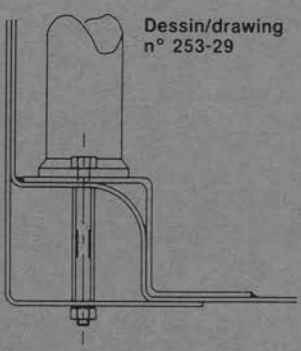

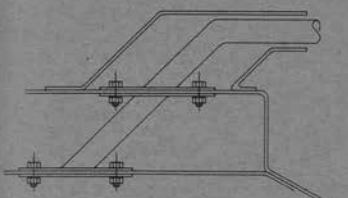

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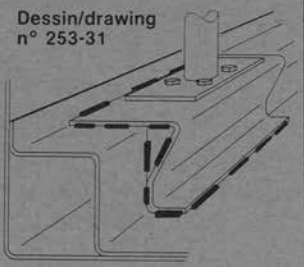
Dessin/drawing n° 253-31



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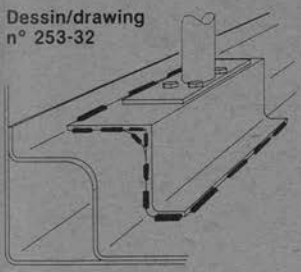

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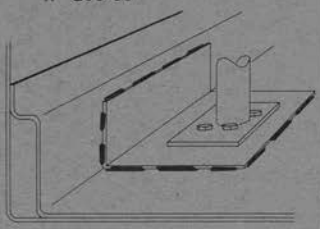

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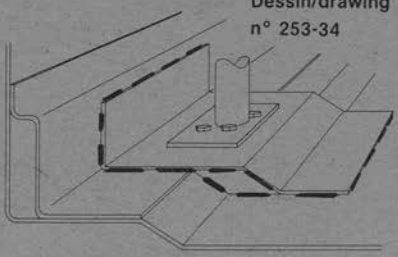

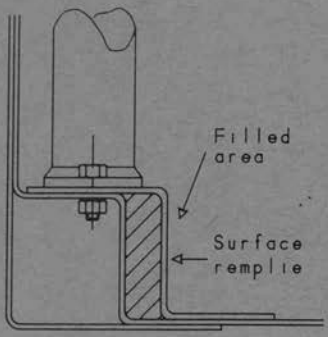

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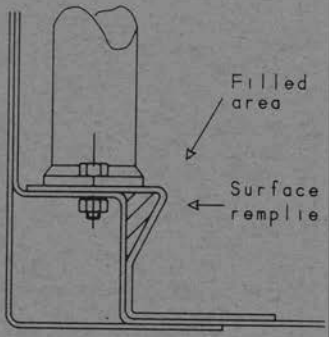

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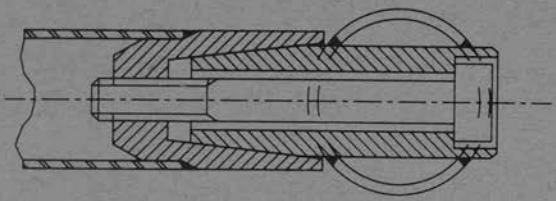

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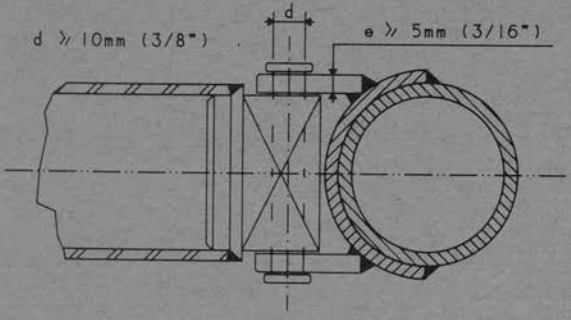

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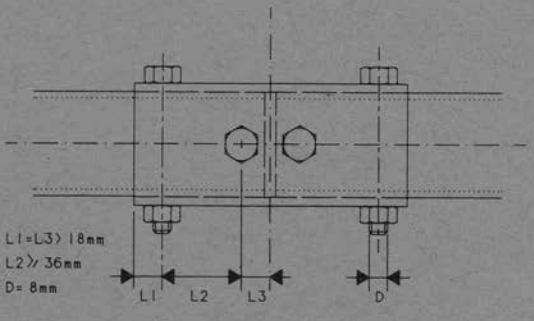

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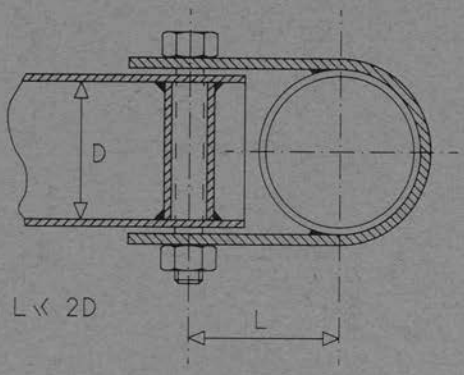

