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VEHICLE STANDARDS INFORMATION

Internal Roll Bars and Roll Cages

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For further information please write to the Manager – Vehicle Safety & Policy
60 Denmark Street, Kew, 3101 or contact your local Customer Service Centre.

Introduction

Regulation 257 of the Road Safety (Vehicles) Regulations 2009 requires that all modifications to a vehicle to either have specific approval from VicRoads or to be carried out in accordance with guidelines published by VicRoads.

Installing a roll bar or roll cage in a vehicle is a modification.

This document is a published guideline for the purposes of Regulation 257 and generally applies to all vehicles.

General Comment

Some car owners choose to install roll bars or roll cages in their vehicles, usually because they wish to use their normal road cars for competition purposes such as rallies, club sprints, hill climbs, etc.

The main purpose of installing roll bars and roll cages in enclosed cars is to reduce the extent of any roof or upper sidewall collapse in the event of a severe rollover crash, and to provide some measure of overhead protection particularly in open-topped cars. However, rollover crashes are not amongst the most frequently occurring nor amongst those that produce the greatest number of serious injuries.

Modern cars are much more stable than earlier models and do not roll over as readily. Also, the structures of modern enclosed cars generally withstand the types of rollover crashes that occur from legal speeds better than older cars. Almost all injuries suffered by vehicle occupants in on road crashes are from contact with the interior structure and fittings of the vehicle. It is vital to ensure that any reinforcing of vehicle structures to provide added protection in rollover crashes does not increase the risk of injury or the severity of injuries from contact with the interior of the vehicle.

Vehicle manufacturers and other vehicle safety workers are constantly investigating ways of further improving occupant protection in new models of cars. Therefore, owners thinking of installing a roll bar or roll cage in a car to be used for driving on public roads in normal traffic should consider very carefully whether in reality it is likely to reduce the overall risk of injury to occupants of the vehicle. This applies particularly to owners who may be considering installing a roll bar or cage for appearance or "image" reasons.

General Guidelines for Fitting Roll Bars and Roll Cages

Considerable care needs to be taken when installing this type of equipment to ensure that mandatory safety requirements are not contravened.
The following comments and guidelines should be observed:

- The bar or cage must be constructed entirely of round section material, apart from attaching brackets and fittings, etc.; the main hoops must be at least 30mm outside diameter and any bracings must be at least 25mm outside diameter.
- The bar or cage must be shaped and sized to fit as close as possible to the internal profile of the car's occupant compartment.
- Transverse and diagonal members must not be located between a point immediately above the rearmost part of the back of the front seats and a point as close to the windscreen header rail as it is possible to locate a transverse member (see Figure 1a). Longitudinal members must not be located directly above an area extending 140mm either side of the longitudinal centreline of a seat. (see Figure 1b).
- The bar or cage must not cause undue obstruction to entry to or exit from any seat in the vehicle or encroach significantly into the occupant space for the driver or passenger(s); no part may pass through or across the opening of a door giving access to a seating position, except in the following spaces viewed from the side of the vehicle (see Figure 2):-
  (i) within 25mm of the top and upper forward part of the door opening;

(ii) within 150mm of the foremost part of the front of the door opening;

(iii) below the height of the seat cushions with nobody in the seat;

(iv) rearward of the foremost edge of the seat back, with the seat in its rearmost position of adjustment and the seat back adjusted to a normal driving or riding position.

- The bar or cage must be securely attached to load-bearing parts of the vehicle's structure using lugs or similar that are properly made for this purpose. They must not be simply attached to floor pans or other panels. Where bolts passing through hollow parts of the vehicle structure are used, the structure must be reinforced to prevent its collapse under bolt tightening loads.

  NOTE: Seat belt and seat anchorages installed as original equipment by the vehicle manufacturer must not be used for attaching roll bars or cages or any other fittings.

- The bar or cage must not have any projections, corners or edges likely to cause injury to any person. Joints in the structure must not be likely to fail under impact loads in a crash in a way that would expose sharp or dangerous edges or projections.
- All parts of the bar or cage which may be contacted by the head of an occupant wearing a properly adjusted seat belt during the violent movements of the vehicle as may be experienced in a crash must be covered by an energy-absorbing material (e.g. high density foam or equivalent) secured in place in a manner that will not allow it to become dislodged under impact loads. A very firm material about 15mm to 20mm thick is required - soft foams are not acceptable. All original padding fitted to the vehicle, including the sun visors, should be retained.
- All of the vehicle's original seat belts should be retained unaltered and the bar or cage installation must not interfere with their operation in any way. Additional restraining devices such as racing harnesses, etc., may be fitted. However, if the original seat belts or anchorages are altered in any way, or if the bar or cage interferes with their operation at all, an approval certificate issued by a member of the Vehicle Assessment Signatory Scheme (VASS) will be required to confirm the installation satisfies the mandatory requirements. It should be noted that it may not be possible for harnesses to comply with the applicable seat belt standards, in which case the original seat belts must remain in place and be used whenever the vehicle is driven on the road.
- The installation of the bar or cage must not significantly increase the obstructions to the driver's vision forward of the "B" pillar. In particular, they must not intrude downwards across the glass areas of the windscreen and side windows more than 25mm from the top and must not increase the effective width of the driver's side "A" pillar (the windscreen pillar) by more than 25mm when viewed from the driver's normal seating position. If the internal rear vision mirror is obscured in any way, the vehicle must be fitted with effective external rear vision mirrors on both the right and left sides.
- If the roll bar or cage or a modified seat belt installation encroaches into the occupant space for rear seat passengers, the rear seats and seat belts should be removed from the car and the registration description changed to the reduced seating capacity. If there is a reason of sufficient importance to justify the rear seats remaining in the vehicle in such circumstances, the vehicle's registration must be converted to "conditional registration", the condition to be applied being that no occupants be carried in the affected seats. (It would then be an offence to use the vehicle on roads with occupants in these seats).
- However, if rear seats are only obstructed by alternative seat belts fitted to the front seats and the original seat belts are still available to be used, passengers may be carried in the rear seats provided the front seat occupants only use the original seat belts and not the alternative seat belts.

