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## Car Specifications

For 1/10<sup>th</sup> and 1/12<sup>th</sup>

## Scale Electric Model Racing Cars

### 2018 Release

### Version 1.0

This Document supersedes all previous TRAP ORE – Car Specification documents prior to this release.  
Any equipment not listed in this document needs to be approved by the TRAP ORE Committee

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## **TRAP ORE Classes**

The following are the classes that will be run at any TRAP ORE event providing that there is a minimum entry of three cars within the class:

- Beginners Class
- Tamiya Stock Touring
- Tamiya Mini
- FWD Touring
- Tamiya Open Stock
- Tamiya Super Stock
- Tamiya GT
- Tamiya GT Open
- 21.5 Touring
- Pro Stock Touring 13.5
- Formula 1
- 1/12th Scale
- Touring Modified

New and existing classes that do not maintain 10 entries for half of the events in the season should automatically be tabled for possible removal at the annual rules meeting.

### **1. General Car Specifications**

#### **1.1 Appearance**

The essence of the sport of radio control car racing is competition between realistic models of racing cars. General car specifications will be applied to all classes unless stipulated differently in the specific class rules.

#### **1.2 Bumpers**

When bumpers are used on a car, they must conform to the following specifications:

- 1.2.1 Bumpers must be between 2 and 6mm thick, with all exposed edges smooth and well rounded
- 1.2.2 Rigid bumpers made from hard materials such as metal, brittle plastics, hardboard, fibreglass etc. will not be allowed.
- 1.2.3 Bumpers will not extend forward of the body and may not be wider than the outer edge of the tyres.

#### **1.3 Wheels and tyres**

The following shall apply for Wheels and Tyres:

- 1.3.1 Wheel nuts/axles must not extend more than 2mm beyond the wheels when viewed from above
- 1.3.2 All tyres shall be black in colour except for any tyre wall detail.

#### **1.4 Chassis**

The following shall apply for all chassis:

- 1.4.1 Scratch built or modified commercial chassis are allowed provided that they comply with the rules within the specified class.
- 1.4.2 Differentials, ball bearings and thrust bearings are allowed in all classes.
- 1.4.3 No part of the chassis may protrude beyond the body shell, with the exception of the aerial and body post mountings.

#### **1.5 Bodies**

All bodies shall conform to the following:

- 1.5.1 All bodies must be painted for the event, no unpainted bodies will be allowed.
- 1.5.2 All bodies must be scale replicas of an original full size car. The body may be painted to the competitor's own design.
- 1.5.3 Windows on all bodies must be clear and unpainted. A light tinting may be used but must remain see-through and the chassis or cockpit must remain visible through the windows. Windows may not be cut out.
- 1.5.4 A 3-dimensional driver figure with at least head (Helmet) shoulders and arms and the top of a steering wheel must be in the appropriate place in all open cockpit cars.
- 1.5.5 All cars must carry 3 numbers during racing. The numbers will be supplied by the Club. The numbers must be 30mm high and 4mm thick. The numbers must be placed on the front of the car and on each side so as to be visible to spectators and officials. No other numbers may be visible other than the correct number for that race.
- 1.5.6 No cut outs that allow any part of the chassis to be visible when the car is viewed from above are allowed. The only exceptions are those that can be proved to be of scale, e.g., Formula one.
- 1.5.7 All wheel arches must be cut out, unless it can be proved by a photograph of the full size original.
- 1.5.8 No part of the body may be widened to allow for a wider wheelbase.
- 1.5.9 No bodies may be cut above the lower door line or, in the case of touring and saloon bodies, above the rear bumper line.

## 1.6 Batteries

Batteries shall conform to the following specifications in all classes unless otherwise stipulated in a particular class rule:

1.6.1 1/12th scale may use battery pack as per a single cell Lithium Polymer (LiPo) battery, min 20C, max 3.8 volts and must be in manufacturer's hard case with no limit on maximum Capacity or maximum C rating. The maximum resting voltage will be 4.22 volts before any race.

