

**ASSOCIATION OF
AUTHORISING
BODIES**



RULES & REGULATIONS

2018 EDITION

CLASS 4, 5, 6, & 7



"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 RULES
INFORMATION DOCUMENT.**

CLASS 4, 5, 6, & 7

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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
Class 12 Classes 4, 5 & 6 will race together duly handicapped
Class 13 Classes 3 & 7 will race together duly handicapped
Class 14 Classes 8, 9 & 10 will race together duly handicapped

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

NB 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).

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

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.

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.
 - * **All Application Forms and Letters of Consent for under 18's are available from your Club Secretary.**
- 4*. 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.
5. A Men's Licence entitles you to race in Men's Classes only, and Men's Championships.
6. 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# **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.

Beam Axles - A Beam Axle is formed by two rear wheels being attached on a common axle shaft. (See Fig.15).

Bulkhead A Bulkhead is a partition or panel separating any two vehicle compartments.

e.g. Engine compartment and drivers compartment.
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 - 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.

Mechanical Components - Classes 5, 6 & 7 only - Engine, bellhousing, gearbox, transmission engine ancillaries.

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.

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.

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

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

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

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 offenders and non-runners, with original grid positions being maintained.

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.

Trailing Arms - Trailing Arms are formed by rear wheels; acting independently of each other. (See Fig.16).

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. Additional and or 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 Motor sport Copy" type "Weld In" Roll Cages are prohibited.
- c). The use of a Roll Cage with 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.

2. 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.

3. Roll Cage "Inspection Hole".

An inspection hole may be drilled in each of the mandatory component bars of the complete cage, i.e. 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 circled 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 MUST be of steel, including all 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 cages 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. All tube to be cold drawn seamless carbon steel, with a minimum yield strength of 350N/mm.

Permitted minimum diameter and tube wall thickness sizes:

32 (1¼") / 38 / 42mm Diameter with an absolute minimum wall thickness = 2.5mm.

50mm Diameter with an absolute minimum wall 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 these 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 thickness 2.5mm and or 3.0mm and associated tolerances, to the 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 indicted 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.

- i. 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 bars 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 Rule 13.).
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 (30-mm 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 2.36 & 2.37

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 specified wall thickness 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 specified wall thickness fitted (by means of welding), at either floor or low level.

See Fig 1.

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 24, also Chassis/Bodyshell Rule 2.37 & 2.38.

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 Fig.1).

Note:

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

19. Pick up vehicles only:

The rear roll cage hoop may be positioned externally to the vehicle cab, however it must be within 2" (50mm) of the external face of the original vehicle cab to rear pick up bed bulkhead (See fig.21).

20. Door / Side bars.

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 Rule 11 & Fig. 3).

It is recommended that 3 No. or more vertical upright bars joining the bottom side 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.

21. 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 rear upright. Or vies-versa. (See Fig.1) The fitting of two diagonal bars to form a cross is permitted.

22. 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.

23. 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 circular 32mm(1¼") circular or box section 30mm minimum with specified wall 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.

24. 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.

25. Brace bars, floor frame and or engine cradle/suspension support bars may pass through the vehicle floor pan and or passenger compartment to engine/luggage compartment bulkhead.

26. It is prohibited to directly connect any mechanical component, except damper units to the roll cage.

CONSTRUCTION - GENERAL

- 1.1 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.
- 1.2 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.
- 1.3 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.
- 1.4 The use of 'Twin Engine installation' is only permitted in Class 7.
- 1.5 A vehicle must not be capable of seating any person other than the driver.
- 1.6 All driver controls must be operated from, and remain within, the drivers compartment at all times.
- 1.7 Traction / Launch Control (see definitions) systems prohibited.
- 1.8 Vehicle rear wheel-standing (aka Wheelies).
The prevention of vehicle rear wheel-standing (aka Wheelies) at all times shall be the competitors responsibility. Rear wheel standing is regarded as dangerous or extremely dangerous driving and is a Black Flag (Race Disqualification) offence.
- 1.9 Driver size & Stature.
The vehicle must be constructed to suit the competitor driver size and stature in all respects.
If it is considered that a particular vehicle is unsuitable for a driver, given the person's size or stature then the person concerned will not be permitted to race that vehicle. See rue 2.32.
- 1.10. 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.
- 1.11. 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.
- 1.12 The vehicle must be maintained in good order. Vehicles in poor condition may not be permitted to race at the discretion of the scrutineer.
- 1.13. 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.
- 1.14 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.

1.15. The Scrutineer's decision, as to the eligibility of any component or part and or suitability of a vehicle for racing is final.

SEE ALSO RULES SPECIFIC TO EACH CLASS

CLASS SPECIFICATION - CLASS 4

May be a front or rear wheel drive saloon, sports saloon, or specified dual-purpose vehicle.

- a). A vehicle produced and marketed by a recognised automobile manufacturer with an engine cubic capacity not exceeding 1130 cc.
The vehicle must be made from a NASA permitted vehicle body shell.
See Rule 2.1 for Permitted & Non-Permitted vehicle information.
- b). Any mark of engine, as fitted to the vehicle, may be used in the body shell of any mark of the same vehicle produced by the same original vehicle manufacturer e.g. Mk 1, Mk 2 etc, saloon, specified dual purpose vehicle, etc.
Where a vehicle manufacturer produces a version of a 1130cc or under engine, that is of a greater cc than 1130cc, and is available in either the same bodyshell or an evolution of that bodyshell (e.g. Mk 1, Mk 2 etc, saloon, specified dual purpose vehicle etc), then provided the engine is of the same basic configuration and or engine code (e.g. single camshaft, OHV, comparable engine block, etc) that engine may be modified by de-stroking/bore sleeving to give a cc within the class capacity.
e.g.. - a 1275cc, Leyland/Rover Mini engine may be converted to 1130cc and used in any type of Leyland/Rover Mini body shell.
Note:
Where a vehicle manufacturer produces an engine, which is not available in 1130cc or under form, it cannot be converted to 1130cc form even if the same bodyshell is used with a different type of 1130cc engine.
e.g.. - a Leyland/Rover "K" Series engine cannot be converted to 1130cc and used in any type of "A" Series engine Leyland/Rover Mini body shell.
- c). The engine and transmission must initially prior to modification be as per manufacturer's original specification, and appropriate to that make or model.
Modifications to the original engine and gearbox or transmission other than restrictions listed in b, d, e, f, h, i, j, & k are free.
- d). Engine & Transmission – Materials.
The cylinder head, block, and gearbox casing must be of the original donor vehicle's automobile manufacturer's original standard production material. i.e. The changing of an original cast iron material cylinder head or engine block to an alloy type or vies-versa is not permitted.
Other modifications to cylinder head, block, and gearbox casing free.
- e). Cylinder- Head Ports & Valves Modification.
The cylinder head must have the vehicle manufacturer's original standard production number of inlet and exhaust ports and valves, which must remain in their original location plane. i.e. Cylinder head "Overhead Valves" must remain as "Overhead Valves". "Side Entry/Exit" ports must remain as "Side Entry/Exit" ports.
Other modifications to valves and ports free.
- f). Pistons, conrod, crankshaft & flywheel.
The engine bore and stroke must be such that the cubic capacity is not be greater than 1130cc.
Modifications to and type of pistons, con-rods, crankshaft & flywheel free.
- g). The engine may be positioned anywhere within the original vehicle engine compartment.
Modification to the front bulkhead other than that stated in rule l. below and 2.40 is prohibited. See also Rules 2.4 & 25.
Note.
The location of the engine compartment must remain as per the original manufacturer's specification for the particular vehicle's body-shell.
The conversion of: Either a RWD vehicle to a FWD vehicle Or a Front engine RWD to a Front engine FWD and vies-versa is prohibited.
E.g. Where a say Mk1 vehicle is rear engine RWD or front engine RWD and MK4 vehicle is front engine FWD the MK4 bodyshell cannot be converted to rear engine RWD or front engine RWD.
- h). Gearbox/Transmission.
The original gearbox/transmission casing must be retained.
Modification and or Internal machining free.
Gear type and ratios free.
The original drive shafts and or wheel hubs may be retained, modified or replaced.
Driveshaft and or wheel hub type free.
See Rule 1.c.

- i). Clutch Operation – Restricted.
A single clutch pedal must be fitted to control the operation of the 'clutch mechanism or engaging' drive to the transmission system mechanism from the engine.
Clutch type and modifications to are free.
- j). Drive.
Drive must be effected by the either the two front wheels or the two rear wheels as per Class specification.
The use of Four-wheel drive is not permitted.
- k). Forced Induction – Restricted.
The use of any form of Forced Induction, including Turbochargers, and/or Superchargers is prohibited.
- l). Slight local modification of the front bulkhead and floorpan is **only** permitted for:
 - i. Localised clearance of mechanical components. (As a "Rule of thumb" "Localised clearance" is regarded as approx 100mm clearance).
 - ii Repositioning the control pedal assembly (foot brake/clutch/accelerator throttle pedals).
Note:
The driver's feet must remain at all times to the rear of the driver's compartment face of the original front bulkhead location.
 - iii. See Fig. 32 & 33. See also Rules 2.4 & 2.5.
- m). For manufacturer's original specification rear engine vehicles, the original rear engine compartment bulkhead may be removed. However a safety shield MUST be fitted as required by 16 "Safety Shields".
- n). See Rule 2.1 for Permitted & Non-Permitted vehicle information.

CLASS SPECIFICATION - CLASS 5

May be a front or rear wheel drive saloon, sports saloon, or specified dual-purpose vehicle with only two valves per cylinder.

- a). A vehicle produced and marketed by a recognised automobile manufacturer may be taken in its entirety, and modified.
The vehicle must be made from a NASA permitted vehicle body shell. See Rule 2.1 for Permitted & Non-Permitted vehicle information.
- b). Slight local modification of the front bulkhead and floorpan is **only** permitted for:
 - i. Localised clearance of mechanical components. (As a "Rule of thumb" "Localised clearance" is regarded as approx 100mm clearance).
 - ii Repositioning the control pedal assembly (foot brake/clutch/accelerator throttle pedals).
Note:
The driver's feet must remain at all times to the rear of the driver's compartment face of the original front bulkhead location.
 - iii. See Fig. 32 & 33. See also Rules 2.4 & 2.5.
- c). A single normally aspirated engine must be used (See definitions).
The engine must have only 2 valves per engine cylinder and be of a cubic capacity of between the following limits:
Minimum cubic capacity – Restricted.
Minimum cubic capacity of 1131cc.
Maximum cubic capacity of 1420cc.

Permitted Engines.

Those that comply with NASA "Engine" Definition.

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.

Prohibited Engines.

Engine with more than 2 valves per cylinder. E.g. 3/4/5 Valves per cylinder.

Motorbike/motorcycle engine.

"Motorcycle Hybrid" engine.

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

Non-metal engine.

Rotary engine.

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 a engine as being suitable or unsuitable for Autograss racing at any time.

- d). Engine type and location.
Any type of engine (within class specification) and transmission may be used in any body shell of vehicle.
The engine and transmission may be positioned & fitted anywhere within the chassis except for the area between the front roll cage hoop and the rear of the drivers compartment.
i.e. The location of the engine & transmission compartment may remain as per the original manufacturer's specification for the particular vehicle's body-shell or be moved to a different location.
The conversion of: Either a RWD vehicle to a FWD vehicle Or a FWD vehicle to a RWD vehicle is permitted.
- e). Cylinder- Head Ports & Valves Modification.
The cylinder head must have no more than two (2) valves per cylinder.
Other modifications to valves and ports free.

- f). Pistons, conrod, crankshaft & flywheel.
The engine bore and stroke must be such that the cubic capacity is not less than 1131cc nor greater than 1420cc. Modifications to and type of pistons, con-rods, crankshaft & flywheel free.
- g). Forced Induction – Restricted.
The use of any form of Forced Induction, including Turbochargers, and/or Superchargers is prohibited.
- h). Gearbox/Transmission. Type and location.
The original gearbox/transmission casing may be retained, modified or replaced.
Type.
Any type of Transmission/Gearbox, may be used, with unlimited modification.
Internal machining free, Gear type and ratios free.
The original drive shafts including wheel hubs may be retained, modified or replaced.
Driveshaft and wheel hub type free.
Location.
It may be fitted anywhere within the chassis except for the area between the front roll cage hoop and the rear of the drivers compartment.
- i). 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.

CLASS SPECIFICATION - CLASS 6**Must be a front wheel drive saloon, sports saloon, or specified dual-purpose vehicle.**

- a). A suitable vehicle produced and marketed by a recognised automobile manufacturer may be taken in its entirety, and modified. The vehicle must be made from a NASA permitted vehicle body shell. See Rule 2.1 for Permitted & Non-Permitted vehicle information.
- b). Slight local modification of the front bulkhead and floorpan is **only** permitted for:
- Localised clearance of mechanical components. (As a “Rule of thumb” “Localised clearance” is regarded as approx 100mm clearance).
 - Repositioning the control pedal assembly (foot brake/clutch/accelerator throttle pedals).
Note:
The driver’s feet must remain at all times to the rear of the driver’s compartment face of the original front bulkhead location.
 - See Fig. 32 & 33. See also Rules 2.4 & 2.5.
- c). A single engine must be used (See definitions)
The engine if normally aspirated must be of a cubic capacity of between the following limits:
Minimum cubic capacity - Restricted.
Engines to Class 1, 2, 4 and 5 specification are not permitted.
Engines to other specification:
Minimum cubic capacity – Free.
Maximum cubic capacity – Free.
Permitted Engines.
Those that comply with NASA “Engine” Definition.
“Millington” Engines.
“Scat V4 Engines.
Rotary Engines.
It is the Competitors and/or race vehicle constructor’s responsibility to contact a Scrutineer to confirm that the engine is eligible before using it in the vehicle.
Prohibited Engines.
“Motorcycle or Motorbike type” engine
“Motorcycle hybrid” engines.
“Motorbike/cycle conjoined” engine e.g. “RPE” or “Powertec” or similar V4, V6 or V8.
Non-metal engine.
Note.
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 a engine as being suitable or unsuitable for Autograss racing at any time.
- d). Engine & Transmission – Permitted Units.
Any type of engine (within class specification) and transmission with unlimited modifications may be used in any body shell of vehicle.
- e). Engine & Transmission – Materials.
The engine materials and gearbox/transmission materials - Free.
The cylinder head, block, and gearbox casing materials may be changed from the original. i.e. The changing of an original cast iron material cylinder head or engine block to an alloy type or vice-versa is permitted.
Other modifications to cylinder head, block, and gearbox casing free.

- f). Cylinder- Head Ports & Valves Modification.
Modifications to valves and ports free.
- g). Pistons, conrod, crankshaft & flywheel.
Modifications to and type of pistons, con-rods, crankshaft & flywheel free.
- h). Engine/Transmission Location – Restricted.
The engine and transmission may be positioned & fitted anywhere within the chassis except for the area between the front roll cage hoop and the rear of the drivers compartment.
i.e. The location of the engine & transmission compartment may remain as per the original manufacturer's specification for the particular vehicle's body-shell or be moved to a different location.
The conversion of: a RWD vehicle to a FWD vehicle is permitted.
- i). Gearbox/Transmission.
The original gearbox/transmission casing may be retained, modified or replaced.
Type.
Any type of Transmission/Gearbox, may be used, with unlimited modification.
Internal machining free, Gear type and ratios free.
The original drive shafts may be retained, modified or replaced.
Driveshaft type free.
- j). Forced Induction – Restricted.
The use of any form of Forced Induction, including Turbochargers, and/or Superchargers is permitted.
For forced Induction engine cubic capacity = Free.

CLASS SPECIFICATION - CLASS 7**Must be a rear wheel drive saloon, sports saloon, or specified dual-purpose vehicle.**

- a). A suitable vehicle produced and marketed by a recognised automobile manufacturer may be taken in its entirety, and modified. The vehicle must be made from a NASA permitted vehicle body shell. See Rule 2.1 for Permitted & Non-Permitted vehicle information.
- b). Slight local modification of the front bulkhead and floorpan is **only** permitted for:
- Localised clearance of mechanical components. (As a "Rule of thumb" "Localised clearance" is regarded as approx 100mm clearance).
 - Repositioning the control pedal assembly (foot brake/clutch/accelerator throttle pedals).
Note:
The driver's feet must remain at all times to the rear of the driver's compartment face of the original front bulkhead location.
 - See Fig. 32 & 33. See also Rules 2.4 & 2.5.
- c). Any type of engine(s) or transmission(s) may be used, with unlimited modification (See 'd' below).
Note.
- The engine or transmission may be fitted anywhere in the chassis, and also not in the area between the front roll cage hoop and the rear of the drivers compartment.
 - A single gear lever or operating device must be fitted to control the operation of the transmission system 'gear change' mechanism for the engine or engines. The use of 'sub-levers or devices' to independently control the gear change system for each engine or transmission in twin-engine installations is prohibited.
 - 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 or engines. The use of 'sub-pedals or devices' to independently control the clutch mechanism system from each engine or transmission in twin-engine installations is prohibited.
- d). A single engine or twin engine must be used (See definitions).
The engine if normally aspirated must be of a cubic capacity of between the following limits:
Minimum cubic capacity – Restricted.
Engines to Class 1, 2, 4 and 5 specification are not permitted.
Engines to other specification:
Minimum & Maximum cubic capacity = Free

Permitted Engines.

