



## **Formula Historic Estonia technical regulations 2024**

Confirmed by Estonian Autosport Union 28.02.2024

### **Preambula**

Formula Historic Estonian Cup series are held to commemorate the heritage of Estonian engineering and to honour the long tradition of TARK/Kavor production of racing cars. Competitors must be aware of the possibility of corrosion and/or ageing of components and the consequences thereof and must take measures to ensure the integrity and safety of these components while respecting the original specification. The presentation of a car at scrutineering implies a declaration by the Competitor that it is in a safe condition to take part in the Competition. Cars must be presented in a clean condition.<sup>1</sup>

Standard items in current regulations mark items/spare parts that duplicate exactly the shape, dimensions and functioning of the OEM original part. These technical regulations are valid from 01.03.2024, regulations and amendments for the class that were valid up to 01.03.2024 are voided. In the event of any dispute or uncertainty regarding Technical Regulations, Estonian shall be the prevailing language.

Whereas possible, a link to FIA or national governing body regulation is added.

Possible guidance and assistance available by Mr. Sten Suban, member of Estonian Autosport Union track-racing committee and formula historic estonia enthusiast, contact info available at Estonian Autosport Union homepage:

<https://uus.autosport.ee/sport/ringrada/>

### **Current regulations contain following paragraphs:**

- 1 Autosport vehicle technical card and accordance to technical regulations;
- 2 Bodywork and dimensions;
- 3 Aerodynamics;
- 4 Weight;
- 5 Engine;
- 6 Cooling-system;
- 7 Exhaust;
- 8 Fuel System;
- 9 Oil system;
- 10 Engine starting;
- 11 Transmission;
- 12 Suspension and steering;
- 13 Brakes;
- 14 Wheels and tyres;
- 15 Safety belts and driver's safety equipment;
- 16 Fire extinguishing system;
- 17 Rollover structures;
- 18 Electrical system.

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<sup>1</sup> [https://www.fia.com/sites/default/files/2023\\_appendix\\_k\\_full\\_yearbook\\_web\\_20230623.pdf](https://www.fia.com/sites/default/files/2023_appendix_k_full_yearbook_web_20230623.pdf) (page 20 paragraph 5)



# 1 Autosport Vehicle Technical Card and accordance to technical regulations

## 1.1. Autosport Vehicle Technical Card:

All competitors must be in possession of a Autosport Vehicle Technical Card (AVTC) for their car, which will be issued by the relevant ASN and must always accompany the car. No car will be permitted to take part in an event unless the AVTC is available for inspection at initial scrutineering.

1.2. Car must comply with the technical regulations the whole time of the event.

1.3. If scrutineering finds a car technically dangerous, it can be disqualified from the event by a decision of jury.

## 2 Bodywork and dimensions

2.1. All measurements must be made while the car is stationary on a flat horizontal surface.

2.2. Bodywork construction must be symmetric in respect to vehicle centerline (including the mass balance of longitudinal axis within tolerance of +/- 5%).

2.3. The driver must be able to enter and get out of this seat without it being necessary to open a door or move any part of the car. The driver must be able to exit the cockpit in 5 seconds including opening himself/herself the safety harnesses.

2.4. Sitting at his/her steering wheel, the driver must be facing forward.

2.5. The opening of the cockpit must at least 600 mm in length and at least 450 mm wide for at least 300 mm, measured from the back of the seat.

2.6. All cars must have at least two mirrors mounted so that the driver has visibility to the rear and both sides of the car and they must have at least 5500 mm<sup>2</sup> each of reflective surface.

2.7. Between the rear edge of complete front wheels and the front edge of the complete rear wheels, all sprung parts of the car visible from directly underneath the car must lie on one plane within a tolerance of +/- 25mm, except generations of Estonia-21 and Estonia 23 where ground-effect with venturis is allowed.

2.8. Bodywork must respect following (see drawing/appendix) dimensions:

2.8.1. Length – no part of the bodywork can reach more than 1000 mm in front of the center of front wheels and no part of the bodywork can reach more than 800 mm behind the centre of rear wheels.

2.8.2. Wideness – maximum wideness of the car is 1850 mm, maximum wideness of the bodywork in between the axis and in front of the centre of front wheels is 1350 mm.

2.8.3. Height – no part of the car (main rollover structure excluded) cannot be higher from the ground more than 950 mm. However, any part of the rollover structures more than 900mm from the ground must not be shaped to have a significant aerodynamic influence on the performance of the car.

2.8.4. No part in front of front wheel axis could be higher than front wheel.

2.8.5. Minimal wheelbase is 2000 mm, minimal track 1200 mm.

## 3 Aerodynamics

3.1. Any specific part of the car influencing its aerodynamic performance:

-must comply with the rules relating to bodywork.

-must be rigidly secured to the entirely sprung part of the car.

3.2. Curtains and modifications to floor-panels for ground-effect are allowed on cars from Estonia-21 and 23 generations.

3.3. Maximum width for aerodynamic elements placed behind rear axis is 1000 mm.



## 4 Weight

- 4.1.** Minimum weight for a car in a class is as follows: Eastern - 420 kg, Mondial - 450 kg.
- 4.2.** The weight may be checked at any time during an event with the quantity of liquid remaining in the tanks, on the understanding that it is forbidden to add oil, any other liquid or extinguishants from the moment of jury's decision to weigh the car (or during weighing).
- 4.3.** Ballast can be used provided it is secured in such a way that tools are required for its removal. It must be possible to fix seals if deemed necessary by the scrutineers.
- 4.4.** Adding liquid of any kind to the car is forbidden during races.

