GS 42

MOTOR VEHICLES
GENERAL REQUIREMENTS

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ICS: 43.020

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1- SCOPE AND FIELD OF APPLICATION

This standard is concerned with the general requirements for construction of motor vehicles. For detailed requirements refer to the approved Gulf standards on the subject concerned.

2- DEFINITIONS

For definitions see the relevant Gulf standards.

3- COMPLEMENTARY REFERENCES

The following Gulf standards:

3.1 GS 34 “Lead-Acid Starter Batteries Used for Motor Cars and Internal Combustion Engines”.

3.2 GS 35 “Methods of Test for Lead-Acid Starter Batteries Used for Motor Cars and Internal Combustion Engines”.

3.3 GS 136 “Radiators of Motor Cars”.

3.4 GS 135 “Methods of Test for Radiators of Motor Cars”.

3.5 GS 36 “Methods of Test for Passenger Cars Impact Strength - Part 1: Frontal Impact”.

3.6 GS 37 “Methods of Test for Passenger Car Impact Strength - Part 2: Moving Barrier Rear Impact”.

3.7 GS 38 “Methods of Test for Passenger Car Impact Strength - Part 3: Side Impact”.

3.8 GS 39 “Methods of Test for Passenger Car Impact Strength - Part 4: Roof Strength”.

3.9 GS 40 “Motor Vehicles - Passenger Car Impact Strength”.

3.10 GS 41 “Motor Vehicles - Front and Rear Exterior Protection Devices for Passenger Cars (Bumpers, etc.) and its Methods of Test”.

3.12 GS 43 “Methods of Testing for Pollutants Emitted from Gasoline Engined Vehicles - Part 1: Determination of Exhaust Gaseous Pollutants After Cold Start”.

3.13 GS 44 “Methods of Testing for Pollutants Emitted from Gasoline Engined Vehicles - Part 2: Determination of Exhaust Carbon Monoxide at Idle Speed”.

3.14 GS 45 “Methods of Testing for Pollutants Emitted from Gasoline Engined Vehicles - Part 3: Determination of Evaporative Emissions (Hydrocarbons) from the Fuel System of Gasoline Engined Vehicles Using the Trap Method”.

3.15 GS 46 “Methods of Testing for Pollutants Emitted from Gasoline Engined Vehicles - Part 4: Determination of Evaporative Emissions (Hydrocarbons) from the Fuel System of Gasoline Engined Vehicles Using Enclosure Method”.

3.16 GS 47 “Allowable Limits of Pollutants Emitted to the Atmosphere from Gasoline Engined Vehicles”.

3.17 GS 48 “Motor Vehicles - Conformity Certificates”.

3.18 GS 595 “Methods of Testing Non-Petroleum Base Brake Fluid for Road Vehicles”.

3.19 GS 594 “Non-Petroleum Base Brake Fluid for Road Vehicles”.

3.20 GS 230 “Non-Petroleum, Base Brake Fluid Simulated Service Performance Test”.

3.21 GS 99 “Road Vehicles - Sound Signaling Devices - Technical Specifications”.

3.22 GS 51 “Passenger Car Tyres - Part 1: Nomenclature, Designation, Marking, Dimensions, Load Capacities and Inflation Pressures”.

3.23 GS 52 “Passenger Car Tyres - Part 2: General Requirements”.

3.24 GS 53 “Passenger Car Tyres - Part 3: Testing Methods”.

3.25 GS 98 “Motor Vehicles - Flammability of Interior Materials and Testing Methods”.

3.26 GS 159 “Motor Vehicles - Weights and Dimensions”.

3.27 GS 96 “Motor Vehicles - Methods of Testing of Safety Belt Assemblies”.

3.28 GS 97 “Motor Vehicles - Safety Belts”.

3.29 GS 289 “Motor Vehicles - Retro-Reflective Number Plates and its Methods of Test”.

3.30 GS 144 “Motor Vehicles - Allowable Limits of Pollutants Emitted to the Atmosphere from Heavy Duty Diesel Engined Vehicles”.

3.31 GS 145 “Motor Vehicles - Methods of Testing for Pollutants Emitted from Heavy Duty Diesel Engined Vehicles - Part 1: Determination of Exhaust Gaseous Pollutants”.

3.32 GS 146 “Motor Vehicles - Methods of Testing for Pollutants Emitted from Heavy Duty Diesel Engined Vehicles - Part 2: Determination of Smoke Density”.

3.33 GS 419 “Motor Vehicles - Methods of Test for Door Locks and Door Hinges”.

3.34 GS 420 “Motor Vehicles - Door Locks and Door Hinges”.

3.35 GS 421 “Motor Vehicles - Methods of Testing of Rear-View Mirrors”.

3.36 GS 422 “Motor Vehicles - Rear-View Mirrors”.

3.37 GS 565 “Air Filters for Internal Combustion Engines”.

3.38 GS 566 “Air Filters for Internal Combustion Engines - Test Performance”.

3.39 GS 743 “Motor Vehicles - Methods of Testing for Brake Lining - Part 1: Internal Shear Strength of Lining Material”.

3.40 GS 645 “Multi-Purpose Vehicles Trucks, Buses, and Trailers Tyres - Part 1: Nomenclature, Designation, Dimensions, Load Capacities and Inflation Pressure”.

3.41 GS 646 “Multi-Purpose Vehicles Trucks, Buses, and Trailers Tyres - Part 2: Testing Methods”.

3.42 GS 647 “Multi-Purpose Vehicles Trucks, Buses, and Trailers Tyres - Part 2: General Requirements”.

3.43 GS 967 “Motor Vehicles - Safety Requirements for Pilgrim Buses”.

3.44 GS 971 “Motor Vehicles - Periodic Technical Inspection Manual”.

3.45 GS 972 “Transportation of Dangerous Substances by Road - Part 1: General Safety Requirements”.

3.46 GS 1052 “Motor Vehicles Tyres - Temporary Use Spare Wheels/Tyres and Their Methods of Test”.

4- DIMENSIONS

4.1 The total length of trucks and buses shall not exceed 12.5 m, 18 m for the trailer or semi-trailer, 20 m for articulated truck and trailer and 23 m for the carriers of small motor vehicles. No motor vehicle shall exceed a width of 2.6 m and a height of 4.2 m, according to the cases specified below:

4.1.1 Unladen.

4.1.2 When the ladder of an escalade motor vehicle, or the turret of an overhead-wire repair motor vehicle, is housed.

4.1.3 When rear-view or front under-view mirrors and flexible antennas, are removed.

4.2 None of the outward-opening windows or ventilators and rear-view or front under-view mirrors shall protrude, each in the state specified below by more than 300 mm outward from the outermost side of the motor vehicle, and

300 mm or more upward from the highest part of the motor vehicle. In the case of rear-view mirrors attached to a tractor/vehicle towing a trailer with a larger width than that of the tractor/vehicle, protrusion of 300 mm from the outermost side of the trailer may be allowed:

4.2.1 When outward-opening windows or ventilators are opened.

4.2.2 When rear-view or front under-view mirrors are attached.

4.3 The rear overhang shall not exceed the following values:

4.3.1 67% of wheelbase or 3.6 m whichever is less.

4.3.2 1.83 m for motor tractors.

4.3.3 1.75 m for tipping vehicles.

5- MINIMUM ROAD CLEARANCE

Any part other than the earth-touching parts of a motor vehicle shall have adequate clearance above the ground so as to ensure safe driving.

6- GROSS VEHICLE AND AXLE WEIGHT

6.1 The gross vehicle weight of a motor vehicle or articulated motor vehicle shall not exceed 45 tones.

6.2 Maximum axle weights

6.2.1 The maximum axle weight for steerable single axle with single tyre shall not exceed 8 tones, and double tyre 10 tones, and 13 tones for unsteerable single axle.

6.2.2 The maximum weight on two closely spaced axles (TANDEM) shall not exceed the following:

Distance between two axles (Tandem) Meters From up to	Max. weight Tones
0.90 0.99	14.7
1.00 1.09	16.1
1.10 1.19	17.5
1.20 1.29	18.9
1.30 1.34	20.3
1.35 2.50	21.0
More than 2.5	each axle is to be treated as a single axle

6.2.3 The maximum permitted weight for three closely spaced axles shall not exceed the following:

Distance between the first and third axles (meters)	Max. weight (Tones)
3 m and less	26
More than 3 m	32

6.3 The maximum weight on any unsteerable axle end shall not exceed 6.5 tons.

6.4 The total weight imposed upon the road by the steerable wheels in the unladen state and in the laden state, shall be not less than 20% of the vehicle weight and of the gross vehicle weight, respectively.

7- STABILITY

7.1 Any motor vehicle (except trailers) in the unladen state shall not overturn when tilted to the left or right side at an angle of 35 degrees, and 30 degrees in the case of a motor vehicle with gross vehicle weight not exceeding 1.2 times the kerb weight.

