

## **"LE MANS" PROTOTYPE ("LM"P & "LM"GTP)**

### **ART.1 - DEFINITIONS**

**1.1 - "LE MANS" PROTOTYPE** ("LM"P / "LM"GTP) is a racing car with no production minimum required and meeting the prescriptions regarding :

- a/ The safety regulations issued by FIA ;
- b/ The Technical Regulations issued by the **AUTOMOBILE-CLUB DE L'OUEST (ACO)**.

**1.2 - "LE MANS" PROTOTYPE** category includes :

1.2.1 - "LE MANS" PROTOTYPE ("LM"P) : open car.

1.2.2 - "LE MANS" GT PROTOTYPE ("LM"GTP) : closed car :

- a/ With a windscreen and one door on each side ;
- b/ Complying with the criteria :
  - b.1 - Defined by ACO for the construction ;
  - b.2 - Of the "Full Type" road homologation regarding :
    - b.2.1 - External protruding bodywork elements (ECE Directive # 70/387),
    - b.2.2 - Forward field of vision (ECE Directive # 77/649), measurements made with a **175 cm standard dummy**.

### **1.3 - Non conventional specifications :**

Cars the specifications of which are considered today as unusual in motor racing may be eligible on the basis of special regulations made by the ACO so as to maintain the balance of performance between the cars.

### **1.4 - Homologation Form :**

1.4.1 - Prototypes "LM"P and "LM"GTP cars shall comply with the homologation form filled by the manufacturer and agreed after the inspection carried out by the ACO.

1.4.2 - Modifications : *the specifications listed in the Homologation Form and all the aerodynamic elements of the car can be changed only by the car manufacturer and with the ACO agreement.*

1.4.3 - Once the Homologation Form has been agreed by ACO, the manufacturer shall give a copy of it to the owner of every car sold *after filling the first page (chassis number, name and address of the owner)*

1.4.4 - A car is not permitted to undergo scrutineering before taking part in an event if it has not been homologated by the ACO.

1.4.5 - The Homologation form must be presented by the competitor during scrutineering.

### **1.5 - Bodywork :**

1.5.1 - The bodywork concerns all entirely sprung parts of the car in contact with the external air stream apart from:

- a/ The underbody of the car ;
- b/ Parts in relation to the mechanical functioning of the engine, of the drive train and of the running gears.

1.5.2 - As viewed from above (plan view), from the sides (elevation), from the front and from the rear, the bodywork shall not allow mechanical parts to be seen.

1.5.3 - Movable bodywork parts/elements are forbidden when the car is in motion.

### **1.6 - Air intakes :**

1.6.1 - Air intakes are part of the bodywork.

1.6.2 - If air intakes or air extractors make mechanical parts visible, they shall be fitted with mesh about 10 mm (to Scrutineers' appreciation).

### **1.7 - Weight :**

1.7.1 - Except for the weighing procedure used during the practice sessions, it is the weight of the car with no driver and no fuel on board.

1.7.2 - During the event, changing a bodywork element or a mechanical part with a heavier or lighter one is forbidden.

### **1.8 - Cockpit :**

Internal volume of the car to accommodate the driver and the passenger.

#### **• Prototype "LM"GTP :**

1.8.1 - The cockpit is the internal volume inside the main structure which is defined by the top of the car, the floor, the doors, the side panels, the glass areas and the front and rear bulkheads.

1.8.2 - The cockpit minimum dimensions : windscreen, rear window, doors, height over the seats, etc. must meet the provisions of the FIA International Sporting Code (Appendix J : GT Class) and be agreed by ACO.

### **1.9 Automobile Make :**

1.9.1 - An automobile make corresponds to a **complete car**.

1.9.2 - The name of the **chassis** manufacturer shall always precede the name of the **engine** manufacturer if different.

**1.10 - Electronic systems :**

- 1.10.1 - Any automatic or electronic control system or function is forbidden : chassis control, automatic or semi-automatic transmissions, electrical clutches, final drive differential system, shock absorbers, suspension or ride height adjustment, four wheel steering, etc.
- 1.10.2 - A simple open-loop **non automatic** electrical switch **activated by the driver** acting on one or more system(s) is not considered to be an electronic control.
- 1.10.3 - A **closed-loop** electronic control system is (FIA wording) a system in which :
- An **actual value** (controlled variable) is continuously monitored ;
  - The "feed back" signal is compared with a **desired value** (reference variable) ;
  - The system is then automatically adjusted according to the result of that comparison.
- 1.10.4 - Unless specified in these regulations and apart from engine monitoring systems, no such system is permitted.

**1.11 - Telemetry :**

**Apart from any other process**, are permitted :

- Legible messages on a signaling pit board.
- The driver's body movements.
- Telemetry signals from the car to the pits (one direction).
- "Lap trigger" signals for the start or the end of a lap :
  - Lap marker transmitters (lap triggers) shall be autonomous and not connected to any pit equipment (wires, cable, optical fibers, etc.) ;
  - These transmitters shall operate with a carrier frequency above **10 Ghz** (radio/optical) and a beam half angle lower than **36°**, when measured at the **3 dB** point ;
  - The only function of these transmitters is to mark the laps.
- Two way verbal communications between the driver and his pit.

- The use of any other communication device is only permitted after the agreement and under the control of the Organiser.

**ART. 2 - REGULATIONS**

**2.1** - What is not expressly permitted by the Automobile Club de l'Ouest is prohibited.

**2.2** - Eligibility of a car is within the exclusive competence of the ACO.

**2.3** - Changes made on grounds of safety will be enforced **without notice** and **immediately**.

**ART. 3 - BODYWORK & DIMENSIONS****3.1 - Dimensions :**

Except what is permitted by Art. 3.6 below, inside and outside measurements (length, width, overhangs, wheelbase, windscreen, windows, etc.) and the general shape of the bodywork elements shall be maintained as in the ACO Homologation form.

