

**ASSOCIATION OF
AUTHORISING
BODIES**



RULES & REGULATIONS

2018 EDITION

CLASS 8, 9, & 10



"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 8, 9, & 10

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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 2071cc Specials
Junior Specials Under 1200cc Vauxhall Corsa Engined Special Restricted Drivers Only.

Ladies Classes - Recommendations for Club/League Racing.

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

- Class 11** Classes 1 & 2 will race together duly handicapped/staggered.
Class 12 Classes 4, 5 & 6 will race together duly handicapped/staggered.
Class 13 Classes 3 & 7 will race together duly handicapped/staggered.
Class 14 Classes 8, 9 & 10 will race together duly handicapped/staggered.

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

All Classes = 8 Vehicles.

Note.

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

LICENCE

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

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

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

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

2. A person over 18 years of age may be issued with a NASA competition licence.
- 3*. A person under 18 years of age and over 16 years of age may be issued with a NASA Competition Licence provided that the official letter of consent to compete is received from his/her parent or legal guardian.
- 4*. A person under 16 years of age and over 12 years of age may be issued with a NASA Junior Competition Licence provided that the official letter of consent to compete is received from his/her parent or legal guardian.
- 5*. All NASA Competition Licence holders under 18 years of age and over 12 years of age must produce their copy of the letter of consent signed by their parent or legal guardian to any official when required.
- * **All Application Forms and Letters of Consent for under 18's are available from your Club Secretary.**
6. A Men's Licence entitles you to race in Men's Classes only, and Men's Championships.
7. A Ladies Licence entitles you to race in Ladies Classes only, and Ladies Championships. (A lady may apply for a Men's Licence, and then **MUST** race in Men's Classes only.)
Note:
A Lady competitor will not be allowed to change her competition licence (i.e. Men's to Ladies or Ladies to Men's) during any one season.
8. A Junior Special Vehicle may be raced by a Men's or Ladies competition licence holder at single day events only.
9. **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.
10. A competitor/driver must produce his/her licence to any official when required.
11. NASA reserves the right to refuse a licence to any driver who has been refused a current road licence for medical reasons.
12. NASA also reserves the right to refuse or cancel any issued identification numbers and letters. Frivolous or obscene number/letter combinations are prohibited.
13. All licences must have a current photograph of the Licence Holder affixed to the Licence at all times.
14. 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.

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

Ballast - Non-functional material added or fixed to the vehicle to increase weight.

Class - Vehicles grouped together governed by specified Rules.

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

Driver's Compartment – Specials.

The driver's compartment is the area within the vehicle chassis occupied by the vehicle driver.

It is deemed to begin at an imaginary line, across the vehicle from the front face of the nearside rear roll cage upright to the front face of the offside rear roll cage upright.

It is deemed to end at an imaginary line across the vehicle forward of the fully depressed foot control pedals.

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 Recognised and permitted 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)

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.

Panel. (Including "Panelled" and or "Panelling") -

Sheet metal used to clad and or cover the chassis structure and roll cage as specified & required. Material to be either Steel sheet or Non Ferrous metal/Aluminium sheet.

Minimum Thickness: Steel sheet = 22 Gauge (0.71mm (0.028").

Non Ferrous Metal or Aluminium Sheet = 1mm (0.40").

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

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.

Re-Run - A repeat of the previous race minus offenders and non-runners, with original grid positions being maintained.

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.

VEHICLE CONSTRUCTION RULES**1. INTRODUCTION**

- 1.1 A Special is defined as a single seat-racing vehicle constructed in accordance with the following construction regulations.
- 1.2 A Special that is constructed, derived and/or converted from the following is prohibited:
- i. A production motor vehicle. i.e. Saloon/Sports Saloon/Van, Pick-up/MPV body shell.
 - ii. A vehicle designed and/or built for contact motorsports.
- 1.3 The rules including the chassis and roll cage specification and design requirements are for Autograss Racing on an unsealed surface only.
- 1.4 A vehicle chassis and or roll cage structure that is designed and / or manufactured for use in other forms of motor sport may not be suitable for Autograss Racing.
- 1.5 The rules are valid from the 1st January of the year of issue and will apply until further notice.

NASA reserves the right to amend or alter any rules.

2. GENERAL

- 2.1 Competitors must ensure that their racing vehicle conforms to NASA Rules and Regulations. Where a competitor is under 18 years of age the responsibility is shared with the parent/guardian.
- 2.2 Only methods of construction and modifications as listed are permitted. Any further modifications, other than those permitted, 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.
- 2.3. 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. The underside of the top bar of the roll cage must be not less than 75mm (3") above the helmet of the seated driver.
- 2.4. 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.
- 2.5. 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.
- 2.6. The vehicle must be maintained in good order. Vehicles in poor condition may not be permitted to race at the discretion of the scrutineer.
- 2.7. 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.
- 2.8 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 also may be used together.

Proprietary manufacture Arm Restraints for motorsport only permitted. Simpson/Sparco/TRS Arm Restraints permitted.

For window webbing see rule 11.8

- b). It is the 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.

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

3 TECHNICAL NOTES

3.1 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.

- 3.2 All bolts, set screws and nuts used must be of steel and be of a minimum of R or S quality. Square headed bolts are prohibited.
- 3.3 A Special must not be capable of seating any person other than the driver.
- 3.4 All driver controls must be operated from, and remain within, the drivers compartment at all times.
- 3.5 The fitting and/or use of 'Safety Air Bag(s)' prohibited.
- 3.6 The fitting and/or use of aerofoils, spoilers, wings, splitters, and/or any device to enhance vehicle adhesion to the ground via the airflow over or under the vehicle or device are prohibited.
- 3.7 The fitting of mascots, toys, banners, flags or ornamentation is prohibited.
- 3.8 There must be no sharp or protruding surfaces that may be regarded as a hazard, either internally or externally.
- 3.9 Traction / Launch Control (See definitions) systems prohibited.
- 3.10 Towing Eye.
The fitting of a "Towing Eye" at the front and rear of the vehicle is mandatory. Specified metal "Eye" diameter is 50mm. For other materials a minimum 50mm, maximum 100mm "Loop" is specified. The 'Towing Eye' must not protrude beyond the vehicle bodyline. "Towing Eyes" and "Towing Eye fixings" that are excessively sized or that can be regarded as 'ballast' or 'protection' are prohibited.
- 3.11 Vehicle rear wheel-standing (Aka "Wheelies").
The prevention of vehicle rear wheel-standing (Aka "Wheelies") at all times shall be the competitor's responsibility. Rear wheel standing is regarded as dangerous or extremely dangerous driving and is a Black Flag (Race Disqualification) offence.

4. ENGINE SPECIFICATION.

- 4.1. Modifications: Free subject to Class limits and listed restrictions.

4.2.1 CLASS 8

- a). A single normally aspirated engine sourced from a NASA permitted "Car" or "Motorbike" must be used (See definitions).
- b). The engine must have a cubic capacity of between the following limits:
Minimum cubic capacity = Free.
Maximum cubic capacity "Car engine" = 1420cc.
Maximum cubic capacity "Motorbike engine" = 1350cc.

Permitted Engines.

Those that comply with NASA "Engine" Definition.

"Motorbike/motorcycle" engine in a single engine installation.

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

Prohibited Engines.

Rotary engine.

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

Engine – Materials.

The engine materials – Metal otherwise Free.

The cylinder head, block 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 vies-versa is permitted.

Other modifications to cylinder head and block free.

Cylinder- Head Ports & Valves Modification.

Modifications to cylinder head including valves and ports free.

Pistons, conrod, crankshaft & flywheel.

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

c). Induction – Restricted.

Nitrous Oxide (N2O) Injection is not permitted.

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

d). Engine Identification.

The original engine manufacturer’s engine identification numbers must remain and be legible.

e). Engine oil system = Free.

4.2.2 CLASS 9:

a). A single normally aspirated engine sourced from a NASA permitted “Car” must be used (See definitions).

b). The engine must have a cubic capacity of between the following limits:

Minimum cubic capacity 1421cc.

Maximum cubic capacity 2070cc.

Permitted Engines.

Those that comply with NASA “Engine” Definition.

“Millington” engine.

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

Prohibited Engines.

“Motorbike/cycle” engine including “Motorbike rotary”, “Motorbike hybrid”, (e.g. engine using both “Car” and “Motorbike” components) and or “Motorbike conjoined” engine (e.g. “RPE” “Powertec” or similar V4, V6 or V8) types.

Rotary engine.

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

c). Engine – Materials.

The engine materials - Free.

The cylinder head, block 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 vies-versa is permitted.

Other modifications to cylinder head and block free.

d). Cylinder- Head Ports & Valves Modification.

Modifications to valves and ports free.

e). Pistons, conrod, crankshaft & flywheel.

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

f). Induction – Restricted.

Nitrous Oxide (N2O) Injection is not permitted.

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

g). The original engine manufacturer’s engine identification numbers must remain and be legible.

h). Engine oil system = Free.

4.2.3 CLASS 10:

a) The use of either single or twin-engine installation permitted.

The original engine manufacturer’s engine identification numbers must remain and be legible.

b) For “Single Engine Installation”:

Minimum cubic capacity normally aspirated = 2071cc.

Minimum cubic capacity “Forced Induction” is Free.

Maximum cubic capacity is Free.

For ‘Twin Engine Installation’:

Minimum cubic capacity normally aspirated free.

Maximum cubic capacity normally aspirated = 4000cc (4 Litres) (2.0 Litres each).

The two engines must both be of the same original manufacturer, whether car motor vehicle or motorcycle, including model, type and cubic capacity (cc) rating.

Permitted Engines.

Those that comply with NASA "Engine" Definition.

"Millington" Engines.

"Scat V4 Engines.

Rotary Engines.

"Motorbike/cycle" engine in a "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 concerned is eligible before using it in the vehicle.

Prohibited Engines.

"Motorbike/cycle" engine in a "Single" installation.

"Motorbike rotary" and or "Hybrid" types (e.g. engine using both "Car" and "Motorbike" components).

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

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.

- c). Cylinder- Head Ports & Valves Modification.
Modifications to valves and ports free.
- d). Pistons, conrod, crankshaft & flywheel.
Modifications to and type of pistons, con-rods, crankshaft & flywheel free
- e) For 'Twin Engine Installation':
- i. The two engines must both be of the same original manufacturer, whether car motor vehicle or motorcycle, including model, type and cubic capacity (cc) rating.
 - ii. Cubic Capacity.
Minimum cubic capacity normally aspirated free.
Maximum cubic capacity normally aspirated = 4000cc (4 Litres) (2.0 Litres each).
 - iii The two engines must be located in the same engine compartment.
The Engine compartment must be within the chassis structure. i.e. there must be chassis space-frame structure steel tube bars to the front, side and rear of the engine and transmission units. (See Figs. 26 & 27).
 - iv. The use of "Forced Induction" is not allowed.
 - 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 disengaging of one engine or transmission or ignition or throttle or clutch or gear change mechanism control system is prohibited.
Note.
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 (e.g. one engine per wheel) are prohibited.
 - vii. The following is not permitted.
 - i. The use of "Forced Induction" i.e. the fitting an engine with a Supercharger and/or Turbocharger on twin motorbike engine and or conjoined motorbike engines.
 - ii. Nitrous Oxide (N2O) Injection.
- d). Engine oil system = Free.

5. ENGINE SEALING & CAPACITY LABELLING

- 5.1. Class 8 & 9 Only. Engine Sealing.
The engine must have available at all times provision for the fitting of at least one readily accessible scrutineers wire seal/tag, such that the fitting of the wire seal/tag prevents access to internal engine components.
A minimum of two adjacent engine cylinder head retaining studs or bolts must have a single 2mm (1/16") diameter hole pre-drilled in each of them.
- i Where the method of cylinder head retention is by means of 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. 31)
 - ii Where the method of cylinder head retention is by means of a bolt the hole must be located through two adjacent edges of the hexagon head of the bolt.
 - iii Where cylinder head retaining studs and bolts are inaccessible, then a single 2mm (1/16") diameter hole must be pre-drilled in two accessible parts or areas of the engine.
- 5.2 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.

5.3 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.

5.4. Class 8 & 9 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).

5.5. 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).

5.6. 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.

6. ENGINE LOCATION

6.1. The engine location is restricted.

Note.

The engine(s) must be located to the rear of the rear roll cage uprights.

The only disapplication of this requirement is for existing pre-1st October 2015 constructed "front" engined vehicles that have been registered with NASA prior to January 2016 and fitted with a NASA authorised "Tag". Any such vehicle may continue to race until further notice. Any such non-tagged "front" engined vehicles are prohibited.

6.2. An engine must not be located in or any part of the engine unit protrude into the area between the front face of the front roll cage hoop uprights and the front face of the rear roll cage hoop uprights.

6.3. An engine must not be located within the Driver's Compartment.

6.4. The engine(s) location is/are free elsewhere in the vehicle; however it/they must be within the chassis structure. i.e. there must be chassis space-frame structure steel tube bars to the front, both sides and rear of the engine and transmission units. (See Figs. 26a & b).

As a rule of thumb in the event of a potential roll over or side/rear impact the chassis structure must be such that it is struck initially. It also must contain the engine/gearbox unit within the chassis structure in the event of any mountings failure.

6.5. The engine must be shielded from the driver. See also SECTION 12 SAFETY SHIELDS & GUARDS.

6.6 Engine Mountings/Cradle.

Engine Mountings/stabilisers free. However they must be sufficient for size and weight of engine and stress loadings involved.

Engine Cradle mountings and construction must be fit for purpose. Excessive construction is regarded as ballast/reinforcement and prohibited.

7 TRANSMISSION

7.1. Drive: rear wheel drive only. i.e. the vehicle drive must be effected by the two rear wheels only.

7.2. Transmission – Permitted Units.

Transmission and or gearbox type is free

i.e. Any type of transmission and or gearbox may be used.

Modifications to transmission or gearbox – Free.

The gearbox/transmission materials - Free.

Internal machining free,

Gear type and ratios free.

7.3. Transmission Location:

The transmission must be located to the rear of the rear roll cage uprights.

It must be located within chassis structure. i.e. there must be chassis space-frame structure steel tube bars to the front, side and rear of the engine and transmission units. (See Figs. 26a & b).

The only disapplication of this requirement is for existing pre-1st October 2015 constructed "front" engined vehicles that have been registered with NASA prior to January 2016 and fitted with a NASA authorised "Tag". Any such vehicle may continue to race until further notice.

7.4 The transmission must be shielded from the driver. See also SECTION 12 SAFETY SHIELDS & GUARDS.

7.5 Gear Lever.

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.

