

Scalextric4Schools

Formula 3 Competition rules 04-11-2009

These rules apply to the PTC/Hornby Scalextric4Schools competition 2010.

The latest version of the official documentation and these rules can be downloaded from <http://www.scalextric4schools.org>. Enquiries should be sent to: info@scalextric4schools.org

1. Overview

There are two separate challenges in the 2010 competition; car design based on the 2009 competition and a new challenge to design and make a speed controller.

- 1.1. **Car design** – Open to teams of pupils from schools and individuals who do not attend a school.
- 1.2. **Speed control** – Individuals are invited to design, make and test a working speed controller to work with standard Scalextric analogue track and power supply.

2. Car competition

- 2.1. Judges will be employees of Hornby, PTC and partners.
- 2.2. The competition will use standard Scalextric 'Sport' track.
- 2.3. Heats and testing.
 - 2.3.1. There are no formal heats planned for 2010. Schools are encouraged to organise local testing sessions and competitions with other schools.
 - 2.3.2. All schools are encouraged to contact their local Scalextric club for guidance on designing and tuning their cars. Most of the winning teams in 2009 had benefited from involving local enthusiasts.
- 2.4. UK finals
 - 2.4.1. These will be managed by Hornby and are provisionally planned for Sunday May 23rd 2010 at Castle Donnington racing circuit near Derby.
 - 2.4.2. Prizes will be awarded in a number of categories and at the discretion of Hornby/PTC staff.
- 2.5. 3D Modelling
 - 2.5.1. Pro|ENGINEER 3D parametric modelling software must be used to design the car.
Note: Pro|ENGINEER is available free to schools when a teacher completes accredited training through the D&TA Digital Design & Technology programme.
- 2.6. Chassis and motor
 - 2.6.1. Cars must use the 'standard' Mabuchi 'S' 12v motor supplied by Hornby for the Scalextric4Schools curriculum challenge. Motors must not be modified.
 - 2.6.2. Chassis may contain no hinging parts.
- 2.7. Dimensions – *Also see orthographic drawing*

Cars must comply with the following dimensional limits

	Minimum value	Maximum Value
2.7.1. Overall length	100mm	150mm
2.7.2. Overall width	-	64mm
2.7.3. Overall height	30mm	50mm
2.7.4. Ground clearance	-	-
2.7.5. Front wheel diameter	21mm	21mm
2.7.6. Front wheel width	10mm	10mm
2.7.7. Rear wheel diameter	21mm	21mm
2.7.8. Rear wheel width	10mm	10mm
2.7.9. Slot guide length	-	25mm
2.7.10. Slot guide pivot lead	-	107mm

2.8. Appearance

- 2.8.1. The car should resemble a road car, i.e. saloon/hatchback in all three views with the body enclosing all four wheels and slot guide when viewed from above.
- 2.8.2. No part of the motor, chassis, gears or slot guide shall be visible when viewed from above or through the windscreen or windows if they are transparent. Windows do not have to be transparent and can be represented by coloured areas on the body.
- 2.8.3. Clear plastic bodies shall be painted including the body sides).
- 2.8.4. The following logos (supplied as JPG images) must be clearly visible on the external body of the car at the minimum dimensions shown.



18mm x 8mm



18mm x 4mm



10mm x 10mm



18mm x 4mm



18mm x 12mm

- 2.8.5. Other logos and advertising are allowed on the car with the exception of companies offering similar or competing services or products to the sponsors listed above.

2.9. Slot guides

- 2.9.1. No projections downwards capable of guiding the car are allowed, except for the guide blade, and pick-ups.
- 2.9.2. Only one guide blade is permitted.
- 2.9.3. The maximum permitted guide blade length is 25mm.

2.10. Wheels and tyres

- 2.10.1. All road wheels shall be in contact with the track surface at rest and must rotate.
- 2.10.2. Teams must use the standard tyres supplied in the official Scalextric 'parts pack'. Tyres must not be modified or treated. Teams may be asked to replace their tyres with standard tyres prior to racing.
- 2.10.3. Ground clearance and minimum tyre diameter rules apply at the start of a race.

2.11. Miscellaneous

- 2.11.1. Apart from the standard Scalextric electric motor, magnets are not allowed.
- 2.11.2. Folding/ flexible parts are not allowed.

