

BULLETIN



BULLETIN No.: 2018-01

Subject: O4WD, P4WD & P2WD Rule Changes

Issue Date: January 5, 2018

Effective Date: For review, comments will be accepted until January 26, 2018

The CARS board would like your feedback on the content and implementation of this package, please send directly to the CARS Technical Director, Graham Bruce technical@carsrally.ca

OR

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In this manner the feedback can be properly collected and reviewed.

The Technical Rules team that worked on these rules include;

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Rationale and overview of O4WD, P4WD and P2WD rule changes.

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Brief Class History

CARS went to a simplified 4-class structure in 2013. Allowing for Open and Production cars in both 2WD and 4WD. Over the subsequent years this structure has proved reasonably successful with the O4WD, O2WD and P4WD classes having a fairly even distribution of competitors and good competition within those classes.

Feedback to the CARS board during this time has included:

1. Beliefs that the displacement limits on normally aspirated cars are too restrictive.
2. The cost to build and operate a competitive O4WD car continues to increase, as does the performance gap.
3. Production cars are getting to be further from the intended production base.
4. 2WD to 4WD conversions are more prevalent and should be allowed as an alternative to available 4WD cars.
5. FIA cars should be allowed to compete.

4WD Team mandate

Develop a set of Open 4WD rules that limit the overall spend required to build and maintain a competitive O4WD car.

Review the Production Class rules in light of the proposed O4WD rules, to ensure that we are meeting the intent of having a production class car and that any restrictions placed on O4WD cars are appropriately cascaded down.

4WD Team Guiding Principles

- Understand the costs of building and running O4WD cars in the CRC
- Improve competition in O4WD by reducing the competitive difference between cars
- Increase the diversity of O4WD cars
- Ensure that the P4WD rules meet the intent of this being a production based class
- Ensure that the P4WD rules appropriately fit under the O4WD rules.

- Minimal impact on current 4WD competitors and allow time for competitors to adapt to any new rules
- Minimal policing required
- Maintain 4-class structure
- Avoid “balance of performance” measures

4WD rules change pre-amble

4WD Classes

This set of proposed rule changes to the O4WD and P4WD class rules are intended to do two things;

1. Ensure that the O4WD class of the CRC continues to encourage a diversity of competition vehicles while introducing technology that will reduce the overall operating costs, reduce the need for the most expensive technology in order to compete and narrow the performance gap across the class.
2. Ensure that the P4WD class of the CRC is truly a production-based class for production 4WD cars readily available in North America.

O4WD Class.

The O4WD performance objectives will be achieved by:

1. Requiring a 34mm dia. restrictor.
2. Requiring a boost pop-off valve be installed to limit boost to 1.5 bar (Implemented for the 2019 season)
3. Requiring a minimum weight of 2900 lbs.

The O4WD diversity objectives will be achieved by encouraging a variety of new O4WD cars:

1. By allowing FIA Vehicles (World Rally Cars, R5, S2000, AP4, etc.) to compete in CRC events and to score points in the CRC providing they comply with all of the O4WD class rules. There will be a performance observation period during which CARS will monitor relative performance of any FIA vehicles competing in the championship and adjustments could be made to restrictor and/or boost pressure rules for them.
2. By allowing naturally aspirated 4WD vehicles to compete on an approximately even footing by allowing displacements up to 4.0l, as is allowed in O2WD
3. By allowing (encouraging) builds that convert 2WD to 4WD, using the engine and chassis from the same manufacturer. Cross platform (different engine and chassis manufacturers) builds will not be permitted.

P4WD Class

Modifications to the O4WD class rules have precipitated the need to review the Production class rules to ensure that the 4WD classes align appropriately with each other.

The P4WD objectives will be achieved by strictly limiting the changes that can be made to a P4WD car to:

1. Those required in preparing the car to safely compete;

2. Those required in allowing the car to withstand the rigors of competition;
3. The P4WD Class rules will use the principle that ANY modifications are not allowed unless expressly permitted.
4. Requiring a boost pop-off valve be installed to limit boost to 1.2 bar (Implemented for the 2019 season)

Notes on Pop-off Valves

The pop-off valve, in conjunction with the restrictor, is designed to cap the performance of all 4WD forced induction engines. It is simply a precision mechanical valve that opens at a predetermined manifold pressure, effectively limiting the maximum boost pressure available.