## 5 Engine

- 5.1.** Only four-stroke in-line engines with reciprocating pistons and maximum of two valves per cylinder are allowed. The maximum number of cylinders is 4. The engine block and engine head castings, machining completed, must be those of a car engine equipping a car model of which the FIA has ascertained the series production of at least 5000 units in 12 consecutive months and production started not later than 1990/31/12. Supercharging is forbidden.
- 5.2.** The original engine block, cylinder head and crankshaft must be used. Compression ratio and crankcase ventilation is free.
- 5.3.** Taking in account that LADA 2101 and LADA 2106 piston max allowed diameter is 80mm, 1300 and 1600 engine capacity must not exceed 1330ccm and 1610ccm by EASTER and MONDIAL classes respectively.
- 5.4.** Formula Mondial - Any modifications are free except those:
  - 5.4.1.** Original cylinder block and its head could be modified by the removal of material.
  - 5.4.2.** The original crankshaft must be used, any kind of modifying is allowed. The type of crankshaft bearings cannot be modified.
  - 5.4.3.** Camshaft is free. Camshaft placement, type of drive system (chain, belt, gear) and drive system components (rocker, rocker arm and rocker shaft) cannot not be changed but can be modified.
  - 5.4.4.** Valve springs, plates are free, except count and way of mounting.
  - 5.4.5.** Maximum number of carburetors is two, both with maximum two barrels. Fuel injection is forbidden. Not more than one camera for each cylinder can be used.
- 5.5.** Formula Eastern – any modification, unless clearly stated in current regulations are forbidden.
  - 5.5.1.** Original cylinder block and its head could be modified by the removal of material. Allowed engines: LADA 2101; 21011; 2105 and allowed cylinder heads: 2101-1003015; 21011-1003015-10 and 2105-1003015.
- 5.6.** Crankshaft must be original serial production and it can be balanced with reducing weight from factory set locations as well as ground to the repair size.
- 5.7.** Connecting rods must be original serial production. Modification by material removal is allowed. Rod and piston connection can be changed to free moving piston pin.
- 5.8.** Pistons, rings, piston pins are free.
- 5.9.** Camshaft is free. Camshaft placement, type of drive system (chain, belt, gear) and drive system components (rocker, rocker arm and rocker shaft) cannot not be changed but can be modified.
- 5.10.** Valves and connecting elements should not be changed. Diameter of valve stem: 8mm +/- 0.1mm, can be machined. Intake valve head max diameter 37mm, exhaust valve head max diameter 31.5mm. Overall length of valve – 113mm +/- 1.5mm. Valve springs and plates are free, except count and way of mounting. Rocker arms – original construction without additional elements, can be machined. Valve bushings and valve seats free.
- 5.11.** Intake manifold – standard. Inner surfaces can be machined. Heating system disconnection allowed.
- 5.12.** Exhaust manifold – free. Thermal isolation allowed.
- 5.13.** Carburettor – standard, quantity – 1, number of diffusers – 2, total sum of diameters – max 47mm. Every diffuser dimension rounded to full numbers and measured with calibrated tool. Allowed diffuser dimensions: 22mm; 23mm; 24mm and 25mm. Control check precision must be ±0,1 mm. Dimensions should match despite temperature of material. It is allowed to disconnect cold start system. It is



allowed to use mechanical connection for vacuum camera. Solex type LADA carburetors are allowed. Carburettor throttle connection – free, must be equipped with spring in order to close throttle when needed.

## 6 Cooling system

Fluid based cooling system is mandatory, but radiators and water pumps are free, except electric water pump. If a radiator has an air-directing device, it must comply with rules set for bodywork. Type of coolant – water.

## 7 Exhaust system

- 7.1.** The outlet orifices of the exhaust pipes must be directed to the rear and must be less than 600mm from the ground and not more than 250mm from gearbox rear-end.
- 7.2.** Variable length exhaust systems are forbidden.
- 7.3.** Exhaust system must be equipped with silencing element such as muffler or catalysator etc.
- 7.4.** Noise level limit is set up to 105 dB. Estonian Autosport Union measures noise level in accordance with FIA procedure with a device set to “A” and “SLOW”, with a device placed under 45° angle at 500 mm from the outlet orifices and with engine running at 4500 rpm/min.
- 7.5.** Event organizer or particular racetrack can define noise limits differently from stated limits within technical regulations (those can be more strict).

## 8. Fuel system

- 8.1.** Fuel tank should be located inside bodywork (chassis frame or monocoque) and it should be separated from cockpit and engine side with firewall, made from safe metallic material at least 1mm thick. Total capacity of fuel tank should not exceed 40L.
- 8.2.** The tank fillers and their caps shall not protrude beyond the bodywork.
- 8.3.** Fuel pump is free, but it must be located outside the cockpit.
- 8.4.** Fuelling during the race is not allowed.
- 8.5.** The fuel must be commercially available petrol as listed in FIA appendix J article.<sup>2</sup>

## 9 Oil system

- 9.1.** All parts containing lubricating oil must be situated between the front wheels axis and the rearmost gearbox casing longitudinally, and cannot be located more than 550 mm from longitudinal axis. Oil tanks, radiators and pipes must be placed outside of cockpit.
- 9.2.** Catch tank. When a car's lubrication system includes an open type of sump breather, this breather must vent into a catch tank of at least 2L capacity. Catch tank should be connected also to gearbox and cooling system. Container shall be made of translucent plastic or include a transparent panel.
- 9.3.** No oil replenishment is allowed during a race.
- 9.4.** Oil pump is free, fixing point and oil pump drive must be standard. Oil tank – free. LADA 2105 engine could have additional oil line from cylinder head.
- 9.5.** Oil radiators are allowed.

