General Regulations for Rallies

2009

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3 TECHNICAL REGULATIONS FOR CARS

3.1 Vehicle Eligibility

3.1.1 Vehicle Registration

Each vehicle entered in a NASA Rally Sport event must have a current and valid vehicle registration. This requirement may be waived for closed venue events.

3.1.2 Street Legality

Each vehicle competing in an event must carry all the equipment required by State and Federal laws to operate on the public highways. Required equipment should remain in good operation throughout the running of the event. Should the competing vehicle be detained or removed from operation during an event by a law enforcement officer, the competitor may not seek remedy or relief under these Regulations. This requirement may be waived for closed venue events.

3.1.3 General Construction

Vehicles eligible for events must be production based four wheeled passenger vehicles generally available for purchase by the general public. "One-off" vehicles specially built from the ground up for competition use is prohibited. To this end, the frame, floor pan, basic body shell, and firewall must remain original but may be modified for strength or to accommodate legal components. Exterior bodywork and pieces must be present and visually similar to the original components. Otherwise non-eligible vehicles may compete at the discretion of NASA Rally Sport.

3.2 Vehicle Preparation Regulations

Vehicle class and preparation regulations will be per the requirements of the individual event organizer and/or series, but all vehicles, not otherwise excepted, must at a minimum meet NASA Rally Sport Technical Regulations.

3.2.1 Lights

1. Original headlights may not be changed or removed. However, the frontal glass, reflector and bulbs are free, provided they are in compliance with the legal requirements of the province or state of registration.
2. A headlight shall be considered as any lighting device throwing a beam toward the front of the vehicle (dipped-beam, long range lamp, anti-fog lamp).
3. Auxiliary headlights may be fitted, provided the number installed is even or, if odd, that the lights are symmetrically mounted with one light in the center.
4. It must be possible to turn off all high-beam headlights and auxiliary lights with a single switch, which must leave the low-beam headlights functioning.
5. It must not be possible to operate any fog lights fitted without the front marker lights and taillights operating.
6. Auxiliary reversing lights may be fitted. All reversing lights may only switch on by engaging reverse gear.
7. It is not permitted to fit any device that can alter the normal functioning of the brake lights.
8. The mounting of maneuverable searchlight(s) is prohibited.

3.2.2 Exhaust System

The maximum permitted noise level from the exhaust system shall be 86 db (A scale) with the engine idling at 3500 RPM, measured from a distance of 50 feet in an area 45 degrees either side from the centerline of the exhaust outlet. The test shall be on level ground and be free from any obstructions.

3.2.3 Air Bags

All air bags must be disabled during stage competition.

3.2.4 Wheels

1. The wheels are free, regarding the maximum diameter and maximum width unless amended in specific class regulations.
2. The use of wheels with lesser dimensions is permitted.
3. Wheels made from forged magnesium are forbidden (including standard wheels).
4. Wheels fixations by bolts may be changed to fixations by pins and nuts provided that the number of attachment

points and the diameter of the threaded parts as indicated on drawing 254-1 are respected.

5. Air extractors added on the wheels are forbidden.

3.2.5 Tires

1. Tires are free provided that they can be mounted on those wheels.
2. The use of any device for maintaining the performance of the tire with an internal pressure equal to or less than the atmospheric pressure is forbidden. The interior of the tire (space between the rim and internal part of the tire) must be filled only with air or nitrogen.
3. The spare wheel may be brought inside the driving compartment, on condition that it is firmly secured there and that it is not installed in the space reserved for the occupants.
4. The use of tires with metal or plastic studs is allowed only at designated snow/ice events. The studs used must be legal in the state within which the event occurs.

3.2.6 Additional Tarmac Tire Rules

1. A tread pattern depth of 5.5mm (6/32”) must be molded into the tire and at all times during the event, the tread depth of the tires must be not less than 1.6 mm (2/32”) over at least three quarters of the tread pattern.
2. The method of measuring the tread depth shall be averaging two measurements, both taken in the center of the width of the tire, with the measuring points being at the 10 o’clock and 2 o’clock positions.
3. Shaving of tires is permitted. Siping/grooving of tires is permitted. Tires do not need to be homologated.
4. Full racing slick and some “DOT” R-spec road race tires (some examples are Hoosier R3S04, A3S04 & A3S05; Avon Tech R; Kumho ECSTAV710; Hankook Ventus Z214, Goodyear GS-CS Eagle) are disallowed.

3.3 Vehicle Class Rules

As an overview only, the following car classes are briefly described:

- Prototype 1 - open class AWD turbo
- Prototype 2 - open class AWD naturally aspirated
- Modified 1 - open class 2WD turbo and large engine
- Modified 2 - open class 2WD naturally aspirated
- Stock: "GT" - large displacement turbo AWD
- Stock: "Super Stock" - powerful stock cars
- Stock: "Stock" - less powerful stock cars
- Stock: "Group N" - homologated FIA cars

3.3.1 Prototype Classes - Open AWD

Open AWD Class consists of modified four-wheel drive cars. The class is split into two sub-classes:

1. Prototype 1: four wheel drive with forced induction engines
2. Prototype 2: four wheel drive with naturally aspirated engines

3.3.1.1 Definition

1. Any vehicle with a four-wheel drive driveline.
2. Vehicles which do not comply with Prototype 1 Class but do comply with FIA regulations for Group A rally cars (including World Rally Cars) are permitted to compete in Prototype 1 class, but shall not be eligible to score championship points.

