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VEHICLE STANDARDS INFORMATION

Guide to Modifications for Motor Vehicles

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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.

Contents

1. Introduction

Vehicle Standard Information sheet No.8 (VSI 8) applies to vehicles registered in Victoria. Modifications to vehicles have the potential to adversely affect a vehicle's compliance with the Standards for Registration, its structural integrity, the operation of its safety systems or its handling characteristics. It is for this reason that Regulation 257 of the Road Safety (Vehicles) Regulations 2009 states that a person must not use on a highway a modified vehicle unless the modification has been approved by VicRoads or has been carried out in accordance with guidelines published by VicRoads.

From time to time vehicles and vehicle designs change. Accordingly, the modifications that are approved will change. Modifiers must ensure that they are working from the most recent version of this document before they modify a vehicle.

However, the requirements of this Information Sheet are not retrospective. This means that, in general, modifications undertaken in accordance with the version of VSI 8 current at the time the modification is carried out will remain acceptable into the future unless a future version of VSI 8 specifically states otherwise.

VicRoads has approved some of the more common and simpler modifications which generally do not affect a vehicle's continued compliance with the Standards for Registration. A list of these approved modifications is set out in Section 4 below.

In respect of light vehicles (i.e. vehicles with a gross vehicle mass not exceeding 4500 kg),VicRoads has also approved some of the more complex modifications provided those modifications have been carried out in accordance with the National Code of Practice for Light Vehicle Construction and Modification published by the Commonwealth as Vehicle Standards Bulletin 14 (VSB 14). Particulars are set out in Section 5 below. Some modifications that are not addressed by VSB 14 are also included below.

While VSI 8 applies to both heavy and light vehicles, there are some specific additional requirements that apply to the modification of a heavy vehicle. These are set out in VSI 32.

2. Standards for Registration

Victoria's Standards for Registration are set out in Schedule 2 of the Road Safety (Vehicles) Regulations 2009. To be eligible for registration in Victoria a vehicle must comply with the Standards for Registration applicable at its date of manufacture. Registered vehicles are required to continue to comply with the applicable Standards for Registration.

3. Vehicle Assessment Signatory Scheme(VASS) Approval Certificates

A VASS Approval Certificate is a certificate that can be accepted as evidence that a modified vehicle has been inspected and that all modifications have been carried out and completed in accordance with recognized standards and codes of practice and that the vehicle in its modified form continues to comply with the Standards for Registration. An Approval Certificate can only be issued by a participant in the Vehicle Assessment Signatory Scheme (VASS).

The list of VASS signatories is available from any VicRoads Customer Service Centre or the VicRoads website vicroads.vic.gov.au

In general, an Approval Certificate is required for a modification to any part of a vehicle that is covered by an Australian Design Rule (ADR) or that has the potential to adversely affect the structural integrity or handling characteristics of the vehicle.

Note - Any modification not specifically listed as an approved modification in this Information Sheet will require a VASS Approval Certificate.

4. Approved Modifications

For the purposes of Regulation 257 of the Road Safety (Vehicles) Regulations 2009 the following are approved modifications.

This approval does not apply to a modification that has been carried out in a manner that does not comply or would cause the vehicle not to comply with a Standard for Registration:

- additional lighting, forward and rearward facing lamps which comply with the Standards for Registration
- air horns (single tone only)
- air conditioner
- air shock absorbers (provided the vehicle maintains its original attitude)
- alarm systems
- bull bars, which comply with the requirements in VSI 1
- cargo barriers complying with AS/NZS 4034
- markings, painting, speed strips, reflective (prism pattern) film (on body work only). Note that the fitting of additional reflectors is subject to rule 118(2) of Schedule 2 of the Road Safety (Vehicles) Regulations 2009
- mesh stone shields (windscreens and lamps)
- mudflaps, spats and pebble guards
- radio and sound systems including aerials, speakers and fittings
- rear vision mirror extensions for towing
- roof racks
- stabiliser bars, torque rods and traction rods, provided the ground clearance requirements are still met
- supplementary mirrors not interfering with or significantly reducing the area of the mirrors required by the Standards for Registration
- sun visor (exterior) and rear window louvres
- tow bars, which comply with the requirements in VSI 24
- window tinting, which complies with the requirements in VSI 2
- any other modification that does not adversely affect the structural integrity of the vehicle, it's handling characteristics, the operation of its safety systems or its compliance with the relevant Standards for Registration
- equipment or accessories equivalent in quality, performance and safety to those fitted to the vehicle or supplied or recommended by the vehicle manufacturer as original equipment or accessories.

