

2007 MANUAL OF MOTOR SPORT

WITH 2007 NATIONAL COMPETITION RULES



CONFEDERATION OF AUSTRALIAN MOTOR SPORT



Section 6

General Requirements for Cars and Drivers

(Formerly Appendix C to the National Competition Rules)

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See also "Definitions - General", Section 4, Part II

BALLAST

It is permitted to complete the weight of the automobile by one or several ballasts on condition that each is a strong and unitary block, fixed by means of tools with the possibility to fix seals, placed on the floor of the cockpit, visible and sealed by the scrutineers. Ballast shall be affixed to the body utilising class 8.8, bolts, each of 8mm diameter, utilising reinforcement plates of at least 75mm x 50mm x 3mm under each bolt. There shall be at least one bolt per 20kg or part thereof of ballast in each ballast block with a minimum of two bolts. On automobiles with composite coachwork, ballast shall be attached to the chassis of the automobile forward of the midpoint of the wheelbase.

BODY SHELL

The main coachwork structure of an automobile which, in the case of an automobile not having a separate chassis, constitutes the fundamental structure of the automobile. Components such as doors, bonnet, bootlid and mudguards which are readily demountable are not deemed to be part of the body shell.

BODYWORK/COACHWORK

- externally: all the entirely suspended part of the automobile licked by the airstream;
- internally: cockpit and boot.

CHASSIS

The structure of any automobile so constructed that the coachwork is a separate entity and not a primary load carrying element of the automobile. It foresees that the coachwork may contribute to the overall strength of the automobile, but the word "chassis" is applicable only to those automobiles in which removal of the coachwork does not affect the entity of the mechanical components of engine, transmission, suspension and unsprung part as an assembly.

CYLINDER BLOCK

The crankcase and the cylinders.

ELASTOMER

An elastic solid composed primarily of hydrocarbon material with widely-spaced cross-linking bonds. Such material shall have a maximum Shore (A) Hardness of 100, and a maximum tensile strength of 60MPa.

ELASTOMERIC BUSHING

A flexible coupling between two rigid structures that provides limited radial and axial freedom of movement. Bushings with less than 4.0mm of elastomer between the rigid structures shall not be regarded as elastomeric.

EXHAUST MANIFOLD

Part collecting together the gases from the cylinder head and extending to the first gasket separating it from the rest of the exhaust system.

FAMILY OF AN AUTOMOBILE

Different series models belonging to one and the

same production series of the same manufacturer. Not fewer than the number of automobiles specified in the relevant Technical Regulations for the category of automobile with the same external general lines of the bodywork, material of the bodywork and wheelbase must have been produced in 12 consecutive months.

All models must be available through the normal commercial channels of the manufacturer.

Variations in the following details are acceptable:

- shape and material of front and rear bumper bars
- removable aerodynamic devices (eg, spoilers, wings, sill mouldings)
- control and comfort equipment (eg, sun roof, auxiliary lamps, door handles, exterior mirrors)
- decorative strips and mouldings
- left and right hand drive versions
- versions which differ in the number of doors provided that these differ only with regard to the doors, door openings and pillars.

FRICTION SURFACE OF THE BRAKES

Surface swept by the linings on the drum, or the pads on both sides of the disc, when the wheel achieves a complete revolution.

FUEL TANK

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

HOT LIQUID

Any liquid being of a temperature likely to cause at least first degree burns on contact with the skin.

ID Inside diameter.

IDENTICAL AUTOMOBILES

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

INTAKE MANIFOLD

- Carburettor System:** the components collecting the air-fuel mixture from the carburettor/s, and extending to the inlet ports.
- Injection System:** the components collecting the air from the air intake control device and extending to the inlet ports.
- Diesel Engine:** the components collecting the air at the air filter and extending to inlet ports.

MAIN STRUCTURE

The fully sprung structure of the vehicle to which the suspension and/or spring loads are transmitted, extending longitudinally from the foremost front suspension mount to the rearmost mount at the rear suspension.

MANUFACTURING STANDARDS

Unless specifically authorised in the relevant Technical Regulations for the Group or Category, it is not permitted to modify any component, even though the end result may fall within a permitted range.

MAXIMUM VALUE

Where a quantity is specified as having a maximum value, that value shall be absolute and no tolerance shall apply.

MEASURING TOLERANCES

Where a tolerance is expressed in the recognition documents, it shall apply, otherwise the following is applicable:

- Bore and stroke ± 0.1 mm
- All machining (except bore and stroke) including fan, crankshaft bearings, connecting rod bearings, valves, ports, carburettor, venturi, manifolds and clutch: ± 0.2 mm
- Distance from gudgeon pin centre line to highest point of piston crown: ± 0.5 mm
- Unfinished castings: $+4\% - 2\%$
- Cam lift: $+ 1\%$
- Weight of flywheel, clutch, crankshaft, connecting rods and pistons: $+7\% - 0.3\%$
- Width of car at front and rear axles: $+1\% - 0.3\%$
- Wheelbase: $\pm 1\%$
- Track: ± 25 mm

MECHANICAL COMPONENT

Any component of an automobile whether moving or not, which is necessary for the propulsion, suspension, steering and braking as well as any accessory which may be used in its operation.

MECHANICALLY IDENTICAL COMPONENT

A component which performs exclusively the original function/s in the same manner as foreseen by the manufacturer and which permits the attachment of any secondary components in the original manner and without modification of that component.

MINIMUM VALUE

Where a quantity is specified as having a minimum value, that value shall be absolute and no tolerance shall apply.

MINIMUM WEIGHT

The weight of the empty automobile (without persons, luggage, tools or jack aboard). Any reservoir containing a liquid (eg, lubrication, cooling, brake fluid, heating if necessary) shall be filled to the level laid down by the manufacturer, with the exception of the windscreen or headlight washer, brake cooling system, fuel and water injection/intercooler spray system, which shall be empty.

MODEL OF AUTOMOBILE

All the identical automobiles belonging to a family (see Family of Car) and a production series distinguishable by an identical conception and identical external general lines of the coachwork, and by an identical mechanical conception of the engine and the transmission to the wheels.

MONOCOQUE

A form of motor vehicle body construction in which all or most of the stresses are carried by the skin.

OD Outside diameter.

OPEN AUTOMOBILE

An automobile without a supporting structure between the tops of the windscreen pillars and those of the rear window (if fitted).

PERIMETER OF AN AUTOMOBILE

The locus delineating the horizontal extremities of an automobile.

PRODUCTION CAR

An automobile of which the production of a certain number of identical examples within a specified period of time has been verified at the request of the manufacturer, and which are destined for normal sale to the public.

RACING WEIGHT

The weight of the automobile during or immediately after a competition including the driver wearing all normal racing apparel including helmet. No materials, liquid or otherwise, may be added prior to weighing.

ROCKER PANELS

The external body panel extending horizontally from front to rear mudguard panels, and from sill to the lower extremity of the coachwork, when the automobile is viewed in side elevation.

ROTARY (WANKEL-TYPE) ENGINE

Spark ignition engine based on the Wankel principle.

SEAT

The two surfaces making up the seat cushion and seatback or backrest.

SILL

That component of the body shell, generally in a horizontal plane, which constitutes the lower extent of a door opening.

SPACE FRAME CHASSIS

An automobile chassis so constituted that all loads are borne by a matrix of structural sections of metal.

SPLITTER

An aerodynamic device generally mounted horizontally to the front lower bodywork of an automobile and which is contiguous therewith.

SPOILER

An aerodynamic device attached to an automobile which is contiguous with the bodywork and which is licked on only one surface by the airflow.

STRESSED SKIN SPACE FRAME CHASSIS

A space frame chassis to which stress bearing panels are attached.

TRACK

The distance between the centres of the contact patches of the tyres on the same axle as presented for competition.

WHEEL ANGLES - LIVE REAR AXLES

Unless established otherwise by the manufacturer or included in the relevant regulations, all production-based automobiles utilising a live rear axle are deemed to be configured with parallel wheel planes.

WHEEL

Wheel: flange and rim.

Complete Wheel: flange, rim and tyre. For measurement the tyre shall be inflated to the tyre manufacturer's recommended pressure.

Classification of Automobiles

1. RECORDS

For the purpose of attempting CAMS speed and/or endurance records, automobiles will be classified according to their calculated effective engine capacity, using the relevant factors as noted below. Automobiles shall then be placed in one of the following classes:

Vehicles with positive displacement reciprocating engines:

Below 250cc	Class 1
251-350cc	Class 2
351-500cc	Class 3
501-750cc	Class 4
751-1100cc	Class 5
1101-1500cc	Class 6
1501-2000cc	Class 7
2001-3000cc	Class 8
3001-5000cc	Class 9
5001-8000cc	Class 10
Over 8000cc	Class 11

(See "Supercharging", below.)

2. GENERAL

Applicable to all competition (excluding records) unless specifically noted otherwise.

2.1 Rotary Combustion (Wankel-type) Engines:

The nominal engine capacity will be calculated by the following formula: 1.8 times the volume determined by subtracting the minimum capacity of the working chamber/s from its/their maximum capacity unless otherwise specified in Group technical regulations.

2.2 Supercharging: The nominal cylinder capacity for a supercharged engine shall be multiplied by a factor of:

- for spark ignition engines = 1.7
- for Diesel engines = 1.5

and the automobile will be classified in all respects corresponding to the effective capacity thus obtained.

2.3 Automobiles with Electric, Turbine, Steam or Hybrid Engines:

Class allocation for competition purposes will be made on application to CAMS.

WING

An aerodynamic device attached to an automobile which is licked on both upper and lower surfaces by the airflow.

3. COMPETITIONS

For international competitions, the class structure shall be in accordance with the ISC of the FIA.

For other competitions, automobiles shall be classified as below.

Event organisers are permitted to amalgamate any adjoining classes, but shall use only the class limits stated for the relevant category or group.

Competitions shall be conducted only in accordance with the following categories, unless varied by CAMS.

3.1 1st Category: Racing Cars

Australian Formula 2
Formula 4000
Formula Ford
Formula Vee
Formula 3
Formula Libre (up to 1300, 1301-2000, 2001-3000, 3001-5000cc)

3.2 2nd Category

(i) Sports Cars:

Up to 1300cc	1301-1600cc
1601-3000cc	3001-6000cc
Above 6000cc	

(ii) Marque Sports Cars:

Up to 1300cc	1301-1600cc
1601-3000cc	3001-6000cc
Above 6000cc	

3.3 Sports Sedans

Up to 1600cc	1601-2000cc
2001-3000cc	3001-4000cc
4001-6000cc	

3.4 3rd Category: Touring Cars

Up to 1300cc	1301-1600cc
1601-2000cc	2001-3000cc
Over 3000cc	

3.5 Improved Production Cars

0-1600cc	1601-2000cc
2001-3000cc	3001-6000cc

3.6 HQ Holdens

As specified in the Group regulations.

3.7 4th Category (Off Road Automobiles)

As specified in Group regulations.

3.8 5th Category: Historic Cars

As specified in Group regulations.

3.9 6th Category: Other Automobiles

As specified in the relevant regulations.

General Requirements of Automobiles

Schedule A

ALL AUTOMOBILES (EXCEPT SUPERKARTS) SHALL, OF NECESSITY, IN ALL COMPETITIONS:

1. comply with the definition of an automobile;
2. be fitted with some form of fire protection between engine and driver's compartment suitable for preventing the passage of flame;
3. be constructed so as to minimise the entry of foreign matter into the driving compartment from the road or road wheels; and
4. have any propeller shaft and universal joints, if passing through the cockpit, fitted in a fixed tube or casing;
5. have any driving chain effectively guarded;
6. be arranged so that each fuel tank is vented externally to the bodywork;
7. if manufactured prior to 1 January 1978 (or otherwise not complying with ADR25A) and not registered for use on public roads, have any steering column locking device removed or disabled;
8. if required to be fitted with rollover protection, compliant with Schedule J;
9. use only fuel compliant with Schedule G;
10. if fitted with windows including any

windcreens shall be transparent and clear or, if tinted, in accordance with AS 2080;

11. be fitted with safety harness or seat belts compliant with Schedule I;
12. if fitted with an ABS (anti-lock braking) system or SRS (airbags), those systems may be disconnected or deactivated;
13. be fitted with a steering wheel not incorporating any wood, unless such is the original component of the automobile;
14. having any container within the cockpit which can hold more than 500mL of hot liquid (other than a series heater core) enclosed in a sealed compartment; and
15. where fitted with rigid brake pipes have such pipes made of steel ["Bundy" tubing or equivalent], unless it is an automobile of the 5th Category which is fitted with original components. In each case the installation must be such to protect the pipes against vibration and damage.

Schedule B

ALL AUTOMOBILES (EXCEPT SUPERKARTS) SHALL, OF NECESSITY, IN ALL SPEED EVENTS AND RACES:

1. if fitted with an opening front panel (eg. bonnet) utilise two separate fastening systems;
2. if fitted with any crankcase breather discharging to the atmosphere, each breather be vented into a catch tank of minimum capacity of two litres for engines up to 2000cc or three litres for over 2000cc. Regulations for competitions on unsealed surfaces may waive this requirement;
3. be fitted with safety equipment compliant with Schedules I and J);
4. be fitted with fire extinguisher compliant with Schedule H;
5. be so constructed that any longitudinal propeller shaft shall be protected from striking the ground;
6. be fitted with wheels and tyres compliant with Schedule E);
7. if fitted with any aerodynamic device, be compliant with Schedule F);
8. comply with any Supplementary Regulations which require the fitment of a device to prevent the loosening of any oil drain plug;
9. if fitted with a scatter shield, be compliant with Schedule M);
10. on each throttle be fitted with a return mechanism which in the event of any throttle

linkage failure will close each throttle;

11. be fitted with a dual circuit braking system save for automobiles manufactured prior to 31 December, 1973 or of the 5th Category;
12. be fitted with an operable reverse gear save for automobiles of the 5th Category and Formula Libre; and
13. be fitted with sideways or rearward-facing exhaust outlets. If rearwards, the outlet/s shall be between 100mm and 450mm above the ground and shall not protrude more than 150mm beyond the rearmost portion of the automobile. If directed sideways, the outlet/s must be located rearward of the midpoint of the wheelbase. In any case, they shall not project beyond the maximum width of coachwork or terminate more than 50mm within the plan view of the adjacent coachwork;
14. display a blue triangle of sides 150mm indicating the location of the battery;
15. be fitted with a flame- or liquid-proof bulkhead, which effectively separates the cockpit from the fuel tank or re-fuelling system;
16. for races and multi-start speed events, have an adhesive cover to prevent the spillage of broken glass on all external forward facing glass

components, save for the windscreen. Head lamp covers must not be red;

17. be configured such that the sound emitted when measured 30m from the track edge does not exceed 95dB(A) unless event regulations set a lower limit.
18. Notwithstanding the above requirements automobiles registered for unrestricted road use shall not, when competing in Drifting, Single- and/or Multi-car speed events (other than racing), be required to comply with the provisions of sub-sections 2, 5, 8, 9 and 11 of this Schedule.

Schedule D - Apparel

1. HEADGEAR

NOTE: Events which are entered on the FIA International Sporting Calendar have restricted standards for allowable helmets. Standards approved by the FIA for international competition are accepted by CAMS for domestic competition.

Helmets are compulsory in the following events (including where these activities form part of a Touring Road Event):

- Circuit Races
- Speed Events
- Special Stage Rallies (other than liaison/transport sections)
- Non Special Stage Rallies (other than liaison/transport sections)
- Off Road Events
- all other events where helmets are required by the event regulations

In kart races, it is compulsory for drivers to wear a full face helmet.

