



**Organisation of Radio Race Car Associations of Queensland Inc.**

## *Technical Rules*

### *EP Tourer*

<b>Details</b>	
<b>Section</b>	EP Tourer
<b>Type</b>	Technical Specification
<b>Classes</b>	1/10 190mm Electric Tourer TC1, TC2, TC3
<b>Release Date</b>	March 2015

<b>Version</b>		
1.0		Initial setup from IFMAR Technical Rules ORRCA QLD
	<b>Sept 2011</b>	Minimum weight 1380g, 17.5 and 21.5 esc and 21.5 motor updated
2.0	<b>Oct 2012</b>	Rule 8.17 tyres update for impound Rule 9.13 wing update for type of wings Rule 9.18 incorrect numbers
2.1	<b>Aug 2012</b>	Rule 3.10 – 3.12 Battery C rating updated Rule 4.9 Update to cooling of esc and Motors Rule 8.4 Update to Modification of Controlled Tire Rule 9.14 Clarification of wing rule form Oct 2012
3.0	<b>Feb 2014</b>	Rule 2.3 – 2.6 Tech up date to Body rules Rule 3.2 Number of Batteries Rule 3.9 Lipo cut off Rule 3.15 Orrca safety on Batteries Rule 4.1 – 4.5 Clarification on Motors and Esc Rule 7.0 Simplafied Bodys Rules for All Rule 8.16 Additional markings for tires Rule 9.9 - 9.11 update to body rules Section 10 Add (Reference)
3.1	<b>June 2014</b>	Limited number of Motors for Blinky Classes
4.0	<b>Jan 2015</b>	Rule 1.2 Class names amended (further references in rule set also adjusted) Rule 1.4 Reworded eligibility for TC3 class Rule 4.9 added – Limitation on number of cooling fans Rule 5.11 Limitation of number of cooling fans Rule 8.2 Change to prebuilt control tyre combination Rule 8.4 Altered to accommodate 8.2
		All Changes are Marked in Red

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## TECHNICAL SPECIFICATIONS

### 190mm Electric Tourer

#### 1.0 General

- 1.1 1/10<sup>th</sup> Tourers
- 1.2 Three classes are presented for competition, defined by level of motor performance.
  - 1.2.1 TC1 – Open motor
  - 1.2.2 TC2 – 13.5t Motor
  - 1.2.3 TC3 - 21.5t Motor
- 1.3 The essence of the 1/10 Tourer class is competition between realistic models of full scale saloon/sedan cars raced in Touring Car classes worldwide
- 1.4 TC3 Eligibility
  - 1.4.1 TC3 class only – If a driver has placed in the top three in a higher class of any ORRCA or AARCMCC sanctioned event, they are not eligible to compete in this class.
  - 1.4.2 Exception to the rule 1.4.1 - A driver/entrant is not eligible to complete in the ORRCA QLD state title for TC3 if he/she has placed 1<sup>st</sup> in this equivalent event previously (21.5 etc).

#### 2.0 TECHNICAL INSPECTION

- 2.1 All cars must be presented to Technical Inspection for an Initial Inspection before the start of controlled practice.
- 2.2 The purpose of this Initial Inspection is to determine that the car meets these Technical rules for this event.
- 2.3 All bodysells and wings intended to be used by the competitor during the event should be presented at the same time.
- 2.4 After a car passes the initial Technical Inspection, a member of the Technical Inspection team will mark the bodysell(s) and wing(s) to assist in future inspection during the meeting.
- 2.5 Any driver failing a pre-race inspection will be given the opportunity to rectify the issues.
- 2.6 During the event cars must be presented to technical inspection prior to entering the race area before each race. Battery voltage and tyre markings will be checked at this point.
- 2.7 Drivers must race the car initially presented to technical inspection during qualifying and finals in accordance with the rules above.
- 2.8 All cars must be presented for technical inspection after each race.
- 2.9 No car will be allowed to enter the track surface without being presented for technical inspection.
- 2.10 All cars must be presented for technical inspection before and at the end of each final.

- 2.11 All motors and batteries to be inspected as necessary during qualifying and mandatory during finals.
- 2.12 All cars in the finals will be impounded at the end of the finals for further technical inspection, such as motors, etc.
- 2.13 Only one car per driver per class is allowed. Cross entering is to be restricted between TC3 and TC2 or TC2 and TC1 only.

