# 4x4 Modifications – The Legal State of Play

In early 2006 a draft National Code of Practice (NCOP) for Light Vehicle Construction and Modification was released. Since then, there have been several updates, but no State or Territory has adopted the NCOP. However, there is progress.

The Federal Government is the custodian of the Australian Design Rules, but the Australian Motor Vehicle Certification Board (AMVCB), a round table committee of all State and Territory Transport Departments, compiled the 2006 draft NCOP for Light Vehicle Construction and Modification. Following industry and public comment this NCOP has acquired status as a Vehicle Standards Bulletin, VSB14, which brings its contents closer to becoming legislation.

However, we all know that national uniformity is a pipedream in this eight-nation federation, because State and Territory bureaucrats have to justify their existence by drafting individual laws. With vehicle compliance rules for registered vehicles being the domain of State and Territory regulators, they have the right to call up VSBs, ADRs and other Federal instruments as they see fit. This is why a vehicle can be 'roadworthy' in one jurisdiction and 'unroadworthy' in another!

In a way, it's a good thing that VSB14 has not yet been made law in any State or Territory, because the Australian Automotive Aftermarket Association is lobbying to promote national adoption, after further industry input and without different variations in each jurisdiction. Let's look at some hot issues – some covered by VSB14 and others not.



## Non-Engineering Approved Modifications

VSB14 sets out a list of modifications not requiring engineering certification: specified tyre and rim substitution; raising suspensions by not more than one third of the original suspension travel; shock absorber substitution; spring and sway bar substitution; track rod and strut brace installation; and power steering conversion using manufacturer's option components.

Replacement shock absorbers, including struts and strut inserts, may be used provided that they have been manufactured as replacement units for the particular vehicle model and have compatible mountings and dimensions.
Transverse strut braces may be fitted between suspension strut and spring mounting towers. Front strut braces should be kept as low as possible below the bonnet to minimise head injury to a pedestrian from any downward impact on the bonnet.

## Engineering Approved Modifications

Modifications requiring engineering certification include: left to right hand steering conversions; steering and suspension design modifications; non-optional power steering conversion; rack and pinion steering conversion; suspension strut or upright substitution; rear axle substitution; and raising the vehicle beyond 50mm but not more than 150mm.
Raising vehicles beyond 150mm will most likely not be permitted under VSB14.

## Vehicle Lifts

The AAAA, through its specialist Australian 4WD Industry Council, is pushing for suspension lift amendments to VSB14 before implementation. For example, the Australian 4WD Industry Council has made representation to the AMVCB to allow a vehicle suspension lift of 50mm and a tyre diameter increase of 50mm to be allowed, without engineering approval being necessary.
VSB14 already allows the rolling diameter of any tyre fitted to an off-road passenger vehicle or a commercial vehicle to be 50mm larger than any tyre designated by the vehicle manufacturer for that model.
However, VSB14 allows a suspension plus tyre upgrade with a combined lift of only 50mm in total. The Australian 4WD Industry Council believes a 75mm overall lift – a 50mm suspension lift plus a 25mm rolling radius tyre lift – is a safe upgrade for most 4x4s, although the Council points out that some narrow-track vehicles may still require engineering certification.
The AMVCB is evaluating the Australian 4WD Industry Council's case for the safety of 75mm-lift upgrades.

## Seat Removal

Many 4x4 owners buy wagons or utes that have seating capacities from five to eight persons, with the aim of removing the rear seats and using the rear seat space for travel and camping gear. There is some uncertainty in the 4x4 community about the legality of such 'conversions', so we sought responses from some State road transport authorities.

Transport South Australia's view is that removing rear seats, where no tools or only simple tools are needed; where no structural modifications are involved; no change in vehicle category and no commercial gain is sought; does not need approval and so is not committing an offence.

Providing no anchorages for seat, seat belt or child restraint are removed or modified, no modification has been made to the seating capacity. However, if the seat cannot be returned to its original position because of the removal of an anchorage point, then a permanent change in seating capacity has occurred. To formalise this change in seating capacity, an inspection will be required and following inspection a certificate of exemption issued for the permanent removal of the seat.



 

Where the seats are removed to change a vehicle registration category; to skirt established arrangements such as ADR certification; or to make a substantial structural change relevant authority approval is needed. If any change in classification is sought, an inspection is required and a label attached accordingly.

Vic Roads view is that there is no reason seats that are designed to be removable cannot be removed. Doing this does not alter the seating capacity of the vehicle. Seating capacity is defined by the Australian Design Rules as the maximum number of seating positions for which the vehicle is designed; not the number of seats actually fitted at any point in time.

The NSW RTA's position is similar to Victoria's in that rear seats may be temporarily removed without affecting the vehicle's compliance.

Queensland Transport says that for vehicles fitted with quick-release seating attachments as original equipment, temporary removal of the seats is acceptable.
In the case of vehicles fitted with bolt-in seats no engineering approval is necessary for temporary removal, provided the category of the vehicle does not change as a result of the seating reduction.

At the time of a Safety Certificate inspection, the vehicle must be returned to the manufacturer's original condition or have a Modification Plate fitted for the seating configuration as presented. Queensland Transport will mutually recognise interstate drivers travelling in Queensland who comply with their own jurisdiction's requirements, but drivers are advised to carry some proof of this compliance.

## Replacement Tyres

The latest proposed modification to VSB14 is a clause that prohibits any non-manufacturer's standard or optional wheel or tyre size being fitted to any vehicle equipped with electronic stability control. The AAAA is currently lobbying to have this clause altered to allow a reasonable tyre size increase that won't affect the ESC calibration. Watch this space for further developments.