5. Vehicle Standards Bulletin 14 (VSB 14)

National Code of Practice for Light Vehicle Construction and Modification

VSB 14 is published by the Commonwealth Department of Infrastructure and Transport on its internet site infrastructure.gov.au. This code of practice has been developed in consultation with industry, user groups and government agencies with an interest in light vehicle construction and modification. VSB 14 has been endorsed by State and Territory vehicle registration authorities. Regulation 21 (3) (c) (i) of the Road Safety (Vehicles) Regulations 2009 requires that any modification or addition to a light vehicle be certified as complying with VSB 14.

VSB 14 cannot and does not address every conceivable modification. While modifications not addressed by VSB 14 are generally not permitted, there may be some circumstances where these modifications are allowable. In such cases it is essential that the vehicle owner consult a VASS Signatory **before** commencing any work.

Most of the modifications covered by VSB 14 require a VASS Approval Certificate. However, some modifications can be "owner certified". These are considered approved modifications provided that they have been carried out in accordance with the *General Requirements* section of the relevant Modification Code in VSB 14. More specific information is set out below. It is strongly recommended that readers of VSB 14 familiarise themselves with the Important Information for Users and the General Requirements sections of each of the relevant VSB 14 Modification codes before commencing work on a vehicle.

The following approved modifications are identified using the applicable VSB 14 Modification Code. Also included are guidelines for other related modifications that are not specifically addressed by VSB 14. Where indicated, a VASS Approval Certificate is required. Persons contemplating a modification that will require a VASS Approval Certificate are strongly advised to consult a VASS Signatory before commencing any work.

6. Engines

6.1 VSB 14 Modification Code LA

The following are modifications that may be performed without certification providing the modifications are carried out in accordance with the Sub-section 2 *General Requirements of Section LA:*

- fitting a replacement new, used or reconditioned engine identical to that originally fitted
- fitting a manufacturer's optional engine together with any associated components (e.g. brakes, suspension, etc) as supplied by the manufacturer for that same model vehicle
- fitting replacement original equipment engine and exhaust components
- fitting replacement original equipment, equivalent or better components that have no influence on engine performance or emissions, (e.g. higher volume oil pump than original)

In all of the above cases, if the engine is modified such that the resulting power increase is greater than 20% it must be certified by a VASS Signatory under the relevant Code of Section LA.

Note - It is the registered operator's responsibility to notify VicRoads of any change of engine number within seven days.

6.2 Exhaust Systems

The following applies instead of Section 2.7 of VSB 14 Modification Code LA. Modified and alternative exhaust systems are permitted if they satisfy the following requirements:

- the exhaust system must not allow direct entry of exhaust gases into the occupant compartment
- for vehicles fitted with one or more catalytic converters as original equipment, the catalytic converter(s) must be retained in their original location and all exhaust gas must flow through the converters at all times. Similarly any sensors positioned in the exhaust system as original equipment must be retained in their original locations
- no exhaust system whether it be functional or ornamental is to be mounted in such a manner as to create a hazardous situation particularly from hot surfaces or projections
- all piping and muffler systems must be adequately supported
- exhaust extractors may be fitted to a motor vehicle manufactured before July 1976, provided they do not foul any part of the steering, suspension, braking or fuel systems. In all other cases, evidence either in the form of an Approval Certificate or acceptable evidence from the extractor manufacturer to show that the vehicle continues to comply with all applicable emission regulations will be required

  Evidence from the extractor manufacturer is acceptable if it includes information:

  1. identifying the extractors as appropriate for the particular vehicle make and model
  2. certifying that the extractors have all the features and fittings necessary to allow the vehicle's emission control system to be reconnected and work properly; and
  3. describing how the extractors should be fitted

- the vehicle must continue to comply with the ground clearance requirement

There must be no escape path for exhaust gases other than the exhaust outlet, and the vehicle must continue to comply with the noise emission standards applicable to it.

