

TEAM'S VEHICLE CHECK LIST



2018



Conducted under "Australian Human Powered Vehicle Racing Design & Construction Specifications"

This is a Check List version of the Vehicle Specifications for Teams to use as pre-Scrutineering preparation.

Refer to the Specifications document for full details of items as per the **Green Numbers**.

Using this list will help to develop Rider understanding of their vehicle.

Putting Riders through a Rollover Test will show if they have their seat belt on properly, will reassure them of their vehicle's protections and give them rollover experience so a track incident is less traumatic.

- | | | |
|--------------------------|---|--------------------------|
| <input type="checkbox"/> | 1 Single seat recumbent : solely human powered drive to road wheel(s) : no motorised fan 1.2 | <input type="checkbox"/> |
| <input type="checkbox"/> | 2 Minimum of three, full time, load bearing wheels 1.2 3.1.1 | <input type="checkbox"/> |
| <input type="checkbox"/> | 3 Rider protection structures remain strong enough to meet their purpose 1.4.1 1.4.2 a 2.2.1 a | <input type="checkbox"/> |
| <input type="checkbox"/> | 4 No aspect of the vehicle compromises Rider safety at any time 1.4.2 b 2.2.8 | <input type="checkbox"/> |
| <input type="checkbox"/> | 5 The Team's Riders each fit safely within the vehicle, especially head clearance 1.4.2 c | <input type="checkbox"/> |
| <input type="checkbox"/> | 6 Exterior bodywork has room rearward of front wheels for number panels 1.4.4 | <input type="checkbox"/> |
| <input type="checkbox"/> | 7 Replacement large body sections meet required strength expectations 1.4.5 | <input type="checkbox"/> |
| <input type="checkbox"/> | 8 Composite materials used safely 2.1.4 | <input type="checkbox"/> |
| <input type="checkbox"/> | 9 Composite design/construction meets HPV requirements : fully cured : no unbound fibres 2.1.4 4.6.5 | <input type="checkbox"/> |
| <input type="checkbox"/> | 10 Vehicle prevents contact between Rider, the road, other vehicles and obstacles. 2.2.1 b | <input type="checkbox"/> |
| <input type="checkbox"/> | 11 Vehicle has no internal items or aspects of vehicle design that could injure the Rider. 2.2.1 d | <input type="checkbox"/> |
| <input type="checkbox"/> | 12 Joints competently welded, mounts properly attached, tubing-structures-joints fracture free 2.2.1 a,c | <input type="checkbox"/> |
| <input type="checkbox"/> | 13 Exterior of vehicle has no problematic protrusions : No exterior roll bar on Closed Canopy Vehicle 2.2.2 | <input type="checkbox"/> |
| <input type="checkbox"/> | 14 Exposed axle ends are recessed or flush in hub, or covered or shielded 2.2.3 | <input type="checkbox"/> |
| <input type="checkbox"/> | 15 Batteries mounted securely from collision damage and shorting out - no liquid acid battery 2.2.4 | <input type="checkbox"/> |
| <input type="checkbox"/> | 16 Vehicle underside is coloured white or very light-coloured 2.2.5 | <input type="checkbox"/> |
| <input type="checkbox"/> | 17 Seat positively prevented from moving during riding [Rider weight or seat belt not part of retention] 2.2.7 | <input type="checkbox"/> |
| <input type="checkbox"/> | 18 Canopy can be opened by the Rider without assistance 2.3.1 | <input type="checkbox"/> |
| <input type="checkbox"/> | 19 Canopy can be opened from outside without Rider help : closure devices marked externally 2.3.1 2.3.2 | <input type="checkbox"/> |
| <input type="checkbox"/> | 20 Cockpit free of hazards to Rider or Pit Crew : eg. zip tie ends - brake or gear cable ends - rigid edges 2.3.3 | <input type="checkbox"/> |
| <input type="checkbox"/> | 21 Rider helmets certified - correctly fitted - have no mounted devices [incl. lights] 2.3.5 7.1.4 Event Manual | <input type="checkbox"/> |
| <input type="checkbox"/> | 22 Airflow provided for Rider ventilation and defogging 2.3.6 | <input type="checkbox"/> |
| <input type="checkbox"/> | 23 Bodywork and window treatments will not impair Rider vision : Rider can see the road 5m ahead 2.4 | <input type="checkbox"/> |
| <input type="checkbox"/> | 24 Three wheel vehicle has a track of 600mm minimum [measured at centre of tyre ground contact] 3.1.2 | <input type="checkbox"/> |
| <input type="checkbox"/> | 25 Four wheel vehicle: 1 axle track of 500mm minimum + sum of both tracks is 900mm minimum 3.1.3 | <input type="checkbox"/> |
| <input type="checkbox"/> | 26 Wheel base is 1000mm minimum [between axle lines] 3.1.4 | <input type="checkbox"/> |
| <input type="checkbox"/> | 27 Maximum External Body dimensions: Length 2700mm : Width 1100mm : Height 1200mm 3.2 | <input type="checkbox"/> |

