

Schedule TRS – Technical Regulations 2011 Toyota Racing Series

1. INTRODUCTION

1.1 If the following Technical Regulations do not clearly specify that you can do something, you should work on the principle that you cannot.

1.2 **Everything, which is not explicitly authorised, and anything that is not specified in;**

- (a) These Technical Regulations,
- (b) The Articles of the 2011 Toyota Racing Series Championship,
- (c) Section Four 2011 Nomenclature Regulations relating to the TOYOTA FT40 car,
- (d) Any Official Technical Bulletin or TRS Advise notice published over the course of the 2011 Toyota Racing Series Championship,

IS FORBIDDEN.

1.3 All of the documents detailed in 1.2 will be issued to each Competitor registered to take part in the 2011 Toyota Racing Series Championship.

1.4 As is the case with any race vehicle on going maintenance and attention to all components that influence the safety of the driver is essential. Addendum Two to these regulations contains guidelines for entrants / drivers / team technicians.

2 DEFINITIONS

Terms that are specific to this Schedule are defined here. For further definitions refer to National Sporting Code Article 2(1) and Appendix Two Schedule A, Article 2.

“Active suspension” means any electronic system enabling the control of any part of the suspension or the trim height whilst the vehicle is moving; and

“as supplied” means any car, component, consumables or materials supplied by, or available for purchase from, Toyota Racing Management specifically for the Toyota Racing Series, and

“Bodywork” means all entirely-sprung parts of the car including radiators in contact with the external air system, except for the structure that forms the safety harness and those parts incontestably associated with the mechanical functioning of the engine, the transmission and the running gear; and

“Cockpit” means the volume that accommodates the driver; and

“Cockpit protection” is the non-structural elements situated in the cockpit whose only purpose is to increase driver comfort and safety. Any equipment of this type must be non-flammable and able to be removed quickly without tools; and

“Main structure” means the entirely-sprung part of the vehicle structure to which suspension loads are transmitted, and extending longitudinally from the furthest-forward suspension attachment point on the chassis to the furthest-back suspension attachment point on the chassis; and

“Seal” means a piece of lead, aluminium, metal, plastic or paint composite attached to, or affixed by wire to, a component to prevent it being opened or dismantled without prior authorisation; and

“Set of Tyres,” means two front tyres and two rear tyres; and

“New Tyre” means a tyre supplied by the official Michelin service provider with bar code identification that has not been through a heat cycle and exhibits no wear; and

“Used Tyre,” means a tyre that has been through a heat cycle and exhibits wear; and

“Registered tyre” means a tyre (used or new) that at a previous event in the current championship season has been submitted to the TRS tyre parc fermé for bar code recording and marking for that vehicle; and

“Round” means from the first qualifying session to the end of the last race at each event, and

“Supplementary tyre” means a tyre (either new or registered) selected solely at the discretion of the TRS Series Scrutineer to replace one or more of a competitors tyres at a Round, and

“Survival cell” means the structure containing the fuel tank and cockpit; and

“Suspension” means the method and means by which the chassis/bodywork assembly is suspended from the wheels, i.e. the wheel axes must not be directly connected to the chassis/bodywork assembly. There must therefore be independent movement of the suspension upright/spindles in relation to the main structure; and

“Telemetry” means data transmission between a moving car and any station separate from this car; and

“Test Day” means either an Official TRM Test day or Friday Meeting Testing (refer Article 7.2), and

“Toyota FT40 Car” means a Toyota Tatuus car, supplied via Toyota Racing Management specifically for the purposes of racing and includes all parts and components related to the car, and

“Toyota Racing Management” or **“TRM”** means representatives appointed by Toyota New Zealand Ltd as the “Category Manager” to organise the class and under delegated authority promote the class with The MotorSport Company Ltd; and

“TRS Series Scrutineer” means the appointed TRS Scrutineer(s); and

“TRS” means the Toyota Racing Series; and

“Wet race trim” means that the vehicle is fitted with the approved wet weather tyres; and

“Wheel” means the combination of the flange and rim, **“complete wheel”** means the combination of the flange, rim and tyre and **“vertical wheel axis”** means the axis perpendicular to the ground, seen from the side, passing through the wheel's rotation axis, included in the central line of the tread; and

3 REGULATIONS

- 3.1. All vehicles and equipment must at all times comply with the entirety of these Technical Regulations to be eligible for the 2011 Toyota Racing Series Championship.
- 3.2. Competitors must comply with these Technical Regulations in their entirety.
- 3.3. Toyota Racing Management and / or MotorSport NZ reserve the right to issue additional statements, amendments, interpretations or clarifications concerning these Technical Regulations. The time scale for implementation will be detailed on the statement. Changes made for safety reasons may come into effect without prior notice.
- 3.4. Any matter affecting Technical Regulations must be put in writing, to the TRS Championship Coordinator. A claim to have received a clarification or ruling on any Technical Regulation must be substantiated by the production, on demand, of written confirmation of the clarification or ruling.
- 3.5. Non compliance with, or attempt to circumvent, any of the Technical Regulations and Procedures, including any fraudulent act (defacing and re-marking), shall incur a penalty.

3.6 General:

- (1) The 2011 Toyota Racing Series Championship is for competitors participating in TOYOTA FT40 cars prepared as detailed in this Schedule.

The TRS Lites Series is a class of TOYOTA FT40 controlled cars with reduced horsepower [150bhp approx], limitations on aerodynamic and mechanical adjustments all identically prepared by a TRM appointed race engineer.

The TRS Sporting Coordinator will publish on the TRS Official notice board, as and when applicable throughout the meeting, a TRS Advice Note detailing obligatory set up requirements for TRS Lites cars [e.g. wing settings, suspension settings, shock absorber settings etc]

Unless detailed otherwise in this specific Advice note all articles of Schedule TRS remain applicable to TRS Lites cars.

- (2) The only rolling chassis permitted are those supplied by Toyota Racing Management. Once supplied the rolling chassis may not be modified in any way whatsoever except where specifically permitted by these Technical Regulations or with the written permission of the TRS Series Scrutineer. Any such modifications will only be permitted if they are deemed absolutely necessary after a problem has been clearly identified.
- (3) Toyota Racing Management must supply any components supplied as part of the rolling chassis that need to be replaced unless specifically authorised elsewhere in these Technical Regulations.
- (4) At the start of each event, qualification or race, the cars must be clean and in good order. Toyota Racing Management and / or MotorSport NZ reserve the right to forbid cars not meeting this requirement from taking part.

- (5) Only organisations holding the approval of the Toyota Racing Management are allowed to manufacture and supply Cars and components, including spares. Toyota Racing Management undertakes to inform all registered competitors of any organisations approved by newsletter or advise notice.
- (6) The car must be constructed and assembled in total conformity with the original design.
- (7) Except where specifically permitted, the reinforcement of any component or joint by the addition of material either separately or by increase in the gauge or section of the material is not permitted.
- (8) Except where specifically permitted, the structural and aerodynamic performance of the car and performance of the engine must not be changed by modifying the shape of any component (e.g. by the addition or removal of any material or by deforming the original material).
- (9) Any work on the car in the following areas:
- The structure
 - The bodywork
 - The mechanical elements
 - The electrical system
 - The accessories

must be carried out in accordance with the methods prescribed by Toyota Racing Management in order to ensure that the car retains its original configuration.

- (10) Replacement parts and technical assistance will be available from Toyota Racing Management at all TRS test days and Sanctioned Race Meetings.
- (11) From time to time it will be necessary to approve alternative equivalent components. Only components approved as alternatives and published as such, by the Toyota Racing Management and / or MotorSport NZ in official amendments to these Technical Regulations are eligible for use in the 2011 Toyota Racing Series Championship.
- (12) Spare cars are prohibited. With the exception of sub article (a) below, each driver can only use a single car during each Event.
- (a) If an accident at an event compromises the safety integrity of the monocoque beyond safe repair at the event, then with the permission of the TRS Series Scrutineer, the Competitor is allowed to replace either the monocoque, or complete car. In this case, the replacement car must be presented again and pass a scrutineering audit inspection.

3.7 Technical checks - General principles:

- (1)** The entrant/driver must present the car as detailed on Form No TRS 003 for a Technical and Safety check prior to the commencement of competition at the first meeting entered. Toyota Racing Management will advise of the time and place of these inspections.
At all subsequent rounds entered the TRS Series Scrutineer or appointed representative may undertake random audit / inspections of all or some of the items detailed on Form TRS 003.
- (2)** The TRS Series Scrutineer or appointed representative can check the compliance of a vehicle at any point during an event, and may insist that the car be dismantled by the competitor to ensure that the entry or compliance conditions have been fully met.
- (3)** Any competitor who refuses to submit their vehicle for technical compliance inspection(s) will be referred on to the meeting officials for appropriate action.
- (4)** The TRS Series Scrutineer has the responsibility for checking that cars comply with the Technical Regulations and may invite a representative of the approved suppliers to assist in verifying the source of components. The technical checks can be made by comparison between the checked part and the same genuine new part.
- (5)** The entrant/driver is responsible for ensuring that only eligible components are used and that all replacement parts fitted to the vehicle comply with the Technical Regulations before such parts are fitted.
- (6)** If a car is deemed not to be in compliance, the lack of any performance gain will never be considered as an element of defence.
- (7)** It is the entrant's responsibility to maintain all seals unbroken and to protect all such seals from damage or loss. The eligibility of the relevant component and assemblies depends upon a full complement of seals being in place.

