

PART L

SCHEDULE TL

SAFETY CAGE CONSTRUCTION

IMPORTANT NOTE - Part L was updated for the 2008–2009 season. All new safety cages constructed / homologated after 31-05-08 shall comply with these new prescriptions hereinafter.

Article	1.0 GENERAL PRESCRIPTIONS	Diagram Reference
1.1	<p>General:</p> <p>(1) Safety cages homologated by MSNZ prior to 31-05-08 Safety cages homologated by MSNZ under Schedule TL prior to 31-05-08 which have a notation of approval in the vehicle's logbook are accepted under this schedule until further notice provided the structure remains compliant to the homologation issued by MSNZ. The regulations in force at the time of homologation shall be referenced.</p> <p>(2) Safety cages constructed on or after 31-05-08 Safety cages constructed on or after 31-05-08 (MSNZ homologation issued after 31-05-08) shall comply with the design prescriptions of this schedule and diagram L1 with the following mandatory process strictly adhered to;</p> <p>(a) <u>Safety cage constructors are required in the first instance to notify the MSNZ Technical Department of their intention to build a safety cage under this schedule.</u></p> <p>(b) <u>Written design approval from MSNZ must be gained prior to commencement of construction.</u></p> <p>(c) <u>Safety cages shall be constructed by a MSNZ approved constructor.</u></p> <p>(d) <u>All newly constructed safety cages shall be physically sighted and approved by either the Championship Scrutineer or the MSNZ Technical Department prior to a MSNZ Roll Protection Homologation Application being submitted.</u></p> <p>(e) <u>A MSNZ Roll Protection Homologation Application shall be submitted to the MSNZ Technical Department upon receipt of approval as per part (d) of this article.</u></p> <p>(f) <u>Once issued, the MSNZ homologation certificate shall be contained within the cars' MSNZ logbook.</u></p> <p>IMPORTANT - Constructors are advised to seek clarification from MSNZ concerning any interpretations of these regulations.</p>	
1.2	<p>Definitions:</p> <p>'Main rollbar' means a transversal near-vertical single piece tubular hoop located across the vehicle just behind the front seats.</p> <p>'Lateral rollbar' means a near longitudinal, near-vertical, single piece tubular frame located along the right and left sides of the vehicle, originating at the floor mounting of the front leg which follows the interior profile of the A post/windscreen pillar following the side of the vehicle to finish at the junction of the main rollbar.</p> <p>'Sill bar' means a lateral bar located between the lower vertical leg of the main rollbar and the lower vertical leg of the lateral rollbar at or near the sill of the vehicle.</p> <p>'Diagonal member' means a transverse bar between a top corner of the main rollbar or upper end of a backstay and a lower mounting point, on the other side of the main rollbar or of the other backstay.</p> <p>'Cage reinforcement' means a reinforcing member fixed to the roll protection structure to improve its structural efficiency.</p> <p>'Reinforcement plate' means a metal plate welded to the bodyshell structure under a rollbar leg or mounting to spread load into the bodyshell.</p> <p>'Bodyshell attachment plate' means a metal plate welded between the safety cage and the bodyshell.</p> <p>'Gusset' means reinforcement for a bend / junction made from bent sheet steel with a 'U' shape cross section.</p>	