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<sup>2</sup> [https://www.fia.com/sites/default/files/252\\_2021\\_wmsc\\_2020.10.15.pdf](https://www.fia.com/sites/default/files/252_2021_wmsc_2020.10.15.pdf)



## 10 Engine starting

- 10.1** A starter must be fitted with electrical or other source of energy carried aboard the car, and able to be controlled by the driver when seated normally at any time of race.
- 10.2.** An ignition system must be fitted with electrical switch and able to be controlled by the driver when seated normally.
- 10.3.** A supplementary device temporarily connected to the car may be used to start the engine both on the grid and in the pits.

## 11 Transmission

- 11.1.** A participating car is expected to use gearbox that was originally designed to that particular vehicle in the factory or by its designer.
- 11.2.** Four-wheel drive is forbidden.
- 11.3.** All cars must have no more than five forward gears. All cars must have a reverse.
- 11.4.** Sequential gearboxes are forbidden.
- 11.5.** The use of traction and launch controls is forbidden.
- 11.6.** Clutch is free.
- 11.7.** Limited slip differentials or fully blocked differentials are not allowed.

## 12 Suspension and steering

- 12.1.** Cars must be fitted with sprung suspension.
- 12.2.** Active suspension is forbidden.
- 12.3.** Chromium plating of any steel suspension components is strongly not recommended.
- 12.4.** All suspension members must be made from a homogeneous metallic material.
- 12.5.** The steering must consist of a mechanical link between the driver and the front wheels.

## 13 Brakes

- 13.1.** All cars must have a brake system which has at least two separate circuits operated by the same pedal. This system must be designed so that if leakage or failure occurs in one circuit; the pedal shall still operate the brakes on at least two wheels.
- 13.2.** Brake discs must be made from ferrous material. Brake pads are free.
- 13.3.** Maximum 4 brake pistons per 1 brake caliper is permitted. Brake calipers must be produced from metallic material.
- 13.4.** Air ducts for brake cooling are allowed.
- 13.5.** Liquid brake cooling is forbidden.
- 13.6.** Anti-lock Braking System (ABS) and vacuum booster is forbidden.

## 14 Wheels and tyres

- 14.1.** Maximum complete wheel width - 11.5 inches. Compulsory wheel diameter is 13.0 inches. These measurements will be taken horizontally at axle height.
- 14.2.** The wheel rim must be produced from metallic material.
- 14.3.** On a central hub nut safety spring must be in place throughout the event. It is recommended, that these springs be painted in red or orange.
- 15.4.** Tire pressure must be ensured by using air only. Pressure control valves are forbidden.



## 15 Safety belts and drivers' safety equipment

- 15.1.** Homologation requirements on safety belts is set by national federation.<sup>3</sup>
- 15.2.** Safety belts are to be either wrapped around tubular structure of the frame of the car or bolted on the the frame. In the latter case the minimum diameter of the bolt is 8 mm and strength class 10.9.
- 15.3.** Safety belts must be clean and with no visible signs of wear or damage.
- 15.4.** Use of FHR is strongly recommended<sup>4</sup>
- 15.5.** Unless FHR is used, shoulder straps have to be 3" wide.
- 15.6.** It is mandatory to wear helmets according to following standards:
- 8858-2002 or 8858-2010 (Technical List N°41);<sup>5</sup>
  - 8859 (Technical List N°49);<sup>6</sup>
  - 8860-2010 (Technical List N°33)<sup>7</sup> or
  - 8860-2018 or 8860-2018-ABP (Technical ListN°69)
- 15.7.** Usage of helmets with expired homologation is regulated with Estonian Autosport Union Technical Committee decision.<sup>8</sup>
- 15.8.** Racing overall, balaclava, racing shoes, racing gloves and racing underwear must be with FIA homologation. Using above mentioned items with expired homologation is regulated with Estonian Autosport Union Technical Committee decision.<sup>9</sup>
- 15.9.** All equipment listed in paragraph 15.7. have to be clean, without visible signs of wear or damage and have to be presented by the driver in pre-event technical scrutineering.
- 15.10.** Every deviational case from current paragraph must be investigated by technical scrutineers during the race, fixed in written statement and finally approved by the jury.

## 16 Fire extinguishing system

- 16.1.** All cars must be fitted with a fire extinguishing system, which must have minimum extinguishant in quantity of 2kg and must discharge into the cockpit and into the engine compartment.
- 16.2.** Nozzles must be directed in such a way that eliminates the substance release directly against the driver.
- 16.3.** The following information must be visible on each container with extinguishant:
- type of extinguishant
  - weight or volume of the extinguishant
  - date the container must be checked which must be no more than two years after the date of filling or latest official check.
- 16.4.** An extinguisher purchased more than 10 years ago is forbidden.
- 16.5.** During pre-event technical scrutineering it must possible to verify the position of the dial of the pressure vessel to be in the green area of the scale.
- 16.6.** Any triggering system having its own source of energy is permitted, provided it is possible to operate all extinguishers should the main electrical circuits of the car fail.
- 16.7.** There must be an exterior trigger, which must be situated at the base of rollover structure and can be combined with circuit breaker switch. It must be marked with a letter "E" in red inside a white circle of at least

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<sup>3</sup> <https://uus.autosport.ee/wp-content/uploads/2023/04/Lisa-J-253-2023.pdf>

<sup>4</sup> [https://www.fia.com/sites/default/files/appendix I 2024 public le 01 janvier 2024.pdf](https://www.fia.com/sites/default/files/appendix_I_2024_publication_01_janvier_2024.pdf) (p. 53 chapter 3.1.)