3.8 Removal of parts:

- (1)** The TRS Series Scrutineer or appointed representative has the right to request the removal of parts, to check them after the qualifying session and/or the race(s).
- (2)** The competitor, or his designated representative, can put a mark on the removed items. There will be no contestation possible concerning the origins of the removed parts.
- (3)** The removed parts, if declared not to be in compliance with the Technical Regulations, will be confiscated by the Toyota Racing Management and / or MotorSport NZ and will not be replaced.
- (4)** In the event of any dispute relating to the authenticity of a component, the TRS Series Scrutineer shall refer to the 'standard component' as supplied by the manufacturer and or the manufacturers drawings, which shall be consulted as the official items.

- (5) All references to standard parts and/or part numbers and/or materials in these regulations shall be interpreted as references to Toyota Racing Management approved manufacturers' or partner's original specification(s) relative to TOYOTA FT40 car or to official sample parts supplied and certified by the manufacturers and builder. In the case of dispute, reference will be made to these specifications, drawings and/or samples.
- (6) Removed parts, which are declared to be in compliance with the Technical Regulations, will be returned.
- (7) In all cases, the Competitor is responsible for any cost for dismantling and rebuilding save for any dismantling or rebuilding required as a result of protest when the MotorSport NZ regulations apply.
- (8) As a method of control, any component on a competitor's car may be removed by the TRS Series Scrutineer and exchanged for a similar component from another source. While efforts will be made to ensure that the condition of the exchanged parts is similar, responsibility for the care of the exchanged component lies with the recipient. Exchanged components may be returned to their original owner later. However, any part damaged or failed while on exchange will remain with the recipient.

3.9 Seals and component identification:

- (1) Only vehicles bearing a full compliment of TRS seals and component identification marks will be eligible for the 2011 Toyota Racing Series Championship. (Refer also to Articles 3.11 and 6.5 of this Schedule).
- (2) Given that the presence of seals only presumes compliance, it may be necessary, when performing scrutineering to determine compliance, to remove components that have been sealed so that they can be inspected internally.
- (3) The condition of the seals is the responsibility of the competitor.
 - (a) Any absence, deterioration or tampering will automatically imply non-compliance with the Technical Regulations. The TRS Series Scrutineer or appointed representative will be the sole arbiter in respect to the condition of the seals.
 - (b) Breaking or removal of any TRS applied seal(s) is not permitted without the approval of the TRS Sporting Coordinator or TRS Series Scrutineer
- (4) Supplementary elements may be sealed at any moment of an event. These seals must remain intact until the TRS Series Scrutineer authorizes their removal.
- (5) All components used in the construction and assembly of the car must be capable of being identified by an approved identification mark, except where modifications and adjustments are specifically permitted by these Technical Regulations.

- (6) Certain components will be identified by holograms or Manufacturers identification marks. These components will only be eligible while the tags / identification marks are intact, legible and positioned in conformance with the requirements of the Workshop Manual/Nomenclature Regulations. If parts have been supplied without holograms the part may be authenticated and a hologram or an identification mark approved by Toyota Racing Management and / or MotorSport NZ fitted, providing an audit trail and compliance with the component specification can be demonstrated.

3.10 Nomenclature:

- (1) The 2011 version of the 'Nomenclature Regulations' relating to the TOYOTA FT40 car, incorporating all clarifications, amendments and details of updated components shall remain the only active version of the document.
- (2) The parts that make up a TOYOTA FT40 car are described in the 'Nomenclature Regulations' document.

These parts are divided into three categories;

- (a) **Category A:** No modifications or repairs (unless approved by Toyota Racing Management) are authorized. The parts in this category must be the genuine parts designed for the TOYOTA FT40 car and must remain in their original positions and fulfil the function/s for which they were originally intended.
 - (b) **Category B:** Only the modifications as specified in the Technical Regulations or in the Nomenclature Regulations relating to the TOYOTA FT40 car are authorized, insofar that they are of equal or higher quality to the original part.
 - (c) **Category C:** The part is considered to be unrestricted, on the express condition that the original function is not bypassed, that no supplementary functions are added, and that it is located in the same position as the genuine part.
- (3) The set of parts that make up an element are subject to the same category as the element concerned.
 - (4) The 2011 version of the Nomenclature Regulations and the Maintenance Manual, relating to the TOYOTA FT40 car, incorporating all clarifications, amendments and details of updated components shall be the 'active' versions of those documents for the duration of the 2011 Toyota Racing Series Championship.

3.11 Seal and Component Identification Record Form:

- (1) All cars will be issued with a Seal and Component Identification Record Form. This will be used to record the details and location of all component sealing and identification marks.
- (2) A copy of the form will be appended to the MotorSport NZ Vehicle Logbook.
- (3) If required by the TRS Series Scrutineer, the form must be made available for inspection and must at all time, be a true reflection of the details.
- (4) If the details or location of any component sealing or identification mark changes, replacements form must be completed with the revised details.

- (5) The only persons authorised to issue Seal and Component Identification Record Forms are the TRS Series Scrutineer and / or MotorSport NZ, or their appointed representative.

3.12 Bureau:

The Bureau of the Toyota Racing Series, instituted by joint agreement of Toyota Racing Management and the Executive of MotorSport New Zealand Inc, is a body whose essential mission is to maintain the balance of performance between the competitors entered in the Toyota Racing Series Championship and to see to it that the regulations are interpreted in a fair and safe manner that does not upset the balance of the Championship.

The Bureau may automatically take up any question that falls within its field of competence. In this context, it may also act on the request of any competitor correctly registered and entered in the Championship concerned, or of any natural person or legal entity wishing to take part with a vehicle that satisfies the criteria set out in the Articles of the Championship concerned.

Any request must be submitted to the Secretary of the Bureau in writing.

The members of the Bureau may ask the competitor to provide any further information they may require or demand an assessment if necessary, the cost of which will be borne by the competitor.

The appointed TRS Championship Sporting Coordinator will furnish competitors with full details of the Bureau on request.

4 BODYWORK and DIMENSIONS

- 4.1** The sections of bodywork may not be modified in any way, other than as specified in the current versions of:
- (a) These Technical Regulations.
 - (b) The Maintenance Manual relating to the TOYOTA FT40 car.
 - (c) The Nomenclature Regulations relating to the TOYOTA FT40 car.
 - (d) Any Official Technical Bulletin published over the course of the 2011 Toyota Racing Series.
- 4.2** It is not permitted to bridge bodywork joint lines with adhesive tapes other than in an emergency during a race or qualifying session.
- 4.3** Tape applied to bodywork must follow the original shape of the bodywork and must not be used to modify the standard profile.
- 4.4** Small strips of tape whose sole purpose is to cover and protect clips and other bodywork fasteners are permitted provided the tape is of similar colour to the bodywork.
- 4.5** Bodywork sections must be fitted to the vehicle as supplied and not set apart from the chassis mounting points by the use of spacers or any other means.

- 4.6 It is permitted to bond tie wrap securing blocks to bodywork (internally) or components for the sole purpose of securing components/cables. It is not permitted to drill holes in bodywork to fit tie wrap blocks.
- 4.7 It is permitted to paint bodywork and apply vinyl type decals providing that either process is for decorative purposes only and is not performance enhancing.
- 4.8 It is permitted to apply vinyl type protective material of maximum thickness 0.25 mm to the leading edges of the sidepod. It must be for protective purposes only and shall not be performance enhancing. The applied material must be kept to a minimum; the area covered will be at the discretion of the TRS Series Scrutineer.
- 4.9 It is permitted to fit heat reflective tape to the inside surfaces of the right hand side pod in the area extending rearwards from the back line of the survival cell.
- 4.10 Central wheel axis:**
The axis of the axle for overhang measurements is defined as follows:
- The straight line joining the intersection of the rotation axis of each of the wheels to the central line of the tyre tread.
 - This straight line shall be defined practically: by projecting vertically onto the ground, the most forward and rear points of the complete wheel at the level of the central line of the tread, and determining on the ground the middle point between these two projections.
 - Having completed this operation for the right wheel and the left wheel, the straight line connecting the two middle points is the ground projection of the axle axis for the wheels in question.
- 4.11 All height measurements will be taken when the car is in normal race condition, with the driver seated normally.
- 4.12 With the exception of the rollbar and Toyota Racing Management approved in car camera and related mounting, no part of the car must have a height exceeding 90 cm from the ground, with driver on board and seated normally, and the car in its normal race trim. No part of the rollbar with a height exceeding 90 cm from the ground must have a shape enabling it to exert a significant aerodynamic influence over the car's performance. Notwithstanding this when the ride height has been set for "wet race trim" the height of the rear wing side plates at their highest points shall not exceed 92 cm.
- 4.13 No part of the bodywork located in front of the furthest-rear edge of the complete front wheels, and more than 30 cm from the longitudinal axis of the car, must be any less than 50 mm from the reference plane, or have a height exceeding that of the front wheel rims.
- 4.14 Between the furthest-rear edge of the complete front wheels and the furthest-forward edge of the complete rear wheels, all suspended parts of the car visible from below must be located on one of the following two parallel planes: the reference plane or the step plane.
- (1) Reference plane: surface between the furthest-rear edge of the complete front wheels and the furthest-forward edge of the complete rear wheels with a maximum width of 500 mm symmetrical to the longitudinal axis of the car.

