

TECHNICAL REQUIREMENTS 2018

Modified production vehicles – TR-1 Group

A vehicle considered unsafe by Technical Commissioners cannot be admitted for the competition by the Sports Commission.

If unit/part is not mandatory but is used, it must conform to the requirements.

1. DEFINITION

1.1. Stock off-road 4x4 vehicles produced in a quantity of not less than 1000 identical items and equipped with two seats minimum.

1.2. Participants are responsible for proving that the car is stock as a whole and its separate parts and units. During the Technical Inspection parts and units of the car might be compared with stock parts physically or using the manufacturer's catalogue.

2. LIMITS OF ALLOWED CHANGES

2.1. Any changes not specified in the current requirements are forbidden.

2.2. Any worn out or damaged part can be replaced with an identical (completely interchangeable with the original) part only.

2.3. Out-of-production vehicles: it is allowed to install parts and units from next-generation cars of the same brand after a required approval by the Technical Commissioner.

3. REINFORCEMENT

Reinforcement is allowed unless otherwise specified in the current technical requirements, by sheet material for any part if the used material repeats the form of a part, which is being reinforced, and it contacts with the whole surface of a part without forming any box-like cavities. It is allowed to reinforce suspension parts by steel rods with a diameter of not more than 12 mm.

4. WEIGHT

4.1. Vehicle weight must be not less than 1200 kg and not more than 3500 kg.

5. ENGINE

5.1. Air filter

5.1.1. The design of the air filter, its housing, pipes connecting the air filter with atmosphere and the engine, as well as their location in the engine compartment are not restricted.

5.1.2. It is allowed to drill holes in the body panels or the engine compartment, except for the engine shield, with a maximum diameter of 150 mm (in an area of no more than 177 cm²), to provide the engine with air and to place an air intake tube into the hole. The air intake cannot be installed through the crew compartment.

5.2. Fuel flow system

5.2.1. It is allowed to install additional fuel filters if they will not be placed in the interior.

5.2.2. The accelerator drive gear can be replaced or duplicated by another even if it is not original.

5.3. Ignition system

5.3.1. It is allowed to change the position of the ignition system elements within the engine compartment.

5.3.2. Usage of mudguard covers for coil, the distributor of ignition and high voltage wires is allowed.

5.3.3. Replacement of the contact ignition system onto a contactless and vice versa is allowed.

5.4. Cooling system

5.4.1. It is allowed to remove and install jalousie (screen) and its drive in front of the radiator; however, the vehicle appearance cannot be changed.

5.4.2. The fan and its drive can be replaced and/or removed. The number of fans and their size is not restricted.

5.5. Exhaust system

Exhaust system must meet the manufacturer's design during external examination. However, the following is allowed:

- installation of exhaust system additional fastenings to the body/frame;

- bring out the final path to the top / aside after the last muffler. In order to prevent burns from hot components of the system by people outside the vehicle the protection must be installed.

6. TRANSMISSION

6.1. Transfer gear and gear box

6.1.1. Any transfer gears and gearboxes installed by manufacturer in one of vehicle modifications are allowed.

6.1.2. Internal construction modifications of transfer and gearboxes are allowed if the original crankcase is preserved.

6.1.3. Transfer and boxes' mounting brackets modification and replacement is allowed.

6.2. Axles

6.2.1. It is allowed to use portal axles for UAZ vehicles only, serially installed on one of UAZ vehicles' modifications.

6.2.2. Lockable differentials usage is allowed if they are installed in the original housing. The number of lockable differentials, their type and mode of operation are not restricted.

6.3. Shafts, half shafts, U-joints: no restrictions.

7. SUSPENSION

7.1. It is allowed to install any shock absorbers if their initial type is maintained (telescopic, lever, etc.) as well as the operation principle (hydraulic, friction, etc.), and mounting points.

Explanation: Gas-filled shock absorbers on the principle of action must be considered as hydraulic.

In the case if shock absorbers with external expansion chambers are used these chambers and connecting hoses must not be located inside the passenger compartment under any circumstances.

