

# TECHNICAL CONDITIONS OF ESTONIAN RALLYCROSS

## CARS 2021 Valid since 1st of January 2021

National rules (FIA Sporting Code (SC) Appendix J, chapters 254, 255 and 279 with additions and additional freedoms from Estonian Rallycross Committee).

### 1. GENERAL RULES

#### 1.1. Classification

The following classes will be competing for the Estonian Championship title in **The Estonian Rallycross Championship 2021**:

##### 1.1.1. SuperCar

Four-wheel drive homologated cars from groups A and N (except KITCAR, cars), which are permitted by Appendix J chapters 251 to 255 of the FIA Sporting Code. Amendments described in Appendix J's chapters 279.2 and 279.3 are permitted. Cars with a minimum of 4 seats and without FIA homologation that are sold through the normal retail network in the EU are also allowed. Proto Cars and R5/Raly2 race cars are also permitted.

The engine is free, but must not exceed 2000 cm<sup>3</sup>, bränd-based engine can be up to 2058 cm<sup>3</sup>.

##### 1.1.2. Super1600

FIA homologated group A front-wheel drive cars that comply with Appendix J chapters 251 to 255. Changes described in the Sporting Code's Appendix J chapters 279.2 and 279.3 are also permitted. Cars without FIA homologation, with a minimum of 4 seats that are sold through the normal retail network in the EU are also allowed. The permitted engine capacity is up to 1600 cm<sup>3</sup>. The engine must be usable by the manufacturer.

##### 1.1.3. TouringCar

Rear-wheel drive cars that comply with Appendix J chapters 251 to 255 of the FIA Sporting Code. Changes described in Appendix J chapters 279.2 and 279.3 of the Sporting Code are permitted. Engine capacity can be up to 2000 cm<sup>3</sup>. Cars with medium and rear engines are prohibited.

##### 1.1.4. Crosskart Xtreme

The technical conditions of the Crosskart Xtreme class are included in a separate document **Technical conditions in the Estonian Championship rallycross Crosskart Xtreme 2021**.

## 1.2. Wheels, tires

**1.2.1. Only tires supplied by OÜ Topcontrol are permitted in all classes (except for Crosskart Xtreme and Crosskart Xtreme Junior). The tire for all competition classes is Avon ACB11. Permitted wheel size is 15"-17".**

**The tires have to have a special marking that will be checked.** Legal tires. Appendix 1. Tire cutting is permitted according to the attached drawing (Appendix 1A). The pattern shown in the figure can be considered as the maximum cutting range. Following the pattern scheme, some tire grooves may be left uncut, but it's forbidden to cut additional grooves. Tires that have been cut in accordance with the figure (Appendix 1A) may be used without restrictions on both dry and wet tracks. Any heating of the tires is prohibited. The complete wheel (pressurized tire + rim + flange) has to fit into a U-shaped gauge with a spacing of 250 mm between the branches, measured in the unloaded part of the wheel.

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## 1.3 Advertising stickers

The first set of stickers (Appendix 2) is issued by the Estonian Rallycross Committee for free. The following stickers cost money and can be bought at site or be ordered at [info@rallikross.ee](mailto:info@rallikross.ee)

## 2. UPGRADING RALLYCROSS CARS

### 2.1. Tail lights.

Every car must have red brake lights with at least the minimal power of 20W. Diode lights with the same luminous intensity can be used. The installation height from the ground must be 1 – 1.50 m. The lights must light up when pressing the brake pedal and when using the handbrake (parking brake is not considered a handbrake). Every car must be equipped with at least one gauge light with a power of at least 15W. Diode lights with the same luminous intensity can also be used. The installation height from the ground must be 1 – 1.50 m and has to be placed symmetrically with respect to the longitudinal axis of the car and parallel to the transverse axis.

### 2.2. Towing eyes

The towing eyes must be located both front and rear. They must not extend beyond the perimeter of the car when viewed from above and have to be painted bright yellow, orange or red to be easily found. The towing eyes must be made of soft material and the diameter of the loop must be at least 60 mm, with a tensile strength of 5000N.