- 7.6 Clutch.
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.
Clutch type and modifications to are free.
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.
- 7.7 Drive Shafts & Wheel Hubs.
Driveshaft and Wheel Hub type free.
Note.
Whilst racing, Drive Shafts and wheel hubs 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 Drive shaft system choices.
- NASA reserves the right via an appointed Official and or Scrutineer to reject a drive shaft and wheel hub system, deemed as not fit for purpose and unsuitable for the shock and stress loadings of the "Autograss racing environment".
- 7.8 Differential Type.
Type and material Free.
Final drive Crown Wheel & Pinion ratio - Free.
Modification - Free.
"L.S.D", "Powerlock", "ATB", "Gripper" "Quaife" or "Locked" differentials are allowed

8 VEHICLE DIMENSIONS AND WEIGHT.

- 8.1. Length & Width – Restricted.
Maximum overall length = 4.0 metres.
Maximum overall width = 2.0 metres.
Note
NASA reserves the right to amend and or revise the minimum and or maximum width & length at any time.
- 8.2. Wheelbase – Restricted.
Minimum = 1750mm. (1.75mtrs).
Maximum - Free provided the overall length remains within stated Rule 8.1. overall dimensions.
Note
NASA reserves the right to amend and or revise the minimum wheelbase at any time.
- 8.3. Vehicle track – Restricted.
The distance between two wheels on one axle is free provided it remains within stated Rule 8.1 overall dimensions.
- 8.4 Limits of construction.
No form of construction shall, on each side of the vehicle, protrude beyond an imaginary line joining, in plan view (i.e. when viewed from above) the centre of that side front wheel tyre with the centre of that side rear wheel tyre. (See Fig. 29.).
- 8.5. Vehicle Height.
Shall be not less than 1067mm (3' 6") (42"), measured vertically downwards from a point on the vehicle roof directly above the driver's head, to the ground when the driver is seated in his/her normal driving position for that vehicle. (See Fig.3).
- 8.6 The roll cage roof plan area is free but must be no less than a minimum of 508mm (20") in width when measured at the narrowest point.
- 8.7 There must be a minimum of 75mm (3") distance and clearance between the top of the helmet of the seated driver and the bottom surface (underside) of the roll cage roof bars.
- 8.8 The rear roll cage hoop must not be more than 254mm (10") behind the driver's helmet, when the driver is normally seated.
- 8.9 The drivers compartment width – Restricted.
Minimum width 600mm.
Maximum width free provided it remains within stated Rule 8.1 overall dimensions.
Note.
Where the distance 'V' (See Fig.21) is less than 50mm then driver's compartment side protection MUST be fitted.
- 8.10 There must be a minimum of 50mm (2") clearance, when the driver's legs are drawn back into a crouch type position, between the drivers knees and any bar or cross-member across or joining the nearside and offside top chassis rails or the "Dashboard" assembly. i.e. Should a driver have to remove his feet from any foot pedal and/or draw any leg back, he/she is able to do so quickly, without the knees being trapped by any cross bar or "Dashboard".
- 8.11 The front of the vehicle shall not extend further than 610mm (24") in front of the centre line of the front wheels. (See Rule 11.4.).
- 8.12 The front of a special must be a minimum of 230mm (9") from the driver's feet when any of the foot control pedals are fully depressed by either of the driver's feet.

- 8.13 The front panel and or chassis and or nose cone of a vehicle must present a straight and flat front not less than 300mm (12") wide and 208mm (8") high. The front must be either vertical or within 15 degrees to the vertical. See Fig. 33. See Rules 8.11, 8.12, & 11.4.
Curved, rounded, bowed, arched, convex or concave construction and panelling is prohibited.
- 8.14 Vehicle Weight.
The total weight of the complete vehicle excluding driver at any time is free.
Note
NASA reserves the right to amend and or revise the minimum weight at any time.
- 8.15 Ballast - Restricted.
The use of specified "Ballast" is permitted.
Ballast (See definitions) must be as specified. Other forms of "Ballast" are prohibited. See Section 27 – BALLAST.

9 STEERING

- 9.1 It is a requirement that all vehicles are able to steer at all times. All-wheel and/or rear wheel steering prohibited.
NASA reserves the right via an appointed Official and or Scrutineer to request that a competitor's vehicle undergoes a steering capability test.
Note.
Where the vehicle cannot perform or complete the steering capability test to the satisfaction of the designated official then it is deemed as being in contravention of the NASA vehicle construction rules and will not be eligible to race.

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

Refusal to comply with a request to take part in a steering capability test will immediately deem the vehicle as being in contravention of the NASA vehicle construction rules and make the competitor concerned subject to disciplinary action.
- 9.2 Steering System.
The steering system & drive from the steering wheel to front wheels is free however it/they must be within the chassis structure. i.e. there must be chassis space-frame structure steel tube bars to the front, side and rear of the steering drive and rack.
Open "Chain and or gear drives" must be fitted with chain & sprocket / gear guards.
"Steering arms" must be of metal.
The use of "Kart" and or "Bicycle" steering components is prohibited.
- 9.3 Steering Column.
Steering column type and location free. The steering column must be attached to:
A support bar or supporting steel tubing frame work of roll cage specification or a minimum of 20mm steel tubing which is attached to the front roll cage uprights, between each upright, across the front of the driver's compartment in the dashboard area. The support bars must not hinder driver or medical personnel access and egress to driver compartment.
- 9.4 Steering Wheel.
A full circumference steering wheel must be used. Diameter free. See Rule 15.1.
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.. The boss must be fitted below the steering wheel
Steering wheel lock and or locking devices are not allowed.
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.
- 9.5 Steering Wheel Mounted Controls. - Restricted
Steering wheel mounted controls permitted.
However they 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.).

10 CHASSIS and 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 fit additional bars to the safety roll cage and chassis to satisfy themselves in respect of the overall safety of the vehicle. NASA are not responsible for the failings of any roll cage and or chassis construction as a result of its lack of design strength or manufacturing integrity.**
- 10.1 A Special must be built in a secure manner and be robust and sufficient to withstand race track conditions and a collision or roll-over.
During a race and or a collision or roll over a special may be subjected to severe stress loadings. This should always be borne in mind when designing and/or building a special.
Note.
NASA reserves the right via a Scrutineer to reject a vehicle that is considered to be of unsuitable construction.
- 10.2 The chassis construction is free but must be of a steel tubular (Round/circular and/or box section) space frame construction.
The chassis must incorporate the roll cage and required bars and rails as described in the construction rules. See Rule 10.7.

- 10.3 The use of a full or part "Monocoque" construction chassis is not permitted.
- 10.4 The chassis, including roll cage, side bar and brace bar tubing must not be used as a medium for the flow of liquid, oil, water, fuel, or the internal passage of electrical wiring.
- 10.5 The chassis must incorporate the roll cage and bracing bars and upper and lower chassis rails and side cross brace construction as specified. See Rules 10.2, 10.7, & 10.20.

- 10.6 Chassis Tubing wall thickness measurement.
An inspection hole may be drilled in each of the mandatory component bars of the chassis and roll cage, including uprights and roof bars, bracing bars, diagonal bars, driver side bars and main chassis rails.

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.

Size & location & identification.

The hole must be 5mm size in diameter, at least 75mm (3") away from any weld, and encircled in contrasting colour paint. The location of the hole must be such that the bar diameter and thickness can be measured via the use of a vernier gauge. An easily removable cover may be fitted to the hole to prevent ingress of water etc.

- 10.7 Roll Cage Structure.
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 construction.
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.

The roll cage must comply with NASA design. See Fig 1.

The main roll cage structure will comprise:

Two main hoops.

Roof centre bar, roof cross bar and roof side bars.

(See rule 10.11 & 10.12).

Front Bracing bars (See rule 10.14).

Rear Bracing Bars (See rule 10.14).

Drivers compartment/Side chassis bars.

(See Rules 10.15, 10.16 & 10.17).

Diagonal bars (See rule 10.13).

Material.

The main roll cage and main chassis 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.

Or

(c). Steel box section tube with a minimum size of 25mm x 25mm and with a minimum wall thickness of 2.5mm.

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: 30mm maximum tolerance = 0.5mm. I.e. the absolute minimum thickness at any point = 2.5mm.

iii. Steel box section tube: 25mm maximum tolerance = 0.2mm. I.e. the absolute minimum thickness at any point = 2.3mm.

Note.

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

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

Each component bar of the roll cage must measure at or above the dimensions stated in (a), (b), or (c) 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

Note.

The use of 25mm x 25mm box section tube for the main roll cage structure construction is to be subject to a review.

- 10.8 The roll cage structure must comply with the NASA Design incorporating the statutory or mandatory bars of the specified material and wall thickness. See Rule 10.7. See Fig 1 for roll cage design.

Note.

Additional bars to provide further protection - material steel only, may be fitted, size, wall thickness and design free.

- 10.9 The roll cage main hoops must be symmetrical about the length-wise centre line of the vehicle (See Fig.1).

- 10.10 The rear roll cage hoop uprights must be Vertical +/-50mm (2") measured at the top of the hoop. (See Fig. 2).

10.11 Roof "X" Bars.

A roll cage roof must incorporate two diagonal cross (X) bars. One cross bar from the nearside corner to the front offside corner and one from the rear offside corner to the front nearside corner.
Each crossbar to be of a minimum size of 20mm x 20mm and with a minimum wall thickness of 2mm.
The underside of the roof "X" Bars must be not less than 75mm (3") above the helmet of the seated driver.

10.12 Roof Width – Restricted.

The roll cage roof width must be not less than 508mm (20") at any point. See Fig. 3.

A roll cage roof that has a width of 600mm (24") or greater must, have:

Either A centrally positioned bar fitted between the rear hoop and the front hoop in addition to the two diagonal cross (X) bars described in Rule 10.11

Or Two diagonal cross (X) bars of roll cage material. One cross bar from the nearside corner to the front offside corner and one from the rear offside corner to the front nearside corner.

All bars to be of material as specified in Rule 10.7.

Note.

Where a roof is tapered, from the minimum of 508mm (20") to a greater measurement, the mean width will be used as a datum.

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.

The underside of the roof "X" Bars and or centre bar must be not less than 75mm (3") above the helmet of the seated driver.

10.13 Rear Hoop Diagonal bar.

There must be a diagonal bar fitted to the rear roll cage hoop. The bar must be welded from the point of intersection of the upright with the top rear roll cage bar, to a point within 75mm (3") of the point of intersection of the upright with the bottom chassis rail (see Fig. 1.) or in accordance with the alternative drawing Fig. 8.

This bar to be of material as specified in Rule 10.7.

10.14 Roll Cage Hoop Brace Bars.**a). Rear Hoop – Forward brace bar.**

There must be two (2) rear hoop brace bars fitted (Welded), one (1) on each side of the vehicle rear roll cage hoop in a forward direction to connect to a point on the drivers compartment side chassis, with distance "X" 100mm (4") minimum (See Figs.1 and 4).

The brace bars to be straight and of material as specified in Rule 10.7.

b). Rear Hoop - Rearward brace bar.

There must be two roll cage hoop brace bars, one on each side of the vehicle rear roll cage hoop, in a rearward direction to connect to a point on the rear chassis of the vehicle and at an angle not exceeding 60 degrees to the horizontal.

The brace bars to be straight and of material as specified in Rule 10.7.

The brace bars must be fixed (Welded/bolted) from a point:

i As near as possible to the top of the rear roll cage hoop.

ii Within 100mm (4") of the junction point of the rear roll cage upright and the top rear roll cage bar, see Fig.1.

iii. The point of connection of the rear hoop brace bars with the rear chassis of the vehicle must be such that:

a). Distance "Y" is not less than 458mm (18").

b). Distance "W" is free.

Note. See Figs, 4, 5, 6, 7.

c). Front Hoop – Forward brace bar.

There must be two (2) Front hoop brace bars fitted (Welded), one (1) on each side of the vehicle front roll cage hoop in a forward direction to connect to a point on the drivers compartment side chassis that is adjacent to a front suspension mounting point. (See Fig.1.).

The brace bars to be straight and of material consisting of steel tube circular 25mm minimum outside diameter or box section 25mm x 25mm minimum, – All 2.5mm minimum thickness.

10.15 The front and rear roll cage uprights, on each side of the vehicle must be connected by the following bars each of which must individually be of one continuous length of tube.

a) A steel upper chassis member/rail constructed of box section tubing, minimum size 20mm x 20mm (3/4" x 3/4") or circular section tube with a minimum diameter of 25mm(1") and with a minimum thickness of 2mm. (See Rule 10.7, 10.16 & 10.17).

The upper chassis member/rail must be fixed at a height such that there is a minimum clearance of 150mm (6") above the drivers elbow, when the driver's arms are placed by his/her side, to the top of the upper chassis rail. (See Fig. 3).

b) A steel lower chassis member/rail constructed of material as specified in Rule 10.7.

It is recommended that the chassis floor is of a width of not less than 500mm (For tapering chassis not less than a mean of 500mm). See Rule 11.3 regarding panelling.

c) Steel side bar(s) located midway between the upper and lower chassis member/rails, constructed as specified in Rule 10.7 (See also Rules 10.18 & 10.19). (See Figs. 1, 9 & 27).

10.16 If the upper chassis member as described in rule 10.15 (a) is constructed of material specified in Rule 10.7 then One (1) side bar may be fitted. (See Fig. 1.).**10.17 If the upper chassis member as described in rule 10.15 (a) is NOT constructed of material as specified in rule 10.7 then a minimum of Two (2) side bars MUST be fitted, constructed of material specified in rule 10.7 and, fixed a minimum of 100mm (4") apart, for the protection of the lower half of the driver's body. (See Fig. 1.).****10.18 The main upper and lower chassis rails, from the rear roll cage hoop upright to a "Front bulkhead structure" joining the upper and lower chassis rails both horizontally from nearside to offside and vertically (Forming a front square or oblong "Box") located forward of the foot control pedals, must be constructed of material as specified in Rule 10.7.**

10.19 Side "X" Bars.

The section of the chassis construction from the front roll cage hoop upright to the front bulkhead structure must also incorporate two No. side diagonal cross or (X) bars. i.e. one cross bar from the upper chassis rail and roll cage hoop joining corner to the lower chassis rail and lower front bulkhead structure upright corner and one from the lower chassis rail and roll cage hoop joining corner to the upper chassis rail and upper front bulkhead structure upright corner. Each side cross bar to be of minimum size of 20mm x 20mm and with a minimum thickness of 2mm.

Note:

The above is a minimum requirement. Additional cross bars to form a "Double cross" or (XX) pattern providing a structure of equal strength to the above may be fitted.

10.20 Chassis Floor.

There must be a minimum of two lower chassis rails, one on each side (nearside and offside) of the vehicle and a rear and front and other appropriate cross joining bars to form a oblong or "ladder" type box shape constructed of material as specified in Rule 10.7. The width is free, however the mean "nearside" outside edge to "offside" outside edge width of the "Drivers Compartment" chassis rails must not be less than 500mm. See Rule 10.21.

10.21 Floor "X" Bars.

It is recommended that the section of the lower chassis construction from the rear roll cage hoop upright to a front suspension mounting point incorporates two No. floor diagonal cross or (X) bars. i.e. one cross bar from the nearside lower chassis rail and roll cage hoop joining corner to a offside lower chassis rail front suspension wishbone mounting point, and one from the offside lower chassis rail and lower roll cage hoop joining corner to a nearside lower chassis rail front suspension wishbone mounting point. Each floor cross bar to be of minimum size of 20mm x 20mm and with a minimum thickness of 2mm.

Note:

The above is a recommended minimum requirement. Additional cross bars to form a "Double cross" or (XX) pattern providing a structure of equal strength to the above may be fitted.

10.22 Nose Cone.

A nose cone may be fitted forward of the front bulkhead structure. The nose cone must be constructed of box section tubing minimum size 20mm x 20mm (3/4" x 3/4"), maximum 25mm x 25mm or circular section tube with a minimum diameter of 25mm (1"), maximum 32mm, and with a minimum thickness of 2mm. The front of the nose cone shall not extend further than 600mm (24") beyond the centre line of the front wheels. See Rules 8.11 & 11.4.

Note:

The fitting of battery enclosure box/container within the nose cone is only permitted if the nose cone is constructed of:

Either Steel circular section tube with a minimum diameter of 32mm (1¼in) and with a minimum wall thickness of 2.5mm.

Or Steel box section tube with a minimum size of 25mm x 25mm and with a minimum wall thickness of 2.5mm.

For fuel tank/battery enclosure protection it must also be panelled with metal sheet 2mm minimum thickness.

It is recommended that there is a clearance of 50mm between a battery enclosure box/container and nose cone to allow for slight structure deformation in the event of a front impact.

11 CHASSIS PANELS

- 11.1 Panels used to clad and or cover the chassis structure and roll cage must be of sheet metal and must be secured by means of positive fixings (screws, rivets or bolts). An adhesive may be used in conjunction with the described positive fixings.

Panel material.

Panel material to be either Steel sheet or Non Ferrous metal/Aluminium sheet. The use of wood, plastic, GRP, Kevlar, Carbon Fibre and/or other synthetic or non-metal material is prohibited.

Panel minimum Thickness:

Steel sheet = 22 Gauge (0.71mm (0.028")).

Non Ferrous Metal or Aluminium Sheet = 1mm (0.40").

Panel maximum Thickness: All metals = 3mm

Note:

The use of multiple sheets to provide an overall thickness to the required size is prohibited.

- 11.2. Removable, hinged and or opening access panels are permitted. However they must have secondary fastenings to keep them secure whilst racing.

