

**ASSOCIATION OF
AUTHORISING
BODIES**



RULES & REGULATIONS

2018 EDITION

CLASS 3



"The Association reserve the right to alter/amend the Rules and Regulations as required, and that the Association has the right to review and amend any Class or Construction Rules and Regulations at the end of each racing year."

**VALID FROM JANUARY 2018
UNTIL FURTHER NOTICE.**

ALL PREVIOUS EDITIONS ARE INVALID.

NEW REGULATIONS IN THIS EDITION ARE MARKED #.

**IT IS THE RESPONSIBILITY OF THE DRIVER/CONSTRUCTOR TO ENSURE THAT ALL
VEHICLES CONFORM FULLY TO THE RULES CONTAINED WITHIN THIS DOCUMENT.**

CLASS 3

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CLASSES

Class 1 Under 1000cc Front Wheel Drive Saloons of specified type and manufacturer.

Class 2 Up to 1300cc, limited modification vehicles

Class 3 Over 1421cc, front engined, rear wheel drive, modified saloons

Class 4 Up to 1130cc modified vehicles

Class 5 1131cc - 1420cc modified vehicles

Class 6 Front wheel drive modified vehicles – Restricted minimum capacity.

Class 7 Over 1421cc rear wheel drive, modified vehicles

Class 8 Up to 1420cc Specials

Class 9 1421cc - 2070cc Specials

Class 10 Over 2070cc Specials

Junior Specials Under 1200cc Vauxhall Corsa Engined Special Restricted Drivers Only

Ladies Classes - Recommendations for Club/League Racing.

It is recommended that Ladies are given the same amount of racing as Men.

Class 11 Classes 1 & 2 will race together duly handicapped/staggered.

Class 12 Classes 4, 5 & 6 will race together duly handicapped/staggered.

Class 13 Classes 3 & 7 will race together duly handicapped/staggered.

Class 14 Classes 8, 9 & 10 will race together duly handicapped/staggered.

Class Races - Maximum amount of vehicles allowed on a single straight-line start is, (refer to Members Handbook Track Construction General, rule 2 regarding track width):

All Classes = 8 Vehicles

Note. Where classes are mixed the maximum number of vehicles allowed on a straight-line start reduces to the lower number applicable to the classes above. E.g.: Specials & Saloons mixed - 8 vehicles on a straight-line start.

LICENCE

1. All drivers must hold a NASA Licence obtained through an Affiliated Autograss Club, before they can race. (For a listing of affiliated Clubs see NASA Website and/or NASA Fixture List).

The driver's NASA issued racing Club and League prefix and number identification shall be confirmed within the NASA Licence.

The NASA permitted number identification shall be a figure 3 numerical figure from 1 to 999. For any number less than 1 or greater than 999 an application must be made to NASA for permission to be allocated the number before it can be used. It is not permitted to prefix any number identification by the figure zero (0) e.g. 0001, 001, 01 ... etc.

Note: Racing on pink application slips will not be allowed.

2. A person over 18 years of age may be issued with a NASA competition licence.
 - 3*. A person under 18 years of age and over 16 years of age may be issued with a NASA Competition Licence provided that the official letter of consent to compete is received from his/her parent or legal guardian.
 - 4*. A person under 16 years of age and over 12 years of age may be issued with a NASA Junior Competition Licence provided that the official letter of consent to compete is received from his/her parent or legal guardian.
 - 5*. All NASA Competition Licence holders under 18 years of age and over 12 years of age must produce their copy of the letter of consent signed by their parent or legal guardian to any official when required.
- * **All Application Forms and Letters of Consent for under 18's are available from your Club Secretary.**
6. A Men's Licence entitles you to race in Men's Classes only, and Men's Championships.
 7. A Ladies Licence entitles you to race in Ladies Classes only, and Ladies Championships. (A lady may apply for a Men's Licence, and then **MUST** race in Men's Classes only).
Note:
A Lady competitor will not be allowed to change her competition licence (i.e. Men's to Ladies or Ladies to Men's) during any one season.
 8. **Junior Drivers** must use **either** a Class One vehicle and **or** a Junior Special vehicle **only**, in Junior races. They **must not** compete with Men or Ladies, or race any other Class of vehicle See relevant rule books for Junior Licence details.
 9. A competitor/driver must produce his/her licence to any official when required.
 10. NASA reserves the right to refuse a licence to any driver who has been refused a current road licence for medical reasons.
 11. NASA also reserves the right to refuse or cancel any issued identification numbers and letters. Frivolous or obscene number/letter combinations are prohibited
 12. All licences must have a current photograph of the Licence Holder affixed to the Licence at all times.
 13. If you lose your Licence, please contact your own Club Secretary for details of reapplication.

GENERAL INSTRUCTIONS FOR APPLYING FOR A NASA LICENCE

No one is allowed to race in a NASA Class until they have received their licence or a day licence has been issued.

1. You must obtain an Application Form for your Licence from your Club Secretary, giving to that Secretary your subscriptions for your Licence. The Club Secretary must sign and date the form and also stamp it with the Club Stamp, if the club has one.
2. You will also receive an envelope with the address of the person to whom you must send the Application Form.
3. The Form is in quadruplicate and when filled in you should hand the yellow copy back to your Club Secretary, keep the pink copy for yourself and send the two white forms to the Registration Secretary for your League together with a STAMPED SELF-ADDRESSED ENVELOPE. FAILURE TO SEND A STAMPED SELF-ADDRESSED ENVELOPE WILL RESULT IN YOUR LICENCE NOT BEING ISSUED.
4. When filling in the Application Form, please print all the details and mark the appropriate Licence that you are applying for. A Full Mens is for a Man's Licence and likewise with the Full Ladies, although if a lady wishes to race with the men only and wishes to compete at the Men's Championships and not at the Ladies' Championships then she too must apply for a Full Men's Licence. A Mechanics Licence is for persons who wish to be mechanics and/or officials and a Membership card is for Officials. (If applying for a Junior Licence then the Application Form must be countersigned by a Parent or Guardian.) A copy of the NASA letter of consent for Juniors and drivers under 18 when they apply for a licence, must also be sent with the application form, otherwise the application will not be processed.
5. If you have any problems regarding the above, and with your Application then please contact the person to whom you will send or have sent your Licence application.

PLEASE NOTE FAILURE TO COMPLETE THE APPLICATION FORM CORRECTLY WILL RESULT IN IT BEING RETURNED TO YOU UNTIL IT HAS BEEN COMPLETED SATISFACTORILY.

DEFINITIONS

A race meeting – for the purpose of definition by NASA is an event where one or more cars travels around or along a track at a speed greater than “walking pace”.

Active /Adaptive/ semi-Active Suspension

The vertical movement of a vehicle’s wheels relative to the chassis or vehicle body is controlled by an automatic onboard system/device in conjunction with electrical/optical/hydraulic sensors and control unit/computer to detect/monitor body and or chassis movement in relation to the surface the vehicle is being driven upon.

Aerofoil/Spoiler - Any device or part of a vehicle, which affects airflow over a vehicle to create an aerodynamic advantage.

Air Cooling hole - A single hole or series of holes up to a maximum of 4 in number of 50mm (2") maximum diameter cut in the rear panel or rear half of the rear boot/rear luggage compartment lid or rear engine cover/rear bonnet of a vehicle to allow the passage of cooling air.

Ambulance – A vehicle constructed to take a stretcher, which carries sufficient First Aid equipment and personnel to cover all foreseeable accidents at an event, and is capable of transporting a stretcher case to hospital in comfort and safety.

Authorised Personnel – Driver, Mechanic, Marshal, Scrutineer or Official who has signed on.

Ballast - Non-functional material added to increase weight.

Bulkhead- A Bulkhead is a partition or panel separating any two vehicle compartments. E.g. Engine compartment and drivers compartment or Luggage compartment and drivers compartment

Class - Vehicles grouped together governed by specified Rules.

Cross Over Rule - Vehicles must hold a straight line until the appropriate marker has been passed.

CWP / cwp – Differential Crown Wheel Pinion.

Driver's Compartment –Saloons: The driver’s compartment is deemed to finish/end/cease at an imaginary line, across the vehicle immediately behind the driver’s seat. i.e. at the rear face of the driver’s seat.

Enclosed Space - An area which is fully enclosed by material such to prevent access to any point within that area for fire extinguishant.

Engine - An internal combustion device for the production of motive power, consisting of one or more fuel combustion chambers with a common rotating internal output shaft, as produced by a NASA permitted/recognised manufacturer.

Engine Ancillaries – Carburettor/Throttle Bodies/Injection, inlet manifold, exhaust manifold, exhaust system.

Event – A continuing competition held over a period of one or more days.

False Start – Vehicles commencing a race before the start of race signal is given.

Gauge - In all references to measurements, "gauge" refers to British Standard Wire Gauge. (See Table for gauge details)

Local or Slight Modification - The absolute minimum modification or alteration to an original manufacturer’s vehicle body panel.

NASA – all references to NASA refer to the National Autograss Sport Association Ltd.

Official Vehicle – Vehicles such as Tractors, Breakdown vehicles or other vehicles in the custody or control of the Club/League.

Oil tank – A container for the storing of oil including breather system catch tank, oil reservoir and or dry sump tank.

Padding/Cushion.

An enclosed non-metal item such as cloth bag filled with soft material stuffing to support or ease or “fill in” gap between driver body and seat.

Parent – in the context of these rules is the natural parent of any licence holder who is under 18yrs of age. It does not include a step parent, the “partner” of a natural parent or a guardian who has not been appointed as such by a court. It does include a “Legal Guardian” who will be a person who has been appointed by a court to act as such.

Passive suspension.

The vertical movement of a vehicle’s wheels relative to the chassis or vehicle body is determined entirely by the surface the vehicle is being driven upon.

Private Vehicle – Vehicles that are not owned by the Club/League and not in the custody or control of the Club/League.

Proprietary / Proprietary Manufactured. – An item or component that is produced, manufactured and marketed by a NASA recognised manufacturer.

Pump Fuel - A type sold to the public in the United Kingdom at roadside Filling Stations. L.P.G. / Methanol are not allowed.

Restrictor - A device of metal used for controlling the passage of the air/fuel mixture between two points.

Re-Run - A repeat of the previous race minus exclusions and non-runners, if any, with original grid positions and any penalties imposed in the original race being maintained.

Rev Limiter – A device that controls and or restricts engine maximum RPM.

Silhouette - The silhouette is the shape of the vehicle when viewed from the front, back and side elevation, and when viewed from the top.

Skinning of Panel(s) - The removal of: Part of or completely of an interior panel without detriment to the structural strength of the vehicle bodyshell. Specifically excluding the following: Door pillars/posts, front bulkheads, metal dashboards, sills. Drivers compartment floorpan, and/or other panels as defined in the rules.

Track - The area within the confines of the spectator barrier.

Traction / Launch Control - An automatic and/or electrical and/or optical and/or mechanical and/or pneumatic and/or hydraulic method of controlling:

- a. The vehicle driving wheel or wheels rotational speed in relation to the distance travelled by the vehicle.
- b. The vehicle suspension system in relation to differing start-line settings and racing settings.

By means other than direct human driver action upon the accelerator and/or throttle and/or engine fuel delivery activator.

SAFETY ROLL CAGE

Roll cage specifications stipulated within this rule book are the minimum acceptable. Members should take account of the condition, physical strength and style of the vehicle and of any structural modifications to the body-shell that have been carried out and fit additional bars to the safety roll cage to satisfy themselves in respect of the overall safety of the vehicle. NASA are not responsible for the failings of any roll cage as a result of its lack of design strength or manufacturing integrity.

The basic purpose of a roll cage is to protect the driver if the car should overturn, or be involved in a serious accident. This purpose should always be borne in mind during Roll Cage selection. All Roll Cages must comply with the NASA Design and material thickness specification. The NASA design is a minimum requirement for Autograss Racing only. Extra bars to provide further protection - material steel only, may be fitted, design free. Roll Cages designed and / or manufactured for use in other forms of motor sport may not be suitable for Autograss Racing.

The roll cage design including additional and or extra bars fitted to the roll cage and or vehicle structure, and component mounting bars must not impede driver access to or egress from the vehicle or access for marshals/medical personnel/assistance in the event of a roll over or on-track incident.

Note.

- a). All Roll Cages must be constructed of steel with the individual component bars welded together (i.e. "Weld In" roll cages).
- b). "FIA Copy" or "Other Motorsport Copy" type "Weld In" Roll Cages are prohibited.
- c). The use of a Roll Cage with the individual component bars bolted together (i.e. a "Bolt Together" roll cage) is prohibited.
- d). All Door bars must be as NASA requirements. "FIA" or "FIA Copy" or "Other Motor sport Copy" "X (cross) type door" bars on their own are prohibited.

1. Whenever bolts and nuts are used, they must be of steel and a minimum of R or S quality. Square headed bolts must not be used.

Note.

For the complete roll cage installation, including associated "Cross Brace" and "Cross Member", all of the floor and bodyshell fixings and "fixing plates" nuts and bolts must be correct and fit for purpose. The use of "Half head bolts" "Half nuts" or "cut down" full bolt head and or nuts prohibited. The use of "lightened and or "drilled shank/stem" bolts/set screws is prohibited."

2. Welding.

The roll cage must be a welded metal construction.

- a). All welding must be of the highest quality possible, with full penetration.
- b). Where any bars are welded together the joint mating surfaces must be entirely welded.

NASA via a designated Scrutineer reserves the right to reject any welding that may be deemed insufficient and or incorrect.

3. Roll Cage "Inspection Hole".

An inspection hole may be drilled in each of the mandatory component bars of the complete roll cage, ie uprights, roof bars, bracing bars, diagonal bars, driver side bars 3/16" (5mm) size in diameter, at least 3" (75mm) away from any weld, and encircled in an contrasting/outstanding colour paint.

Note.

In order to verify the tube wall thickness a scrutineer or NASA designated official can request the drilling of an inspection hole at any point or points of the roll cage component bar tube.

Refusal to comply with a request to fit a "inspection hole" will immediately deem the vehicle as being in contravention of the NASA vehicle construction rules and make the competitor and or member concerned subject to disciplinary action.

4. The roll cage including associated "Cross Brace" and "Cross Member" bars MUST be of steel, including all "fixing plates" and their associated nuts/bolts etc.
5. The roll cage, including side bar and brace bar tubing, must not be used as a medium for the flow of oil, water, fuel or the internal passage of electrical wiring.
6. Where any bars are welded together the joints must be completely welded.
7. The use of a proprietary manufactured steel roll cage is permitted. See Rule 8.
8. All NASA permitted proprietary manufactured roll cages must comply with NASA design, complete with the correct proprietary manufactured additional bars (e.g. door bars and diagonals) fitted as required (See Fig.1). Tube to be cold

drawn seamless carbon steel, with a minimum yield strength of 350N/mm. Permitted Minimum diameter and tube wall thickness.

32mm (1¼") / 38mm / 42mm. Diameter with an absolute Minimum thickness = 2.5mm.
50mm. Diameter with an absolute Minimum thickness = 2.0mm
See rule 11 for associated material tolerances.
See Figure 1 for roll cage design.

9. The NASA permitted proprietary manufactured roll cage additional bars (Only door bars and diagonal) must be fixed by welding.
10. If a NASA permitted proprietary manufactured roll cage has been modified by fitting of additional bars (only door bars and diagonals) and the bars being welded in place by persons other than the original roll cage manufacturer, then the additional bars must comply in all respects, including stated minimum specified thickness 2.5mm and or 3.0mm and associated tolerances to NASA required design. See Rule 11.
11. All NASA permitted roll cages must comply with NASA design.
The main roll cage structure will comprise:
Two main hoops (See rule 13).
Roof centre bar, roof cross bar and roof side bars (See rule 16).
Floor level front to rear bars (See rule 16).
Front and rear cross bars (See rule 17).
Bracing bars (See rule 18).
Door bars (See rule 19).
Diagonal bars (see rule 20).

Material

The main roll cage structure must be constructed of either:

- (a). Steel circular section tube with a minimum diameter of 32mm(1¼") and with a minimum wall thickness of 2.5mm.
- Or
- (b). Steel box section tube with a minimum size of 30mm x 30mm and with a minimum wall thickness of 3.0mm

Wall thickness tolerances.

- i. Steel circular section tube: maximum tolerance = 0.2mm. I.e. the absolute minimum thickness at any point = 2.3mm.
- ii. Steel box section tube: maximum tolerance = 0.5mm. I.e. the absolute minimum thickness at any point = 2.5mm

Note.

The tolerances specified in i. and ii. above are only to take account of local variations and imperfections in the wall thickness of manufactured steel tube.

It is not permitted to construct a roll cage from material that has been manufactured, sourced and or supplied with a specified wall thickness that is less than the minimum requirement indicated in (a) or (b) above.

Each component bar of the roll cage must measure at or above the dimensions stated in (a) or (b) at one or more points. The measurements will not be taken on "seams" or "bends".

- # The above will be enforced by taking measurements throughout a roll cage and, if there is evidence that the material used is entirely below the required wall thickness, or if at any point the wall thickness is found to be below the absolute minimum, the cage will be deemed non compliant and the vehicle will not be permitted to race.

12. No protection bars are to be connected to the roll cage.
13. A Roll Cage must be made of two main hoops and associated mandatory construction bars. (See Fig. 1.).
One hoop at or as close as possible to following the front windscreen pillars ("A" Posts).
One hoop at or as close as possible to, following the "B" Posts - If forward of "B" post then within 75mm (3") - If behind the "B" post not more than 254mm (10") to the rear of the driver's helmet, when the driver is seated.
The linear distance of the bar between and joining the front hoop and rear hoop must be of a length as necessary to join the two hoops at the top of the "A" and "B" posts. i.e. at each of the points where the "A" and "B" posts join the body-shell roof panel.
The main roll bar hoops and joining bars must be placed as near as possible to the roof, in order to limit crushing in the event of a somersault or roll-over.
Note.
Each of the roll cage individual component bars must be of a single continuous length of tube. i.e. One length bar per part.
The forming of a length of tube from two or more lengths by welding and concealing the welded joints by grinding/smoothing is prohibited.

14. The underside of the top bar of the roll cage must be not less than 75mm (3") above the helmet of the seated driver.
15. The rear roll cage hoop uprights must be straight and must be vertical +/- 50mm (2") measured at the top of the hoop. (See Fig 2.).
16. Front and rear hoops must be connected by a minimum of:
At the top.
Three front to rear bars, one along each side of the roof, and one along the middle. (See Fig. 1.).
The box shape and or frame formed by the roll cage roof bars must be such that the driver's body, including torso is within the box and or frame perimeter when seen in plan view from above. See Fig. 1b.
The fitting of an additional diagonal or two diagonal bars from either or both of the front upright top corners to either or both of the rear upright top corners is permitted.
Note. The Two diagonal bars may be a substitute for the centre bar.

At the base or bottom.

Two front to rear bars, one along each side consisting of a steel tube ((30mm x 30mm box section minimum, 50mm x 50mm maximum, 32mm (1¼") circular section minimum, 50mm circular section maximum) – with wall thickness as specified in rule 11 fitted (by means of welding). Steel plates (minimum surface area 6 sq ins (3871 sq mm) to be fixed to the frame at a maximum of 450mm (18") centres and bolted through the floorpan to a steel plate of equal size.

See also Chassis/Bodyshell Rule 2.9 & 2.10.

17. Cross bars

The front nearside upright and front offside upright of the hoop must be connected by one front cross bar, consisting of a steel tube box section 30mm x 30mm minimum, 50mm x 50mm maximum, 32mm(1¼") circular section minimum, 50mm circular section maximum – with wall thickness as specified in rule 11 fitted (by means of welding), at either "dash panel" level or floor or low level. See Fig. 1.

Note. If a floor level bar of the specified size is fitted, then a steering column support cross bar of a minimum size of 25mm box or circular section may also be fitted at "dash panel" level.

The rear nearside upright and rear offside upright of the hoop must be connected by one rear cross bar consisting of a steel tube box section(30mm x 30mm minimum, 50mm x 50mm maximum, 32mm(1¼") circular section minimum, 50mm circular section maximum – with wall thickness as specified in rule 11 fitted (By means of welding), at either floor or low level.

Cross bar Floor Plates.

Where the above bars are fitted at floor or low level then steel plates (Minimum surface area 6 sq ins (3871 sq mm), to be fixed to the frame at a maximum of 450mm (18") centres and bolted through the floorpan to a steel plate of equal size. See Rule 23, also Chassis/Bodyshell Rule 2.42.

18. Bracing Bars.

Two straight bracing bars must be fitted from the rear hoop, one (1) on each side, to the rear of the vehicle, at an angle not exceeding 60 degrees with the horizontal. The bars MUST be fixed within 4" (100mm) of the point of intersection of the rear upright and the top rear bar. (See Rule 11 & Fig.1).

Note:

It is not permitted to mount any rear bracing bars to the vehicle rear parcel shelf or rear seat bulkhead.

19. Door Side Bars (Sb).

Two side bars (Sb) each consisting of a single continuous length of tube must be fitted inside the driver's door and the passenger's door for the complete length of the doors, on the outside of the main roll bar uprights. They must be fitted as close as possible to the "A" and "B" posts. They cannot be fixed on the vehicle coachwork itself. They must be fitted such that the upright rather than any "Weld" is subject to the stress loadings of any side impact.

The angle of the side-bar with the horizontal must not exceed 5 degrees, and be mounted between 100mm (4") and 150mm (6") apart, for the protection of the lower half of the drivers body. (See Fig. 3).

It is recommended that 3 No. or more vertical upright bars joining the bottom side bar to the top side bar at regular intervals be fitted. The fitting of additional side cross bars made to the same specification as the roll cage requirements is permitted.

20. Diagonal Bar.

There must be a minimum of one diagonal bar fitted from the point of intersection of the offside rear upright with the nearside to offside rear hoop top bar to the bottom of the nearside upright, or vies-versa. (See Rule 11 & Fig. 1). The fitting of two diagonal bars to form a cross is permitted.

21. Rear Upright Triangulation bar (Tb).

There must be a minimum of one Triangulation bar (Tb) fitted on each side at high level to brace and or gusset the nearside top bar and the nearside rear upright and the offside top bar and offside rear upright - steel tube circular or box section 25mm minimum 2.5mm minimum thickness (by means of welding). The point of connection on each top bar and upright must be a minimum of 100mm (4") from the point of intersection of each top bar with each rear upright. See Fig. 1a, 1b, 1c, & 3.

22. Front Upright brace bar (Fb).

There may be a minimum of one additional Front Upright brace bar (Fb) fitted on each side at a near vertical angle from the vehicle floor/floor frame, to the top of the roll cage hoop, steel tube 32mm (1¼") circular or box section 30mm minimum with specified thickness (by means of welding). The point of connection on each top bar must be a minimum of 100mm (4") from the point of intersection of each top bar with each front upright. See Fig. 1a, 1b, 1c, & 3.

The front upright brace bar may be connected to and pass through the door bars to connect to the floor frame or be directly connected to the floor frame.

23. Floor Plates – Uprights, Brace Bars & Floor Bars.

All roll bar upright and bracing bars must have adequate steel plates welded to the bottom, with a contact area of at least 6 sq ins (3871 sq mm), and have the same thickness as the tube.

The plates must be bolted through the floor to a steel plate of equal size.

The plates shall be joined together by at least two bolts, minimum 10mm (3/8") diameter.

Note.

Where roll cage upright bars are welded to a floor frame chassis construction and the floor frame is welded to the floorpan (i.e. the floorpan is integral with the floor-frame) then "Floor plates" may be fitted.

When a roll bar rests on a box member, the latter must be locally reinforced by a structure of welded bolts or tube ends. (See Fig.4).

24. Brace Bars.

The following brace bars only are permitted to pass through the passenger compartment to front engine/luggage compartment bulkhead.

i. A brace bar from the nearside and offside front roll cage upright to the front engine/luggage compartment nearside and offside inner wing/bodyshell front suspension top support housing i.e. nearside upright to nearside inner wing and offside upright to offside inner wing only.

No part or component of the front suspension may be supported from or connected to this brace bar.

ii. The brace bars as described in "i" or any other brace bars cannot pass through the vehicle floorpan or any other bulkhead. (See Fig. 13)

- iii. The brace bar as described in "i" may be connected to the front suspension support bracket/cradle.
25. It is prohibited to directly connect any mechanical component, except damper units to the roll cage.

VEHICLE CONSTRUCTION RULES - CLASS 3

Must be a front engine, rear wheel driven, modified saloon, over 1421cc.