### 2.3. Seats

**2.3.1.** The driver's seat and safety clothing must have a valid FIA logation.

**2.3.2.** The driver's seat must be attached to the supports through 4 points (2 front, 2 rear) with M8 bolts and a minimum strength class of 8.8. Thickness of the side mountings must be at least 3 mm, if it's a light alloy then 5 mm.

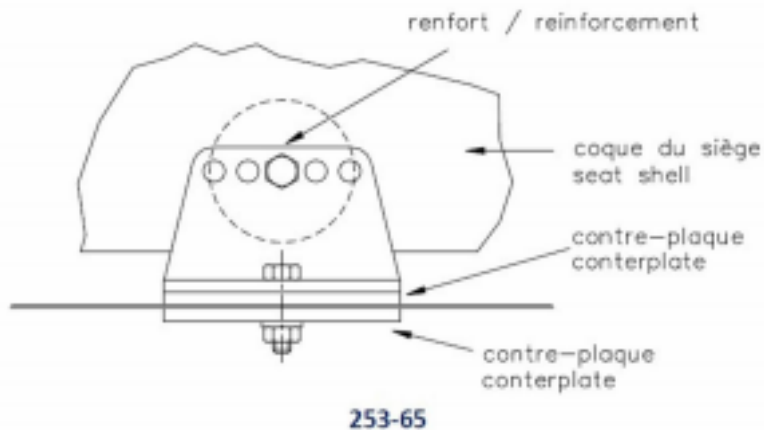
**2.3.3.** The driver's seat must be attached in accordance with the FIA figure 253-65b! The driver's seat can also be attached directly to the bottom (figure 253-65) or to two crossbeams, which's ends are attached to the Center tunnel and / or to the side box. The minimum diameter of the crossbeams for a square tube is 35 x 35 x 2.5 mm.

Cars which technical cards have been issued after 01.01.2009, have to have seat tubes with the following dimensions: 35 x 35 x 2.5 for square tubes and 38 x 2 mm for round tubes. The ends of the pipe must be bolted to the body. The anchorages must be reinforced with tiles that have an area of at least 40 cm<sup>2</sup>. The minimal dimension of one side of the plate is 6 cm. The minimal thickness of the plate is 3 mm. If the seat anchorages pass through the beams, they shall be made in accordance with Appendix 25, chapter 253, figure 253-65B of the SC.

According to FIA Appendix J chapter 253 Art16.2: when the car's body is made of steel, you can replace the body reinforcement plates seat plate end plates (with bolted joints) with welded joints.

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Figure 253-65



**2.3.4.** The driver's seat must be above the front edge of the original rear seat. It's measured from the height of the occupant's shoulders. No part of the driver's seat may be under the main arch, that has been measured from the horizontal edge of the arch (when viewed from above, perpendicular to the floor of the vehicle).

#### 2.4. Windshield and other glasses

**2.4.1.** The windscreen must be made of laminated glass or polycarbonate (at least 5 mm of thickness). Cars that have cracked windscreen or could crack to loss of visibility will be removed from the race. Films, stickers and paint spraying are prohibited (except for the maximum 15 cm high advertising sticker at the top of the windscreen).

**2.4.2.** Other glasses must either initially be with safety film or be made of polycarbonate with a minimum thickness of 5 mm. The polycarbonate being used must not break during folding and there must not be any cracks. All windows must be replaceable with the initial ones and the windows have to be transparent. Synthetic glass in front doors, windscreens and rear windows must not be tinted. The use of tinted safety films is mandatory on initial windows (the minimum transparency of initial glasses is 50%). There must be competitors name and national flag on the rear side windows.

**2.4.2.1** According to SC's Appendix J, Chapter 253, paragraph 11 the driver is obliged to use the safety net. The safety net must not be installed on the door.

**2.4.3.** Additional or enlarged window washing fluid tank is permitted.

## **2.5. Spare tire**

Spare tire must not be located in the car.

## **2.6. Fuel tank**

**2.6.1** It's allowed to use original tanks.

**2.6.2** All non-primary fuel tanks have to comply with FIA requirements (Art 253-14). Tank (pumps, filters included) has to be located min 30 cm from the outer surface of the car's body, All non-original fuel tanks must comply with FIA requirements (Art 253-14). The tank (pumps, filters included) must be located at least 30 cm inside from the outer surface of the body, outside of the driver's compartment. A non-return valve on the ventilation pipe is mandatory. The breather pipe must be routed outside from the outer layer of the car's body. In double-decker cars, the tank must not be located in the passenger compartment.