7.2. The maximum length of the shock absorber and its stroke cannot be changed by more than 30 mm.

7.3. Elastic element:

Screw springs: The length is not restricted, as well as the number of coils, bar diameter, external diameter, spring type (progressive or not), and the shape of the spring. Laminated springs: Length, width, thickness and vertical curvature are not restricted.

The number of sheets is not restricted.

Torsion bars: the diameter is not restricted.

7.4. It is allowed to change the location of jounce bumpers.

8. WHEELS AND TIRES

8.1. Wheels must be factory-built.

8.2. Any tire lockup is allowed except bead locks. Bead locks usage is prohibited.

8.3. It is not allowed to change the tread pattern of the tires by cutting them.

8.4. Tires diameter

It is allowed to use pneumatic tires of not more than 838 mm overall tire diameter measured along a straight line passing through the center of a tire which is not vertical in relation to the ground (in order to avoid the loaded diameter to be taken into consideration). Measurements are performed for all tires (spare, replaceable, etc.) planned to be used throughout the competition. Measurements are performed on the tires inflated to a pressure of 1.5 atm.

8.5. Tires width

Vehicle weight, kg	Tire width
From 1200 to 1500	9.4 " (240 mm)
From 1501 to 1800	10.5 " (267 mm)
From 1801 to 2100	12 " (305 mm)
From 2101 to 3500	13.5 " (343 mm)

Measurement technique: Measurements are performed along the horizontal line passing through the wheel hub on tires pumped to a pressure of 1,5 atm. The width of the wheel is the maximum width of the rubber part.

9. BRAKES

It is allowed to replace drum brakes with disc ones for all vehicles. However, car calipers must be used only. Brake discs are not restricted, but in case if any standard disc brakes models were installed on a specific axle, original brake calipers only must be used.

10. ELECTRICAL EQUIPMENT

It is allowed to use additional electrical equipment, including supplementary relays and fuse plugs in electric circuits, extend or add electric wires. Electric cables and their housings are not restricted.

It is allowed to make additional sealing of any electric connections.

10.1. Battery

10.1.1. Not more than two batteries connected to the vehicle electrical system are allowed. Types, capacity of any battery, as well as connecting cables are not restricted. Location of the battery (s) is not restricted, but if it was changed, then:

- Safety conditions must be observed;
- The battery (s) must be placed behind the front seats only.

10.1.2. The battery as viewed from the above (as well as its plugs in case of a side contact) must be covered with a solid dielectric (rubber or plastic) cover.

10.2. Alternator

10.2.1. Alternator brand and capacity are not restricted as well as its position in the engine compartment, however the drive gear system (belt, chain etc.) cannot be modified.

10.2.2. The voltage adjuster is not restricted. Its position can be changed, but it cannot be placed in the cabin, if it is not the original location.

10.3. Main battery disconnection switch

It is recommended to equip the vehicle with the main battery disconnect switch for all electric circuits (battery, starter, alternator, lights, alarm, ignition, etc., except electric winches). It should work without sparking and be available to any crewmember who is fastened by seat belts. Turning off all of the electrical circuits must be accompanied by stopping the engine, regardless of its type (petrol or diesel).

10.4. Lighting equipment

10.4.1. Original elements of lighting can be replaced by other elements that don't need to have the same size and form according to the following conditions: new elements must function the same way as original elements; their position is not changed; the given replacement does not lead to change of any body panels; the panel they are mounted on completely covers original holes in the vehicle body. Headlights housing material, deflectors and lamps are not restricted.

10.4.2. Basic lighting equipment (headlights, sidelights, direction indicators (but not repeaters), marker lights, brake lights, reversing lights, number plate lighting) must work properly during Technical Inspection.

10.4.3. Additional lighting equipment is not restricted; however, it must conform to requirements of traffic regulations.

10.4.4. In the case of replacing the original rear position and brake lights, it is recommended to install two additional brake (21W each) and two sidelights (15W each).

