

# Queensland Code of Practice

## Vehicle Modifications

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# 1 Introduction

The Queensland Code of Practice – Vehicle Modifications (QCOP) covers modifications which have been specifically designed for use in Queensland and is based on acceptable engineering practices. The QCOP is intended to supplement the recommendations of the original vehicle manufacturer in relation to vehicle modification techniques or standards and to provide guidelines where vehicle manufacturer's specifications do not exist.

The QCOP is divided into two distinct sections, a light vehicle section for vehicles with a Gross Vehicle Mass of 4.5 tonne or less and a heavy vehicle section for vehicles with a Gross Vehicle Mass greater than 4.5 tonne. The Light Vehicle section is intended to be used in conjunction with Vehicle Standards Bulletin 14 - National Code of Practice for Light Vehicle Construction and Modification (NCOP), while the Heavy Vehicle section is to be used in conjunction with the National Heavy Vehicle Regulator Code of Practice for the Approval of Heavy Vehicle Modifications (the Heavy Code).

It is important to note that the requirements of the Australian Design Rules and the original vehicle manufacturer's specifications take precedence over the QCOP. Approved Persons must ensure at all times that the modifications approved under the QCOP comply with all applicable Australian Design Rules and original vehicle manufacturer's recommendations when available. Vehicles modified in accordance with the QCOP must meet the administrative and technical requirements of the NCOP (for light vehicles) or the Heavy Code (for heavy vehicles).

The administrative requirements relating to the use of the approved codes of practice are found in the preface and introduction sections of the NCOP (for light vehicles) and the Heavy Code (for heavy vehicles). For modifications or general technical specifications not provided in the QCOP, vehicle owners and Approved Persons must comply with any relevant requirement in the NCOP (for light vehicles) and the Heavy Code (for heavy vehicles).

Any reference to approved codes of practice for a light vehicle refers only to the current versions of the QCOP or NCOP that are approved for use, by the Chief Executive of the Queensland Department of Transport and Main Roads, at the time the modification is certified.

Any reference to the Australian Street Rod Federation Queensland Street Rod LH9 or LH10 Guidelines, are a reference to the versions that are approved for use, by the Chief Executive of the Queensland Department of Transport and Main Roads, at the time the vehicle is certified.

Any enquiries about the Heavy Code or the *Heavy Vehicle (Vehicle Standards) National Regulation 2013* should be directed to the National Heavy Vehicle Regulator.

## 2 Modification Codes

### Light Vehicles and Motorbikes

<b>Code</b>	<b>Modification</b>
LC1	Dual-controls for Driver Trainer Vehicles (Design)
LC2	Dual-controls for Driver Trainer Vehicles (Modification)
LC3	Vehicle controls for persons with a disability (Design)
LC4	Vehicle controls for persons with a disability (Modification)
LH9	Street Rod Certification (Concessional)
LH10	Street Rod Certification (Full)
LS9	High Lift – 75mm to 150mm (Design)
LS10	High Lift – 75mm to 150mm (Modification)
LS11	Gross Vehicle Mass Increase
LS12	Light Trailer Modifications
LS14	Re-rating of a Light Trailer Aggregate Trailer Mass/Gross Trailer Mass to Manufacturer's Specifications
LS15	Gross Vehicle Mass Rating of Light Vehicles
LX1	Modification of Light Vehicles to TMR Individual Approval

### Heavy Vehicles

<b>Code</b>	<b>Modification</b>
S13	Bus Life Vehicle Ratings

# Light Vehicles

# Section LC

## Vehicle Controls

### 1. Scope

This section of the QCOP outlines the minimum design, fabrication and installation requirements for the following light vehicle modifications used in special applications.

#### 1.1 Basic Modifications Not Requiring Certification

- Fitting of a steering wheel spinner knob for a person with a disability.
- Fitting of a Wheelchair/mobility scooter carrier to the rear of a suitable vehicle.
- Fitting of a restraint system in conjunction with the vehicle's original manufacturer's seatbelt.
- Fitting of additional grab handles to aid entry to and exit from the vehicle.

#### 1.2 Modifications Requiring Certification under LC Codes

- Fitting dual controls for driver training vehicles
- Fitting modified driving controls for persons with a disability

**NOTE:** The main design installation and fabrications requirements for all of the above modifications are contained in sub-section 2 "General Requirements".

### 2. General Requirements

This subsection applies to all light vehicles and should be read in conjunction with the other sub-sections of the LC Code and the specific Approval Code for the modification or conversion.

The installation of dual controls under this code can only be performed on a Queensland vehicle registered for the purpose of driver training.

All decisions to modify a vehicle for the use of a person with a disability will be made in conjunction with the intended driver/operator, Approved Person and a qualified Occupational Therapist.

It is recommended that modifications be carried out using production components which themselves do not require modification.

#### 2.1 Fabrication

All work must be performed in accordance with recognised engineering standards. Cutting, heating, welding or bending of components should be avoided by choosing unmodified production components wherever possible.