- a). A suitable Rear Wheel Drive (RWD) or Front Wheel Drive (FWD) saloon (including permitted three and/or five door "Hatchback" saloons, permitted 2 door saloons, but excluding "Estate" models, prohibited 2 door "Coupe" models and 4WD models) produced and marketed by a NASA recognised automobile manufacturer, may be taken in its entirety and modified.

Note.

The extent of modification is restricted on the type of original donor vehicle manufacture.

i.e. RWD and or FWD. See Rule 2.3.

For any vehicle it is Competitors responsibility to contact a scrutineer and or designated official to confirm that vehicle is eligible **before** using it as a donor vehicle/bodyshell.

- b). The vehicle must be made from:
- i. A NASA permitted front engine, rear wheel drive, saloon body shell.
- Or**
- ii. A NASA permitted front-engine front wheel drive (FWD), saloon bodyshell with a minimum wheelbase of 2300mm (90.55") as per the vehicle manufacturers' original specification or greater, that has been converted to front engine rear wheel drive. (See Rule 2.5).

Note.

The conversion of a Four Wheel Drive (4WD) vehicle to RWD is not permitted. The conversion of a rear-engine RWD vehicle to front engine RWD is not permitted.

- c). The engine cc MUST comply with class cc limits for the type of engine used.
- d). Repositioning of the control pedal assembly (Foot- brake/clutch/ accelerator pedals) is permitted. However the driver's foot-to-foot pedal contact face of each foot pedal must remain forward of an imaginary line a distance of 608mm (24") from the centre of the front wheel hub across the vehicle from nearside to offside.

Note.

Whilst racing the brake/clutch/accelerator operating systems may be subject to severe stress, pressure and/or heat loading. This must be borne in mind during system component choices.

- e). The following vehicles/bodyshells are not permitted.
Triumph - TR7 / Herald / Vitesse models.
Smart Car /Forfour/Roadster (All Models).
Subaru - Justy (4WD).
Fiat - Panda (4WD).
- f). The following are examples of permitted vehicles:
Vehicles that comply with class specification as a). & b). including:
Citroen Saxo (wb 2385mm).
Citroen C1. (wb 2340mm).
Ford Anglia 105E (wb 2300mm).
Ford Capri Mk 1 & 2 (1970 on).
Ford Escort Mk 1 (wb 2400mm).
Ford Escort Mk 2 (wb 2408mm).
Ford Fiesta (wb 2446mm).
Ford Sierra RWD only.
Ford KA (wb 2446mm).
Honda CRX Coupe 91/92.
Morris Minor 2 & 4 door Saloon (wb 2184mm)).
Nissan Micra Mk 1 (wb 2300mm).
Nissan Micra Mk 2 (wb 2360mm).
Opel Manta RWD.
Toyota 1000 2 door saloon RWD (wb 2159mm).
Toyota Starlet (wb 2300mm).
Vauxhall Chevette (wb 2392mm).
Vauxhall Nova (wb 2343mm).
Vauxhall Corsa (wb 2443mm).
Vauxhall Tigra - (See Rule 2.35).
VW Polo - (wb 2335/7).

Note.

The lists of prohibited and permitted vehicles are not fixed.

NASA reserves the right via an appointed Official and or Scrutineer to permit, reject and or prohibit a vehicle/bodyshell as being suitable or unsuitable for Autograss racing at any time.

GENERAL

1. Competitors **must** ensure that their racing vehicle conforms to NASA Rules and Regulations. Where a competitor is under 18 years of age the responsibility is shared with the parent/guardian.
2. Only methods of construction and modifications as listed are permitted. Any further modifications, other than those permitted, are prohibited. Unless the rules and regulations state that any part can be fitted or removed or that removal or modification of any standard part is allowed, then the part cannot be fitted or removed, and the standard part cannot be

removed or modified or altered or changed in anyway whatsoever. Any further modifications other than those listed are prohibited.

i.e. Unless the rules and regulations specifically permit a method of construction and or modification then it should be assumed that other type of construction, materials, modifications are not permitted. Intentional or deliberate (Including concealment) non-compliance with NASA vehicle construction rules will make the competitor and or member concerned subject to disciplinary action.

In the event of any doubt a Scrutineer must be contacted for clarification.

3. A vehicle must not be derived from a "Special" or a sports car.
Original manufacturer's convertible or cabriolet or soft top or sports car vehicles cannot be fitted with a metal roof or converted in any way for use as a saloon/hatchback/ closed car.
4. A vehicle must not be capable of seating any person other than the driver.
5. Welding.
a). All welding must be of the highest quality possible, with full penetration.
b). Where any bars are welded together the joint mating surfaces must be entirely welded.
Note.
NASA via a designated Scrutineer reserves the right to reject any welding that may be deemed insufficient and or incorrect.
6. All bolts, set screws and nuts used must be of steel and be of a minimum of R or S quality. Square headed bolts are prohibited.
7. All driver controls must be operated from, and remain within, the drivers compartment at all times.
8. There must be no sharp or protruding surfaces that may be regarded as a hazard, either internally or externally.
9. The fitting and/or use of wings, splitters, and/or any device to enhance vehicle adhesion to the ground via the airflow over the vehicle or device are prohibited. Aerofoils and spoilers are only allowed if fitted as standard production.
10. The fitting of mascots, toys, banners, flags or ornamentation is prohibited.
11. The use of Safety Air Bag(s) is prohibited.
Where they are fitted as a standard production item, they must be disconnected and removed. Disconnection & removal must be carried out in accordance with the original vehicle manufacturer's recommendations
12. Traction / Launch Control (see definitions) systems prohibited.
13. NASA reserves the right via an appointed Official and or Scrutineer to request a competitor (Note. For under 18 years of age this includes the parent/guardian), to remove any component part of the vehicle for inspection and or measurement for compliance with the regulations.
The removal of the component shall be carried out by the competitor concerned and or competitor's mechanic under the supervision of the appointed Official and or Scrutineer.
Refusal to comply with such a request and or provide the item for inspection will immediately deem the vehicle as being in contravention of the NASA vehicle construction rules and make the competitor and or member concerned subject to disciplinary action.
14. NASA reserves the right via an appointed Official and or Scrutineer to retain any component part of the vehicle for inspection and or measurement for compliance with the regulations. NASA reserves the right to designate the information reference source and the method of component checking.
Such components may be returned to the competitor concerned or confiscated at the discretion of the NASA Chief Scrutineer.
15. The vehicle must be maintained in good order. Vehicles in poor condition may not be permitted to race at the discretion of the scrutineer.
16. The vehicle must be able to drive to scrutineering and to, around and within the pit area without any assistance. If the vehicle suffers damage due to an on track incident then assistance as necessary to return it to the pit area for repairs and or to transporter for removal from meeting is permitted.
17. Driver Arm Restraints.
It is the responsibility of all competitors to ensure that their arms are restrained from extending outside of their vehicle in the event of an accident or roll. This must be done by the use of either a permitted arm restraint or window net or by their seating position within their car.
It is the driver's responsibility to ensure that any adjustments are correct and that the necessary equipment is properly fitted. Drivers will be checked in their cars by scrutineers.
Officials will monitor the use of this equipment as they do with other safety equipment.
Drivers who appear to be flagrantly ignoring the intended safety considerations of these rules will be penalised.
Note:
a). All restraint systems must not impede, entangle, unlock, unfasten, disengage nor prevent the correct reach and or access to and or operation of any safety harness or driver operated vehicle controls (e.g. Steering. Ignition switch. Cut off switch. Gear lever, etc.).
Arm restraints should be released by the single opening of the seatbelt fastening mechanism.
It is the competitor's responsibility to ensure compliance when making the choice of restraint system.
The restraint System must be in the form of either "Arm Restraints" or "Window Webbing".
The both may be used separately or together.
Proprietary manufacture Arm Restraints for motorsport only permitted.
Simpson/Sparco/TRS Arm Restraints permitted.
For window webbing details see rule 3.5.
b). It is Competitors responsibility to contact a scrutineer and or designated official to confirm the particular restraint system form of construction is eligible. i.e. permitted by the NASA Scrutineers Committee **before** using it and or them.

- c). When a restraint system and or construction is inspected and is not to the satisfaction of a scrutineer and or designated official then it is deemed as being in contravention of the NASA vehicle construction rules and will not be eligible for use. Therefore it must be removed immediately. The competitor is not permitted to race until a permitted 'Restraint System' is used.
 - d). The "Restraint System" form of construction must be only as permitted by NASA. The types of construction will be subject to regular review by NASA to ensure suitability for Autograss racing.
NASA reserves the right to amend the permitted "Restraint System" construction requirements at any time.
18. The Scrutineer's decision, as to the eligibility of any component or part and or suitability of a vehicle for racing is final.

1 ENGINE/GEARBOX/AXLE

1.1 Engine Type - Restricted.

A single normally aspirated engine (See Definitions) must be used. The engine must have a cubic capacity (cc) of a minimum of 1421 cc. The numbers of valves are free, however limitations are placed upon the type and modifications allowed to engines with more than two valves per cylinder.

2 valve per cylinder engine.

For a 2 valve per cylinder engine maximum cubic capacity is free.

"Multi" valve per cylinder engine.

For a "multi-valve" per cylinder engine maximum cubic capacity = 2070cc

Permitted Engines.

Those that comply with NASA "Engine" Definition.

"Scat V4 Engines.

Prohibited Engines.

"Millington" multi valve engine.

Rotary engine.

"Motorcycle or Motorbike type" engine.

"Motorcycle Hybrid" engine.

"Motorbike/cycle conjoined" engine. e.g. "RPE" or "Powertec" or similar V4, V6 or V8.

Non-metal engine.

All engines.

It is the Competitors and/or race vehicle constructor' responsibility to contact a Scrutineer to confirm that the engine choice is eligible before using it in the vehicle.

The lists of permitted and prohibited engines are not fixed.

NASA reserves the right via an appointed Official and or Scrutineer to permit, reject and or prohibit an engine as being suitable or unsuitable for Autograss racing at any time.

Note.

The engine block must be of the original donor vehicle's automobile manufacturer's original standard production engine block material. i.e. The changing of an original cast iron material engine block to an alloy type or vies-versa is not permitted.

Other modifications to engine and/or engine block/short motor free.

Cylinder Head modification – Restricted.

Type and modifications free subject to the following.

The conversion of a 2 valve per cylinder engine to a multi-valve per cylinder engine by means of an after-market kit is permitted. However, the method of conversion must comply with notes a & b. i.e. The "Engine block/Short motor" must have been produced by a NASA recognised automobile manufacturer and used in a standard production road vehicle. The conversion must not involve a change of block material from original or result in an engine cubic capacity of greater than 2070cc.

It is the Competitors and/or race vehicle constructor's responsibility to contact a Scrutineer to confirm that the method of conversion is eligible before using it in the vehicle.

Cylinder- Head Ports & Valves Modification.

Inlet & Exhaust Valves

The numbers of valves are free, however limitations are placed upon the type and modifications allowed to engines with more than two valves per cylinder.

i. "2 Valve per cylinder" engine.

Modifications free.

The conversion of a 2 valve per cylinder engine to a multi-valve per cylinder engine is permitted subject to Notes a & b. & Cylinder head in ii. below.

ii. Other "Multi-valve" engines.

Type & Modifications - See Notes a & b. & Cylinder head below.

Note

a). The multi-valve engine must have originally been produced by a NASA recognised automobile manufacturer and used in a standard production road vehicle. i.e. The use of an engine originally manufactured or produced by any person or company or specialist other than a NASA recognised automobile manufacturer is prohibited.

It is the Competitors and/or race vehicle constructor' responsibility to contact a Scrutineer to confirm that the engine is eligible before using it in the vehicle.

- b). The engine block must be of the original donor vehicle's automobile manufacturer's original standard production engine block material. i.e. The changing of an original cast iron material engine block to an alloy type or vice-versa is not permitted.

Other modifications to engine and/or engine block/short motor free.

Pistons, conrod, crankshaft & flywheel.

Modifications to and type of pistons, con-rods, crankshaft & flywheel free.

1.2 Engine & Transmission Combination.

Any engine and gearbox and prop-shaft may be used with unlimited modifications (Within class specification) provided the engine is directly attached to the gearbox (Via engine adaptor & clutch bellhousing) in a straight line and the gearbox connected via a prop-shaft (With a minimum of 2 universal joints (one at gearbox & one at axle)) to the axle & CWP in an inline straight format. See Fig. 17.

The fitting of an engine in a transverse position/location is not permitted.

1.3 Engine location/position.

- a. The engine may be positioned anywhere within the engine compartment, in an in line format, provided that the centre of the engine orifice (plug-hole) for No1. ignition sparking plug (i.e. No. 1 being the most forward sparking plug on the engine cylinder head), does not protrude rearwards further than an imaginary line, across the vehicle from the centre of the nearside front wheel hub to the centre of the offside front wheel hub. (See Fig. 14).

Note:

For a Diesel engine the centre of the No. 1 injector orifice shall be used.

- b. Bulkhead engine aperture.

i. A slight local aperture may be cut into the bulkhead for clearance of the engine and associated ancillaries (Inlet & Exhaust manifolds) only. Where such an aperture is cut, then the engine aperture must be completely shielded and sealed from the driver's compartment. ("Localised clearance" is regarded as approx 100mm (4") clearance from item to cover.) Excessive localised clearance is not permitted.

ii. For engines that have a rear mounted distributor, a slight local small aperture may be cut into the bulkhead for clearance of the distributor only. Where such an aperture is cut, then the distributor & aperture must be completely shielded and sealed from the drivers compartment.

Also see Section 15 – Exhausts.

- 1.4 Modifications to the oil system are free. See Section 11 COOLING SYSTEMS.

1.5 Induction – Restricted.

The engine must be naturally aspirated.

The use of "Forced Induction" i.e. the fitting an engine with a Supercharger and/or Turbocharger is not permitted.

1.6 Gearbox/Transmission Location & Type.

The original gearbox/transmission casing may be retained, modified or replaced.

Gearbox and or transmission type is free.

Type.

Any type of Transmission/Gearbox, may be used, with unlimited modification.

Internal machining free,

Gear type and ratios free.

The use of a "Transaxle" (i.e. a combined transmission and axle unit whether in a single casing or attached and or coupled units) is not permitted.

Method of connection to engine.

The gearbox must be attached to the engine in a straight line (Via engine adaptor & clutch bell-housing/spacer) and the gearbox must be connected via a prop-shaft (With a minimum of two universal and or CV joints (One at gearbox & one at axle CWP)) to the axle CWP in an inline straight format. (Engine to Gearbox maximum distance 350mm). See Fig. 17.

The gearbox and or transmission must be located such that it is forward of both prop-shaft and the axle.

See Section 16 SAFETY SHIELDS

Gearbox/Transmission Mountings.

Gearbox/Transmission Mountings - Free.

Gearbox/Transmission and or gearbox/transmission cradle mountings and construction must be sufficient for size and weight of engine and stress loadings involved and must be fit for purpose. Excessive construction is regarded as ballast/reinforcement and prohibited.

Propshaft.

The original propshaft may be retained, modified or replaced.

Propshaft type is free.

The use of a Torque Tube or plain shaft or similar in place of a prop-shaft is prohibited.

1.7 Clutch Operation – Restricted.

A single clutch pedal must be fitted to control the operation of the 'clutch mechanism or engaging' drives to the transmission system mechanism from the engine.

Clutch type and modifications to are free.

1.8 Drive.

Drive must be effected by the two rear wheels only as per Class specification.

The use of Four-wheel drive is not permitted.

1.9 Rear Axle Location & Type.

Rear axle including wheel hub type is free. See also Rule 2.8.

The original drive shafts may be retained, modified or replaced.

Driveshaft type free.

Rear Axle including differential, location for RWD & Converted FWD vehicles is restricted.

For "Live" and or "Solid" Axle".

In a direct line between the original standard production centre of the nearside wheel-hub to the original standard production centre of the offside wheel-hub. The Differential output shafts must also be inline with this centre line. See Fig. 17.

For "Independent" Type Axle.

The rearmost part of the differential casing must not protrude rearwards beyond an imaginary line from the rear surface of the nearside tyre across the rear of the vehicle to the rear surface of the offside tyre. The tyre rear surface datum point to be taken when the vehicle is standing still upon the ground, not whilst racing. See Fig. 17.

110 Differential Type.

Free.

Final drive Crown Wheel & Pinion ratio - Free.

Modification – Free.

"L.S.D"., "Powerlock", "ATB", "Gripper" "Quaife" or "Locked" differentials are allowed

1.11 Engines with more than 2 Valve per cylinders.

Engine Sealing.

The engine must have provision for the fitting of at least one readily accessible scrutineers wire seal, such that the fitting of the wire seal prevents access to internal engine components. A minimum of two adjacent engine cylinder head retaining studs or bolts must have a single 2mm (1/16") diameter hole pre-drilled in each of them.

- i. Where the method of cylinder head retention is by means of stud and locking nut the hole must be located above a cylinder head retaining locknut but below the top surface of the stud. (See Fig 14).
- ii. Where the method of cylinder head retention is by means of a bolt the hole must be located through two adjacent edges of the hexagon head of the bolt.
- iii. Where cylinder head retaining studs and bolts are inaccessible, then a single 2mm (1/16") diameter hole must be pre-drilled in two accessible parts or areas of the engine.

1.12 Engines with more than 2 Valve per cylinders.

Bore & Stroke Labelling.

Where an engines with more than 2 Valve per cylinders is used the engine must be fitted with a readily accessible, legible and securely fixed scrutineering "Bore & Stroke & cc Label". The label shall be permanently marked or stamped with the piston bore size and crankshaft stroke size in millimetres and the engine cubic capacity (cc).

Note.

A measurements check to verify the engine cc or stated label information can be carried out at any time by Scrutineers.

The lack of such a label may result in the carrying out of a measurement check to verify the engine cc.

Where stated measurements and/or cc are found to be false the competitor and/or driver of the vehicle concerned shall be disqualified and will be reported for disciplinary action.

For shared vehicles **all** 'signed on' drivers of the vehicle concerned will be disqualified and reported for disciplinary action.

1.13 Component Sealing Purpose.

The purpose of sealing is to prevent the engine or key parts being substituted for another unit prior to the inspection of the unit by a designated official. Seals can be fitted to any component or part of a vehicle by a NASA designated official. Refusal to comply with a request to fit a "Seal" will immediately deem the vehicle as being in contravention of the NASA vehicle construction rules and make the competitor and or member concerned subject to disciplinary action.

1.14 Seal Removal.

Once a seal has been placed by the duly appointed official the competitor and or member concerned must seek permission to remove or "Break" such seals. A seal must not be removed without the express permission of the NASA designated official or NASA Chief Scrutineer.

The person that removes or "Breaks" a seal must be able to demonstrate to any official that permission has been granted for seal removal.

The unauthorised removal or "Break" of a seal will immediately deem the vehicle as being in contravention of the NASA vehicle construction rules and make the competitor and or member concerned subject to disciplinary action.

2 CHASSIS/BODY SHELL

2.1 All vehicles must be of metal and retain their original shape and silhouette (Including height, width and length) as per manufacturer's original specifications, including engine compartment bonnet or cover (See Rule 2.14). De-Seaming prohibited.

The bodyshell must remain as its original type as produced by the original manufacturer. The conversion of a 2 or 3 door model to a 4 or 5 door model and vies-versa is prohibited. e.g. If a vehicle as originally manufactured is a 5 door hatchback it must remain as a 5 door hatchback the conversion to a 2 door saloon or a 3 door hatchback or non-original door configuration is prohibited.

2.2 The body shell must be complete with the doors, original luggage compartment lid (Boot/tailgate/hatchback etc.) and original engine cover/bonnet must be retained in its original position. (See rules 2.8, 2.9 & 2.26).

2.3 The original chassis of the original standard production vehicle must be of integral construction with the original standard production bodyshell. Original standard production vehicles that have a separate chassis or a chassis that is separate or able to be separated from the body-shell are prohibited.

Note.

When the vehicle is then modified in accordance with the class construction requirements and a floor frame and integral roll cage structure incorporated into the vehicle then the following applies.

For RWD donor vehicles.

The construction of a complete steel tube "Rolling" chassis space-frame" with integral new steel floorpan and the attachment of a body-shell is permitted. For such vehicles the FWD conversion rules apply.

The floor frame and roll cage chassis space-frame may be an integral part of the whole vehicle and bodyshell (including bulkhead, floorpan, rear floor, and panels) construction. (See Figs. 1a - i.).

For Non-“Rolling” chassis space-frame” vehicles.

The floor frame and roll cage chassis space-frame must be an integral part of the whole vehicle and bodyshell (including bulkhead, floorpan, rear floor, and panels) construction. (See Figs. 1a - i.).

Note.

Wheelbase - Restricted.

The original vehicle manufacturers wheelbase, for the particular make or model of vehicle must be retained.

For FWD donor vehicles.

The construction of a complete steel tube “Rolling” chassis space-frame” with steel floorpan up to the rear of the rear roll cage upright and a metal floor from the rear roll cage upright to the rear of the body shell, and the attachment of a bodyshell is permitted.

The bodyshell including all associated panels, roof, bulkhead and rear floor must be securely fixed to the chassis space-frame and roll cage. (See Fig 1k.). See Rule 2.9 & 2.10.

- # There must also be a minimum of two (2) front area and two (2) rear area upper bodyshell fixings (Bolt size 8mm HT or greater) at a level that is at or above the door window aperture bottom at nearside and offside.

Note.

NASA reserves the right via a Scrutineer to reject a method choice due to size and ability and or capacity to provide the necessary secure fitment of the bodyshell to the chassis space-frame and roll cage.

2.4 Conversion of FWD bodyshells to RWD.

Front engined front wheel drive (FWD) vehicles may be converted to front engined rear wheel drive (RWD) and used in this class.

i. Wheelbase - Restricted.

Minimum wheelbase of donor FWD vehicle to be 2300mm (90.5”).

Note:

- a). The original vehicle manufacturers wheelbase for the particular make or model of vehicle must be retained. It cannot be either lengthened or shortened to a distance greater or smaller than the original manufacturers stated wheelbase. e.g. For a FWD bodyshell from a vehicle with an original wheelbase of 2500mm it is not permitted to either lengthen the wheelbase to 2550mm or shorten it to 2300mm. See also Rule 2.5.
- b). It is the Competitors and/or race vehicle constructor’s responsibility to contact a Scrutineer to confirm that the proposed bodyshell is eligible for conversion to RWD and or conversion to a steel tube “Rolling chassis space-frame” based vehicle before using it as a donor vehicle/bodyshell.

2.5 Wheelbase – All Vehicles - Restricted.

- i. For all vehicles the vehicle wheelbase must remain as per the vehicle manufacturers’ original specification. (See Rules 1.6 & 1.7.).

Note:

The centre of the vehicle front and rear wheel hubs must remain in their original standard production locations in the horizontal plane, when viewed from the side. The location of the wheel hub centres in the vertical plane is free, i.e. It is not permitted to alter the vehicle wheelbase from the standard production measurement or to move the location of the wheel hubs forward or rearwards either individually or together. It is permitted to alter the height of the wheel hub centres from the ground level.

- ii. All FWD Converted vehicles must be constructed of a bodyshell that has a standard production wheelbase of a minimum of, or greater than, 2300mm.

2.6 Front passenger compartment to engine compartment bulkhead.

- a). It is permitted to remove the complete bulkhead and replace it with metal sheet, minimum thickness 20 gauge (0.91mm). (See Rule 2.8e.). See Fig. 19.
- b). It is permitted to remove the complete bulkhead and refit it in a non-standard production location.

Note.

Regardless of the location of the bulkhead or replacement panel the location of the driver’s feet is restricted. The driver’s foot-to-foot pedal contact face of each foot pedal must remain forward of an imaginary line a distance of 608mm (24”) from the centre of the front wheel hub across the vehicle from nearside to offside.

2.7 Floorpan (Bulkhead to vehicle rear).

A complete steel floor pan including the transmission/gear linkage/exhaust tunnel from the front bulkhead extending to the rear of the vehicle (including boot/rear luggage compartment floor and inner wheel arches) must be fitted. (See Note iii. below and See Rule 2.3).

This floorpan, including the transmission tunnel, may be the complete original vehicle steel floorpan or a substitute non-original steel panel/sheet floorpan (Statutory minimum thickness 20 gauge) or a repaired original floorpan (Repair material - steel sheet statutory minimum thickness 20 gauge).