**3.1.1 - Dimensions :**

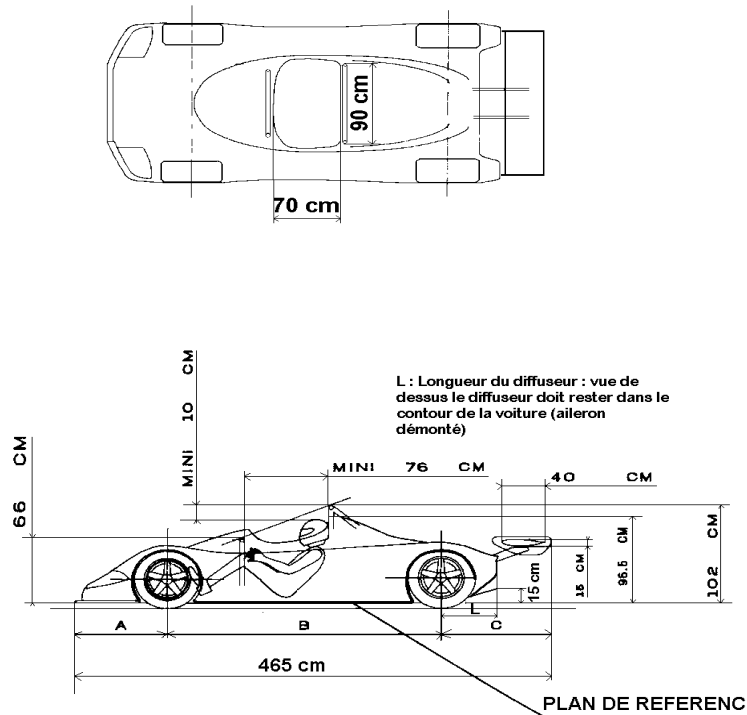
	<b>"LM"P</b>	<b>"LM"GTP</b>
a/ Wheelbase :	Free	Free
b/ Length (overall) :	<b>465 cm</b> maximum (overhang rear wing included)	<b>465 cm</b> maximum (rear wing over bodywork included)
c/ Width (overall) :	<b>200 cm</b> maximum	<b>200 cm</b> maximum
d/ Height :	<ul style="list-style-type: none"> <li><b>"LM" P</b> : no part of the bodywork, including the rear wing, is permitted more than <b>96,5 cm</b> above the reference plane (See Art. 3.5 : flat bottom) ;</li> <li><b>"LM"GTP</b> : height defined by the FIA International Sporting Code (Appendix J - Homologation regulations for FIA GT Class) and Art. 1.2.2.b.2.2 above (forward field of vision).</li> </ul>	

**3.1.2 - Ground clearance :**

- Any system, other than the suspension, which is designed so as to modify the ground clearance is not permitted (Art. 10.2 below) ;
- No sprung part of the car is allowed :
  - Lower than the plane generated by the flat bottom save the three mandatory blocks described in Art. 3.5.6. below ;
  - To touch the ground when the car is moving :
    - Penalty** : car black flagged by the Race Control.
- Rub blocks** are not permitted.

**3.1.3 - Overhangs :**

- The wheelbase as registered in the ACO Homologation form cannot be modified ;
- When added, front plus rear overhangs must not exceed **70%** of the wheelbase :  
( $A + C \leq 70\% B$ ) ;
- The difference between front and rear overhangs must be less than **10%** of the wheelbase:  
( $A - C$  or  $C - A \leq 10\% B$ ).



### 3.2 - Doors :

3.2.1 - "LM" P : optional.

3.2.2 - "LM" GTP : minimum dimensions of the doors (overall figures) :

- a/ Height (vertical measure) ..... 55 cm
- b/ Width (horizontally) :
  - At the top of the glass ..... 40 cm
  - At the bottom of the glass .. 50 cm
  - At door sill level ..... 50 cm
- c/ Doors must provide a normal access to the cockpit ;
- d/ The extension of the windows over the top is taken into account neither for the measurements nor to assess accessibility ;
- e/ Opening (hinges) or locking (locks) devices designed to allow a quick release of the entire door in case of emergency need a prior written agreement from ACO ;
- f/ ACO is the only authority to assess the design of the doors.

### 3.3 - Windscreen & Glass areas :

3.3.1 - "LM"P : windscreen optional.

3.3.2 - "LM"GTP :

- a/ Windscreen : mandatory, made of one piece **laminated glass** or equivalent material approved by ACO :
  - The car undergoing homologation shall be fitted with a laminated glass windscreen ;
  - The scrutineers may ask the competitor to present a laminated glass windscreen.
- b/ Glass areas :
  - b.1 - Side and rear windows made of polycarbonate are permitted ;
  - b.2 - The side window, driver's side, may be replaced with a net ;
  - b.3 - Additional fasteners are recommended ;
  - b.4 - Openings may be made through the side windows the only purpose being to permit the cockpit **ventilation** and without hindering the driver's vision.
- c/ Mid or rear engine car :  
If the engine can be seen from outside, the glass between the cockpit and the engine compartment must be changed for a **metallic firewall** (Art. 16.6).

### 3.4 - Bodywork :

3.4.1 - It shall cover :

- a/ As viewed from the side : the whole circumference of the complete wheels (wheels and tyres) above the wheel centre line level with no empty space or cut-out in the bodywork :
  - Wheel arches must be open exclusively as viewed from outside.

