1997 Formula One Technical Regulations

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ARTICLE 1: DEFINITIONS

1.1) Formula One Car

An automobile designed solely for speed races on circuits or closed courses.

1.2) 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.

1.3) 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.

1.4) Bodywork

All entirely sprung parts of the car in contact with the external air stream, except the rollover structures, on board cameras (described in Articles 1.15 and 17.3) 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.

1.5) Wheels

Flange and rim. Complete wheel : Flange, rim and tyre.

1.6) 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.

1.7) Event

An event shall consist of official practice and the race.

1.8) Weight

Is the weight of the car with the driver, wearing his complete racing apparel, at all times during the event.

1.9) Racing weight

Is the weight of the car in running order with the driver aboard and all fuel tanks full.

1.10) 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.

1.11) 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.

1.12) Cockpit

The volume which accommodates the driver.

1.13) Sprung suspension

The means whereby all complete wheels are suspended from the body/chassis unit by a spring medium.

1.14) Survival cell

A continuous closed structure containing all fuel tanks and the cockpit.

1.15) On board camera

A television camera, including all wiring, power supply and live transmission unit, temporarily mounted on a car.

1.16) Ballast box

A box measuring 38mm x 72mm x 160mm and weighing 5kg, temporarily mounted on a car in lieu of an on board camera.

1.17) Cockpit padding

Non-structural parts placed within the cockpit for the sole purpose of improving driver comfort and safety. All such material must be quickly removable without the use of tools.

ARTICLE 2 : REGULATIONS

2.1) Role of the FIA

The following technical regulations for Formula 1 cars are issued by the FIA.

2.2) Publication dates for amendments

Each year in October, the FIA will publish all changes made to these regulations. All such changes will take effect on the third 1st January following their publication unless otherwise agreed between the FIA and all Formula One recognised constructors, in which case the changes will take effect on the date agreed.

2.3) Dangerous construction

If an automobile is deemed to be dangerous, it may be excluded by the Stewards of the Meeting.

2.4) Compliance with the regulations

Automobiles must comply with these regulations in their entirety at all times during an event.

2.5) Measurements

All measurements must be made while the car is stationary on a flat horizontal surface, or as provided in Article 89 of the F1 Sporting regulations.

2.6) Duty of competitor

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.

ARTICLE 3 : BODYWORK AND DIMENSIONS

3.1) Wheel centre line

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.

3.2) Height measurements

All height measurements will be taken vertically from the reference plane.

3.3) Overall width

The overall width of the car including complete wheels shall not exceed 200cm, with the steered wheels in the straight ahead position.

3.4) Width ahead of the rear wheel centre line

The bodywork ahead of the rear wheel centre line is limited to a maximum width of 140cm.

Furthermore, in order to prevent tyre damage to other cars, the top and forward edges of the lateral extremities of any bodywork forward of the front wheels must be at least 10mm thick with a radius of at least 5mm.

3.5) Width behind the rear wheel centre line

Bodywork behind the centre line of the rear wheels must not exceed 100cm in width.

3.6) Overall height

Except for the rollover structures, no part of the car can be higher than 95cm from the reference plane.

However, any part of the rollover structures more than 95cm from the reference plane must not be shaped to have a significant aerodynamic influence on the performance of the car.

3.7) Front bodywork height

All parts of the bodywork in front of the rear edge of the complete front wheels and more than 25cm from the centre line of the car must be between 5cm and 25cm above the reference plane.

3.8) Height in front of the rear wheels

3.8.1 - No part of the bodywork between the forward-most point of the rear roll structure and the front edge of the complete rear wheels, which is more than 60cm above the reference plane, may be more than 30cm from the centre line of the car.

3.8.2 - No bodywork between the rear wheel centre line and a line 80cm forward of the rear wheel centre line, which is more than 50cm from the centre line of the car, may be more than 50cm above the reference plane.

3.8.3 - No bodywork between the rear wheel centre line and a line 40cm forward of the rear wheel centre line, which is more than 50cm from the centre line of the car, may be more than 30cm above the reference plane.

3.9) Height between the rear wheels

No bodywork between the front edge of the complete rear wheels and 15cm behind the rear wheel centre line may be more than 60cm above the reference plane.

3.10) Height behind the rear wheel centre line

Any part of the car more than 15cm behind the centre line of the rear wheels must not be more than 80cm above the reference plane..

No bodywork behind the centre line of the rear wheels, and more than 15cm each side of the longitudinal centre line of the car, may be less than 30cm above the reference plane.

Furthermore, any bodywork behind the rear wheel centre line which is more than 50cm above the reference plane, when projected to a plane perpendicular to the ground and the centre line of the car, must not occupy a surface greater than 70% of the area of a rectangle whose edges are 50cm either side of the car centre line and 50cm and 80cm above the reference plane.

3.11) 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 40cm and 100cm from the car centre line and two transversal lines, one 35cm forward of and one 80cm behind the front wheel centre line.

3.12) Bodywork facing the ground

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 underneath must form surfaces which lie on one of two parallel planes, the reference plane or the step plane.This does not apply to any parts of rear view mirrors which are visible, provided each of these areas does not exceed 75cm2 when projected to a horizontal plane above the car.

The step plane must be 50mm above the reference plane.

The surface formed by all parts lying on the reference plane must extend from the rear edge of the complete front wheels to the centre line of the rear wheels, have minimum and maximum widths of 30cm and 50cm respectively and must be symmetrical about the centre line of the car.

