



Technical requirements

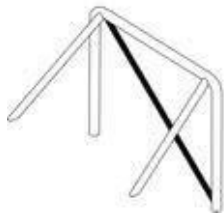
1. SAFETY EQUIPMENT (for all categories)

1.1 SAFETY CAGE is required for PROTO and PRO MODIFIED categories vehicles.

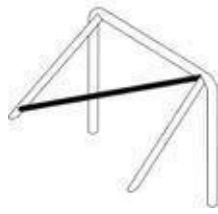
1.2 SAFETY CAGE DESIGN. The main rollbar with backstays and diagonal member must be installed present as a necessary minimum. The diagonal member position shall meet design requirements as depicted below:

Drawings 1 - 3: the minimum required design

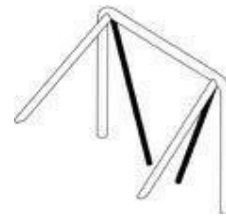
Drawings 4 – 6: recommended design



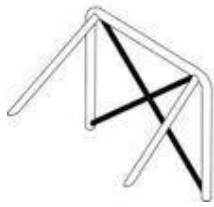
Drawing 1



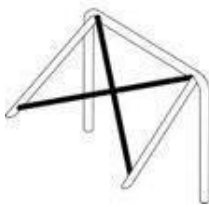
Drawing 2



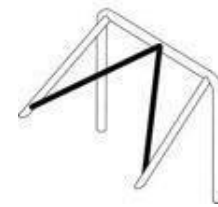
Drawing 3



Drawing 4



Drawing 5



Drawing 6

1.2.1. For vehicles from all categories with detachable hardtop and for PROTO vehicles a full safety cage is required (see Drawings 7A, 7B, 7C).



Drawing 7A



Drawing 7B



Drawing 7C

1.2.2. The base structure must be made according to one of the following designs:

- 1 main rollbar, 1 front rollbar, 2 longitudinal member, 2 backstays (Drawing 7A);
- 2 lateral rollbars, 2 transverse members, 2 backstays (Drawing 7B);

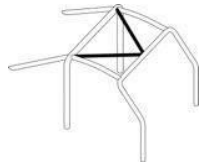




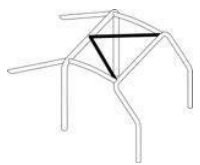
- 1 main rollbar, 2 lateral half-bars, 1 transverse member, 2 backstays (Drawing 7C). Diagonal member(s) is/are mandatory as depicted on Drawings 1 – 6. Roof reinforcement members must be installed as depicted below (Drawings 8A, 8B, 8C, 8D).



Drawing 8A



Drawing 8B



Drawing 8C

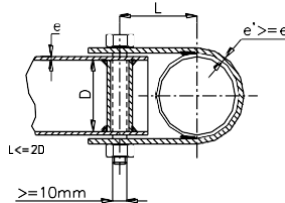


Drawing 8D

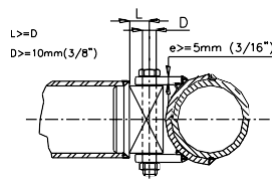
1.2.3. All safety cage members must be single tube pieces. The safety cage members shall be connected by welding or dismantlable joints.

1.3 REMOVABLE MEMBERS

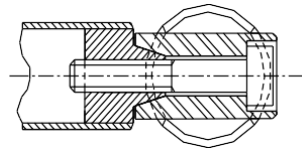
1.3.1. Should removable members be used in the construction of a safety cage they must comply with one of the following types (Drawings 9A – 9E):



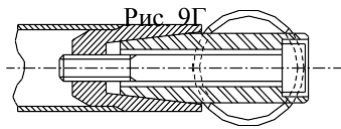
Drawing 9A



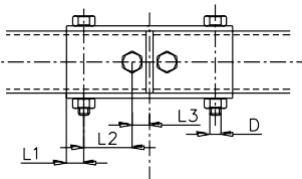
Drawing 9B



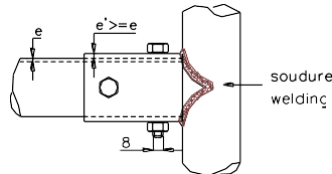
Drawing 9C



L1 = L3 > 18mm
L2 >= 36mm
D = 8mm



Drawing 9D



Drawing 9E

1.3.2. Removable members must be mounted strictly along the axis of tubes connected. They must not be welded once assembled. Bolts and nuts must have a minimum quality of 8.8 (ISO standard).