7. Transmission

VSB 14 Modification Code LB

The following are modifications that may be performed without certification providing the modifications are carried out in accordance with Sub-section 2 *General Requirements* of Section LB:

- fitting a manual or automatic gearbox offered as an option by the vehicle manufacturer for the same model vehicle
- fitting a differential or final drive gear set offered as an option by the vehicle manufacturer for the same model vehicle

Note 1. Permanent locking of a differential or fitting a "spool" is not allowed.

Note 2. It is a requirement that vehicles manufactured after June 1988 have a functioning and accurate speedometer. The speedometer of a vehicle that has had a transmission or final drive change may need to be recalibrated to maintain its pre-modification accuracy.

8. Brakes

VSB 14 Modification Code LG

The following are modifications that may be performed without certification provide they are carried out in accordance with the requirements specified in Sub-section 4 *Modifications Without Certification* of Section LG:

- fitting a manufacturer's optional braking system for the particular make/model
- fitting of additional or substitute in-line brake boosters to pre-ADR 31/35 vehicles (before 1977 for passenger cars, before July 1979 for other vehicles)

9. Body and Chassis

9.1 VSB 14 Modification Code LH

The following modifications do not require certification under the LH codes, if they are carried out in accordance with the requirements specified in Sub-section 2 *General Requirements* and Sub-section 4 *Modifications Without Certification* of Section LH:

- bonnet scoops and projections (see also Section 9.3)
- bonnet pins and mascots (see also Section 9.3)
- customised and replacement panels
- inner mudguard modifications. Note: Front inner guards on vehicles equipped with airbags or subject to ADRs 69 or 73 (e.g. all passenger cars built after 1995) must not be modified unless certified by a VASS Signatory
- glass and surface films (See also VSI 2)

9.2 External Gauges

Gauges may be mounted externally forward of the windscreen in a position visible to the driver provided they meet the following requirements which are effectively the same as the bonnet scoop and protrusion requirements:

- the gauges and any attaching brackets or covers must be of a smooth construction with the edges suitably radiused so that they are not likely to increase the risk of injury to a person
- the surface of any part of the gauge or cover visible to the driver must not be more reflective than the general bodywork of the vehicle
- if the gauges have instrument lighting then the intensity of the light must not be greater than that of the interior instrument panel
- the gauges or covers must not prevent the driver from having a clear uninterrupted view through the full width of the windscreen of all parts of the road surface 11 metres forward of the steering wheel viewed from any driving position permitted by the range of adjustment of the driver's seat
- if the gauges or mounting brackets have sharp edges or are constructed in such a way that the likelihood of injury to any person is increased then they must be covered by a fairing which presents a smooth surface when viewed from the front and side of the vehicle

It is recommended that pressure gauges are of a type that are electrically controlled, however if pressure lines are required to operate the gauges then the lines must be suitable for the pressures and temperatures involved, braided type lines are preferred. The lines must be appropriately supported and routed so that they are not likely to fail or be damaged during normal use.

9.3 Protrusions

A modification to a vehicle must not result in:

- any object or fitting, protruding from any part of the vehicle in a manner likely to create the risk of bodily injury to any person
- any component, feature object or fitting on the vehicle whose design, construction and/or condition and the manner in which it is affixed, is likely to create the risk of bodily injury to any person
- any bumper bar which does not have its ends turned towards the body of the vehicle to a sufficient extent to avoid any risk of hooking or grazing any person
- vertical supports forward of the windscreen for use in conjunction with overhead carriers where such attachment will adversely affect the vehicle driver's forward field of view. See VSI 29 for more information

9.4 Glazing (Windscreen and Windows)

All replacement or modified windscreens, windows, glazed partitions, etc. must be of appropriate automotive safety glass or other approved material and must comply with the Standards for Registration.

The luminous transmittance of all glazing material including any applied tinting must also comply with the Standards for Registration.

Further information on glazing and window tinting is contained in VSI 2.

9.5 Internal Rollcages

Internal rollcages must be certified by a VASS Signatory as complying with either VSB 14 Modification Code LK8 or with Codes LK9 and LK 10 (as applicable).

10. Seating and Occupant Protection

10.1 VSB 14 Modification Code LK

The following modification does not require certification under the LK codes provided the vehicle manufacturer has provided seat and seat belt anchorages suitable for the optional seating configuration:

- fitting a manufacturer's optional seating configuration to the particular make/model

Note - It is the Registered Operator's responsibility to notify VicRoads of any change to the number of adult seating positions.