All parts lying on the reference and step planes, in addition to the transition between the two planes, must produce uniform, solid, hard, continuous, rigid (no degree of freedom in relation to the body/chassis unit), impervious surfaces under all circumstances.

The peripheries of the surfaces formed by the parts lying on the reference and step planes may be curved upwards with maximum radii of 25 and 50mm respectively. The surface formed by the parts lying on the reference plane must be connected at its extremities vertically to the parts lying on the step plane and any radius which forms the transition between the two planes may have a maximum radius of 25mm.

To help overcome any possible manufacturing problems, a tolerance of +/- 5mm is permissible across these surfaces.

Beneath the surface formed by all parts lying on the reference plane, a rectangular skid block must be fitted. This skid block may comprise more than one piece but must :

a) extend longitudinally from the rear edge of the complete front wheels to the centre line of the rear wheels.

b) be made from an homogeneous material with a specific gravity between 1.3 and 1.45.

c) have a width of 30cm with a tolerance of +/- 2mm.

d) have a thickness of 10mm with a tolerance of +/- 1mm.

e) have a uniform thickness when new.

f) have no holes or cut outs other than those necessary to attach it to the car or those which will be used to measure it's thickness.

g) have six precisely placed holes in order that it's thickness can be measured at any time. These holes must be 50mm in diameter and must be placed in the positions detailed in Fig.1.

In order to establish the conformity of the skid block after use, it's thickness will only be measured in

these holes.

h) have no more than ten fasteners, each with a maximum area of 20cm2, which are flush with it's lower surface. Any other fasteners must be at least 1mm above it's lower surface.

i) be fixed symmetrically about the centre line of the car in such a way that no air may pass between it and the surface formed by the parts lying on the reference plane.

The lower edge of the periphery of this block may be chamfered at an angle of 30° to a depth of 8mm, the trailing edge however may be chamfered over a distance of 200mm to a depth of 8mm.

All sprung parts of the car behind the front edge of the complete rear wheels visible from underneath and more than 25cm from the centre line of the car must be at least 50mm above the reference plane.

3.13) Overhangs

No part of the car shall be more than 50cm behind the centre line of the rear wheels or more than 120cm in front of the centre line of the front wheels.

No part of the bodywork more than 20cm from the centre line of the car may be more than 90cm in front of the front wheel centre line.

All overhang measurements will be taken parallel to the reference plane.

3.14) 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, with the exception of the skid block in 3.12 above, may under any circumstances be located below the reference plane.

3.15) Upper bodywork

3.15.1 - When viewed from the side, the car must have bodywork in the triangle formed by three lines, one vertical passing 100cm in front of the front edge of the complete rear wheels, one horizontal 55cm above the reference plane and one diagonal which intersects the vertical at a point 94cm above the reference plane and the horizontal at the front edge of the complete rear wheels.

The bodywork over the whole of this area must be arranged symmetrically about the car centre line and must be at least 20cm wide when measured at any point along a second diagonal line parallel to and 20cm vertically below the first.

Furthermore, over the whole area between the two diagonal lines, the bodywork must be wider than a vertical isosceles triangle lying on a lateral plane which has a base 20cm wide lying on the second diagonal line.

3.15.2 -When viewed from the side, the car must have no bodywork in the triangle formed by three lines, one vertical at the front edge of the complete rear wheels, one horizontal 95cm above the reference plane, and one diagonal which intersects the vertical at a point 60cm above the reference plane and the horizontal at a point 70cm in front of the front edge of the complete rear wheels.

3.15.3 - The second rollover structure must be designed to provide a clearly visible unobstructed opening in order that a strap whose section measures 6cm x 3cm can pass through it to lift the car.

ARTICLE 4 : WEIGHT

4.1) Minimum weight

The weight of the car must not be less than 600kg.

4.2) 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.

4.3) Adding during the race

With the exception of fuel, nitrogen and compressed air, no substance may be added to the car during the race.

If it becomes necessary to replace any part of the car during the race, the new part must not weigh any more than the original part.

ARTICLE 5 : ENGINE

5.1) Types of engine permitted

Only 4-stroke engines with reciprocating pistons are permitted.

5.2) Maximum capacity

Engine capacity must not exceed 3000cc.

5.3) Supercharging

Supercharging is forbidden.

5.4) Number and type of cylinders

The maximum number of cylinders is 12 and the normal section of each cylinder must be circular.

5.5) Number of valves

Engines may have no more than 5 valves per cylinder.

5.6) Temperature and pressure of the charge

5.6.1 - 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.

5.6.2 - 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).

5.7) Exhaust system

Variable geometric length exhaust systems are forbidden.

5.8) Engine materials

5.8.1 - The basic structure of the crankshaft and camshafts must be made from steel or cast iron.

5.8.2 - Pistons, cylinder heads and cylinder blocks may not be composite structures which use carbon or aramid fibre reinforcing materials.

ARTICLE 6 : PIPING AND FUEL TANKS

6.1) Fuel tanks

6.1.1 - All fuel tanks must be rubber bladders conforming to or exceeding the specifications of FIA/FT5.

6.1.2 - 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 30cm 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.

6.1.3 - Fuel must not be stored more than 40cm from the longitudinal axis of the car.

6.1.4 - All rubber bladders must be made by manufacturers recognised by the FIA.