1.4 SAFETY CAGE INSTALLATION

1.4.1. Minimum requirements. The safety cage must be installed as follows:

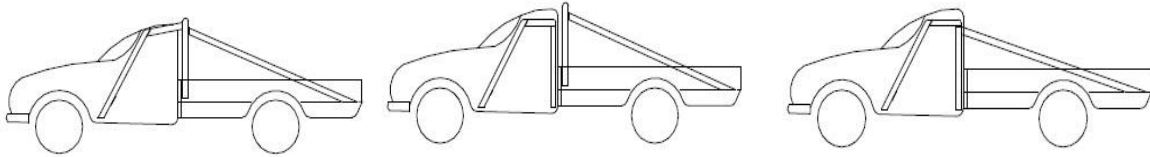
- Front rollbar – in the front part of a crew compartment, and its shape must follow the windscreen pillars and its top edge. The rollbar can be installed both inside and outside the body. When installed outside, it should be located not more than 60 mm from the windshield frame;





- Main rollbar - directly (or as close as possible) behind the backs of the crew front seats as vertically as possible;
- Backstays must be located at an angle of at least 30° relative to a vertical plane and must be mounted above or behind the rear axle.

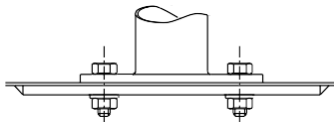
Allowed members' arrangements are depicted below:



1.4.2. Each member mounting foot must be attached to a reinforcement plate at least 3 mm thick.

1.4.3. Each mounting foot must be attached by at least three bolts on a steel reinforcement plate at least 3 mm thick and of at least 120-cm² area, which is welded or riveted, to the body shell.

Recommended angle between 2 bolts (measured from the tube axis at the level of the mounting foot, see Drawing 10) must not be less than 60 degrees.



Drawing 10

1.4.4. It is allowed to mount an external front rollbar to vertical load-bearing body members. Front fenders modification is allowed in this case by cutting openings in order to provide a proper rollbar mounting feet installation.

1.4.5. In addition, more mounts can be used, mounting feet may be welded to reinforcement plates, and a rollbar can be welded to the vertical body shell/chassis members.

1.5 TUBE SPECIFICATIONS

Material	Min. Tensile strength	Minimum dimensions (mm)	Use
Cold drawn seamless steel	350 kgf/mm ²	45 x 2.5 or 50 x 2.0	Safety cage members highlighted in dark color in drawings 7A, 7B, 7C
Carbon steel containing a maximum of 0.3 % carbon		38 x 2.5 or 40 x 2.0	Other safety cage members

1.5.1. Note: If a tube section takes an oval shape (flattens) during bending, the ratio of the minimum to maximum diameter should be not less than 0.9.

1.6 INSPECTION HOLE

1.6.1. The inspection hole shall be made on a straight section of the main rollbar with a diameter not less than 4,5 mm designed to inspect the tube thickness.





1.7 PROTECTIVE PADDING

1.7.1. Flame redundant energy absorbing protective padding is recommended to be fixed on safety cage elements that may contact with crewmembers bodies or their helmets.

1.8 SAFETY CAGE ELEMENTS MOUNTING

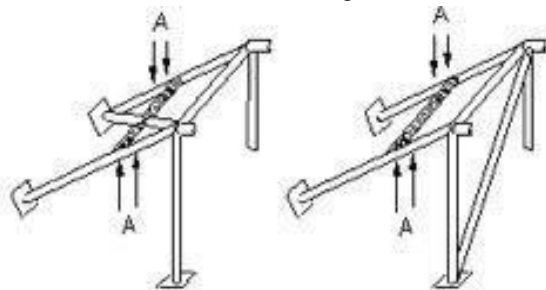
1.8.1. Any modifications of **the safety cage described above** made to fasten any objects or mechanical parts using drilling or welding are forbidden.

1.8.2. Any fastenings to **additional** safety cage members (not specified above on drawings) are allowed.

1.9 SAFETY HARNESSES

1.9.1. Vehicles must be equipped with at least 3-point factory-made safety harnesses (seat belts) for every crewmember. Safety harnesses must be anchored to the vehicle body or chassis. Using regular harness anchor points is recommended.

1.9.2. For vehicles, not originally equipped with safety harnesses it is permitted to mount safety harness to the safety cage transversal member (see Drawing 11).



Drawing 11

Warning: Safety harnesses must not be mounted to safety cage members, seats and seat rails under no circumstances.

1.9.3. Shoulder straps should be directed downwards and backwards, and to make an angle of not more than 45° horizontally from the upper edge of the backrest. The recommended angle to be not less than 10°.

1.10 GENERAL CIRCUIT BREAKER

1.10.1. All categories: mandatory. The vehicle must be equipped with a general circuit breaker must to cut all electrical circuits (battery, starter, alternator, lights, alarm, ignition, etc., except winches). It must be a spark-proof model, and must be accessible to both **the first and second drivers sitting in their seats and fastened**. Circuit cut-off must stop the engine regardless of its type (petrol or diesel).

1.11 BATTERY

1.11.1. The battery must be securely fastened. If the actual mount is not saved, a mount must be provided to replace it and securely fix the battery.

1.11.2. The battery on top (as well as its terminals - with the side output) should be closed with a solid dielectric (rubber or plastic) cover with a minimum thickness of 2 mm.

1.11.3. It is allowed to install batteries outside the engine compartment. The following conditions must be met: the battery should not be located in the crew compartment (that is, it can only be located behind the front seats); all elements of the wiring must be securely fastened and have double insulation without any mechanical damage.