- b/ As viewed from the rear : mechanical components and the gearbox shall not be visible above the horizontal plane passing through the wheel centre line :
- If this is the case, a wire mesh about 10 mm or louvers are mandatory.
- 3.4.2 - Engine covers must be fitted with **two safety fasteners** as a minimum, both clearly indicated (**red arrows** or any other contrasting colour).
- 3.4.3 - It must be possible to remove the engine covers **without the use of tools**.
- 3.4.4 - Bodywork joints in the vicinity of the refuelling coupling systems must be designed such as to prevent any leakage into the engine compartment or into the cockpit.
- 3.4.5 - Air intakes :
- a/ Air intakes the purpose of which is **to feed** the engine with air, **to cool** mechanical components (radiators, brakes, gearbox, etc.), and to provide **ventilation** for the driver and the engine compartment shall not induce aerodynamic effects ;
- b/ They must channel all the air stream on the components to be cooled ;
- c/ They shall not protrude beyond the perimeter of the bodywork as viewed from above ;
- d/ They shall not protrude more than **15 cm (20 cm** for the engine air intakes) over the surface of the bodywork :  
  - Measurement made vertically from the highest point of the air intake opening down to a horizontal bodywork element at least 10 cm wide across (to Scrutineers' assessment).
- e/ **"LM"GTP** :  
 On the top of the car, area defined by the upper line of the windscreen, the side windows and the rear window (\*), air intake(s) shall :  
 e.1 - Be located aft the highest point of the windscreen ;  
 e.2 - Be integrated into the curved line of the roof without making a too prominent bulge :  
  - "Snorkel type" air intakes are not permitted ;
 e.3 -The highest point on top of the car - not of the air intake - will be used as a reference to measure the maximum height of the rear wing ;  
 (\*) If there is no rear window, the roof of the car will be defined by a line across the car at the top of the side windows level.
- 3.4.6 - Air extractors : they are permitted :
- a/ On the front bonnet ;
- b/ On the rear valance (vertical panel coming down to the wheel centre line level) without protruding more than **20 mm** ;
- c/ On either side, without protruding beyond the perimeter of the car ;
- d/ They are mandatory above the front wheels without protruding more than **20 mm** (louvers) :  
  - Total area of the openings : **25 sq. in. (160 cm<sup>2</sup>)** as a minimum on each side.
- 3.5 - Flat bottom (Reference plane) :**
- 3.5.1 - A flat bottom, continuous and rigid is mandatory :
- a/ Underneath and across the total width of the car between the front and rear wheel centre lines ;
- b/ It must be an integral part of the main structure/survival cell (tub) as a minimum over a rectangular area the measurements of which are 70 cm (longitudinally) x 90 cm (across) :  
  - No air stream is permitted to be channelled on top of the area such defined ;
- c/ The plane underneath the flat bottom will serve as a **Reference Surface** for checking all vertical height measurements.
- 3.5.2 - Except the rear edge between the wheels which must remain flat, the flat bottom may be curved upwards (maximum radii : **5 cm**) :  
 a/ As to join up the bodywork ;  
 b/ Forward and over the width of the rear wheels.
- 3.5.3 - The flat bottom must not protrude beyond the perimeter of the bodywork as viewed from above.
- 3.5.4 - Areas of the flat bottom over which air streams are channel shall be covered with an extension of :  
 a/ Either the bodywork ;  
 b/ Or a main structure panel being part of the chassis/body unit ;  
 c/ These extensions must be solid and must cover the whole area of the flat bottom ;  
 d/ This does not apply to the area on top of the flat bottom when it is an integral part of a duct or tunnel used for channelling air for cooling a mechanical element.
- 3.5.5 - The only openings permitted in the flat bottom are the gaps made necessary for the wheel movements (suspension travel and steering), air jack holes, closed hatches (maintenance operations) and the overflow fuel pipe.  
  - Transponders : cf. appendix C
- 3.5.6 - Ground clearance :  
 A block made of hard material shall be affixed underneath the flat bottom :  
 a/ either side of the rearmost edge of the flat bottom and as close as possible of the wheel clearance ;  
 b/ *at the junction of the centre line of the car and the rear axle centre line.*  
 Measurements of these three blocks **with no bevelled edges** are :  
  - Width : 20 mm (across)
  - Height : 20 mm (vertically)
  - Length : 100 mm (longitudinally)

### 3.6 - Aerodynamic devices :

3.6.1 - Forward the front wheel centre line, aft and below the rear wheels centre line, no bodywork or underbody element having a **wing profile** (\*) is permitted :

(\*) "Wing profile" : section generated by two arcs with different curves joining a leading edge at the front to a trailing edge at the rear, the purpose being to exert an aerodynamic effect, lift or down force.

3.6.2 - Forward of the front wheels centre line, only bodywork panels having parallel planes and a constant thickness are permitted.

Two aerodynamic elements maximum can be added in front of the front fenders provided that :

- They do not obstruct the driver's view
- They do not mask the headlights ;
- They are not situated more than 600 mm above the plane generated by the flat bottom.
- They are approved by the manufacturer and the ACO (Homologation form of the car)

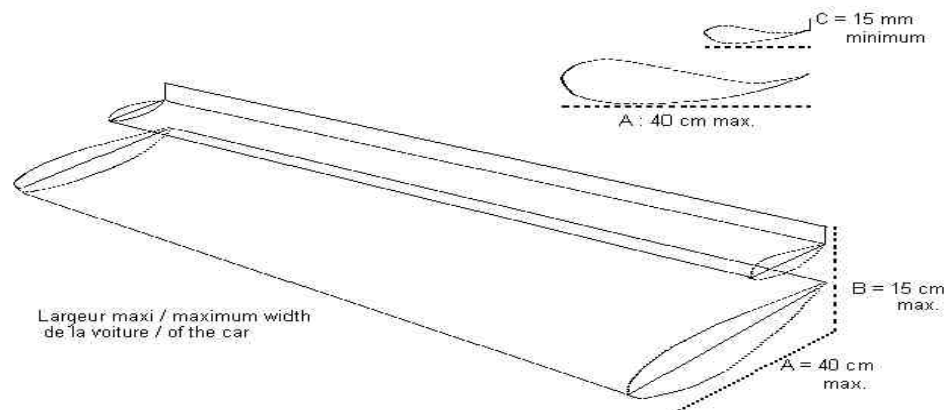
#### 3.6.3 - Rear diffuser :

An inclined panel (diffuser), **perfectly flat**, delimited by **square angles** and with one (two) opening(s) for the pneumatic jack(s) is permitted :

- a/ In the space existing between the rear edge of the flat bottom and the vertical plane formed by the rearmost element of the **bodywork**, the car standing against a wall ("LM" P : rear wing removed) ;
- b/ Between the vertical planes formed by the inside faces of the rear wheels :
  - Maximum width : **100 cm** measured inside the vertical external fins (See Art. 3.6.3.e) ;
- c/ As viewed from above, the rear diffuser shall remain within the contour of the car ("LM" P : rear wing removed) ;
- d/ No part of the diffuser is permitted more than **150 mm** above the plane generated by the flat bottom :
  - d.1 - No element or bodywork panel, solid or not, is permitted to extend rearward the inclined panel of the diffuser up to the limit defined by the contour of the car ;
  - d.2 - The trailing edge of the diffuser shall extend rearwards to the vertical of the bodywork perimeter ;
- e/ Vertical and flat **fins** may be added provided that :
  - e.1 - They are parallel to the longitudinal centre line of the car ;
  - e.2 - They have flat and parallel surfaces ;
  - e.3 - They form 90° angles with the inclined panel of the diffuser.

#### 3.6.4 - Rear wing :

- a/ The primary device inducing down force (negative lift) shall be a single aerodynamic device, adjustable, mounted at the rear of the car, with **two wing profiles as a maximum** (main wing and flap) ;



- b/ This rear wing (end plates included) must :

b.1 - Be framed by a volume measuring **40 cm** horizontally (A) x **15 cm** vertically (B) x **maximum width** of the car ;

b.2 - Be mounted such that no part of the wing is :

- "**LM**"P : more than **96,5 cm** above the reference plane ;
- "**LM**"GTP : higher than the **top** of the car (air intake not being taken into consideration : Art. 3.4.5.e.3 above) ;

b.3 - Not be adjustable from within the cockpit ;

b.4 - A rigid trim tab/gurney (C) is mandatory. It shall be :

- **15 mm** high as a minimum above the wing plane ;
- At right angle to the plane defined by the top of the main wing or the flap ;
- Solidly fixed all along the wing by means of tools if the gurney is not an integral part of the main wing or the flap. A locking system at each end is not enough.

b.5 - The section of the rear wing shall be **symmetrical** in relation to the longitudinal centre line of the car.

c/ Vertical supports and end plates :

c.1 - Length : **40 cm** maximum horizontally ;

- c.2 - Height (end plates) : **15 cm** maximum vertically ;  
 c.3 - The supports shall be **165 cm** apart as a maximum ;  
 c.4 - Surfaces shall be flat and parallel to the longitudinal centre line of the car ;  
 c.5 - The leading edge may be made round (constant radius) and the rear edge (trailing edge) may be beveled no more than **20 mm** ;  
 c.6 - The rear wing must be rigidly attached to the main structure of the car and not just to the bodywork.