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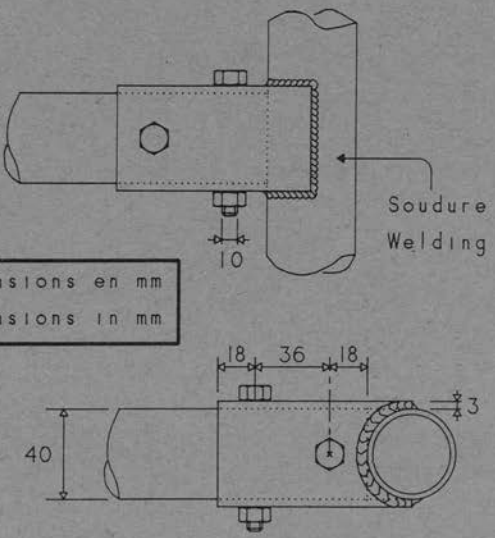
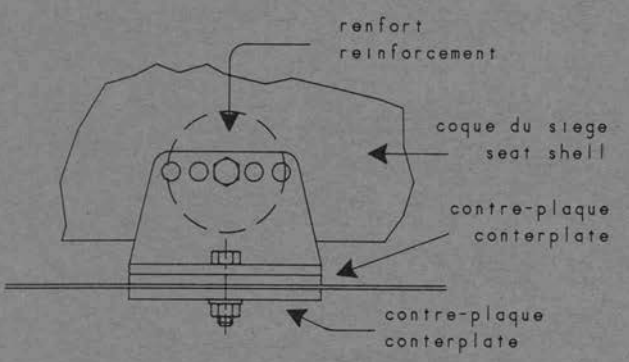
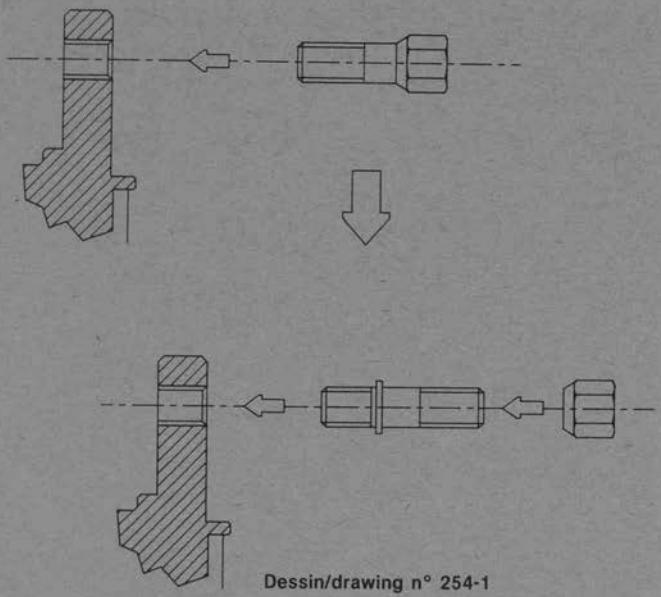


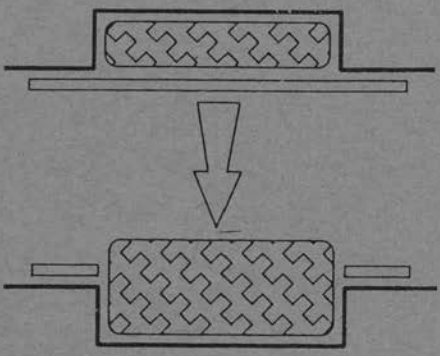
Dessin/drawing n° 253-41



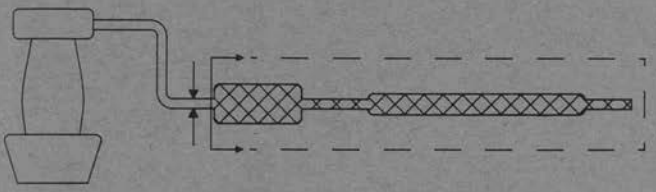
Dessin/drawing n° 253-52



Dessin/drawing n° 254-1

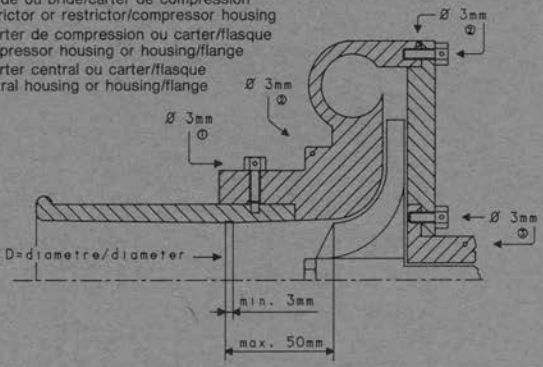


Dessin/drawing n° 254-2



Dessin/drawing n° 254-3

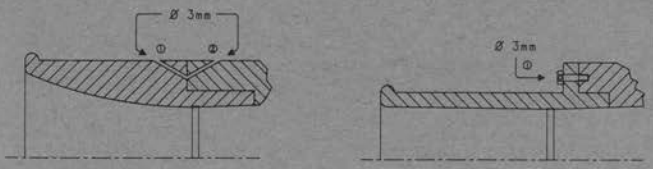
① Trou pour bride ou bride/carter de compression
Hole for restrictor or restrictor/compressor housing
② Trou pour carter de compression ou carter/flasque
Hole for compressor housing or housing/flange
③ Trou pour carter central ou carter/flasque
Hole for central housing or housing/flange



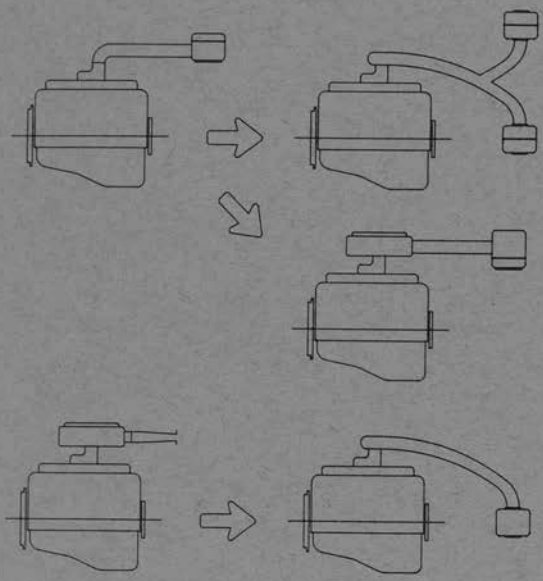
D = 38 mm max. pour Groupe A
D = 36 mm max. pour Groupe N