### 3.0 BATTERIES

- 3.1 **Must be on the ROAR, BRCA or IFMAR approved lists and comply with the rules in this section.**
- 3.2 A maximum of one (1) drive battery may be used per car (ie 2 cell lipo)
- 3.3 For the purpose of motive power, cooling fans, radio equipment and transponders only in all car classes, and must conform to the battery section rules.
- 3.4 A receiver battery pack must only supply power to radio receivers for its operation and the control only of addition equipment listed: speed controls, servos and transponders for their operation. No other devices will be powered from a receiver pack.
- 3.5 Lithium Polymer Battery: 7.4v (2 (3.7 volt) cells only)
- 3.6 No modifications allowed to the case and/or the battery
- 3.7 Any physical distortion, denting, puncturing or damage to the hard case of the Li-Po battery will deem the Li-Po battery to be ineligible for use at ORRCA QLD events.
- 3.8 Must charge in Li-Po sack or other device (fire mitigation device able to withstand and contain a destructive failure without showing a flame).
- 3.9 Must be used with electronic speed control that has either a inbuilt cut-off or used with an external cut-off device installed (6 volts minimum).
- 3.10 Must be charged using a Li-Po capable charger only at a maximum rate of 2C Full Balance charging with proper leads, this is strongly recommended all times for maximum safety
- 3.11 2C charging is dependent on supporting manufacturer recommendations and documents, where no such records exist; charging will remain limited to a maximum of 1C.
- 3.12 Overcharging of packs is not allowed, chargers must be set no higher than 4.20V per cell, and packs shall not measure above 4.20V per cell (**8.40V maximum**) once fully charged.
- 3.13 Battery cells may not be charged or changed during the race.
- 3.14 ORRCA QLD takes LiPo safety extremely seriously. Any disregard for the above rules will result in instant disqualification from the event, and a one year suspension from future ORRCA sanctioned events.

## 4.0 MOTOR'S and ESC

- 4.1 All motors must be based on industry standard "05" dimensions.
- 4.2 Motors for each class must comply with the following rules
  - 4.2.1 **TC1** – Any motor allowed.
  - 4.2.2 **TC2** – Any commercially available 13.5t motor on ROAR, BRCA approval list
  - 4.2.3 **TC3** – Any commercially available 21.5t motor on ROAR, BRCA approval list
- 4.3 No modifications are allowed to motors used in TC2 and TC3
- 4.4 Speed controllers for each class must comply with the following rules
  - 4.4.1 **TC1** – Any speed controller and profile allowed
  - 4.4.2 **TC2 & TC3** – Any esc running in Zero timing (Blinky) mode, using software versions on ROAR, BRCA, AARCMCC or ORRCA approval list
- 4.5 For TC2 and TC3, any driver using an adjustable timing capable esc must prove to technical inspection when requested that the ESC is running in approved Zero timing (Blinky) mode.
- 4.6 TC2 and TC3 drivers with adjustable timing speed controls will need to have their adjustment tools (lap top/box) with them to prove they are running to zero timing,
- 4.7 Penalty for running advance timing in TC2 and TC3 will be disqualification from the event with no warnings given.
- 4.8 Motor Cooling – Only forced air cooling devices (i.e. Fans) are allowed. All Motor's and esc must enter the racing area at ambient temperature. No refrigerant devices, Specialized cooling devices or chemical cooling devices is allowed.
- 4.9 A maximum of two (2) cooling fans may be fitted per vehicle, both of maximum 40mm dimensions. Only one fan may be used for the purpose of cooling the motor, and one for the cooling of the ESC. Final clarification as to the purpose of the each fan will be at the discretion of the Chief Scrutineer, however as a guideline, any fan blowing *onto* a component will be considered to be cooling that component. Neither fan shall impede the inspection of the electronic components i.e, No tools required to allow inspection.
- 4.10 **Maximum number of Motors to be used at State Championships shall be limited to TWO**
- 4.11 TC2 and TC3 classes = Maximum of two (2) motors for the event.
- 4.12 All motors are to be marked by the Technical Inspector. This marking will take place before the driver starts the event.
- 4.13 Drivers can change approved rotors, sensors, end bells and bearings but the stators cannot be replaced. All rebuilds will be conducted under the presence of an inspector and re- marked by the Technical Inspector.
- 4.14 Unmarked motors may be used on the car during practice sessions

- 4.15 Every car will have their motors checked by a Technical Inspection prior to entry to the track before or after qualifying heats and finals.
- 4.16 Any driver using any other motor will immediately be disqualified from the event.
- 4.17 It is the driver's responsibility to ensure all technical inspection marks and any manufacturer identifying marks on any part of the motor are kept intact and clearly visible for the Technical Inspectors. If this is not the case then that motor cannot be used.
- 4.18 **Motor Impound** (*if required*) Motors will be issued to drivers at the beginning of each race day, and it is the responsibilities of the drivers to return to Technical Inspection all motors at the completion of each day. Motors must not be removed from the Pit or race track area at any time. Failure to surrender the motors at the end of the day or removal of the motors from the Pit area except for racing will result in those motors being excluded from the event.

