



## 2017 BTRDA AUTOSPORT INTERNATIONAL CLUBMAN'S RALLYCROSS CHAMPIONSHIP

### Appendix 2a Production 4x4 Technical Regulations

#### 5.5.1 INTRODUCTION.

The following Technical Regulations are set out in accordance with the MSA 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.

**5.5.1.a** Production 4x4 cars are 4-wheel drive four seater cars that must meet the definition of a series production car as set out in MSA Nomenclature and Definitions.

The class is for cars that are, or have been available on general sale to the public.

**5.5.1.b** Competitors should be aware that the organisers intend to develop this class in future years, which may include restricting modification from standard parts. Therefore, before making any modifications from standard competitors should advise the championship coordinator on a confidential basis.

#### 5.5.2 GENERAL TECHNICAL REQUIREMENTS AND EXCEPTIONS.

**5.5.2.a** Cars must comply with the Technical Regulations published by the Organisers for the event throughout official practice, qualifying heats and finals.

**5.5.2.b** All cars must comply fully with the current MSA Yearbook sections; J, K, and N.6.1 to N.6.14.3. and these supplementary regulations.

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

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

#### 5.5.3 SAFETY REQUIREMENTS.

**5.5.3.a** Minimum, all cars must comply fully with the 2017 MSA Blue Book sections J, K, and N.6.1 to N.6.14.3 as appropriate. Double longitudinal door bars must be fitted to the driver's side of the roll cage in accordance with Section K Appendix 2 Drawing No 12(g) or 12(h).

In addition:

**5.5.3.b** Seats must comply with N6.13.6.

**5.5.3.c** Seat Belts minimum requirement; complying with N6.12.2.

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

**5.5.3.e** A fire extinguisher MUST be fitted; the minimum specification must be to current MSA Regulations. (K3.1.2. (b) or (c) not necessarily plumbed in)

**5.5.3.f** In addition to the minimum apparel standards set out in MSA General Regulations the following are highly recommended:

- i) FHR devices
- ii) fireproof gloves

iii) fireproof underwear

iv) fireproof balaclava

#### 5.5.4 CHASSIS and BODYWORK.

**5.5.4.a** The standard body shell MAY NOT be strengthened except for the following: -

i) The fitting of the roll cage as 5.5.3.a & b

ii) The reinforcing of the standard suspension mounting points may NOT extend to more than a radius of 100mm from the centre of the suspension point.

iii) To prolong the life of the body shell it is permitted to carry out seam welding.

**5.5.4.b** The exterior of the car MUST remain as standard including mirrors, door handles and bumpers, although it is permitted to remove body mouldings, badges and the radio aerial.

It is permitted to fit guards to engine sump and fuel tank. Any guards may protect but NOT strengthen.

It is NOT permitted to reinforce the bumpers or their mountings.

**5.5.4.c** Glass sunroofs MUST be replaced as per MSA Yearbook Regulation Q19.14.6.

**5.5.4.d.** 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.

**5.5.4.e** The interior of the car MUST have the roof lining, carpets and all the seats, apart from the driver's (See 5.5.3.c), removed. It is also required that any audio equipment, spare wheel, tools and standard seat belts be removed. It is permitted to remove the door trim panels and the window regulators (the windows must then be fixed to prevent them opening). It is recommended that trim panels are replaced by aluminium or Kevlar panels.

**5.5.4.f** An interior mirror of a minimum of 50 sq. cm. MUST be fitted. The original dashboard MUST be retained although instruments may be replaced.

Dashboard may be modified to allow fitment of roll cage.

**5.5.4.g** Racing type bonnet and boot lid clips can be used

#### 5.5.5 ENGINE.

**5.5.5.a** The engine must be as originally fitted as original equipment to the car and be in the original location. Maximum engine capacity is 2000cc.

**5.5.5.b** Pistons must be unmodified standard production or approved replacement pistons subject to a maximum oversize of +0.5mm. (even if this increases the capacity beyond 2000) Competition pistons are prohibited. Stroke must comply with Manufacturer's original specification. Material may be removed from the skirt area only for balancing purposes. In this case ONE piston must remain unmodified.

**5.5.5.c** Lightening of crankshaft or con rods is prohibited. Balancing may be carried out by pin drilling only.



**5.5.5.d** Camshaft must be standard as originally supplied for type of engine used. It may not be machined or reprofiled. Original timing gear must be used. Offset keys or adjustable vernier drives may not be used, unless fitted to the original engine.