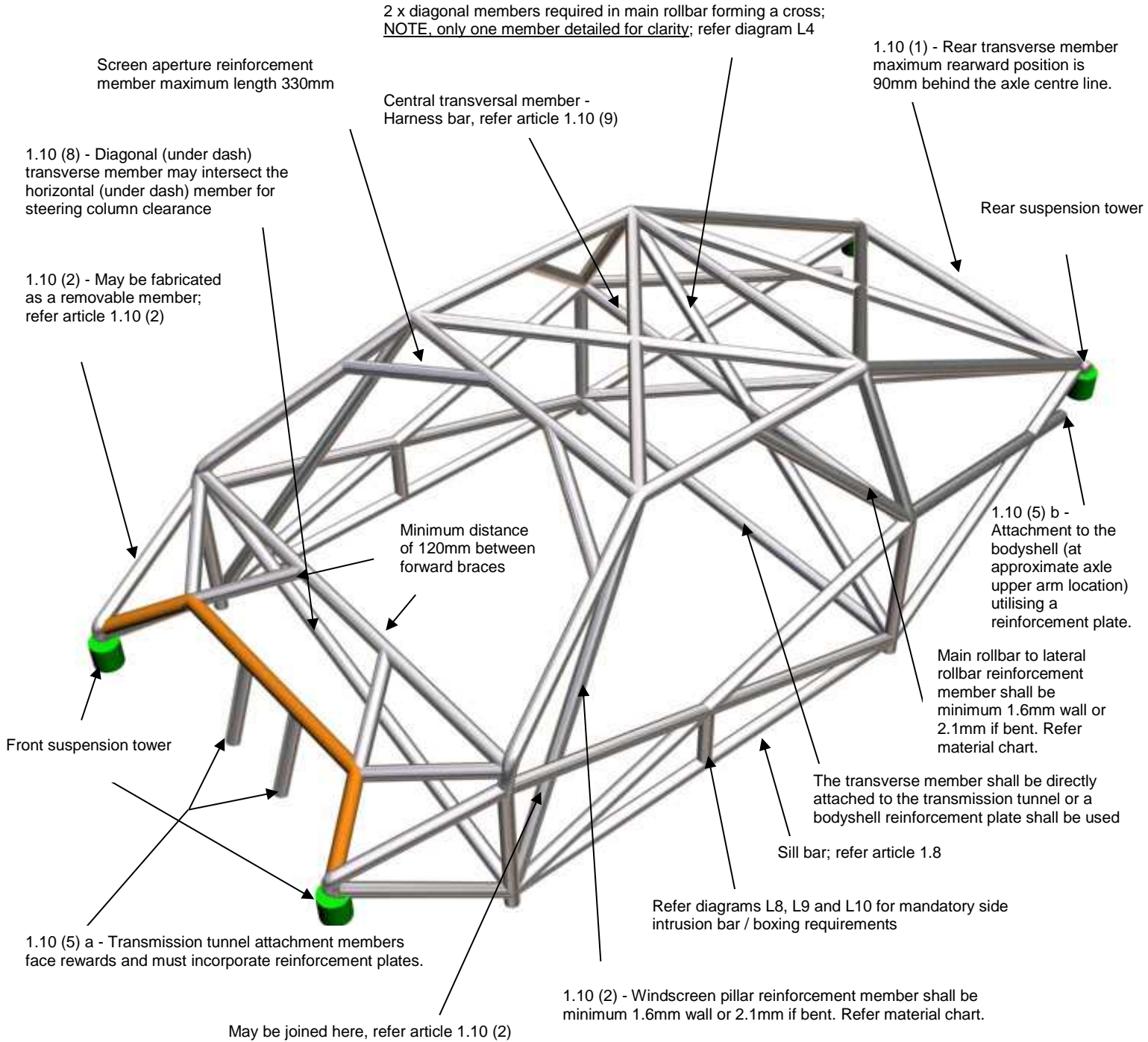
1.3	Material and Construction Criteria:	
	(1) The material shall respect the minimums as detailed in the material specification chart 1.3(1).	
	(2) The authorised material specification is ANSI 4130 or BS4T45 and only material (tubes) with a circular section are authorised.	
	(3) The safety cage shall incorporate all tubing members with approximate positioning as illustrated in diagram L1. No other tube members are authorised.	L1
	(4) The tubing must be bent by a cold working process and the centre-line bend radius must be at least 3 times that of the tube diameter. No visual ovalisation of the tube should be apparent.	
	(5) A professional standard of welding combining the appropriate heat treatment techniques, methods, and materials shall be employed in the fabrication of the safety cage structure. All tubes shall be welded through 360°.	
	(6) The safety cage shall comply with the dimension prescriptions of diagram L12 for the door aperture and diagram L13 for front windscreen vision.	L12 & L13
1.4	Main rollbar:	
	(1) Shall be constructed from one piece of material with a smooth and even appearance.	
	(2) The vertical part must be as straight and as close as possible to the interior profile of the bodyshell.	
	(3) May be positioned up to a maximum of 200mm rearward of the B pillar. This is measured from the rear edge of the B pillar to the rear edge of the rollbar.	
	(4) Shall incorporate a reinforcement plate, welded to the floor/sill of the vehicle, being 3mm flat steel plate of minimum area 120cm ² .	
1.5	Lateral rollbars:	
	(1) Shall be constructed from one piece of material with a smooth and even appearance.	
	(2) The front leg (of the lateral rollbar) must be straight in its vertical position and then follow the windscreen pillar with only one bend at the lower and one bend at the upper windscreen opening positions.	
	(3) Where attached to the floor / sill of the vehicle shall incorporate a reinforcement plate welded to the bodyshell constructed from 3mm flat steel plate with a minimum area of 120cm ² .	
	(4) A bodyshell attachment plate shall be fitted along the screen aperture section of the bodyshell 'A' post.	
	(5) The bars may be attached to the bodyshell 'B' post by welding / bodyshell attachment plate.	
1.6	Backstays:	
	(1) Shall be constructed from one piece of material, be straight, make an angle of at least 30° with the vertical, and mount to the suspension tower area of the bodyshell. Note 1; On the Ford model these members shall not be welded to the <i>control</i> top hat.	
	(2) Shall be attached to each side of the main rollbar about the top outer bends and as close as possible to the roofline of the car.	
	(3) Shall incorporate a reinforcement plate welded to the bodyshell constructed from 3mm flat steel plate with a minimum area of 60cm ² . Note 1; On the Holden model the use of a reinforcement plate is optional. Note 2; On the Ford model the reinforcement plate may extend under the <i>control</i> top hat.	
1.7	Diagonal members:	
	(1) A cross shall be fitted in the main rollbar in accordance with diagram L4 consisting of two straight diagonal members gusseted (all 4 quarters) at their central intersection. Attachment shall be within 100mm of the centre of the bend at the top of the main rollbar and within a 100mm of the main rollbar mounting foot/reinforcement.	L4
	(2) A cross shall be fitted between the backstays in accordance with diagram L5 consisting of two straight diagonal members. These shall be attached at the upper junction of the main rollbar and the backstays and at the lower junction of the backstays lower mounting.	L5
	(2) A cross shall be fitted in the upper part of the safety cage (roof section) in accordance with diagram L6 consisting of two diagonal members. These shall be attached at, or within 100mm from, the junction between the rollbars and members. They may be bent to follow the contour of the bodyshell roof.	L6