This is expected to obviate the need for higher spec engine components and turbos, as well as limit the overall fuel burn and reduce wear on the driveline. Ultimately, this will reduce the cost to compete competitively and increase competition within the class.

Pop-off valves are commonly used in many motorsports series (including in the FIA R5 cars) to limit maximum allowed boost. They are a reliable and relatively inexpensive alternative to electronic control and monitoring of maximum boost pressure.

The current cost of the pop-off valve is 289 GBP. CARS will facilitate a group buy well before the beginning of the 2019 season at a competitive price. The mounting flange may be fabricated by the competitor or purchased from various shops.

Typically, these pop-off valves are inspected annually or about every 1500 stage km. CARS will have the ability to calibrate and service these valves locally by mid-2019 but pop-off valves may also be shipped back to the manufacturer for service.

P2WD rules change pre-amble

The Production 2WD rules were originally combined into section 12.7 with the P4WD. As part of the 4WD rule changes and some cleaning up of the language it was decided to separate the P4WD and P2WD rule sets. This required the creation of a new rule section for P2WD. This will be section 12.8.

The old section 12.8 Log Books, will be re-numbered section 12.9

The P2WD class is intended to be a production-based class, limiting the changes that can be made to a P2WD car to:

1. Those required in preparing the car to safely compete;
2. Those required in allowing the car to withstand the rigors of competition;
3. The P2WD Class rules will use the principle that ANY modifications are not allowed unless expressly permitted.

RULE CHANGES – 4 Wheel Drive (Planned Implementation February 15, 2018)

12.4.7 US Vehicles

Vehicles registered in any of the United States of America, where the driver is competing on CARS entry permit (See 11.1.10), shall be acceptable to compete in Canadian events provided that they meet the requirements of current ARA/RA/NASA Rally Regulations. Entrants whose cars are entered under this provision must be able to produce, upon request by CARS or event officials, a copy of the relevant Rally Regulations. Failure to produce these regulations may result in vehicle being judged according to CARS regulations.

US vehicles entered in Canadian rallies shall be classified by CARS vehicle class regulations. US Vehicles not in compliance with CARS class rules will be allowed to compete but will not be eligible for Championship points.

12.5 Open 4WD

12.5.1 Definition.

Any AWD or 4WD vehicle which meets the requirements of 12.1 to 12.4 and 12.5.2 to 12.5.7. This includes vehicles of series or limited production, which are modified beyond what is permitted in Production 4WD. Innovation and modifications within the rules are encouraged, including modifying production 2WD vehicles into 4WD rally cars.

12.5.1.1 FIA Vehicles

Vehicles, which do not comply with 12.5.1, but do comply with FIA regulations for Group A rally cars (Including World Rally Cars, S2000, R5, AP4) are permitted to compete in open 4WD Class, ~~but shall not be eligible to~~ and score points for the Canadian Rally Championship providing that the FIA Vehicles comply with all other requirements of competition vehicles and of the Open 4WD class per 12.5. However, in recognition of the engineering and development of these cars, the CARS Technical Director and CARS board may impose turbocharger restrictor pressure and / or boost pressure limits.

FIA Vehicles that comply with the FIA regulations for their class but do not comply with CARS Open 4WD class rules will be eligible to compete in CARS events but are not eligible to score points in the Canadian Rally Championship.

12.5.2 Engine

The engine is unrestricted, but must be derived from the product line offered by the vehicle manufacturer.

12.5.2.1 Engine Displacement

~~The maximum displacement for limit for both normally aspirated and forced induction engines is 2500cc.~~

~~Forced induction~~

The maximum displacement limit for forced induction engines is 2500cc.

The maximum displacement is 4000cc for naturally aspirated engines.

Note that these rules anticipate a maximum horsepower of 400bhp at a maximum engine speed of 8,500 RPM. CARS, through the Technical Director and Board, reserves the right to impose restriction for engines deemed to be exceeding these values

Rotary engines are restricted to twin rotors. Peripheral porting is not permitted.