1.11.4. Under no circumstances should the wiring elements be located in the area of their possible mechanical abrasion and damage (at the feet of the crew compartment, near moving parts, other rotating or not permanently fastened vehicle elements).

1.11.5. Each battery must be securely fastened and closed to prevent short circuits or leaks. If the battery is moved from the factory location, its attachment to the body must be carried out with the help of a metal pallet and two metal brackets with an insulating coating attached to the bottom with bolts and nuts. For these fastenings, bolts with a diameter of at least 10 mm must be used with reinforcement plates under each bolt. Reinforcement plates must be at least 3 mm thick, their surface area must be at least 20 cm² located on the backside of the body panel. The battery must be closed with a rigid box, impermeable to liquid, fixed independently of the battery.

The box should be made of:

- Steel, not less than 1.0 mm thick;
- Aluminum, at least 1.5 mm thick;
- Non-splitting plastic or composite material, not less than 3 mm thick.

The protective box should have air vents with exit to the outside of the vehicle.

1.11.6. If a vehicle is equipped with a regular battery mounting located inside the crew compartment (for example, under the seat), then this also requires compliance with paragraph 1.11.4 in respect of a rigid box, formed of the body elements that form a regular niche for installing the battery.

1.12 TOWING-EYES

1.12.1. The vehicle must be equipped with towing eyes: at least one installed in the front and at least one installed in the rear of the vehicle. Towing eyes must be attached to the frame of the vehicle or the body shell in case of a frameless body. Towing eyes must be strong, have a closed shape with a hole diameter of at least 30 mm, painted in a bright (yellow, orange, red) color (contrasting to other elements of the body / frame).

1.12.2. Factory-made tow hooks installation is allowed.

1.13 ROOF

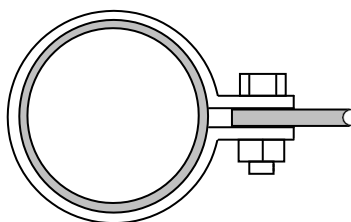
1.13.1. Open vehicles with mounted safety cage should have a rigid roof made of a single piece of material (protection) over the crew cabin / compartment. At the same time, the width of this roof should not be less than the width of the upper part of the windshield frame, and extend along the length from the windshield frame to the furthest vertical plane passing through the rear edges of the front seat backrests or the main rollbar of the safety cage.

Required roof thickness depends on a material used:

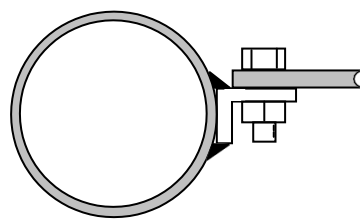
- Steel: at least 1.0 mm thick (in this case spot welding to the frame elements is allowed);
- Aluminum: at least 1.5 mm thick (fastening to frame elements with clamps only, riveting is not allowed);
- Non-splitting plastic or composite material: at least 3 mm (fastening to frame elements with clamps only, riveting is unacceptable).

1.13.2. The roof can be attached to the safety cage members in one of three ways:

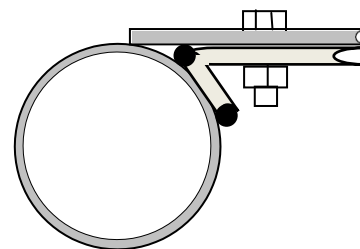
- Using plastic or metal clamps wrapped around the frame elements (see Drawing 12A);
- Using bolts or rivets to metal brackets welded to safety cage members (see Drawing 12B, 12C). In this case, welding seams can only be longitudinal and dashed (stitch length and in-between distance must be not more than 25-30 mm);
- Roofs made of at least 3 mm thick composite material - using adhesive-sealant for windshields.



Drawing 12A



Drawing 12B



Drawing 12C





1.14 FIRE EXTINGUISHER

1.14.1. Vehicles must be equipped with at least two factory-made fire extinguishers containing at least 4kg of extinguishing agent — bromoethyl, carbon dioxide, extinguishing powder.

Using foam and aerosol fire extinguishers is not allowed.

1.14.2. One of fire extinguishers should be located in an easily reachable place for driver and a co-driver. Fire extinguisher fastening must be reliable and quick detachable without using any tools in case of fire.

1.14.3. 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 (or recharge) date.

1.15 EQUIPMENT

1.15.1. Helmets used all official competitions must have a rigid outer shell, energy absorbing (polyurethane foam, polystyrene, etc.) inner insert, which is an integral part of the helmet design, and air vents. Using rafting helmets complying to EN 1078, EN 1077 (Europe) or ASTM 2040 (USA) standards is recommended; mountain bikes helmets - Snell B 90 (USA) standard (the standard label is located on the helmet inner surface), ski helmets. Automotive or motorcycle helmets complying with E22 and above standards is allowed. Using construction helmets and any soft helmets is **unacceptable**. Using hockey helmets is **unacceptable**.