Vehicle Assessment Signatory Scheme (VASS) Approval Certificates

Installation of a roll bar or roll cage in itself will not require a VASS approval certificate to be submitted and the modification will be considered as an approved modification if it is carried out in accordance with these guidelines. However, a VASS approval certificate will be required by VicRoads if the installation includes any modification to the existing structure of the vehicle, or any modification to components or features subject to specific Standards for Registration, such as seats and seat belts.

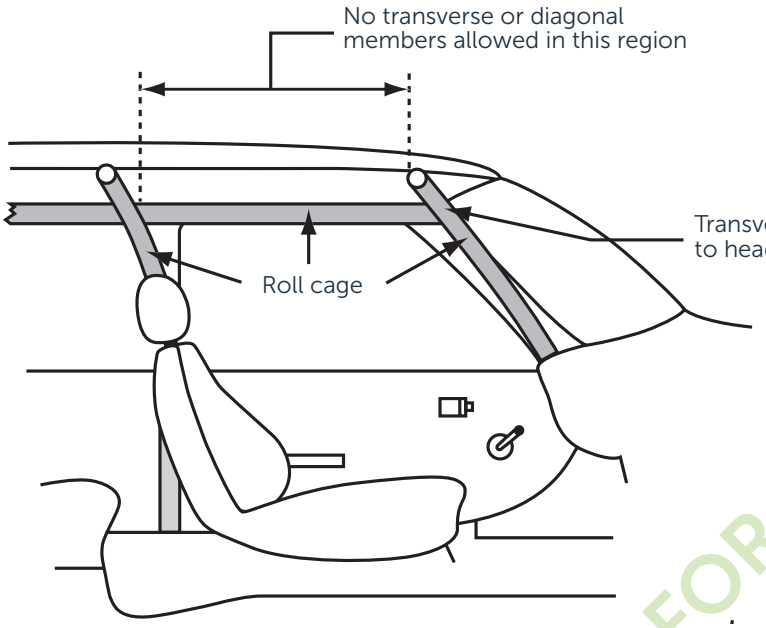

Figure 1a

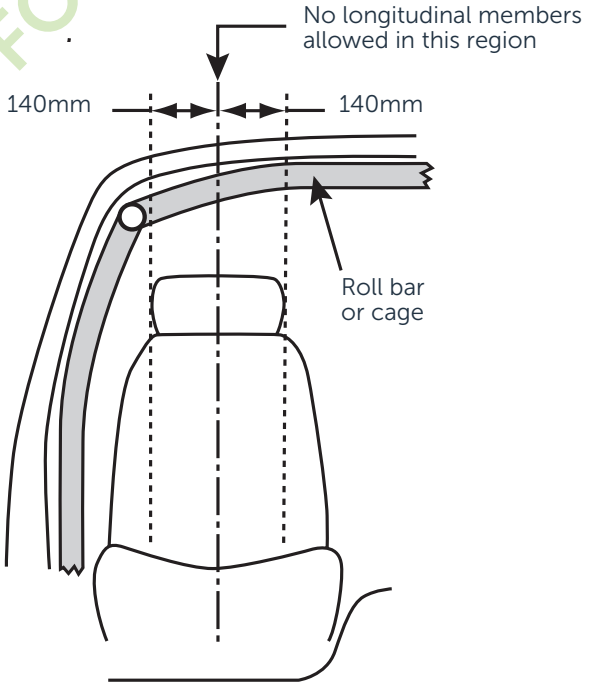

Figure 1b

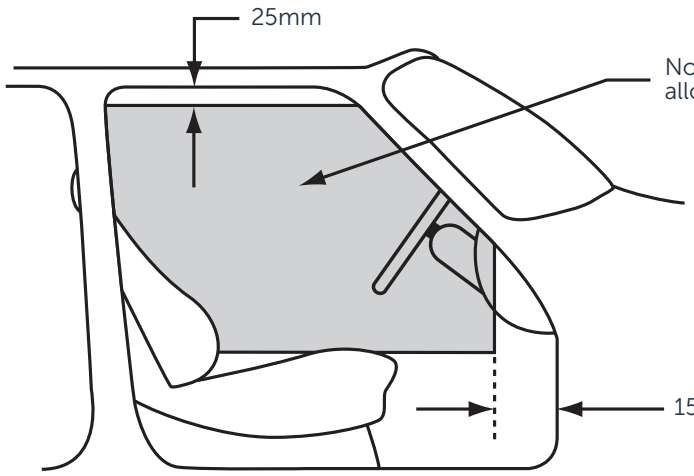

Figure 2

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