1.8	Sill bars:	
	(1) Shall be constructed from one piece of material, be straight and fitted on both sides of the vehicle attached to the bodyshell sill/floor in addition to the main rollbar and the lower leg of the lateral rollbar (although it shall not extend past these points).	
	(2) The sill bar shall either be attached directly to the bodyshell sill or a bodyshell attachment plate may be used. In both cases the attachment shall extend for a minimum of 200mm.	
1.9	Side intrusion bars:	
	(1) Longitudinal members shall be fitted in the form of a cross to both sides of the safety cage as per diagrams L1 and L3. For design options refer to diagrams L8 and L9.	L1 & L3 L8 & L9
	(2) The intrusion bar cross (central intersection of bars) shall be boxed (excluding the top section) as per diagram L8 or L9. This is mandatory on the drivers' side and optional for the passenger side. Note, the boxing dimensions are specified in the diagram as this is not considered to be a gusset.	L8 & L9
	(3) A single upright shall be fitted according to diagram L10. This is mandatory on the drivers' side and optional for the passenger side.	L10
	(4) The lower attachment points of the cross-struts shall be positioned within 100mm of the front and main footing/reinforcement plates.	
1.10	Other members:	
	(1) The forward section of the safety cage (under the bonnet) may be installed as a removable one-piece transversal brace, extending from one front suspension tower, to the bulkhead (connection to the safety cage), to the other front suspension tower. Alternatively, only the right-hand side may be removable for brake servo access. No part of the safety cage may extend forward of the front axle centre-line.	L1
	(2) The windscreen pillar reinforcement member 1.10 (2) shall be constructed from one piece of material, be straight and fitted on both sides of the vehicle. This member and the forward intrusion bar may be joined – refer diagram L1.	L1
	(3) The most rearward transverse member (refer diagram L1) may not be positioned further rearwards than 90mm behind the rear axle centre-line.	L1
	(4) Any unsupported member longer than 1000mm shall have a minimum wall thickness of 1.6mm.	
	(5) A reinforcement plate of 2mm flat steel plate with a minimum area of 40cm ² shall be fitted to members 1.10 (5)a and 1.10 (5)b as detailed in diagram L1.	L1
	(6) Where a bend is introduced into a reinforcement member the wall thickness shall be increased from 1.2mm to 1.6mm or from 1.6mm to 2.1mm.	
	(7) Bodyshell attachment plates may be used where specified in diagram L1.	L1
	(8) The under dash diagonal transversal member may be constructed in 2 pieces intersecting the horizontal (under dash) transverse member where it passes the steering column.	
	(9) The main rollbar central transversal member shall be used for mounting the safety harness. Important Note: careful consideration regarding the positioning of this member needs to be applied to ensure that harness shoulder strap angles are compliant for HANS® use.	
1.11	Gussets:	
	(1) Where two members of the safety cage form a join, a single gusset constructed of 1.2mm mild steel plate not extending beyond 100mm either side of the join may be used – unless specified otherwise.	
1.12	Seat mount rails (frame):	
	(1) Transversal seat mounting rails (frame) shall be fitted as per diagram L11.	L11
	(2) The seat rails shall be attached to the sill bar of the safety cage and to reinforcement plates on the bodyshell (floor / tunnel) constructed from 2mm flat steel plate with a minimum area of 60cm ² .	
	(3) Tubing shall be used as per material specification chart 1.3 (1). If the tubing is straight a wall thickness of 1.2mm is authorised. Where bends are introduced the tubing shall respect a wall thickness of 1.6mm.	
	(4) Seat mount rails (frame) as per 1.12 (2) shall be constructed on the passenger side of the vehicle (for seat fitment for promotional rides).	