7.2 The distance between the centers of the earth - touching parts of the left and right outermost wheels of a pole trailer, shall be not less than 1.3 times the height of the loading floor from the ground in the unladen state.

7.3 The minimum turning radius of a motor vehicle or combination of motor vehicles shall not exceed 12 meters with regard to the outermost wheel - track.

8- ENGINE

8.1 The engine shall be suitable for either Gulf domestic unleaded gasoline or diesel oil.

8.2 The engine and its accessories shall be suitable for use in dusty atmospheric conditions and high ambient temperatures especially as concerns the radiator (type and size), air filter and battery in accordance with the relevant Gulf standards.

8.3 The engine and its accessories shall comply with the relevant Gulf standards.

8.4 The engine power for trucks and buses shall not be less than 4.4 kw/ton* (5.9 HP/ton) of the gross vehicle weight or the gross combination weight of the motor vehicle with trailer.

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* *1 kw = 1.341 H.P.*

9- FUEL SYSTEM

9.1 The fuel tank and its connections shall be secure and fixed in such a manner that they will become resistant to damage by vibration, impact, and flammability.

9.2 Each fill pipe shall be fitted with a cap that can be fastened securely over the opening in the fill pipe.

9.3 In a normal filling operation, it shall not be possible to fill into the fuel tank a quantity of fuel exceeding 97.5% of its capacity.

9.4 The structure of the fuel tank and its connections in passenger cars shall be such that it will be unlikely to leak fuel in the case of collision impact at the maximum rate specified in Gulf standards No. 264 and No. 267/1984.

9.5 The filler and air vent on the fuel tank shall be so constructed as to be free from fuel leakage when subjected to jolting.

9.6 The filling entry and air vent on the fuel tank shall not be located in the path of discharge of the exhaust pipe and besides, additionally, shall be located not less than 300 mm from the open end of the exhaust pipe.

9.7 The filling entry and air vent on the fuel tank shall be located not less than 200 mm from any exposed electric terminal or switch or be separated by body panels.

9.8 The filling entry and air vent on the fuel tank shall not open into any passenger compartment (except the driver's compartment separated by a partition).

9.9 A fuel line shall not extend between a towed and the vehicle towing it while the combination of vehicles is in motion.

9.10 No part of the fuel system of a bus shall be located within or above the passenger compartment.

10- COOLING SYSTEM

10.1 Every motor vehicle shall be equipped with a cooling system suitable for climate of GCC countries to keep the engine at its most efficient operating temperature at all engine speeds and under all driving conditions.

10.2 Cooling system, using a liquid coolant, shall be provided with a device (thermostat) to shorten the inefficient or cold-operating time.

10.3 The air conditioning system shall not use any refrigerant which will affect the ozone layer.

11- ELECTRIC SYSTEM

11.1 Lead-acid batteries shall comply with the Gulf standard No. 1919/2001 "Lead-Acid Batteries Used for Motor Cars and Internal Combustion Engines".

11.2 The batteries shall be so fixed as not to move or become damaged by vibration, impact, etc., and in the case of batteries located in the passenger or cargo compartment, it shall be covered with cases made from electrically insulating materials.

11.3 Any electrical equipment shall be so constructed as not to cause continuous and/or excessive radio interference.

12- EXHAUST SYSTEM

12.1 No part of the exhaust system of any motor vehicle shall be so located as would be likely to result in burning, charring or damaging the electrical wiring, the fuel supply, or any combustible part of the motor vehicle.

12.2 The exhaust system of a bus powered by a gasoline engine shall discharge to the atmosphere at or within 200 mm of the rearmost part of the bus. The exhaust system of a bus powered by diesel engine shall discharge to the atmosphere at or within 400 mm of the rearmost part of the vehicle or to the rear of all doors or windows designed to be opened, except windows designed to be opened solely as emergency exits. No exhaust pipe shall have its opening directed rightwards or leftwards.

12.3 The exhaust system of every truck and truck tractor shall discharge to the atmosphere at a location to the rear of the cab or, if the exhaust projects above the cab, at a location near the rear of the cab.

12.4 The position and location of the exhaust pipe for trucks may be vertical or horizontal and it depends on the material transported by truck.

13- BRAKING SYSTEM

13.1 Every motor vehicle shall be equipped with brakes adequate to control the movement of, and to stop and hold stopped, the vehicle or combination of vehicles.

13.2 No material affecting the public health, directly or after reaction with other components for example: asbestos and cadmium, shall be used in the brake parts (i.e. friction disc, lining or hose).

13.3 When operating the services braking device the driver shall be able to achieve the braking action from his driving seat, without removing his hands from the steering control, and with at least one hand on the steering control in the case of the parking braking systems.

13.4 The control of the service braking device shall be independent of the control of the parking braking device.

13.5 The service braking device and the parking braking device shall act on braking surfaces permanently connected to the wheels through components of adequate strength.

13.6 The service brake shall be so constructed as to be operated by the driver's right foot. This general rule does not prevent the use of a service brake which can be operated by both the right and the left foot. The service brake on an automobile which is intended to be driven by a handicapped driver may, however, be so arranged to be operated in another way. A hand-operated service brake shall be able to be operated by a driver using a properly adjusted static three-point safety belt.

13.7 Brake pipes shall be so attached to the chassis or equivalent that they are not unnecessarily subjected to damage through vibration or abrasion and shall be made of materials resistant to corrosion or treated by any process which ensures such resistance.

13.8 The service braking device shall act on all the wheels of the vehicle, and shall be appropriately distributed among the axles as mentioned in the Gulf standard No. 1284/1997 (Motor Vehicles - Periodic Technical Inspection Manual).

13.9 Except for ABS, the action of the service braking device shall be distributed between the wheels of one and the same axle symmetrically in relation to the longitudinal median plane of the vehicle.

13.10 In the event of any failure of the service braking device (from malfunction, partial or total exhaustion of an energy reserve, etc.), the emergency braking device (which shall be unaffected by the failure), shall be able to bring the vehicle to a halt.

13.11 An optical, and/or acoustic, signal shall activate when the ignition (start) switch is in the "on" ("run") position and one of the following conditions occurs:

13.11.1 A fall in the supply pressure in a brake power unit to a level less than half of the normal system pressure.

13.11.2 A drop in the level of brake fluid in any master cylinder reservoir compartment to less than the recommended safe level specified by the manufacturer.

13.12 The parking braking device shall be arranged so that the braking components are entirely, mechanically, retained in their applied position, and shall be capable of holding the laden vehicle, facing up or down, stationary on a gradient of 18% for 5 minutes.

13.13 A vehicle which is intended for towing a trailer, equipped with a brake which is coupled to the brake system of the towing vehicle, shall be equipped with a device which will prevent the service brake of the vehicle from ceasing to function if a fault occurs in the connecting lines between the vehicle and trailer. This device shall be so arranged that it automatically starts to function when the pressure in the system falls below 55% of the specified pressure.

13.14 The trailer which is intended for towing vehicle shall be equipped with a braking device that will prevent the movement of the trailer by automatic functioning, when sudden separation occur from each other.

14- SUSPENSION SYSTEM

14.1 Every motor vehicle shall be equipped with springs and shock absorber or any other shock absorbing system which has adequate capacity against the impact from the ground and can ensure safe driving on uneven and rough road.

14.2 It is not permissible to introduce any modifications (by increasing or decreasing the strength of the suspension system) before getting the agreement of the responsible authority.

15- STEERING SYSTEM

15.1 The steering system shall be such as to be easily and securely handled by the driver in his normal position.

15.2 The steering wheel shall be on the left side.

15.3 No part of the steering system shall come into contact, when steered, with any other part of the motor vehicle such as the chassis frame, fender, ... etc.

15.4 There shall be no considerable difference between the maximum right and left steering angle of the wheel steered.

15.5 There shall be no considerable difference between the left and right steering force.

15.6 For motor vehicles excluding heavy duty trucks and buses any steering column placed at an angle of not more than 35^{o}, with the line parallel to the vehicle centerline, shall be shock absorbing and shall collapse away from the driver's chest upon impact or sudden deceleration.

16- CONTROL DEVICES

16.1 Each motor vehicle shall have the following controls which are necessary for operation:

16.1.1 Starter switch.

16.1.2 Accelerator pedal.

16.1.3 Braking system control.

16.1.4 Clutch pedal (except for auto clutch or auto transmission vehicles).

16.1.5 Transmission shift control.

16.1.6 Horn control.

16.1.7 Direction indicator control.

16.1.8 Head lamp switch.

16.1.9 Windshield wiper control.

16.1.10 Windshield washer control.

16.1.11 Steering wheel.

16.1.12 Hazard lamps switch.

16.2 The controls mentioned in item 16.1 shall be located to left and right of the centre of the steering wheel and so as to be easily operated by the driver in a normal driving position.

17- FRAME AND BODY

17.1 The frame and body shall be so secure as to fully withstand the operation of the vehicle.

17.2 The whole construction of passenger cars shall withstand the impact to the front, rear, side and roof under the conditions specified in Gulf standards No. 36, 37, 38, 39 and 40/1984.