If the original floorpan is retained it must remain in its original location. If the floorpan is not original, then it must be fitted in the location of the original floorpan. See rule 2.8, 2.9, 2.10 & 2.14.

Note.

- i. The original location of the floorpan in the vertical plane is regarded as the lower edge of the original manufacturers outer sill of the vehicle when viewed from the side.
- ii. The original location of the floorpan in the horizontal plane is regarded as a horizontal line from the lower edge of the original manufacturer’s outer offside sill to outer nearside sill across the vehicle.
- iii. Replacement steel floor with Floor frame.

For a FWD donor vehicle that is constructed/fitted with a complete steel tube “rolling” chassis space-frame” a complete steel floor must be fitted from the front bulkhead extending to the rear of the rear roll cage upright. The floor from this point to the rear of the vehicle (including rear luggage compartment floor and inner wheel arches may be in a non original location and material but must be fitted and be of metal of minimum 0.91mm thickness.

- # iv. Replacement steel floor with Floor frame – Thickness verification/drain holes.
There must be a single inspection hole of a minimum of 40mm diameter fitted in the floor panelling. It is permitted to fit a maximum of 1 No. per floor frame triangle, additional “Air / “Cleaning / draining holes” into the chassis floor panelling , each hole diameter free up to a maximum of 50mm diameter. i.e where there are 6 No. triangles a maximum of 6 holes may be fitted, one of which shall be the inspection hole.

2.8 Floorpan (Front, Centre & Rear).

The front, centre, and rear areas of the vehicle floorpan may have local or slight modifications for localised clearance of mechanical components, i.e. belhousing, gearbox, prop-shaft, exhaust system pipework, rear axle and its associated drive shafts and the rear suspension system. (“Localised clearance” is regarded as approx 100mm clearance from item to cover. For items that are movable 100mm (4”) clearance at full travel.) Excessive localised clearance is not permitted. See Section 16 – SAFETY SHIELDS.

Note.

- All apertures formed or cut into the floor-pan to allow the fitting of the above mechanical components must be filled in and made good with steel material such that there is a complete floor-pan. The material must provide a mechanical component cover and/or transmission tunnel/cover and/or shield of steel with a minimum thickness of 0.91mm (20 gauge) and fully welded in place. No mechanical component shall be visible or accessible from the interior and/or inside of the bodyshell. The use of non-ferrous metal and/or pop rivets is not acceptable.
- The removal of the complete floor-pan and replacement of the same with a non-original replacement steel panel/sheet floorpan is permitted provided the panel thickness is 0.91mm or greater and the panel/sheet contours & silhouette match the original. See Rule 2.3, 2.7, 2.9, 2.10 & 2.14.
- Sill Location – Restricted.
The depth of any sill fitted with a complete replacement steel floorpan must be a minimum of 50mm from the base or bottom of the original vehicles’ doors.
Where the original floor is retained and or repaired, then the sill must remain in its standard production location.
- Where the engine flywheel is contained within the transmission tunnel, then the area surrounding the flywheel location must be of steel sheet to 2 X (twice) the above stated minimum thickness. See Section 16 – SAFETY SHIELDS
- In addition there must be a safety shield fitted to interrupt a direct line between the vehicle driver and the engine flywheel. This shield to be constructed from steel plate minimum specification: - 6.0mm thickness, 150mm (6”) width. This shield must be fitted (bolted/welded) in an inverted ‘U’ like pattern so as to follow the contours or shape of the transmission tunnel from the tunnel to floor-pan join on the offside to the tunnel to floor-pan join of the nearside. See Section 16 – SAFETY SHIELDS.

Rear Suspension/Axle Cradle.

The suspension/axle cradle framework must be of steel tubular construction. Tube must be of minimum wall thickness 2.5mm. The cradle must be securely fixed (bolted or welded) to the vehicle chassis/floorpan/floorframe etc. The width is free provided the location of the wheel and tyre assembly complies with Rule 2.30.

The amount of rearward protrusion of the suspension/engine cradle is restricted. All components of the cradle must not protrude beyond the rear surface of the rear tyres.

The suspension/axle cradle construction may include 20mm “cross bars”. However excess framework material will be deemed as ballast and prohibited.

Note.

The choice of rear wheel & tyre combinations and their potential and actual overall diameters must be considered during construction to ensure compliance regardless of competitor wheel & tyre choice during racing.

Component support bar

The Battery/Dry Sump Tank/Fuel Tank may be mounted via a support bar connected to the rear suspension/axle cradle.

Restricted to one 32mm x 32mm box, 32mm diameter circular bar fitted to the area rear of the drivers compartment but forward of the original rear panel of the vehicle. The width to be not more than to the centre line of the rear wheels.

Note.

- No more than 2 brace / support bars of maximum size 32mm x 32mm box, 32mm diameter circular may be used to support the component support bar.
Straight triangulation bars, maximum 32mm box/circular for the component support bars are permitted. However they must not be connected to the rear protection bar and must cease 100mm forward of the rear protection bar.
- The component support bars, (if fitted) may be connected to the rear boot floor or the rear suspension/axle cradle at a height +/- 50mm of the original vehicle rear boot floor location/position.
- All support bars to the rear of the rear face of the rear tyres and protection bar must have a wall thickness no greater than 3.5mm. i.e. a maximum of 3.5mm.
- Protection bar(s) and any support bars must not be connected to the roll cage or any brace bar(s).
- When considering the location of the Battery/Dry Sump Tank/Fuel Tank above due regard must be given to the potential results of a severe rear impact or roll over. NASA reserves the right via a scrutineer to deem a location and construction, particularly if too close to the rear panel, as not fit for purpose and unacceptable.

Rear protection bar & its associated support bars – See rule 18.1.

2.9 Floorpan - Modification/Repairs – Cross Member & Cross Brace.

For all vehicles in addition to the replacement mechanical component steel covers and shields the following items a. & b. must be fitted.

Item b. must also then be incorporated within the roll cage structure i.e. connected to the rear brace bars and the rear roll cage hoop uprights (See fig 1c). Item b. may also be used as a suspension mounting point.

- A metal cross member fixed to the floorpan and body at low level minimum 38mm (1½”) box section or circular section steel tube with 2.5mm wall thickness. This cross member may be used as a suspension mounting point. (See Fig. 1c, 20, 21 & 22).
- A steel cross brace fixed above the rear wheel arch, below the rear side window aperture and across the interior between the offside and nearside, minimum 30mm x 30mm box section tube - with wall thickness as specified in rule 11. End plates 75mm x 75mm x 3mm must be welded to both the cross member and cross brace and be bolted (10mm or ¾” bolts - minimum Two No.) through the body skin to a plate of equivalent size on the outside (See Fig. 1c).

Note.

Where the bodyshell construction makes the use of end plates impractical, then the cross brace/cross member must be fitted in a permitted manner. i.e. CROSS BRACE fully welded or bolted to vehicles by means of steel sandwich plates

through the vehicle side. CROSS MEMBER fully welded or bolted to vehicle by means of steel sandwich plates through the vehicle floor/side.

2.10 Floorpan Cross Member & Floor Frame.

For all vehicles.

- a). The cross member described in 2.9a above must be extended forwards up to the front bulkhead, to form a steel strengthening "floor frame" with bars as specified and described in roll cage rules 16 & 17.
There must be an "X" or 2 "Cross" bars of steel tube box section 25mm x 25mm minimum, 50mm x 50mm maximum or round (circular) section 25mm diameter minimum, 50mm diameter maximum, all with a minimum thickness of 2.5mm, fixed on top of the vehicle floor diagonally from offside rear corner to nearside front corner and nearside rear corner to offside front corner welded into the floor frame described. They may deviate to suit any tunnel construction (See Figs.1a - i).
- b) Steel plates (minimum surface area 150 sq mm to be fixed to the frame at a maximum of 450mm (18") centres and bolted through the floorpan to a steel plate of equal size. See Rule 23.
- c) The floor frame if fitted may be directly connected to the front sub-frame or any framework supporting the engine, gearbox or front and/or rear suspension and or the roll cage.

Note.

a). For RWD donor vehicles.

The floor frame and roll cage chassis space-frame must be an integral part of the whole vehicle and bodyshell (including bulkhead, floorpan, and panels) construction. . (See Fig 1j.).

The construction of a complete steel tube "Rolling" chassis space-frame" with integral new steel floorpan and the attachment of a body-shell is permitted. For such vehicles the FWD conversion rules apply. See b). below.

b). For FWD donor vehicles.

The construction of a complete steel tube "Rolling" chassis space-frame" with steel floorpan up to the rear of the rear roll cage upright and the attachment of a body-shell is permitted. For this type of construction only there must be a complete metal floor from the rear of the roll cage upright to the rear of the bodyshell. See Rule 2.7. iii.

The bodyshell including all associated panels, bulkhead and rear floor must be securely fixed to the chassis space-frame. (See Fig 1k.).

There must also be a minimum of two (2) front area and two (2) rear area upper bodyshell fixings (Bolt size 8mm HT or greater) at nearside and offside. These must be at a level that is at or above the door window aperture bottom.

c). For a non-original replacement panel floorpan used in conjunction with a floor frame, then the floorpan must be constructed so as to comply with Rule 2.3 and welded to the vehicle bodyshell such that the floorpan is below the bottom face of the floor-frame construction steel tubes and/or bars. See Fig 1i.

d). The creation of a floorpan by the infilling of voids between the floor-frame construction tubes/bars with welded or bolted or riveted infill sheets or panels is prohibited. See Fig 1h.

2.11 Engine Compartment - Inner Wings & Chassis & Slam Panel.

Free modification to the vehicle original manufacturer's engine compartment inner wings and chassis rails and floorpan forward of the front bulkhead is permitted for the fitting and provision of localised clearance for: -

- a). The engine and its ancillaries and associated components. i.e. engine block & cylinder head(s), distributor, oil and/or water pumps, carburettor(s), inlet and exhaust system manifolds and pipework including their associated support brackets/cradle.
- b). The suspension and steering systems and their associated components. i.e. struts/shock absorbers, springs, wishbones, arms, and support brackets/cradle.
- # c). All support bars forward of the front face of the front tyres must have a wall thickness no greater than 3.5mm. i.e. a maximum of 3.5mm.

Note.

For RWD bodyshell vehicles.

The provision of a engine compartment inner wing is mandatory for all Non-"Rolling" chassis space-frame" vehicles.

All apertures in the original vehicle's engine compartment inner wing that have been formed to allow the fitting of the above must be filled in with steel material (Min. 22 gauge) and made good such that there is a complete steel "Inner wing" panel from the top of the wing to the bottom surface of the lowest chassis rail/support cradle.

Where the original vehicle's engine compartment chassis rail is at a high level and the new chassis rails/support cradle is at a level lower than this, then, the inner wing must be extended by the addition of steel material (Min. 22 gauge) to the bottom surface of the lowest chassis rail/support cradle.

For Converted Front engine front wheel drive (FWD) vehicles & Original RWD - "Rolling" chassis space-frame" vehicles

The provision of a engine compartment inner wing is optional.

All apertures in the original vehicle's engine compartment inner wing that have been formed to allow the fitting of the above may be filled in with steel material (Min. 22 gauge) and made good such that there is a complete steel "inner wing" panel from the top of the wing to the bottom surface of the lowest chassis rail/support cradle.

Where the original vehicle's engine compartment chassis rail is at a high level and the new chassis rails/support cradle is at a level lower than this, then, the inner wing may be extended by the addition of steel material (Min. 22 gauge) to the bottom surface of the lowest chassis rail/support cradle.

The following also applies:

Slam Panel.

The slam panel may be removed or retained.

Where it is removed there must be a substitute bonnet single steel tube support bar (Maximum 20mm box or 20mm circular section) fitted in its place. This "Substitute slam panel bar" must not protrude more than 20mm from the inside edge of each of the front wings, outward, on each side of the vehicle.

Front Panel Support Bar.

There must also be a single steel tube panel support bar (Maximum 25mm box or 25mm circular section) fitted immediately behind the front panel/metal covering, from nearside to offside to securely hold (i.e. bolted or welded) the metal covering / front panel in place. The panel support bar must not protrude beyond the inside rim of each of the front

wheels on each side of the vehicle when the wheels are parallel. This support bar must have a minimum of 1 (One) bar maximum of 2 (Two) bars (Maximum 20mm box or 20mm circular section) connecting it to the suspension cradle.

See Fig 13.

Note.

The suspension cradle connecting bars must not be joined together at a single point of connection on the panel support bar. There must be a minimum of 300mm in a horizontal plane, between each connecting bar at the point of connection to the panel support bar.

Any gusseting must be at a point that is a minimum of 150mm from the panel support bar.

Front Suspension/Engine Cradle.

The suspension/engine cradle framework must be of steel tubular construction of minimum thickness 2.5mm. It must be securely fixed (bolted or welded) to the vehicle front bulkhead/chassis/floorpan etc. The width is free provided the location of the wheel and tyre assembly complies with Rule 2.30.

The amount of forward protrusion of the suspension/engine cradle is restricted.

All components of the cradle must not protrude beyond the the front surface of the front tyres.

The suspension/engine cradle construction may include 20mm "cross bars".

Note.

The choice of front wheel & tyre combinations and their potential and actual overall diameters must be considered during construction to ensure compliance regardless of competitor wheel & tyre choice during racing.

2.12 Engine compartment bonnet or cover.

This must be of metal and retain its original shape and silhouette except for the plan area necessary to provide a Carburettor/air filter cover as described in b).

a). The rear part of the engine compartment bonnet or cover must remain flush with the front windscreen scuttle at all times.

Failure to comply with this is a Black Flag (Race Disqualification) offence.

b). It is permitted to make a hole for carburettor(s) and/or air filter(s) to protrude through the engine compartment bonnet or cover. However the items that protrude through must be completely covered and shielded with metal.

The shield dimensions are restricted to the following:

Height: maximum of 160mm (6") from the original engine bonnet or cover surface.

Plan Area: Absolute minimum necessary to provide the shield.

Note.

Any removable or hinged access panel fitted into the carburettor/air filter shield must remain closed/shut at all times whilst the vehicle is taking part in a race. Failure to comply with this is a Black Flag (Race Disqualification) offence.

2.13 All opening bonnet/engine covers/boot/luggage compartment lids must have secondary fastenings to keep them securely closed during racing.

Note.

Failure to ensure that the above remain closed during racing is a Black Flag (Race Disqualification) offence.

The use of bonnet pins with aluminium posts/pins, elasticated and elasticised luggage straps, string, rope, wire, padlocks, or any fastening that requires the use of a tool to gain access is prohibited.

2.14 Vehicle Panels.

i. All vehicle panels including original and or replacement panels must be as original vehicle manufacturer's design and or permitted by the NASA scrutineers committee.

ii. The removal of any vehicle panel including roof, front and or rear wings, engine cover and or bonnet, luggage compartment lid and or boot lid and replacement of the same with non-proprietary replacement prefabricated metal panels or panels from different make or model of vehicle is prohibited (See iv. For the only exception).

iii. Panels must not be reinforced. Foam filling of panels is prohibited.

The complete removal of a vehicle front panel including grille and the fitting of replacement steel sheet panel is prohibited.

iv. Toyota Starlet vehicles only.

When replacing the front wings, due the non-availability of standard replacement parts, it is permitted to use Peugeot 309 front wings in place of the original front wings.

2.15 Synthetic Fibre Parts - Restricted.

i The following Synthetic Fibre parts only are permitted: Wheel arch extensions/spats and Hatchback vehicle tailgate.

ii For front engined Hatchback vehicles only.

The original vehicle manufacturers fitted rear hatchback/tailgate may be removed and substituted by a synthetic fibre hatchback/tailgate. However 2 diagonal steel bracing bars must then also be fitted in the original bodysell hatchback/tailgate aperture. The brace bars must be a minimum size of 20mm (¾") box or 25mm (1") diameter circular tube of a minimum thickness of 16 gauge (1.62 mm).

Note.

Where the original vehicle is fitted with a tailgate that is 100% automotive glass then the glass must be removed and two (2) diagonal bars as described above must be fitted

2.16 "Skinning" restricted.

Skinning of panels is allowed. See Definitions. See Rule 2.7.

Note.

Where the original floor is retained the Inner "B" Post, inner windscreen pillars, inner sills and all structural elements must remain in place.

Excessive skinning is not permitted. The bodysell must retain structural integrity. The bodysell must be securely fixed to any internal floor frame and the roll cage structure.

2.17 Apertures remaining following removal of:

i. Vehicle light fittings and/or units, may be filled in by a metal covering of 20 gauge maximum thickness.

ii. Vehicle metal and/or plastic grilles, metal and/or metal and/or polycarbonate or synthetic fibre bumpers, must be filled in by a metal covering of 20-gauge maximum.

Note.

Where rotating parts including pulleys, drive belts etc; are exposed by the removal of the above, then the aperture **must** be filled in by a metal covering of 20 gauge maximum thickness.

- 2.18 No protection may be fitted to vehicles other than as specified in 18. PROTECTION.
- 2.19 All exterior and internal "Trim" must be removed. Removal must be carried out in accordance with the original vehicle manufacturer's recommendations.
- 2.20 All light fittings/units must be removed. Removal must be carried out in accordance with the original vehicle manufacturer's recommendations.
- 2.21 The vehicle bodyshell, panels, wings, front bulkhead and floorpan etc; must be kept in good repair at all times. Apertures formed as a result of the removal of interior "Trim" "audio equipment/speakers" etc; and/or metal corrosion and/or accident damage must be made good by "Filling in" with steel 20-gauge maximum.
- 2.22 Locks and lock assemblies must be removed. Removal must be carried out in accordance with the original vehicle manufacturer's recommendations.
- 2.23 Window winder assemblies must be removed. Removal must be carried out in accordance with the original vehicle manufacturer's recommendations.
- 2.24 Scuttle.
The vehicle engine compartment scuttle must retain its original shape and silhouette as per the original vehicle manufacturer's original specification.
All air vents/grilles or apertures remaining following removal of trim, wiper assemblies etc., which are located in the front windscreen scuttle panel, must be filled in with a suitable covering.
Note.
For vehicles fitted with automotive plastic scuttle the plastic scuttle may be retained or removed. If removed it must be replaced with plain metal of equivalent shape and size.
- 2.25 Side/Rear windows.
The covering or infilling of side or rear window apertures is prohibited.
- 2.26 Doors.
All doors must be retained and securely welded closed with each having a minimum of three 25mm (1") length visible welds on each upright with one 25mm (1") length visible weld on the bottom. The welding must be carried out such that the welds are either on the outside or inside surface of the doors. Door hinges may be Retained or removed.
Drivers Compartment Doors.
i. The driver's compartment doors (Nearside and offside) may be modified to leave the outer door "skin" only.
Note.
If the above modification is carried out then there must be two side bars fitted inside the driver's door and Two side bars fitted inside the passenger's door as described in Rule 19 – Safety Roll Cage.
ii. The door skin may also be substituted by a replacement panel to the original vehicle manufacturer's design and/or as permitted by the NASA Scrutineers Committee.
iii. The door tops (window frames) may be retained or removed.
iv. The offside/driver's door MUST be retained at the standard production manufactured height.
v. The front nearside (passenger's) side door, to facilitate entry and exit to the driver's compartment, may be cut down no more than 1/4 (One quarter) the height of the original standard production manufactured height. I.e. a minimum height of ¾ (Three quarters) of the original door height must remain.
Rear passenger Compartment Doors.
The rear passenger's compartment doors (Nearside and offside) and rear tailgate may be modified to leave the outer door "skin" only. See Rule 2.1.
The rear passenger's compartment doors (Nearside and offside) "door tops" (window frames) may be retained or removed.
- 2.27 A metal door brace bar (Steel tube box section maximum 1" x 1" [25mm x 25mm], 1" [25mm] circular) may be fitted at the top of the drivers door and also at the cut down top of the nearside door between the drivers compartment front and rear door pillars only.
- 2.28 The driver's compartment access aperture(s) may have a non-metal webbed covering, for the purpose of retaining the driver's arms within the driver's compartment in the event of a rollover or accident. See Rule 17 & 3.5.
The covering or "Window webbing" must be of a NASA permitted proprietary brand; be retained/fixed by quick release clips as supplied by the window webbing manufacturer. The window webbing MUST be easily, completely removable by the use of the quick release clips or 'R' clips, from both inside and outside of the vehicle either by the driver or marshals.
- 2.29 Bumpers.
a). Standard production original bumpers may be retained or removed (See rule 2.17). It is recommended that they be retained (See b.).
b). The original standard production automotive plastic vehicle bumper may be interchanged with that of another vehicle, provided the vehicle bumpers are so similar as to be considered identical, and the vehicle silhouette is not affected.
c). Where a bumper is part of a wheel arch, the bumper sides and/or edges may be partially cut and/or trimmed and removed to suit the size & diameter of wheel & tyre assembly used.
- # Note.
Failure to ensure that the bumper or replacement metal covering remains fitted during racing is a Black Flag (Race Disqualification) offence.
- 2.30 Wheel Arches.
Front and rear wheel arches may be altered to facilitate wheel widening. The wheel arch/spat must be fitted below the top surface and not protrude above the top surface of the particular wing they are fitted to. Excessive removal of material prohibited. (See Fig. 5).

- # However a wheel arch/spat must cover/shield a minimum of the upper surface of the top quadrant (25%) of the wheel and tyre assembly such that the wheel and tyre assembly does not protrude more than 20mm (3/4") beyond the vehicle body line.
Note.
 The "Body line" includes the actual wheel arches/spats.
 The fitting of "Air holes" in wheel arches/spats is prohibited.
- # Failure to ensure that the wheel arch covering remains fitted during racing is a Black Flag (Race Disqualification) offence.

Wheel arch support bar/lip.

A steel wheel arch may be fitted with a NASA permitted support bar or lip/edge/border.
 If a bar it must be metal and be no greater than 8mm in diameter.
 If a box and or flat it must be of metal and be no greater than 8mm in width and 8mm in height.
 The above may edge the wheel arch rim only. It is not permitted to form a reinforcement linking with any non-wheel arch vehicle body panel/bumper or vehicle roll cage/floor frame/space frame/protection bars.
 NASA reserves the right via an appointed Official and or Scrutineer to reject a wheel arch support/lip construction as being unsuitable for the vehicle concerned.

2.31 Air Cooling Holes.

Where a radiator has been fitted to the rear of the driver's compartment (or in the rear boot/luggage/engine compartment) to allow the exit of air from the rear of the vehicle a maximum of 4 in number 50mm (2") diameter holes may be cut in the rear panel or rear half of the rear boot/rear luggage compartment lid or rear engine cover/rear bonnet only.

Note.

- i For ALL vehicles it is NOT permitted to cut or form additional air cooling or air inlet/exit holes, other than those as described above (see ii) to supplement the existing front or other grilles etc; in any panel/area etc; of the vehicle.
- ii If the radiator is retained within the original vehicle engine compartment it is NOT permitted to cut or form air cooling or air inlet/exit holes in any part/area etc; of the vehicle.

2.32 Sunroofs.

Where a bodyshell has been fitted with a sunroof the following applies.

- (a). If the original integral sliding/tilting steel sunroof is retained, the steel sunroof panel must be securely welded closed by "Spot" or "Seam" welds around the edge of the panel.
- (b). If the sunroof is constructed of a non-steel panel, e.g. glass, plastic, alloy etc then the original sunroof must be removed and the remaining aperture must be filled in with a steel covering of 20 gauge maximum thickness welded in place as described in (a).
- (c). If a sunroof has been removed the remaining aperture must be filled in with a steel covering of 20 gauge maximum thickness welded in place as described in (a).

2.33 Side Skirts.

Where a vehicle is fitted with modified wheel arches or spats that protrude from the bodyshell or wing more than the original fitted standard wheel arches, then the fitting of a "Side skirt" on the nearside and offside of the vehicle is permitted. The use of an "Enclosed base or bottom" type "Side skirt" is prohibited.

The Side skirt " shall be fitted so as to join the bottom rear edge of the front wheel arch with the bottom front edge of the rear wheel arch in a horizontal line (Angled "Side skirts" are prohibited) The side skirt must be constructed of a maximum of 20 gauge steel or aluminium sheet.

The use of proprietary manufactured "Non-enclosed base or bottom" type "Hot Rod" type side skirts is permitted.

The "Side skirt" may be supported along its horizontal length via a maximum of 3 No. 25mm wide strips of 20-gauge steel or aluminium sheet fitted between the lower edge of the bodyshell and the lower edge of the "Side skirt".