3.3.1.2 Engine Displacement

Engine displacement after adjustment shall be no greater then 5100 cm3. Adjusted engine displacement is calculated by multiplying the actual displacement by the multipliers listed below:

	Prototype 1	Prototype 2
Rotary	1.8	1.8
Supercharged	1.7	
Four or more valves per cylinder	1.0	1.2
Three valves per cylinder	1.0	1.1
Two valves per cylinder	1.0	1.0
Pushrod	0.8	0.8
Diesel	0.8	0.8

3.3.1.3 Authorized Modifications

1. Except for restrictions listed within this class definition, the modification, reinforcement, substitution, addition or

deletion of parts and components is permitted without restriction, provided the vehicle complies with the safety and general regulations.

2. Except for doors and roofs, bolt-on body pieces may be constructed of an alternate material. The 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, commercially available cooling vents are allowed.
3. Fenders modifications are allowed for the benefit of tire clearance. The tires must be contained in the bodywork when viewed above the car in a 90-degree perpendicular angle to the ground.

3.3.1.4 Weight

1. The minimum weight limit of the car is determined by the class and adjusted displacement.

Adjusted Displacement in cubic centimeters	Weight Limit, in pounds	
	Prototype 1	Prototype 2
Up to 1000	2700	1585
over 1000 and up to 1150	2700	1735
over 1150 and up to 1400	2700	1850
over 1400 and up to 1600	2700	2025
over 1600 and up to 2000	2700	2200
over 2000 and up to 2500	2700	2375
over 2500 and up to 3000	2700	2530
over 3000 and up to 3500	2700	2700
over 3500 and up to 4000	2700	2885
over 4000 and up to 4500	2700	3080
over 4500 and up to 5000	2700	3300
over 4000 and up to 5500	2700	3500
over 5500 and up	2700	3700

2. This is the real weight of the car, without fuel, driver, co-driver and their personal equipment.
3. If the weight is disputed during weighing then all the driver and co-driver equipment, including helmets shall be removed.
4. All external headphones, tools, spare parts, tires and wheels will remain in the car during weighing.
5. Securely fixed ballast may be used to realize the absolute minimum real weight of the car.

3.3.1.5 Electronic Controls

1. Electronic control of the suspension, steering, braking, and gear change/clutch, front and rear differentials are expressly prohibited.
2. Sequential transmissions are prohibited with the exception of automatic transmissions available as the vehicle is sold from dealer.

3.3.1.6 Homologated Component Use

Any vehicle (except FIA Group N4) may use FIA homologated components in an unmodified form if such components are not in violation of 3.2.1.6 above.

3.3.2 Modified Classes - Open 2WD

Modified Class consists of modified two wheel drive cars. The class is split into two sub-classes:

1. Modified 1: two wheel drive with adjusted displacement over 2400 cm3
2. Modified 2: two wheel drive with adjusted displacement equal or less than 2400 cm3

3.3.2.1 Definition

1. Vehicles must be 2-wheel drive, normally aspirated models sold globally in minimum quantities of 1000.
2. Drive configuration must remain as originally manufactured (e.g. front engine, front drive) with the exception that a normally four wheel drive vehicle may be reduced to either front or rear wheel drive as long stock suspension pickup points are used and the floor pan of the vehicle is not grossly modified for the conversion.

3.3.2.2 Engine Limitation

	Modified 1	Modified 2
turbochargers	Allowed	N/A
NSU Wankel patents (Mazda rotary)	Allowed	N/A
Adjusted displacement less than	5100 cm3	2400 cm3
Adjusted displacement at least	2400 cm3	N/A

Adjusted engine displacement is calculated by multiplying the absolute displacement by the multipliers listed below:

	Modified 1	Modified 2
Rotary	1.8	N/A
Supercharged	1.7	N/A
Four or more valves per cylinder	1.2	1.2
Three valves per cylinder	1.1	1.1
Two valves per cylinder	1.0	1.0

Pushrod	0.8	0.8
Diesel	0.8	0.8

All turbocharged engines will be considered to have two valves per cylinder.

3.3.2.3 Authorized Modifications

1. Except for restrictions listed within this class definition, the modification, reinforcement, substitution, addition or deletion of parts and components is permitted without restriction, provided the vehicle complies with the safety and general regulations.
2. Except for 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, commercially available cooling vents are allowed.
3. Fenders modifications are allowed for the benefit of tire clearance. The tires must be contained in the bodywork when viewed above the car in a 90-degree perpendicular angle to the ground.

3.3.3 Stock Classes

Stock Class consists of essentially showroom stock cars and SUV. The class is split into four sub-classes:

1. Grand Touring: specific turbocharged AWD cars with superior performance to the typical showroom ready vehicle. The following vehicles are specifically placed in GT unless eligible for another class.
    a. 2004-present US Subaru STi
    b. 2006 US Subaru WRX
    c. 2004-2005 Mitsubishi Evo VIII
    d. 2006-present Mitsubishi Evo IX
    e. 2004-2006 Volvo S40 T5 AWD
    f. 2006-present Mazda Speed 6
2. Super Stock: adjusted displacement over 2650 cm3
3. Stock: non-turbocharged, with adjusted displacement equal or less than 2650 cm3
4. Stock SUV: Commonly referred to as sport utility vehicles these vehicles are typically one-volume cars and must have non-turbocharged engine with adjusted displacement equal or less than 5000 cm3. Drive may be 2WD, AWD, and or 4WD.

3.3.3.1 Definition

1. Sedans, station wagons, sports cars and light trucks, available from manufactures listed in National Dealers Association “Car Guide”, with limited modifications in order to make them more suitable for competition with respect to safety and reliability only.
2. There must have been a minimum of 1000 units of the specific make and model and of a specific model year commercially available in the United States. Commercially available shall be interpreted as meaning that the general public is able to obtain a price and reasonable delivery date for the specific make and model.

