



JUNIOR MINI RALLYCROSS CHAMPIONSHIP

2024 TECHNICAL REGULATIONS



4. TECHNICAL REGULATIONS

4.1 INTRODUCTION

The following Technical Regulations are set out in accordance with the Motorsport Ireland (MI) General Competition Regulations (GRC) and it should be clearly understood that if the following texts do not clearly specify that you can do it you should work on the principle that you cannot. All competitors are advised to read Appendix 2 of the current Motorsport Ireland Yearbook.

4.1.1 Cars must comply with the Technical Regulations published by the Organisers for the Junior MINI Rallycross Championship throughout official practice, timed practice, qualifying and events.

4.1.2 It is the Competitor's responsibility to ensure their car complies with MI Technical Regulations in Appendix 2 as appropriate and the Supplementary Regulations throughout the event.

4.1.3 All vehicles reported involved in contact incidents during races or practice must be re-presented to the Scrutineers before continuing in the races or practice.

4.2 GENERAL DESCRIPTION

4.2.1 Eligibility: – Only R50 (2001 – 2006 Model Year) MINI Cooper 1.6 Petrol (W10 engine) are eligible providing they comply with these Technical Regulations. An R50 MINI One donor car may be converted to be eligible for the Championship but it should be noted that the engine ECU mapping will need to be converted to those of the "Cooper" to fully comply.

4.2.2 Examination of Vehicles

4.2.2.1 The organisers (in addition to any other powers they may have under these Regulations) reserve the right before or after any race in the Championship to designate any one or more of the competing cars for special eligibility scrutineering. Upon such election being made, the competitor shall immediately place the car under the control of the Organisers and be deemed to have permitted all such scrutineering, examination and testing as the organisers may responsibly require to undertake. The organisers have the right to:

- a) Examine the car at the circuit for such period as they may reasonably require and take fuel and/or other samples and/or
- b) Retain the car for detailed examination at premises chosen by the organisers. If the organisers elect to retain the car, they shall make it available for collection by the competitor at least seven days prior to the qualification session for the next race in the Championship unless the car is found to be in breach of these regulations and/or
- c) Seal the car and its components in such a manner as they may choose and require the competitor at their own expense to present the car at any other premises chosen by the Organisers for detailed examination within a specified period and/or remove the car by transporter at no expense to the competitor to an appointed location. The competitor will be advised in writing of the time, date and location of the subsequent testing or eligibility examination.

4.2.2.2 The stripping of the engine or any required component will be undertaken by the competitor and/or mechanic/technician nominated by the competitor at the premises designated and overseen by a Motorsport Ireland licenced Scrutineer.

4.2.2.3 Competitors will be personally and solely responsible for ensuring that their cars comply with their registration details and with these regulations for each event at which they are entered. Failure to comply in either respect will be a breach of these regulations. Queries concerning eligibility should be referred in writing to the Organisers or the Eligibility Scrutineer at least seven days prior to an event entered, to permit a ruling in advance of any meeting at which it is intended to compete.