<sup>5</sup> [https://www.fia.com/sites/default/files/regulation/file/L41\\_FHR\\_compatible\\_helmets\\_6.pdf](https://www.fia.com/sites/default/files/regulation/file/L41_FHR_compatible_helmets_6.pdf)

<sup>6</sup> [https://www.fia.com/sites/default/files/l49\\_premium\\_helmets\\_80.pdf](https://www.fia.com/sites/default/files/l49_premium_helmets_80.pdf)

<sup>7</sup> [https://www.fia.com/sites/default/files/l33\\_advanced\\_helmets\\_25.pdf](https://www.fia.com/sites/default/files/l33_advanced_helmets_25.pdf)

<sup>8</sup> <https://uus.autosport.ee/wp-content/uploads/2023/11/kiivrid.pdf>

<sup>9</sup> <https://uus.autosport.ee/wp-content/uploads/2023/07/TK-Teada-Fia-Standart-8856-2000.pdf>



100mm diameter, with a red edge.

**16.8.** All pressure vessels must be situated inside the main structure.

**16.9.** The system must work in any position, even when the car is inverted.

## 17 Rollover structures

**17.1.** All cars must be fitted with at least two roll structures. The driver's helmet, wearing all racing equipment, must be below a straight line, drawn between highest points of two roll structures.

**17.2.** In case the driver fails to meet the 50 mm requirement, it is allowed to weld an height extension from identical material to the main rollover structure.

**17.3.** Rollover structures have to be made from 35 mm chrome-molybdenum tubes with a wall thickness at least 2 mm. TARK/Kavor originaal material for the rollover structures was сталь 45 ГОСТ 1050-74, its modern day replacement is 42CrMo4 (DIN EN ISO 683-2).

**17.4.** Vehicle has to be presented together with its driver for inspection at initial scrutineering.

## 18 Electrical system

**18.1.** The driver, when seated normally with safety belts fastened and steering wheel in place, must be able to cut off all electrical circuits to the ignition, all fuel pumps and the rear light by means of a spark proof circuit breaker switch.

**18.2.** There must also be either an exterior switch or extension from interior main switch to exterior panel of the car. This switch or extension must be situated at the base of the main rollover structure. This (external) switch or the extension from internal switch must be clearly marked by a symbol showing a red spark in a white edged blue triangle with a base of at least 100 mm.

**18.3.** All cars must have a red light, in working order throughout the event, which:

- is at least 21W or LED type lamp.
- faces rearwards at 90° to the car centerline.
- is clearly visible from the rear.
- is not lower than 400mm from road level.
- can be switched on by the driver when seated normally in the car.
- in case of LED lamp – 90% from total diodes must be in working order.



## APPENDIX No 1

# Technical regulations for class formula Mondial cars using VAG engines and eligible chassis

## 1. General

These Technical Regulations are valid from 01.03. 2024. The regulations and their amendments for the class that were valid up to 01.03.2024 are voided.

Eligible cars: the basic car must be manufactured according to FIA appendix J article 275 (formula 3 cars except engine that would have been VW/Audi 1,6 or 1,8 litre GTI/GTE with limits and modifications set on them at the time).

Eligible are also former F4 cars and cars similar to F4 in regards of its power and speed (for example Estonia 26, Esttec 884, Formula Ford 2000, Formula Super V), produced prior to 1996, except the models from Estonia 26 generations.

The basic car includes a monocoque/frame, wheel suspension attachments, wheel rims, and with gearbox casings. Each car must be in accordance with its age and design. Different to original car manufacturers model and modification parts shall not be used with the original car. The competitor has an obligation to show the age of his own car in respect of the basic car.

## 2. Definitions

### 2.1. Formula Car

Automobile designed solely for speed races on circuits or closed courses. Land vehicle running on at least four non-aligned complete wheels, of which at least two are for steering and at least two for propulsion.

### 2.2. Bodywork

All entirely sprung parts of the car in contact with the external air stream, except the rollover structures and the parts definitely associated with the mechanical functioning of the engine, transmission and running gear. Airboxes and radiators are considered to be part of the bodywork.

### 2.3. Wheel

Flange and rim. Complete wheel: flange, rim and tyre.

### 2.4. Weight

The weight of the car with the driver, fuel and complete racing apparel.

### 2.5. Cubic Capacity

The volume swept in the cylinders of the engine by the movement of the pistons. This volume shall be expressed in cubic centimetres. In calculating engine cubic capacity, the value of  $\pi$  shall be 3.1416.

### 2.6. Supercharging

Increasing the weight of the charge of the fuel/air mixture in the combustion chamber (over the weight induced by normal atmospheric pressure dynamic effects in the intake and/or exhaust system) by any means whatsoever. The injection of fuel under pressure is not considered to be supercharging.

### 2.7. Main Structure

The fully sprung structure of the vehicle to which the suspension and/or spring loads are transmitted, extending longitudinally from the foremost front suspension on the chassis to the rearmost one at the rear.

### 2.8. Cockpit

The volume, which accommodates the driver.

### 2.9. Survival cell

A continuous closed structure containing all fuel tanks and the cockpit.