12.5.3 Turbocharger/Supercharger Restrictions.

12.5.3.1 Restrictor

Forced induction engines must have an air inlet orifice of 34mm diameter or less. If the forced induction is equipped with a larger inlet, the use of a restrictor is required. It must have a minimum width (parallel to the direction of the airflow) of three (3) mm and be placed within 50 mm of the compressor blades.

If a car is fitted with multiple induction systems, then the total area of the two restrictors cannot exceed the area of the restrictor listed above. Competitors must have in place a mechanism to allow the induction system to be sealed by the use of wire and CARS seals. With the wire and seal in place, it must be impossible to access the restrictor without removing the wire and seal. The wire and seal cannot be installed without a detailed examination of the restrictor and, without the seal being in place, competitors must be prepared to dismantle the induction system to allow for verification of compliance with the rule above.

12.5.3.2 Boost limit (Proposed implementation January 1, 2019)

Boost is limited to 2.5bar absolute (1.5 bar nominal boost) using a series specific, tamper proof "pop-off" valve installed in the induction tract, downstream of the turbo. The pop-off valve must be clearly visible with the vehicle hood open. The part number of the valve is:
CARS – OPEN – XXX

Where XXX is the valve serial number.

12.5.4.1 Except for 12.5.4.2, the modification, reinforcement, substitution, addition or deletion of parts and components is permitted without restriction.

12.5.4.2 Exterior bodywork (i.e.: all components licked by the airstream) must be visually similar to the original item. Except for front doors and roofs, bolt-on body pieces may be constructed of an alternate material. A and B pillars must remain original. The original floor pan and firewall must remain and may be modified only to the extent necessary to accommodate allowed alternate components. Roof mounted vents are allowed.

12.5.5 Mechanical Components.

Brakes, carburetor/injection, transmission, suspension, cooling, final drive ratio and type, clutch, pressure plate and flywheel are unrestricted.

12.5.6 Electronic Controls

No type or form of electronic control is permitted for the following components: Suspension, Braking, Gear change/clutch, front and rear differentials. Simple engine cut operating during a mechanically activated gear change is permitted

12.5.6.1 The use of an unassisted manual sequential gear change mechanism is allowed.

12.5.7 Weight

~~For O4WD class vehicles, the absolute minimum real weight of the car is set at 1318 Kg (2900 Lbs)~~
The minimum weight of the car is set at 2900 lbs (1318 kg).

~~The weight of the car without fuel, driver, co-driver and their personal equipment. In case of a dispute during weighing the full equipment of the driver and co-driver will be removed, including their helmets. Headphones external to the helmet, tools, spare parts, including tires and wheels and championship recording equipment shall be left in the car.~~

This is the real weight of the car, without consumable fluids, with neither driver nor co-driver nor their equipment, and with a maximum of one spare wheel. When two spare wheels are carried in the car, the second spare wheel must be removed before weighing.

~~At no time during the event may a car weigh less than the absolute minimum real weight stated in these regulations.~~

The use of securely fixed ballast to complete the weight of the car is permitted.

In case of a dispute during weighing, the full equipment of the driver and co-driver must be removed

12.7 Production 2WD and 4WD

12.7.1 ~~Intent of Production 2WD and 4WD:~~ Definition.

Vehicles available through normal marketing channels in Canada and/or US, with limited modifications in order to make them more suitable for competition with respect to safety and reliability. Modifications, unless expressly permitted allowed under 12.7.2 to 12.7.15, are not allowed permitted. Note that with respect to any modifications to the vehicle, the burden of proof that these modifications comply with the regulations rests solely with the competitor. Competitors must bring any relevant documentation to Tech Inspection.

12.7.1.1 Minimum production or importation.

There must have been a minimum of 100 units of the specific make and model and of a specific model year commercially available in Canada or 1000 units in the United States. Commercially available means a new vehicle for the Domestic North-American market, sold by the manufacturer through its dealer network, in Canada and/or the U.S.

12.7.1.2 Original equipment (OEM).

~~Production 2WD and 4WD:~~

- Exchange of original equipment parts or components from the same model and same generation are allowed, per definitions 12.2.2, 12.2.3 and 12.2.5.
- Only original equipment parts, per definition 12.2.4 are allowed.