17.3 The external shape of a motor vehicle shall be free from any sharp or protruding rotating part likely to endanger other traffic.

17.4 Every vehicle shall be provided with enough space in front and rear and on rear only for tractors and motorcycles to fix the number plate, the space shall have holes with spacing as mentioned in Gulf standard No. 572/1989.

17.5 The flooring in all motor vehicles shall be substantially constructed free of unnecessary holes and openings and shall be maintained so as to minimize the entrance of exhaust gases.

17.6 In case of passenger cars and multipurpose vehicles the surfaces of metal bumpers which are most likely to come into contact with other objects shall be provided with rubber (or any equivalent material) of suitable hardness.

17.7 Heavy duty trucks and trailers shall be mounted with rear and side shields (under- run protection) to prevent the passenger cars from interference.

17.8 Heavy duty trucks of GVW more than 7 tons and slow moving vehicles shall be equipped with a suitable rear reflective plates.

18- COUPLING DEVICES AND TOWING METHODS

18.1 When two or more vehicles are operated in combination, the coupling devices connecting the vehicles shall be designed, constructed and installed, and the vehicles shall be designed and constructed so that when the combination is operated in a straight line on a level, smooth, paved surface, the path of the towed vehicle will not deviate more than 76 mm to either side of the path of the towing vehicle.

18.2 Fifth wheel

18.2.1 The lower half of a fifth wheel mounted on a truck tractor or converter dolly shall be secured to the frame of that vehicle. The mounting of the fifth wheel on the frame of the tractor vehicle may be at least adequately effected by means of eight M 16 bolts placed symmetrically with respect to the longitudinal and transverse axes of the fifth wheel.

The installation shall not cause cracking, warping, or deformation of the frame. The installation shall include a device for positively preventing the lower half of the fifth wheel from shifting on the frame to which it is attached.

18.2.2 The upper half of a fifth wheel shall be fastened to the semi-trailer with at least the same security required for the installation of the lower half on a truck tractor or converter dolly. It is possible to use electric welding in fastening it.

18.2.3 Every fifth wheel assembly shall have a locking mechanism. The locking mechanism and any adapter used in conjunction with it shall prevent separation of the upper and lower halves of the fifth wheel assembly unless a positive manual release is activated.

The release may be located so that the driver can operate it from the cab. If a motor vehicle has a fifth wheel designed and constructed to be readily separable, the fifth wheel locking devices shall apply automatically on coupling. The sound of locking shall be appeared.

18.2.4 The lower half of a fifth wheel shall be located so that, regardless of the condition of loading, the relationship between the kingpin and the rear axle or axles of the towing motor vehicle will properly distribute the gross weight of both the towed and towing vehicles on the axles of those vehicles, will not unduly interfere with the steering, braking, and other maneuvering of the towing vehicle and will not otherwise contribute to unsafe operation of the vehicles comprising the combination. The upper half of the fifth wheel shall be located so that the weight of the vehicles is properly distributed on their axles and the combination of vehicles shall operate safely during normal operation.

18.3 Towing of full trailers

The full trailer shall be equipped with a tow-bar and a means of attaching the tow-bar to the towing and towed vehicles. The two-bar and the means of attaching it shall meet the following:

18.3.1 They shall be of structure adequate to withstand the weight being drawn.

18.3.2 They shall be properly and securely mounted.

18.3.3 They shall be provided with a locking device that prevents accidental separation of the towed and towing vehicles. The mounting of the trailer hitch on the towing vehicle shall include reinforcement or bracketing of the frame sufficient to produce strength and rigidity of the frame to prevent its undue distortion.

18.4 Every full trailer and every converter dolly used to convert a semi-trailer to a full trailer shall be coupled to the frame, or an extension of the frame, of the motor-vehicle which tows it, with one or more safety devices to prevent the towed vehicle from the braking loose in the event the tow-bar fails or becomes disconnected. The safety device shall meet the following requirements:

18.4.1 It shall not be attached to any device on the towing vehicle to which the tow-bar is attached.

18.4.2 It shall have no more slack than is necessary to permit the vehicle to be turned properly.

18.4.3 It shall have an ultimate strength of not less than the gross weight of the vehicle or vehicles being towed.

19- WHEELS (TYRES AND RIMS)

19.1 The tyres and rims imported or manufactured locally in GCC countries shall comply with the tyre and rim standards applicable in GCC countries.

19.1.1 Passenger car tyres shall be of "A" or "B", temperature rating and provided with speed symbol "S" (180 km/h) and higher rating tyres.

19.1.2 Multi-purpose passenger vehicles equipped with passenger car tyres, shall have tyres of "A" or "B" temperature rating and provided with speed symbol "S" (180 km/h) and higher rating tyres.

19.1.3 Multi-purpose passenger vehicles, equipped with light truck (LT) tyres, shall be provided with speed symbol "S" (180 km/h) and higher rating tyres.

19.1.4 All the information mentioned in items 19.1.1 to 19.1.3 shall be marked on the tire.

19.2 No bus shall be operated with a regrooved, recapped or retreated tyre on a front wheel.

19.3 No truck or truck tractor shall be operated with regrooved or retreated tyres on front wheels which have a load carrying capacity equal to or greater than 4000 kg.

19.4 No crack or cut shall be apparent in the tread or on either side wall of the tyre. The tyres shall not have metal pieces, gravel or other foreign matter pinched or struck in them. The tread shall be uniform without any separated plies.

19.5 The temporary-use spare wheels (tyre with rim) provided on passenger cars shall comply with the Gulf Standard No. 1052 "Motor Vehicle Tyres - Temporary Use Spare Wheels/Tyres and Their Method of Test".

19.6 The rear axle tyres for heavy trucks and buses shall be provided with shields fixed to the chassis to prevent stones, mud and foreign materials from hitting the rear oncoming vehicles.

19.7 The vehicles shall be provided with a spare tyre.

20- SEATS

20.1 Driver's seat

20.1.1 The driver's seat on a motor vehicle in the left side shall be so constructed and located that the driver can at all times have full view necessary for driving and that the driver can control the motor vehicle without being obstructed by the passengers or loaded goods, etc.

20.1.2 The width of the driver's seat shall be extended equally to the right and left outward from the centre of the steering wheel. The minimum extension shall be 200 mm to the left and to the right, respectively from the centre of the steering wheel.

20.2 Passenger's seats

20.2.1 Except in the case of seats located facing one another, where the minimal distance between them should be double those specified for the ordinary located seats, the space between the foremost edge of a seat cushion and the back of a seat, partition, etc., located ahead shall be at least as follows:

20.2.1.1 In the case of seats on any motor vehicle with a riding capacity of 11 persons or more, ... 200 mm; (except emergency motor vehicles and child - carrying vehicles).

20.2.1.2 In the case of seats to be occupied by children or a child - carrying vehicle ..... 150 mm.

20.2.2 Any motor vehicle with a riding capacity of 11 persons or more, (excluding those most windows of which have available opening facility 500 mm or more in width and 300 mm or more in height), shall not be equipped with spare seats in the aisles.

20.2.3 Vehicles carrying children shall not be equipped with spare seats.

21- SAFETY BELTS

21.1 Motor vehicles shall be equipped with safety belt assemblies and safety belt anchorages in order to restrain the passengers on the seats from moving forward or inclining their upper torso forward excessively in case of collision.

21.2 The front and rear outboard seats of passenger cars and multipurpose vehicles shall be provided with three-point safety belts, the other seats and seats of all other vehicles shall be provided with either two point or three-point safety belts except side facing seats.

21.3 All three-point belts shall be provided with retractor, and in the two-point belts shall be optional.

21.4 The belt assembly shall be so designed and constructed that when correctly installed and properly used its satisfactory operation is assured and it reduces the risk of bodily injury in the event of an accident or collision.

21.5 The design of the belt assembly shall be such that it can be used by one, and only one, person at any one time.

21.6 The design of the assembly shall be such that in case of collision it will not exert forces which could cause severe injury to the wearer.

21.7 The assembly shall be such that during abrupt deceleration the force applied to the pelvic area is in a downward and rearward direction and that loads on the shoulder portion of the belt do not tend to pull the lap portion of the belt upwards.

21.8 Hardware shall be free from burrs and sharp edges, and located in the assembly in such a manner that the possibility of injury to the wearer is minimized.

21.9 The adjusting device shall be capable of easy adjustment and readily accessible to the wearer. The operating force shall be not more than 50 N(≙ 5 kgf).

21.10 The buckle or other release device shall be so positioned that it can be released by the wearer with either hand separately and also by any other person in case of emergency, and shall be such that it cannot be worn in a manner which adversely affects performance.

21.11 When a belt assembly of the driver's seat is not fastened and the ignition switch is in the "start" position, a warning system shall be activated for a period of four seconds at least. The warning shall consist of a continuous or intermittent audible signal, and/or a continuous or flashing warning light visible to the driver in the panel displaying the words "Fasten Seat Belts", or any other indication.

