

116i RALLYE SERIES

Sporting and Technical Regulations

BMW 116i (E87)

Issued in accordance with Motorsport UK and FIA National Competition Rules (NCR)

This document supersedes all previous versions of the 116i Rallye Trophy Regulations.

1. SERIES REGULATIONS

1.1 Title and Jurisdiction

The Series is titled the 116i Rallye Series (“the Series”) and is organised in accordance with the Motorsport UK National Competition Rules (NCR), the applicable FIA regulations, and these Series Regulations.

1.2 Series Status

Permit number: [TBC]

Series grade: Club

Event type: Stage Rally

1.3 Series Officials

Series Co-ordinator: Graham Tatham +44 (0) 7809 119082

Eligibility Scrutineer: Bob Backmore

Series Stewards: [TBC]

1.4 Competitor Eligibility

Competitors/Drivers must hold valid driving licence and a current Motorsport UK Stage Rally Competition Licence and must be registered for the Series. Co-drivers must hold an appropriate and current competition licence.

1.5 Registration

All competitors must complete Series registration before participating in any round. A registration fee is payable.

1.6 Series Events

The Series is contested over asphalt (tarmac) events, as set out in the event schedule at Annex. The number of results counting towards the final Series standings will be defined for each season and published in advance.

1.7 Points Scoring

Points are awarded to overall finishers as follows:

- 1st – 25 points
- 2nd – 22 points
- 3rd – 20 points

Points for subsequent finishing positions descend in accordance with the published Series points table.

1.8 Awards

Awards are presented for 1st, 2nd and 3rd place overall in the Series, together with such additional category awards as may be published for that season.

2. SPORTING REGULATIONS

2.1 Entries

Entries must be submitted to the organiser of each event. Current Series registration is mandatory before an entry can be accepted.

2.2 Scrutineering

All vehicles must undergo pre-event scrutineering and may in addition be subject to post-event checks at the discretion of the organisers or the Eligibility Scrutineer.

2.3 Rally Format

Events are run in accordance with the Motorsport UK Stage Rally format, as set out in the current NCR.

2.4 Conduct

All competitors must at all times adhere to Motorsport UK standards of conduct and to the Race With Respect code.

2.5 Penalties

Breaches of these Regulations may result in time penalties, deduction of Series points, or disqualification, at the discretion of the Clerk of the Course, the Series Stewards, or the Eligibility Scrutineer as appropriate.

3. TECHNICAL REGULATIONS – BMW 116i (E87)

3.1 Introduction

These Technical Regulations are set out in the format specified by Motorsport UK. They must be read on the basis that if a modification is not explicitly permitted by the following text, it is prohibited – the fact that certain modifications are expressly stated to be prohibited does not imply that any modification not mentioned is therefore permitted.

The Series is designed to prioritise driver and co-driver skill, reliability and affordable competition. It is not a development formula: if a modification is not described in these Regulations, it is not permitted.

References in these Regulations to the NCR (National Competition Rules) are to the publication previously known as the Motorsport UK Yearbook/Blue Book.

Standard: Where the word ‘standard’ is used in these Technical Regulations to describe a component, it is to be interpreted as ‘Standard Part’, as defined in NCR Chapter 1, Appendix 1. No modification is permitted beyond the repair or adjustment processes specifically described in the manufacturer’s workshop manual or microfiche. Compliance will be checked by comparison against parts supplied by the manufacturer’s official agent, or by any other means the Eligibility Scrutineer considers necessary. Where specifications for parts (for example camshaft, final drive or gear ratios, anti-roll bars) are stated in these Regulations, those specifications are mandatory for this make and model.

Standard pattern: Where the words ‘standard pattern’ is used, they are to be interpreted as ‘Standard Pattern Part’, as defined in NCR Chapter 1, Appendix 1. Compliance will be checked as described above.

Homologation papers, including VO, VK or ES extensions, are not accepted as proof of the specification of any component.

