

الهيئة السعودية للمواصفات و المقاييس و الجودة
Saudi Standards, Metrology and Quality Org(SASO)



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Safety Requirement for Modified Light Duty Vehicles

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مقدمة

قامت الهيئة السعودية للمواصفات والمقاييس والجودة بإعداد مشروع المواصفة القياسية السعودية " متطلبات السلامة لمركبات الخدمة الخفيفة المعدلة " بعد استعراض المواصفات القياسية العربية و الاجنبية و الدولية و المؤلفات المرجعية ذات الصلة.

Foreword

Saudi Standards, Metrology and Quality Organization (SASO) has prepared the draft of Saudi " Safety Requirement for Modified Light Duty Vehicles " based on relevant ADMO, International and National foreign Standards and references..

Safety Requirement for Modified Light Duty Vehicle

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Safety Requirement for Modified Light Duty Vehicles

1. SCOPE AND FIELD OF APPLICATION

This regulation specifies the requirements for the modification Light Duty Vehicles. This is applicable to used and new Light Duty Vehicles modified by the addition, substitution, or alteration of vehicle equipment or systems. Excluded are the motorcycle, trailers, caravans and tractors.

2. COMPLETING REFERENCES

- 2.1 SASO GSO 42 " Motor vehicles - General requirements ".
- 2.2 SASO GSO 1040 " Motor vehicles-allowable limits of pollutants emitted to the atmosphere from light duty diesel engined vehicles.
- 2.3 SASO GSO 1680 " Motor vehicles allowable limits of gaseous pollutants emitted to the atmosphere from unleaded gasoline engined vehicles".
- 2.4 SASO GSO ECE 13 H " Motor Vehicles: Braking system of Passenger Car and Multi Purpose Vehicles".
- 2.5 SASO GSO 51 " Passenger car tyres - Part 1: Nomenclature, designation, marking, dimensions, load capacities and inflation pressure".
- 2.6 SASO GSO 52 " Passenger car tyre - part 2: general requirement".
- 2.7 SASO GSO 645 " Multi-Purpose Vehicles, Trucks, Buses and Trailers Tyres - Truck and Bus - Part 1:Nomenclature, Designation Marking, Dimensions, Load Capacities and Inflation Pressures".
- 2.8 SASO GSO 647 " Multi-Purpose Vehicles, Trucks, Buses and Trailers Tyres - Part 3: General Requirements
- 2.9 SASO GSO 1624 " Motor Vehicles - Noise Emissions".
- 2.10 SASO GSO 1712 " Motor Vehicles – Spare Parts - General requirements ".
- 2.11 SASO 469 " Motor vehicles - Dimensions and weights ".

3. DEFINITIONS

For the purpose of this standard, the following terms and definitions shall apply:

3.1. Light Duty Vehicles (LDVs)

Vehicles with a maximum gross weight of 3500kg and which are primarily used to transport passengers or goods.

3.2. Passenger Car

A motor vehicle except a multipurpose passenger car, which, on account of its design and appointment, is intended mainly for carrying persons and their luggage and/or goods, and which has available a maximum of nine seating places, including the driving seat.

3.3. Multipurpose passenger vehicle (MPV)

A motor vehicle designed to carry a maximum of nine persons or goods equivalent by weight, which has special features for occasional off-road operation".

3.4 Emission of Gaseous Pollutants

Substances airborne to the atmosphere, which arise in the running of the vehicle, due to exhaust gases, evaporative fuel and crankcase emissions. They include carbon monoxide, hydrocarbons (CH_{1.85}) and oxides of nitrogen (expressed in nitrogen dioxide (NO₂) Equivalent).

3.5 Approved Center

Any center or workshop accredited by the competent authority or authorized by it

3.6 Drivetrain

Consist of the engine, transmission, universal joints, control arms, drive shaft axels, hubs and wheels.

3.7 Maximum Weight (Gross vehicle weight GVW)

The curb weight together with the maximum load declared by the manufacturer.

3.8 Auxiliary Liquid Fuel Tank

An additional fuel tank and any other components attached directly there to designed to supplement the vehicle's liquid fuel carrying capability beyond that provided by the vehicle manufacturer.

3.9 Body floor height

The vertical distance between the ground and the top of the passenger compartment (cab) floor, measured directly below the center of the steering wheel.

3.10 Frame Height

Means the vertical distance between the ground and the lowest point on the frame, measured when the vehicle is unloaded on a level surface at the lowest point on the frame OR the mid-point in the chassis between the front and the rear axles.

