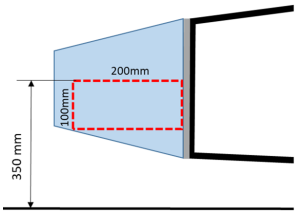


MECH 2				
!ONLY FOR CV! NO FUEL IN THE FUEL TANK ! IF YES, EMPTY AT THE PIT				
!ONLY FOR EV! CHECK IF THE TEAM HAS THE ACCUMULATOR INSPECTION STICKER! IF NOT THE ACCUMULATOR MUST NOT BE PRESENT!				
Technical Inspection Sticker (IN1.3)				
PRESENT DOCUMENTS				
No.	Checkpoint	Rule No	Checkbox	Comments
47	Approved SES	T3.6		
48	Approved SESA (if applicable, monocoque only)	A5.7		
49	IA test specimen and approved IA data (except for teams with a standard IA)	T3.18		
50	Laminate test specimens	T3.5		
GENERAL				
No.	Checkpoint	Rule No	Checkbox	Comments
51	<ul style="list-style-type: none"> <li>The chassis has to be constructed with node-to-node triangles: All structural frame members must meet the min. material requirements</li> <li>• Two roll hoops that are braced</li> <li>• A front bulkhead with support system and IA</li> <li>• Side impact structures</li> <li>• All hoops and bracings must meet the min. material requirements</li> </ul>	T3.1		
FRONT IMPACT PROTECTION (REMOVE NOSE)				
No.	Checkpoint	Rule No	Checkbox	Comments
IMPACT ATTENUATOR ASSEMBLY (IA AND AIP)				
52	<ul style="list-style-type: none"> <li>The attachment of the IA assembly must be designed to provide an adequate load path for transverse and vertical loads in the event of off-center and off-axis impacts.</li> <li>• Segmented foam attenuators must have the segments bonded together to prevent sliding or parallelogramming.</li> </ul>	T3.17.6		
53	<b>BOLTED</b> <ul style="list-style-type: none"> <li>• If the IA assembly is bolted to the FBH, it must be the same size as the outside dimensions of the front bulkhead</li> <li>• One 8mm metric grade 8.8 bolt must be used for every 200mm of reference perimeter. Smaller but more bolts may be used if equivalency is shown. The bolts are considered critical fasteners (T10)</li> <li><i>Check for positive locking</i></li> </ul>	T3.16.6 T3.17.3		
54	<b>WELDED</b> <ul style="list-style-type: none"> <li>• If it is welded to the front bulkhead, it must extend at least to the centerline of the front bulkhead tubing in all directions.</li> </ul>			
55	<ul style="list-style-type: none"> <li>• The AIP must not extend past the outside edges of the front bulkhead.</li> </ul>			
IMPACT ATTENUATOR				
56	<ul style="list-style-type: none"> <li>• At least 100mm high and 200mm wide for a minimum distance of 200mm forward of the front bulkhead.</li> </ul>	T3.17.2		
57	<ul style="list-style-type: none"> <li>• No portion of the required 100 × 200 × 200 mm<sup>3</sup> volume of the IA can be positioned more than 350 mm above the ground.</li> </ul> 	T3.17.2		
58	<ul style="list-style-type: none"> <li>• Attached securely and directly to the Anti Intrusion Plate (AIP).</li> <li>• No wing supports through IA</li> </ul>	T3.17.2		

