



## 2019 BTRDA AUTOSPORT INTERNATIONAL CLUBMAN'S RALLYCROSS CHAMPIONSHIP APPENDIX 2 Clubman 4x4 Technical Regulations

### 1.1.1 INTRODUCTION.

The following Technical Regulations are set out in accordance with the Motorsport UK specified format and it should be clearly understood that if the following texts do not clearly specify that you can make a modification you should work on the principle that you cannot.

### 1.1.2 GENERAL TECHNICAL REQUIREMENTS AND EXCEPTIONS.

**1.1.2.a** Cars must comply with the Technical Regulations published by the Organisers for The BTRDA Rallycross Championship throughout official practice, qualifying heats and finals. (See SR)

**1.1.2.b** All cars must comply fully with the 2019 Motorsport UK Blue Book regulations sections J, K, and N.6.1 to N.6.14.3 as appropriate

**1.1.2.c** No approved modification may give rise to an unapproved one.

**1.1.2.d** The use of magnesium alloy sheet is not permitted. Titanium sheet may only be used for heat shields

### 1.1.3 SAFETY REQUIREMENTS.

**1.1.3.a** Minimum, All cars must comply fully with the 2019 Motorsport UK Blue Book sections J, K, and N.6.1 to N.6.14.3 as appropriate. In addition:

**1.1.3.b** Roll over structure crossed door-bars to K Appendix 2 Drawing 12 (g) or (h) are mandatory

**1.1.3.c** Seats must comply with N6.13.6.

**1.1.3.d** Currently FIA Homologated Seat Belts are mandatory (K.2.1.2 and N.6.12.2)

**1.1.3.e** From a 'race ready' position with seat belts fastened, the driver must be able to vacate the car in 5 seconds.

**1.1.3.f** All cars must be fitted with a FIA homologated extinguisher system plumbed to the engine bay and the cockpit, or 1.75ltr hand held extinguisher

**1.1.3.g** Window nets are recommended on the driver's side of the vehicle.

**1.1.3.h** Clothing and personal safety equipment as per Motorsport UK regulations N5.9 to N5.9.6 inclusive.

### 1.1.4. CHASSIS and BODYWORK.

**1.1.4.a** The original bodywork must be retained, other than as detailed below.

The series-production body shell and chassis must be retained but the original basic structure may be reinforced in accordance with current FIA Appendix J Article 255.5.7.1.

**1.1.4.b** The bodywork may be modified in accordance with current FIA Appendix J Article 279 Drawing 279-1. All the measurements will be taken in relation to the middle of the front and rear axles of the homologated bodywork. The materials added must be ferrous and must be welded to the bodywork.

**1.1.4.c** In order to accommodate the catalytic converter, it is allowed to make a hollowing out in the central tunnel as described in current FIA Appendix J Article 279 Drawing 279-2.

**1.1.4.d** Except for the driver's door, the material is free, provided that the original outside shape is retained.

**1.1.4.e** Door hinges and outside door handles are free. The original locks may be replaced but the new ones must be efficient.

**1.1.4.f** The original driver's door must be retained, trim may be removed.

**1.1.4.g** Trim strips, mouldings, etc., may be removed.

**1.1.4.h** Under no circumstances can any part of the bodywork or the suspended parts of the car be below a horizontal plane passing 40mm above the ground, the car being in normal race trim with the driver strapped into his/her seat.

**1.1.4.i** Must have a windscreen as N.6.2.4 and J.5.20. 8.. All side and rear windows may be replaced with polycarbonate of minimum 4mm thickness.

**1.1.4.j** All cars will be equipped with front and rear towing eyes strong enough for a recovery vehicle to tow the car. The towing eye must have a hole of minimum dimension 25mm x 40mm situated 25mm forward of the adjacent bodywork. The area 100mm above and below the towing eye must allow clearance to enable the rescue crews to attach straps and shackles. The surrounding bodywork must be flexible or deformable in order to access to the towing eye. They must be clearly marked, visible and painted yellow, red or orange in contrast to the colour of the car.

**1.1.4.k** At the start of each heat or race the car must be fitted with mud-flaps behind all four wheels extending to a minimum of 38mm either side of the tyre tread and to a maximum of 76mm above the ground the 2019 Motorsport UK Blue Book regulations section N.6.9.

**1.1.4.l** At least one mirror of a minimum surface area of 500mm<sup>2</sup> must be securely mounted and positioned to give a clear view to the rear. The edges of the mirror must be protected by a suitable cover to reduce the possibility of injury in event of an accident.

**1.1.4.m** The rear doors may be sealed shut by welding.

**1.1.4.n** The locking devices on the bonnet and boot lid, as well as the hinges, are free, but each lid must be fixed at four points, and opening from the outside must be possible. The original closing systems must be removed.