3.11 Frame

The main longitudinal structural members of the chassis of the vehicle.

3.12 Engine

The engine itself and the engine management system.

3.13 Vehicle Control Module

A term for any embedded system that controls one or more of the electrical systems or subsystems in a motor vehicle.

3.14 Body conforming to manufacturer specifications

Designed from factory or conform to manufacturer dimensions and specifications.

3.15 Engine conforming to manufacturer's specifications

Manufacturer's design or conform to manufacturer dimensions and specifications.

3.16 Fire Wall

The separation between the engine compartment and passenger compartment to protect passengers from harmful factors.

3.17 Computer

Electronics that controls the motor.

3.18 Inspection Authority

An independent body accredited in accordance with the rules and responsible for inspecting and issuing the technical report of the modified vehicle

4. Technical Requirements

4.1 General requirement

Inspection authority shall inspect the vehicles that are modified from their original manufactured state. These modifications shall not affect the safety of vehicle, environment and road users. Vehicle should be free of trouble codes, damages, and in good working order in general. Owner of vehicle must disclose all modifications done to vehicle.

4.2 Engine

- 4.2.1 A replacement engine shall be accepted as long as it is complying the emission and noise standards.
- 4.2.2 The engine swap is accepted, if the replaced engine belongs to the same vehicle category, according to the OEM maximum.
- 4.2.3 When the replacement engine is larger in power output than the original engine offered by the vehicle manufacturer as standard or optional equipment, the vehicle must be upgraded with the appropriate parts and equipment, e.g. brakes, front and rear suspension, fire extinguisher and appropriate seat belt.
- 4.2.4 The replacement engine shall be suitably installed in such a way to ensure proper engine mount. Replacement engines shall be securely fastened to the vehicle frame or unit body with bolts and mounting hardware designed to accommodate the engine. Engine mounting frames or brackets that are cracked, broken, or display improper welding will cause the vehicle to fail in inspection.
- 4.2.5 Engines shall be located outside the compartment of the vehicle that is intended for use by the driver or passenger (passenger compartment). The engine shall be separated (from the passenger compartment) and shielded by a firewall that is :
 - 4.2.5.1 Constructed of a metal or comparable insulated fire retarding material acting as protective barrier,
 - 4.2.5.2 Capable of withstanding forces normally encountered in collisions and
 - 4.2.5.3 Designed to retard the spread of fire from the engine compartment into the passenger compartment.
- 4.2.6 All the moving parts and components of the engine, that are accessible to inadvertent contact during normal operating conditions and those that may cause personal injury to persons standing outside of the vehicle, shall be effectively screened or shielded.
- 4.2.7 It is accepted to install force induction system (Super charger, turbocharger ...etc) as long as the engine is complying with the emission and noise Saudi / Gulf Standards and the system is fixed according to installation manual. The force induction system shall be complying with Saudi / Gulf Standards.
- 4.2.8 The flexible and hard line hoses connected to the power induction system from the manufacturer must be retained and used.
- 4.2.9 Vehicle Control Module shall comply with the emission Saudi / Gulf Standards and shall not affect the safety of the vehicle.
- 4.2.10 If the vehicle was equipped with intercooler piping, Blow off valves and Ram air system originally; then the aftermarket system should retain all those types of components
- 4.2.11 The air filter should be suitable and the level of its installation should be higher than the chassis structure level and the under the bottom of the hood.

4.3 Battery

- 4.3.1 If the location of the battery has been changed from its original location, It shall be insulated with an appropriate box and installed with appropriate nuts and bolts.

4.3.2 The battery isolation box shall have a closed cover to protect the battery terminals from any contact.

4. 4 Exhaust Systems

4.4.1 Installation or use of aftermarket part is allowed provided the system will not affect emissions performance mentioned in Saudi /Gulf Standards. Reasonable basis can be considered as existing if there is written document by the manufacturer of the part that emissions tests have been conducted and reveal that the part complies the requirements of the above mentioned standards OR passing the Saudi emission testing specifications.

4.4.2 The exhaust system shall contain at least one silencer.

4.4.3 The exhaust system in gasoline powered vehicles shall contain at least one chemical transformer (catalytic Converter: to convert harmful pollutants into less harmful pollutants) If OEM equipped on OEM vehicle or powertrain.

4.4.4 The catalytic converter can be changed and must be in good working condition and be attached to all the sensors that are functioning as OEM designed.

