

# TECHNICAL REGULATIONS

## CARBONIA CUP 2021

### Amateur International Races for Passenger and Formula Cars on Race Circuits

#### 1. CARS:

1.1. The “CC” category is available for the registration of cars fulfilling the following conditions:

a) the car is approved as roadworthy, which is evidenced by its certificate of roadworthiness. The type of body and the type of engine of the registered car shall correspond to the submitted certificate of roadworthiness.

b) the car has been awarded the FIA sports licence or a similar document. If the car has no such a licence, the “CC” organizers will issue the car driver a licence for the car stating the technical specification of the car.

c) the car complies with the technical regulations described and specified below.

The car is not required to have been allocated a registration number. The technical commissioner is fully competent not to register a car showing signs of unsafe construction.

#### 2. CLASSIFICATION OF CARS:

The final classification of the car will be decided on based on technical inspection. The organizer is authorized to reclassify the car to a different category on the basis of findings that fail to comply with requirements imposed on the category concerned.

#### A – Modified Travelling Cars:

**A Junior – up to 1,600 ccm – with no weight limit, for drivers at the age of 14 to 17**

**A1 -1,600 ccm – with no weight limit**

**A2 -2,000 ccm (1,120 kg) – the weight, including the driver, fuel and lubricants, to be determined after the race**

**A3 -3,000 ccm (1,170 kg) – the weight, including the driver, fuel and lubricants, to be determined after the race**

**A4 -3,500 ccm (1,220 kg) – the weight, including the driver, fuel and lubricants, to be determined after the race**

**A5 +3,500 ccm (1,300 kg) – the weight, including the driver, fuel and lubricants, to be determined after the race**

**A6 –**

A spec. = non-compliant in terms weight, more extensive modifications

**A7 -2,000 ccm**

**A8 -3,500 ccm (GT3 cup,GT4)**

**A9 +3,500 ccm (GT3 cup,GT4)**

#### B – Series-Produced Travelling Cars:

**B1. cars up to 1,600 ccm**

**B2. cars up to 2,000 ccm, including 1,200 ccm with supercharging**

**B3. cars up to 3,000 ccm**

#### **B4. cars up to 3,500 ccm**

#### **B5. cars above 3,500 ccm**

#### **B6. ABARTH CUP**

**C+D – Special Series and Free Formula E2:** open cars with an open integral engine-mount truss structure, carbon monocoque frame of the Kaipan, Ariel-Atom, KTM, Caterham, Radical, etc. type, two-seat open racing cars manufactured especially for races of the following types: Osella, Norma, Lucchini and cars of the monoposto type, formula special cars and sports prototype cars further classified based on the engine capacity and type – motor-vehicle and motor-cycle engine.

The group may be further classified depending on registered cars into 10 sub-classes.