**1.1.4.o** Openings may be made in the bonnet for ventilation, provided that they do not allow mechanical components to be seen.

**1.1.4.p** In all circumstances, the bonnets and boot lids must be interchangeable with the original homologated ones.

**1.1.4.r** It is permitted to remove the window opening mechanisms from all four doors or replace electric winders with manual winders.

**1.1.4.s** It is permitted to install one or two ventilation flaps in the roof of the car, in the following conditions:

- i) maximum height 10 cm
- ii) displacement contained within the front third of the roof
- iii) hinges on the rear edge total maximum width of the openings: 500 mm

**1.1.4.t** Front aerodynamic device The material and shape are of free design, limited by:



- i) The vertical plane passing through the axis of the front wheels and the horizontal plane passing through the lowest point of the door opening (FIA Appendix J Article 279 drawing 279-3);
- ii) The overall length of the homologated car;
- iii) To the front, by the vertical projection of the bumper of the homologated car.
- iv) The material of the bumper must remain unchanged (plastic remaining plastic, including composite materials). Aftermarket bumpers are permitted provided they are to the same pattern as the original equipment bumpers.
- v) The safety elements allowing the absorption of impacts between the bumper and the chassis must be kept.
- vi) Modification of the lateral part of the front bumper: according to the definition of the wing given by Appendix 1 of the "FIA Homologation Regulations for Group A and B Cars".
- vii) One or more openings may be made in the bumper (the part situated above the plane passing through the lowest point of the door opening), but the total surface of openings in the front shield must be no more than 2500 cm<sup>2</sup>.
- viii) These openings must not affect the structural integrity of the bumper.
- ix) The thickness of the front aerodynamic devices must be 2mm minimum and 5mm maximum.

**1.1.4.u Rear aerodynamic device:**

- i) It must have the maximum dimensions defined in current FIA Appendix J Drawing 279-4.
- ii) Even if the vehicle has original dimensions bigger than those maximum dimensions, it must comply with this drawing.
- iii) At its extremities, this device must join the bodywork, and it must be entirely contained within the frontal projection of the car without its rear-view mirrors.
- iv) The base of the box including the drawing must be the one with the largest dimensions. It must be positioned horizontally.
- v) Further, this volume may be extended section by section, which means that at any point of the rear aerodynamic device, each section must not exceed the section 450mm x 290mm x 190mm, supports included.
- vi) This aerodynamic device must be contained within the frontal projection of the car, and within the projection of the car seen from above.
- vii) The thickness of the rear aerodynamic devices must be 2mm minimum and 5mm maximum.

**1.1.5 ENGINE.**

- 1.1.5.a** The engine is free, but must have same number of cylinders and mounted in the same area as the original model. k.
- 1.1.5.b** The engine must be located in the original engine compartment.
- 1.1.5.c** Twin-engine configurations are not permitted unless homologated in that form.
- 1.1.5.d** Variable valve timing is not permitted.
- 1.1.5.e** Variable length inlet trumpets are forbidden.
- 1.1.5.f** Titanium is not permitted except in connecting rods, valves, valve retainers and heat shields.
- 1.1.5.g** The use of magnesium is not permitted in moving parts.
- 1.1.5.h** The use of any ceramic component is forbidden.
- 1.1.5.i** Internal and/or external spraying or injection of water or any substance whatsoever is forbidden (other than fuel for the normal purpose of combustion in the engine).

**1.1.5.j** The use of carbon or composite materials is restricted to clutches and non-stressed covers or ducts.

**1.1.5.k** Only a direct mechanical linkage between the throttle pedal and the engine load control device is permitted.

**1.1.5.l** All supercharged cars must be fitted with a restrictor fixed to the compressor housing. All the air necessary for feeding the engine must pass through this restrictor, which must respect the following:

The maximum internal diameter of the restrictor is 45 mm. This must be maintained for a minimum distance of 3 mm measured downstream of a plane perpendicular to the rotational axis situated at a maximum of 50 mm upstream of a plane passing through the most upstream extremities of the wheel blades (see current FIA Appendix J FIA drawing

254-4). This diameter must be complied with, regardless of the temperature conditions. The external diameter of the restrictor at its narrowest point must be less than 51mm and must be maintained over a distance of 5 mm to each side. The mounting of the restrictor onto the turbocharger must be carried out in such a way that two screws have to be entirely removed from the body of the compressor, or from the restrictor, in order to detach the restrictor from the compressor. Attachment by means of a needle screw is not authorised. For the installation of this restrictor, it is permitted to remove material from the compressor housing, and to add it, for the sole purpose of attaching the restrictor onto the compressor housing. The heads of the screws must be pierced so that they can be sealed. The restrictor must be made from a single material and may be pierced solely for the purpose of mounting and sealing, which must be carried out between the mounting screws, between the restrictor (or the restrictor/compressor housing attachment), the compressor housing (or the housing/flange attachment) and the turbine housing (or the housing/flange attachment) (see FIA drawing 254-4).