Note:

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

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

11.3 Chassis Floor.

The whole section of the chassis floor from the rear roll cage upright to the foremost point of the vehicle; must be completely panelled with steel sheet of a minimum thickness of 2mm. The steel sheet shall be fixed to the chassis by means of welding by 25mm "Spot" or "Stitch" or "Seam" welds around the edge of the panel such that a minimum of 50% of the total edge is welded.

Note:

For vehicles with a driver's compartment chassis floor that is a width of less than 500mm (For tapering chassis a mean of 500mm) the steel sheet must be fitted on the outside of the side of the driver's compartment so as to extend up to a height equivalent of 100mm vertical and perpendicular to the chassis floor.

There shall also be a horizontal chassis member (Minimum 20mm tube) fitted between the roll cage uprights at a height equal to the termination point of the steel sheet. The steel sheet must also be welded to this member. This member must be in addition to the driver side bars as described in rule 10.17 c and is not and cannot be regarded as a side bar.

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 5 No. additional "Air / "Cleaning / draining holes" into the chassis floor panelling, each hole diameter free up to a maximum of 50mm diameter. i.e A maximum of 6 holes may be fitted, one of which shall be the inspection hole.

It is not permitted to fix components direct to the floor panelling. "Floor mounted" components (e.g. seat, steering rack and or pedal box) must be fixed to the chassis framework only.

Apertures and grilles.

Apertures and grilles etc. into or through the above panelling, that allow the flow of air to radiators/coolers, engine or engine components and/or ancillaries may be fitted, provided the airflows through enclosed ducting, which is shielded, from the vehicle driver.

11.4 Chassis sides top and front.

The whole section of the chassis from the front roll cage upright (Windscreen) to the foremost point of the vehicle. i.e. sides, top and front, including the driver's foot/feet compartment, and nose cone must be completely panelled. (See 11.1).

Note.

The front panelling may be fitted such that there is a gap (Maximum 230mm (9")) between the inside of the panelling and the front surface of the chassis frame. This to act as a 'Crush Panel' in the event of a front impact. See Rule 8.11 & 8.12 for length restriction.

Apertures and grilles

Apertures and grilles etc. into or through the above panelling, that allow the flow of air to radiators/coolers, engine or engine components and/or ancillaries may be fitted, provided the airflows through enclosed ducting, which is shielded, from the vehicle driver.

11.5 Front bulkhead.

A metal bulkhead may be fitted immediately forward of the foot pedals. This bulkhead may be either incorporated within the "Front bulkhead structure" as described in rule 10.18, provided it is immediately forward (Within 25mm) of the foot pedals. If not it must be a separate panel.

Note.

Where a fuel tank and/or electrical battery(s) is / are fitted forward of the foot pedals. There must be a metal bulkhead as described above fitted between the foot pedals and fuel tank and/or electrical battery(s). See Rule 11.1 for material specification.

11.6 Drivers Compartment.

The area between the rear roll cage upright and the front roll cage upright, from the lower chassis member/rail to the upper chassis member/rail, must be completely panelled and covered with metal sheet. The metal sheet shall be.

Either Steel sheet 1mm (0.040") minimum thickness.

Or Aluminium sheet 2mm (0.080") minimum thickness.

Note:

The use of multiple steel sheets to provide an overall thickness to the required size is prohibited. See Rule 11.3 regarding floor panelling.

11.7 The drivers compartment access aperture(s) may have a non-metal, non flammable partial covering or "Side screen" or "Splash guard" for driver protection from ground/track debris, dust etc. It must be securely retained / fixed to the drivers compartment top chassis rail and roll cage uprights such that its removal can be easily facilitated without the use of a tool or knife.

All fixings must be readily accessible to facilitate its quick removal in the event of an emergency.

The side height above drivers' compartment top chassis rail free up to a maximum side height of just below the lowest or bottom surface of the particular driver's safety helmet.

11.8 Aperture 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 2.8).

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 non-metal webbed/meshed net must be fitted to both nearside and offside driver's compartment access apertures.

If an arm restraint system is not used then a non-metal webbed/meshed net on both nearside and offside drivers compartment access aperture (Either wholly or partially), is mandatory and must be fitted. See Fig. 35.

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

Webbing/Mesh Type.

The 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. 35.

Note:

a).When a "Window/Aperture 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 fitted to a vehicle it must be removed immediately.

- 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.
 Proprietary manufacture Window/Aperture net for motorsport only permitted.
 OMP/TRS/JRS Oblong & Trapezoid (Angular) full size window safety net permitted.
 Full metal tube support bar/border and "gate opening" types prohibited.

11.9 Roll Cage Roof.

The whole section of the roll cage from the rear roll cage hoop to the front roll cage hoop; from the offside front hoop-rear hoop bar to the nearside front-rear hoop must be completely panelled of material as specified in rule 11.1.

11.10 Rear Roll Cage Hoop – Panelling.

The area enclosed by the rear roll cage nearside and offside hoop uprights and top rear roll bar, from vehicle floor level to the vehicle roof level (i.e. from the bottom chassis to the top roll bar and nearside chassis and/or roll cage upright to offside chassis and/or roll cage upright) must be completely panelled of material as specified in rule 11.1. (See Fig. 20). The fitting of "Air holes" to, in or through the panelling is prohibited.

12 SAFETY SHIELDS and GUARDS

- 12.1 All vehicles must be fitted with a metal fire shield, which completely protects the driver from the engine unit. The engine unit must not be visible from the driver's compartment.
 The fitting of "Air holes" to, in or through the fire shield is prohibited.

Material to be either Steel sheet or Non Ferrous metal/Aluminium sheet.

Minimum Thickness:

Steel sheet = 22 Gauge (0.71mm (0.028").

Non Ferrous Metal or Aluminium Sheet = 1mm (0.40").

Maximum Thickness: All metals = 3mm.

- 12.2 Where transverse mounted "Single" or "Twin" engine installation is used, then the following metal fire and safety shields must be securely fitted.

i Flywheel shield.

Fitted to interrupt a direct line between the vehicle driver and engine or engines' flywheel(s). The shield(s) to be constructed from steel plate minimum 6mm (¼") thickness, 460mm (18") high, 100mm (4") width.

ii For rear mounted transverse engines.

From the vehicle floor to a height equal to the top of surface of the engine or engines' "Rocker or cam cover" for the complete width of the roll cage structure. i.e. from nearside roll cage upright to the offside roll cage upright. (See Fig.25). The shield is to be constructed from either: Steel sheet: minimum 2mm thickness or Aluminium sheet: minimum 3mm thickness.

iii For front mounted transverse engines.

This applies to NASA authorised permitted and tagged vehicles only.

From the vehicle floor to a height equal to the top of surface of the engine or engines' "Rocker or cam cover", for the complete width of the chassis structure. i.e. from nearside chassis upright to the offside chassis upright. (See Fig. 26b.) The shield to be constructed from either: Steel sheet: minimum 2mm thickness or Aluminium sheet: minimum 3mm thickness.

12.3 Chain Drive Enclosure.

All transmission/drive chains must be encased (See Fig.23) by a substantial material, minimum 2mm steel sheet or Aluminium sheet: minimum 3mm thickness to contain the chain in the event of a breakage. i.e. The chain must not be visible.

12.4 Drives.

Where a prop shaft, gearbox and or flywheel bell housing/cover is in the driver's compartment it/they must be encased/covered with metal minimum 3mm thickness.

12.5 Sump Guard – Restricted.

A sump guard or under engine/gearbox shield may be fitted. However it must be of metal with a maximum thickness of 3mm.

Size:

Width = Maximum - No wider than vehicle chassis rails.

Length = Maximum – From bottom of rear roll cage upright to rear most point of gearbox.

12.6 Fluid Pipes.

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

12.7 Oil Tanks.

All oil tanks (Including catch tanks and dry sump tanks) must be shielded from the driver in case of spillage in an accident.

12.8 Cooling Systems.

Radiators, expansion tanks, intercoolers or any other cooling system, must be completely shielded from the driver's compartment, and be as leak proof as possible.

12.9 Pulleys/Belts/Chains.

All external revolving pulleys/belt/gear/chain drives must be shielded. i.e. None must be visible when the vehicle is viewed in any plane.

- 12.10 Suspension Shield.
Shock absorbers, springs or coil/shock absorber or link bars/arm assemblies located adjacent to the driver's compartment must be shielded from the driver. The shield is to be made of either steel or aluminium sheeting a minimum of 2mm thickness.

13 PROTECTION

- 13.1 Front Protection.
Front protection bars and or bumper/tree/nerf bars are not permitted.
- 13.2 Rear Protection.
Rear protection bars and or bumper bars are permitted, however, they must not protrude beyond the centre of the wheels.
Materials to be used must be no greater than 1" (25mm) box or 1¼" tubular (32mm).
- 13.3 Side Protection.
Driver's compartment side protection is permitted.
It is recommended that all Specials be fitted with driver's compartment side protection for the area between the front and rear roll cage uprights. (See rules 13.4, 13.5, and 13.6).
The side protection construction must consist of:
i. "Side Pods" constructed of a tubular framework consisting of a minimum of 20mm box or 25mm circular steel tube, and projecting more than 150mm (6") at 90° from the external panelled face of the driver's compartment.
ii. Side/nerf bars as shown in Fig. 10 - 13.
iii A combination of the above.
- 13.4 Side Protection Bars.
If fitted, they shall on each side of the vehicle have a mean ride height, which is to an imaginary line joining, in side elevation (i.e. when viewed from the side) the centre of the particular side front wheel with the centre of that side rear wheel. (See Fig. 30).
Side protection bars may be used as suspension mounting points.
- 13.5 If a vehicle has a driver's compartment with a width of less than 24" (600mm) (Measured at the top chassis rail, to the outside of the chassis rails between each side of the driver's compartment - distance 'U'), and/or with distance "V" (See Fig.21) less than 50mm, then side protection bars MUST be fitted. (See rule 3.8 & 13.6).
- 13.6 If a vehicle has a driver's compartment width of less than 24" (600mm) - distance "U", (measured to the outside of the chassis rails, on each side of the driver's compartment) and/or with distance "V" less than 50mm, AND is fitted with "Side pods" externally to the side of the driver's compartment, constructed of a tubular framework consisting of a minimum of 20mm box or 25mm circular steel, and projecting more than 150mm (6") at 90 degrees from the external panelled face of the driver's compartment, then side protection bars may also be fitted.
- 13.7 Local gearbox, engine ancillary, fuel or oil tank protection, and exhaust protection is permitted. Materials to be used must be no greater than 25mm box or 32mm (1¼") tubular steel.
- 13.8 Protection bar construction must be fit for purpose.
NASA reserves the right via a Scrutineer to reject a construction component choice due to size and ability and or capacity to provide the necessary protection.
Multiple or excessively large or oversized or "Heavyweight" protection bars may be regarded as ballast/reinforcement and prohibited.

14 SUSPENSION

- 14.1 Suspension type is restricted.
A passive suspension system must be fitted. "Solid" suspension prohibited.
Any form of passive suspension may be used.
Active /Adaptive/ semi-Active Suspension prohibited.
"Inboard" suspension is permitted.
Other types and modifications free.
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 12.10.
- 14.2 Suspension Mountings.
Suspension space-frame fixing/mounting points must be built in a secure manner and be robust and sufficient to withstand race track conditions. See Rule 12.10.
Note.
Where suspension mounting or support bars are fixed to the chassis, the fixing points must have a clearance of not less than 100mm (4") distance from any seat or harness fixing point.
- 14.3 Shock absorbers, dampers, springs or coil/shock absorber or link bars/arm assemblies located adjacent to the drivers compartment must be shielded from the driver. The shield is to be made of steel or alloy a minimum of 2mm thickness. See rule 12.10.

14.4 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.

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

14.6+ Wheel Camber – Free.

Wheel Castor – Free.

Wheel Alignment (Toe in/out) – Free.

15 WINDSCREEN/GLASS**15.1 Windscreen.**

The aperture enclosed by the front roll cage hoop, above the upper main chassis that forms a "Windscreen" must have a covering over the full "Windscreen" aperture ONLY of steel weld mesh 1" x 1" (25mm x 25mm) made up of a minimum 12 gauge (0.104") (2.64mm) diameter wire.

The mesh must securely fixed to the vehicle.

Note:

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

15.2 Perspex/Lexan/Clear Polycarbonate may be fitted to the outside of the mesh on the front screen only, provided that there is a suitable aperture cut in front of the driver, in his/her line of vision. The aperture must be at least 100mm (4") high, 300mm (12") wide, or the equivalent area within a 300mm (12") diameter.

15.4 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.

15.5 A rear view mirror may be fitted, number and type free however it/they must not be of glass. Any mirror must be securely fixed directly to the vehicle chassis. Fixings to panels only are prohibited.

16 SAFETY HARNESES

16.1 All vehicles must be fitted with a full harness seat belt to BSI standards (Adjustable to securely fit driver) with one quick release buckle, 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 supplied by the manufacturer of that harness seat belt and be fitted with accordance with the manufacturer's recommendations. Full aircraft type harnesses that incorporate a crutch strap are permitted. Inertia harness seat belt type is prohibited.

Note:

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

16.2 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. (See Fig.19a, 19b, & 19c.)

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.

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.

16.3 Harness "Extension"

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

16.4 Harness Fixing & Mounting Points.

Harness fixings and mounting points must be in accordance with the harness manufacturer's recommendations and be sound and secure.

Note.

- i. Safety harness fixings must be mounted onto the vehicle chassis.
- ii. Safety harness fixings must not be mounted on any vehicle panel.
- iv. 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 carburettors/fuel injection system or exhaust system.
- v. Attachment bolts for seat belts/safety harness must be minimum 3/8" or 10mm high tensile steel.

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

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

17 SEAT

- 17.1 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 rule, 17.2, & 17.3. 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. 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.

Note.

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 potential risk of neck injuries. The use of a seat designed and manufactured for "Kart" racing is prohibited. The use of a folding or hinging type seat is prohibited.

Whilst racing or in the event of an accident or roll over the seat, seat frame, seat mounting brackets and fixings may be subjected to severe shock and stress loading. . The seat, (Particularly "Thin", "Lightweight" or "Ultralight" types), seat frame, seat mounting brackets 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 seat and/or seat frame and mounting bracket choices.

- 17.2 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.
- 17.3 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.
- # 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 Mounting / Fixing

The driver's seat or seat frame must be securely fixed (bolted/welded) to the vehicle chassis, back and front (See Fig. 14). Bolt size 8mm HT or greater. Where a proprietary seat is used it must be fitted in accordance with the manufacturer's 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.

- # The mounting or fixing of a seat directly to sheet metal only is prohibited.
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. 19.
If the seat is fitted directly to the rear roll cage hoop diagonal bar then the diagonal bar is deemed as equivalent to the support bar and an additional support bar is not required.
If the seat is not fitted directly to the rear roll cage hoop diagonal bar then a separate support bar is required.

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. 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. The seat, seat frame, seat mounting brackets 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 seat and/or seat frame and mounting bracket choices.

- 17.4 NASA reserves the right via an appointed Official and or Scrutineer to reject a seat (Including mounting support frame/brackets), deemed as not fit for purpose and unsuitable for the shock and stress loadings of the "Autograss racing environment".

18 FIRE EXTINGUISHER

- 18.1 All competitors must be in possession of a fire extinguisher which is in good working order.
- The extinguisher must be present while the vehicle is in the pits area and must be within easy reach of the driver and mechanics at all times, especially when refuelling.
 - It is optional for the extinguisher to be carried in the vehicle during racing. If the extinguisher is to be carried in the racing vehicle it must be securely fixed with the manufacturer's clamp and bracket. The use of secondary fixings to retain the extinguisher within its bracket is permitted, but the use of any fastening that requires a tool to remove the extinguisher is prohibited.
- 18.2 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).

19 VEHICLE IDENTIFICATION

- 19.1 All vehicles must have the competitor's NASA registered/recognised Club letters and racing numbers, displayed. (See Rule 19.5) 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.15).
- 19.2 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.

- 19.3 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.
- 19.4 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. 15.

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.

19.5 Identification SizesVehicle 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.

19.6 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.