Those that comply with NASA "Engine" Definition.

"Millington" Engine.

"Scat V4 Engine.

Rotary Engine.

"motorbike/cycle" engine either in a single or "Twin" installation.

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

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

Non-metal engine.

Note.

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 a engine as being suitable or unsuitable for Autograss racing at any time.

- e). Engine & Transmission – Materials.
The engine materials and gearbox/transmission materials - Free.

The cylinder head, block, and gearbox casing materials may be changed from the original. i.e. The changing of an original cast iron material cylinder head or engine block to an alloy type or vice-versa is permitted.
Other modifications to cylinder head, block, and gearbox casing free.

- f). Cylinder- Head Ports & Valves Modification.
Modifications to valves and ports free.
- g). Pistons, conrod, crankshaft & flywheel.
Modifications to and type of pistons, con-rods, crankshaft & flywheel free.
- h). Engine & Transmission/Gearbox Location – Restricted.
The engine and transmission may be positioned & fitted anywhere within the chassis except for the area between the front roll cage hoop and the rear of the drivers compartment.
i.e. The location of the engine & transmission compartment may remain as per the original manufacturer's specification for the particular vehicle's body-shell or be moved to a different location.
The conversion of: Either a RWD vehicle to a FWD vehicle Or a FWD vehicle to a RWD vehicle is permitted.
- i). Gearbox/Transmission. Type and location.
The original gearbox/transmission casing may be retained, modified or replaced.
Type.
Any type of Transmission/Gearbox, may be used, with unlimited modification.
Internal machining free, Gear type and ratios free.
The original drive shafts including wheel hubs may be retained, modified or replaced.
Driveshaft and or wheel hub type free.
- j). Forced Induction – Restricted.
The use of "Forced Induction" i.e. the fitting an engine with a Supercharger and/or Turbocharger is permitted on NASA defined "Car" engines only. (See section – DEFINITIONS).
For an engine fitted with forced induction i.e. a Supercharger and/or Turbocharger, the cubic capacity (cc) is free.
Note:
i. The use of forced induction on a single "Motorbike", "Motorcycle", Motorcycle Hybrid and or "Motorbike/cycle conjoined" engine is prohibited.
ii. The use of forced induction for 'Twin Engine' installation is prohibited.
iii. Nitrous Oxide (N₂O) Injection is prohibited.
- k). For 'Twin Engine Installation':
i. The use of 2 No. engines including "Motorcycle or Motorbike type" engines permitted.
ii. Minimum cubic capacity normally aspirated = Free
Maximum cubic capacity normally aspirated = 4000cc (4 Litres) (2.0 Litres each).
iii. Both engines must be of the same original manufacturer, including model, type and cubic capacity (cc) rating.
iv. Both engines must be located in the same "Single engine compartment". The Engine compartment must be within the vehicle silhouette.
v. The complete "Twin Engine" installation and the transmission system(s), including each engine & transmission unit throttle, clutch and gear change mechanism control systems must be such that they operate simultaneously as one complete unit at all times. The temporary dis-engaging of one engine or transmission or ignition or throttle or clutch or gear change mechanism control system is prohibited. There will be a random spot check upon the starting line in order to check that any engine or gearbox or transmission or any part of the gearbox or gears or transmission or ignition or throttle or clutch or gear-change mechanism control systems are not temporarily disconnected.
vi. Both engines and their associated transmission drives must provide motive power to the vehicle driving wheels via a single common 'drive shaft' at all times. Devices that "Split" the drive are prohibited.
vii. The use of "Forced Induction" on a twin engine installation is prohibited.

1 ENGINE / TRANSMISSION

- 1.1 See Class Specification Rules for Engine/Transmission Specification.
Note:
The engine cc must comply with the specified class cubic capacity (cc) limits.
The original engine manufacturer's engine identification numbers must remain and be legible.
Engine/Gearbox Cradle mountings and construction must be fit for purpose. Excessive construction is regarded as ballast/reinforcement and prohibited.
- 1.2 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 and be within the vehicle silhouette.
- 1.3 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 or engines. The use of "Sub-pedals or devices" to independently control the fuel delivery to each engine in twin-engine installations is prohibited. See Rule 10.10.
- 1.4 The use of Nitrous Oxide Injection prohibited.
- 1.5 Inlet and exhaust manifolds are free.
- 1.6 Modification to oil system free.
- 1.7 Final drive CWP/cwp ratio free.
- 1.8 "L.S.D"., "Powerlock", "ATB", "Gripper" "Quaife" or "Locked" differentials are allowed.

- 1.9 Engine Mountings/stabilisers free. However they must be sufficient for size and weight of engine and stress loadings involved.
- 1.10 Drive.
Drive must be effected by either the two front wheels or the two rear wheels as per Class specification.
The use of Four-wheel drive is not permitted in any class.
- 1.11 Class 4 & 5 only. Engine Sealing.
All engines 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 engine cylinder head retaining studs or bolts must have a single 1/16" (1.2mm) diameter hole pre-drilled in each of them.
- Where the method of cylinder head retention is by means of a 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.24).
 - 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.
 - Where cylinder head retaining studs or bolts are inaccessible, then a single 1/16" (1.2mm) diameter hole must be pre-drilled in two accessible parts or areas of the engine.
- 1.12 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.
- 1.13 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.
- 1.14 Class 4 & 5 Only. Capacity Labelling.
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).
- 1.15. A measurement check to verify the engine cc or stated label information can be carried out at any time by a Scrutineer.
The lack of such a label may result in the carrying out of a measurement check to verify the engine cubic capacity (cc).
- 1.16. Where stated label 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

2 CHASSIS/BODY SHELL

- 2.1 All vehicles must be of metal with the bodyshell an integral part of the Chassis.
The original chassis of the original standard production vehicle must be of integral (Monocoque) construction with the original standard production bodyshell. 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.
The vehicle and bodyshell must retain their original shape and silhouette (Including height, width, and length) as per manufacturer's original specifications, including engine compartment bonnet or cover. De-Seaming prohibited.
- Note.
i). 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 construction of a complete steel tube "Rolling" chassis space-frame" and the attachment of a body-shell is permitted.
The bodyshell including all associated panels, roof, bulkhead floorpan and panels must be securely fixed to the chassis space-frame and roll cage. The floor frame and roll cage chassis space-frame must be an integral part of the whole vehicle and bodyshell construction. See Rule 2.38.
- # 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.
Note.
NASA reserves the right via a Scrutineer to reject a fixing 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.
- ii). Composite material panels:
The use of non metal automotive "Composite material" panels attached to a metal bodyshell permitted only on vehicles with such panels fitted by the original vehicle manufacturer as standard production items to that make and model. The use of such panels to replace original standard production metal items on other vehicles is restricted (See rule 2.6 & 2.7).
- iii). Permitted Vehicles – Restricted.
It is Competitors responsibility to contact a scrutineer and or designated official to confirm that the chosen donor vehicle is eligible. i.e. permitted by the NASA Scrutineers Committee before using it.
The following are examples of permitted vehicles:
Vehicles that comply with class specification including: Permitted three and/or five door "Hatchback" saloons, permitted 2 door saloons, permitted Dual Purpose models.

Permitted Dual Purpose Vehicles:

Mini Pick-up.
 Skoda Pick Up.
 VW Golf Pick Up.
 Mini Estate.

iv). Prohibited Vehicles

The following vehicles are not permitted.

Any vehicle that has a chassis that is not integral (Monocoque) with the bodyshell including following examples of non-permitted vehicles:

Station Wagon; Sports Car; 2 door Coupe; 4WD; Non-specified dual purpose models of vehicle.

Vehicles of Class 3 and or built to Class 3 specification.

Also the following specified vehicles.

Triumph Herald / Vitesse models.

Smart Car /Forfour/Roadster (All Models).

Austin A40 Farina. A30. A35.

Morris Minor. Minor 1000.

Ford Popular/Prefect/Anglia 100e/101e/107e.

Land Rover, Range Rover, Discovery, Defender, Freelander.

Jeep, Shogun.

Note.

The lists of permitted and prohibited vehicles are not fixed.

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

2.2 Original Engine compartment bonnet or cover.a). Front Engined Vehicles.

This must be of metal (See Rule 2.1) and retain its original shape and silhouette except for the plan area necessary to provide a Carburettor/air filter cover as described in b).

i). 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.

ii). 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 offence.

b). Rear engined Vehicles and original front engined vehicles converted to mid/rear engine vehicles.

This must be of metal (See Rule 2.1) and retain its original shape and silhouette.

2.3 Bodyshell.

The vehicle bodyshell, panels, wings, front bulkhead and floor pan etc; must be kept in good repair at all times.

The bodyshell must be complete with:

i). Doors.

All doors securely welded closed with a minimum of three 1" (25mm) visible welds on each upright with one 1" (25mm) visible weld on the bottom. (The welding may be carried out such that the welds are on the outside or inside surface of the doors). (See rule 2.31 & 2.32).

ii). Luggage compartment lid.

The luggage compartment lid (Boot/tailgate/hatch back etc) and original engine cover/bonnet fitted. (See rule 2.6, 2.7 & 2.8).

iii). Rear panel.

The rear silhouette must remain as the original vehicle. It is not permitted to remove or "trim" the rear panel and or the rear bodyshell. See Rule 2.27.

iv). See Rule 2.35, 2.36 & 2.37.

v) Apertures formed as a result of the removal of interior "Trim" etc; and/or metal corrosion and/or accident damage must be made good by "Filling in" with steel 20-gauge maximum.

2.4 Front Bulkhead.

The steel front bulkhead must be retained in its original position. A complete steel front bulkhead **must** be fitted. This bulkhead may be the complete original vehicle steel bulkhead or a substitute steel sheet bulkhead (Statutory minimum thickness 20 gauge) or a repaired original bulkhead (Repair material - steel sheet statutory minimum thickness 20 gauge).

If the original front bulkhead is retained it must remain in its original location.

If the front bulkhead is not original, then it must be fitted in the location of the original front bulkhead position at points of connection with bodyshell side, dashboard/front windscreen and floor-pan areas. The Bulkhead including any foot-pedal indent must always be to the rear of an imaginary line connecting the nearside and offside front hub centres and also more than 230mm (9") from the front face of the front engine/front suspension cradle. See Fig. 29, 32, & 33.

2.5 Floorpan.

The steel floorpan must be retained in its original position.

A complete steel floor pan including the transmission/gear linkage/exhaust tunnel from the front bulkhead extending to the back of the rear roll cage feet **must** be fitted. This floorpan may be the complete original vehicle steel floorpan or a substitute steel 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 2.36).

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. See rule 2.37iii.
- ii The original location of the floorpan in the horizontal plane is regarded as a horizontal line from the lower edge of the original manufacturers outer offside sill to outer nearside sill across the vehicle. See rule 2.37iii.
- iii Where the Driver is centrally seated the Transmission/gear linkage/exhaust tunnel may be retained or removed. (See Rule 2.36).

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 4 No. triangles a maximum of 4 holes may be fitted, one of which shall be the inspection hole.

2.6 Synthetic Fibre Panels/Parts.

The following Synthetic Fibre parts only are permitted:

Wheel arch extensions/spats, luggage compartment lids/covers/tailgates. See rule 2.7. Standard production "composite material" panels (See rule 2.1).

2.7 Rear Hatchback/Tailgate.

a). 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 bodyshell hatchback/tailgate aperture. The brace bars must be a minimum size of 20mm (3/4") box or 25mm (1") diameter circular tube of a minimum thickness of 16 gauge (1.62mm).

Note

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

b). For front engined Estate vehicles only.

The rear door(s)/tailgate may be removed. However 2 diagonal steel bracing bars must then be fitted in the remaining original bodyshell hatchback/tailgate aperture. The brace bars must be a minimum size of 20mm (3/4") box or 25mm (1") diameter circular tube of a minimum thickness of 16 gauge (1.62mm).

2.8 Estate rear doors.

For rear/mid-mounted engined vehicles.

The metal Estate rear door(s), luggage compartment lids, must be retained.

2.9 All opening bonnets/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 offence.

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

2.10 Replacement Panels.

All replacement panels must be as original vehicle manufacturer's design and/or permitted by the NASA scrutineers committee. For Bulkhead see Rule 2.4. For Floorpan see Rule 2.5.

2.11 The removal of any vehicle panel including engine cover/bonnet, luggage compartment lid/boot lid and replacement of the same with non-proprietary replacement prefabricated metal panels is prohibited.

2.12 "Skinning" - Restricted.

Skinning of panels is allowed. See Definitions.

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 bodyshell must retain structural integrity. The bodyshell must be securely fixed to any internal floor frame and the roll cage structure.

2.13 Apertures.

i. Apertures remaining following the removal of vehicle light fittings and/or units may be filled in by a metal covering of 20 gauge maximum thickness.

ii. Apertures remaining following the removal of vehicle metal and/or plastic grilles, metal and/or polycarbonate or synthetic fibre bumpers **must** be filled in by a metal covering of 20 gauge maximum thickness. (See Rule 2.3 & 2.49).

iii. See also Rule 2.3.

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.

2.14 Pick-up vehicles only.

i. The rear pick-up bed sides and rear must remain as standard production sizes and dimensions for its whole length. i.e. it must not be reduced and or shortened either in height, length, or width. See Fig 35

ii. The rear of the pick up bed including "tailgate" must remain as its standard production height (Mini Pick-up = 18"). A suitable steel covering of 20 gauge maximum may be substituted for the original rear tailgate only.

iii. If the rear floor has been removed, a metal pick-up bed strengthening bar (Steel equal angle section maximum 25mm x 25mm & thickness 3mm) may be fitted inside/underneath the top lip/surface of the rear pick up bed side panels and

rear tailgate. The strengthening bar may be connected to the rear protection bar at low level at each corner of the rear bodyline.

iv. Engine.

For rear engined vehicles the engine(s), including carburettors/throttle bodies, but excluding air filter(s), should be fully within the silhouette of the vehicle. i.e. When viewed from the side the engine(s) must be within the triangular area bounded by the rear facing brace bars and must be within the pick up bed sides. See Fig. 30.

It is permitted for the carburettors/throttle bodies to slightly protrude above the pick-up bed sides provided a raised protection bar(s) is/are mounted to the chassis to provide protection for the carburettors/throttle bodies. The carburettors/throttle bodies and all protection bar must be within a 150mm maximum height limit. See Fig. 30.

2.15 Pick-up vehicles & Vauxhall Tigra vehicle only.

For Classes 4, 5 & 6 Front engined FWD & 5 & 7 Front engined RWD only.

If the original driver's compartment to rear pick up bed bulkhead has been removed and 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.19). The additional bar must comply with specified measurements as for roll bars.

2.16 Panels must not be reinforced.

2.17 Foam filling of panels is prohibited.

2.18 No protection may be fitted to vehicles other than as specified under PROTECTION.

2.19 No part of the body shell shall have any sharp projecting surfaces, which might cause a hazard, either internally or externally.

2.20 Motifs and mascots are not allowed. Aerofoils and spoilers are only allowed if fitted as standard.

2.21 All exterior and internal trim must be removed. Removal must be carried out in accordance with the original vehicle manufacturer's recommendations.

2.22 All light fittings/units must be removed. Disconnection & removal must be carried out in accordance with the original vehicle manufacturer's recommendations.

2.23 Instruments and instrument cable drives may be retained or removed. Removal must be carried out in accordance with the original vehicle manufacturer's recommendations.

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

2.25 Locks and lock assemblies must be removed. Removal must be carried out in accordance with the original vehicle manufacturer's recommendations.

2.26 Window winder assemblies must be removed. Removal must be carried out in accordance with the original vehicle manufacturer's recommendations.

2.27 Bumpers.

a). Front Bumper:

i). For all vehicles except for Leyland/Rover Mini & Metro, Hillman/Chrysler Imp, Fiat 126, Fiesta Mk 1 & Mk 2, and Suzuki Sc100 bodyshell based types a front bumper must be fitted. (i.e. Leyland/Rover Mini & Metro, Hillman/Chrysler Imp, Fiat 126, Fiesta Mk 1 & Mk 2, and Suzuki Sc100 vehicles front bumpers are not mandatory).

ii). 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.

iii). 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. (See Rule 2.13).

b). Rear Bumper:

Standard production original rear bumpers may be retained or removed. (See Rule 2.13).