- 28 Guarding provided for Rider's hands where there is risk of contact with tyres or spokes 4.1.1
- 29 Riders are protected from hair and clothing entanglement 4.1.2
- 30 Discs covering both sides of chain ring teeth : drive system to chain ring covered from under seat 4.1.3-4
- 31 Chain cover has 3mm maximum clearance to chain ring discs 4.1.4
- 32 Any exposed pinch point on the return side of the chain is guarded 4.1.5
- 33 Rider protected from impact through floor, especially peripheral chassis, with sufficient structures 4.2.1
- 34 Floor pan encloses whole underside except for wheel cutouts : Will stop Rider contacting road 4.2.2
- 35 Cockpit gives Riders shoulder-to-knees side-impact-T-bone protection : Will not move sideways 4.3
- 36 Effective head restraint system installed that has edges made safe for the Rider 4.4
- 37 Integrated frontal structures and panels will protect Rider's legs, knees and feet 4.5
- 38 Vehicle (body) is larger than 200mm cross-sectionally at 100mm from front 4.5.1
- 39 Forward projecting struts have wide frontage to not be a hazard 4.5.2

Rider Rollover Protection Structures

- 40 Structurally integrated with chassis/frame/monocoque shell : Constructed to meet their purpose 4.7.1
- 41 Entirely encompasses all Riders viewed from all directions 4.7.3
- 42 Removable structures and bracing attached appropriately - multiple bolts - sleeving - flanges 4.7.4
- 43 Structures/panels to protect Rider's legs, knees and feet when vehicle is upside down or on its side 4.7.5
- 44 Opening parts secured to not open involuntarily : Sufficient alignment locating systems 4.7.6
- 45 Large opening components [clam shell - semi-clam] shut with audible click 4.7.6
- 46 Team riders do Roll-Over Test to validate their seat belt wearing and vehicle protections

Open Cockpit Vehicle Rider Rollover Protection Structures

- 47 500mm min.wide at shoulders - integral part of side impact protection 4.8.1
- 48 Head structure has rounded shape at least 300mm wide at 150mm down from highest point 4.8.2a Fig.2
- 49 Head structure is a minimum of 100mm above every Rider's helmet 4.8.2 b
- 50 Head structure braced as per Figures 3 and 4 4.8.2 c - d
- 51 Front structure braced as per Figures 3 and 4 or by sufficient material attachment 4.8.3

Closed Canopy Vehicle Rider Rollover Protection Structures

- 52 Body system meets purpose of RRPS and COP through robustness and integral bracing 4.9.1
- 53 Specified Foam installed : minimum area 1200cm² or 200mm X 600mm 4.9.2 Definition 4
- 54 Specified Foam extends above all Riders : All Riders meet Roller Test indicators 4.9.3 Definition 3 2.3.4

Cockpit Overhead Protection

- 55 COP capable of deflecting an oncoming vehicle 4.10.1
- 56 Locating fixtures able to keep COP in place during track incidents and to cope with flexing 4.10.6
- 57 Opening structures are not hinged from the rear 4.10.8
- 58 Locking mechanism will maintain protection during track incidents 4.10.8
- 59 If elastic loops are used, minimum of two, 300mm min. apart, of 5mm min. diameter cord 4.10.8 b
- 60 Loops are under tension when closed and over fixed hooks or large flanged buttons 4.10.8 b
- 61 Loops and retainers are fixed to structural members/bars/composites 4.10.8 b
- 62 Velcro is not used as the sole closure mechanism 4.10.8 a