3.3.3.2 Engine Limitations

	Grand Touring	Super Stock	Stock	SUV
Turbochargers	Allowed	Allowed	N/A	N/A
Rotary	N/A	Allowed	Allowed	N/A
Adjusted displacement less than	Unlimited	Unlimited	2650 cm3	5000 cm3
Adjusted displacement at least	2650 cm3	2650 cm3	0 cm3	0 cm3

Adjusted engine displacement is calculated by multiplying the absolute displacement by the multipliers listed below:

	GT/Super Stock	Stock/SUV
Rotary	1.8	1.8
Turbocharged	1.7	Not allowed
Four wheel drive	1.3	1.3
Four or more valves per cylinder	1.2	1.2
Three valves per cylinder	1.1	1.1
Two valves per cylinder	1.0	1.0
Pushrod	0.8	0.8
Diesel	0.8	0.8

3.3.3.3 Original equipment

1. Original equipment is as defined in Article 3.7.
2. No updating or backdating of cars, models and/or components is permitted.
3. Except where the removal, replacement or modification is authorized under these regulations, all original components and equipment installed by the vehicle's manufacturer shall be present and functioning as specified for the particular bodywork variant.

4. If an optional mechanical component is fitted to a vehicle and that component is only offered by the manufacturer in conjunction with other components, then all such components must be fitted, except where deletion of any of the components is authorized under these regulations.
5. It is the entrant's responsibility to provide manufacturer's documentation such as sales brochures, workshop manuals, service bulletins, etc., where necessary to substantiate the eligibility of the vehicle and its components.

3.3.3.4 Additional Modifications & Specifications for Grand Touring

3.3.3.4.1 Wheels

1. Gravel: Maximum permitted wheel is 15” x 7”
2. Tarmac: Maximum permitted wheel is 17” x 8”

3.3.3.4.2 Brake

Brakes may be replaced with smaller diameter rotors and smaller calipers to facilitate using 15” wheels on gravel events. Homologated brake systems for the specific car are allowed. The number pistons per caliper may not exceed the greatest number standard on any of the listed cars.

3.3.3.4.3 Minimum weight

Vehicle	Weight in pounds
2004-2006 US Subaru STi	3298
2006 US Subaru WRX	3192
2004-2005 Mitsubishi Evo VIII	3197
2006-present Mitsubishi Evo IX	3219
2004-2006 Volvo S40 T5 AWD	3230
2006-present Mazda Speed 6	3589

3.3.3.5 Normal work and repair

Except where authorized in these Regulations, the only work permitted is the normal maintenance or replacement of parts damaged through accident or wear. Except where specifically authorized, all parts must be identical to the original part and repairs must be according to the manufacturer's accepted service instructions.

3.3.3.6 Authorized Modifications

All items, which are not specifically allowed or referred to as “free” below, must be of original manufacturer's specification. Minor changes (such as a hole in the fire wall, etc) resulting from authorized modifications are permissible

It is the entrant's responsibility to provide specification documents, where necessary, to substantiate the eligibility of all components, which are added under the following, authorized modifications and might have an influence on performance. The specification documents must demonstrate both function and capability of the component.

1. **Lighting Devices** - Additional lighting is permitted, but must conform to Article 3.2.1.
2. **Cooling System** - If, for the same vehicle model, radiators of different capacities are normally offered, they may be used. The addition of a radiator screen is authorized. The make and type of thermostat are free. A single oil cooler and necessary fittings may be added.
3. **Induction - All Engines** - The elements that control the quantity of fuel fed into the engine may be modified, but not those which control the volume of air. The original air filter (OEM specification) and air filter housing may not be modified, however the components upstream of the housing may be moved, modified or removed. All air entering the engine must pass through the air filter.
4. **Induction - Carbureted engines** - The carburetor(s) normally mounted on the recognized model may not be changed or removed.
5. **Induction - Fuel Injected Engines** - The Fuel injection normally mounted on the recognized model may not be changed or removed. Boost on turbocharged or turbocharged vehicles is unrestricted and a manual boost control and associated hardware is authorized. The electronic control unit and the ignition components in the electronic control unit are free; nevertheless the system must be entirely interchangeable with the original unit. The original wiring loom must be kept and cannot be modified. Sensors and actuators on the input side must be standard, as must their function. No sensor may be added, even for the purpose of data recording. It is prohibited to add a switch in the original wiring loom between the electronic control unit and a sensor and/or actuator.
6. **Induction - Turbocharging/ Supercharging Systems -** Turbocharger and supercharger units must remain as supplied by the vehicle manufacturer on that model. Intercoolers may in no way be modified, moved or added.
7. **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 present in the exhaust system.