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**2.6.3.** The non-original tank and supply pipe must be insulated with fireproof partitions or a container. Once the tank is in the luggage compartment and the rear seats have been removed, a fire and liquid proof partition or container shall be built to separate the driver's compartment and the tank. For two-dimensional cars, it can be made of impact-resistant, non-combustible and transparent plastic.

**2.6.4** The non-original tank must be securely fastened to the body with at least 4 (four) M8 (strength class 8.8) bolts.

**2.6.5** Fuel pumps may only be operated when the engine is running or being started.

**2.6.6** Fuel line can't have any connection points in the passenger compartment. Car's body's bushes have to have seals that prevent the pipes from rubbing.

## **2.7. Steering mechanism**

Anti-theft devices must be removed.

**2.7.1** The steering wheel has to be removable from the attachment (with quick connector).

## **2.8. Safety belts**

Safety belts must have a valid FIA approval. At least 5-point attachment to the car body is required (based on SC Appendix J, chapter 253, paragraph 6). The attachment of the 5th and 6th point strap may be on the base of the car with reinforcement plates only according to FIA guidelines or with an attachment to a separate pipe that is not connected to the seat brackets. Dimensions and mounting of this tube will be done similarly with regulations of installing seat mounting tubes. Shoulder belts have separate mandatory attachments to the car body or safety cage. The straps must not be worn or stretched.

## **2.9. Coolant radiator**

**2.9.1** The radiator and its capacity is free, as is the location (except for the Super1600), but it must not be located or reach the passenger compartment. Coolant pipes must not be located in the passenger compartment. Air ducts inside and outside are allowed if the total area of the openings doesn't exceed the surface of the radiator. Additional cooling fans are allowed. The screen can be installed, if it doesn't cause reinforcing the body.

## **2.10. Exterior lights**

Exterior lights can be removed, but openings in the body have to be covered. The covers of the openings must follow the original shape of the body. Each fire cover may have a ventilation opening of up to 100 cm<sup>2</sup>.

## **2.11. Safety cage**

Safety cage according to FIA Appendix J Chapter 253 p 8.

## **2.12. Carpets**

Carpets have to be removed.

## **2.13. Fire extinguishing system**

An automatic fire extinguishing system is recommended for everyone. A hand fire extinguisher (at least 2 kg) is recommended and must be located in the passenger compartment and be easily accessible. Only metal tapes with a metal quick release (min. 2 pcs.) can be used for fastening. The extinguisher may be used until the date prescribed for verification, but not longer than one year from the last inspection.

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Permitted extinguishing agents powder, AFFF, Viro 3 or some other substance approved by FIA. BCF, NAF, and CO<sub>2</sub> are prohibited.

## **2.14. Mud flaps**

Mud flaps are mandatory behind all wheels. Thickness of the material has to be at least 3 mm. Flaps have to be at least the width of the wheel, but must not extend more than 50 mm beyond the wheel. The flaps have to extend at least 50 mm below the center of the wheel, but must not reach the ground. The mud flaps must be rigidly attached to the body.

## **3. WEIGHT, BODY**

### **3.1. Weight of the car (SC Appendix J chapter 279 p 3.1)**

Minimum allowed vehicle weight, including the driver and all the necessary driving equipment and the necessary fluids in the vehicle at the time of weighing, according to the engine capacity: Up to 1000 cm<sup>3</sup> 770 kg

Over 1000 – 1400 cm<sup>3</sup> 860 kg

Over 1400 – 1600 cm<sup>3</sup> 1000 kg

Over 1600 – 2000 cm<sup>3</sup> 1100 kg

Over 2000 – 2500 cm<sup>3</sup> 1130 kg

Over 2500 – 3000 cm<sup>3</sup> 1210 kg

Over 3000 – 3500 cm<sup>3</sup> 1300 kg

Minimum weight in Supercar class R5/RALLY2 1250 kg, other cars in the same class, including the Protocar, have a minimum weight of 1300 kg.

Weights consider the work capacity together with turbo and carriage engine multiplier.