- (2) Step plane: all suspended parts of the car visible from below and not in the reference plane, must be positioned 50 mm above the reference plane.

4.15 No part of the car must be positioned more than 50 cm to the rear of the rear wheel axis, or more than 100 cm to the front of the front wheel axis.

4.16 Aerodynamic Devices:

- (1) The addition of any element having an aerodynamic influence is prohibited. It is emphasised that the aerodynamic shape of the car must remain absolutely standard i.e. all surfaces wetted by the air stream including bodywork and side pods (both inside and outside the ducts) must not be modified in any way.

(2) **Front Wing:**

- (a) It is mandatory to use the wing and end plates designed for the TOYOTA FT40 car 2011 version.
- (b) Front wing angles may be changed using only the range of adjustment provided by the original specification.
- (c) It is permitted to apply vinyl type protective material of maximum thickness 0.25 mm to the leading edge of the front wings. It must be for protective purposes only and shall not be performance enhancing. The applied material must be kept to a minimum; the area covered will be at the discretion of the TRS Series Scrutineer.

(3) **Rear Wing:**

- (a) It is mandatory to use the wing designed for the TOYOTA FT40 car 2011 version.
- (b) Rear wing angles may be changed using only the range of adjustment provided in the original specification.
- (c) It is permitted to use a thin coating of silicon sealer between the rear flap spacer [Part number 010204053] and the mating wing panel for the sole purpose of enhancing the retention of the two parts. All excess silicon that extrudes around the panel edges shall be removed so it has no influence on aerodynamics. The TRS Series Scrutineer may order the removal of silicon around the panel edges if in their opinion alone it is considered to be influencing aerodynamics.

(4) **Rear Floor and Skid Plate:**

It is mandatory to use of the rear floor designed for the TOYOTA FT40 car 2011 version. The rear skid plate 'as supplied' may be removed on the proviso that 2 x 6mm bolts and appropriate washer are installed to maintain the integrity of the rear floor retention.

It is permitted to use a thin coating of silicon sealer between

- The RH & LH conveyors [Part numbers 010302044 & 010302045] and the rear floor [Part number 010302002], and

- The Rear right and left floor deflector plates [Part numbers 010302046 & 010302047] and the rear floor [Part number 010302002],

All excess silicon that extrudes around the panel edges shall be removed so it has no influence on aerodynamics. The TRS Series Scrutineer may order the removal of silicon around the panel edges if in their opinion alone it is considered to be influencing aerodynamics.

(5) Floor sections – Front, middle and rear wooden skid panels.

It is permitted to use a thin coating of silicon sealer between;

- The deflector [Part Number 010301004] and the front wooden skid panel and the chassis [tub], and
- The central wooden skid panel and the chassis [tub], and
- The rear wooden skid panel and the chassis [tub], and
- To replace the rubber seal with a silicone sealer bead sealing the leading edge of the front floor to the chassis

All excess silicon that extrudes around the panel edges shall be removed so it has no influence on aerodynamics. The TRS Series Scrutineer may order the removal of silicon around the panel edges if in their opinion alone it is considered to be influencing aerodynamics.

4.17 Main dimensions:

- (1) The wheelbase and track (front and rear) must remain within the range of permitted values using the original suspension parts.
- (2) Vehicle ride height must be within the tolerance of the official TRS Technical Drop bar on both front and rear axles.
- (3) Any measurements made to confirm compliance with permitted values, shall be made while the car is stationary on the surface and location nominated and advised by the TRS Championship Scrutineer.
- (4) All measurements of height shall be made with the vehicle in 'race trim' and with the driver on board seated in the normal driving position. If failure occurs a re-measurement will be performed with a nominated set of unused dry tyres provided by the TRS Championship Scrutineer and set at the manufacturers recommended pressures, 21.0 PSI for front tyres and 22.5 PSI for rear tyres. This set of tyres will be available for competitors to use throughout the event to check their ride height.

4.18 General car requirements:

Throughout the Meeting, Round or Event, any covers, protections or other devices that in any way conceal any part of the car bodywork or any component with an aerodynamic function are forbidden at any time in the Paddock, the Pit Garages, and the Pit Lane or on the Start Grid.

The following are permitted:

- Covers which are placed over damaged cars or components;
- A transparent tool tray (provided it does not act as a cover in any way), no more than 50mm deep, placed on top of the rear wing;
- A cover over the car in the pit lane, grid or Parc Fermé if it is raining;
- Covers over the car in the Paddock if all team members are absent for a prolonged time and the car is unattended i.e. for security reasons only.

4.19 In Car Camera Mounting:

It is mandatory for all cars to be fitted with the Toyota Racing Management approved in car camera mounting kit. (Refer also to Article 18.3 of this Schedule).

An additional camera for the use of teams in driver training and / or internet video release, etc can be installed on the proviso that;

- The camera and its location are approved by Toyota Racing Management and the TRS Championship Scrutineer, and
- The installation including the camera mount meets or exceeds the crash loading requirements of 40 G.

5 WEIGHT

5.1 Minimum weight:

- (1) Minimum weight of car and driver: **550kg.**
- (2) The minimum weight is “in the condition in which the vehicle and driver (wearing his complete racing apparel) crosses the finish line or at any other time during an event. For the purpose of this Regulation, an event is deemed to include any transfer to a place of post event scrutiny as directed by an Official and without the addition or removal of any solid or fluid matter, including fuel.”

5.2 The addition of any liquid(s) or other material(s) to the car, or the substitution of any part(s) for a heavier one during the race or during officially timed qualifying is forbidden until the end of the parc fermé period.

5.3 Ballast:

- (1) If ballast is required to achieve the minimum weight, this must be in the form of ballast blocks and / or plates located beneath the driver’s seat. Ballast plates may also be located within the cockpit behind the seat, however any such plates must be securely attached using bolts into existing chassis bolt holes, with the provision for lock wiring and must be to the satisfaction of the TRS Championship Scrutineer.
- (2) Attachment of the ballast block(s) and / or plate must be to the satisfaction of the TRS Championship Scrutineer.

- (3) If ballast is not required to achieve the minimum weight, the ballast plate does not need to be installed.
- (4) If ballast is fitted in order to meet weight requirements, it is mandatory for this ballast to be declared to the TRS Championship Scrutineer for it to be recorded in the meeting Scrutineering Audit Worksheet and sealed into place.
- (5) The re-distribution of weight in the car, by reducing the gauge or section of material in any component and by adding ballast or increasing material elsewhere, is not permitted.

6 ENGINE

6.1 General:

- (1) Only the Toyota 2ZZ-GE engine, which has been modified, prepared to a uniform performance specification, sealed or officially ID marked, approved and supplied by Toyota Racing Management are eligible for use in the Toyota Racing Series Championship.
- (2) The engine is a standard series production unit to which no additional modifications may be made by the competitor or entrant

6.2 Only the authorised engine supplier to Toyota Racing Management and / or Toyota Racing Management themselves, are permitted to carry out any repairs, rebuilding or tuning to the engine. All requests for assistance in this matter shall be referred to Toyota Racing Management and not directly to the engine supplier.

6.3 The TRS Series Scrutineer reserves the right to retain an engine at the end of the race for further examination.

6.4 Toyota Racing Management reserves the right to require a driver to exchange an engine for a new replacement at any time.

6.5 Engine Sealing:

- (1) Any engine not sealed or officially ID marked, or with one or more seals missing, or with seals of an origin that cannot be verified, shall be considered, non-compliant with the Technical Regulations and must be fully examined, tested and sealed by the TRS Series Scrutineer or appointed representative (at a cost payable by the competitor) before it can be considered eligible for the Toyota Racing Series Championship. (Refer also to Article 3.9 of this Schedule).
- (2) A seal may only be broken with the permission of the TRS Series Scrutineer or appointed representative.
- (3) Only engines with a full complement of seals will be eligible for repair and rebuild.

6.6 Clutch:

- (1) It is mandatory to use the original TOYOTA FT40 clutch system, 'as supplied'.

- (2) It is permitted to reposition the clutch bleed screw by using a flexible extension pipe with a maximum authorized length of 50cm. The bleed screw must remain within in the engine bay. The bleed screw bracket may be bent or inverted to provide greater clearance between the bleed screw assembly and engine coolant pipes.
- (3) In the interest of driver comfort and ease of pedal operation the pedal pad may be substituted with another pad provided it is:
 - (a) Made of 5mm (nominal) thickness aluminium alloy of equal or higher grade or quality to the original pad, and
 - (b) To a maximum width of 50mm, and
 - (c) Identical in height to the original pad, and
 - (d) Installed to the satisfaction of the TRS Series Scrutineer.

6.7 Clutch Master Cylinder:

- (1) It is mandatory to use the original TOYOTA FT40 master cylinder, 'as supplied'. (Refer also to (4) of this article).
- (2) It is mandatory to use the master cylinder extension top 'as supplied'.
- (3) A replacement push rod of different length is only permitted if it can be demonstrated that insufficient adjustment can be achieved using the 'standard' components. The replacement push rod must respect the original diameter, material, thread and pitch.
- (4) It is permitted to interchange the clutch master cylinder and brake master cylinders. The car must be equipped with 3 master cylinders, one of 0.70", one of 3/4" and one of 5/8". The cylinders may be fitted in any position, clutch, front brakes or rear brakes.