1.6.2 Touring cars & Formula 1 may use a Lithium Polymer (Li-Po) battery, min 20C, max 7.6 volts and must be in manufacturer's hard case with no limit on maximum Capacity or maximum C rating. The maximum resting voltage will be 8.44 volts before any race.

Max case size

Length: 139mm

Width: 47mm

Height: 25.1mm

1.6.3 All Li-Po batteries must be SARDA approved. ROAR Spec will be used as a base starting point for approval. (See current year equipment list for approved batteries)

1.6.4 Charging bags must be used to place Li-Po batteries in for the charging process. All members are reminded of the dangers in the misuse of these batteries and are requested to act responsibly. Any member acting irresponsibly will be excluded from the event.

## 1.7 Motors

### 1.8

1.8.1 **Brushless Can:** Overall maximum diameter is 36.02mm measured at whatever point yields the maximum dimension, excluding solder tabs, screw heads or lead wires. Maximum length is 53.00mm measured from the mounting face of the motor to the furthest most point of the end bell, not including solder tabs, lead wires or original manufacturer's logo or name. Motor mounting holes must be on 1.00- inch (25.40mm) centres.

1.8.2 **Brushless Stack/Stator:** For 21.5 & 13.5 and any Spec Brushless Motors: The stator construction must be continuous laminations having the same overall shape, one after the other without anything in between. The laminations must

be of one homogeneous material without cut-outs, holes or hollow sections other than the three slots for the round copper coil wires and three slots for the screws used to hold the entire can together. The overall stator length parallel to the motor shaft shall be a maximum 21.0 mm. The thickness of the laminations shall be 0.35+/- 0.05mm. A 'go-nogo' gauge 14.500 +0.000/- 0.005 mm diameter shall pass into the stator, clearing the stator plus its windings and the electrical collection ring at the end of the stator.

**1.8.3 Winding:** 21.5 & 13.5 Turn motors: Only three slot "Y" wound stators are permitted. No delta wound or slot less stators are allowed. Only circular (round) pure copper magnet wire permitted. The three slotted stator must be wound with 13.5 turns of 2 strands of a maximum diameter of 21AWG or 0.724mm and two strands of a maximum diameter of 23AWG or 0.574mm per slot.

**1.8.4 Modified Touring & 1/12<sup>th</sup> scale classes**

Touring Modified may use any motor manufactured for radio controlled electric model car racing. Motor can, must be of the 540 size. Only Brushless motors are permitted. Sintered magnets are permitted to be used in the rotor of a brushless motor. Motors may have any configuration of windings and wire gauge. They may be opened for attention. They must however conform to the general rule 1.7.8 below.

**1.8.5 Pro Stock Touring / Tamiya GT Open**

Only SARDA approved 13.5 Turn brushless motors will be permitted to be used in the 13.5 Turn Touring class. SARDA uses ROAR Approved as the standard for approval. Please consult the equipment list for approved motor.

**1.8.6 21.5 Stock Touring**

Only TRAP ORE approved 21.5 Turn brushless motors with locked timing will be permitted to be used in the 21.5 Turn Touring class. TRAP ORE uses ROAR Approved as the standard for approval. Please consult the equipment list for approved motor.

**1.8.7 Formula 1**

Only SARDA approved 21.5 Turn brushless motors will be permitted to be used in the Formula 1 class. SARDA uses ROAR Approved as the standard for approval. Please consult the equipment list for approved motor.

### 1.8.8 Front Wheel Drive Touring

Only SARDA approved 13.5 turn brushless motors will be permitted to be used in the 13.5 Turn Touring class. SARDA uses ROAR Approved as the standard for approval. Please consult the equipment list for approved motor.

### 1.8.9 General

No Cobalt, rare earth magnets motors are allowed. Only one drive motor per car is allowed.

## 1.9 Electronic Speed Controllers

1.9.1 Stock Touring, Pro Stock Touring, Front Wheel Drive Touring & Formula 1 - Only sensed electronic speed controllers with "Blinky" mode in the software OR no turbo/timing function may be used and must be approved by SARDA. SARDA uses ROAR Approved as the standard for approval. Please consult the equipment list for approved electronic speed controllers.