**ART. 4 - WEIGHT****4.1 - Minimum weight :**

"LM"P 900	"LM"GTP	"LM"P 675
900 kg	900 kg	675 kg

**4.2 - Ballast :**

- 4.2.1 - Movable ballast is not permitted.  
 4.2.2 - Fixing or removing of the ballast must only be possible with tools.  
 4.2.3 - Sealing the ballast by the Scrutineers must be possible.

**4.4 - Liquids :**

The weight may be checked at any time during the event with the quantity of liquids remaining in the tanks, but at the end of the practice sessions or the race the car will have all fuel drained before being weighed.

**ART. 5 - ENGINE****5.1 - Engine specifications :**

	"LM" P 900	"LM" GTP	"LM" P 675
5.1.1 - Engine :	free	free	free
5.1.2 - Displacement limit (*)	see Appendix A	see Appendix A	see Appendix A
a/ Normally aspirated engines :	6000 cm <sup>3</sup>	6000 cm <sup>3</sup>	3400 cm <sup>3</sup>
b/ Turbo/Supercharged engines	4000 cm <sup>3</sup>	4000 cm <sup>3</sup>	8 cyl. maximum 2000 cm <sup>3</sup> (**) 6 cyl. maximum

(\*) Engines not commonly used in motor racing may be eligible according to Art. 1.3 above.

(\*\*) Only one single stage charging device and air/air and/or air/water heat exchanger.

- 5.1.3 - Inlet manifolds must be fitted with **air restrictors** made of metal or metal alloy the diameter of which shall be **minimum 3 mm** in length (Appendix A below).

**5.2 - Turbocharged engines :**

- 5.2.1 - Air restrictors location : a one piece and airtight right cone must be fitted between the restrictor(s) and the inlet diameter of the charging device :  
 a/ The cone shall have a mandatory opening of **7°** minimum ;  
 b/ To each base of the cone, over **10 mm** maximum in length, a round shape is permitted within the diameter of both the restrictor(s) and the charging device inlet.  
 5.2.2 - Charging devices incorporating ceramic components, variable diameter inlets and adjustable internal vanes are forbidden.  
 5.2.3 - Boost pressure : see Appendix A.

**5.3 - Temperature of the charge :**

- 5.3.1 - Apart from intercoolers, 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 :  
 • Apart from pipes feeding an air/water heat exchanger, the pipes between the supercharging device, the intercooler and the manifold are free, but their only function must be to channel air.  
 5.3.2 - Internal and/or exterior spraying or injection of water or any substance whatsoever is forbidden other than fuel for the normal purpose of combustion in the engine.

**5.4 - Intake system : free**

- 5.4.1 - Are not permitted :  
 a/ Variable length manifolds (except for rotary engines) ;  
 b/ Variable valve timing unless original on the production engine of a manufacturer approved by ACO.  
 5.4.2 - Throttle : only a **direct mechanical** linkage (rod, cable) is permitted between the throttle pedal and the supply control system (fuel and/or air) of the engine.  
 5.4.3 - Air box(es) :  
 a/ All the air feeding the engine must pass through the restrictor(s) ;  
 b/ Air tightness must be total in all circumstances : no pipe is allowed to intrude into or to exit from the air box(es) ;  
 c/ Closing the intake system at restrictor(s) level must lead to stall the engine **immediately** ;  
 d/ If the air box(es) is(are) made of several parts, they shall be put together in an efficient way so as to ensure a total air tightness by means of a system approved by ACO ;

- e/ Air box(es) will be sealed by the Scrutineers ;
- f/ Any faulty functioning is the Competitor's responsibility.

### 5.5 - Exhaust system : SR

#### 5.5.1 - Noise level :

- a/ The noise generated by the car cannot exceed **110 dB(A)** at 3800 rpm, or at 3/4 maximum revs if less ;
- b/ Measurement is made at a distance of **0.5 m** and at a **45 degree** angle in relation to the exit point of the exhaust ;
- c/ In order to ensure that the maximum noise limits are permanent, they must not be cancelled by the exhaust gas pressure.

#### 5.5.2 - Exhaust pipe outlets : they must exit :

- a/ Aft the middle of the wheelbase ;
- b/ Within the contour of the bodywork as viewed from above.

### ART. 6 - PIPING AND FUEL TANKS

The fuel system is free provided the provisions in Art. 6.1, 6.2 and 6.3 are complied with.

#### 6.1. - Fuel tank(s) :

##### 6.1.1 - No part of the fuel tank(s) is allowed :

- a/ More than **675 mm** from the longitudinal centre line of the car ;
- b/ Outside the area between the front and rear wheel centre lines.

##### 6.1.2 - The fuel tank(s) must be surrounded by a crushable structure at least **10 mm** thick.

##### 6.1.3 - A **firewall** must separate the fuel cell(s) from the cockpit and/or the engine compartment.

##### 6.1.4 - The fuel tanks must be **rubber bladders** meeting or exceeding the FIA/FT3 specifications.

##### 6.1.5 - Rubber bladders must be made by manufacturers recognised by the FIA :

- A list of approved manufacturers is available from the FIA.

##### 6.1.6 - Rubber bladders shall have a printed **code** indicating the name of the manufacturer, the specifications and the date of manufacture.

##### 6.1.7 - No rubber bladder shall be used **more than 5 years** after its date of manufacture, unless inspected and recertified by the manufacturer for a new period not exceeding **2 years**.

#### 6.2 - Fittings and piping :

##### 6.2.1 - Any equipment included in the tank walls (air vents, inlets, outlets, tank fillers, inter tank connectors and access openings) must be metal or composite made fittings and bonded inside the fuel tank.

##### 6.2.2 - Fuel lines between the fuel tank and the engine must include a **self sealing breakaway valve** the parts of which must separate under a pressure less than half the load required to break the fuel line fitting or to pull it out of the fuel tank.