12.7.1.3 Tolerances.

All adjustment machining must be at the manufacturer's specification and/or within the manufacturer's specified tolerances.

12.7.2 Engine.

12.7.2.1 Over boring.

Over boring for the use of oversize pistons is prohibited, unless it is within OEM specifications, and using OEM oversize pistons.

12.7.2.2 Motor Mount.

Motor mounts are free.

12.7.2.3 Engine Displacement.

~~Production 2WD:~~

- ~~The maximum displacement limit for forced induction engines is 1600cc.~~

- ~~Rotary engines are restricted to twin rotors. Additional porting and forced induction is not permitted.~~

~~Production 4WD:~~

Naturally Aspirated

- The maximum displacement limit for normally aspirated engines is 4000cc.

Forced Induction

- The maximum displacement limit for ~~both normally aspirated and forced induction~~ engines is 2500cc.
- Rotary engines are restricted to twin rotors. Additional porting is not permitted.

12.7.3 Turbocharger/Supercharger Restrictions.

~~Production 2WD and Production 4WD~~

Turbocharger and supercharger units must be OEM for the model.

12.7.3.1 Restrictor

Forced induction engines must have an air inlet orifice of 32mm diameter or less. If the forced induction is equipped with a larger inlet, the use of a restrictor is required. It must have a minimum width (parallel to the direction of the airflow) of three (3) mm and be placed within 50 mm of the compressor blades.

If a car is fitted with multiple induction systems, then the total area of the two restrictors cannot exceed the area of the restrictor listed above. Competitors must have in place a mechanism to allow the induction system to be sealed by the use of wire and CARS seals. With the wire and seal in place, it must be impossible to access the restrictor without removing the wire and seal. The wire and seal cannot be installed without a detailed examination of the restrictor and, without the seal being in place, competitors must be prepared to dismantle the induction system to allow for verification of compliance with the rule above.

12.7.3.2 Boost limit (Proposed implementation January 1, 2019)

Boost is limited to 2.2bar absolute (1.2 bar nominal boost) using a series specific, tamper proof "pop-off" valve installed in the induction tract, downstream of the turbo. The pop-off valve must be clearly visible with the vehicle hood open. The part number of the valve is:

CARS – PROD – XXX

Where XXX is the valve serial number.

All details are the same as 12.5.3.

12.7.4 Body Work.

Weight reduction and modifications of *ORIGINAL* parts and components is ~~permitted~~ allowed as ~~except for the restrictions listed below.~~

- ~~Exterior bodywork (i.e. all components licked by the airstream) must be visually identical similar to the original item. The modifications derived from the fitting of supplementary accessories authorized in 12.7.11.5 (i.e. such as those necessitated by the addition of a windshield washer by drilling of a hole in the hood), will be allowed.~~
- ~~No composite materials allowed.~~
- ~~The main unibody must remain as OEM.~~
- ~~All doors and front bumper beam must remain as OEM.~~
- ~~Driver's and Co-driver's door structure must remain unaltered.~~
- ~~No replacement of stock parts with magnesium or titanium components is allowed unless these came as OEM parts.~~
- ~~All glass must stay as per original equipment or of equivalent OEM specifications.~~
- ~~None of the normal elements of the interior cockpit bodywork (including the dashboard and the elements contained in or part of the dashboard) and none of the accessories normally mounted by the manufacturer on the lowest price model may be removed or replaced may be modified to fit around the roll cage~~
- Carpets, padding, liners, etc. may be removed or modified.
- Standard seat/shoulder belts may be removed.
- The glove box door may be removed/replaced.
- Seam welding the body work is permitted.
- The rear seat may be removed.
- Side, roof, pillar, door and rear mouldings may be removed or modified. (see 12.3.15)
- Interior lighting may be removed or modified.
- Roof mounted vents are allowed.
- Center console may be removed or modified.
- Heat shields and covers may be removed

12.7.5 Mechanical Components

The following components are free:

- Dampers
- Springs
- Clutch disc, pressure plate and flywheel

~~Differential, clutch, pressure plate and flywheel are free.~~

Addition of a mechanical limited slip differential is allowed

Brakes are free but must retain the OEM pedal box and equal number of master cylinders as OEM, and must retain dual hydraulic circuits. OEM pedal box being the OEM brake pedal, location, mounting and actuation. ABS pump, wiring and electronic controls may be removed. Brake calipers and rotors are free. An additional master cylinder for a hydraulic hand brake is acceptable.