In order to obtain the agreement of the FIA, the manufacturer must prove the compliance of his product with the specifications approved by the FIA. These manufacturers must undertake to deliver to their customers exclusively tanks complying to the approved standards.

A list of approved manufacturers is available from the FIA.

6.1.5 - 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.

6.1.6 - No rubber bladders shall be used more than 5 years after the date of manufacture.

6.2) Fittings and piping

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

6.2.2 - All fuel lines between any 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.

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

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

6.2.5 - All fuel and lubricating oil lines must have a minimum burst pressure of 41bar (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).

6.2.6 - All lines containing hydraulic fluid, with the exception of lines under gravity head, must have a minimum burst pressure of 70bar (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). Hydraulic fluid lines must have no connections inside the cockpit which are capable of being removed.

6.3) 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 15.4.7 and 15.4.9.

6.4) Fuel tank fillers

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 25cm from the cockpit opening.

All tank fillers and breathers must be designed to ensure an efficient locking action which reduces the risk of an accidental opening following a crash impact or incomplete locking after refuelling.

6.5) Refuelling

6.5.1 - All refuelling during the race must be carried out using equipment which has been supplied by the FIA designated manufacturer. This manufacturer will be required to supply identical refuelling systems, the complete specification of which will be available from the FIA no later than one month prior to the first Championship Event.

Any modifications to the manufacturer's specification may only be made following written consent from the FIA.

6.5.2 - Before refuelling commences, the car connector must be connected electrically to earth.

All metal parts of the refuelling system from the coupling to the supply tank must also be connected to earth.

6.5.3 - 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.

6.5.4 - Any storage of fuel on board the car at a temperature more than ten degrees centigrade below ambient temperature is forbidden.

6.5.5 - 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

7.1) 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.

7.2) Longitudinal location of oil system

No other part of the car containing oil may be situated behind the complete rear wheels.

7.3) 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.

7.4) Transversal location of oil system

No part of the car containing oil may be more than 70cm from the longitudinal centre line of the car.

7.5) Oil replenishment

No oil replenishment is allowed during a race.

ARTICLE 8 : STARTING

8.1) 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

9.1) Four wheel drive

Four wheel drive cars are forbidden.

9.2) Gear changing

Notwithstanding Article 1.3, semi-automatic gearboxes driven by automatic control are permitted and may, for the purpose of changing a gear ratio only, momentarily take control of the propulsion system away from the driver.

9.3) Gear ratios

9.3.1 - The minimum number of forward gear ratios is 4.

9.3.2 - The maximum number of forward gear ratios is 7.

9.4) 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.

9.5) Propulsion :

Traction control is forbidden.

9.6) Clutch disengagement

All cars must be fitted with a means of disengaging the clutch in the event of the car coming to rest with the engine stopped.

This system must be in working order throughout the Event and must be capable of being operated by the driver when seated normally as well as by a marshal from outside the car.

Furthermore, the position of the switch which operates the system must be marked with a letter "N" in red inside a white circle of at least 10cm diameter with a red edge.

ARTICLE 10 : SUSPENSION AND STEERING

10.1) 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.

The suspension system must be so arranged that its response is consistent at all times and results only from changes in vertical load applied to the wheels save only for movement permitted by inherent and fixed physical properties.

10.2) Suspension geometry

Suspension geometry must remain fixed at all times.

10.3) Suspension members

10.3.1 - The design of the front suspension must be such that it may be clearly demonstrated that measures have been taken to avoid the front wheel making contact with the driver's head in the event of

an accident.

10.3.2 Each member of every suspension component must be made from material whose cross section has an aspect ratio no greater than 3.5:1. All suspension components may however have sections with an aspect ratio greater than 3.5:1 provided these are adjacent to their inner and outer attachments and form no more than 20% of the total distance between the attachments of the relevant member.

All measurements will be made perpendicular to a line drawn between the inner and outer attachments of the relevant member.

10.3.2 - The forward-most lower suspension member and its attachments, on both sides of the front and rear of the car, must be the strongest members in tension. These members must, when viewed from above, be able to articulate horizontally about their inboard mounting at least 60° each side of their original position, or until the wheel makes contact with a substantial structure such as the survival cell.

10.4) Steering

10.4.1 - Four wheel steering is not permitted.

10.4.2 - Power steering systems which do anything other than reduce the physical effort required to steer the car are not permitted.

10.4.3 - No part of the steering wheel or column, nor any part fitted to them, may be closer to the driver than a plane formed by the entire rear edge of the steering wheel rim.

10.4.4 - The steering wheel, steering column and steering rack assembly must be subjected to an impact test.

For the purposes of this test, these parts must be fitted to a representative test structure, any other parts which could materially affect the outcome of the test must also be fitted. The test structure must be solidly fixed to the ground and a solid object, having a mass of 8kg and travelling at a velocity of 7m/s, will be projected into it.

The object used for this test must be hemispherical with a diameter of 165mm.

For the test, the centre of the hemisphere must strike the structure at the centre of the steering wheel along the same axis as the main part of the steering column.

During the test the striking object may not pivot in any axis and the test structure may be supported in any way provided this does not increase the impact resistance of the parts being tested.

The resistance of the test structure must be such that during the impact the peak deceleration of the object does not exceed 80g for more than 3ms.

After the test the steering wheel quick release mechanism must still function normally.