Helmets bearing any of the following marks are approved for use in any of the above events and other events where helmets are required and the event is not entered on the FIA International Sporting Calendar:

AS1698	Australian standard
Snell SA95, SA2000, SA2005	USA standard
Snell M2000, M2005 (Superkarts only)	USA standard
SFI Spec 31.1, 31.2, 31.1A, 31.2A	USA standard
SFI Spec 24.1 - see Note (i)(d)	USA standard
E22 (with 03, 04 or 05 amendments)	European standard
BS 6658-85 Type A and A/FR (incl. amendments)	British standard
8880-2004	FIA standard

NOTES:

- (i)(a) Helmets permitted for events entered on the FIA international sporting calendar, or events organised under the authority of an ASN other than CAMS, will be restricted to those specified in FIA Technical List 25 (see www.fia.com).
- (i)(b) No helmet may be modified from its

Schedule C

Schedule C is published in Section 7.

specification as manufactured except in compliance with instructions approved by the manufacturer and one of the standards organisations listed above, which certified the model concerned. Any other modification will render the helmet unacceptable for the requirements of this regulation.

- (i)(c) The fitment of tether posts for a HANS® device must only be done in accordance with the helmet manufacturer's guidelines, and only on helmets approved for the purpose. See FIA Technical List 29.

All helmets fitted with HANS® tethers must also bear a HANS® Approval label, issued either by the FIA or CAMS.

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- (i)(d) SFI 24.1 helmets may be used only by Junior Licence holders as defined under the General Regulations, Section 2 of this Manual.
 - (ii) The FIA has advised that communication systems in helmets must have been tested with that model of helmet for standard assessment. Any subsequent additions or modifications to facilitate communication or breathing devices may invalidate helmet certification.
 - (iii) Decoration of helmets is potentially dangerous, and members are warned of the hazard of using paint on approved helmets. Paint, stickers and transfers, or surface treatments can react with helmet shell material and affect its protective capacity, therefore, where a manufacturer provides guidelines or restrictions on the painting or decoration of helmets, these must be followed, using only paint or surface treatment specified by them (eg, air drying acrylic, polyurethane enamel or others) and preferably a painter having their approval. This is particularly important for injection-moulded shells which are not usually suitable for painting.
- The shell being painted should be efficiently masked as paint penetrating the interior can affect the performance of the helmet liner.

Paints requiring heat curing should not be used and any process should not exceed the

maximum temperature of conditioning of the helmet in the standard to which it is approved.

The manufacturer's instructions should also be consulted for any considerations on the use of stickers and transfers.

- (iv) Drivers are cautioned against using helmets which have been damaged or involved in accidents.

2. GOGGLES

Goggles or visors must be worn by drivers of open cars. Those with glass lenses of any kind are not acceptable. Lenses shall be of a plastic material, with high-impact resistance, satisfactory optical qualities and complying with Australian Standard Specification AS 1609-1981, BS4110Z or equivalent international standard.

NOTE: Goggles must be configured so as to minimise the entry of dust into the eye from any angle, and be positively retained by an elastic strap behind the head or helmet. Conventional style glasses are not acceptable.

3. CLOTHING

NOTE: All members are advised that the use of apparel to the FIA 8856-2000 standard may be introduced progressively at some future time. Members are advised to take this into consideration when making purchases of apparel.

(a) Races:

- (i) Drivers: In all circuit races and practice therefore, all drivers shall be required to wear overalls homologated to the FIA 1986 standard, or FIA 8856-2000 standard, as well as socks, shoes and gloves which respect the design parameters set out in those standards. Copies of these standards are available at CAMS State offices.

NOTES:

- The wearing of apparel, including underwear and balaclavas complying with the 8856-2000 Standard is mandatory in any event entered onto the International Calendar and is strongly recommended for all other events.
- It is foreshadowed that from 1 January 2009, only apparel to FIA 8856-2000 will be acceptable in any National Championship or Series. From 1 January 2011 the use of FIA 1986 apparel will no longer be permitted in any circuit race.
- (ii) Pit Crew: All persons working in pit or paddock areas on cars must wear shoes and socks, neck to ankle covering, and at least a short sleeved shirt. On race day, pit crew must be neatly attired. Promoters are authorised to refuse entry to the pit area of people unsuitably dressed. In circuit races where refuelling operations are permitted, any persons involved in such operations or who are working within one metre of the refuelling or venting points must be attired in the following:

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- One-piece overalls of flame-resistant materials extending from neck to wrists to ankles. Where such overalls consist of a single layer of material, separate flame-resistant underwear extending from neck to wrists to ankles must also be worn.
- A flame-resistant balaclava which covers the entire head and neck save for one or two eye openings, unless a helmet providing a similar level of protection is worn.
- Goggles which cover all exposed areas of skin not covered by the balaclava, or a full face helmet and visor.
- Shoes of leather or other flame-resistant materials which completely cover the feet and which fit closely around the ankle to minimise the ingress of spilt fuel. The soles must be resistant to fuel.
- Those directly handling fuel shall require socks and gloves which comply with the requirements of the FIA 1986 or 8856-2000 standard.

(b) Superkart Races and Practice:

In all Superkart races and practice, drivers must wear:

- a one- or two-piece abrasive-resistant race suit which is securely fastened at the wrists and ankles, and at the waist on two-piece suits. In the 250cc classes, the suit must be of leather.

For all other classes, the material may be

- leather, Cordura®, Cordulon® or equivalent;
 - footwear, securely fastened which covers and protects the ankles;
 - abrasive-resistant gloves that cover and protect the hands and wrists (including the fingers).
- NOTE:** Superkart drivers may wear appropriate wet weather clothing in addition to that specified. It is recommended that acoustic ear plugs be worn.

(c) Rallies:

(i) Special Stage Rallies (State level* or higher):

During all special stages, at minimum crew members are required to wear:

- One-piece driving suits, made from a flame retardant material, or, until 30 December 2008, two (2)-piece driving suits homologated to an appropriate SFI standard;
- a separate balaclava, t-shirt, underwear and socks, all made from a material complying with ISO 15025:2000 or ISO 6940, or alternatively of cotton or wool;
- flame-retardant gloves (co-drivers are exempted from this requirement), complying with current FIA standards or from materials compliant with ISO 6940;
- boots complying with current FIA standards, boots the upper portions of which are made from materials compliant with ISO 6940 or alternatively boots

which incorporate a full leather upper.

The use of flame-retardant apparel which has been homologated to the FIA 8856-2000 standard is strongly recommended.

- * **Note:** Where a State level series is not run, this regulation shall instead apply to the highest status Club or Multi-Club rally series run in that State.

(ii) Australian Rally Championship & Tarmac Rally Events:

In addition to (i) above, during all special stages, crew members are required to wear socks and boots complying with the FIA 8856-2000 standard.

(iii) Special Stage and Non-Special Stage Rallies not covered by (f) above:

During all competitive sections, crew members are required to wear clothing from ankles to neck to wrists during all competitive sections. Clothing of flammable synthetic material, such as nylon, is not acceptable. The use of apparel complying with (i) above and/or which has been homologated to the FIA 8856-2000 standard is strongly recommended.

(iv) Touring Road Events:

For Touring Road Events, crews will comply with the provisions of the relevant sub-event requirements; of the equivalent status (refer NCR 15, and the Touring Road Event Standing Regulations).

(v) Other Road Events:

For Touring Assemblies and the like which do not involve performance driving, clothing appropriate for the conditions likely to be experienced, which is in line with community standards, shall be worn.

(d) Off Road:

During all Off Road competition, all crew members are required to wear:

- one-piece driving suits made from flame retardant material;
 - boots complying with current FIA standards, the upper portions of which are made from materials compliant with ISO 6940, or alternatively boots which incorporate a full leather upper;
 - socks made from materials complying with ISO 15025:2000 or ISO 6940, or alternatively of cotton or wool.
- It is recommended that a separate balaclava, t-shirt and underwear all made from a material complying with with ISO 15025:2000 or ISO 6940, or alternatively of cotton or wool, be worn.

(e) Speed Events:

In speed events, clothing for drivers and crew members must be from ankles to neck to wrists. Clothing and footwear of flammable synthetic

material, such as nylon, is not acceptable.

(f) General:

All Events: All apparel must be worn as the manufacturer intended. No driver shall participate in any competition unless wearing suitable and appropriate footwear. Prohibited are, for example, thongs, Roman sandals and high-heeled shoes.

Drivers shall continue to comply with the requirement of NCR 141 until such time as they leave their automobiles.

Badges and embroidery: The attachment of badges and use of embroidery on competitor's overalls can have a detrimental effect on the protection afforded by the garment.

- (i) **Badges:** For apparel complying to the FIA 8856-2000 Standard, it is mandatory that all badges attached to the garment have a flame-resistant backing, and be attached only with flame-resistant thread to the outer layer of the garment only. For all garments the number and size of badges should be kept to the minimum required to meet commercial and regulatory obligations.
- (ii) **Embroidery:** For apparel complying to the FIA 8856-2000 Standard, it is mandatory that all embroidery be done using flame-resistant thread. Embroidery is only permitted to the outer layer of the garment. This is strongly recommended for all apparel.

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Schedule E - Wheels and Tyres

The following requirements and parameters apply to all competitions.

1. **RIM WIDTH**
 1st Category: Racing Cars
 2nd Category: Sports Cars (Group 2A) and cars complying with Group 2C Formula.
 Where a steel centre is employed, the width of any rim attached thereto shall not exceed the following:
 - cars up to 2000cc capacity and Supersports: 8.5"
 - cars over 2000cc capacity: 10"
 - if a steel centre is not utilised, the width is unrestricted.
 2nd Category: Other Cars
 3rd Category: Touring Cars
 (i) where a steel wheel centre supplied by a vehicle manufacturer as original vehicle equipment is employed, any rim attached to such centre shall not be more than 2" wider than the rim originally fitted to such centre.
 (ii) wheels and steel centres other than those supplied by a vehicle manufacturer as original vehicle equipment may not be widened.
2. **TYRES**
 2.1 Tyre fitment shall be in accordance with the Tyre and Rim Association Manual; otherwise the tyre manufacturer's specifications shall be respected.
 2.2 Tread wear indicators as provided by the tyre manufacturer shall be the definitive indicator of tread depth.

- 2.3 Prior to practice or racing, each tyre must have tread in excess of the wear indicator save on the shoulder where localised wear may occur.
3. **WET WEATHER TYRES**
 In wet conditions and with the approval of the Stewards of the Meeting, the Clerk of the Course may declare "untreaded tyres are not to be used at the commencement of the competition".
4. **CONTROL TYRES**
 A Control Tyre is the tyre specified for a particular Group, class, competition etc and shall not be modified other than by the reduction of tread depth.
5. **TYRE PRESSURE CONTROL VALVES**
 Tyre pressure control valves on the wheels are forbidden.
6. **VALVE CAPS**
 Each tyre valve shall be fitted with a cap which effectively prevents leakage in use.
7. **WHEEL SPACERS**
 A maximum of one, metallic spacer may be used behind each wheel.
8. **RIM PROFILE/INNER TUBES**
 Any tyre fitted to a rim without safety profiles must be fitted with an inner tube.

Production Car Tyre List

Manufacturer	Tyre	Manufacturer	Tyre	Manufacturer	Tyre
Bridgestone	RE 540S, RE55	Hoosier	Street TD	Silverstone	FTZ Sport Type RR
Continental	Conti Competition C1	Kumho	Ecsta V700	Toyo	Proxes RA-1, Proxes R888, Trampion R881
Dunlop	Formula R (D83J, D84J, D93J, D01J, DZ02G, DZ03G), Formula 901, Formula W10, SP Super Sport Race	Ohitsu	Falken Azenis, Azenis RT215	Yokohama	A021R, A032R, A038R, A039R, A048R
		Pirelli	P Zero C, P Zero Corsa		

New tyres to be added to this list shall be generally and commercially available from stocks normally kept within Australia. CAMS reserves the right to remove tyres from this list at any time.

To be considered for addition to the Production Car Tyre List, the tyres must have a moulded tread pattern across the entire width of the working area of the tyre. Such tread shall incorporate a void ratio of a minimum 10% of the total contact surface in the unworn tyre, and at least 5% when the tyre is worn to the tread wear indicators.

Schedule F - Aerofoils and Coachwork

The following are the CAMS (and FIA) parameters regarding the fitting of aerofoils and other aerodynamic devices to cars.

1. For all vehicles (1st, 2nd, 3rd, 4th and 5th Categories) coachwork shall be deemed to include all external parts of the car which extend above the highest point of either the front or rear complete wheels (with tyres) with the exception of units definitely associated with the functioning of the engine or transmission and the roll bar.
 Any specific part of the car which has an aerodynamic influence on the stability of the vehicle must be mounted on the entirely sprung part of the car and shall be firmly fixed whilst the car is in motion.
 Neither the roll bar nor any of the units associated with the functioning of the engine or transmission shall have an aerodynamic effect by creating vertical thrust.
 All external projections swinging in a horizontal plane shall have a minimum radius of 15mm. The leading edge of any aerofoil fixed to the front of the car shall not be sharp.
 Switches for battery isolation and fire fighting equipment may project beyond the coachwork without infringing regulations.
2. **2ND CATEGORY**
 Vehicles shall comply with the following requirements (except for cars which comply with Group 2C Regulations):
 The highest point of any forward facing gap in the coachwork shall not be situated above a horizontal plane 800mm above the lowest point of the entirely sprung structure of the car. The maximum width of coachwork shall not exceed by more than 200mm the maximum width between the two vertical planes tangent to the outer faces of the front/rear wheels.
3. **1ST CATEGORY**
 Vehicles shall comply with the following requirements:
 - 3.1 No element of coachwork may exceed in height a horizontal plane situated at 900mm above the ground. Neither the roll bar nor any of the units associated with the functioning of the engine shall be included. Measurements are to be taken with the driver on board.
 - 3.2 Cars of a type registered at 1 January, 1975, but constructed after 1 July, 1975; and cars of a type not registered at 1 January, 1975, but constructed after 1 January, 1976; and cars registered at 1 January, 1975, but which have subsequently been substantially varied; must all comply with the following requirements:

Table for Art. 3.2

	F4000	F2	F/FORD
• Maximum width ahead of front wheels	1,500mm	1,500mm	950mm
• Maximum width ahead of front wheels, above height of wheel rims	1,100mm	1,100mm	950mm
• Maximum width between front and rear wheels + deformable	1,300mm	1,100mm +200mm	1,300mm
• Maximum width behind rear wheels	1,100mm	1,100mm	1,100mm
• Maximum front overhang		1,000mm	
• Maximum rear overhang (from centre of wheel/axle)	800mm	1,000mm	

- 3.3 Wheels shall be external to the coachwork.
- 3.4 Unless otherwise specified in technical regulations the coachwork opening giving access to the cockpit must be at least 600mm long; and 450mm wide, maintained over 300mm from the rearward point of the seat backrest towards the front. It must be able to be entered or left without it being necessary to open a door or remove a panel. Sitting at his steering wheel the driver must be facing forwards. Moreover, the cockpit must be so conceived that the maximum time necessary for the driver to get out does not exceed five seconds.

1. GENERAL

Unless expressly permitted otherwise by the Board of CAMS, all fuel used in competition must comply with the prescriptions of this Schedule. All fuel must be used without additives other than those permitted herein. Other than for pump fuel, the mixing of fuels from different oil companies, or of different grades and/or types of fuel from the same oil company is forbidden.

An oil company shall be deemed to be either:

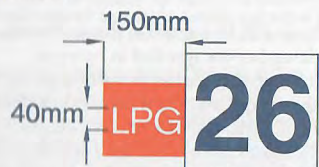
- a company with oil refining capacity either in Australia or Internationally; or
- a company with roadside retail fuel bowser outlets within Australia; or
- a marketing company with national distribution capability, and specifically recognised by CAMS.