It is prohibited to reinforce the outside edge of the "Side skirt" with any material, i.e. Additional metal sheeting. Double skinning, solid or round or box section tubing, wood, glass-fibre, kevlar, automotive plastic, carbon fibre.

Due to the different types of vehicles that may have side skirts fitted, the "Side skirt" must not protrude more than whichever is the smaller dimension or distance of the following:

- i. More than 100mm (4") from the vehicle bodyshell.
- ii. Beyond an imaginary line joining the outside edge of the front wheel arch with the outside edge of the rear wheel arch.

2.34 Towing Eye.

The fitting of a 'Towing Eye' at the front and rear of the vehicle is mandatory. Specified metal 'Eye' diameter is 50mm. For other materials a minimum 50mm, maximum 100mm "Loop" is specified. The 'Towing Eye' must not protrude beyond the vehicle bodyline. 'Towing Eyes' and 'Towing Eye fixings' that are excessively sized or that can be regarded as 'ballast' or 'protection' are prohibited. The original standard production item may be retained or removed or bent downwards so as not to protrude beyond the bodyline.

2.35 Vauxhall Tigra vehicle only.

For all "Tigra" vehicles, to protect the driver in the event of an accident, an additional safety bar MUST be fitted from the junction point of the top roll bar above the driver, with the rear upright nearest to the driver to the junction point of the rear brace bar and rear cross bar on the opposite side of the vehicle. (See Fig.18). The additional bar must comply with specified measurements as for roll bars.

2.36 Ballast

Ballast Prohibited.

The use of certain commercial vehicle and or agricultural vehicle and/or over large and or high wall thickness metal components may be construed as ballast and thus prohibited. Their use is not recommended.

3 WINDSCREEN/GLASS

- 3.1 All glass (Excluding gauges) must be removed.
- 3.2 All gauges/instruments fitted with a glass lens must have the lens covered with adhesive tape such that the lens pieces are retained in the event of breakage.

3.3 Windscreen Mesh

A covering of steel weld mesh 1" x 1" (25mm x 25mm) made up of a minimum 12 gauge (0.104") (2.64mm) diameter wire, must be fitted over the full windscreen aperture ONLY, and be securely fixed to the vehicle.

Note.

There must be adequate clearance between the windscreen mesh and steering wheel to prevent injury to driver's hands.

- 3.4 Perspex/Lexan/Clear Polycarbonate may be fitted on the outside of the mesh on the front screen only, providing that there is a suitable aperture cut in front of the driver's line of vision. The aperture must be at least 4" high, 12" wide, or the equivalent area within a 12" diameter.

3.5 Window Webbing/Net/Mesh..

It is the responsibility of all competitors to ensure that their arms are restrained from extending outside of their vehicle in the event of an accident or roll. This must be done by the use of either a permitted restraint or window net or by their seating position within their car (see also Rule 17).

If a arm restraint system is not used then a non-metal webbed/meshed net on the drivers door window aperture (Either wholly or partially), is mandatory and must be fitted. See Fig. 23.

If the driver's seating position within the vehicle is such that there is a risk of their arms extending out of either side of the vehicle then a window net must be fitted to both nearside and offside driver's compartment window apertures.

If an arm restraint system is used then the driver's compartment access window aperture may also have a non-metal webbed/meshed net covering (Either wholly or partially).

Webbing/Mesh Type.

The window aperture webbed/meshed net covering must be of a NASA permitted proprietary brand and or construction. It must be fixed by quick release clips as supplied by the window webbing/meshed net manufacturer or be retained/fixed by the use of "R" clips ("Bolted with hinge" types prohibited) or "Heavy duty" Velcro.

The window webbing MUST be easily and completely removable from both inside and outside of the vehicle either by the driver or marshals and or medical personnel.

The net mesh construction shall be of a mesh size of a minimum of 50mm up to a maximum of 100mm.

The mounting or support bars may be of metal 6mm minimum and maximum 10mm circular section metal tubing. There shall be no sharp or pointed edges that may cause potential injury to driver or marshals in the event of deformation or breakage. See Fig. 23.

Note:

- a). When a "Window net" construction is inspected and is not to the satisfaction of a scrutineer and or designated official then it is deemed as being in contravention of the NASA vehicle construction rules and will not be eligible for use. Therefore if it is fitted to a vehicle it must be removed immediately. The competitor is not permitted to race until a compliant "Restraint System" is used.
- b). It is Competitors responsibility to contact a scrutineer and or designated official to confirm the particular 'Window net' form of construction is eligible. i.e. permitted by the NASA Scrutineers Committee **before** using it and or them.
- c). "Window net" form of construction must be only as permitted by NASA. The types of construction will be subject to regular review by NASA to ensure suitability for Autograss racing. NASA reserves the right to amend the permitted "Window net" construction requirements at any time. OMP & TRS & RJS Oblong and or Trapezoid (Angular) full size window safety net permitted. Full metal tube support bar/border and "gate opening" types prohibited.

- 3.6 Windscreen wiper assemblies must be removed. Removal must be carried out in accordance with the original vehicle manufacturer's recommendations.

- 3.7 Interior rear view mirror(s) allowed. It/they must not be of glass.

4 STEERING

- 4.1 It is a requirement that all vehicles are able to steer at all times. All-wheel and/or rear wheel steering prohibited. NASA reserves the right via an appointed Official and or Scrutineer to request that a competitor's vehicle undergoes a steering capability test.

Note.

Where the vehicle cannot perform or complete the steering capability test to the satisfaction of the designated official then it is deemed as being in contravention of the NASA vehicle construction rules and will not be eligible to race.

Reasons for the failure of a vehicle to pass the steering capability test will be given to the driver/competitor concerned who will be allowed to make adjustments etc, and present the vehicle for re-testing within the specified time period allocated at the event for the steering capability testing and or scrutineering of vehicles.

Refusal to comply with a request to take part in a steering capability test will immediately deem the vehicle as being in contravention of the NASA vehicle construction rules and make the competitor concerned subject to disciplinary action.

4.2 Steering System.

The standard production steering system may be retained, modified and or replaced. A steering system must be fitted and be in good working order.

The steering system & drive from the steering wheel to front wheels is free.

Open "Chain and or gear drives" must be fitted with chain & sprocket / gear guards.

"Steering arms" must be of metal.

Steering wheel lock and or locking devices are not allowed and must be removed. Removal must be carried out in accordance with the original vehicle manufacturer's recommendations.

Power Steering.

Original standard production Power steering may be retained or removed. Replacement power steering system must be of proprietary manufacture and be suitable for the stresses and loads involved in Autograss racing.

NASA reserves the right via an appointed Official and or Scrutineer to reject power steering components as being unsuitable for the vehicle concerned.

4.3 Steering Wheel

The original standard production steering wheel may be retained or removed. If removed a full circumference steering wheel must be used – diameter free.

The steering wheel used must be fitted correctly. The fitting of a "reversed" or "upside down" (Steering wheel rotated 180 degrees front to back) steering wheel is prohibited.

Quick Release steering wheel boss permitted. Steering wheels will be subject to random spot checks of steering wheel fixings whilst on the starting line. The boss must be fitted below the steering wheel.

Note. It is the driver's responsibility to ensure that the steering wheel is secure at all times. Steering wheels may be subject to random spot checks of steering wheel fitment and or boss and or fixings whilst on the starting line.

4.4 Steering wheel mounted controls permitted.

Note.

Such systems must not impede, entangle, unlock, unfasten, disengage nor prevent the correct reach and or access to and or operation of any safety harness or other driver operated vehicle controls (e.g. Steering. Ignition switch. Cut off switch. etc.).

4.5 Safety Air Bag(s)

The use of Steering wheel mounted Safety Air Bag(s) is prohibited. Where they are fitted as a standard production item, they must be disconnected and removed. The disconnection & removal must be carried out in accordance with original vehicle manufacturer's guidelines and/or instructions & recommendations.

4.6 Steering Column

Steering column type and location free.

The steering column if fitted other than by the original vehicle manufacturer must be attached to:

Either: A support bar of roll cage specification, which is attached to the front roll cage uprights, between each upright, across the front of the drivers compartment in the dashboard area.

Or: A support bar or supporting steel tubing frame constructed of a maximum of 25mm x 25mm box or 25mm circular tubing fixed to the bodyshell in the dashboard area.

The support bars must not hinder driver or medical personnel access and egress to driver compartment.

5 SAFETY HARNESS

5.1 All vehicles must be fitted with a proprietary manufactured full harness seat belt to BSI standards and be adjustable so as to securely fit the driver, with one quick release buckle and a crutch strap and a minimum of 5 point fixing. The use of a 6 point fixing harness is recommended.

The whole harness seat belt must be as supplied by the manufacturer of that harness seat belt and be fitted in accordance with the manufacturers recommendations.

Full aircraft type harnesses that incorporate a crutch strap are permitted.

Inertia harness seat belts are prohibited.

Note. The drivers seat must have the correct "seat harness holes" to enable the choice of harness to be correctly fitted.

Whilst racing, the safety harness may be subject to severe shock and stress loading. The type, size and construction and fixings must be suitable and fit for purpose for the shock and stress loadings of the "Autograss racing environment". This must be borne in mind during safety harness choices.

NASA reserves the right via an appointed Official and or Scrutineer to reject a safety harness and fixings, deemed as not fit for purpose and unsuitable for the shock and stress loadings of the "Autograss racing environment"

5.2 Shoulder Straps.

The shoulder straps of the harness seat belt must ideally pull back at an angle of between 45 degrees and straight back.

The safety harness shoulder straps must not be supported by the driver's seat associated shoulder/neck holes only.

The safety harness shoulder straps when the rear angle is less than or more than 45 degrees to the horizontal must have a supporting/fixing bar that must be fitted either between the two roll cage uprights or brace bars or across the inside between each side of the bodyshell provided Rule 5.5 ii is not contravened. (See Figs 6 & 7 & 24)

It is recommended that a harness "Strap guide" be fitted to ensure that the harness remains in position in the event of a roll over.

The shoulder straps must not be directly mounted to the vehicle bodyshell, it/they must be fitted to either the floor frame and or a safety harness fixing bar located either between the two roll cage uprights or brace bars or across the inside between each side of the bodyshell.

Note:

The harness shoulder straps must be a tight and correct fit on top of and over the driver's shoulders and elsewhere on the driver's body. This is a requirement to securely contain the driver within the seat in the event of a roll over. Therefore the stature of the driver and or drivers for shared vehicles, must be considered during harness and or mounting point choices.

NASA reserves the right via an appointed Official and or Scrutineer to reject a safety harness and its fixings, and or require adjustments to be made particularly if the harness straps remain a "loose" fit when tightened.

5.3 Proprietary manufactured Safety Harness "Extension pieces" only permitted. No "Home made" extensions, rope, wire, chains etc.

5.4 Harness Fixing & Mounting Points.

The original vehicle manufacturer's seat belt fixing points or mountings, with the exception of the shoulder straps, may be used as safety harness fixing points or mountings. Where original seat belt fixing points or mountings are not used, safety harness fixing bolts or fixing ring/eyes must be adequately plated.

Note.

- i. Whilst racing or in the event of an accident the safety harness fixing points or mountings may be subject to severe stress/shock loading. This must be borne in mind during safety harness fixing point and mounting location choices. All safety harness fixing and mounting points must be sound and secure.
- ii. Safety harness fixings must not be mounted on the vehicle rear parcel shelf or rear seat panel.
- iii. Attachment bolts for seat belts/safety harness must be minimum $\frac{3}{8}$ " or 10mm high tensile steel.

5.5 The safety harness shoulder straps, when the rear angle is more than 45 degrees to the horizontal must not be supported by the driver's seat associated shoulder/neck holes only. An additional safety harness guiding & supporting/fixing bar must be fitted either between the two roll cage uprights or brace bars or across the inside between each side of the bodyshell provided Rule 5.4 ii is not contravened. (See Fig 10b).

5.6 The safety harness fixing points may be mounted and fitted to either the floor frame and or a safety harness fixing bar located either between the two roll cage uprights or brace bars or across the inside between each side of the bodyshell. See Rule 5.2. (See Fig. 24.).

6 SEAT6.1 Seat Type – Restricted.

All vehicles must be fitted with proprietary manufactured "Car" or "Racing" or "Competition" or "Motor sport" car driver's seat to securely hold the driver in place. The seat material, type and design is free see rules 6.2, 6.3 & 6.4.

The seat must incorporate a head restraint / headrest, a full-length backrest, left & right sides for thigh support and a bottom panel.

Left & right rib supports may be fitted. All padding used must be securely fixed.

Note.

The use of a seat designed and manufactured for "Kart" racing is prohibited.

The use of a folding or hinging type seat is prohibited.

The seat must have the correct "Seat harness holes", adjustable as necessary to enable the choice of harness to suit the stature of the driver to be correctly fitted.

The seat head restraint/headrest must be an integral part of the driver's seat construction and be such that it provides a support for the driver's head, regardless of the stature of any driver and will prevent the driver's head from being violently jerked backwards during an impact thus reducing the risk of neck injuries.

Whilst racing or in the event of an accident or roll over the seat may be subjected to severe shock and stress loading. This must be borne in mind during seat choices. See Rule 6.4.

6.2 The location of the vehicles driver's car seat is free, but it must remain within the bounds of the original vehicle manufacturers designated "Driver and front passenger's seat" area i.e. It may not be located in any originally designated "Rear passenger seat" areas.

6.3 The seat must be adjustable for driver stature fit, seat location and harness location to securely hold the driver in place and to ensure correct control of the vehicle regardless of the stature of any driver. The means of adjustment shall be by positive fixings.

6.4 The seat must be installed in accordance with the particular manufacturer's recommendations and instructions and be in good order and or condition and be free of damage.

Seat Mounting / Fixing.

The driver's seat or seat frame must be securely fixed (Bolted/welded) to the vehicle chassis, back and front (See Figs. 6 & 7).

The mounting or fixing of a seat directly to sheet metal only is prohibited.

Seat fixing bolt size 8mm HT or greater.

Where a proprietary seat is used it must be fitted in accordance with the manufacturers recommendations and instructions.

The seat, seat to seat frame or seat frame to vehicle support brackets must be located such that they cannot puncture or pass through the seat in the event of any impact.

Where a seat manufacturer's "mounting instructions" (e.g. Kirkey) does not recommend the use of "sliding seat fixings" and or "sliders" and or "seat adjustment" mechanism(s) then they are prohibited.

Seat Support Bar.

A steel seat support bar must be fitted, minimum size 25mm circular or box section, with minimum wall thickness 2.5mm directly to the rear of the seat backrest. The back of the seat must be fixed (Bolted/welded) to the seat support bar in two (2) places adjacent to the safety harness apertures.

The base of the seat must be fixed (Bolted/welded) to the vehicle chassis by means of a minimum of 4 fixings.

Note.

Where a seat manufacturer recommends that floor fixing only is required then additional fixings to the seat support bar are not required. (For such seats documentary evidence shall be provided by the competitor to the designated official upon request). However the support bar must be fitted.

Whilst racing or in the event of an accident or roll over, the seat, seat frame, seat mounting brackets and fixings may be subject to severe shock and stress loading. This must be borne in mind during seat and/or seat frame and mounting bracket choices. Non-proprietary and or "Home made non-steel types prohibited.

6.5 The direct fixing of any non-cushion item including instruments, driver controls, battery, fuel tank and their associated support brackets/bars to a driver's seat is prohibited.

- 6.6 NASA reserves the right via an appointed Official and or Scrutineer to reject a seat (including mounting support frame/brackets), particularly "Thin", "Lightweight" or "Ultralight" types that are marketed as a "Race seat" but deemed as not fit for purpose and unsuitable for the shock and stress loadings of the "Autograce racing environment".

7 FIRE EXTINGUISHER

- 7.1 All competitors must be in possession of a fire extinguisher which is in good working order.
- The extinguisher must be present while the vehicle is in the pits area and must be within easy reach of the driver and mechanics at all times, especially when refuelling.
 - It is optional for the extinguisher to be carried in the vehicle during racing. If the extinguisher is to be carried in the racing vehicle it must be securely fixed with the manufacturer's clamp and bracket. The use of secondary fixings to retain the extinguisher within its bracket is permitted, but the use of any fastening that requires a tool to remove the extinguisher is prohibited.
- 7.2 Extinguishers must be minimum 1 kg (2.2 lbs) dry powder or 0.9 litre foam spray AFFF or Zero 2000. The "use by" date must be current and the "stored pressure" indicator must be within the manufacturer's recommended limits. For extinguishers subject to regular inspection and service, a current record of inspection/test must be shown. All inspection and servicing must be carried out by a "competent person" in accordance with BS 5306 (current edition).

8 IDENTIFICATION

- 8.1 All vehicles must have the competitor's NASA registered/recognised Club letters and racing numbers, displayed (See Rule 8.5) on each side of the vehicle and on each side of a specified roof structure, at a point forward of the rear roll cage upright, to a minimum size of 230mm (9") in height, with a minimum 25mm (1") width. The Identification (Club letters & Racing number) must match that stated in the competitor's NASA Licence. i.e. if AA123 in Licence then it is AA123 Not 123AA or A123A on vehicle (See Fig.8).
- 8.2 It is the responsibility of the competitor to ensure that the identification letters and numbers of his/her race vehicle are displayed, clear, upright and legible at all times. Identification must be "Clean" and visible at the beginning of any particular race particularly during wet/inclement weather/track conditions.
- Note.
The purpose of the vehicle identification requirement is to ensure that race lap scorers and officials can easily and correctly identify each vehicle from their race observation locations during any race. This must be borne in mind during identification font sizing and layout choices.
- 8.3 All NASA registered/recognised racing numbers, club letters and class numbers must be displayed the colour black on a white panel background. i.e. a background that is displayed/painted so as to be the colour white. Iridescent or chameleon effect (Colour Change) Letters or Numbers or panels prohibited.
- 8.4 All NASA registered/recognised racing numbers, club letters and class number font is free however they must be sized so as to be proportioned such that they are clear and legible, and upright.
- There must be a minimum of 50mm – Side Identification, 5mm – Roof Identification, clearance between the outside border and/or edge of the letter and/or number characters, regardless of font, and the outside border and/or edge of the white panel background.
 - There must be a minimum of 25mm between the club identification letters and race number grouping of characters. E.g. for AAC 123 there must be a minimum of 25mm between the character "C" and "1".
 - The shading, blocking, outlining, overlapping, use of disproportionate sizing and/or leaning at an angle other than vertical of the letters and numbers is prohibited. (See Fig. 8).

Note.

The Lap Scorers and or appointed Officials wish to correctly identify each vehicle that is racing and or on track and also record the race results. It must be borne in mind during identification choices that NASA shall not be held responsible for the erroneous recording and or omission of any vehicle, regarding race results due to illegible identification.

NASA reserves the right via an appointed Official and or Scrutineer to reject identification deemed as not fit for purpose and unsuitable for official purposes.

8.5 Identification Sizes.
Vehicle Side.

A minimum size of 230mm (9") in height, with a minimum 25mm (1") width. (See Fig.8).

Vehicle Roof.

A minimum size of 150mm (6") in height, with a minimum 12mm (1/2") width. (See Fig.8).

Note.

The roof display structure size must be appropriate for the size and type of font used.

8.6 Roof Display Structure.

The stand up structure MUST be made of 0.71mm (0.028") (22 gauge) aluminium, to the dimensions shown on Fig. 9. The length being discretionary within the vehicle roof area.

Note.

The roof display structure size must be appropriate for the size and type of font used.

- 8.7 The vehicle must have the NASA registered/recognised racing class identification number displayed upon the vehicle roof over both the nearside and offside driver's compartment access aperture to a maximum height of 50mm (2"), minimum 25mm (1").

- 8.8 Identification letters and numbers and panel background may be printed on self adhesive vinyl film to the colours and sizes specified.
- 8.9 The use of magnetic white panels and/or magnetic identification numbers and letters is prohibited.
- 8.10 Vehicle paint and decoration is free, however stickers, logos, decals, drawings, phrases etc., which may be considered, obscene, offensive or intimidating are prohibited.

9 ELECTRICAL / INSTRUMENTS

- 9.1 Vehicle electrical wiring system free.
The original vehicle manufacturer's general wiring harness and the charging system (Dynamo/alternator etc) may be removed or retained.
- 9.2 An ignition switch of proprietary manufacture must be fitted, it must be within reach of the vehicle driver when the driver is seated in the vehicle seat and in his/her normal driving position, with his/her safety harness fastened.
Note. When an electrical fuel delivery pump is fitted, then the fuel pump must be wired through the ignition switch.
- 9.3 Isolation Switch.
A single electrical system & battery isolation switch of proprietary manufacture must be fitted in either Positive (+) or Negative (-) earth circuit.
- 9.4 Battery Isolator Location – Restricted.
The battery isolator switch must be fitted on the offside of the vehicle, immediately in front of the windscreen on the scuttle. The switch "On/Off" positions must be clearly identified & displayed/painted a minimum size of 25mm (1") in height. (See Fig.10).
On operation of the battery isolator switch, the engine and electrical system must stop.
- 9.5 Battery Size and Number off – Restricted.
Type and capacity of electrical battery free.
The use of a maximum of 2 x 12v batteries for 24v starting permitted.
The fitting of multiple or extra large batteries and/or large and or high thickness battery containers may be construed as ballast (See Rule 9.6).
The enclosure box/container maximum size = 300mm Height x 300mm Width x 600mm Length. Maximum wall thickness = 3mm.
- 9.6 Battery Enclosure & location – Restricted.
A battery must be secured within a metal enclosure box/container of sufficient strength not to burst open upon any impact and that is made as leak-proof as possible. Maximum wall thickness = 3mm.
The enclosure box/container must be firmly secured to the vehicle.
- Drivers Compartment.
The fitting of an electrical battery enclosure/box/container within the driver's compartment is permitted. However the battery enclosure/box/container must not be fitted beneath the driver's seat.
- Vehicle Wings.
The enclosure box/container must not be fitted under the vehicle wings. i.e. No part of the enclosure shall be within and or beneath any part of any of the vehicle wings. Deformation of inner wings prohibited.
- Limit of location – Vehicle Front.
The enclosure box/container must not be fitted anywhere on the vehicle at a point that is forward of an imaginary line, across the vehicle from the most forward part of the engine block and or gearbox and clutch housing casing.
- 9.7 All vehicles must be fitted with a self-starting system capable of starting the engine when operated.
- 9.8 Instrumentation & Gauges.
The original vehicle manufacturer's instruments and instrument cable drives may be retained or removed.
Instrumentation and gauges free. However they must be firmly secured to the vehicle.
The use of an engine "Rev counter" and or "Speedometer" and or "Gear shift light" system(s) and their and tachometer associated drive mechanisms and or sensors permitted.
- 9.11 Ignition system, ignition leads and spark plugs free.
- 9.12 Brake Light
A minimum of One (1) number Brake light, of 21 watts output and lens size 70mm x 70mm must be fitted to all vehicles.
The mandatory brake light to be mounted facing rearwards (towards an imaginary marshal standing at the vehicle rear) at a point as near to the rear most point of the vehicle as practicable. It is permitted to fit a secondary brake light, mounted onto the offside roll cage upright facing outwards (towards an imaginary marshal standing at the vehicle side). All brake lights must be covered with a red plastic lens and be clearly visible when in operation. "LED" lamps that emit a light that is the colour red of a minimum size 50mm x 50mm and that is clearly visible when in operation are permitted.

10 FUEL

- 10.1 Pump fuel only to be used.
Proprietary manufactured Lead & Octane replacement and Anti-Wear Additives may be used.
Note. Millers Oils – VSP and CVL Fuel Additives are permitted. However their use must be in compliance with the particular manufacturers recommendations and instructions.
- 10.2 The use of Nitrous Oxide (N₂O) injection is prohibited.

- 10.3 Type number and size of carburettor(s), fuel injection system and air filter(s) free. However all including the air filter(s) must remain within the engine compartment.
- 10.4 Inlet manifold free.
- 10.5 A single "accelerator" or "Throttle" pedal, including a "Accelerator/throttle cable" must be fitted to control the operation of the fuel delivery system to the engine. The engine must be fitted with an 'accelerator' or 'throttle' return spring of sufficient size, strength and movement such that the fuel delivery system closes once the 'accelerator' or 'throttle' pedal is released.
Note.
The accelerator cable/connection system must be sufficiently routed, shielded from any heat source, and lubricated to minimise the risk of seizure.
- 10.6 Fuel Pump.
Fuel pump and fuel regulator type and capacity free.
- 10.7 Fuel Tank.
The original vehicle manufacturer's fitted fuel tank must be removed.
Where the original fuel tank(s) are an integral part of the chassis, it/they must have a side completely removed.