##### Welding

All Welding must be performed in accordance with the relevant Australian Standard. For example – mild steel must be welded in accordance with Australian Standard 1554 Part 1 – 1985 "*Welding of Steel Structures*" Category SP

## Fasteners

All fasteners in highly stressed locations must be high tensile ISO Grade 8.8 (mm sizes), SAE Grade 5 (inch sizes) or equivalent as a minimum specification. All other fasteners are to be at least of similar strength and number to those in the original installation. Self-locking nuts should be used in preference to spring washers. Locking nuts with plastic inserts (“Nyloc”) must not be used in high temperature applications.

## Electroplating

To prevent cracks forming in brittle chromium plating or from hydrogen embrittlement of steel components, electroplating of brake control components including bolts is not permitted.

## 2.2 Definitions

Generally the terms used in the LC section have the meaning given by the *Transport Operations (Road Use Management) Act 1995 (the Act)* or the *Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2010 (the regulation)*. Specific technical terms used in this section have the following meanings:

**Dual Controls** mean additional controls fitted for the exclusive use for an accredited driver trainer.

**Driving control** mean any device, including hand controls, fitted to or intended to be fitted to a vehicle to enable the vehicle to be driven by a person with a disability.

**Electromechanical type control** means a device that is electrically operated and has mechanical motion, such as relays for servos.

**Extension device** means any device which extends the operation point of any existing control.

**Hand Control** means a control which enables controls of a vehicle, which are normally operated by foot to be operated by hand.

**May** indicates the existence of an option.

**Pedal extension** means any device which relocates the surface of a pedal.

**Restraint System** means fixed restraints which may be required in addition to original manufacturer’s seatbelts for trunk support

**Shall** indicates that a requirement is mandatory.

**Should** indicates a recommendation.

**Vehicle**, to removal all doubt, for this section means a motor vehicle.

## 3. Australian Design Rules

The Australian Design Rules (ADRs) that may be affected by modifications covered in this section are as follows:

**Table LC1** ADRs that may be affected by modifications under this section

ADR	Title and Comments
ADR 3	Seat Anchorages
ADR 4	Seatbelts

<b>ADR</b>	<b>Title and Comments</b>
ADR 5	Anchorage for Seatbelts
ADR 10	Steering Columns
ADR 13	Installation of Lighting and Light Signalling Devices
ADR 21	Instrument Panel
ADR 28	Motor Vehicle Noise
ADR 31	Hydraulic Braking Systems
ADR 42	Demisting of Windscreens
ADR 69	Full Frontal Impact Occupant Protection
ADR 72	Dynamic Side Impact Occupant Protection
ADR 73	Offset Frontal Impact Protection
ADR 83	External Noise

**NOTE:** Each ADR usually has more than one version. The ADRs can be identified in two different formats as illustrated in the following examples:

- ADR 4, ADR 4A,.....in the Second Edition (pre-1988), and
- ADR 4/00, ADR 4/01,.....in the Third Edition (1988 on).

The ADRs apply according to the vehicle's category and date of manufacture. It is the responsibility of the signatory to refer to the appropriate ADR applicable to the vehicle.

The modified vehicle must continue to comply with all ADRs applicable at the date of its manufacture. Where any system governed by an Australian Design Rule is altered, it is necessary to show that the original requirements of the rule are still met.

#### **4. Non-certified modifications**

The following modifications may be carried out after consultation with a qualified health practitioner and provided they do not affect compliance with ADRs and they meet the following general safety requirements.

##### **4.1 Steering wheel spinner knobs**

The spinner must be robustly built and operate smoothly. The handle (gripped component) should be designed to be easily removable without affecting the security of the mounting block which can remain affixed to the wheel. The assembly must not have any dangerous or sharp projections which may increase the risk of injury or accident. The spinner knob must be mounted in a position which is comfortable to the driver and must not restrict access to or the operation of other controls such as the indicator stalk.

Seek advice from an Approved Person (Engineer) if the knob affects vehicle compliance to the ADR's, eg; ADR 21/..., ADR/42/... and ADR 10/...

## 4.2 Rear mounted wheelchair/mobility scooter carrier

The installation of a rear mounted wheelchair/mobility scooter carrier to a vehicle is considered to be a modification that does not require certification, provided the following requirements are met:

- Use of the wheelchair/mobility scooter carrier is restricted to the carriage of a wheelchair/mobility scooter (only) for a person with a disability.
- The weight of the loaded wheelchair/mobility scooter carrier must not exceed 200kg, or the manufacturers' rear axle mass limit or the towbar's ball weight, whichever is the lesser.

**Please note:** While the mass of the loaded wheelchair/mobility carrier may be within the above limits, additional consideration must be given to the higher loads imposed due to the overhanging mass of the carrier.

