



**General  
Requirements for  
Automobiles for Off  
Road Racing Events  
V1.1 February 2017**

# Off Road Racing Automobiles General Requirements- GRO

## Scope of Regulations

The following Regulations are adjunct to the AASA General Requirements for Automobiles (GRA). They list additional requirements beyond the GRA that are specific to automobiles competing in Off Road Racing events. Where an item shown on an Individual Recognition Document (IRD) issued by the AASA for a specific automobile is in conflict with either the GRA or GRO, then that specific IRD specification will take priority.

1. Each automobile must be equipped with a firewall that effectively shields the occupants from hazards associated with the derangement or malfunction of the engine and gearbox. A water cooling radiator mounted behind and above the level of the driver's shoulders will be regarded as contributing to an effective shield.
2. Each automobile, other than those retaining a series production floorpan, must be equipped with bodywork which prevents any "line of sight" entry of foreign matter into the habitacle up to approximately the level of the driver's shoulder. For panels fitted to the floor of the habitacle, the material required shall be either mild steel of minimum thickness 1.6mm or aluminium alloy of minimum thickness 2.0mm. Attention should be paid to the strength and impact resistance of the material used for the remaining bodywork.
3. Where the plane of the engine's flywheel intersects any part of the occupant's bodies, a scattershield of 6mm mild steel or aluminium alloy (5083 or similar) must be fitted. The scattershield must be of sufficient length and width to prevent any "line of sight" projectile contact from a deranged clutch/flywheel with the occupants. As an alternative, the use of a bellhousing to SFI 6.1 is permitted. This requirement shall not apply where the automobile retains an unmodified series production floorpan/firewall.
4. Tailshaft
  - 4.1. Where the automobile is fitted with a longitudinal driveshaft/tailshaft, it must be effectively prevented from striking the ground in the event of a derangement of any flexible coupling mechanism.
  - 4.2. Each tailshaft/driveshaft/chain drive passing through the habitacle must be contained within a casing of mild steel of minimum thickness 1.6mm or aluminium alloy of minimum thickness 2.0mm.
  - 4.3. Any chain drive assembly used to transmit power to the wheels must be effectively guarded to prevent the entrapment of foreign objects.
5. Where no structural bodywork exists in the region between the front and rear wheels, a protection or "nerf" bar must be added to minimise the likelihood of wheel interlock. The Nerf bar shall be predominately horizontal and constructed of a single hoop of steel tube of minimum dimensions 38mm diameter and wall thickness 2.5mm. The nerf bar must extend laterally at the rear to a vertical plane through the front and rear wheel hubs on the relevant side. It must be mounted with the fore and aft positions being at least 800mm apart, and have a triangulating brace at the lateral extremity that extends to the chassis at a point in between but not collinear with the other two mounts. At the rear the maximum distance between the nerf bar and the

leading edge of the rear tyre is 250mm. The nerf bar may be removable but the mountings must be at least as strong as the bar itself.

## 6. Fuel Tanks

6.1. Fuel tank(s) must be contained within the structural profile of the automobile when viewed from above. The structural profile is the main chassis/spaceframe of the automobile, less any hanging panels. Any retained bodyshell components from a series production automobile shall contribute to the structural profile, as shall any nerf bar fitted between the wheels.

6.2. When mounted at the rear of the automobile, the fuel tank must be protected to the rear and underneath by a steel tube structure of minimum dimensions 38mm diameter and 2.5mm wall thickness.

6.3. The fuel tank must be isolated in such a manner as to prevent any “line of sight” entry of fuel into the habitacle should a leak occur in any part of the fuel tank.

6.4. Unless a retained series production component, the fuel cap of each fuel tank must be a fully sealed type.

6.5. Each fuel tank must be vented externally to the habitacle. It is strongly advised that a roll-over check valve be used in each vent line. Where a roll-over valve check valve is not used, the vent pipe must be attached at the top of the tank in one corner and extend vertically to at least the same height above the tank as the tank is deep at its maximum point. It must then cross to the opposite side of the tank and extend down to a point at least 150mm below the lowest part of the tank.

7. Each automobile shall be fitted with a means of travelling in a reverse direction without external assistance.

8. Each automobile shall be provided with two rear vision mirrors, each with a reflective surface area of at least 50 cm<sup>2</sup>. The mirrors shall be arranged so that the driver can see an object placed on the ground a distance 15m directly behind the automobile in at least one mirror.

9. Each automobile shall be fitted with two towing points; one ahead of the front axle and one to the rear of the rear axle. These shall be of sufficient strength to permit the movement of the automobile with its wheels locked, and be clearly marked in bright red. If they take the form of an eye it must be capable of accepting the insertion of a 40mm diameter pin.