Australian Design Rule 24 requires that all vehicles under 4.5 tonnes gross mass rating be fitted with a tyre placard that contains information on original and optional tyres and rims for that vehicle model. A motor vehicle which is required to comply with ADR 24 may be equipped with tyres other than those listed on the tyre placard provided that: the load rating of the tyres is not less than the lowest load rating listed on the tyre placard of the vehicle or equivalent variant of that model vehicle; the speed rating of the tyres fitted to a passenger vehicle or soft-roader is at least 180 km/h ('S') when the tyre placard requires a higher speed rating than 'S'; the speed rating of the tyres fitted to vehicles with special features for off-road use of at least 140 km/h ('N') when the tyre placard requires a higher speed rating than 'N'.

In special circumstances, the speed rating may be less than the ratings specified above if the speed rating of the tyre is more than the vehicle's maximum speed.

Where a vehicle has its GVM re-rated, the tyre load capacity must be capable of the carrying the revised GVM, both in total and across individual axles.

Replacement tyres must be rated by the tyre manufacturer as being suitable for road use and the tyre construction and size must be the same on each axle.



 

## Non-Standard Tyres and Rims

Replacement aluminium alloy rims must comply with one of the following standards: Wheel Industries Association (Australia) (WIA); Standards Association of Australia (SAA); Technischer Uberwachugen Verein (TUV); Japanese Industrial Standards (JIS).

Wheel rims must not have a full circumferential weld, other than one that attaches the rim to the wheel centre.

A replacement wheel should be designed for the particular hub and have the same bolt or stud pitch circle diameter (PCD) and the same centre location method. The wheel nuts or bolts must have the same tapers as the wheel.

A replacement aluminium alloy rim should be located on the hub by the same-diameter centre spigot as the original wheel, using metal adaptor rings where necessary.

Wheel nuts and bolts must have a thread engagement length at least equal to the thread diameter, except where specified otherwise by the vehicle manufacturer.
No part of the wheel must foul any part of the body or suspension under all operating conditions. To check this, the vehicle must be fully laden and capable of negotiating raised obstacles that would normally be encountered. This test should be conducted at full lock without any part of the rim or tyre contacting the mudguard or suspension.
The wheels must be contained within the mudguards, including ‘flares’, when the wheels are in the straight-ahead position.

The wheel track of 4x4 vehicles must not be increased by more than 25mm beyond the maximum specified by the vehicle manufacturer for the particular model, except for vehicles fitted with front and rear beam axles, where a maximum wheel track increase of 50mm is allowed.

## Wheel Spacers

The release of the Toyota 70 Series, with a front track up to 95mm wider than the track of the rear axle, has produced renewed buyer interest in wheel spacers.
Owners are keen to remove handling quirks brought about by a coil-sprung, wide-track front axle, with a relatively low roll centre, in combination with a narrow-track, leaf-sprung rear end that has a much higher roll centre.
Current State and Territory legislation and VSB14 prohibit the use of wheel spacers, between the wheel mounting face and the road wheel, except where they’re provided by the original vehicle manufacturer. Also, modifications to disc brake callipers, hubs and suspension, and steering components to enable the fitting of replacement wheels are not allowed.
Paradoxically, the fully-floating rear axle wheel bearings of the 70 Series look more than capable of carrying the additional load inputs from spacer-mounted wheels, but current and future law forbids the practice.



 

## HID Headlight Conversions

High Intensity Discharge (HID) lights produce brilliant light by striking an electrical arc across tungsten electrodes. HID lights are standard on some luxury 4x4s and are increasingly becoming popular as auxiliary, high-beam driving lights.
There are high-low beam HID replacement headlight kits in the marketplace, but such kits can comply with ADRs only if the vehicle has an automatic headlamp levelling system (normally air suspension) and an automatic headlight cleaning system.
These conditions have been imposed because any beam height increase caused by vehicle load, or beam refraction caused by dirt or ice on the lens, can become a vision hazard for oncoming drivers.

## DVD Screens

Rear-passenger DVD screens are attracting attention in some legislatures. Australian Road Rule (299) makes the point that it is illegal to allow a DVD screen to display in the sight of a driver. It doesn't specify *which* driver. Some drivers have been booked for having the screen operating in a position where it can be seen by a *passing* or *following* driver!

## The AAAA and the 4WD Industry Council

VSB14 is a document that was almost 10 years in the making, and finally published in February 2006. The AAAA formed eight committees from the automotive industry to draw up a detailed response to the relevant components of the NCOP, as an Industry submission. This submission has been followed up through meetings with state regulators, and efforts to effect change are ongoing.
The AAAA represents the interests of manufacturers, re-manufacturers, importers, distributors, wholesalers, resellers and retailers of automotive parts, accessories, tools and equipment in Australia. Established in 1980, the AAAA now has more than 1100 members, produces The Australian Auto Aftermarket Expo, publishes the Australian Automotive Aftermarket magazine and represents the industry before governments and regulators.

Within the AAAA the Australian 4WD Industry Council was formed to provide advice, understanding and a strategic approach to current and potential market issues specific to the 4x4 sector.
Although the Australian 4WD Industry Council is an organisation for businesses in the industry, the www.4wdcouncil.com.au website provides an opportunity for input by vehicle owners, with a focus on matters concerning vehicle modifications and vehicle accessories.



 