1.15.2. When installing communication devices on a helmet, it is allowed to use only original mounting brackets, using improvised metal brackets, plates, and linings is prohibited.

1.15.3. Attention: Crews must be equipped in vests (jackets, T-shirts, etc.) of bright signal (yellow, red, bright green) colors at special stages.

1.16 FIRST AID KIT

1.16.1. Vehicles must be equipped with a car first aid kit. All components of the first aid kit must meet the expiration date and have no visible signs of damage to the package.

1.16.2. First aid kit must be waterproof-packed and located in an easily reachable.

1.16.3. First aid kit must contain an instant cold pack or a similar medication.

1.17 MEANS OF COMMUNICATION

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

1.18 WINCH AND ADDITIONAL RECOVERY EQUIPMENT

1.18.1. If a winch cable/rope passes is laid through a front part of a vehicle, it shall be placed inside a one-piece metal tube with a wall thickness of at least 2 mm.

1.18.2. It is allowed to install the winch in the base / cabin of the vehicle considering that a one-piece metal tube inlet is located behind the back of the front seats.

1.18.3. When winching a factory-made cable/rope dampener must be used. Its dimensions to be at least 900 mm x 450 mm and its weight must be not less than 1.5 kg.

1.18.4. A vehicle with a winch installed must be equipped with a flat tree protector at least 60 mm wide.

1.18.5. Winch cable/rope, cable/rope extension, tree protector, mounting hook, shackles and blocks used for winching must withstand a breaking load equal to doubled maximum winch pull force.

1.19 PARKING BREAK

1.19.1. A functioning parking brake is mandatory. A parking break type is not limited.

2. PRO MODIFIED CATEGORY (MODIFIED OFF-ROAD VEHICLES)





A vehicle considered unsafe by Technical Commissioners may be suspended for the competition by the Competition Committee. If a unit/part is not mandatory but is used, it must comply with the requirements.

2.1. DEFINITION

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

2.1.2. 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.

2.1.3. Vehicle weight must be not less than 1050 kg and not more than 3500 kg.

2.2. LIMITS OF ALLOWED MODIFICATIONS

If a list of prohibited modifications, replacements and additions is provided in provisions of the current document, then all technical modifications that are not listed in this list are certainly **ALLOWED** except for the separately agreed items of safety equipment.

2.3. ENGINE

2.3.1. Air filter. The air filter design, case, branch pipes connecting the air filter to atmosphere and the engine as well as their mounting location in the engine compartment is not limited. Air pipes cannot be mounted inside or through the crew compartment under no circumstances.

2.3.2. Cooling system, ventilation and interior heating.

2.3.2.1. Ventilation and interior heating systems air intake from the engine compartment is forbidden.

2.3.2.2. It is forbidden to install the cooling system radiators inside the crew compartment. When installing the radiator (s) inside the body shell, they must be separated from the crew compartment by leak-proof partition.

2.3.3. Exhaust system.

2.3.3.1. In order to prevent burns from hot components of the system by people outside the vehicle the exhaust system protection must be installed.

2.3.3.2. Exhaust pipe must exit under a floor pan in the front or rear side of a vehicle.

2.4. TRANSMISSION

2.4.1. Transfer box and gear box

Any transfer boxes and gearboxes are allowed.

2.4.2. Axles

Any axles except ones with external engagement final drives and self-made final drives.

2.5. SUSPENSION

2.5.1. It is prohibited to use an active suspension that allows the driver to change the vehicle's ground clearance while driving, even if the car is equipped with it by default.

2.5.2. It is forbidden to change the type of suspension.

2.5.3. Spring elements: not limited.

2.5.4. Shock absorber.

2.5.4.1. Coil-over and air-shocks are allowed. It is allowed to install not more than two shock absorbers per wheel. It is allowed to replace shock absorbers without any restrictions. It is allowed to transfer regular shock absorbers mounting spots. When installing additional shock absorbers or changing mounting spots, it is allowed to make minimum changes, including cutting holes in the internal body panels. In this case, if a safety barrier separating the crew compartment from the rear part of the body shell is missing, the upper mounting points of the rear shock absorbers must be completely sheathed with metal similar to the one used for a vehicle floor so that no open end holes remain.

2.6. STEERING

2.6.1. Hydrostatic steering is prohibited.

2.6.2. Four-wheel steering is prohibited (4X4X4).





2.7. WHEELS AND TIRES

- 2.7.1.** It is allowed to use pneumatic tires with outer diameter of 895 mm measured along a straight line that is not vertical in relation to the ground and runs through the center of the tire (natural tires indenting is not considered during measurements). Measurements are done by a special gauge on tires inflated to a pressure of 0.5 atmosphere.
- 2.7.2.** It is allowed to use tires with a minimum residual tread height of at least 5 mm.
- 2.7.3.** It is allowed to change a tire tread pattern by cutting. In this case, the cord cannot be damaged under any circumstances.
- 2.7.4.** Additional anti-skid devices (for example, chains, special covers that change tire traction, etc.) mounted on wheels and tires are prohibited.

