



# LETTER OF THE LAW

ENGINEERING AND LEGISLATION WITH JOHN VARETIMIDIS

## ROLLCAGES

**T**he installation of rollbars and/or rollcages is usually limited to off-road and race vehicles where a helmet is required to prevent impact or risk of injury to occupants. Under normal road use, drivers are not equipped with a safety helmet.

Rollcages can also restrict occupant seating plus entry and exit to and from a vehicle, obstruct vision and access to controls of the vehicle. The rollcage structure must also not interfere with the normal operation of the seats and seatbelts.

Recommended head space clearance areas for occupant safety are outlined in the National Code of Practice and must be maintained at all times.

The main central hoop which is normally located at the B-pillar area must be located at least 150mm rearward of the front occupants head space area. The hoop must also be located as close as practical to the original roof line to limit the level of crushing in the event of an impact.

In open-top vehicles it is recommended to locate the central hoop no less than 50mm below the original roof line to ensure that when viewed from the front or rear of the vehicle, the occupants' profiles including head and shoulders are within the hoop profile.

Rear braces should be fabricated with the least amount of bends or changes in profile shape and size. The braces should be attached to the highest point practical on the vertical central hoop and extend rearward as far as practical to attach to a permanent mounting point at the rear of the vehicle structure.

Where no rear passenger seats are fitted, a diagonal brace may be integrated into the rear half of the rollcage to improve the structural integrity, provided rear vision is not significantly obscured.

Mounting points must be fitted with material equivalent to the rollcage structure or steel plates with a recommended size of 100x100x6mm. The footing area which locates

the mounting points should be flat or the plate should be profiled to follow the contour of the floor pan. Where a bolted mounting plate is to be used, it is recommended to reinforce the underside of the floor pan with a steel plate of equivalent size and secure, with no less than two 10mm diameter high-tensile grade 8.8 bolts.

Where any anchor bolts are to be secured through a hollow section, it is common practice to ensure a steel compression tube is fitted to prevent crushing. Where welding is to be carried out, all welding should comply with AS/NZS 1554.1:2004 Structural Steel Welding – Welding of Steel Structures or AS 1665 – Aluminium Welding Code.

All rollcage installations must be equipped with padding to protect the occupants in the event of an impact. Rollcage padding should be of a high-density foam or equivalent with a minimum thickness of no less than 19mm.

Six-point rollcages that have supports running along the A-pillar are generally not accepted as they are likely to increase risk to the driver and front passenger in the event of an impact, and also reduce visibility and usually prevent correct positioning and operation of the sun visors.

Where rollcage installations are to utilise seatbelt anchor points, then the attachment point must be adequate to withstand the combined loads of a rollcage and seatbelt anchorage forces. It is not recommended to combine the rollcage and points with the seat anchor points.

Rollcage installations are not suitable to all vehicles and may affect compliance with existing Vehicle Safety Standards and Australian Design Rules. It is recommended to consult with an approved engineering signatory to determine if your vehicle is suitable and for advice on configuration and installation. The abovementioned notes are only a guide and further information is available in the National Code of Practice (NCOP). sc