2. COMMERCIAL FUEL

Commercial Fuel: Petrol, automotive diesel or liquefied petroleum gas (LPG) produced by an oil company and available for commercial sale in all States and mainland Territories of Australia. Such fuel shall comply with the Fuel Standards Determinations made under Section 21 of the Fuel Quality Standards Act (2000).

Fuel which is the subject of Approvals made under Section 13 of the Fuel Quality Standards Act (2000) shall not be regarded as Commercial Fuel.

- 2.1 **Pump Fuel:** A commercial petrol available for sale on demand from a roadside retail bowser outlet at each of at least five separate service stations in each of at least three Australian States. Mixtures of Pump Fuels are permitted.
- 2.2 **Liquefied Petroleum Gas:** A commercial LPG being either butane, propane or a mixture of both, and of a type which is dispensed from a roadside retail bowser. Where an automobile utilises LPG, a sign in the form of the white letters LPG on a red reflective background, as per drawing G-1, must be placed immediately to the left and centralised vertically to all competition numbers.



Drawing G-1

Unless specifically approved otherwise by CAMS, LPG must not be used in circuit races involving re-fuelling.

- 2.3 **Diesel:** Diesel fuel must be gas oil corresponding to the following specifications:
- hydrocarbon level, 99.0 % by weight minimum

- specific gravity, 860 kg/m³ maximum
- cetane number 55 maximum (ASTM D 613)
- calculated cetane number 55 maximum (ASTM D 976-80).

3. RACING FUEL

3.1 **Leaded Racing Fuel:** Leaded racing fuel is defined as a leaded petrol which is supplied by an oil company and having a composition the same as that supplied for piston engine general aviation use, ie, Avgas 100/130 or Avgas 100LL only.

3.2 **Unleaded Racing Fuel:** Unleaded racing fuel is defined as an unleaded petrol in compliance with FIA Article 252.9.1 of Appendix J to the current FIA Year Book.

4. ALCOHOL

Alcohol fuels may only be used where specific regulations permit.

4.1 For vehicles other than 5th Category, such fuels must contain a minimum 95% V/V of methanol and/or ethanol and a maximum 5% ketone content. Nitromethane is expressly prohibited.

4.2 For individual vehicles of the 5th Category, specific alcohol based fuels with a constitution other than as described in 4.1 above may be approved; the constitution of such fuels shall be listed on the Certificate of Description of the particular vehicle in question and must be used unadulterated in that vehicle.

4.3 In all these cases, it is mandatory that cars using alcohol fuels carry a symbol in the form of the letter "A" in white on a red circle of approximately 115mm diameter as shown in drawing G-2 below. This symbol should be placed adjacent to the competition number on each side of the car, and the filling cap of the fuel tank.



Drawing G-2

5. OXIDANTS

Only air may be mixed with the fuel as an oxidant. The use of Nitrous Oxide is strictly prohibited.

6. ADDITIVES

Any substance, other than air, incorporated into the fuel subsequent to its final blending by the producing oil company is deemed to be an additive. Nothing in the foregoing shall be deemed to prohibit the addition of water,

an approved lead replacement additive* or a lubricant provided that such additive does not increase the octane rating, oxygen content or specific heat content of the fuel.

List of Approved Lead Replacement Additives:

Valvemaster®, Redline Lead Substitute®, Penrite Valve Shield®, PM 800 Fuel System Conditioner®, ELF Millesim®.

7. FUELS REGULATION COMMITTEE

7.1 **Appointment:** The Fuels Regulation Committee has been established by the Board of CAMS for the purpose of considering the application of restrictions to fuel usage. The Chairman and Committee members shall be appointed annually by the Board. Recommendations from the Committee shall be passed to the Board for consideration.

7.2 **Application for Restrictions:** Requests for restrictions to fuel usage may only be addressed to the Committee by:

- 7.2.1 Sporting Commissions of CAMS;
- 7.2.2 The holders of valid Activity, Series or Championship Management contracts;
- 7.2.3 Persons or organisations recognised by CAMS as representing particular Groups of vehicles;
- 7.2.4 Event organisers.

7.3 **Criteria for consideration of Restrictions to Fuel:** The Committee will consider the following criteria in making their recommendation:

- 7.3.1 **The nature and level of the competition:** Is the competition at amateur or professional level, and will the type of fuel play a major role in the outcome of the competition?
- 7.3.2 **Applicability of Government regulations:** Are there statutory restrictions that would affect the fuel used in competition?
- 7.3.3 **Availability of fuel:** Is there a particular supply issue affecting the competition?
- 7.3.4 **Technical appropriateness of fuel:** Does the nature of the fuel restriction sought match the technical specifications of the cars?
- 7.3.5 **Cost containment:** Is the request for a restriction for fuel, based on cost containment, consistent with other cost containment philosophies of the competition?
- 7.3.6 **Health and safety:** What effect will any restriction have on OH & S issues?
- 7.3.7 **Performance criteria:** What effect will a restriction have on performance relativities within the competition?
- 7.3.8 **Commercial considerations:** What commercial arrangements may form part of any restriction to fuel (eg, sponsorship, rebates, promotion etc)?

Further information on these criteria is available from the Executive Officer, Fuels Regulation Committee, at the CAMS National Office.

7.4 **Restrictions:** The Committee will consider requests for restrictions to:

- 7.4.1 **Nominated Suppliers:** In general, a "Control Fuel", being a restriction to a particular brand and/or

type of fuel, will not be authorised (see NCR 68). Notwithstanding the above, a contract between the competition organisers and a particular fuel supplier may be recognised provided that such a contract is the outcome of an open tender process. Where such a fuel is supplied to the competitors it is prohibited to alter the composition of the fuel in any manner, including by the use of additives otherwise permitted under article 6.

7.4.2 **Fuel supplied by the Organisers:** A restriction may be sought to limit fuel used by all competing vehicles at an event to "Fuel supplied by the Event Organisers". Such a restriction will not be granted unless the organisers can demonstrate that they have taken reasonable steps to ensure that appropriate grades of fuel are available to suit all competing groups of vehicles.

7.4.3 **Commercial Fuel:** As defined above.

7.4.4 **Pump Fuel:** Restrictions to pump fuel will be obtainable to a limited number of competitions that can strictly satisfy all the criteria of article 7.3 above. A restriction to pump fuel will not be authorised in conjunction with any other type of fuel (eg, a restriction to pump fuel and leaded racing fuel).

7.4.5 **Racing Fuel:** Where a restriction to racing fuel is sought, an additional restriction to unleaded racing fuel may also be approved. In general, restrictions to leaded racing fuel only will not be authorised for other than competition solely for 5th Category vehicles.

8. FUEL TESTING

Fuel samples may be drawn for testing from a competing automobile at any time during the period of time from the commencement of the event until the vehicle is released from parc fermé at the conclusion of the event, should one be organised.

It is the competitor's responsibility to provide the means by which fuel samples may be taken from the vehicle; the method being subject to the approval of the Chief Scrutineer. Sampling requiring the disconnection of hoses containing fuel under pressure is not acceptable.

Whilst the fuel samples for testing are being taken, the competitor, or his nominated representative must be in immediate attendance to observe the process. Where the competitor or his nominated representative cannot be present within a reasonable time, the Chief Scrutineer must notify the Stewards of the Meeting, who shall appoint a proxy observer, being an official of the meeting, who shall act as the nominated representative of the competitor.

For all National Championships and Series, and other events as specified in event regulations, the competitor must declare to the scrutineers, at the time of sampling, the brand

and type of fuel that is in the vehicle's fuel tank. Any additive, including lubricants, must also be disclosed to the scrutineers. Where a permitted mixture of fuels is present, all component fuels must be declared.

Samples shall be tested according to procedures A or B below.

Test Procedure A: Testing at the Event

The Chief Scrutineer may choose to test fuel samples at the event. To this effect, one sample of fuel may be taken for testing under the conditions outlined above from each or any competing vehicle. The competitor may, at his discretion, request a second sample be drawn at the same time. After being duly identified and sealed, this second sample may be retained by the competitor**.

Testing at the event shall be limited to:

- physical observation of the sample (colour, smell, opacity)
- testing using whatever specialist equipment is available at the event (eg, electrical conductivity, density, gas chromatography etc)

Where a charge is raised as a result of such testing, the Chief Scrutineer or his representative shall give evidence at the subsequent Stewards Hearing or Inquiry, although they shall not be accorded the status of "Judge of Fact". Notwithstanding this, the Stewards shall be obliged to take into consideration any evidence thus presented.

** The competitor may use the retained sample in his defence provided that the seal of the sample retained by the competitor is broken in the presence of the Stewards of the Meeting. Where the scrutineers deem that no action is necessary, the container holding the competitor's sample shall be returned by the competitor to the scrutineers upon request.

Test Procedure B: Testing by a CAMS-approved Laboratory

Each year, CAMS shall, by means of a Bulletin, publish a list of approved laboratories for the testing of fuel.

For tests by an approved laboratory, two fuel samples shall be drawn and sealed into identified containers. The seal on each container shall be affixed in such a way as to ensure the rupture of the seal upon the opening of the container. Each seal shall bear identification of the event, the name and signature of the scrutineer taking the sample and the name and signature of the competitor. The samples (Samples A and B) shall then be sent to CAMS, which shall send Sample A to a CAMS-approved laboratory. The determination of fuel type and composition shall be by comparison against a reference library of results for known fuel types determined by the method ASTM D-3710-95 (or equivalent).

Where the approved laboratory notifies CAMS that sample A has been found to be not in conformity with the prescriptions contained herein, CAMS shall lodge sealed fuel sample B with the same approved laboratory. Where the

results of the second test sample B corroborate the initial determination of Sample A, the fuel shall be deemed to be not in conformity with the prescriptions of the present Schedule. This finding shall be binding on any Stewards Hearing, Appeal Tribunal or any subsequent AMSAC Hearing. Where a discrepancy exists between the results of samples A and B, no action shall be taken against the competitor. **Note:** There are special conditions associated with the transport and handling of flammable liquids. Contact CAMS to ascertain an appropriate method of transporting the fuel.

9. HEALTH WARNING

All participants in motor sport are reminded that fuels, oils, lubricants and coolants are highly specialised substances. Apart from the ever-present risk of fire, participants must be aware that these agents may contain substances that are extremely dangerous to one's health if misused, inhaled or allowed into contact with human skin. Some of the components of these fuels, oils and lubricants are suspected of having the potential to cause cancer in rare instances. The use of petrol as a general cleaning and washing agent is a common misuse of a potentially dangerous substance.

Schedule H - Fire Extinguishers

(not applicable to Karts)

1. All racing cars of Formula 4000 and Formula 2 (when competing in circuit races only) shall be required to be fitted with a fire-extinguishing system of at least 5kg extinguishant capacity, at least half of which must be placed forward of the engine, but to the rear of the foremost pick-up points of the front suspension.

The system must include a manual triggering device, operable by the driver on board or by a helper outside the vehicle, the location of which must be indicated by a letter "E" in a red circle. The direction of the outlet/s of the extinguishant is free.

The operating system must be designed so that even if the battery of the car is inoperative, the extinguisher will still function.

2. In other than circuit races, all cars mentioned in 1 (above), and in all competitions, all other 1st Category vehicles must be equipped with at least a fire extinguisher as required in 3 (below).

3. SPEED EVENTS, RACES AND DRIFTING

All vehicles of the 2nd, 3rd, 4th, 5th and 6th Categories in all speed events including races must be equipped with a fire extinguisher which complies with the following conditions and is properly fitted at a suitable location:

- (i) it must comply with Australian Standard 1841 (save that extinguishers which meet AS1841.2 are not permitted). **Note** that Halon extinguishers (1201 or 1311, including BCF) are not permitted under civil legislation;
- (ii) it must be of at least 900g capacity;
- (iii) it must remain restrained under an acceleration of 25G;
- (iv) it must be capable of removal by the driver without the aid of tools.

The fitment of an "on-board" extinguishing system homologated by the FIA shall be acceptable as an alternative to the fitment of a separate extinguisher.

4. ROAD EVENTS

- (i) **Hand-held extinguishers:** All cars must be fitted with one or two fire extinguishers, which must meet the following criteria:

- The extinguishant must be: AFFF, Dry Powder or other extinguishant permitted by the FIA.
- The minimum capacity of the total of the two extinguishers must not be less than:

AFFF	2.4 litres	12.0 bar
	pressure	(or as otherwise determined by the FIA)
Dry Powder	2.0kg	AS1841.5

- Each AFFF extinguisher must be equipped with a means of checking the pressure of its contents.
- The following information must be visible on each extinguisher:
 - capacity
 - type of extinguishant
 - weight or volume of the extinguishant
 - date on which the extinguishant must next be checked, which must be no more than two years after the date of the last filling or the date of the last check

- (ii) **Plumbed-in extinguisher systems:** In addition to the above extinguishers, PRC Rally Cars and Groups A and N Rally Cars are to be equipped with a plumbed-in fire extinguisher system, homologated by the FIA, in accordance with the following:

(a) **for ARC events:**

All vehicles, regardless of date of manufacture, except as provided for in this sub-regulation.

Drivers competing in their home State*, in vehicles manufactured prior to 1 January 2000, shall be exempt from this requirement.

The extinguisher system must comply with the specifications either in force at 1 January 2001 or in force on the date of issue of the vehicle log book, whichever is the later.

(b) **State Championship events or other major rallies, other than ARC:**

All vehicles whose original date of manufacture is post-1 January 2000**.

- (iii) **International events:** All cars being used in International events must comply with the FIA

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requirements for fire extinguishers.

* **Note:** Where, in a particular year, there is no round of the ARC in a driver's home State, a driver may nominate an adjoining State to be his home State.

** **Note:** This date refers to the original date of manufacture of the vehicle, and not the date on which it was built as a rally car.

5. Fire extinguishers as per 3(i) and 4(i) above must be maintained according to the following prescriptions:
- an inspection, to be carried out by scrutineers at least once every six months, or otherwise prior to competition. This involves visually checking the unit and its mountings for damage, checking the pressure of the contents, and shaking the container to check for settling of the extinguishant. Where practical the extinguisher should be weighed
 - a three-yearly service, which involves recharging the extinguisher (Notes 1 & 2 below)
 - a six-yearly hydrostatic test of the pressure vessel (Note 2 below)

Note 1: Unless otherwise specified, road registered cars competing in Club or Multi Club level speed events are exempt from this requirement.

Note 2: It is the competitor's responsibility to provide evidence that the required three- and six-yearly services have been undertaken.)

6. Fire extinguishers homologated by the FIA (plumbed-in type) must be serviced every two years, either by the manufacturer or their agent as follows:
- Bottles must be examined for signs of corrosion, abrasion and paint finish. Should the service engineer decide that the bottle has been subject to corrosion or exhibits abrasions that may affect performance, the bottle must be discarded.
 - The bottle must be pressure tested to at least one and a half times its working pressure. Extinguishers with poor paint finish must be refurbished. The interior of the bottle must also be inspected for signs of damage or corrosion.
 - All seals must be replaced.
 - The operating head must be cleaned and tested. If found to be faulty it must be either repaired or replaced.
 - Nozzles must be checked for damage/possible blockage. They must be tested to ensure that they are in good working order.
 - Extinguisher contents must be replaced.
 - Service records including the bottle label must be updated, indicating the date on which the service was undertaken, the work carried out and the date on which the next service is due.

Schedule I - Safety Harnesses / Window Nets

(not applicable to Karts)

1. GENERAL REQUIREMENTS

Safety harnesses or seat belts must be complete units sourced from a recognised manufacturer. It is not permitted to mix parts of seat belts/harnesses of different types or manufacturers. Safety harnesses or seat belts and must be fitted and worn in accordance with any manufacturer's instructions or limitations, the requirements of the present Schedule and any such additional requirements as may be imposed by specific category, group and/or event supplementary regulations.