22- AIR BAGS

When equipped with a supplemental inflatable restraint system (air bags) the following requirements shall be met:

22.1 The air bag shall be located in suitable position to assist in preventing the driver's head and chest from impacting the steering wheel or windshield.

22.2 The material used to inflate the bag shall not be toxic for the passengers.

23- WINDSHIELD AND WINDOW

It must also meet the requirements of SASO 1553 "Motor Vehicle: Safety Glass - Mechanical Test".

23.1 The glass of a windshield shall be laminated and all windows on every motor vehicle shall be safety glass or laminated.

23.2 The glass of a windshield shall be transparent and free from any distortion obstructing the driver's clear view.

23.3 The glass of a windshield shall be such that even if the glass is broken, the driver can still have a view of near the front of the vehicle through the broken glass.

23.4 Safety flexible plastic materials may be used in a motor vehicle only in the following specific locations at levels not requisite for driving visibility and not to obstruct any visibility from outside to inside:

23.4.1 Windows, except forward - facing windows, and sliding doors in campers and pick up covers.

23.4.2 Windows in buses remote from passenger seating.

23.4.3 Interior partitions.

23.4.4 Openings in the roof.

23.4.5 Flexible curtains or readily removable windows or ventilators used in conjunction with readily removable windows.

23.4.6 Windows and doors in motor homes, except for the windshield, forward - facing windows, and windows to the immediate right or left of the driver.

23.5 No motor vehicle may be operated with any label, sticker, or other vision reducing matter which would reduce the forward or side vision of the driver covering any portion of its windshield or windows at either side of the driver's compartment, except that stickers required by law may be affixed at the bottom of the windshield, provided no portion of any label, sticker, or other vision - reducing matter may extend upward more than 119 mm from the bottom of such windshield, as stipulated.

23.6 The allowable minimum light transmissibility for the windshield glasses and the side front windows of motor vehicles shall not be less than 70%. The light transmissibility of the rear side windows and rear glass shall be not less than 10%. It shall not obstruct any visibility from outside to inside.

23.7 The rear window shall be provided with suitable anti fog system where necessary.

23.8 The following identification marks shall be used to identify the safety glasses of motor vehicles:

Identification marks of safety glass	Safety standards, etc. to which safety glass has complied
AS 1	This mark indicates that the glass has conformed to the U.S. standards concerning laminated glasses.
AS 2	This mark indicates that the glass has conformed to the U.S. standards concerning toughened glass.
 Also bears a symbol, letter or word to denote "Laminated"	This mark denotes that the glass has met the West Germany standards regarding safety glasses.
	This mark denotes that the glass has met the Japanese standards regarding safety glasses.
	This mark denotes that the glass has met the British standards regarding safety glasses. Besides: - "T" for toughened glasses - "Z" for zone-toughened glasses - "L" or "Laminated" for laminated
 and ASR 1 (sometimes Australian Standard R_1 may be used)	This mark shows that the glass has complied with the Australian standards concerning safety glasses, besides: - "Z" for toughened glasses - "L" or "Laminated" for laminated glasses

Identification marks of safety glass	Safety standards, etc. to which safety glass has complied
TPGS	This mark indicates that the glass has complied with the French standards concerning safety glasses.
E ... number identifying the country of origin	This mark denotes that the glass has met the European ECE standard regarding safety glass.

24- HEAD RESTRAINT

24.1 Front outboard seats of passenger cars and multipurpose vehicles shall be tower back type or equipped with adjustable head restraints. For the other seats the head restraints may be optional.

24.2 The tower back type and the adjustable type when adjusted to its fully extended design position, shall conform to the following:

24.2.1 When measured parallel to the torso line, the top of the head restraint shall not be less than 700 mm above the seating reference point.

24.2.2 When measured either 65 mm below the top of head restraint or 625 mm above the seating reference point, the lateral width of the head restraint shall be not less than 85 mm to each side of the centre plane of seating position.

24.3 It shall be designed and constructed so as not to cause the occupant's head or neck injury as a result of impact in rear - end.

24.4 Adjustable type restraint shall be so mounted as not to become dislodged as a consequence of vibration, impact, etc.

25- REAR-VIEW MIRRORS

25.1 Every motor vehicle shall be equipped with one internal rear-view mirror and two external rear-view mirrors except for heavy duty trucks the internal mirror may be optional.

25.2 The rear-view mirrors shall be mounted in such a manner that by means of them, the driver in his seat can clearly observe the traffic conditions of other vehicles on both sides, right and left of the vehicle, and directly behind and is also able clearly to observe traffic conditions near the right side of the vehicle, other than in the area he in his seat can view directly.

25.3 The mirrors shall be firmly fixed in such a way that, with the vehicle traveling at speeds up to 80 percent of its maximum design speed but not exceeding 150 km/h, they will not move so as significantly to change the field of vision and thus cause the driver to misinterpret the nature of the image perceived.

25.4 The internal mirror shall be adjustable by tilting in both the horizontal and vertical directions from the driver's seated position. If the mirror has "Night" and "Day" positions, the coefficient of reflection of the reflecting surface in the "night" position shall be not less than 4%.

25.5 If the internal mirror is located where impact by the head is likely in case of accident, the mounting shall deflect, collapse or break away, on such impact without leaving dangerous projections or sharp edges which might cause injury.

25.6 The external mirrors shall be directly visible from the normal driving position, through the side windows or through the windscreen.

25.7 The external mirror and the mounting shall not protrude beyond the widest part of the body of the vehicle, except to the extent necessary to produce a field of vision as specified in section 25.10 and 25.11.

25.8 If the external mirror is less than 2 m above the ground, when the vehicle is laden to its maximum technically permissible weight, this mirror shall not project more than 350 mm beyond the overall width of the vehicle.

25.9 The field of vision of the internal mirror shall be such that the driver can see at least a 20 m wide plane and horizontal portion of the road centered on the vertical longitudinal median of the vehicle, with the said portion being measured 60 m behind the centre of the reflecting surface of the mirror.

Anyway as long as the field of vision requirement of the two external mirrors installed on the right and left sides are satisfied, the field of vision requirement of the interior mirror do not have to be satisfied.

25.10 The field of vision at the left hand (driver's side) external mirror shall be such that the driver can see at least a 2.5 m wide plane and horizontal portion of the road, the said portion being bounded on the right by the plane which is parallel to the vertical longitudinal median of the vehicle, and passes through the left-most point of the overall width of the vehicle with the said portion measured 10 m from the eye point of the driver.

25.11 The field of vision of the right-hand (passenger's side) external mirror shall be such that the driver can see at least a 3.5 m wide plane and horizontal portion of the road, said portion being bounded on the left by the plane which is parallel to the vertical longitudinal median of the vehicle, and passes through the right-most point of the overall width of the vehicle with the said portion measured 30 m from the eye point of the driver.

26- SOUND SIGNALLING DEVICE (HORN)

26.1 Every motor vehicle other than a trailer and semi-trailers shall be equipped with a horn.

26.2 The sound level of the horn or horns shall be not less than 88 dB(A) and not more than 125 dB(A).

26.3 The horn shall emit a continuous and uniform sound, its spectra shall not vary substantially during operation.

26.4 In the case where a vehicle is equipped with several horns which operate simultaneously, the prescribed minimum value mentioned in item 26.2 shall be obtained by operating all the horns at the same time.

26.5 Except for priority vehicles, no horn shall produce a sequence of sounds of varying frequencies.

27- POLLUTION(*)

27.1 Light duty leaded gasoline engined vehicles

27.1.1 The mass of gaseous pollutants in the exhaust gases, collected over a period of 13 minutes, when testing the vehicle in accordance with Gulf standard No. 43/1984 "Motor Vehicles - Methods of Test for Pollutants Emitted from Gasoline Engined Vehicles - Part 1: Determination of Exhaust Gaseous Pollutants After a Cold Start", shall not exceed the amounts indicated in table 1 of the above-mentioned standard.

27.1.2 The carbon monoxide present in the exhaust gases at idle speed shall not exceed 4.5% by volume when testing the vehicle in accordance with Gulf standard No. 44/1984 "Motor Vehicles - Methods of Test for Pollutants Emitted from Gasoline Engined Vehicles - Part 2: Determination of Exhaust Carbon Monoxide Concentration at Idle Speed".

27.1.3 The mass of the fuel vapours (hydrocarbons) emitted from the fuel system shall not exceed 6.0 grams per test when testing the vehicle in accordance with either Gulf standard No. 45/1984 "Motor Vehicles - Methods of Test for Pollutants Emitted from Gasoline Engined Vehicles - Part 3: Determination of

Evaporative Emissions (Hydrocarbons) from the Fuel System Using the Trap Method" or No. 46/1984 Part 4, "Determination of Evaporative Emissions (Hydrocarbons) from the Fuel System Using the Enclosure Method".