4.3 SAFETY REQUIREMENTS

- 4.3.1** All cars must comply with these Technical Regulations, in addition to the safety requirements as listed in Appendix 2 of the current MI Yearbook.
- 4.3.2** A Multi Point bolt in roll cage in compliance with FIA Appendix J 253 and in accordance with MI GCR Appendix 2 Section 16 is mandatory. A Safety Devices six point bolt in roll cage with double door bars (Part No B023) is recommended. The fitment of the cage to the chassis of the car is to be bolted, not welded, and the cage must only contact the chassis at the six mounting points. A fitting kit with captive nuts may be welded for the fitment of the 6 main legs provided these comply with the exception in 4.5.3. No additional welding, mounting points or bars may be used. No chassis modification or stiffening is permitted except that derived from the fitting of the roll cage. Seam welding or the addition of spot welds to the shell is prohibited.
- 4.3.3** A six-point safety harness in accordance with MI Regulations Appendix 2 Section 7.2 must be fitted
- 4.3.4** A currently FIA Homologated Driver's seat in good condition must be used and fitted in accordance with MI Regulation Appendix 2.
- 4.3.5** Drivers must wear current FIA homologated flame retardant overalls, underwear, socks, boots, balaclava and gloves. Flame retardant overalls must cover the arms to the wrists, the legs to the ankles and the torso to the neck during the competitive sections of the event. Clothing will remain valid for 5 years after the expiry date shown on the relevant FIA Technical List subject to being in adequate condition. See MI GRC Appendix 2 Section 23.
- 4.3.6** It is mandatory to use a plumbed in fire extinguisher in accordance with MI Regulation Appendix 2 Section 6.1. The extinguisher bottle must be mounted **in the passenger footwell**.
- 4.3.7** Safety helmet must be to the standard specified in MI GRC Appendix 2 Section 17 and must incorporate an FIA approved FHR device fitted in accordance with FIA Regulations.
- 4.3.8** Vehicles must be equipped with an externally operated circuit breaker as per MI GRC Appendix 2 Section 22 of the current MI yearbook. The circuit breaker must be operable when the driver is normally seated irrespective of whether a safety harness is worn or not.
- 4.3.9** It is not permitted to have any ignition components, coils, chokes or black boxes located in the cockpit area of the car.
- 4.3.10** The car must be fitted with towing points front and rear. It is only permissible to use a strap to connect to the existing towing eye mounting point on the cars to avoid damage in a contact situation. Where a solid bracket is used, the towing eye must not protrude beyond the bodywork of the vehicle. See MI GRC Appendix 2 Section 21.
- 4.3.11** Competitors are reminded that they will be required to comply with safety requirements of the local ASN where the event is being held outside of MI jurisdiction.

4.4 GENERAL TECHNICAL REQUIREMENTS & EXCEPTIONS

- 4.4.1** Components may be refurbished by way of painting or powder coating.
- 4.4.2** All vehicles must be of sound construction and mechanical condition and be well maintained.
- 4.4.3** Standard – is a part, the specification, features, location, and method of operation of a part are as provided when new by the motor manufacturer for the model and date of car. No modifications permitted beyond the repair or adjustment processes specified by the manufacturer. Checking will be by comparison to parts

supplied by BMW, or any of its nominated dealers or suppliers or sealed components from the Eligibility Scrutineer.

4.4.4 All vehicles must have a Competition Car Log Book in accordance with MI GRC Appendix 2 Section 27.

4.4.5 Two sump bolts must be drilled for sealing. Failure to comply will be considered to be a breach of the regulations. Two rocker cover bolts must also be drilled, and two timing cover bolts must be drilled for sealing two gear box bolts drilled for sealing before starting any events. As per MI GRC Appendix 2 Section 28.6 and 28.6.1

4.5 CHASSIS

4.5.1 The chassis must remain to the standard BMW MINI specification in construction and material. Reinforcing, removing, or adding material to the chassis is not permitted unless otherwise specifically allowed in these regulations. Under body sealant must not be removed.

4.5.2 All original “spot” welded seams attaching both front chassis legs to the bulkhead and both front suspension turrets may be “stitch” welded; this is defined by approx. 25-30mm of weld then 25-30mm gap of no welding. ‘Seam” welding, continuous welding along the seam, is not permitted.

4.5.3 Mounting plates and brackets must be welded to the floor for “bolt in” roll cage fitment. All welding for these plates and brackets and the original seams may be “seam welded”, continuously welded, within 200mm of the centre line of the corresponding “leg” of the roll cage. No welding permitted outside this 200mm limit.

4.5.4 Flat bar or plates may be welded or bolted to the floor directly under the driver’s seat to provide secure seat mounting points.