#### **C – Special Series Cars:**

##### **C1. up to 1,400 ccm (Radical, Pacemaker, Performer)**

##### **C2. above 1,400 ccm (Radical, specially modified Caterham, Lucchini, Osella, Norma, Praga)**

##### **C3. up to 1,600 ccm (Kaipan, Lotus7, Caterham)**

##### **C4. above 1,600 ccm (Kaipan, Lotus7, Caterham, Ariel Atom)**

##### **C5. KTM X-BOW**

#### **D – Free Formula E2:**

##### **D1. up to 1,400 ccm (motor-cycle engines)**

##### **D2. up to 1,400 ccm (motor-vehicle engines)**

##### **D3. up to 1,600 ccm**

##### **D4. up to 2,000 ccm**

##### **D5. above 2,000 ccm**

#### **3a – MODIFIED TRAVELLING CARS from groups A1 – A5 – permitted modifications:**

##### **3a. 1. CAR BODY**

The basic body structure of a series-produced car shall be used. For the purposes of this documentation, a series-produced car shall not refer to a car manufactured in pieces (so-called construction sets) that has been put into operation individually. Only the engine hood, doors, wings, roof, trunk lid assembly and bumpers can be light-weight, material is not regulated in any manner and the shape can be modified. The doors can be light-weight only if the car is equipped with a full-valued roll cage. In addition, the clamping of the rear seats may be removed and the same applies to the space for the spare wheel, however, the space shall be protected by a cover. Decorative and aerodynamic features are allowed. The windscreen shall be layered, shatter-proof and original. The other glass elements may be replaced by those made of plastic material (MAKROLON) with the thickness of at least 3 mm. All windows shall be clear. Sliding windows are allowed. Splintering materials (PLEXI GLASS) are forbidden. If the car has a roof window, it shall be dismantled, and the opening covered. The lid of the engine compartment and that of the luggage compartment shall be equipped with at least two fastening devices while the original locks may be removed. The doors on the driver's and co-driver's sides shall remain functional (if opened from the outside), while the other ones may be welded

together or provided with a cover. In the car, it is permitted to use air hoists but no compressed-air bottles. The cars shall be equipped with both external rear-view mirrors. The headlights may be removed and the same applies to the original protective covers of the engine and car frame.

All insulation parts and plastic components may be removed.

Inner mudguards may be removed or adjusted in case of widening exterior mudguards and thus altering the tyre width.

### **3a. 2. CAR INTERIOR**

The car interior may be modified, the car dashboard may be arbitrary without sharp edges, the upholstery and sound insulation materials may be removed. The steering wheel is subject to no limitations, the car window control system may be removed while the lateral net is recommended.

### **3a. 3. CAR FRAME**

The axles, arms' fixing and material may be modified. Mounting in metal sleeves is allowed. Vibration dampers and springs are not subject to any limitations and the same applies to their positioning and fixing. The stabilizer and its fixing are not regulated. The clearance height is not limited, however, no part of the car may touch the ground if tyres on one side of the car are flat.

### **3a. 4. WHEELS AND TYRES**

The wheels and tyres are not regulated, washers under the wheel disks are allowed. A spare wheel is not required.

The widest point of the complete wheel may not exceed the widest point of the car bumper in the horizontal projection (see the figure).



### **3a. 5. BRAKES**

The car brake system is not regulated on condition that it includes at least two independent circuits controlled by the same pedal.

### **3a. 6. STEERING SYSTEM**

The steering system is not regulated.

### **3a. 7. ENGINE**

All cars shall use the engine designed for the respective type and model of the car make. The engine mounting material is subject to no limitations with the original place of engine mounting. Any other modifications are not limited, only the engine capacity shall correspond to requirements imposed on the classification.

### **3a. 8. CLUTCH**

The clutch material and number of plates are not regulated.

### **3a. 9. TRANSMISSION**

The number of transmission gears and the ratio are not regulated and the same applies to the shifting system.

### **3a. 10. DIFFERENTIAL**

A self-locking differential is allowed.

### **3a. 11. DRIVE**

The car drive concept shall remain the same as in the original car.

### **3a. 12. ELECTRONIC SYSTEM, IGNITION**

Not regulated. The battery is subject to no limitations, its position may be changed, however, it shall be properly attached to withstand any excess load during a possible collision. Starting shall be made by a power source located in the car controlled by the driver sitting at the steering wheel. The disconnect switch shall be also controlled from the outside and designated in compliance with FIA requirements.

### **3a. 13. FUEL TANK, FUELS**

The fuel tank shall be the original, series-produced one. Alternatively, a sports tank with type- approval may be used. There are no restrictions imposed on fuel and additives.

### **3a. 14. EXHAUST**

The exhaust manifold, including the exhaust piping, are not regulated. The rear outlet shall not exceed the car body contour by more than 10 cm. Exhaust gases may be discharged only at the end of the system. Lateral outlet of the exhaust system may not exceed the car body contour at all. The exhaust system shall comply with the max. engine-noise level limit of 100 dB.

### **3a. 15. MANDATORY SAFETY EQUIPMENT OF THE DRIVER**

3a.15.1. The protective roll cage shall be designed in a manner protecting the crew in the case of accident.