2.8. BRAKES

It is allowed to use brakes with at least a double-circuit working system being applied on both axles using a single pedal.

2.9. ELECTRICAL EQUIPMENT

- 2.9.1. Alternator.** The quantity, brand and capacity are unlimited; however, its mechanical drive gear must be carried out by vehicle's engine.
- 2.9.2.** All connectors and connections must be insulated if wiring is modified.
- 2.9.3. Battery.**
- 2.9.3.1.** It is allowed to install not more than two batteries connected to the vehicle electric system.
- 2.9.3.2.** Batteries type, capacity and connection wires are not limited. If original batteries location is changed, then modified location must comply with requirements from art. "Safety equipment" p. 1.11.
- 2.9.4. Lighting equipment.** Original lights can be replaced to equivalent equipment with similar dimensions and shape under the following conditions: the new elements fully perform the functions of the original ones; their location is not changed; this replacement does not change any body panels; the panel where they are mounted completely covers the original opening in the body shell. Headlights, reflectors and lamps material is not limited, LED lights are allowed.
- 2.9.4.1.** The position of the direction indicators, position lamps and brake lights can be changed, but the original openings must be closed (at least with a scotch tape).
- 2.9.4.2.** In case if original tail and brake lights are replaced or their location is changed, it is **recommended** to install two additional brake lights (21W each) and two additional parking lights (15W each). These lights should be located outside the rear surface of the body or cabin (for a truck) symmetrically relative to the longitudinal plane of the car, as close as possible to the side dimensions of the body shell at a height of at least 1500 mm from the road surface and have red lenses installed. The area of each lens must be at least 60 cm². It is allowed to install LED lights of appropriate brightness.
- 2.9.4.3.** Lighting equipment (headlights, direction indicators (but not repeaters), sidelights and brake lights, parking lights) must be in working condition at least during technical inspection.

2.10. FUEL SYSTEM

2.10.1. Fuel tank:

- 2.10.1.1.** It is allowed to modify or replace original fuel tanks, as well as change their location. In this case, fuel tank (s) must be protected by a flame retardant cover if a crew compartment is not separated by a leak-proof bulkhead. Additionally all fuel pipelines attached to a tank shall be covered with sealed protectors. If tanks and fillers are located inside the body shell, there must be draining holes in the body floor to drain spilled fuel outside the vehicle. A draining hole diameter must not exceed 100 mm.
- 2.10.1.2.** Fuel tanks ventilation must exit outside the vehicle body.
- 2.10.1.3.** Liquid necks and caps must not extend beyond the perimeter of the vehicle when viewed from above. Any lock system eliminating incomplete locking or accidental opening can be used.

2.10.2. Fuel lines.

- 2.10.2.1.** If fuel lines pass through the vehicle cabin, they must be made of one-piece metal pipes. Any kinds of fuel lines joints are not allowed inside the cabin except threaded joints where it exits through the floor or other body panels.

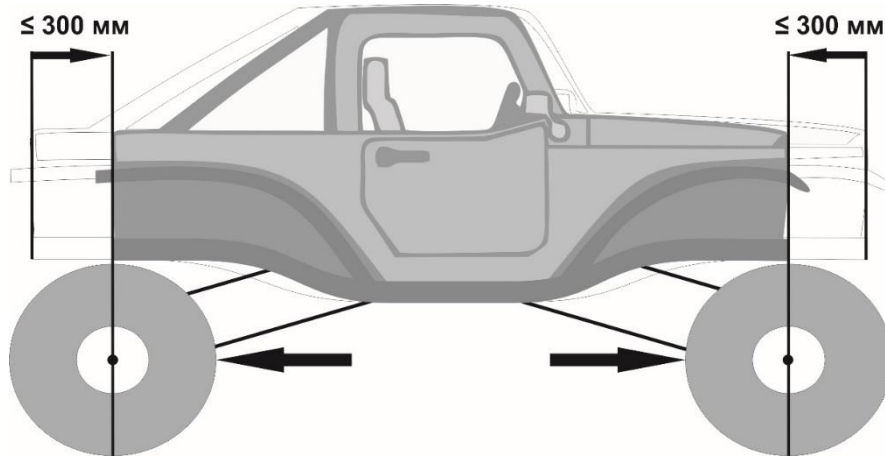
2.11. BODY AND FRAME

- 2.11.1.** Trimming front and rear frame edges is allowed for not more than 300 mm. In this case, all body panels can be moved or trimmed, removing then is not allowed.