D = 38 mm max. for Group A
D = 36 mm max. for Group N

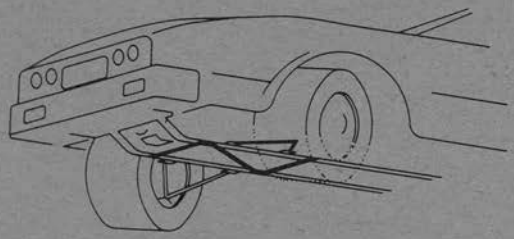
AUTRES POSSIBILITES/OTHER POSSIBILITES :



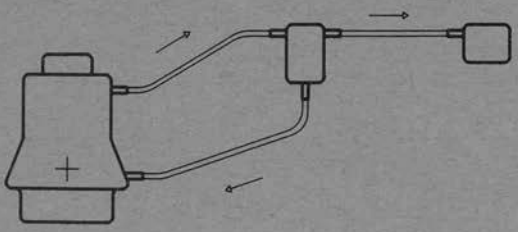
Dessin/drawing n° 254-4



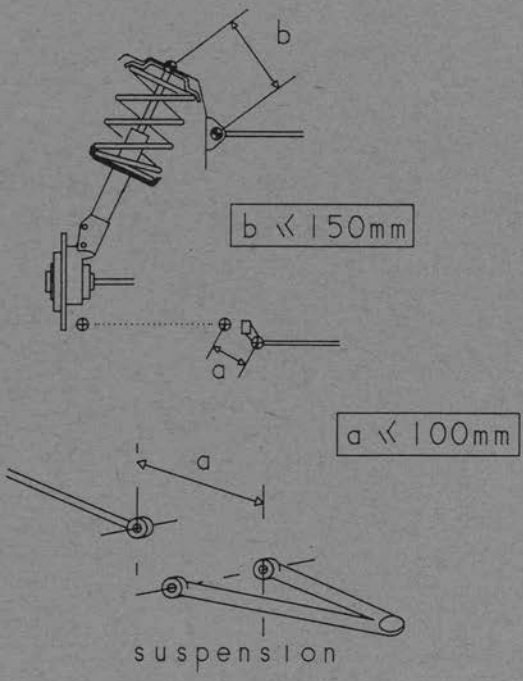
Dessin/drawing n° 255-1



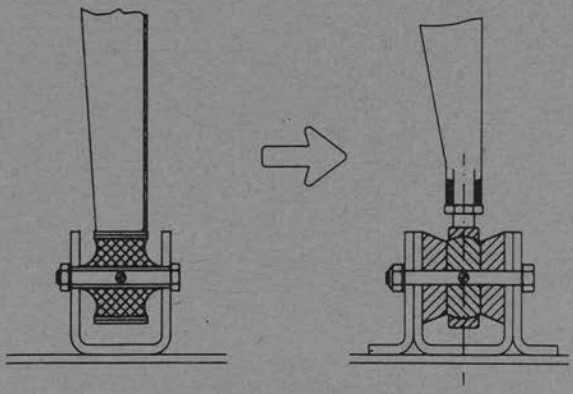
Dessin/drawing n° 255-2



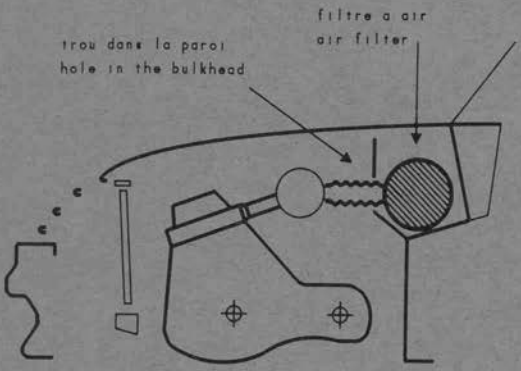
Dessin/drawing n° 255-3



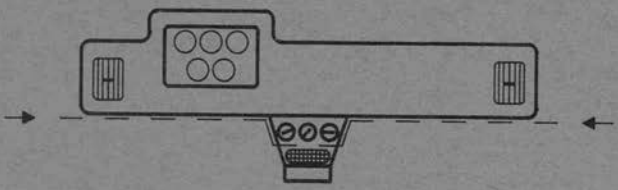
Dessin/drawing n° 255-4



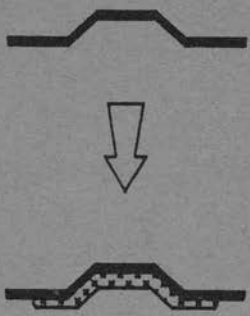
Dessin/drawing n° 255-5



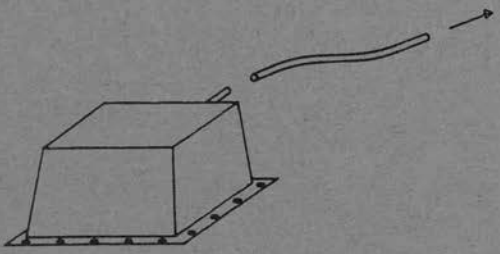
Dessin/drawing n° 255-6

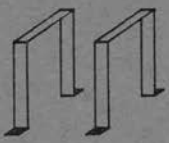


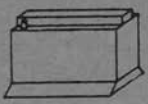
Dessin/drawing n° 255-7

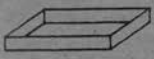


Dessin/drawing n° 255-8

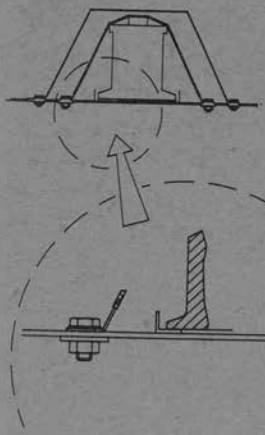