The roll cage shall be made of seamless steel tubes and the shape and fixing thereof shall comply with any of those provided in the figures. It shall be manufactured based on the “J” specification imposed by FIA on contemporary vehicles.

#### **Basic roll cage:**



3a.15.2. The disconnect switch shall be controlled from the inside as well as the outside where it is indicated by a blue triangle with a red lightning. It must be connected in a manner allowing the started engine to be de-energized, not only the battery to be disconnected.

3a.15.3. An anatomical sports seat, type-approved by FIA (also expired) and five- to six-point safety belts type-approved by FIA (also expired) are required. Fixing points on the car body,

two for the lumbar belt and two or one symmetrical with respect to the seat for the shoulder belts. It is **FORBIDDEN** to attach the safety belts to the seats or their holders.

3a.15.4. A two-kilogram functional fire extinguisher attached in a manner allowing any excess load during a possible collision to be withstand is required. In addition, it shall be attached in a manner allowing its release without any tools. A valid record of the revision test is required!!! We recommend a fire-extinguishing system.

3a.15.5. The driver's equipment includes a safety helmet type-approved for road traffic, racing suit, all-finger gloves and closed footwear. We recommend wearing non-combustible underwear. 3a.15.6. The towing lug shall be designated by a red arrow at the front as well as at the back.

### **3a.16. SUPERCHARGER**

In the case of supercharging, the nominal cylinder capacity is multiplied by the respective coefficient and the car is reclassified to the class that corresponds to the calculated capacity. The coefficient in supercharged engines is 1.7 multiple for petrol engines and 1.5 multiple for Diesel engines of the original capacity. In the case of WANKEL rotary engines, the coefficient is 1.3 and the coefficient 2.0 shall be applied to a supercharged rotary engine.

## **3b. MODIFIED TRAVELLING CARS from groups A7 – A9 – permitted modifications:**

This group comprises cars with a larger scope of modifications (interventions in the car body, changes in the engine type, etc.), cars participating in FIA-classified championships whose engine capacity exceeds 3,000 ccm and cars belonging to the GT3, RGT, and E1 categories according to FIA regulations and closed E2 cars according to FIA regulations (travelling-type cars with the appearance of series-produced cars with 4 seats and closed two-seat cars tailor-made for races).

### **3b. 1. CAR BODY**

The car body may be light-weighted, material is not regulated, and the shape may be modified. The car body shall be equipped with a full-valued FIA-compliant roll cage according to FIA regulations, Annex J. Decorative and aerodynamic features are allowed. The windscreen shall be layered, shatter-proof, either original or plastic with a minimum thickness of 5 mm. The other glass elements may be replaced by those made of plastic material (MAKROLON) with the thickness of at least 3 mm. All windows shall be clear. Sliding windows are allowed. It is **forbidden** to use splintering materials (PLEXI GLASS). If the car has a roof window, it shall be dismantled, and the opening covered. The lid of the engine compartment and the luggage compartment shall be equipped with at least two fastening devices while the original locks may be removed. The doors on the driver's side shall remain functional, while the other ones may be welded together or provided with a cover. In the car, it is permitted to use air hoists but no compressed-air bottles. The cars shall be equipped with both external rear-view mirrors. The headlights may be removed and the same applies to the original protective covers of the engine and car frame. All insulation parts and plastic components may be removed.

### **3b. 2. CAR INTERIOR**

The car interior may be modified, the car dashboard may be arbitrary without sharp edges, the upholstery and sound insulation materials may be removed. The steering wheel is subject to no limitations, the car window control system may be removed while the lateral cargo net is recommended.

### **3b. 3. CAR FRAME**

The axles, arms' fixing and material may be modified. Mounting in metal sleeves is allowed.

Vibration dampers and springs are not subject to any limitations and the same applies to their positioning and fixing. The stabilizer and its fixing are not regulated. The clearance height is not limited, however, no part of the car may touch the ground if tyres on one side of the car are flat. **3b. 4. WHEELS AND TYRES**

The wheels and tyres are not regulated, washers under the wheel disks are allowed. A spare wheel is not required.