Each harness or belt must comply at least with one of the acceptable Standards as specified in Table 1 below.

2. APPLICATION

Safety harnesses and/or seat belts are required to be worn in all competition, save where otherwise specified for vehicles of the 5th Category. Safety Harnesses and/or seat belts must be fitted as specified in Table 2 below. Harnesses of a higher level than specified are permitted and encouraged.

Important note: Some safety harnesses and seat belts specified by CAMS may not comply with civil registration requirements. Where the vehicle is to be driven on open public roads, it is the competitor's responsibility to ensure that the vehicle complies with all relevant State and Territory legislation.

3. MOUNTINGS

The safety harness or seat belt must be securely mounted on at least two points (Type D), three points (Types B and C) or 4 points (Type A). On cars derived from series production vehicles such mountings shall be positioned to provide compliance with the prescriptions shown in Drawings I-1 and I-2. If the two shoulder straps join prior to a common mounting point then that junction shall be at least 150mm behind the wearer's neck. In all cases of mounting the

following must be observed:

- (a) On series production cars, some or all of the original seat belt mounting points may be satisfactory. Where the original seat belts are affixed to the seat, such mounting points may be used only:
- (i) where the original unmodified mounting points on the seat are retained; and
 - (ii) the vehicle is being used for non-FIA International events.
- Where the original mounting points are not used, additional floor mounting points must be reinforced with a 3mm steel plate of at least 75mm x 50mm on the underside of the body.
- (b) Full harness (Type A and B) rear mounting points must be to a substantial part of the vehicle's structure, reinforced as for floor mounts above, or to the safety cage.
- (c) Under no circumstances may a safety harness mounting bolt be used to affix a safety cage to the bodyshell.
4. In races and speed events all cars of 1st Category and Sports Racing Cars (Group 2A and 2C) must be fitted with a five- or six-strap harness (Type A). In such vehicles the shoulder straps shall be mounted in compliance with Drawing I-3. It is recommended that all cars with a reclined driving position be fitted with such harness.
5. Safety harnesses or seat belts of cars involved in any accident must be inspected by a scrutineer at the relevant meeting. If appropriate, the vehicle log book shall be endorsed with a requirement that the belts be replaced. The scrutineer at the car's next meeting must satisfy himself that the replacement has been made.
6. **WINDOW NETS**
- In races, closed vehicles which are required to have a roll over protection structure fitted will be required to have a safety window net fitted in the driver's door window opening. The window net must cover the opening forward to



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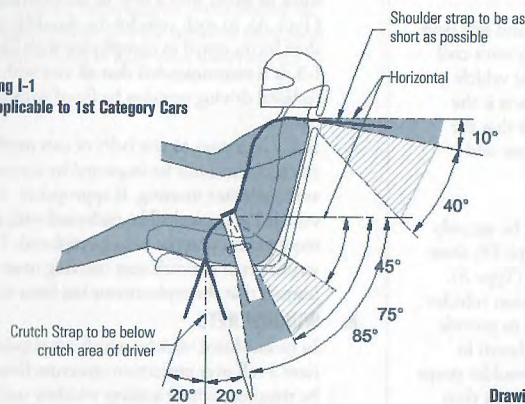
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TABLE 1

Type	Configuration	Acceptable Standards	Notes
A	6-Strap Harness 	FIA 8853/98 ^{Note 1} FIA 8853 - 1985 SFI 16.1 ^{Note 2}	¹ "Not valid after XXXX" shown on each strap. Harness not to be used after 31 December of the year stated (XXXX). This five-year life is imposed by the FIA. ² Harness to be returned to original manufacturer for re-webbing within two years of the date of manufacture shown on SFI label. This requirement imposed by SFI Foundation (inc).
	5-Strap Harness 		
B	4-Strap Harness 	FIA 8854/98 ^{Note 1} FIA 8854 - 1991 SFI 16.1 ^{Note 2} AS 2596 ECE R16	
C	Lap Sash Belt 	AS 2596 ECE R16 AS E35	Seat belts as fitted to production cars as standard equipment and marked as complying with ADR 4/00 or 4/01 shall be deemed as complying with AS2596
D	Lap Belt 	AS 2596 ECE R16 AS E35	

Drawing I-1
Not applicable to 1st Category Cars

 Recommended range of angles for Safety Harness Belts
 Acceptable range of angles for Safety Harness Belts. Note that the angles are taken from the driver's body, not the slots in the seats.

Drawing I-2

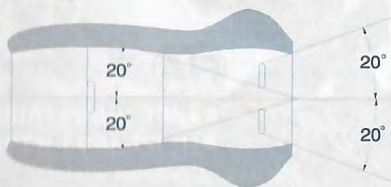
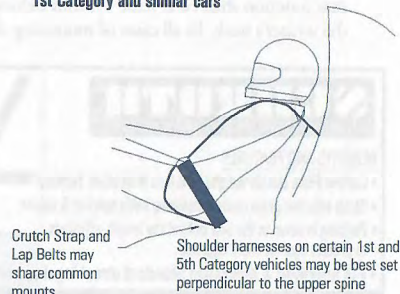
Drawing I-3
1st Category and similar cars

TABLE 2

Event Type	Event Permit Level	Type	Notes
Observed Section Trial or Motorkhana	All	D	
Khanacross	All	C	"Specials" only: Type B minimum
Speed Events* Drifting Events	Club, Multi-Club	C	
	State and Above	C	Registered closed cars
		B	All other vehicles
Races* - 1st Category - Group 2A/2C	All non International	A	Recommended for all vehicles with reclined driving position.
	International events	A	FIA 8853/98 only
Races* - Other vehicles	Club, Multi-Club	C	
	State	B	
	National	B	
	International	B	FIA 8853/98 and 8854/98 only
Rallies	Introductory	C	Where ROPS not required.
	Other Non-National	B	Club, Multi Club, State
	National	B	
	International	B	FIA 8853/98 and 8854/98 only
Other Road Events	Touring Assemblies	C, D	Must comply with civil regulations
	Touring Road Events	C, D	Where ROPS not required
		B	During activities requiring ROPS
Off Road	All non International	A	
	International	A	FIA 8853/98 and 8854/98 only

* Except 5th Category. For vehicles of the 5th Category whilst competing in events exclusively for the 5th Category, safety harnesses shall be of a type and configuration as specified in the specific group technical regulations.

the centre of the steering wheel and be able to withstand a load of 500N applied at any point. The net may be locally modified to preserve the driver's view of the external mirror. It must be affixed by means of a rapid release system so that, even with the vehicle inverted it must be possible to detach the mechanism with one hand. To this end, the handle or lever must have coloured markings. A push button release system is authorised provided that it respects the prescriptions of this article. The push button must be visible from the outside, be of a contrasting colour and be marked "press".

From 1 January 2008:

On cars derived from series production vehicles manufactured after 1970 and that retain the unmodified door, hinges and latches of the registrable vehicle, the net may be mounted to the door frame. On all other vehicles the net must be mounted to the safety cage.

Cars fitted with a permanently closed shatterproof window on the driver's door that

complies with strength requirements imposed above will be deemed to comply with the requirement for a window net.

NOTE: 5th Category vehicles, when competing in events exclusively for such cars are exempt from the requirement from Window Nets.

SAFETY CAGE STRUCTURES

1. APPLICATION

A safety cage is required as follows.

- 1.1 Races all cars except:
 - (i) Unrestricted Road Registered, Closed Cars in Club or Multi-Club Level races; and
 - (ii) those in competition exclusively for the 5th Category unless otherwise specified in the relevant Historic Technical Regulations.
 - (iii) Notwithstanding Article 8 of these present regulations, a safety cage to at least Type 3 Full Cage specification is required to be fitted to all closed vehicles in all National, and from 1 January 2008, State-level races, save for the exemption in (ii) above.
- 1.2 Truck Races: as specified in Appendix A to the Truck Formula.
- 1.3 State Level and above Speed Events: all cars except cars of the 5th Category (unless otherwise specified in the relevant Historic Technical Regulations), and closed cars which are unrestricted road registered.
- 1.4 Off Road Events: all Class 4, 5, 7 and 8 vehicles.
NOTE: Classes 1, 2, 3, 6 and 9 must comply with the prescriptions of GR9, including the diagram "Regulated Tubes for all Buggies" on page 12-16.
- 1.5 Rallies: all cars in timed rallies/trials, other than Introductory events. Notwithstanding article 8 of these present regulations, a safety cage to at least Type 3 Full Cage specification is required

to be fitted to all closed vehicles in all National level rallies and all tarmac rallies. An exemption to these requirements is provided for vehicles subject of a CAMS 5th Category (Historic) documentation (eg, CoD/Temporary Permit to Compete), other than those issued with log books for Group C, Group N Historic Touring Cars and Group S. However, Historic vehicles must be fitted with a safety cage in rallies if such would be required for the particular vehicle should it be entered in Historic-only circuit races, and the safety cage shall be to at least the same specification as required in such a race.

- 1.6 Other events: as specified in the event Supplementary Regulations.
- 1.7 Motorkhana: As specified in Section 13, Group 4H.
- 1.8 Entrants in events listed on the FIA International calendar should make themselves familiar with any additional requirements for safety cages over and above the following that may be required for such competitions.
- 1.9 Drifting: Safety cages are mandatory for open cars and strongly recommended for closed cars.

Note: It is anticipated that, from 1 January 2008, all new vehicles in races, tarmac and special stage rallies will be required to have safety cages in close alignment with the contemporary FIA Safety Cage regulations (see Art 253.8 of Appendix J on www.fia.com). Confirmation and final details of this implementation will be

published during 2007.

A revised set of Regulations specific to other events will be published during 2007 for implementation in 2008.

2. DEFINITIONS

- 2.1 Safety cage: A structural framework designed to prevent serious bodyshell deformation in the case of a collision or of a car turning over.
- 2.2 Roll bar: Structural frame or hoop and mounting points.
- 2.3 Safety cage: Structural framework made up of a main roll bar and a front roll bar (or of two lateral roll bars), their connecting members, one diagonal member, backstays and mounting points. (For example, see drawings 253-3, 253-4 and 259-1.)
- 2.4 Main roll bar: Structure consisting of a near-vertical frame or hoop located across the vehicle just behind the front seats.
- 2.5 Front roll bar: Similar to main roll bar but its shape follows the windscreen pillars and top screen edge.
- 2.6 Lateral roll bar: Structure consisting of a near-vertical frame or hoop located along the right or left side of the vehicle. The rear legs of a lateral roll bar must be just behind the front seats. The front leg must be against the screen pillar and the door pillar such that it does not unduly impede the entry or exit of driver and co-driver.
- 2.7 Longitudinal member: Longitudinal tube which is not a part of the main, front or lateral roll bar and linking them, together with the backstays.
- 2.8 Diagonal member: Transverse tube between a top corner of the main roll bar or upper end of a backstay and a lower mounting point on the other side of the roll bar of backstay.
- 2.9 Framework reinforcement: Reinforcing member fixed to the safety cage to improve its structural efficiency.
- 2.10 Reinforcement plate: Metal plate fixed to the bodyshell or chassis structure under a roll bar mounting foot to spread load into the structure.
- 2.11 Mounting foot: Plate welded to a roll bar tube to permit its bolting or welding to the bodyshell or chassis structure, usually onto a reinforcement plate.
- 2.12 Removable members: Structural members of a safety cage which must be able to be removed.

3. SPECIFICATIONS

3.1 General comments

3.1.1 Safety cages must be designed and made so that, when correctly installed, they substantially reduce bodyshell deformation and so reduce the risk of injury to occupants.

The essential features of safety cages are sound construction, designed to suit the particular vehicle, adequate mountings and a close fit to the bodyshell.

Tubes must not carry fluids. The safety cage must not unduly impede the entry or exit of the driver and co-driver.

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

Longitudinally, the safety cage must be entirely contained between the top mounting points of the front and rear suspension that carry a vertical load (springs and suspension dampers).

- 3.1.2 Basic safety cage: Only safety cages must be used.
- 3.1.3 Compulsory diagonal member: Different ways of fitting the compulsory diagonal member: see drawings 253-3 to 253-5.

The combination of several members is permitted.

- 3.1.4 Optional reinforcing members: Each type of reinforcement (drawings 253-6 to 253-17, 253-17A and 253-17C) may be used separately or combined with others. A forward brace as per drawing 6-5 may be used in open cars where there is only one occupant.

Note: This means that safety cages may only be constructed in accordance with the drawings shown in this schedule. The use of reinforcements other than those shown will require the specific approval of CAMS through the CAMS Safety Cage Certification process.

3.2 Technical specifications

- 3.2.1 Main, front and lateral roll bars: These frames or hoops must be made in one piece without joints. Their construction must be smooth and even, without ripples or cracks. The vertical part of the main roll bar must be as straight as possible and as close as possible to the interior contour of the bodyshell.

The front leg of a front roll bar or of a lateral roll bar must be straight, or if it is not possible, must follow the windscreen pillars and have only one bend with its lower vertical part. Where a main roll bar forms the rear legs of a lateral roll bar (drawing 253-4), the connection to the lateral roll bar must be at roof level.

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

Where necessary, the fuse box and ECU may be moved to enable a safety cage to be fitted.

In open cars the roll bar must be a minimum of 50mm above the top of the driver's helmet.

In conjunction with the vehicles structure the safety cage should not leave unprotected any part of the drivers shoulders when viewed from front or rear.

The main roll bar must not overhang but must be within 150mm of the driver's head.

In 1st Category be constructed so that the driver helmet is prevented from passing between the bars to the extent that the helmet is visible at the rear of the hoop when viewed from the side.

Holes drilled in the main roll bar and braces shall be fitted with a bush, the wall thickness of which is the same as the drilled tube.

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3.2.2 Mounting of safety cages to the bodyshell:

Option 1

Minimum mountings are:

- 1 for each leg of the main or lateral roll bar;
- 1 for each of the front roll bar;
- 1 for each backstay (see 3.2.3).

Each mounting foot of the front, main and lateral roll bars must include a reinforcement plate, of a thickness of at least 3mm which must not be less than that of the tube onto which it is welded.

Each mounting foot must be attached by at least three bolts on a steel reinforcement plate at least 3mm thick and of at least 12,000mm² area which is welded to the bodyshell. Examples are shown in drawings 253-18 to 253-24. (For drawings 253-18 and 253-20, the reinforcement plate does not necessarily have to be welded to the bodyshell.) This does not necessarily apply to backstays (see below).

Bolts must be either M8 size to ISO standard 8.8, hexagon head high tensile fasteners to AS2465 or cap screws to AS1420 with nuts to AS1112 or better. Pins for removable connections (see drawing 253-30) shall the same strength specification as the bolts.

Fasteners must be self-locking or fitted with lock washers.

These are minimum requirements. In addition to these requirements, more fasteners may be used, the roll bar legs may be welded to reinforcement plates, the safety cage may be welded to the bodyshell. Roll bar mounting feet must not be welded directly to the bodyshell without a reinforcement plate.

Option 2

Non-international use only: As an alternative to welding reinforcement plates to the chassis of the vehicle, all the attachment points of the safety cage may be fitted with a base foot and lower plate complying with the table below. The base foot, complying with the area requirements shown below may be welded to the bodyshell, in which case the use of bolts and the lower plate is not required (see drawing 6-4).

Option 3

Where group regulations permit, the roll over protection may be an integral part of a space frame tubular chassis. The safety cage shall comply with these regulation from a point above where the predominantly vertical portion of the safety cage meets a predominantly horizontal portion of the chassis. Parts of the safety cage may extend below this horizontal plane and become integral with the chassis.