8. **Electrical Equipment** -The original equipment alternator and the battery may be replaced, provided the location remains unchanged, and provided they are commercially available units of equal or larger electrical capacity. The manufacture of the battery and alternator are unrestricted.
9. **Transmissions** - Any transmission normally installed by the manufacturer in the same model may be used.
10. **Differentials**, if for the same model different final drive ratios are normally offered and installed by the manufacturer, they may be used. If the original vehicle is fitted with a differential controlled by an electronic system, the electronic control unit is free, but must be entirely interchangeable with the original unit (i.e. the differential must work when the unit is replaced with the series unit). Sensors and actuators on the input side must be standard, as must their function. No sensor may be added, even for the purpose of data recording. The use of "locked" and “limited slip “differential units are allowed.
11. **Shock Absorbers** - Shock absorbers are free, provided that their number, their type (telescopic, arm, etc.), their working principle (hydraulic, friction, mixed, etc.), and their attachment location remain unchanged. Shock absorbers attachment points may be reinforced. The damper tanks may be attached onto the unmodified shell of the cars. If the shock absorbers have separate fluid reserves located in the cockpit, or in the truck if this is not separated from the cockpit, these must be strongly fixed and must have a protection. A silent block may be replaced by a "Uniball" joint, but only on condition that the shock absorber has no guiding function. Gas filled dampers, regarding their working principle, will be considered as hydraulic dampers. If, in order to change the damping element of a McPherson suspension, or a suspension operating in an identical manner, it is necessary to replace the entire McPherson strut, the replacement parts must be mechanically equivalent to the original ones and have the same mounting points. For McPherson suspensions, the shape of the spring seats is free. The material of the spring seats is free.
12. **Suspension** - The reinforcing of the structural parts of the suspension (with the exception of anti-roll bars) and its anchorage points by the addition of material is

allowed. Braces of the strut towers are allowed provided no alterations are made to the induction system or air filtration system. The suspension reinforcements must not create hollow sections and must not allow two separate parts to be joined together to form one. The spring seats may be adjustable if the adjustable structural part is a part of the spring seat and is separated from the original suspension parts/bodywork (it may be removed). The freedoms in spring length do not authorize a reduction in the ride height below the limit in the official factory shop manual. The length of the coil springs is free, as is the number of coils, the wire diameter, the type of spring (progressive or not), the external diameter and the form of the spring seats. The length, width, thickness and vertical curvature of the leaf springs are free. The diameter of the torsion bars is free. Stock anti-roll bars may be removed or replaced. The reinforcing of the structural parts of the suspension (with the exception of anti-roll bars) and its anchorage points by additional material is allowed. The roll cage may be used to brace the vehicle's suspension.

13. **Brakes** - Brake linings are free, as well as their mountings (riveted, bonded, etc.) provided that the contact surface of the brakes is not increased. Protection plates may be removed or bent. In the case of a car fitted with servo-assisted brakes, this device may be disconnected and removed. The anti-lock braking system (ABS) may be disabled and or removed. If the anti-lock braking system (ABS) is disconnected, the use of a mechanical rear-braking distributor (e.g. pressure limiting valve) is authorized. Brake lines may be changed for aviation type lines and rerouted. A device for scraping away the mud, which collects on the brake, discs or the wheels, may be added.
14. **Clutch and Pressure Plate with Flywheel** - The disc is free, including the weight, with the exception of the number. The diameter of the clutch disc may be increased. The flywheel must be made of the same material as offered from the vehicle manufacturer and must meet the manufactures minimum specifications for weight.
15. **Fuel Cells and Fuel Lines** - It is permitted to replace the original fuel tank with an approved fuel cell.
16. **Motor Mounts** - Free provided the stock location is maintained for the mounting for the engine and

transmission. The location of the engine and transmission may not be affected.

17. **Engine** - Over boring for the use of oversize pistons is prohibited
18. **Additional accessories** - All accessories, which have no influence on the car's behavior, for example equipment that improves the aesthetics or comfort of the car interior (lighting, heating, radio, etc.), are allowed without restriction. In no case may these accessories increase the engine power or influence the steering, transmission, brakes, or road holding, even in an indirect fashion. All controls must retain the role laid down for them by the manufacturer. They may be adapted to facilitate their use and accessibility, for example a longer handbrake lever, an additional flange on the brake pedal, etc. The following are allowed:
    a. Fasteners and their locking mechanism are free.
    b. Measuring instruments such as speedometers etc. may be installed or replaced, and possibly could have different functions. Such installations must not involve any risk. However, the speedometer may not be removed.
    c. The horn button may be changed and/or an additional one added, within reach of the passenger. The horn is not compulsory on closed venue events.
    d. Additional electrical relays, switches, wiring, fuses and circuit breakers may be installed.
    e. Engine throttle cables may be replaced. The manufacture is free. If the series vehicle is fitted with a motorized throttle valve, a throttle kit with a mechanical linkage may be used.
    f. The steering wheel is free. The locking system of the anti-theft steering lock may be rendered inoperative. Quick release mechanism are allowed.
    g. Additional compartments may be added to the glove compartment.
    h. Additional pockets in the doors provided that they use the original panels.
    i. The luggage compartment may be modified to allow the safe installation of equipment, toolbox, and additional spare wheels.
    j. Cruise Control systems may be rendered inoperative.
    k. Anti-theft systems may be rendered inoperative.

l. Insulating material may be added to the existing bulkheads to protect the passengers from fire.

m. Removal of standard radio/stereo systems is permitted

n. Exterior Bodywork

1. Roof mounted cooling vents are allowed.
2. Hubcaps must be removed.
3. Protective headlight covers may be fitted provided that their only function is to cover the glass and they have no influence on the car's aerodynamics.
4. The fitting of underbody protections is authorized provided that these really are protections which respect the ground clearance, which are removable and which are designed exclusively and specifically in order to protect the following parts: engine, radiator, suspension, gearbox, tank, transmission, steering, exhaust, extinguisher bottles.
5. Any locking system may be used for the cap of the petrol tank.
6. The changing of the front and rear windscreen wiper blades is authorized.
7. In case of damage, all transparent parts must be replaced by identical original equipment parts

o. Interior Bodywork

1. The front seats may be moved backwards but not beyond the vertical plane defined by the front edge of the original rear seat.
2. The rear seat may be removed.
3. The dashboard and the central console must remain original.
4. Side, roof, pillar, door and rear moldings may be removed or modified. Interior lighting may be removed or modified
5. It is permitted to replace electric window winders with manual ones.
6. Floor Carpets are free and may thus be removed.
7. The original heating equipment must be retained. The air conditioning system may be removed provided if certain elements are common with the heating system they must be retained. The air conditioning compressor may be removed provided that the only further

necessary modification is either removing a drive belt, using a shorter drive belt, or adding a free-spinning idler pulley in place of the compressor.