The widest point on the complete wheel may not exceed the widest point of the car bumper in the horizontal projection, see the figure.



### **3b. 5. BRAKES**

The car brake system is not regulated on condition that it includes at least two independent circuits controlled by the same pedal.

### **3b. 6. STEERING SYSTEM**

The steering system is not regulated.

### **3b. 7. ENGINE**

Not regulated.

### **3b. 8. CLUTCH**

The clutch material and number of plates are not regulated.

### **3b. 9. TRANSMISSION**

The number of transmission gears and the ratio are not regulated and the same applies to the shifting system.

### **3b.10. DIFFERENTIAL**

A self-locking differential is allowed.

### **3b.11. DRIVE**

Not regulated.

### **3b.12. ELECTRONIC SYSTEM, IGNITION**

Not regulated. The battery is subject to no limitations, its position may be changed, however, it shall be properly attached to withstand any excess load during a possible collision. Starting shall be made by a power source located in the car controlled by the driver sitting at the steering wheel. The disconnect switch shall be also controlled from the outside and designated in compliance with FIA requirements.

### **3b.13. FUEL TANK, FUELS**

A sports tank with an awarded type-approval shall be used. There are no restrictions imposed on fuel and additives.

### **3b.14. EXHAUST**

The exhaust manifold, including the exhaust piping, are not regulated. The rear outlet shall not exceed the car body contour by more than 10 cm.

Exhaust gases may be discharged only at the end of the system. Lateral outlet of the exhaust system may not exceed the car body contour at all. The exhaust system shall comply with the max. engine-noise level limit of 100 dB.

### **3b.15. MANDATORY SAFETY EQUIPMENT OF THE DRIVER**

3b.15.1. The protective roll cage shall be designed in a manner protecting the crew in the case of accident.

The roll cage shall be made of seamless steel tubes and the shape and fixing thereof shall comply with any of those provided in the figures. It shall be manufactured based on the “J” specification imposed by FIA on contemporary vehicles.

#### **Basic roll cage:**



3b.15.2. The disconnect switch shall be controlled from the inside as well as the outside where it is indicated by a blue triangle with a red lightning. It must be connected in a manner allowing the started engine to be de-energized, not only the battery to be disconnected.

3b.15.3. An anatomical sports seat, type-approved by FIA and six-point safety belts are required. Fixing points on the car body, two for the lumbar belt and two symmetrical with respect to the seat for the shoulder belts shall be provided. It is **FORBIDDEN** to attach the safety belts to the seats or their holders.

3b.15.4. A two-kilogram functional fire extinguisher attached in a manner allowing any excess load during a possible collision to be withstand is required. In addition, it shall be attached in a manner allowing its release without any tools.

A valid record of the revision test is required!!! We recommend a fire-extinguishing system.

3b.15.5. The driver's equipment includes a safety helmet type-approved by FIA, racing suit, all-finger gloves and closed footwear. Non-combustible underwear is required.

3b.15.6. The towing lug shall be designated by a red arrow at the front as well as at the back.

### **3.16. SUPERCHARGER**

In the case of supercharging, the nominal cylinder capacity is multiplied by the respective coefficient and the car is reclassified to the class that corresponds to the calculated capacity. The coefficient in supercharged engines is 1.7 multiple for petrol engines and 1.5 multiple for Diesel engines of the original capacity. In the case of WANKEL rotary engines, the coefficient is 1.3 and the coefficient 2.0 shall be applied to a supercharged rotary engine.

## **4. SERIES-PRODUCED TRAVELLING CARS of the B group – permitted modifications:**

During technical inspection, the certificate of registration (“malý TP”) of the car will be required to check the car technical parameters, and in the case of ambiguity, the certificate of roadworthiness (“velký TP”) of the car will be required for the next race.