3.2 General Description

The Series is open to the BMW E87, 5-door, 5-speed, 1596cc (N45 engine) model. Only UK and European domestic-market vehicles of model years 2004–2013 are eligible. There is no restriction on how a car is transported to or from an event. All cars compete in a single class; non-scoring ‘Invitational Cars’ may be admitted at the discretion of the Series Co-ordinator.

These Technical Regulations are intended to allow competitors to build competition cars that are safe, affordable, and of near-identical performance, with emphasis placed firmly on driver ability. Competitors should bear this in mind when building or modifying a car and are encouraged to seek guidance from the Series Co-ordinator where in doubt. A modification that offers a performance advantage at high financial cost will almost certainly be found illegal or may be prohibited in future revisions of these Regulations.

3.3 Examination of Vehicles

In addition to any other powers available to them under these Regulations, the organisers reserve the right, before or after any round of the Series, to select any competing car for special eligibility scrutineering. Competitors must be prepared, with tools and spare parts as necessary, to permit inspection of components, or to have units sealed at the venue for later inspection by the Eligibility Scrutineer at the competitor’s expense.

Once selected, the competitor must immediately place the car under the control of the organisers, and is deemed to have consented to all scrutineering, examination and testing that the organisers may reasonably require. The organisers have the right to:

- examine the car at the venue for such period as they reasonably require, and take fuel samples;
- retain the car for detailed examination at premises of the organisers’ choosing. Where the car is retained, it will be made available for collection by the competitor at least seven days before the next Series round, unless it is found to be in breach of these Regulations;
- seal the car, or any of its components, and require the competitor – at their own expense – to present the car at other premises for detailed examination within a specified period or remove the car by transporter at no expense to the competitor to an appointed location. The competitor will be notified in writing of the time, date and location of any subsequent testing or examination. Any overseen stripping of the engine or other component will be carried out by the competitor and/or a mechanic or technician nominated by the competitor;
- require the removal of any part for further inspection and testing. If a part is retained for inspection over a race weekend, the scrutineer will provide a fully eligible replacement part at the time of removal, so the competitor can continue to compete.

The colour scheme of any car is free, but the car must be presented in good, clean condition; any damage sustained must be made good cosmetically to the Series’s satisfaction before the next event, failing which the car will be considered non-compliant. All decals must be affixed as per the issued decal sheet; a car not carrying all required decals will be considered non-compliant.

3.4 Safety Requirements

All entrants, competitors and their vehicles must comply with the relevant articles of NCR Chapters 7 and 9.

Roll cages: Only 6-point roll cages authorised by 116 Racing Ltd are permitted (see Annex).

Extinguishers: Must comply with NCR Chapter 7, Appendix 6, Article 1.

Seat belts: Must be FIA-homologated and fitted in accordance with NCR Chapter 7, Appendix 7.

3.5 General Technical Requirements and Exceptions

All cars must comply with the current NCR Chapter 7 and NCR Chapter 12, Appendix 13. All vehicles must be of sound construction and mechanical condition and be well maintained.

Water and oil hoses, and their associated clips, are free. Fasteners (for example nuts and bolts) are free. Rose joints of any type are prohibited, except where fitted to mandatory items.

The organisers reserve the right to refuse entry to any car whose preparation – including external appearance – is of a standard likely to bring the Series into disrepute.

3.6 Chassis

No chassis stiffening is permitted, other than that which results from fitting the roll cage.

Seam welding is strictly forbidden.

Cutting, grinding, drilling or acid-dipping to remove components or material from the chassis is strictly forbidden, as is any alteration to the standard thickness of the shell by dipping or sandblasting. Seam sealer may only be removed within 50mm of the periphery of a roll cage mounting foot; removal of seam sealer from any other part of the shell, interior or exterior, is forbidden.