MATERIAL SPECIFICATION CHART – 1.3(1)			
Note – the diameter & wall thicknesses are all minimums			
	Material	Diameter	Wall thickness
Main rollbar	ANSI 4130 BS4T45	44.5	2.1
Lateral rollbar	ANSI 4130 BS4T45	41.3	1.6
Back stays	ANSI 4130 BS4T45	41.3	1.6
Side Intrusion bars	ANSI 4130 BS4T45	38.1	1.6
Sill bars	ANSI 4130 BS4T45	38.1	1.6
Diagonal members	ANSI 4130 BS4T45	38.1	1.2
Other members	ANSI 4130 BS4T45	38.1	1.2
Cage reinforcement	ANSI 4130 BS4T45	38.1	1.2
Main rollbar to lateral reinforcement	ANSI 4130 BS4T45	38.1	1.6*
Windscreen pillar reinforcement	ANSI 4130 BS4T45	38.1	1.6*
Seat rails / frame	ANSI 4130 BS4T45	38.1	1.2 or 1.6**
NOTES:			
<ul style="list-style-type: none"> ▪ The dimension specifications are all in millimetres. ▪ * 1.6mm wall for straight or 2.1mm wall where the tubing is bent ▪ ** 1.6mm wall shall be used where the tubing is bent ▪ The minimum diameter/wall thickness of any tube used in the safety cage shall not be less than 38.1 x 1.2mm 			