- Any wheelchair/mobility scooter carried on the scooter carrier must be adequately restrained and meet requirements of the "Load Restraint Guide".
- The wheelchair/mobility scooter carrier and associated towbar components must be removed from the vehicle when not in use. Alternatively, if the wheelchair/mobility scooter carrier is transported in a folded position it may remain attached to the vehicle provided no dangerous projections exist and rear overhang requirements are complied with.
- The vehicle's rear overhang with the wheelchair/mobility scooter attached must not exceed 80% of the wheel base or 3.70m, whichever is the lesser.
- The wheelchair/mobility scooter carrier must not be more than 2.5m wide or the maximum width of the vehicle to which it is attached, excluding side rear view mirrors.
- An adequately rated safety chain between the wheelchair/mobility scooter carrier and the vehicle must be attached.
- Reflectors must be fitted to each corner of the wheelchair/mobility scooter with yellow reflectors visible to the sides and red reflectors visible to the rear
- If the wheelchair/mobility scooter carrier obscures the vehicle's number plate or any compulsory lighting, additional lamps complying with the regulation, and an accessories number plate must be attached.

## 4.3 Additional grab handles

The installation of additional grab handles to a vehicle is considered to be a modification that does not require certification, provided the following requirements are met:

- Additional grab handles must not be fitted in an airbag deployment area.
- Grab handles must be mounted a sufficient distance from seatbelt anchorage points as to not weaken the structural integrity of the seatbelt anchorage. The Department of Transport and Main Roads (TMR) recommends speaking to an Approved Person (Engineer) if you have any concerns.
- The position of any additional grab handles must not impede on the driver's normal operating position or restrict the driver's field of view in any way.

#### 4.4 Additional Restraint System

The installation of an additional restraint system to a vehicle is considered to be a modification that does not require certification, provided the following requirements are met:

- The additional restraint system must be fitted in addition to the vehicle's original manufacturers' seatbelts.
- The mounting points of the additional restraint system must be mounted a sufficient distance from seatbelt anchorage points as to not weaken the structural integrity of the seatbelt anchorage. TMR recommends speaking to an Approved Person (Engineer) if you have any concerns.
- If any part of the additional restraint system impedes on another seating position (generally the rear seats) the impeded seating position is not to be used until the additional restraint system has been removed.

**Note:** The above non-certified modifications should only be fitted after consultation with an installer and occupational therapist, doctor or other medical professional.

#### 5. Certified Modifications (LC Codes)

This section specifies particular requirements and covers limitations on certifications carried out under individual LC Approval Codes.

Each Code is supplemented with a checklist (refer to Table LC2)

**Table LC2 LC Code Directory**

LC Codes		Page
LC1	Dual-controls for Driver Trainer Vehicles (Design)	14
	LC1 Checklist	
LC2	Dual-controls for Driver Trainer Vehicles (Modification)	
	LC2 Checklist	
LC3	Vehicle controls for persons with a disability (Design)	
	LC3 Checklist	
LC4	Vehicle controls for persons with a disability (Modification)	
	LC4 Checklist	

# Dual-controls for Driver Trainer Vehicles (Design)

## CODE LC1

### 1. Scope

Section LC1 outlines the minimum design, specifications and fabrication requirements for the following light vehicle modifications involving controls for driver training.

#### 1.1 Designs allowed under Code LC1

The following is a summary of the designs that may be prepared under Code LC1:

- Design of Dual-controls systems for use in driver trainer vehicles.

#### 1.2 Designs not allowed under Code LC1:

The following is a summary of designs and certifications that cannot be performed under Code LC1:

- Left to right hand steering conversions
- Modifications for persons with a disability
- Installation of a dual-control system.

### 2. Compliance with applicable vehicle standards

Modified vehicles must continue to comply with the ADRs to which they were originally constructed, except as allowed for in the *Regulation*. These modified vehicles must also comply with the applicable in-service requirements of the regulation.

Modified pre-ADR vehicles must continue to comply with the regulation.

Outlined below in Table LC3 are areas of the vehicle that may be affected by the modifications and that may require re-certification, testing and/or data to show compliance for the modified vehicle. This is not an exhaustive list and other modifications may also affect ADR compliance.

**Table LC3** Summary of items that, if modified or altered, may detrimentally affect compliance with applicable ADRs

DETAIL	REQUIREMENTS
Brake Lights	ADR 49 ADR 60
Brake Hoses	ADR 42/04
Hydraulic Brake Systems	ADR 31
Brake Performance	<i>Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2010</i>

To determine the ADRs that apply to the vehicle in question, refer to the Applicability Tables in Section LO. Vehicles manufactured from 1 January 1969 but prior to 1 July 1988 need to comply with the Second Edition ADRs, whilst vehicles manufactured from 1 July 1988 need to comply with the Third Edition ADRs. Section LO has separate applicability tables for each edition.

Alternatively, ADR applicability tables for individual vehicle categories may be referenced on the Department of Infrastructure and Transport (Road vehicle Certification Scheme) *RVCS* website at the following address and under the section titled ADR Applicability tables:

<http://rvcs.dotars.gov.au/>

The ADRs apply according to the vehicle's category and date of manufacture. It is the responsibility of the signatory to refer to the appropriate ADR applicable to the vehicle.

### 3. Specific Requirements

The following are specific requirements that need to be met to enable certifications to be issued for vehicle controls.

All work must also comply with the general guidelines contained in sub-section 2 General Requirements of the NCOP.