Application	Minimum Area	Minimum single dimension
<i>Upper plate</i>		
Cars under 700kg	6,500mm ²	55mm
701kg to 1150kg	7,500mm ²	65mm
Over 1151kg	10,000mm ²	75mm
<i>Lower plate</i>	4,500mm ²	Proportional to upper plate

3.2.3 Backstays: These are compulsory and must be attached near the roof line and near the top outer bends of the main roll bar on both sides of the car. They must make an angle of at least 30° with the vertical, must run rearwards and be straight and as close as possible to the interior side panels of the bodyshell.

Their materials specification, diameter and thickness must be as defined in Article 4.

Their mountings must be reinforced by plates. Each backstay should be secured by bolts having a cumulative section area at least two thirds of that recommended for each roll bar leg mounting in 3.2.2 above, and with identical reinforcement plates of at least 6000mm² area (see drawing 253-25).

A single bolt in double shear is permitted, provided it is of adequate section and strength (see drawing 253-26) and provided that a bush is welded into the backstay.

For 1st Category cars and Sports cars it may be more appropriate for the longitudinal braces to be forward of the main roll bar rather than rearward. Such configurations may be considered by CAMS upon the application for a specific Safety Cage Certificate.

3.2.4 Diagonal members: At least one diagonal member must be fitted. Its location must be in accordance with drawings 253-3 to 253-5 and it must be straight.

The attachment points of the diagonal members must be so located that they cannot cause injuries. They may be made removable but must be in place during events. The lower end of the diagonal must join the main roll bar of backstay not further than 100mm from the mounting foot. The upper end must join the main roll bar not further than 100mm from the junction of the backstay joint, or the backstay not more than 100mm from its junction with the main roll bar.

They must comply with the minimum specification set out in Article 4. Diagonal members fixed to the bodyshell must have reinforcement plates as defined in 3.2.3 above.

For FIA International events for Group N and A vehicles, any vehicle of a type homologated after 1 January 2002 the fitting of a second diagonal in the main hoop as per drawing 253-4 is mandatory. The junction of these two members must be reinforced by a pair of opposing gussets. Details are available from CAMS, or the FIA web site, www.fia.com

3.2.5 Optional reinforcement of the safety cage: The diameter, thickness and material of reinforcements must be as defined in Article 4. They shall be either welded in position or installed by means of demountable joints.

3.2.5.1 Transverse reinforcing members: The fitting of two transverse members as shown in drawing 253-7 is permitted. The transverse member fixed to the front roll bar must not encroach upon the space

reserved for the occupants. It must be placed as high as possible but its lower edge must not be higher than the top of the dashboard.

3.2.5.2 Doorbars (for side protection): One or more longitudinal members may be fitted at each side of the vehicle (see drawings 253-7, 253-8, 253-12, and 253-17). They may be removable. The side protection must be as high as possible, but its upper attachment points must not be higher than half the total height of the door measured from its base. If these upper attachment points are located in front of or behind the door opening, this height limitation is also valid for the corresponding intersection of the strut and the door opening. In the case of doorbars in the form of an "X" (cross-struts), it is recommended that the lower attachment points of the cross-struts be fixed directly on to the longitudinal member.

3.2.5.3 Roof reinforcement: Reinforcing the upper part of the safety cage by adding members as shown in drawings 253-9A to 253-9D is permitted.

3.2.5.4 Reinforcement of bends and junctions: It is permitted to reinforce the junction of the main roll bar or the front roll bar with the longitudinal struts (drawings 253-10 and 253-16), as well as the top rear bends of the lateral roll bars and the junction between the main roll bar and the backstays.

The ends of these reinforcing tubes must not be more than half way down or along the members to which they are attached, except for those of the junction of the front roll bar, which may join the junction of the door strut/front roll bar.

A reinforcement as in drawing 253-17B may be added on each side of the front roll bar between the upper corner of the

windscreen and the base of this roll bar.

For all vehicles first issued with a log book after 1 January 2002, safety cage members for both Certified and Basic cages shall comply with the following:

- In the front door aperture (drawing 253-17D)
- Dimension A must be a minimum of 300mm
- Dimension B must be a maximum of 250mm
- Dimension C must be a maximum of 300mm.
- In front projection, reinforcements of bends and junctions of the upper corners of the front safety cage must only be visible through the area of the windscreen described in drawing 253-17E.

3.2.6 Protective padding: Where the occupants' bodies or their crash helmets could come into contact with the safety cage, non-flammable padding must be provided for protection.

For all Group N and A cars competing in FIA International events, the following applies.

Where the occupants' crash helmets could come into contact with the safety cage, the padding must comply with FIA standard 8857-2001, type A (strongly recommended), or with FIA standard 8857-2001 type B or SFI specification 45.1 (minima) (see technical list no. 23 "Roll Cage Padding Homologated by the FIA").

Application: For all Group N and A cars competing in FIA International events.

Note: From 1 January 2008, the use of this padding will be mandatory for all cars where a safety cage is fitted.

3.2.7 Removable members: Should removable members be used in the construction of a safety cage, the demountable joints used must comply with a type approved by the FIA/CAMS (see drawings 253-27 to 253-37). They must not be welded.

The screws and bolts must be of at least ISO standard 8.8.

It should be noted that demountable joints must not be used as part of a main, front or

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lateral roll bar because they act as hinges in the principal structure and allow deformation. Their use is solely for attaching members to the roll bars and for attaching a lateral roll bar to a main roll bar (drawing 253-4). In this last case, hinged joints illustrated in drawings 253-30, 253-33 and 253-37 must not be used.

3.2.8 Guidance on welding: All welding must be of the highest possible quality with full penetration and preferably using a gas shielded arc. Welds must be along the whole circumference of the tube.

Although good external appearance of a weld does not necessarily guarantee its quality, poor looking welds are never a sign of good workmanship.

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

It must be emphasised that the use of heat-treated or high carbon steels may cause problems and that bad fabrication may result in a decrease in strength (caused by brittle heat-affected zones) or inadequate ductility.

4. MATERIAL SPECIFICATIONS

Specifications of the tubes used:

All tubing used in roll over protection structures shall be circular section cold drawn steel tube (CDS, CDW or CEW) with

properties as shown in the following table.

Note: The use of drawn welded tubing (CDW or CEW) is authorised for international events provided the ROPS is homologated by CAMS.

Property	Specification	
Carbon content	0.3%	max.
Manganese content	1.5%	max.
Other alloy content	0.5% for any element	max.
Tensile Strength	350 MPa	min.

Component	Outside Diameter	Wall Thickness
Main hoop	44.45 mm	2.5 mm
	or 50 mm	2.0 mm
All other components	38 mm	2.5 mm
	or 40 mm	2.0 mm
Roll bar and braces for 1st Category vehicles under 700kg	38 mm	2.5 mm
	40 mm	2.0 mm

CAMS may consider other steels and sizes not in compliance with the above through the process of roll over protection certification.

Note that these figures represent the minimum strengths and dimensions permitted. In selecting the steel, attention must be paid to obtaining good elongation properties and adequate weld ability.

The tubing must be bent by a cold working process and the centreline bend radius must be at least three times the tube diameter. Where the tubing is distorted during bending, the ratio of minor to major diameter must be 0.9 or greater.

5. CERTIFICATION BY CAMS

5.1 General: Safety cage manufacturers may submit a safety cage of their own design to CAMS for approval as regards the quality of steel used, the dimensions of the tubes, the optional reinforcing members and the mounting to the vehicle.

CAMS reserves the right to accept or refuse the certification of a safety cage, in accordance with the design prescriptions established by CAMS and by the FIA.

Manufacturers are advised to seek approval in principle for their designs prior to the commencement of construction. Longitudinal safety cage extensions are allowed up to the level of the original suspension mounting points on the shell. There must not be direct connection between the top extension and the bottom extension.

A Safety Cage Certificate, approved by CAMS and signed by qualified technicians representing the manufacturer, must be presented to the event's scrutineers. It must contain drawings or photos of the safety cage in question including its fixation and particularities, and must declare that the safety cage can resist the forces specified above.

Any new cage which is certified by CAMS must be identified by means of an individual identification plate affixed to it by the manufacturer; this number must be neither copied nor moved (engraved, embedded or self-destroying sticker). The identification plate must bear the name of the manufacturer, the CAMS certificate number and the individual series number of the manufacturer. A certificate bearing the same number will be attached to each of the cages by the manufacturer.

These safety cages must not be modified in any way.

5.2 Design prescriptions: The basic construction of any safety cage submitted to CAMS for certification must comply with the requirements of drawing 253-4 and the following additional minimum design requirements:

The fitting of two diagonal members on the main roll bar is mandatory (see drawing 253-4).

The connection between the two members must be reinforced by a pair of opposing gussets. Other forms of bracing the hoop may be considered on application to CAMS.

The upper part of the safety cage must be fitted with members according to one of the drawings 253-9A, 253-9B or 253-9C.

For competitions without co-drivers, only one diagonal member may be fitted but its front

connection must be on the driver's side.

- One or more longitudinal members must be fitted at each side of the vehicle (see drawings 253-7, 253-8, 253-12, 253-17).
 - If dimension "A" (see drawing 253-4) is greater than 200 mm, a reinforcement member according to drawing 253-17B must be added on each side of the front roll bar between the upper corner of the windscreen and the base of this roll bar.
 - Angle "α" (see drawing 253-4) is 90°.
- 5.3 Structures using basic materials:** Where the basic safety cage as shown in drawing 253-4 is manufactured from materials in compliance with the requirements of article 4, CAMS may certify the structure directly without requiring any testing of the structure.
- 5.4 Load tests:** Safety cages not complying with all the dimension prescriptions of article 5.3 must be subjected to the static load tests described in articles 5.4.1 and either 5.4.2, or 5.4.3.

The tests must be carried out by a company approved by the FIA.

- (a) **Safety cage to be considered:** As the total function of a safety cage must be considered only in its entirety, the test must be carried out on the complete safety cage.
- (b) **Testing device:** This must be constructed in such a way that none of the loads has any influence on its structure.
- (c) **Mountings:** The safety cage must be fitted directly or by means of an additional frame to the testing device by its original main mountings (see drawing 253-4) and on a maximum of six points.

5.4.1 Test on the main roll bar (see drawing 253-38) - Closed Cars: The complete safety cage must withstand a vertical load of 7.5w daN (w being the weight of the car +150 kg) applied on the top of the main roll bar through a rigid stamp.

The stamp must be made of steel, have a radius of 20mm ± 5 mm at the edges directed towards the safety cage and have the following dimensions:

- Length = main roll bar width + min 100mm
- Width = 250mm ± 50mm
- Thickness = min 40mm.

The stamp may follow the transversal profile of the main roll bar.

The load must be applied in less than 15 sec.

In the total safety structure, this test must not produce any breakage or any plastic distortion of more than 50mm measured along the axis of load application.

5.4.2 Test on the front roll bar (see drawing 253-38B) - Closed Cars: The complete safety cage must withstand a load of 3.5w daN (w being the weight of the car +150kg) applied on the top of the front roll bar through a rigid stamp, on the driver's side and at the intersection with the front transverse member.

The stamp must be made of steel, have a radius of 20mm ± 5mm at the edges directed towards the safety cage and have the following dimensions:

- Length = 450mm ± 50mm
- Width = 250mm ± 50mm
- Thickness = min 40mm.

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It must be designed so that it remains in the area of the intersection with the front transverse member when the load is applied.

The longitudinal axis of the stamp must be directed to the front and downwards with an angle of $5^\circ \pm 1^\circ$ relative to the horizontal, and its transversal axis must be directed to the exterior and downwards with an angle of $25^\circ \pm 1^\circ$ relative to the horizontal.

The load must be applied in less than 15 sec.

In the total safety structure, this test must not produce any breakage or any total distortion of more than 100mm measured along the axis of load application.

5.4.3 Additional test on main roll bar - Open Cars: The main hoop must withstand a horizontal load toward the rear of the car of 5.5w daN imposed using the same stamp as per 5.4.1 across the upper portion of the main hoop (see drawing 253-38C).

The main hoop must withstand a load as per 5.4.2 above, applied to the top of the main

hoop behind the driver's head, but with the longitudinal axis horizontal.

5.4.4 Arithmetical proof: As an alternative to the static load tests described in article 5.4.1 and either 5.4.2 or 5.4.3, the manufacturer may submit to CAMS a complete calculation report carried out by an institute approved by CAMS and the FIA. (See FIA Technical List 35.)

This report must clearly demonstrate that the safety cage withstands the static loads specified in articles 5.4.1 and either 5.4.2 or 5.4.3, that the plastic deformation remains within the limits prescribed and that there is no breakage.

6. FIA HOMOLOGATION

FIA suggests that each car manufacturer should recommend a type of safety cage complying with FIA standards, as defined in Article 5 above. This safety cage must be described on a homologation extension form presented to FIA for approval and the safety cage must not be modified (see 3.1.1) in any way.

7. FORMS OF ACCEPTABLE SAFETY CAGES

Type	Description	Vehicle application	Remarks
1	Solo Roll Bar	1st Category Race Cars	Vehicles up to 700 kg
		Open Sports Cars	For other than Races and Speed Events, no passengers permitted
2	Half Cage	Open Sports Cars	Minimum acceptable in Speed Events, Races, Special Stage and International rallies and Off Road
3	Full Cage (see Diagrams 253-3 to 253-17)	Closed Cars	Minimum acceptable in Speed Events, Races, Special Stage and International rallies and Off Road

8. IMPLEMENTATION

Where safety cages have been fitted to cars and where such cars have been issued with a CAMS log book, or where safety cages have been certified, such cages may continue to be used in competition provided they remain in conformity with the regulations that were in force at the date of issue of either initial log book for the car, or the certification document.

Competitors are advised that Supplementary Regulations may require more stringent requirements than those identified in articles 1 and 8 of this Schedule. Such requirements shall take precedence over articles 1 and 8 herein.

9. NON-COMPLYING SAFETY CAGES

Safety cage structures which do not comply with these regulations or are not otherwise specifically approved by CAMS or the FIA are prohibited in all levels of competition. However, in cases where the type and/or status of the event does not require a vehicle to be fitted with any form of safety cage, approval of structures which do not comply with these regulations may be granted for the event by the Stewards of the Meeting.

10. REGISTRATION

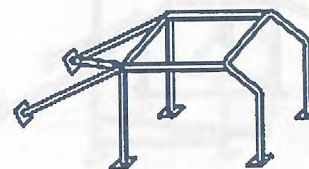
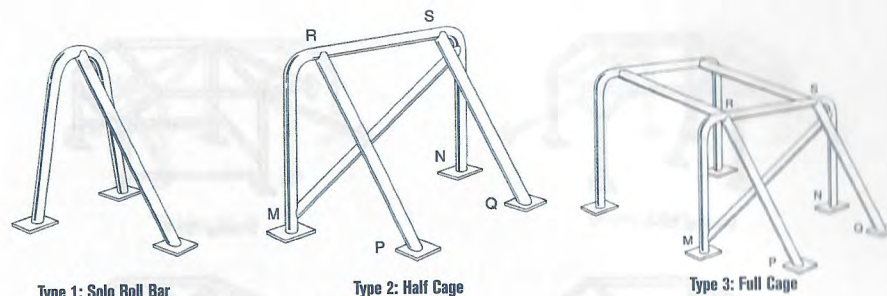
All safety cage structures fitted to vehicles for which a CAMS log book is issued after 1 January, 2001 must be either registered with CAMS and carry a valid safety cage registration label, or be the subject of a CAMS safety cage certificate. This requirement shall not apply when the type and/or status of an event do not require the use of a safety cage.