### **3.2. Body construction**

**3.2.1.** The original construction of the body has to be maintained, except for the wings and aerodynamic elements.

**3.2.2.** The body can be converted from a four-wheel drive car to a two-wheel drive car and vice versa. It's also permitted to change from front-wheel drive to a rear-wheel drive and vice versa. Body parts can be strengthened by adding materials (welding). The added material must be ferritic or of the same material (min. thickness 1 mm) with the original body.

**3.2.3.** The driver's door and construction must remain original (including safety beams, etc.). The material of other hatches and doors is voluntary, but the original shape must be preserved and be interchangeable with the original ones. Hinges, locks and handles are free, but must work securely. The original locks of the bonnet and boot lid must be removed. When removing the hinges, fasteners that can be opened from the outside of the four points of the hatches must be installed. The rear doors may be welded closed. Intake vents may be on the bonnet, if the mechanical parts are not visible from under the bonnet. The window lifters can be chosen freely.

**3.2.4.** Up to two interior ventilation openings are permitted on the roof if:

- the height of the air collector does not exceed 10 cm
- the openings with the collector are in the first third of the roof
- the maximum width of the opening is 500 mm

The heating system can be removed. The removal of moisture and fog from the windows must be ensured.

**3.2.5.** Bottom guards are permitted according to SC Appendix J chapter 255 paragraph 5.7.2.10, to protect the following parts: engine, radiator, suspension, gearbox, fuel tank, transmission, exhaust pipes, fire extinguishing system.

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Bottom guards shall be made of aluminium alloy, steel or composite materials and shall be at least 4 mm and steel 2 mm. The floor guards must not extend forward from the lower edge of the front edge.

According to FIA Article 279 – 2021 *Règlement Technique pour Voitures de Rallycross Technical Regulations for Rallycross Cars* paragraph 10.3.15 underbody protection must not weigh more than 40 kg (25 kg front and 15 kg rear).

**3.2.6.** Moldings can be removed. Windscreen wipers can be chosen freely, at least one windscreen wiper is required for cleaning the windscreen.

**3.2.7.** Mandatory presence of two side mirrors and an interior mirror (minimum mirror area of one mirror is 40 cm<sup>2</sup>)

**3.2.8.** Appearance of the car must be correct, without rust and accident marks.

**3.2.9.** For installing the catalyst, additions may be made to the central tunnel in accordance with SC Appendix J chapter 279 figure 279-2.

### **3.3. Aerodynamic details**

**3.3.1.** Front and rear spoilers are permitted. They must not protrude from the perimeter of the car when viewed from above.

**3.3.2.** When installing spoilers and wing extensions, make sure that they do not touch the ground when the car has both tires flat on one side, except for side curtains that are made of soft flexible material.

The spoilers must fit in the projection of the car body without mirrors when viewed from the front.

**3.3.3.** A bumper, which is a body element, is mandatory (internal safety beams must be removed). Additional bumpers, beams and all reinforcements are prohibited. Four attachments are allowed to the bumper – 2 in the middle, reinforcement plates with maximum dimensions of 100 x 100 x 2 mm and one on each side. The diameter of the fastening material must not exceed the original.

**3.3.4.** It's forbidden to use additional beams and sheet materials to strengthen the front panel, if the thickness of it exceeds the original one.

#### **3.3.5.**

The element that binds the first half-frames or otherwise strengthens the part may be original or you could use a single steel beam or pipe, provided that its cross-section is not more than 50 mm from any edge.

**3.3.6.** The thickness of the front and rear aerodynamic components shall be at least 1 mm and up to 5 mm. Plastic or plastic composite materials can be used to make aerodynamic components.

### **3.4. Fenders**

The material and shape can be freely chosen, but the shape of the wheel arch must be maintained. The dimensions of the arch are free, but the wheel must not be visible when viewed from above.

### **3.5. Wind vents**

Intake / cooling openings of up to 30 cm<sup>2</sup> may be left in the openings of the removed lights mentioned in paragraph 2.10.

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### **3.6. Engine**

**3.6.1.** In the first competition in which the competitor takes part, the technical commission seals the engine valve covers with a numbered seal. The number of engines used during the season is free. Prior to the permission from the Estonian Rallycross Committee must be obtained to replace or disassemble the engine. In case of violation of the procedure, the results of all previous stages may be canceled for this competitor.