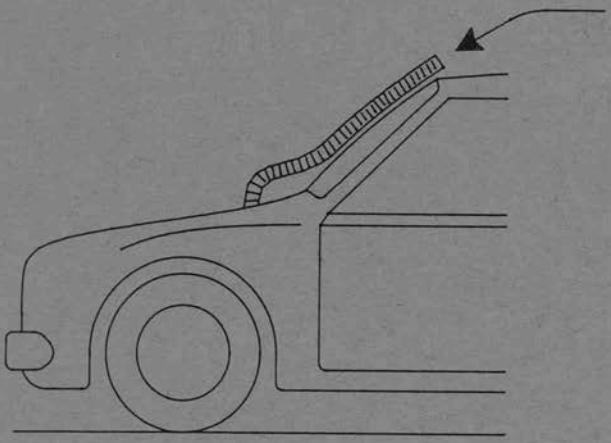




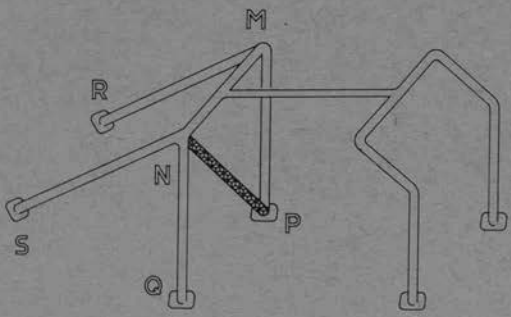
Dessin/drawing n° 255-10



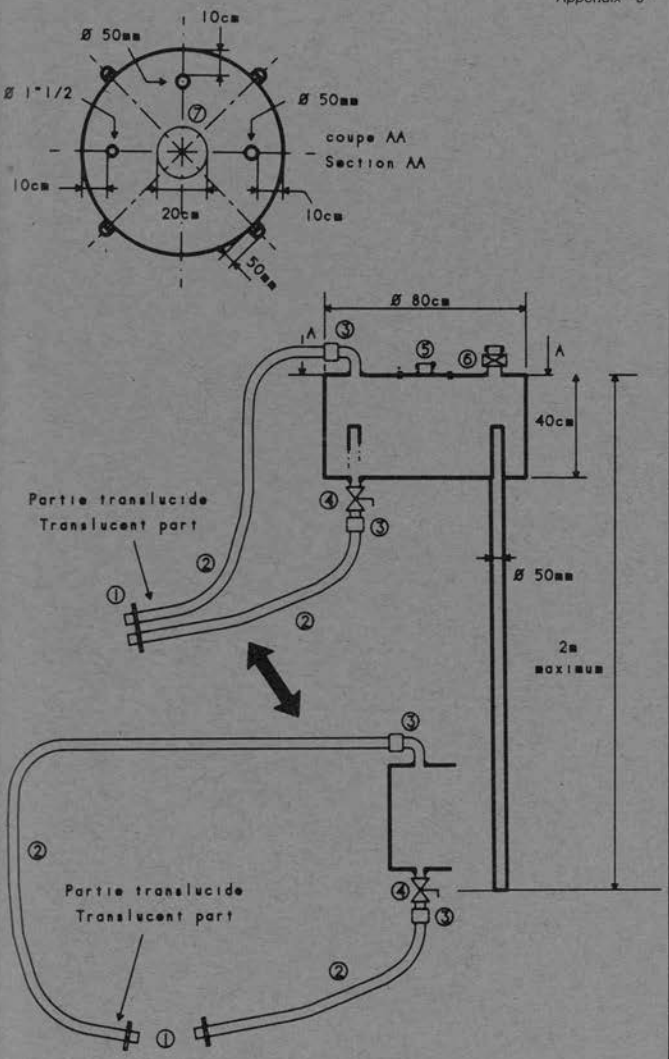
Dessin/drawing n° 255-11



Dessin/drawing n° 255-13

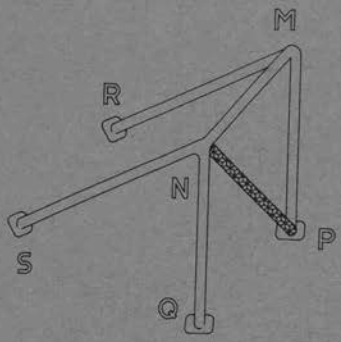


Dessin/drawing n° 257-1

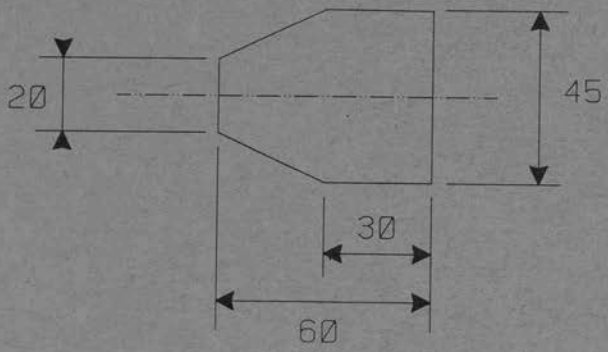


Dessin/drawing n° 257-2

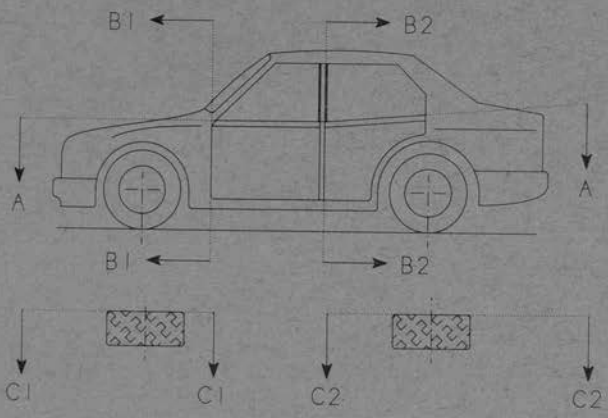
① Accoupleurs étanches combinés ou séparés ∅ 50 mm
Leakproof combined or separated couplings ∅ 2"
② Flexible ∅ int. 1"1/2
Hose internal diam. 1"1/2
③ Raccord rapide ∅ 1" 1/2
Quick coupling ∅ 1" 1/2
④ Vanne quart-de-tour ∅ 1" 1/2
Quarter turn valve ∅ 1" 1/2
⑤ Bouchon rapide de remplissage ∅ 50 mm
Quick filling cap ∅ 2"
⑥ Arrête-flamme/event ∅ 50 mm
Flame arrestor/vent ∅ 2"
⑦ Trappe de visite ∅ 200 mm
Inspection hole ∅ 8"