11. REPAIRS

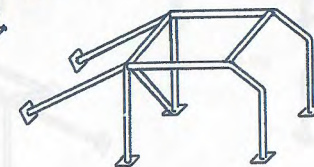
All repairs to safety cages/roll bars must be done in such a manner to ensure the structure conforms with the requirements for new structures as were in place at the time of original manufacture.

Safety Cages

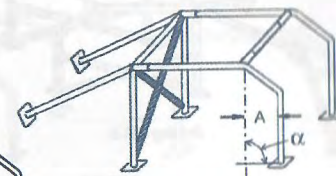
Drawings



Drawing 253-3



Drawing 253-5



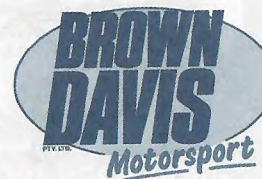
Drawing 253-4

ROLL CAGES

to FIA and CAMS specifications

CDW + CDS 350MPa tube
Chrome Moly 4130, 650MPa tube
 Certification and cage homologation available

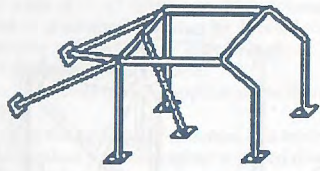
Alloy welding and tube bending



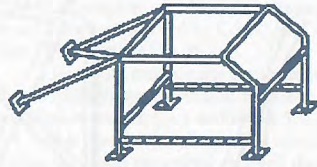
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Safety Cages

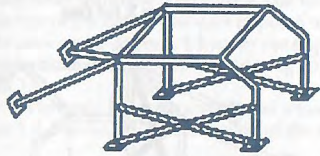
Drawings (continued)



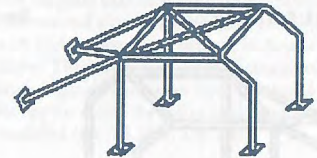
Drawing 253-6



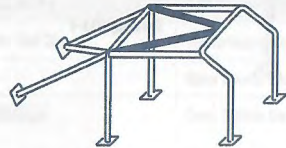
Drawing 253-7



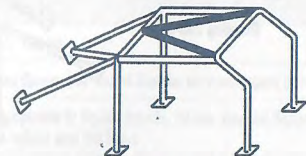
Drawing 253-8



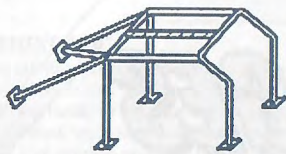
Drawing 253-8A



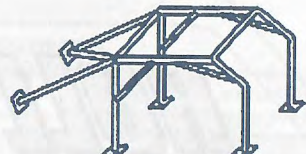
Drawing 253-9B



Drawing 253-9C



Drawing 253-9D



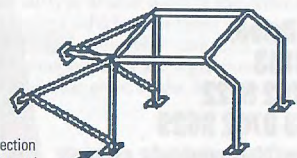
Drawing 253-10



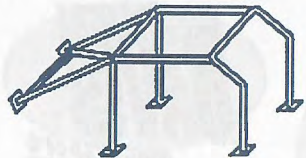
Drawing 253-11



Drawing 253-12



Drawing 253-13

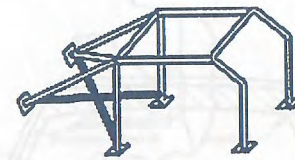


Drawing 253-14

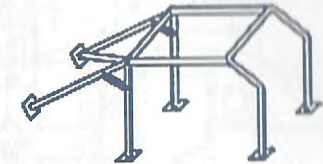
This connection may be situated at the level of the doorbar

Safety Cages

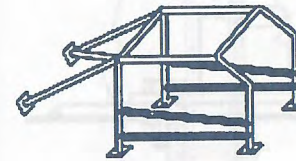
Drawings (continued)



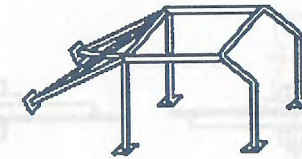
Drawing 253-15



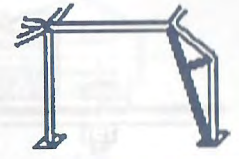
Drawing 253-16



Drawing 253-17

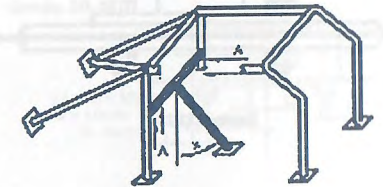
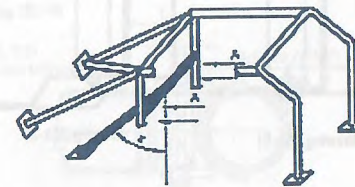


Drawing 253-17A



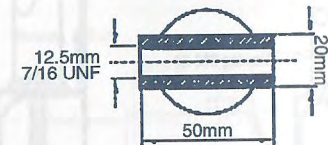
Drawing 253-17B

Drawing 253-17C



(A) mounting hole for harnesses

(X) minimum angles 30°



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GP-90

GP-T

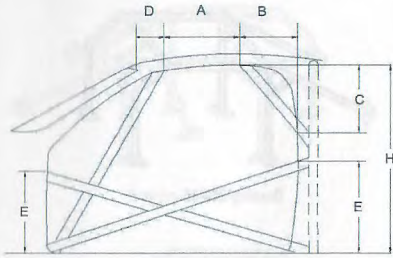
Podium II

Apex Carbon

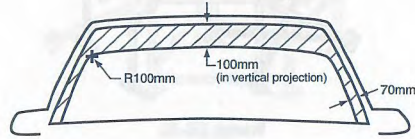
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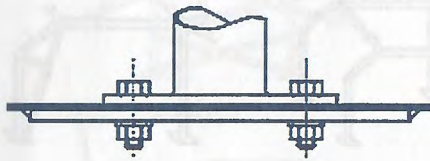
Drawings (continued)



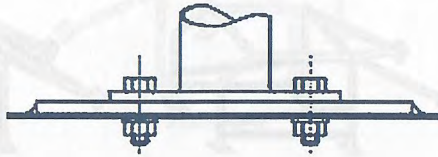
Drawing 253-17D



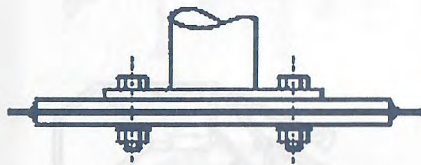
Drawing 253-17E



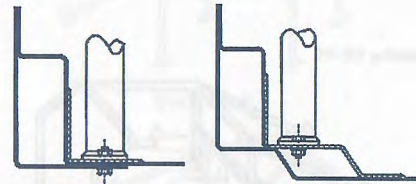
Drawing 253-18



Drawing 253-19

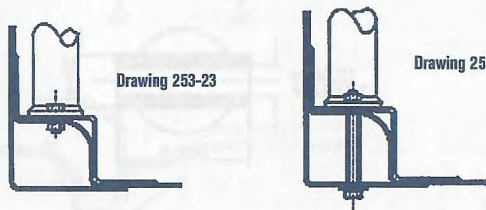


Drawing 253-20



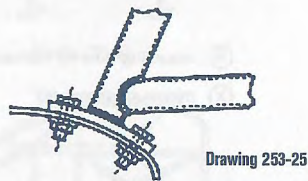
Drawing 253-21

Drawing 253-22



Drawing 253-23

Drawing 253-24



Drawing 253-25

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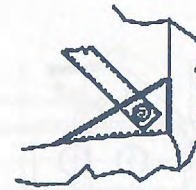
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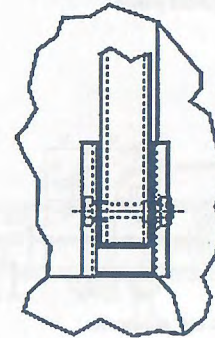
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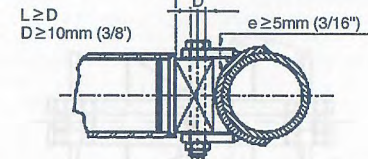
Drawings (continued)



Drawing 253-26



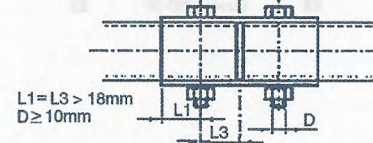
Drawing 253-30



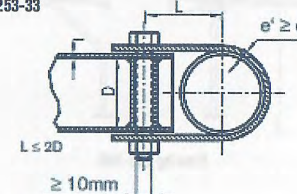
Drawing 253-31



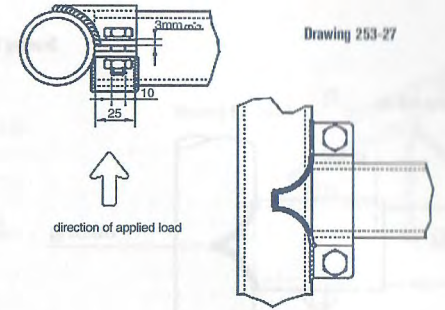
Drawing 253-32



Drawing 253-33



L must be minimum
The clamp width must be at least 25mm

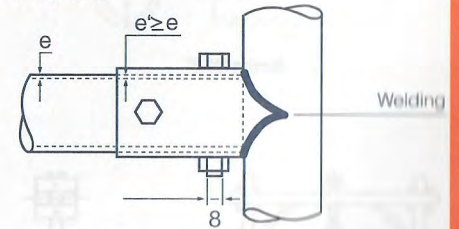


Drawing 253-27

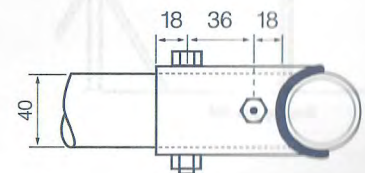
Drawing 253-28

Drawing 253-29

Drawing 253-34



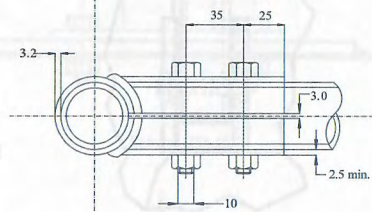
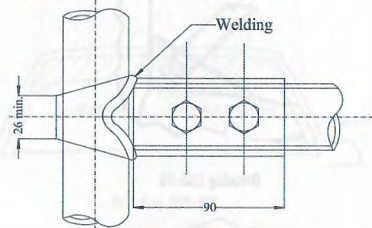
Dimensions in mm



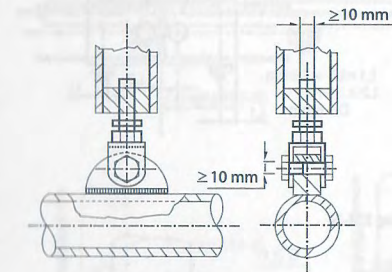
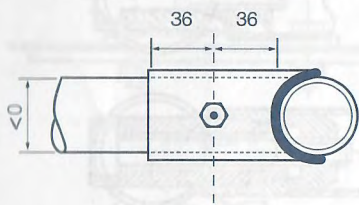
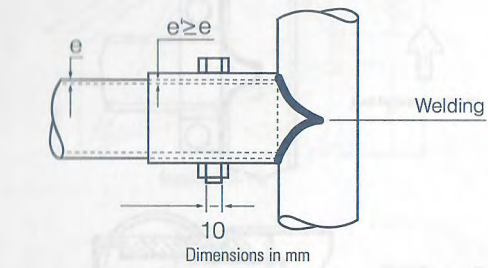
Safety Cages

Drawings (continued)

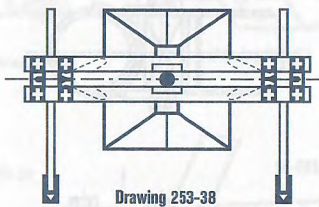
Drawing 253-36



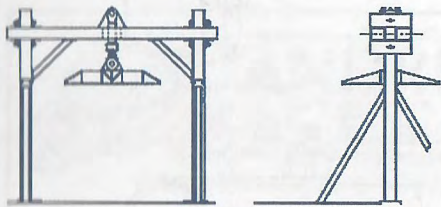
Drawing 253-35



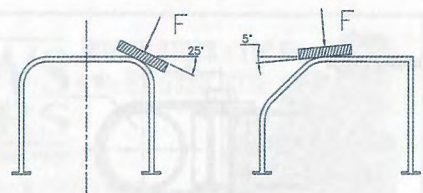
Drawing 253-37



Drawing 253-38



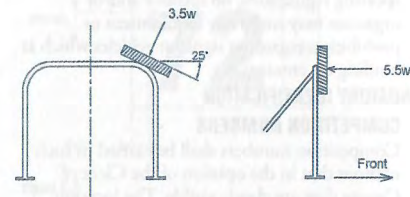
Drawing 253-38A



Drawing 253-38B

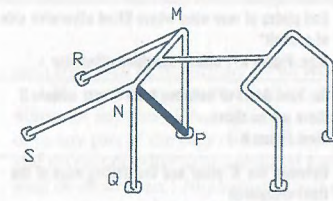
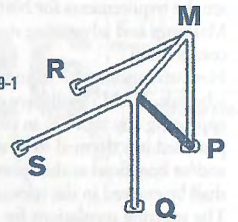
Safety Cages

Drawings (continued)

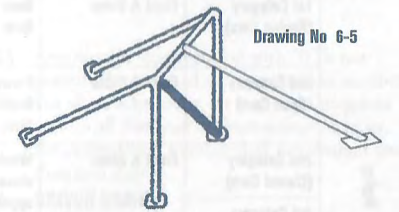


Drawing 253-38C

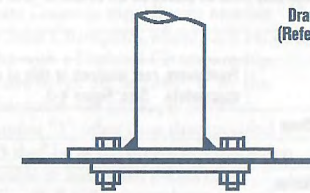
Drawing No 259-1



Drawing No 259-3

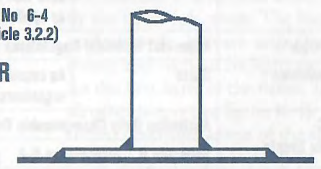


Drawing No 6-5



Drawing No 6-4
(Refer Article 3.2.2)

OR



Schedule K – Markings on Automobiles

1. INTRODUCTION

- As required by NCR 147 and 155 the following are the requirements for Numbers, Signs, Markings and advertising on automobiles in competition.
- Notwithstanding the requirements of this schedule, CAMS shall have discretion in approving any sign not in conformity therewith, provided it is deemed to be a public service and/or beneficial to the sport. All such variations shall be entered in the relevant vehicle log book.
- The sporting regulations for a CAMS-approved championship, series, challenge etc, may make other requirements that vary, in whole or in part, the provisions of this schedule.

- In the absence of the written approval of CAMS, and with the exception where such requirement is made in an approved set of sporting regulations, no sponsor and/or organiser may make any requirement or prohibition regarding signs on vehicles which is binding on entrants.

MANDATORY IDENTIFICATION

2. COMPETITION NUMBERS

- Competition numbers shall be carried in such manner that in the opinion of the Clerk of Course they are clearly visible. The location and size of competition numbers shall be in accordance with the following table:

Discipline	Application	Visibility	Front location & Size	Side location & Size
Racing	1st Category (Racing Cars)	Front & Sides	Nose of car Size: Figure K-1	End plates of rear wing where fitted otherwise side of cockpit* Size: Figure K-1 unless specified otherwise
	2nd Category (Open Cars)	Front & Sides	Forward of centreline of front wheels. Size: Figure K-1	On front doors or between front & rear wheels if there are no doors Size: Figure K-1
	2nd Category (Closed Cars)	Front & Sides	Windscreen for all closed vehicles on the opposite side to the driver Size: Figure K-3	Between the 'B' pillar and the trailing edge of the front wheelarch Size: Figure K-1
	3rd Category (Touring Cars)			On front doors. Size: Figure K-2
	Trucks	Front & Sides		
	5th Category	Front & Sides	As per Racing, Sports or Touring Cars as applicable to each Historic Group, save that front numbers must be placed on the bonnet or nose of the vehicle as applicable	
	Superkarts	Superkart Technical Regulations		
Other Speed Events	All vehicles	Sides	As required by organisers	Front doors, rear windows or side of cockpit* as appropriate. Size: Figure K-2
Road	ARC Other Events	Australian Rally Championship Regulations Schedule R. Size: Figure K-2		
Off Road	All classes	General Requirements for Off Road Vehicles		
Motorkhana	Group 4H	Sides	As required by organisers	Front doors, rear windows or side of cockpit* as appropriate. Size: Figure K-2

* Note: Defined as a vertical surface alongside the cockpit or the most prominent position possible on the side of the car.