#### **4.1. CAR BODY**

The original, series-produced car body shall be retained and the same applies to the material. Light-weighted modifications are forbidden. Installation of decorative and aerodynamic tuning features (spoilers, trims of wheel wells and body sills, etc.) is allowed. The windows shall remain original, series-produced. The headlights, back lights, traffic direction indicators, horn and windscreen wipers shall remain fully functional. The side window control system, door handles, door locks and engine-hood lock shall remain fully retained and functional.

#### **4.2. CAR EXTERIOR AND INTERIOR**

The only items that may be removed are: back seats with backrests and back plateau (the boot cover), the remaining upholstery shall remain unchanged. If a roll cage is used, the interior may be modified and so may be the upholstery but only in places where the tubes of the roll cage are installed. Using front anatomical seats is recommended. Safety belts with three, four up to six points are recommended. The mandatory equipment may be removed. A sports variant of the steering wheel, gear change lever knob and hand brake is allowed and the car radio with loudspeakers may be dismantled. The original protective covers of the engine and car frame may be removed; an intercepting trap is recommended.

#### **4.3. ENGINE**

The original engine-mounting place shall be retained. Only the original engine for the given type of car may be used. The cylinder capacity shall be retained at the original value. The original series-produced engine block and fuel distribution system shall be retained. The crank mechanism, pistons, rings, connecting rod, cams, valves and other internal components of the engines may be modified. Other than series-produced cylinder head for the given type of car may not be used, however its modifications are allowed. The number of throttle valves shall be retained while the diameter may be changed. The induction manifold may be modified. The exhaust piping, including complete piping may be modified, however, at least one completely functional damper shall be retained. The car catalyst may be regarded as a vibration damper. The use of a supercharger or compressor is only possible where the manufacturer mounts these components within the framework of the series-produced model of the given car. The original, series-produced clutch-control system, flywheel and thrust plate shall be retained. Mounting a different sports air filter is permitted. The NOS system is forbidden. The series-produced differential for the given model of the car shall be used. The original, series-produced principle of the car drive, including the axle shaft material, shall be retained. The tank shall be either the original, series-produced or a sports one type-approved by FIA. The alternator shall be fully functional and retained in the original place. The battery shall be properly attached, fully functional and retained in the original position.

#### **4.4. TRANSMISSION**

The series-produced transmission shall be retained and may only be replaced by a different one produced within the framework of the given car model. The number of transmission gears, including the backward gear, the gear ratio and the shifting system shall be retained in the way in which the transmission was manufactured.

#### **4.5. CAR FRAME**

The mounting of tuning vibration dampers and suspension springs is allowed. The axles, arms, connecting rods and stabilizers, including material, shall remain original, series-produced. Unibal in the upper mount of the vibration damper is permitted. The car frame geometry is not regulated.

#### **4.6. BRAKES AND STEERING SYSTEM**

The series-produced brakes and steering system are required. The exchange of brake disks, brake valves and lines is allowed. A supplementary mounting of a hydraulic hand brake is allowed.



The series-produced steering system shall be retained.

#### **4.7. WHEELS AND TYRES**

Only series-produced tyres with a tread pattern of at least 1.6 mm are allowed. The tyres can have any dimension but may not exceed the car contour. Wheels made of light alloys are permitted. All tyres marked as E and DOT are allowed.

The expansion washers for wheels are permitted, however, the wheels shall not exceed the car contour.

#### **Cut-through tyres are forbidden.**

The widest point of the complete wheel may not exceed the widest point of the car bumper in the horizontal projection (see the figure).



#### **4.8. MANDATORY SAFETY EQUIPMENT**

A disconnect switch is recommended. In all other aspects, series-produced variant is required.

The general rule is – **WHATEVER IS NOT ALLOWED, IS FORBIDDEN!**

4.5.1. The driver's equipment includes a safety helmet type-approved for road traffic, one-piece racing suit, all-finger gloves and closed footwear.

4.5.2. A two-kilogram fire extinguisher fixed inside the car **IS STRONGLY RECOMMENDED ON OUR PART**. A valid record of the revision test is required!!!