## 5.0 DRIVERS' AIDS

- 5.1 It is the objective of this rule to ensure that sanctioned Electric Circuit Events be a test of driver skill.
- 5.2 ORRCA QLD seeks to limit the type of driver aids to a minimum to achieve this objective.
- 5.3 Traction control, active suspension and steering control by gyroscopes are not allowed.
- 5.4 Sensors fitted to the car for the purpose of data management, recording or logging etc (eg. measuring suspension movement, wheel speed, motor speed, temperature, lateral forces or tyre slip) whilst the car is in motion are not allowed.
- 5.5 Unless an electronic or mechanical driver aid is listed below, it is not allowed for use in ORRCA QLD sanctioned Event.
- 5.6 The fixed single ratio transmission may not include a mechanical device/s between the drive motor output and the gearbox input for the purpose of controlling torque. (eg 'slipper' clutch/fluid clutch)
- 5.7 A differential may include a mechanism for apportioning torque over the axle/s (eg limited slip differential). This mechanism must only be capable of setting or adjustment manually whilst the car is stationary.
- 5.8 A mechanical or electronic speed controller may include a mechanical or electronic device to limit the current/voltage passed from the batteries to the drive motor (eg timed delay, current limiter, keyboard programs).
- 5.9 Setting or programming of such a device must only be possible whilst the car is stationary. Changes to the setting or program during a race are not allowed.
- 5.10 Radio control receivers carried in the car may only have a maximum of Three (3) devices (normally the steering servo, speed controller and transponder) connected when powered by an optional separate battery supply for powering of the radio control equipment/devices. The use of any further channels to receive electrical signals from sensors carried in the car is prohibited.

- 5.11 Any competitor found in contravention of the spirit or fact of rule 5.1 to 5.11 will be disqualified from event.

## 6.0 Chassis and Drive Train

- 6.1 Two-wheel drive to front or rear wheels or four-wheel drive is allowed.
- 6.2 Chassis must have independent suspension on all four wheels. Each driven wheel must have a flexible joint, eg: dog bone/s or universal joint/s in its driveshaft. Drive train and suspension design is free from restriction. Flat Pan (1/12th and 1/10th Track Style) chassis are not allowed.
- 6.3 The Chassis must not be shaped to gain an aerodynamic advantage. In principle the underside of the chassis must be flat and parallel to the ground along the entire length of the body-shell.
- 6.4 Aerodynamic shaped parts (splitters/diffusers/tunnels/etc) may not be fitted to the chassis.
- 6.5 Wheels nuts/axles must not extend more than 2mm beyond the wheels when viewed from above.
- 6.6 Reverse is not allowed - forward control only

## 7.0 General Dimensions

- 7.1 dimensions are defined in the following table

Description	Min	Max
Wheelbase (mm)	250	270
Width - without body (mm)	170	190
Width - with body (mm)	175	200
Length inc Body and wing (mm)	360	460
Tyre Width (mm)		27
Tyre diameter (mm)	52	67
Roof height on 10mm block (mm)	110	
Weight (g)	1380	

**Weight:** ready to race including transponder, at all times during the race:

Wing Dimensions

Description	Min	Max
Width (mm)	-	190
Depth* (mm)	-	40
Height* (mm)	-	20

\*The wing must fit these dimensions at all times along its width.

## 8.0 Tyres

- 8.1 Moulded rubber tyres only allowed. No sponge, closed-cell foam or pneumatic tyres allowed. Tyres must be black except for Technical Inspection markings.