19. **Chassis** - Seam welding the bodywork is permitted.
20. **Non-durable parts** - All normally non-durable parts (oil filters, air filters, spark plugs, fan belts, etc.) must be replaced with others of equivalent OEM specifications. The heat range of spark plugs is free.
21. **Manufacturer's Specifications** - Any machining for adjustment must meet the manufacturer's specification including those for tolerances.

3.3.4 Group N

These Group N regulations include vehicles in the FIA Group N4, 2 liter 4WD turbocharged, and FIA Super 2000 classes.

3.3.4.1 Homologation

1. Series production touring cars which comply with the FIA regulations for Group N, and comply with Appendix J, Article 251, 252, 253 and 254, 254A, 255 of the FIA technical regulations and the FIA homologation paper(s) specified on the entry form for that particular vehicle. Compliance with homologation papers shall be determined based on interpretations of those papers in accordance with the FIA standards and regulations.
2. Expiration of FIA Homologation will be extended by four years.
3. Homologation Papers: Entrants are required to present originals of correct vehicle homologation papers bearing an original ink stamp of the issuing FIA/ASN at scrutineering to substantiate the eligibility of the vehicle and its components.

3.3.4.2 Safety Regulations for Homologated Group N4

Safety regulations are as per FIA regulations.

3.3.5 Turbocharger/Supercharger Restrictors

3.3.5.1 Restrictor Sizes

Car Class	Maximum Internal Restrictor Size
Prototype 1	34 mm
GT	34 mm
Super Stock	32 mm
Stock	32 mm
Stock SUV	32 mm

Group N	32 mm
All other classes	not required

3.3.5.2 Restrictor Specifications

1. All turbocharged cars listed as requiring restrictors must be fitted with a restrictor fixed to the compressor housing unless the compressor air inlet internal diameter is equal to or smaller then the required restrictor internal diameter.
2. All air used for feeding the engine must pass through this restrictor.
3. The restrictor must be maintained for a minimum distance of 3 mm measured downstream of a plane perpendicular to the rotational axis situated at a maximum of 50 mm upstream of a plane passing through the most upstream extremities of the wheel blades (see Appendix B drawing 254-4). The external diameter of the restrictor at its narrowest point must be less than 38 mm, and must be maintained over a distance of 5 mm to each side.
4. The required diameter must be complied with regardless of the temperature conditions.
5. The mounting of the restrictor onto the turbocharger must be carried out in such a way that two screws have to be entirely removed from the body of the compressor, or from the restrictor, in order to detach the restrictor from the compressor. Attachment by means of a needle screw is not authorized. For the installation of this restrictor, it is permitted to remove material from the compressor housing, and to add it, for the sole purpose of attaching the restrictor onto the compressor housing. The heads of the screws must be pierced so that they can be sealed.
6. The restrictor must be made from a single material and may be pierced solely for the purpose of mounting and sealing, which must be carried out between the mounting screws, between the restrictor (or the restrictor/compressor housing attachment), the compressor housing (or the housing/flange attachment) and the turbine housing (or the housing/flange attachment) (see Appendix B drawing 254-4).
7. In case of an engine with two parallel compressors, each compressor must be limited to a maximum intake diameter of 22.6 mm.

8. Diesel engine: For vehicles with diesel engines, the restrictor must have a maximum internal diameter of 35 mm and an external diameter of 41 mm.

3.4 Vehicles Prepared to Technical Regulations of Other Sanctioning Bodies

Vehicles prepared to Federation Internationale de L'Automobile (FIA), Association of Rally Sport (C.A.R.S.), Rally America (R/A) or Federación de Automovilismo Deportivo (F.A.M.D.) technical regulations will be allowed to compete in NASA Rally Sport Events.

3.4.1 Documentation

Vehicles competing under alternate technical regulations must bring printed copies of those regulations, in their entirety, to the vehicle's technical inspection.

3.4.2 Compliance

Vehicles competing under alternate technical regulations must completely comply with all of these regulations including restrictor sizes, minimum weights, required safety equipment and all vehicle preparation rules.

3.5 Pre-event Technical Inspection

Each competing vehicle must pass a detailed technical inspection that will insure all required safety equipment and modifications are present and functional. All crew and service crew at scrutineering must have checked in at registration.

Vehicles will also be inspected for overall roadworthiness and mechanical condition and compliance with all rules.

Any vehicle failing to meet all technical and safety requirements will be submitted for official review.

Any vehicle deemed unsafe for competition will be barred from the event.

Each vehicle must be presented in a neat and clean condition free of oil or fluid leaks.

Each vehicle must be presented with all required identification and any advertising decals as required by the event supplemental regulations.

Each vehicle must be road worthy and have the following equipment in full functional condition:

1. Headlights with high and low beams;

2. Parking lights, taillights, brake lights, front and rear turn signals;
3. Horn, windshield wipers, windshield washer;
4. Inside rearview mirror and side mirror(s);
5. Foot brake and parking brake;
6. Tires of at least 2/32 minimums tread depth;
7. Mud flaps on all driven wheels and rear wheels;
8. Exhaust system, leak free and exiting at the rear of the vehicle; and
9. Engine sound suppression system which does not exceed 86db at any time, when measured 50 feet from the vehicle.