These lights must be located outside the rear surface of the body or cabin (of the truck) symmetrically along the longitudinal plane of the vehicle as close as possible to the body sides not less than 1500 mm above the road surface, with red lenses. The light spot of each lens should be at least 60cm.

10.4.5. It is allowed to install LED lamps of the relevant brightness.

11. FUEL SYSTEM

The filler pipe must be equipped with a lid providing its reliable locking.

12. STEERING

12.1. It is allowed to replace a steering wheel by another factory-made one.

12.2. It is allowed to install the power steering mounted on one of serial modifications of the vehicle.

13. BODY AND FRAME

13.1. Exterior

13.1.1. It is allowed to install the top luggage compartments to fasten additional equipment.

13.1.2. It is allowed to install spare-wheel brackets if these brackets do not bear any other function.

13.1.3. In case if soft-top is used in a vehicle, it is allowed to unmount it completely or partially. In case if a soft top was unmounted, it is not required to transport it in the vehicle during the competition.

13.1.4. Small necessary changes in body panels (radiator enclosure, bumper etc.) for winch installation (at distance no more 50 mm from the winch) are allowed.

13.1.5. If folding side doors are used in the vehicle, it is allowed to remove the top half of them. It is not required to transport removed during the competition.

13.1.6. Small necessary changes (cuttings or deformation) of side panels to install larger wheels are allowed.

The distance between the top edge of a wheel and the bottom edge of the side panel at the maximum suspension compression must not exceed 50 mm. Wheels (rims with tires), as seen from above, must be covered by wings or fender extensions along their entire width and length. Installing the expanders must be done safely.

13.1.7. It is allowed to restore segments, cut off previously by welding and riveting.

13.1.8. It is allowed to change the radiator grille material and shape.

13.1.9. Windows located behind the doors of the driver and the front passenger, can be replaced with the panels made from:

- steel plate, minimum 0,8 mm-thick;
- aluminum, minimum 1,5 mm-thick;
- non-cracking plastic, minimum 3 mm-thick.

Several transparent panels installed in one window aperture can be replaced with one panel. Mounting method is not restricted. None of the body elements or body contours must not be changed due to these replacements.

13.1.10 It is allowed to replace front-door glass windows with transparent polycarbonate with a thickness of at least 4 mm. Opening function must remain in this case.

13.2. Body protection

13.2.1. It is allowed to use a removable protection under the body in order to protect the engine, radiator, transmission, exhausting system, fuel tank. The protection must not perform any other function.

13.2.2. It is allowed to use any bulbar. It must not perform any other function but vehicle front part protection and additional headlights and winch installation. It must be mounted on the bumper.

12.2.3. It is allowed to install detachable side protectors (sills).

12.2.4. It is allowed to install bush wires. The only function they must perform is protection.

13.3. Bumpers

It is allowed to modify the bumper, except its removal. The design and the material of the bumper is not restricted.

13.4. Towing eyelets:

The vehicle must be equipped with towing eyelets: at least one mounted at the front and one set behind the vehicle. Towing eyes must be fixed to the vehicle frame or body, if vehicle has a frameless body. The eyelets must be durable, have a closed form and a hole with diameter of not less than 30 mm, to be painted in bright (yellow, orange, red) color. It is allowed to install factory-made towing hook-shaped attachments.

13.5. High lift jack

13.5.1. The jack should be reliably fastened in the vehicle (using metal fastenings is recommended).

13.5.2. It is allowed to reinforce the jacking locations and / or change their location. However their installation must be done safely (i.e. without acute angles, edges etc.). Unused brackets can be removed.

13.6. Seats

13.6.1. It is allowed to replace front seats to any other automobile seats. Seats must be securely mounted.

13.6.2. It is allowed to remove all seats and their brackets except driver's and co-driver's ones.

13.7. Interior

13.7.1. It is allowed to use extra elements and drill interior panels to fasten additional equipment.

13.7.2. Carpets and sound insulation materials can be removed.

13.7.3. It is allowed to change/remove the armrests and doors handles.

13.7.4. It is allowed to unmount kick panels.

13.7.5. It is allowed to replace door pads. Removing door pads completely is prohibited.

13.7.6. In order to reach the efficient safety cage installation the original interior can be modified around assembly points of a safety cage by minimum trimming or bending. However, these modifications do not mean upholstery total or partial removal.