- 19.7 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").
- 19.8 Identification letters and numbers and panel background may be printed on self adhesive vinyl film to the colours and sizes specified.
- 19.9 The use of magnetic white panels and/or magnetic identification numbers and letters is prohibited.

19.10 Vehicle Paint & Decoration.

Vehicle paint and decoration is free, however stickers, logos, decals, drawings, phrases etc., which may be considered, obscene, offensive or intimidating are prohibited.

20 ELECTRICAL & INSTRUMENTS

- 20.1 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.
- 20.2 The ignition switch must be within reach of the vehicle driver when the driver is seated in the vehicle seat and in his/her normal driving position, with his/her safety harness fastened.
- 20.3 All vehicles must be fitted with a self-starting system capable of starting the engine when operated.
- 20.4 A single electrical system & battery isolator switch of proprietary manufacture must be fitted in either the Positive (+) or Negative (-) electrical "Live" or "Earth" circuit.
- 20.5 On operation of the battery isolator switch, the vehicle electrical system and engine must stop.
- 20.6 Battery Isolator Location – Restricted.
The battery isolator on/off switch must be fitted on the offside of the vehicle, at the base of the front roll cage hoop, adjacent to the point where it meets the top chassis rail. The switch "On/Off" positions must be clearly identified & displayed/painted a minimum size of 25mm (1") in height. (See Fig.17).
- 20.7 Battery Size and number off – Restricted.
Type and capacity of electrical battery free. The use of 2 x 12 volt batteries for 24 volt starting permitted. The fitting of multiple or extra large batteries and/or large and or high thickness battery containers may be construed as ballast (See Rule 20.8).
- 20.8 Battery Enclosure Type – 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.
The enclosure box/container must be firmly secured directly to the vehicle chassis.
The enclosure box/container maximum size = 300mm Height x 300mm Width x 600mm Length.
Maximum wall thickness = 3mm.
- 20.9 Battery Location - 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.
- Battery Location - Nose Cone.
The fitting of an electrical battery enclosure/box/container within the nose cone is permitted subject to type of nose cone construction. See Rule 10.22.
- 20.10 Battery Location – Vehicle side.
A battery enclosure/box/container fitted externally to the side of the driver's compartment must be protected from side impact by means of **either**:
i A protective encasing tubular framework consisting of a minimum of 20mm box or 25mm circular steel.
Or:
ii Side bar protection as shown in Figs. 10 and 11.
Note.
For the safety of the driver and other competitors/marshals the above items i and ii must be panelled.
- 20.11 Instrumentation & Gauges.
Instrumentation and gauges free. However they must be firmly secured to the vehicle.
The use of an engine "Rev counter" and or "Speedometer" and or "Gear shift light" and or "Rev limiter" system(s) and their and tachometer associated drive mechanisms and or sensors permitted.
All instrumentation and gauges must be securely fixed to the vehicle.
- 20.12 For a vehicle fitted with an electrical fuel delivery pump the fuel pump electrical connection must be wired through the main ignition switch.
- 20.13 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.

21 FUEL

- 21.1 Pump fuel (See definitions) 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 particular manufacturer's recommendations and instructions.
- 21.2 The use of Nitrous Oxide (N₂O) injection is prohibited.

- 21.3 Carburetion and Fuel Injection permitted.
Type and capacity free.
Where carburetors and or injection systems do not have positive fixings to attach them to a manifold or engine (i.e. nuts/bolts), then a steel wire tether must be fitted to retain them in the event of an accident or roll over.
- 21.4 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.
All engines 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/throttle cable/connection system must be sufficiently routed, shielded from any heat source, and lubricated to minimise the risk of seizure.
- 21.5 A single non-spill proprietary metal fuel tank or NASA permitted proprietary "Fuel cell", with a maximum capacity of 10 Litres (2. Gallons) and that has a secure screw filler cap must be fitted.
Fixings:
For a metal fuel tank the fixings must be such that the tank and fill pipe and cap are secure. The use of non-metal fixing straps, wire, etc is prohibited.
Note.
For a "Fuel cell" the original fuel cell manufacturers "Fixing kit" only must be used and the "Fuel cell" must be secure.
- 21.6 Fuel Tank – Location – Restricted.
The fuel tank or "Fuel cell" and or fuel filler pipe and or filler cap must be located to the rear of the forward facing surface of the rear roll cage uprights and be completely shielded with metal from the driver's compartment. The shield must be as leak proof as possible. (See rule 10.4).
Note.
Fuel tanks/cells depending upon their location may be required to have protection bars fitted. See PROTECTION – Rule 13.7.
- 21.7 Fuel Tank – Vehicle Side.
A fuel tank or "Fuel cell" and or fuel filler pipe and or filler cap fitted externally to the side of the driver's compartment must be protected from side impact by means of.
Either:
i. A protective encasing tubular framework consisting of a minimum of 20mm box or 25mm circular steel.
Or:
ii Side bar protection as shown in Figs 9 and 10.

For the safety of the driver and other competitors/ marshals the above items i and ii must be panelled.
- 21.8 Fuel Tank - Nose Cone.
The fitting of a fuel tank within the nose cone is not permitted.
- 21.9 Fuel Tank Enclosure
If the fuel tank or "Fuel cell" is fitted within a totally enclosed space, a 50mm diameter hole MUST be provided as near to the tank as possible in one accessible face of the enclosure. This is for accessibility of a fire extinguisher nozzle in the event of fire.
- 21.10 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 car. This vent pipe must not protrude into the fuel tank or "Fuel cell" more than 6mm (1/4"). It is also 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.
- 21.11 The fuel tank fill pipe must be fitted so as to be an integral part of the fuel tank or "Fuel cell".
Where a fuel filler pipe and or filler cap is located beneath or under a vehicle panel there must be clearance above the filler pipe and or cap to allow for deformation in the event of a roll over.
- 21.12 The fuel tank outlet delivery pipe must be fitted so as to be an integral part of the fuel tank or "Fuel cell".
- 21.13 A fuel tank outlet fuel delivery "Fuel shut –off" tap may be fitted. However it must be fitted so as to be an integral part of the fuel tank or "Fuel cell". "In line" fuel taps prohibited.
- 21.14 Fuel delivery pipes must be of metal or proprietary fuel flexible hose and be securely fixed. Fuel pipe fittings must be of proprietary manufacture.
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.
- 21.15 If a fuel tank or "Fuel cell" or carburettor or fuel injection is fitted at the rear of a special, then depending upon the location of the fuel tank or "Fuel cell" or carburettor or fuel injection, protection will be required. (See Rule 20.18).
- 21.16 Fuel pump and regulator type and capacity free. See Rule 20.12.
- 21.17 Fuel filter type, number and capacity free.
- 21.18 Fuel Tank/Fuel Cell/Carburettor/Fuel Injection/Air Filter Protection.
Where an Fuel Tank/Fuel Cell/Carburettor/Fuel Injection/Air Filter is fitted at the rear of a special and protrudes beyond the line of the rear brace bars and/or the rear chassis bars, then, for the safety and protection of the driver and marshals

in the event of a roll over or rear impact, there MUST be at least one Fuel Tank/Fuel Cell/Carburettor/Fuel Injection/Air Filter protection bar for each Fuel Tank/Fuel Cell/Carburettor/Fuel Injection Unit/Air Filter consisting of a minimum of 20mm box or 25mm circular section steel tube.

22 COOLING SYSTEMS

22.1 Radiators & Coolers. Number and type free.

Note.

Location restricted. They must be fitted within the chassis structure. See Fig. 18. (See also rule 22.5).

22.2 Cooling System Shields.

Radiators, coolers/intercoolers, expansion tanks, oil tanks, catch tanks or any other cooling system, must be completely shielded from the driver's compartment, and be as leak proof as possible. See rule 22.5.

22.3 Oil System Components.

Oil Hoses.

Oil hoses must be of the correct oil resistant type with suitable high-pressure oil connections/fittings.

Oil Pump.

Type and modification – Free

Oil Sump.

Modifications to the oil sump permitted.

"Dry sump", "Accusump" oil reservoirs and or similar oil systems are permitted.

22.4 Oil Tank location – Restricted.

Oil tanks (Including breather catch tanks and dry sump tanks) must be fitted to the rear of the front roll cage upright. It is recommended that they be fitted to the rear of the rear roll cage upright.

Oil tanks (Including breather catch tanks and dry sump tanks) must be shielded from the driver in case of spillage in an accident.

22.5 Radiators & Coolers – Location.

Radiators, expansion tanks, intercoolers, and or oil tanks, fitted externally to the side of the driver's compartment must be protected from side impact by means of.

Either:

i A protective encasing tubular framework consisting of a minimum of 20mm box or 25mm circular steel.

Or:

ii Side bar protection as shown in Figs.9 and 10.

For the safety of the driver and other competitors /marshals the above items i and ii must be panelled.

22.6 If an oil tank is fitted at the rear of a special, then depending upon the oil tank's location, protection will be required. (See PROTECTION - Rule 13.7).

22.7 Where the radiator(s) coolers and or intercoolers is/are fitted behind or to the rear of the driver, it (they) must be to the rear of the front face of the rear roll cage upright, and be below the top face of the rear brace bars and be within the shaded area shown on Fig.18. (See Rules 22.8 & 22.13).

22.8 Radiators, coolers and or intercoolers fitted at the rear of specials must also have radiator protection bars fitted. (See 22.13).

Note.

Rear brace bars may suffice as protection bars if they are above the radiator/cooler.

22.9 Water and coolant pipes must be of metal or proprietary flexible hose.

22.10 Water radiator(s) or header tank(s) must be fitted with a pressure cap. There must be an overflow pipe fitted, fastened in a downward position to terminate at a point below the vehicle chassis floor.

22.11 Where sealed radiator systems are used, they must be of an approved manufactured type, and be fitted with an approved pressure release device, in working order.

22.12 Air Scoops.

Where a radiator-cooling air-inlet scoop is fitted at vehicle roof level it must not protrude above the vehicle roof by more than 75mm (3") and be no wider than 450mm (18").

22.13 Radiator/cooler Protection.

Where radiators, coolers and or intercoolers are fitted at the rear of Specials, and are to the rear of the rear brace bars it (they) must be within the shaded area as shown on Fig.18. and be fitted such that they are with 1metre (33") of the ground when vehicle at standstill. If it (they) protrudes either beyond the rear brace bars or main chassis, for safety and protection of following competitors, the radiators/coolers must be adequately protected, with a framework consisting of a minimum of 1" (25mm) box or 1¼" (32mm) circular/tubular. (See Fig.18).

22.14 Oil Tank Protection.

Where an Oil Tank is fitted at the rear of a special and protrudes beyond the line of the rear brace bars and/or the rear chassis bars, then, for the safety and protection of the driver and marshals in the event of a roll over or rear impact, there MUST be at least one Oil Tank protection bar for each Oil Tank consisting of a minimum of 20mm box or 25mm circular section steel tube. (See PROTECTION - Rule 13.7).

23 BRAKES

- 23.1 Vehicle braking system type is free. (For Handbrake See Rule 23.5).

Note:

Whilst racing the braking system may be subject to severe stress, pressure and/or heat loading and or bombardment by debris from the unsealed track surface. 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.

- 23.2 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.

- 23.3 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. 32.

- 23.4 A single foot brake pedal must be used to operate the braking system master cylinder.
Pedal foot pad number - Minimum = 1. Maximum = 2.

- 23.5 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.

- 23.6 All wheels must "Lock" on grass on application of the foot brake pedal only at all times. Anti-lock and/or ABS braking systems prohibited.

- 23.7 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.

- 23.8 Brake fluid pipes and hoses of proprietary manufacture only permitted. Braided brake hose permitted.

Note. Whilst racing the braking system pipework may be subject to bombardment by debris from the unsealed track surface and or other vehicles.

It is recommended that the pipework to a wheel hub brake drum or disc calliper must be mounted on the rearward face of a suspension wishbone or suspension/hub mounting arm such that it is not in a direct line of assault from track surface debris.

If this is not possible then it is recommended that a formed metal shield barrier with a minimum thickness of 2mm, must be fitted to protect the pipework.

- 23.9 Brake Warning Light.

A Brake Warning Light must be fitted, and work correctly and be activated by the depression of the foot brake pedal only – See Rule 20.13.

24 WHEELS

- 24.1 A special must have 4 wheels only.

- 24.2 Type, width and diameter of road wheel is free.

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.

i. A wheel must of a suitable size sufficient for the tyre fitted.

ii. The use of different wheel diameter sizes on the offside and nearside of the vehicle is prohibited.

iii. Beadlock type wheels may be used but the "Beadlock rim" fixing bolts must have either "Button head" or "Countersunk head" bolts only. Hexagon head "Beadlock rim" fixing bolts prohibited. The fixings must not protrude beyond the wheel rim.

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. Wire wheels and/or "Twin wheels" are prohibited.

vii. Maximum permitted wheel diameter is 17".

- 24.3 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. The studs/nuts must not protrude beyond wheel rim.

v. Locking wheel nuts/bolts prohibited.

vi. All 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 "Alloy" or non-steel nuts prohibited.

- # ix "Plated" Wheel Studs prohibited.

24.4 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 type 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

24.5 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”.

25 TYRES25.1 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.
Maximum permitted tyre width is 225.
- 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.

25.2 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.

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.

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

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 25.3.

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" or "B".

Tyres must also comply with Rule 25.3.

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.

25.3 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.

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

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

26 EXHAUST & SILENCING

26.1 Exhaust systems are free. Catalytic Converters are permitted.

26.2 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.

- 26.3 All engine exhaust system pipe work forward of the rear roll cage upright must be contained within a fully panelled area or compartment of the vehicle chassis.
- 26.4 An exhaust pipe, fitted inside or protruding into the driver's compartment, must be shielded from the driver. Shield material to be either Steel sheet or Non Ferrous metal/Aluminium sheet.
Minimum Thickness:
Steel sheet = 22 Gauge (0.71mm (0.028")).
Non Ferrous Metal or Aluminium Sheet = 1mm (0.40").
Maximum Thickness: All metals = 3mm.
- 26.5 Exhaust pipes must not protrude beyond the shaded area shown in Fig.22. The outlet pipe must be either horizontal or downward at an angle of not more than 30 degrees from the horizontal.
- 26.6 The single engine and/or twin engine exhaust system outlet or outlets must end at a point to the rear of the rear roll cage upright. This must be at a point height of not more than 838mm (33") from ground level, and at a point that is easily accessible for the taking of noise level test measurement readings.
- 26.7 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. 24.).
- 26.8 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.

27 BALLAST

- 27.1 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.
It must be fitted adjacent to the vehicle front between the foot pedals and most forward part of the chassis.

- 27.2 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.

27.3 Ballast Fixing/Mounting

The ballast must be 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.

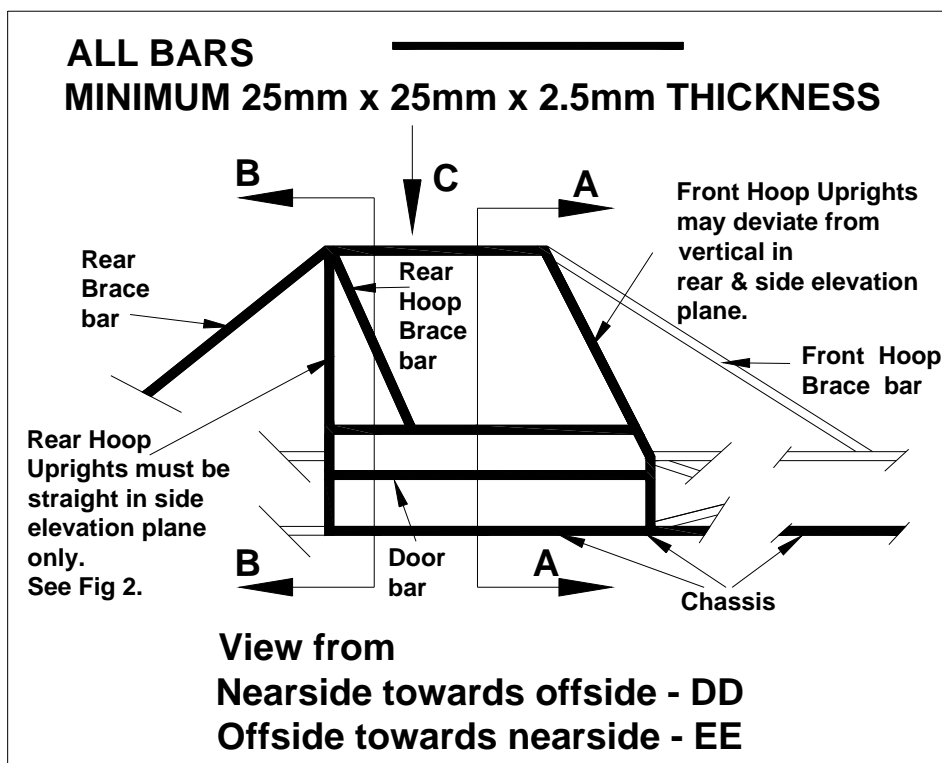
The ballast mounting plate must be fixed (Bolted/welded) to the vehicle chassis. It is not permitted to be fixed to vehicle floor or panelling/bodyshell.