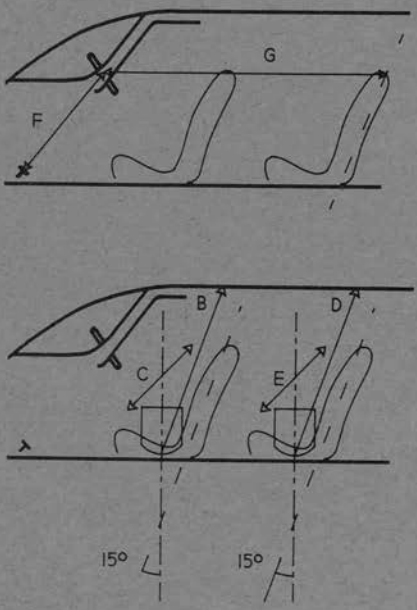
Dessin/drawing n° 259-1



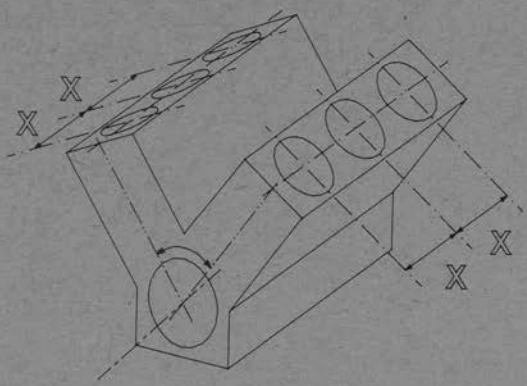
Dessin/drawing n° 259-2



Dessin/drawing n° 261-1

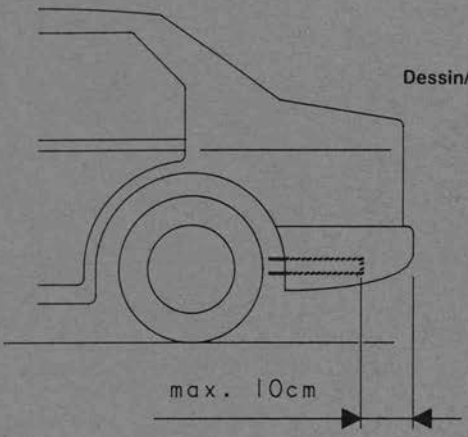


Dessin/drawing n° 261-2

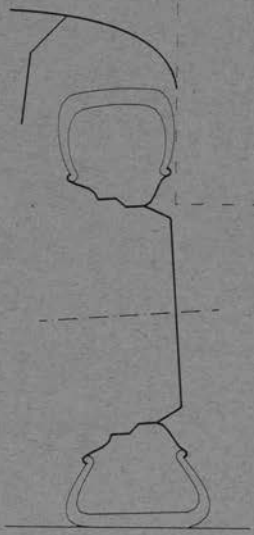


Dessin/drawing n° 261-3

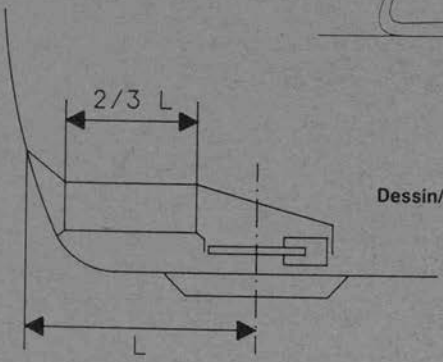
Dessin/drawing n° 261-4

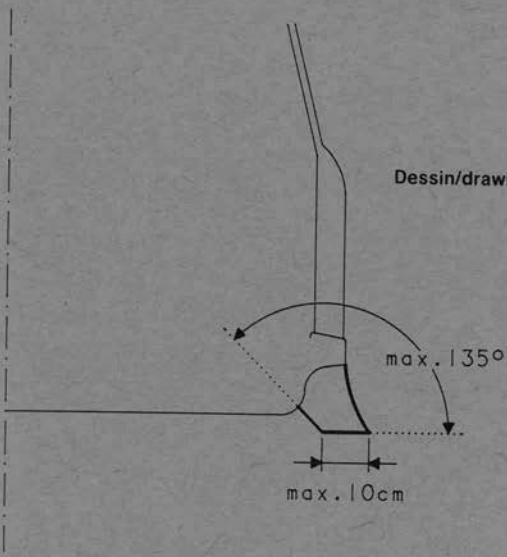


Dessin/drawing n° 261-5

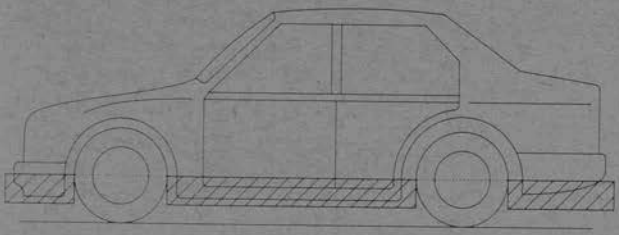


Dessin/drawing n° 261-6

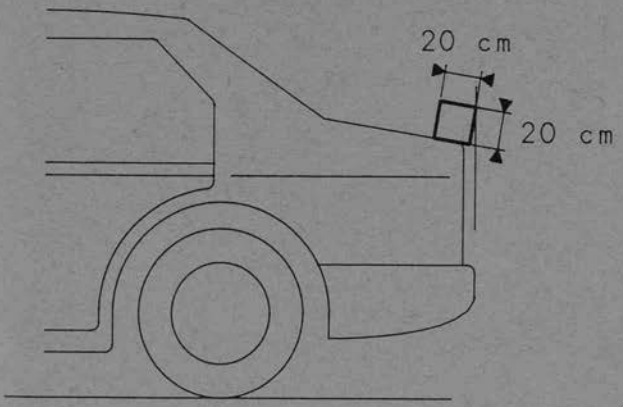




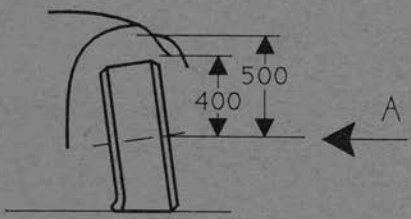
Dessin/drawing n° 261-7