**5.5.5.e** Cylinder head must be standard as originally fitted to the type of engine used. No gas flowing or polishing is allowed. The original terrain must be visible in the inlet & exhaust ports and in combustion chambers. Heads may be skimmed for maintenance purposes only and may not be less than Manufacturer's minimum dimension.

**5.5.5.f** Competition flywheels are not permitted. The standard unit may not be lightened or machined.

**5.5.5.g** It is permitted to baffle the standard sump and modify the oil pick up pipe. Dry sumping is not allowed.

**5.5.5.h** It is permitted to fit an oil cooler within the engine compartment.

**5.5.5.i** It is permitted to remove/replace the original air filter and filter housing with a performance filter or induction kit. Where engine breather pipes cannot be refitted to the induction system, breather pipes must go to a breather catch tank of adequate size. It is permitted to change carburettor jets or injectors.

It is NOT permitted to modify the inlet manifold system including the throttle mechanism, carburettor, fuel pressure regulators, and throttle body apart from fitting an additional external throttle spring

**5.5.5.j** The standard ignition/engine management system MUST be retained but it is permitted to fit a modified "chip", and ECU may be re-mapped subject to restrictions in these regulations. Secondary/Piggy Back ECU systems are NOT permitted. Rev. limiters may be fitted or removed. Spark plugs and ignition leads are free. It is NOT permitted to add additional ignition systems. The ignition system must not perform any functions not intended by the manufacturer. 3D Management systems are not permitted.

**5.5.5.k** All water radiator and hoses are free but the original radiator location MUST be retained. Heater may be removed and pipe work blanked off or linked together in the engine compartment.

**5.5.5.l** To allow for scrutineers seals at least two adjacent sump bolts and two adjacent rocker/cam cover bolts must have suitable sized holes drilled.

**5.5.5.m** Forced induction and turbo must be as standard for make and model.

**5.5.5.n** The inductions system including turbo intercooler and pipework must remain as standard for make and model.

**5.5.5.o** Anti lag systems are not permitted.

#### **5.5.6 TRANSMISSION.**

**5.5.6.a** The standard gearbox casing and all internals MUST be retained except as permitted in 5.5.6.a.(i). Gear ratios & final drive ratios must be the same as originally supplied for that make and model of car.

5.5.6.a.(i) A 5-speed gearbox may be replaced by a 6-speed gearbox (and vice versa) from the same manufacturer.

**5.5.6.b** 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.

**5.5.6.c** All forms of traction control are prohibited.

- All sensors on the wheels, drive shafts and differential are prohibited.

- In order to measure the speed of the car, a single sensor on one driven wheel may be used.

- Whatever their positions, optical sensors for measuring the speed of the vehicle are prohibited.

**5.5.6.d** Standard drive shafts must be retained.

**5.5.6.e** The clutch drive plate and cover may be up rated by a standard pattern type. It must fit without any modification to the flywheel. Friction material is free providing it is to the original configuration.

**5.5.6.f** 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.

**5.5.6.g** 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.

**5.5.6.h** 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.

#### **5.5.7 SUSPENSION and STEERING.**

**5.5.7.a** It is permitted to fit non-standard shock absorbers and springs provided that they mount onto the body at the standard suspension mounting points. Any shock absorber units may only have a single method of damping adjustment. Multi-adjustable and/or remote reservoir types are prohibited

**5.5.7.b** The ride height may be altered. Adjustable spring platforms are permitted

**5.5.7.c** It is permitted to fit up rated bushes to the suspension (No rose type joints permitted)

**5.5.7.d** It is permitted to fit, remove or up rate anti-roll bars. (No rose type joints permitted)

**5.5.7.e** It is not permitted to have adjustable suspension geometry. I.E. Camber, Caster unless fitted as standard to the original car, the car MUST retain the type of suspension fitted as original equipment. Camber must at all times be no more than 1 degree more or less than the original manufacturers specified figure. Competitors must be able to provide manufacturers data to prove the original camber of their car.

**5.5.7.f** Strut braces are permitted and their design and material are free, but they must not connect to any part of the front bulkhead.

**5.5.7.g** The steering lock must be removed.

#### **5.5.8 BRAKES.**

**5.5.8.a** The standard braking system must be retained this includes handbrake.

**5.5.8.b** Friction material is free.



**5.5.8.c** Standard pattern after market ferrous discs and drums may be used.

**5.5.8.d** It is permitted to use cross-drilled or grooved brake discs/drums if fitted as original equipment.

**5.5.8.e** Brake lines may be re-routed. It is recommended that flexible braided brake lines be installed.

**5.5.8.f** It is permitted to replace/add a brake pressure limiting valve. Any such valve must not be able to be adjusted by the driver while driving the car. It must comply with MSA Yearbook Regulation N6.8.2.