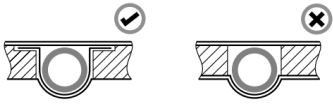
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59	<ul style="list-style-type: none"> <li>Attached to the AIP by a minimum of four 8 mm metric grade 8.8 bolts. The bolts are considered critical fasteners and must comply with T 10.</li> </ul>	T3.17.5		
60	<p>For "standard" FSAE IAs:</p> <ul style="list-style-type: none"> <li>if the <b>FBH width is larger than 400 mm</b> and/or its <b>height is larger than 350 mm</b> a diagonal or X-bracing that is a front bulkhead support tube or an approved equivalent per T 3.2, must be included in the front bulkhead. Or equivalent for monocoque bulkheads.</li> <li>must use a 1.5 mm solid steel AIP that is welded along its full perimeter to a steel bulkhead or use a 4 mm solid aluminium AIP that is bolted to any bulkhead with a minimum of eight 8 mm metric grade 8.8 bolts</li> </ul>	T3.17.7		
61	<p><b>ANTI INTRUSION PLATE (AIP)</b></p> <ul style="list-style-type: none"> <li>Thickness = min 1.5mm solid steel or 4.0mm aluminium.</li> <li>Alternative AIP designs are permissible if equivalency to T 3.17.3 is proven by physical testing as in T 3.19.2. (Check SES and IAD)</li> </ul>	T3.17.3 T3.17.4		
<b>FRONT STRUCTURE</b>				
No.	Checkpoint	Rule No	Checkbox	Comments
62	<p><b>FRONT BULKHEAD</b></p> <ul style="list-style-type: none"> <li>Any alternative material used for the front bulkhead must have a perimeter shear strength equivalent to a 1.5 mm thick steel plate.</li> <li>The front bulkhead must be supported back to the front hoop by a minimum of three tubes on each side</li> </ul>	T3.13 T3.14		
63	<p><b>FRONT BULKHEAD SUPPORT</b></p> <ul style="list-style-type: none"> <li>Must support the FBH back to Front Hoop by minimum 3 tubes on each side</li> </ul> <p>UPPER MEMBER</p> <ul style="list-style-type: none"> <li>attached to FBH maximum 50mm from the top and to the FH maximum of 50mm below the upper SIS member</li> <li>If attachment point is more than 100mm above the upper SIS member, triangulation is needed to transfer load to the MH</li> </ul> <p>LOWER MEMBER: attached to the base of the FBH and the base of the FH</p> <p>DIAGONAL MEMBER: must triangulate the upper and lower member node-to-node</p>	T3.14		
64	<p><b>FRONT HOOP BRACING</b></p> <ul style="list-style-type: none"> <li>The front hoop bracing attaches on each side of the front hoop as well as the structure forward of the driver's feet. A minimum of two tubes without any bends must be straight on a line in side view of the frame and <b>must have a minimum distance of 100 mm between each other at the front hoop</b></li> <li>Attached to front hoop <b>not lower than 50mm from top-most surface</b> of the front hoop (not applicable for monocoque)</li> <li>If the front hoop is inclined more than 10° to the rear, additional braces extending rearwards are required</li> </ul>	T3.11		
<b>FRONT HOOP (T3.9)</b>				
65	<ul style="list-style-type: none"> <li>Material must be <b>metal</b> with a wall <b>thickness at least 2 mm</b> <i>(inspection holes if needed)</i></li> </ul>	T3.2.1		
66	<ul style="list-style-type: none"> <li>In side view, <b>no part</b> of the front hoop can be <b>inclined more than 20°</b> from vertical.</li> </ul>	T3.9.3		
67	<ul style="list-style-type: none"> <li>The lower roll hoop tubing attachment points must be within <b>50 mm</b> of the endpoints of the roll hoop. (T3.7.4)</li> </ul>	T3.7.4		
	<b>FRONT HOOP ATTACHMENT</b>			
68	<ul style="list-style-type: none"> <li>Check if the submitted design matches the structure on the car</li> </ul>			
69	<ul style="list-style-type: none"> <li>Check proper manufacturing</li> </ul>			
70	<p><b>BOLTED FH</b></p> <ul style="list-style-type: none"> <li>The front hoop requires six attachment points, two on each side connecting to the front bulkhead support structures and two connecting to the front hoop bracing, and must therefore show equivalency to 180 kN, as follows from T 3.16.1 and T 3.11.4.</li> </ul>	T3.9.5		
71	<ul style="list-style-type: none"> <li>Each attachment point requires a minimum of <b>two 8 mm</b> metric <b>grade 8.8</b> bolts and <b>steel backing plates</b> with a minimum thickness of <b>2 mm</b>.</li> </ul>	T3.16.3		
72	<ul style="list-style-type: none"> <li>Check e/D of attachments (&gt; 1.5 Hole Diameter)</li> </ul>	T10.1.4		

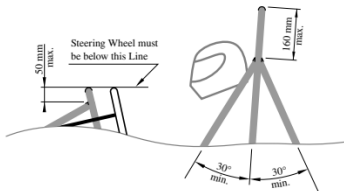
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73	<p>LAMINATED FH</p> <ul style="list-style-type: none"> <li>Fully laminating the front hoop to the monocoque is acceptable. Fully laminating means that the hoop has to be encapsulated with laminate around its whole circumference, see figure 5. Equivalence to T 3.7.4 must be shown in the SES. The laminate encapsulating the front hoop must overlap by at least 25 mm on each side. It must have the same lay-up as the laminate that it is connecting to.</li> </ul> <p><i>(The manufacturing quality is to be checked - dry areas, insufficient overlap, bad laminating quality)</i></p>  <p>Figure 5: Front hoop laminating requirements</p>	T3.9.6		
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Max - What else is considered bad laminating quality?