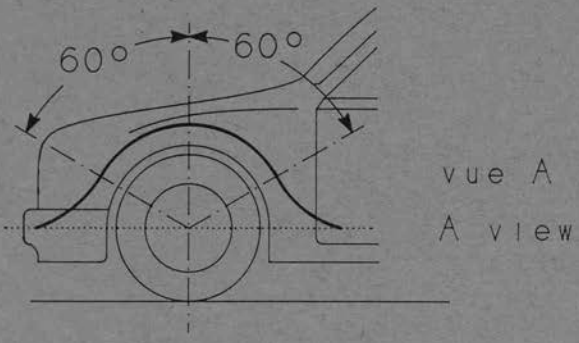
Dessin/drawing n° 261-8

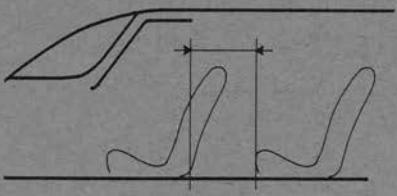


Dessin/drawing n° 261-9

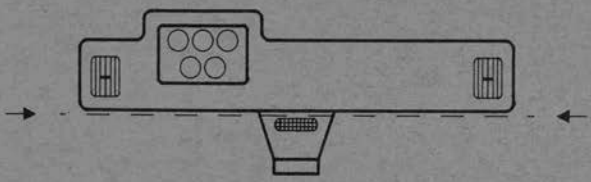


Dessin/drawing n° 261-10

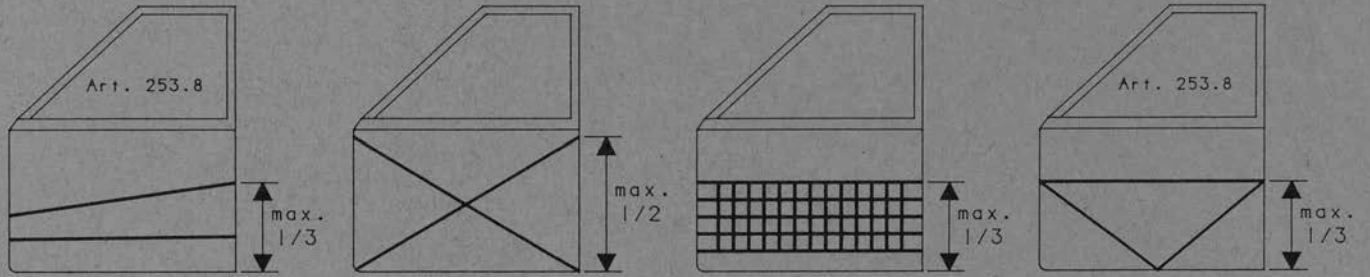




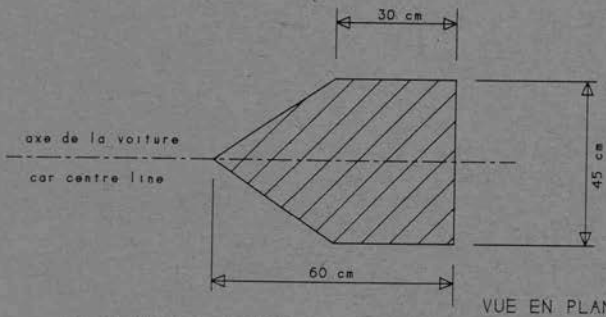
Dessin/drawing n° 261-11



Dessin/drawing n° 261-12

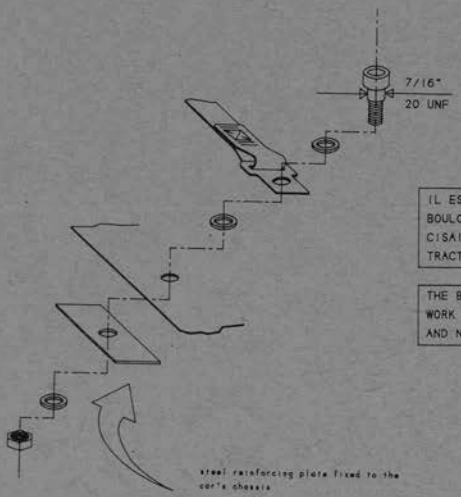


Dessin/drawing n° 261-15

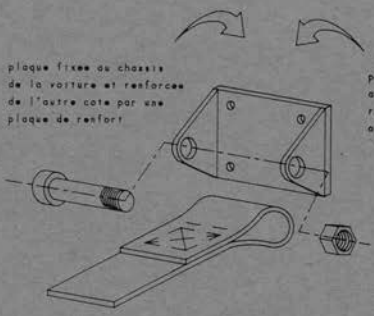


VUE EN PLAN
PLAN VIEW

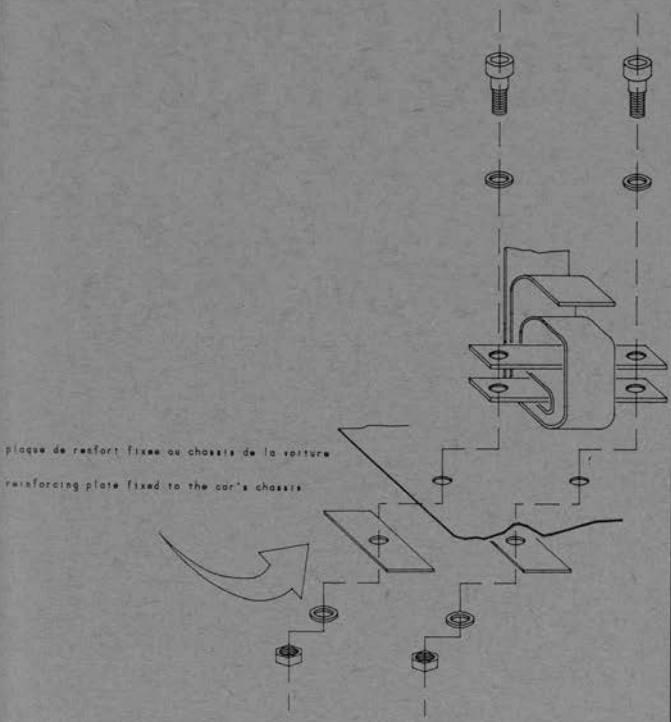
Dessin/drawing n° 274-5



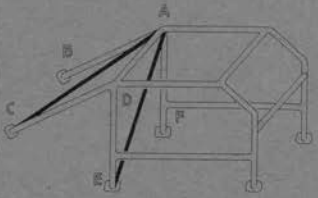
Dessin/drawing n° 283-3