6.8 Induction System:

- (1) **Air Filter:**
 - (a) It is mandatory to use the engine air filter, 'as supplied'; the air filter element will be sealed into the air box canister at all times. Permission to remove the seals must be obtained from the TRS Series Scrutineer prior to the removal of the seals. Failure to comply may result in penalties.
 - (b) Modification of the air filter in any way is prohibited.
 - (c) The air filter must be fitted at all times during the event. It may only be removed (refer sub article (a) above) for the sole purpose of cleaning and / or re-oiling of the filter. The filter may only be cleaned with compressed air and / or the cleaning fluid and re-oiling fluid supplied by Toyota Racing Management.

- (d) Toyota Racing Management will supply replacement air filter elements in accordance with the following schedule.

The air filter element removed must be returned to Toyota Racing Management in exchange for the replacement unit.

Air Filter changes will occur:

In the period between Rounds 2 & 3

In the period between Rounds 4 & 5

- (e) Toyota Racing Management may at their discretion require that an air filter element is cleaned or replaced in addition to the changes scheduled in article 6.8(1)(d) above.
- (f) It is permitted to remove the original screws attaching the lower air box to the rear air box support bracket and replace these with bolts and nyloc nuts by drilling two holes in the appropriate locations through the lower air box.
- (2) The introduction of water, nitrous oxides or any other agent into the air intake system is prohibited.

6.9 Engine Electrical System

(1) Engine Management System:

- (a) It is mandatory to use the genuine TOYOTA FT40 engine management system.
- (b) The Electronic Control Unit is sealed using metallic and / or paint sealing systems.
- (c) Only engine Electronic Control Units, which carry unbroken seals, are eligible for the Toyota Racing Series Championship.
- (d) The seals on the ECU may only be broken with the permission of the TRS Series Scrutineer or appointed representative.
- (2) The TRS Series Scrutineer retains the right, at any time, to;
- (a) Provide replacement engine Electronic Control Units,
- (b) Interchange ECU's between participating cars or
- (c) Acquisition data from the ECU and / or any other data stored in the vehicles electronic components.
- (3) It is mandatory to use the spark plugs as supplied from Toyota Racing Management.

6.10 Silencing and Exhaust:

- (1) It is mandatory to use the standard exhaust system, and muffler, 'as supplied'. The Exhaust protection plate Part No. 040425014 [as listed in Spare Parts list page NZ code 25-04] cannot be removed.

It is permitted to;

- (a) Add additional heat shielding material to the underside of the engine cover provided that it is fixed with adhesive only and has no other function than shielding the engine cover from heat transfer.
 - (b) Add heat-shielding material to the engine bay end of accelerator cable.
- (2) The exhaust system and muffler must remain 'as supplied,' unmodified and must be fitted at all times.
- (a) Repairs to the exhaust system excluding the muffler must be carried out in a repair facility approved by Toyota Racing Management.
 - (b) All repairs must be approved, documented and facilitated by Toyota Racing Management.
 - (c) All repairs made to the exhaust system by the authorised repairer will be identified by way of either engraved information, or welded identification tag detailing the name of the repair facility and incorporating a unique serial number. The repair facility will maintain records of all repairs and provide such information as and when required by Toyota Racing Management and / or the TRS Series Scrutineer.
- (3) No additional material, coating or covering may be applied to either the inside or outside of the exhaust system.

6.11 Cooling System:

- (1) Airflow through the radiator may be controlled by the application of blanking plates on the radiator core.
- (2) The application of adhesive tape across the inlet of the ducts is prohibited.
- (3) It is permissible to fit grilles on the radiator air intake.
- (4) The detail design of such grilles is free, provided that;
 - (a) The grille may only be fixed to the floor and the radiator duct assembly.
 - (b) It is not permitted to fix the grille to the chassis (survival cell).
 - (c) Only one grille per side pod is permitted.
 - (d) Nothing may protrude outside of the side pod.

The TRS Series Scrutineer may order a competitor to modify or remove a grille(s) should data recorded from the ECU indicate any cooling deficiencies.

- (5) It is permitted to repair damage to water pipes by welding. Any repair must respect the 'as supplied' dimensions / materials and must not alter the function of the primary component in any way.

- (6) Pipe support brackets must remain 'as supplied'. It is permitted to fit a vibration absorbing material only in the area between the bracket and the pipe.
- (7) It is permitted to fit a vibration absorbing material between;
 - (a) The radiator and the support brackets.
 - (b) The radiator and the air inlet duct assembly.
- (8) Radiators must be fitted parallel to the mounting face of the air inlet duct assembly.
- (9) Radiators must not be set apart from the air inlet duct assembly by the use of spacers or any other means except for the use of vibration absorbing material as detailed in (7) (a) of this article.
- (10) The use of sealing material between the radiator and the air inlet duct assembly to compensate for any irregularities in the mating faces is permitted.
- (11) Pipes and hoses may be protected by wrapping in a suitable material provided such wrapping is for protection only and does not alter the function of the primary component in any way. Any protective wrapping shall be easily removable to allow inspection of the component.
- (12) It is mandatory to use only coolant fluid sourced from Toyota Racing Management. No additives (including water) are permitted.

7 PIPING and FUEL TANKS

7.1 Fuel Cell:

- (1) It is mandatory to use the TT104 ZZ fuel cell 'as supplied'.
 - (a) Rubber fuel cells must bear the name of the manufacturer, the specifications to which the fuel cell was manufactured, together with the date of manufacture.
 - (b) No fuel cells complying with FIA specification FT3 shall be used more than 5 years after the date of manufacture, unless inspected and re-certified by the manufacturer for a period of up to another 2 years. FIA specification FT 3 cells must be replaced after a maximum of 7 years.
- (2) The fuel cell breather pipe must deposit into the catch tank in such a way as to prevent any spilling on the track.
- (3) It is mandatory to use the fuel cell filler cap 'as supplied'.

7.2 Fuel Delivery System:

- (1) It is mandatory to use the original TOYOTA FT40 fuel lines and related accessories 'as supplied'.

- (2) Heat shrink or fire sleeve protective coverings, which do not alter the function of the primary component and which are easily removable, to allow inspection of the component, may be fitted to any fuel lines.

7.3. Refuelling:

- (1) Unless specifically provided for in Event regulations or bulletin specific to TRS Articles or Schedules refuelling is not permitted;
 - (a) During officially timed qualifying or between split qualifying sessions if these are used at any Event.
 - (b) On the starting grid or in pit lane.
 - (c) During races.
 - (d) While the driver is in the car.
- (2) Any storage of fuel on board the vehicle at a temperature below ambient temperature is prohibited.
- (3) The use of a specific device, whether on board the car or not, to lower the temperature of the fuel to below the ambient temperature is forbidden.
- (4) Refuelling and defueling devices used must comply with the procedures outlined in Addendum One and any requirements notified by Motorsport NZ Bulletin or TRM Advice Notice, at all times.

8 OIL SYSTEM

- 8.1 It is mandatory to use engine lubricant sourced from Toyota Racing Management. No additives or substitutes are permitted.
- 8.2 It is mandatory to use the 2011 TOYOTA FT40 lubrication system and oil lines, 'as supplied'.
- 8.3 All hoses must be free from restrictors, expansion chambers and any other device intended to alter the pressure or rate of flow.
- 8.4 No oil replenishment is allowed during qualifying or during any race.
- 8.5 The lubrication system is designed to operate with a fresh air vent. The breather pipe must deposit into the original catch tank (located internally as part of the bell housing assembly) in such a way as to prevent any spilling on the track.
The catch tank must be emptied daily prior to the commencement of any testing, practise or race sessions.
- 8.6 Heat shrink or fire sleeve protective coverings, which do not alter the function of the primary component and which are easily removable, to allow inspection of the component, may be fitted to any oil or hydraulic line.
- 8.7 It is permitted to drill a hole of 3 mm maximum diameter, in the web of the oil filler cap to facilitate the fitting of lock wire to prevent accidental opening of the cap. Any lock wire fitted must be for the sole purpose of securing the filler cap.

9 Starting

- 9.1** It is mandatory to use the TOYOTA FT40 starter, 'as supplied'.
- 9.2** The driver when seated normally in the car must be able to demonstrate, at all times, that the starter is capable of starting the engine.
- 9.3** A reserve battery, temporarily connected to the vehicle by a jack plug, (provided specially for this purpose), may be used to start the engine, both in the pits and (when permitted) on the grid.

10 TRANSMISSION

10.1 Gearbox:

- (1)** It is mandatory to use the (six speeds and reverse) TOYOTA FT40 sequential gearbox, 'as supplied'.
- (2)** Once supplied, the gearbox and ancillaries supplied with it may not be modified in any way whatsoever.
- (3)** The gear ratio set nominated by Toyota Racing Management must be used in its entirety.
- (4)** All cars must have a properly functioning reverse gear. It must be selectable at any time during the event by the driver seated in his normal driving position, with the engine running.
- (5)** Any repairs undertaken on the gearbox unit must comply with the procedures detailed in the TOYOTA FT40 car Maintenance Manual.
- (6)** It is mandatory to use transmission lubricant sourced from Toyota Racing Management. No additives are permitted.
- (7)** It is permitted to fit a gearbox push/pull cable heat shield of a standard and specification approved by the TRS Series Scrutineer.
- (8)** It is mandatory to fit a gearbox breather, which discharges into the bell housing catch tank.