- Where figure K-1 applies the minimum width of the background shall be 245mm for single digit competition numbers and 450mm for two digit competition numbers. Where figure K-2 applies the minimum width of the background shall be 320mm for single digit competition numbers and 500mm for two digit competition numbers. Where competition numbers containing three digits are permissible (see Article 2.9) the minimum width of the background shall increase to 780mm.
- Competition numbers in accordance with figure K-1 and figure K-2 shall be black on a white background for all races. The background for the number must be either a disc or rectangle. Where the background colour does not contrast

with the colour of the coachwork the perimeter of the background shall be defined by a line the same colour as the number and a minimum of 5mm thick. Competition numbers in accordance with figure K-3 shall be "Dayglo" yellow with no background.

- The competition number shall be of a typestyle as shown following:

1234567890

Typestyles that comply with the above sample are "Helvetica Bold", "Zurich Bold" and "Arial Bold". For National Championships, or other approved series, an alternative typestyle may be specified in the Sporting Regulations whereupon

Figure K-1

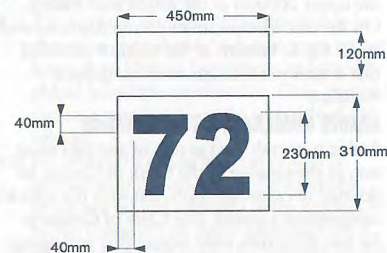


Figure K-3

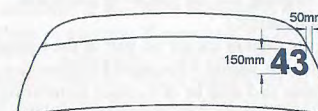


Figure K-2

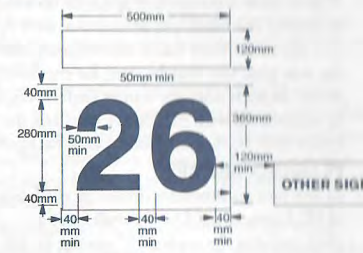


Figure K-4



such style shall be mandatory for all vehicles.

No part of any numeral shall be closer than 40mm to any part of the adjoining numeral or to any part of the edge of the background and no part of other signs permitted hereunder shall be closer than 120mm to any part of the competition number.

- Competition number "1" is reserved to recognise current Australian Champion drivers in each applicable category or discipline. Where a champion driver elects not to use number "1" it shall be withheld from use for the appropriate period. State Councils may allocate number "1" for use by State Champions where such use does not conflict with a National Championship. The exclusive use of the number "1" by the current champion will not apply to rallies.
- Use of number "1" other than that specified in Article 2.5 shall be at the organiser's discretion and applicable to individual events only.
- In Australian Rally Championship events, the current Australian Rally Champion driver may use number "1" regardless of their starting position, and may also use a yellow background where the relevant Regulations stipulate a white background.

- Any number commencing with "0" is not permitted to be used as a competition number.
 - For all vehicles of the 1st and 2nd Categories and for all National championships or series, the competition number shall not contain more than two digits.
- ### 3. DRIVER NAME
- In all races forming part of an Australian Championship for closed cars the surname of each driver must be displayed on the lower edge of each rearmost side window or, if this is not possible, in a suitable location as approved by the Chief Scrutineer. The letters shall be of uniform style, 100mm and 60mm, white in colour and without background, using a capital for the first letter of the name, and lower case for all other letters (see figure K-4). For grammatical correctness other letters of the surname may use a capital letter (eg, MacDonald, Holmes-Walker, O'Riordan). The typestyle shall be as required for competition numbers (see article 2.4). In all other competitions for closed cars, such display is optional, but if used, shall comply with this Regulation. For international events the national flag of the ASN of each driver and co-driver where applicable shall be displayed adjacent to

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- sponsors' logos
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the name.

- 7.2 Where there is insufficient space or no window to display the name/s in accordance with Article 3.1, the turret/door frame immediately above the side glass line may be used for the driver's name. In such cases the names shall be displayed in accordance with Article 3.1 save that the letters shall be displayed on a black background.

4. PC LICENCE HOLDERS

- 4.1 In any race automobiles driven by the holders of PC Licences for Drivers shall carry a plate carrying the capital "P" similar in size and design to those approved by Australian authorities for civil probationary or provisional drivers. In all cases this shall be red on a white background or white on a red background, mounted so that it is clearly visible from the rear of the automobile at a distance of 100m in daylight.

5. CAMS LOGO

- 5.1 In all competitions of State Championship and above, with the exception of those for 5th Category vehicles, the CAMS logo shall be carried on the car. For cars other than the 1st Category the logo shall be positioned adjacent to, and in a plane in line with the top of the competition number. (Note: self-adhesive CAMS logos are available from State offices.) Sporting regulations may specify an alternate location which shall be considered on application to CAMS.

6. MANDATORY ADVERTISING SPACE

- 6.1 Above or below the background of the side numbers, a surface having the same width as the background (in any case at least 450mm wide on 1st Category and Sports Cars and 500mm on other cars), and of a height of at least 120mm, shall be left free of advertising. This space shall be used at the discretion of CAMS, which may use it for advertising purposes, or which may delegate to the organisers authority to use that space. On cars on which such an area is not available due to coachwork limitations the competitors shall keep free of any advertising an equivalent surface in the immediate vicinity of the background (see figure K-1 & figure K-2).

OTHER SIGNAGE

7. USE OF WINDSCREEN & WINDOWS

- 7.1 It is permissible to use the opaque area around the perimeter of a windscreen or window for signage purposes when such area of windscreen or window is bonded to the coachwork. The permissible area must be as defined by the manufacturer on the surface of the windscreen or window. Such a border may not be varied from that provided by the manufacturer.
- 7.2 Signs or advertisements may not be placed on any windscreen, side or rear window with the exception of the following allowances:
- 7.2.1 Subject to articles 3.1 and 7.1 of this Schedule.
- 7.2.2 On the top of the windscreen on a background free as to colour and depth, subject to the

lettering and devices being placed only within the upper 200mm of the windscreen surface.

- 7.2.3 On the rear window up to 85mm depth located at the top or bottom of the window provided that it does not interfere with the driver's visibility.

8. ARABIC NUMERALS & TRADE MARKS

- 8.1 Arabic numerals used as part of any sign must not, in the opinion of the Clerk of Course, be deemed to cause any confusion with the vehicle's competition number. The Clerk of Course at his sole discretion, may require that any signage deemed to cause such confusion be removed.
- 8.2 Arabic numerals may be used subject to the forgoing and the following additional requirements:
- 8.2.1 On the sides of the car no part of the numeral shall come within 120mm of a competition number and shall be of a colour contrasting with the competition number.
- 8.2.2 In all instances such numerals shall be of a colour contrasting with the competition number.

9. OTHER REGULATIONS

- 9.1 No sign or advertisement shall be permitted to be indecent or in breach of good taste. The Clerk of Course at any meeting shall be authorised to refer to the Stewards of the Meeting any sign which he deems to be contrary to the requirements of this paragraph and the stewards' decision thereon shall be final in respect of that meeting. See NCR 169(xi).
- 9.2 The lettering of all numerals and letters in all signs referred to in this Schedule and these Rules shall be carried out in a neat, regular and professional manner. The Clerk of Course, on the advice of the Scrutineers, may recommend to the Stewards of the Meeting the re-lettering of any sign or part of a sign etc, which in their opinion fails to comply with the requirements of this paragraph. The stewards' decision thereon shall be final in respect to that meeting.
- 9.3 Registration labels, club badges (for CAMS-affiliated clubs) and official number plates shall not be deemed to be advertising with regard to this Schedule.
- 9.4 Signage retained to the vehicle structure solely by magnetic means is not permitted.
- 9.5 Where required, markings in accordance with Schedules A, B & C must be provided.

10. HISTORIC CARS

- 10.1 In the case of Historic Cars competing under the 5th Category Regulations the following provisions shall apply:
- 10.1.1 The original style of paintwork and livery is encouraged
- 10.1.2 The name of the driver may be shown on the vehicle, appearing once on either side in a position below the window line, in a size not larger than 40mm by 300mm.
- 10.1.3 A club badge, of an acceptable motoring club, can appear on the vehicle. Each badge must be not larger than 150mm by 100mm and must be

placed below the window line. Only two such badges are permitted.

- 10.1.4 The territory of origin of the driver may be shown on the vehicle. Each sign must be not larger than 100mm by 150mm and must be placed below the window line. Only two such signs are permitted, one on each side of the vehicle.
- 10.1.5 No other advertising material or sign is permitted unless evident in the applicable group period (see relevant Group regulations in 5th Category) or, upon application by a promoter, specific approval is granted by the Historic Commission to allow the display of event sponsor signage. Applications should be submitted at least three months prior to the event in question. If approved, the positioning of such signage on the various Groups of historic vehicles shall be determined by the Commission, having regard to vehicle type and historic precedent. Dimensions of any such signage must be in accordance with the restrictions set out in FIA Appendix K.
- 10.1.6 **Competition Numbers:** Competition numbers carried by 5th Category vehicles must comply

Schedule L - Vehicle Log Books

1. The production of a properly entered vehicle log book and, for 5th Category vehicles, the relevant Certificate of Description (CoD) issued by CAMS is required by NCR 150. Failure to present such vehicle log book and/or CoD when the relevant vehicle is presented for scrutineering may involve exclusion of the vehicle concerned from the relevant competition, unless the vehicle is of the 5th Category and subject of a Temporary Permit to Compete. The Chief Steward may, however, permit the vehicle to practice upon payment of a fine (see Appendix R) and completion of a Statutory Declaration that the vehicle is subject to a current and valid log book. Should the relevant log book not be produced prior to the competition, the vehicle will not be permitted to compete save upon the explicit authority of the stewards, subject to whatever conditions they may impose. Failure to produce the log book may result in the competitor/s being charged with an offence against the NCR, including NCR 183 (ii), (iii) and (xii).
It shall be required that if a vehicle competes at a meeting in respect of which the possession of a log book is not required, and such vehicle nevertheless is the subject of a log book, then the log book shall be presented at such a meeting.
2. The vehicle log book shall contain a description and specification of the automobile to which it refers, together with such other information as may be from time to time required by CAMS. Only one log book shall be issued for each vehicle (other than by way of extension or replacement), and the possession of two log books for any vehicle at one time shall be deemed an offence

with the requirements of Schedule K, article 2 Competition Numbers, except as follows:

- Groups J, K, L, Sa and Na are exempted from the requirements as to background specified in Article 2.3.
- Notwithstanding the prescriptions of article 2.3, all 5th Category vehicles which have a disc or rectangular background to the competition number may carry either black numbers on a white background or white numbers on a black background.
- Applications for exemption from the requirements as to background specified in article 2.3 and/or for the carriage of numbers differing in typestyle, size, colour or placement to the normal requirements may be made in individual cases where the specified vehicle competed in such a visual form during the relevant group period. Approvals to such applications will be evidenced by inclusion in the Certificate of Description of photographs showing the approved style of competition number on the car.

against these Rules.

3. CAMS will issue a vehicle log book only upon written application signed by the bona fide owner of the relevant automobile, and upon payment by such owner of a fee as stated in Appendix R to these Rules (Fees & Charges Payable to CAMS - refer to CAMS website, www.cams.com.au/gol2007/fees). The Log Book remains the property of CAMS, and must be returned to CAMS on request.
4. Notwithstanding the issue by CAMS of such vehicle log book the said log book shall be deemed invalid if:
 - (i) the specification therein, or any of them, are found upon examination by a scrutineer to differ from the specifications laid down in the relevant vehicle's homologation or Recognition Certificate, or (in the event that such certificate is not available for whatever reason) from the specifications laid down for the make and model concerned by the relevant manufacturer (3rd Category vehicles only); or
 - (ii) the automobile is found, upon examination by a scrutineer, to differ from the specifications stated in the vehicle log book and/or CoD; and the presentation of the automobile for scrutineering under either of the contingencies foreseen in subparagraphs (i) or (ii) of this paragraph shall be deemed a prima facie breach of these Rules, and punishable accordingly.
5. Amendments to the vehicle log book shall be made only by CAMS and upon the completion of a written application by the bona fide legal owner of the automobile concerned.

6. Any alteration to the specifications of an automobile, or any change in its bona fide legal ownership, shall necessarily involve the return of the relevant vehicle log book to CAMS for the recording of each alteration or change.
7. Entries in log books may be made only by the Chief Scrutineer or his deputy, a steward of the meeting, a CAMS Technical Commissioner, or a permanent employee of CAMS. Such endorsements may be cancelled or noted as having been complied with, only by any of the above persons.
8. Any person or body competing, or offering or attempting to compete, in any competition for which a valid vehicle log book is required while not in possession of a relevant and valid vehicle log book shall be liable to penalties under these Rules; or having so competed shall be excluded from the results of such competition without prejudice to the infliction upon him of further penalties under these Rules.
9. Any official of a meeting who, under any pretext, permits the competition of any automobile known by him to be ineligible, or reported to him by the relevant officials as being ineligible, shall be liable to serious penalties under these Rules, without prejudice to the

10. Measurements taken by scrutineers approved by CAMS shall be deemed to be accurate, and no protest shall lie in respect of the methods employed by such scrutineers in taking such measurements, scrutineers being Judges of Fact in this context (see NCR 181 (i) (c)).
11. No vehicle for which a log book has been issued may compete in, or practice for, any event until it has been subjected to a pre-event inspection by an authorised scrutineer and subsequently approved.

EXPLANATORY NOTE:

Save for vehicles of the 5th Category, the log book serves as an identification for the car, and a means of communication from one competition to the next. It also records the vehicle's ownership. The log book is not prima facie evidence of the car's eligibility for a particular category or group, nor is it a certificate of compliance. Any vehicle may compete in any category or group for which it is eligible, and is thus determined at the time of scrutiny of the vehicle.

When an automobile is entered in a competition for a class or category other than that noted in the log book it shall comply with the conditions for that class or category.

Schedule M – Scatter Shields

1. APPLICATION

A scatter shield complying with the specification below must be fitted to:

- (i) Front-engined Sports Sedans or Improved Production vehicles which have undergone an engine change, or which are fitted with a transverse engine transmission assembly.
- (ii) Front-engined Sports Cars and front-engined Category 1 cars, in which a derangement of the clutch-flywheel assembly could pose a hazard to the driver.

Excepted from the above requirements (i) and (ii) are those cars upon which the entire clutch-flywheel housing is, in plan view, forward of all parts of the driver's body when he is seated normally in the car.

- (iii) Any rear- or mid-engined Category 1 or 2 car:
 - in which derangement of the clutch-flywheel assembly could present a hazard to the driver; or
 - which is fitted with a transverse engine transmission assembly; or
 - on which the clutch-flywheel assembly extends to within 250mm of the rear of the driver's seat, when such seat is at the rearmost extremity of adjustment.

NOTE: Historic cars when competing in events exclusively for such cars are exempted from this requirement.