4.4.5 Open manifolds shall not be used in the exhaust system (sutures or sills).

4.4.4 It is preferably to place the exhaust system hangers in their OEM locations, Additional Hangers may be added as long as they are made of a suitable material, fitted to the vehicle properly, allow enough movement for the engine's natural movement and do not allow the exhaust system to come in contact with any of the vehicle's other components.

4.4.7 The use of headers shall be permitted without adversely affecting the requirements of pollutants and noise specified in the Saudi / Gulf Standards concerned.

4.4.4 The vehicle shall not have any exhaust leaks, and should be equipped with exhaust clamps and gaskets on exhaust manifold or headers, pipe extensions from the exhaust manifold, headers, piping, muffler and exhaust tips.

4.4.4 The exhaust system shall discharge the exhaust gases in a position behind the body of the vehicle or direct the exhaust gases outward from the body of the vehicle or up to the rear towards as long as they are away from any side windows that can be opened on the vehicle.

4.4.10 No part of the exhaust system shall pass through the passenger compartment or close to the fuel system.

4.4.11 No part of the exhaust system shall not contain valves designed to increase noise or route the exhaust to other chambers or pipes with in the exhaust system (if non OEM to body equipped, and this includes vacuum or electric powered valves)

4.4.12 The amount of noise emission in the modified vehicle should not exceed 95 decibels according to the noise test (SAEJ1169 test procedure)

4.4.13 No part of the exhaust system shall contain a pass-by pass.

4. 5 Fuel System

4.5.1 Fuel system shall be securely fastened to the vehicle and not affect the safety of operation of the vehicle. Fuel system components such as the tank, tubing, hoses, and pump, must be of leak proof fittings and lines and installed away from heat and moving parts.

4.5.2 All fuel system lines must be routed in a similar to OEM manner and must pass outside the passenger compartment. Connections and fittings must be of press fittings in hard line applications, and AN hose fittings in high powered fuel systems.

- 4.5.3 Only a flexible hose specifically designed, manufactured and marked for use as a fuel hose should be used for fuel supply or return in the fuel system. The pressure rating of the fuel hose must not be less than twice the operating pressure of the fuel system.
- 4.5.4 The fuel line connection to the engine shall be of a flexible design, and of a length sufficient to accommodate all engine vibrations and movements of the engine with respect to the vehicle frame.
- 4.5.5 The fuel tank shall not be located in the engine compartment. The fuel tank shall be shielded from passenger compartment by a flame-proof barrier, and equipped with a filler cap designed to prevent fuel spillage from the filler opening when the cap is in place.
- 4.5.6 Do not use external fuel tanks (lift or surge tanks).
- 4.5.7 The fuel tank, its fittings, lines, filler neck and the ventilation system shall be outside the vehicle and be away from the passenger compartment. The fuel tank and its accessories shall not pass near the exhaust system and the distance shall not be less than 7.62 cm. The distance may be less than 5 cm when appropriate automotive thermal insulation is used. The mounting level of the fuel tank shall not be less than the level of the axles and the structure of the vehicle in the position which the vehicle is loaded at the maximum OEM load weight specified and the minimum OEM tire pressure recommended in cold pressure.
- 4.5.8 The fuel tank manufacturer shall provide clear printed instructions for safe installation and proper use. The fuel tank shall be installed according to these instructions. The fuel line of the fuel tank shall not affect the work of the main fuel tank. Holds a certificate of conformity with Saudi / Gulf or international standards in the absence of Saudi specifications
- 4.5.9 Fill caps shall be threaded or bayonet type and shall be used with a gasket or seal.
- 4.5.10 If the fuel system contains a fuel flow control valve between a main tank and auxiliary tank and operable by the driver, the valve shall be installed in a way that:
- 4.5.10.1 The driver can operate the valve while driving, or
- 4.5.10.2 The driver shall stop the vehicle to operate the valve, or
- 4.5.10.3 The fuel line between the tanks shall be provided with a unidirectional valve in the absence of a control valve
- 4.5.10.4 The owner of the vehicle shall keep proof of purchase and technical documents to the fuel system and submit it to the concerned authorities upon request.

4.6 Engine Space and Hood

The engine space is allowed in its compartment, And height of hood can be changed as long as it doesn't affect the drivers vision.