2.12. Entrants

2.12.1. Individuals

- 2.12.1.1. Individual pupils who are not attending a school or are educated at home. (Note: The challenge web site lists centres who offer support for individual entrants including: Single parts packs, laser cutting of chassis, machining body moulds, vacuum forming body shells.

2.12.2. Teams entering should have four members adopting the roles of:

- 2.12.2.1. Team manager
- 2.12.2.2. Designer
- 2.12.2.3. Media and marketing
- 2.12.2.4. Driver

2.13. Competition judging part one – Presentation

This will be used by the judges to assess the quality of initial design, analysis, manufacture, testing, development and final outcome. Note: All teams making electronic submissions will be invited to the UK final competition with the marks awarded for the electronic presentations contributing to the overall scores.

- 2.13.1. Presentations must be submitted electronically before 30th April **2010**
- 2.13.2. The files must be in a format viewable on a PC running Windows XP/Microsoft Office 2007/Pro|ENGINEER Schools Edition Wildfire 4.0
- 2.13.3. The presentation should include as a minimum:
 - 2.13.3.1. Individual/school details
 - 2.13.3.2. Team name.
 - 2.13.3.3. Individual/school name and address
 - 2.13.3.4. Student team member names
 - 2.13.3.5. Supervising teacher
 - 2.13.3.6. Advisers/consultants including roles
 - 2.13.3.7. List of sponsors and their contributions
 - 2.13.3.8. Car designs including;
 - 2.13.3.9. Initial and development sketches
 - 2.13.3.10. Design development with key milestones how the design evolved
- 2.13.4. Manufacture
 - 2.13.4.1. 3D mould creation and manufacture e.g. vacuum forming
 - 2.13.4.2. 2D chassis components
 - 2.13.4.3. Any other manufacturing processes; e.g. rapid prototyping, injection moulding
- 2.13.5. On track testing including performance development
 - 2.13.5.1. Car preparation/adjustment
 - 2.13.5.2. Reports of local competitions entered.
 - 2.13.5.3. Pro|ENGINEER models and associated files
- 2.13.6. 3D CAD parts/assemblies
 - 2.13.6.1. Photorealistic visualisation
 - 2.13.6.2. Exploded/assembled views
 - 2.13.6.3. Virtual simulation/testing
 - 2.13.6.4. Interference of parts
 - 2.13.6.5. Mass
 - 2.13.6.6. Mechanical operation
 - 2.13.6.7. Physical analysis of car performance
 - 2.13.6.8. Manufacture
- 2.14. Judging – UK final competition
 - 2.14.1. This event will be managed by Hornby and is provisionally planned for Sunday May 23rd 2010 at Castle Donnington circuit near Derby.
 - 2.14.2. A 'standard' Scalextric4Schools layout will be available for testing purposes.

