

Mini Manufacturer Construction Rules and Guidance for Clubs

Overview & Intent

RC Mini Racing offers a simple, low-cost entry to RC Car Racing that is also perfect for experienced RC Racers looking for something hassle-free to race on a weekly basis.

The following construction rules have been formulated in conjunction with the car kit manufacturers and are intended to provide a universally accepted set of criteria and specifications to which these cars can be designed and manufactured. The spirit and intent of these rules is to maintain a simple, low-cost, competitive yet fair category in which technical development is limited and participation on a level playing field is actively encouraged.

Changes to these rules are only permitted with unanimous agreement from the endorsing manufacturers listed below. To appear on this list, manufacturers must produce a commercially available kit that is compliant with this rule set. Endorsing manufacturers are expected to maintain and uphold the spirit and intent of Mini Class racing with use of these rules.

Endorsing Manufacturers

Mardave (Chris Wilkinson)

Kamtec (Keith Dowsett)

BattCave (Shaun Batt)

TWR Modelsport (Harry Weymouth)

1. Overall Dimensions & Materials

- 1.1. The overall maximum width of the rolling chassis to be no more than 161mm.
- 1.2. The wheelbase of the rolling chassis must be 175mm +/-2mm. The wheelbase of the car must be the same on each side of the car; the front wishbones cannot be staggered.
- 1.3. Materials used in the rolling chassis may only be steel, stainless-steel, brass, aluminium alloy, glass fibre reinforced plastic (GRP), carbon skinned GRP (CSC) or solid plastic. The use of materials such as titanium or monolithic carbon fibre reinforced plastic (CFRP) is not permitted. 3D printed composite materials are allowed.
- 1.4. All fasteners used to assemble the car must be steel or stainless steel.
- 1.5. Identifiable weights may only be of brass, steel, or zinc construction.

2. Chassis

- 2.1. The chassis must be of single-piece construction and consist of a continuous sheet of Aluminium Alloy, Glass Fibre Reinforced Plastic (GRP) or Carbon Skinned GRP (CSC).
- 2.2. The chassis must be at least 2mm thick and extend from a minimum of 10mm ahead of the front axle centreline to at least 20mm behind the rear axle centreline.
- 2.3. The chassis must accept a 4-cell sub-C sized battery pack mounted transversely in the car. The use of in-line, offset or saddle pack battery configurations is not permitted.
- 2.4. Additional holes may be drilled in the chassis for the re-mounting of body post and aerial mast locations only. The chassis may not otherwise be modified from its original specification with the addition of holes or cutouts.

3. Rear Suspension & Axle

- 3.1. The rear axle carriers and motor mount (pod sides) must be of plastic construction. The pod sides must be rigidly attached to a flat, single piece base plate or be connected as part of the same component. This

assembly is defined as the “pod”. The use of metallic pod sides is not permitted. The pod sides may be braced providing the brace satisfies rule 1.3.

- 3.2. Articulation of the rear suspension must be about a single pivot ball joint. Alignment of the rear axle relative to the chassis is only allowed with use of a single, straight post mounted perpendicularly to the chassis. Articulation of the rear suspension with use of flexures, pins, side links or any other method is not permitted.
- 3.3. A maximum of 3 spring or elastomeric band attachment locations may be used to control the articulation of the rear pod
- 3.4. The use of sealed shock absorbers, damper units, damper/friction plates or straw dampers of any kind is strictly forbidden.
- 3.5. The rear axle height may only be set to one of two positions (high/low) to accommodate the diameter of the tyres. This setting may only be achieved with;
 - a) The provision of 2 separate fixed axle height pods
 - b) The provision of a pod that allows only 2 axle heights which are set using a single design of reversible insert supplied in the car kit. Fine adjustment of the rear axle height relative to the pod plate using eccentric bearing carriers, shims or any other method is not permitted.

4. Front Suspension & Steering

- 4.1. Front suspension may be independent provided that the suspension design does not have any pivot, rod or other mechanism that alters the wheel camber in roll relative to the chassis during its full travel.
- 4.2. The caster angle must remain constant throughout the range of front suspension travel.
- 4.3. A maximum of 1 spring location may be used to control the articulation of each front stub axle.
- 4.4. Front wishbones must be of plastic construction and attach rigidly to the chassis using a maximum of 2 fixings per side.
- 4.5. Front suspension must be of the sliding kingpin/hub design. Kingpins must be steel or stainless steel and not include any features designed for the transmission or storage of lubricant or fluid.
- 4.6. Steering hubs must be solid plastic with no separate bushes or guides as part of their construction. Front stub axles must be steel or stainless-steel and be 4mm in diameter.
- 4.7. Front caster, camber and ride height may only be adjusted with shims, washers, wedge spacers or via a designed feature of the front wishbone. Optional camber braces are permitted but must be of the same generic design as one which is supplied as part of the rolling chassis kit. Camber braces must be of single piece construction and not adjustable.

5. Drive System, Wheels & Tyres

- 5.1. Rolling element (ball) bearings are permitted on the front and rear axles. Front axle bearings must not be flanged.
- 5.2. The rear axle must be of solid, single piece construction and have a minimum length of 146mm. The rear axle must be of steel or stainless-steel construction. Differentials and limited slip devices of any kind are strictly forbidden.
- 5.3. Drive must be to the rear wheels only and via Z-drive or Dog-drive (Slot drive) only. Hex drives or pin drives are not allowed. Wheel retention must be via a single M3 threaded fixing and on the axle centre only.
- 5.4. Only 32d.p. drive gears may be used.