**5.5.8.g** It is permitted to remove or deform brake back plates and add additional ducting to aid brake cooling.

**5.5.8.h** ABS Braking systems must be removed

#### **5.5.9 WHEELS.**

**5.5.9.a** Wheels MUST retain standard diameter and offset and be of maximum rim width of 5.5", unless the standard rim width of the model is greater. Nonstandard wheels may be fitted but standard diameter and offset must be retained.

**5.5.9.a(1)** Where a control tyre of correct dimension is not made, the organisers may, at their discretion authorise a wheel with a different diameter and/or width.

**5.5.9.b** Have all nuts securing road wheels, excepting those of centre-lock type, of steel and in thread contact over a minimum length of 1.5 bolt/stud diameters reference N.6.9.1. Extended or composite wheel bolts/studs are prohibited. Safety wheel nuts to prevent wheels pulling over the standard nuts are strongly recommended.

#### **5.5.10 TYRES**

**5.5.10.a** Free

**5.5.10.b** Tyre restrictions may be introduced in 2017.

**5.5.10.c** The use of tyre heating/heat retention devices, tyre treatments and compounds are prohibited.

**5.5.10.d** No alteration to the tyre from the manufacturer's specification is permitted.

**5.5.10.e** Re-cutting, re-grooving or in any way modifying the tread pattern is not permitted.

**5.5.10.f** All the manufacturer's data must be clearly visible. Buffing of the sidewalls to remove data is prohibited.

#### **5.5.11 ELECTRICS.**

**5.5.11.a** Only one battery may be fitted. The type of battery is free but it must be sealed and can be located anywhere within the vehicle in accordance with J5.14.1.

**5.5.11.b** The battery must be capable of repeatedly starting the engine at any time when requested.

**5.5.11.c** It is recommended that all lights are removed and similar shaped covers are fitted to the resulting holes.

**5.5.11.d** Two high-level brake lights MUST be fitted to the inside of the rear window in accordance with the MSA yearbook regulation N6.7.2.

**5.5.11.e** A high intensity rear light must be fitted in accordance with MSA Yearbook regulations K5.

**5.5.11.f** Both charging and starting circuits must be as standard and function efficiently.

#### **5.5.12 WEIGHT.**

**5.5.12.a** It is not permitted to lighten the vehicle unless specifically permitted in these regulations.

**5.5.12.b.** Minimum weight is 1300kg.

**5.5.12.c** Further weight limits may be introduced in 2017 based upon data collected during the season.

#### **5.5.13 FUEL TANK and FUEL.**

**5.5.13.a** Be equipped with an effective method of stopping the fuel supply that can be operated by the driver when normally seated with seat belts secured

**5.5.13.b** The fuel pump, filter and fuel lines are free.

**5.5.13.c** Cold start systems may be disconnected or removed.

**5.5.13.d** Only Pump Fuel as defined in section B of the MSA yearbook is permitted

**5.5.13.e** The original fuel tank may be replaced by another provided it is located in the original location

**5.5.13.f** If the fuel tank is located inside the car, a safety, currently FIA homologated, FT3 type must be fitted if the standard tank is not used.

**5.5.13.g** An alloy fuel tank, maximum capacity 5 litres, fitted with fuel tank foam may be fitted inside the engine compartment.

#### **5.5.14 EXHAUST and SILENCING.**

**5.5.14.a** The standard exhaust manifold MUST be retained.

**5.5.14.b** The exhaust system beyond the existing manifold is free but it MUST exit from the rear of the car.

**5.5.14.c** Exhaust gas re-circulatory systems may be removed.

**5.5.14.d** Exhaust manifold must remain a complete component

**5.5.14.e** It is not permitted to fit a temperature sensor to the exhaust manifold to monitor exhaust gas temperature

**5.5.14.j** 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.

#### **5.5.15 PERFORMANCE EQUALISATION**

**5.5.15.a** This class is aimed at cost effective and competitive racing. The organisers reserve the right to equalisation performance of vehicles during the season. Such equalisation may by any means, but may include turbo restrictors, weight limits and time penalties. Any such equalisations will be notified to competitors by official bulletin.