DIAGRAM L2

DIAGRAM L1



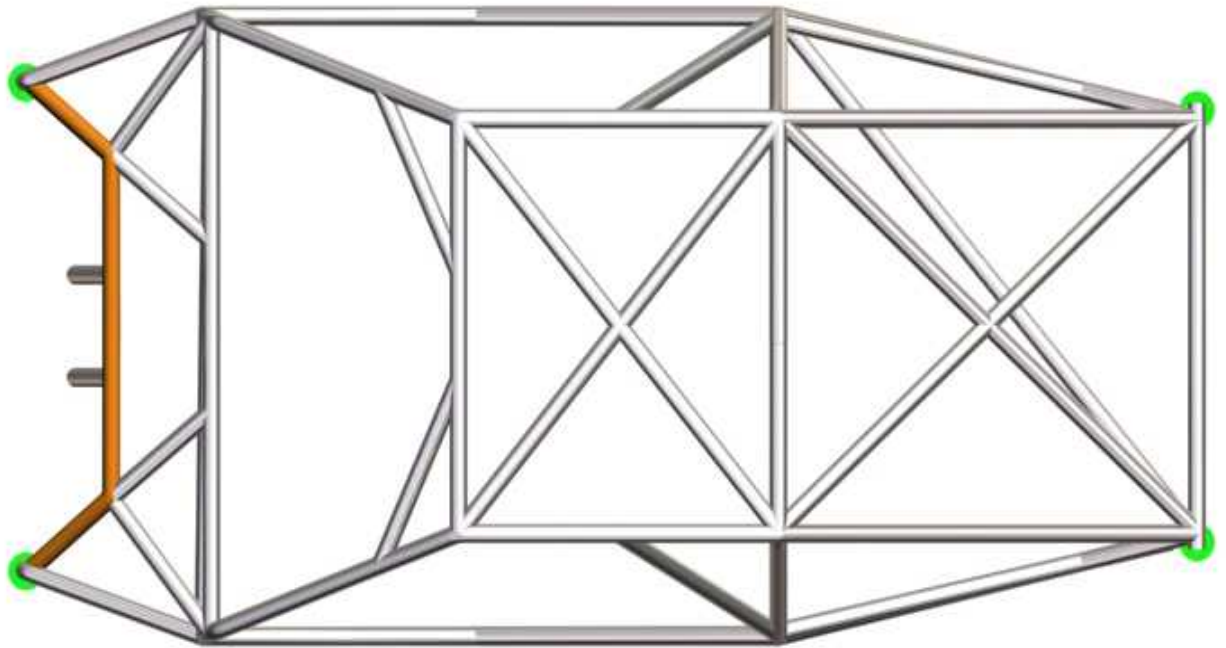


DIAGRAM L3

Main rollbar to lateral rollbar reinforcement member shall be minimum 1.6mm wall or 2.1mm if bent. Refer material chart.

Windscreen pillar reinforcement member shall be minimum 1.6mm wall or 2.1mm if bent. Refer material chart.

Transmission tunnel attachment members face rearwards and must incorporate reinforcement plates