##### 6.2.3 - **No line containing fuel, cooling water or lubricating oil may pass through the cockpit.**

##### 6.2.4 - The lines must be fitted in such a way that any leakage cannot result in accumulation of fluid in the cockpit.

##### 6.2.5 - Flexible lines must have **threaded connectors** and an **outer braid** resistant to abrasion and flame.

##### 6.2.6 - **Fuel and lubrication oil lines** must have a minimum burst pressure of **41 bar** at a maximum operating temperature of **135°C**.

##### 6.2.7 - Hydraulic fluid lines :

- a/ Lines which are not subjected to abrupt changes in pressure, with the exception of lines under gravity head, must have a minimum burst pressure of **408 bar** at a maximum operating temperature of **204°C** (steel connectors) and **135°C** (aluminium connectors) ;
- b/ Lines subjected to abrupt changes in pressure must have a minimum burst pressure of **816 bar** at the maximum operating temperature of **204°C** ;
- c/ Are only permitted in the cockpit hydraulic fluid lines fitted with **threaded connectors** and **secured** by means of a metallic wire.

##### 6.2.8 - Fuel pumps must be in operation only when the engine is running or being started.

#### 6.3 - Fuel Tank Fillers :

##### 6.3.1 - Cars must be fitted with fuel tank fillers and vents which may be either combined or separate units on each side of the car.

##### 6.3.2 - Both fillers and air vents must be equipped with leak proof dry break couplings complying with the **dead man** principle and therefore without any retaining device when in open position :

- Coupling devices dimensions : FIA Appendix J - Drawing 252.5 with internal diameter :  
D ≤ 50 mm.

##### 6.3.3 - Tank fillers, vents and caps:

- a/ Shall be placed where they would not be vulnerable in the event of an accident ;
- b/ Must not protrude beyond the surface of the bodywork ;
- c/ An overflow pipe is permitted to exit through the flat bottom.

##### 6.3.4 - Any **breather pipe** connecting the tank to atmosphere must :

- a/ Exit on the outside of the bodywork ;
- b/ Be fitted with a **non return valve** ;
- c/ Be designed such as to avoid any liquid leakage when the car is running or if upside down.

- 6.3.5 - Cars must be fitted with a **self sealing connector** which can be used by the Scrutineers as to take a sample of fuel from the tank. This connector shall be :
- a/ Approved type ;
  - b/ Fitted immediately before the injector nozzles.

#### **6.4 - Refuelling during the Race :**

- 6.4.1 - Refer to Appendix B below : Refuelling.  
 6.4.2 - The refuelling equipment (**with the car number affixed**) and the tank of the car shall always remain at the outside ambient temperature and atmospheric pressure.

#### **6.5 - Fuel Capacity :**

- 6.5.1 - **90 litres** maximum on board whatever the outside ambient temperature and atmospheric pressure.  
 6.5.2 - Any device or system the purpose and/or effect of which is to increase the fuel storage capacity on board is prohibited.

### **ART. 7 - OIL SYSTEM**

The following provisions must be complied with :

#### **7.1 - Oil tanks :**

- 7.1.1 - If the oil tank is located forward the front wheel centre line or aft the rear wheel centre line, it must be surrounded by a **10 mm** minimum thick crushable structure.  
 7.1.2 - The external wall of an **oil tank** cannot be more than **65 cm** from the longitudinal centre line of the car.  
 7.1.3 - No **tank** or **pipe** containing lubricating oil is permitted :
- a/ In the cockpit ;
  - b/ Aft the gearbox ;
  - c/ In a vulnerable area.

#### **7.2 - Catch tank :**

The **open type sump breather** (if any) shall vent into a catch tank of at least **3 litre** capacity.

### **ART. 8 - ELECTRICAL EQUIPMENT :**

The following provisions have to be complied with :

#### **8.1 - Battery(ies) :**

Batteries must be strongly secured and protected inside a **box** made of insulating material.

#### **8.2 - Starter :**

- 8.2.1 - The starter shall **always** be in working order.  
 8.2.2 - It must be possible for the driver to operate the starter when seated normally at the wheel.

#### **8.3 - Lighting equipment :**

- 8.3.1 - Lighting equipment must **always** be in working order.  
 8.3.2 - Cars shall be fitted with :
- a/ At the front :
    - a.1 - **Two main headlights** as a minimum, ACO approved, symmetrical to the longitudinal centre line of the car and separated by a minimum of the front track measurement (centre of the lighting areas) ;
    - a.2 - Headlights must produce a **white beam**.
  - b/ At the rear :
    - b.1 - **Two red lights** and **two "Stop" lights** fitted symmetrically about the longitudinal centre line of the car and separated by a minimum of the rear track measurement ;
    - b.2 - Either **one red "Rain" or "Fog" light** (minimum 21 watts) or any equivalent and as efficient device ACO approved, located in the middle at the rear and the highest possible on the bodywork ...  
 ... or **two red "Rain" or "Fog" lights** (minimum 21 Watt) or any equivalent device ACO approved and located at the rear and the highest possible on each side symmetrically to the longitudinal centre line of the car.
  - c/ On each side : front and rear direction indicators.

### **ART. 9 - TRANSMISSION**

#### **9.1- Electronics :**

Any resort to electronics incorporated in the operation of any part of the transmission is forbidden save if in compliance with the prescriptions of Art. 1.10 above.

#### **9.2 - Gearbox :**

- 9.2.1 - Maximum 6 forward speeds.  
 9.2.2 - Electronic or electric monitoring shifting devices and semi-automatic or automatic transmissions are not permitted.  
 9.2.3 - A single switch may operate several systems (Art. 1.10) including the control of a valve but if, for any reason whatsoever, these systems do not respond to the driver's order or if the valve checked is not the good one, the driver will have to actuate the switch again.



9.2.4 - Are permitted only sensors the purpose of which is :

- a/ to give information to the driver
- b/ to control a value at the driver's request exclusively (see Art. 9.2.3. above).

- These sensors shall never affect the functioning of the transmission.

9.2.5 - Reverse gear : mandatory :

- It must be possible for the driver seated in a normal position to select the reverse gear **while the engine is running**.

**9.3 - Differential(s) :**

9.3.1 - Traction control : all devices are forbidden.

9.3.2 - Are only permitted : **Mechanical limited slip differentials working without the help of a hydraulic or electric system.**

- A visco-coupling system is not considered as a hydraulic slip control device provided that no control is possible when the car is running.