## 3. Regulations

### 3.1. Event

An event comprises of official practice and the race.

**3.2.** Car must comply with the technical regulations the whole time of the event.

### 3.3. Autosport Vehicle Technical Card

All competitors must be in possession of Autosport Vehicle Technical Card (AVTC) for their car, which will be issued by the relevant ASN and must always accompany the car. No car will be permitted to take part in an event unless the AVTC is available for inspection at initial scrutineering.

**3.4.** If scrutineering finds a car technically dangerous, it can be removed from the event by a decision of jury.

**3.5.** All measurements must be made while the car is stationary on a flat horizontal surface, with driver in car.

**3.6.** Above mentioned vehicles should match safety rules of FIA Appendix J period 1990, Article 275<sup>10</sup> and regulations herewith.

## 4. Bodywork and dimensions

**4.1.** The overall width of the car including complete wheels shall not exceed 1850mm, with the steered wheels in the straight-ahead position.

**4.2.** The bodywork ahead of the front edge of the complete front wheels is limited to a maximum width of 1350mm. Bodywork, that is in front of the front edge of front wheels and is outside of 950mm width, cannot be higher than the highest point of front wheel rims.

**4.3.** The maximum width of the bodywork behind the rear edge of the complete front wheels and in front of the centerline of the rear wheels is 1300mm.

**4.4.** Bodywork behind the centerline of the rear wheels must not exceed 950mm in width, except rear wing with maximum permissible width of 1000 mm.

**4.5.** No part of the car shall be more than 800mm behind the centerline of the rear wheels or more than 1000mm in front of the centerline of the front wheels.

**4.6.** Except for the rollover structures, no part of the car can be higher than 950mm from the ground. However, any part of the rollover structures more than 900mm from the ground must not be shaped to have a significant aerodynamic influence on the performance of the car.

**4.7.** Any specific part of the car influencing its aerodynamic performance:

-must comply with the rules relating to bodywork.

-must be rigidly secured to the entirely sprung part of the car

**4.8.** Any part of the bodywork, located more than 500 mm from longitudinal axis must have minimum ground clearance of 20 mm.

**4.9.** Cars with stepped floor cannot be altered and must comply entirely for FIA F3 body rules of the date of their manufacture.

Competitor must have documentation for his stepped floor car, where all concerning FIA rules are presented.

**4.10.** Minimum wheelbase: 2000mm.

**4.11.** Minimum track: 1200mm.

**4.12.** The opening of the cockpit must at least 600 mm in length. The opening must be at least 450 mm wide for at least 300 mm, starting from the back of driver's seat. The cockpit must be so conceived that the maximum time necessary for the driver to get out from his normal driving position does not exceed 5 seconds with all driving equipment being worn and starting with the safety belts fastened.

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<sup>10</sup> [https://historicdb.fia.com/sites/default/files/regulations/1439544717/appendix\\_j\\_1990.pdf](https://historicdb.fia.com/sites/default/files/regulations/1439544717/appendix_j_1990.pdf)



## 5. Weight

- 5.1.** The weight of the car must not be less than 535 kg, with the pilot and his racing apparel.
- 5.2.** Ballast can be used provided it is secured in such a way that tools are required for its removal. It must be possible to fix seals if deemed necessary by the scrutineers.
- 5.3.** Adding liquid of any kind to the car is forbidden during races.
- 5.4.** The weight may be checked at any time during an event with the driver on board and with the quantity of liquid remaining in the tanks, on the understanding that it is forbidden to add oil, any other liquid or extinguishants from the moment of jury's decision to weigh the car (or during weighing).

## 6. Engine VW/Audi GTI; GTE 1600cc

- 6.1.** Only in-line engines with reciprocating pistons and maximum of two valves per cylinder are allowed. The maximum number of cylinders is 4. Two-stroke engines are forbidden. Supercharging is forbidden.
- 6.2.** Engine capacity must not exceed 1610 cm<sup>3</sup>.
- 6.3.** Modifications to the engine:
  - 6.3.1.** The engine block and engine head castings, machining completed, must be those of a car engine equipping a car model of which the FIA has ascertained the series production of at least 5000 units in 12 consecutive months and production started not later than 1990/31/12.
  - 6.3.2.** The original engine block and cylinder head may be modified by the removal of material, but addition of material is not permitted. However, it is permitted to sleeve an engine block, by welding if necessary, that originally is not fitted with sleeves, to modify or close the lubrication holes, close standard injector holes or to use helicoils. Unused apertures in the cylinder head or block may be closed provided the only purpose is that of closing.
  - 6.3.3.** The type of crankshaft bearings cannot be modified. The crankshaft must be with the same stroke as described by the engine original manufacturer. Competitor must have documentation concerning his crankshaft stroke, confirmed by manufacturers representative.
  - 6.3.4.** All other engine components can be modified, replaced or not used. The use of titanium parts is strictly forbidden.
  - 6.3.5.** Variable length intake systems are forbidden. Fuel injection is forbidden. Airboxes are forbidden. There must be one trumpet per each cylinder, with air intake orifices directed to the centerline of the car. Otherwise carburetors are free. Intake is free.
  - 6.3.6.** Maximum number of carburetors is two, both with maximum two barrels.
- 6.4.** The outlet orifices of the exhaust pipes must be directed to the rear and must be less than 600mm from the ground. Variable length exhaust systems are forbidden.