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 Dia 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. 34.

FIGURES.

FIGURE 1a. Roll Cage.



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FIGURE 1b. Roll Cage.

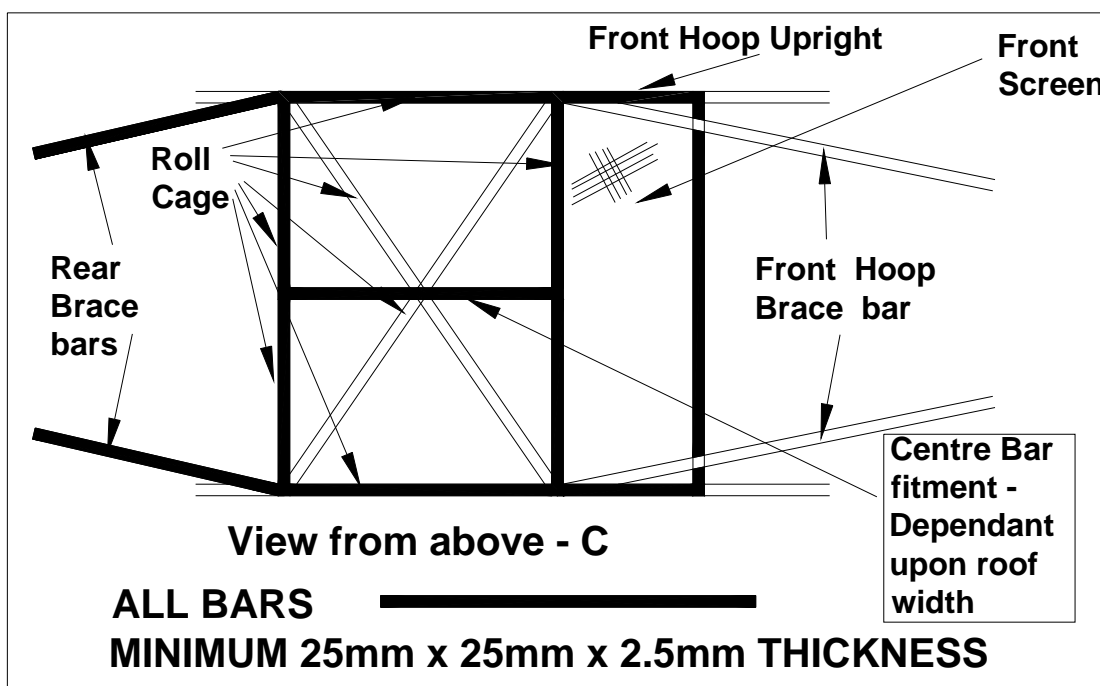


FIGURE 1c. Roll Cage.

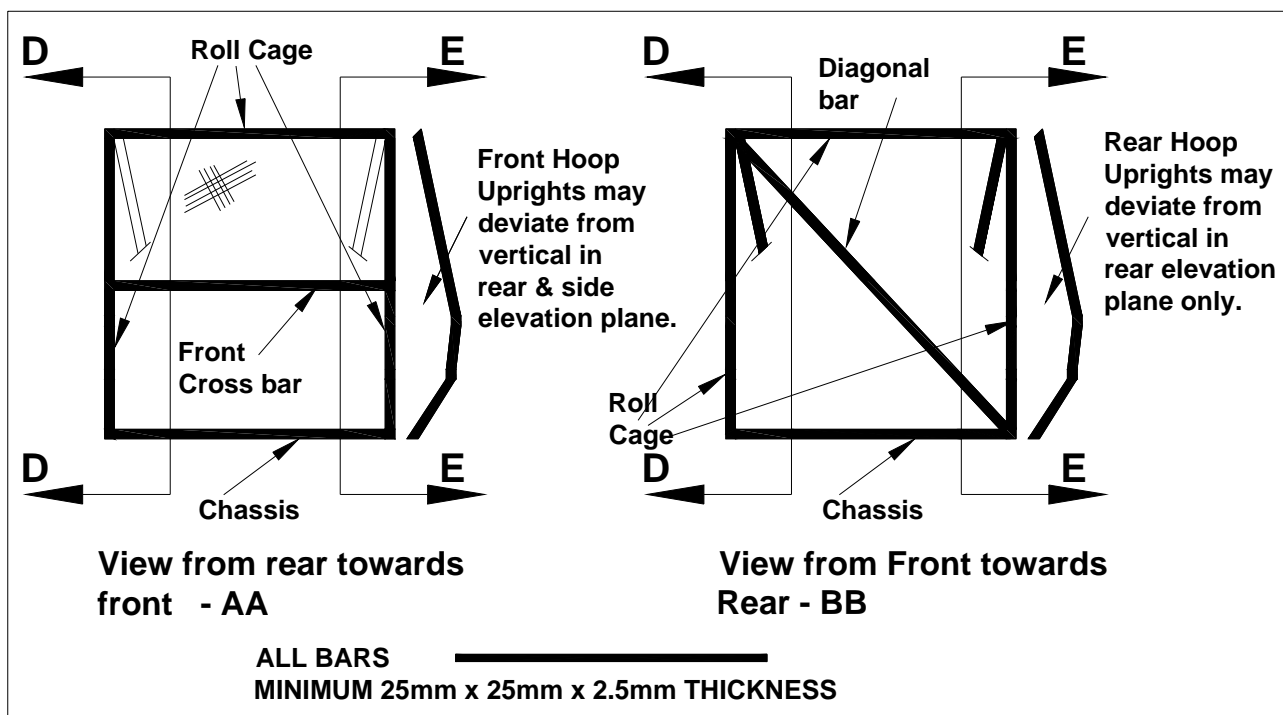


FIGURE 1d. Optional Bars

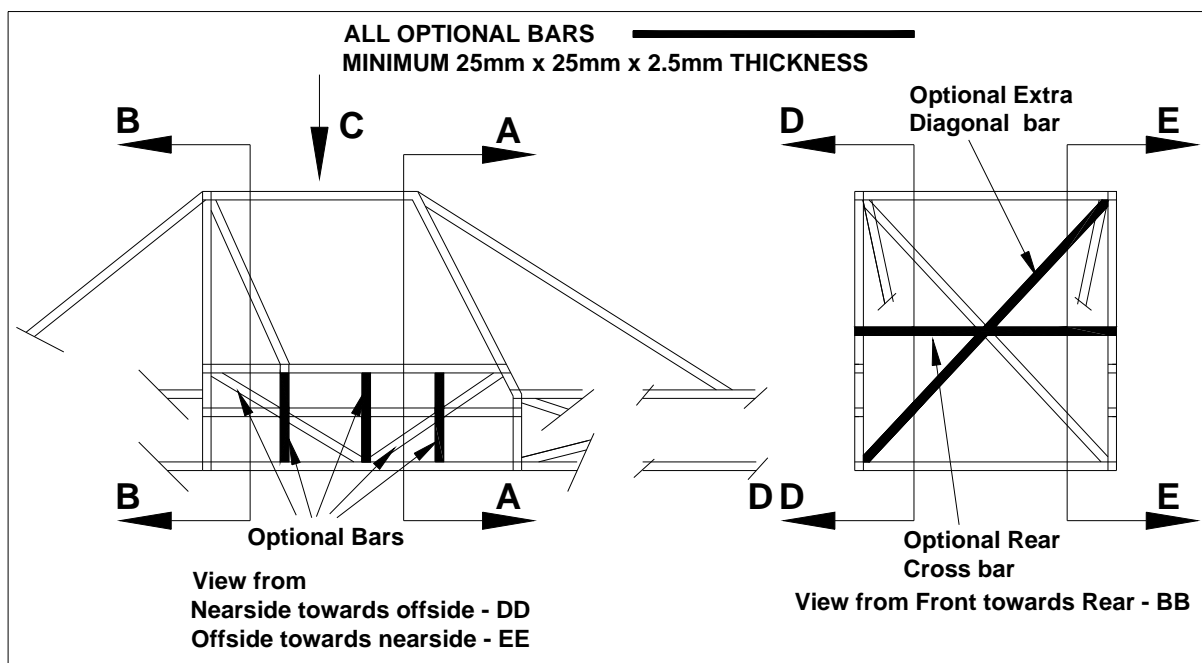


FIGURE 1e.
Optional Bars

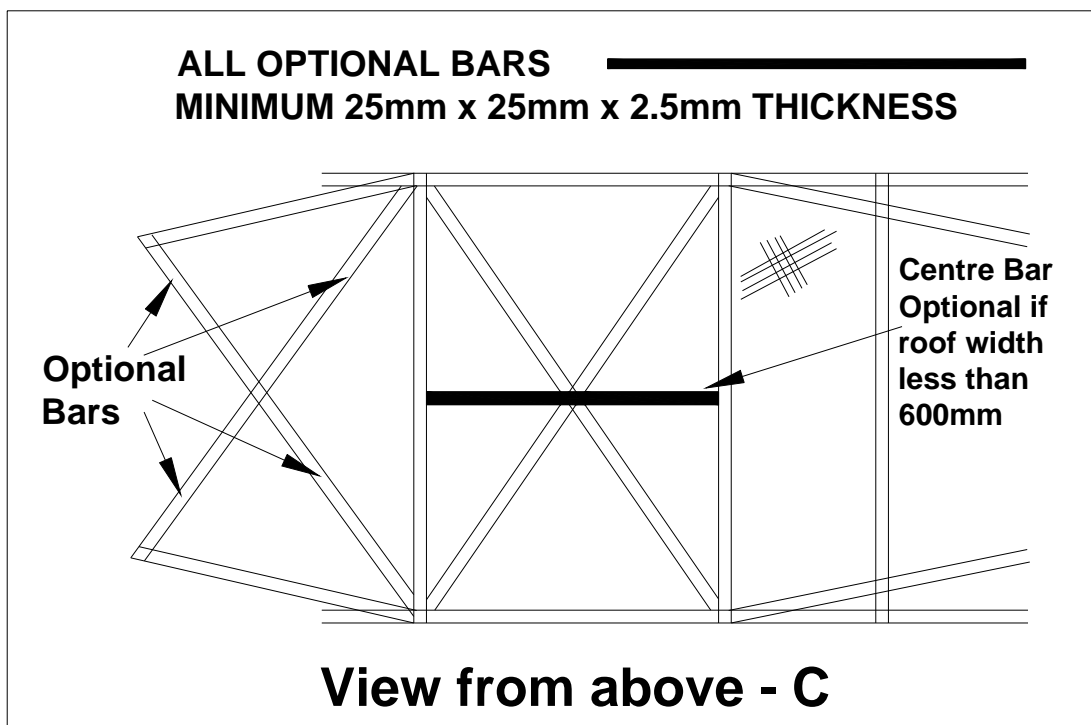
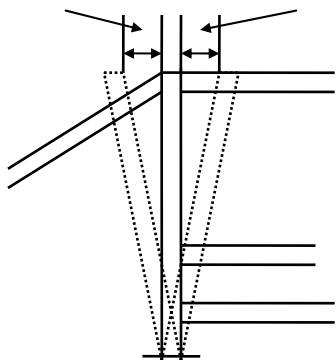


FIGURE 2.

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

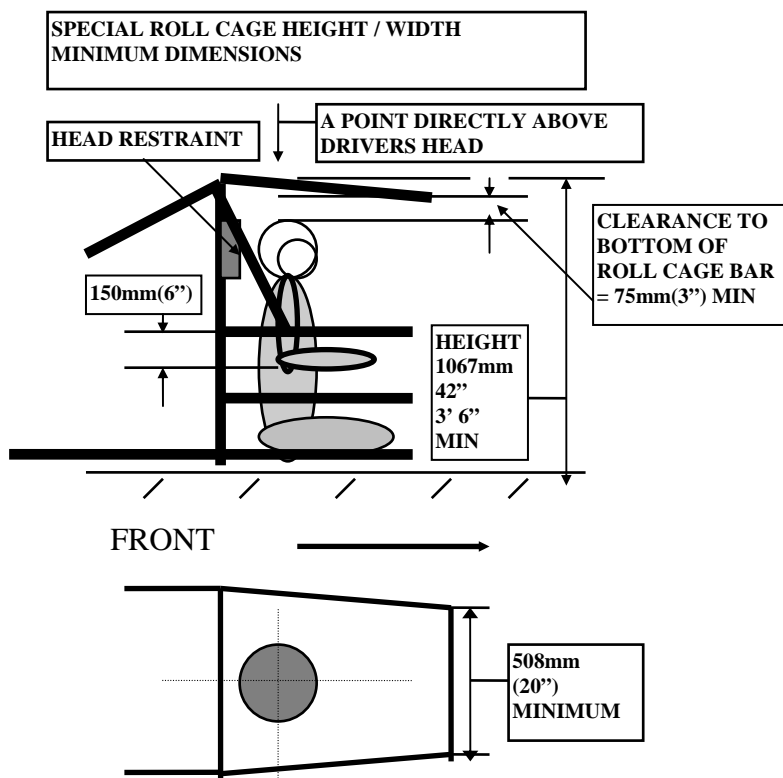


UPRIGHT BAR MUST BE STRAIGHT
WHEN VIEWED FROM THE SIDE.

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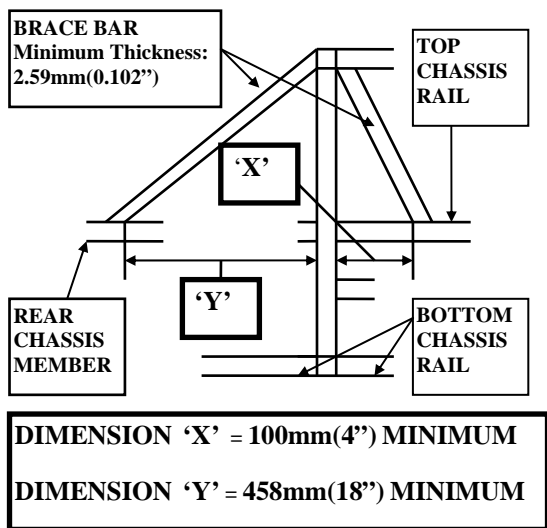
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FIGURE 3



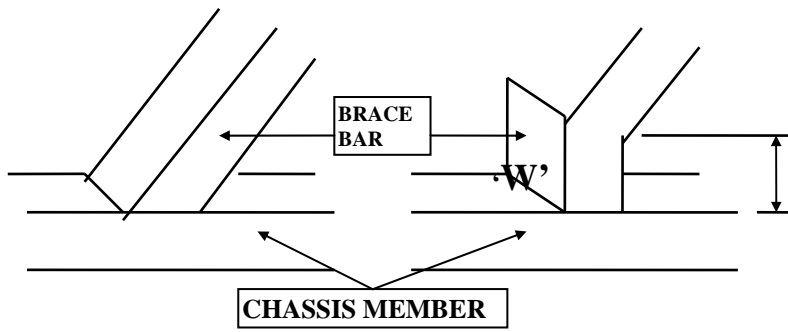
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FIGURE 4



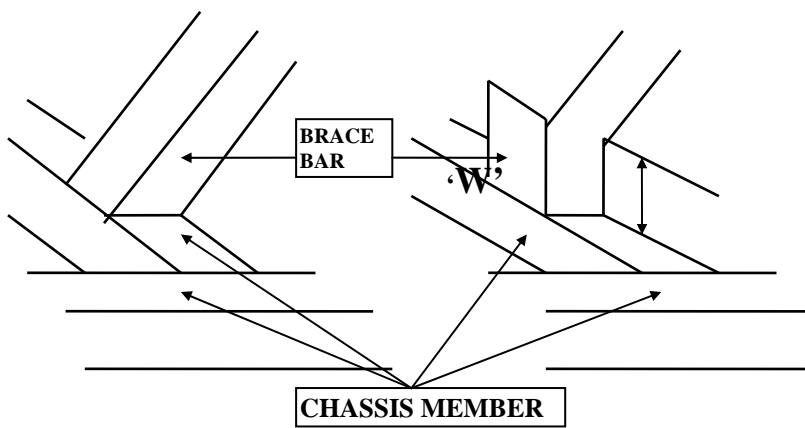
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FIGURE 5.