ARTICLE 11 : BRAKES

11.1) 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.

11.2) 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 140mm above the horizontal centre line of the wheel.

- A plane parallel to the ground situated at a distance of 140mm 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 120mm 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.

11.3) Brake pressure modulation

Anti lock brakes and power braking are forbidden.

ARTICLE 12 : WHEELS AND TYRES

12.1) Location

Wheels must be external to the bodywork in plan view, with the rear aerodynamic device removed.

12.2) Dimensions

12.2.1 - Maximum complete wheel width : 15"

Maximum complete wheel diameter : 26"

Wheel bead diameter : 13"

12.2.2 - These measurements will be taken horizontally at axle height.

12.3) Number of wheels

The number of wheels is fixed at four.

12.4) Wheel material

All wheels must be made from an homogeneous metallic material.

ARTICLE 13 : COCKPIT

13.1) Cockpit opening

The opening giving access to the cockpit must allow the horizontal template shown in Fig.2 to be inserted vertically, from above the car into the survival cell and bodywork, with the steering wheel, steering column, seat and all padding removed.

The front tip of the template must be no less than 625mm from the front wheel centre line and it must be possible to lower the template 25mm below the lowest point of the cockpit opening.

Furthermore, the forward extremity of the cockpit opening, even if structural and part of the survival cell, must be at least 5cm in front of the steering wheel.

The driver must be able to enter and get out of the cockpit without it being necessary to open a door or remove any part of the car other than the steering wheel or cockpit padding. 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 and starting with the safety belts fastened.

13.2) 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.

13.3) 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 700cm2.

A free vertical cross section which allows the template shown in Fig.3 to be passed vertically through the cockpit, must be maintained over its entire length.

The only things that can encroach on these two areas are the steering wheel and padding.

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

14.1) Fire extinguishers

14.1.1 - All cars must be fitted with two fire extinguishing systems, one which will discharge into the cockpit and one into the engine compartment.

14.1.2 - Permitted extinguishants :

Any AFFF which has been specifically approved by the FIA.

14.1.3 - Minimum extinguisher capacity :

The capacity may vary according to the type of AFFF used, a list is available from the FIA.

14.1.4 - Minimum quantity of extinguishant :

The quantity may vary according to the type of AFFF used, a list is available from the FIA.

14.1.5 - Discharge time :

Engine : 30 seconds min / 80 seconds max.

Cockpit : 10 seconds min / 40 seconds max.

Both extinguishers must be released simultaneously.

14.1.6 - All extinguishers must be pressurised according to the contents:

The pressure may vary according to the type of AFFF used, a list is available from the FIA.

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

14.1.7 - The following information must be visible on each extinguisher:

a) Capacity

b) Type of extinguishant

c) Weight or volume of the extinguishant

d) Date the extinguisher must be checked which must be no more than two years after the date of filling.

14.1.8 - All extinguishers must be adequately protected and must be situated within the survival cell. In all cases their mountings must be able to withstand a deceleration of 25g.

All extinguishing equipment must withstand fire.

14.1.9 - 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 the steering wheel in place.

Furthermore, a means of triggering from the outside must be combined with the circuit breaker switch described in Article 14.2.2. It must be marked with a letter "E" in red inside a white circle of at least 10cm diameter with a red edge.

14.1.10 - The system must work in any position, even when the car is inverted.

14.1.11 - Both extinguisher nozzles must be suitable for the extinguishant and be installed in such a way that they are not directly pointed at the driver.

14.2) Master switch

14.2.1 - The driver, when seated normally with the safety belts fastened and the steering wheel in place, must be able to cut off the 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.

14.2.2 - 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 roll over structure on the right hand side.

14.3) 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 10cm wide and at least 5cm high, with a maximum corner radius of 1cm.

The scrutineers must be satisfied by a practical demonstration that the driver, when seated normally, can clearly define following vehicles.

For this purpose, the driver shall be required to identify any letter or number, 15cm high and 10cm wide, placed anywhere on boards behind the car, the positions of which are detailed below :

Height : From 40cm to 100cm from the ground.

Width : 200cm either side of the centre line of the car.

Position : 10m behind the rear axle line of the car.

14.4) Safety belts

The wearing of two 75mm wide shoulders 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.

14.5) Rear light

All cars must have a red light in working order throughout the event which :

- Is the model specified by the FIA.

- Faces rearwards at 90 degrees to the car centre line.

- Is clearly visible from the rear.

- Is not mounted more than 10cm from the car centre line.

- Is at least 35cm above the reference plane.

- Is no less than 45cm behind the rear wheel centre line, measured to the face of the lens and parallel to the reference plane.

- Can be switched on by the driver when seated normally in the car.

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

14.6) Headrest

All cars must be equipped with headrests made from a material specified by the FIA.

The headrests must consist of one at least 75mm thick over an area of 400cm2 behind the driver's helmet and one at least 75mm thick over an area of 400cm2 along each side of the driver's helmet.

The headrests must be so installed that if movement of the driver's head was to fully compress the foam at any point over their area, his helmet would not make contact with any structural part of the car.

They must be so positioned as to be the first point of contact for the driver's helmet in the event of an impact projecting his head backwards or sideways when he is seated normally.

14.7) Wheel retention

All cars, whilst under their own power, must be fitted with devices which will retain any wheel in the event of it coming loose.

After the wheel nut is fastened, these devices must be manually fitted in a separate action to that of securing the wheel nut.