Note.

i. If the rear bumper is removed, then the remaining aperture must be filled in as rule 2.13.

ii. For vehicles fitted with synthetic and or automotive plastic rear bumper it is permitted to remove or 'trim' the rear bumper and panel behind the bumper below an imaginary line from the top surface of the nearside rear tyre across the rear of the vehicle to the top surface of the offside rear tyre The tyre top datum point to be taken when the vehicle is standing still upon the ground, not whilst racing. See Fig. 31.

c). Front & Rear Bumper:

i). 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.

ii). 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.

Note.

Failure to ensure that the bumper or replacement metal covering remains fitted during racing is a Black Flag (Race Disqualification) offence.

2.28 Side & Rear Windows.

The covering or infilling of side or rear windows apertures is prohibited.

- 2.29 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 Rule 2.30. and See Fig.6. See Fig 17.
- 2.30 Wheel Arch/Spat size.
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 each 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 Doors
Modification Restricted.
Door Hinges.
Door hinges may be Retained or removed.

Side door tops (window frames).
These may be retained or removed.

Door height – Restricted.
Offside/driver's door.
The offside/driver's door MUST be retained at the standard manufactured height.
- 2.32 Nearside/Passenger's door.
To facilitate entry and exit to the driver's compartment, the front nearside (passenger's) side door may be cut down no more than ¼ (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.
Note.
i. Where a driver is centrally seated both the offside/driver's and nearside/passenger door MUST be retained at the standard manufactured height.
ii. The cutting down of the nearside/passenger door may be permitted subject to driver stature.
NASA reserves the right via an appointed Official and or Scrutineer to permit, reject and or prohibit the cutting down of the nearside/passenger door as being suitable or unsuitable for the driver stature racing at any time
- 2.33 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 offside door and also at the cut down top of the nearside door between the driver's compartment front and rear door pillars only.
- 2.34 Vehicle Weight
i. Vehicle Weight.
The total weight of the complete vehicle excluding driver at any time is free.
Note
NASA reserve the right to amend and or revise the minimum weight and or weight distribution percentages at any time.
ii. Ballast – Restricted. See Section 19 Ballast.
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 additional ballast and thus prohibited. Their use is not recommended.
- 2.35 Where the original floor is retained in its entirety (See Fig.7) a suspension mounting cross member may be attached to the vehicle via the original rear sub frame mounts, 10 BSG x 1½" box section or permitted suitable equivalent. (See Fig.8).
- 2.36 Cross Member & Cross Brace.
If any part of the vehicle floor, including any transmission/gear linkage/exhaust tunnel is removed or repaired or replaced and/or substituted with steel sheet (statutory minimum thickness 20 gauge) then, items a. and b. and c. and d. must be fitted.
Item b. must also then be incorporated within the roll cage structure i.e. connected to the rear brace bars and rear roll cage hoop uprights (See Fig. 20a). Item b. may also be used as a suspension mounting point.
a. A metal cross member fixed to the floorpan and body at low-level, minimum size 38mm x 38mm box or circular section steel tube with 2.5mm wall thickness. (See Rule 11 & Fig 7). This cross member may also be used as a suspension mounting point.
b. 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, 32mm(1¼") circular section tube – with specified wall thickness as Roll cage Rule 11.
End plates 75mm x 75mm x 3mm (3" x 3" x ⅛") must be welded to both the cross member and cross brace and be bolted (minimum 2 No. 10mm or ⅝" bolts) through the body skin to a plate of equivalent size on the outside (See Fig 9).

- c. Floor Frame as described in rule 2.37.
- d. Where the bodyshell construction makes the use of end plates impractical, then the cross brace/cross member must be fitted in a permanent manner. i.e. CROSS BRACE fully welded or bolted to vehicle by means of steel sandwich plates through the vehicle side. CROSS MEMBER BRACE fully welded or bolted to vehicle by means of steel sandwich plates through the vehicle floor /side.
- e. 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 prescribed in c. above and rule 2.37.

2.37 Floorpan Cross Member & Floor Frame.

- a). The cross member described in 2.36a above must be extended forwards up to the front bulkhead, to form a steel strengthening "floor frame" with bars as specified in roll cage rules 16 & 17. (See Fig. 7).
- b). Steel plates (minimum surface area 150 sq mm (6 sq")) 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. The floor frame if fitted may be directly connected to the front sub-frame or any framework supporting the engine, gearbox or front suspension.
- c). The floor frame if fitted may be directly connected / attached to the front sub-frame or any framework supporting the engine, gearbox or front and/or rear suspension. The method of connection/attachment must be secure and fit for purpose.

Note.

- i). The construction of a complete steel tube "Rolling chassis space-frame" and the secure attachment of a body-shell is permitted.
The floor frame and roll cage and chassis space frame must be an integral part of the whole vehicle and bodyshell construction. See Fig 1i.

- ii). For a non-original replacement panel floorpan used in conjunction with a floor frame, the floorpan must be constructed of a single sheet steel so as to comply with Rule 2.5 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 1h.

iii) Sill Location – Restricted.

The depth of any sill fitted with a complete replacement steel floorpan must be:

- (a). A minimum of 50mm (2") from the base or bottom of the original vehicles' doors.

- # (b). For certain specified vehicles only a minimum of 20mm (3/4") from the base or bottom of the original vehicles' doors. N.B. Applications for consideration and or permission for other non-listed vehicles must be made to NASA before use as a donor vehicle.

Specified vehicle: VW Polo, year 2002 onwards.

Note – All Vehicles.

Where the original floor is retained and or repaired, then the sill must remain in its standard production location.

- iv). The creation of a floor-frame and floorpan by the infilling of voids between the floor-frame construction tube/bars with welded or bolted or riveted infill sheets or panels is prohibited.

2.38 Wheelbase.

Wheelbase free. However, the wheel must remain within the vehicle silhouette, when viewed from the side.

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

2.39 For Classes 4, 5 & 6 only.

Front engined, FWD Bodyshells only - Bulkheads.

The upper front bulkhead area directly behind the main vehicle instrument panel may be modified to accommodate the battery, carburettor and air filter, fuel tank, and engine ancillaries.

However the driver's compartment must be protected from the engine compartment by a fire shield. and or bulkhead sufficient to act as such. i.e. voids formed for the accommodation of above items must be made good and filled in with metal.. This bulkhead/engine fire shield may be the complete replacement original vehicle steel bulkhead or a substitute steel sheet bulkhead (Statutory minimum thickness 20 gauge) or a repaired original bulkhead (Repair material - steel sheet statutory minimum thickness 20 gauge) or a substitute engine fire shield as required in 16 - SAFETY SHIELDS.

The original rear passenger compartment to luggage compartment bulkhead may be retained, modified and or removed.

2.40 For Classes 5, 6 & 7 only.

If engine/transmission is to be located other than as originally positioned by the original vehicle manufacturer, then:

a). Front engine installation:

The original front engine compartment or front luggage compartment bulkhead may have local slight modification as necessary to accommodate the fitting of the engine transmission. However, any aperture formed in the front bulkhead must be filed in with metal to act as a safety shield as required in 16 - SAFETY SHIELD.

b). Mid/Rear engine installation:

The original rear engine compartment or luggage compartment bulkhead may be retained, modified and or removed.

This bulkhead/engine fire shield may be the complete replacement original vehicle steel bulkhead or a substitute steel sheet bulkhead (Statutory minimum thickness 20 gauge) or a repaired original bulkhead (Repair material - steel sheet statutory minimum thickness 20 gauge) or a substitute engine fire shield as required in 16 - SAFETY SHIELDS.

2.41 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. It is NOT permitted to cut or form additional air cooling or air inlet/exit holes to supplement the existing front or other grilles etc; in any panel/area/wheel arch 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.

2.42 Scuttle.

The original donor vehicle engine compartment front scuttle and or front 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

2.43 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).

2.44 Air Bags

The use of Safety Air Bag(s) are 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.

2.45 Towing Eye.

The fitting of a 'Towing Eye' at the front 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.

2.46 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 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, or Carbon Fibre.

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

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

2.47 Bodyshell Modifications – Front areas.

The original vehicle front engine compartment or front luggage compartment or front fitch panels, inner wings and chassis/floorpan forward of the front bulkhead, may be removed either:

- a) To facilitate the fitting of the engine and transmission.
- b) To facilitate the fitting of a suspension and steering system mounting support cradle.
- c) To facilitate the fitting of non-original size of tyre & wheel assembly.
- d) To facilitate a combination of a). & b).

Where the above is carried out and other components removed leaving apertures then, there must also be a metal covering maximum thickness 0.91mm (20 gauge), fitted as the original vehicle silhouette, in place of any removed non-metal body components. See also Rules 2.10, 2.11, 2.19.

The following also applies:

i). 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.

ii). 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 24.

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.

iii). Suspension Cradle - RWD.

The suspension 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. It must not protrude further forward than the front surface of the front tyres. The suspension cradle construction may include 20mm 'cross bars'. See Fig 24.

iv). Suspension/Engine Cradle - FWD.

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 dependant upon its height above ground level.

Any component of the cradle at a height of 350mm or greater above ground level must not protrude beyond the furthest forward of either the front face of the engine block or the front surface of the front tyres.

Any component of the cradle at a height of 349mm or less above ground level may protrude up to a point 20mm rearward of the front panel.

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

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 25mm x 25mm (1" x 1") made 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 hand.

3.4 Windscreen Pespex.

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 /Meshed Net.

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 1.14).

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. 34.

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(s) 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. 34.

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.
NASA reserves the right via an appointed Official and or Scrutineer to request that a competitor's vehicle undergoes a steering capability test.

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 Column

Steering column type and location free.

The steering column if fitted other than by the 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 work constructed of a maximum of 25mm x 25mm box or 25mm circular tubing fixed to the body shell in the dashboard area.

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

4.4 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.

- 4.5 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.).

4.6 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.

- 4.7 All-wheel and/or rear wheel steering prohibited.

5 SAFETY HARNESS

- 5.1 All vehicles must be fitted with a full harness seat belt to BSI standards (adjustable to securely fit 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 are permitted. (Inertia harness seat belt prohibited).

Note.

The driver's seat must have the correct "seat harness holes" to enable the choice of harness to be correctly fitted.

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 is not contravened. (See Figs 6 & 7 & 10c.).

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 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. Safety harness fixing & mounting points, due to the potential fire risk must not be within the vehicle engine compartment. No part of the harness shall be adjacent to or pass alongside or above the engine or carburetors/fuel injection system or exhaust system.
 - iv. Attachment bolts for seat belts/safety harness must be minimum 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. 36.).

6 SEAT

6.1 Seat – 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.

- # Seat fixing bolt size 8mm HT or greater.

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.

- 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.

Note.

If any part of the driver's seat encroaches into the front passenger's seat area i.e. crosses the centreline of the vehicle, then it is deemed as being "centrally located" and therefore 2 side bars must be fitted between both the nearside front and rear roll cage uprights and offside front and rear roll cage uprights.

- 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. 10 & 11).

- # 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 of an appropriate size and 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. See Fig. 10.

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.

- 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 "Autograss racing environment".

7 FIRE EXTINGUISHER

- 7.1 All competitors must be in possession of a fire extinguisher which is in good working order.
- a) 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.
- b) 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") brush 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.12).
- 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. 12).

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.15).

Vehicle Roof.

A minimum size of 150mm (6") in height, with a minimum 12mm (1/2") width. (See Fig.15).

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. 16. 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 Ignition Switch.
A single ignition switch of proprietary manufacture must be fitted to control the ignition system to the engine or engines. The use of "Sub-ignition switches" to independently control the ignition system to each engine in twin-engine installations is prohibited. The ignition switch must be within reach of the vehicle driver when the driver is seated in the vehicle 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 Isolator Switch.
A single electrical system & battery isolation switch of proprietary manufacture must be fitted in either the Positive (+) or Negative (-) earth circuit.
On operation of the battery isolator switch, the engine and electrical system must stop.
- 9.4 Isolator Location – Restricted.
The Electrical & 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. 9).

9.5 Electrical Battery.

Number, type and capacity of electrical battery free. The use of 2 x 12v batteries for 24v starting permitted. The fitting of multiple or extra large and or commercial and or agricultural vehicle batteries and/or battery containers may be construed as ballast.

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 metal wall thickness = 3mm.

The enclosure box/container must be firmly secured to the vehicle.

a). Class 4, 5, & 6 FWD.

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 either the engine block or gearbox casing including clutch housing.

b). Class 5, 7 RWD.

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 front of the nearside front tyre to the front of the offside front tyre.

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 and or engines when operated.

9.8 Ignition system, ignition leads and spark plugs free.

9.9 Instrumentation and Gauges.

Instrumentation and gauges free. However they must be firmly secured to the vehicle.

The use of an engine "Rev counter"/"Tachometer" and or "Speedometer" and or "Gear shift light" system(s) and their associated drive mechanisms and or sensors permitted.

9.10 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 petrol 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 manufacturers recommendations and instructions.

10.2 The use of Nitrous Oxide (N₂O) injection is prohibited.

10.3 Fuel pump and fuel regulator type and capacity free. See Rule 9.2.

10.4 Fuel Tank type – Restricted.

The original vehicle manufacturers 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 including gasket or "O" ring seal 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 are prohibited.

For a "Fuel cell" the original fuel cell manufacturers 'fixing kit' only must be used and the "Fuel cell" must be secure.

10.5 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".

10.6 Fuel Tank Location – Restricted.

a). 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 as indicated in i). & ii). below.

i). Class 4, 5, & 6 FWD.

The fuel tank or "Fuel cell" 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 either the engine block or gearbox casing including clutch housing.

- ii). Class 5, & 7 RWD.
The fuel tank or "Fuel cell" must not be fitted anywhere on the vehicle at a point that is forward of an imaginary line, across the vehicle from the front of the nearside front tyre to the front of the offside front tyre.
 - b). 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 panel etc; deformation in the event of a roll over.
 - c). 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.
- 10.7 There must be a metal fire shield between the driver and all fuel related components and the fuel tank or "Fuel cell" including filler cap.
- 10.8 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.
- 10.9 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.
- 10.10 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.

11 COOLING SYSTEMS

- 11.1 Radiator - Restricted.
Original standard production 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. An 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. See Section 16.
- 11.4 Oil System.
Modification to oil system free.
Modifications to the oil sump and "oil pick up pipe" may be carried out to prevent oil surge.
"Dry sump", "Accusump" and or similar oil systems are permitted. systems permitted.
Oil coolers are permitted.
- # 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 Tank location – Restricted
Oil tanks (including catch tank / dry sump tank) must be shielded from the driver in case of spillage in an accident. The oil tanks must not be fitted under the vehicle wings.
The following also applies:
- a) Class 4,5, & 6 FWD
The oil tanks 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 either the engine block or gearbox casing including clutch housing.
 - b) Class 5 & 7 RWD
The oil tanks must not be fitted anywhere on the vehicle at a point that is forward of an imaginary line, across the vehicle from the centre of the nearside front tyre to the centre of the offside front tyre.
- 11.7 Water pipes must be of metal or proprietary flexible hose. Type free.
Type of hose clamps free, however they must be fit for purpose.

- 11.8 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.
- 11.9 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. 23.
- 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 systems 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.

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 wither "Button head" or "Countersunk head" bolts only. Hexagon head "Beadlock rim" fixing bolts prohibited. The fixings must not protrude beyond the 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, Liam Evans Tyres & Kinsley 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. Tyres 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 systems 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 single engine and/or twin 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. See Fig. 26.

Note.

- i. The outlet pipe or pipes must point either horizontal or downward at an angle of not more than 30° (degrees) from the horizontal.
- ii. For Class 5 & 7 rear engined 'pick up' type vehicles.
Where the exhaust outlet or outlets is/are at a height above the side of the rear pick up bed, then the outlet or outlets must point downward, at an angle of not more than 30° (degrees) from the horizontal.

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

16 SAFETY SHIELDS

16.1 Engine Fire Shield.

- a). All vehicles must be fitted with a securely fitted (Use of wire, plastic tie straps or similar prohibited) 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.
- b). For a front engined vehicle.
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. 29.
- c). For a rear engined vehicle.
If an imaginary person was to occupy the driver's seat and rotate an imaginary 180 degrees, then no part of the engine on should be visible.
The shield must be installed from the vehicle floorpan to a height equal to the top of surface of the engine or engines' "Rocker or cam cover", then rising and tapering up to a point on the roll cage rear hoop above the centre of the driver's seat.
The shield size must be extended as necessary to protect the driver from items as described in a). See Fig 26.

16.2 Where prop-shafts, gearboxes and bell-housings are mounted within the drivers compartment area and are not contained in the original vehicle's engine compartment to drivers compartment bulkhead and/or transmission tunnel(s), they must be covered with metal (Steel: 16 gauge (1.62mm) Non steel ¼"(3.2mm) minimum thickness) sufficient to act as a safety shield.