10.2 Traction control systems are forbidden.

10.3 Differential and Final Drive:

- (1)** It is mandatory to use the final drive, 'as supplied'.
- (2)** Any final drive with an origin that cannot be verified, shall be considered, non-compliant with the Technical Regulations and must be fully inspected, by the TRS Series Scrutineer or appointed representative (at a cost payable by the competitor), before it can be considered eligible for the Toyota Racing Series Championship.

- (3) The lightening and removal of material from the transmission system is prohibited. No modification to the prevailing torque within the differential mechanism is permitted.
- (4) It is not permitted to have a prevailing torque within the differential mechanism, measured when the differential mechanism is at ambient temperature, of less than 22ft pounds (30nm).

11 SUSPENSION and STEERING

- 11.1 It is mandatory to use the original TOYOTA FT40 suspension elements, 'as supplied'.
- 11.2 Adjustment of the suspension geometry is free, but only within the range of adjustment provided.
- 11.3 Adjustment of Camber, Castor and Tracking angles are free, but only within the range provided by the parts as detailed in the Nomenclature for the TOYOTA FT40 car.
- 11.4 The suspension may not be modified in any way, other than as specified in Technical Regulations 1.2 (a), (b), (c) and (d).
- 11.5 It is not permitted to apply heat reflective tape to suspension components, except for the rear upper and lower wishbones and the rear right pushrod to protect these items from the exhaust heat.
- 11.6 It is not permitted to change or modify the surface appearance of suspension components (e.g. chrome plating, powder coating etc).
- 11.7 Replacement suspension joints are free but must respect the Category requirements as detailed in the Nomenclature for the TOYOTA FT40 car.
- 11.8 The **only** permitted fastening point configurations, for the rear suspension is **BF 35**.
- 11.9 **Anti-roll bars:**
 - (1) It is mandatory to use TOYOTA FT40 anti roll bars 'as supplied' within the range of parts as detailed in the Nomenclature for the TOYOTA FT40 car.
 - (2) Anti-roll bar stiffness adjustment is free within the range provided. The operating linkage may be disconnected or one tie rod (as detailed in Parts list code 13-04 items 25,26,27,28 & 29) may be completely removed.
 - (3) Cockpit and remotely adjustable anti-roll bar stiffness is prohibited.
- 11.10 **Suspension Springs (Front and Rear):**
 - (1) It is mandatory to use the TOYOTA FT40 springs, 'as supplied' within the range as detailed in the Nomenclature for the TOYOTA FT40 car.
 - (2) It is permitted to apply small strips of tape whose sole purpose is to cover the spring rating recorded on the spring provided that the springs retain legible Toyota Racing Management identification marks.

11.11 Steering: It is mandatory to use the TOYOTA FT40 steering rack, 'as supplied'.

11.12 Active suspension is prohibited

11.13. Dampers:

- (1)** It is mandatory to use the TOYOTA FT40 dampers, 'as supplied'.
- (2)** Only dampers, which have been;
 - (a)** Verified by the officially appointed representative for dampers as having been prepared to the 2007 season specifications and
 - (b)** Code marked and / or sealed by the officially appointed representative for dampers; are considered eligible for the TOYOTA FT40 car.
- (3)** Any damper with an origin that cannot be verified, or not bearing an intact seal which has an origin that can be verified, shall be considered, non-compliant with the Technical Regulations and must be fully inspected, tested and sealed by the TRS Series Scrutineer or appointed representative (at a cost payable by the competitor), before it can be considered eligible for the Toyota Racing Series Championship.
- (4)** Only external adjustment of bump and rebound is permitted, but only within the range of adjustment provided.
- (5)** Damper gas canister pressure shall not exceed 14 bar at ambient air temperature.

Notes:

- [a] Dampers as supplied are pressured to 12 bar with a tolerance of + or – 2 bar.*
- [b] For the purpose of Technical inspection damper pressure will be checked with the car lifted clear of the ground / dampers in extended position / suspension unloaded.*

- (6)** Damper gas canister(s) shall be inflated with nitrogen; no other medium may be used.
- (7)** No modification to the damper valving is permitted.
- (8)** Toyota Racing Management will advise the officially appointed representative for damper repairs and rebuilding.
- (9)** The TRS Series Scrutineer reserves the right at any time to require that dampers be removed from a car and checked for conformity or replaced with dampers from another source.

12 BRAKES

12.1 It is mandatory to use the original TOYOTA FT40 braking system, 'as supplied'.

- (1)** In the interest of driver comfort and ease of pedal operation the pedal pad may be substituted with another pad provided it is:
 - (a)** Made of 5mm (nominal) thickness aluminium alloy of equal or higher grade or quality to the original pad, and

- (b) To a maximum width of 50mm, and
 - (c) Identical in height to the original pad, and
 - (d) Installed to the satisfaction of the TRS Series Scrutineer.
- (2) (a) It is permitted to use either the 2005 or 2006 version brake rotors “as supplied”
- (b) Brake rotors may be machined, to restore friction surface run out, by skimming provided that the amount of material removed does not reduce the thickness of the rotor beyond the minimum thickness specified in Section Four Nomenclature Regulations.

Note: Skimming creates a slight reduction in mass, thus reducing thermal capacity, increasing temperatures; consequently drivers may note brake fade occurs earlier. A brand new disc with its greater thermal capacity will always perform better than a worn disc.

12.2 It is permitted to fit a quick release coupling in the rear brake line.

12.3 It is not permitted to fit cooling arrangements to the front and rear brakes (scoops, ducts, extractors etc.)

12.4 It is mandatory to use brake pads specified for the 2011 Championship season sourced from Toyota Racing Management.

12.5 Master Cylinders:

- (1) It is mandatory to use the TOYOTA FT40 car 2006 version master cylinder, ‘as supplied’. (Refer also to (4) of this article).
- (2) It is mandatory to use the master cylinder extension top ‘as supplied’.
- (3) A replacement push rod of different length is only permitted if it can be demonstrated that insufficient adjustment can be achieved using the ‘standard’ components. The replacement push rod must respect the original diameter, material, thread and pitch.
- (4) It is permitted to interchange the clutch master cylinder and brake master cylinders. The car must be equipped with 3 master cylinders, one of 0.70”, one of 3/4” and one of 5/8”. The cylinders may be fitted in any position, clutch, front brakes or rear brakes.
- (5) It is not permitted to have master cylinders of the same size on the front and rear braking systems.
- (6) It is permitted to have the brake balance capable of being adjusted by the driver while driving the car.

12.6 Brake Calipers:

- (1) The piston return springs shall be installed with the larger diameter coil windings inside the piston cavity and the smaller diameter windings facing the calliper housing.

Note: A calliper piston seal Part No. CSK3235EB is available for purchase from Toyota Racing Management as a direct supersession of the original seal.

- (2) To ensure full area surface contact between the brake pads and brake discs it is permitted to machine [i.e. by milling process] the caliper mounting posts on the front and rear suspension uprights provided that any machining does not create a secondary function.

13 WHEELS and TYRES

13.1 Wheels:

- (1) It is mandatory to use the TOYOTA FT40 wheels, 'as supplied'.
 - (a) Diameter of wheel. 13 inches
 - (b) Width of front wheel. 8 inches
 - (c) Width of rear wheel. 10 inches
 - (d) Manufacturer brand of wheels 'as supplied' are either "Avus" or "OZ". Only complete sets of either Avus or OZ wheels are permitted to be used on the car at any one time.
- (2) It is not permitted to fit aerodynamic devices or air extractors to wheels.
- (3) Repainting of wheels must be carried out in accordance with Toyota Racing Managements specifications [colours currently approved are gold, silver, black or slate] and must be carried out in a painting facility approved by Toyota Racing Management.
- (4) **Wheel attachment:**
 - (a) All cars whilst under their own power must be fitted with a safety spring, which will retain any wheel nut in the event of it coming loose.
 - (b) After each wheel change the safety spring must be fitted in a separate action to that of securing the wheel nut.
 - (c) It is mandatory to paint the safety springs, Day-Glo pink, red or orange.

13.2 Tyres:

- (1) Make: It is mandatory to use the series nominated and specified tyre sourced from "Michelin" the approved series supplier.
- (2) Type and Sizes;
 - (a) **Michelin Dry (Slick):**
 - Front 20/54/13 S310
 - Rear 24/57/13 S310
 - (b) **Michelin Wet (Treaded):**
 - Front 20/54/13 P304
 - Rear 20/57/13 P304

- (3) Tyres shall be inflated with nitrogen or air; no other medium may be used. The tyre pressure is left up to the operator, but instructions by the approved tyre manufacturer must be observed. Pressure regulation valves are forbidden.
- (4) Preheating and chemical treatment of the tyres of any kind is prohibited. Scraping of tyres with tools in conjunction with applying heated air is forbidden. The application of any material (liquid, solid or gas) to any part(s) of the tyre is forbidden. The only exceptions are the use of a mixture of pure domestic water and household detergent for washing purposes, or the lubricant applied to the tyre bead for fitting purposes.
- (5) Any tyre protection covers used at any time within the confines of the circuit must be of a temporary construction and must be capable of being used many times.