## 10. Safety Cage structure

10.1. For automobiles that utilise a retained series production bodyshell, a safety cage to AASA Class 2 or Class 3 specification must be added. The fitment of a second side anti-intrusion bar is strongly recommended. It is permitted to add up to two bars into the “windscreen” area provided that they don’t form a cross at any point, nor unduly impede the driver’s vision.

10.2. For automobiles that utilise a spaceframe structure, it is possible to either:

- Add a safety cage structure in compliance with AASA Class 2 or Class 3, with the main hoop and front legs extending to floor level; or
- Incorporate a safety cage into the spaceframe structure. In this case, the complete spaceframe must be acknowledged by the manufacturer as being suitable for the purpose of Off Road Racing competition. Refer to the AASA Spaceframe vehicle requirement for further information (Note: Not Yet finalised as of 30/01/2017)

## 11. Windows

11.1. Each windscreen fitted to the habitacle shall be made from laminated glass or polycarbonate (Note: Perspex® is specifically not permitted).

- 11.2. Where the driver must look through a windscreen, an effective wiper, and washer system, must be fitted to the area ahead of the driver.
12. Each rear hinged swinging panel must be equipped with two fastening mechanisms that act simultaneously to hold the panel closed under all reasonably foreseeable operating conditions.
13. Each automobile must be fitted with at least one hand held type fire extinguisher, with the total mass of extinguishant not less than 1.80kg. Event Regulations may require carriage of additional extinguishers in high fire risk periods and/or locations.
14. Seating
  - 14.1. Each occupant must be provided with a seat capable of supporting and restraining the torso and of sufficient size to permit the occupant to sit fully into the seat.
  - 14.2. The minimum width of the seat at each of the hip and shoulder is 350mm
  - 14.3. The minimum width of the space available for each occupant's feet is 250mm, measured at the pedals or footboard as appropriate and perpendicular to the automobile's longitudinal centreline.
  - 14.4. Where no headrest is incorporated into the seat, a separate headrest must be provided to support the occupants head against a rearwards impact. The headrest must be constructed of a flat plate of steel at least 2mm in thickness and an area of at least 225cm<sup>2</sup> with no projections on its surface. It shall be covered with energy absorbing padding to SFI 45.2 or equivalent at least 25mm thick, and must be within 50mm of the occupant's helmet when the occupant is seated normally.
  - 14.5. The headrest, whether incorporated into the seat or as a standalone item, must extend to at least half the height of the helmet.
15. Roof
  - 15.1. There shall be a minimum clearance of 50mm between the roof and the occupant's helmets.
  - 15.2. Automobiles that do not use the retained roof panel of a series production bodyshell must be equipped with roof plate(s).
  - 15.3. Each roof plate shall be constructed of either:
    - Aluminium alloy (5083 or similar) of minimum thickness 2.6mm; or
    - Mild steel of minimum thickness 1.2mm
  - 15.4. Each roof plate must, in combination or individually extend the full width of the space available between the inner edges of the upper longitudinal safety cage or chassis members.
  - 15.5. When viewed from above, each roof plate must be at least 600mm in length when measured parallel to the automobile's longitudinal centreline, of which at least 300mm must be ahead of the upper edge of the eye opening of the occupant's helmets.
  - 15.6. Each roof plate may be fixed or hinged to the automobile's structure.
    - If fixed the plate(s) shall be attached by either:
      - Stitch welding (minimum 30mm per weld spaced no further than 300mm apart) to the space frame or safety cage structure, or
      - Attachment by fasteners to tabs welded to the space frame or safety cage structure. In this case the fasteners shall be bolts of 6mm minimum diameter or quarter turn fasteners of minimum diameter 9.5mm, each at intervals of no more than 300mm.
    - If hinged:

- The roof plate shall be attached to a continuous “piano” hinge that is itself attached to a tab(s) welded to the front lateral member or front hoop of the space frame or safety cage structure.
- The hinge must be of length sufficient to extend to within 20mm of the longitudinal tubes of the frame.
- Each hinge shall be made from steel, of width 50mm and with a pin of not less than 2.5mm.
- The rivets fastening the hinges shall be a minimum of 3mm in diameter and be spaced no further than 30mm apart.
- Hinges shall be attached to the roof and tab using rivets of corrosion resistant material (Monel® or similar).
- A hinged roof must overlap and be supported at the sides and rear edge by the other members of the spaceframe or safety cage that make up the roof opening.
- Each hinged roof must be held closed by two self-locking or elastic type latch mechanisms, each free from sharp edges and projections.

## 16. Brakes

16.1. Each automobile is to be equipped with a foot controlled primary braking system operating simultaneously on each wheel.

16.2. Each automobile must be fitted with a secondary braking system capable of operating on at least two wheels in the event of a failure of the primary braking system.