## 1.10 New equipment

Any new equipment such as **motors, batteries, electronic speed controls** and **bodies** that come into the market place must first be accepted by the TRAP ORE Committee and deemed legal for use. Any person may inform / request the TRAP ORE committee to evaluate and accept a new product for use. This must be submitted in writing to the chairman.

The emphasis of this rule is not to prevent equipment from their use but rather to control the timing of their use except in the case when the new products clearly do not comply with the current rules of the class. The new equipment list will only be valid for that race season it came out. Each year a new equipment list will be initiated. TRAP ORE Committee reserves the right to request a sample to be presented of the proposed products for which approval is being requested.

## 2. Radio Specifications

2.1 Standard equipment intended for radio control hobby should be used. If the equipment presents problems to other competitors, then it should be changed.

2.2 The control of the vehicle is limited to one channel for steering and one channel for speed and brakes (two channels).

### 3. Classes

The following are the classes that will be run at any TRAP ORE sanctioned event providing that there is a minimum entry of three cars within the class:

- Beginners Class
- Trucks
- Stock Touring
- Open Stock
- Super Stock
- FWD Touring all makes
- Stock 21.5 Touring
- Pro Stock 13.5 Touring
- Tamiya GT Open
- Formula 1 all makes
- 1/12th Scale
- Touring Modified all makes

When a new class is voted in, it must maintain at least 10 entries for at least 3 of the 5 races in a season to qualify as a permanent class. Existing classes that do not make the above grade should automatically be tabled for possible removal at the annual rules meeting.

### 4. 1/12th Scale Specifications

#### 4.1 Dimensions

Maximum Length	450mm (with full body and wing)	
Maximum width	172mm (with full body and wing)	
Maximum Height	140mm (with full body and wing, excluding aerial)	
Wheel Base	Maximum	222mm
	Minimum	180mm

#### 4.2 Weight Limit

4.2.1 All 1/12<sup>th</sup> scale cars shall have a minimum weight limit of 730g (0.73kg) ready to race.

#### 4.3 Wheels and Tyres

Maximum Rim diameter	38mm
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Front and rear tyre width

Maximum 38mm Minimum 13mm

#### 4.4 Bodies

Only "Group C", GT1, TOJ or IMSA type bodies are allowed, also known as "Sports Prototype"

#### 4.5 Wings

Only one wing is allowed on the car unless extra wings are proven by photograph in scale position. The wing may be no closer than 6.5mm to the body, other than tail fins or side dams. Dimensions are as follows:

Maximum width 172mm

Maximum side chord 50mm

### 5. Touring Car Specifications

#### 5.1 Definition

A Touring car is defined as a scale width car with independent suspension to all wheels. The car must have flexible joints to all drive wheels.

There are 5 classes for Touring cars:

Trucks

FWD Touring

Stock Touring

Pro Stock Touring Touring

Modified

#### 5.2 Car Manufacture

9.2.1 Any available scale width car is allowed according to the specifications in Stock, Pro Stock and Modified.

9.2.2 Any FWD chassis is allowed according to the specifications in FWD Touring. Open drive ratio and open 13.5 turn motor ROAR approved.

9.2.2.1 Chassis to qualify for this class must have a front wheel drive layout meaning the motor must be mounted in the front and the drive wheels must be the front wheels.

#### 5.3 Chassis Specifications general.

- 5.3.1 All chassis must have independent suspension to all four wheels. All drive wheels must be driven by a flexible joint, such as a "Dog Bone" or universal type drive shaft. No solid axles are allowed.
- 5.3.2 No parts to aid aerodynamics are to be fitted to the underside of the car, such as Diffusers, Splitters, Tunnels, etc.
- 5.3.3 No multi-speed gearboxes allowed, single speed gearboxes only.
- 5.3.4 Only a differential or a spool or a one-way differential may be used in the front transmission.
- 5.3.5 Only a differential or a spool may be used in the rear transmission exempting Front Wheel Drive Class as per class specifications.
- 5.3.6 No driver aid devices allowed, these include slipper and fluid clutches.
- 5.3.7 No four wheel steering is allowed.