- 8.2 A **Pre-built** controlled tyre combination must be used; Tyres, inserts and rims are to be supplied by the drivers, unless the hosting club chooses to supply complete sets of race tyres at a cost approved by ORRCA Q Inc.
- 8.3 The club must also ensure that two (2) complete sets of practice tyres identical to the control tyre will be readily available to each driver for purchase
- 8.4 The host club determines the pre-built tyre, wheel and insert combination to be used, and submits the details to ORRCA Q Inc. for approval.
- 8.5 The selected tyre combination must be announced not less than three (3) months prior to the event. The selected tyre combination must not have been used in the previous two (2) years; this rule doesn't apply if a tyre supplier sponsors the event.
- 8.6 ORRCA Q Inc. will decide on the controlled tyre combination if the club has not submitted their choice of tyre three (3) months prior to the event.
- 8.7 Tyre material must not damage the racing surface.
- 8.8 Any driver using any other type of tyre will immediately be disqualified from the event.
- 8.9 Tyres are restricted in use during the event:
- 8.10 All classes = Maximum of three (3) sets of four (4) tyre & wheel assemblies for the event. Drivers can have Two (2) sets out during qualifying; drivers can use any combination of the 2 sets. All 3 set can be used in the finals in any combination.
- 8.11 A driver cannot re-use any part of the tyre assembly (i.e. inserts) in the assembly of another set.
- 8.12 All tyre sets are to be marked by the Technical Inspector and impounded. This marking will take place before the driver starts the event.
- 8.13 Unmarked wheels/tyres may not be used on the car during qualifying heats and finals.
- 8.14 Every car will have their tyres checked by a Technical Inspection prior to entry to the track before or after qualifying heats and finals.
- 8.15 Technical Inspection marks need to identify the following. Each tyre/wheel assembly uniquely identifies the driver and the class for the driver. Technical Inspection is to leave its own unique mark on the tyre/wheel assembly. Technical Inspection shall be responsible for recording the number of tyres used by each driver.
- 8.16 Additional markings must be included for a driver ID number, and set number. Eg.304-B
- 8.17 It is the driver's responsibility to ensure all technical inspection marks and any manufacturer identifying marks on any part of the tyre assembly are kept intact and clearly visible for the Technical Inspectors. If this is not the case then that tyre assembly cannot be used.
- 8.18 Tyres will be issued to drivers at the beginning of each race day, and it is the responsibilities of the drivers to return to Technical Inspection all tyres at the completion of each day. Tyres must not be removed from the Pit or race track area at any time.
- 8.19 Failure to surrender the tyres at the end of the day or removal of the tyres from the Pit area except for racing will result in those tyres being excluded from the event.



- 8.20 A driver will only be able to use tyres that have been returned to technical impound for remaining of the qualifying and finals.
- 8.21 **Tyre additives may only be used if approved by the organiser.**
- 8.22 A tyre impound may be utilised

## **9.0 Body-shells**

- 9.1 2 & 4 door sedan style bodies are allowed that are currently on the IFMAR, EFRA or ROAR body listings and fit within the GLOBAL BODY SPECIFICATIONS for electric touring cars.
- 9.2 Sports coupe, GT style or hybrid bodies will not be allowed unless approved by IFMAR, EFRA or ROAR
- 9.3 All details of main grill, front and rear lights must be clearly contrasted from the surrounding paintwork
- 9.4 All windows must be clear and unpainted.
- 9.5 Body-shells must be securely fixed to the chassis at all times during a race.
- 9.6 Only one cut out, maximum 10mm diameter for the radio antenna, may be made in the body except for clearance for the wheels (wheel arches), body mounting holes and lap timing equipment.
- 9.7 All wheel arches must be cut out as on the original car. No more than 10mm clearance between the wheels and the wheel arches is allowed.
- 9.8 The only cutouts permitted are for wheels, body posts, and one each for a radio antenna and lap timing equipment (if required)
- 9.9 All features (splitter / bumpers) from the original moulding must remain on the shell.
- 9.10 Only one wing is allowed to the dimensions specified in section 7
- 9.11 Wings must be directly mounted to the bodyshell (no spacers) on the mounts provided at the back of the shell, and be of a single moulded construction (not flat pack, bend-your-own)
- 9.12 Wings/splitters/spoilers/tabs/gurney flaps must be fixed rigidly to the body and or wing, and may not be moved whilst the car is in motion.
- 9.13 Foam bumpers may be fitted. No part of the bumper may extend outside the body-shell when viewed from any direction, nor be lower than the chassis.
- 9.14 Any car found to have no or incorrect numbers will be disqualified from that round.

## References

### **“05” Motor dimensions**

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) centers.

### **ROAR Approval Lists**

Motor approvals (TC2, TC3)

Web list (Pre March 2013) - [http://www.roarracing.com/?page\\_id=251](http://www.roarracing.com/?page_id=251)

Forum (post March 2013) - <http://roarracing.org/4rmb/forumdisplay.php?23-Motor-Approvals>

Blinky ESC approvals

Web List (Pre March 2013) - [http://www.roarracing.com/?page\\_id=737](http://www.roarracing.com/?page_id=737)

Forum (post March 2013) - <http://roarracing.org/4rmb/forumdisplay.php?39-ESC-Approvals>