A single non-spill proprietary metal fuel tank or NASA permitted proprietary "Fuel cell", with a maximum capacity of two (2) gallons (10 litres) and which is fitted with a secure filler cap must be fitted.

Fixings:
For a metal fuel tank the fixings must be such that the tank and fill pipe & cap are secure. The use of non-metal fixing straps, wire, etc is prohibited.
For a "Fuel cell" the original fuel cell manufacturers "Fixing kit" only must be used and the "Fuel cell" must be secure.
- 10.8 Fuel Tank Location – Restricted.
- The fuel tank or "Fuel cell" and or fuel filler pipe and or filler cap, must not be fitted:
In the driver's compartment and or under the vehicle wings and or anywhere on the vehicle at a point that is forward of an imaginary line, across the vehicle from the most forward part of the engine block.
 - Where a fuel filler pipe and or filler cap is located beneath or under a vehicle panel or bonnet or luggage compartment lid there must be clearance above the pipe and or cap to allow for deformation in the event of a roll over.
 - If the fuel tank or "Fuel cell" including filler cap is fitted within a totally enclosed space, then a 50mm diameter hole MUST be provided as near to the tank as possible in one accessible face of the enclosure, for accessibility of a fire extinguishant in the event of a fire.
- 10.9 There must be a metal fire shield between the driver and all fuel related components, including the fuel tank or "Fuel cell" and filler cap.
- 10.10 The fuel filler pipe (And if fitted, the fuel delivery "Fuel shut –off" tap) must be fitted so as to be an integral part of the fuel tank or "Fuel cell". Where a fuel filler pipe and or filler cap is located beneath or under a vehicle panel or bonnet or luggage compartment lid there must be clearance above the pipe and or cap to allow for deformation in the event of a roll over.
- 10.11 The fuel tank or "Fuel cell" must have an external vent pipe fastened in a downward position, to a point below the floor of the vehicle. This vent pipe must not protrude into the fuel tank or "Fuel cell" more than 6mm (1/4"). It is recommended that a one way (non return) valve be fitted in the vent pipe.
Note:
Where a "Fuel cell" is used the vent pipe must be connected to the fuel cell by proprietary fittings and in a manner approved by the fuel cell manufacturer.
- 10.12 Fuel delivery pipes must be of metal or proprietary fuel flexible hose and be securely fixed.
Note:
Where a "Fuel cell" is used the fuel delivery pipes must be connected to the fuel cell by proprietary fittings and in a manner approved by the fuel cell manufacturer.

11 COOLING SYSTEMS

- 11.1 Radiator - Restricted.
Original water cooling radiator may be retained or replaced. The use of an aftermarket and/or specialist fabricated radiator is permitted. Alloy and or composite metal & plastic radiator permitted.
Number and type of radiators and coolers are free. Oversize radiators/coolers may be regarded as ballast and prohibited. Commercial vehicle radiator(s) prohibited.

Radiator Location – restricted.
The standard production water cooling or replacement radiator may be moved from the original position and refitted elsewhere, but must be fitted within the vehicle silhouette.
The fitting of radiators next to or at the side of or within window apertures prohibited.

Radiator Cooling Fan.
The original water cooling fan may be retained or removed and replaced. A electric cooling fan assembly may be fitted to the radiator.
For a standard production electric cooling fan assembly it may be retained or removed and replaced.
All electric fan assemblies must remain within the vehicle silhouette.
- 11.2 Original manufacturer's heater/ventilation unit may be retained or removed.

- 11.3 Radiators, expansion tanks, coolers, or any other cooling systems must be completely shielded from the driver.
- 11.4 Oil coolers are permitted.
Oil coolers must be fitted within the vehicle silhouette.
- # The fitting of oil coolers next to or at the side of or within window apertures prohibited.
- 11.5 Oil hoses must be of the correct oil resistant type with suitable high-pressure oil connections/fittings.
- 11.6 Oil tanks (including catch tank / dry sump tank) must be shielded from the driver in case of spillage in an accident. Oil tanks must not be fitted under the vehicle wings and or anywhere on the vehicle at a point that is forward of an imaginary line, across the vehicle from the most forward part of the engine block.
- 11.7 Modifications to the oil sump and or oil pick up pipe permitted.
"Dry sump", "Accusump" and or similar oil systems are permitted.
- 11.8 Water pipes must be of metal or proprietary flexible hose. Type free.
- 11.9 Water radiators or header tanks must be fitted with a pressure cap and overflow pipe fastened in a downward position to a point below the floor of the vehicle.
- 11.10 When sealed radiator systems are used, they must be of an approved manufactured type, and be fitted with an approved pressure relief device, in good working order.

12 BRAKES

- 12.1 The standard production braking system may be retained, modified and or replaced. A braking system must be fitted and be in good working order.
Vehicle braking system type is free. (For Handbrake See Rule 12.5).
Note:
Whilst racing the braking system may be subject to severe stress, pressure and/or heat loading. This must be borne in mind during brake and brake component choices.
NASA reserves the right via a Scrutineer to reject a component choice due to size and ability and or capacity to provide the necessary braking force.
- 12.2 A brake device (Calliper & disc or shoe & drum) must be fitted on each wheel hub and or wheel hub drive shaft and be kept in good working order at all times.
A brake calliper may be fitted such that it is either "Inboard" or "Outboard".
Note:
The use of "Kart" and or "Bicycle" brake disc and or brake calliper is prohibited.
- 12.3 The brake device fitted on each axle hub or wheel hub drive shaft of an axle must be equal in type, size and capacity. i.e. If a disc and calliper is fitted to nearside rear hub, or nearside driveshaft then a disc and calliper of equal size and capacity must be fitted on the offside rear hub or offside drive shaft.
Note:
The nearside and offside brake device must not be on the same side of the axle "Drive box" or "Differential" or centreline. See Fig. 16.
- 12.4 All wheels must lock on grass (On application of the single foot brake pedal only) at all times. Anti-lock and/or ABS braking system are prohibited.
- 12.5 Handbrake/Parking brake type and method of operation restricted. The original vehicle handbrake/parking brake may be retained or removed. A handbrake/parking brake may be fitted. If fitted a handbrake/parking brake must operate the rear wheel braking system only. Hydraulic handbrake permitted. Electric handbrake prohibited.
- 12.6 Brake fluid pipes and hoses of proprietary manufacture only permitted. Braided brake hose permitted.
- 12.7 Brake proportioning - Restricted.
The fitting and use of a brake system proportioning "Brake Balance Bar" and or brake proportioning valve and associated adjustment mechanisms (including lever or knob) is permitted.
The fitting of a brake fluid shut off or isolation tap to facilitate the isolation or deactivation of any part of the braking system is prohibited.
- 12.8 Brake warning light(s) must be activated by the depression of the foot brake pedal only. – See Rule 9.12.

13 WHEELS

- 13.1 A vehicle must have 4 wheels only.
- 13.2 All wheels must be in good order and or condition and be free of damage.
Modification of a proprietary manufactured wheel other than machining to suit "Beadlock" conversion is prohibited.
Type, width and diameter of road wheel is free.
- i. The use of different wheel diameter sizes on the offside and nearside of the vehicle is prohibited.
 - ii. Beadlock type wheels may be used but the "Beadlock rim" fixing bolts must have either "Button head" or "Countersunk head" bolts only. Hexagon head "Beadlock rim" fixing bolts prohibited. The fixings must not protrude beyond wheel rim.
 - iii. Wire wheels and/or "Twin wheels" are prohibited.
 - iv. The use of hub caps and or dust/mud shield and any attachments prohibited.
 - v. Wheels must have a single tyre inflation valve orifice in its standard production location.
 - vi. The wheels must be suitable for the tyres used.

vii. Maximum permitted wheel diameter is 17".

13.3 Wheel fixings – Type Restricted.

- i. Wheel centres must only be fitted to hubs the correct way.
- ii. Wheel studs and nut fixings only permitted.
- iii. The wheel nut must be completely penetrated and threaded by the wheel stud.
- iv. The correct number and size of studs and nuts must be fitted for all the wheels used. Wheel nuts must be used to match the nut taper and stud bore and depth of the particular wheel (including spacer if used) concerned.
- v. Locking wheel nuts/bolts prohibited.
- vi. All wheel studs must be of a one-piece type.
- vii. Single nut and/or stud and/or centre lock wheel fixings prohibited.
- viii. "Half nuts" and/or non-steel nuts prohibited.
- ix. "Plated" wheel studs prohibited.

13.4 Wheel Spacers – Type restricted.

- i. The fitting of wheel spacers is permitted.
- ii. A wheel spacer must be of proprietary manufacture, be of solid one piece that incorporates an integral backing plate.
Note. The hollow spacers and or those requiring "Extension studs" are prohibited.
- iii. The alteration of or thinning or machining of proprietary wheel spacers is prohibited.
- iv. The spacer must be of uniform width and diameter.
- v. The associated wheel studs must be of a one-piece type and of correct size. "Extension studs" prohibited

13.5 Wheel Adaptors. – Type restricted.

The use of wheel adaptors to fit wheels of a different PCD is permitted.
The use of wheel spacers and/or combined wheel spacer and wheel adapter permitted.

Note.

Whilst racing, a wheel adaptor/spacer may be subject to severe shock and stress loading. Adaptor/spacer type and construction and fixings must be suitable and fit for purpose for the shock and stress loadings of the "Autograss racing environment". This must be borne in mind during adaptor/spacer choices.

NASA reserves the right via an appointed Official and or Scrutineer to reject a adaptor/spacer, deemed as not fit for purpose and unsuitable for the shock and stress loadings of the "Autograss racing environment".

14 TYRES

14.1 Tyres are restricted.

For "drive axles" and/or "drive wheels" Control Tyres will apply. The application of control Tyres will remain effective until 31 December 2018. NASA reserve the right to modify these regulations without notice at any time.

There are 3 options. "A" and "B" and "Wet Weather".

A competitor may use tyres on that comply with either option on a "Drive axle". Mixing & matching of Option "A" and Option "B" and or "Wet Weather" tyres on the same drive axle is permitted.

- i. All tyre identification markings must be present and visible on each of the tyre sidewalls.
Removal of identification markings is not permitted.
The hardness value must be marked upon all Option "A" tyres.
Such marking is to be clearly visible, non removable and applied during the tyre manufacturing process.
Sticky labels applied by the retailer or "Branding iron" markings are not acceptable.
Tyres that are not marked with hardness value will be deemed as Option "B" Tyres and then must comply with Option "B" rules.
- ii. The tread block/pattern/profile must be pre-formed. i.e. made during the original manufacturing process.
Note.
Alteration or modification to original manufacturer's tread pattern by "Tyre cutting" is not allowed.
- iii. All tyres whether Control Tyres or other, must have a speed rating of a minimum of 75 mph ("L" speed symbol).
"Town and Country", and "M & S" (Mud & Snow) tyres are permitted subject to drive & non drive axles and Control Tyre restrictions. Motorbike and/or Motorcycle tyres prohibited.
- iv. All tyres must be fitted to the wheel correctly and be in good condition. i.e. Be within wheel rim and or be free of damage to main tread pattern and sidewalls, including cuts, bulges, tears, rips, loose and or separated tread.
- v. Tyre Hardness - Restricted.
Tyre hardness must comply with the following. Random checks of hardness will be carried out by means of a Durometer.
For non-Control Tyres the shore hardness is free.
Control Tyres Option "A" must have a minimum nominal shore hardness of 60. when measured at a nominal temperature of 20 deg C. (There is a tolerance of -5 shore hardness to allow for manufacturing variance. The absolute limit is 55).
Control Tyres Option "B" must have an absolute minimum shore hardness of 55. when measured at a nominal temperature of 20 deg C.
- vi. Tyre Width - Restricted.
Maximum permitted tyre width is 225.

14.2 Tyre Option Description & Application.

i. Drive Axles

For "Drive Axles" Control tyres will apply. There are 2 choices of tyre - Option "A" and or Option "B".

A competitor may use tyres on that comply with either option on a "Drive axle". Mixing & matching of Option "A" and Option "B" tyres on the same drive axle is permitted.

Option "A" Tyres

Tyres must be of a type supplied by a manufacturer /supplier as shown on the NASA permitted list of suppliers only. (The current NASA permitted suppliers are: Maxsport Competition Tyres, Sportway Tyres, Kinsley & Liam Evans Tyres).

N.B. The tyre tread pattern must be of a type as permitted by NASA.

Option "B" Tyres.

Tyres must be an "E" marked Car road going "New" or "Remould" tyres that are permitted in law for road use only. available from any regular UK tyre distributor or Internet seller. They must have a shore hardness rating of a minimum of 55. The cost of the tyre must be such that it has, or has had an initial sales value inclusive of VAT of less than £60. Tyres must also comply with Rule 14.3.

NASA will maintain a register of approved Option "B" tyre makes/patterns. Tyre not on the approved listing are prohibited.

Where any "Option B" tyre is found to be below the stipulated hardness, the user will be reported for disciplinary action. The fact that an "Option B" tyre is on the approved list maintained by NASA does not mean that NASA agrees that all tyres of that make/pattern will necessarily conform to their hardness requirements. The responsibility lies with the competitor to ensure his "Option B" tyres comply with the NASA minimum hardness requirements

Wet Weather Tyres.

Wet weather tyres are listed separately by NASA are exempt from hardness control.

Wet Weather tyres may be fitted to any axle/wheel.

Wet Weather tyres must also comply with Rule 14.3.

Examples of permitted Wet Weather Tyre patterns are:

Maxsport: *RB 1, RB 3, Hakka II+, Hakka.*

Sportway: *AT1, AT2, Rallygrip, Ultragrippa.*

ii. Non-Drive Axles.

Tyres fitted to **non-drive axles** must be:

Either Car road going tyres that are permitted in law for road use only.

Or Control Tyres Option "A", "B", or Wet weather tyres.

Tyres must also comply with Rule 14.3.

iii. Pre January 2012 Tyres.

Tyres in use prior to January 2012, currently in circulation and not marked "60" but of a pattern previously sold by an "Option A" seller will be deemed to be "Option B" and come under the "Option B" regulation making the user responsible for their hardness.

14.3 Eligibility.

- a). When a tyre is inspected and is not to the satisfaction of a scrutineer and or designated official then it is deemed as being in contravention of the NASA vehicle construction rules and will not be eligible for use.
- b). It is Competitors responsibility to contact a scrutineer and or designated official to confirm that tyres are eligible. i.e. permitted by the NASA Scrutineers Committee **before** using them.
- c). Tyres tread patterns must be only as permitted by NASA. Tyre tread patterns will be subject to regular review by NASA to ensure suitability for Autograss racing. (See d). iii.). NASA reserves the right to amend the permitted tyre tread pattern requirements at any time.
- d). The following tyres are not permitted:
 - i. Option "A" Tyres sourced from a supplier not on the NASA permitted supplier list.
 - ii. Option "B" and or 'Wet Weather' Tyres not on the NASA permitted tyre list.
 - iii. Tyres with an aggressive tread pattern. i.e. As a 'Rule of Thumb' the 'Tread Block' must be greater than the gap between the individual tread blocks.
 - iv. Tyres fitted with studs and/or attachments.
 - v. Implement. Industrial. Horticultural and or Agricultural tyres.
 - vi. "Hand-cut" tyres.
 - vii. Barum, Monarch Bartrack, Bridgestone Potenza RE39 R or 606, Yokohama MT14, Hoosier tyres
- e). Any tyre manufacturer wishing to introduce a new size and or pattern for use in Autograss Racing must contact the NASA Scrutineers Committee for approval. Patterns and Sizes must have been originally available at 30th September of the preceding year and as per the manufacturers submitted lists.
- f). NASA reserves that right to trial tyres at any time - of any type from any supplier and will dictate at the time if any car using a trial tyre may be included within race results.
- g) NASA reserve the right to consider and or appoint additional suppliers of "Option A" tyres at any time – Subject to them meeting the NASA Tyre criteria.

14.4 Tyres may be fitted with inner tubes. The placing of liquid into a tyre or inner tube is prohibited.

14.5 The use of any substance to alter, change, enhance or improve the adhesion and/or softness & hardness properties of tyres is prohibited.

15 EXHAUST

15.1 Exhaust manifold and system is free. Catalytic Converters may be retained or removed.

Note.

Any device(s) that acts as a valve and or regulator, whether adjustable or not, upon the exhaust gas flow within the exhaust system is/are prohibited.

15.2 All vehicles must be fitted with an efficient silencer capable of reducing the noise level to within the NASA specified noise limit 102 Db (A). For method of noise level measurement see SILENCING.

- a). It is the competitor's responsibility to:
 - i). Ensure that his/her vehicle complies with sound testing regulations and it is recommended that competitors make themselves aware of any additional regulations imposed by clubs which they may visit before attending.
 - ii). Ensure that his/her vehicle is constructed such that noise testing may be readily and easily carried out.
 - iii). Familiarise themselves with the NASA Noise Test Chart showing the different engine r.p.m. test levels for different types of engines.

b). Test Engine RPM.

The noise test engine r.p.m. shall be notified by NASA to each affiliated club's Chief Scrutineer by means of a list showing the different levels for different types of engines cc. NASA reserves the right to amend and or revise the engine test r.p.m. at any time.

Note.

- i. A vehicle considered noisy by any official during racing may be disqualified notwithstanding that they may have passed the initial static test.
- ii Where a silencer's performance is found to be insufficient to comply with the above, the use of any temporary modifications, including inserting drink's cans, extra wire wool etc., into the silencer outlet pipe etc; is prohibited.
- iii. For further detailed information see also Members Handbook – SECTION – SILENCING.

15.3 The engine exhaust system outlet or outlets must end at the rear bodyline of the vehicle, and not protrude beyond 50mm of the vehicle bodyline.

- # It is recommended that the outlet end be at a point between the rear of the "B" pillar and the rear of the vehicle. The outlet or outlets must be at a point that is easily accessible for the taking of noise level test measurement readings. All outlets of twin or multiple exhaust systems must terminate at a single common point, enclosed within an imaginary area of 300mm Diameter.

Note.

The outlet pipe or pipes must point either horizontal or downward at an angle of not more than 30° from the horizontal.

15.4 The exhaust may pass from the engine compartment to the drivers compartment, through the front bulkhead at low level, however the top surface of the exhaust pipe must be no greater than 250mm from the vehicle floor level when measured at the lower bulkhead/floorpan panel angle. (See Fig. 12).

15.5 Exhaust pipes, when fitted inside the driver's compartment, must be covered with material sufficient to act as a safety shield.

16 SAFETY SHIELDS16.1 Engine Fire Shield.

All vehicles must be fitted with a securely fitted full width metal fire shield (Bulkhead) between the driver and the engine/transmission unit, including engine ancillaries and radiator(s) so as to completely shield the driver from the engine(s) and ancillaries and radiator to prevent the progress of fire or fluids (Oil, petrol, water, coolant) from the engine compartment area or component onto the driver . i.e. Any direct line from any such item to any part of the driver must be interrupted by the fire shield.

The shield must be installed from the vehicle floorpan to a height equal to the whole bottom surface of the front windscreen aperture and formed to suit the curvature etc; and from the nearside inside surface of the bodyshell to the offside inside surface of the bodyshell all as necessary to protect the driver. See Fig. 19.

16.2 Sump Guard – Restricted.

A sump guards is permitted. Material of guard must be metal.

- # Sump guard thickness maximum: Steel = 3mm. Alloy = 5mm.

Guard Shape/Dimensions - Restricted.

Plan area: Absolute minimum necessary to protect the engine oil sump pan only.

There shall be no vertical surface extending above the base of the vehicle chassis or the front suspension/engine cradle.

The sump guard area shall not be extended to incorporate suspension system and/or suspension component mounting and or mounting protection.

16.3 Fluid Pipes.

Oil, water and fuel pipes, when fitted inside the driver's compartment, must be secure, completely encased in a suitable material and of continuous length, from the point it enters to the point it leaves the driver's compartment. The material must be of sufficient strength to act as a mechanical protection.

16.4 Belhousing & Prop Shaft.

The prop shaft, and or flywheel bell housing/cover must be fitted with a safety shield as follows:

The material must provide a mechanical component cover and/or transmission tunnel/cover and/or shield of steel with a minimum thickness of 0.91mm (20 gauge) and fully welded in place. No mechanical component shall be visible or accessible from the interior and/or inside of the bodyshell. The use of non-ferrous metal and/or pop rivets is not acceptable.

16.5 Flywheel Shield.

Where the engine flywheel is contained within the transmission tunnel, then the area surrounding the flywheel location must be of steel sheet minimum 1.82mm thickness.

In addition there must be a safety shield fitted to interrupt a direct line between the vehicle driver and the engine flywheel. This shield to be constructed from steel plate minimum specification: - 6.0mm thickness, 150mm (6") width. This shield must be fitted (bolted/welded) in an inverted 'U' like pattern so as to follow the contours or shape of the transmission tunnel from the tunnel to floor-pan join on the offside to the tunnel to floor-pan join of the nearside.

16.6 Transmission Shaft Shield.

The transmission shaft (shaft from engine to gearbox) must be within the transmission tunnel and in addition be encased/covered with or within a metal enclosure minimum thickness 4mm steel or 6mm aluminium.

16.7 Suspension Shield.

Shock absorbers, springs or coil/shock absorber assemblies and or "link" bars/arms located adjacent to the drivers compartment must be shielded from the driver. The shield is to be made of either steel or aluminium sheet a minimum of 2mm thickness.

17 SUSPENSION**17.1 Suspension Type – restricted.**

The original donor vehicle suspension may be retained, modified or replaced.
Any form of passive suspension may be used.

Active /Adaptive/ semi-Active Suspension prohibited.

Suspension components must be of metal.

Track conditions may mean that suspension components and component to chassis mounting points may be subjected to severe stress loadings. This should always be borne in mind during suspension design and component choices.

Note.

NASA reserves the right via a Scrutineer to reject a component choice due to size and ability and or capacity to provide the necessary vehicle suspension. Suspension components must be shielded from driver See rule 16.7.

17.2 Suspension mounting points must be built in a secure manner and be robust and sufficient to withstand race track conditions.**Note.**

Where suspension mounting or support bars are fixed to the floorpan and or floor frame, the fixing points must be have a clearance of not less than 150mm distance from any seat or harness fixing point. Suspension

17.3 Suspension Components.

Whilst racing, suspension components may be subject to severe shock and stress loading. The type, size and construction and fixings must be suitable and fit for purpose for the shock and stress loadings of the "Autograss racing environment". This must be borne in mind during component choices.

NASA reserves the right via an appointed Official and or Scrutineer to reject a suspension component and fixings, deemed as not fit for purpose and unsuitable for the shock and stress loadings of the "Autograss racing environment".

Suspension "Arms" & Wheel Hubs.

Suspension arms and wheel hubs must be of metal.

Suspension Bushes.

Type, material and size – free.

"Powerflex" type or similar uprated bushes may be used.

Bump Stops – Uprated bump stops may be used.

Rose Joints.

Type and size – free.

Suspension springs.

Suspension spring type, number and rating – free.

Note.

The practice of heating and bending leaf springs is prohibited.

See SECTION 16 – SAFETY SHIELDS

17.4 Strut Brace.

A "Strut Brace" may be fitted between the engine compartment suspension turret housings.

17.5 Dust/dirt covers for shock absorber, springs or coil/shock absorber assembly must be of proprietary manufacture only.**17.6 Wheel camber, castor and alignment (toe in/out) is free. (See Section 4 – Steering).****18 PROTECTION****18.1 Front and/or Side Protection/Reinforcement.**

No internal or external protection or reinforcement is allowed on the front or side of vehicles.

18.2 Rear Protection - Restricted.

There shall be one 1" x 1" (25mm x 25mm) box bar fitted inside the rear panel, or bolted flush to the outside of the panel. The width to be not more than to the centre line of the rear wheels. (See Fig. 11).