Towing eyes must be fitted front and rear, with a minimum internal diameter of 60mm (the towing eye may be of rigid or flexible material, bolted to the chassis). One hole per tow strap is permitted in each of the front and rear bumpers. The plastic 'jack fixture' (BMW part no. 31 11 6 761 462) fitted to the front subframe, and the four plastic 'lift supports' fitted to the sills (BMW part no. 51 71 7 237 195), may be removed.

Under-guard protection is mandatory for the sump at the front of the car and the fuel cell at the rear, fitted at the mounting points set out in the Annex. These points are for protection only and must not be used for body strengthening. Sill stand mounting sleeves are permitted.

3.7 Bodywork

3.7.1 Modifications Permitted

(a) General – Fitment of a laminated windscreen is mandatory. Door glass and the rear windscreen must be standard glass; safety film may need to be applied to the glass in accordance with the NCR. Door glass may be replaced with polycarbonate to allow the fitment of vents or NACA ducts.

(b) Interior – The occupant's OE seat must be replaced with a competition seat, fitted in accordance with NCR Chapter 7, Appendix 7, Article 2. All passenger seats, floor coverings, roof lining, sound-deadening material, radio/stereo equipment, speakers and associated wiring may be removed, as may redundant interior metal brackets such as rear seat mountings – provided that where removal of material would weaken the structural integrity of a panel, the Clerk of the Course may, at their discretion, exclude the car

from the event. The spare wheel and its associated parts, and all tools, must be removed. The rear plastic battery box may be removed and the resulting hole covered with a strong aluminium or carbon-fibre panel.

Additional instruments are permitted, but the original dash binnacle and instrument cluster must be retained and fitted in their original position. The main body of the standard dashboard must be retained and securely fitted in its original position, although localised trimming is permitted to allow fitment of the roll cage and aftermarket switchgear or pull cables. The glovebox lid must remain in place, although its hinges may be removed.

The steering wheel may be changed; if the standard wheel is retained, its airbag must be disabled. Glass sunroofs must be removed or replaced in accordance with NCR Chapter 12, Appendix 13, Article 11.8. Air conditioning may be removed if fitted, but the original heater matrix, mechanism and blower must be retained and kept in full working order.

An interior rear-view mirror (standard or non-standard) must be fitted. Rear doors may be stripped of redundant electrics and window-lifting parts. The centre console must be retained, although the armrest may be removed. Where original interior door panels are removed, they must be replaced with strong aluminium or composite sheeting, finished to a high standard with no sharp edges and a smooth surface.

Interior items permitted under Motorsport UK rally regulations are allowed, including a map light, trip meter, additional switches, and additional forward-facing lighting or other equipment classed as rally auxiliary devices.

(c) Exterior – The bonnet, front wings, front and rear bumpers, doors and tailgate must remain standard. Only pre-LCI (2004–2007) BMW E87 ES/SE and Sport bodywork is permitted; LCI bumpers, M Sport bumpers and side skirts are prohibited. Door mirrors must be fitted on both sides of the vehicle, and only standard OEM mirrors are permitted. The original number of front windscreen wiper arms and blades must be retained and kept fully functional; the rear wiper may be removed. All weather strips and channels must be retained.

The standard engine bay cover locking mechanism must be disabled; only bonnet pins may be used to secure the bonnet in the closed position. The left-hand lateral underbody shield (BMW part no. 51757059389) must be retained, to protect underside pipework. The engine undertray and plastic wheel-arch liners may be removed.

(d) Silhouette – All cars must retain the original E87 ES/SE or Sport profile. Removal of the front fog lamps is permitted. The front and rear bumpers may not be aesthetically modified in any way and must retain their standard appearance (other than localised trimming to permit fitment of towing straps). The rear bumper must retain its diffuser insert, which must not be modified in any way.

(e) Ground clearance – Ride height may be altered. No part of the bodywork, or any suspended part of the car, may at any time be below a horizontal plane 100mm above the ground, with the car in normal trim, static, and the steering set straight ahead. Scrutineers may use a 100mm gauge to check ground clearance; there is no tolerance on this measurement.

