



BMW Race Driver Endurance Series

E30 Technical Regulations - Effective for 2017/ 2018 Season.

1 - GENERAL DESCRIPTION

The objective of the series is to give competitors the opportunity to compete in motorsport without the burden of a high cost investment to develop and run a car.

To achieve this, performance enhancing modifications are strictly limited.

Driver capabilities should be the paramount factor in winning races.

The Series is for Right-Hand-Drive BMW E30 318 / 320i Models, in both 2-door / 4-door, and Touring body styles that were produced by BMW for sale to the general public, as shown in sales brochures.

This can be verified by using the chassis number.

Other body styles such as M3, Baur, Cabrio, or Convertible are not eligible for the BMW Race Driver Series.

The 318i must use the M40 8-valve 1.8 litre four-cylinder engine fitted in face-lift 2-door or 4-door cars built between 09/1987 and 04/1991, or Touring models built between 03/1989 and 02/1994.

NB: A 318i based on the pre-facelift (chrome bumper) E30 model built from 1982-09/1987 is not permitted.

The 320i must use the M20B20 12-valve 2.0 litre six-cylinder engine in either L-Jetronic or Motronic forms. This may be fitted to either a facelift or pre-facelift car. Applicable models are the two-door (05/1982-11/1990), four-door (02/1983-01/1991) and Touring. (06/1988-04/1991).

If an M20 engine is converted from Motronic to L-Jetronic or vice versa, ALL of the following items must be changed so that the new engine is a complete representation of that engine type:

- | | | |
|-------------------|-----------------------------|---------------------------------|
| - Intake manifold | - Throttle Body | - Air Flow Meter |
| - Distributor | - Engine Wiring Loom | - Electronic Control Unit (ECU) |
| - Ignition Coil | - Auxiliary Air Slide Valve | - TZI / Ignition Amplifier |

NB: Models other than 318i and 320i may be used as the base for an E30 series race car. For example, a 316i could be made into a 318i or a 320i. However, all other technical regulations must still be followed.

The E30 concept is intended to provide close racing between drivers rather than a technical challenge for preparation experts. The intention of the technical regulations is to create a car that is as safe as possible, fun to drive and yet remain as close to standard as possible.

If you are contemplating any modifications not specifically approved in these regulations, you should contact the BMW Race Driver Series via e-mail: bmwraceseries@hotmail.com

Competitors must assume that unless a modification is specifically permitted, then it is prohibited.

- 1.1 All vehicles racing in the E30 Series shall be road legal and have active registration, a current Warrant of Fitness and a Motorsport NZ Authority card.
- 1.2 Cars must be presented to a high standard. Corrosion, poor paint work or significant bodywork damage/or missing parts (such as front panel lower trim and body moldings) will incur a noncompliance which may result in a points deduction, and/or exclusion from the practice / race or event.

- 1.3 Should one particular model prove to have unequal performance the BMW Race Driver Series Committee reserves the right to review data twice during the Championship season and introduce performance equalizing measures accordingly with a minimum of 14 days' notice to competitors. These measures may include (but are not limited to) the fitting of additional weight or performance-controlling equipment to either one or all of the models.
- 1.4 By entering the BMW Race Driver Endurance Series drivers acknowledge that they have read all of the technical and operational rules and will abide by them in all respects. They should be aware that any breach of these series regulations will render their vehicle ineligible and will result in sanctions against the offending driver that may include time penalties, disqualification, loss of competition points, suspension and/or expulsion from the series, plus any further penalties deemed appropriate.
- 1.5 The BMW Race Driver Endurance Series reserves the right to make technical checks at any time during the racing season, defined as being from the start of pre-season scrutineering through until the completion of parc ferme following the last race meeting of the season. The duration of parc ferme may be based on the driver's position in the championship, and will be advised during the last race meeting. Scrutineering inspections may be made at race meetings, or away from the track at the discretion of the scrutineers. Any costs associated with any inspections or tests will be borne by the competitor, including any replacement parts, such as gaskets and fluids, as well as the cost of getting the car to any specified place of inspection.
- 1.6 Security seals will be applied to various components as advised by the Committee and/or scrutineers. The BMW Race Driver Endurance Series reserves the right to have these sealed components checked for eligibility purposes. **Removal of, or tampering with these seals, where fitted, without prior authorization will lead to penalties being applied.**

2 - SAFETY REQUIREMENTS

All vehicles are required to adhere to all Current Motorsport New Zealand (MSNZ) regulations in relation to Driver and Vehicle Safety – refer to NZ Motorsport Manual no. 35, Appendix Two, Schedule A, available in hard copy or on-line: www.motorsport.org.nz/Regs/manual.htm#Manual35. This includes any amendments or subsequent versions issued by MSNZ.

2.1 Required Safety Equipment

1. An MSNZ approved competition seat designed for use with four-point, five-point or six-point harness; with appropriate mountings; must be fitted according to App Two, Sch A, Section 4.7.
2. A suitable MSNZ approved harness of four-point, five-point or six-point mounting as detailed in App Two, Sch A, and Section 4.4.
3. A MSNZ approved hand held fire extinguisher is mandatory as per App Two, Sch A, Section 4.8.
4. A MSNZ approved multi-point roll cage compliant with App Two, Sch A, Section 4.6 with side intrusion bars is mandatory. Alternative roll cages are acceptable provided they meet the following criteria:-
 - i. The roll cage design, construction and installation must satisfy all of MSNZ regulations.
 - ii. The roll cage material must be of unalloyed carbon steel. NOTE: Chrome Moly is not permitted.
 - iii. iii. Triangulation between the roll cage front legs and front strut towers is permitted.
 - iv. iv. Roll cage padding must be fitted as required in Section 4.6 sub section 6.
5. Headlamps should be covered with protective tape, and comply with any current MSNZ requirements.