**9.4 - Four wheel drive** : not permitted.

**9.5 - Clutch** : only conventional designs actuated by the driver are permitted.

**9.6 - Disconnecting the transmission :**

9.6.1 - The transmission shall be designed such that, should the car be stopped and the engine stalled, it is still possible to push or to tow it.

9.6.2 - A pneumatic assistance device is permitted thanks to a compressed air bottle fitted **outside** the cockpit (**0,5 kg** maximum) as to select neutral and to allow the car to be moved.

**ART. 10 - SUSPENSION**

Free.

**10.1** - Changing the adjustment of the springs, the shock absorbers and the anti-roll bars from inside the cockpit is forbidden.

**10.2** - Any system other than the suspension parts, whatever the functioning principle, activated or not by the driver the purpose of which is to modify the ground clearance is forbidden.

**10.3** - An **anti-intrusion bar** at the base of the front suspension wishbones is mandatory as to protect the driver's legs.

**10.4** - The suspension arms :

- a/ Must not be chromium plated ;
- b/ Must be made from an **homogeneous metal**.

**11 - STEERING**

Free.

**11.1** - Only a **continuous mechanical link** between the driver and the wheels is permitted.

**11.2 - Four wheel steering** : not permitted.

**11.3 - Power steering :**

Permitted but without any electronic assistance whatsoever :

- a/ An **electric** power steering is permitted provided that any increase of an electrical signal respects a fixed ratio between the entry and the exit (linear function) ;
- b/ The control system shall use an **open loop** (See Art. 1.10 above) with no feed back for the driver's information.

**11.4 - Quick release system** : mandatory.

**ART. 12 - BRAKE SYSTEM :**

Free.

**12.1 - Separate circuits :**

12.1.1 - At least **two separate circuits** operated by the same pedal are compulsory :

- Between the brake pedal and the calipers it must be possible to identify separately the two circuits with no other interconnection than the mechanical balance device ;

12.1.2 - No device or system is permitted between the master-cylinders and the callipers :

- Sensors to collect information, stop lights switches or mechanical brake pressure controls **adjustable by means of tools** are not considered as "systems" and they shall be fitted at the very exit of the master-cylinders.

**12.2 - Brake callipers :**

12.2.1 - Brake callipers must be made from **aluminium** materials (elasticity modulus : **< 80 Gpa**).

12.2.2 - Only one calliper with **6 pistons** maximum is permitted per wheel.

12.2.3 - The section of each calliper piston must be **circular**.

### 12.3 - Disc brakes and brake pads :

12.3.1 - Material : free.

12.3.2 - Rotors : **one** per wheel maximum ;

12.3.3 - Carbon brake equipment (rotors and brake pads) :

a/ Maximum diameter of the rotors :

- "LM" P 900 / "LM" GTP ..... 15" (380 mm)

- "LM" P 675 ..... 14" (356 mm)

b/ Carbon discs the 2nd wear warnings of which are not visible before use are not permitted.

12.4 - **Anti-lock braking systems** : not permitted.

## ART. 13 - WHEELS & TYRES

### 13.1 - Number and position of the wheels :

13.1.1 - Number : four (**4**).

13.1.2 - Above the plane passing through the wheel centre line, it must be possible to house the complete wheels inside the wheel arches.

13.1.3 - As viewed from above, the wheels aligned for the car to proceed straight ahead shall not be visible above the plane passing through the wheel centre lines.

### 13.2 - Dimensions :

- Complete wheel measured horizontally at wheel hub level.

	"LM" P 900	"LM" GTP / "LM" P 675
13.2.1 - <u>Width</u> (maximum) :	16"	14"
13.2.2 - <u>Diameter</u> (maximum) :	28.5"	28"

### 13.3 - Weight (kg) :

	"LM" P 900	"LM" GTP / "LM" P 675
13.3.1 - Front (minimum) :	8.0	7.5
13.3.2 - Rear (minimum) :	9.0	8.5

### 13.4 - Material :

13.4.1 - Metallic.

13.4.2 - One piece wheels : recommended.

### 13.5 - Rims :

13.5.1 - Front and rear diameter : **18"** maximum.

13.5.2 - Flanges shall :

a/ Be symmetrical ;

b/ Not be more than **19.2 mm** maximum high.

13.5.3 - Removable wheel/hub caps are not permitted.

### 13.6 - Wheel attachment :

Free.

13.6.1 - If the wheel is attached by means of a single nut, a **safety spring** (painted **red** or "**dayglo orange**") must be **on** the nut whenever the car is running, and it must be put back after every wheel change.

13.6.2 - *another method of retaining the wheels attachment system may be used, provided it has been approved by the FIA.*

13.7 - **Pressure control valves** : not permitted.

13.8 - **Pneumatic jacks** : permitted :

- It is forbidden to carry on board compressed air bottles for their operation.

13.9 - **Sensors** : *Sensors for the pressure and the temperature of the tyres when the car is in motion are permitted.*

## ART. 14 - COCKPIT

14.1 - The cockpit shall provide the best driver's protection.

**For cars built as from 01/01/2002 and for all cars as from 01/01/2004 :**

*The cockpit must be fitted with a protection structure surrounding the driver, attached to or integrated into the survival cell and positioned :*

a/ *between the front and rear rollover structures ;*

b/ *500 mm minimum above the surface underneath the flat bottom. .*

*This structure must have the minimum dimensions specified on drawing 258A-1 (Sporting Code, Appendix J).*

The lateral surfaces close to the driver must be padded with non-flammable foam approved by the FIA. In the helmet area, the foam thickness must not be less than 75 mm over a minimum length of 300 mm (see Sporting Code, Appendix J, drawing 258A-1).

- **Seats :**

It must be possible to fit symmetrically to the three axis (longitudinal, across and vertical) two seats of equal shape and size excluding the shoulder supports *and/or the mandatory protections above* and/or the permitted protections complying with Art. 16.1.3 below.

#### 14.2 - Survival cell :

14.2.1 - The survival cell shall include the fuel cell(s) and extend from a point located a minimum of **15 cm** in front of the driver's feet placed on the pedals not depressed to a point behind the rearmost component of the cockpit.

14.2.2 - The driver's feet shall be located aft the vertical plane passing through the front wheel centre lines.

#### 14.2.3 - Empty volumes :

Two volumes of equal dimensions defined by **six** flat surfaces with 90° angles and symmetrical to the longitudinal centre line of the car shall be provided for the legs of both occupants.