13.3 Tyre use and restrictions:

- (1) The intention of this regulation is to;
 - (a) Contain the costs by limiting the number of tyres which can be purchased on behalf of any one car / driver during the series, and
 - (b) To limit the number of tyres used per car / driver per complete Round.
- (2) Tyre allocation, marking and conditions of use will be specified in the TRS Championship Articles.

14 COCKPIT

14.1 Steering Wheel:

- (1) It is mandatory to use the steering wheel as supplied by Toyota Racing Management in its entirety. A non standard radio transmit button may be added to the wheel with the approval of the TRS Series Scrutineer.
- (2) The Driver shall refit the steering wheel immediately after exiting the cockpit at all times so that the vehicle can be steered by officials and / or pit crews. Failure to do so may result in a penalty.

14.2 Seat:

- (1) The arrangement of seat, padding and protection must be such that the maximum time necessary for the driver to get out from his normal driving position does not exceed 5 seconds. All driving equipment being worn, the safety belts must be fastened and the steering wheel must be in place in the most inconvenient position.
- (2) Any additional padding or covering placed on the seat should be fire retardant to FIA standard 8855 -1999. All such material must be quickly removable without the use of tools.

14.3 Safety Harness:

- (1) It is mandatory to use a six-point safety harness that conforms to the current FIA standards.

- (2) It is not permitted to mix parts of seat belts. Only complete sets as supplied by the safety harness manufacturer shall be used.
- (3) It is mandatory to wear two shoulder straps, one abdominal strap and two straps between the legs.
- (4) It is mandatory to replace the complete harness following a 'Major Impact' accident where the safety harness has been subject to high stress.

15 SAFETY

15.1 Fire Extinguisher:

- (1) It is mandatory to use the fire extinguisher system as supplied.
- (2) The following information must be clearly displayed on each fire extinguisher:
 - (a) Capacity,
 - (b) Type of extinguishant,
 - (c) Weight or volume of extinguishant,
 - (d) Verification date of extinguisher, which must not be more than 2 (two) years after the date of filling or the date of the last verification.

Any extinguisher on which the above information cannot be read will be deemed not to comply with the Technical Regulations and must be replaced.

- (3) The driver, when seated normally in the vehicle, with belts and steering wheel in place, must be able to activate the fire extinguisher manually, as must any person outside the vehicle by means of a clearly indicated trigger.
- (4) The means of triggering the extinguisher from the outside of the vehicle must be combined with the master switch and must be denoted by a red 'E' within a white circle, of at least 50mm diameter with a red edge.
- (5) It is mandatory that the fire extinguisher remains in its original position in the survival cell.
- (6) The fire extinguisher must be securely fixed with attachments able to resist a deceleration of 25 "g".
- (7) The whole of the extinguishing system must be fire resistant.
- (8) Extinguisher nozzles must be suitable for the extinguishant and must be installed in such a way that they are not pointed directly at the driver
- (9) The system must be operable, irrespective of the position/direction of the vehicle, even when the car is upside down.

- (10) All extinguisher systems must be in the 'ARMED' condition (i.e. be capable of being operated without the removal of any safety device) at all times while competing or practising and during post event Technical Inspection.
- (11) The fire extinguisher may not be disarmed in any 'Parc Ferme' area without the specific permission of the TRS Series Scrutineer.
- (12) A fire extinguisher system found to be incapable of being operated shall be considered to be non compliant with the Technical Regulations.

15.2 Main Circuit Breaker:

- (1) It is mandatory to use the circuit breakers 'as supplied'.
- (2) When the Main Circuit Breaker, is 'operated' all electrical circuits must be isolated and there must be no power source capable of keeping the engine running.
- (3) The driver, when seated normally in the vehicle with seat belts fastened and steering wheel fitted in place, must be able to shut off all electrical circuits and stop the engine by activating the Main Circuit Breaker (which has been isolated to prevent arcing).
- (4) The Main Circuit Breaker must also be able to be operated from the outside of the car by means of a clearly indicated trigger.
- (5) The means of triggering must be combined with the fire extinguisher triggering and must be located on the lower main hoop of the rollbar on the right hand side. The location must be identified by a Red Spark on a white edged blue triangle with a base of at least 60mm.

15.3 Rear Light:

- (1) It is mandatory to use the LED red warning light 'as supplied'.
- (2) This red warning light must be in working order throughout the entire event and must;
 - (a) Face rearward in the original position.
 - (b) Be clearly visible from the rear.
 - (c) Be able to be switched on, by the driver when seated normally in the car.
 - (d) Show visually continuous illumination when switched on.
 - (e) Have a minimum of 90% of the total number of LED's in working order at the start of any competition (qualification or race).
- (3) The rear warning light must be illuminated at all times when the car is running on wet weather tyres and / or when requested by the Meeting Official signal (Rain Lights On) as detailed in Schedule CH.

- (4) During a race or practise it shall be at the discretion of the Event Director / Clerk of the Course to decide if a driver shall be stopped because the rear warning light is not illuminated for what ever reason. Should a car be stopped in this way it may rejoin when the fault has been remedied.

15.4 Rear View Mirrors:

- (1) It is mandatory to use the TOYOTA FT40 rear view mirrors, 'as supplied'. However it is permissible to shorten the length of the mirror support arm (i.e. the end that passes through the mirror body) provided that it is drilled and retapped to accept the original mirror body fastening screw.
- (2) All vehicles must be equipped with two rear view mirrors, one on each side, which offer the driver a rearward view on both sides of the vehicle.

15.5 HANS Device:

- (1) The use of the HANS (Head and Neck Restraint System) for all competitors is mandatory. Thirty degrees is generally recommended.
- (2) The system must conform to the manufacturers mounting instruction, and it must be configured, maintained and used in accordance with the manufacturer's instructions.
- (3) Tether anchors may only be fitted to helmets that are;
 - (a) Listed in FIA Technical List No 29, or
 - (b) Retro fitted to a SA2000, SA 2005 or BS6658-85 type A/FR compliant helmet in strict conformance with the HANS tether post fitting instructions.

15.6 Driver Apparel

All Drivers are required to wear competitor's apparel (*Protective helmet, HANS device, Overalls, underwear, socks, footwear and gloves*) that meets the current FIA International requirements.

Notes:

1. For details of the current FIA competitors' apparel refer to the FIA website at www.fia.com/sport/Regulations/driverequipregs.html.
2. Competitors are reminded that their gloves are required to be of a contrasting colour to that of the car thereby enabling clear visibility of any hand signals made.

16 SAFETY STRUCTURES

16.1 Roll Protection and Head Restraint:

- (1) Height of the roll structure:
 - (a) No part of the driver's helmet shall pass through a line struck between the tops of the first structure acting as a (forward) rollbar, to the highest point of the Main (rear) Rollbar. The driver must be sitting in a normal position in the car with helmet attached and safety belts fastened.

- (b) When the driver is seated normally with seatbelts fastened an imaginary line drawn through the highest point of the Main (rear) Roll-Over bar must clear the driver's helmet by 2 inch (50 mm).
- (2) When the driver is seated normally with seat belts fastened the head restraint must be not more than 2 inch (50 mm) behind the driver's helmet.
- (3) The side head restraint system must be fitted at all times. It is permissible to recover the side head restraint system with a different (softer) material. The covering must be fire retardant to FIA standard 8855 –1999.
- (4) The head restraint must present a flat vertical plane to the driver's helmet. It is permitted to reduce the thickness of the head restraint rear vertical face across approximately two thirds of the vertical face to ensure an air gap not exceeding the maximum distance referred to in 16.1 (2) of these regulations.
- (5) It is permitted to fit extensions to the 2 locating pins on the roll hoop to provide better location of the head restraint. The locating pins must not exceed 12.5mm diameter and protrude a maximum of 18mm from the face of the roll hoop.

16.2 Survival Cell:

- (1) It is mandatory for the survival cell to be identified by a plate fixed in the drivers cockpit area and a seal attached to a non-detachable part of the main structure.
- (2) Any survival cell with an origin that cannot be verified, shall be considered, non-compliant with the Technical Regulations and must be fully examined and validated (at a cost payable by the competitor) before it can be considered eligible.
- (3) The Survival Cell may not be modified in any way, other than as specified in Technical Regulation 1.2.
- (4) It is permitted to fit heat reflective material only to the rear of the survival cell.
- (5) It is permitted to paint the survival cell and apply vinyl type decals providing that either process is for decorative purposes only and is not performance enhancing.
- (6) It is permitted to bond 'tie wrap' securing blocks to the survival cell for the sole purpose of securing components/cables. It is not permitted to drill holes in the survival cell.
- (7) If after an accident, the car no longer guarantees sufficient safety, the competitor may replace the survival cell on the express condition they receive prior agreement of the TRS Series Scrutineer.
- (8) The car should be shown to the TRS Series Scrutineer and declared to be compliant before further use.

16.3 Nose (Crash Box):

- (1) It is mandatory for the nose box to be identified by an official seal or identification mark.