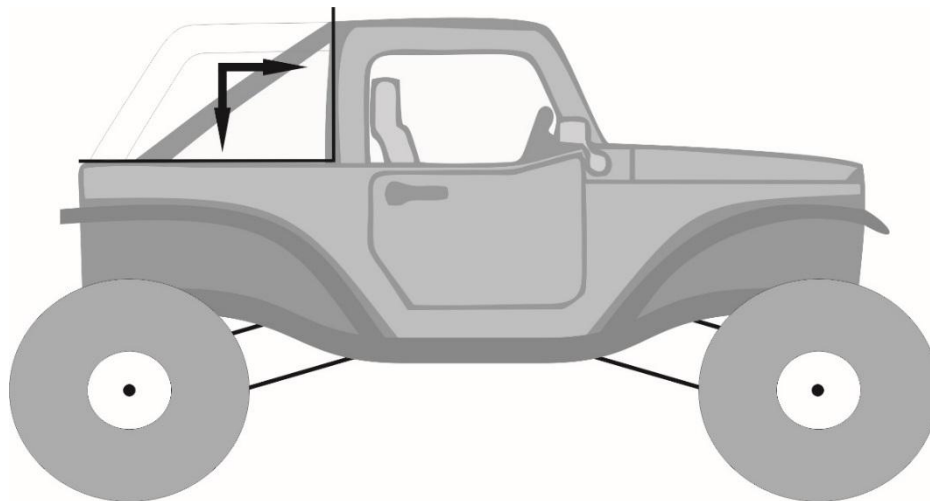
2.11.2. In case if frame edges are trimmed, wheel axes cannot be located beyond the frame or body shell under no circumstances. See Drawing 13.



Drawing 13

2.11.3. It is allowed to trim the rear part of the roof up to the middle door pillar (see Drawing 14). In this case a safety barrier separating the crew compartment from the rear vehicle body part is mandatory. The barrier must be made of metal. Viewing window in a safety barrier is allowed. It shall be made of a single-piece polycarbonate that is at least 3 mm thick or triplex safety glass.

2.11.4. A rear door must be replaced by a replacing element, made of the same material as the original door and repeating the shape of the body to the side plane. Preserving the door function for this element (hinges and a lock) is not required.



Drawing 14

2.11.5. It is allowed to increase the distance between vehicle's body and frame (body lift) up to 76 mm.

2.11.6. Minimum front and/or rear traversing bar modifications/relocation are allowed for a winch installation as well as minimum body panels modifications (radiator grill, front panel, rear door / rear deck panel, trunk floor not more than 50 mm from a winch).

It is forbidden to have rotating elements of the transmission, suspension and steering in the crew compartment.





2.12. Exterior

2.12.1. It is allowed to change the material of a radiator grill while its appearance must remain.

2.12.2. In case if soft-top or removable hard top is used in a vehicle, it is allowed to remove it completely or partially. If it is the case, it is not mandatory to transport these parts in a vehicle during the competition. P. 1.2.1. of "Safety equipment" section and p. 4.11.1.1. must be observed.

2.13. Splash boards and wheel arches

2.13.1. It is allowed to modify wheel arches size to mount larger wheels.

2.13.2. Mounted wheels when viewed from above must be covered with splashboards or fender flares over their entire width and length. Fender flares must be installed safely. The following materials are allowed for fender flares: rubber, plastic, carbon fiber.

2.14. Hood catches

2.14.1. In order to prevent spontaneous hood opening while driving it is **recommended** to install two additional external hood catches.

2.15. Body protection and additional external protectors.

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

2.15.2. It is allowed to install a protective mesh or perforated sheet behind the false radiator grill. When replacing the original false radiator grill, the recognizable appearance must be retained.

2.16. Bumper.

No limitations considering that bumpers are they are harmless (no sharp corners, edges etc.).

2.17. Doors.

2.17.1. If side windows are equipped with manual or power regulator, then the mechanism shall be covered by a protector (aluminum or non-flammable plastic is recommended).

2.17.2. An area of 52x52 cm must be available on side doors or panels for the event logo and starting numbers. This surface must be smooth, and free from joints and level differences.

2.17.3. If doors are not provided by design or do not have a rigid structure, it is mandatory to install rigid opening doors equipped with locks to prevent spontaneous opening.

2.17.4. A distance from a seat pad to the upper edge of a rigid door must be at least 300 mm. Door panels must be made of:

- steel, not less than 1.0 mm thick;
- aluminum, not less than 1,5 mm thick;
- non-splitting plastic or composite material, not less than 3,0 mm thick.

2.17.5. Each side door must contain an opening window where a parallelogram with at least 400 mm horizontal side fits. Window height must not be smaller than 350 mm when it is measured perpendicular to horizontal sides. The parallelogram corners can be rounded with a maximum radius of 50 mm.

2.18. Windows.

2.18.1. It is allowed to use multi-layered windshields of triplex type only.

2.18.2. It is allowed to remove glass in the front doors and replace it with a transparent non-splitting plastic with a minimum thickness of 4 mm. In this case, a mechanism providing its full opening **must be** installed. The opening mechanism is not limited. Windows behind a driver and a co-driver can be replaced with panels made of the following material:

- steel, not less than 1.0 mm thick;
- aluminum, not less than 1,5 mm thick;
- non-splitting plastic, polycarbonate or composite material, not less than 3,0 mm thick.

Several glasses installed in one opening can be replaced with one panel. The panel mounting method is not limited. A vehicle body design and general outline must not be changed after these modifications.