6. **Forward Head Restraints (FHR):** These are considered mandatory
- A) All Drivers must wear FHR during all qualifying and races that are part of the BMW Race Driver Series. Failure to do so may result in penalties (Points deduction) or even Disqualification.
- B) FHR Devices must:
1. Comply with an approved standard, and
 2. Be a good fit on the wearer, and
 3. Be of the correct type/angle for the vehicle being driven, and
 4. Be in good condition, free of cracks or signs of damage, and
 5. Not be modified, except as specifically permitted by the manufacturer, and
 6. Only be used with helmets bearing one(1) of the following standard markings:
 - **FIA** - 8860 & 8858,
 - **Snell** - SAH 2010, SA 2010, SA 2005 & SA 2000,
 - **British Standard** - BS 6658-85 A/FR, and
 - **SFI** - Spec 31.1/2005 & Spec 41.1/2005.
- C) **Approved Forward Head Restraint Standards:** Examples of the following standards labels are detailed in Part Two Article 4 of this Schedule.
- **FIA** - FIA8858-2002
 - **FIA** - FIA8858-2010
 - **SFI** - SFI Spec 38.1
- Examples of acceptable FHR device brands (not limited to): HANS type, NexGen, Simpson Hybrid, Leatt
- Examples of non-acceptable devices: Padded collars.

To be fitted and worn in accordance with Schedule A in the MSNZ guidelines

3 – CHASSIS& EXTERIOR/BODYWORK

3.1 Required Equipment / Modifications:

- a) The chassis design and material must remain as standard. Lightening or reducing chassis strength is prohibited. Additional strengthening of the chassis is prohibited (e.g. seam welding). The chassis as produced by the manufacturer with the original material must be retained in all aspects in respect of material, thickness and contour. For the benefit of doubt, chassis is defined here to include the body shell, wings, doors, bonnet, boot-lid, roof, panels, floor and all bumper bars and support devices.
- b) Except as specifically permitted within these regulations, the steering system including rack, tie rods, front sway bar, steering arms and column shall remain as standard E30 fitment.
- c) Towing eyes must be fitted and identified as per MSNZ regulations. To avoid damage caused by a solid metal towing eye a soft webbing-type strap must be used on the front of all Facelift cars. These eyes are available at a nominal charge through the BMW Race Driver Series Committee.
- d) The following items must be removed – tow bars, mud flaps and non-retractable aerials.
- e) A genuine BMW E30 lower lip on the front panel is mandatory on all models. This item must be correct for each particular model EG facelift or pre-facelift.
Pre-facelift cars (320i only) may have either part number 51 71 1911 983 or part number 51 71 1933 402.
Facelift cars (318i or 320i) can choose between part number 51 71 1945 559 or the sport alternative part number 51 71 1968 488.

3.2 Modifications permitted, but not mandated:

- a) It is permissible to remove the factory applied body under seal.

- b) A strut brace between the front strut towers may be fitted, either bolted or welded in place.
- c) Sunroof mechanisms may be removed entirely. If a sunroof panel is removed it must be replaced with the same material and thickness as the roof skin. Alternatively, the complete roof panel may be replaced with another standard roof that does not have a sunroof.
- d) A metal skid plate may replace the plastic panel that protects the sump and lower engine provided that the plate is not more than 100mm wider than the sump and extends no further back than the front bulkhead. It cannot be designed in any way which would further enhance aerodynamics.
- e) A metal skid plate may be fitted to cover the fuel tank. The plate itself may not extend more than 100mm beyond the tank in any direction. It cannot be designed in any way which would further enhance aerodynamics.
- f) A boot spoiler may be fitted to the rearmost edge of the boot lid. This spoiler must be of the same material and dimensions as BMW part number 51 71 1945 710.
- g) Number plates may be removed while racing.
- h) The bonnet catch mechanism may be replaced with an alternative device provided the bonnet remains adequately secured. Bonnet hinges/support struts may be removed, but refer to 3.1a.
- i) Power assisted steering may be disabled or replaced with an E30 non power steering rack, but all other steering components must be retained in their standard form, as per 3.1b.
- j) The inside edge of the rear wheel arches may be “rolled” to prevent tyre rub when using wheels with the minimum offset of 15mm. As per 3.3c the outside profile of wheel arches cannot be modified in any way.
- k) The standard exterior rear view mirrors must be retained and it is recommended that one or more wide angle mirrors glasses are fitted. BMW part numbers 51 16 1926 853 (RH) and 51 16 1926 845 (LH).
- l) To aid airflow to the filter / inlet manifold, it is permissible to remove the webbing between the grille blades of the left-hand grille section only so long as the external appearance/profile of the grille is maintained. The centre and right-hand grille sections cannot be modified in any way.