27.1.4 There shall be no emission from the crankcase of the vehicle to the atmosphere.

27.2 Light duty unleaded gasoline engined vehicles shall comply with the following standards:

27.2.1 GS 1681/2001 "Motor Vehicles - Methods of Test for Gaseous Pollutants Emitted from Gasoline Engined Vehicles - Part 1: Determination of Exhaust Gaseous Pollutants After a Cold Start".

(*) *For the method of testing, any international standard may be used until the relevant Gulf standards are approved.*

27.2.2 GS 1682/2001 "Motor Vehicles - Methods of Test for Gaseous Pollutants Emitted from Gasoline Engined Vehicles - Part 2: Determination of Exhaust Carbon Monoxide Concentration at Idle Speed".

27.2.3 GS 1683/2001 "Motor Vehicles - Methods of Test for Gaseous Pollutants Emitted from Gasoline Engined Vehicles - Part 3: Determination of Evaporative Emissions (Hydrocarbons) from the Fuel System Using the Enclosure Method".

27.2.4 GS 1684/2001 "Motor Vehicles - Methods of Test for Gaseous Pollutants Emitted from Gasoline Engined Vehicles - Part 4: Determination of Gaseous Pollutants Emitted from Engine Crankcase".

27.2.5 GS 1685/2001 "Motor Vehicles - Methods of Test for Gaseous Pollutants Emitted from Gasoline Engined Vehicles - Part 5: Determination of Durability of Pollution Control Equipment".

27.2.6 GS 1680/2001 "Motor Vehicles - Allowable Limits of Gaseous Pollutants Emitted to the Atmosphere from Unleaded Gasoline Engined Vehicles".

27.3 Heavy duty gasoline engined vehicles

27.3.1 The mass of gaseous pollutants in the exhaust gases shall not exceed the amounts indicated in Table 1, when testing the vehicle in accordance with Gulf standard No. ..... "Motor Vehicles - Methods of Test for Pollutants Emitted from Heavy Duty Gasoline Engined Vehicles - Part 1: Determination of Exhaust Gaseous Pollutants".

TABLE 1

Maximum Masses of Pollutants

Pollutant	Maximum Limit g/kW
C O	20.8
HC	1.7
Nox	14.4

27.3.2 The carbon monoxide in the exhaust gases at idle speed shall not exceed 4.5% by volume when testing the vehicle in accordance with Gulf standard No. ..... "Motor Vehicles - Methods of Test for Pollutants Emitted from Heavy Duty Gasoline Vehicles".

27.3.3 There shall be no emission from the crankcase of the vehicle to the atmosphere.

27.4 Light duty diesel engined vehicles

27.4.1 The mass of gaseous pollutants in the exhaust gases shall not exceed the amounts given in Table 2 when testing the vehicle in accordance with Gulf standard No. 1041/2000 "Motor Vehicles - Methods of Test for Pollutants Emitted from Diesel Engined Vehicles - Part 1: Determination of Exhaust Gaseous Pollutants".

27.4.2 The light absorption coefficient of the exhaust gases shall not exceed the respective limits for k specified in Table 3 when testing the vehicle in accordance with Gulf standard No. 1042/2000 "Motor Vehicles - Methods of Test for Pollutants Emitted from Diesel Engined Vehicles - Part 2: Determination of Smoke". In case of engines equipped with any exhaust driven supercharger, the absorption coefficient measured under free acceleration shall not exceed the respective limit for k, specified in Table 3, plus 0.5 m^{-1}, for the nominal flow value corresponding to the maximum absorption coefficient measured during the test at steady speeds.

TABLE 2

Maximum Masses of Gaseous

Pollutants and Reference Weight of Vehicle

Reference weight of vehicle (rw) (kg)	Mass of Carbon Monoxide (CO) (g/test)		Combined mass of Hydrocarbons (HC) oxides in Nitrogen (No_x) (g/test)	
	Type test	Acceptance test	Type test	Acceptance test
rw ≤ 1020	58	70	19	23.8
1020 < rw ≤ 1250	67	80	20.5	25.6
1250 < rw ≤ 1470	76	91	22	27.5
1470 < rw ≤ 1700	84	101	23.5	29.4
1700 < rw ≤ 1930	93	112	25	31.3
1930 < rw ≤ 2150	101	121	26.5	33.1
2150 < rw ≤ 3500	110	132	28	35

TABLE 3

Exhaust Gas Flow and Absorption Coefficient

Nominal flow (g) liters/second	Absorption coefficient (k) m^{-1}
42	2.26
45	2.19
50	2.08
55	1.985
60	1.90
65	1.84
70	1.775
75	1.72
80	1.665
85	1.62
90	1.575
95	1.535
100	1.495
105	1.465
110	1.425
115	1.395
120	1.37
125	1.345
130	1.32
135	1.30
140	1.27
145	1.25
150	1.225
155	1.205
160	1.19
165	1.17
170	1.155
175	1.14
180	1.125
185	1.11
190	1.095
195	1.08
200 and more	1.065

NOTE: If the value of the nominal flow is between the values given in table (3), the limit applicable value shall be obtained by interpolation.

27.4.3 There shall be no emission from the crankcase of the vehicle to the atmosphere.

27.5 Heavy duty diesel engined vehicles

27.5.1 The mass of gaseous pollutants in the exhaust gases shall not exceed the amounts given in Table (4) when testing the engine (vehicle) in accordance with Gulf standard No. 145/1991 "Motor Vehicles - Methods of Test for Pollutants Emitted from Heavy Duty Diesel Engined Vehicles - Part 1: Determination of Exhaust Gaseous Pollutants".

TABLE 4

Maximum Permitted Masses of Gaseous Pollutants

Emitted from Engine

Pollutant	Carbon monoxide	Hydro-carbons	Nitrogen oxides expressed in NO_2 equivalent
Allowable limit in grams per kilowatt hour	11.5	3.5	18

27.5.2 The opacity of smoke emissions shall not exceed the limits specified below when testing the engine (vehicle) in accordance with Gulf standard No. 146/1991 "Motor Vehicles - Methods of Test for Pollutants Emitted from Heavy Duty Engined Vehicles - Part 2: Determination of Smoke".

27.5.2.1 The average readings during the engine acceleration mode shall be 20 percent.

27.5.2.2 The average readings during the engine lugging mode shall be 15 percent.

27.5.2.3 The readings during the peaks in either mode shall be 50 percent.

28- VEHICLE EXTERIOR NOISE LEVELS(*)

The exterior noise level shall not exceed the values mentioned in Table (5).

(*) For the method of testing, any international standard may be used until the relevant Gulf standards are approved.

TABLE 5

Maximum Permitted Exterior Noise Level and

Category of Vehicle

	Vehicle Category	Limit values dB(A)
1	Vehicles used for the carriage of passengers and capable of having not more than nine seats including the driver's seat:	
	- Equipped with petrol engines.	78
	- Equipped with diesel engines.	79
2	Vehicles used for the carriage of passengers having more than nine seats, including the driver's seat and the maximum authorized mass of more than 3.5 T:	
	- Engine power less than 150 kW.	81
	- Engine power of 150 kW or above.	84
3	Vehicles used for the carriage of passengers having more than nine seats, including the driver's seat and vehicles used for the carriage of goods:	
	- Equipped with petrol engines and the maximum mass not exceeding 2 T.	79
	- Equipped with petrol engines and the maximum mass greater than 2 T but not exceeding 3.5 T.	80
	- Equipped with diesel engines and the maximum mass not exceeding 2 T.	80
	- Equipped with diesel engines and the maximum mass greater than 2 T but not exceeding 3.5 T.	81
4	Vehicles used for the transport of goods with a maximum mass exceeding 3.5 T:	
	- Engine power of less than 75 kW.	82
	- Engine power of 75 kW or less than150 kW.	84
	- Engine power of 150 kW or more.	85
5	Vehicles designed for off-road use and with a maximum mass above 2 T:	
	- Engine power of less than 150 kW.	85
	- Engine power of 150 kW or more.	87

29- FLAMMABILITY OF INTERIOR MATERIALS

The materials used in the compartment for the occupants of motor vehicles (e.g. seat cushions, seat backs, seat belts, roof lining convertible tops, arm rests, all trim panels including door, front, rear and side panels, compartment shelves, head restraint, floor coverings, sun visors, curtains) shall not burn, nor promote travel of a flame front across their surfaces at a rate exceeding 250 mm/min after application a small flame as specified in GS 98/1986 "Motor Vehicles: Flammability of Interior Materials and Testing Methods".

30- LIGHTING EQUIPMENT

30.1 General

30.1.1 Only the authorized lighting equipment shall be fitted to motor vehicles and trailers.

30.1.2 The lighting equipment shall be mounted firmly and as specified, and shall at all times be ready for operation.

30.1.3 Lighting equipment mounted in pairs shall be of the same colour and intensity and (with the exception of turn signal lamps and parking lamps) illuminate simultaneously.