16.3 All transmission/drive chains must be suitably encased by a substantial material, minimum 2mm steel sheet, to contain the chain in the event of breakage.

16.4 Where transverse mounted 'single' or 'twin' engine installation is used, then the following metal fire & safety shields must be securely fitted.

- i. For front and rear engined vehicles - Flywheel shield.
Fitted to interrupt an imaginary line between the vehicle driver and engine or engines flywheel.
The shield to be no more than 100mm from the flywheel bell-housing/enclosure
The shield to be constructed from steel plate, minimum 6mm (¼in), thickness 460mm (18ins) high, 100mm (4ins) width.
- ii For rear engined vehicles.
From the vehicle floorpan to a height equal to the top of surface of the engine or engines 'rocker or cam cover' and from the roll cage upright adjacent to the driver' seat to a point beyond the width of the driver's seat so as to completely shield the driver from the engine or engines. (See Fig. 27.)
The shield to be constructed from either: Steel sheet minimum 2mm thickness or Aluminium sheet minimum 3mm thickness.

16.5 Sump Guard – Restricted.

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

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

Note:

For Rear engines vehicles: there shall be no vertical surface extending above the base of the vehicle chassis or the rear engine/gearbox cradle. The sump guard may be extended to provide gearbox protection.

16.6 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.

16.7 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 SUSPENSION17.1 Suspension Type – restricted.

The original donor vehicle suspension system may be retained, modified or replaced.

Any form of passive suspension may be used. (See Fig.15 & 16)

Active /Adaptive/ semi-Active Suspension prohibited.

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.

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.

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.

17.4 Strut Brace.

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

17.5 Shock absorber, springs or coil/shock absorber assembly dust/dirt covers of proprietary manufacture only permitted.

17.6 Wheel camber, castor and alignment (toe in/out) is free. (See Section 4 – Steering).

18 PROTECTION18.1 Front and/or Side Protection/Reinforcement.

No internal or external protection or reinforcement is allowed on the front or side of vehicles other than Distributor protection as described in Rule 18.4.

18.2 Rear Protection

Restricted to one 1" x 1" (25mm x 25mm) box 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.18).

Note.

i). 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. 18).

ii). If the boot floor remains in situ the support bars, (If fitted) must be connected to the rear boot floor only.

iii). If the boot floor has been removed the support bars, (If fitted) must be connected to either: The vehicle floorpan or upper cross brace bar at the junction of the rear hoop bars and lower connecting bar to roll cage feet or lower cross member of the mid/rear engine frame/cradle.

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

v). Protection bar(s) and support bars must not be connected to the roll cage uprights.

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

18.3 For Rear engined vehicles local rear gearbox and rear engine ancillary protection is permitted as an addition to the 'Engine/Gearbox cradle' and must comply with the sizes indicated in Rule 18.2. Also 18.2.v., 18.2.vi. Engine/Gearbox Cradle and protection bar construction must be fit for purpose. Excessive construction is regarded as ballast/reinforcement and prohibited.

18.4 Distributor Protection

Front transverse engined vehicles only. Restricted to local distributor area. One 1" x 1" (25mm x 25mm) box section maximum, top bolted to engine, bottom to sub-frame/lower chassis/engine cradle member.

19 BALLAST

19.1 The use of specified "Ballast" is permitted.

Ballast must be as specified. Other forms of "Ballast" are prohibited.

Ballast Location – Restricted.

Ballast must be located at the non-drive part of the vehicle.

For a RWD vehicle it must be fitted adjacent to the vehicle front between the foot pedals and most forward part of suspension cradle.

For a FWD vehicle it must be fitted adjacent to the vehicle rear between the rear floor bar and most rearward part of suspension cradle.

19.2 Ballast Construction.

Ballast shall be constructed of steel and be in "Plate" form to the following dimensions.

Overall size limit maximum = 200mm L x 150mm W x 75mm Total Thickness.

Ballast may be removable and or adjustable.

Adjustment shall be by means of the use of individual steel plates.

The maximum thickness of any individual plate is 10mm thickness. i.e. the number of individual ballast plates is free subject to the maximum total overall thickness of 75mm.

Maximum weight of ballast = 15 Kg.

19.3 Ballast Fixing/Mounting.

The ballast must be securely fixed to a ballast mounting base plate and be held down by a ballast top plate.

The ballast mounting base plate and ballast top plate must be constructed of steel and be 200mm L x 150mm W with a minimum thickness of 10mm and a maximum of 14mm thickness.

The ballast mounting plate must be fixed (Bolted/welded) to the vehicle chassis. It is not permitted to be fixed to vehicle floor or panelling/bodyshell.

If bolted then a minimum of 4 No 10mm Diameter HTS (minimum grade 8.8) must be used. If welded there shall be a minimum of 4 x 25mm stitch welds.

The individual ballast plates must be fixed to the mounting base plate and held in place by a ballast top plate by means of a minimum of 2 No. 12mm Diameter HTS (minimum grade 8.8) bolts & full nuts (Type - Plain with spring washer or Nyloc). A minimum of 10mm thread must protrude from the top of the Ballast top plate at all times. See Fig. 28.

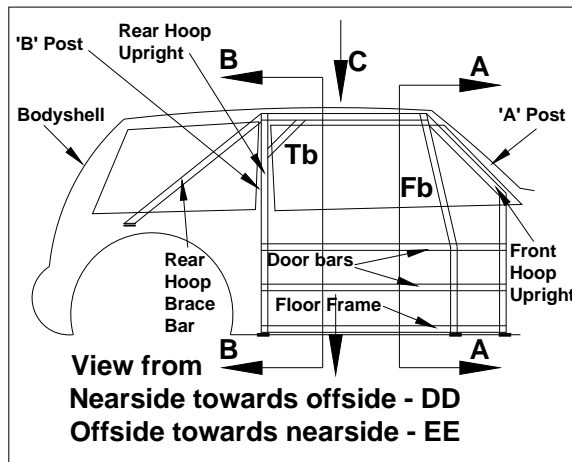
FIGURES & DRAWINGS –.

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

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

Bar Tb is mandatory.

Bar Fb is optional



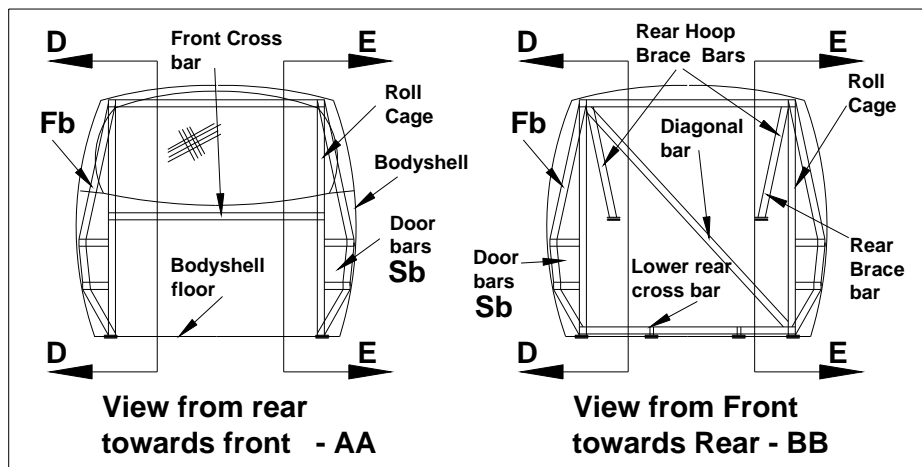
**ORIGINAL VEHICLE FLOOR INTACT
(COMPLETE WITHOUT REPAIRS AND NOT
REPLACED WITH STEEL SHEET).**

gii

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

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

Bar Fb is optional

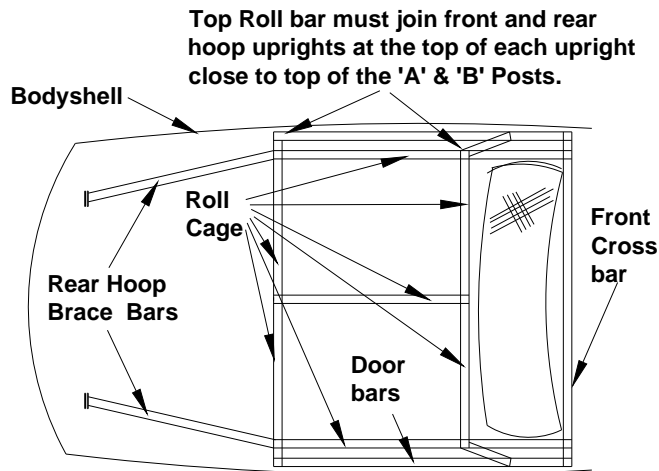


**ORIGINAL VEHICLE FLOOR INTACT
(COMPLETE WITHOUT REPAIRS AND NOT
REPLACED WITH STEEL SHEET).**

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

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

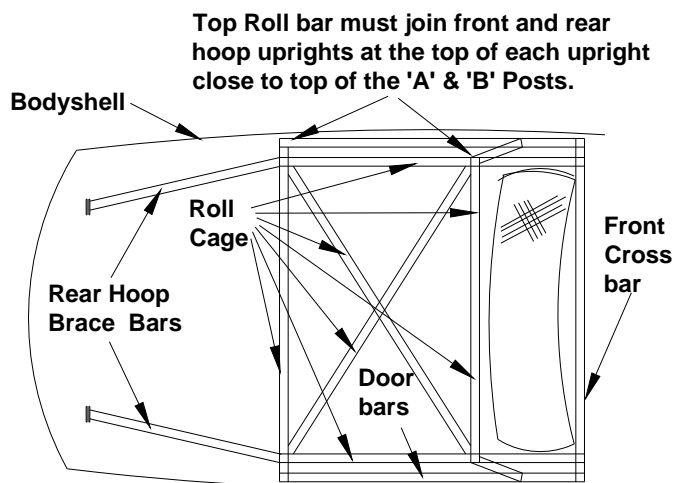


View from above - C

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

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

OR

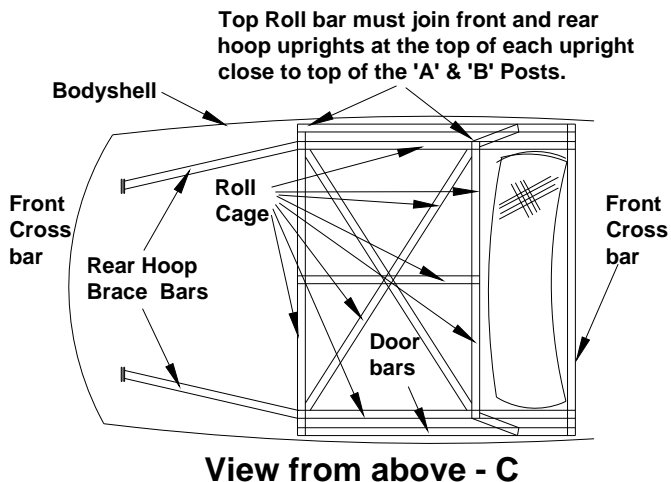


View from above - C

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

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

OR



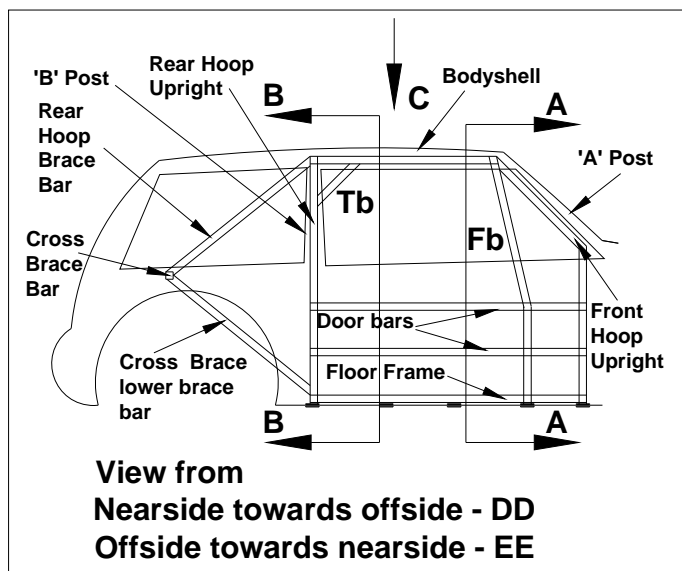
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Figure 1c i. Roll Cage - Original Floor not Intact – Side Elevation

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

Bar Tb is mandatory.

Bar Fb is optional.

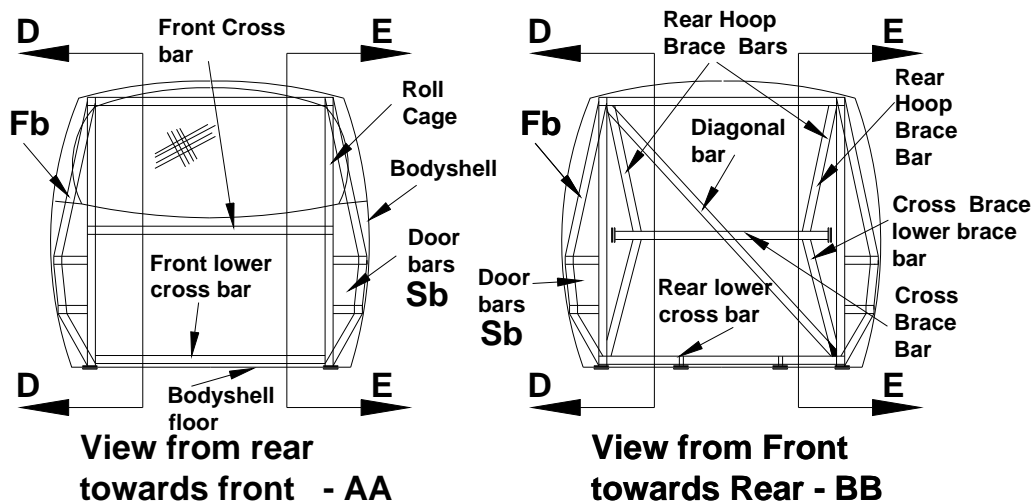


**ORIGINAL VEHICLE FLOOR NOT INTACT
(PART REMOVED AND OR HAS HAD
REPAIRS AND OR REPLACED WITH STEEL
SHEET).**

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Figure 1c ii. Roll Cage - Original Floor not Intact Front & Rear View

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



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

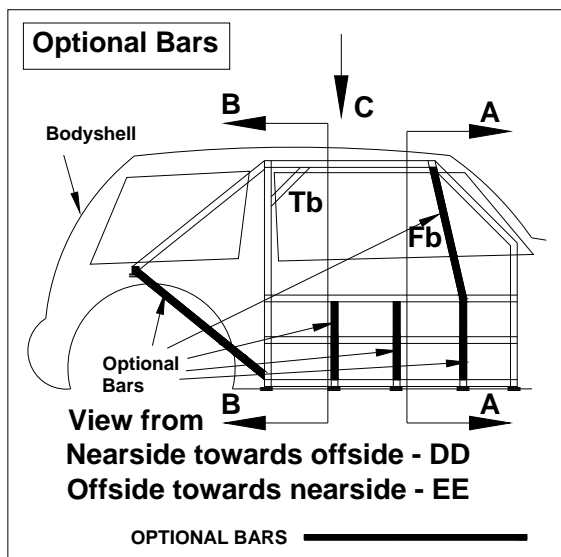
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Figure 1d Roll Cage - Optional Bars – Side Elevation

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

Bar Tb is mandatory.

Bar Fb is optional



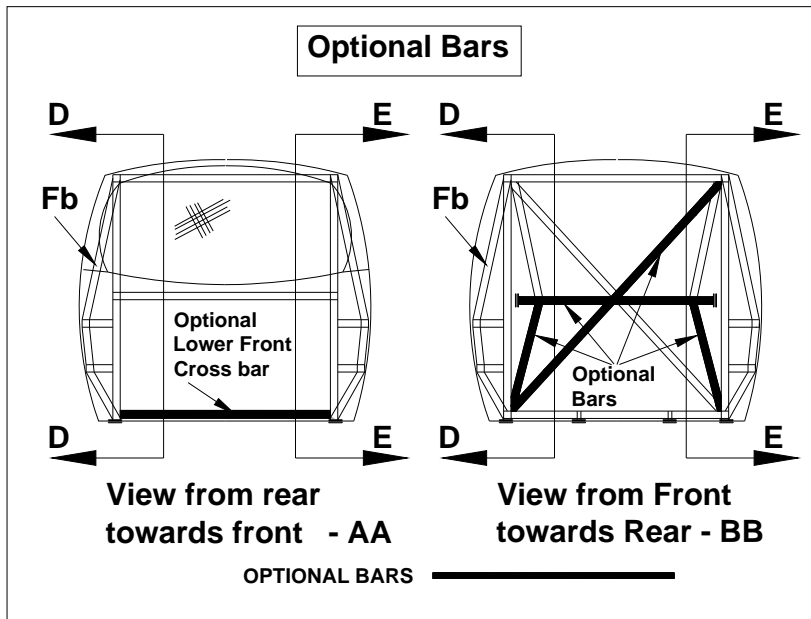
NOTE.
Some optional bars become mandatory if original vehicle floor not intact - See Fig 1b.