3.3 Modifications strictly prohibited:

- a) All spoilers, dams, splitters, aero foils and diffusers are prohibited, other than the spoiler mentioned in 3.2g.
- b) The use of any under-trays, diffusers or any other aerodynamic device fitted to the underside of the vehicle other than those fitted as standard are prohibited, but refer to 3.2e & f.
- c) Except as specifically allowed no external body parts may be modified in any way to improve the flow of air around the vehicle or into the engine / engine bay.
- d) All window glass must be retained as originally fitted and be fully operational. If a window net is used to cover an open side window then the window glass must still be retained
- e) Use of window tinting film is not permitted, but refer to 12.2f.
- f) Plan view must be as standard with no extensions to wheel arches permitted.
- g) All bumpers must remain in complete original condition. All bumper dampers, bumper mounting brackets, mounting points and trim must be retained as fitted standard by the factory.

4 – INTERIOR

4.1 Required Equipment / Modifications:

- a) All standard seating must be removed. The driver’s seat must be replaced as per MSNZ Manual no. 35, Appendix Two, Schedule A, Section 4.7. Front passenger seat if used must also be a competition seat and comply with Appendix Two, Schedule A, Section 4.7.
- b) The standard heater / demisting unit must be retained in its entirety and not modified in any way. However the heater core does not need to be connected to the engine’s cooling system.

4.2 Modifications permitted, but not mandated:

- a) An aftermarket steering wheel may be fitted but must comply with MSNZ regulations.

- b) Any interior trim (including dashboard trim, sound proofing and heat shielding may be removed, but window winding mechanisms, boot and door locks and catches must remain in place but can be disabled for safety reasons.
- c) The dashboard may be modified to allow the fitting of the roll cage and the opening / removable glove box unit may be removed provided the dash remains securely fastened.
- d) Mechanically operated items may replace electrically operated items provided that the mechanical parts were available on the 318i / 320i E30 models. It is not permitted to replace an electrically operated part with a non-standard alternative mechanical part or mechanism.
- e) Interior door trim panels may be removed. If removed they must be replaced with an alternative door panel that protects the driver from sharp edges and the intrusion of metal structures in the event of a side impact.
- f) The rear bulkhead may be modified to accommodate the roll cage. Where holes have been cut to fit the roll cage they shall be no more than twice the diameter of the roll cage member to be fitted.
- g) A spare wheel may be fitted in the original location but must be securely mounted.
- h) A footrest may be added next to the clutch pedal.
- i) The three pedal pads may be modified by the addition of a non-skid surface.

5 – ENGINE & RELATED COMPONENTS

5.1 Overview

- a) Only the 8-valve, four-cylinder engine (designated M40) or the 12-valve six-cylinder engine (designated M20) as fitted to the BMW E30 318i or 320i models is eligible. For the avoidance of doubt both the 8 valve (M10) and the 16 valve, four cylinder 318iS engine (designated M42) are not eligible.
- b) Except for the allowed modifications shown in these regulations no modification to the engine or any ancillaries, including the fuel, ignition systems or ECU are permitted. For the benefit of doubt, this includes grinding or machining or lightening. The engine must retain the standard specification block, pistons, crankshaft, con-rods, flywheel, cylinder head, camshafts and valves. “Balancing” of engines by the removal or addition of material is specifically prohibited.
- c) Unless otherwise stated, all parts must be the standard, Original BMW parts.

5.2 Cylinder heads

- a) Only the following cylinder head part numbers are permitted:
M40 = 11 12 0030 299 M20 = 11 12 9068 671 or 11 12 9068 672
- b) The cylinder head may have the head gasket surface only skimmed, with a minimum finished head height of 140.6mm for the 318i and 124.7mm for the 320i. Additionally cylinder heads may be cleaned and/or decoked, but additional porting, polishing, machining, or any other modifications are prohibited.
- c) Valve seat inserts must be positioned as per the manufacturer’s original specifications.
- d) Valve seat inserts cannot be modified other than the machining of the valve sealing surface. Triple-cut machining of valve seats is allowed but none of the three angled faces may be more than 6mm in width as measured across the machined face, and the valve sealing face must be the centre one of the three faces.
- e) Valves must be the original parts specified for the relevant model - 318i or 320i. Valves from another model, such as 325i, cannot be used – either modified or original.
- f) Only the sealing edge of the valve may be machined as part of the reconditioning process. The profile of the valve, including head and stem, may not be modified in any other way.
- g) Camshafts – only the following parts are permitted:
M20 = 11 31 9058 572 or 11 31 1716 139 (in both L-Jetronic or Motronic engines)
M40 = 11 31 1709 580 (OEM) or the **optional camshaft** supplied by BMW Race Driver Series.

5.3 Lower Engine (Block, Pistons, Conrods, Crankshaft & Sump)

- a) Pistons from either of the four BMW OE suppliers are permitted - Mahle, Kolbenschmidt, Borgo or Nueral/Alcan. These must be manufactured to Original BMW specifications, with a maximum oversize of +0.5mm. Pistons from all other suppliers are specifically prohibited.
- b) All three piston rings must be fitted per manufacturer's specifications and normal trade practice.
- c) **NOTE:** High-compression pistons from the L-Jetronic engine cannot be used in a Motronic engine. For clarification the following piston formats are permitted.