- 5.5. Maximum wheel diameter 40mm, minimum 38mm. Maximum wheel width 26mm, minimum 20mm. Tyres to have a maximum 26mm width, maximum 60mm diameter and no minimum diameter. Tyres must cover the complete surface of the wheel rim from edge to edge.

6. Bodyshells

- 6.1. Only commercially available bodyshells that appear on approval lists compiled by race organisers may be used.
- 6.2. Windows must remain clear and may not be cut out. Additional holes/openings in the bodyshell other than those used for mounting to the car or attaching a wing are not permitted.
- 6.3. Only one wing is allowed on the bodyshell. Wings may not extend beyond the rearmost point of the bodyshell or be more than 15mm above the roof of the bodyshell. Wings must also satisfy the following dimensional specifications.
- Maximum width 160mm
 - Maximum length 35mm
 - Maximum height (including end plates) 25mm
- 6.4. Headlights and grilles must be defined and clearly contrasted from the surrounding body colour.
- 6.5. The body shell must be securely attached to the chassis at all times whilst the car is on track. Body shells must not have any sharp edges or corners which could cause harm to other racers/marshals, damage to other cars or the racing surface.

7. Accessories and Optional Parts

- 7.1. Foam or 3D printed TPU bumpers may be fitted to the front of the chassis. Use of a rear bumper or other cosmetic attachment to the chassis is optional.
- 7.2. Modification of kit supplied parts and use of homemade or non-standard parts is not allowed unless explicitly stated in these rules.
- 7.3. The use of prototype parts, one-offs or mixtures of parts/assemblies that are not supplied as part of a commercially available kit is not allowed. Only manufacturer approved optional parts may be fitted providing their design also conforms to these rules and they are commercially available at least 4 weeks prior to the event in which they are used.
- 7.4. Car kits must have been commercially available for a minimum of 4 weeks prior to use at an organised event.

Version History

V1.0 – Initial Draft - 25/02/2024

V1.1 – Electronics & Bodyshell Sections Added – 28/02/2024

V1.2 – Manufacturer Requested & Other Changes Made – 01/03/2024

V1.3 – Electronics moved to an Appendix – 07/03/2024

V1.4 – Clarifications added to 3.3, 4.5 & 4.7. 5.6 (tyre additives) and 7.3 (option parts) removed. 3.1 modified to ensure compliance of all existing pod designs. 2.3 (chassis braces/stiffeners) removed. Appendices section (Electronics) removed – Procedural Rules to be collated separately – 10/03/2024

V1.5 – 3.5b modified to state “insert”, 1.3 & 2.1 modified to permit use of CSC, Spirit and Intent reference added to Overview section – 23/03/2024

Mini Masters Brushed Rules

The following rules form the rules specific for the **Brushed** class and are in addition to the general construction rules above.

1 Gearing

- 1.1 32dp only.
- 1.2 15, 16, or 17 tooth pinions ONLY.
- 1.3 46, 48 or 50 tooth spurs ONLY.

2 Motor

- 2.1 Mardave G2 F20 (#G2 F20), Core 21 Silver Can (#CR711) and Etronix Sport 540 Tuned Stock 20T (ET0320) only, these cannot be tampered with in anyway, motors may be water bathed, Motor additives are allowed. Motor Spacers can be used.

3 Speed Controller

- 3.1 Any commercially available brushed speed controller with a list price of less than £60.

4 Batteries

- 4.1 Batteries must be made up from 4 Sub-C Metal Hydride cells. Pack may be in “stick” or “saddle” format. These must be readily available to purchase. Batteries may be wrapped but the club can ask for the wrapping to be removed for inspection if required.

5 Servo

- 5.1 Any commercially available servo with a list price of less than £50.

Mini Masters Brushless Rules

The following rules form the rules specific for the **Brushless** class and are in addition to the general construction rules above.

1 Gearing

- 1.1 32dp only.
- 1.2 Any 32dp pinion gear.
- 1.3 Any kit specific spur gear.

2 Motor

- 2.1 Any 25.5 brushless Fixed Timing, sensored motor. Motors must be readily available.

3 Speed Controller

- 3.1 ESC must meet the following criteria:
 - Must have a Blinky mode that can be enabled
 - No boost can be run
 - No turbo can be run
 - £80 max limit
- 3.2 Recommended ESC's
 - XR10 JUST STOCK Zero Timing (HW3011200)
 - XR10 JUST STOCK G3 (HW30112003)
 - XR10 JUST STOCK G3s (HW30112005)
 - Surpass Supersonic 120A ESC: SP-6000-11 (discontinued) (Flashing Blue for Blinky mode)
 - Surpass Supersonic 100A ESC: SP-6000-12 (current model) (Flashing Blue for Blinky mode)

4 Batteries

- 4.1 Batteries must be 7.4v or 7.6v (2 cell) commercially available (in the UK) hard cased LiPo batteries.
- 4.2 Batteries must be charged to a maximum of 8.40v whilst connected to a charger/discharger.
- 4.3 Batteries must be securely placed in a LiPo sack.
- 4.4 Batteries must be charged or discharged using a LiPo charger on the LiPo settings and must not be charged in excess of the manufacture's guidelines or over 15A, whichever is lower. When discharging this must not be in excess of the manufacture's guidelines or over 20A, whichever is lower.
- 4.5 No heating or cooling of cells are allowed during charging or discharging.

5 Servo

- 5.1 Any commercially available servo with a list price of less than £50.