10.2 Wheelchair Accessible Vehicles

Vehicles modified to accommodate one or more wheelchair bound occupants must:

- be certified by a VASS Signatory
- comply with the requirements of AS 2942 – *Wheelchair Occupant Restraint Assemblies for Motor Vehicles* current at the time of conversion; and
- if wheelchair hoists and or ramps are fitted, comply with AS/NZS 3856 - *Hoists and Ramps for People with Disabilities – Vehicle Mounted*, Parts 1 and 2 current at the time of modification

11. Motorcycles & Three Wheeled Vehicles

VSB 14 Modification Code LL

The following modifications do not require certification provided the modifications are carried out in accordance with the Sub-section 2 *General Requirements* of Section LL:

- fitting a manufacturer's optional component such as an engine, transmission, exhaust system or fuel tank for the particular make/model of the vehicle in question together with any associated components
- conversion of a two-seat motorcycle to a single seater
- conversion of a modified motorcycle to original seating configuration
- the fitting, or removal, of a sidecar (provided the motorcycle frame is not cut or welded)

12. Fuel Systems

Note - Nitrous oxide injection systems must not be fitted. This prohibition includes a partial installation or a disconnectable nitrous oxide system that is fitted to the vehicle ready for use.

12.1 VSB 14 Modification Code LM

12.1.1 Fuel Lines

The fitting of alternative or replacement fuel lines, is allowed provided that:

- fuel lines must be made of a material appropriate to its intended use in the vehicle
- all components used are unmodified
- the fuel lines are secured, properly supported and shielded against heat, abrasion and impact damage; and
- the fuel lines do not leak

12.1.2 Fuel Filters and Pumps

Additional fuel filters and/or alternative or replacement fuel pumps may be fitted without certification provided that:

- the installation is in accordance with good engineering practice
- no pump, fuel line or filter is located within the occupant compartment
- all components used are unmodified
- the alternative/replacement fuel filter and/ or fuel pump are secured, properly supported and shielded against heat, abrasion and impact damage
- the alternative/replacement fuel filter and/ or fuel pump and its associated fittings and connections do not leak; and
- the pump stops when the engine stops.

12.1.3 Replacement or Additional Fuel Tanks

Replacement fuel tanks and drop tanks must meet the following requirements:

- The vehicle must have a minimum ground clearance of 100mm and meet the minimum ground clearance requirements as defined in ADR 43
- No part of any fuel tank or fuel system component must lie below a plane created as a component of that vehicle's Departure Angle (Departure Angle is the greatest angle between the horizontal plane and the plane from the static loaded rear tyres to the lowest, rearmost extremity of the Original Equipment Manufacturer's (OEM) permanent body work)
- Any fuel tank or fuel system component must be at least 100mm inboard of the OEM permanent body work (excluding the filler neck and assembly)
- Any fuel tank or fuel system component with a ground clearance of 200mm or less must be adequately protected by shields or adjacent vehicle components
- In the event of any tyre being deflated, no parts of the fuel tank or fuel system may touch the road surface
- If a replacement tank of a 125% or larger capacity than the original uses the original mountings, their strength must be checked and shown to be adequate by a VASS Signatory
- Replacement fuel tanks must not adversely affect the suspension travel, controllability, handling or road holding of the vehicle
- The fuel filler inlet and cap should be located on the outside of the vehicle. Where an inlet is located inside a vehicle, it must not be inside the passenger compartment and the inlet must be separately sealed from the rest of the vehicle to ensure fumes do not enter the passenger cabin and that provisions are made to ensure any fuel spills are localized and drain outside the vehicle
- The fuel tank and filler shall be so arranged that any overflow or leakage of fuel cannot accumulate or contact the exhaust or electrical systems
- Any apertures created to allow for the installation of the fuel tanks must be suitably sealed to prevent the entry of exhaust, road or petrol fumes into the cabin of the vehicle

In addition, the following apply to vehicles fitted with Evaporative Emission Control Systems:

- All of the fuel tank evaporative controls for ventilation of the tank must be installed and operational to prevent hydrocarbon emissions entering the atmosphere
- If the replacement fuel tank has a greater capacity than the largest optional fuel tank available for the vehicle, an additional or larger canister of sufficient capacity must be fitted
- Vehicles originally fitted with fuel tanks with expansion/vapour spaces must continue to provide these facilities (e.g. modified fuel tanks must have vapour spaces proportional to their new capacity). Vehicles originally equipped with independent liquid/vapour separators must have either an additional separator or that provision built into the new tank.