## 7. 1800 cm engine (F4)

- 7.1.** The engine has to be VW/Audi engine produced between 1983-1991 for VW Golf GTI / Audi 80 GTE as well as other VW / Audi models such as Jetta, Passat, Santana and/or Scirocco with 112 hp with maximum bore of 81,61 mm and maximum stroke of 86,40 mm. The biggest allowed engine capacity is 1808 cm<sup>3</sup>. These eligible engine blocks are marked with letters EV, DX, DZ, GZ, JJ, KT and PB. Also eligible are engine blocks from the same manufacturer which would have been equipped with carburetor-type inlet. The engine has to be built using only VW/Audi 1,8 liter parts in spite of some exceptions, which are separately mentioned later on. The block deck surface can be machined, but under no circumstances can the piston rise more than 1,0 mm above the block deck.
- 7.2. Carburetors.**  
Maximum number of carburetors is two, both with maximum two barrels. The maximum allowed choke diameter is 34mm. The maximum allowed bore diameter is 45 mm. Otherwise carburetors are free. Intake is free.
- 7.3. Supercharging.**  
Mechanical or chemical supercharging is forbidden.



#### **7.4. Adding material.**

All sorts of material adding (welding, gluing, galvanizing etc) are forbidden.

#### **7.5. Cylinder walls.**

Damaged cylinder walls can be replaced with standard size cylinder sleeves.

#### **7.6. Balancing.**

Removing material to balance moving parts is allowed only in places meant for it by manufacturer.

#### **7.7. Cam cover (Valve cover).**

Cam cover can be changed, given that it will not enhance in any way the performance of the engine.

#### **7.8. Valve train.**

Except for valve springs, all valve train parts must be standard. Use of washers under the valve spring is allowed.

Cam followers can be altered to mechanical cup type, adjustable by inner washers beneath working surface.

#### **7.9. Oil system.**

Oil system is free. The material and shape of oil sump is free.

#### **7.10. Oil coolers.**

Oil coolers are free, as long as they comply with other rules.

#### **7.11. Cooling system.**

Fluid based cooling system is mandatory, but radiators and water pumps are free. If a radiator has an air-directing device, it must comply with rules set for bodywork.

#### **7.12. Fuel pump.**

Fuel pump is free, but it must be located outside the cockpit. Fuel pressure regulators are allowed.

#### **7.13. Distributor.**

The distributor is free, providing its location and use is as original. Other devices that brake, time or distribute ignition current are not allowed. Pointer for flywheel, for camshaft - crankshaft timing is allowed. A mechanical or electric rev limiter is allowed but cannot be adjusted from cockpit by driver. Shift light is allowed.

#### **7.14. Gaskets.**

Gaskets are free, except cylinder head gasket, which has to be VW/Audi original, with part number 026103383 or similar both in dimensions or material. Metal head gasket (code 050103383) is allowed. The minimum thickness of compressed cylinder head gasket is 1.7 mm. It must be possible to check the spare part code of the head gasket from assembled engine.

#### **7.15. Alternator.**

Alternator is free. Can be removed.

#### **7.16. Pulleys.**

Belt driven pulleys are free. Camshaft drive system is free.

#### **7.17. Breathers.**

Crankcase breathers are free and can be removed. All breathers must lead to at least 2L catch tank.

#### **7.18. Mechanical tachometer.**

Mechanical tachometer is allowed.

#### **7.19. Bearings.**

Standard oversize bearings are allowed.

#### **7.20. Cylinder head.**

Cylinder head must be VW/Audi original, with casting number 026103373.

Spare part number is 026103351 as new or 026103265 as a replacement.

Attention: after the number, there may be letters, depending on the manufacturing year.

Cylinder head must be standard in all dimensions, weight, shape and material. Same applies to valve train. Cylinder head machining is allowed for straightening purposes, but combustion chamber capacity must be at least 28 cm<sup>3</sup>.

Valve seats can be machined, but original 45-degree angle must be kept. Valve seat inner diameter has to be: intake 34 mm and exhaust 28 mm. Valves have to be original or identical to original parts.

Original part numbers:

- \* Intake valve with mechanical lifter 026109601 D
- \* Intake valve with hydraulic lifter 026109601 C
- \* Exhaust valve with mechanical lifter 026109611 F
- \* Exhaust valve with hydraulic lifter 026109611 B



Changing valve surface and form is allowed, given that valve stems keep the original diameter. The maximum allowed diameter of intake valve is 40,1 mm and exhaust 33,3 mm.

#### **7.21. Camshaft.**

Camshaft shape must be completely standard, manufactured by VW/Audi. Machining of camshaft is forbidden. Surface hardening and glass ball blasting is allowed, other types of blasting and polishing is forbidden.

Camshaft characteristics are:

Lobe separation at maximum lift: 110+/- 1 degrees.

Maximum lift: intake 10,35 mm and exhaust 10,8 mm. Normal VW manufacturing tolerances are allowed.

Camshaft part numbers:

- with mechanical lifters 049109101 N

- with hydraulic lifters 026109101 G

Also camshafts produced by ENEM and marked as Z15 are allowed.

duration 296 degrees;

maximum lift 12 mm.

If using ENEM Z15 camshaft, material can be cut from the edges of lifter bores, so the camshaft can rotate freely.

#### **7.22. Crankshaft.**

Crankshaft has to be standard and it can be balanced. Surface hardening, grinding and glass ball blasting is allowed.

The minimum weight of crankshaft is 12,95 kg.