If the vehicle is equipped with a sunroof or roof panel, it must be metal and fixed by welding or bolted in a closed position.

3.6 Safety Requirements

3.6.1 Roll Cage / Rollover Protection

See the Roll Cage Appendix.

3.6.2 Safety Harness

3.6.2.1 Generally

Five, six or seven-point safety harness of unmodified proprietary manufacture shall be fitted for both members of the crews. It is not permitted to mix parts of seat belts. Only complete sets may be used. All harnesses shall be of current FIA or SFI specification. All safety harness systems must either have a date of manufacture label or stamp that is no older than five years from the date of competition, or not exceed the expiration date indicated on the manufacturer's label.

All SFI certified restraints must be maintained, inspected, and replaced or rewebbed every two years. The two-year period runs from the date of manufacture contained on the label attached to the restraints.

This requirement does not affect FIA certified restraints. FIA certified restraints may be used through December 31 of the year of expiration contained on the label attached to the restraints. Please note that FIA certified restraints contain the expiration date on the label attached to the restraints, and not the date of manufacture.

3.6.2.2 Condition

The material of all straps shall be in new or perfect condition. The belts must be equipped with turnbuckle or push button or lever style release systems.

3.6.2.3 Placement

The lap belt and crotch straps should not pass over the sides of the seat, but through the seat in order to wrap and hold the pelvic region over the greatest possible surface. The lap straps must fit tightly in the bend between the pelvic crest and the upper thigh. Under no circumstances may they be worn over the region of the abdomen.

Holes may be made in the seat if this proves to be necessary in order to avoid such an occurrence. Care must be taken that the straps cannot be damaged through chafing against sharp edges.

3.6.2.4 Anchorage

In all cases, it is most preferable that safety harnesses be installed on the anchorage points of the vehicle. The recommended geometrical locations of the anchorage points are shown in drawing 253-42.

3.6.2.5 Shoulder Harness

The shoulder harness shall be a two-strap over-the-shoulder type. (“H” type configuration is permitted.) In the downwards direction, the shoulder straps must be directed towards the rear and must be installed in such a way that they do not make an angle of more than 45 degrees to the horizontal from the upper rim of the backrest, although it is recommended that this angle should not exceed 10 degrees. The maximum angles in relation to the centerline of the seat are 20 degrees divergent or convergent. (See diagram 253-42) Anchorage points creating a higher angle to the horizontal must not be used unless the seat meets the requirements of the FIA standard. A safety harness must not be installed on a seat having no head restraint or having a backrest with integrated head restraint (no opening between backrest and head restraint) (If the seat does not provide lateral restraint, the mounting point on the vehicle structure shall be a minimum of 20 inches behind the seat back when measured along the belt.)

3.6.2.6 Safety Wiring

If the manufacturer provides for safety wiring the locking bale or clasp to prevent accidental unfastening of the belts from their anchorage points, then it shall be necessary for the all such components to be safety wired.

3.6.2.7 Hardware

The minimum acceptable size and grade of bolt used in the mounting of all belts and harnesses shall be 7/16 inch UNF, SAE grade 8, or, preferably, M12 8.8. When mounted, the bolts should work in shear and not in tension.

3.6.2.7.1 Alternate Anchorage

If installation on the series anchorage points is impossible for the shoulder and/or crotch straps, new anchorage points must be installed on the shell or the chassis, as near as possible to the center-line of the rear wheels for the shoulder straps. The shoulder straps may also be fixed to the safety roll cage or to a reinforcement bar by means of a loop, and may also be fixed to the top anchorage points of the rear belts, or be fixed or leaning on a transversal reinforcement welded or bolted to the backstays of the rollbar. In this case, the use of a transversal reinforcement is subject to the following conditions:

3.6.2.7.2 Reinforcement

The transversal reinforcement shall be a tube measuring at least 1.5 inch x .120 inch or 1.6 inch x .095 inch, made from cold drawn seamless carbon steel.

3.6.2.7.3 Placement

The height of this reinforcement must be such that the shoulder straps, towards the rear, are directed downwards with an angle of between 10 degrees and 45 degrees to the horizontal from the rim of the backrest, an angle of 10 degrees being recommended.]

3.6.2.7.4 Attachment

The straps may be attached by looping or by screws, but in the latter case an insert must be welded for each mounting point (see drawings 253-17C and 253-53 for the dimensions). These inserts will be positioned in the reinforcement tube and the straps will be attached to them using bolts of M12 8.8 or 7/16 UNF specification.

3.6.2.7.5 New Anchorage Reinforcement

For each new anchorage point created, a steel reinforcement plate with a surface area of at least 16 square inches and a thickness of at least 1/8th inch must be used.

3.6.2.8 Principles of Mounting to the Chassis/Monocoque

3.6.2.8.1 General Mounting System

See drawing 253-43.

3.6.2.8.2 Shoulder Strap Mounting

See drawing 253-44.

3.6.2.8.3 Crotch Strap Mounting

See drawing 253-45.

3.6.2.9 Manufacturer Instructions

A safety harness must be used in its homologation configuration without any modifications or removal of parts, and in conformity with the manufacturer’s instructions. The effectiveness and

longevity of safety belts are directly related to the manner in which they are installed, used and maintained. The belts must be replaced after every severe 7collision, and whenever the webbing is cut, frayed or weakened due to the actions of chemicals or sunlight. They must also be replaced if metal parts or buckles are bent, deformed or rusted. Any harness, which does not function perfectly, must be replaced.