2.19. Seats.

2.19.1. It is allowed to replace front seats to any other automotive ones. The seats must be securely mounted.





2.20. Jack

2.20.1. The jack and jacking points are not limited.

2.20.2. Mounting and installing any supplementary stationary jacking devices of any type (mechanical, pneumatic, hydraulic, etc.) is prohibited.

2.21. WINCH AND ADDITIONAL RECOVERY EQUIPMENT

2.21.1. The current requirements define a winch as a device consisting of the following elements:

- power drive gear
- reducer
- winch head (drum)
- case or frame
- brake gear
- cable/rope.

It is allowed to use winch components from different brands and models.

2.21.2. The vehicle must be equipped with two winches maximum. Any type of drive is allowed. Winch traction parameters must exceed the vehicle weight for at least 1.4 times.

2.21.3. The voltage applied to a winch motor must not exceed 27 V under no circumstances.

2.21.4. Wheel self-recovery devices are prohibited.

3. PROTO CATEGORY (SPECIAL OFF-ROAD VEHICLES)

A vehicle considered unsafe by Technical Commissioners may be suspended for the competition by the Competition Committee. If a unit/part is not mandatory but is used, it must comply with the requirements.

3.1. DEFINITION

3.1.1. Off-road vehicles with 4x4 wheel configuration, custom-built or original, complying with the requirements for the category.

3.1.2. A cabin with at least two seats is mandatory.

3.2 LIMITS OF ALLOWED MODIFICATIONS

If a list of prohibited modifications, replacements and additions is provided in provisions of the current document, then all technical modifications that are not listed in this list are certainly ALLOWED.

3.3 VEHICLE WEIGHT

The vehicle weight must be not less than 1050 kg and not more than 3500 kg.

3.4 ENGINE

3.4.1. Any gasoline or diesel engines are allowed.

3.4.2. **Air filter.** The air filter design, case, branch pipes connecting the air filter to atmosphere and the engine as well as their mounting location in the engine compartment is not limited. Air pipes cannot be mounted inside or through the crew compartment under no circumstances.

3.4.3. **Cooling system, ventilation and interior heating.**

3.4.4. It is forbidden to install the cooling system radiators inside the crew compartment. When installing the radiator (s) inside the body shell, they must be separated from the crew compartment by leak-proof partition.

3.4.5. If pipelines containing liquids pass through the crew compartment, any connectors inside are forbidden while pipelines must be additionally protected with metal or plastic sealing.

3.4.6. **Exhaust system.**

3.4.7. Exhaust system design is not limited but its components must not be mounted inside the crew compartment under no circumstances.





3.4.8. In order to prevent burns from hot components of the system by people outside the vehicle the exhaust system protection must be installed.

3.5 TRANSMISSION

No limitations.

3.6 SUSPENSION

Запрещается применение активной подвески, позволяющей водителю изменять дорожный просвет автомобиля в процессе движения.

3.7 STEERING

3.7.1. It is prohibited to use an active suspension that allows the driver to change the vehicle's ground clearance while driving (4X4X4).

3.8 WHEELS AND TIRES

3.8.1. It is allowed to use pneumatic tires with outer diameter of not less than 813 mm and not more than 965 mm measured along a straight line that is not vertical in relation to the ground and runs through the center of the tire (natural tires indenting is not considered during measurements). Measurements are done using a special gauge for all wheels (including spares, replacements, etc.) that will be used during the competition. Measurements are carried out on tires inflated to a pressure of 0.5 atmosphere.

3.8.2. Additional anti-skid devices (for example, chains, special covers that change tire traction, etc.) mounted on wheels and tires are prohibited.

3.8.3. It is allowed to use tires with a minimum residual tread height of at least 5 mm.

3.8.4. It is allowed to change a tire tread pattern by cutting. In this case, the cord cannot be damaged under no circumstances.

3.9 BRAKES

3.9.1. It is allowed to use brakes with at least a double-circuit working system being applied on both axles using a single pedal.

3.9.2. Brake lines arrangement is not limited. Additional brake lines protection against damage is recommended.

3.10 ELECTRICAL EQUIPMENT

All connectors and connections must be insulated.

3.10.1. Battery.

3.1.2.1. 3.10.1.1 Batteries type, capacity and connection wires are not limited.

3.1.2.2. 3.10.1.2 It is allowed to install not more than three batteries connected to the vehicle electric system. Batteries location is not limited. Batteries must be fixed according to "Safety Equipment" section provisions.

3.10.2. Alternator.

The quantity, brand and capacity are unlimited; however, its mechanical drive gear must be carried out by vehicle's engine.

3.10.3. Lighting equipment.

3.10.3.1. Lighting equipment (headlights, direction indicators (but not repeaters), sidelights, brake lights, parking lights) must be in working condition at least during technical inspection.

3.10.3.2. Two additional brake lights (21W each) and two additional parking lights (15W each) must be installed. These lights should be located outside the rear surface of the body or cabin (for a truck) symmetrically relative to the longitudinal plane of the car, as close as possible to the side dimensions of the body shell at a height of at least 1500 mm from the road surface and have red lenses installed. The area of each lens must be at least 60 cm². It is allowed to install LED lights of appropriate brightness.