**5.4 Weight Limits**

- 5.4.1 All Four Wheel drive cars and Front Wheel Drive cars shall have a minimum weight limit of 1,350g (1.35kg) ready to race. (excluding Stock Touring)

**5.5 Dimensions**

All Touring cars shall conform to the dimensions below or otherwise stated:

- |        |  |       |       |
|--------|--|-------|-------|
| 5.5.1  | Minimum Wheel Base:  | 250mm |       |
| 5.5.2  | Maximum Wheel Base:  | 270mm |       |
| 5.5.3  | Minimum Width, excluding body  | 175mm |       |
| 5.5.4  | Maximum Width, excluding body  | 190mm | 5.5.5 |
|        | Maximum Width, excluding body  | 190mm |       |
| 5.5.6  | Maximum Height, Excluding Aerial   | 175mm |       |
| 5.5.7  | Maximum bumper cut out line height from chassis                                  | 35mm  |       |
| 5.5.8  | Minimum wing width including endplates   | 125mm |       |
| 5.5.9  | Maximum wing width including endplates<br>(Limited to maximum width of the body) | 190mm |       |
| 5.5.10 | Minimum height from bottom of chassis to roof                                    | 110mm |       |

**5.6 Bodies**

- 5.6.1 Unless otherwise stated in the specific class rules, only 190mm 4 door Touring car bodies allowed as per the SARDA equipment list.
- 5.6.2 This will be the starting point and used as a base. Any new bodies that comply with the basic Roar specifications that have not yet been approved by Roar

may be submitted to the committee as "new equipment" for evaluation and addition to this list.

### **5.7 Wings**

Any wing may be used. The wing must be fitted into the standard position intended for the car. No height or extension modifications are allowed.

5.7.1 All wings shall conform to the following dimensions:

5.7.1.1 Maximum Width: 190mm or max width of Body

5.7.1.2 Maximum Inside Dam 25mm

5.7.1.3 Maximum Chord Width 50mm

5.7.1.3.1 Chord width is measure from the leading edge of the wing diagonally across to the trailing edge. Wings may only be of one element. Should a wing have two or more elements, this must be proven by a scale picture.

### **5.8 Tyres**

5.8.1 All Touring Classes will use Specification Tyres. The specification of the tyres will be determined by the TRAP ORE Committee and may change during the year.

5.8.2 The Specification Tyres will be marked by a member of the TRAP ORE committee on race day. E.g. Stock Touring & FWD Touring will be marked differently as Stock Touring tyres may not be used for FWD Touring and FWD Touring Tyres may not be used for Stock Touring

5.8.3 Stock Touring – One set of Specification Tyres must last the duration of six events.

5.8.4 Rubber Tyre dimensions

5.8.4.1 Minimum wheel width 19mm

5.8.4.2 Maximum Wheel width 26mm

5.8.4.3 Minimum Tyre width 19mm

5.8.4.4 Maximum tyre width 28mm

5.8.4.5 Minimum tyre diameter when mounted 61mm

5.8.4.6 Maximum tyre diameter when mounted 67mm

5.8.5 Participants are not permitted to use tyres of which the traction surface has worn through.

## **6. FWD Touring Car Specifications**

6.1 **Body** – Only SARDA or TAMIYA Approved Hatch Back bodies will be permitted.

## 6.2 **Drive ratio**

6.2.1 **Tamiya FF03/FF03 Pro/FF04** – in keeping with the latest Tamiya Car rules, see TSA rules 2017.

6.2.2 Any Other “pro chassis” open gearing and open **13.5 motor**, however ROAR approved and in this case SARDA Approved.