4.6 BODYWORK

4.6.1 General

The body must be standard in all respects and must not be modified unless otherwise stated below. Bodywork in whole or part may not be removed, modified or lightened.

4.6.2 Interior

4.6.2.1 The driver’s and passenger air bag units, SRS control unit and side impact sensors must be removed completely.

4.6.2.2 It is permitted for throttle, brake, and clutch pedal extensions to be added to aid foot control provided it does not enhance performance.

4.6.2.3 Steering wheel – free

4.6.2.4 The main dashboard must remain; however, it is permissible to remove the following:

- Lower dashboard shelves / glovebox
- In car entertainment system and all speakers
- Headlining, insulation, sound deadening and carpets
- Sun visors
- All interior plastic trims
- Rear windscreen wiper, arm, and mechanism/motor assembly
- All original seat belt mountings front and rear
- Any non-structural mounting brackets, e.g., rear seat backing mounting brackets, SRS ECU mounting, etc may be removed
- Rear parcel shelf
- Emergency tool kit
- Passenger front seat and rear seats.

- 4.6.2.5 The heating and ventilation matrix, blower fan and ducting behind the dashboard must remain in its entirety. It is permitted to remove the OEM plastic under-carpet ducting.
- 4.6.2.6 Drivers window door net is recommended. Window nets if used must be fitted in accordance with FIA Regulations Appendix J Art. 253 – Article 11
- 4.6.2.7 Interior mirror must be fitted but size is free.
- 4.6.2.8 A footplate may be added to Drivers / passenger footwell.
- 4.6.2.9 It is permitted for handbrake extensions to be added to aid control

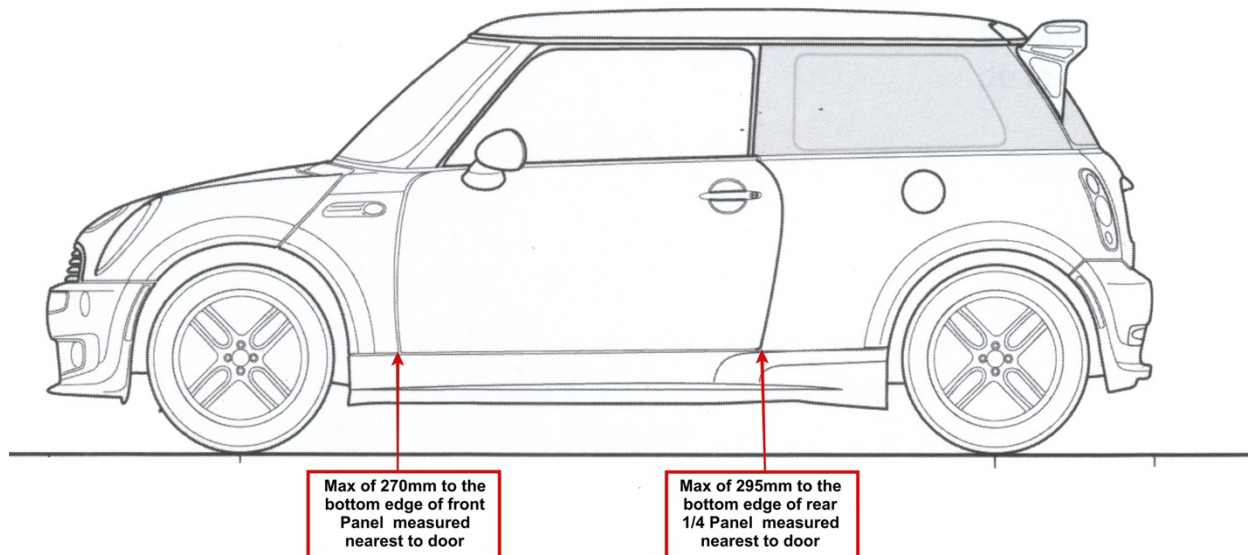
4.6.3 Exterior

The bodywork/exterior must be standard in all respects except for amendments specified in these regulations.