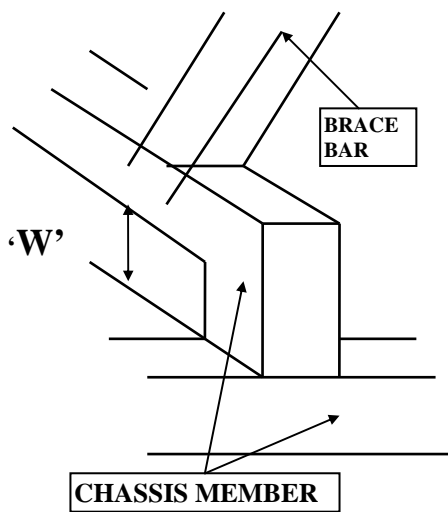
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FIGURE 6.



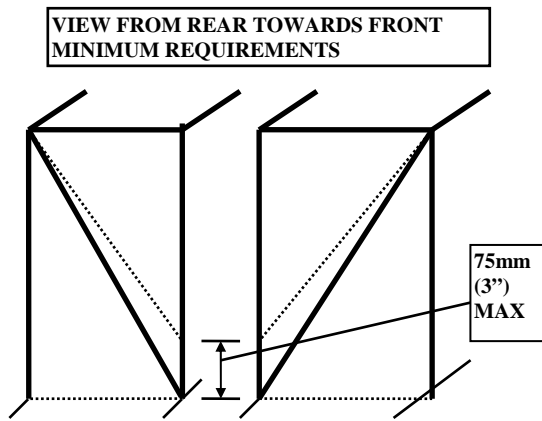
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FIGURE 7.



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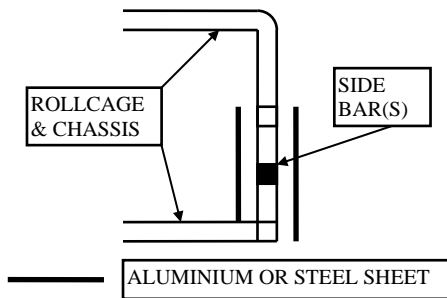
FIGURE 8 ROLL CAGE – Diagonal deviation.



EACH ROLL CAGE UPRIGHT MUST
BE CONNECTED TO BOTTOM
CHASSIS RAIL.

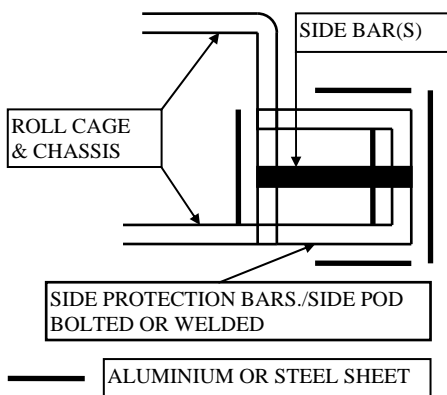
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FIGURE 9 SIDE PROTECTION



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FIGURE 10 SIDE PROTECTION



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FIGURE 11 SIDE PROTECTION

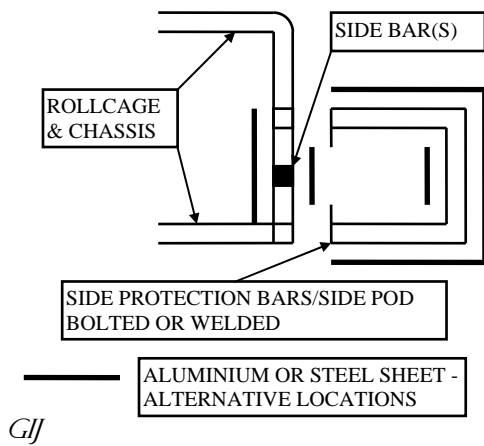


FIGURE 12 SIDE PROTECTION

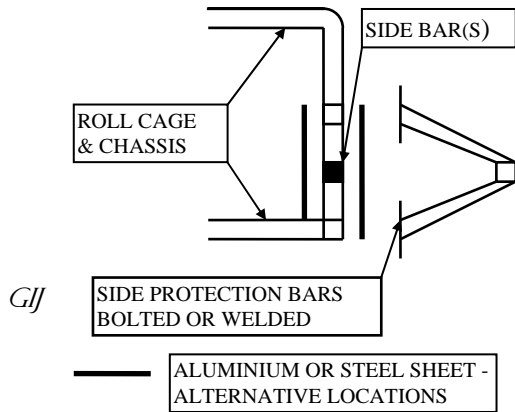


FIGURE 13 SIDE PROTECTION

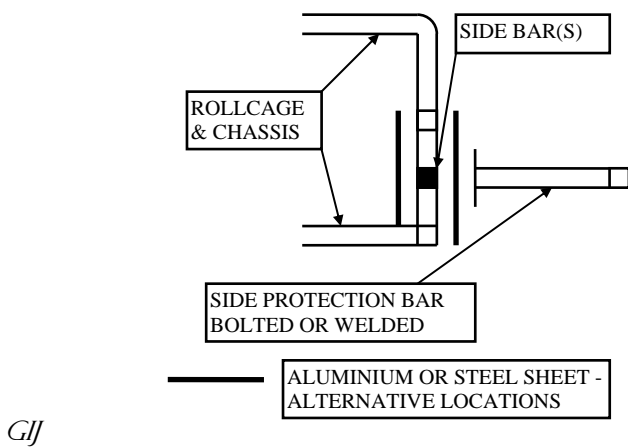
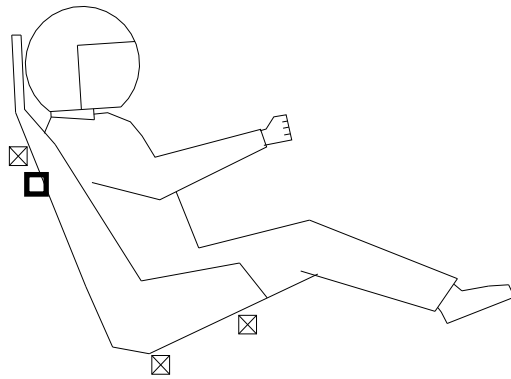


FIGURE 14 SEAT FIXING POINTS

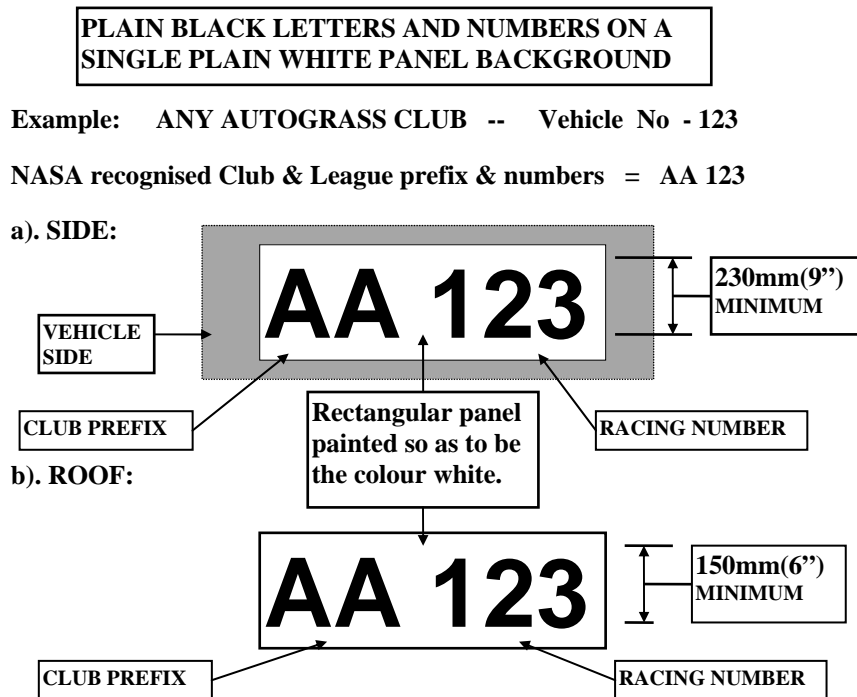


☒ **FIXING POINTS**
As seat manufacturer's
recommendations

Seat Support Bar ☐
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.

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FIGURE 15 VEHICLE IDENTIFICATION

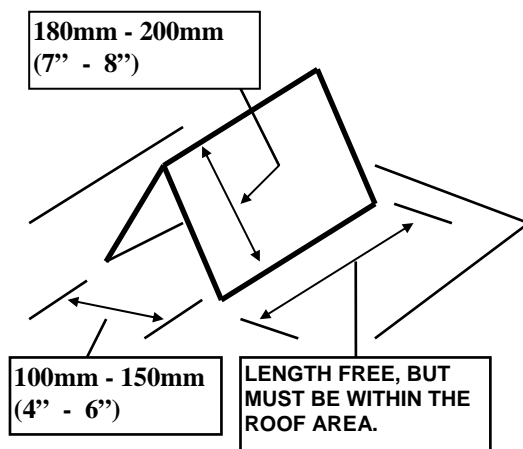


The Identification (Club letters & Racing number) must match that stated in the competitor's NASA Licence. i.e. if AA123 = AA123 Not 123AA or A123A. Identification must be located forward of Rear Roll Cage upright. All letters & Numbers must be clear, legible and upright. Clearance between outside edge of letter and or number to outside edge of white panel: Side: = 50mm. Roof: = 5mm.

g/i

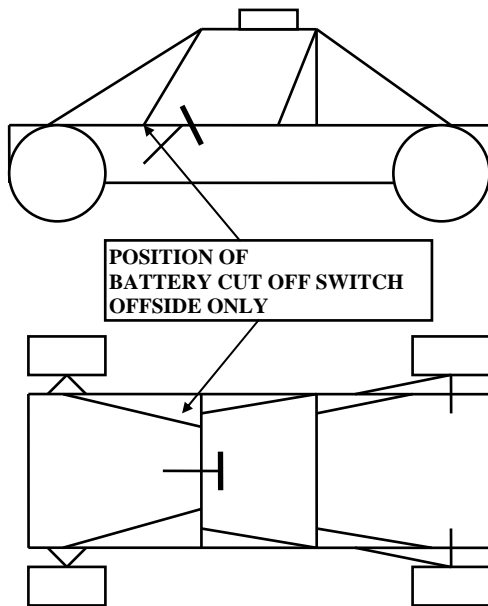
FIGURE 16 METAL ROOF NUMBER PANEL

Identification panel must be located forward of Rear Roll Cage upright.



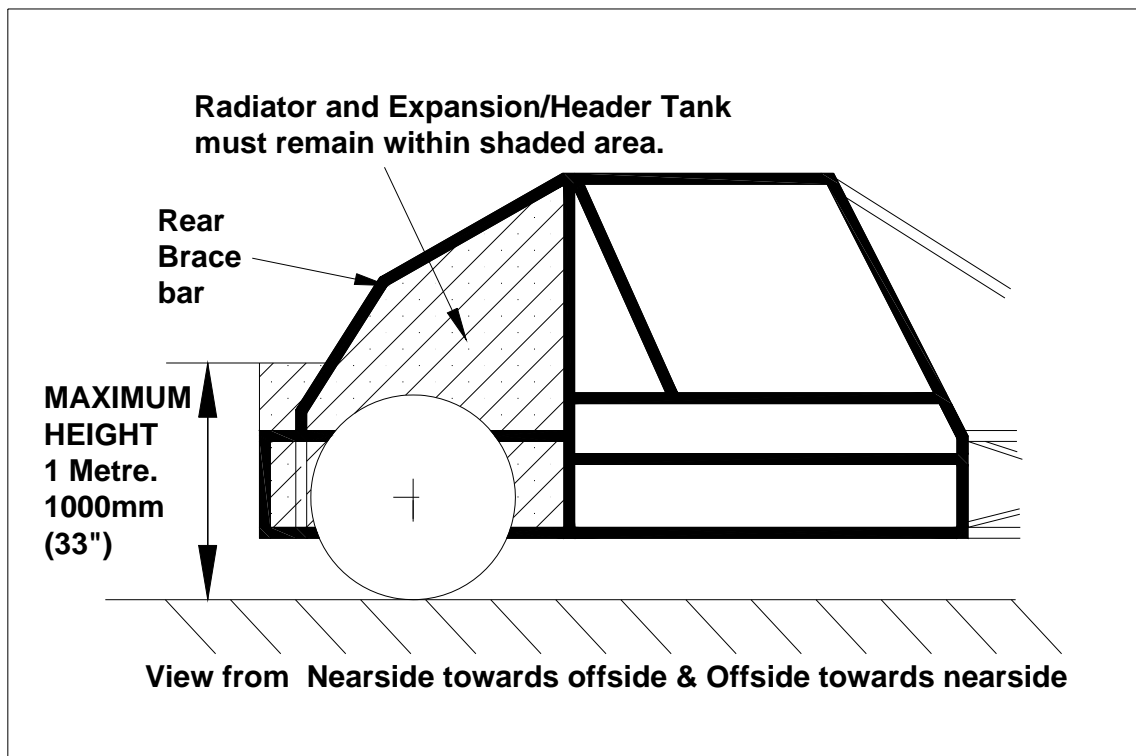
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FIGURE 17 LOCATION OF BATTERY CUT OFF SWITCH



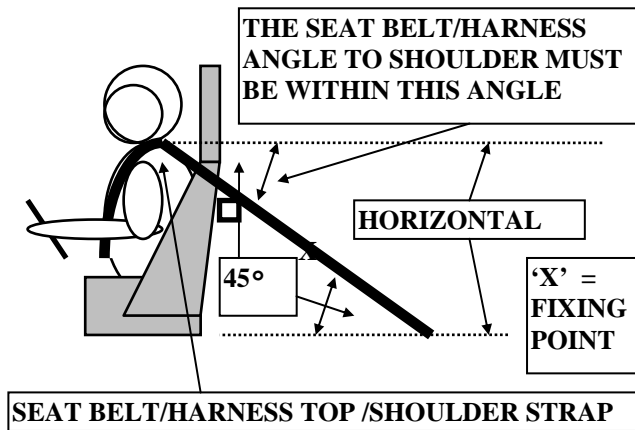
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FIGURE 18 RADIATOR & EXPANSION TANK LOCATION



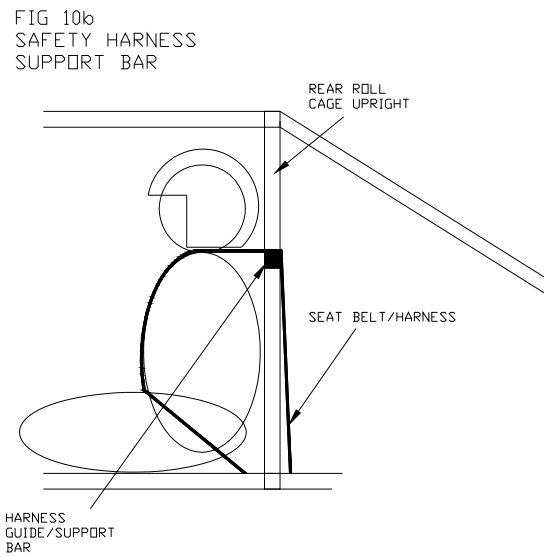
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FIGURE 19a SEAT BELT HARNESS TOP STRAP