2. SPECIFICATION

- 2.1 The shield must be so fitted as to minimise the risk of injury in case of flywheel and/or clutch

failure. It must be of safe construction.

- 2.2 The shield must be fitted under the floor or, in appropriate cases, in the engine compartment. It must not rely on floor or toeboard for strength and it must be securely mounted.
- 2.3 The shield must be of sufficient width and length to protect the occupant of the driver's seat and should encompass at least 140° above the horizontal.
- 2.4 The shield must be of a thickness of:
 - 6mm if mild steel plate;
 - 3mm if tungsten impregnated alloy steel plate;
 - 6mm if Alcoa aluminium alloy A5083H321.

Specifications of alternative materials may be submitted to CAMS for evaluation before installation or manufacture.

3. ALTERNATIVES

A scatter shield may be dispensed with on vehicles where the construction of the flywheel/clutch housing is such that it meets or exceeds the requirements herein, eg, a housing fabricated from mild steel plate of 6mm thickness or is otherwise in compliance with the SFI 6.1, 6.2 or 6.3 standards.

A transmission blanket to the SFI Spec 14.1 is acceptable as an alternative to one fabricated from metal as above.

Schedule N – Fuel Tanks and Refuelling

Part 1 – Fuel Tanks

(State Level and above Race Meetings only)

1. 1ST CATEGORY CARS

- 1.1 It is compulsory for all cars of Formula Holden, in championship races all cars of Formula 2, and all cars with a fuel capacity in excess of 50 litres, to be equipped with fuel tanks either fitted with a CAMS-approved foam, or fitted with a safety-type fuel tank as approved by the FIA.
- 1.2 Tank fillers and caps must not protrude beyond the coachwork. The caps must be designed in such a way as to ensure an efficient locking action which reduces the risk of an external opening following a crash impact or incomplete locking after refuelling. Fillers must be placed away from points which are vulnerable in case of a crash. The air vents must be located at least 250mm to the rear of the cockpit.
- 1.3 From a date to be advised, it will be compulsory for all cars of Formula 2 and all cars with a fuel capacity in excess of 50 litres to be fitted with a safety-type fuel tank, of a type as will be specified by FIA.
- 1.4 From a date to be advised, it will be required that that part of the structure surrounding the fuel tank which is in direct contact with the air stream must include an aluminium sheet of a to-be-determined thickness, tensile strength and elongation.
- 1.5 All Formula 2 cars first registered with CAMS after 1 January, 1977, and all those in which the fuel tank is within 100mm of the outside surface of the car, shall be fitted with a crushable structure.
- 1.6 It is recommended that car owners adopt as a guide the following specifications for the fuel tank surround, and incorporate this in their cars:

Thickness	1.5mm
Material	Aluminium
Tensile strength	215 MPa
Minimum elongation	5%

2. CARS OF THE 2ND, 3RD AND 4TH CATEGORIES

- 2.1 Cars of the 2nd Category must be fitted with fuel tanks of capacity no greater than specified in 2.7 below. The fuel tanks must be fitted with anti-spray foam in conformity with CAMS Standard or the tanks must be of a safety type approved by the FIA. In races of less than 30 minutes' duration, road-registered cars need not comply with this requirement.
- 2.2 From 1 January, 1974, all vehicles not previously registered with CAMS or of a model for which a log book has not previously been issued, must be fitted with fuel tanks of capacity no greater than specified in 2.7 below.
- 2.3 In 3rd Category vehicles, unless otherwise specified in the Group Regulations, it is permitted to replace original fuel tanks with FIA bladder tanks provided the fuel capacity does not exceed that specified in 2.7 below.
- 2.4 Should "dry-break" fuel couplings be fitted then a FIA-approved tank is required (see 2.5 below for exception). The fuel filling port must then be relocated and in such relocation:
 - (i) the original fuel port/s shall be rendered inoperative;
 - (ii) the valve receiver mounting must be installed in the appropriate external panel in such a way as to prevent entry of fuel into the boot compartment in the event of spillage;
 - (iii) a flexible connection between the valve receiver mounting and the top of the fuel tank is permitted.

See Part 2 for further information regarding refuelling with dry-break couplings.

- 2.5 If dry-break fuel couplings are fitted to Series Production Cars equipped with standard fuel tanks as supplied by the manufacturer and the tank remains unmodified in all other



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respects (including baffling, foam filling and modifications to the filler neck or venting stem), any consequential increase in fuel capacity will be acceptable. However, the fitment of the refuelling and vent bottle orifices must be as close as practical to the fuel tank; the size of the refuelling pipe from the rear of the dry-break coupling to the original filler neck of the fuel tank must be no greater than that of the OD of the exit of the dry-break bulb; and the route of the filler and vent pipes from the dry-break bulbs to the fuel tank must be as short as practical.

- 2.6 Any installation of LP Gas to vehicles must be in accordance with the requirements of AS 1425 (1989). Fuel tanks may be made demountable utilising appropriate self-sealing connections on fuel hoses.
- 2.7 The maximum capacity of fuel tanks fitted to cars of the 2nd, 3rd and 4th Categories, except as provided above, shall be:

Up to 700cc	60 litres
701-1000cc	70 litres
1001-1400cc	80 litres
1401-1600cc	90 litres
1601-2000cc	100 litres
2001-2500cc	110 litres
Over 2500cc	120 litres

2.8 (i) Cars of the 3rd and 4th Categories competing in races scheduled to extend more than 30 minutes and not fitted with a "safety tank" must have fitted to their fuel tank such anti-spray foam as specified by CAMS.

(ii) Car owners are reminded that, at some future date, such foam may be required in all cars.

(iii) The foam to be used is that produced for this purpose.

3. GENERAL

3.1 The requirements of this Schedule N do not apply to Club or Multi-club Level race meetings, nor to cars participating in races exclusively for Production Cars.

3.2 Cars first registered with CAMS after 1 January, 1977, are not permitted to have fuel tanks forming part of the stressed structure of the car.

3.3 In all circuit races, refuelling in pit lane may be undertaken only under the conditions prescribed in Part 2 hereof.

3.4 **NOTE: Refer also to relevant technical regulations for the category/class.**

Schedule N - Fuel Tanks and Refuelling

Part 2 - Refuelling in Pit Lane

1. GENERAL

1.1 For any refuelling undertaken in pit lane, during any testing, practice, qualifying or race, the following procedures must be adopted, unless Supplementary Regulations provide otherwise.

1.2 Any refuelling in a pit or paddock area not utilising these procedures must be undertaken either with a vehicle totally within a pit garage or in the area of the paddock specifically designated for the purpose of refuelling; and must be completed with the engine turned off.

1.3 Under no circumstances will refuelling be permitted on the circuit.

1.4 When event regulations allow the use of any alternative refuelling equipment, those regulations shall prescribe all relevant conditions, including capacity of permitted refuelling containers and the requirements for delivery hose/s.

1.5 The regulations regarding the use of overhead rigs are compatible with FIA requirements and are thus acceptable for international events. The use of chums during competition is prohibited.

2. SAFETY

2.1 **Area:** The area of the pit garage in which the fuel reservoirs are situated must be adequately ventilated and have unimpeded access from front and rear of the pit garage. A minimum quantity of extinguishment (9kg if dry powder type), which must be in either one or two extinguishers must be available for use in each pit. The area must be clean and free of potentially flammable materials eg, paper, rags, oily fabrics etc.

2.2 **Pit Crew:** As prescribed in Race Meeting Standing Regulations, the maximum number of attendants handling refuelling related procedures will be three, their designated tasks will be as follows:

Fire attendant;

One hose attendant;

One rig cut off valve attendant.

All attendants will be required to be attired as per Schedule D, art. 3(iii). Balaclavas must be worn and any resultant exposed areas (eg, eyes) must be covered to minimise risk of injury from flash fire burns (eg, by goggles). The wearing of a full face helmet is recommended in addition to the above.

Any wheel attendants whose tasks place them within one metre of a fuel or vent valve on a vehicle will be required to wear clothing as listed in above for fuel attendants.

For the entire time of a pit stop during which any refuelling operation is undertaken, it will be compulsory for the fire attendant to be ready to attend to any fire which may occur.

The fire attendant must stand near the car and the overhead rig, poised with the extinguisher ready to operate.

2.3 **Emergency Cut-Off Valve:** It will be compulsory for any refuelling operation which incorporates an overhead rig that the rig be equipped with a ball-cock or similar fast action valve which must work on the "dead man" principle. This valve must be attached directly to the fuel reservoir.

See diagram 2. The emergency cut-off valve attendant may hold the valve open only during the refuelling operations. When pressure on the handle of the cut-off valve is released, the valve must immediately close, stopping the flow of fuel from the reservoir. The closing principal must not rely on the action of gravity alone.

2.4 **Approval of Installations and Equipment:** All installations and equipment must be specifically approved by the Chief Scrutineer of the Meeting or his nominee prior to any competition during which refuelling is permitted in pit lane. Event supplementary regulations will provide further details of times etc. for the inspection.

2.5 **Earthing:** During any refuelling operation, it is strongly recommended that vehicles to be electrically connected to earth, viz:

(i) Each pit is equipped with two aircraft type grounding connections. Vehicles must be equipped with a suitable terminal to which one of these connections may be attached.

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

(iii) The car is connected, at least momentarily, to the other grounding connection as soon as it stops in the pit.

(iv) No fuel hose connection (either the fill or vent bottle) be made unless conditions (ii) and (iii) have been fulfilled.

2.6 **Vehicle movement:** The vehicle must be stationary at all times during refuelling.

3. FUEL TANKS (VEHICLES)

Refer to Schedule N (Part 1) and the relevant Technical Regulations for requirements of fuel tanks.

4. STANDARD COUPLING

All refuelling operations must be carried out utilising a Siamese dry-break system. A dry-break system is deemed to consist of two separate units, the receiving unit and the probe unit together with the associated hoses, valves etc. The general design of the receiving unit and probe unit is included at diagram 1.

A male probe unit shall be fitted to each refuelling hose.

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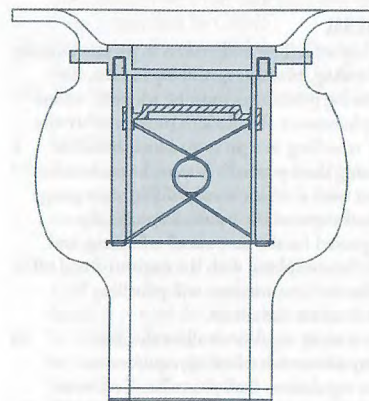
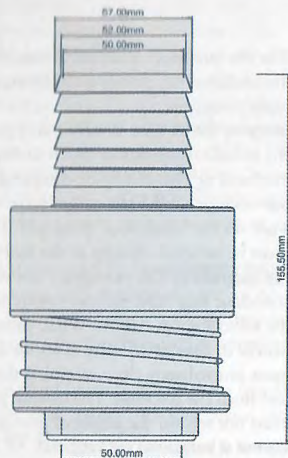
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Diagram 1: General Design of Dry-break Coupling
Standard coupling (probe and receiver unit)



The receiving units shall be fitted to the vehicle, under the conditions listed in the technical regulations for the relevant category.

It is permitted to only use one receiving valve to permit the entry of fuel into the tank, and one receiving valve for connection to the vent bottle/return vent.

Any other design of dry-break coupling, which operates on an alternative principle to that of diagram 1, must be specifically approved by CAMS and the subsequent permission, if granted, will be noted in the log book of the subject vehicle.

Maintenance: Competitors are advised it is extremely important to maintain all refuelling equipment in good working order. O-rings must be regularly inspected and replaced if there are any signs of expansion or damage. Springs and tracks must also be regularly inspected and kept lubricated during those times the refuelling valves are not in operation.

5. REFUELLING

Refuelling may only be undertaken by an overhead rig.

5.1 Refuelling by Overhead Rig

- (i) **General:** This system envisages fuel being stored in a single rigid tank of fixed capacity (see Note), at a specific maximum height above the pit lane. Vehicles will be refuelled via a single flexible hose which in turn is fitted with a male probe unit of standard design (see article 4) with a single return vapour line to the overhead rig.

- (ii) **Design Requirements:** The maximum height of any part of the rig which contains fuel is two metres above the pit lane. Only non-fuel holding connections and vents are permitted above two metres.

The maximum capacity of the reservoir

including the delivery hose is 220 litres which must in all circumstances allow 10% ullage (air space). *See Note.*

A single delivery hose, which must be of a flexible rubber or a fuel resistant reinforced plastic material must be connected to the "dead man" valve.

The flexible part of the hose must be at least 2.5m in length and of an ID no greater than 50mm.

The flexible hose must be connected to the male probe. A solid connecting sleeve (maximum length 300mm) is permitted between the hose and the probe, to assist with ease of handling.

The head of the male probe and all other metal parts of the system must be electrically connected to ground via a lead clipped to the delivery hose.

All parts of the refuelling system, including the male probe, the flexible hose, any connection sleeve, the cut-off valve and the reservoir must be electrically continuous and efficiently grounded.

The reservoir must be vented via an explosion safe shielded vent.

A filling orifice (maximum dimension 50mm) may be fitted to the main reservoir. Any refilling operations to the main reservoir must be carried out bearing in mind civil Occupational Health and Safety regulations.

No artificial pressurisation of the reservoir is permitted.

The vent must be open to the atmosphere and only atmospheric pressure may be exerted on the fuel in the main reservoir.

Any device which changes the ambient temperature of the fuel is prohibited.

The rig shall not be moved once filled and must be completely drained before moving.

The fire attendant must be "ready for action" during any refilling operations.

- (iii) **Use:** The rig, including the reservoir, return and delivery hose, must either remain behind the pit wall or be contained entirely within the pit garage. The delivery hose may only be moved into pit lane from the pit garage a maximum of three minutes prior to any pit stop. While in pit lane, the delivery hose must at all times be held by the relevant attendant.

Note: Overhead rigs identified as being in use prior to 1 January, 2001, shall remain acceptable until further advised.

6. VENTING DURING REFUELLING OPERATIONS

In all refuelling operations, the fuel tank/s of the vehicle must be vented through a standard coupling (see article 4), by a return vent integrated with the filler coupling as a Siamese unit.

6.1 Return Vents

- (i) **General:** The return vent allows a fuel tank of a car to be vented to the ullage space in the reservoir of the overhead refuelling rig (see diagram 2).

- (ii) **Design Requirements:** Maximum internal diameter at vent hose is 50mm.

The vent hose must only return to the reservoir tank.

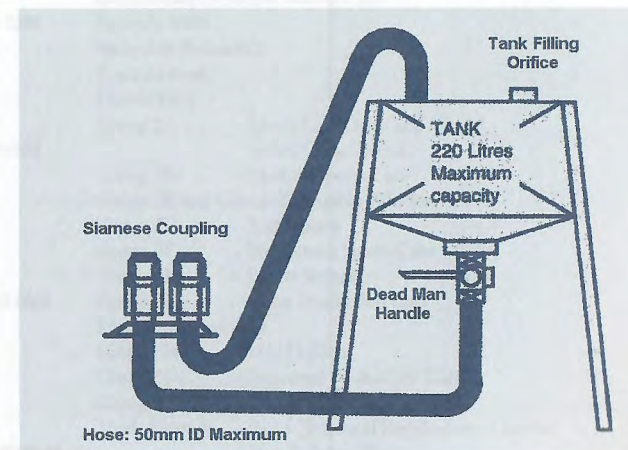
The reservoir of the main tank must be vented externally to any pit garage.

"Siamese" couplings, the equipment must be manufactured in a manner which allows the vent coupling to engage prior to the refuelling coupling and likewise the vent coupling must disengage after the refuelling coupling.

Siamese coupling



Diagram 2: Overhead rig with fuel hose and return vent



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Racing

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