**1.1.5.m** In case of an engine with two parallel compressors, each compressor must be limited to a maximum internal intake diameter of 32mm (internal diameter), 38 mm for the external diameter.

**1.1.5.n** The exhaust gases from the waste-gate must exit into the vehicle's exhaust system and must not be recycled in anyway. Furthermore, there must be no connection between the intake and exhaust systems

**1.1.5.o** Water injection is prohibited, even if it originally exists on the homologated block. Spraying of the intercooler is prohibited.

**1.1.5.p** Supercharged cars must not be equipped with any device which allows the boost pressure, or the electronic management system controlling the boost pressure, to be adjusted by the driver while the car is in motion (except the throttle pedal).

**1.1.5.q** Ceramic components, variable diameter inlets and adjustable internal vanes on turbochargers are forbidden

**1.1.5.r** Cars with forced induction will be subject to a coefficient of 1.7:1 as per current Motorsport UK Yearbook Regulation J 5.4.1

**1.1.6 TRANSMISSION.**

**1.1.6.a** The operating method and the design of the system are free except as below.

**1.1.6.b** Traction control is prohibited.



**1.1.6.c** Conversion to four-wheel drive is permitted.

**1.1.6.d** Front and rear limited slip differentials must be mechanical. Active differentials are not permitted. Mechanical limited slip differential means any system, which works purely mechanically, i.e. without the help of a hydraulic or electric system. A viscous clutch is not considered to be a mechanical system.

**1.1.6.e** In the case of a 4-wheel drive vehicle, the addition of a hydraulic system or a viscous clutch to the central differential is allowed; in order to limit the slip, but this system must not be adjustable when the vehicle is in motion.

**1.1.6.f** Any sensor, contact switch or electric wire on the four wheels, gearbox or front, middle or rear differentials are forbidden. Only one sensor for displaying the ratio engaged is authorised on the gearbox, on condition that the sensor/electric wire/display assembly is completely independent of the engine control system.

**1.1.6.g** A maximum of two wires are permitted to the centre differential to power an electric oil pressure pump, provided that the wires serve no other purpose, and the differential is standard equipment for the make and model of vehicle. The system must not be adjustable when the car is in motion.

#### **1.1.7 SUSPENSION and STEERING.**

**1.1.7.a** Cars must be fitted with a sprung suspension.

**1.1.7.b** The operating method and the design of the suspension system are free.

**1.1.7.c** Front axle - Modifications to the shell (or chassis) are limited to:

- i) the reinforcement of the existing anchorage points,
  - ii) the addition of material for the creation of new anchorage points,
  - iii) the modifications necessary to provide clearance for suspension components, drive shafts, and wheel and tyre.
- The reinforcements and addition of material must not extend further than 100 mm from the anchorage point.

**1.1.7.d** With the exception of subframes connecting the front to the rear, the front subframe is free as regards the material and the shape, provided that:

- i) it is interchangeable with the original part and that the original number of anchorage points remains unchanged.
- ii) it can be dismantled (no welding).

**1.1.7.e** Moving the anchorage points of the subframe is allowed provided that they are situated inside the new tunnel (see current FIA Appendix J article 279 3.2.2).

**1.1.7.f** Rear axle - Modifications to the shell (or chassis), to accommodate the changed position of pivot and mounting points, are limited to those in FIA drawing 279-1.

**1.1.7.g** The springing medium must not consist solely of bolts located through flexible bushes or mountings but may be of fluid type.

**1.1.7.h** There must be movement of the wheels to give suspension travel in excess of any flexibility in the attachments.

**1.1.7.i** The use of active suspension is forbidden.

**1.1.7.k** Chromium plating of steel suspension members is forbidden.

**1.1.7.l** All suspension members must be made from a homogeneous metallic material.

**1.1.7.m** Hydro-pneumatic suspension systems are permitted, on condition that they do not have active control.

**1.1.7.n** Quick release steering wheels are mandatory. The quick release device must be coloured YELLOW.

They must also carry a yellow "Q" of at least 80mm diameter on a red background, located at the centre of the base of the windscreen, adjacent to the electrical circuit breaker and fire extinguisher triggering points

#### **1.1.8. BRAKES.**

**1.1.8.a** The operating method and the design of the system are free except as below.

**1.1.8.b** There must be a double circuit operated by the same pedal and complying with following:

**1.1.8.c** The pedal shall normally control all the wheels.

**1.1.8.d** In case of a leakage at any point of the brake system pipes or of any kind of failure in the brake transmission system, the pedal shall still control at least two wheels.