3.10.3.3. Дополнительное светотехническое оборудование не ограничивается, однако количество дополнительных фар должно быть четным, а расположение симметричным, относительно продольной оси автомобиля. Additional





lighting equipment is not limited, given that the number of additional headlights must be even, and they are arranged symmetrically with respect to the longitudinal axis of the vehicle.

3.11 FUEL SYSTEM

3.11.1. 3.11.1 Fuel tank.

3.11.1.1. It is allowed to install fuel tanks of custom or factory production in a safe area. It is recommended to install the tank above or in front of the rear axle.

3.11.1.2. Liquid necks and caps must not extend beyond the perimeter of the vehicle when viewed from above. Any lock system eliminating incomplete locking or accidental opening can be used.

3.11.1.3. Fuel tanks ventilation must be taken outside of a vehicle body. If tanks and fillers are located inside the body, there must be draining holes in the body floor to drain spilled fuel into the space outside the vehicle. A draining hole diameter **must not exceed 100 mm**.

3.11.2. **Fuel lines.** Fuel lines mounting is not limited.

3.12 BODY AND FRAME

3.12.1. Jointed frames are forbidden.

3.12.2. Exterior.

3.12.2.1. Exterior body panels can be made of the following materials:

- steel, not less than 1,0 mm thick;

- aluminum, not less than 1,5 mm thick;

non-splitting plastic or composite material, not less than 3,0 mm thick. Mounting according to drawings 12A, 12B and 12C is allowed.

3.12.3. Splash boards and wheel arches.

3.12.3.1. Mounted wheels when viewed from above must be covered with splashboards or fender flares over their entire width and length. Fender flares must be installed safely. The following materials are allowed for fender flares: rubber, plastic, carbon fiber.

3.12.4. **Hood catches.** In order to prevent spontaneous hood opening while driving it is recommended to install two additional external hood catches.

3.12.5. **Bumper and additional protection.** No limitations.

3.12.6. Cabin (crew compartment).

3.12.6.1. A crew compartment must be designed and built safely. There should be no sharp or cutting edges inside. Any equipment that may be dangerous, including all types of pipelines must be securely fastened and isolated from the crew by rigid fire-resistant and, if possible, sealed shields.

3.12.6.2. The crew compartment must be isolated by fire-resistant partitions from the engine compartment and the compartment where the fuel tank is located.

3.12.6.3. It is forbidden to mount rotating elements of the transmission, suspension and steering in the crew compartment.

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

3.12.7. Side protection.

3.12.7.1. It is mandatory to install a side protection or rigid doors with door locks preventing spontaneous opening. A distance from a seat pad to the upper edge of a side protector or a rigid door must be at least 300 mm.

3.12.7.2. Each side protector or door must contain an opening window where a parallelogram with at least 400 mm horizontal side fits. Window height must not be smaller than 300 mm when it is measured perpendicular to horizontal sides. The parallelogram corners can be rounded with a maximum radius of 50 mm.

3.12.7.3. If door windows are equipped with mechanical or electric window regulator, the mechanism must be separated from the crew by a protective panel (application of aluminum or nonflammable plastic is recommended).

3.12.7.4. In case if collapsible side doors are mounted, it is allowed to remove the upper half of them. In this case the removed parts are not required to be transported in the vehicle during the competition, however, the vehicle weight still must comply with paragraph 5.8.2.

3.12.7.5. An area of 52x52 cm must be available on side doors or panels for the event logo and starting numbers. This surface must be smooth, and free from joints and level differences.

3.12.8. Windows.





3.12.7.6. It is allowed to use multi-layered windshields of triplex type only.

3.12.7.7. If a side door opening is covered with a transparent material (glass or polycarbonate with a minimum thickness of 4 mm), a mechanism providing its opening **must be** installed. The opening mechanism is not limited.

3.12.9. Seats. Any automobile seats are allowed. The seats must be securely mounted.

3.12.10. Spare wheels.

Spare wheels can be located in the vehicle if they are securely fastened.

3.12.11. Jack.

3.12.11.1. The jack and jacking points are not limited.

3.12.11.2. Mounting and installing any supplementary stationery jacking devices of any type (mechanical, pneumatic, hydraulic, etc.) is prohibited.

3.13 WINCH AND ADDITIONAL RECOVERY EQUIPMENT

3.12.12. The current requirements define a winch as a device consisting of the following elements:

- power drive gear
- reducer
- winch head (drum)
- case or frame
- brake gear
- cable/rope.

It is allowed to use winch components from different brands and models.

3.12.13. *Mandatory for official competitions, recommended for other competitions.*

It is allowed to equip the vehicle with two winches maximum. Any type of drive is allowed. Winch traction parameters must exceed the vehicle weight for at least 1.4 times.

3.12.14. The voltage applied to a winch motor must not exceed 27 V under no circumstances.

3.12.15. Wheel self-recovery devices are prohibited.

