



## 2024 BTRDA CLUBMAN'S RALLYCROSS CHAMPIONSHIP

### Appendix 2a

### Modified 4x4 Technical Regulations

#### 5.5.1 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.

It should be clearly understood that unless a modification or removal/change of an item is specifically permitted by these regulations, that any modification or removal/change or repositioning of an item is prohibited. The provision of evidence to determine eligibility is the responsibility of the entrant/driver.

Modified 4x4 will be comprised of **three** classes:

1. **Production 4x4 up to 2000cc as defined by the regulations below**
2. **Production 4x4 2001 - 2500cc as defined by the regulations below**
3. **BMW Mini All 4 as defined by the BMW Mini All 4 Regulations, as published by the BTRDA (see appendix 2B)**

#### Production 4X4

**For the purposes of these regulations;**

The term 'make' refers to the manufacturer of the vehicle.

The term 'model' refers to the product ONLY. It does not refer to the model variants, trim level or specification.

As per the Motorsport UK yearbook, the term **standard** implies that the specification, features, location and method of operation of a part are as supplied when new by the motor manufacturer for the model and date of car as shown on the entry form.

**HOMOLOGATION SPECIALS OR MANUFACTURER 'SPECIAL EDITIONS' WHEREBY THE NUMBER OF CARS PRODUCED IS LESS THAN 1000 ARE NOT PERMITTED.**

Eligibility reference for any parts or assemblies is by reference to manufacturer's official publications, the relevant Haynes manuals, **Manufacturers original repair manual** and Autodata Workshop Application ONLY.

**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 Motorsport UK

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 Motorsport UK 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 2024 Motorsport UK Blue Book sections J, K, and N.6.1 to N.6.15 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 and N6.13.6.1 and K2.2 to K2.2.3 inclusively. As per the Motorsport UK Yearbook Section N6.13.6 it is mandatory for all seats to be FIA homologated. As per N6.13.6.1 FIA homologated seats manufactured to FIA Standard 8855-1999 may be used for up to two years beyond the expiration of the original homologation label validity. FIA homologated seats manufactured to FIA Standard 8862-2009 may be used until 31st December of the year stated on the label. The seat must be entirely mounted to one side of the vehicle's centreline.

**5.5.3.c** Seat Belts minimum requirement; complying with K2.1 and K2.1.3.

**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 Motorsport UK Regulations. (K3.1 or K3.2 minimum)

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

**5.5.3.g.** If the engine/motor(s) is run with the drive engaged whilst the vehicle does not have any of the driven wheels in direct contact with the ground the vehicle must be securely supported on stands (not jacks) and:

a) a competent person must be in the driver's seat while the engine/motor(s) is running and

b) there must be a safe zone around the car with only essential personnel admitted while the engine/motor(s) is running and

c) each driver/entrant is responsible for controlling and managing the above obligations within their own paddock space and for briefing their own personnel on all matters of safe work practices.

#### **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 Motorsport UK Yearbook Regulation N.7.1.14 and Q.13.10.6.

**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. Windows must remain in a fixed upright position.

**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 aluminum 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 carburetor jets or injectors.

It is **NOT** permitted to modify the inlet manifold system including the throttle mechanism, carburetor, 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/Piggyback 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 scrutineer's 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, model, and engine size.

**EXCEPTION:** The turbo may be replaced for a TD04 model.

**5.5.5.n** The induction system including, airbox, turbo, intercooler and pipework must remain standard for make, model, and engine size.

**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.

The only exception to this is as per 5.5.6.b.i as below

**5.5.6.b.i)** Haldex systems:

Haldex systems are permitted with the rulings below. The system MUST have a programmed controller fitted that is set prior to an event. The term 'programmed' controller means it is using a pre-determined setting for power split per axle and not actively changing. Controllers that respond to throttle traces are NOT permitted.

ABS Sensors must be removed to disable the road Haldex operating system (One speed sensor may remain for speed monitoring)

This controller must be out of reach of the driver so adjustments cannot be made during competition.

At any time, the drive to the rear axle may not exceed 50% torque.

**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.



5.5.8.a(i) The original handbrake must be retained and be operational. In addition, a secondary, handbrake may be fitted.

5.5.8.b Friction material is free.

5.5.8.c Standard pattern aftermarket ferrous discs and drums may be used.

5.5.8.d Subject to 5.5.8.c, discs are free subject to a maximum diameter of 295mm.

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 Motorsport UK 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.

5.5.9.c Wheels spacers are prohibited.

#### 5.5.10 TYRES

5.5.10.a The controlled tyre manufacturer will be MRF Tyres. The **only** permitted tyre for use is the MRF branded MRF 'ZTR' RX tyre. Tyres must be purchased from Waltham Services – these tyres will be stamped to prove place of purchase and this will be monitored. Non-compliance will be considered a breach of the technical regulations.

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 Motorsport UK yearbook regulation N6.7.2.

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

5.5.11.f Both charging and starting circuits must be 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 for any unlisted vehicle is 1250kg.

Mitsubishi Evo VI – 1400kgs

First Generation Subaru Impreza (including WRX) – 1200kgs

Second Generation Onwards, Subaru Impreza (including WRX) – 1250kgs

Nissan Pulsar – 1250kgs

These weights will be reviewed throughout 2024 and may be amended for 2025.

5.5.12.c As the class is aimed at inexpensive and competitive racing BTRDA reserves the right to equalise performance by altering specific vehicle weights. A maximum of 30kg may be added at any time. Where this regulation is enforced the weight established will be published in a Championship Bulletin issued prior to the next event.

#### 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 Motorsport UK 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

**5.5.15 PERFORMANCE EQUALISATION**

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

**5.5.16 Eligibility Scrutineering Requirements**

**5.5.16.a** All cars **MUST** have the following studs, nuts and bolts drilled to enable seals to be affixed. Drillings must be of at least 3mm diameter. Failure to have the following drilled is deemed to be a breach of vehicle eligibility:

- (i) at least two adjacent rocker cover fastenings so it is impossible to remove the head without disturbing the seals; and
- (ii) at least two adjacent bolts connecting the gearbox to the engine block, so it is impossible to separate the gearbox from the engine without disturbing the seals.
- (iii) Sealing points should be available so that it is impossible to open / remove / change any part of the gearbox without disturbing the seals.

**5.5.16.b** The event organisers, and/or the Championship eligibility scrutineer / his representative reserve the right to make random eligibility checks and subsequently seal any parts for later inspection at any Championship round. Any components which are sealed, at any point in the Championship, will be checked within 50 days of the final round (subject to any extenuating circumstances which may result in a deadline extension being sought from Motorsport UK). All eligibility testing costs are borne by the competitor. It is a condition of entering the Championship that the competitor will submit any component and/or for sealing and later inspection when requested to do so.

**5.5.17 Telemetry / Voice communications**

**5.5.17.a** Any form of wireless data transmission between the vehicle and any person and/or equipment (other than that required by the timekeepers) is prohibited while the car is on the track. Pit to car radio by any means, including the use of mobile phones, whilst on track is not permitted.

**5.5.17.b** Data transmission through a temporary physical connection is allowed in the paddock only.