### MAIN HOOP

No.	Checkpoint	Rule No	Checkbox	Comments
74	<p><b>MAIN HOOP</b></p> <ul style="list-style-type: none"> <li>The main hoop must be constructed of a single piece of uncut, continuous, closed section steel tubing.</li> <li>Material must be steel with a wall thickness at least 2 mm (T3.2.1) <i>(inspection holes if needed)</i></li> <li>In side view the portion of the main hoop which is above its upper attachment point to the side impact structure must be inclined less than 10° from vertical</li> <li>In side view any portion lower than the upper attachment point to the side impact structure must be inclined either forward or not more than 10° rearward</li> <li>In side view any bends in the main hoop above its upper attachment point to the primary structure must be braced to a node of the main hoop bracing support structure with tubing meeting the requirements of main hoop bracing.</li> <li>The lower roll hoop tubing attachment points must be within 50 mm of the endpoints of the roll hoop. (T3.7.4)</li> </ul>	T3.8 T3.7		
75	<p><b>MAIN HOOP BRACING</b></p> <ul style="list-style-type: none"> <li>Material must be steel and the bracings must be straight.</li> <li>Bracings must be attached to the main hoop no lower than 160 mm below the top-most surface of the main hoop. The angle between bracings and main hoop must be greater than 30 deg.</li> <li>Proper construction for removable braces (if applicable) see T3.12</li> <li>If any item which extends outside of the primary structure is attached to the main hoop braces, additional bracing is required to prevent bending loads in a rollover situation. <i>(Usually rear wing supports, applies to anything that induces loads to the Main Hoop Bracing tubes)</i></li> </ul>  <p>Figure 6: Front hoop bracing, main hoop bracing and steering wheel requirements</p>	T3.10		
76	<p><b>SHOULDER HARNESS BAR / MOUNTING</b></p> <ul style="list-style-type: none"> <li>Minimum thickness 2mm (T3.2.1)</li> <li>Must be steel, or tested and calculated to show equivalence.</li> <li>Must not transfer load to the Main Hoop Bracing without additional triangulation-bracing</li> <li>Check attachment calculations on SES and compare the attachments on the car with the ones submitted</li> </ul>	T5.5		

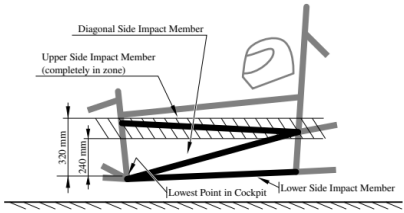
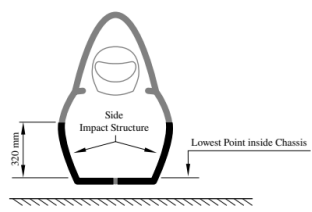
### MAIN HOOP ATTACHMENTS

77	<ul style="list-style-type: none"> <li>Check if the submitted design matches the structure on the car</li> </ul>			
78	<ul style="list-style-type: none"> <li>Each attachment point requires a <b>minimum of two 8 mm metric grade 8.8 bolts and steel backing plates</b> with a minimum thickness of <b>2 mm</b>.</li> <li>Or <b>one 10 mm metric grade 8.8 bolt</b>, if the bolt is on the centerline of the tube</li> </ul>	T3.16.3 T3.16.4		
79	<ul style="list-style-type: none"> <li>Check e/D of attachments (&gt; 1.5 Hole Diameter)</li> </ul>	T10.1.4		