**3.6.2** To allow the valve chamber lid to be sealed, the sealing wire bushings must be drilled in the two adjacent cover studs.

**3.6.3.** General engine requirements:

Class Super1600 engine, self-breathing, capacity up to 1600 cc

Class TouringCar engine, self-breathing, capacity up to 2000 cc

**3.6.4.** Mixer dampers must be fitted with external auxiliary springs to ensure that they close in an emergency.

**3.6.5.** The necessary air for burning the fuel must not be taken from the passenger compartment.

**3.6.6.** Only air/petrol mixtures may be used in the engine for combustion. All impurities, including water, are prohibited.

**3.6.7.** Manifold with variable length is prohibited.

**3.6.8.** Titanium may only be used in the manufacturing of rods, valves, valve pushers and hot shields.

**3.6.9.** The use of magnesium on moving parts is prohibited.

**3.6.10.** The use of ceramic components is prohibited, except for the clutch.

**3.6.12.** The use of systems with variable gas distribution phases (so-called VETEC) is prohibited. The system of variable gas distribution phases must be switched off mechanically.

### **3.7. Cars with supercharge**

For supercharged engines, a maximum rated displacement of 2058 cm<sup>3</sup> is permitted, for diesel engines it's 2333 cm<sup>3</sup>. All turbocharged cars must be fitted with a turbo limiter, for a description of which see SC Chapter 254, p 6.1 (Figure 254-4), with a maximum inside diameter of 45 mm and an outer diameter of 51 mm at the narrowest point (32 mm and 38 mm for two parallel turbos respectively).

### **3.8. Interior**

At least brand-based reinforcement is mandatory. Only trim strips and parts of the Center console to which the heating and display elements are not attached can be removed from the armature. Parts may be removed from the driver's compartment which must not cause sharp body angles and edges (radius at least 3 mm). The driver's seat must be completely on either side of the car's center axle. The partitions separating the passenger compartment from the engine compartment and the luggage compartment must be fire and liquid resistant. The material must be the same or stronger.

### **3.9. Fuel, oil and coolant tanks**

**3.9.1.** They must be isolated from the passenger compartment so that, in the event of a leak, no liquid gets into the passenger compartment.

**3.9.2.** The fuel tank cap must not extend beyond the surface of the body and must be leak-proof.

**3.9.3.** A minimum of 2-liter oil collection tank is required for crankcase ventilation (except for cars where the original Intake system has been retained, in which case the ventilation is connected to the Intake manifold), which prevents oil from getting on the track, regardless of the position of the car.

### **3.10. Axles, suspension**



Amortisaatorid ja vedrud ning nende tööpõhimõtte on vabad. Muudatused kerele on lubatud antud piirides: Shock absorbers and springs and their working principle are free. Modifications to the body are permitted within the following limits:

- reinforcement of the original anchorages of the bridge beams
- adding material to create new anchorages
- modifications that are necessary to provide clearance for suspension components, drive shafts and wheels.

Reinforcement and the addition of materials must not alter the original bridge attachment point by more than 10 mm.

In addition, modification of half-frames is permitted if:

- they are interchangeable with the original ones and the attachment points to the body remain the same – they can be removed from the body (welding is prohibited).

Active suspension is disabled.

### **3.11. Transmission**

Transmission is free, but traction control is prohibited.

The front and / or rear differential with limited slip must be mechanical. A mechanical differential with a limited slip is a differential that operates fully mechanically, i.e without any hydraulic or electrical assistance. A viscous coupling is not considered to be a mechanical system.

Electrically operated transmission is permitted in the Supercar class. The use of an electric center differential is also permitted. The minimum weight of 1350 kg applies to the racing machines they use. It will be checked by the Technical Commission. The competitor is obliged to ensure that the intermediate box is removed and open the reductor for checking.

### **3.12. Breaks**

The brakes are free, but they must be in working order and all four wheels must brake. The handbrake must work and must check either the front or rear wheels. ABS brakes are prohibited. Brake fluid additional tanks may be located in the passenger compartment only if they are made of metal or covered with a leak-proof and fireproof coating. The working surfaces of the brake disc and drum must be made of ferritic material.