#### 3.1 Dual-Control Vehicles for Driver Training

Driver training vehicles are usually standard production vehicles which are modified to provide the driving instructor with brake, clutch, accelerator and/or steering controls operated from the left hand side passengers' front seating position. The fitting of left hand side brake, clutch or accelerator control does not contravene State road traffic regulations or ADRs providing that the work undertaken is carried out to acceptable engineering practices and does not degrade the design strength or operation of the original systems.

All components must be durable in service and designed so as not to create any dangerous or sharp projections.

#### 3.2 Signage

A sign must be permanently mounted on the dashboard adjacent to the operator of the auxiliary controls. This sign must not have any sharp edges, must not have a reflective surface finish and must be of similar hardness to the existing dashboard material. This sign must display the following statement:

#### **CAUTION**

**THIS VEHICLE IS FITTED WITH AUXILIARY DRIVER CONTROLS. ONLY TO BE USED FOR DRIVER TRAINING PURPOSES BY AN ACCREDITED DRIVER TRAINER.**

This sign must be printed in bold black letters, 5 mm high, on a yellow background.

#### 3.3 Steering

Certification can only be granted by an Approved Person (Engineer) after they have been able to demonstrate compliance to any relevant requirements, including:

- No component of the original steering system is heated or welded unless a report is presented by an Approved Person (Engineer).
- The work undertaken is carried out to accepted engineering practices and it does not degrade the design strength or operation of the original steering system.

- If the vehicle to be modified was originally built to comply with ADRs 10A, 10B, 10/... the donor steering column assembly and steering wheel must be from a vehicle built to comply with the equivalent or more stringent ADR. Vehicles originally designed to comply with ADR 69/.. or ADR 73/.. must not be fitted with an additional steering column.
- The steering mechanism fitted to the left hand side is of equivalent strength and durability compared to the original steering system.
- The additional steering system must be capable of being disabled when not in use.
- The additional steering system requires a similar input force to manoeuvre the vehicle and does not restrict the vehicle's original steering in any way.

### 3.4 Brakes

The brake lamps must be connected so as to operate from both brake pedals.

The additional brake pedal must provide similar grip to the original manufacturer's brake pedal and allow full travel

- Mechanically Coupled

Brake controls which are coupled directly to the original brake actuation mechanisms would not contravene vehicle standard regulations or ADRs providing that the work undertaken is carried out to acceptable engineering practices and does not degrade the design strength or operation of the original braking system.

- Hydraulically Coupled

Brake controls which are interconnected into the hydraulic brake system, depending on the date of manufacture of the vehicle, may contravene the requirements of the ADRs. Therefore, an engineering report from an Approved Person (Engineer) must provide the installer with an Engineering Report stating the additional system does not affect the vehicle's compliance with the regulation and ADRs.

**Checklist LC1**  
**Dual-controls for Driver Trainer Vehicles (Design)**  
**CODE LC1**

Form No: LL7  
(Y=Yes, N=No)

<b>Modification Certificate Number :</b>				
<b>1</b>	<b>Components</b>			
1.1	Do all the components and fittings used in the dual-control system design meet the 'General Requirements' list in this section?		Y	N
<b>2</b>	<b>Mounting Brackets</b>			
2.1	Have all the brackets, mountings and pedal assemblies been designed to adequately cope with the forces generated during operation (including emergency application)?		Y	N
<b>3</b>	<b>Pedals</b>			
3.1	Will the additional pedals be fitted with anti-slip material as required under the ADR's?		Y	N
<b>4</b>	<b>Workmanship</b>			
4.1	Has all the mounting and fitting instructions been included in the design plans?		Y	N
<b>5</b>	<b>Testing</b>			
5.1	Has a test procedure been developed for the installer to follow once the controls have been fitted?		Y	N
<b>6</b>	<b>ADR Compliance</b>			
6.1	Will the modified vehicle continue to comply with the ADRs that applied to it at its first supply to market in Australia?		Y	N
<b>7</b>	<b>Records</b>			
7.1	Have complete records of the design been retained in a manner suitable for auditing by TMR?		Y	N

**Note:** If the answer to any question is **N (No)** the design cannot be certified under Code LC1.

CERTIFICATION DETAILS																
<b>Make</b>						<b>Model</b>						<b>Year of Manufacture</b>				
<b>VIN</b>																
<b>Chassis Number (If applicable)</b>																
<b>Brief Description of Modification/s</b>																
<b>Vehicle Modified By</b>																
<b>Certificate Number (If applicable)</b>																
<b>Vehicle Certified By (<i>Print</i>)</b>																
<b>Signatory's Employer (If applicable)</b>																
<b>Signatory's Signature</b>											<b>Date</b>					

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# Dual-controls for Driver Trainer Vehicles (Modification)

## CODE LC2

### 1. Scope

Section LC2 outlines the installation and testing requirements for the following light vehicle modifications involving controls for driver training.