3.6.3 Fire Extinguishers

3.6.3.1 Number

One fire extinguisher with a minimum UL rating of 10 BC or two each with a minimum rating of 5 BC must be installed inside the passenger compartment. During installation, consideration must be given to quick release and security of attachment. One fire extinguisher must be located within easy reach of the Driver or Co-Driver when seated.

3.6.3.2 Extinguishers

It is strongly recommended that Halon or a similar gas be used. If a dry powder unit is used, the unit should be shaken or rapped sharply at frequent intervals to reduce the chance of the powder compacting.

3.6.3.3 Maintenance

Evidence must be produced that the fire extinguisher has been purchased or recharged within the preceding two years.

3.6.3.4 Recommended Systems

It is highly recommended that all vehicles comply with the FIA Appendix J, Article 253.7 (Extinguishers - Extinguishing Systems).

3.6.4 First Aid Kit

A comprehensive first aid kit shall be carried in the passenger compartment. The first aid kit must include:

1. Antiseptic (ointment or liquid)
2. Gauze pads or rolls
3. Adhesive tape
4. Arm sling
5. Safety pins
6. Scissors
7. 2 “space” blankets
8. First aid manual.

3.6.5 Warning Devices

A minimum of three self-supporting, light-reflecting, daylight-visible triangular warning devices shall be carried in the vehicle. One of which must be located within easy reach of the Driver or Co-Driver when seated.

3.6.6 Batteries

3.6.6.1 Mounting

Batteries must be securely mounted with metal-to-metal mounts.

3.6.6.2 Housing

If removed from the original location, all batteries shall be mounted inside covered, non-conductive boxes.

3.6.6.3 Mounting within Passenger Compartment

If mounted inside the passenger compartment, batteries shall be those that are completely sealed or so designed or modified to prevent acid spillage.

3.6.7 General Circuit Breaker

3.6.7.1 Recommended Use

It is strongly recommended that a spark-proof general circuit breaker with the capability of disconnecting all electrical circuits shall be mounted in the passenger compartment. (Supplementary wiring may protect the integrity of a fuel injection computer.)

3.6.7.2 Location

If a circuit breaker is used, the location of the circuit breaker shall be that which makes it easily operable by either member of the crew or by persons outside the vehicle through either front door.

3.6.7.3 Labeling

If a circuit breaker is used, the location of the circuit breaker shall be marked with a label showing a red spark in a white-edged blue triangle.

3.6.8 Windows

The front windshield shall be laminated safety glass

All windows and windshields should be presented to scrutineering free from structural damage minus small cracks and chips.

The front windshield must be replaced if it is structurally damaged during the event. Failure to replace broken and or damage windows shall be deemed a safety hazard and shall cause competitor to be declared DNF.

3.6.8.1 Winders

It is encouraged to replace electric winders with manual ones. In all cases, the competitor must be able to describe to the satisfaction of the event Scrutineer the ability to escape from the car with the doors closed.

3.6.8.2 Use During Events

Windows in the driver and co-driver doors must be rolled-up during special stages.

3.6.8.3 Window Nets

Window safety nets are highly recommended.

All SFI certified window nets must be replaced every two years. The two-year period runs from the date of manufacture contained on the label attached to the window nets.

3.6.8.4 Window Films

The use of translucent and colorless anti-shatter films on glass side windows is highly recommended. The use of silvered or tinted films is also authorized provided that the openings in these films allow a person outside the car to see the driver.

3.6.8.5 Replacement

In classes where it is permissible to replace glass side windows with Lexan, it should be of equal or greater thickness than the original glass. However, competitors must be able to display to the satisfaction of the event Scrutineer that the mounting of the substitute windows will allow both emergency escape from inside the car and access by rescue from the outside of the car.

3.6.9 Mud Flaps

Mud flaps are required on all rear wheels and driving wheels.

3.6.10 Fuel Tanks, Lines and Pumps

3.6.10.1 Fuel Tank Bulkhead

A fuel-resistant and fire-retardant plate or shield is required between the passenger compartment and the compartment or area in which the fuel tank is located.
For two-volume cars only, this structural partition may be made of transparent, nonflammable plastic. As of January 1, 2007 two-volume cars must be have a liquid proof container surrounding the fuel cell and its filler holes. Such a container is recommended for three-volume cars.

3.6.10.2 Approved Fuel Cells

The original fuel tank may be replaced or supplemented by a fuel cell which is from a manufacture approved by the FIA meeting FT3 1999, FT3.5 and or FT 5 specifications. The fuel cell(s) must be installed in a metal container(s).

The manufacturer, the model, the exact specifications according to which this tank has been manufactured, the homologation number, the date of end of validity, and the series number, must be printed on the fuel cell.

The fuel cell must be properly vented to the outside of the vehicle from the compartment in which it is located.

As of January 1, 2007 all fuel cells may only be placed either in the original location of the tank or in the luggage compartment.

All cars fitted with a fuel cell with filler neck passing through the cockpit must be equipped with a non-return valve homologated by the FIA. This valve, of the type ″with one or two flaps″, must be installed in the filler neck on the tank side." The filler neck is defined as being the means used to connect the fuel filler hole of the vehicle to the fuel cell itself.

Should the fuel cell and its filler be located in the luggage compartment, an outlet must be provided for fuel spilled in the compartment.

Where fuel cells are installed in the passenger compartment of vehicles such as “hatchback” variants, Article 3.6.10.1 above applies if the fuel cell filler is located in the passenger compartment.

The aging of safety tanks entails a considerable reduction in the strength characteristics after approximately five years. No bladder shall be used more than five years after the date of manufacture, unless inspected and recertified by the manufacturer for a period of up to another two years.