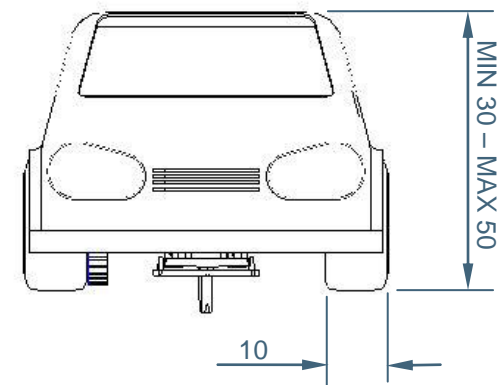
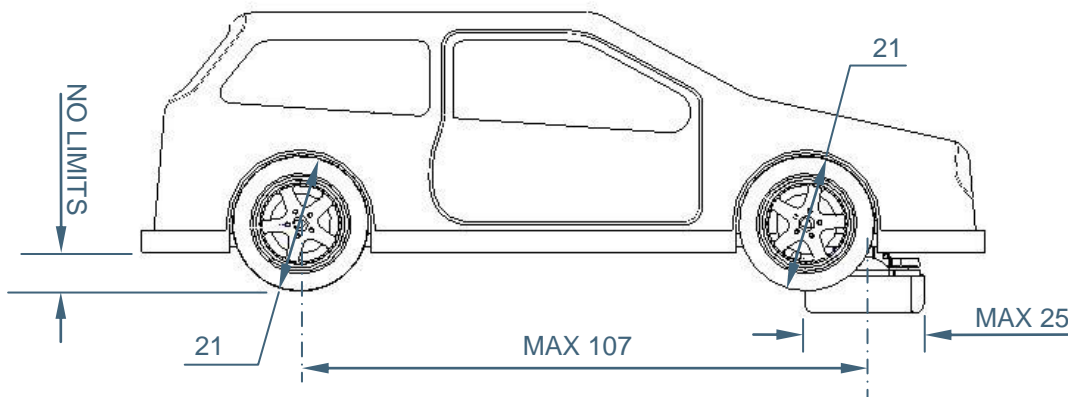
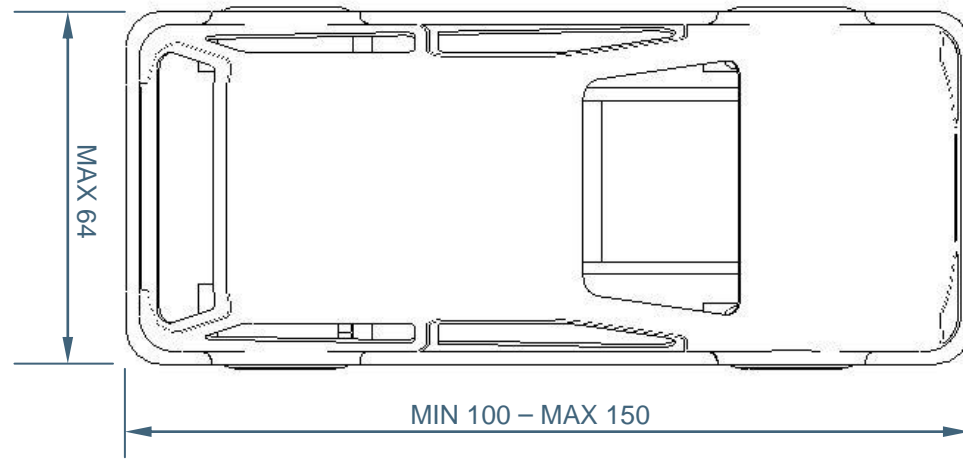
- 2.14.3. The competition track layout will be revealed on the day of the event.
- 2.14.4. Teams will be allowed a fixed period of practice on the competition track.
- 2.14.5. Staff from Hornby, PTC and partners will be judging the competition and their decision will be final.
- 2.14.6. Teams will be allocated time slots during which they must set a time for a specified number of laps.
- 2.14.7. If the car stops or leaves the slot/track only team members are allowed to re-slot the car.

3. Speed controller

This is a new category introduced for the first time in 2010. It is open to individuals and builds on development work carried out by Paul Gardiner at Finham Park School on speed control circuits using both hard-wired and PIC designs and either conventional or surface mount components. Links to Paul's web site for circuit schematics, build instructions and sources for component are on the Scalextric4Schools web site.

- 3.1. Individuals are invited to design a speed controller based on Finham Park circuits or ones you design yourself.
- 3.2. The designs must be fully functioning using a standard, unmodified Scalextric power supply, 'Sport' track and analogue cars.
- 3.3. The design must be modelled using **Pro|ENGINEER** with all CAD and manufacturing files plus an electronic presentation covering; aesthetics, function, design, manufacture, assembly and maintenance.
- 3.4. Additional credit will be given where entries are targeted at individuals who would have difficulties or find it impossible to use a standard Scalextric hand controller.
- 3.5. Designs should be submitted electronically before **30th April 2010** as a single zip file containing:
 - 3.5.1. The Pro|ENGINEER models and all associated files.
- 3.6. A presentation in a format viewable on a PC running Windows XP/Microsoft Office 2007/Pro|ENGINEER Schools Edition Wildfire 4.0/5.0
- 3.7. All pupils submitting a complete submission will be invited to attend the UK finals provisionally planned for Sunday May 23rd 2010 at Castle Donnington racing circuit near Derby.
- 3.8. Prizes will be awarded at the discretion of Hornby/PTC staff.

Key dimensions



All dimensions in millimetres

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