#### 1.1 Modifications covered under code LC2:

The following is a summary of the modifications that may be performed under Code LC2:

- Dual-control vehicles for driver training

#### 1.2 Modifications not covered under code LC2:

The following is a summary of the modifications that may not be performed under Code LC2:

- Left to right hand steering conversions
- Controls for persons with a disability.

### 2. Compliance with applicable vehicle standards

Modified vehicles must continue to comply with the ADRs to which they were originally constructed, except as allowed for in the regulation. These modified vehicles must also comply with the applicable in-service requirements of the regulation.

Modified pre-ADR vehicles must continue to comply with the regulation.

Outlined below in Table LC4 are areas of the vehicle that may be affected by the modifications and that may require re-certification, testing and/or data to show compliance for the modified vehicle. This is not an exhaustive list and other modifications may also affect ADR compliance.

**Table LC4** Summary of items that, if modified or altered, may detrimentally affect compliance with applicable ADRs

DETAIL	REQUIREMENTS
Brake Lights	ADR 49 ADR 60
Brake Hoses	ADR 42/04
Hydraulic Brake Systems	ADR 31
Brake Performance	<i>Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2010</i>

To determine the ADRs that apply to the vehicle in question, refer to the Applicability Tables in Section LO. Vehicles manufactured from 1 January 1969 but prior to 1 July 1988 need to comply with the Second Edition ADRs, whilst vehicles manufactured from 1 July 1988 need to comply with the Third Edition ADRs. Section LO has separate applicability tables for each edition.

Alternatively, ADR applicability tables for individual vehicle categories may be referenced on the Department of Infrastructure and Transport *RVCS* website at the following address and under the section titled ADR Applicability tables:

<http://rvcs.dotars.gov.au/>

The ADRs apply according to the vehicle's category and date of manufacture. It is the responsibility of the signatory to refer to the appropriate ADR applicable to the vehicle.

**Checklist LC2**  
**Dual-controls for Driver Trainer Vehicles (Modification)**  
**CODE LC2**

Form No: LC2  
(Y=Yes, N=No)

<b>Modification Certificate Number :</b>				
<b>1</b>	<b>Design</b>			
1.1	Has the vehicle been modified in accordance with the plans and specifications issued under: Design Approval No.....or Type Approval Number.....		Y	N
<b>2</b>	<b>Workmanship</b>			
2.1	Has all the work including the mounting been performed in accordance with recognised engineering standards?		Y	N
<b>3</b>	<b>Pedals</b>			
3.1	Are the pedals ergonomically positioned as per recognised automotive standards?		Y	N
3.2	Do the additional pedals allow full travel of the original vehicle's pedal assembly		Y	N
<b>4</b>	<b>Signage</b>			
4.1	Has a sign been permanently mounted on the dashboard adjacent to the operator of the auxiliary controls?		Y	N
<b>5</b>	<b>ADR Compliance</b>			
5.1	Does the modified vehicle continue to comply with the ADRs that applied to it at its first supply to market in Australia?		Y	N
<b>6</b>	<b>Final Inspection</b>			
6.1	Has a final inspection of the installation been carried out and found to be satisfactory?		Y	N
<b>7</b>	<b>Testing</b>			
7.1	Has the modified vehicle been road tested utilising all pedal controls and found satisfactory?		Y	N
7.2	Has the modified vehicle been tested in accordance with the post-installation test procedure provided as part of the design approval?		Y	N
<b>8</b>	<b>Records</b>			
8.1	Have complete records of the design, installation and testing been retained in a manner suitable for auditing?		Y	N

**Note:** If the answer to any question is **N (No)** the conversion cannot be certified under Code LC2.

CERTIFICATION DETAILS																
<b>Make</b>						<b>Model</b>						<b>Year of Manufacture</b>				
<b>VIN</b>																
<b>Chassis Number (If applicable)</b>																
<b>Brief Description of Modification/s</b>																
<b>Vehicle Modified By</b>																
<b>Certificate Number (If applicable)</b>																
<b>Vehicle Certified By (<i>Print</i>)</b>																
<b>Signatory's Employer (If applicable)</b>																
<b>Signatory's Signature</b>											<b>Date</b>					

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# Vehicle controls for persons with a disability (Design)

## CODE LC3

### 1. Scope

Section LC3 outlines the minimum design, specifications and fabrication requirements for the following light vehicle modifications involving controls for driver training.

#### 1.1 Designs covered by the Code LC3

The following is a summary of the designs that may be prepared under Code LC3:

- Vehicle control modification (design) for persons with a disability, which are not covered by *Australian Standard (AS) AS3954.1. Motor vehicle controls- Adaptive systems for people with disabilities- General requirements* and *AS3954.2. Motor vehicle controls- Adaptive systems for people with disabilities- Hand controls- Product requirements*.
- Vehicle control modification (design) for persons with a disability, which are not covered by an existing individual Department of Transport and Main Roads (TMR) Type Approval.

#### 1.2 Designs not covered by the Code LC3

The following is a summary of the designs that are not covered under Code LC3:

- Vehicle controls conversion/modification for other than for persons with a disability.
- Dual-Control for driver training

### 2. Compliance with applicable vehicle standards

Modified vehicles must continue to comply with the ADRs to which they were originally constructed, except as allowed for in the regulation. These modified vehicles must also comply with the applicable in-service requirements of the regulation. This is not an exhaustive list and other modifications may also affect ADR compliance.

