

# TECHNICAL REQUIREMENTS 2018

## Modified production vehicles - Adventure 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 1100 kg and not more than 3500 kg.

### 5. ENGINE

#### 5.1. Air filter

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 cm<sup>2</sup>), 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.** It is allowed to install a lockable differential upon condition that it is installed in the original crankcase.

**6.2.** It is prohibited to use track gearboxes.

#### **7. BRAKE SYSTEM**

**7.1.** For all car brands, it is allowed to install disc brakes instead of drum brakes.

At the same time, automotive calipers must be used only; the brake discs are not limited, but in case if they were mounted serially on the axis for any modification of this body, it is necessary to use original calipers from this modification.

Clarification:

This item is not a substitute for replacing calipers and brake discs for others in all other cases, except Suzuki - all models, Niva (Niva, Lada4x4) of all modifications, UAZ of all modifications, where calipers and brake discs are not limited, but only automotive.

**7.2.** It is allowed to replace standard brake hoses with sports reinforced hoses. It is necessary to use special fittings in this case.

**7.3.** It is allowed to change the arrangement of brake lines and their additional protection.

#### **8. SUSPENSION**

**8.1.** 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.

Using shock absorbers with external expansion chambers is not allowed.

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

**8.3.** 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.

**8.4.** It is allowed to change the location of jounce bumpers.

## **9. WHEELS (RIMS) AND TIRES.**

**9.1.** Wheels must be factory-built.

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

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

### **9.4. 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.

### **9.5. Wheels width**

Width of the tire must not exceed 343 mm.

**9.6. 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.

**9.7.** Wheels diameter must not exceed 838 mm.

**9.8.** For vehicles with a wheelbase of 2740 mm and more wheels diameter must not exceed 890 mm, wheels width must not exceed 343 mm.

## **10. ELECTRICAL EQUIPMENT**

**10.1.** 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.

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

### **10.3. Battery**

**10.3.1.** Type, capacity of any battery, as well as connecting cables are not restricted. Location of the battery designed by manufacturer must be retained.

**10.3.2.** 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.

### **10.4. Alternator**

**10.4.1.** 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.

**10.4.2.** 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.

### **10.5. 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).

## **10.6. Lighting equipment**

**10.6.1.** 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.

**10.6.2.** 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.

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

## **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.

**13.1.11.** It is allowed to install sub frames.

**13.1.12.** It is allowed to lift body and suspension as well as replace suspension elastic elements including springs relocation.

### **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.

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

**13.2.4.** 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.

## **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 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.

### **16. ALLOWED EXTENSIONS FOR SPECIFIC CAR BRANDS AND MODELS**

**16.1.** For **NIVA (Niva, Lada 4x4)** of all modifications and **Chevrolet NIVA** of all modifications it is allowed to:

- install any internal combustion engine with a volume of up to 2000 cc;
- replace a factory-made front gearbox housing with steel housing;
- use rear axle half shafts of unloaded type;
- wheel hubs and hub bearings are not limited;
- refine the front steering knuckles to install non-original hub bearings;
- strengthen and change the appearance of the body sills;
- install a winch in the base behind the front seats following general safety rules of the current technical requirements;
- steering rod ends are not limited;
- EPHS or steering gear are not limited;
- front suspension levers are not limited;
- the installation of the second shock absorbers on the front suspension is allowed. At the same time, the following conditions must be observed: one of the shock absorbers is installed in its original position, and both shock absorbers do not contradict to p. 3.7.

**16.2.** For **UAZ** vehicles of all modifications and **GAZ69, 69A**, it is allowed to:

- replace the engine to any engine ever installed on UAZ vehicles serially;
- cut sills and doors to the line passing under the lower original door hinges;
- move into the body and replace fuel tanks with a factory-made fuel tank. The tank must be securely fastened. In case if there is no separator between the crew compartment and the rear part of the body, the tank must be protected by non-flammable casing. Fuel lines passing through the cabin should also be protected by non-flammable casing. Additionally a fuel drain hole with a diameter not larger than 30 mm must be made. When installing the fuel tank in the body it is allowed to replace the fuel pump;
- install EPHS from any UAZ vehicle;
- steering rod ends are not limited;
- steering levers are not limited;
- move the body mounting points from front frame member to side rails for winch installation;
- change a removable cross-beam under the engine;
- increase the rear wheel arches. At least a 1-mm thick steel sheet must be used for this.

**16.3.** For **Suzuki** vehicles it is allowed to:

- replace the engine to any gasoline engine up to 1.8 liters, ever installed on Suzuki cars, or any diesel engine up to 1.9 liters, ever installed on Suzuki cars;

- install a transfer box from any Suzuki model;
- install a gearbox from any Suzuki model;
- transfer case brackets are not limited;
- replace a factory-made front gearbox housing with steel housing;
- replace a differential case to any case from Suzuki model;
- install EPHS or EAS from any Suzuki model;
- front suspension levers are not limited;
- use rear axle half shafts of unloaded type;
- move into the body and replace fuel tanks with a factory-made fuel tank. The tank must be securely fastened. In case if there is no separator between the crew compartment and the rear part of the body, the tank must be protected by non-flammable casing. Fuel lines passing through the cabin should also be protected by non-flammable casing. Additionally a fuel drain hole with a diameter not larger than 30 mm must be made.

16.4. For **Jeep** vehicles, it is allowed to:

- replace the engine to any engine ever installed on this model;
- install any gearbox and transfer case that was ever installed in Jeep models;
- move into the body and replace fuel tanks with a factory-made fuel tank. The tank must be securely fastened. In case if there is no separator between the crew compartment and the rear part of the body, the tank must be protected by non-flammable casing. Fuel lines passing through the cabin should also be protected by non-flammable casing. Additionally a fuel drain hole with a diameter not larger than 30 mm must be made.