3.7.2 Modifications Prohibited

(a) General – Other than the panels described at 3.7.1(c), the exterior of the car must remain standard for the model being raced. The bodysell, and any replacement body panels, must be of the original shape, material and thickness.

(b) Interior – A full-width dashboard must be used.

(c) Exterior – It is not permitted to increase the width of a wheel arch by adding material to, or deforming, its outer face, although the inside lip may be rolled. Bonnets must remain in their normal position and, when closed, must show no non-standard gaps at any edge. Tape, sealant or any other material used to close body gaps (for example between bonnet and wing) is prohibited. No non-standard material or structure may be added to the underbody or outer floor pan.

(d) Silhouette – Any contravention of 3.7.1(d) is prohibited.

(e) Ground clearance – Any contravention of 3.7.1(e) is prohibited.

3.8 Engine

The only permitted engine is the BMW N45 B16. All internal engine parts must be original, or unmodified OEM pattern parts, for the N45 B16 (internal engine components from the N45 B20S engine are not permitted).

It is the competitor's responsibility to ensure that no prohibited modification has been made, even where they have not assembled the engine themselves. Compliance will be checked by comparison against parts supplied by the manufacturer's official agent, or by any other means the Eligibility Scrutineer considers necessary.

Maximum permitted power is 130bhp peak flywheel horsepower, (the manufacturer's stated accuracy for this equipment is $\pm 2\%$). Competitors may be required, at their own expense, to present their car at a rolling-road centre with MAHA LPS 3000 or FPS 2700 equipment.

3.8.1 Modifications Permitted

No modification is permitted beyond the repair or adjustment processes specifically described in the manufacturer's workshop manual. The engine and gearbox must remain in their standard location; lowering the engine, or moving it towards the bulkhead, is prohibited.

Replacement of the standard dual-mass flywheel with the TTV Racing aftermarket flywheel is permitted (see Appendix A) – part no. TTV5033, with crank bolts part no. 11227520706.

3.8.2 Modifications Prohibited

Any modification other than those permitted at 3.8.1 is prohibited. It is specifically prohibited to modify the cylinder head in any way, or to skim the head or rebore the cylinders. The engine block bore must not exceed 84mm, and the original 72mm crankshaft must be retained. Removal of material to lighten, or addition or removal of material to balance, any internal engine part is prohibited. Camshaft profiles and cam timing must remain as standard.

3.8.4 Oil and Water Cooling

Water radiators must remain standard; aftermarket electric cooling fans are permitted. The standard water pump and pulley must be used. An aftermarket oil pressure sender and remote cockpit gauge are permitted, with the sender fitted to the oil filter housing using the OEM blank provided.

The standard oil filter housing (BMW part no. 11427530668) may be removed and replaced with the alternative Series oil filter housing (BMW part no. 11427508966), in order to fit either the BMW heat exchanger for hot climates (part no. 11427508967) and its associated pipework, or the aftermarket take-off

plate 116T001 (available from 116 Racing Ltd to registered drivers) to fit an aftermarket oil cooler and associated pipework. No other modification to the oil system is permitted.

3.8.5 Induction Systems

The induction system must remain complete and standard. The only modification permitted is fitment of a larger-diameter BMW throttle body (part no. 13541439580, or a pattern equivalent) and its associated parts, comprising the air boot (part no. 13717555289 or pattern equivalent), mass air flow meter (part no. 13627533853 or pattern equivalent), and airbox (part no. 13717543163). All such parts must be unmodified and complete, and the standard 116i air probe must be fitted and operational. A foam or paper air filter element must be fitted and complete; the type is free, whether aftermarket or BMW part no. 13717532754. The crankcase breather may vent directly to a catch tank, and any resulting holes in the air filter housing may be blanked off.