~~Struts/springs are free provided their~~ Suspension must retain the OEM attachment points remain OEM and geometry. Non-OEM Adjustable strut tops are permitted as long as the upper pivot remains within 20mm of the same location as OEM. For the purposes of durability, reinforcement

~~re-enforcement~~ by way of plating of the pick-up points on the chassis is permitted. The addition of strut tower braces is permitted. The substitution of OEM bushings and sway bars are permitted, ~~providing the original mounting points and geometry remain unchanged~~

12.7.5.1 Transmissions.

~~Production 2WD:~~

- ~~• The transmission installed must be OEM for the model and year of manufacture of the vehicle.~~

~~Production 4WD:~~

- Any transmission normally installed by the manufacturer for the model and generation may be used, ~~except that electronically controlled sequential transmissions are not allowed.~~

12.7.6 Electronic Controls

12.7.6.1

Only OEM electronic controls are permitted, using OEM control systems and sensors.
~~No type or form of electronic control is permitted for the following components: Suspension, Braking, Gear change/clutch, front and rear differentials. Simple engine cut operating during a mechanically activated gear change is permitted~~

12.7.6.2 ECU

The ECU is free. Launch control and Anti-Lag are permitted only if these features are available as OEM features.

12.7.7 Minimum weight.

~~Production 2WD:~~

~~The minimum weight of the car is unrestricted.~~

~~Production 4WD:~~

- The minimum weight of the vehicle shall be the original curb weight listed by the manufacturer, or 1409kg (3100lbs) if the competitor has not provided evidence of the original curb weight. This is the real weight of the car, without consumable fluids fuel, with neither driver nor co-driver nor and their personal equipment and a maximum of one spare. When two spare wheels are carried in the car, the second spare wheel must be removed before weighing.
- In case of a dispute during weighing the full equipment of the driver and co-driver will be removed, ~~including their helmets. Headphones external to the helmet, tools, spare parts, including tires and wheels and championship recording equipment shall be left in the car.~~

At no time during the event may a car weigh less than the ~~absolute~~ minimum ~~real~~ weight ~~stated in these regulations.~~

The use of securely fixed ballast to complete the weight of the car is permitted.

12.7.8 Induction.

The carburetor(s) or fuel injection normally installed by the manufacturer must be OEM for the model. The electronic control unit (ECU) for the fuel injection is free per 12.7.6.2. The elements ~~which that~~ control the quantity of fuel fed into the engine may be modified, but not those ~~which that~~ control the volume of air. ~~Such alterations must not allow any additional air to be inducted to the engine (i.e., the removal of a vacuum hose from the air cleaner housing requires capping off the hole in the air cleaner housing).~~

~~12.7.8.1 For forced induction engines, the boost is free.~~

12.7.8.2 1

The intercooler(s) must remain OEM or OEM equivalent and mounted in the original mounting location(s).

12.7.8.3 2

The air filter housing and the air filter are free. All air entering the engine must pass through the air filter.

12.7.9 Exhaust.

The exhaust system is free, except that the stock exhaust manifold(s) must be retained. The pipe(s) must exit behind the driver and external to the body. A functioning catalytic converter must be retained or installed.

12.7.10 Fuel Cells and Fuel Lines.

Fuel cells, not to exceed the capacity of the stock fuel tank, or 70 litres (15 gallons), whichever is greater, are allowed to replace stock fuel tanks. Location is free. Fitting of such cells must conform to 12.3.11.3. Rerouting of fuel lines is permitted, but they must conform to 12.3.11.5.

12.7.11 Electrical Equipment.

12.7.11.1 Battery and Alternator.

The original battery and alternator may be replaced by another commercial automobile unit of equal or larger capacity. The location and make is free.