4.5.3. The towing lug shall be mounted in the car for the whole racing day.

#### **4.9. SUPERCHARGER**

In the case of supercharging, the nominal cylinder capacity is multiplied by the respective coefficient and the car is reclassified to the class that corresponds to the calculated capacity. The coefficient in supercharged engines is 1.7 multiple for petrol engines and 1.5 multiple for Diesel engines of the original capacity. In the case of WANKEL rotary engines, the coefficient is 1.3 and the coefficient 2.0 shall be applied to a supercharged rotary engine.

#### **4.10. EXHAUST**

The exhaust system may be replaced by a tuning sports variant, however, changing the shape of lines and outlet is not allowed. Exhaust gases may be discharged only at the end of the system. The exhaust system shall comply with the max. engine-noise level limit of 100 dB.

#### **4.11. COOLING SYSTEM**

The engine cooling system may be modified including the intercooler.

#### **4.12. FUEL TANK, FUEL**

The fuel tank shall be the original, series-produced one. Alternatively, a sports tank with type- approval may be used.

## 5. SPECIAL-SERIES cars of the group C1 to C5, allowed

**modifications:** Open cars: cars with an open integral engine-mount truss structure, carbon monocoque frame of the Kaipan, Ariel-Atom, KTM, Caterham, Radical, etc. type, two-seat open racing cars manufactured especially for races of the following types: Osella, Norma, Lucchini and cars of the monoposto type, formula special cars and sports prototype cars further classified based on the engine capacity and type – motor-vehicle and motor-cycle engine.

**5.1.** Minor modifications on the car body are allowed, however, they may not interfere with the load-bearing part of the car body structure.

### **5.2. SUPERCHARGER**

In the case of supercharging, the nominal cylinder capacity is multiplied by the respective coefficient and the car is reclassified to the class that corresponds to the calculated capacity. The coefficient in supercharged engines is 1.7 multiple for petrol engines and 1.5 multiple for Diesel engines of the original capacity. In the case of WANKEL rotary engines, the coefficient is 1.3 and the coefficient 2.0 shall be applied to a supercharged rotary engine. The NOS system is forbidden.

**5.3.** All open cars shall have fully functional at least one brake light and rear parking light.

### **5.4. MANDATORY SAFETY EQUIPMENT**

A disconnect switch is recommended. In all other aspects, series-produced variant is required with the exception of allowed modifications. The general rule is – **WHATEVER IS NOT ALLOWED, IS FORBIDDEN!**

5.4.1. The driver's equipment includes a safety helmet type-approved for road traffic, one-piece racing suit, all-finger gloves and closed footwear.

5.4.2. A two-kilogram fire extinguisher, properly attached to withstand any collision is required. In addition, it shall be attached in a manner allowing its release without any tools. A valid record of the revision test is required!!!

5.4.3. The towing lug shall be mounted in the car for the whole racing day.

## 6. Free FORMULA, group D1 – D5, allowed modifications:

**6.1.** Formula special cars and sports prototype cars shall comply with the international FIA regulations or national technical regulations imposed on the given category applicable to the respective period for which such regulations were issued. This concerns in particular the

safety features such as: fire extinguisher, safety belts, disconnect switch, battery, roll cage, fuel tank and the overall structure of the car.

**6.2.** The driver's equipment includes a safety helmet type-approved for road traffic, one-piece racing suit, all-finger gloves and closed footwear.

### **WHATEVER IS NOT ALLOWED, IS FORBIDDEN!!!**

**The organizer reserves the right to reclassify the car based on the technical inspection results. In addition, the organizer reserves the right to amend the technical regulations at any time during the season. Such amendments will always be notified in the form of an addendum.**

**If necessary, do not hesitate to contact the  
Chief Technical Commissioner:**

**David Friček, E-mail: [carbonia@seznam.cz](mailto:carbonia@seznam.cz) Tel.: +420 602 475 537, or send an sms, we will call you back.**