

TEAM'S VEHICLE CHECKLIST

2020



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**.

This list follows the order of the Vehicle Specs. document and so there is some duplication when the same item is being covered from a different perspective.

Using this list as a Team activity will help to develop Rider understanding of their vehicle.

- | | | |
|-----------|---|--------------------------|
| 1 | Single seat recumbent : solely human powered drive to road wheel(s) : no motorised fan 1.2 | <input type="checkbox"/> |
| 2 | Minimum of three, full time, load bearing wheels 1.2 3.1.1 | <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"/> |
| 4 | No aspect of the vehicle compromises Rider safety at any time 1.4.2 b 2.2.8 | <input type="checkbox"/> |
| 5 | The Team's Riders each fit safely within the vehicle, especially head clearance 1.4.2 c 2.3.4 8.3 | <input type="checkbox"/> |
| 6 | Exterior bodywork has room rearward of front wheels for number panels 1.4.4 | <input type="checkbox"/> |
| 7 | Replacement large body sections [eg. for night running] meet required strength expectations 1.4.5 | <input type="checkbox"/> |
| 8 | Composite materials used safely : fully cured : no unbound fibres 2.1.4 | <input type="checkbox"/> |
| 9 | Composite design - construction sufficient to act as RRPS and COP 2.1.4 4.6.5 4.7 4.10 | <input type="checkbox"/> |
| 10 | Vehicle prevents contact between Rider, the road, other vehicles and obstacles. 2.2.1 b | <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"/> |
| 12 | Joints competently welded, mounts properly attached, tubing-structures-joints fracture free 2.2.1 a,c | <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"/> |
| 14 | Exposed axle ends are recessed or flush in hub, or covered or shielded 2.2.3 | <input type="checkbox"/> |
| 15 | Batteries mounted securely from collision damage and shorting out - no battery containing liquid 2.2.4 | <input type="checkbox"/> |
| 16 | Vehicle underside is coloured white or very light-coloured 2.2.5 | <input type="checkbox"/> |
| 17 | Seat positively prevented from moving during riding [Rider weight nor seat belt are not part of retention] 2.2.7 | <input type="checkbox"/> |
| 18 | Closed Canopy front wheels are enclosed to prevent Rider contact and to minimize wheel-borne debris 2.2.9 | <input type="checkbox"/> |
| 19 | Canopy can be opened by the Rider without assistance 2.3.1 | <input type="checkbox"/> |
| 20 | Canopy can be opened from outside without Rider help : closure devices marked externally 2.3.1 2.3.2 | <input type="checkbox"/> |
| 21 | 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"/> |
| 22 | Rider helmets certified - correctly fitted - have no mounted devices [incl. lights] 2.3.5 7.1.4 Event Manual | <input type="checkbox"/> |
| 23 | Airflow provided for Rider ventilation and defogging 2.3.6 | <input type="checkbox"/> |
| 24 | Window treatments and bodywork do not impair Rider vision : Rider can see the road 5m ahead 2.4 | <input type="checkbox"/> |
| 25 | Three wheel vehicle has a track of 600mm minimum [measured at centre of tyre ground contact] 3.1.2 | <input type="checkbox"/> |
| 26 | Four wheel vehicle: 1 axle track of 500mm minimum plus sum of both tracks is 900mm minimum 3.1.3 | <input type="checkbox"/> |
| 27 | Wheel base is 1000mm minimum [between axle lines] 3.1.4 | <input type="checkbox"/> |
| 28 | Maximum External Body dimensions: Length 2700mm : Width 1100mm : Height 1200mm 3.2 | <input type="checkbox"/> |
| 29 | Guarding provided for Rider's hands where there is risk of contact with tyres or spokes 4.1.1 | <input type="checkbox"/> |
| 30 | Riders are protected from hair and clothing entanglement 4.1.2 | <input type="checkbox"/> |
| 31 | Discs covering both sides of chain ring teeth 4.1.3 | <input type="checkbox"/> |

- 32 Drive chain [or system] covered from under seat to 3mm maximum clearance to chain ring discs 4.1.4 Figure 1
- 33 Rider protected from impact through floor [especially with 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 [especially top] 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 [end plate, lateral tubing] to not be a hazard 4.5.2

Rider Rollover Protection Structures

- 40 Will protect rider in roll-over or track incident - formed from suitable materials 4.6.1 4.6.4 4.7.2
- 41 Structurally integrated with chassis/frame/monocoque shell : Constructed to meet their purpose 4.7.1
- 42 Entirely encompasses all Team Riders viewed from all directions 4.7.3
- 43 Removable structures and bracing attached appropriately - multiple high strength bolts - sleeving - flanges 4.7.4
- 44 Structures/panels able to protect Rider's legs, knees and feet when vehicle is upside down or on its side 4.7.5
- 45 Opening parts secured to not open involuntarily : Sufficient alignment locating systems 4.7.6
- 46 Large opening components [clam shell - semi-clam] shut with audible click 4.7.6
- 47 Team Riders do Roll-Over Test to validate their vehicle's protections and as experience prior to any track incident

Open Cockpit Vehicle Rider Rollover Protection Structures

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

Closed Canopy Vehicle Rider Rollover Protection Structures

- 53 Body system meets purpose of RRPS and COP through robustness and integral bracing 4.9.1
- 54 Specified Foam extends above all Riders' heads : minimum area 1200cm² 4.9.2 8.4
- 55 All Riders meet Roller Test indicators 2.3.4 4.9.3 8.3