**1.1.8.e** Anti-lock brake systems are not permitted.

**1.1.8.f** The brake discs must be made from ferrous material.

**1.1.8.g** A handbrake is mandatory it must be efficient and simultaneously control the two front wheels or the two rear wheels.

**1.1.8.h** Fluid tanks are forbidden inside the cockpit.

#### **1.1.9 WHEELS.**

**1.1.9.a** The complete wheel (flange + rim + inflated tyre) must always fit inside a U-shaped gauge of which the extremities are 250 mm apart, the measurement to be made on an unloaded part of the tyre.

**1.1.9.b** The diameter of the rim is free but may not exceed 18".

#### **1.1.10. TYRES.**

**1.1.10.a** Tyres are free provided they comply with 1.1.9, subject to Championship regulations.

**1.1.10.b** Hand-cutting is permitted but only for the purpose of introducing additional grooves no deeper than those moulded into a new tyre. Hand cutting in order to increase the depth of existing moulded grooves is prohibited.

#### **1.1.11. ELECTRICS.**

**1.1.11.a** The nominal voltage of the electrical system including that of the supply to the ignition of the "original" car must be retained.

**1.1.11.b** Relays, circuit breakers, fuses and cables are free.

**1.1.11.c** A red rear warning light complying with current Motorsport UK Yearbook regulation K5 must be fitted

**1.1.11.d** The make, number and capacity of the batteries are free

**1.1.11.e** Have any wet batteries in the drive/passenger compartment enclosed in a securely located leak-proof container capable of retaining any leaked acid and protecting the terminals from short circuiting and producing sparks.

**1.1.11.f** All lights may be removed but all cars must be equipped with two rear lights of the anti-crash type as used in fog with the minimum of 15 watts each and illuminating an area of 60 sq. cm. These must work with or replace the car brake light system at all times and must be between 115cm and 150 cm above the ground and must be clearly visible from behind.

**1.1.11.g** Generators are optional but the self-starter system must be operable at all times



**1.1.11.h** Starting the car: Cars must be equipped with an electrical energy source to enable the driver to start the engine when normally seated with seat belts fastened.

**1.1.12 WEIGHT.**

**1.1.12.a** At all times the minimum weight of the car with driver (wearing full racing apparel) will be: 1300kg

**1.1.12.b** Cars with forced induction will be subject to a coefficient of 1.7:1 as per current Motorsport UK Yearbook Regulation J5.4.1.

**1.1.13 FUEL TANK and FUEL.**

**1.1.13.a** If a non-original tank is fitted, it must be a safety tank homologated by the FIA (minimum FT3 1999 specification) in accordance with the specifications of current FIA Appendix J Article 253 Article 14.

**1.1.13.b** The tank, the catch tank (buffer box), the pumps and all component of the fuel feed system shall be located at least 30 cm from the body shell in both lateral and longitudinal directions, outside the driver's compartment.

**1.1.13.c** In all cases, the tank, including the filler pipe must be isolated by a firewall or by a container, both of which shall be flameproof and fire-resistant, preventing any fuel from infiltrating the cockpit and any contact with the exhaust pipes.

**1.1.13.d** Should the fuel tank be installed in the boot and the rear seats removed, a fireproof and liquid-proof bulkhead must separate the cockpit from the fuel tank.

**1.1.13.e** In the case of twin-volume cars, it will be possible to use a non-structural partition wall in transparent, non-flammable plastic between the cockpit and the tank arrangement.

**1.1.13.f** The tanks must be protected effectively and securely attached to the shell or the chassis of the car.

**1.1.13.g** The use of safety foam in tanks is recommended.

**1.1.13.h** All the fuel pumps must operate only when the engine is running, or during the starting process.

**1.1.13i** Only use Pump fuel as defined in 2019 Motorsport UK Blue Book "Nomenclature and Definitions"

**1.1.13j** The requirements of J5.13.7. must be complied with.

**1.1.13k** Have sufficient fuel for a fuel test present at any time during the meeting to comply with the fuel sampling requirements as laid down in the Motorsport UK year book D34.1 Procedure for fuel testing.

**1.1.14 EXHAUST and SILENCING.**

**1.1.14.a** Exhausts systems must comply with the current Motorsport UK Yearbook regulations J5.16 and J5.17

**1.1.14.b** All exhaust gasses including wastegate outlet must pass through the main exhaust system.

**1.1.14.c** All cars MUST adhere with a 100db limit. Failure to comply to this rule will mean an immediate black flag from any practice, heat or final and could result in exclusion from the meeting/event.

(Certain event may have an increased dB limit this will be notified in the SR).

**1.1.14.d** All cars are NOT permitted to use an anti-lag system on their vehicle

**1.1.15 Telemetry / Voice communications**

**1.1.15a** Any form of wireless data transmission between the vehicle and any person and/or equipment (other than that required by the time keepers) is prohibited while the car is on the track.