- (2) On the grounds of safety, all cars whilst on the track must be fitted with a nose, which is attached to the main structure of the vehicle, in the original position and with the correct fixings.
- (3) Should the nose become detached from the vehicle, or sustain damage that may be considered to compromise its structural integrity, the car will, immediately be shown the black flag with orange disc. (The car must call at its pit for repairs on the next lap).
- (4) It is permitted to paint the nose and apply vinyl type decals providing that either process is for decorative purposes only and is not performance enhancing.
- (5) It is permitted to apply vinyl type protective material of maximum thickness 0.25 mm to the nose cone front. It must be for protective purposes only and shall not be performance enhancing. The applied material must be kept to a minimum; the area covered will be at the discretion of the TRS Series Scrutineer.

16.4 Repairs:

- (1) The policy of the Toyota Racing Management and MotorSport NZ requires that cars shall be of uniform performance.

In all cases, the repair or replacement of body panels and chassis, must be carried out in accordance with the methods prescribed and detailed in the Maintenance Manual and in the Nomenclature Regulations.

- (2) Any repairs not undertaken by direct replacement with standard parts will only be permitted if it can be demonstrated that such repairs are incapable in any way of enhancing the performance of the car. [Refer Article 16.5 of these regulations for details of authorised repair facilities.] It is the entrant's responsibility to provide such demonstration to the TRS Series Scrutineer before the car is used but the decision of the TRS Series Scrutineer whether to accept the demonstration or not will be taken as final.
- (3) Any car, which shows obvious signs of having been reinforced in any areas, will automatically be deemed not to comply with these Technical Regulations.
- (4) Survival Cell Repair:
 - (a) Repairs to the Survival Cell must:
 - (i) Be carried out in accordance with the manufacturer's specifications.
 - (ii) Be carried out in a repair facility approved by Toyota Racing Management.
 - (iii) Be fully documented.
 - (iv) Have a demonstrable audit trail.
 - (b) It is not permitted to use other than the nominated repairer. Doing so may render the Survival Cell ineligible.
- (5) Nose (Crash box) Repair:
 - (a) Repairs to the Nose must be carried out in accordance with Toyota Racing Managements specifications and must be carried out in a repair facility approved by Toyota Racing Management. The only action which may be carried

out to the Nose by other than the approved repair facility is cosmetic surface preparation for painting.

- (b) It is not permitted to use other than the nominated repairer. Doing so will render the Nose ineligible.

(6) Front Wing Main Plane (blade) and / or Flap Repair:

- (a) Repairs to the Front Wing Main Plane (blade) and / or Flap must be carried out in a repair facility approved by Toyota Racing Management. The only action which may be carried out to the Nose by other than the approved repair facility is cosmetic surface preparation for painting.

16.5 Approved repair facility:

- (1) All repairs must be approved, documented and facilitated by Toyota Racing Management.
- (2) All repairs made to the survival cell; nose (crash box), wings or wing flaps will be identified by way of an imbedded tag detailing the name of the repair facility and incorporating a unique serial number. The repair facility will maintain records of all repairs and provide such information as and when required by Toyota Racing Management and / or the TRS Series Scrutineer.

17 FUEL

17.1 The only authorised fuel shall be the control fuel 'as supplied' from the Toyota Racing Management designated supplier at each round of the Championship series."

17.2 Once supplied, nothing may be added to the fuel.

17.3 Testing:

- (1) On the instructions of the TRS Series Scrutineer, fuel testing may be carried out at any time including prior to the start of a session or race.
- (2) The TRS Series Scrutineer or appointed representative will take a sample of fuel from the control fuel distribution point and will seal the container. Fuel samples taken from competing cars will be analysed against the sample taken by the TRS Series Scrutineer or appointed representative. The fuel from the cars must in all respects be identical with the sample taken from the distribution point.
- (3) After each qualifying session and race a minimum of 3 litres of fuel from the fuel cell of the competing car must be made available on request to the TRS Series Scrutineer for analysis.

17.4 Competitors must ensure that no fuel contamination occurs.

17.5 Fuel handling protocols:

Competitors are required to comply with the protocols of fuel handling and storage (refer addendum one to this Schedule). Failure to comply may result in penalty.

18 ELECTRICAL

18.1 Telemetry:

During all Meeting test sessions, qualifying sessions and races it is forbidden to use all telemetry systems and associated electrical equipment unless specifically allowed for elsewhere in these regulations.

18.2 Data Acquisition:

- (1) It is permitted to fit a data acquisition system(s). The only data acquisition system(s), which may be fitted, is that specified and supplied by Toyota Racing Management through its appointed agent.

Note: Currently TRM supply the following sensors for data acquisition:

2 x Brake pressure sensors

2 x wheel speed sensors

1 x steering angle sensor

2 x accelerometers (g force) sensors

1 x battery voltage sensors.

These being additional to the sensors as supplied as part of the engine package.

- (2) All unapproved data acquisition systems must be removed in their entirety.
- (3) It is only permitted to use the sensors provided with this specified system, all sensors shall be installed as detailed by Toyota Racing Management and be fully operational throughout all testing, practice sessions and races.
- (4) The TRS Series Scrutineer reserves the right to download access and analyse any information at any time during the event.
- (5) The ECU allows for a data audio feed to give on screen graphics to the TRM approved TV broadcaster for TV programme advanced features.

18.3 Radio communication – TV cameras:

- (1) It is permitted to use 2-way radio communication between the Driver and Team.
- (2) It is not permitted to use 2-way radio communication between Drivers.
- (3) It is not permitted to link radios, by any connection or signal device to the ECU or Data Acquisition system.

Note: MotorSport NZ will again be using "Race Radio" to advise competitors of important information throughout each Round of the Championship. Refer to Schedule CH for further details.

- (4) TV camera(s) are only permitted to be fitted in the locations provided on the car by TRM and where all such installations are approved by the TRS Series Scrutineer.

18.4 Battery:

- (1) It is mandatory to use a sealed (gel type) 12-volt battery that can be installed in the existing battery mounting bracket and cover without modification.

- (2) It is mandatory to mount the battery in the original position.
- (3) The battery terminals **shall be insulated** to protect from short-circuiting and producing sparks.
- (4) The battery earth lead shall be identified by a yellow marking.

18.5 Reserve Battery Jack Plug:

- (1) It is mandatory to fit the reserve jack plug as supplied on the rear wing mounting plate as detailed in the Nomenclature section.
- (2) It is authorised to drill and tap 2 x 4mm holes in the left hand rear wing mounting plate for the installation of the reserve battery plug.
- (3) It is permitted to connect the reserve battery jack plug cables other than directly to the battery terminals. Connections may be made to either the starter or alternator and to a suitable ground adjacent to the reserve battery jack plug. The connection of cables must respect the Nomenclature category of the parts used to build a TOYOTA FT40 2006 version car.

18.6 Charging Circuit:

- (1) It is mandatory to use the 12volt (nominal) alternator 'as supplied'.
- (2) The Charging circuit must be operational at all times whilst the engine is running.

18.7 Wiring Loom:

- (1) It is mandatory to use the wiring loom, 'as supplied'.
- (2) No modifications are permitted to the wiring loom; however additional earth wires are permitted (e.g. starter earth wire).
- (3) Repairs to the wiring loom can only be carried out by Toyota Racing Management and / or their authorised repairer.
- (4) The only authorised repair facility (appointed representative of Toyota Racing Management) is Motorsport Electronics.
- (5) All repairs made to the wiring loom will be identified by way of tag detailing the name of the repair facility and incorporating a unique serial number. The repair facility will maintain records of all repairs and provide such information as and when required by Toyota Racing Management and / or the TRS Series Scrutineer.

- 18.8 Dashboard:** It is mandatory to use the TOYOTA FT40 car 2005 or 2006 version dashboard, 'as supplied'.

19 FASTENERS

- 19.1** Nuts and bolts must respect the category of the nomenclature; they are classed as '**Category C**' and are unrestricted on the following conditions:
- (a) The standard diameter is retained
 - (b) The standard thread pitch is retained
 - (c) The original material must be retained
 - (d) Steel construction must be of equal or higher grade than the original part.
- 19.2** Rivets must respect Article 19.1 (a) and 19.1 (c) of these regulations.
- 19.3** The use of additional fastening devices, e.g. bolts, screws, rivets is prohibited.
- 19.4** It is permitted to repair faulty threads by the use of Keen Inserts/Helicoils. Where thread inserts are utilised the original thread diameter and pitch must be respected.
- 19.5** The use of bonding material (adhesives, glues) to reinforce, replace or supplement any bolted, screwed or riveted joint is prohibited unless specifically provided for elsewhere in these regulations.
- 19.6** It is permitted to use Loctite RC 75/AAV (Retaining Compound) or equivalent, to supplement any screw or bolt thread.

ADDENDUM ONE

FUEL HANDLING AND STORAGE PROTOCOLS

1 FUEL STORAGE and TRANSFER

- 1.1 All TRS fuel supplies will be stored in sealed drums, under cover in specified location at each event. TRM will advise the location of the fuel storage area to competitors at each event.
- 1.2 TRM staff will be wearing protective overalls, gloves, balaclava, and safety goggles at all times while dispensing fuel. A TRM team member, in equivalent protective clothing, will also be assigned to a fire extinguisher during any fuel transfer from this station. [Refer Note 1 below]

A sign may be placed adjacent to the fuel transfer area of the storage container warning that fuel is being dispensed, at the discretion of TRM. No personnel except those actually involved in the fuel transfer or with the fire extinguisher will be permitted within 5 metres.