- 4.6.3.1 The bonnet must have catches removed and bonnet retaining pins and/or straps fitted in accordance with MI Regulation Appendix 2 Section 18.
- 4.6.3.2 Retaining pins/straps must be fitted to the rear tailgate and the electric catch must be removed.
- 4.6.3.3 Under bonnet sound proofing may be removed.
- 4.6.3.4 The plastic radiator panel may be replaced in accordance with a drawing which will be provided by bulletin.

4.6.4 Ground Clearance

The minimum ride height for all chassis will be - front 270mm, rear 295mm - with the driver normally seated. See diagram below for measurement datum points (from edge of metal wing to ground).



The Organisers reserved the right to amend the ride height and mandate an alternative measurement point. Any amendment will be advised by a Championship Bulletin.

- 4.6.5 The colour scheme of cars is free.
- 4.6.6 The Championship Rear Wing Assembly (Part No OBM00BS1) and Body Kit (Part No OBM00JCW) are optional. For the avoidance of doubt no other Wing Assembly or Body Kit may be fitted.
- 4.6.7 Mudflaps must be fitted to the front and rear wheels. Material is free

4.7 ENGINE

- 4.7.1 Only the standard W10 petrol engine fitted to the 2001 – 2006 MINI Cooper may be used. No JCW upgrade parts are permitted e.g. head, camshaft, ECU and intake.
- 4.7.2 All engine components must remain as standard as supplied by BMW MINI and be “as cast” and completely standard in every respect, except as permitted by these regulations.
- 4.7.3 It is permitted to skim a cylinder head and engine block. It is not permitted to skim the cylinder block by more than 0.1 millimetre from standard. The maximum compression ratio is 10.7 to 1 which allows for any

skimming. Pistons must remain standard. Standard plug (NGK BKR 6 EQUIP) will be used during the compression test.

- 4.7.4 No machining or polishing of any other part, including the combustion chamber, is permitted. All other engine components must remain standard and as supplied by BMW.
- 4.7.5 Engines may be sealed by the Championship Organisers or their nominated agent at any time during the season and for the duration of the season. Seals must not be broken under any circumstances. If seals are broken the engine will be ineligible unless a full internal inspection is carried out by the Organisers or their nominated agent. The inspection will be at the competitor's cost. Additional MI seals may be fitted to engines at any time. It is strictly forbidden for a competitor or his agent to remove or tamper with the MI seals. Should these seals be damaged or removed for whatever reason except under the direction of the Eligibility Scrutineer the car must not be used in competition or practice until the Eligibility Scrutineer has inspected the engine and refitted the correct seals. In the event that an engine or one of its components are sealed by the Eligibility Scrutineer for examination, and prior to that examination taking place, the engine or component is damaged such that it is not possible to confirm its compliance with the regulations, the Eligibility Scrutineer will automatically issue a non-compliance /reject report for the sealed parts.
- 4.7.6 The MI Eligibility Scrutineer may require that the engine be removed and/or stripped for inspection and compared with the standard parts held for this purpose or supplied by BMW. The cost of this and any subsequent rebuild will be borne by the competitor. All instances of broken seals will be logged and reported to Clerk of the Course/Championship Organisers.
- 4.7.7 Only NGK spark plugs may be used; these must be NGK BKR 6 EQUIP or the BMW branded equivalent (BMW Part No. 12129071003).
- 4.7.8 Air Filter make is free. Only a foam air filter may be used, and no additional ducting other than the standard ducting is allowed before or after the filter.
- 4.7.9 The designated engine Electronic Control Unit (ECU) or any of its associated parts shall not be modified in any way. It is not permitted to change the strength or form of any of the sensor signals to or from the ECU or ignition amplifier unit. All cars must have the mandatory Championship Control ECU software installed. This software shall be regarded as the only software permitted to be installed and used. At any time of their choosing a Technical Representative and/or the Eligibility Scrutineer will check compliance with the control software. The organisers reserve the right to swap ECUs between competitors cars or swap it out for a control ECU.
- 4.7.10 All engine control sensors and actuators must be standard, connected, and operational as originally designed for road use. The engine wiring harness from the ECU multiplug to all sensors and control functions must remain standard in all respects. An after-market oil pressure warning light may be fitted.
- 4.7.11 If the original donor car was fitted with air-conditioning, the air conditioning pump and radiator may be removed and a shorter drive belt may be used.
- 4.7.12 Lower engine mount brace may be fitted with a polyurethane bush (Powerflex PFF5-104BLK and PFF5-120BLK)
- 4.7.13 It is permitted to install a switch to over-ride the cooling fan relay.
- 4.7.14 It is permitted to replace the dual heater fitting with a metal upgrade (Part No TBA)