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Figure 1e Roll Cage - Optional Bars – Front & Rear View

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

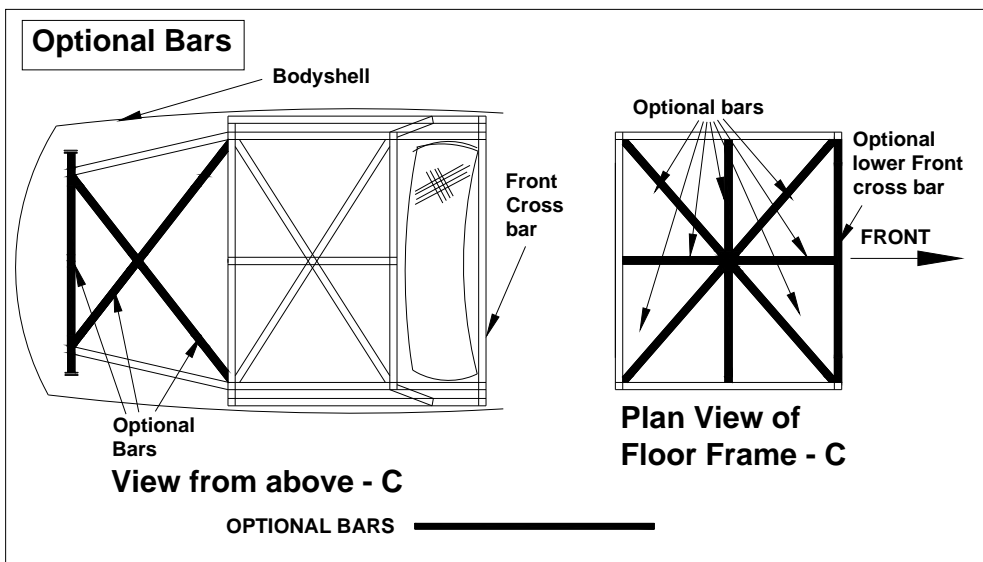
Bar Fb is optional



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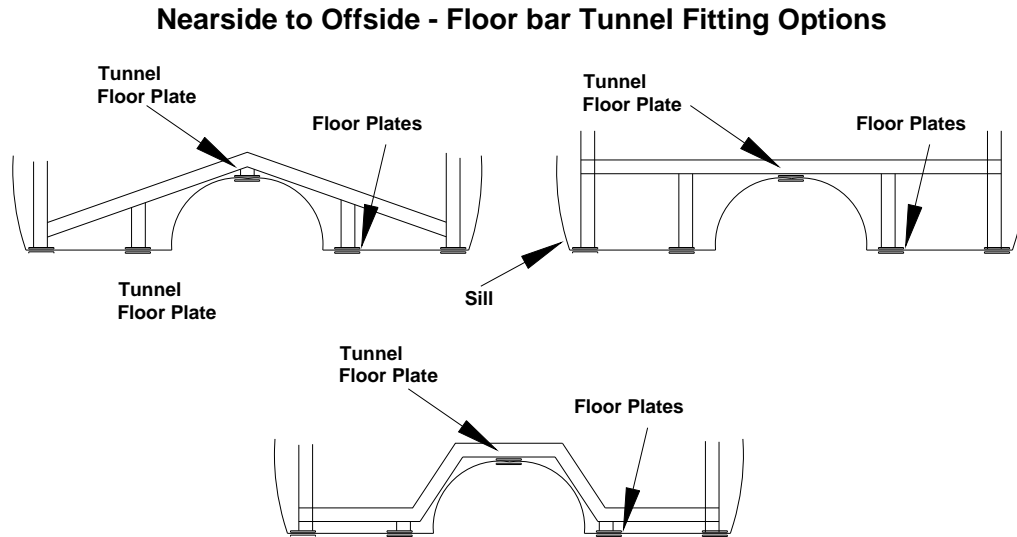
Figure 1f Roll Cage - Optional Bars – Plan View

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



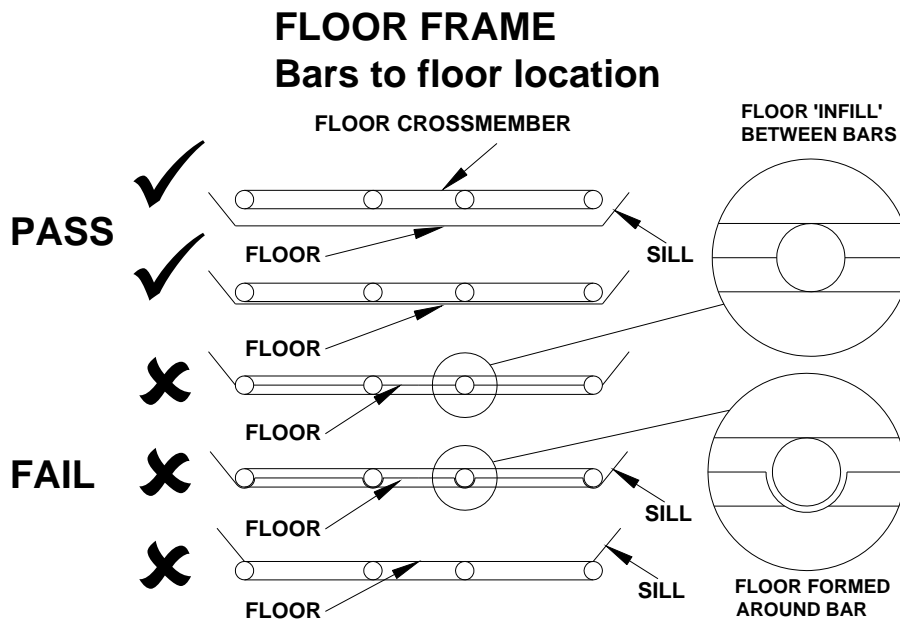
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Figure 1g – Floor Bar – Tunnel Options
 All Bars - Minimum sizes and specified wall thickness and as Rule 11 & 16.



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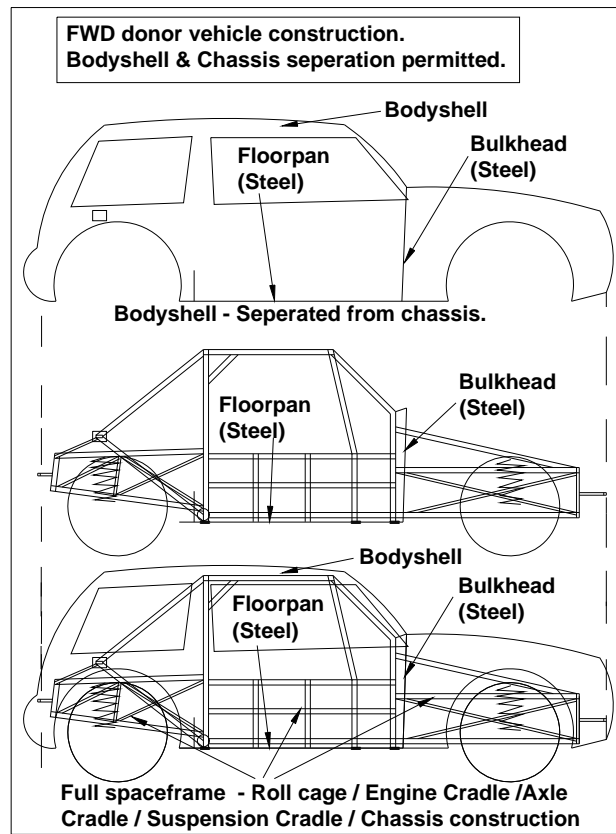
Figure 1h – Floor Frame Location



Floor crossmember must be above floor.

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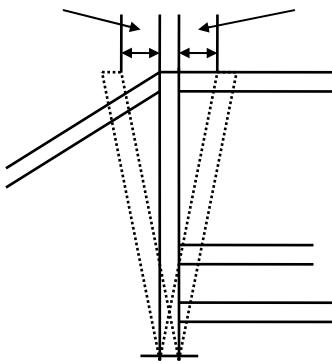
Figure 1i



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FIGURE 2

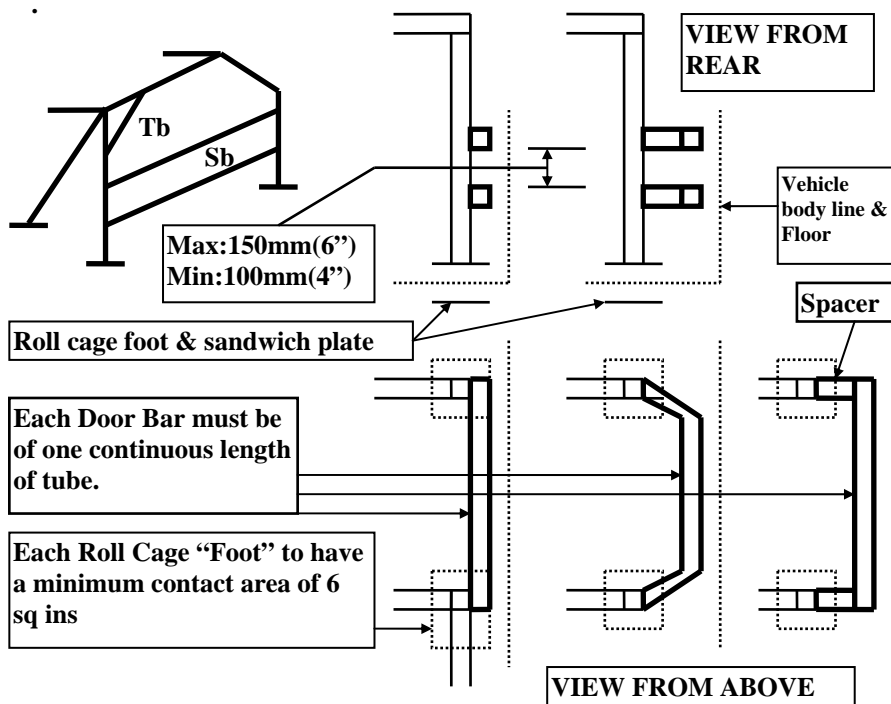
**ROLL CAGE REAR UPRIGHT:
MAXIMUM PERMITTED
DEVIATION FROM VERTICAL.
- 50mm(2") + 50mm(2")**



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

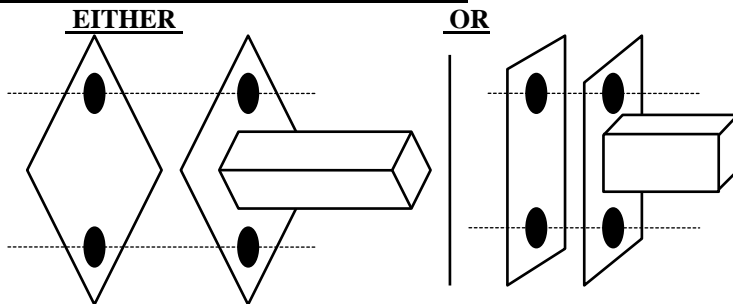
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FIGURE 3 SIDE BAR & TRIANGULATION BAR POSITIONS ON SALOONS



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FIGURE 4a ROLL BAR FOOT
MINIMUM OF 2 BOLTS -- M10 (3/8")



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FIGURE 4b HOLLOW CHASSIS ATTACHMENTS

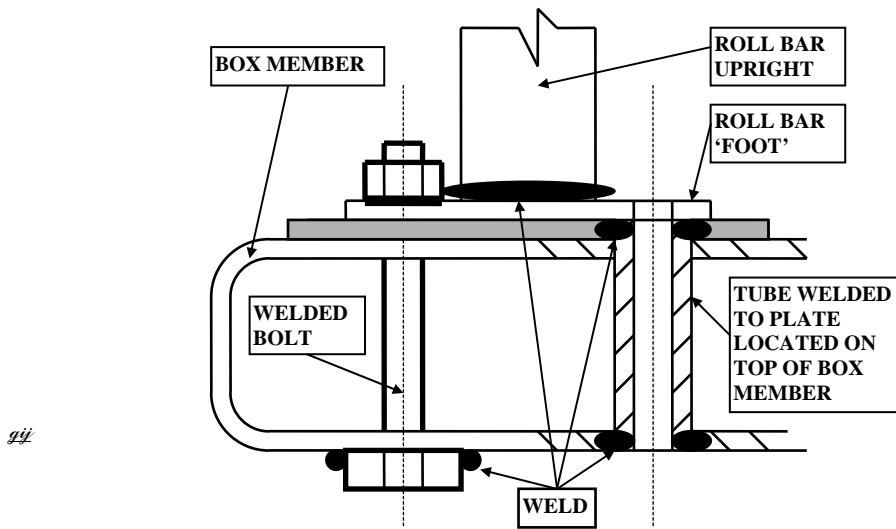


FIGURE 4c INNER CILL FIXING

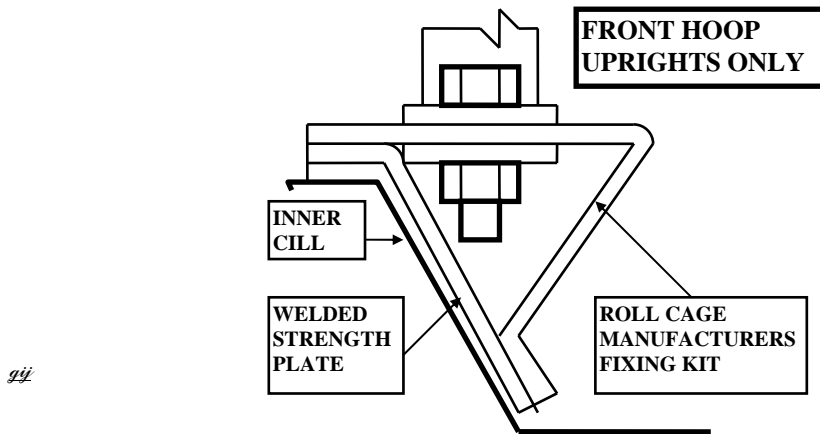
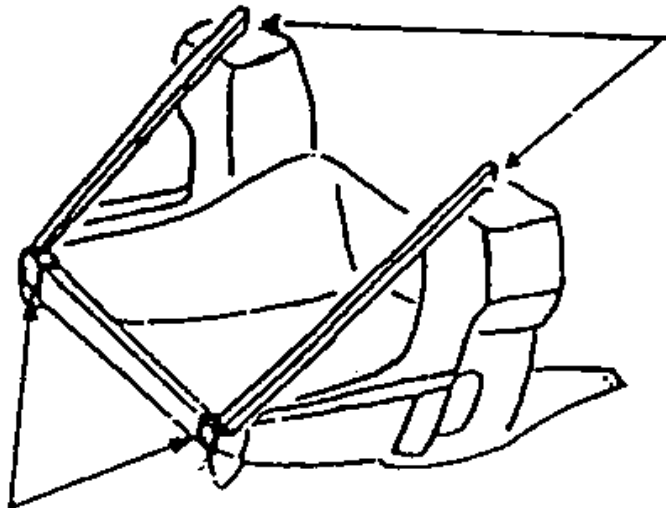


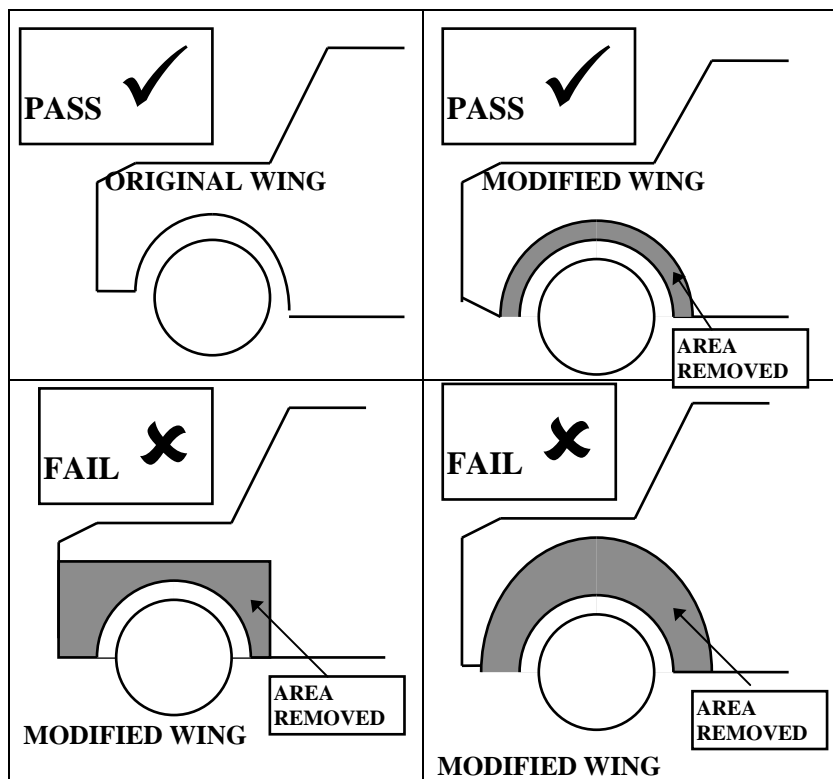
FIGURE 5 INNER FLITCH PANEL REMOVED

25mm (1") MINIMUM BOX/CIRC SECTION STEEL TUBE.
 BOLTED / WELDED FROM FRONT OF SUBFRAME TO THE FRONT BULKHEAD



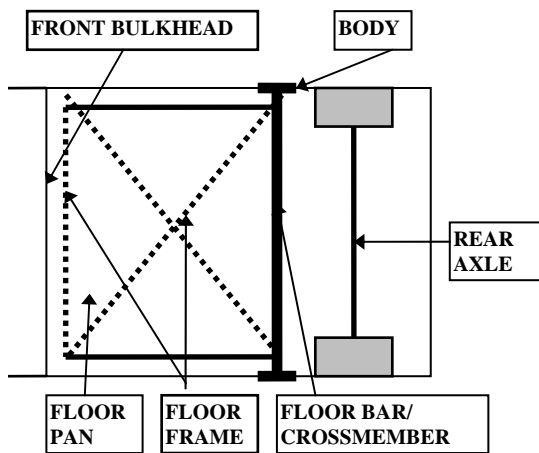
25mm (1") ANGLE SUPPORT

FIGURE 6 VEHICLE WING WHEEL ARCH MODIFICATIONS.