4.7 Transmissions (Gearboxes)

- 4.7.1 Transmissions shifters in manual or auto system are allowed as long as it's not affecting the movement and the safety of the vehicle.
- 4.7.2 The installation of this system shall be as per the aftermarket manufacturer`s installation manual.
- 4.7.3 The transmission shifter shall move smoothly and unaffected by the seats or passengers around it.
- 4.7.4 The transmission shifter shall be bolted to the vehicle's floor pan.
- 4.7.5 Reverse lights should be turned on automatically when Reverse gear is engaged.
- 4.7.6 A drive shaft loop of acceptable material shall be added and securely mounted in the case of engine modifications have been done, and vehicle uses a 1-piece driveshaft.

- 4.7.7 All driveshaft joints shall be in good condition.
- 4.7.8 All electrical connections and extensions shall be extended in the same original manner and as far away as possible from any moving parts.
- 4.7.9 Thermal insulators may be added provided they are installed in an appropriate manner

4.8 Brake System

- 4.8.1 The vehicle shall be equipped with a manual emergency parking brake that must operate on at least two wheels on the same axle, and when applied it must be capable of holding the vehicle on any grade on which the vehicle is operated. The parking brake must be separately actuated in case of failure of the main braking system.
- 4.8.2 The aftermarket brake system shall have a certificate conforming to the Saudi /gulf standards and pass the brake test. This excludes the brake pads, brake disc.
- 4.8.3 All components of the braking system must function properly, be non-worn or heavily consumed, and be fitted with a light behind the vehicle to operate automatically when the brakes are used to warn those behind the vehicle.
- 4.8.4. The braking pressure adjustment valve shall be used for rear brakes only.
- 4.8.5 The brake lines shall be properly fitted and all fittings shall be in good condition without wear, cracking or swelling.
- 4.8.6 The upper brake oil reservoir shall be of two-chamber type, with the brakes split into two

3.9 Nuts, Bolts and Fasteners.

- 3.9.1 The nuts and bolts used shall be as per the below Table.
Minimum Standards for Choice of Nuts and Bolts

Grade	Applicability
Ungraded bolts	Panel fixing, floor panel fixing, and lightly loaded brackets.
Grade 5 or metric 8.8 bolts:	Seat belts, moderately loaded members, suspension mounts,.
Grade 8 or metric 10.9 bolts:	Brake calipers, master and slave cylinder mounts, steering arms and all suspension assemblies

- 4.9.2 The bolt or fastener should be long enough to ensure that at least one clear turn of thread is visible. This applies to all nuts, including the nylon and locking nuts. Locking must be fitted to all fasteners. Spring and shake proof washers, nylon nuts, deformed thread locknuts, castellated nuts with split or roll pins, lock wire, split pins, locking tabs, and staking.
- 4.9.3 Bolt washers shall be used with any nut in the use of securing parts together.

4.10 The vehicle's external body

- 4.10.1 The exterior of the vehicle shall be identified as it was original built. (e.g/ a ford mustang shall appear as a ford mustang)
- 4.10.2 The front and rear lighting positions shall be maintained in the same original location and shall function properly.