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80	• Check positive locking (nylon nuts allowed if area is less than 80 degrees)	T10.1.1 T10.2.2		
81	• Check proper manufacturing			
<b>TEMPLATE FITTING</b>				
No.	Checkpoint	Rule No	Checkbox	Comments
82	<b>COCKPIT OPENING</b> <ul style="list-style-type: none"> <li>• Insert template 2 into cockpit. The firewall may not be removed. Teams are allowed to remove the seat, steering wheel and all padding</li> <li>• Template passes down below the top of the Side Impact Structure (or 320mm above lowest point in car, monocoque only)</li> </ul>	T4.1		
83	<b>COCKPIT INTERNAL CROSS SECTION</b> <ul style="list-style-type: none"> <li>• Check if pedals are in <b>most forward</b> position.</li> </ul> <i>*MOST FORWARD = TOWARDS FRONT BULKHEAD</i> <i>*REARWARDS = TOWARDS MAIN HOOP</i> <ul style="list-style-type: none"> <li>• Insert template 3 into cockpit. Steering wheel and padding may only be removed if no tools are required and the driver is able to do so from the driving position.</li> <li>• Template passes through to 100mm from rearmost pedal face.</li> </ul>	T4.2		
84	<b>DRIVER'S LEG PROTECTION</b> <ul style="list-style-type: none"> <li>• All moving suspension and steering <b>components</b> and other <b>sharp</b> edges inside the cockpit between the front hoop and a vertical plane 100 mm rearward of the pedals, must be shielded with solid material.</li> </ul>	T5.9.1		
85	• Check if anything from the rear of the pedal box (brake lines, cables etc.) is forward than the inner FBH skin, or is crimped-crashed to it.			
86	<b>PERCY</b> <p>Insert percy into cockpit</p> <p>The figure has to be positioned in the vehicle as follows:</p> <ul style="list-style-type: none"> <li>• The seat adjusted to the rearmost position (<i>REARMOST = TOWARDS MAIN HOOP</i>)</li> <li>• The pedals adjusted to the frontmost position (<i>FRONTMOST = TOWARDS FRONT BULKHEAD</i>)</li> <li>• The bottom 200mm circle placed on the seat bottom. The distance between the center of the circle and the rearmost actuation face of the pedals must be minimum 915mm.</li> <li>• The middle circle positioned on the seat back</li> <li>• The upper 300mm circle positioned 25mm away from the head restraint.</li> <li>• Top is at least 50mm below the line between the main hoop and front hoop</li> </ul>	T4.3		
<b>IMPACT STRUCTURES</b>				
No.	Checkpoint	Rule No	Checkbox	Comments

87	<p><b>SIDE IMPACT STRUCTURE (T3.15)</b></p> <ul style="list-style-type: none"> <li>Must consist of at least three members on each side</li> <li><b>UPPER MEMBER:</b> must connect the front and main hoop and must be at a height of 240mm and 320 mm above the lowest inside chassis point between the front and main hoop</li> <li><b>LOWER MEMBER:</b> must connect the bottom of the main hoop and the bottom of the front hoop</li> <li><b>DIAGONAL MEMBER:</b> must triangulate the upper and lower member between the roll hoops node-to-node.</li> </ul>  <p>Figure 9: Side impact structure</p>  <p>Figure 10: Side impact structure monocoque</p>	T3.15		
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**HARNESS ATTACHMENTS**

No.	Checkpoint	Rule No	Checkbox	Comments
88	• Check if the submitted design matches the structure on the car			
89	• Check if the submitted test configuration matches the structure on the car			
90	<ul style="list-style-type: none"> <li>If attached to monocoque <b>one 10 mm metric grade 8.8 bolt</b> or <b>two 8 mm metric grade 8.8 bolts</b> (or bolts of an equivalent standard) and steel backing plates with a minimum thickness of 2 mm. If no backing plates are used check thoroughly the testing presented</li> <li>If attached to the primary structure using brackets must use two 8 mm metric grade 8.8 or stronger fasteners.</li> </ul>	T4.5.1 T4.5.2		
91	• Check positive locking (nylon nuts allowed if area is less than 80 degrees)	T10.1.1 T10.2.2		
92	• Minimum thickness 1.6mm steel or 4mm aluminium (if not, testing to be presented)	T4.5.5		

**ACCUMULATOR CONTAINER (EV5.5)****ONLY IF THE TEAM HAS PASSED THE ACCUMULATOR INSPECTION - CHECK STICKERS!**

No.	Checkpoint	Rule No	Checkbox	Comments
	<b>ACCUMULATOR CONTAINER ATTACHMENTS</b> <b>(EV - WITH ACCUMULATOR STICKER AND ACCUMULATOR INSIDE)</b>			
93	• Check if the submitted design matches the structure on the car			
94	• Any brackets used to mount the TSAC must be made of steel 1.6 mm thick or aluminum 4 mm thick and must have gussets to carry bending loads. Each attachment point including brackets, backing plates, and inserts, must be able to withstand 20 kN in any direction.	EV5.5.13		
95	• Each attachment point requires steel backing plates with a minimum thickness of 2 mm. Alternate materials may be used for backing plates if equivalency is approved. <i>(Check SES)</i>	EV5.5.5		
96	• Check e/D of attachments (> 1.5 Hole Diameter)	T10.1.4		
97	• Check positive locking (nylon nuts allowed if area is less than 80 degrees)	T10.1.1 T10.2.2		
98	• Check proper manufacturing			
	<b>APPROVAL STATUS</b>		gid=0	
MECH 2	Approval (Control box) (DON'T CHANGE MANUALLY)		FALSE	

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