14.8) Data acquisition systems

In order that car performance data, which is being recorded and stored on board the car, is not lost in the event of an accident, the principal data storage unit on board the car must be situated within the periphery of the survival cell when viewed from directly above the car.

ARTICLE 15 : SAFETY STRUCTURES

15.1) Magnesium sheet

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

15.2) Rollover structures

15.2.1 - The basic purpose of these structures is to protect the driver. This purpose is the primary design consideration.

15.2.2 - All cars must have at least two rollover structures.

The first structure must be in front of the steering wheel, not more than 25cm forward of, and at least as high as the top of the steering wheel rim.

The second structure must be at least 94cm above the reference plane, not less than 50cm 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 5cm 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 5cm when he is seated normally with his helmet on and seat belts

fastened.

15.2.3 - Both rollover structures required by Article 15.2.2 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 780kg.

Under the load, the deformation must be less than 50mm, measured along the loading axis and any structural failure limited to 100mm below the top of the rollover structure, measured vertically.

15.2.4 - The second rollover structure shall be subjected to a static load test by applying the combined loads described in 2.3 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 15.4.8.

15.2.5- - The design concept of the rollover structures required by Article 15.2.2 shall be free. However, the second rollover structure must have a minimum structural cross section, in vertical projection, of 100cm2, across a horizontal plane passing 5cm lower than the highest point of the second rollover structure.

15.3) 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 780kg.

15.4) Survival cell and frontal protection

15.4.1 - The survival cell must extend from behind the fuel tank in a rearward direction to a point at least 30cm 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 the minimum size to allow access to mechanical components.

The safety structures described in Articles 15.2.2 and 15.3 must be a part of the survival cell or solidly attached to it.

15.4.2 - 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.

15.4.3 - In front of the survival cell an impact absorbing structure must be fitted. This structure need not be an integral part of the survival cell but must be solidly attached to it.

Furthermore it must have a minimum external cross section, in horizontal projection, of 90cm2 across a vertical plane passing 50mm behind it's forward most point.

15.4.4 - The minimum external width of the survival cell is 30cm. This width must be maintained for a minimum height of 25cm along the whole length of the survival cell. The minimum height of the survival cell between the two rollover structures is 55cm.

Furthermore, the parts of the survival cell which are situated each side of the driver's helmet must be no more than 550mm apart and at least as high as a line parallel to and 220mm below the line between the

tops of the two roll structures.

In order to maintain good lateral visibility, the driver when seated normally with his seat belts fastened and looking straight ahead must have his eyes above the top of the sides of the survival cell.

15.4.5 - 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. All parts which could materially affect the outcome of the test must be fitted to the test structure which must be solidly fixed to the trolley through its engine mounting points but not in 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 75kg must be fitted with safety belts described 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 780kg and the velocity of impact 12.0 metres/sec.

The resistance of the test structure must be such that during the impact the average deceleration of the trolley does not exceed 25g and the peak deceleration in the chest of the dummy does not exceed 60g for more than 3ms.

Furthermore, there must be no damage to the survival cell or to the mountings of the safety belts or fire extinguishers.

This test must be carried out on the survival cell subjected to the higher loads in the tests described in Articles 15.4.8 and 10, and on a frontal impact absorbing structure subjected to the test described in Article 15.4.9.

This test must be carried out in the presence of a FIA technical delegate in an approved testing centre.

15.4.6 - Between the front and rear roll structures, on each side of the survival cell, identical impact absorbing structures must be fitted and must be solidly attached to it.

The survival cell and one of these impact absorbing structures must be subjected to an impact test.

For the purposes of this test, all parts which could materially affect the outcome of the test must be fitted to the test structure which must be solidly fixed to the ground and a solid object, having a mass of 780kg and travelling at a velocity of 5m/s, will be projected into it.

The object used for this test must be flat, measure 45cm wide by 55cm high and may have a 10mm radius on all edges.

Its centre of area must strike the structure 27.5cm above the bottom of the survival cell and at a point 325mm forward of the rear edge of the cockpit opening template longitudinally.

During the test the striking object may not pivot in any axis and the survival cell may be supported in any way provided this does not increase the impact resistance of the parts being tested. The impact axis must be perpendicular to the car centre line and parallel to the ground.

The resistance of the test structure must be such that during the impact the average deceleration of the object does not exceed 10g.

Furthermore, all structural damage must be contained within the impact absorbing structure.

This test must be carried out on the survival cell subjected to the higher loads in the tests described in

Articles 15.4.8 and 10.

This test must be carried out in the presence of a FIA technical delegate in an approved testing centre.

15.4.7 - At the rear of the car an impact absorbing structure must be fitted to the gearbox symmetrically about the car centre line with it's rearmost point no less than 48cm behind the rear wheel centre line.

For the purposes of this test, all parts which could materially affect the outcome of the test must be fitted to the test structure. The structure and the gearbox must be solidly fixed to the ground and a solid object, having a mass of 780kg and travelling at a velocity of 12m/s, will be projected into it.

The object used for this test must be flat, measure 45cm wide by 55cm high and may have a 10mm radius on all edges. Its lower edge must be at the same level as the car reference plane and must be so arranged to strike the structure vertically and at 90° to the car centre line.

During the test, the striking object may not pivot in any axis and the crash structure may be supported in any way provided this does not increase the impact resistance of the parts being tested.