- 410.3 The engine bonnet changed as long as its height does not interfere with the driver's sight or exposes mechanical or electrical parts that are sensitive to elements.
- 4.10.4 All body panels must be bent inward or the edges shall be stamped with a diameter of not less than 2.5 mm.
- 410.5 Body panel gaps, openings, grooves, channels and holes shall be blunt and no more than 10 mm in diameter.
- 4.10.6 The edges of panels made of fiberglass or carbonate fibers reinforced with plastic shall be not sharp.
- 4.10.7 The structure of the vehicle body shall be free from any edges and sharp cuts at all external and internal locations where it may be in contact with persons under normal conditions of use and vehicle care.
- 4.10.8 The engine compartment shall not exceed the external body of the vehicle.
- 4.10.9 Any aftermarket aerodynamic part or any part of the outside body shall be properly constructed and secured.
- 4.10.10 The rear license plate of the vehicle shall be properly lit.
- 4.10.11 Addition of hood pins or locks are allowed.
- 4.10.12 It is permitted to add fender flares provided they are properly fitted and do not have sharp edges. Fender flares must be used for the purpose of covering increased wheel track, or tire tread, and must not come in contact with tires or suspension of the vehicle.
- 4.10.13 The vehicle must contain two external mirrors and one internal rear view mirror.
- 4.10.14 The vehicle shall contain front and rear lights for driving, parking, braking and reverse lights and turn signals according to the Saudi / Gulf standard specifications and shall not use any flashing or strobing lights reserved for government vehicles.
- 4.10.15 The vehicle must contain windshield wipers and work well.
- 4.10.16 The front and rear license plates shall be fixed in the center section of the front and rear of the vehicle.
- 4.10.17 The colors used for the vehicle shall be what are officially registered with Saudi Government, unless approved with secondary permits.
- 4.10.18 **In addition to the above mentioned, the external body of 4x4 vehicles should include the following:**
- 4.10.18.1 It is possible to change the front and rear bumpers in order to improve the performance of the vehicle in terms approach angles, increased cooling, light mounts or to install a winch. As long as material used in aftermarket is of the same as the OEM material or similar. Inspection Authority must be sure that the vehicle bumpers design do not harm vehicle or its surroundings.
- 4.10.18.2 Front bumper height shall not exceed 79 cm (measured from bottom of bumper to ground)
- 4.10.18.3 Any equipment installed on the bumper shall not exceed its dimensions.
- 4.10.18.4 The bumper should not obscure the driver's vision of the road or obscure the OEM lights of the vehicle.
- 4.10.18.5 Push bars or government style bumpers are not allowed.
- 4.10.18.6 Roof racks or other equipment must be constructed of acceptable materials, and must mount to structural points on the vehicle (no mounting to sheet metal)
- 4.10.18.7 All auxiliary off road lights must be covered with a cover that ensures that at least 99% of the light is blocked **and is never allowed to be used while on the road** and must be covered during vehicle testing.
- 4.10.18.8 Vehicle fenders should cover 75% of the tires tread

- 4.10.18.9 All storage boxes shall be within the body of the vehicle and shall contain locks and shall be securely secured to vehicle to ensure the safety of road users.
- 4.10.18.10 If the place of spare tire is changed, it must be installed securely.
- 4.10.18.11 On pick up trucks (blue registration tags), If the vehicle's rear bumper has been lifted from its original height, the use of mud flaps must be used for the rear tires. Mud flaps must be of a rubberized flexible material, must be large enough to cover the entire tread of the top of the rear tires, and must be able to block any debris thrown from the tires. Mud flaps must allow 20cm clearance from the bottom of it to the surface of the ground.
- 4.10.18.12 No welding is allowed on the chassis or external body of the vehicle. Any accessories must be used with bolts or acceptable fastening methods.
- 4.10.18.13 Body spacers intended for the lift of a vehicle's body from its chassis is not allowed.

4.11 Steering & Suspension

- 4.11.1 The steering wheel shall be circular and diameter shall not exceed 34 cm.
- 4.11.2 The steering system shall remain smooth and unhindered when moving from side to side.
- 4.11.3 Tire contact with any part of the chassis structure and base shall not occur in all suspension conditions, and should not make contact between suspended and unsuspended parts except through a shock absorber. If the suspension is exposed to the maximum pressure, must prevent any hose belonging to the brake system from fully expanding.
- 4.11.4 The movement of wheels and axels shall not cause damage to braking, electrical wiring and similar installations under all normal conditions of suspension.
- 4.11.5 No welding is permitted on the steering system. Adjustments must be made using nuts and bolts self-closing.
- 4.11.6 Do not cut, heat or weld spiral or helical springs, leaf springs or torsion rods.
- 4.11.7 All rubber joints for the axle, suspension and steering system shall be in good condition and free from cracking.
- 4.11.8 When the original suspension of the vehicle is changed from the manufacturer specification, it must be mounted or adjusted in a manner that changes the height of the structure of the vehicle where it is level from side to side, and must not ride on suspension bump-stops. And the motion of the suspension system is vertical only.
- 4.11.9 Appropriate shock length should be installed for the height of the vehicle. The inspection technician may ask the vehicle owner to remove the shock in order to measure its shock shaft length
- 4.11.10 The modified suspension shall be installed as provided by the manufacturer and should not affect the ABS or traction control system of the vehicle if equipped by OEM.
- 4.11.11 The use of suspension limiting straps is allowed provided that the method of installation is suitable for the expected loads.
- 4.11.12 The minimum height of the vehicle shall be 12 cm and measured from the bottom of the area under the driver's door.

4.12 Tires and wheels

- 4.12.1 Special tires may be used if they comply with the SASO GSO 42. The tires must have Gulf conformity certificate for tires and comply with the speed and load codes indicated.
- 4.12.2 The replaced tires shall not touch any part of the body during movement or obscure it.