Cockpit Overhead Protection - General Requirements

- 56 COP capable of deflecting an oncoming vehicle [such as a hard nosed composite] 4.6.2 4.10.1
- 57 COP is above the head position of all Team riders 4.10.1
- 58 Vehicle structures [eg. roll bar braces, roof] provide COP level of protection from rear impact 4.10.2 Figure 5
- 59 Total width of COP to protect Rider as required for vehicle shape [checked when vehicle is on its side] 4.10.3
- 60 Locating fixtures able to keep COP in place during track incidents and to cope with flexing 4.10.7
- 61 Opening structures are not hinged from the rear 4.10.9
- 62 Locking mechanism will maintain protection during track incidents 4.10.10
- 63 If elastic loops are used, minimum of two, 300mm min. apart, of 5mm min. diameter cord 4.10.10 b
- 64 Loops are under tension when closed and over fixed hooks or large flanged buttons 4.10.10 b
- 65 Loops and retainers fixed to structural members/bars/composites 4.10.10 b
- 66 Velcro is not used as the sole closure mechanism 4.10.10 a

Cockpit Overhead Protection specifically for Open Cockpit Vehicle

- 67 Minimum of two longitudinal bars with maximum separation of 200mm acting as COP 4.10.4
- 68 COP bars straight or upwardly arched and suitably cross-braced 4.10.4
- 69 Construction enables 100mm minimum clearance to Rider's helmet 4.10.5

Cockpit Overhead Protection specifically for Closed Canopy Vehicle

- 70 COP structure has minimum width of 200mm and minimum length of 600mm 4.10.6
- 71 Metal or composite rigid panel of minimum 200mm X 600mm incorporated in COP 4.10.6

72	Opening door/roof/COP has overlaps sufficient to maintain integrity [minimum of 20mm overlap] 4.10.8	<input type="checkbox"/>
73	Seat belt is a four strap harness and has manufacturer's Certification Label attached 5.1.1	<input type="checkbox"/>
74	Belt is in good condition and is not frayed, cut, restitched nor modified from manufacture 5.1.2 5.1.4	<input type="checkbox"/>
75	Seat belt worn correctly according to Maker's specs. [espec. lap belt] 5.1.3 [no excessive seat padding]	<input type="checkbox"/>
76	Belt is mounted as intended : Correct bolts being used : 2-3 threads showing through nuts 5.2.1 5.2.2	<input type="checkbox"/>
77	Bolts are through frame tags or welded sleeves in frame tubes : mounting points in good condition 5.2.4	<input type="checkbox"/>
78	Coupling nuts as captive nuts are 25mm long: bolts are 8mmX20mm of Metric Grade 12.9 or 8.8 5.2.3	<input type="checkbox"/>
79	Seat, sub-frame or bracket carrying belt mounts attached to chassis with equivalent strength 5.2.5 5.2.9	<input type="checkbox"/>
80	Shoulder belt mounts or guides at maximum of 200mm centres 5.2.7 b	<input type="checkbox"/>
81	Shoulder belt mounts or belt guiding brackets are level with, or higher than, Team Rider's shoulders 5.2.7 a	<input type="checkbox"/>
82	Shoulder belts can be secured using three bar slides 5.2.6	<input type="checkbox"/>
83	Seat shape will prevent the Rider sliding under the lap belt [lap belt kept on pelvis] 5.2.8	<input type="checkbox"/>
84	Belts protected from seat edges, slots or other structures by flexible grommet or similar, not just tape 5.2.10	<input type="checkbox"/>
85	Riders complete Roll-Over Test to self validate that they have their belts on properly	<input type="checkbox"/>
86	Riders are able to ride and steer through a Slalom of 4 markers placed 4.2 metres apart 6.1	<input type="checkbox"/>
87	Steering has uninterrupted movement lock to lock 6.1.1	<input type="checkbox"/>
88	Steering limitation to prevent jamming, over-centre travel or linkage damage 6.1.2	<input type="checkbox"/>
89	Steering will not injure Rider in track incident [including tyre or wheel contact] 6.1.3 6.1.4	<input type="checkbox"/>
90	Steering controls projecting towards Rider are rounded and padded 6.1.5	<input type="checkbox"/>
91	Steering controls projecting towards Rider are not closer than 250mm from Rider's face 6.1.5	<input type="checkbox"/>
92	No rope, cable, tilt-steer, lean-steer, flexible column or rear-only steer systems 6.1.6	<input type="checkbox"/>
93	Two operational brake systems with controls mounted securely and safely 6.2	<input type="checkbox"/>
94	Brake controls away from moving parts and road : No brake friction applied to tyres 6.3	<input type="checkbox"/>
95	Mirror mounted each side, each of a minimum area of 18cm ² and having <u>same size</u> images 6.4.1 6.4.2	<input type="checkbox"/>
96	Mirrors enable Rider to identify overtaking vehicles 6.4.2	<input type="checkbox"/>
97	Mirrors need not be adjustable but must be within Rider's arm reach distance to give a wide field of view 6.4.3	<input type="checkbox"/>
98	Headlight : white : mounted securely forward of Rider's feet : 250mm-600mm above ground 7.1.2	<input type="checkbox"/>
99	Tail light : min. 3 red LED : within 150mm of end of vehicle : on vertical centre line : 160° rear sweep visible: robustly mounted within 350mm - 600 mm above road level or strip lights masked to this 7.1.3	<input type="checkbox"/>
100	White lights face forwards : Red only as tail light : All vehicle lights set to steady 7.1.2 7.1.3 7.1.5	<input type="checkbox"/>
101	Loud electric/electronic warning device - direct airstream contact - forward of feet - facing forwards 7.2	<input type="checkbox"/>
102	Warning device waterproofed : Only operated by momentary switch on steering handle 7.2.4	<input type="checkbox"/>
103	Speedometer operational and mounted in clear view of Riders 7.3	<input type="checkbox"/>
104	Signage not offensive and not of alcohol, tobacco or illegal substances Event Manual	<input type="checkbox"/>