12.7.11.2 Lighting Devices.

Additional lighting is permitted, but must conform to 12.4.2

12.7.12 Wheel diameter and width are unrestricted. See 12.4.9

12.7.13 Cooling System is free but must remain in the stock location. Additional oil coolers are permitted.

12.7.14 Supplementary Accessories.

Supplementary accessories are authorised without restriction provided they have no influence whatsoever on the behaviour or the outside appearance of the car. Such items are those which concern the aesthetics or the inside comfort (lighting, heating, radio, etc.) or those enabling easier or safer driving of the car (extra windshield washer, etc.) provided they do not affect, even indirectly the performance of the engine, the steering, the transmission, the road holding or handling characteristics of the vehicle. The following is authorised:

- Nuts and bolts may be freely exchanged and locked by any means.
- The mounting of additional gauges, meters, etc.
- The horn may be changed or an extra one added, at the disposal of the co-driver if desired.
- Extra relays, switches, wiring, fuses and circuit breakers may be added to the electrics.
- The original accelerator cable may be replaced by another one whether supplied or not by the manufacturer.
- The luggage boot may be adapted for better accommodation of the equipment carried (straps for fixing of a tool box, additional spare wheel, etc.). The location and attachment system of the original spare wheel may be altered and "Space Saver" spares may be removed.
- Filler caps may be locked by any means.
- The steering wheel is free.
- The addition of protection for the engine sump, transmission, fuel tank and all fluid lines is permitted.
- Cruise control systems may be removed.
- Anti-theft systems may be removed.
- Any elements of the air conditioning system and related hardware may be removed.
- Replacement and removal of electric window mechanisms by wind-up window mechanisms is permitted. Removal of sun roof mechanisms is also permitted.
- Removal of standard radio/stereo systems is permitted.

12.7.15 Consumable Items.

The replacement of normally consumable items (oil filters, air filters, spark plugs, fan belts, etc.), by others of equivalent OEM specifications is permitted. Spark plug heat range is free.

12.8 ~~Production 2WD and 4WD~~

(This whole section 12.8 is new, however the original words from 12.7 referring to P2WD show as original words and only the changes are underlined)

12.8.1 ~~Intent of Production 2WD and 4WD~~ Definition.

Vehicles available through normal marketing channels in Canada and/or US, with limited modifications in order to make them more suitable for competition with respect to safety and reliability. Modifications, unless expressly permitted allowed under 12.8.2 to 12.8.15, are not allowed permitted. Note that with respect to any modifications to the vehicle, the burden of proof that these modifications comply with the regulations rests solely with the competitor. Competitors must bring any relevant documentation to Tech Inspection.

12.8.1.1 Minimum production or importation.

There must have been a minimum of 100 units of the specific make and model and of a specific model year commercially available in Canada or 1000 units in the United States. Commercially available means a new vehicle for the Domestic North-American market, sold by the manufacturer through its dealer network, in Canada and/or the U.S.

12.8.1.2 Original equipment (OEM).

~~Production 2WD and 4WD:~~

- Exchange of original equipment parts or components from the same model and same generation are allowed, per definitions 12.2.2, 12.2.3 and 12.2.5.
- Only original equipment parts, per definition 12.2.4 are allowed.

12.8.1.3 Tolerances.

All adjustment machining must be at the manufacturer's specification and/or within the manufacturer's specified tolerances.

12.8.2 Engine.

12.8.2.1 Over boring.

Over boring for the use of oversize pistons is prohibited, unless it is within OEM specifications, and using OEM oversize pistons.

12.8.2.2 Motor Mount.

Motor mounts are free.

12.8.2.3 Engine Displacement.

Production 2WD:

Naturally Aspirated

- The maximum displacement limit is ~~2500cc~~ for normally aspirated engines is 4000cc.

Forced Induction

- The maximum displacement limit for forced induction engines is ~~1600cc.~~ 2500cc

Rotary Engines

- Rotary engines are restricted to twin rotors. Additional porting and forced induction is not permitted.

Production 4WD:

- ~~The maximum displacement limit for both normally aspirated and forced induction engines is 2500cc.~~
- ~~Rotary engines are restricted to twin rotors. Additional porting is not permitted.~~

12.8.3 Turbocharger/Supercharger Restrictions.

Production 2WD and Production 4WD

Turbocharger and supercharger units must be OEM for the model.