4.8 SUSPENSION

- 4.8.1 The standard suspension components and configuration as supplied by BMW MINI must remain unaltered except as specified below.
- 4.8.2 The Championship Camber Kit (Powerflex PFF5-132GBLK and PFF5-101GBLK or PFF5-101G) may be used and must remain unaltered in all aspects. The organisers reserve the right to introduce an optional camber kit or modification and competitors will be advised by bulletin.
- 4.8.2 Rear upper damper isolator bush may be changed for a competition bush (Powerflex PFF5-115BLK); however, the pick-up point and mounting plates must remain completely standard.
- 4.8.3 Negative wheel camber angles, measured with driver seated, must not exceed: - Front = 2° (negative); Rear = 1.5° (negative).
- 4.8.4 Front control arm rear carrier mounting bolts, inner ball joint mounting bolts, and steering rack mounting bolts may be replaced with bolts and nuts.
- 4.8.5 The standard rear anti roll bar must be fitted and be connected to the trailing arm drop link at both ends and be operational at all times unless a Mini One rear subframe is being used..
- 4.8.6 The front anti roll bar must remain standard in all aspects and must be connected to the damper mounted drop links at both ends and be operational at all times. It is permitted to replace the standard front anti-roll bar bushes with polyurethane bushes (Powerflex PFF5-102**BLK).
- 4.8.7 It is permitted to fit a front strut brace; this must only attach the chassis at the strut top mounting holes and no other point.
- 4.8.8 It is permitted to fit a polyurethane bush (Powerflex) in place of the standard bush to the rear of the front lower wishbone. No other modifications to this wishbone are permitted. This means the specification of the rubber can be changed to polyurethane and an offset bush is therefore NOT permitted. The optional support kit for this bush is permitted.
- 4.8.9 It is mandatory to use either of the following shock absorbers:
- 4.8.9.1 Standard production springs and shocks unaltered
- 4.8.9.2 **Sachs Shocks**
Rears Part No: 290238009
Front Part No: 290236009 and 290237009
- 4.8.9.3 **Bilstein B4**
Front Part No: 22-119193 (RHS) and 22-119186 (LHS)
Rear Part No: 19-119205
Note: these Bilstein parts will not be permitted for the 2025 season.
- 4.8.10 It is mandatory to use Eiback Spring Kit Part No: EIBE10-57-001-03-22 unless using standard springs and shocks as per 4.8.9.1. Springs must remain unmodified. A control sample will be available for comparison purposes.
- 4.9 **TRANSMISSION**
- 4.9.1 The clutch may be replaced with an uprated competition specification.
- 4.9.2 Either “Midland” type gearbox (BMW transmission code GS5-65BH) or “GETRAG” type gearboxes (BMW transmission code GS5- 52BG) are eligible providing they are standard in every respect with the exceptions below. Both MINI One And Cooper R50 5 Speed gearboxes are eligible to be used.