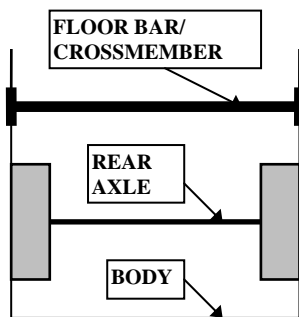
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FIGURE 7 FLOOR BARS.



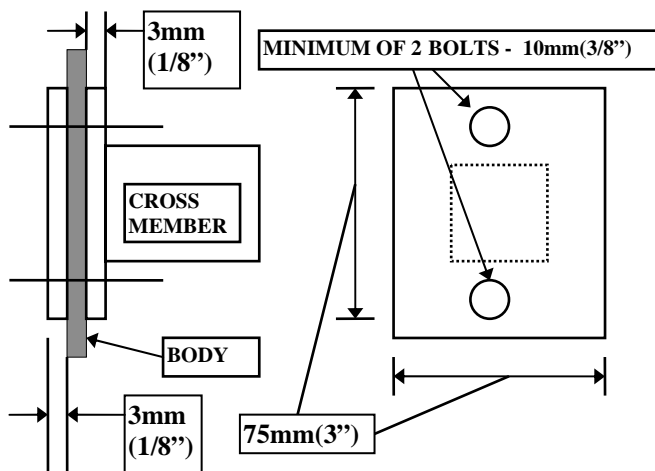
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FIGURE 8 FLOOR CROSS BAR.



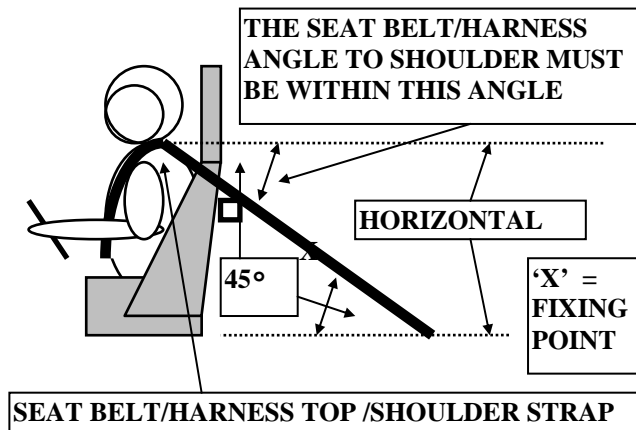
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FIGURE 9 CROSS BRACE/MEMBER END PLATES



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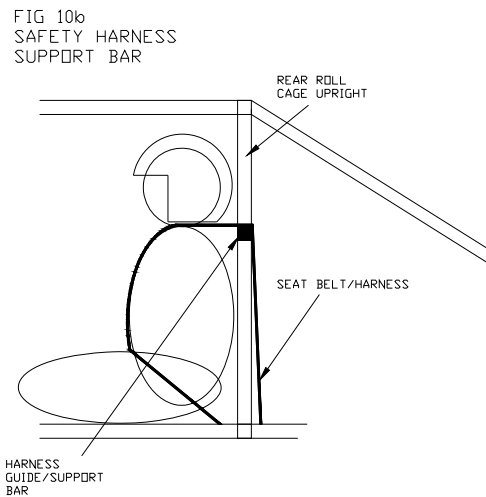
FIGURE 10a SEAT BELT HARNESS TOP STRAP



Seat Support Bar 

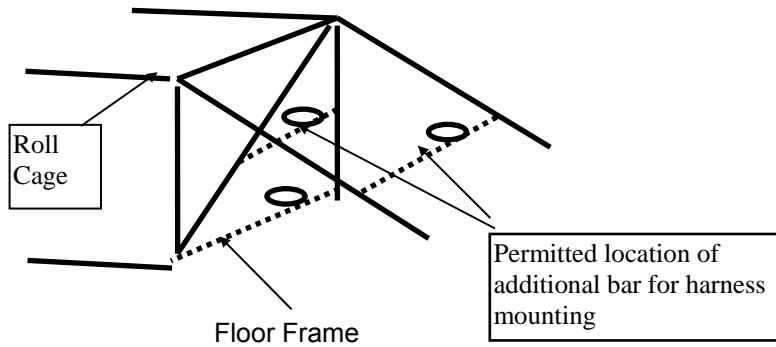
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FIGURE 10b SEAT BELT HARNESS SUPPORT BAR



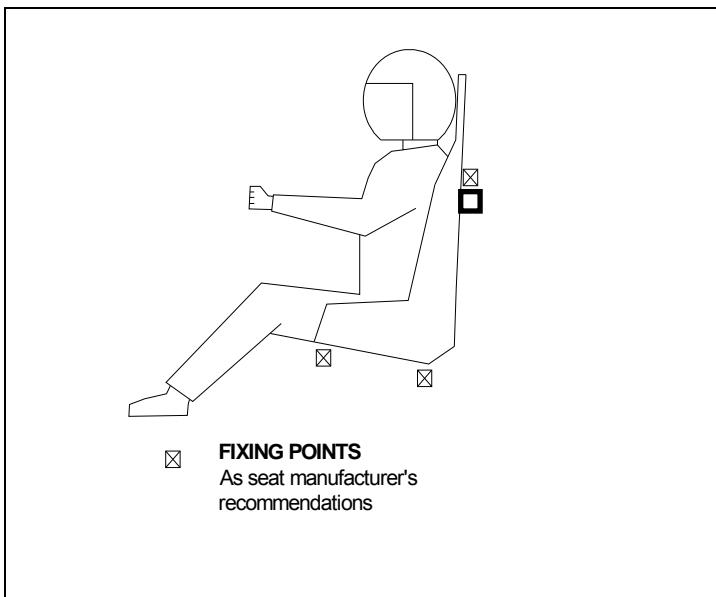
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FIGURE 10c HARNESS STEEL EYE BOLT MOUNTING PLATE
ROLL BAR FIXINGS



11

FIGURE 11 DRIVER'S SEAT FIXING POINTS



Seat Support Bar □
Connected direct to rear roll cage upright.
Minimum Box Section = 25 mm x 25 mm x 2.5mm Wall Thickness
Minimum Circular Section = 25mm x 2.5mm Wall Thickness.
Seat Fixing Bolts = 8mm HT or greater.

11

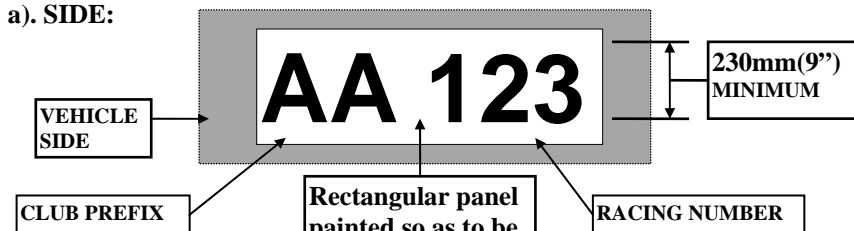
FIGURE 12 VEHICLE IDENTIFICATION

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

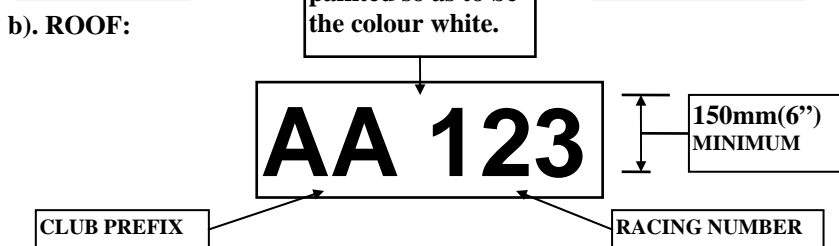
Example: ANY AUTOGRASS CLUB -- Vehicle No - 123

NASA recognised Club & League prefix & numbers = AA 123

a). SIDE:



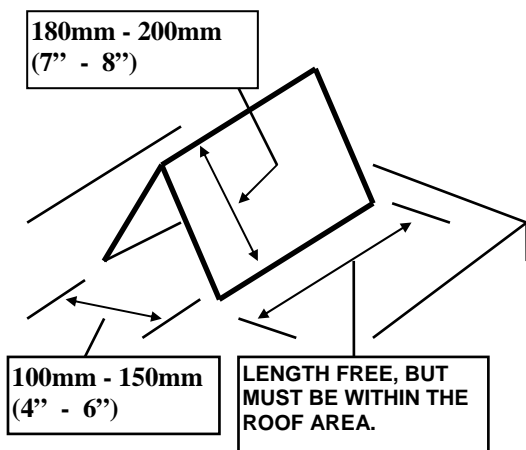
b). ROOF:



The Identification (Club letters & Racing number) must match that stated in the competitor's NASA Licence.
 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.

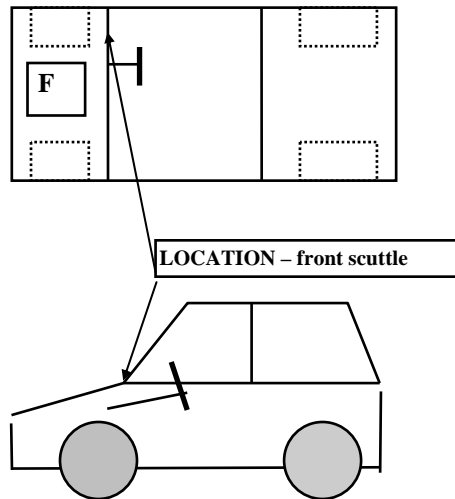
gii

FIGURE 13 METAL ROOF NUMBER PANEL



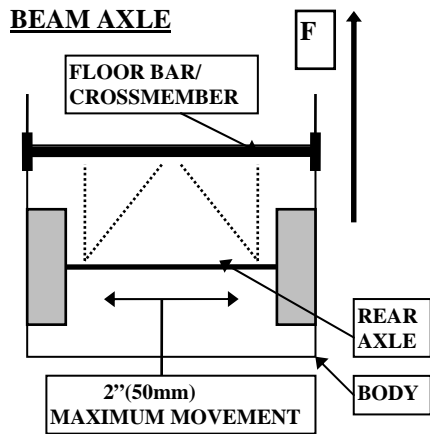
gii

FIGURE 14 LOCATION OF BATTERY CUT OFF SWITCH



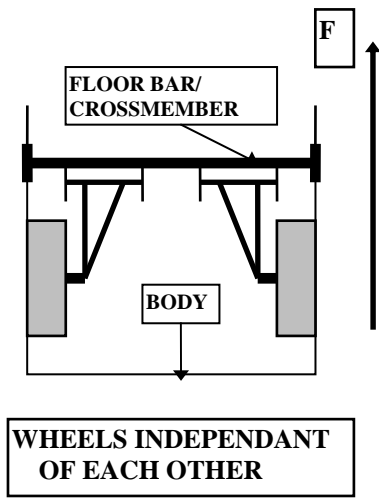
gii

FIGURE 15 BEAM AXLE



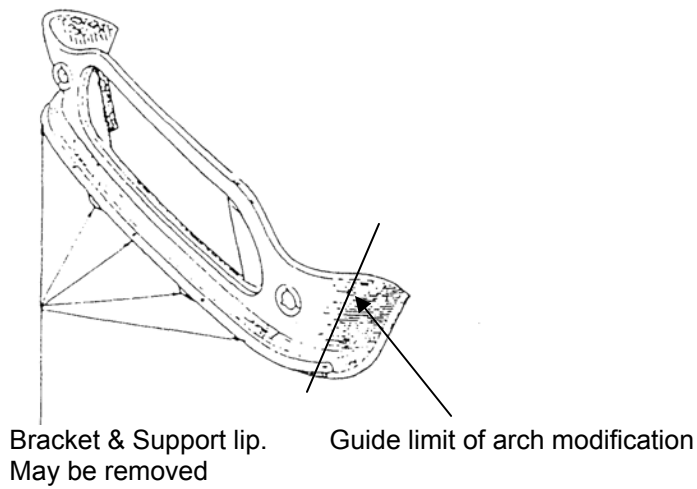
gii

FIGURE 16 TRAILING ARMS



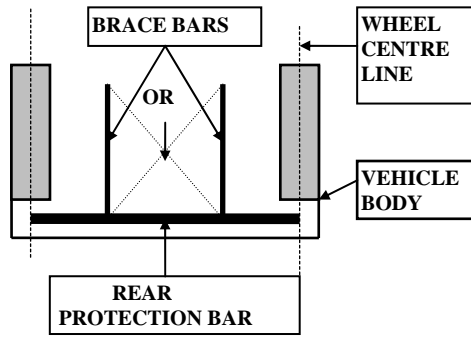
gij

FIGURE 17
Mini Front Panel – Wheel Arch Trim Limit.