Modified pre-ADR vehicles must continue to comply with the regulation.

Outlined below in Table LC5 are areas of the vehicle that may be affected by the modifications and that may require re-certification, testing and/or data to show compliance for the modified vehicle.

**Table LC5 Summary of items that if modified, may detrimentally affect compliance with applicable ADRs**

DETAIL	REQUIREMENTS
Brake Lights	ADR 13 ADR 60
Brake Hoses	ADR 7
Hydraulic Brake Systems	ADR 31 ADR 33

	ADR 35
Supplementary Restraint Systems	ADR 69 ADR 72 ADR 73
Brake Performance	<i>Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2010</i>

To determine the ADRs that apply to the vehicle in question, refer to the applicability tables in Section LO. Vehicles manufactured on or after 1 January 1969 and prior to 1 July 1988 need to comply with the Second Edition ADRs whilst vehicles manufactured after this date need to comply with the Third Edition ADRs. Section LO has separate applicability tables for each edition.

Alternatively, ADR applicability tables for individual vehicle categories may be referenced on the Department of Infrastructure and Transport *RVCS* website at the following address and under the section titled *ADR Applicability Tables*:

<http://rvcs.dotars.gov.au/>

The ADRs apply according to the vehicle's category and date of manufacture. It is the responsibility of the signatory to refer to the appropriate ADR applicable to the vehicle.

### 3. Specific Requirements

#### 3.1 Disabling Airbags

Airbags are part of the Supplementary Restraint System (SRS) fitted by new vehicle manufacturers as part of their approval process to comply with ADRs including ADR 69/00 (Full Frontal Impact Occupant Protection) ADR 72/00 (Dynamic Side Impact Occupant Protection) and/or ADR 73/00 (Offset Frontal Occupant Protection). The introduction of SRSs has been a major advance in protecting people from death or injury in road crashes and the majority of vehicle manufacturers do not endorse the disabling of SRS components such as airbags.

As the use of SRSs has proven to be so successful, TMR does not readily support the reduction of occupant safety if other options are available. However, TMR will approve the disabling of the airbags (knee airbags) where it can be demonstrated by the Approved Person (Engineer) that:

- there currently is no readily available alternative design hand controls which could be used which would not require the driver's airbag to be disabled or modified, and
- the disabling of the driver's airbag will not interfere with any other parts of the SRS fitted to the vehicle such as seatbelt pre-tensioners or other airbags.

This provision will only remain in force for a period up to and including 30 June 2019 or unless otherwise withdrawn.

#### 3.2 Strength Testing (Normative)

##### 3.2.1 Scope

This section sets out a method for testing a fully assembled hand control for strength.

##### 3.2.2 Principle

The test specimen is fully assembled and fitted to a test rig. A force is applied to the handle of the brake control and left in place for a specified period. The hand control system is then inspected.

### 3.2.3 Apparatus

The following apparatus is required:

- (a) A suitable test rig to which the hand control under test can be fixed at its designed mounting points. The part of the rig that simulates the brake pedal shall be an immovable fixture.

Note: The test rig could be a vehicle with the brake pedal blocked as in the test for strength of hand control in brake operation in AS 3954.1

- (b) A means of applying a force of 670 N to the handle of the control lever which is designed to activate the brake.

### 3.2.4 Procedure

The procedure shall be as follows:

- (a) Fix the fully assembled hand control to the test rig at its designed mounting points in accordance with the AP Engineer/Manufacturer's instructions for installation.
- (b) Apply a force of 670 N to the handle of the control lever in the direction in which the control is intended to be operated for a period of 30 seconds.
- (c) Release the force and note any failure, changes in alignment, loosening of parts, or permanent deformation of any part of the hand control.

### 3.2.5 Report

The following shall be reported:

- (a) The identity of the hand control.
- (b) Any failure, change in alignment, parts which became loose, or permanent deformation of any part of the hand control.
- (c) A reference to this test method.

## 3.3 Dynamic testing for determining fatigue resistance (Normative)

### 3.3.1 Scope

This section sets out a method for testing a hand control for a resistance to fatigue.

### 3.3.2 Principle

The test specimen is fully assembled and fitted to a test rig. A force is applied to actuate the brake and accelerator controls which are operated for specified number of cycles prior to inspection taking place. If no specified indicators of fatigue are noted, the test continues for a total of 250 000 cycles.

### 3.3.3 Apparatus

The following apparatus is required:

A suitable test rig with:

- (a) A simulated accelerator pedal capable of adjustment to provide a load of not less than 50 N at full stroke of the hand control/accelerator linkage;
- (b) Simulated clutch and brake pedals which are capable of adjustment to provide a load not less than 200 N at the maximum travel of the clutch and brake linkages respectively; and
- (c) A means of moving the hand control repeatedly throughout its full range of movement within a time period of not more than 2 seconds.