Motronic	8.8:1 compression ratio	0.8mm dome
Motronic	9.4:1 compression ratio	2.3 mm dome
L-Jetronic	9.8:1 compression ratio	3.3mm dome

- d) Conrods must be Original E30 BMW Parts. Under no circumstances can they be modified to alter their effective length.
- e) M40 pistons and conrods can only be those fitted to E30 models and not E36 which has a longer conrod and shorter piston.
- f) The head gasket surface only of an engine block may be machined during reconditioning, but the maximum protrusion of the piston above the top of the block will be restricted as follows:

M40 = 0.50mm M20 = 0.60mm

This measurement is taken at the outer edge of the piston, ignoring any domes or raised surfaces.

- g) The block may be machined to take oversize pistons of up to +0.5mm, with a revised bore of up to 84.5mm for the 318i and 80.5mm for the 320i. However, as per 5.3a, the requirement to use only Mahle, Kolbenschmidt, Borgo or Nueral/Alcan pistons remains. Even if a certain size / piston type is not available from any of these suppliers, then pistons from other suppliers can still not be used.
- h) To repair bore damage the block may have one or more cylinders sleeved provided all other rules are followed.
- i) Non-OEM BMW bearings may be used for the crankshaft. (big-end & main bearings)
- j) The crankshaft may have the bearing surfaces only machined during reconditioning to allow the fitment of oversized big-end and main bearings. However, "offset" grinding to alter the crank throw is strictly prohibited.
- k) The standard sump may have baffles fitted to prevent oil surge as follows:
 - i. 318i - any additional baffles cannot project above the gasket line between the upper and lower sump sections.
 - ii. 320i - the original sump baffle must be retained. Additional baffles can be fitted but cannot go above the level of the lower horizontal section of the original baffle. i.e. approximately 55mm above the bottom of the sump.
 - iii. No other sump modifications are permitted and no additional parts can be fitted to provide any form of windage or scraping effect.

5.4 Fuel System

- a) Fuel pressure regulator, fuel rail and injectors must be the original part and no modification is permitted, including restricting vacuum supply.

To avoid confusion regarding injectors. The Bosch part number and colour codes Listed are permitted. You may not use 318 injectors in a 320.

318 All **0 280 150 715** Blue plug connector Black Injector Shield
 318 All **0 280 150 211** Blue plug connector Yellow Injector Shield
 320 All **0 280 150 716** White plug connector Yellow Injector Shield
 320 All **0 280 150 208** White plug connector Black Injector Shield

- b) The design and location of the fuel tank shall be as per manufacturer's specification.
- c) The standard fuel pump must be used, with no additional pumps permitted.
- d) No swirl tanks or other means of fuel baffling is permitted.
- e) Only fuel with an octane rating between 91 and 98 is permitted. It must be commercially available from a New Zealand service station forecourt pump.
Ethanol or alternative Bio Fuels, E85 etc are not permitted.
- f) Fuel must be used as purchased - no fuel additives are permitted.

5.5 Engine Miscellaneous

- a) Gaskets are open in terms of supply, but must be manufactured to Original BMW specifications. Only one gasket may be used in any location. For the head gasket, inlet manifold gasket and exhaust manifold gaskets, the following dimensions are supplied for clarification:
- **Cylinder Head Gasket** (both M20 & M40)
 - Minimum non-compressed thickness = 1.7mm*
 - Minimum compressed (used) thickness = 1.5mm*
 - *measured at the fire ring
 - **Exhaust Manifold Gasket**
 - Maximum thickness = 2.0mm
 - **Inlet Manifold Gasket**
 - Maximum thickness = 2.0mm
- b) Flywheels may have the friction and pressure plate mounting surfaces skimmed. No other parts of the flywheel can be machined or modified in any way. Regardless of the starting measurements, at all times the minimum operating thickness and weight for each flywheel must be:
- M20 = 29.7mm on the inner surface (clutch plate friction area) and 29.1mm on the outer surface. (pressure plate mounting) and weigh no less than 8.05kg.
- M40 = 22.7mm on the inner surface (clutch plate friction area) and 44.5mm on the outer surface. (pressure plate mounting) and weigh no less than 9.00kg.
- NB: These weights are inclusive of the three dowels but exclude all other components such as bolts, bearings, etc. See Appendix 1 for detailed pictures of the flywheels.
- c) The throttle body water heating system must be retained in its entirety and be fully operational.
- d) Throttle bodies cannot be modified in any way. For the avoidance of doubt the 320i standard throttle body diameter measured at the butterfly should be 51.1mm, for both L-Jetronic and Motronic models. The 318i standard throttle body diameter measured at the butterfly should be 55.0mm.
- e) The induction system must retain the standard airflow meter and throttle body, but upstream of the airflow meter is free. No mechanical or electrical forced induction is allowed. For the avoidance of doubt air intake ducting cannot be channeled through any additional holes cut into body work or other components.
- f) The standard exhaust manifold must be retained and not modified in any way but the remainder of the system is free providing that it shall conform to current WOF noise limits. (maximum of 95db @ a 30 metre right angle from the exhaust)
- g) The standard cooling fan must be retained; however the addition of a single electric cooling fan is permitted. The original radiator cowling may be removed but cannot be replaced by a non-standard cowling. Coolant hose material is free, and may be modified to accommodate an additional temperature sender unit. Fan clutches must be the Original BMW part and be in a fully operational condition and must not be modified in any way.
- h) Radiator – must be an Original BMW radiator that was factory-fitted to an eligible E30 model (318i or 320i) or an aftermarket radiator of similar dimensions and format to a BMW E30 radiator as described above.
- In either case the original radiator mounting points must be used.
- i) Only standard, unmodified, genuine E30 BMW ECU's can be used in the 320i models, and either standard or the series-controlled ECU for the 318i models. ECU's may be sealed by the scrutineers and are not to be tampered with. Broken seals will be deemed a breach of the Series technical regulations.
- Competitors must clearly mark ECU's with their cars competition number, as series scrutineers may interchange these units between cars, or by using a control ECU.
- j) Rev limits will be monitored by the scrutineers, and must conform to the following:
- | | |
|---|----------------|
| 318i with standard ECU/camshaft | 6,200 ± 50 rpm |
| 318i with series ECU/camshaft | 6,400 ± 50 rpm |
| 320i Motronic or L-Jetronic with ECU-limiter | 6,200 ± 50 rpm |
| 320i L-Jetronic with mechanical rotor limiter | 6,200 ± 50 rpm |
- In all cases, if engine revs measured by the scrutineers are higher than the specified limits, this will be deemed a breach of the E30 technical regulations and appropriate penalties applied.
- k) Engine mounts from the 320i with part number 11 81 1132 321 may also be used on 318i due to the standard mounts often breaking. In addition, a retaining cup (p/n 11 81 1133 377) may also be used on both 318i and 320i.