Note.

a). No more than 2 brace bars of maximum size 1" x 1" (25mm x 25mm) box may be used to support the protection bar. (See Fig. 11).

b). The 25mm support bars, (if fitted) may be connected to the rear boot floor or the "rear suspension/axle cradle" or "component support bar" at a height +/- 50mm of the original vehicle rear boot floor location/position. See rule 2.8.

c). Where the protection bar(s) are fixed to the outside of the rear panel, the support bars may pass through the rear panel.

d). Protection bar(s) and support bars must not be connected to the roll cage or any brace bar(s).

e). The protection bar or support bar(s) must not be connected to the vehicle rear wheel arches.

f). All support bars to the rear of the rear face of the rear tyres and protection bar must have a wall thickness no greater than 3.5mm. i.e. a maximum of 3.5mm.

19 BALLAST**19.1 The use of "Ballast" is prohibited.**

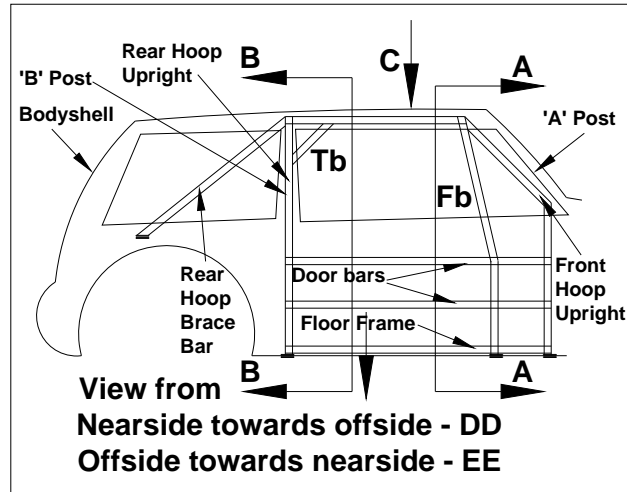
FIGURES & DRAWINGS –.

FIGURE 1a.i – Roll Cage - Original Floor Intact. – Side elevation

All Bars - Minimum sizes and specified wall thickness as Rule 11.

Bar Tb is mandatory.

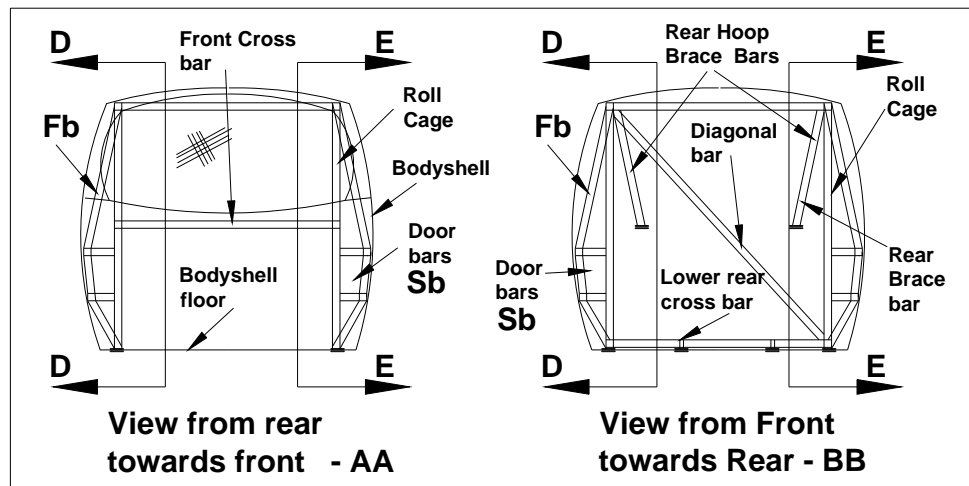
Bar Fb is optional



**ORIGINAL VEHICLE FLOOR INTACT
(COMPLETE WITHOUT REPAIRS AND NOT
REPLACED WITH STEEL SHEET).**

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FIGURE 1a.ii – Roll Cage - Original Floor Intact – Front & Rear view

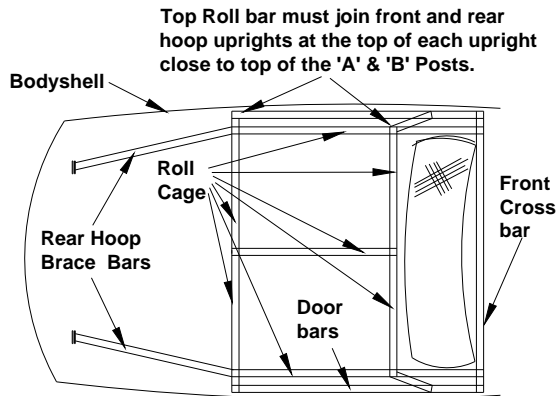


**ORIGINAL VEHICLE FLOOR INTACT
(COMPLETE WITHOUT REPAIRS AND NOT
REPLACED WITH STEEL SHEET).**

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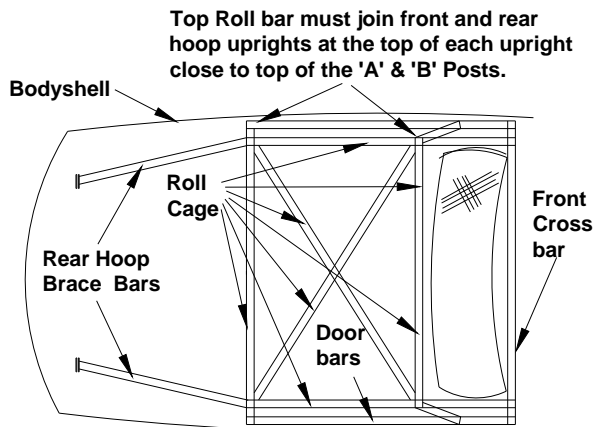
FIGURE 1b.i. Roll Cage - Roof Bars - All Vehicles

All Bars - Minimum sizes and specified wall thickness as Rule 11.



View from above - C

OR



View from above - C

FIGURE 1b.i cont...

OR

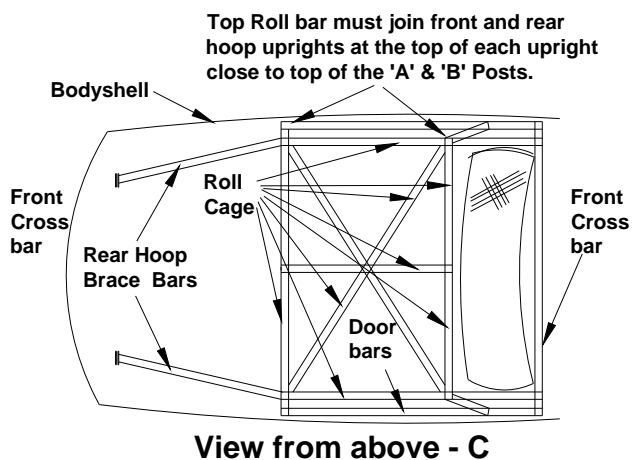
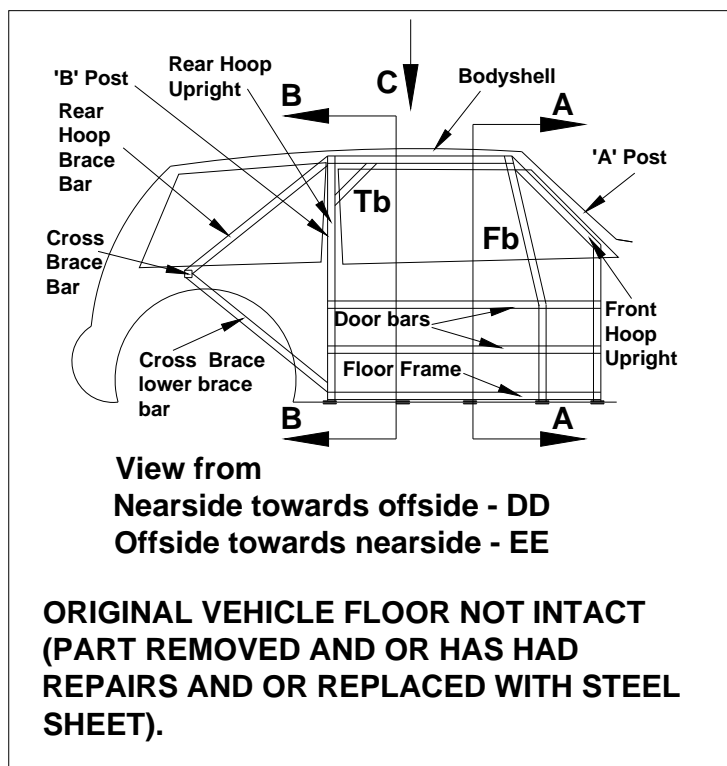


Figure 1b.ii - Roll Cage - Original Floor not Intact.

All Bars - Minimum sizes and specified wall thickness as Rule 11.

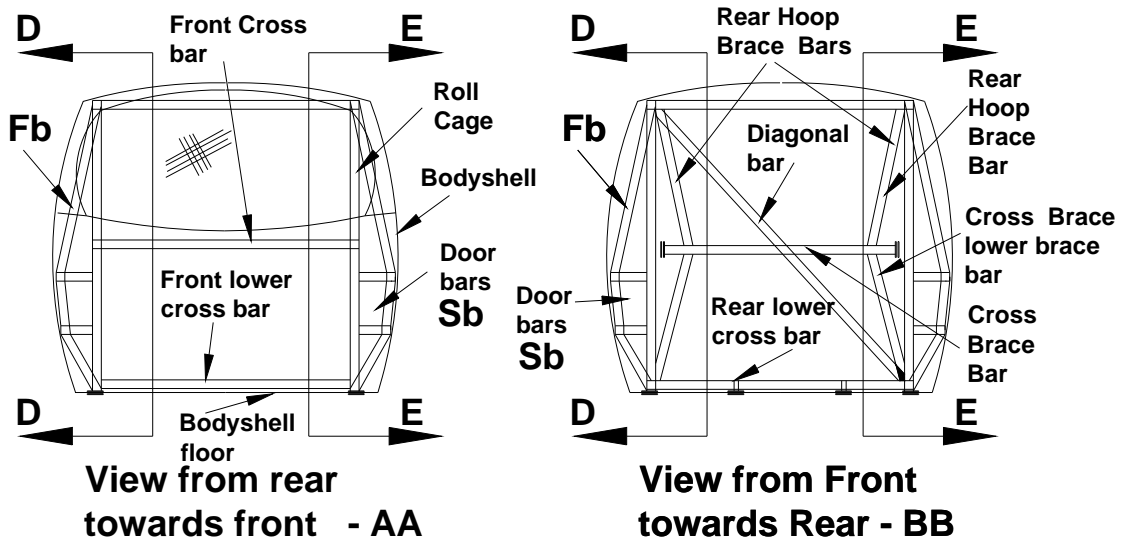
Bar Tb is mandatory.

Bar Fb is optional.



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Figure 1b.iii - Roll Cage - Original Floor not Intact.

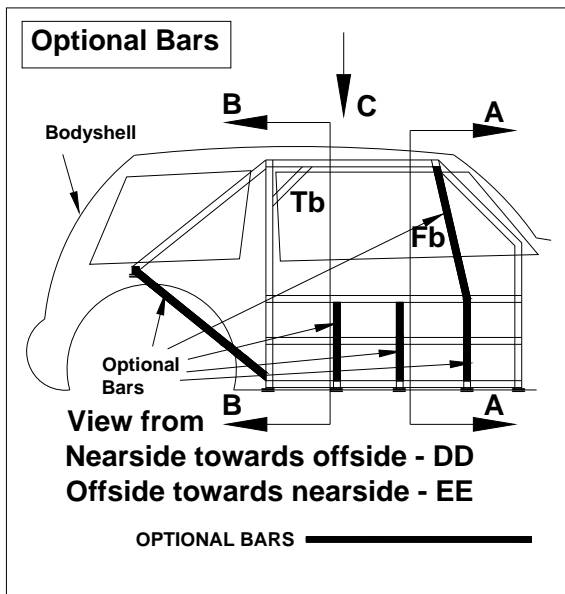


**ORIGINAL VEHICLE FLOOR NOT INTACT
(PART REMOVED AND OR HAS HAD REPAIRS
AND OR REPLACED WITH STEEL SHEET).**

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Figure 1c Roll Cage Optional Bars – Side Elevation

All Bars - Minimum sizes and specified wall thickness as Rule 11, 16, 21 & 22.
Bar Tb is mandatory.
Bar Fb is optional

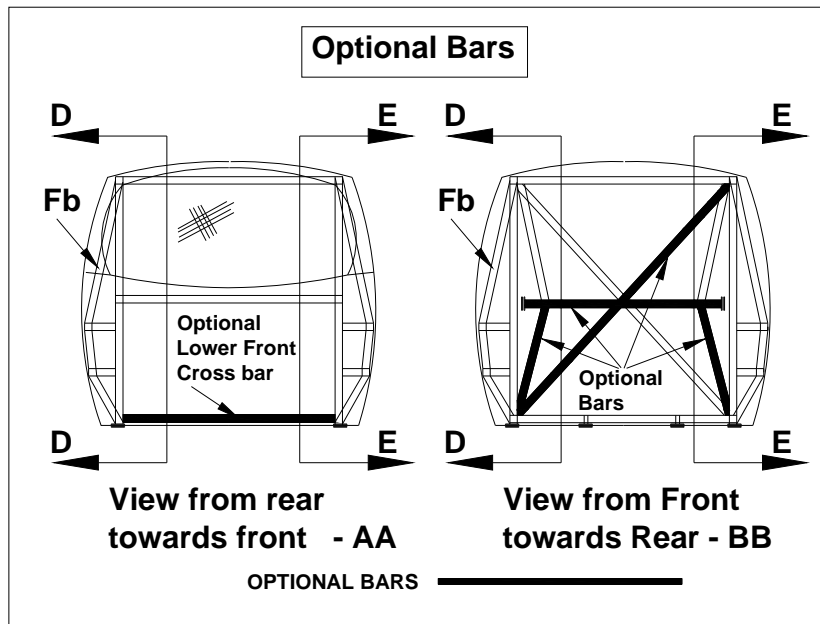


NOTE.
Some optional bars become mandatory if original vehicle floor not intact - See Fig 1b.

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Figure 1d Roll Cage Optional Bars – Front & Rear View

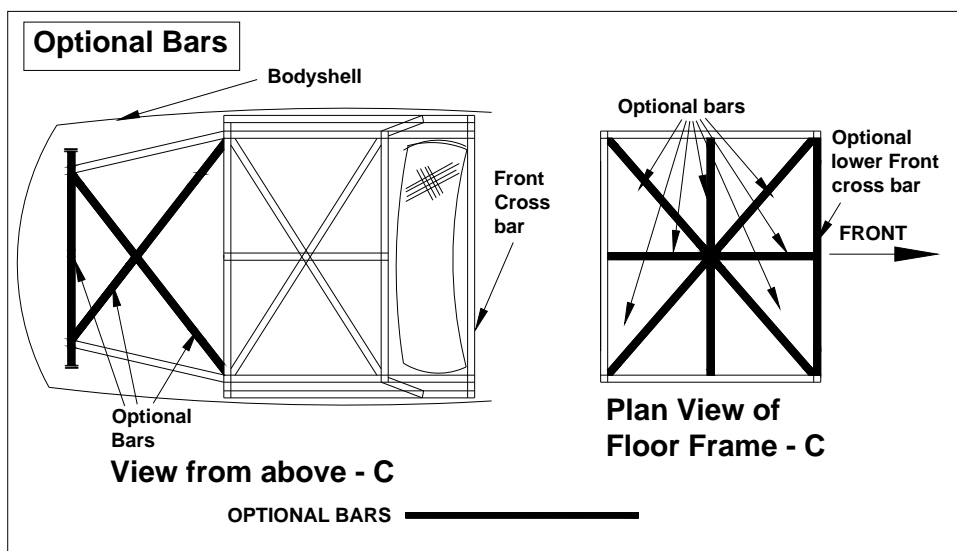
All Bars - Minimum sizes and specified wall thickness as Rule 11, 16, 21 & 22.
 Bar Fb is optional



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Figure 1e Roll Cage Optional Bars – Plan View

All Bars - Minimum sizes and specified wall thickness as Rule 11.

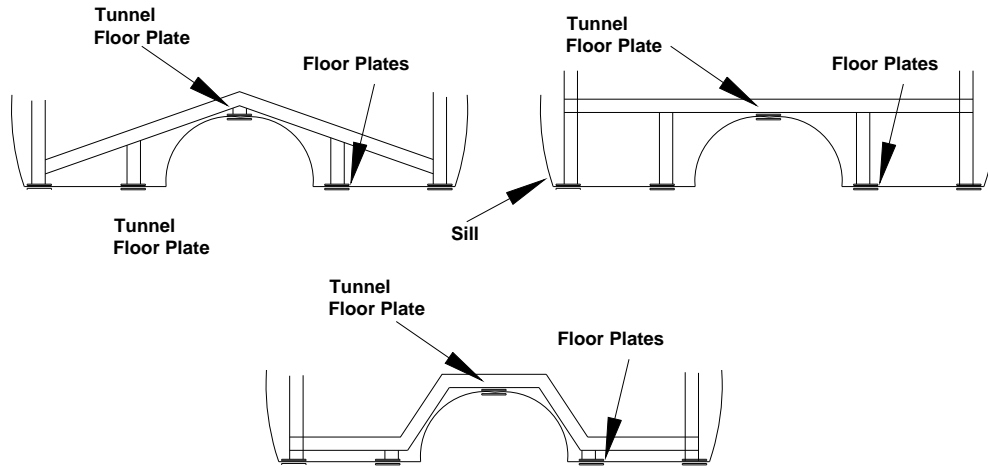


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Figure 1f – Floor Bar – Tunnel options.

All Bars - Minimum sizes and specified wall thickness as Rule 11 & 16.

Nearside to Offside - Floor bar Tunnel Fitting Options

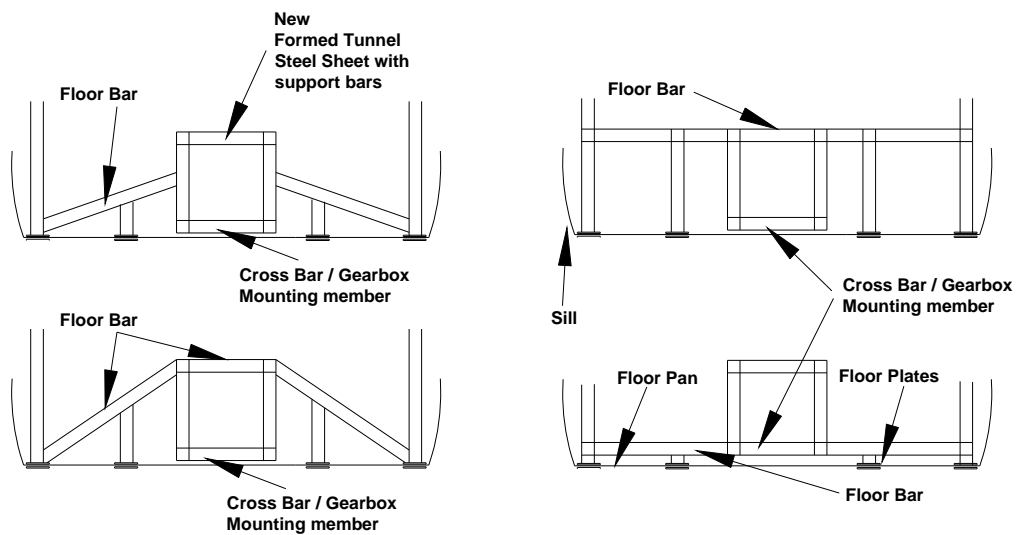


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Figure 1g Floor bar – Tunnel Options.

All Bars - Minimum sizes and specified wall thickness as Rule 11 & 16.

Nearside to Offside - Floor bar Tunnel Fitting Options

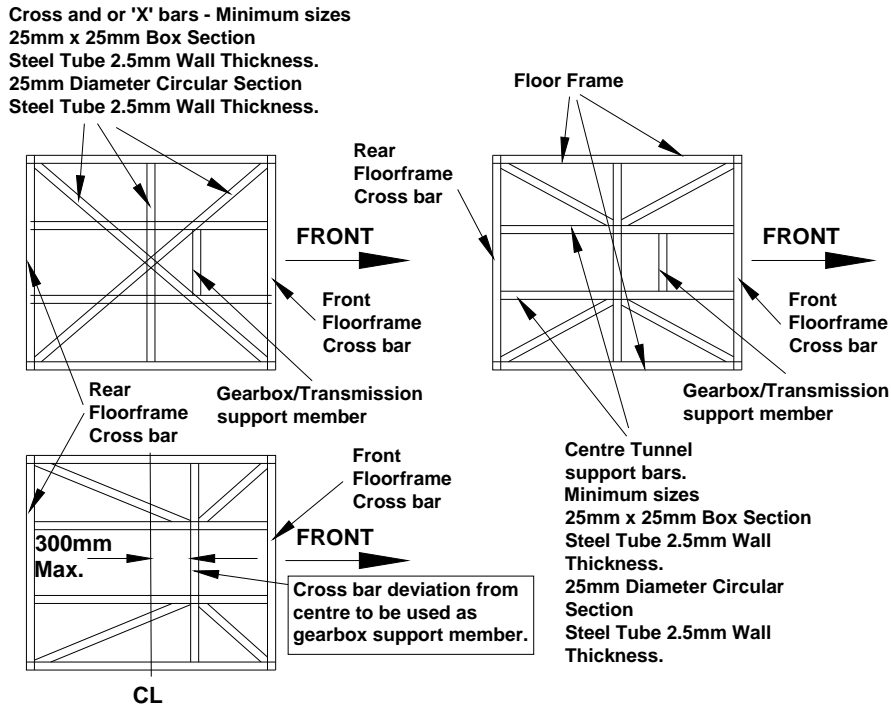


**ORIGINAL VEHICLE FLOOR NOT INTACT
OR REPLACED WITH STEEL SHEET**

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Figure 1h – Floor Frame & Centre Tunnel Options

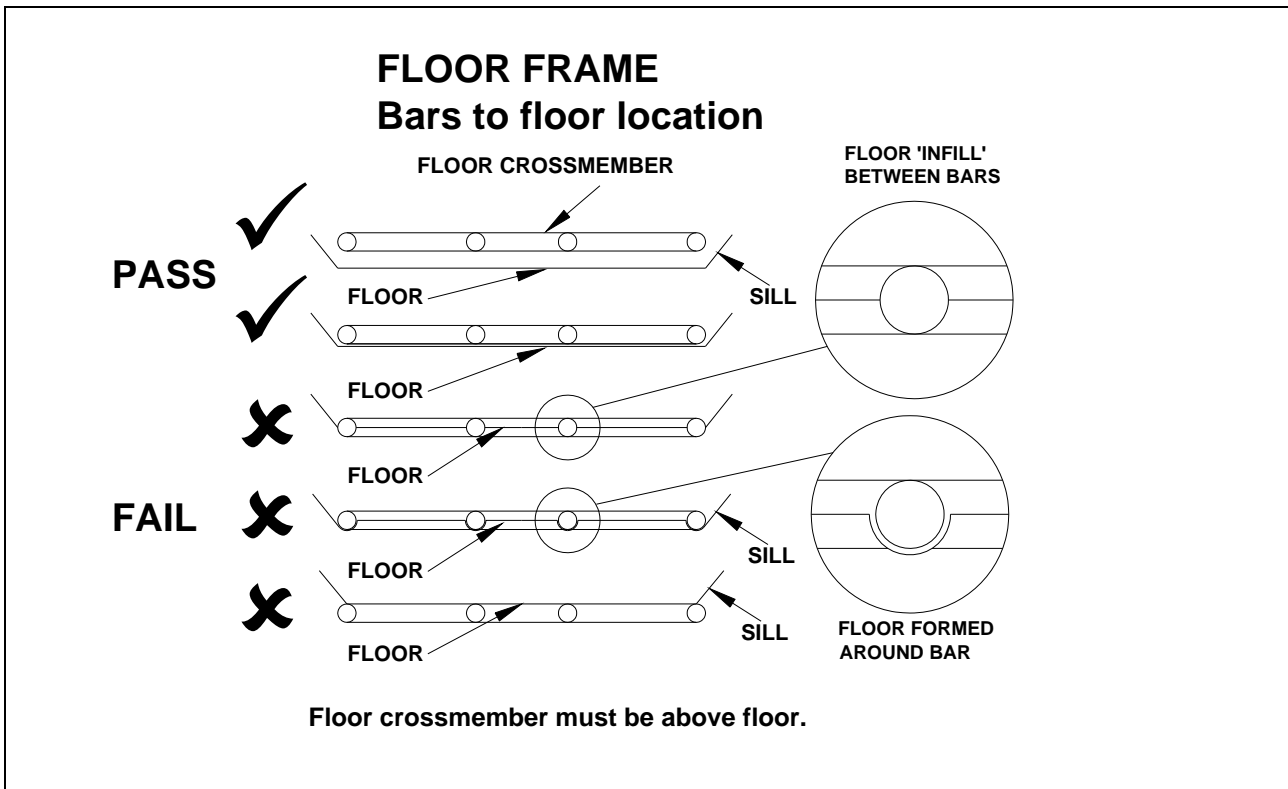
All Bars - Minimum sizes and specified wall thickness as Rule 11 & 16.