- 4.12.3 The load rating of a wheel as determined by the wheel manufacturer, either by a stamp on the wheel or in the wheel manufacturer's literature, shall not be exceeded. If such a load rating is not available, the wheel shall not be used on the vehicle. The axle weight rating for most vehicles is shown on the identification label located on the driver's side door jam, gas tank door, trunk lid or glove compartment..
- 4.12.4 The replaced tire shall be similar of a higher standard than the original tyre in terms of durability.
- 4.12.5 Replacement wheels shall be similar to or better than original wheels / in terms of durability.
- 4.12.6 All tires shall be mounted according to the recommended procedures of the manufacturers of tire. The tire manufacture recommendations of rim width must be followed according to the reference manual for the given country. The reference manual for the United States of America is published by the Tire and Rim Association (TRA), the reference manual for Europe is published by the European Tire and Rim Technical Organization (ETRTO), the reference manual for Japan is published by Japan Automobile Tire Manufacturers Association, Inc. (JATMA).
- 4.12.7 Wheels must be free from damage, cracking, and rust, and must clearly ensure the safe operation, mounting, or performance of the wheel in service.
-Wheels may not be drilled, welded shaved, cut or otherwise altered from the wheel manufacturer design and application - Any modification on the structure of the wheels are not allowed
- 4.12.8 The use of spacers/ adapters between wheel and hub are not allowed.
- 4.12.9 Tire-to-fender clearances and tire-to-suspension clearances should appropriate. So that they prevents rubbing and scuffing. Wheel balance weights shall not be in contact with suspension components and tires shall not be in contact with fenders.
- 4.12.10 A wheel shall not use fewer fasteners than the wheel and vehicle was designed for, and must installed at the appropriate torque value according to the size of the fastener. See vehicle manufacturer manual handbook for the number of fasteners and recommended tightening torque value.
- 4.12.11 Racing use or sand tires (balloon) tires are not allowed on the road.

4.13 In-vehicle entertainment systems

- 4.13.1 The visual display unit of the in-vehicle entertainment system should be installed such that it does not interfere with the driver's visibility. If it is in the view of the driver, it shall have a function to automatically disable or switch off the visual display when the vehicle is in motion.
- 4.13.2 The system shall not interfere with existing vehicle controls or instrumentation in any way.
- 4.13.3 The electrical system shall be adequately protected against fire hazards. The addition of in-vehicle entertainment systems must be carried out by qualified personnel in accordance with the system manufacturer's recommendations.

4.14 . Chassis and frame

- 4.14.1 A vehicle shall be equipped with a frame consisting of structural beams or channels, or structural tubing, or unitized construction capable of supporting the vehicle, its load, and the torque produced by the power source under all conditions of operation.
- 4.14.2 The frame structure shall be essentially rigid, free of cracks and visual indications of weakness, such as bending or buckling. Body mounts may not be broken, cracked, deteriorated or missing.

- 4.14.3 A vehicle shall be equipped with a floor pan under the entire passenger compartment. The floor pan shall be capable of supporting the weight of the number of occupants that the vehicle is designed to carry in the designated seating positions.
- 4.14.4 The body structure of a vehicle shall be free of sharp edges and projections in all interior and exterior locations where persons in the normal use and care of the vehicle may contact them. This requirement does not include those locations usually accessible only when the vehicle is hoisted or partially dismantled for the purpose of maintenance or repair.
- 4.14.5 Chassis cross members for engine and drivetrain location may be removable if desired. The flanges and bolts shall be of suitable size and the nuts and threaded bosses shall have thread depth appropriate for the application.
- 4.14.6 Double shear – All shear style suspension mounts shall be mounted in double shear.
- 4.14.7 No cutting or welding is allowed anywhere on the vehicle's frame
- 4.14.8 Protective skid plates can be added to protect the lower parts of the vehicle provided they are well-secured.
- 4.14.9 Aftermarket hinging or modification of OEM hinges of doors or trunk lid is not allowed

4.15 Bull bars

- 4.15.1 Fiberglass, carbon fiber and other composite material are accepted as long as there is no internal reinforcement with heavy steel that is welded or attached to the main chassis
- 4.15.2 For steel / rigid bull, bars are allowed as long as they come as a manufacturer's option.

5. CRITERIA OF TECHNICAL CONFORMITY

The technical inspection of vehicles modified shall be carried out by the Saudi Organization for Standardization, Metrology and Quality or an approved third party by them