12.8.3.1 Restrictor

Forced induction engines must have an air inlet orifice of 32mm diameter or less. If the forced induction is equipped with a larger inlet, the use of a restrictor is required. It must have a minimum width (parallel to the direction of the airflow) of three (3) mm and be placed within 50 mm of the compressor blades.

If a car is fitted with multiple induction systems, then the total area of the two restrictors cannot exceed the area of the restrictor listed above. Competitors must have in place a mechanism to allow the induction system to be sealed by the use of wire and CARS seals. With the wire and seal in place, it must be impossible to access the restrictor without removing the wire and seal. The wire and seal cannot be installed without a detailed examination of the restrictor and, without the seal being in place, competitors must be prepared to dismantle the induction system to allow for verification of compliance with the rule above.

12.8.4 Body Work.

Weight reduction and modifications of *ORIGINAL* parts and components is ~~permitted~~ allowed as except for the restrictions listed below.

- ~~Exterior bodywork (i.e. all components licked by the airstream) must be visually identical similar to the original item. The modifications derived from the fitting of supplementary accessories authorized in 12.7.11.5 (i.e. such as those necessitated by the addition of a windshield washer by drilling of a hole in the hood), will be allowed.~~

- ~~No composite materials allowed.~~
- ~~The main unibody must remain as OEM.~~
- ~~All doors and front bumper beam must remain as OEM.~~
- ~~Driver's and Co driver's door structure must remain unaltered.~~
- ~~No replacement of stock parts with magnesium or titanium components is allowed unless these came as OEM parts.~~
- ~~All glass must stay as per original equipment or of equivalent OEM specifications.~~
- ~~None of the normal elements of the interior cockpit bodywork (including the dashboard and the elements contained in or part of the dashboard) and none of the accessories normally mounted by the manufacturer on the lowest price model may be removed or replaced~~ may be modified to fit around the roll cage
- Carpets, padding, liners, etc. may be removed or modified.
- Standard seat/shoulder belts may be removed.
- The glove box door may be removed/replaced.
- Seam welding the body work is permitted.
- The rear seat may be removed.
- Side, roof, pillar, door and rear mouldings may be removed or modified. (see 12.3.15)
- Interior lighting may be removed or modified.
- Roof mounted vents are allowed.
- Center console may be removed or modified.
- Heat shields and covers may be removed

12.8.5 Mechanical Components

The following components are free:

- Dampers
- Springs
- Clutch disc, pressure plate and flywheel

~~Differential, clutch, pressure plate and flywheel are free.~~

Addition of a mechanical limited slip differential is allowed

Brakes are free but must retain the OEM pedal box and equal number of master cylinders as OEM, and must retain dual hydraulic circuits. OEM pedal box being the OEM brake pedal, location, mounting and actuation. ABS pump, wiring and electronic controls may be removed. Brake calipers and rotors are free. An additional master cylinder for a hydraulic hand brake is acceptable.

~~Struts/springs are free provided their~~ Suspension must retain the OEM attachment points remain OEM and geometry. Non-OEM Adjustable strut tops are permitted as long as the upper pivot remains within 20mm of the same location as OEM. For the purposes of durability, reinforcement re-enforcement by way of plating of the pick-up points on the chassis is permitted. The addition of strut tower braces is permitted. The substitution of OEM bushings and sway bars are permitted, providing the original mounting points and geometry remain unchanged

12.8.5.1 Transmissions.

Production 2WD:

- ~~The transmission installed must be OEM for the model and year of manufacture of the vehicle.~~ Any transmission normally installed by the manufacturer for the model and generation may be used.

Production 4WD:

- ~~Any transmission normally installed by the manufacturer for the model may be used, except that electronically controlled sequential transmissions are not allowed.~~

12.8.6 Electronic Controls

12.8.6.1

Only OEM electronic controls are permitted, using OEM control systems and sensors.

~~No type or form of electronic control is permitted for the following components: Suspension, Braking, Gear change/clutch, front and rear differentials. Simple engine cut operating during a mechanically activated gear change is permitted~~

12.8.6.2 ECU

The ECU is free. Launch control and Anti-Lag are permitted only if these features are available as OEM features.