3.6.10.3 Supplemental Fuel Tanks

Supplemental fuel tanks are permitted.

3.6.10.4 Rerouting of Lines

If fuel lines are re-routed through the passenger compartment, they shall be in compliance with the following: (a) shall incorporate a metallic casing. (If the metallic casing is not exterior to the line, a verifiable sample must be presented at scrutineering.) And (b) shall have a minimum of 200 psi rating and (c) no connectors may be inside the passenger compartment except on the front and rear bulkheads according to drawings 253-1 and 253-2.

If the manufacturer routs fuel lines through the passenger compartment, it is recommended that they be in compliance with this section.

3.6.10.5 Fuel Pump

Providing the original tank is equipped with an electric pump and an interior filter, it is possible when using a fuel cell to relocate or replace a fuel pump and filter with identical characteristics to the original one.

All the fuel pumps must only operate when the engine is running, except during the starting process.

3.6.10.6 Secondary Fuel Pumps

The fitting of a second fuel pump is authorized, but this must be only a spare fuel pump, i.e. it cannot operate in addition to the authorized pump. It must be connectable only when the car is immobile and by means of a purely mechanical device situated beside the pumps.

3.6.10.7 Fuel Pump Bulkhead

Fuel pumps and filters shall be isolated from the driver/co-driver by a fireproof metal bulkhead.

3.6.11 Seats

Seats shall be of one-piece construction, and shall be firmly mounted to the floor of the vehicle in such a manner as to prevent the movement of the seat in case of an accident. Aluminum seats (e.g. Butler Built, Kirkey) are banned as of 3/1/05. Use of FIA certified/homologated seats is required.

3.6.12 Towing Eyes

Towing eyes shall be attached to the front and rear of the vehicle and painted in yellow, red or orange.

3.6.13 Loose Articles

All articles which could be dangerous if left loose must be securely restrained.

3.6.14 Door Panels

Inside door panels are required to provide protection from metal edges.

3.6.15 Tow Rope

All vehicles must carry a tow rope or winch with cable.

3.6.16 Roofs

Movable metal sunroofs and/or roof panels must be fixed in the closed position. Sunroofs and/or roof panels of any other material must be replaced with metal and must be fixed in the closed position. The finished work must be of equal or greater strength than the permanent roof.

3.6.17 Supplemental & Passive Restraints

Airbags and their associated equipment must be disabled or removed during competition in order to eliminate the possibility of

the airbag inflating accidentally. It is recommended that passive restraint systems be disabled.

3.6.18 Power Door Locks

For all classes, it is recommended that power door locks be rendered inoperative and replaced with manually operated mechanisms.

3.6.19 Steering Locking Device

For all classes, it is recommended that any steering locking device be rendered inoperative.

3.6.20 Camera and Camera Mounts

Camera mounts and their attachment to the vehicle shall be of a safe and secure design which would prevent either driver from being able to strike any part of the mount. As well, the camera shall be secured at a minimum of two different points and neither attachment may be elastic or plastic. Cameras small enough to be classified “bullet” cameras or “lipstick” cameras are only required to have one attachment point.

3.6.21 Helmets

All members of the crews competing in events pursuant to these rules must wear helmets with one of the following ratings:

1. Snell Foundation SA2000 or newer
2. British Standard 6658-85 Type A/FR, including all amendments
3. SFI Spec 31.1 or 31.2

3.6.22 Suits

All members of the crews competing in stage rally and rally sprint events must wear suits with one of the following ratings:

1. FIA Standard 8856-2000
2. FIA NORME 1986/1986
3. SFI 3-2A/5
4. SFI 3-2A/1 with fire resistant underwear

3.6.23 Head and Neck Restraint Devices

Use of head and neck restraint devices (e.g. HANS, Hutchens Device) is encouraged. Use of a head and neck restraint system or device, carrying an SFI 38.1 certification or FIA 8858-2002 certification, is mandatory for all car drivers and car navigators as of July 1, 2009. Any system used must be installed, used, and maintained according to the manufacturers directions. The driver is ultimately responsible for the proper installation and use of these devices. A list of currently certified SFI devices is available here: http://www.sfifoundation.com/manuf.html#38.1

3.7 Definitions

These definitions apply to all of Section 3.

1. **Model** - All vehicles belonging to a production series, distinguishable by a specific conception and general exterior lines of the bodywork and by the identical method of transmitting the engine power to the drive wheels. Supercharged/turbocharged vehicles will be considered as different models than normally aspirated versions of the same car. The terms turbocharged and turbocharged will be used interchangeably within this document.
2. **Model variant** - A model may exist in several variants as to bodywork (i.e.: 2 door sedan, 4 door sedan, coupe, station wagon etc.) or with regard to mechanical components.
3. **Interior bodywork** - cockpit and trunk
4. **Exterior bodywork** - All the entirely suspended parts of the car licked by the air stream.
5. **Chassis** - The overall structure of the car around which are assembled the mechanical components and the bodywork including any structural part of the said structure.
6. **Original equipment** - All items of standard or optional equipment that could have been ordered with the particular bodywork variant of the car, installed on the factory production line, and delivered through a dealer in the United States or, for group N, as provided for in the homologation papers for the vehicle. Dealer installed options, except as required by the manufacture directive (no matter how common), are not included in this definition.
7. **Automatic Transmission** - This is made up of a hydrodynamic torque converter, a box with epicyclical gears equipped with clutches and multi-disc brakes and having a fixed number of reduction gears, and a gear change control. The gear change can be achieved automatically without disconnecting the engine and gearbox, and thus without interrupting the engine torque transmission. Gearboxes with continually variable transmission are considered as automatic gearboxes.