Plan View of Floor Frame & Centre Tunnel - Options

94

Figure 1i – Floor Frame Location



94

Figure 1j – RWD Vehicles Construction.

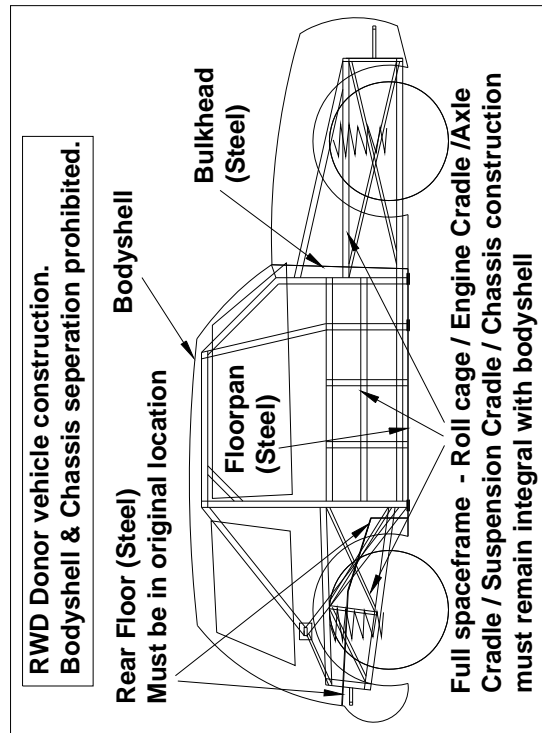


Figure 1k – FWD & RWD “Spaceframe” Conversion Vehicles Construction.

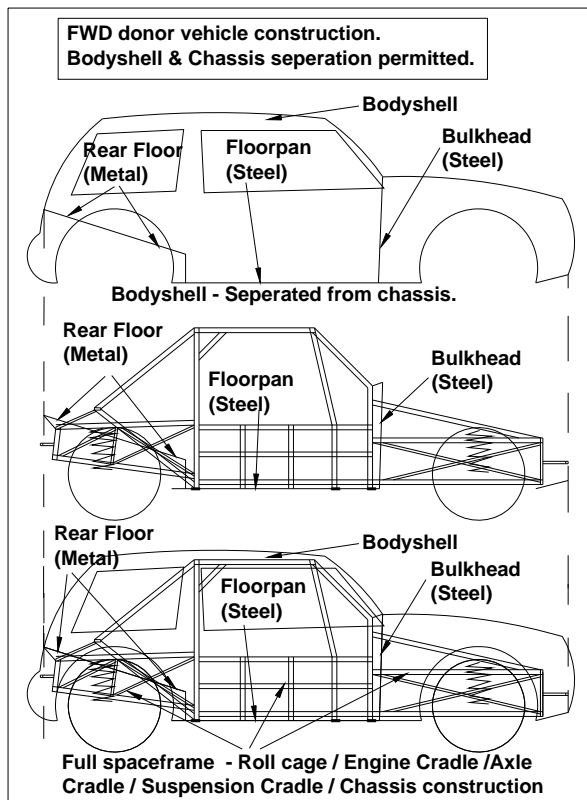
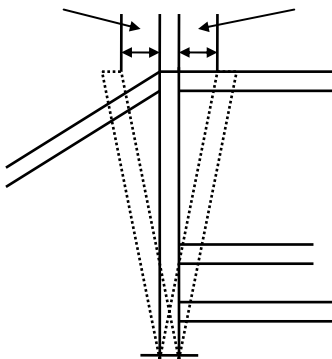


FIGURE 2

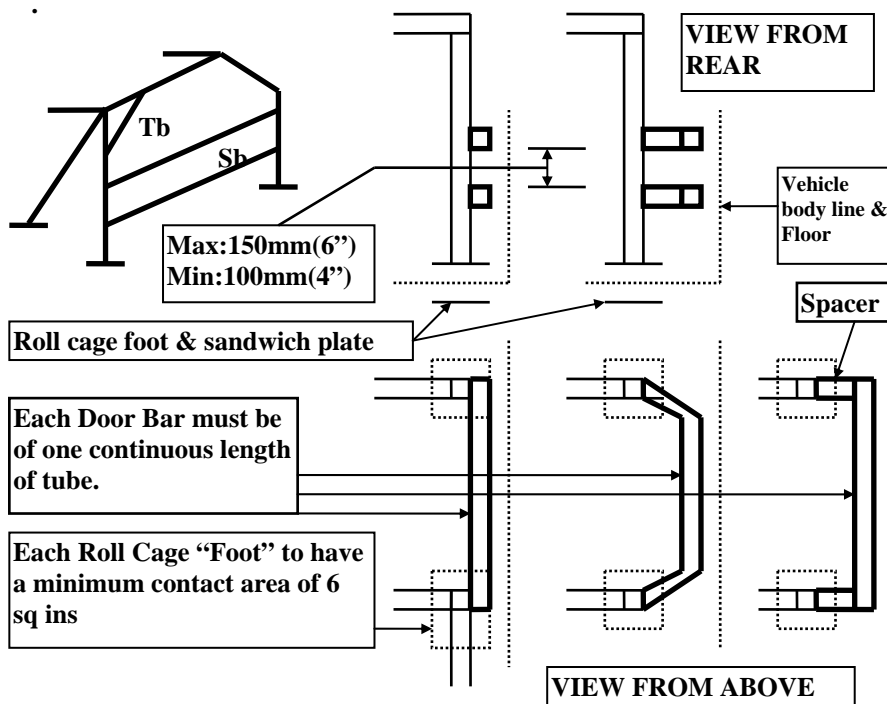
**ROLL CAGE REAR UPRIGHT:
MAXIMUM PERMITTED
DEVIATION FROM VERTICAL.
- 50mm(2") + 50mm(2")**



**UPRIGHT BAR MUST BE STRAIGHT
WHEN VIEWED FROM THE SIDE**

§§

FIGURE 3 SIDE BAR & TRIANGULATION BAR POSITIONS ON SALOONS



§§

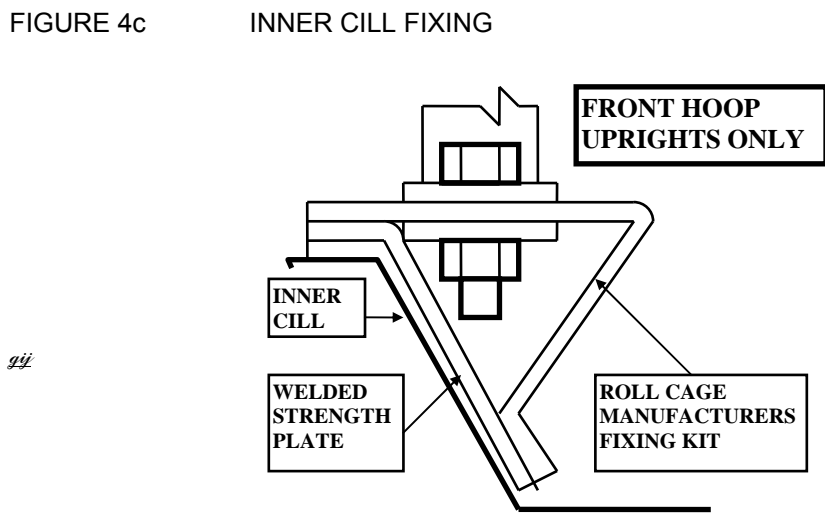
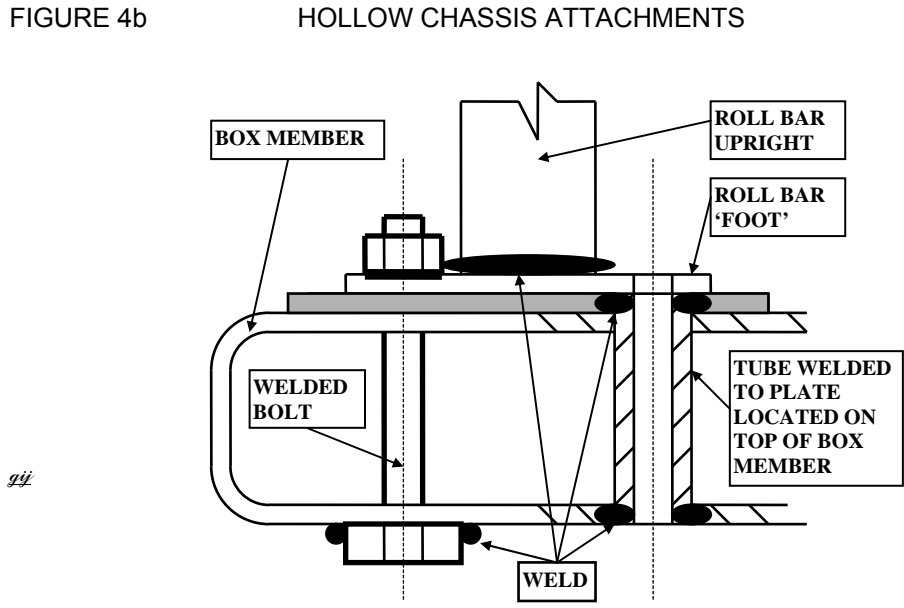
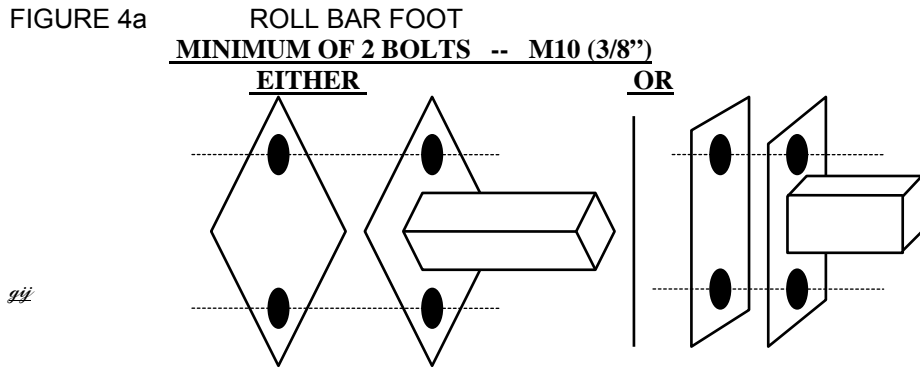
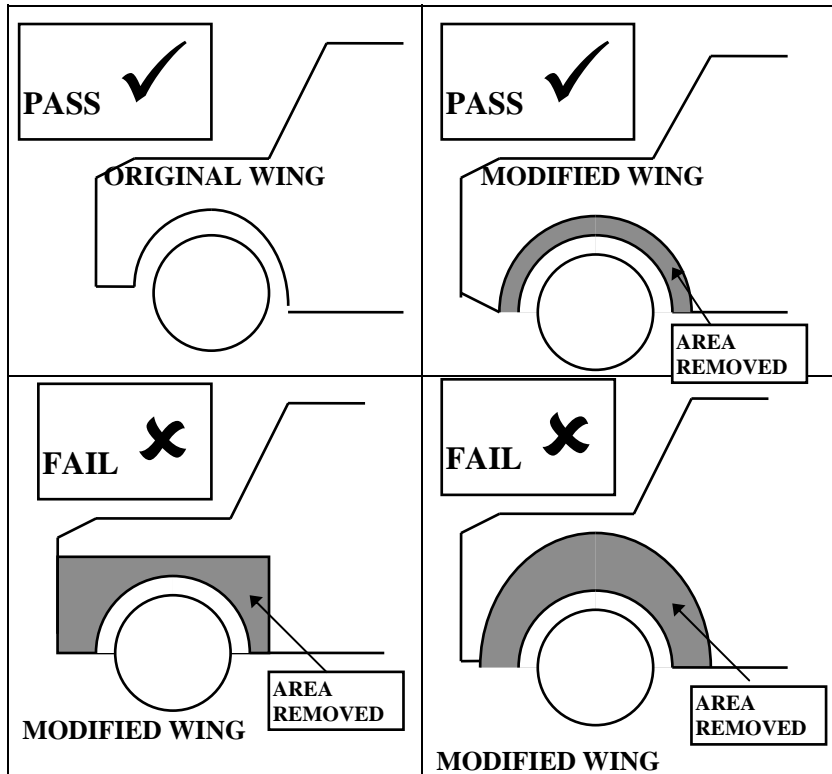
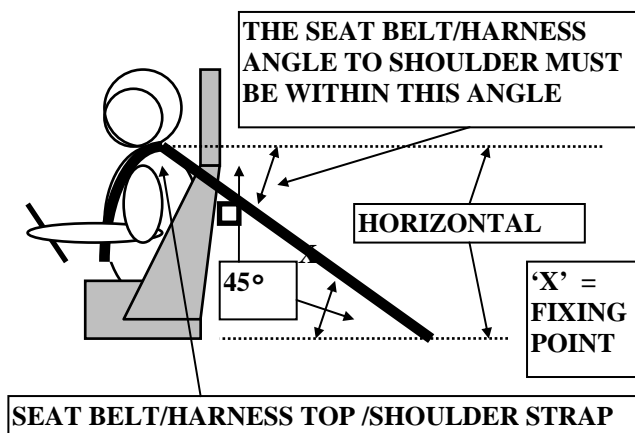


FIGURE 5 VEHICLE WING WHEEL ARCH MODIFICATIONS.



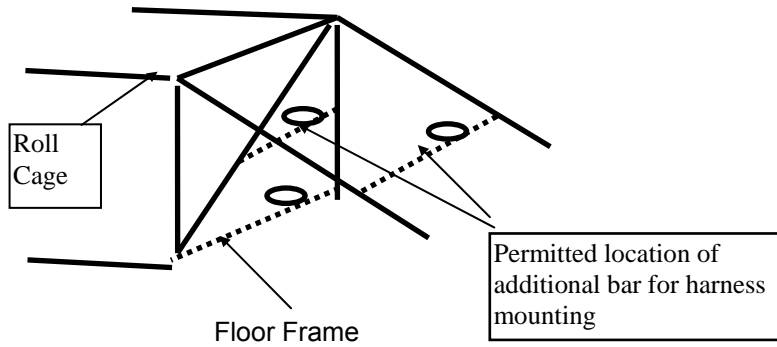
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FIGURE 6a. SEAT BELT HARNESS TOP STRAP



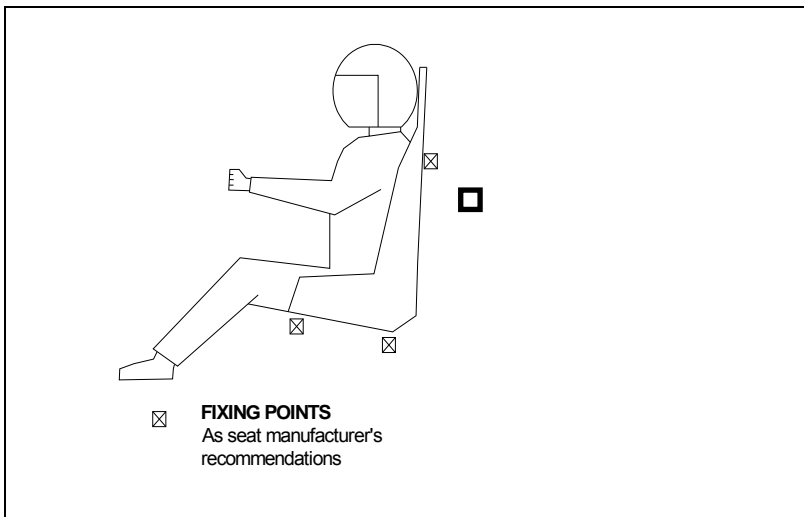
Seat Support Bar

FIGURE 6b. HARNESS STEEL EYE BOLT MOUNTING PLATE
ROLL BAR FIXINGS



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FIGURE 7 DRIVER'S SEAT FIXING POINTS



Seat & Harness Support Bar.
 Connected direct to rear roll cage upright.
 Minimum Box Section = 30 mm x 30 mm x 2.5mm Wall Thickness
 Minimum Circular Section = 32mm x 2.5mm Wall Thickness
 Seat Fixing Bolts = 8mm HT or greater.

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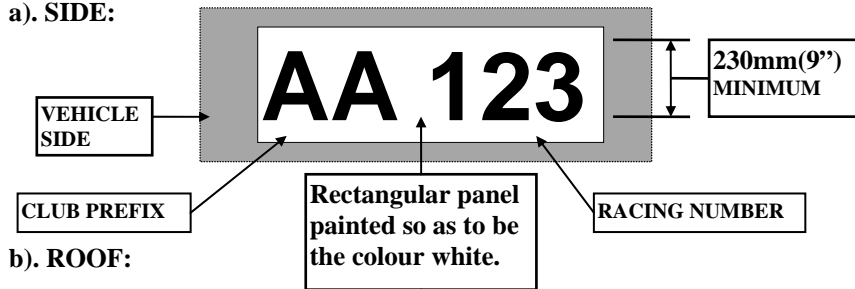
FIGURE 8 VEHICLE IDENTIFICATION

PLAIN BLACK LETTERS AND NUMBERS ON A SINGLE PLAIN WHITE PANEL BACKGROUND

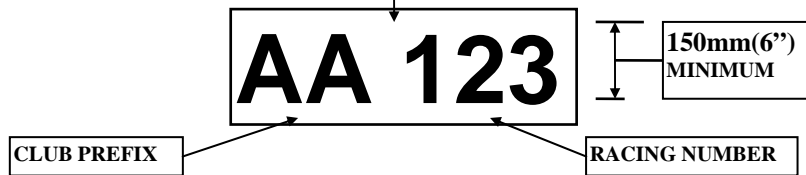
Example: ANY AUTOGRASS CLUB -- Vehicle No - 123

NASA recognised Club & League prefix & numbers = AA 123

a). SIDE:



b). ROOF:



The Identification (Club letters & Racing number) must match that stated in the competitor's NASA Licence. i.e. if AA123 = AA123 Not 123AA or A123A.

Identification must be located forward of Rear Roll Cage upright.

All letters & Numbers must be clear, legible and upright.

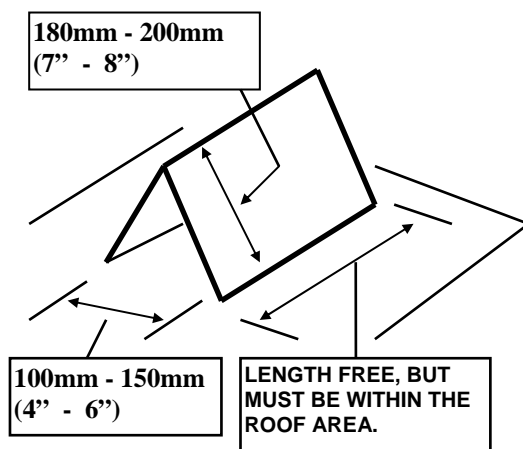
Clearance between outside edge of letter and or number to outside edge of white panel:

Side: = 50mm

Roof: = 5mm

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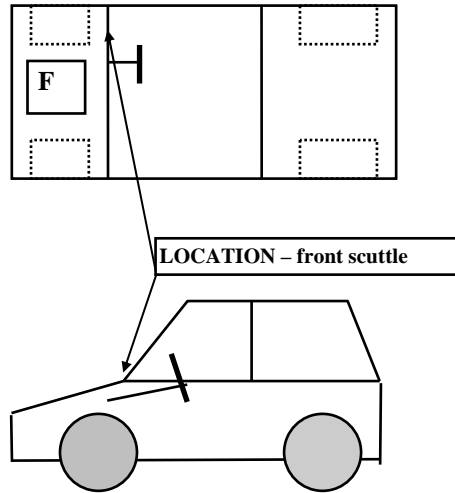
FIGURE 9 METAL ROOF NUMBER PANEL



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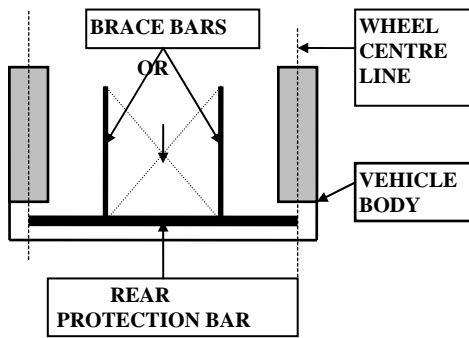
FIGURE 10 POSITION / LOCATION OF BATTERY CUT OFF SWITCH

POSITION OF BATTERY CUT OFF SWITCH



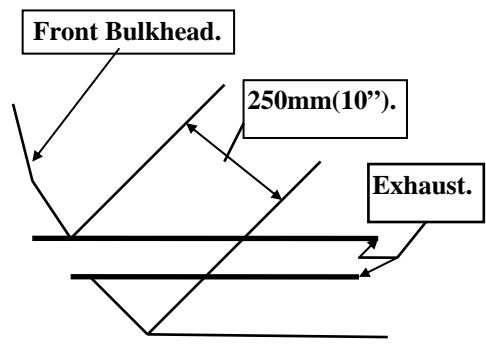
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FIGURE 11 PERMITTED REAR PROTECTION



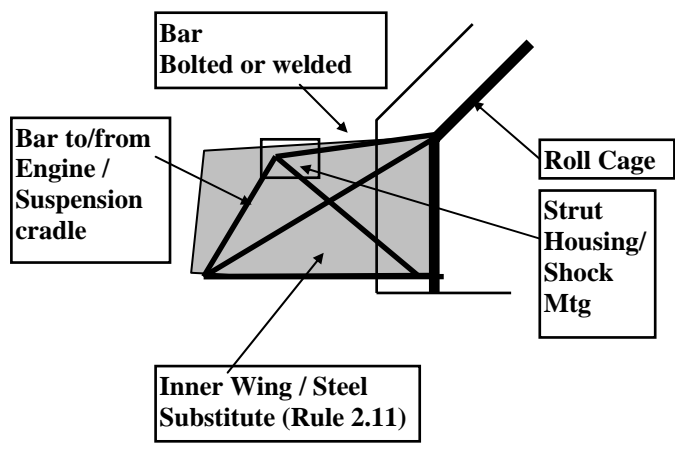
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FIGURE 12 PERMITTED EXHAUST THROUGH BULKHEAD LOCATION



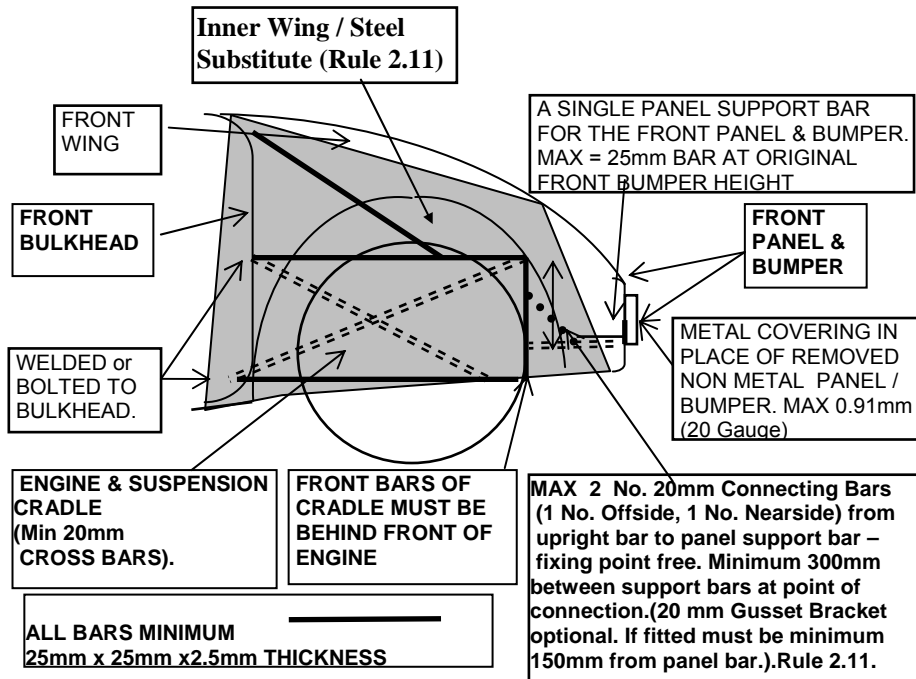
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FIGURE 13a PERMITTED FRONT SUSPENSION ENGINE CRADLE & INNER WINGS