17. Each steering column system between the steering wheel and steering rack/box must incorporate two flexible couplings, and be offset in a manner that permits the column to collapse in the event of the rearwards displacement of the steering rack/box. Automobiles retaining a series production bodyshell and associated steering column in compliance with ADR10A/ADR10B are deemed to comply with this requirement.

18. Each automobile shall be equipped with side window nets, or wrist restraints, capable of restraining each occupant’s limbs within the habitacle.

19. Each automobile shall be equipped with a safety harness for each occupant with at least 5 straps in contact with each occupant’s body. Harnesses shall be to the SFI 16.1 standard, or internationally recognised equivalent.

## 20. Emergency Equipment

20.1. Each automobile shall carry the following equipment

- A reflective warning triangle of side length 200mm
- A water resistant OK/SOS sign of area not less than 580 cm<sup>2</sup>.
- A proprietary automobile tow rope of at least 5m length
- A proprietary device for each occupant designed to cut safety harnesses in the event of an incident.
- A weatherproof Off Road First Aid kit, as supplied by St John Ambulance Australia, or equivalent.

20.2. Emergency equipment shall be securely mounted and reasonably protected from exposure to dust and water.

## 21. Electrical System

21.1. The battery shall be securely mounted, and protected in a manner that prevents short circuits and the spill of liquid onto the occupants.

21.2. The battery’s location shall be marked by a blue triangle of side length 150mm.

- 21.3. Each automobile shall be equipped with a master isolation switch configured so as to remove electrical power from all parts of the system, and which will stop a running engine.
- 21.4. The isolation switch, and any remote point, must be denoted by a red spark in a white edged blue triangle of side length 150mm.
- 21.5. The isolation switch shall be mounted so as to be accessible to each occupant
- 21.6. Where the switch is not readily accessible to an external person, a remote means of operation must be provided near the base of the right A-Pillar.
22. Each automobile shall be equipped with lighting as follows:
  - 22.1. At least one rear facing red stoplight, controlled solely by the application of the brakes. It shall have an area of not less than 60 cm<sup>2</sup> and a light intensity equivalent to a 12V, 21W incandescent filament globe when viewed at any angle up to 45 degrees either side of the longitudinal axis of the automobile.
  - 22.2. At least one rear facing amber dust/clearance light, configured so as to be lighted whenever the main isolation switch is on. It shall have an area of not less than 60 cm<sup>2</sup> and a light intensity equivalent to a 12V, 18W incandescent filament globe when viewed at any angle up to 45 degrees either side of the longitudinal axis of the automobile.
  - 22.3. At least two separate forward facing white lights, configured so as to be switched on by the occupants. Each light shall have a light intensity equivalent to a 12V, 55W incandescent filament globe when viewed directly ahead of the automobile
23. Each automobile shall be equipped with an audible warning device capable of alerting other automobiles that they may be about to be passed. The warning device shall be capable of generating a noise in excess of 95dB at a distance of 5m ahead of the automobile.
24. Wheels and tyres
  - 24.1. Wire spoke wheels are prohibited
  - 24.2. Wheels of rim width greater than 13" must be fitted with devices to mechanically lock the tyre to the rim
  - 24.3. Tyre valves must not project beyond the profile of the inflated tyre, and must be fitted with sealed metal valve caps
25. Number Display
  - 25.1. Each automobile shall be identified by numbers of at least 3 digits, each at least 150mm in height. Unless otherwise specified in event regulations, the font shall be Arial Bold,
  - 25.2. Each automobile shall be equipped with two number panels, each on a vertical plane.
  - 25.3. Each number panel is to be coloured white and of sufficient length so as to permit a gap of at least 25mm between each numeral and its adjacent numerals and to each edge of the panel.
  - 25.4. Each number panel is to be at least 200mm high and configured so as to permit a gap of at least 25mm between each numeral and the top/bottom of the panel
  - 25.5. One number panel shall be parallel to the longitudinal centreline of the automobile, with its lowest edge not below the highest part of the automobile's roof.
  - 25.6. One number panel shall be mounted at the rear of the automobile in such a location as to be visible from 30 degrees each side of the longitudinal centreline.
  - 25.7. Event regulations may specify additional or alternative identification requirements.
26. Engine Capacity

- 26.1. Each petrol engine equipped with forced induction shall be regarded in all circumstances to have an effective capacity equal to the product of its swept volume and a factor of 1.70 (Note: 3.56 litres turbo petrol = 6 litres +1%)
- 26.2. Each diesel engine equipped with forced induction shall be regarded in all circumstances to have an effective capacity equal to the product of its swept volume and a factor of 1.33 (Note: 4.55 litres turbo diesel = 6 litres +1%)
- 26.3. Unless specified otherwise in Event or Specific Regulations, each engine shall be deemed to remain eligible within its nominal class provided its measured capacity, including equivalence factors, is not more than 1% above the nominal capacity limit.