6.2.3 Any other chassis – to be submitted to the TRAP Committee for approval.

## 7. Formula 1 Car Specifications

### 7.1 **Car Specifications:**

7.1.1 Only 1/10 scale Formula 1 chassis' will be permitted

7.1.2 Maximum width: 190mm

7.1.3 Minimum weight: 1050g

7.1.4 Front independent king pin, coil spring suspension is allowed.

7.1.5 Suspension pick up points must be mounted inside the body.

7.1.6 Independent front shocks are not allowed.

7.1.7 The main chassis plate must not protrude from the body when viewed from above

### 7.2 **Tires:**

7.2.1 Only TRAP ORE and TSA approved front and rear rubber tires will be permitted

### 7.3 **Bodies**

7.3.1 Only Formula 1 SARDA and TSA approved body styles will be permitted.

7.3.2 All cars must have a drivers figure installed in the cockpit.

### 7.4 **Wings:**

7.4.1 Any SARDA and TSA approved front and rear Formula 1 wing will be permitted

## 8. Stock Touring Car Specification

8.1 Only TT01, TT01E, TT01E R, TT01 R, TT02 and TT02 R chassis' are permitted in this class.

8.2 Any electronic speed control is permitted.

8.3 The motor is limited to a standard, 2-slot, Tamiya Johnson 540 motor. Any attempt to modify or to influence the ability of the motor is not allowed.

8.4 Only standard stick type battery packs up to 4000mA are allowed. Hard cased stick type Li-Po 7.4v batteries up to 4000mah, MAX discharge of 40C are allowed (the capacity and C rating of the battery pack must be clearly displayed on the pack).

- 8.5 Car does not have to be equipped with cockpit detail and a driver figure.
- 8.6 Minimum weight of the car ready to run is to be 1.400g, without a transponder.
- 8.7 TL-01 Speed Tuned Gear Set (53342) is allowed, with maximum pinion gear size 21T if you are using the Speed Tuned Gear.
- 8.8 TT-01 Spur Gear Set (53665) min 55T is allowed, up to a max 25T pinion gear.
- 8.9 TT-02 – Final Drive Ratio is limited to the same as TT-01
- 8.10 Tyres are limited to
  - 8.10.1 Tamiya 50419 Celica Racing Radial Tyres
  - 8.10.2 Tamiya 50454 Racing Slick Tyres
  - 8.10.3 Tamiya 50810 Racing Semi-Slick Tyres
- 8.11 Tyre additives are allowed but no tyre warmers.

## **9. Pro Stock Touring**

- 9.1 Only SARDA approved 13.5 Turn brushless motors will be permitted to be used in the Pro Stock Touring class. SARDA will use ROAR Approved as the standard for approval. Please consult the equipment list for approved motor.
- 9.2 Tamiya GT open will race together with Prostock. Any Tamiya, Team Power or QT-tyres are allowed.

## **10. Beginners Class**

- 10.1 All new drivers that join the club and have never raced before will start in this class. Any of the above classes may be raced in this class. Once the drivers achieve a consistent average lap time of below 24 seconds, he/she will be allowed to move to one of the regular classes.
- 10.2 There is no championship for this class.

## **11. 21.5 Stock.**

This class will be introduced again in 2018. It will run as an experimental class for drivers that want to step up from TC. NO Experienced drivers will be allowed i.e. if you are racing for more than 1 year, consider yourself NOT ALLOWED. The motors that are allowed will be 21.5 brushless, ROAR approved. It will also be tested and marked in the beginning of the 2017 season and the results will be noted. Any tyre will be allowed provided that it is a matched set.

## **12. Tamiya Truck**

The only chassis that is allowed will be a TT01 Type E chassis as released and sold “out of the box”. The body can be of own choice providing the look thereof resembles a truck

as the guideline laid out by the Committee. The only option allowed is bearings on the drivetrain.

### **13. Amendments**

Additions to the car specifications will be added as and when required after a dually constituted TRAP ORE Committee meeting. These specifications must be publicised to the members so that they can see and understand them. Notice of Two Race Meetings will be given to the competitors in order to comply with any new specifications. Any new equipment not specified above must be submitted to the TRAP ORE Committee for approval.

**Albert Vorster – Chairman TRAP ORE**

**Date: 27 December 2017**