Cockpit Overhead Protection for Open Cockpit Vehicle

- 63 Minimum of two longitudinal bars with maximum separation of 200mm acting as COP 4.10.2
- 64 COP bars straight or upwardly arched and suitably cross-braced 4.10.2
- 65 Total width of COP to protect Rider as required for vehicle shape 4.10.3
- 66 Construction enables 100mm minimum clearance to Rider's helmet 4.10.4

Cockpit Overhead Protection for Closed Canopy Vehicle

- 67 COP area has minimum width of 200mm and minimum length of 600mm 4.10.5
- 68 Metal or composite rigid panel of minimum 200mm X 600mm incorporated in COP 4.10.5
- 69 Opening panel margin overlaps are sufficient to maintain integrity [minimum of 20mm overlap] 4.10.7

- 70 Seat belt is a four strap harness and has manufacturer's Certification Label attached 5.1.1
- 71 Belt is in good condition and is not frayed, cut, restitched nor modified from manufacture 5.1.2 5.1.4
- 72 Seat belt worn correctly according to maker's specs. [espec. lap belt] 5.1.3 [no excessive seat padding]
- 73 Belt is mounted as intended : Correct bolts being used : 2-3 threads showing through nuts 5.2.1 5.2.2
- 74 Bolts are through frame tags or welded sleeves in frame tubes : mounting points in good condition 5.2.3
- 75 Seat, sub-frame or bracket carrying belt mounts attached to chassis with equivalent strength 5.2.4 5.2.8
- 76 Shoulder belt mounts or guides at maximum of 200mm centres 5.2.6 b
- 77 Shoulder belt mounts or guides are level with, or higher than, Rider's shoulders 5.2.6 a
- 78 Seat shape will prevent the Rider sliding under the lap belt [lap belt kept on pelvis] 5.2.7
- 79 Substantial protection to prevent belt damage by belt slots or edges with metal or composite seat 5.2.9

- 80 Vehicle and Riders capable of performing Steering Slalom Test 6.1.2 Definition 5
- 81 Steering has uninterrupted movement lock to lock 6.1.1
- 82 Steering limitation to prevent jamming, over-centre travel or linkage damage 6.1.3
- 83 Steering will not injure Rider in track incident [including tyre or wheel contact] 6.1.4 6.1.5
- 84 Steering controls projecting towards Rider are rounded and padded 6.1.6
- 85 Steering controls projecting towards Rider are not closer than 250mm from Rider's face 6.1.6
- 86 No rope, cable, tilt-steer, lean-steer, flexible column or rear-only steer systems 6.1.7

- 87 Two operational brake systems with controls mounted securely and safely 6.2
- 88 Brake controls away from moving parts and road : No brake friction applied to tyres 6.3
- 89 Mirror mounted each side with minimum area of 18cm² and same size images 6.4.1 6.4.2
- 90 Mirrors within Rider's arm reach and enable Rider to identify overtaking vehicles 6.4.2 6.4.3
- 91 Headlight : white : mounted securely forward of Rider's feet : 250mm-600mm above ground 7.1.2
- 92 Tail light : minimum of 3 red LED : within 150mm of rear : on vertical centre line : 160° rear sweep visible:
robustly mounted at [or strip lights masked to] 350mm - 600 mm above road level 7.1.3
- 93 White lights face forwards : Red as tail light only : All vehicle lights set to steady 7.1.2c+d 7.1.3c+i 7.1.5
- 94 Loud electric/electronic warning device - direct airstream contact - forward of feet - facing forwards 7.2
- 95 Warning device waterproofed : Only operated by momentary switch on steering handle 7.2.5 7.2.4
- 96 Speedometer operational and mounted in clear view of Riders 7.3
- 97 Signage not offensive - nor of illegal substances, alcohol or tobacco Event Manual