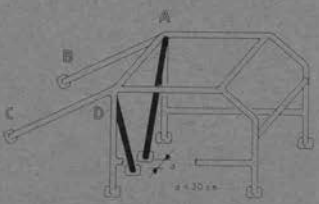
Dessin/drawing n° 283-4



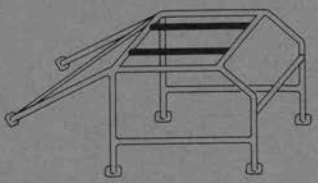
Dessin/drawing n° 283-5



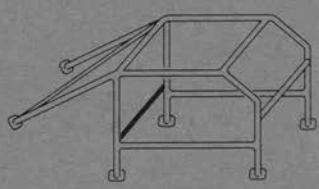
Dessin/drawing n° 283-6



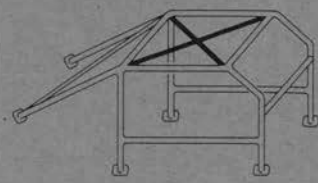
Dessin/drawing n° 283-6A



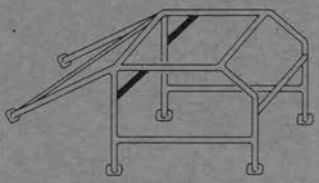
Dessin/drawing n° 283-7



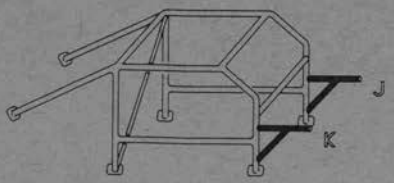
Dessin/drawing n° 283-8



Dessin/drawing n° 283-9

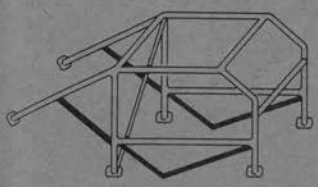


Dessin/drawing n° 283-10

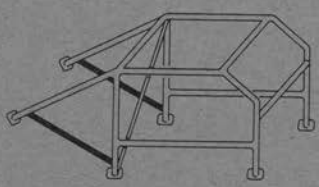


J et K sont les ancrages de suspension
J and K are the suspension anchorage points