The resistance of the test structure must be such that during the impact the average deceleration of the object does not exceed 35g and the maximum deceleration does not exceed 60g for more than 3ms. Furthermore, all structural damage must be contained within the area behind the rear wheel centre line.

15.4.8 - In addition, the survival cell must be subjected to three separate static lateral load tests :

1) In the fuel tank area on a vertical plane passing through the centre of area of the fuel tank in side elevation.

2) On a vertical plane passing half way between the front wheel axis and the top of the first rollover structure.

3) In the cockpit area on a vertical plane passing through the centre of the seat belt lap strap fixing.

For the tests described in 1) and 2) above, a pad 10cm long and 30cm high, with a maximum radius on all edges of 3mm 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 3mm thick may be used between the pads and the survival cell.

A constant transverse horizontal load of 2500daN 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 1.0mm after the load has been released for 1 minute. The deformation will be measured at the top of the pads across the inner surfaces.

These two tests must be carried out on the survival cell subjected to the impact test described in Article 15.4.5.

On every survival cell tested after that one, the same tests must be carried out but with a load of only 2000daN. During the tests the deflection across the inner surfaces must not exceed 120% of the deflection obtained at 2000daN load during the first test.

For the test described in 3) above, pads 20cm in diameter and conforming to the shape of the survival cell, shall be placed against the outermost sides of the survival cell.

The centre of area of the pads must pass through the plane mentioned above and the mid point of the height of the structure at that section.

Rubber 3mm thick may be used between the pads and the survival cell.

A constant transverse horizontal load of 3000daN 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, total deflection must not exceed 20mm and permanent deformation must be less than 1.0mm after the load has been released for 1 minute, the deformation being measured at the centre of the pads across the inner surfaces.

This test must be carried out on every survival cell produced.

15.4.9 - 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 55cm in front of the front wheel axis.

A constant transversal horizontal load of 4000daN must be applied to one side of the impact absorbing structure using a pad identical to the ones used in the lateral tests in Article 15.4.8.

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.

15.4.10 - A further static load test must be carried out on the survival cell from beneath the fuel tank. A pad of 20cm diameter must be placed in the centre of area of the fuel tank and a vertical upwards load of 1250daN applied in less than 3 minutes through a ball jointed junction. The load must be maintained for a minimum of 30 seconds.

Under these load conditions, there must be no structural failure of the inner or outer surfaces of the survival cell and permanent deformation must be less than 0.5mm after the load has been released for 1 minute, the measurement being taken at the centre of area of the pad.

This test must be carried out on the survival cell subjected to the impact test described in Article 15.4.5. On every survival cell tested after that one, the same test must be carried out but with a load of only 1000daN.

During the test the deflection across the inner surfaces must not exceed 120% of the deflection obtained at 1000daN during the first test.

15.4.11 - Two further static load tests must be carried out on the survival cell on each side of the cockpit opening. A pad of 10cm diameter must be placed with its upper edge at the same height as the top of the cockpit side with its centre at a point 200mm forward of the rear edge of the cockpit opening template longitudinally. A constant transverse horizontal load of 1000daN will then be applied at 90° to the car centre line, in less than 3 minutes, through a ball jointed junction. The load must be maintained for a minimum of 30 seconds.

Under these load conditions, there must be no structural failure of the inner or outer surfaces of the survival cell, there must be no more than 10mm total deformation and permanent deformation must be less than 1.0mm after the load has been released for 1 minute, the measurements being taken at the centre of area of the pad.

These tests must be carried out on the survival cell subjected to the impact test described in Article 15.4.5. On every survival cell tested after that one, the same tests must be carried out but with a load of only 800daN.

During the tests the deflection across the inner surfaces must not exceed 120% of the deflection obtained at 800daN during the first test.

15.4.12 - The static load tests in Articles 15.2.4; 15.4.8; 15.4.9; 15.4.10 and 15.4.11 must be carried out in the presence of an FIA technical delegate and using measuring equipment verified by the FIA.

For the tests described in Articles 15.4.8; 15.4.10 and 15.4.11, the survival cells must always be produced in an identical condition in order that their weights can be compared and if the weight differs by more than 5% from the one submitted to the test described in Article 15.4.5, a further impact test and roll structure test must be carried out.

When these tests have been completed, the FIA technical delegate will mark the survival cell.

Any significant modification introduced into any of the structures tested shall require that part to undergo a further test.

ARTICLE 16 : FUEL

16.1) Physical properties

The only fuel permitted is petrol having the following characteristics:

Property	*Units*	*Min*	*Max*	*Test Method*
RON		92.0	102.0	ASTM D 2699-86
MON		85.0		ASTM D 2700-86
Oxygen	%m/m		3.7	Elem Analysis
Nitrogen	%m/m		0.2	ASTM D 3228
Benzene	%v/v		5.0	ASTM D 3606
RVP	hPa	350	700	ASTM D 323
Lead	g/l		0.005	ASTM D 3237
Density at 15°C	kg/m3	725.0	780.0	ASTM D 4052
Oxidation stability	minutes	360		ASTM D 525
Existent gum	mg/100ml			5.0
	EN 5			
Sulphur	%m/m	0.1		ISO 8754
Copper corrosion	rating	C1		ISO 2160
Electrical conductivity	pS/m	200		ASTM D 2624
Distillation :				
At 70°C	%v/v	15.0	50.0	ISO 3405
At 100°C	%v/v	40.0	70.0	ISO 3405
At 140°C	%v/v		90.0	ISO 3405
At 180°C	%v/v	85.0		ISO 3405
Final Boiling Point		°C	215	ISO 3405
Residue	%v/v		2.0	ISO 3405

The fuel will be accepted or rejected according to ASTM D 3244 with a confidence limit of 95%.