- 1.3 No smoking signs will also be displayed in the fuel transfer area (5 metre zone).
- 1.4 No cellphones are permitted within the fuel transfer area (5 metre zone).
- 1.5 Competitor's team personnel must wear protective clothing within the fuel transfer area (5 metre zone). [Refer Note 1 below]

Note 1: For details on the minimum standards of protective clothing refer to the current MotorSport Manual Book One Appendix Two Schedule A Article 4.2 (3)

2 PIT AREA PRACTICES and COMPETITORS FUEL SUPPLY

2.1 No Smoking:

The entire TRS pit and paddock area is a no smoking zone. TRM will place "no smoking" signs in prominent positions in the pit complex. Competitors are requested to assist TRM personnel in ensuring this policy is respected.

2.2 Pit garage storage – during each day:

Competitors will be allowed to store a maximum of 40 litres during the day in their allocated pit garage at any time. Fuel should be placed in a location least likely to be subject to any direct sunlight or other sources of heat. Teams with multiple vehicles should ensure this fuel is not kept in a single location, but appropriately distributed and stored so that no more than 40 litres is stored in any 3-metre radius.

All fuel storage containers must be of a type designated safe for storage of fuel (TRM personnel will not transfer fuel into non-compliant containers) and must have the lid tightly closed at all times when not in use.

2.3 Pit garage storage – overnight:

At the conclusion of testing or competition each day of the event teams are required to remove all fuel (and any other bulk containers of flammable fluids with the exception of aerosol cans) from the pit garages to a secure location outside the pit complex (e.g. race car transporter) or to the TRS fuel storage container (storage container opening times will be advised on TRS noticeboard).

No fuel (or other bulk flammable liquids) apart from that which is in the race car can be stored in TRS marquees/garaging overnight.

2.4 Minimum Fire Extinguisher requirements:

- (1) **In pit garage:** All competitors must have at least one (for each car) Multi Purpose dry powder extinguisher (minimum size 4.5 kg), in their allocated pit garage at all times. The fire extinguisher must be in an accessible location at the front of the allocated pit garage.
- (2) **In pit lane:** In addition to the extinguisher(s) in the pit garages, all teams shall have at least one Multi Purpose dry powder extinguisher (minimum size 4.5 kg), that is taken to pit lane each time the race car is testing or in competition.

2.5 Refuelling or de-fuelling the race car:

- (1) All power connections to manually operate the in-car fuel pump must be sealed electrical plugs and temporary alligator style clips or similar are not permitted. Suitable leads are available from TRM.

For refuelling, funnels are not permitted and competitors must use a manual pump system which has a low risk of spillage

- (2) During refuelling and de-fuelling of the vehicle, competitors are required to have a crewmember ready with an armed fire extinguisher, who is not part of the refuelling or de-fuelling work. No other work is permitted to occur on the vehicle during refuelling and de-fuelling.

All personnel not involved in the refuelling need to be vigilant and members of the public need to be kept well away from the area.

Protective overalls, balaclava, gloves, goggles etc are recommended for competitors' team members involved.

Notes:

- *It is recommended that the car is on the ground with the wheels fitted, preferably half outside the marquee area, during refuelling and de-fuelling.*
- *It is suggested that this process should take place immediately prior to leaving the garage for the next session when the vehicle temps are at their coolest.*
- *Competitors should consider static discharge risk and at all times use procedures which will minimise static discharge during refuelling and de-fuelling. [MJC comment – I have read several reports that suggest this problem is higher with ethanol as it conducts and you can get make/break connections]*

2.6 Pit garage practises:

No competitor is permitted to perform any welding, grinding or other operation likely to cause sparks inside the TRS pit garages.

If such maintenance work is necessary competitors should consult with TRM personnel or event management staff as to the most suitable location for such work.

Care should also be taken when using any torches or portable AC powered lighting, to ensure that all risks are reduced as much as possible.

2.7 Fuel spillage:

If any fuel or oil is spilled on the plastic floors please immediately attend to cleaning it up and notify Toyota Racing Management staff as soon as possible. In the case of fuel spillages, immediately evacuate the immediate area of all personnel not required for containing and cleaning up the spillage.

CRACK-TESTING GUIDELINES

Preamble:

The entrant/car owner is responsible for ensuring that the car is well maintained and in a safe condition at all times on the racetrack. All components should be free from any mechanical or material defects that could lead to stress failure. This means that from time to time a variety of components should be removed cleaned and inspected during general maintenance or in the event of the car suffering accident damage. This is done to try to ensure components remain in a safe condition for continued competition use. If during this inspection process there is any doubt to the integrity of any component then it should be replaced with a new item.

Whilst the TOYOTA FT40 car and components are designed to operate well within the safe limits necessary for a racing car of this performance level, the nature of the vehicle's use in competition requires that a high standard of preventative maintenance is undertaken.

The paragraphs that follow are recommendations for testing and maintenance. Entrants / car owners and operators are strongly advised to take these guidelines into account when preparing and maintaining their car for competition.

1 NON-DESTRUCTIVE TESTING FOR STRUCTURAL INTEGRITY:

- 1.1 The following items of a TOYOTA FT40 should be checked for structural integrity by a non-destructive test or replaced:

Item to be tested	Minimum Test / replacement frequency recommendations
Wheel pins (axles)	Test after two seasons use then annually thereafter. And / or following suspected accident damage occurring immediately test and/ or replace.
Driveshafts	Test after two seasons use then annually thereafter. And / or following suspected accident damage occurring immediately test and/ or replace.
Front and rear uprights	Test after two seasons use then annually thereafter. And / or following suspected accident damage occurring immediately test and/ or replace.
Steering column	Test after two seasons use then annually thereafter. And / or following suspected accident damage occurring immediately test and/ or replace.
Rear wing mount plates	Test after two seasons use then annually thereafter. And / or following suspected accident damage occurring immediately test and/ or replace.
Steering track rods	Test after two seasons use then annually thereafter. And / or following suspected accident damage occurring immediately test and/ or replace.
Wheels	Test after two seasons use then annually thereafter. And / or following suspected accident damage occurring immediately test and/ or replace.
Notes:	
<p>1. This list is not exhaustive. It is strongly recommended that similar inspections should be carried out on other components that are vital to the integrity of the car but which may not be contained in the list above.</p> <p>2. The minimum frequency recommendations are indicative only and should not be extended. The entrant / driver is responsible for determining if an increased frequency is appropriate for their own vehicle.</p>	

- 1.2 All of the above components should be tested using a method of crack detection appropriate to the material and type of construction of the component in question.

2 RECOMMENDED LIST OF STANDARDS

- 2.1 The tests should be carried according to the following standards:

- BSI, DIN, ISO, ASTM E
- Penetration Flaw Detection
- BS 6443 and BSM 39, DIN 54152-1, ISO 3452
- Magnetic Particle Flaw Detection
- BSM 34, ASTM E 709
- X-Ray Flaw Detection
- BS 6072 and BSM 35, DIN 54111-1, DIN 54111-2, ISO 5579.

3 RECOMMENDED RECORD OF TESTING

- 3.1 The company or establishment responsible for verifying the structural integrity of components should furnish the entrant / driver with a certificate or letter on official headed notepaper (photocopies are not acceptable) certifying that they have tested the components listed upon the certificate.
- 3.2 Entrants / drivers should maintain a dossier of all testing against the chassis number of the car.

4 MANUFACTURER'S ADVICE

Toyota Racing Management has received the following advice from the TOYOTA FT40 manufacturer, Tatuus Racing.

4.1 Crack Checks

Routinely perform on the following structural parts visual checks after every race meeting and crack checks after every accident:

- Suspension bracket and rockers
- Wishbones, pushrods and toe links
- Uprights
- Rims
- Pedals
- Steering Column
- Shift Assemblies
- Seat Harness brackets
- Castings (Bell Housing, Gearbox)
- Front anti roll bar & Rear anti roll bar Assemblies

In case of accident or particular driving condition (jump or contact with other cars) it may be necessary to undertake a crack check of all critical components whereas a minor accident needs a visual recheck of all critical components.

Note: *A jump resulting in all four wheels leaving the ground and the subsequent landing will usually achieve a 5g loading.*

4.2 Periodic maintenance

Listed below is the typical expected life to be intended as starting reference.

COMPONENTS	DURATION/DISTANCE (KMs)
Suspension	
Uprights	5000
Pushrods & Wishbones	5000
Rod ends & Spherical bearing	3000
Rocker Assemblies	5000
Front & Rear anti roll bar Assemblies	3000
Steering	
Steering rack	3000
Steering column and bearing	5000
Steering rod ends	3000
Chassis	
Brake pedal	5000
Throttle cable	3000
Push-pull cable	3000
Chassis to engine studs	3000
Engine to bell housing studs	3000
Bodywork	
Floor Stays	3000
Underwing stays	3000
Wheels & Transmission	
Rims	3000
Driveshaft assembly	3000
Wheel bearings	5000
Water & Oil systems	
Water radiators	3000
Water lines	5000
Front & Rear wing Assy	
Front & Rear wing assemblies	5000
Brakes	
Master Cylinder	10000
Master Cylinder seals	3000
Caliper seal	5000 (working T<200°C)