##### a/ Dimensions :

a.1 - Length : from the pedals vertical plane to the vertical projection of the steering wheel centre line ;

	<b>"LM" P 900 / 675</b>	<b>"LM" GTP</b>
a.2 - Minimum width :	33 cm	25 cm
		33 cm (cars built past January 1st 2001)
a.3 - Minimum height :	30 cm	30 cm (cars built past January 1st 2001)

- At Scrutineers' request, the competitor must produce the two volumes during scrutineering.

b/ The only components allowed to intrude into these volumes, any other being excluded including the bulkheads across, are :

b.1 - The steering column and its universal joints ;

b.2 - The suspension arms pick-up points if not a danger for the driver ;

b.3 - The foot-rest *and the protection stuffing* for the driver if removable in order to allow the empty volumes to be controlled.

14.2.4 - The areas adjacent to the driver must include a protection padding.

#### 14.2.5 - "LM" PROTOTYPE ("LM" P) :

a/ The main structure (monocoque/tub) must provide **lateral protections** :

a.1 - **50 cm** high as a minimum *along the total length of the cockpit opening* ;

a.2 - The vertical outside walls of the lateral protections must be separate a minimum of **90 cm** across *and along 80 % minimum of the length of the cockpit opening*.

b/ The cockpit opening (windscreen included) must be at least **90 cm** (across) x **70 cm** (longitudinally) :

b.1 - To allow rounded corners, measurements shall be maintained for **at least 80 %** ;

b.2 - The cockpit opening measurements shall be maintained down to the top of the lateral protections, i.e. 50 cm above the surface underneath the flat bottom ;

b.3 - *all the points of the chassis structure that delimit the cockpit opening on the sides, at the front and at the rear must be at least 50 cm above the surface underneath the flat bottom* ;

b.4 - Are only permitted possible rollover structure reinforcements on top of the cockpit opening and safety devices *mandatory in Art. 14.1 (cars built as from 01/01/2002)* and recommended in Art. 16.1.3.

#### 14.2.6 - Equipment in the cockpit :

a/ Are permitted but only **outside** the two empty volumes (Art. 14.2.3 above) :

• Safety equipment and structures • Tool kit • Seat(s) • Driving controls • Electronic equipment • Driver cooling system • Ballast • Pneumatic jacks • Battery(ies) • Ventilation ducts ;

b/ These components must be covered by a rigid and efficient protective material in the event of a crash if a danger for the driver ;

c/ Nothing may hinder the cockpit exit (Art. 14.2.7 below) ;

d/ The way the equipment permitted is fitted in the cockpit is subject to Scrutineers' assessment.

#### 14.2.7 - Cockpit exit time :

The cockpit shall be design so as to allow the driver wearing his complete driving equipment, being seated in a normal position with the seat belts fastened and the steering wheel in place to get out :

a/ **"LM" P** : in **7 sec.** maximum ;

b/ **"LM" GTP** : in **7 sec.** maximum (driver's side) and **9 sec.** (opposite door).

### ART. 15 - SAFETY EQUIPMENT

#### 15.1 - Fire extinguisher :

Ref. : International Sporting Code - Appendix J - Art. 258.14.1.

#### 15.2 - Safety belts :

15.2.1 - Two shoulder straps, one abdominal strap and two straps between the legs are compulsory :

- These straps must comply with FIA standard 8853-98.

15.2.2 - Safety belts with two buckles are prohibited.

15.2.3 - Safety belt mounting points must be capable of resisting a **25 g** deceleration.

**15.3 - Rear view mirrors :**

- 15.3.1 - Two rear view mirrors (one each side) shall provide an efficient vision to the rear.  
 15.3.2 - The car as viewed from the rear, the rear view mirrors must be visible.  
 15.3.3 - Minimum area : **100 cm<sup>2</sup>** for each mirror.

**15.4 - Headrest :**

- 15.4.1 - The compulsory headrest cannot deflect more than **5 cm** when a rearward force of **85 daN** is applied.  
 15.4.2 - Minimum area, continuous and with no protruding parts : **400 cm<sup>2</sup>**.  
 15.4.3 - In the event of an impact projecting the driver's head backwards, the headrest must be the first point of contact for the driver's helmet.

**15.5 - Master switch :**

- 15.5.1 - When seated normally behind the wheel with the safety belt fastened, the driver must be able to cut off all electrical circuits and turn the engine off by means of a **spark proof circuit breaker** switch.  
 15.5.2 - The switch of the circuit breaker shall be located on the dashboard in a place which can be reached easily by the driver or from outside :  
 • It must be clearly marked by a symbol showing a **red spark** in a **white edged blue triangle**.  
 15.5.3 - There must be also an **exterior switch**, with a **handle** or a **ring** capable of being operated from a distance by a hook.  
 This switch must be positioned :  
 a/ On the left of the upper part of the bodywork ;  
 b/ If possible next to the lower part of the main roll bar.

**15.6 - Towing eyes :**

- 15.6.1 - Front and rear towing eyes shall :  
 a/ Be **rigid**, made from **steel**, with no chance of breaking, have an inner diameter between **80** and **100 mm** and be **5 mm** minimum thick (**round section** for not cutting or damaging the straps used by the marshals) ;  
 b/ Be securely fitted to the chassis/structure by means of a **metallic rigid piece** (cable hoops are not permitted)  
 c/ Be within the perimeter of the bodywork as viewed from above ;  
 d/ Be easily identified and painted in **yellow, red or orange** ;  
 e/ Allow to tow a car stuck in a gravel bed.  
 15.6.2 - Penalty during the race :  
 a/ Should a towing eye break during the race, the track marshals will pull the car into a safe position using any part of the chassis or the bodywork whatsoever they will judge strong enough and the car will be excluded ;  
 b/ Competitors will have no right to lodge protests in case the car has been damaged.  
 15.6.3 - The rear rollover structure ("LM" P) may be used for pulling the cars out of a gravel bed provided that :  
 a/ It makes it possible to pull or lift the car ;  
 b/ The Competitor gives a **written permission** so that the Organizer will not be deemed as responsible in the event of possible damages.