### **3.13. Battery**

The battery capacity, type and location are free. If the battery is located in the passenger compartment, it must be located behind the front seats. The battery must be securely fastened and covered with a leak-proof plastic box to avoid short circuits. The battery must have a „positive“ terminal covered to avoid short circuits. The battery must be attached to the body with at least two metal rods and four bolts and reinforced plates (minimum diameter of fixing bolts is M8 (strength class 8.9), minimum plate thickness 3 mm and minimum area 20 cm<sup>2</sup>, minimum rod thickness 1 mm). Battery mounts must rest on the top of the battery. Battery vapors must be vented out of the car body.

### **3.14. Steering mechanism**

The steering system must be made by the car manufacturer (factory), but does not have to be from the same car brand. Only mechanical wheel steering is permitted. It is forbidden to turn four wheels.

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### **3.15. Gearbox**

Electronically, pneumatically or hydraulically controlled semi-automatic or automatic gearboxes are prohibited. Differentials that can be adjusted electronically, pneumatically or hydraulically by the driver are prohibited.

### **3.16. Main power switch**

The main power switch is mandatory, mechanically switchable in the driving position by the driver and separately from the outside and marked accordingly. When the main power switch is switched off, the engine of the running car must stop. Electromagnetic main circuit breakers are prohibited. (SC Appendix J, Art 253-13).

### **3.17. Telemetry and radio**

Radio communication is permitted (except in the Crosskart Xtreme and Crosskart Xtreme Junior classes). Any telemetry is prohibited.

### **3.18. On-board camera**

3.18.1. An on-board camera is a camera that is installed safely and records a moving image from inside the race car in a way that the race track, steering wheel and pedals are clearly visible from the camera image.

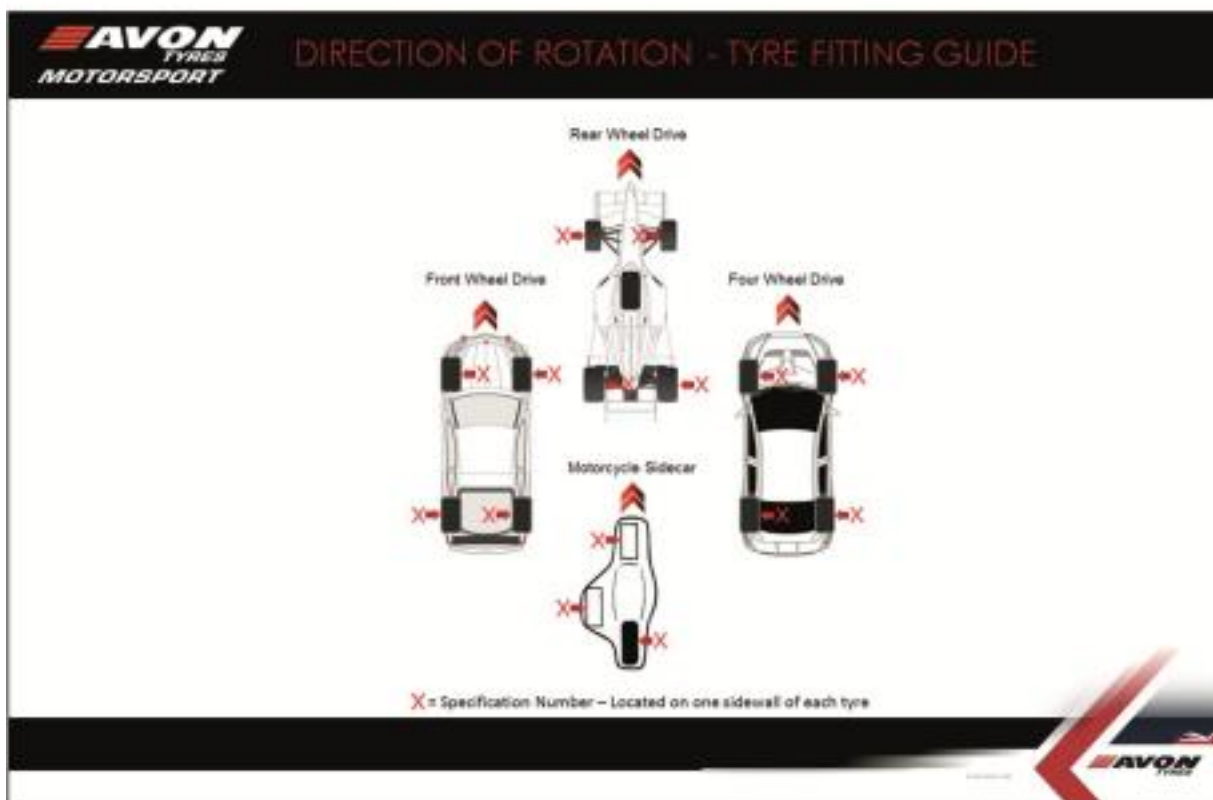
3.18.2. The competitor is obliged to use the on-board camera in order to use the camera recording of their car to interpret the situations that have arisen from the competition situation that may arise during the competition day.