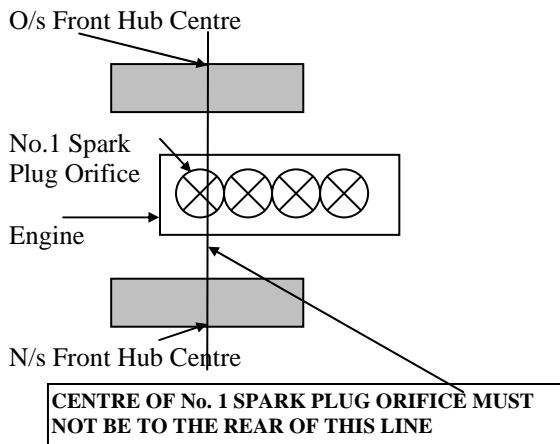
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FIGURE 13b. PERMITTED FRONT SUSPENSION ENGINE CRADLE & INNER WINGS



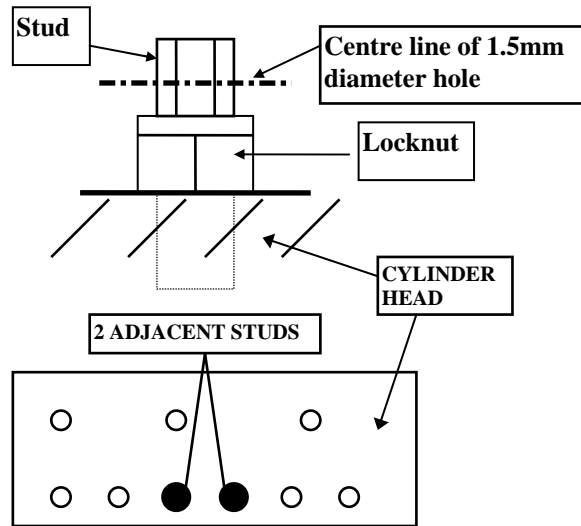
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FIGURE 14 ENGINE LOCATION



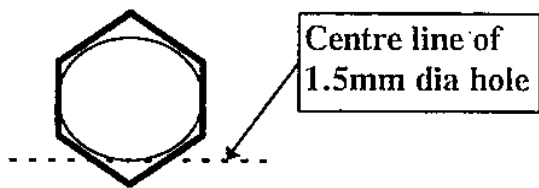
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FIGURE 15a – ENGINE SEALING



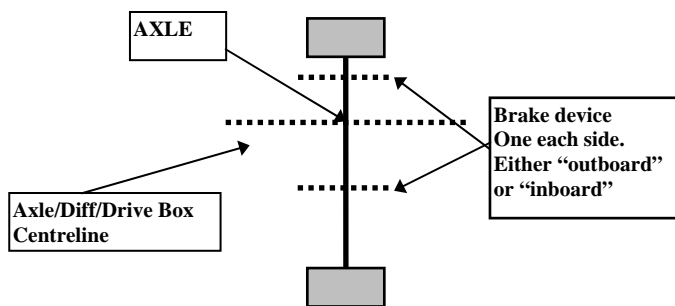
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FIGURE 15b – ENGINE SEALING



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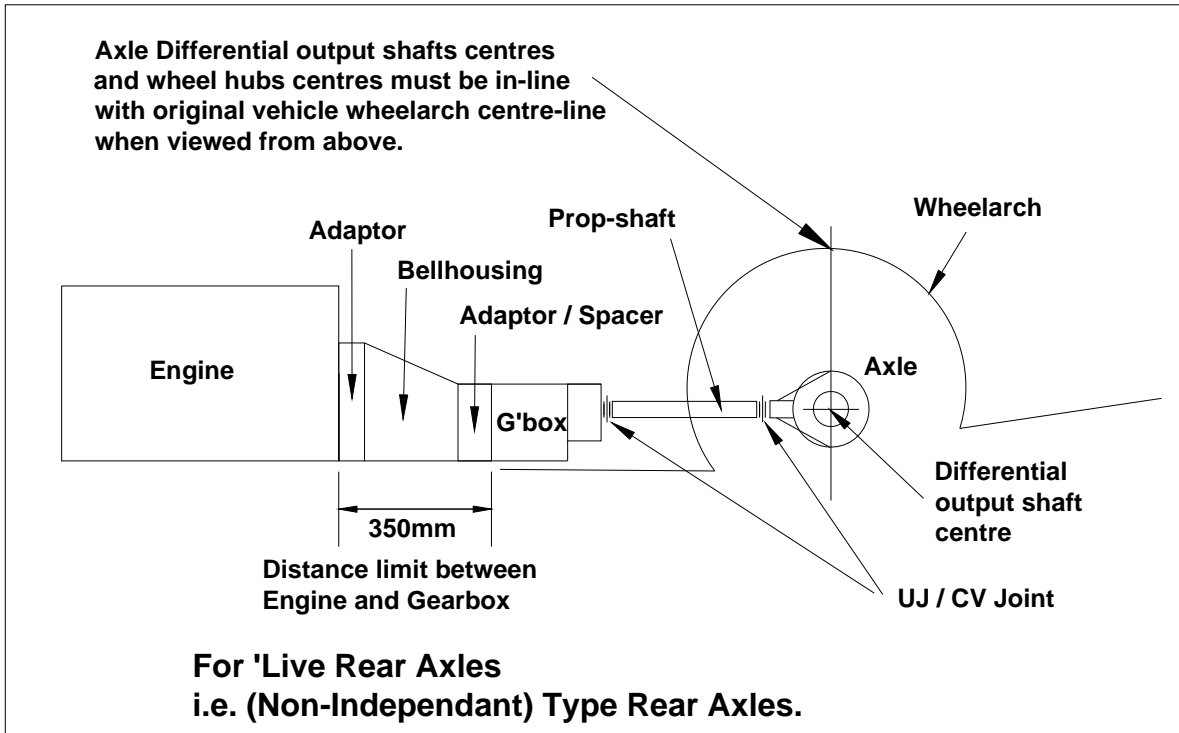
FIGURE 16 – BRAKES



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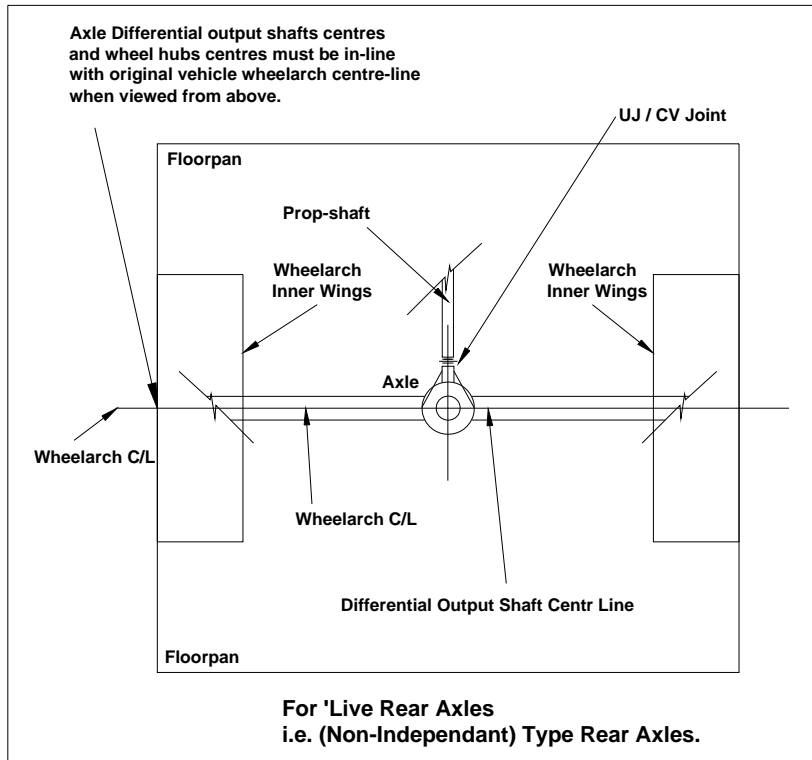
Fig. 17
17a.

ENGINE/GEARBOX/PROP-SHAFT/AXLE - INLINE REQUIREMENT.



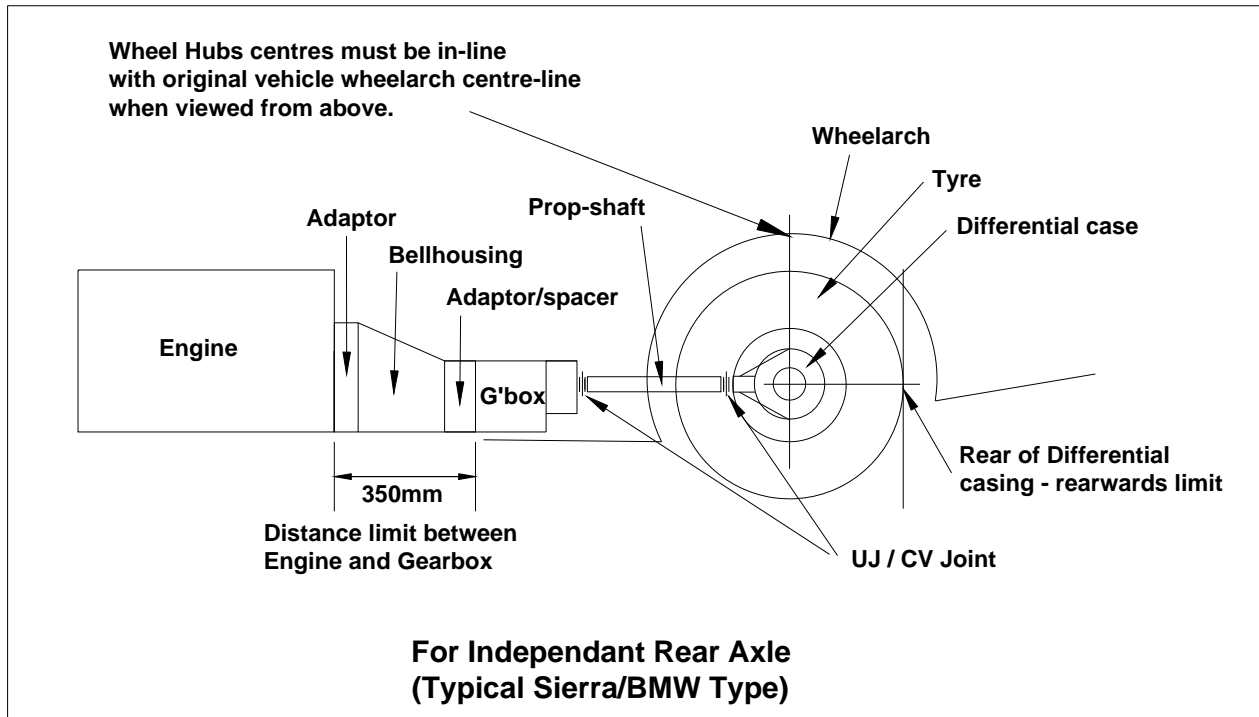
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17b.



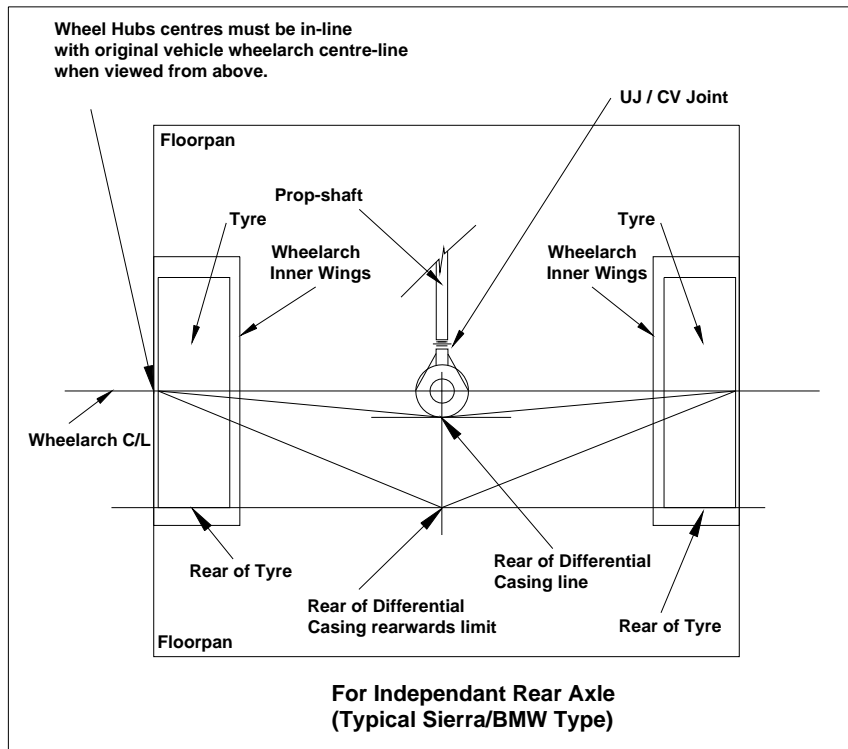
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17c.



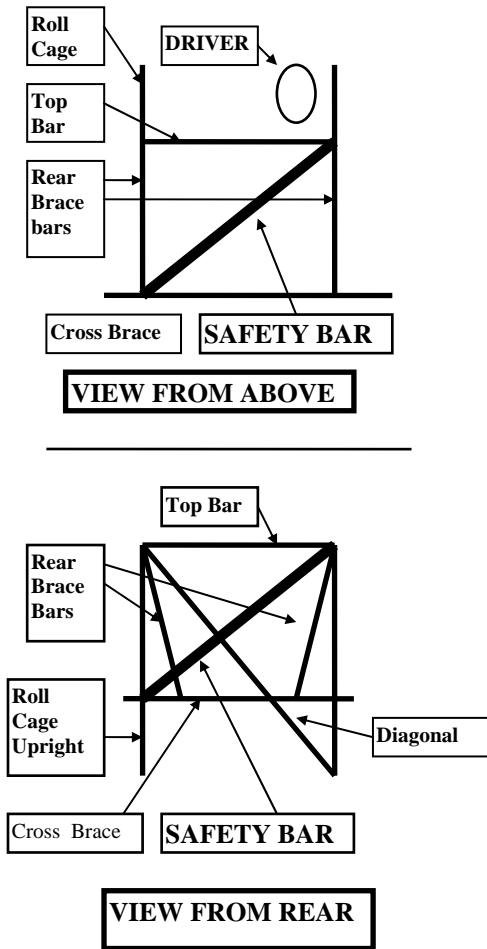
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17d.



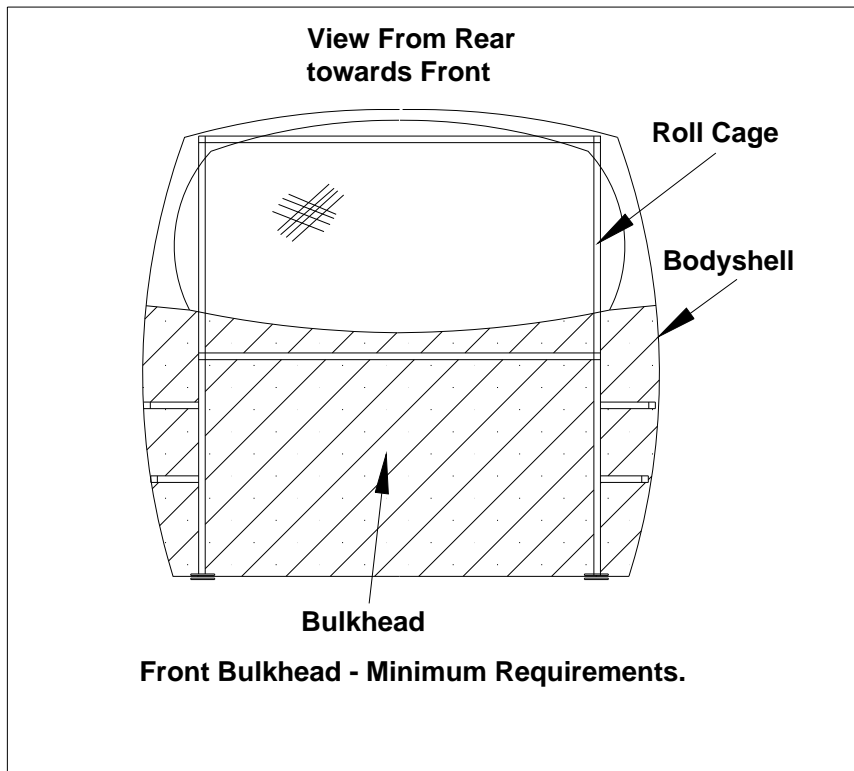
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FIGURE 18 REAR SAFETY BAR (TIGRA VEHICLES).



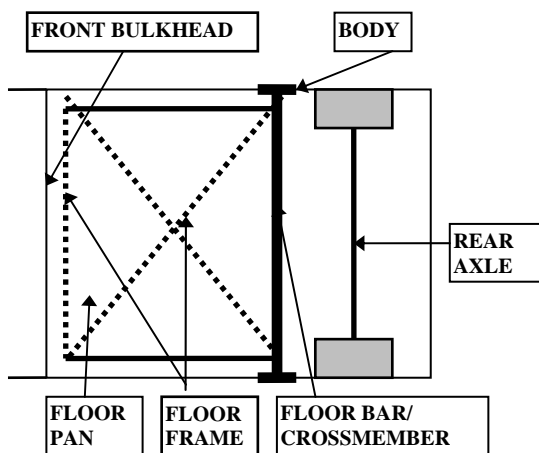
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FIGURE 19. - FRONT BULKHEAD REQUIREMENTS.



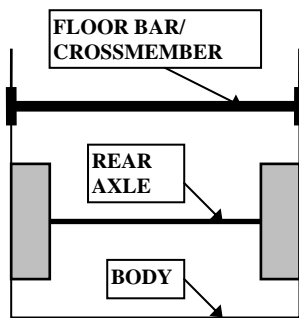
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FIGURE 20. – FLOOR BARS.



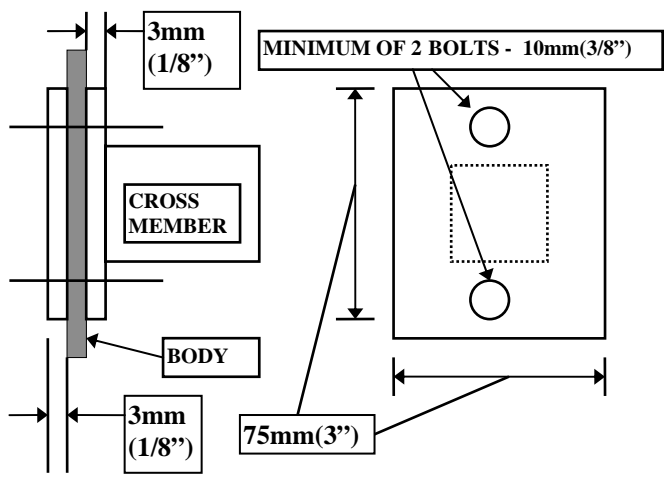
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FIGURE 21 FLOOR CROSS BAR.



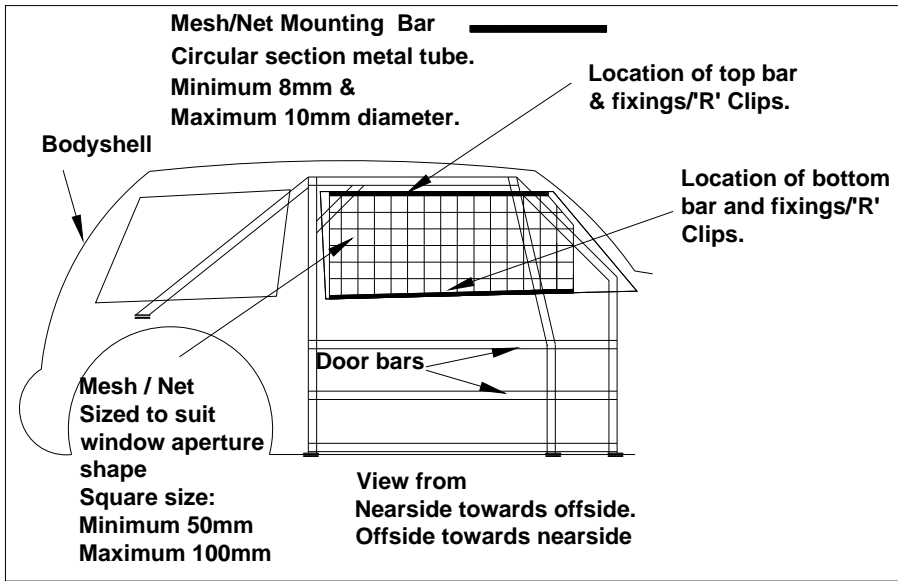
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FIGURE 22 CROSS BRACE/MEMBER END PLATES



gii

FIGURE 23 CLASS 3 - SIDE WINDOW WEBBING/MESHED NET REQUIREMENTS



gii

SILENCING

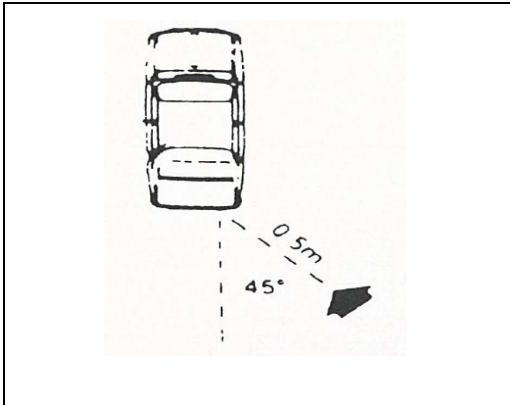
The maximum noise permissible for all vehicles is 102 Db (A).

Sound level meter readings shall be taken at 0.5 of a metre from the exhaust outlet with the microphone of the Noise Meter at 45 degrees to the exhaust axis, and with the car engine running at the appropriate r.p.m. A list of engines/r.p.m's. is available from the scrutineers.

Noise Meter Standards (minimum requirements):

- Type 1 or 2 instrument.
- International Standard IEC 651
- British Standard BS 5969.
- Range 70-120dB(A)
- Time constants Fast/Slow.
- Maximum "Hold" recommended.

NB - Please see Members Book for more detailed information



TABLE

British Standard Wire Gauges

Gauge	Diameter	(mm)
0	0.324	8.23
1	0.300	7.62
2	0.276	7.01
3	0.252	6.41
4	0.232	5.89
5	0.212	5.38
6	0.192	4.87
7	0.176	4.47
8	0.160	4.06
9	0.144	3.65
10	0.128	3.25
11	0.116	2.95
12	0.104	2.64
14	0.080	2.03
16	0.064	1.62
18	0.048	1.22
20	0.036	0.91
22	0.028	0.71

NASA NOISE TEST CHART 2018

CLASS	ENGINE	TEST RPM
1	4 Cyl	4500
2	4 Cyl	4500
3	4 Cyl	5000
	V4 / V6 / V8	4500
	Chevy V8	3500
4	4 Cyl	5000
5	4 Cyl	5000
6	4 Cyl	5000
	V4 / V6 / V8	4500
7	4 Cyl	5000
	M'Bike	8000
	V4 / V6 / V8	4500
	Chevy V8	3500
	Twin M'Bike	8000
	M'Bike V8	8000
8	4 Cyl	5000
	M'Bike	8000
9	4 Cyl	5000
	V4 / V6 / V8	4500
10	4 Cyl	5000
	V4 / V6 / V8	4500
	Chevy V8	3500
	Twin M'Bike	8000
	M'Bike V8	8000

The construction rules in this book are intended for use by Autograss cars taking part in Autograss events as defined by the NATIONAL AUTOGRASS SPORT ASSOCIATION on a natural surface and are not necessarily considered safe for other forms of motor sport.

Drivers are advised that if they intend using their cars at events, other than events as defined by the NATIONAL AUTOGRASS SPORT ASSOCIATION They should ensure that their cars comply with the organiser's construction rules.

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