12.2 Other Fuel System Modifications

The following modifications may be carried out without certification provided they do not affect compliance with the Standards for Registration and provided they meet the following general safety requirements:

- replacement carburettors may be fitted to any motor vehicle provided the vehicle continues to comply with the gaseous emission requirements applicable to it
- any drip tray positioned under the carburettor must be constructed so that any overflow of fuel will not remain in the tray nor flow onto any exhaust pipe, starter motor, alternator or other potential ignition source
- fitting of turbo chargers or superchargers other than those fitted by the original manufacturer must be certified by a VASS Signatory as complying with VSB 14 Modification Code LA3

All Liquefied Petroleum Gas (LPG) installations must comply with the technical requirements of the version of Australian Standard AS/NZS 1425 current at the time of conversion and be fitted with an acceptable LPG *Compliance Plate* if converted to operate on LPG on or after 1 February 1993.

All Compressed Natural Gas (CNG) installations must comply with the technical requirements of Australian Standard AS/NZS 2739 current at the time of conversion and be fitted with an acceptable NG *Compliance Plate* if converted to operate on CNG on or after 1 August 2000.

All Liquefied Natural Gas (LNG) installations must comply with the technical requirements of the version of Australian Standard AS/NZS 2739 curent at the time of conversion and be fitted with an acceptable NG compliance plate if converted to operate on LNG on or after 16 March 2009.

An acceptable LPG or NG *Compliance Plate* is one issued by:

- the Automotive Alternative Fuels Registration Board (AAFRB). (These are only issued to businesses registered with the AAFRB - ph (03) 9862 6700)
- other recognised State and Territory regulatory authorities; or
- approved volume vehicle manufacturers, e.g. Holden, Ford, etc

See VSI 27 for more information on LPG, LNG or CNG installations.

Note -It is the registered operator's responsibility to notify VicRoads of the change using the conversion report in VSI 27.

13. Tyres, Rims, Suspension and Steering

13.1 Introduction

Vehicle manufacturers design the suspension systems of their vehicles to have appropriate stiffness and damping combined with sufficient travel to provide acceptable handling characteristics and an acceptable level of comfort for the occupants on all road surfaces likely to be encountered in service.

In the following, references to vehicle ride height relate to the vehicle manufacturer's original specifications. Manufacturers usually specify ride height as the vertical distance from the centre of a wheel to the centre of the wheel arch immediately above it. Changes in ride height can therefore readily be measured. Ride height is measured unladen with the vehicle sitting on a level surface.

Increases in ride height resulting from replacing or resetting springs that have sagged in service to restore the original ride height are not considered a modification but rather as maintenance.

Lowering or raising the ride height of a vehicle by altering its suspension will alter the amount of suspension travel. For example, lowering a vehicle by, say, fitting shorter springs will reduce the amount of available suspension travel in the "bump" or upward direction. Similarly raising a vehicle by fitting longer springs will reduce the amount of available travel in a downwards or "droop" direction.

13.2 VSB 14 Modification Code LS

The following modifications may be performed without certification provided they are carried out in accordance with Subsection 2 General Requirements and Subsection 4 Basic Modification without Certification of Section LS:

- tyre and rim substitution carried out within the limits specified
- lowering and raising suspensions (by not more than one third of the original suspension travel in either direction provided the vehicle ride height is not increased or decreased by more than 50mm from the manufacturer's specification)
- shock absorber substitution
- spring and sway bar substitution
- track rod and strut brace installation
- steering wheel substitution (See Section 13.4 below)
- power steering (manufacturer's option) conversion

For vehicles fitted with Electronic Stability Control (ESC) also see section 13.7.

13.3 Raising of Four Wheel Drive Vehicles - Alternative to VSB 14 Modification Code LS

In the case of raising the height of an off road type 4WD of ADR Category NA, NB1, MC or MD, and only in this case, the following two options apply as alternatives to meeting the requirements of Section LS of VSB 14. These alternatives are mutually exclusive.