The fitment of aftermarket mounts is also allowed provided they support the engine in the same position as the original mounts.

- l) Oil coolers are not permitted, however an oil catch can may be fitted as per App Two, Sch A, Section 5.1 sub section 5.
- m) Any camshaft and crankshaft angle sensors must remain in their standard unmodified location. This means that mounting points cannot be modified or slotted.
- n) The use of applied High Performance or Friction Coatings on any internal engine or gearbox components is prohibited.

6 – SUSPENSION

6.1 Mandatory Equipment / Control Parts

- a) The only springs that can be used are the King Springs brand with the following part numbers:

318i front KBFL-318, 320i front KBFL-320, 318i & 320i Sedan / Coupe rear KBRL-14-SL, Touring rear KBRL-14.

NB: Wherever possible all springs should be mounted so that the official markings are visible once the wheel is removed. Springs without official markings will be deemed illegal.

- b) KONI externally adjustable shock absorbers as detailed below must be fitted. **318i & 320i front either 8641-1029-SPORT (45mm) or 8641-1021-SPORT (51mm)**
318i & 320i rear 8041-1067-SPORT

NB: The original rear shock absorber mounts have a 10mm hole in the mounting bush and will need to be drilled to 12mm to accept the Koni shock.

6.2 Permitted Equipment / Modifications

- a) The maximum allowable negative camber at the front wheel is 2.5° on either side, measured on a level surface with the car in full race trim meeting minimum weight requirements including driver.
- b) Adjustable camber plates are not permitted.
Only unmodified E30 BMW top mounts can be used, with a choice of the original top mount part number 31 33 1 139 452 or the optional offset top mount part number 31 33 1 139 484.
- c) Suspension bush material is free, provided they are not made entirely of metal.
- d) All suspension bushes must only use the original unmodified mounting points and brackets, however offsets within bushes are permitted.
- e) 51mm diameter strut housings as from the BMW E30 325i model may be used.
- f) Rear shock absorber upper mounts may be replaced with the E36 rear mount, part number 33 52 1 092 362 which has a heavier bush. However, it will still need to be drilled out to 12mm.
- g) Rear shock absorber upper mounts may be modified to use spherical bearings but must retain the standard body shell mounting. However, the total height of the mount including bearing must not exceed 50mm.
- h) The original BMW rubber spring spacers may be retained or removed from one or more corners to assist with equalization of ride height. However, no other spacers / packers may be used to adjust ride height.
- i) The use of bump-stops is recommended. If fitted, the bump stop must be of one-piece construction, made from closed-cell foam and have a maximum length of 50mm.
- j) A standard BMW E30 front anti roll bar of 18mm or 20mm diameter is permitted.

6.3 Suspension Modifications Prohibited

- a) No changes to suspension pick up points are permitted.

- b) Aside from suspension bushes (covered under 6.2b & c) all suspension components must be of the same design and made of the same material as that on the standard vehicle. Specifically, aluminum components may not be used to replace steel components (or vice versa) and no component may be replaced with a composite material or alloys that include any element of Titanium or Magnesium.
- c) No alterations to suspension geometry are permitted other than that available on the standard car and as per 6.2a&c.
- d) Rod ends or other spherical bearings are not permitted except as allowed in 6.2f.
- e) A rear anti roll bar is not permitted for Sedan / Coupe models, however a factory OEM BMW E30 rear sway bar is allowed on touring models.

7 – DRIVE-TRAIN

7.1 Clutch

- a) Original BMW clutch kits (pressure plate, friction plate & release bearing) fitted to the E30 may be used as follows: **318i = 21 21 1223 569, 320i = 21 21 1223 101 or 21 21 1223 102**
- b) Pressure plates, friction plates and release bearings from other suppliers are permissible but must be of the same design as the OEM parts both dimensionally and operationally.
- c) For the avoidance of doubt, the lightening or modification of clutch components - either BMW or aftermarket is prohibited, as is the use of paddle, puck or carbon Kevlar clutch components.