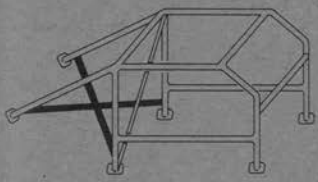
Dessin/drawing n° 283-11



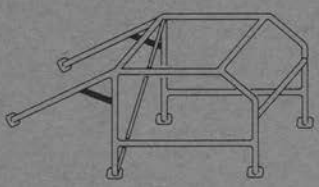
Dessin/drawing n° 283-12



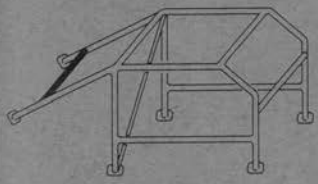
Dessin/drawing n° 283-13



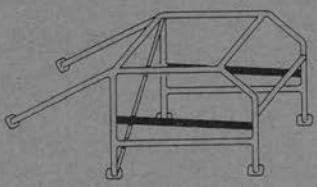
Dessin/drawing n° 283-14



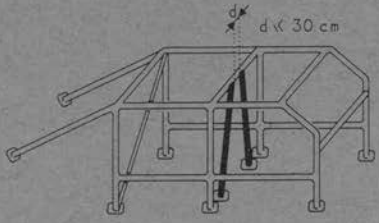
Dessin/drawing n° 283-15



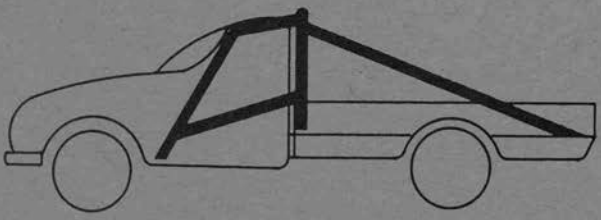
Dessin/drawing n° 283-16



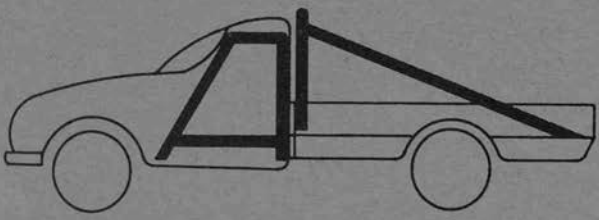
Dessin/drawing n° 283-17



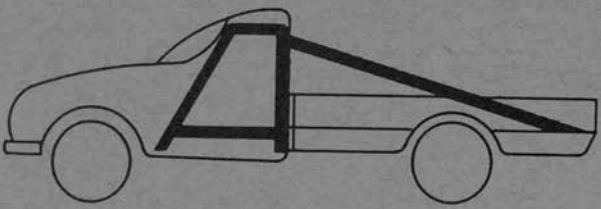
Dessin/drawing n° 283-17A



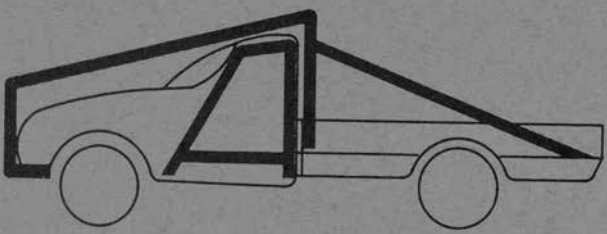
Dessin/drawing n° 283-38



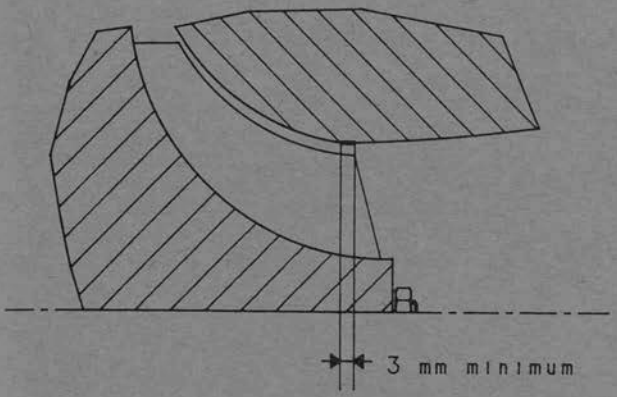
Dessin/drawing n° 283-39



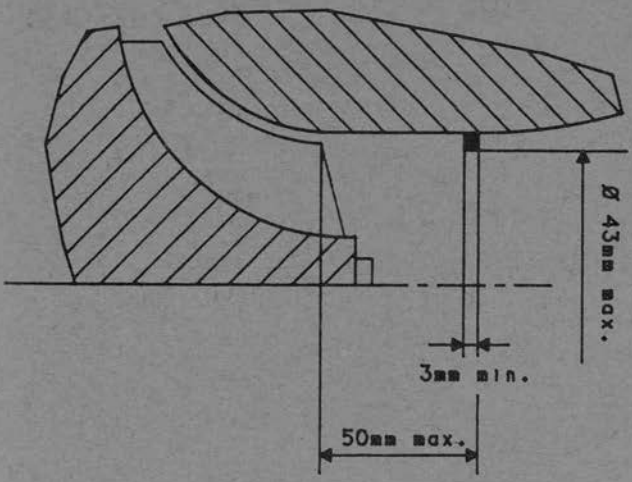
Dessin/drawing n° 283-40



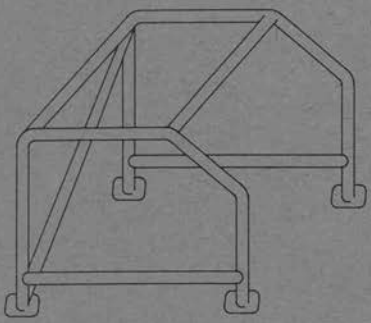
Dessin/drawing n° 283-41



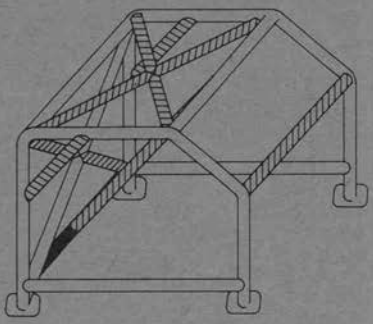
Dessin/drawing n° 285-1



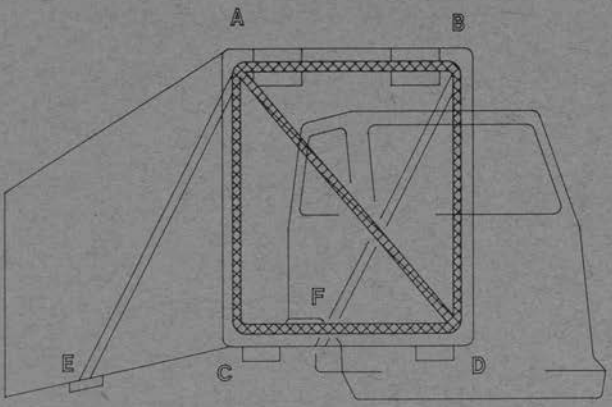
Dessin/drawing n° 286-1



Dessin/drawing n° 287-1



Dessin/drawing n° 287-2



Dessin/drawing n° 287-3