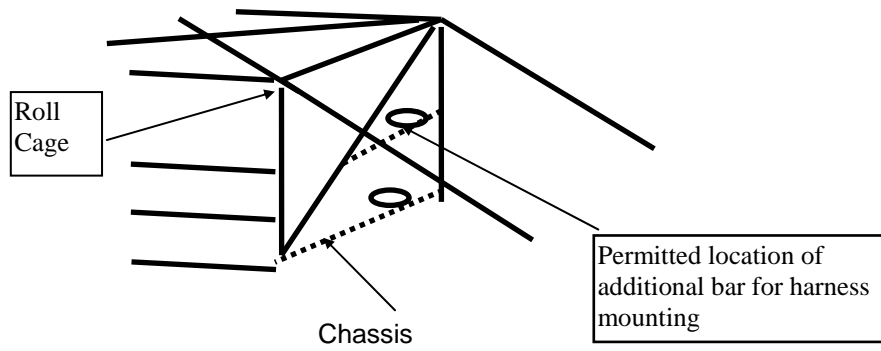
Seat Support bar
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FIGURE 19b SEAT BELT HARNESS SUPPORT BAR



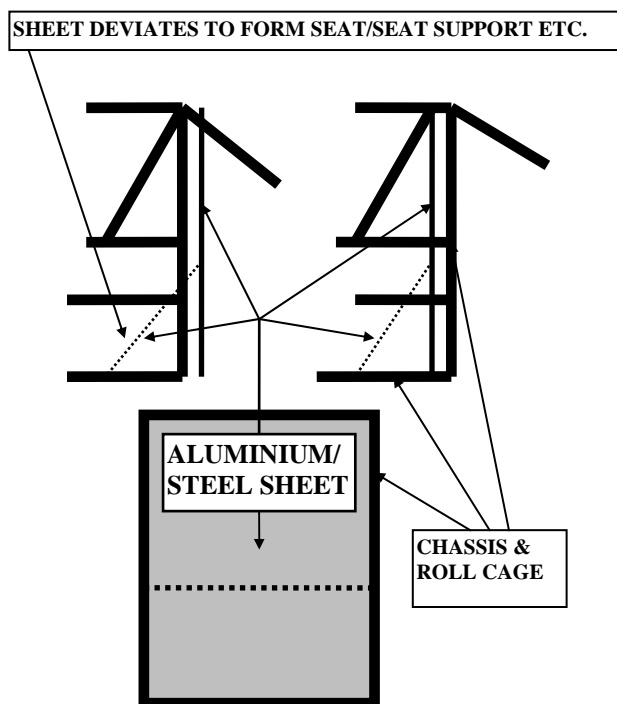
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FIGURE 19c HARNESS STEEL EYE BOLT MOUNTING PLATE FIXINGS



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FIGURE 20



GJ

FIGURE 21

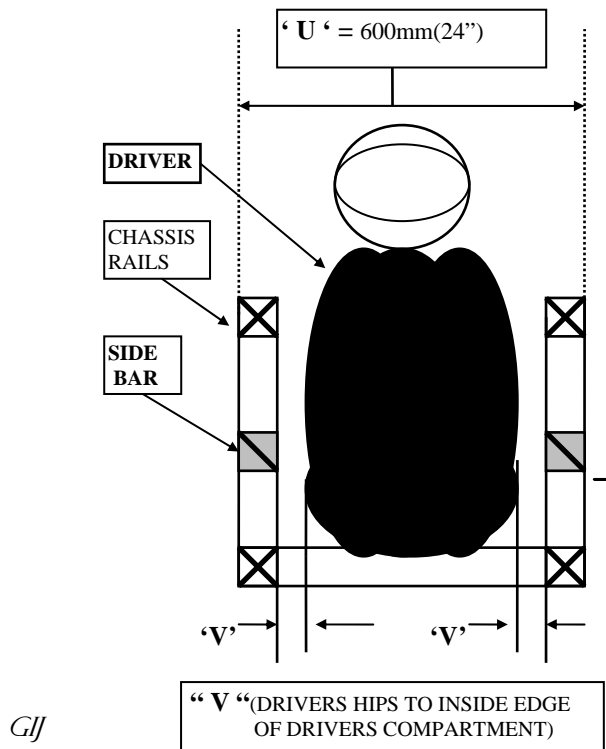


FIGURE 22 EXHAUST AREA

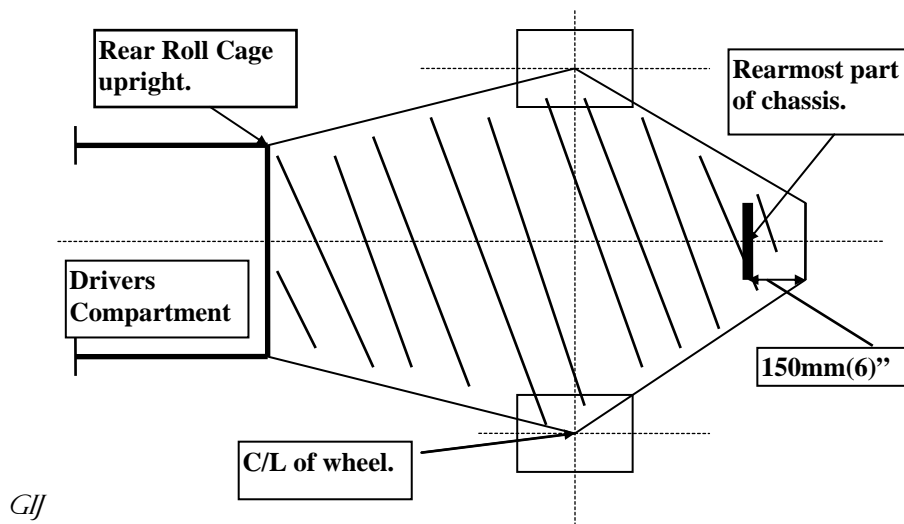
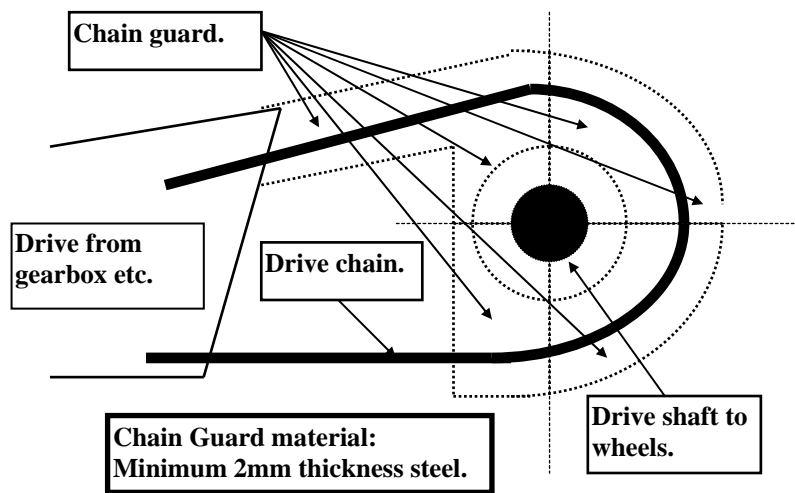


FIGURE 23 CHAIN GUARD

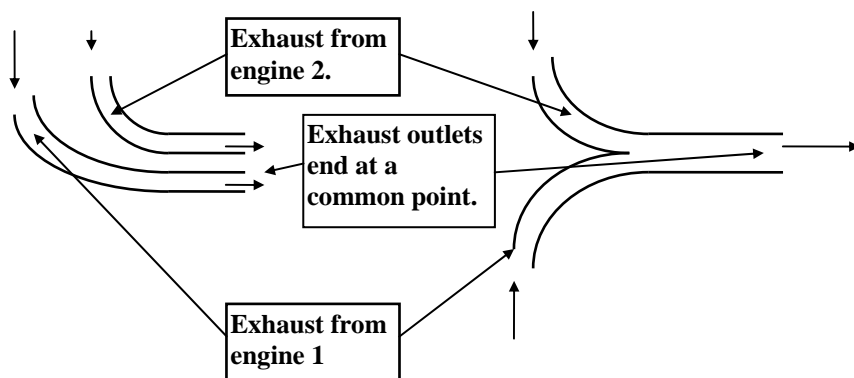


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FIGURE 24a TWIN EXHAUST OUTLETS

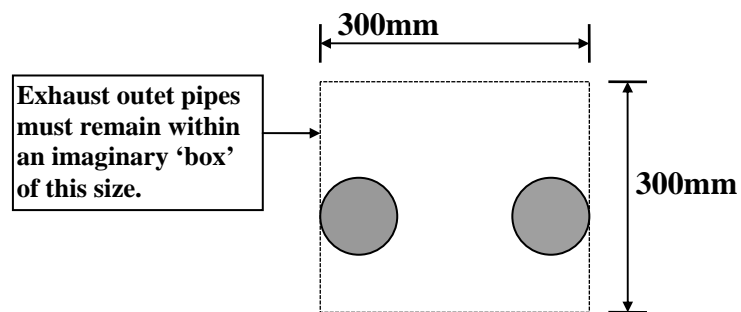
Either A

Or B



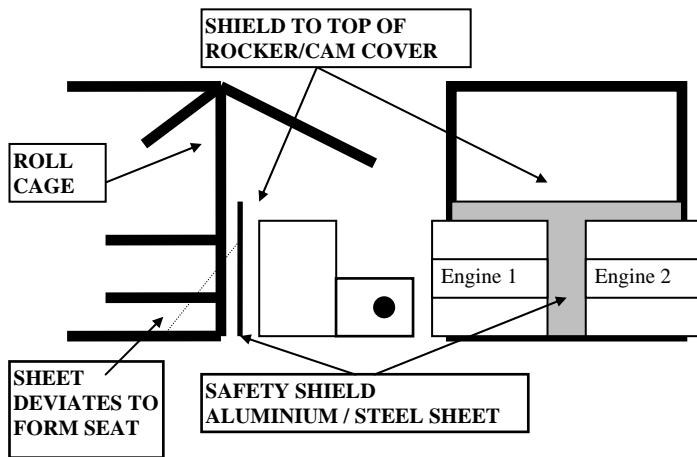
GJJ

FIGURE 24b TWIN EXHAUST OUTLETS



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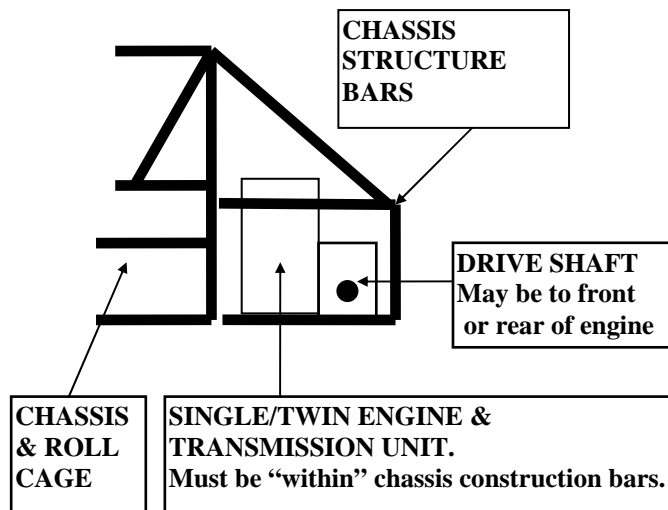
FIGURE 25 ENGINE SHIELD



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FIGURE 26a Rear Engine Requirements

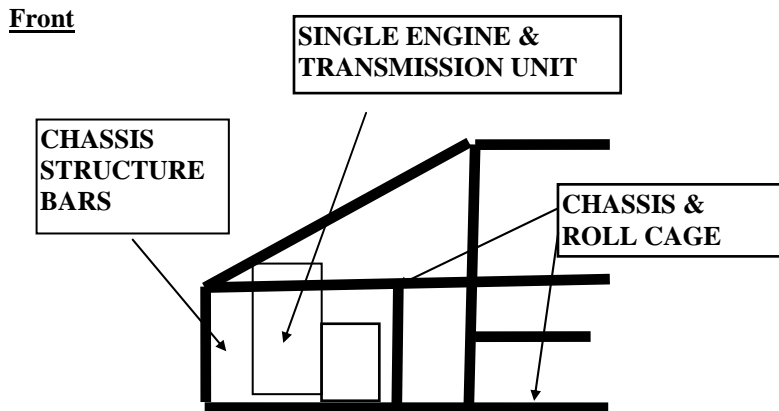
Rear



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FIGURE 26b Front Engine Requirements

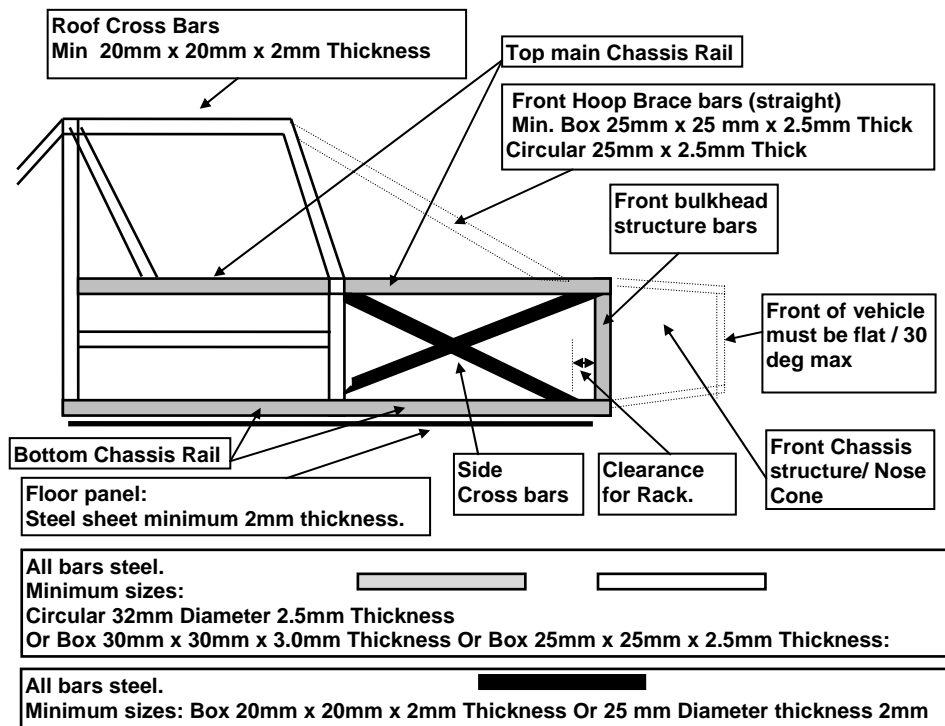
Note: As of January 2016 front engine vehicles prohibited unless registered with NASA Prior to January 2016 and fitted with a "NASA Tag".



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FIGURE 27 a.CAB & CHASSIS REQUIREMENTS

Note: Figure is diagrammatic.