30.1.4 No motor vehicle shall be equipped with a lamp the direct or reflected light of which interferes with the driving operation thereof or of other motor vehicles.

30.2 Head lamp

30.2.1 Every motor vehicle shall be equipped with head lamps one or two on each side, at the front, except the following cases which may be equipped with one head lamp only at the front:

30.2.1.1 Motor vehicles of overall width not more than 0.8 m.

30.2.1.2 Motor vehicles with maximum design speed below 20 km/h.

30.2.2 The intensity of the head lamp or head lamps on the motor vehicle when on high beam setting, shall be capable of allowing any obstacle on the road at night at a distance of 100 meters to be discerned. This distance may be reduced to 50 meters in case of heavy duty special vehicles with maximum speed not more than 35 km/h.

30.2.3 The head lamps shall be of such construction that the intensity can be dimmed (low beam) or the direction of the beam can be dipped in order that other traffic may not be dazzled. The intensity of dimmed or dipped beam shall be such as to allow any obstacle on the road at night at a distance of 40 meters to be discerned. This distance may be reduced to 15 meters in case of heavy duty special vehicles with maximum speed not more than 35 km/h.

30.2.4 The height of the top of the head lamp shall be less than 1.2 m above ground, and the height of the lower edge of the headlamp shall be more than 0.5 m above ground, the head lamps shall be located on the same level and symmetrically to the longitudinal axis of the motor vehicle.

30.2.5 The head lamps shall emit white light.

30.2.6 The mounting of the head lamp shall be such that the aim is not readily disturbed by vibration.

30.2.7 A tell-tale device should be provided to indicate the driver whenever the high beam is on.

30.3 Stop lamp (brake lamp)

30.3.1 Every motor vehicle shall be equipped with a stop lamp on each side at the rear. Passenger cars and multi-purpose passenger vehicles shall be provided with a high mounted stop lamp at the rear. In the case of motorcycle without sidecar or a motor vehicle with an overall width not more than 0.8 m, only one stop lamp at the rear is required.

30.3.2 Stop lamps shall be clearly visible even in day time from a distance of 100 meters to the rear.

30.3.3 Stop lamps shall be actuated upon application of the service brake of the motor vehicle.

30.3.4 If stop lamp is in combination with tail lamp, the intensity of stop lamp shall be at least 3 times that of the tail lamp.

30.3.5 Stop lamps shall display a red color.

30.3.6 Stop lamps shall be mounted at a height not more than 2 meters above the ground.

30.4 Tail lamp (rear position lamp)

30.4.1 Every motor vehicle shall be equipped with at least one tail lamp on each side, at the rear. In case of a motorcycle without sidecar or a motor vehicle with an overall width not more than 0.8 m, only one tail lamp at the rear is required.

30.4.2 Tail lamps shall be clearly visible at night from a distance of 300 meters to the rear.

30.4.3 Tail lamps shall display a red colour.

30.4.4 Tail lamps shall be located at a height not more than 2 meters above the ground.

30.4.5 Tail lamps to motor vehicles shall be wired so that it will light simultaneously on both sides with the front parking lamps.

30.5 Front parking lamp (front position lamp)

30.5.1 Every motor vehicle shall be equipped with a parking lamp on each side at the front.

In case of motor vehicle with an overall width not more than 0.8 m, only one parking lamp on the front is required.

30.5.2 Parking lamps on the front shall be clearly visible at night at a distance of 150 meters from the front of the vehicle.

30.5.3 Parking lamps on motor vehicles shall be wired so that all will light simultaneously. In the case of motor vehicles of overall length less than 6 meters and overall width less than 2 meters, the parking lamps may be wired so that those on the righthand or the lefthand side can be turned on separately.

30.5.4 Parking lamps shall be so designed and constructed that they can be turned on with or without running the engine.

30.5.5 Front parking lamps are required to be amber or white in colour.

30.6 Reversing lamp

30.6.1 Every motor vehicle shall be equipped with not more than two reversing lamps.

30.6.2 The intensity of the reversing lamp shall be not greater than 5000 candela, and shall be white in colour.

30.6.3 Reversing lamps shall be of such wiring as to be lighted only when the transmission system is set in reverse.

30.6.4 Reversing lamps shall be located at a height not more than 2 meters above the ground.

30.7 Turn signal lamp (Direction Indicator Lamp)

30.7.1 Every motor vehicle shall be equipped with turn signal lamps, two mounted on the front end and two mounted on the rear, turn signal light mounted on the side of the vehicle is optional.

30.7.2 The turn signal lamps shall be mounted in such a way as to be visible from any height not more than 2.5 meters above the ground at a distance of 10 meters to the rear.

30.7.3 The illuminated surface of the turn signal lamps showing to the front or rear shall have a projected area measured on the vertical plane perpendicular to the longitudinal axis of the vehicle, of at least:

30.7.3.1 In the case of one on a motor vehicle, with an overall length not less than 6 meters, 40 cm^2;

30.7.3.2 In the case of one on a motorcycle, with or without sidecar, 7 cm^2; or

30.7.3.3 In the case of any other motor vehicle, 20 cm^2.

30.7.4 The illuminating surface of the turn signal lamps mounted on each side of a motor vehicle shall have a projected area, measured both on the longitudinal plane of the vehicle and on a vertical plane which intersects the longitudinal plane at an angle of 45^o, of at least:

30.7.4.1 In the case of one on a motor vehicle with an overall length not less than 6 meters, 20 cm^2; or

30.7.4.2 In the case of any other motor vehicle, 10 cm^2.

30.7.5 Front and rear turn signal lamps shall, when in operation, be visible, even in daytime, from a distance of 100 meters and in the direction in which the signal is intended to show.

30.7.6 The turn signal lamps shall, when in operation, flash at a constant rate of not less than 60 nor more than 120 flashes per minute.

30.7.7 The turn signal lamps shall be located symmetrically to the longitudinal axis of the vehicle, and the distance between the two adjacent ones shall be as far apart as practical.

30.7.8 If turn signal lamps are located in such a way that the driver in his seat cannot confirm directly and easily that they are operating, a tell-tale device shall be provided to inform the driver of correct operating.

30.7.9 The turn signal lamps may be so designed and constructed that they also act as the hazard warning flashing lamps.

30.8 Hazard warning flashing lamp

30.8.1 Every motor vehicle shall be equipped with hazard warning flashing lamps. This requirement shall not apply to motorcycles and motor vehicles with an overall width not more than 0.8 meters.

30.8.2 Hazard warning flashing lamps shall comply with the requirements of turn signal lamps specified in (item 30.7).

30.9 Clearance lamp

30.9.1 Tractors, trailers, semi-trailers and buses whose width exceeding 2.1 m shall be equipped with clerance lamps, with at least one on each side, at the front and at the rear.

30.9.2 The clearance lamp shall be mounted so as to indicate the extreme width of the motor vehicle (not including mirrors) and as near to such position as practical.

30.9.3 Clearance lamps (front and rear) shall be clearly visible from night at a distance of 300 meters to the front and rear of the vehicle.

30.9.4 Front clearance lamps shall display an amber or white colour and the rear shall be amber or red colour.

30.9.5 Clearance lamps shall be mounted symmetrically on the left and right at a maximum height compatible with the requirements relating to the width, design and operational requirement of the vehicle and to the symmetry of the lamps.

30.10 Auxiliary head lamp

Auxiliary head lamps, if mounted, shall comply with the following requirements:

30.10.1 No more than two auxiliary head lamps can be lighted at any time.

30.10.2 Auxiliary head lamp shall be of an intensity of 10,000 candela or less.

30.10.3 The main beam of any auxiliary head lamp shall be directed downward.

30.10.4 The light colour of auxiliary head lamps shall be white or light yellow.

30.11 Side marker lamps and side reflector

30.11.1 Any motor vehicle specified below (except those carrying passengers) shall be equipped with side marker lamps or side reflectors on both sides of motor vehicles according to the following:

30.11.1.1 Motor vehicles with a length:

- more than 9 meters : front, center and rear
- from 6 m to 9 meters : front and rear

30.11.1.2 Tractors of ordinary motor vehicles with a length not more than 6 meters: front only.

30.11.1.3 Trailers with a length not more than 6 meters: rear only.

30.11.1.4 Trailers for transporting poles, pipes, and other long loads: front, center and rear.

30.11.2 The side marker lamps shall comply with the following requirements:

30.11.2.1 Shall be clearly visible at night at a distance of 150 meters from the side of the vehicle.

30.11.2.2 Shall be mounted at a height less than 2 meters above the ground.

30.11.2.3 Shall display amber colour for those equipped on the front and the center, and red or amber colour for those on the rear.

30.11.3 The side reflectors shall comply with the following requirements:

30.11.3.1 Shall be clearly visible at night at a distance of 150 meters from the side of the vehicle when illuminated by head lamp beams.