13.3.1 Option 1

This option allows a combination of suspension lift and the fitting of larger diameter tyres that results in a total lift of up to 75 mm without the need for the testing and certification normally required by VSB 14 for lifts above 50 mm provided the following requirements are met.

The vehicle's suspension may be raised by up to 50mm, provided that at least two thirds of the original suspension travel in either direction is retained.

Only commercially available suspension kits may be used.

Such kits must be:

- Manufactured and supplied by a Corporation;
- Specifically designed and tested by the suspension lift kit manufacturer for the make/model/variant of the vehicle being modified to ensure no adverse effect on the modified vehicle's propensity for rollover, handling characteristics, braking performance and structural integrity when assessed at the combined suspension lift (up to 50mm) and tyre radius increase (up to 25mm), i.e. a total increase in ride height of up to 75mm; and
- Fitted in accordance with the kit manufacturer's instructions, abiding by any conditions or limitations advised by the suspension kit manufacturer and include a written statement (to be retained by the vehicle owner) of the suitability of the suspension lift kit for the make/model/variant of the vehicle being modified whether or not installed in combination with the permissible tyre diameter increase.

As per VSB14 Section LS, tyres up to 50mm larger in diameter than that specified by the vehicle manufacturer may be fitted provided:

- The entire tyre cross section is covered by the vehicles bodywork in plan view with the front wheels in the straight ahead position; and
- The tyres do not foul the bodywork or any suspension or steering component under any combination of suspension and steering movement.

13.3.2 Option 2

This option preserves the requirements of earlier versions of VSI 8 as an alternative to meeting VSB 14 or Option 1 above.

A vehicle may be raised by modifying its suspension provided the available suspension travel in either direction is not altered by more than 1/3 of that specified by the manufacturer. In addition, the original relationship between the front and rear suspension heights must not be unduly affected. Brake line length must be adequate for the range of suspension movement at the revised ride height. The vehicle must not be raised by the use of extended or adjustable shackle plates.

Replacement wheels and tyres may be fitted provided that they comply with the following requirements:

- The width of any replacement rim must not be:
  1. more than 25mm greater than the widest wheel specified by the vehicle manufacturer for that model or vehicle series; or
  2. less than the width of the narrowest rim specified by the vehicle manufacturer for that model or vehicle series
- rims, which have been widened, must have no more than one peripheral weld. All welding must be carried out in accordance with recognized engineering standards, and the rims must comply in all respects with specifications contained in the Tyre and Rim Standards Manual published by the Tyre and Rim Association of Australia
- the overall diameter of any replacement rim and tyre must not be:
  1. more than 15mm greater than largest diameter tyre specified by the vehicle manufacturer for that model or vehicle series; or
  2. more than 15mm less than the smallest diameter tyre specified by the vehicle manufacturer for that model or vehicle series
- rim and tyre combinations must be in accordance with the recommendations contained in the Tyre and Rim Standards Manual published by the Tyre and Rim Association of Australia and have a load and speed rating equal to or better than that required by the standards
- the wheels and tyres must not foul any part of the body, suspension, steering or brake components at any position of the suspension travel or steering movement, and, when in the straight ahead position, the guard or bodywork of the vehicle must cover the section width of the tyre

Note - The section width of a tyre is the distance between the outsides of the sidewalls of an inflated tyre excluding any markings, bands or ribs.

The maximum allowable track increase is:

- in the case of a front axle —25mm
- in the case of a rear axle with independent suspension — 25mm
- in the case of other rear axles —50 mm; and
- in the case of a motor vehicle manufactured with a combination of front wheel drive, McPherson strut front suspension and negative scrub radius steering geometry, no increase in wheel track is permitted unless specified by the vehicle manufacturer
- in the case of a motor vehicle fitted with a diagonally split braking system (i.e. one front wheel and opposite rear wheel on same hydraulic circuit), no change in the wheel track dimension is permitted

Spacers between the wheel and hub are not permitted unless provided by the vehicle manufacturer as original equipment.

Wheel nuts must engage the thread of the wheel stud for at least the same length as the original wheel nut and have the same taper as the mating wheel stud hole. The stud pattern of the replacement wheel must be the same as the original. Re-drilling wheels, hubs, drums, discs or axle flanges is not permitted.