3.8.6 Exhaust Systems

Exhaust systems must exit at the rear of the vehicle. The standard exhaust manifold and system (including catalytic converter) can be retained, the standard exhaust system can be replaced with the Klarius system (see Appendix A), which must remain unmodified. Catalytic converters must be retained, and all exhaust gases must pass through them; emissions testing may be carried out to confirm compliance.

3.8.7 Ignition Systems

The only ECU permitted is the Series-specified ECU (see Appendix A); no alternative or additional ECU is permitted. Spark plugs are free. All original engine sensors must be fitted and operational. The OBD port must remain accessible and fully functional, to permit diagnostic testing and ECU interrogation.

3.8.8 Fuel Delivery Systems

Fuel lines and the fuel filter may be replaced. Fuel pumps and the pressure regulator must be standard and unmodified. Fuel pressure testing may be carried out at any time to confirm that fuel rail pressure does not exceed production limits.

3.9 Suspension

3.9.1 Modifications Permitted

Standard BMW OEM dampers and springs may be retained; where dampers and springs are upgraded, they must be to the Series's controlled suspension kit, as set out in the Supplier Annex and Technical Annex (Appendices A and B). Standard mounting points must be retained, except that the front damper top mount may be replaced with an adjustable top mount. Shock absorbers, including coil springs, are a controlled unit with a fixed set point for the internal valving; two spring rates are specified in the Technical Annex.

Anti-roll bars must be production BMW E87 ES/SE N45 116i (2004–2006) items of the following diameter (see Appendix A): front 26.5mm; rear not applicable. Front anti-roll bar drop links are free.

It is permitted to fit E90/E92 M3 track control arms (BMW part nos. 31102283577 (LH) and 31102283578 (RH)) to allow a wider range of front negative camber, to a maximum of –4 degrees, together with E90/E92 M3 tension arms (BMW part nos. 31102283575 (LH) and 31102283576 (RH)). These may be BMW OEM or pattern parts but must be unmodified. Suspension bushes may be replaced with standard rubber OEM bushes, or any aftermarket polyurethane bush.

It is prohibited to use solid bushes, such as alloy. Rose joints are not permitted, other than on the top mounts supplied with the suspension kit. Maximum front castor and camber is set using the mandatory adjustable top mounts. It is permitted to add a gusset to the rear toe arms on the rear axle; the gusset must be welded in place per Appendix B, or manufactured to the exact drawing at Appendix B.

3.9.2 Modifications Prohibited

Modification of the suspension pick-up points is prohibited, including any alteration (including slotting) of the suspension strut mounting points on the chassis, or of the points where the suspension attaches to the front and rear subframes. The use of eccentric or adjustable control arm bushes is prohibited.

Rear castor and camber adjustment may only be set using OEM components. Front camber must not exceed 4.00 degrees negative. Front and rear strut braces are prohibited.

3.9.3 Wheelbase

The wheelbase must be standard for the model being raced; wheels must fit into the original wings, front and rear, without rolling of the arches. Brackets or tabs on the wing that hold the original plastic under-arch trims may be folded out of the way or removed. Track may only be altered by using wheels of a maximum offset of ET20; wheel spacers are prohibited.

3.10 Transmission

3.10.1 Modifications Permitted

The only permitted gearboxes are the standard 5 and 6-speed manual units as fitted to the BMW E87 N45 116i (2004–2013). Clutches may be replaced with aftermarket options but must be single plate only. The original manual gear lever may be replaced with any OEM BMW part.

The standard E87-116i differential casing must be used and must be unmodified in all respects. The Series runs a controlled limited-slip differential, as specified in the Series parts list. The crown wheel and pinion are free, but ratios must be from BMW OE parts.

3.10.2 Modifications Prohibited

The use of any aftermarket traction control device is prohibited.

3.11 Electrics

3.11.1 Exterior Lighting

Exterior lighting must be as per standard fitment and fully operational, including the reversing lamp.