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FIGURE 27 b.FRONT BULKHEAD REQUIREMENTS

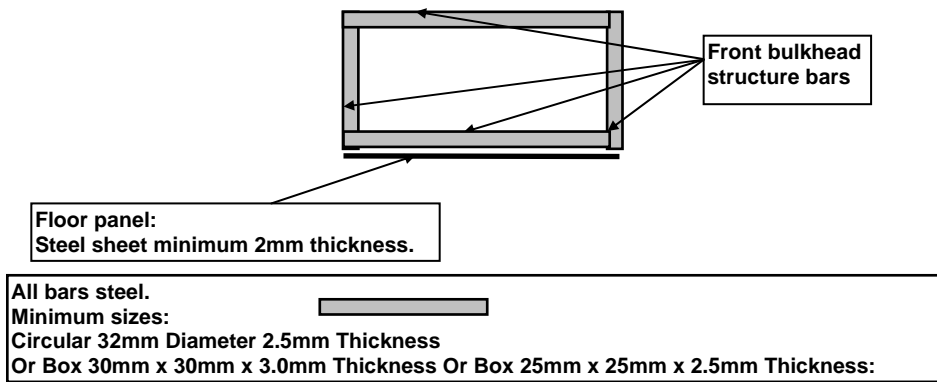
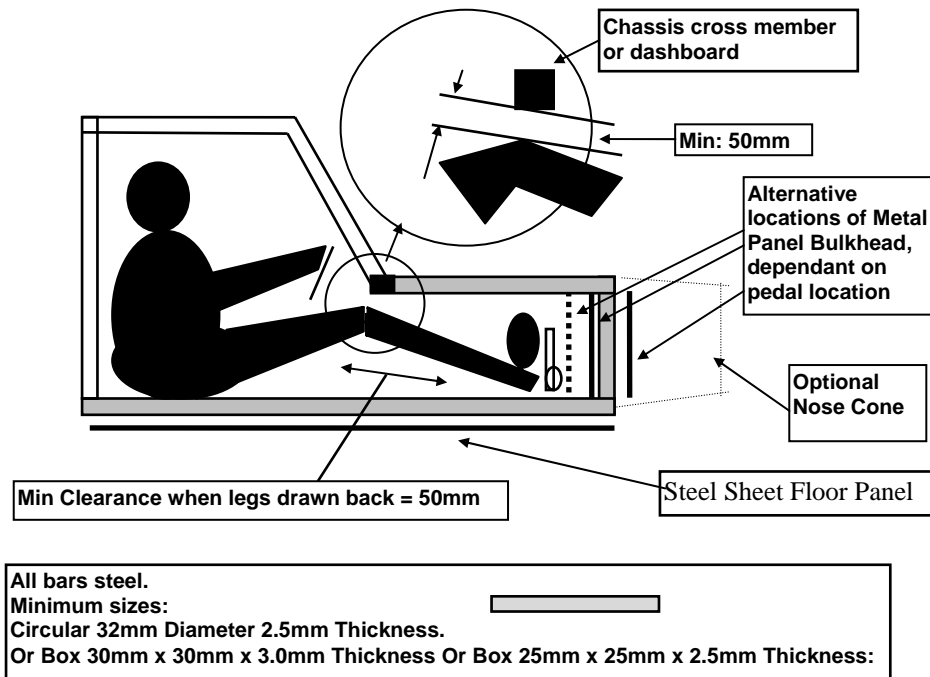
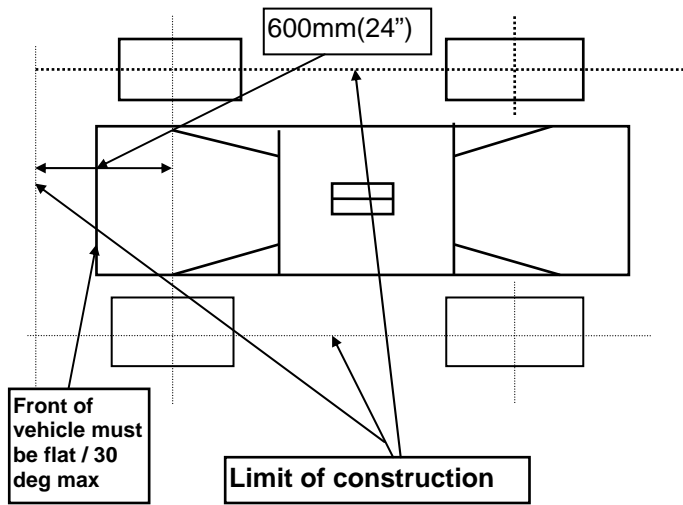


FIGURE 28 CAB REQUIREMENTS
Note: Figure is diagrammatic.



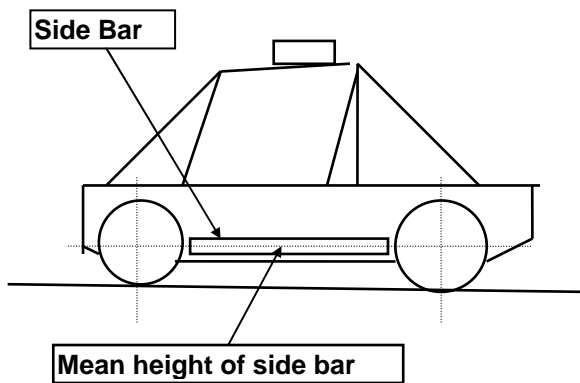
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FIGURE 29 LIMITS OF CONSTRUCTION



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FIGURE 30 SIDE PROTECTION BAR LOCATION



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FIGURE 31a – ENGINE SEALING

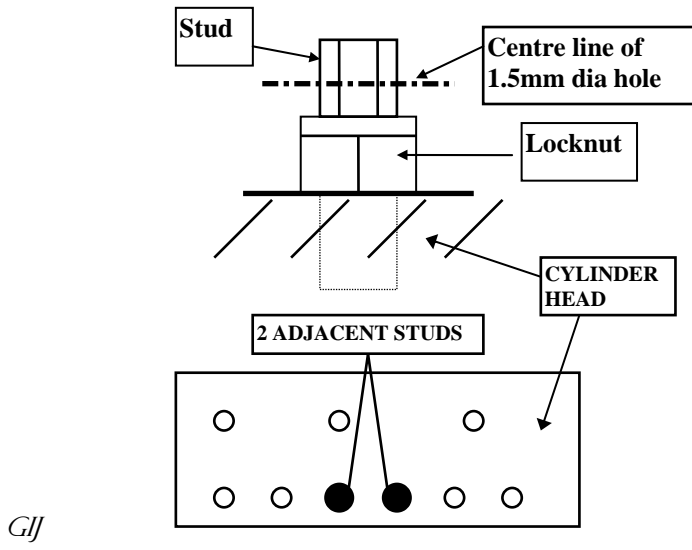
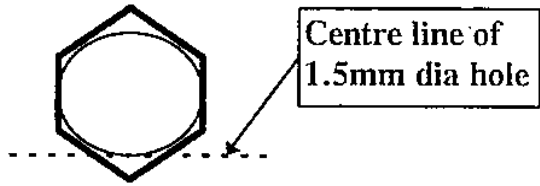
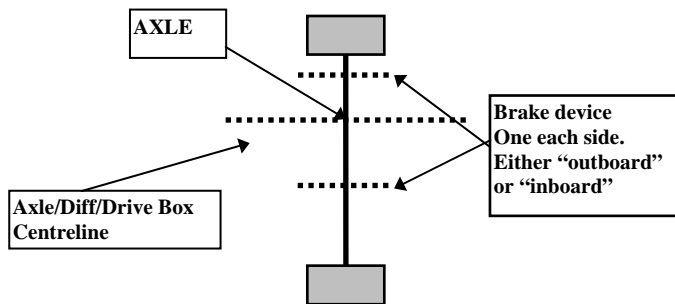


FIGURE 31b – ENGINE SEALING



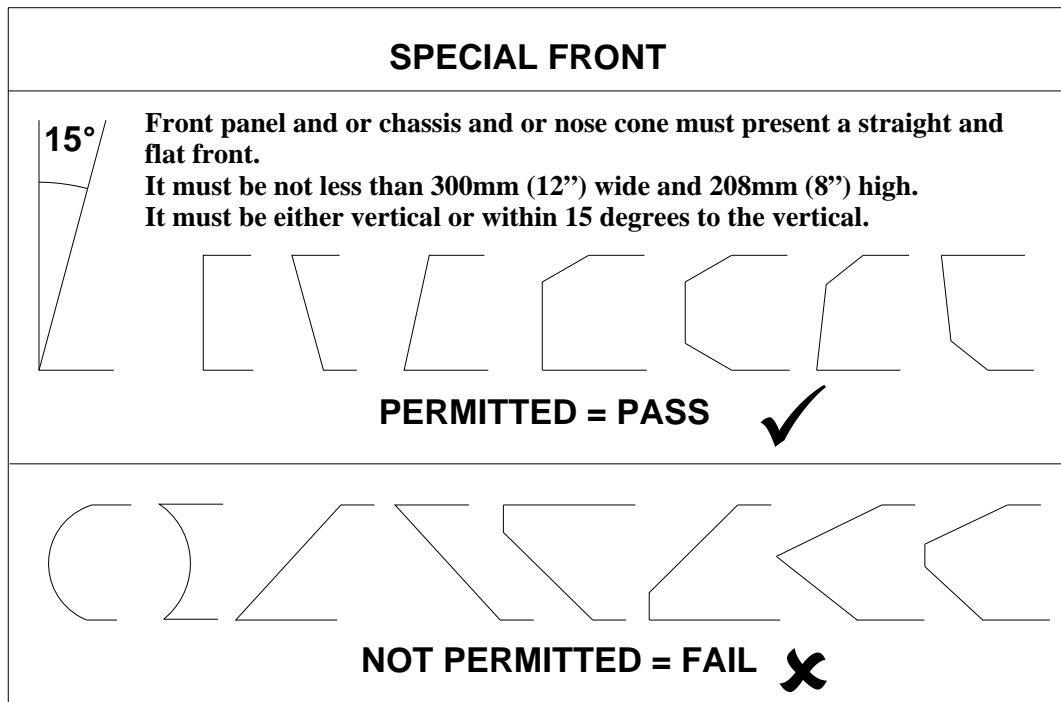
GJJ

FIGURE 32 – BRAKES



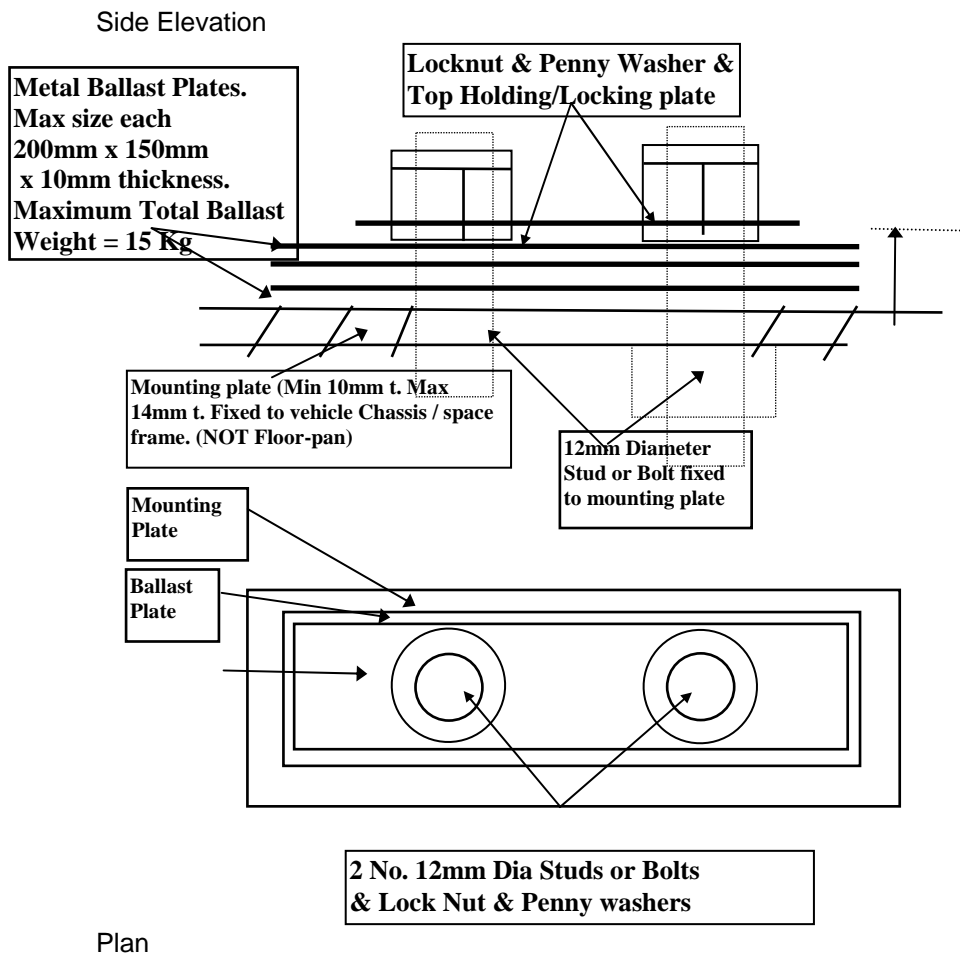
Gj

FIGURE 33 SPECIAL FRONT/NOSE CONE – REQUIREMENTS



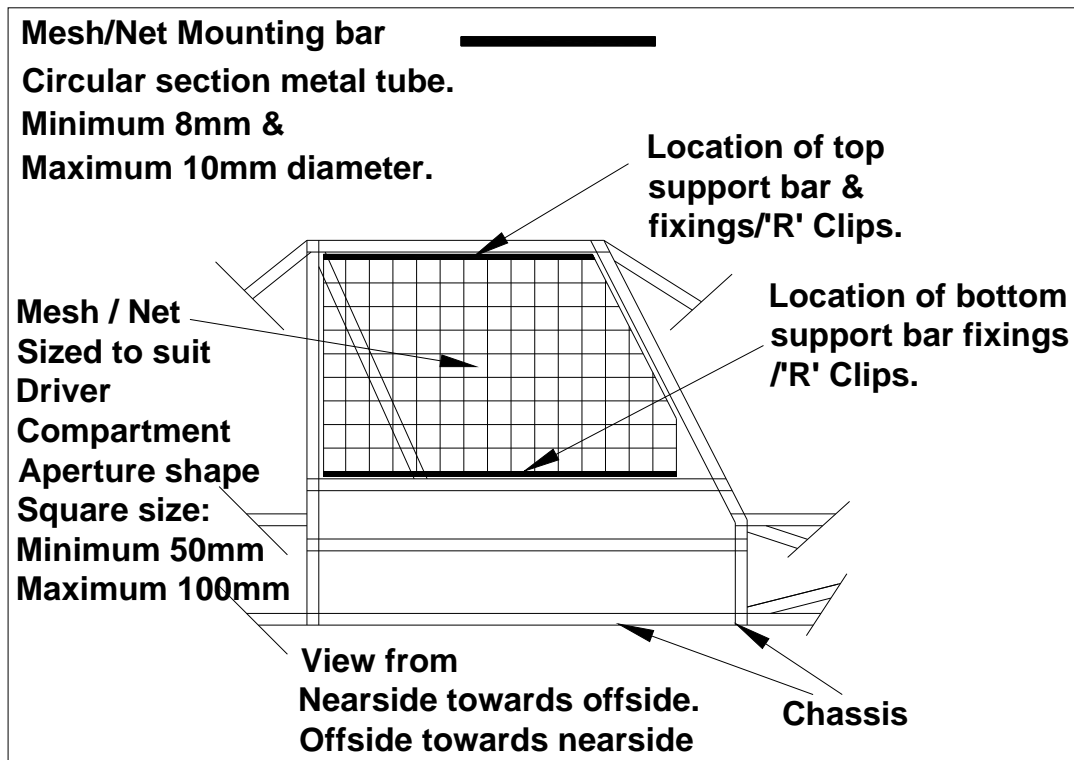
Gj

FIGURE 34 BALLAST REQUIREMENTS.



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FIGURE 35 DRIVERS COMPARTMENT APERTURE WEBBING/NET/MESH REQUIREMENTS. – Both Nearside & Offside.



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SILENCING

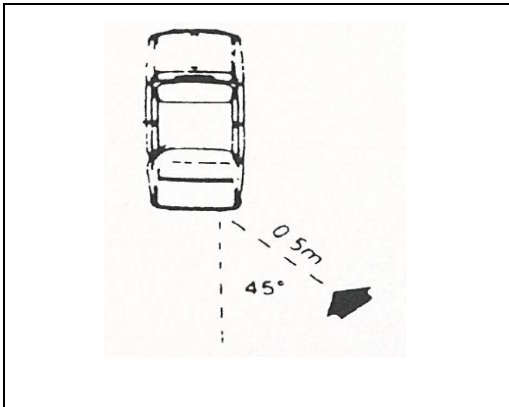
The maximum noise permissible for all vehicles is 102 Db (A).

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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