13.4 Replacement Steering Wheels

Replacement steering wheels must be not less than 330mm in diameter. If the original steering wheel was designed with a recessed or padded hub, the replacement wheel must be of similar design.

Steering wheels fitted to passenger cars manufactured after 1970 must not be replaced with any steering wheel which would cause the vehicle not to comply with the energy absorption requirements for steering columns.

Vehicles manufactured after June 1995, which are required to comply with ADR 69/ (Full Frontal Impact Occupant Protection), may only be fitted with steering wheels certified by the vehicle manufacturer as suitable for that vehicle.

13.5 Aluminium Alloy Wheels

Aluminium alloy wheels (mags) are acceptable provided they have a load rating of at least that stipulated on the vehicle's tyre placard, meet the rim width requirements of VSB 14 or of Option 2 above, and are legibly and durably marked to show compliance with one of the following standards:

- AS 1638 Australian Standard
- DOT Department of Transport USA
- JWLT Japanese Light Alloy Wheel Truck and Bus
- JWLT Japanese Light Alloy Wheel
- JIS Japanese Industry Standard
- KBA German TUV Certification
- VIA Vehicle Inspection Association Japan

Note - Repaired or damaged alloy wheels are not acceptable.

13.6 Airbag Suspension

The replacement of conventional coil and/or leaf springs by airbags is acceptable provided that:

- a VASS Approval Certificate has been issued in respect of the modification
- the ride height of an individual wheel or axle cannot be altered while the vehicle is in motion
- at least two thirds of the original suspension travel in either direction is retained at all selectable ride heights while the vehicle is in motion
- the original attitude of the vehicle is maintained at all selectable ride heights while the vehicle is in motion
- a minimum running clearance of 100mm is maintained at all selectable ride heights while the vehicle is in motion
- a suitably sized receiver fitted with a non-return valve on the supply side is incorporated to ensure continued inflation of the airbags in the event of compressor failure; and
- an audible indicator or a visual indicator visible to the driver in their normal seated position is fitted to alert the driver of any loss of pressure or of compressor failure

13.7 Modifications to Vehicles Equipped with ESC

Many modern vehicles are now being equipped with a safety feature known as Electronic Stability Control (ESC).

(ESC is also known by other terms including vehicle stability control or dynamic stability control). ESC provides motorists additional safety in terms of vehicle stability and handling, particularly in difficult situations where loss of control could otherwise occur.

ESC uses computer technology to assist the driver in maintaining control in emergency situations – particularly when executing avoidance manoeuvres involving sudden swerving and in cases when the vehicle begins to slide and rotate sideways.

Braking is automatically applied to individual wheels, such as the outer front wheel to counter oversteer, or the inner rear wheel to counter understeer. Some ESC systems also reduce engine power until steering control is regained.

ESC is programmed by the vehicle manufacturer for the vehicle to which it is fitted taking into account a number of design parameters such as brake, engine and transmission performance, tyre specifications, steering systems, suspension (type and performance characteristics), mass of the vehicle and weight distribution.

For modification codes contained in Section LS of VSB 14, evidence should be obtained either from the vehicle manufacturer or through testing to determine the impact on the ESC system. To remain within the scope of this Section of VSB 14, a vehicle fitted with ESC must not be modified if the operation of the ESC is affected unless the ESC system is adjusted to restore its original operational characteristics.

Similarly, vehicles equipped with ESC must not have the ESC control unit disconnected.

14. Additional Lamps and Lamp Covers

Rule 118 (2) of the Standards for Registration (Schedule 2 of the Road Safety (Vehicles) Regulations 2009) states that a vehicle must not be fitted with a light or reflector not mentioned in the Vehicle Standards without the written approval of VicRoads.

Individual application must be made to VicRoads for approval to fit any lamps or lighting systems such as flashing or rotating warning lamps that are not of a type required or permitted by the Standards for Registration. Lamps designed for marine or aircraft application are not permitted.

The Standards for Registration specify colour and performance requirements for lamps on a vehicle. To ensure continued compliance with these requirements any lamp cover fitted to a vehicle must be clear, untinted, uncoloured and clean. See VSI 12 for more information on Flashing or Rotating Warning Lamps.

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