#### **7.23. Pistons.**

Pistons must be VW/Audi originals, meant for this specific engine. Pistons can only be machined for balancing; piston crowns cannot be changed in any way. Aftermarket pistons are allowed, if their shape, weight, dimensions and material are the same as the originals. Piston rings must be similar to original VW/Audi rings by their dimensions and material.

#### **7.24. Connecting rods.**

Connecting rods must be standard. Balancing is allowed in balancing hoops. Surface hardening is allowed. Polishing and sandblasting is forbidden. The minimum weight of connecting rods is 0,630 kg.

#### **7.25. Flywheel and clutch.**

Flywheel and clutch are free.

## 8. Piping and Fuel tanks

### **8.1. Fuel tanks**

**8.1.1.** Maximum capacity of fuel tank may not exceed 50 liters.

**8.1.2.** Fuel tank cannot be more than 550mm from the longitudinal axis of the car. Fuel tank must be isolated from the cockpit and engine and protected from side impacts.

**8.1.3.** Fuel tank filling holes cannot be outside bodywork.

### **8.2. Fittings and piping**

**8.2.1.** No lines containing fuel, cooling water or lubricating oil may pass through the cockpit.

**8.2.2.** All lines must be fitted in such a way that any leakage cannot result in the accumulation of fluid in the cockpit.

**8.2.3.** All flexible fuel and oil lines must have an outer braid, which is resistant to abrasion and flame. It is strongly recommended, that lines with threaded connectors and outer braid should be used.

## 9. Exhaust system

**9.1.** The outlet orifices of the exhaust pipes must be directed to the rear and must be less than 600mm from the ground. Variable length exhaust systems are forbidden.

**9.2.** Noise level limit is set up to 105 dB. Estonian Autosport Union measures noise level in accordance with FIA procedure with a device set to "A" and "SLOW", with a device placed under 45° angle at 500 mm from the outlet orifices and with engine running at 4500 rpm/min.

**9.3.** Event organizer or particular racetrack can define noise limits differently from stated limits within technical



regulations (those can be more strict).

## 10. Oil system

### 10.1. Location of oil tanks.

All parts containing lubricating oil must be situated between the front wheels axis and the rearmost gearbox casing longitudinally and cannot be located more than 550 mm from longitudinal axis.

### 10.2. Catch tank.

When a car's lubrication system includes an open type of sump-breather, this breather must vent into a catch tank of at least 2 - liter capacity.

### 10.3. Oil replenishment.

No oil replenishment is allowed during a race.

## 11. Engine Starting

### 11.1. Starter.

A starter must be fitted with electrical or other source of energy carried aboard the car, and able to be controlled by the driver when seated normally.

### 11.2. Starting the engine.

A supplementary device temporarily connected to the car may be used to start the engine both on the grid and in the pits.

## 12. Transmission

### 12.1. Four-wheel drive is forbidden.

### 12.2. Gearbox.

All cars must have no more than five forward gears. All cars must have a reverse gear, which, at any time during the event, can be selected while the engine is running and used by the driver when seated normally.

### 12.3. Sequential gearboxes are forbidden.

### 12.4. The use of traction and launch controls is forbidden.

## 13. Suspension and Steering

### 13.1. Cars must be fitted with sprung suspension.

### 13.2. Active suspension is forbidden.

### 13.3. All suspension members must be made from a homogeneous metallic material.

### 13.4. Chromium plating of any steel suspension components is strongly not suggested.

### 13.5. The steering must consist of a mechanical link between the driver and the wheels.

## 14. Brakes

### 14.1. Separate circuits.

All cars must have a brake system which has at least two separate circuits operated by the same pedal. This system must be designed so that if leakage or failure occurs in one circuit; the pedal shall still operate the brakes on at least two wheels.

### 14.2. Brake discs.

Brake discs must be made from ferrous material.



**14.3.** Air ducts for brake cooling are allowed.

## 15. Wheels and Tires

### 15.1. Dimensions

Maximum complete wheel width: 11.5 inches. Compulsory wheel diameter: 13,0 inches. These measurements will be taken horizontally at axle height.

**15.2.** The number of wheels is fixed at four.

**15.3.** Wheel attachment: A safety spring must be in place on the wheel center nut throughout the event. It is recommended, that these springs be painted in red or orange.

## 16. Safety Equipment

### 16.1. Fire Extinguishers.

All cars must be fitted with a fire extinguishing system, which must comply with current FIA F3 regulations and must discharge into the cockpit and into the engine compartments.

**16.1.1.** Any extinguishant, which has been specifically approved by the FIA, is permitted. The quantity of extinguishant may vary according to the type of extinguishant used. A list is available from the FIA.

**16.1.2.** Each pressure vessel must be equipped with a means of checking its pressure, which may vary according to the type of extinguishant used. A list is available from the FIA.

**16.1.3.** The following information must be visible on each container with extinguishant:

- Type of extinguishant
- Weight or volume of the extinguishant
- Date the container must be checked which must be no more than two years after the date of filling.

**16.1.4.** Any triggering system having its own source of energy is permitted, provided it is possible to operate all extinguishers should the main electrical circuits of the car fail. There must be an exterior trigger, which must be situated at the base of rollover structure and can be combined with circuit breaker switch. It must be marked with a letter "E" in red inside a white circle of at least 100mm diameter, with a red edge.

**16.1.5.** All pressure vessels must be situated inside the main structure.

**16.1.6.** The system must work in any position, even when the car is inverted.

### 16.2. Master switch

**16.2.1.** The driver, when seated normally with safety belt fastened and steering wheel in place, must be able to cut off all electrical circuits to the ignition, all fuel pumps and the rear light by means of a spark proof circuit breaker switch. This switch must be located on the dashboard and must be clearly marked by a symbol showing a red spark in a white edged blue triangle.