In addition, the fuel must contain no substance which is capable of exothermic reaction in the absence of external oxygen.

16.2) Air

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

16.3) Safety

All competitors must be in possession of a Material Safety Data Sheet for each type of petrol used. This sheet must be made out in accordance with EC Directive 91/155/EEC and all information contained therein strictly adhered to.

16.4) Meaning of petrol

Petrol within the meaning of this Article is one of the following:

16.4.1 - Petrol of a kind recognised by the FIA as being on general and genuine sale to the public in a country with at least twelve events entered on the International Calendar.

16.4.2 - Petrol consisting solely of substances which can be found in at least one of the various petrols which satisfy (1) above, none of which is present in a greater proportion than in at least one such petrol, and whose proportions of saturates, aromatics, olefins and di-olefins do not exceed those detailed below:

		Test method
Saturates :	60% v/v maximum	ASTM D 1319
Aromatics :	20-60% v/v	ASTM D 1319
Olefins :	0-35% v/v	ASTM D 1319
Total di-olefins :	1% w/w	maximum GCMS

Additionally, the total of individual hydrocarbon components present at concentrations of less than 5%w/w must be at least 50%(w/w) of the fuel.

16.5) Purpose of Article 16

The purpose of this Article 16 is to ensure that the fuel used in Formula One is pump petrol as this term is generally understood.

The detailed requirements of this Article are intended to achieve this purpose whilst allowing the use of absolutely consistent petrols for racing purposes.

Any petrol which appears to have been formulated in order to subvert the purpose of this regulation will be deemed to be outside it. Fuel suppliers are invited to supply samples of their petrols to the FIA to be checked for conformity before use.

16.6) Sampling

All samples will be taken in accordance with the FIA Formula One fuel sampling procedure.

16.7) Fuel approval

Before any fuel may be used in an Event, a 120 litre sample must be submitted to the FIA for analysis and approval.

No fuel may be used in an Event without prior approval.

ARTICLE 17 : TELEVISION CAMERAS

17.1) Presence of camera or ballast

All cars must carry an on board camera or a ballast box at all times throughout the Event.

17.2) Location of ballast

The location and position of the ballast box is free.

17.3) Location of camera and equipment

The position of the on board camera will be determined by the FOCA appointed engineer and approved by the scrutineers.

ARTICLE 18 : FINAL TEXT

The final text for these regulations shall be the English version should any dispute arise over their interpretation.

ARTICLE 19 : CHANGES FOR 1998

19.1) Changes to Article 1.4 :

All entirely sprung parts of the car in contact with the external air stream, except the rollover structures, on board cameras (described in Articles 1.15 and 17.3) and the parts definitely associated with the mechanical functioning of the engine, transmission and running gear. Airboxes, radiators and engine exhausts are considered to be part of the bodywork.

19.2) Changes to Article 3.14 :

3.14 Aerodynamic influence :

Any specific part of the car influencing its aerodynamic performance (with the exception of the cover described in Article 6.5.2 in the pit lane only) :

- 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, with the exception of the skid block in 3.12 above, may under any circumstances be located below the reference plane.

19.3) Changes to Article 6.1 :

6.1 Fuel tanks :

6.1.1 The fuel tank must be a single rubber bladder conforming to or exceeding the specifications of FIA/FT5.

6.1.2 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 30cm 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.

6.1.3 Fuel must not be stored more than 40cm from the longitudinal axis of the car.

6.1.4 All rubber bladders must be made by manufacturers recognised by the FIA. In order to obtain the agreement of the FIA, the manufacturer must prove the compliance of his product with the specifications approved by the FIA.

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 FIA.

6.1.5 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.

6.1.6 No rubber bladders shall be used more than 5 years after the date of manufacture.

19.4) Changes to Article 6.2 :

6.2 Fittings and piping :

6.2.1 All apertures in the fuel tank must be closed by hatches or fittings which are secured to metallic or composite bolt rings bonded to the inside of the bladder.

Bolt hole centres must be no less than 8mm from the edge of the bolt ring, hatch or fitting.

6.2.2 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.

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

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

6.2.5 No hydraulic fluid lines may have removable connectors inside the cockpit.

19.5) Changes to Article 6.5 :

6.5 Refuelling :

6.5.1 All refuelling during the race must be carried out using equipment which has been supplied by the FIA designated manufacturer. This manufacturer will be required to supply identical refuelling systems, the complete specification of which will be available from the FIA no later than one month prior to the first Championship Event.

Any modifications to the manufacturer's specification may only be made following written consent from the FIA.

6.5.2 A cover must be fitted over the car connector at all times when the car is running on the track. The cover and it's attachments must be sufficiently strong to avoid accidental opening in the event of an accident.

6.5.3 Before refuelling commences, the car connector must be connected electrically to earth.

All metal parts of the refuelling system from the coupling to the supply tank must also be connected to earth.

6.5.4 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.

6.5.5 Any storage of fuel on board the car at a temperature more than ten degrees centigrade below ambient temperature is forbidden.