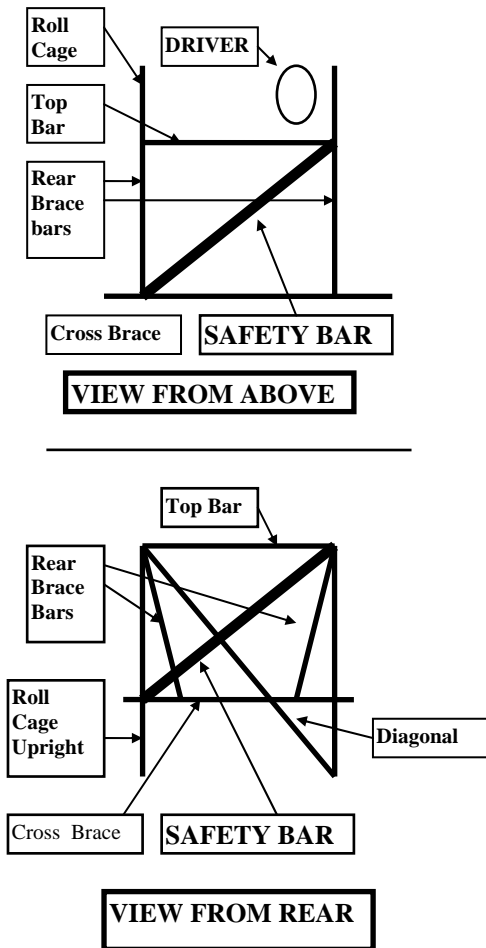
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FIGURE 18 REAR PROTECTION BAR



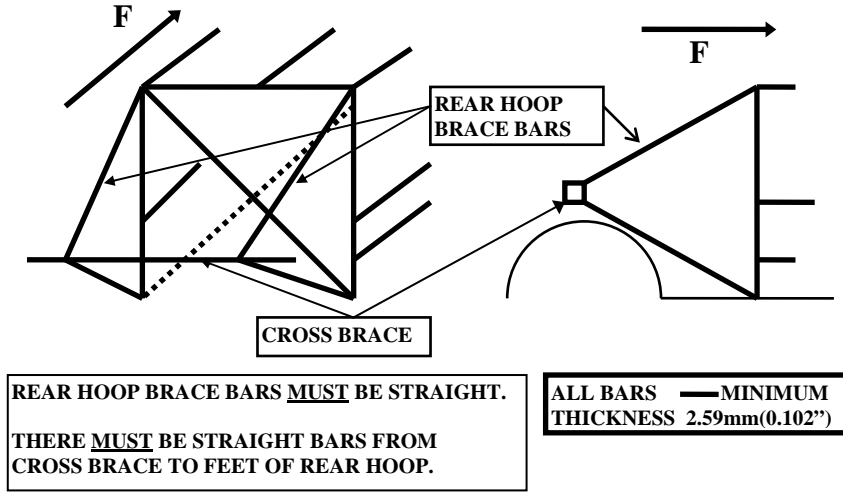
99

FIGURE 19 REAR SAFETY BAR



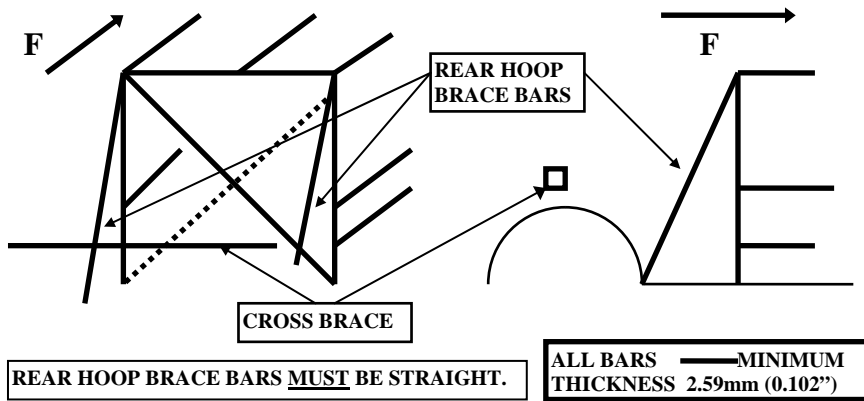
99

FIGURE 20A ROLL CAGE:
REAR HOOP BRACE BARS ATTACHED TO CROSS BRACE



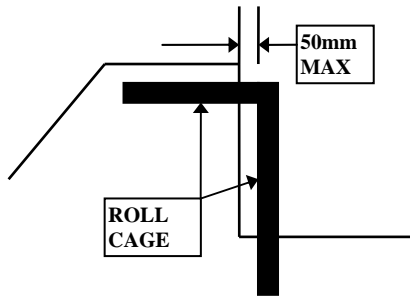
gii

FIGURE 20B ROLL CAGE:
REAR HOOP BRACE BARS NOT ATTACHED TO CROSS BRACE



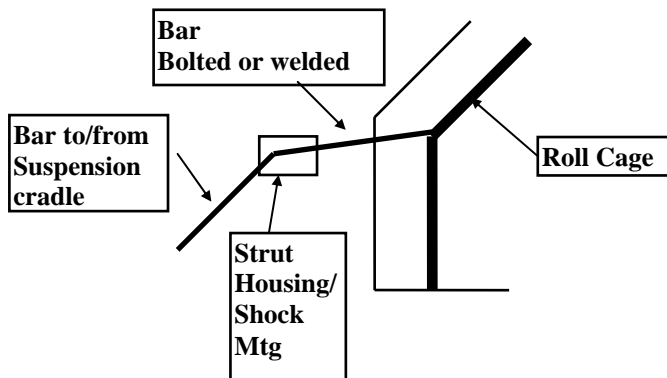
gii

FIGURE 21 PICK UP VEHICLES REAR ROLL CAGE HOOP EXTERNAL TO CAB



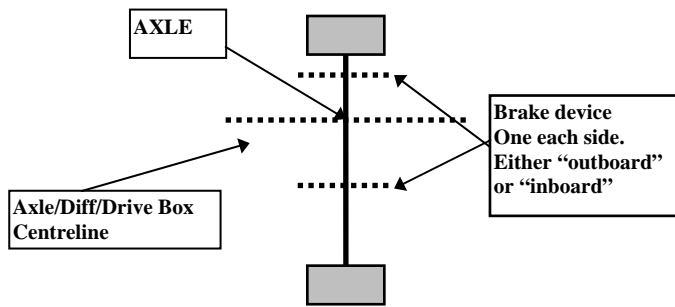
gü

FIGURE 22 PERMITTED FRONT SUSPENSION STRUT BRACE BAR MOUNTING



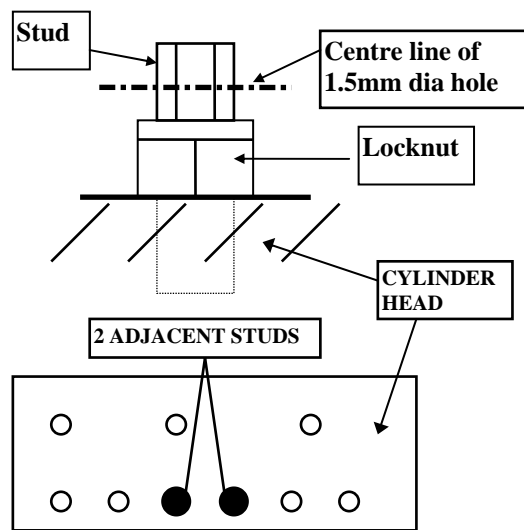
gü

FIGURE 23 – BRAKES



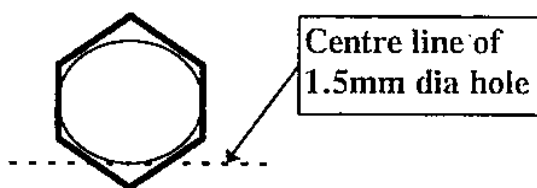
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FIGURE 24a – ENGINE SEALING



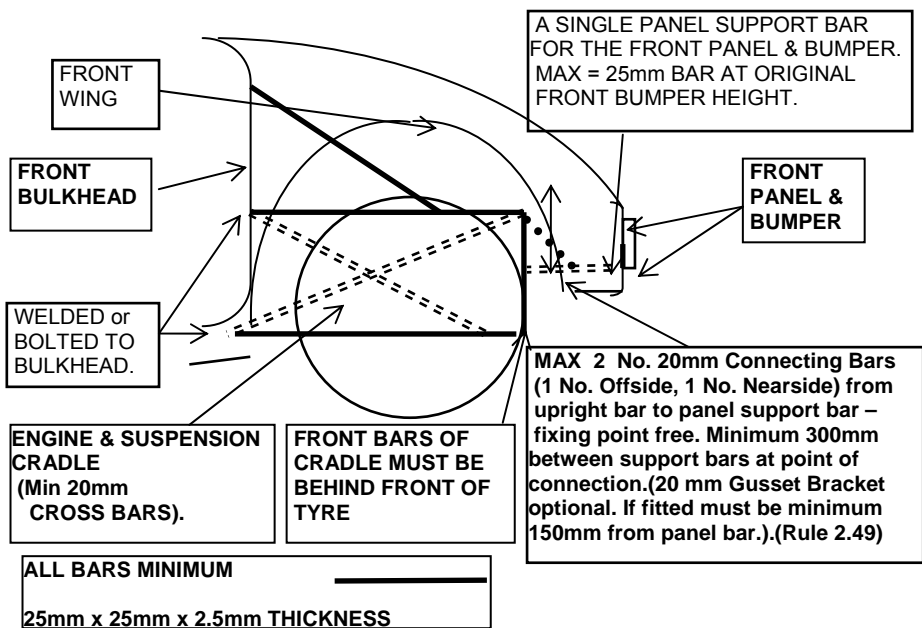
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FIGURE 24b – ENGINE SEALING



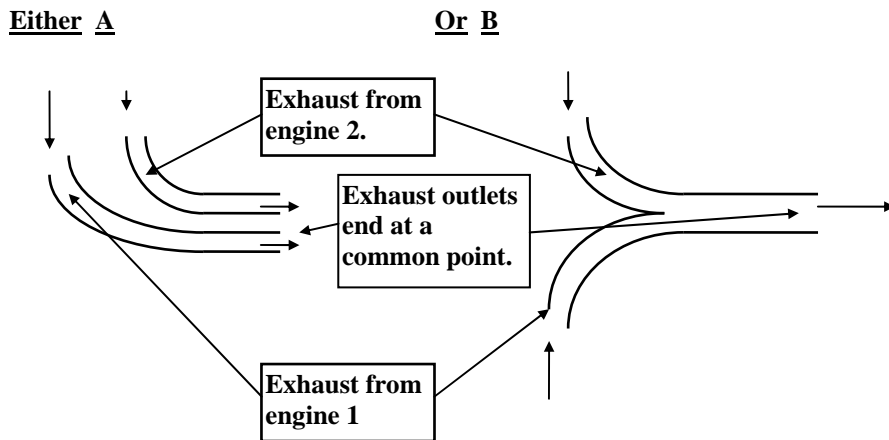
gij

FIGURE 25 FRONT SUSPENSION / ENGINE CRADLE



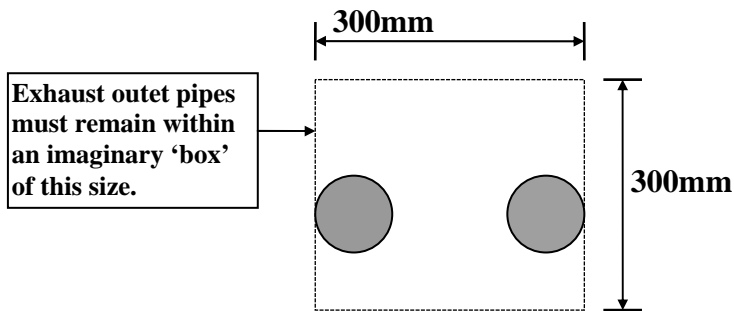
gii

FIGURE 26a TWIN EXHAUST OUTLETS



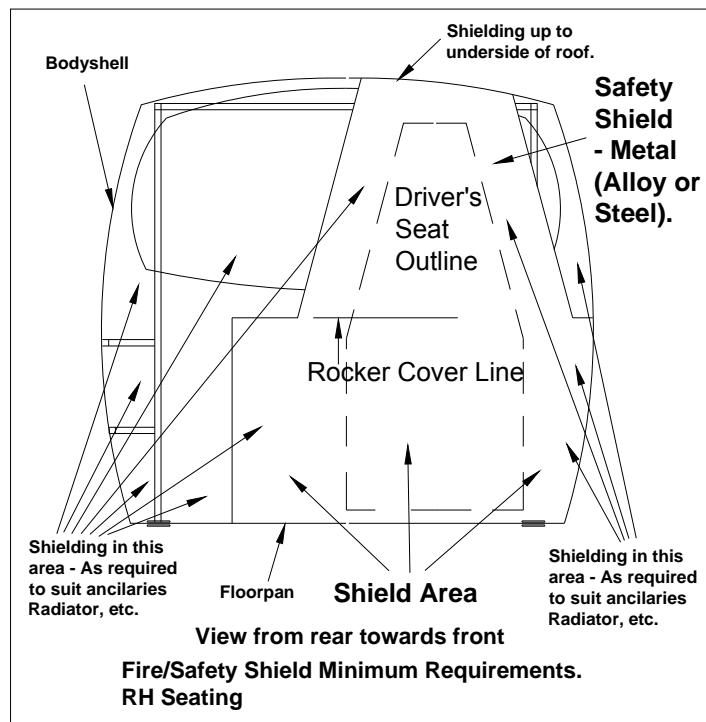
gii

FIGURE 26b TWIN EXHAUST OUTLETS

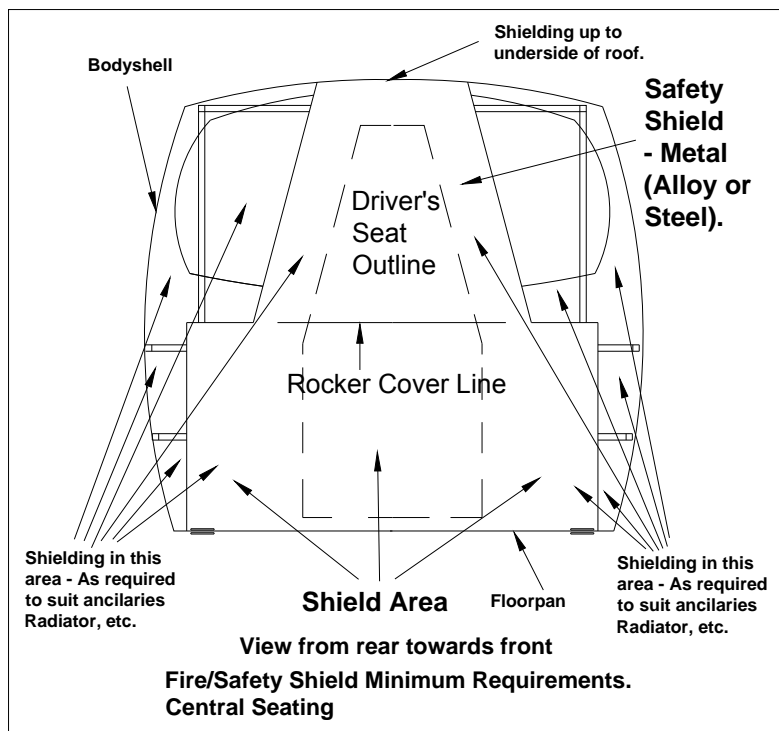


gii

FIGURE 27 ENGINE & ANCILLARY SAFETY SHIELD
27a.

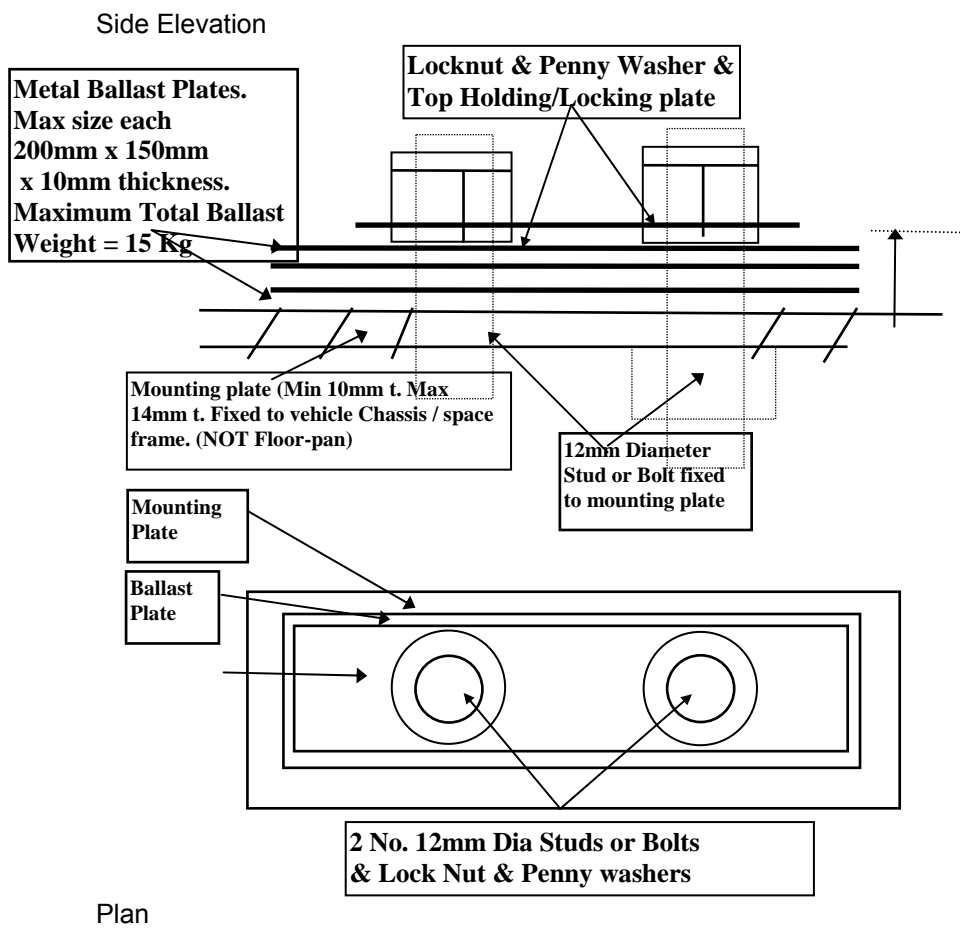


27b.