### 3.3.4 Procedure

The procedure shall be as follows:

- (a) Fix the fully assembled hand control to the test rig according to the Approved Person (Engineer)/manufacturer's instructions, and adjust to the configuration representing the minimum mechanical advantage, and with the maximum offset specified by the Approved Person (Engineer)/Manufacturer.
- (b) Apply a force which moves the hand control through its complete design cycle in a period not greater than 2 seconds. It is permissible to perform the operation of more than one pedal in one cycle of movement.
- (c) After 50 000 cycles stop and inspect the hand control and observe and note if any failure, change in alignment that would be likely to affect normal operation, or loosening of fasteners has occurred. If any failure, change in alignment that would be likely to affect normal operation, or loosening of fasteners is observed, the test shall not proceed.
- (d) Replace any worn parts other than structural components and lubricate as necessary.
- (e) Repeat steps (b) to (d) four (4) times so that 250 000 cycles are completed.

### **3.3.5 Report**

The following shall be reported:

- (a) The identity of the hand control
- (b) Any failure, change in alignment that would be likely to affect normal operation, appreciable wear of structural components, or loosening of fasteners.
- (c) A reference to the test method, ie. AS 3954.2

## **3.4 Fastener Vibration Resistance Testing (Normative)**

### **3.4.1 Scope**

This section sets out a method for testing a hand control for retention of torque on fasteners.

### **3.4.2 Principle**

The test specimen is fully assembled and fixed to a shaker table. The table is subjected to vibration for a specified period. The torque of each fastener used in the construction of the hand control is measured and recorded.

### **3.4.3 Apparatus**

The following apparatus is required:

- (a) A shaker table.
- (b) An accelerometer.
- (c) A vibration meter.
- (d) A torque-measuring device.

### **3.4.4 Procedure**

The procedure shall be as follows:

- (a) Secure the fully assembled hand control to the shaker table only at the designed mounting points according to the Approved Person (Engineer)/manufacturer's instructions for installation. The hand control shall be mounted so that the axial direction of vibrations approximates the axial direction of the hand control. Where the axial direction of the hand control is not obvious, the axial direction shall be taken to be parallel to the axis of the steering column of the vehicle for which the hand control was designed, when installed.

- (b) Apply the torque specified by the manufacturer to all fasteners of components of the hand control.
- (c) Mount the accelerator onto the shaker table (For method of mounting see AS 2775). All connections between the accelerometer and the vibration meter and any auxiliary equipment shall be in accordance with the requirements of AS 2679.
- (d) Subject the shaker table to vibratory motion producing a peak table acceleration of not less than 46 m/s<sup>2</sup> and a peak-to-peak displacement of not less than 2.5 mm at 30 + or – 3 Hz in the axial and transverse directions of the assembly for a period of 30 minutes in each direction.
- (e) Measure and record the torque necessary to initiate tightening of each fastener, in Newton Metres.
- (f) Repeat steps (a) to (e) with the hand control mounted so that the direction of vibration is approximately transverse to the axial direction of the hand control.

#### 3.4.5 Report

The following shall be reported:

- (a) The identity of the hand control.
- (b) For each fastener, any variance in torque applied in Step (b) and measured in Step (e) in 3.4.4 above.
- (c) A reference to this test method, ie. AS 3954.2.

### 3.5 Additional Requirements

- Where an additional accelerator pedal is fitted to the left of the existing brake or clutch pedals (or both), both the left-hand and the right-hand pedals shall be independently capable of being rendered inoperative.
- The driving controls shall be able to be operated through its full range of travel.
- Those components susceptible to wear and tear, eg. pins, shafts and connections etc., shall be accessible for replacement.
- All metal parts shall be resistant to corrosion.
- The surface finish of all parts of the driver controls in the driver's view shall be dull non-reflective to avoid undue glare to the driver.

## Checklist LC3

### Vehicle controls for persons with a disability (Design)

#### CODE LC3

Form No: LC3  
(Y=Yes, N=No)

<b>Modification Certificate Number :</b>				
<b>1</b>	<b>Components</b>			
1.1	Are the components designed with sufficient strength to prevent any permanent deformation occurring during use (including emergency application)?		Y	N
<b>2</b>	<b>Seats and Seat Belts</b>			
2.1	Do seats, seat and seat belt mountings and seat belts comply with relevant ADR 4 and 5 requirements?		Y	N
<b>3</b>	<b>Controls</b>			
3.1	Have the controls been designed to require distinctly different motions for acceleration, brake actuation or clutch application where applicable.		Y	N
3.2	Have the hand controls been designed so that when released, controls shall revert to the neutral or off position.		Y	N
3.3	The hand controls do not permit actuation of the accelerator by forward inertial movement of the driver.		Y	N
3.4	Have all the requirements in '3.5 Additional Requirements' been met?		Y	N
<b>4</b>	<b>Performance Requirements</b>			
4.1	<b>Strength</b>			
	When tested in accordance with '3.2 Strength Testing', there shall be no failure, no changes in alignment, no loosening of parts, or no permanent deformation of any part of the hand controls.		Y	N
4.2	<b>Fatigue Resistance</b>			
	When tested in accordance with '3.3 Dynamic testing for determining fatigue resistance' there shall be no failure, no changes in alignment that would be likely to affect normal operation, no appreciable wear of structural components or no loosening of fasteners.		Y	N
4.3	<b>Vibration Resistance of Fasteners</b>			
	When tested in accordance with '3.4 Fastener Vibration Resistance Testing', any variance in torque of each fastener of the fully assembled hand control shall be not more than 15% of the torque specified by the manufacturer.		Y	N