30.11.3.2 The reflecting surfaces shall not be triangular.

30.11.3.3 Shall reflect amber colour for the front and center side reflectors, and red or amber colour for the rear.

30.12 Registration plate lamp

30.12.1 Every motor vehicle shall be equipped with a registration plate lamp of such construction as to illuminate, with a white light, the rear registration number plate, making it clearly visible from a distance of 20 meters to the rear.

30.12.2 The registration plate lamp shall be wired so that it is on when the head lamps, tail lamps and/or park lamps are on.

30.13 Courtesy lamps (room lamp)

Every vehicle shall be equipped with courtesy lamp(s) inside the passenger compartment.

30.14 Restrictions on colour of lights

30.14.1 No motor vehicle shall be equipped with any red lamp illuminating or displaying to the rear, front or sides except the following:

30.14.1.1 Stop lamps.

30.14.1.2 Tail lamps (rear position lamps).

30.14.1.3 Rear parking lamps.

30.14.1.4 Rear side marker lamps and reflectors.

30.14.1.5 Rear hazard warning lamps and rear turn signal lamps.

30.14.1.6 Auxiliary stop lamps (optional).

30.14.1.7 Rear fog lamps (optional).

30.14.1.8 Rear clearance lamps.

30.14.2 No motor vehicle shall be equipped with any amber lamp illuminating or displaying to the rear, front or sides except the following:

30.14.2.1 Turn and side signal lamps (front and rear).

30.14.2.2 Front clearance lamps and front parking lamps.

30.14.2.3 Hazard warning lamps.

30.14.2.4 Warning lamps on emergency and road service motor vehicles.

30.14.2.5 Identification lamps on motor vehicles loaded with explosive or radioactive materials.

30.14.2.6 Side marker lamps and reflectors.

30.14.3 No motor vehicle shall be equipped with any white light lamp illuminating or displaying to the rear, front or sides except the following:

30.14.3.1 Head lamps.

30.14.3.2 Reversing lamps.

30.14.3.3 Registration plate lamp.

30.14.3.4 Front parking lamps.

30.14.3.5 Front fog lamps (optional).

30.14.3.6 Front clearance lamps.

30.14.3.7 Auxiliary headlamps (optional).

30.14.3.8 Cornering lamps (optional).

31- DOOR LOCKS AND DOOR RETENTION COMPONENTS (LIGHT DUTY VEHICLES)

31.1 Hinged doors (except cargo-type doors)

31.1.1 The latches of each door and striker assembly shall be provided with two positions consisting of:

- A fully latched position.
- An intermediate latched position.

31.1.2 The door latch and striker assembly shall not separate when the forces specified in Table 6 are applied.

TABLE (6)

Applied Force and Position of Door Latches

	Position of door latch	
Kind of load	Fully latched position	Intermediate latched position
	kg	kg
Longitudinal Load	1134	453
Transverse Load	907	453

31.1.3 The door latch shall not move from the fully latched position when a longitudinal or transverse inertia load, in both directions, of 30 g is applied to the latch, including its actuating mechanism ($g = 9.81$ m/sec^2).

31.1.4 Each door shall be equipped with a locking mechanism with its operating means in the interior of the vehicle, such that:

31.1.4.1 When the locking mechanism of side front door is engaged, the outside door handle or other outside latch release control will be inoperative.

31.1.4.2 In passenger cars and multi-purpose vehicles, when the locking mechanism of the side rear door is engaged both the outside and inside door handles or other latch release controls will be inoperative.

31.1.4.3 In passenger cars and multipurpose vehicles, when the locking mechanism of the doors are not engaged, a telltale indicator lamp shall function to indicate the driver the one of the doors are not fully locked.

31.2 Hinged cargo - type doors

31.2.1 The latch system in the latched position shall not separate when a longitudinal load of 1134 kg is applied and when a transverse load of 907 kg is applied.

31.2.2 The hinged system shall be able to keep the door in its position, shall not separate when a longitudinal load of 1134 kg is applied and when a transverse load of 907 kg is applied.

31.3 Sliding doors

The track and slide combination or other supporting means for each sliding door shall not separate when a total transverse load of 1815 kg is applied, with the door in the closed position.

32- SPEEDOMETER

32.1 Every motor vehicle shall be equipped with a speedometer located so that it can be easily observed by the driver and is clearly legible by night and by day.

32.2 The speedometer shall be graduated in kilometers per hour.

32.3 The range of speeds shown on the speedometer shall include the maximum speed indicated by the manufacturer.

32.4 Graduation shall be of 1, 2, 5 or 10 km/h.

32.5 The numerical values shall be spaced at 20 km/h intervals.

32.6 Speedometer accuracy

32.6.1 The indicated speed shall never be less than the actual speed.

32.6.2 The upper limit of accuracy of the speedometer (V_1 - V_2) when the motor vehicle is running on an even, dry paved road at a speed not less than 40 km/h, shall be calculated from the following formula:

$$V_1 - V_2 \leq \frac{V_2}{10} + 4 \text{ km/h}$$

Where:

V_1 = Speed indicated on the scale ..... km/h.

V_2 = Actual speed ..... km/h.

33- ODOMETER

33.1 Every motor vehicle shall be equipped with an odometer in a suitable place in the dashboard.

33.2 Every mechanical type odometer shall be capable of indicating distance traveled from 0 to not less than 999,999 kilometers in one kilometer units. Electronic odometers shall be capable of indicating distance traveled from 0 to not less than 600,000 kilometers in one kilometer units.

34- SPEED WARNING DEVICE AND SPEED LIMITING DEVICE

34.1 Every motor vehicle shall be equipped with light and/or sound emitting devices which automatically give warning to the driver when the speedometer indicates a speed exceeding (120 ± 5) km/h.

34.2 The device shall be of such a structure that the warning signal cannot be stopped by means other than control of the speed by the driver.

34.3 Every heavy duty truck transporting dangerous substances (e.g. explosives ...) and pilgrim buses shall be equipped with speed limiting device in accordance with the Saudi standard No. 1444/1999 to limit the maximum speed as specified by the concerned authority.

35- WINDSHIELD WIPING AND WASHING SYSTEMS

35.1 Every motor vehicle shall have a power-driven windshield wiping system with at least two speeds; one shall be at least 45 cycles per minute and the other at least 20 cycles per minute, regardless of engine speed and engine load.

35.2 Every motor vehicle shall be equipped with a windshield washing system that meets the requirements of the relevant Gulf standard.

36- ADDITIONAL REQUIREMENTS FOR PARTICULAR VEHICLES

In addition to the foregoing requirements in items 1 to 34, the following shall be met:

36.1 Buses (Items 36.1.1 to 36.1.7 are applicable to vehicles greater than 15 passenger seating capacity).

36.1.1 The entrance door shall be so constructed that passengers shall be unable to open it easily. The door shall be equipped with the following items:

36.1.1.1 The automatic lighting system which is lighted when the door opens.

36.1.1.2 Support handles to provide comfort to passengers while boarding or alighting.

36.1.1.3 A mechanism used to open it during the emergency from outside.

36.1.2 The entrance door shall be so constructed that the driver in his seat shall control its opening and closing, and an indicator lamp, which will serve to inform the driver in his seat of the door's opening and closing conditions, shall be provided.

36.1.3 Mirrors shall be provided to enable the driver in his seat to observe the condition near the entrance doors and inside the compartment.

36.1.4 The step edges shall have slip-resistant surfaces.

The step attached to an entrance shall meet the following:

36.1.4.1 Buses less than 34 seating capacity

		With standing passenger space	Without standing passenger space
First step from ground	Max. height (cm)	36	40
	Min. depth (cm)	23	23
Other steps	Max. height (cm)	25	35
	Min. height (cm)	12	12
	Min. depth (cm)	20	20

36.1.4.2 Buses greater than 34 seating capacity

		With standing passenger space	Without standing passenger space
First step from ground	Max. height (cm)	36	40
	Min. depth (cm)	30	30
Other steps	Max. height (cm)	25	35
	Min. height (cm)	12	12
	Min. depth (cm)	20	20

36.1.5 The height of aisle and standing space shall be as follows.

- Buses having space for standing passengers:

  The height of the aisle and standing space shall be not less than 1.9 m.

- Buses not having space for standing passengers:

  The height of the aisle and standing space shall be not less than 1.6 m. (1.2 m if the distance on the longitudinal axis between the furthermost seat and the entrance is less than 2 m).

No provision for standing space shall be made in buses carrying children.

36.1.6 The space to be allowed for each standing passenger shall be within 0.15 - 0.20 m^2.

36.1.7 Every bus shall have an aisle easy and safe for access through and of width not less than 300 mm. The aisle floor shall be covered with slip resistance material.

36.1.8 Every child - carrying vehicle and every motor vehicle having more than 34 passenger seating capacity shall be equipped with an emergency exit meeting the following requirements:

36.1.8.1 The emergency exit shall be located on the left side at the rear or in the rear of the passenger compartment. The aisle leading to the emergency exit shall be free from any obstacles.