**ART. 16 - SAFETY STRUCTURES****16.1 - Rollover structures :****16.1.1 - PROTOTYPE "LM" P :**

- a/ **Two safety rollover structures** (front and rear) are **mandatory**.  
 They must be :  
 a.1 - Made from seamless mild steel or from higher grade steel alloy tubes with a minimum outside diameter of **1 3/4"** (45 mm) and a minimum wall thickness of **0.09"** (2.3 mm). *The use of components of a different type and/or made from different materials from those specified before is permitted, provided that their mechanical characteristics are equivalent or greater ;*  
 a.2 - At least **66 cm** at the front and **102 cm** at the rear above the Reference plane ;  
 a.3 - Separated a minimum of **76 cm** longitudinally ;  
 a.4 - Covered with fireproof foam (FIA approved) as far as tubes close to the driver are concerned.  
 b/ The driver at the wheel, the helmet must not extend higher than a line connecting the top of front and rear rollover structures. *For cars built as from 01/01/2002, the driver's helmet must be at a minimum distance of 80 mm from this line (see Sporting Code, Appendix J, drawing 258A-3).*  
 c/ The rear rollover structure shall be minimum **10 cm** above the top of the driver's helmet ;  
 d/ *As viewed from the front, the steering wheel, whatever its position, must not protrude from the front rollover structure ;*  
 e/ Should streamlining or fairing cover the roll bar mounting area next to the main structure, all facilities must be provided for possible inspection by the Scrutineers.  
 f/ *For the cars built as from 01/01/2002, the rear structure must also :*  
 f.1 - *have a minimum overall length of 200 mm measured at the level of the mountings on the survival cell.*  
 f.2 - *have a minimum height of 165 mm relative to the secondary rollover structure of the survival cell, described in article 16.1.1.3 (see Sporting Code, Appendix J, drawing 258A-4).*

*f.3 - on a frontal projection, the external sides must form an angle of 30° minimum to one another (see Sporting Code, Appendix J, drawing 258A-4).*

**16.1.1.1 - Rollover structures for driver's and passenger's protection (double hoop) :**

- a/ **Front** and **rear** rollover structures must :
- a.1 - Comply with Art. 16.1.1 above ;
  - a.2 - Be symmetrical to the longitudinal centre line of the car.
- b/ **Rear** rollover structure shall :
- b.1 - Have **90 cm** minimum overall width at bodywork mounting points level ;
  - b.2 - Include a diagonal reinforcement bar starting from the top of the hoop (driver's side) and, as a minimum, connected to the middle point of the chassis/monocoque structure ;
  - b.3 - Have two rearward facing braces connected to the top of the hoop ;
  - b.4 - Be **30 cm minimum across** at the upper horizontal section.
- **Streamlining or fairing** of the rear rollover structure is permitted no more than **20 cm** horizontally, provided the transverse section passing through the centre of the tubing remains symmetrical.

**16.1.1.2 - Rollover structures for driver's protection only (single hoop) :**

The front and rear rollover structures must comply with Art. 16.1.1. above.

**16.1.1.3. - Secondary rollover structure (cars built as from 01/01/2002) :**

*The part of the survival cell situated rearward of the driver must form a secondary rollover structure, the purpose of which is to protect the occupants in the case of a failure of the main rear rollover structure described in articles 16.1.1.1. and 16.1.1.2. above.*

*Viewed from the front, this structure must always extend beyond the outline of the driver's helmet.*

*Its external sides must form an angle of 40° minimum to one another (see Sporting Code, Appendix J, drawing 258A-2).*

**16.1.1.4 - Rollover structures approval :**

- a/ *Every rollover structure shall be submitted to the tests described in the FIA Technical Regulations for Sports Cars (see Appendix J, article 258 A, appendix 2) and approved by the FIA.*
- b/ *For these tests, the weight W of the car is :*
- "LM"P 900 = 1050 kg
  - "LM"P 675 = 825 kg
- c/ *The manufacturers shall give ACO in writing an early notification of any scheduled test in order that one of its representatives may eventually attend at manufacturer's expenses.*
- d/ *The manufacturer shall supply a copy of the FIA approval certificate.*

**16.1.2 - PROTOTYPE "LM"GTP :**

- a/ A **rollover structure** complying (International Sporting Code - Appendix J - Art. 253.8) is mandatory ;
- b/ No part of the rollover structure is permitted to intrude into the volume provided for the driver and the passenger ;
- c/ Longitudinal struts or any equivalent ACO approved shall provide lateral protection ;
- d/ Tubes in the driver's vicinity shall be wrapped in fireproof foam meeting FIA standards.

**16.1.3. - RECOMMENDATION ("LM"P & "LM"GTP) :**

ACO very strongly recommends any protection system based on safety standards issued for F.1, namely those providing the protection of the driver's head, neck and shoulders in the event of side or frontal crashes, as well as any system making the driver's extraction from the cockpit easier :

- Any proposal approved by ACO is not considered as a breach of Art. 14 above.

**16.2 - Survival cell and frontal protection :**

**16.2.1 - General prescriptions :**

- a/ *The chassis structure must include a survival cell extending from the vertical plane at least **15 cm** in front of the driver's feet to behind the fuel tank, the driver's feet lying on the pedals not depressed ;*
- b/ *Special impact absorbing structure must be fitted in front of the survival cell. This structure need not be an integral part of the survival cell but it must be securely attached to it.*

**16.2.3 – Approval of the survival cell and the frontal absorbing structure :**

- a/ *the survival cell and the frontal absorbing structure must be submitted to the tests described in the FIA Technical Regulations for Sports Cars (see Appendix J, article 258 A, appendix 2) and approved by the FIA.*
- b/ *For these tests, the weight W of the car is :*
- "LM"P 900 = 1050 kg
  - "LM"P 675 = 825 kg
- c/ *The manufacturers shall give ACO in writing an early notification of any scheduled test in order that one of its representatives may eventually attend at manufacturer's expenses.*
- d/ *The manufacturer shall supply a copy of the FIA approval certificate.*

**16.3 - Modifications :**

Any significant modification regarding any of the structures tested will make mandatory a new test carried out the same way..

**16.4 - Magnesium** : permitted, apart from sheets less than **3 mm** thick.

**16.5 - Firewalls :**

16.5.1 - A perfectly sealed **metallic firewall** preventing the passage of flames from the engine compartment into the cockpit is mandatory :

- A bulkhead made from a fireproof sandwich material and covered with an metallic adhesive sheet is acceptable.

16.5.2 - Any holes in the firewall must be of the minimum size for the passage of controls and cables, and must be completely sealed.

**ART.17 - FUEL**

**17.1 - Fuel :**

The Organiser will supply only one type of fuel (Eurosuper 98).

**17.2 - Specifications :**

Ref. : International Sporting Code - Appendix J - Art. 258.16.

**17.3** - The use of any other fuel than gasoline (petrol) is subject to a special request submitted to the agreement of the Automobile-Club de l'Ouest and the ASN if necessary.

**ART. 18 - FINAL TEXT - DISPUTES**

- a/ The **French version** is the only one valid regarding the implementation and interpretation of the regulations.
- b/ Any interpretation regarding these regulations is the AUTOMOBILE-CLUB DE L'OUEST exclusive responsibility.