13.7.7. The rear demountable shelf in two-box cars can be removed. It is also allowed to remove its fastenings.

13.7.8. It is allowed to remove or modify any part of the dashboard and center console below the steering wheel hub. However, the arrangement of devices and system elements for heating, including the heating control must be kept unmodified.

13.7.9. It is allowed to change or replace the dashboard.

13.7.10. It is allowed to use any additional control, measuring and navigating devices if they are installed safely.

13.7.11. All controls, according to their location and functional scheme must match the original vehicle. It is allowed to modify them in order to improve the comfort and control (extension arms for transmission and transfer boxes, parking brake, additional pedal pads etc.).

13.7.12. It is allowed to install additional equipment of comfort such as heating, ventilation, additional illumination, radio etc.

13.7.13. Additional glove compartments and door pockets are allowed.

13.7.14. It is allowed to replace electric window regulators to manual ones and vice versa with minimal changes to the door panel.

13.8. The safety cage is not required but is recommended.

14. WINCH AND ADDITIONAL EQUIPMENT

14.1. The current requirements define a "winch" as a device consisting of the following elements (not more than one from each category):

- power drive gear (including an electric motor)
- reducer
- drum
- case or frame
- brake gear
- cable

14.2. It is allowed to install not more than one winch with a power drive gear.

14.3. The winch motor voltage input must not exceed 27 V under any circumstances.

14.4. Not more than one adjusting place for the winch is allowed. It must be located in front part of the vehicle between bumper and vertical axis of the front axle.

14.5. It is not allowed to install any stationary mechanisms / devices allowing winching backwards.

14.6. Not more than 4 sand tracks with a maximum size of 1500X500 mm each are allowed.

14.7. If a steel cable is used for winching, a rope dampener must be used. The dampener must be at least a piece of the rubber hose longer than 500 mm and not lighter than 1.5 kg.

15. SAFETY

15.1. Seat belts

The vehicle must be equipped with at least three-point factory-made seat belts. The seat belts must be mounted on the body or chassis of the vehicle. Using regular seat belt mounting points is recommended.

15.2. Helmets

Helmets used at all official trophy-raid competitions must have a rigid external shell, shock absorbing internal insert being an integral part of a helmets design, and ventilation holes. The use of helmets for rafting of EN 1078, EN 1077 (Europe) or ASTM of 2040 (USA) standards is recommended; for mountain bike - Snell B 90 (USA) standard (the standard mark is located on an inner helmet surface), mountain skiing or hockey. The use of automobile or motorcycle helmets, of E22 and above standards is allowed. The use of building helmets, helmets for road bicycles, tanker's or other soft-top helmets is not allowed.

15.3. Fire extinguisher

15.3.1. Vehicles must be equipped with factory-made fire extinguishers containing not less than 4 kg of fire extinguishing substance, concentrated in one or two cylinders.

15.3.2. Using foamy and aerosol fire extinguisher cylinders is not allowed.

15.3.3. Fire extinguisher cylinders must be located in easily reachable places for both driver and the co-driver. Fire extinguisher fastening must be reliable, but should be easy removable barehanded in case of fire. Fire extinguishers must have an easily readable label containing its weight, fully loaded weight in the equipped condition, weight of an empty cylinder and production date (the date of recharge).

15.4. First-aid kit

Vehicles must be equipped with a first aid kit. All kit components must be have a valid expiration date and have no visible package damage. First aid kit must be waterproof-packed and located in an easily reachable place.

15.5. Means of communication

To ensure safety and in-time medical assistance it is recommended to equip the vehicles with a Civil Band radio station (frequencies to be agreed with the organizers of the event). Crewmembers must be equipped with cellular or satellite phones.