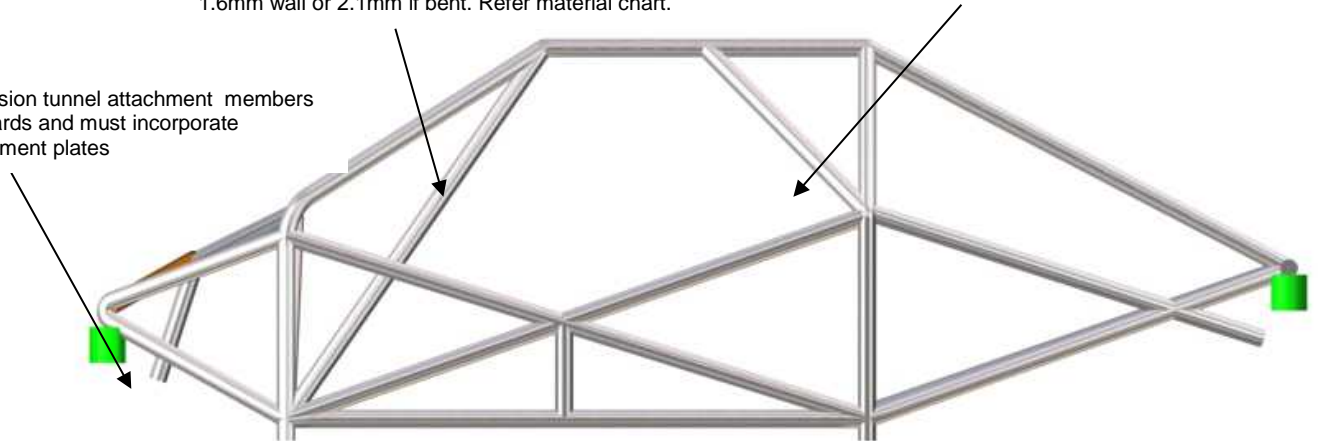


DIAGRAM L4

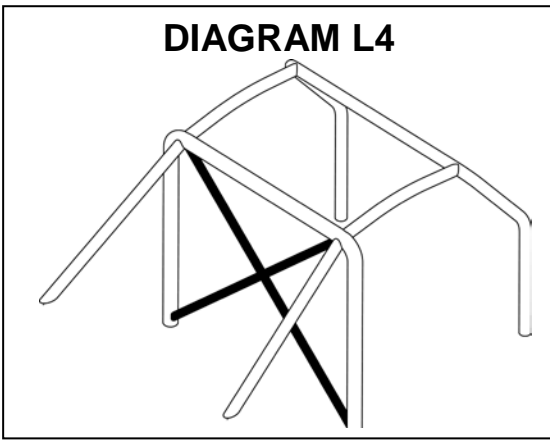


DIAGRAM L5

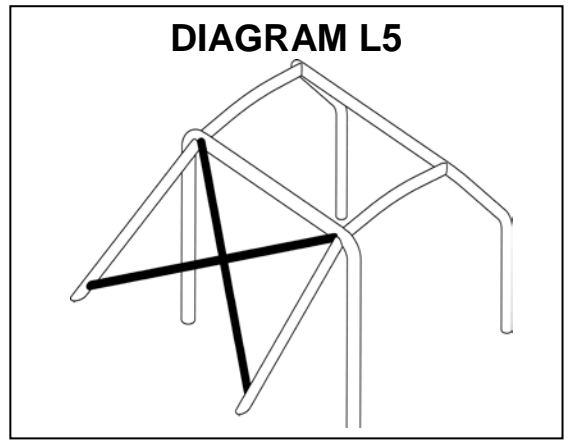


DIAGRAM L6

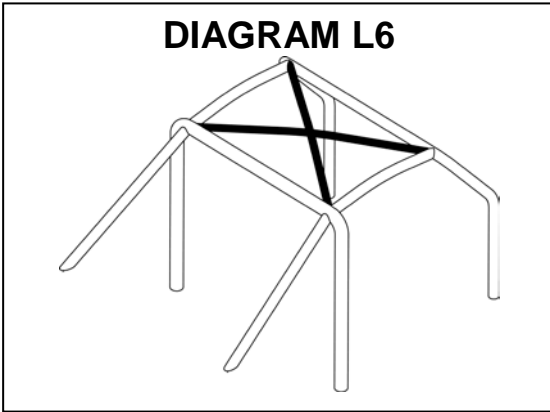


DIAGRAM L7

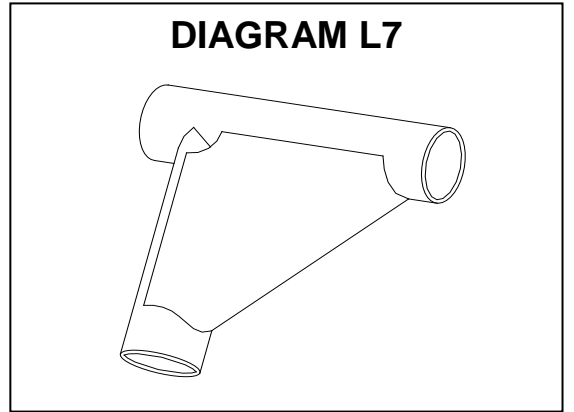


DIAGRAM L8

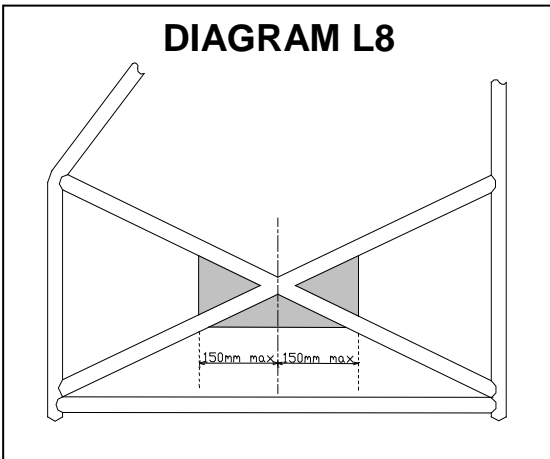


DIAGRAM L9

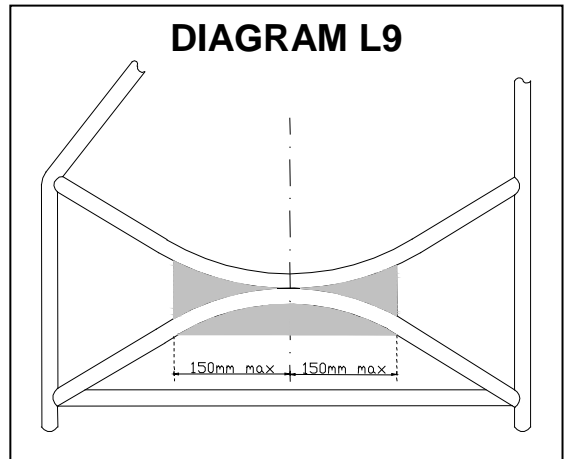


DIAGRAM L10

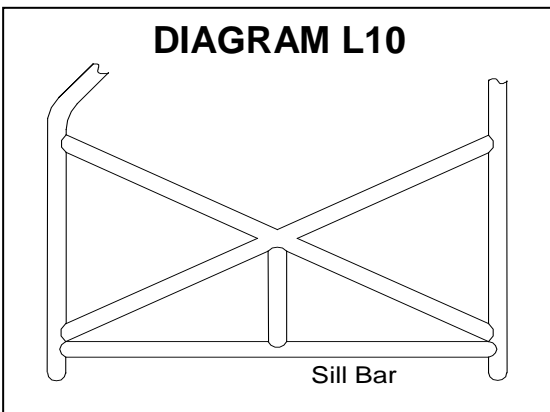


DIAGRAM L11

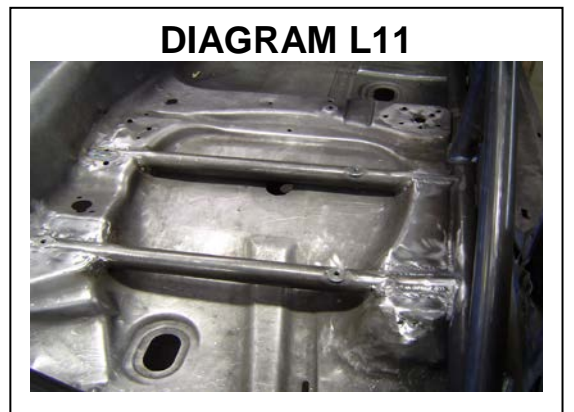


DIAGRAM L12