6.5.6 The use of any specific device, whether on board or not, to decrease the temperature of the fuel below the ambient temperature is forbidden.

19.6) Changes to Article 11.2 :

11.2 Air ducts :

Air ducts for the purpose of cooling the front and rear brakes shall not protrude beyond :

- A plane parallel to the ground situated at a distance of 140mm above the horizontal centre line of the wheel.

- A plane parallel to the ground situated at a distance of 140mm 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 120mm 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.

19.7) Changes to Article 13.1 :

The opening giving access to the cockpit must allow the horizontal template shown in Fig.4 to be inserted vertically, from above the car into the survival cell and bodywork, with the steering wheel, steering column, seat and all padding removed.

The front tip of the template must be no less than 625mm from the front wheel centre line and it must be possible to lower the template 25mm below the lowest point of the cockpit opening.

Furthermore, the forward extremity of the cockpit opening, even if structural and part of the survival cell, must be at least 5cm in front of the steering wheel.

The driver must be able to enter and get out of the cockpit without it being necessary to open a door or remove any part of the car other than the steering wheel or cockpit padding. 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 and starting with the safety belts fastened.

19.8) Changes to Article 13.3 :

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 900cm2**.**

A free vertical cross section which allows the template shown in Fig.5 to be passed vertically through the cockpit, must be maintained over its entire length.

The only things that can encroach on these two areas are the steering wheel and padding.

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.

19.9) Changes to Article 15.2.2 :

15.2 Rollover structures :

15.2.1 The basic purpose of these structures is to protect the driver. This purpose is the primary design consideration.

15.2.2 All cars must have at least two rollover structures.

The first structure must be in front of the steering wheel but no more than 25cm forward of the top of the steering wheel rim in any position.

The second structure must be at least 94cm above the reference plane, not less than 50cm 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 5cm over the steering wheel, in any position, and 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 5cm when he is seated normally with his helmet on and seat belts fastened.

15.2.3 The first rollover structure shall be subjected to a static load test by applying a vertical load of 75kN to the top of the structure through a rigid flat pad which is 10cm in diameter and perpendicular to the loading axis. Rubber 3mm thick may be used between the pad and the survival cell.

During the test, the rollover structure must be attached to the survival cell which is fixed to a flat horizontal plate.

Under the load, the deformation must be less than 50mm, measured along the loading axis, and any structural failure limited to 100mm below the top of the rollover structure, measured vertically.

15.2.4 The second rollover structure shall be subjected to a static load test by applying a load, which is the equivalent of 12kN laterally, 45kN longitudinally and 60kN vertically, to the top of the structure through a rigid flat pad which is 20cm in diameter and 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 15.4.8.

Under the load, the deformation must be less than 50mm, measured along the loading axis and any structural failure limited to 100mm below the top of the rollover structure, measured vertically.

15.2.5 The design concept of the rollover structures required by Article 15.2.2 shall be free. However, both rollover structures must have minimum structural cross sections of 100cm2, in vertical projection, across a horizontal plane 50mm below the highest point of each rollover structure.

19.10) Changes to Article 15.4.4 :

Referring to Fig.6 :

The external width of the survival cell between the line C-C and the rear of the cockpit opening template must be no less than 450mm and must be at least 60mm per side wider than the cockpit opening. These minimum widths must be maintained over a height of at least 350mm.

Forward of the line C-C the width of the survival cell may taper at a linear rate to a minimum of 350mm at the line B-B, at which point it may continue to taper at the same rate to the line A-A.

Between the lines A-A and C-C the width of the survival cell must be greater than the width defined by the two lines b-c. This minimum width must be maintained over a height of at least 350mm at the line C-C and may taper at a linear rate to 250mm at the line A-A.

The minimum height of the survival cell between the lines C-C and D-D is 550mm.

Furthermore, the parts of the survival cell which are situated each side of the driver's helmet must be no more than 550mm apart and must at no point be more than 220mm below the line between the tops of the two roll structures when measured normal to that line.

In order to maintain good lateral visibility, the driver when seated normally with his seat belts fastened and looking straight ahead must have his eyes above the top of the sides of the survival cell.

19.11) Changes to Article 15.4.6 :

Between the front and rear roll structures, on each side of the survival cell, identical impact absorbing structures must be fitted and must be solidly attached to it.

The survival cell and one of these impact absorbing structures must be subjected to an impact test.

For the purposes of this test, all parts which could materially affect the outcome of the test must be fitted to the test structure which must be solidly fixed to the ground and a solid object, having a mass of 780kg and travelling at a velocity of 7m/s, will be projected into it.

The object used for this test must be flat, measure 45cm wide by 55cm high and may have a 10mm radius on all edges.

Its centre of area must strike the structure 27.5cm above the bottom of the survival cell and at a point 525mm forward of the rear edge of the cockpit opening template longitudinally.

During the test the striking object may not pivot in any axis and the survival cell may be supported in any way provided this does not increase the impact resistance of the parts being tested. The impact axis must be perpendicular to the car centre line and parallel to the ground.

The resistance of the test structure must be such that during the impact the average deceleration of the object does not exceed 10g.

Furthermore, all structural damage must be contained within the impact absorbing structure.

This test must be carried out on the survival cell subjected to the higher loads in the tests described in Articles 15.4.9 and 11.

This test must be carried out in the presence of a FIA technical delegate in an approved testing centre.

Figures