**16.2.2.** There must also be an exterior switch. This switch must be situated at the base of the main rollover structure. Both switches must be able to cut off all electrical circuits, not depending on the others position.

## 17. Rear view mirrors

All cars must have at least two mirrors mounted so that the driver has visibility to the rear and both sides of the car and they must have at least 5500 mm<sup>2</sup> of reflective surface.



## 18 Safety belts and drivers safety equipment

**18.1.** Homologation requirements on safety belts is set by national federation.<sup>11</sup>

**18.2.** Safety belts are to be either wrapped around tubular structure of the frame of the car or bolted on the the frame. In the latter case the minimum diameter of the bolt is 8 mm and strength class 10.9.

**18.3.** Safety belts must be clean and with no visible signs of wear or damage.

**18.4.** Use of FHR is strongly recommended<sup>12</sup>

**18.5.** Unless FHR is used, shoulder straps must be 3" wide.

**18.6.** It is mandatory to wear helmets according to following standards:

- 8858-2002 or 8858-2010 (Technical List N°41);<sup>13</sup>

- 8859 (Technical List N°49);<sup>14</sup>

- 8860-2010 (Technical List N°33)<sup>15</sup> or

- 8860-2018 or 8860-2018-ABP (Technical ListN°69)

**18.7.** Usage of helmets with expired homologation is regulated with Estonian Autosport Union Technical Committee decision.<sup>16</sup>

**18.8.** Racing overall, balaclava, racing shoes, racing gloves and racing underwear must be with FIA homologation. Using above mentioned items with expired homologation is regulated with Estonian Autosport Union Technical Committee decision.<sup>17</sup>

**18.9.** All equipment listed in paragraph 18.8. must be clean, without visible signs of wear or damage and have to be presented by the driver in pre-event technical scrutineering.

**18.10.** Every deviational case from current paragraph must be investigated by technical scrutineers during the race, fixed in written statement and finally approved by the jury.

## 19. Rear light

All cars must have a red light, in working order throughout the event, which:

- is at least 21W or LED type lamp – at least 90% of LED diodes must be in working order.
- faces rearwards at 90° to the car centerline.
- is clearly visible from the rear.
- is not mounted more than 100mm from the car centerline.
- can be switched on by the driver when seated normally in the car.

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<sup>11</sup> <https://uus.autosport.ee/wp-content/uploads/2023/04/Lisa-J-253-2023.pdf>

<sup>12</sup> [https://www.fia.com/sites/default/files/appendix\\_l\\_2023\\_publication\\_19\\_octobre\\_2023\\_0.pdf](https://www.fia.com/sites/default/files/appendix_l_2023_publication_19_octobre_2023_0.pdf) (p. 53 chpt 3.1.)

<sup>13</sup> [https://www.fia.com/sites/default/files/l41\\_fhr\\_compatible\\_helmets\\_4.pdf](https://www.fia.com/sites/default/files/l41_fhr_compatible_helmets_4.pdf)

<sup>14</sup> [https://www.fia.com/sites/default/files/l49\\_premium\\_helmets\\_80.pdf](https://www.fia.com/sites/default/files/l49_premium_helmets_80.pdf)

<sup>15</sup> [https://www.fia.com/sites/default/files/l33\\_advanced\\_helmets\\_25.pdf](https://www.fia.com/sites/default/files/l33_advanced_helmets_25.pdf)

<sup>16</sup> <https://uus.autosport.ee/wp-content/uploads/2023/11/kiivrid.pdf>

<sup>17</sup> <https://uus.autosport.ee/wp-content/uploads/2023/07/TK-Teada-Fia-Standart-8856-2000.pdf>



## 20. Safety structures

### 20.1. Roll structures.

All cars must be fitted with at least two roll structures. First roll structure must be in front of steering wheel, not more than 250 mm from the center of the steering wheel and it must be higher than the top of the steering wheel rim. Second roll structure must be situated at least 50 cm behind the first roll structure. Minimum height of the second roll structure is 950 mm from the floor of the car. The second roll structure must be at least 50 mm higher than the driver's helmet and the two roll structures must be of sufficient height, to ensure the drivers helmet is below a straight line, drawn between their highest points.

There are two options for the rear roll structure design. The roll structure must be manufactured from 35 mm<sup>2</sup> chromium molybdenum tube, with wall thickness of at least 2 mm. It must have at least one longitudinal strap of same material or two straps from 25mm tube, with also 2mm wall thickness. The angle of the straps must be 60 degrees or less from horizontal. Roll structures with free design are allowed. These roll structures must comply with FIA F3 regulations from the year of the car manufacturing.

### 20.2. Front protection.

**20.2.1.** Cars with tubular frame must have a design strong enough to protect driver's legs.

**20.2.2.** Cars with monocoque chassis must have metal or carbon composite wall in front of driver's legs. Only small holes, for cars communications, are permitted in these walls.

**20.3.** The driver's feet in resting position must be behind front axle line.

## 21. Fuel

The fuel must be commercially available petrol as listed in FIA appendix J article 252.9.<sup>18</sup>

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<sup>18</sup> [https://www.fia.com/sites/default/files/252\\_2021\\_wmsc\\_2020.10.15.pdf](https://www.fia.com/sites/default/files/252_2021_wmsc_2020.10.15.pdf)