4.9.3 In Midland type and GETRAG type gearboxes, 5th drive gears (input and output), 5th gear synchroniser sleeve, 5th gear synchroniser ring and 5th gear selector fork may be removed and spacers fitted in their place. All other gears, including a reverse gear, must remain standard and selectable at all times. For the avoidance of doubt the 6 Speed GETRAG type gearbox is not allowed.

4.9.3 Gear oil type is free

4.9.4 The gear ratios must remain standard and gears must remain standard and helical cut (with the exception of reverse which is straight cut as standard). These ratios are as follows:

Gear	Midland	GETRAG
Transmission Code	G55-65BH	G55-52BGBFA
1 st	3.417:1	3.308:1
2 nd	1.947:1	1.913:1
3 rd	1.333:1	1.258:1
4 th	1.054:1	0.943:1
5 th (if fitted)	0.846:1	0.805:1
Final drive	3.97:1	4.158:1

Ratios for other eligible gearboxes will be issued by bulletin

4.9.5 The driveshafts must remain standard in all respects.

4.9.6 The minimum weight of the flywheel is 7.4kg

4.9.7 Limited slip differentials are not permitted. Standard differential casing and housing.

4.9.8 The lower mounting on the rear of the engine to assist in stabilising the gearbox may be upgraded to a Powerflex bush (Part No TBA)

4.9.9 The lower mounting on the rear of the engine to assist in stabilising the gearbox may be upgraded to a Powerflex bush (Part No TBA)

4.10 ELECTRICS

4.10.2 Cars must have 2 working rearward facing brake lights with bulbs of 21 watts minimum or FIA approved LED equivalent. See MI GRC Appendix 2 Section 2.3.

4.10.3 One FIA specification high intensity LED rear light must be fitted in the centre line of the rear screen. It must be clearly visible, fitted at the bottom of the screen outside the car. See MI GRC Appendix 2 Section 2.2

4.10.4 A lightweight racing battery may be fitted in accordance with MI GRC Appendix 2 Section 10.2. This battery must be capable of repetitive starts.

4.10.5 The original battery box may be removed, and all plastic scuttle panels on the bulkhead may be removed; if this is done the battery must be securely mounted within the cockpit in accordance with MI GRC Appendix 2 Section 10.2. If this change is made, the air intake on the bulkhead for the heating and ventilation system will also have to be covered by a fireproof material to conform to firewall safety regulations.

4.10.6 The alternator must remain standard, fitted, and operational at all times. No modifications permitted.

4.10.7 Front windscreen wiper motor must remain standard and both wiper blades must park in the position as intended by the manufacturer, i.e., not vertical.

- 4.10.8 Data logging is permissible, provided the data is stored “on board” during practice, timed practice, qualifying or races, and not transmitted from the vehicle.
- 4.10.9 External circuit breakers must be fitted as per MI GRC Appendix 2 Section 22. It is permissible to fit either electric or mechanically activated switches. In either case, parts of the wiring may be added or deleted to allow fitment, but these modifications must not improve performance.
- 4.10.10 Any unnecessary wiring may be removed, but any additional wiring must not be connected to the engine ECU wiring and must not be performance enhancing in any way.
- 4.10.11 The fuse for the automatic central locking must be removed.
- 4.10.12 It is permitted to fit a larger windscreen washer bottle controlled by a separate dash mounted switch.

4.11 BRAKES

- 4.11.1 The braking system must remain standard and fully operational in all respects.
- 4.11.2 The brake pipes may be replaced with braided brake hoses.
- 4.11.3 It is permitted to use brake cooling ducting subject to it being fitted through the front panel taking air from the front fog lamp aperture in the front bumper. This ducting must not protrude beyond the bodywork, and the internal diameter of the ducting must not exceed the diameter of the fog lamp apertures (53mm).
- 4.11.4 The ABS system must remain standard and fitted. No modification to the operation of the valve block assembly, control unit or wheel speed sensors are permitted.
- 4.11.5 The ABS system may be disabled if desired by removing the system fuse found in the interior fuse box. This fuse must either be fitted or removed before an event, i.e. there should be no facility for the ABS system to be activated or deactivated by the driver during practice, timed practice, qualifying or races.
- 4.11.6 Brake callipers must be standard
- 4.11.7 The front brake pad make and material are free, but the friction area must not exceed that of the original BMW part (BMW Part No. 34116770332). The rear brake pad make and material are free, but the friction area must not exceed that of the original BMW part (BMW Part No. 34216762871).
- 4.11.8 Brake fluid type and make is free
- 4.11.9 Brake lines may be rerouted inside the car.