7.2 Gearbox

- a) Only standard (Original BMW) overdrive gearboxes as fitted ex-factory with approved engines in the E30 318i and 320i model ranges will be permitted, this specifically excludes both the automatic transmission and M3 dogleg gearbox. For the avoidance of doubt:
318i = Getrag 240 320i = Getrag 240 or ZF S5-16 THMH
- b) Gear ratios must be as supplied with the gearbox in production form, namely:
1st = 3.72:1 2nd =2.02:1 3rd = 1.32:1 4th = 1.00:1 5th = 0.80:1
- c) Short shift gear lever BMW part number 25 11 7527 252 may replace the standard item. All other gear shift components / linkages must be Original unmodified BMW parts as fitted to E30 models.
- d) Gearbox mounting and location points must be retained and used as intended by the manufacturer.

7.3 Differential

- a) The standard E30 318i/320i differential must be used, with a final drive ratio of 4.10:1.
- b) Limited slip or locking differentials are prohibited. Furthermore, the differential (including all internal components) cannot be modified in any way, nor have any parts added that might provide any kind of locking or additional frictional action.
- c) Differential mounting and location points must be retained and used as intended by the manufacturer.

8 – ELECTRICAL

8.1 Required Equipment / Modifications:

- a) The battery must remain in its original location within the engine compartment and must be capable of starting the car unassisted.
- b) The standard battery position must be retained and the battery fitted in accordance with App Two, Sch A, Section 5.5.
- c) The alternator must remain in its standard configuration and be operational at all times while the engine is running.
- d) Circuit breakers or battery isolating switches can be fitted as per MSNZ requirements.
- e) Engine electronic control units (ECUs) may be exchanged between competing cars with the same engine type or for a standard reference ECU held by the organizers. ECU's must therefore have good access, be quickly removable, and must be clearly marked with the vehicle's race number.

8.2 Modifications permitted, but not mandated:

- a) Electrical controls (eg window switches and light switches) may be repositioned as required to accommodate any permitted changes to the interior trim.
- b) The size and type of battery is free.
- c) The fitment of a simple shift light (to an rpm source), auxiliary gauges and video recorders is permitted as long as these do not contravene any MSNZ or Warrant of Fitness regulations, and are adequately secured.
- d) The fitment of "standalone" lap timers, including GPS units is permitted as long as such fitment and use does not contravene any regulations from the meeting organizers or MSNZ.

When fitted these must not require any driver input during a race and must connect to the car for power supply only. Any connection (wired or wireless) to the cars wiring loom, installation of additional sensors or electronics, including data logging or electronic dash displays is not permitted.

- e) The standard BMW distributor cap, rotor, plug leads and spark plugs may be replaced with aftermarket items, provided they have similar specifications to the original items.
- f) The standard BMW Ignition coil may be replaced with an aftermarket item of oil-filled cylindrical design. No modification to facilitate fitment is permitted. NB: Solid-State or transistorized ignition coils are prohibited.
- g) The following items originally fitted as standard, or as optional extras to the vehicle, may be removed along with any associated wiring as long as this does not prevent the car getting a WOF:
 - i. Cruise control
 - ii. Air conditioning
 - iii. Headlamp wash/wipe
 - iv. Front fog lights
 - v. In-cabin headlamp height adjuster
 - vi. Check Control console
 - vii. On Board Computer
 - viii. Interior courtesy lamps ix. Boot illumination
 - x. Glove box illumination
 - xi. Electric window over-ride switch. NB: windows must still remain operational.
 - xii. Electric mirror control switch, providing mirror adjustment is still available.
 - xiii. Front fog lamps and switchgear
 - xiv. In-car entertainment systems, including speakers, amplifiers, aerials and head units.

8.3 Modifications strictly prohibited

- a) No devices may be added or modified to provide any form of traction control, launch control or full throttle gearshifts.

- b) Electrical switches can only be used to operate the function for which they were originally fitted into the car for, and for no other additional purpose.
- c) Aside from any permitted modifications listed in these regulations, including the rerouting of existing wiring, no other changes may be made to the electrical system.
- d) The fitment and / or use of radios or any electronic communication / signals between a driver and his / her crew or pits are prohibited. By way of clarification the only allowable communication method between pits and cars is via manual lap boards or hand signals.

9 – BRAKES

9.1 Required Equipment:

- a) The braking system shall be standard Original BMW equipment as fitted to either 318i or 320i models, including master cylinder, brake booster, metal brake lines, wheel cylinders and brake calipers.

9.2 Modifications permitted:

- a) Brake pad and shoe material is free but dimensions are to remain as per original equipment.
- b) Brake discs are free in terms of supply, but must be of one-piece steel construction.
- c) Standard (non-vented) front discs have a maximum diameter of 260mm and thickness of 12mm. These may be replaced with vented front discs (and calipers) from E30 320i / 325i models. These discs have a diameter of 260mm and a thickness of 22mm.
- d) Rear discs as per standard fitment to the BMW E30 318i, 320i or 325i are permitted. With a diameter of 260mm and thickness of 10mm.
- e) The flexible rubber portion only of the brake lines may be replaced with a steel braided brake line.
- f) To improve front and rear brake cooling the removal of OEM splash guards / backing plates only is allowed. Also allowed for brake cooling is the addition of ducting, but this cannot be designed in any way which would otherwise enhance aerodynamics.
- g) Anti-lock braking systems. (ABS) All components relating to this must be removed.

9.3 Modifications strictly prohibited

- a) No adjustment to the brake bias is permitted.