3.11.2 Batteries

The battery is free and may be relocated. A battery and electric starter motor must be fitted, capable of repetitive starts.

3.12 Brakes

3.12.1 Modifications Permitted

All cars must have the standard ABS/DSC system in full working order. Front brake calipers must be standard OE – M Sport brakes and 4-pot calipers are prohibited. Front brake discs must be standard or standard pattern, of a maximum diameter of 284mm.

Rear brake calipers must be standard. Rear brake discs must be standard or standard pattern, of a maximum diameter of 280mm.

Brake pads are free. Deformation or removal of back plates is permitted. Brake fluid is free. Flexible hoses may be replaced with aftermarket parts.

The braking system must remain fully operational in all respects at all times. The hydraulic handbrake is free, provided it is used with the OE ABS. Brake lines and their routing are free, and may be routed through the car.

Bias pedal boxes are prohibited.

3.13 Wheels and Steering

3.13.1 Modifications Permitted

An original, unmodified E87-116i BMW steering rack must be used. The steering lock must be rendered inoperative.

Steering wheels are free.

3.13.2 Modifications Prohibited

No machining or other modification of the road wheels is permitted. Power steering assistance may not be disabled; the standard PAS pump and pulley must be retained and used.

3.13.3 Construction and Materials

Magnesium wheels are prohibited. The only permitted wheel options are OEM 16" BMW wheels, as per 3.13.4, or Revolution CR10 wheels, as per 3.13.4, available from Demon Tweeks (contact: Nick Smith, tel. 01978 663064, email nicks@demon-tweeks.co.uk).

3.13.4 Dimensions

16" x 7"J, ET20 only.

3.13.5 Wheel Spacers

Wheel spacers are prohibited; competitors must ensure that wheel bolts are of sufficient length to adequately secure each wheel. Wheel hubs may be fitted with conversion studs to accept wheel nuts.

3.14 Tyres

The only tyres permitted are those supplied by Maxsport UK (see Appendix A), in size 195/45 R16 or 205/45 R16. All tyres must be purchased from the official Series supplier and must bear the specific Series markings (see Appendix A). The original tread pattern must remain visible at all times, with a minimum tread depth of 1.6mm. Cutting, shaving or buffing of tyres is prohibited. The use of tyre heating or heat-retention devices, and of chemical tyre treatments, is strictly prohibited.

3.15 Vehicle Weight

Minimum weight is 1300kg, including driver, co-driver and race personnel equipment. Ballast is permitted. Random weight checks will be carried out during the season; no car should ever be below this minimum weight.

3.16 Fuel Tank and Fuel

3.16.1 Type

The standard 52-litre OE tank must be fitted.

3.16.2 Location

The tank must be in the standard position.

3.16.3 Fuel

Pump fuel only. Fuel exceeding the maximum stated RON of 99 is prohibited, even if sold or promoted as legal for UK competition and/or obtainable from roadside pumps. The use of additives to boost the octane rating (RON) of petrol is prohibited. During an event, at least three litres of petrol from the tank of the competing car must be made available to scrutineers for analysis.

3.17 Silencing

All vehicles must comply with the maximum noise limits set out in NCR Chapter 7, Appendix 8.

3.18 Numbers and Series Decals

3.18.1 Positions

Competitor numbers must be displayed as per the event specification. In addition, all cars must display the 116i Rallye Trophy sun strip on the upper area of the windscreen.

Series series decals must be affixed prominently. Series sponsor decals, where applicable, must be affixed in or near the positions mandated by the organisers, and take precedence over any other decals. Drivers may be required to remove decals viewed as conflicting with official Series sponsors. Failure to comply will render the vehicle and driver ineligible to compete.

3.18.2 Suppliers

Sponsor and Series decals will be available at the first Series round in which a vehicle is entered. See the Supplier Annex at Appendix A.