4.12 WHEELS/STEERING

- 4.12.1 Any standard Mini 15” rim may be used or it is permitted to use any 15” rim once it meets the following specification 15x7.0 e40 4x100.
- 4.12.2 It is permissible to replace the wheel bolts with a conversion to studs and nuts, but any replacement must be compatible with the rim detailed in 4.12.1
- 4.12.3 The steering lock must be rendered inoperable.
- 4.12.4 Wheel studs must not protrude past the face of the wheel.

4.13 TYRES

- 4.13.1** The only tyres eligible are Sailun Atrezzo R01 195/50/15.
- 4.13.2** The minimum tread depth shall be 1.6 mm across the full width of each tyre in accordance with MI GRC Appendix 2 Section 8.3.
- 4.13.3** The use of tyre heating/heat retention devices, tyre treatments and compounds are prohibited.
- 4.13.4** The Organisers reserve the right to restrict the number of tyres used at each event or throughout the Championship and competitors will be informed by Championship Bulletin.
- 4.14 WEIGHTS**
- 4.14.1** The minimum vehicle weight excluding driver is 1026kg, including driver is 1095kg. The car and driver weight are intended to include the driver suitable dressed for competition, with safety helmet and all safety equipment. It is emphasised that both these minimum weights must be respected at all times during both Qualifying and Competition. Failure to meet either or both will be considered an offence under these regulations.
- 4.14.2** Any ballast carried must be securely fixed (bolted), be capable of being sealed and be located in the front passenger footwell.
- 4.15 FUEL TANK/FUEL**
- 4.15.1** The fuel system must be standard in all respects, no modifications permissible.
- 4.15.2** The maximum permitted fuel pressure is TBA bar.
- 4.15.3** Only fuel as defined in MI GRC Appendix 2 Section 28.2 to a maximum of 99 octane may be used.
- 4.15.4** At the end of timed practice/qualifying or races, there must be at least 3.5 litres of fuel from the tank of the competing car made available to the scrutineers for analysis. Compliance with minimum weight for the car will be taken before the fuel is removed.
- 4.15.5** The organisers reserved the right to introduce a control fuel/supplier and competitors will be notified by a Championship Bulletin.
- 4.16 SILENCING**
- 4.16.1** All vehicles must be silenced in accordance with MI GRC Appendix 2 Section 9.
- 4.16.2** The upper exhaust system must retain the standard catalyser and manifold assembly (BMW Part No. 18407525272 or 18407527819). This assembly must be complete from cylinder head mating surface to the centre section mating flange. No machining, polishing, reshaping or any other modifications are permitted to this assembly with the exception of replacing the flexi section with a weld-in like for like replacement providing no performance advantage.
- 4.16.3** The catalyser honeycomb within the manifold assembly must be complete, affixed to the internal surface and operational as designed at all times; no modification to the catalyser is permitted.
- 4.16.4** For the avoidance of doubt the bottom catalyser must be complete, and operational at all times.
- 4.16.5** The upstream and downstream oxygen sensors (lambda sensors) must be standard (BMW Part No. 11780872674), fitted correctly and fully functioning as designed at all times.

- 4.16.6 The lower exhaust system, make and layout, from the manifold assembly rear flange to the exit is free
- 4.16.7 Exhaust manifold may be wrapped with suitable material.