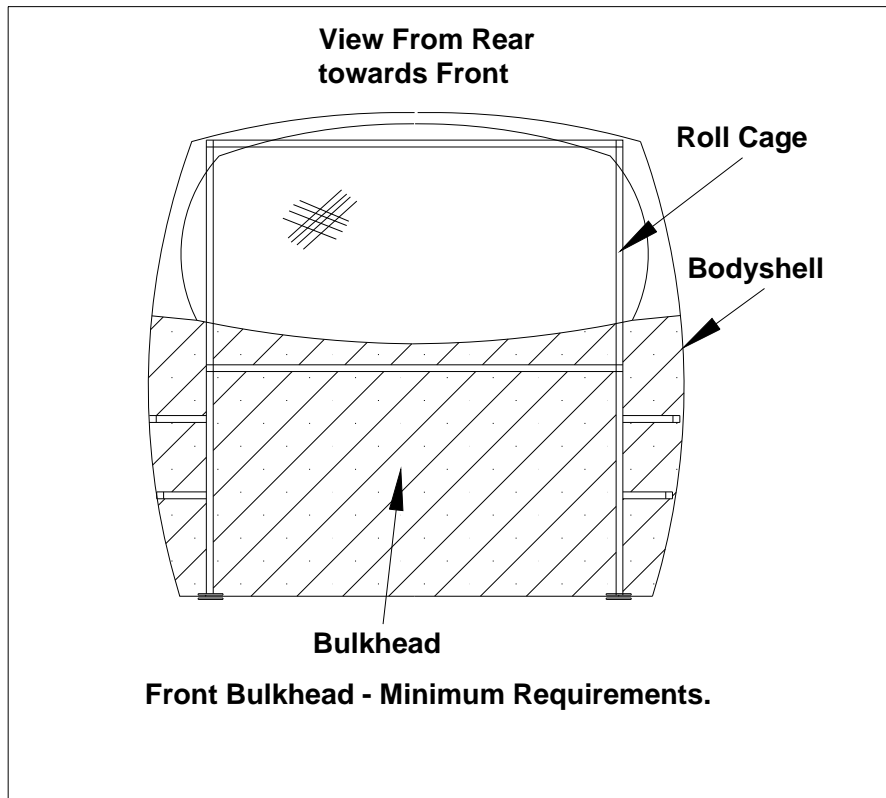
gii

FIGURE 28 BALLAST REQUIREMENTS.



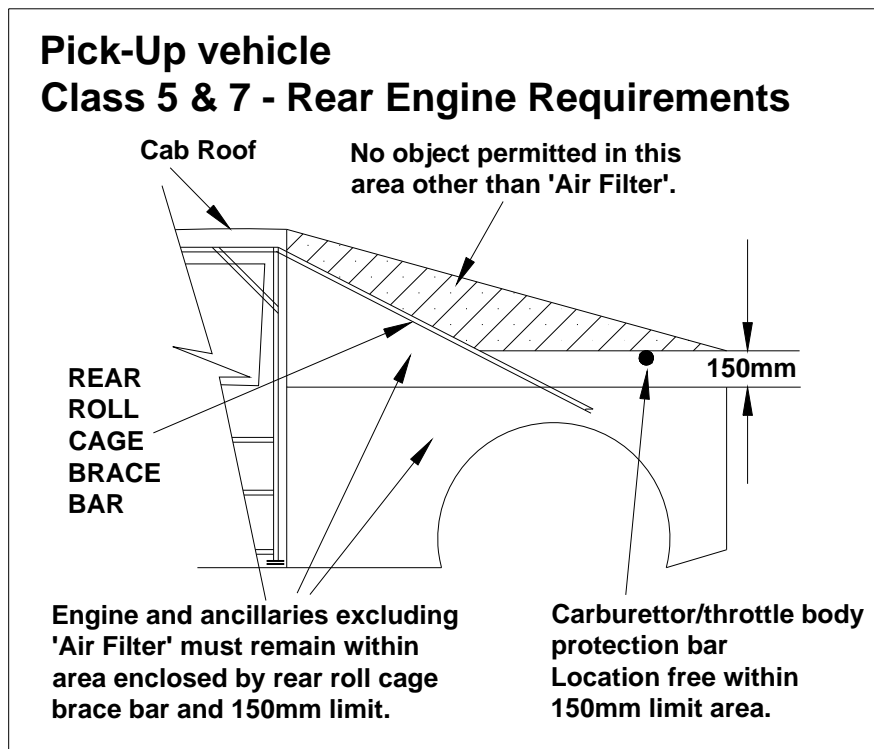
gii

FIGURE 29 FRONT BULKHEAD REQUIREMENTS.



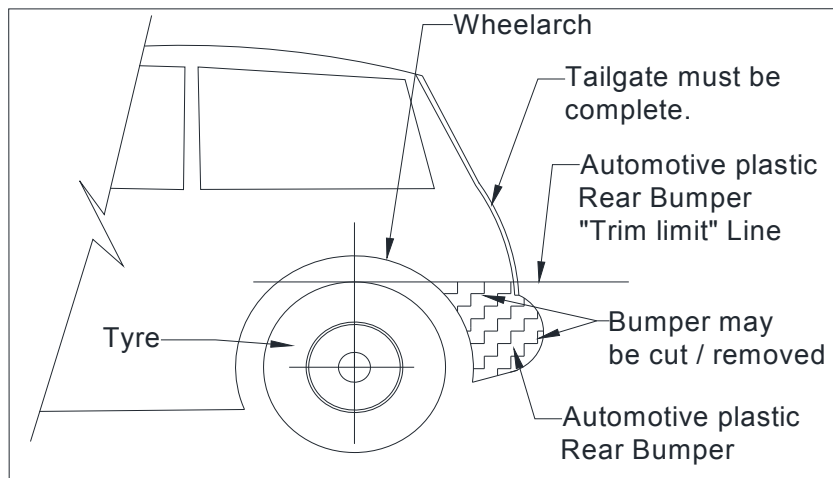
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FIGURE 30 PICK-UP REQUIREMENTS.



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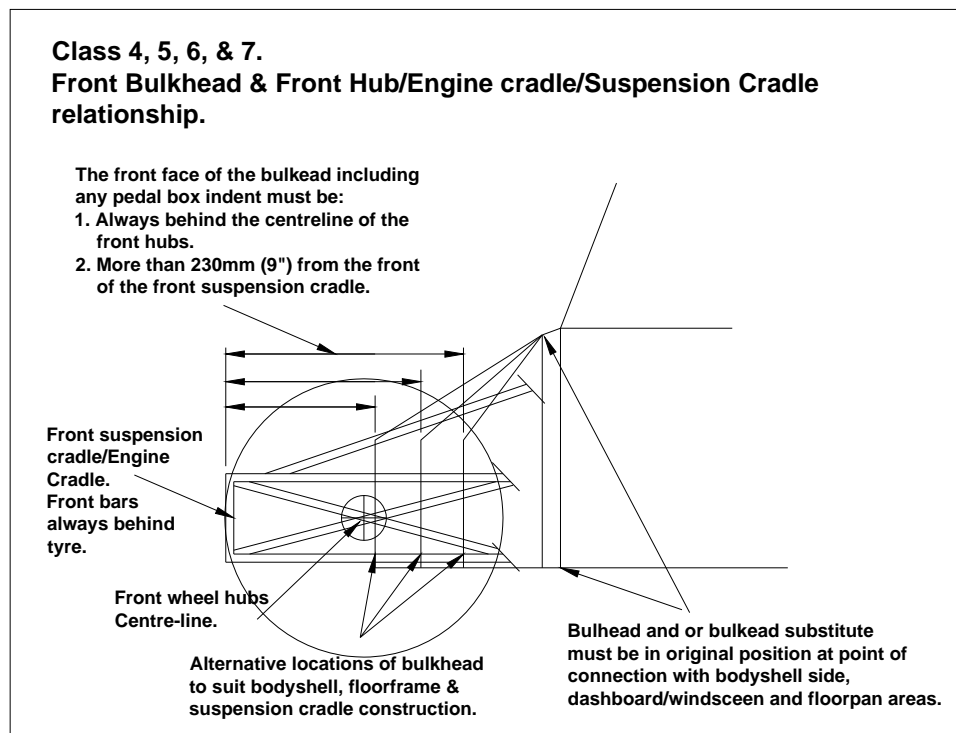
FIGURE 31 REAR BUMPER (Automotive Plastic types only).



Rear Bumper - Automotive Plastic Type Permitted trim limit.

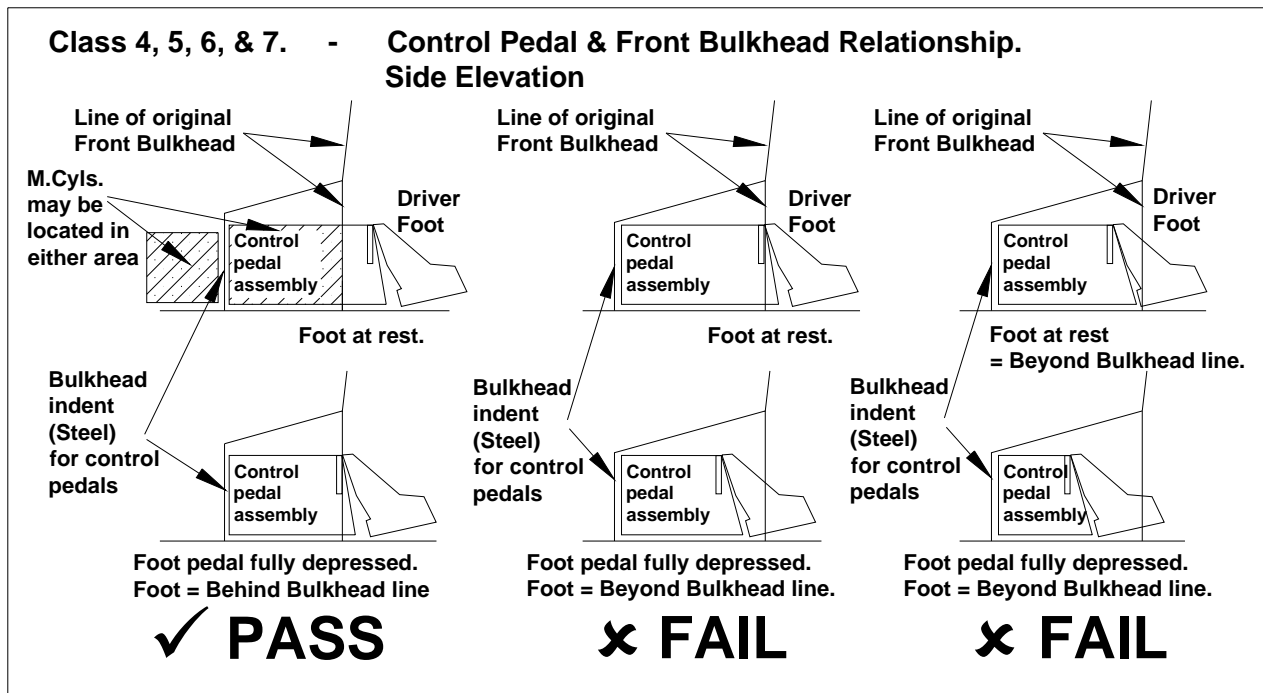
Gij

Figure 32 Front Bulkead Location.



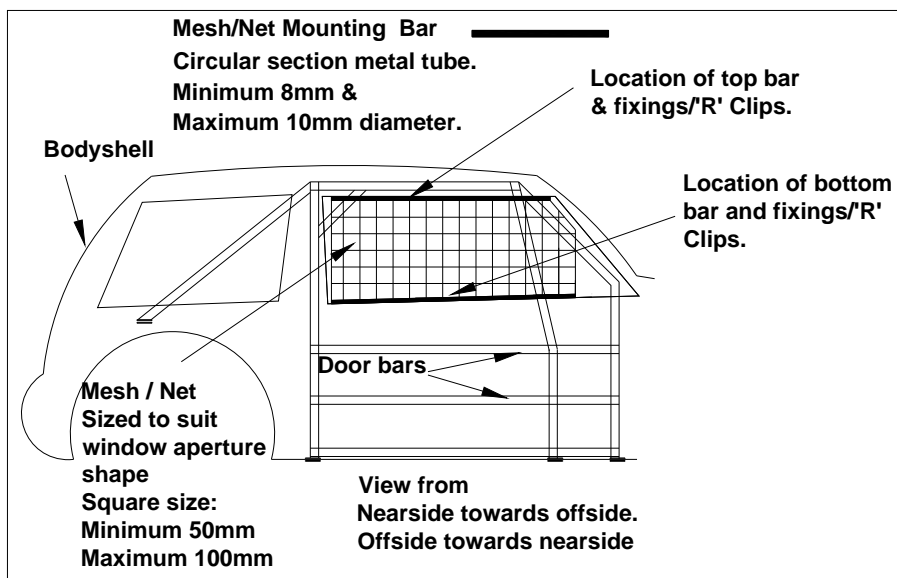
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Figure 33 Control pedal Location.



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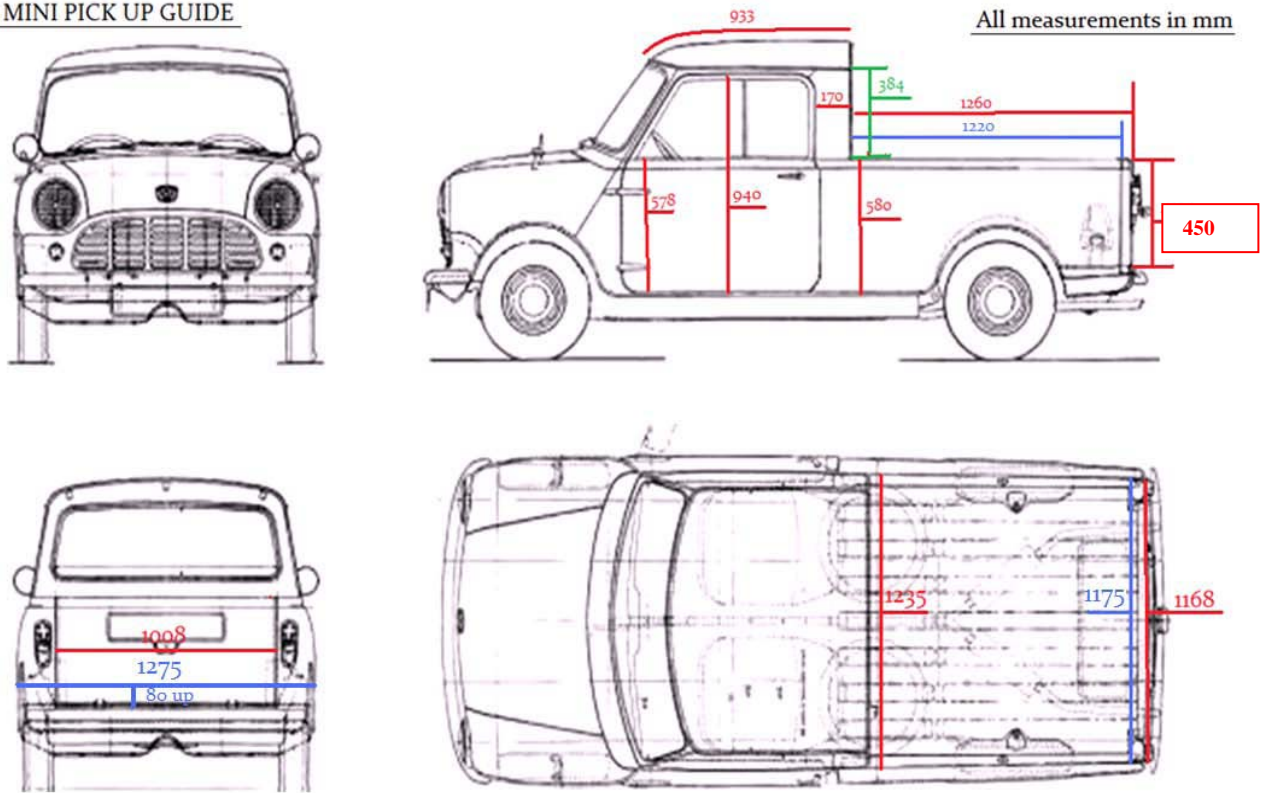
Figure 34 SIDE WINDOW WEBBING/MESHED NET REQUIREMENTS.



Gij

Figure 35 NASA PICK UP GUIDE

NASA MINI PICK UP GUIDE



SILENCING

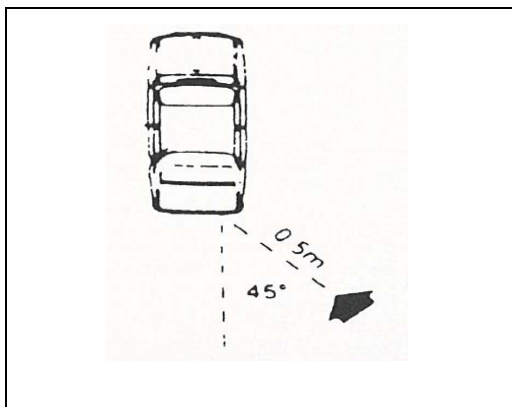
The maximum noise permissible for all vehicles is 102 Db (A).

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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