10 – WHEELS & TYRES

10.1 Wheels

- a) Only single-piece steel or aluminum alloy road wheels are permitted of 15" diameter and width 7J with a negative offset of between 15 and 25mm. Competitors are reminded that no modification to the external surface of wheel arches is permitted and that the tyre should not foul either the body or chassis when the steering is turned under both static and dynamic suspension load.
- b) The use of wheel spacers is prohibited.
- c) Standard specification wheel hubs must be retained; however wheel studs may be fitted to the standard hub.

10.2 Tyres

- a) The control tyre for the series is a the 205/50x15 TOYO Proxes R888r or the R888

- b) It is prohibited to alter the tread or tread pattern of the tyres. For clarification this includes re-grooving, buffing, skimming, or any other method, including chemical application.
- c) Vehicles must be capable of passing a WOF test at the conclusion of a race or qualifying session, including the ability to meet all requirements for tread depth and tread coverage. Tyres found to be outside of these guidelines will incur points penalties

11 – WEIGHTS

- 11.1 Minimum post race weight including driver for all competing vehicles is listed below (see 11.2). All cars weighed after each race or qualifying session. Drivers who do not present their cars for weigh-in after qualifying will receive point penalties or be disqualified from the qualifying session or race.
- 11.2 Different minimum weights have been set for each of the three models (318i, 320i L-Jetronic / 320i Motronic) and apply regardless of the body style. (2-door, 4-door or Touring) For 320i the type of engine fitted rather than the body type (Facelift or Pre-facelift) shall be used to determine the applicable minimum weight. The following weights will apply for the start of the 2013 / 2014 season:
- 318i : 1075kg 320i L-Jetronic : 1175kg 320i Motronic : 1175kg**
- 11.3 As long as no other rules are breached regarding vehicle modifications it is at the driver's discretion how and where the additional weight is achieved, subject to MSNZ regulations.

12 – VEHICLE LIVERY

- 12.1 **Series Sponsor Decals**– The following decals will be made available to registered entrants and must be fitted as supplied to all BMW Race Driver Series cars at all BMW Race Driver Series events. (See Appendix 2 Vehicle Livery below for layout)
- a) BMW Race Driver Series number box – both sides, front door, within 40mm of front edge of door and split above and below body molding, as per appendix 2.
 - b) Windscreen Banner –top of front windscreen with a maximum finished depth of 100mm using the section of the supplied banner that has the Sponsor (TBA) logos printed.
 - c) Bonnet Decal (580 x 135mm) – centerline of bonnet, no more than 75 mm from BMW bonnet badge and oriented so that the writing is the correct way up, as viewed from in front of the car.
 - d) Toyo Tires Decal (320 x 45mm) – Both sides, front fender, within 20mm of front door, and above side indicator. NB: If body colour is similar to decal, a contrasting colour strip (340 x 55mm) must be applied first underneath Toyo lettering.
 - e) Toyo Tires Decal (550 x 55mm) –Boot lid vertical face, to the left of BMW badge. NB: If body colour is similar to decal, a contrasting colour strip must be applied first, behind Toyo lettering.
 - f) King Springs Decal (200 x 80mm) – Both sides, front fender, behind front wheel, above side sill.
 - g) Koni Decal (200 x 65mm) – Both sides, behind front wheel, directly above "King Springs" decal.
- 12.2 **Other BMW Race Driver Series Signage** – The following signage to be supplied by the competitor unless stated otherwise must be fitted to race cars at all BMW Race Driver Series events.
- a) Race Number - both sides inside number box must comply with MSNZ requirements in terms of size, colour, font etc. Minimum of 280mm high, stroke of 50mm, solid black (on the supplied white background), font to be Helvetica or similar. (see Manual 35, Appendix Two, Schedule A, Section 6.2) For clarification.
 - b) Screen Numbers – both front and rear screens, passenger side upper corner, minimum of 150mm high, 20mm stroke, white or fluoro yellow/green in Helvetica or similar font.
 - c) Race Weight – to assist with identification of the cars for weigh-in and for commentary purposes each car will carry an 80mm-wide coloured stripe along the full length of the top edge of the rear side window on each side. (See appendix 2) The stripes, to be supplied by the Race Driver

Series, will be colour-coded as follows:	Blue	318i	1075kg
	Green	320i L-Jetronic	1175kg
	Yellow	320i Motronic	1175kg

- d) Driver Name – The driver surname (at least), on both rear side windows, close to lower edge, minimum of 80mm high, 10mm stroke, white or fluoro yellow/green in Helvetica or similar font.
- e) Novice Markings – The FIA Mandated Novice sticker must be run in a visible location on the rear of the car. These will be supplied to the competitor by the race series.

Regardless of previous race experience in other classes, drivers who are new to the BMW Race Driver Series must display this Sticker for a whole season.

- f) Windscreen - To provide sun shading, additional material may be added below the windscreen banner, to a maximum total depth of 200mm at any point, including the windscreen banner. This additional material shall be a single solid colour in black or similar to the (TBA) logo, with no additional wording or graphics.

NB: It is the driver's responsibility to ensure that the car has a current WOF, even if this requires the temporary removal of the additional material described in 12.2 e and 12.2f above. Furthermore, drivers are reminded that the fitment of additional shading material cannot in anyway interfere with their ability to see flag points or the start lights/flags at any circuit.

12.3 **Personal Signage** – The following restrictions apply to any personal signage or sponsorship carried on cars competing in the BMW Race Driver Series.