36.1.8.2 The width and height of the emergency exit shall not be less than 400 mm and 1.2 m respectively.

36.1.8.3 The emergency exit shall be equipped with an outward opening door that can be securely closed under normal conditions and that can be opened from both inside and outside of the passenger's compartment.

36.1.8.4 Obstruction to escape such as bumper, draw hooks, etc. shall not project into the space around the emergency door.

36.1.8.5 The position and method of opening of the emergency exit shall be indicated in an easily legible way, at or near the emergency door.

36.1.9 Every bus of more than 34 persons riding capacity shall be provided with handrails and stanchions meeting the following requirements:

36.1.9.1 They shall be provided in the entrance way to the vehicle in a configuration which allows elderly and handicapped persons to grasp such means from outside the vehicle while starting to board, and to continue using such means throughout the boarding and fare collection processes.

The configuration of the passenger assistance system for buses having space for standing passengers shall include a rail across the front of the interior of the vehicle which shall serve both as a means of assistance and as a barrier to reduce the possibility of passengers sustaining injuries from the fare collection device or windshield in the event of sudden deceleration.

36.1.9.2 The handrails and stanchions shall be sufficient to permit safe on-board circulation, seating and standing assistance, and boarding and alighting by elderly and handicapped persons.

36.1.10 Every bus shall be provided with a three-point safety belt for the driver seat.

36.1.11 Every pilgrim bus shall be provided with the safety requirements in accordance with Gulf standard No. 967/1997 “Motor Vehicles - Safety Requirements for Pilgrim Buses”.

36.2 Trucks and trailers

36.2.1 Trucks shall be operated on paved and unpaved roads.

36.2.2 Torque capacity of the clutch shall exceed the maximum delivered engine torque with at least 10%.

36.2.3 The trucks/tractor with trailer fully loaded shall be capable of ascending not less than 15% grade ability.

36.2.4 The speed of the fully loaded trucks/tractor with trailer shall be of not less than 50 km/hr at a gradability of 1.5%.

36.2.5 Traction rear axles torque capacity shall be of not less than 10% in excess of the maximum torque developed by the engine as multiplied by the highest numerical gear reduction of transmission.

36.2.6 The trailers shall be provided with at least two spare wheels.

36.2.7 Front supports of semi-trailers (standing legs) and lifting gears shall be capable of supporting the semi-trailers fully loaded plus 10% in excess of load.

36.2.8 Tipper truck fully loaded shall not overturn during discharging when the tipper body reach the highest position.

36.3 Motor vehicles carrying dangerous materials

36.3.1 The electric wiring on the outside of the body, or in any part of the vehicle containing dangerous materials, shall be protected by an electrically insulated cover resistant to fire and firmly fixed to the vehicle body.

36.3.2 Motor vehicles provided with tanks to carry flammable liquids shall comply the following requirements:

36.3.2.1 The tank shall be firmly fixed to the chassis to protect them from excessive movement of the liquid likely to damage them.

36.3.2.2 Exhaust pipes and mufflers shall be free from any leakage of exhaust gases from joints, etc., and where any part of them is nearer than 200 mm to the tank, it shall be suitably insulated to guard against heat transfer to the tank.

36.3.3 Every motor vehicle used for transporting dangerous materials shall carry markings indicating the nature of the load and the class of hazard in accordance with the relevant Gulf standard.

36.3.4 Motor vehicles transporting dangerous materials shall comply with the relevant Gulf standard.

36.4 Emergency motor vehicles

36.4.1 Every emergency motor vehicle shall be equipped with a warning lamp and a siren and shall be painted with the identification colour(s) specified by the concerned authority.

36.4.2 The warning light shall be of specified identifying colour and shall be clearly visible from a distance of 300 meters to the front and to the rear.

36.4.3 The sound level of the siren shall be, when measured at a distance of 20 meters ahead, within 90 to 125 dB(A).

36.5 Handicapped vehicles

The vehicle shall have particular features, purpose-designed for facilitating its use by the disabled and handicapped persons, such features shall be suited to the various kinds of disability or handicap likely to be encountered in the passenger using the vehicle.

37- INCOMPLETE VEHICLES

The incomplete vehicles shall be completed in accordance with the manufacturer information and shall comply with the relevant Gulf standard.

38- SAFETY REQUIREMENTS

38.1 Every motor vehicle shall be provided with suitable changing wheel tools which must be in good condition such as jack; its lever and wheel spanner.

38.2 It shall be provided with dry powder fire extinguisher suitable for its size (minimum gross weight of the extinguisher 2 kg) and type to the vehicle, stored in a place that the driver is able to reach it easily (e.g. pillar, below the dashboard or under the seat).

38.3 It shall be provided with an emergency equipments such as reflector triangle and special tools to be used in emergency for quick repairs on road.

38.4 Every motor vehicle shall be provided with first aid box without any marking at a suitable location with sufficient “facility” for emergency treatment (e.g. bandage, flavones, cotton wool, etc).

38.5 Tire pressure gauge.

38.6 The safety equipment mentioned in items 38.2, 38.3, 38.4 and 38.5 shall be provided by the vehicle manufacturer or by the dealer under the responsibility of the manufacturer of the vehicle.

38.7 Any warning statement provided with any vehicle parts shall be translated into Arabic.

38.7.1 Non-removable stickers may be used for the warning statement mentioned in item 38.7.

39- INFORMATION OF VEHICLE

39.1 The manufacturer shall affix, on the door edge, door latch post of each vehicle or on the chassis of the trailer, a label meeting the following requirements:

39.1.1 It shall be made of material resistant to deterioration.

39.1.2 The label shall, unless riveted, be permanently affixed in such a manner that it cannot be removed without being destroyed.

39.1.3 The following information shall be written (in Arabic or English language) in letters at least 2.4 mm high and in a clearly legible manner:

39.1.3.1 Name of manufacturer and country of manufacture (or assemble).

39.1.3.2 Year and month of production.

39.1.3.3 Maximum (gross) vehicle weight (GVW) in kilograms (for trucks).

39.1.3.4 Maximum (gross) axle weight (GAW) for each axle, in kilograms (for trucks).

39.1.3.5 The statement “This vehicle and trailer conforms to all applicable Gulf/Gulf motor vehicle or trailer standards in effect up to the date of manufacture”.

39.2 Vehicle identification number.

39.2.1 The VIN number shall contain 17 characters (see appendix A) and shall comply with the Gulf standard No. ...../..... “Motor Vehicle Identification Number (VIN) Requirements.

39.2.2 The VIN shall be readable through the vehicle glazing from outside the vehicle adjacent to the left windshield pillar of passenger cars, multi-purpose vehicles and light trucks and shall comply with the Gulf standard No. ...../..... “Motor Vehicles - Identification Number - Location and Attachments”.

39.2.3 The characters of the VIN shall in all cases be legible, durable and not easily altered.

39.2.4 The VIN shall be located on two different places at least, other than the place mentioned in item 39.1.

39.2.5 Each consignment of vehicles of the same type, approved by the Gulf Arabian Standards Organization shall be accompanied with a certificate from the manufacturer including the vehicle identification number, date of manufacture, and the conformity of vehicles to the approved Gulf standards.

40- OWNER'S MANUAL (Operating Instructions)

Every vehicle shall be accompanied with manual in Arabic and English including the following:

40.1 The technical specifications of the motor vehicle.

40.2 Information relating to the operation of the vehicle.

40.3 Information relating to the periodic maintenance.

40.4 Technical information about the recommended tyre designation, inflation pressure and changing procedure.

40.5 Information for the use and changing the spare wheel/tyre.

40.6 The speed limit, maximum torque and maximum power at .... rpm.

40.7 Information mentioned in item 40.6 may alternatively be provided by the dealer or in the sales brochure under the responsibility of the manufacturer.

APPENDIX (A)

VIN NUMBER (17 Characters)

Ex: 1B3BR65E5TV100027

WMI	VDS	Check Digit	VIS
1 B3	BR65E	5	TV100027
3 characters	5 characters	1 character	8 characters

VEHICLE Model Year

1980 ..... A	1990 L	2000 ..... Y
1981 ..... B	1991 ..... M	2001 1
1982 C	1992 ..... N	2002 2
1983 ..... D	1993 ..... P	2003 3
1984 ..... E	1994 ..... R	2004 4
1985 ..... F	1995 ..... S	2005 5
1986 ..... G	1996 ..... T	2006 6
1987 ..... H	1997 V	2007 7
1988 ..... J	1998 ..... W	2008 8
1989 ..... K	1999 X	2009 9
2010 ..... A	2020 L	2030 ..... Y
2011 ..... B	2021 ..... M	2031 1
2012 C	2022 ..... N	2032 2
2013 ..... D	2023 ..... P	2033 3
2014 ..... E	2024 ..... R	2034 4
2015 ..... F	2025 ..... S	2035 5
2016 ..... G	2026 ..... T	2036 6
2017 ..... H	2027 V	2037 7
2018 ..... J	2028 ..... W	2038 8
2019 ..... K	2029 X	2039 9