The presence of the safety cage in the door aperture shall comply with the following dimensions:

- A - shall be a minimum of 300mm
- B - shall be a maximum of 250mm
- C - shall be a maximum of 300mm
- D - shall be a maximum of 100mm (measured from the upper corner of the windscreen)
- E - shall not be more than half the height of the door aperture (H)

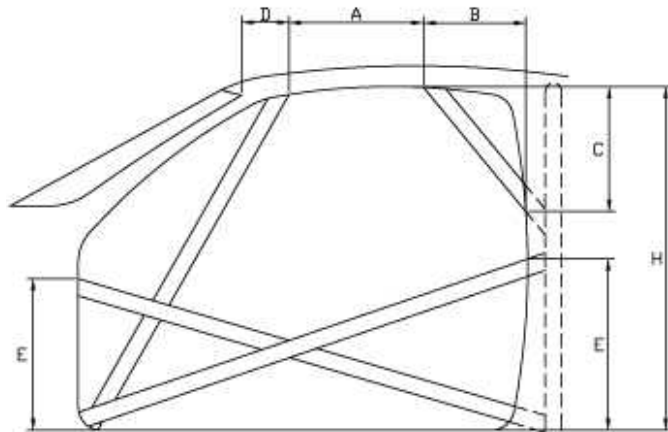


DIAGRAM L13

In frontal projection, the reinforcement members of the upper corners of the safety cage shall only be visible through the area of the windscreen described by diagram.