12.8.7 Minimum weight.

Production 2WD:

- The minimum weight of the car is unrestricted.

Production 4WD:

- ~~The minimum weight of the vehicle shall be the original curb weight listed by the manufacturer, or 1409kg (3100lbs) if the competitor has not provided evidence of the original curb weight. This is the real weight of the car, without fuel, driver co-driver their personal equipment. In case of a dispute during weighing the full equipment of the driver and co-driver will be removed, including their helmets. Headphones external to the helmet, tools, spare parts, including tires and wheels and championship recording equipment shall be left in the car.~~

~~At no time during the event may a car weigh less than the absolute minimum real weight stated in these regulations. The use of securely fixed ballast to complete the weight of the car is permitted.~~

12.8.8 Induction.

The carburetor(s) or fuel injection normally installed by the manufacturer must be OEM for the model. The electronic control unit (ECU) for the fuel injection is free per 12.8.6.2. The elements ~~which that~~ control the quantity of fuel fed into the engine may be modified, but not those ~~which that~~ control the volume of air. ~~Such alterations must not allow any additional air to be inducted to the engine (i.e., the removal of a vacuum hose from the air cleaner housing requires capping off the hole in the air cleaner housing).~~

12.8.8.1 For forced induction engines, the boost is free.

12.8.8.2

The intercooler(s) must remain OEM or OEM equivalent and mounted in the original mounting location(s).

12.8.8.3

The air filter housing and the air filter are free. All air entering the engine must pass through the air filter.

12.8.9 Exhaust.

The exhaust system is free, except that the stock exhaust manifold(s) must be retained. The pipe(s) must exit behind the driver and external to the body. A functioning catalytic converter must be retained or installed.

12.8.10 Fuel Cells and Fuel Lines.

Fuel cells, not to exceed the capacity of the stock fuel tank, or 70 litres (15 gallons), whichever is greater, are allowed to replace stock fuel tanks. Location is free. Fitting of such cells must conform to 12.3.11.3. Rerouting of fuel lines is permitted, but they must conform to 12.3.11.5.

12.8.11 Electrical Equipment.

12.8.11.1 Battery and Alternator.

The original battery and alternator may be replaced by another commercial automobile unit of equal or larger capacity. The location and make is free.

12.8.11.2 Lighting Devices.

Additional lighting is permitted, but must conform to 12.4.2

12.8.12 Wheel diameter and width are unrestricted. See 12.4.9

12.8.13 Cooling System is free but must remain in the stock location. Additional oil coolers are permitted.

12.8.14 Supplementary Accessories.

Supplementary accessories are authorised without restriction provided they have no influence whatsoever on the behaviour or the outside appearance of the car. Such items are those which concern the aesthetics or the inside comfort (lighting, heating, radio, etc.) or those enabling easier or safer driving of the car (extra windshield washer, etc.) provided they do not affect, even indirectly the performance of the engine, the steering, the transmission, the road holding or handling characteristics of the vehicle. The following is authorised:

- Nuts and bolts may be freely exchanged and locked by any means.
- The mounting of additional gauges, meters, etc.
- The horn may be changed or an extra one added, at the disposal of the co-driver if desired.
- Extra relays, switches, wiring, fuses and circuit breakers may be added to the electrics.
- The original accelerator cable may be replaced by another one whether supplied or not by the manufacturer.
- The luggage boot may be adapted for better accommodation of the equipment carried (straps for fixing of a tool box, additional spare wheel, etc.). The location and attachment system of the original spare wheel may be altered and "Space Saver" spares may be removed.
- Filler caps may be locked by any means.
- The steering wheel is free.
- The addition of protection for the engine sump, transmission, fuel tank and all fluid lines is permitted.
- Cruise control systems may be removed.
- Anti-theft systems may be removed.
- Any elements of the air conditioning system and related hardware may be removed.
- Replacement and removal of electric window mechanisms by wind-up window mechanisms is permitted. Removal of sun roof mechanisms is also permitted.
- Removal of standard radio/stereo systems is permitted.

12.8.15 Consumable Items.

The replacement of normally consumable items (oil filters, air filters, spark plugs, fan belts, etc.), by others of equivalent OEM specifications is permitted. Spark plug heat range is free.