### **3.19. Checking and changing technical parameters**

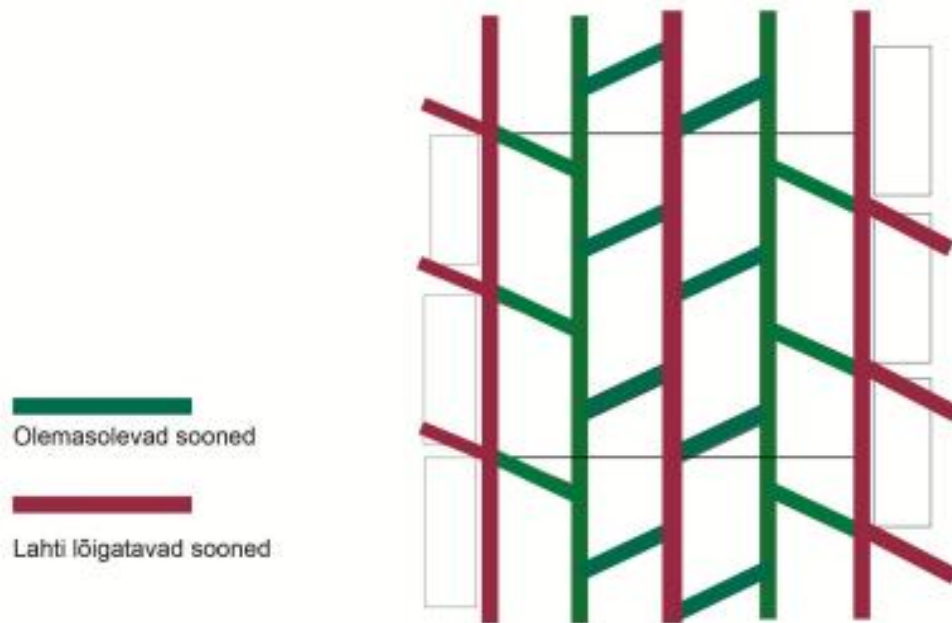
If it's necessary to change the original constructions of the car in order to ensure their reliability and safety, and if the changes made are in conflict with the given technical conditions, then the Rally Cross Committee and the Technical College shall give permission for the changes. The permission will be granted on condition that the safety is not compromised. The permit shall describe the nature and extent of the relevant changes. All costs incurred by the passenger in connection with the attestation of the car's compliance with the Technical Conditions, if this is done at the request of the Technical Commission, shall be borne by the passenger. Fuel compliance checks shall be performed only at the initiative of the Technical Commission. Serious violations detected during the season will lead to the cancellation of all results achieved during the season. A serious violation that leads to the cancellation of the results is, for example, the use of an engine with a higher engine displacement than permitted or use of non-compliant fuel.

Appendix 1. Tires

<b>EESTI RALLIKROSSI MV LEGAALSED REHVID 2021</b>			
<b>Size</b>	<b>Type</b>	<b>Logo</b>	<b>Spec No</b>
195/580-15 A53	ACB11	Avon	13937
215/580-15 A53	ACB11	Avon	13938
195/580-16 A53	ACB11	Avon	13939
215/580-16 A53	ACB11	Avon	13940
205/620-17 A53	ACB11	Avon	7802
225/640-17 A53	ACB11	Avon	7805



## Appendix 1A. Tire cutting



## Appendix 2. Mandatory stickers