- a) Front Screen – This is reserved exclusively for the Series sponsor (TBA) and apart from race numbers (see 12.2b) no other signage can be carried on the front screen.
- b) Rear Screen–Personal advertising may be fitted to the rear screen, as long as it complies with MSNZ and Warrant of Fitness regulations.
- c) Side Sills – No signage at all shall be fitted to the sills forward of the rear edge of the number box.
- d) Competitive Signage – No signage for any brands that compete with any of the series sponsors can be carried on the front section of the car - defined as being all panels “forward of a line through the rear edge of the number boxes on each door”. The Series sponsors currently include: (TBA), **Racer Products, Toyo Tyres, King Springs and Koni**. Committee decisions on any conflicting advertising are final, as are any decisions to introduce new / additional series sponsors.

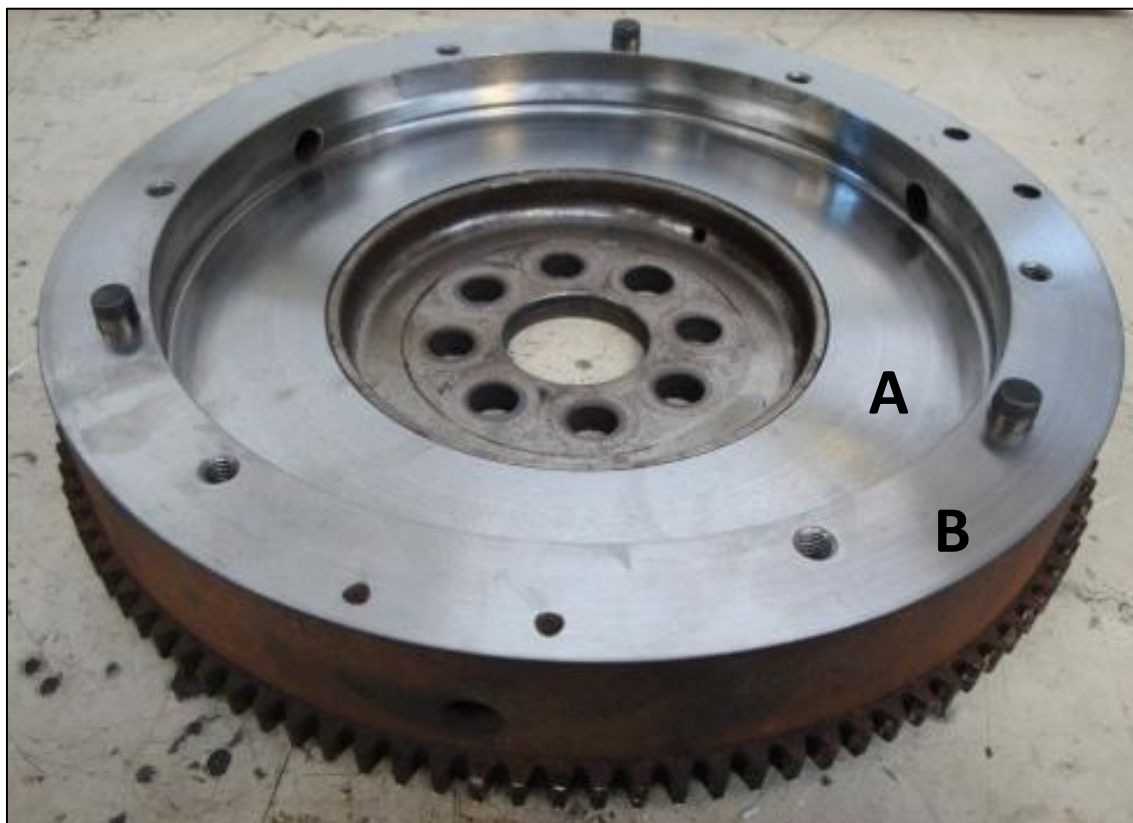
Appendix 1 – Flywheels(Refer Section 5.5b)

M20 Minimum of 29.7mm on the inner surface. (Point A)

Minimum of 29.1mm on the outer surface. (Point B)
Minimum weight of 8.05kg including 3 dowels but no mounting bolts.



M40 Minimum of 22.7mm on the inner surface. (Point A)
Minimum of 44.5mm on the outer surface. (Point B)
Minimum weight of 9.00kg, including 3 dowels but no mounting bolts.



Appendix 2 – Vehicle Livery (Refer Section 12)

12.1 a) Race Number Box

No more than 40mm from front edge of door.

12.1 b) Toyo Tires decal (small)

Both sides, choice of two colours – blue or white

12.1 c) Koni decal

Both sides, choice of two backgrounds – black or white

12.1 d) King Springs decal

Both sides

12.1 e) Windscreen banner

12.2 f) Front screen number

Passenger side, white or fluoro yellow/green

12.1 g) Bonnet decal

Centered, no more than 75mm from bonnet badge

12.1 h) Toyo Tires decal (large)

Centered on left-hand side of boot-lid.

12.2 i) Rear screen number

Passenger side, white or fluoro yellow/green

12.2 j) Novice Sticker

Located at the top of the rear screen drivers on the drivers side.

12.2 k) Weight Stripe (See Section 12.2c)

Both sides, top of rear side window. Colour depends on engine: 318i = Blue, L-Jet = Green, Motronic = Yellow.

12.2 L) Driver Name

Both sides, bottom of rear side window.