<b>5</b>	<b>ADR Compliance</b>			
5.1	Does the modified vehicle continue to comply with the ADRs that applied to it at its first supply to market in Australia?		Y	N
5.2	Has the SRS system (knee airbag) fitted to this vehicle been modified, if so has it been confirmed that the remaining SRS components and systems operate as per original vehicle manufacturer's specifications,	N/A	Y	N
<b>6</b>	<b>Workmanship</b>			
6.1	Does the installation and fabrication design meet the requirements specified by the Occupational Therapist/Doctor?		Y	N
6.2	Does the installation and fabrication design meet recognised engineering standards?		Y	N
<b>7</b>	<b>Records</b>			
7.1	Have complete records of the design been retained in a manner suitable for auditing by TMR?		Y	N

**Note:** If the answer to any question is **N (No)** the conversion cannot be certified under Design Code LC3.

CERTIFICATION DETAILS																
<b>Make</b>						<b>Model</b>						<b>Year of Manufacture</b>				
<b>VIN</b>																
<b>Chassis Number (If applicable)</b>																
<b>Brief Description of Modification/s</b>																
<b>Vehicle Modified By</b>																
<b>Certificate Number (If applicable)</b>																
<b>Vehicle Certified By (<i>Print</i>)</b>																
<b>Signatory's Employer (If applicable)</b>																
<b>Signatory's Signature</b>											<b>Date</b>					

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# Vehicle controls for persons with a disability (Modification)

## CODE LC4

### 1. Scope

Section LC4 outlines the minimum installation and testing requirements for the following light vehicle modifications involving controls for persons with a disability.

#### 1.1 Modifications covered under Code LC4

The following is a summary of modification that may be performed under Code LC4:

- Installation of driver controls for persons with a disability.

#### 1.2 Modifications not covered under Code LC4

The following is a summary of modification that may not be performed under Code LC4:

- Vehicle controls conversion/modification for other than for a person with a disability.
- Installation of a Wheelchair lifter

### 2. Compliance with applicable vehicle standards

Modified vehicles must continue to comply with the ADRs to which they were originally constructed, except as allowed for in the regulation. These modified vehicles must also comply with the applicable in-service requirements of the regulation. This is not an exhaustive list and other modifications may also affect ADR compliance.

Modified pre-ADR vehicles must continue to comply with the regulation.

Outlined below in Table LC6 are areas of the vehicle that may be affected by the modifications and that may require re-certification, testing and/or data to show compliance for the modified vehicle.

**Table LC6 Summary of items that if modified, may detrimentally affect compliance with applicable ADRs**

DETAIL	REQUIREMENTS
Brake Lights	ADR 13 ADR 60
Brake Hoses	ADR 7
Hydraulic Brake Systems	ADR 31 ADR 33 ADR 35
Supplementary Restraint Systems	ADR 69 ADR 72

	ADR 73
Brake Performance	<i>Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2010</i>

To determine the ADRs that apply to the vehicle in question, refer to the applicability tables in Section LO. Vehicles manufactured on or after 1 January 1969 and prior to 1 July 1988 need to comply with the Second Edition ADRs whilst vehicles manufactured after this date need to comply with the Third Edition ADRs. Section LO has separate applicability tables for each edition.

Alternatively, ADR applicability tables for individual vehicle categories may be referenced on the Department of Infrastructure and Transport *RVCS* website at the following address and under the section titled *ADR Applicability Tables*:

<http://rvcs.dotars.gov.au/>

The ADRs apply according to the vehicle's category and date of manufacture. It is the responsibility of the signatory to refer to the appropriate ADR applicable to the vehicle.

### 3. Specific Requirements

The following are specific requirements to enable certification to be issued for vehicle driver controls conversions under Code LC4.

All work must also comply with the general guidelines contained in sub-section 2 *General Requirements* of the NCOP.

#### 3.1 Installation of Vehicle Controls for persons with a disability.

##### 3.1.1 Hand Controls

The fitment of hand controls is restricted to automatic transmission vehicles.

##### 3.1.2 Accelerator to Left of Foot Brake

The fitment of a left of foot brake accelerator pedal is restricted to automatic transmission vehicles.

While there are no requirements which specifically cover the location of a left foot brake or accelerator pedal, attention should be paid to the operator's needs. Due care should also be taken to ensure there is sufficient clearance from the brake pedal, to reduce the risk of the driver accidentally depressing the incorrect pedal.

Where a vehicle is fitted with an additional accelerator pedal, the accelerator pedal not in use must be able to be:

- fitted with a cover; or
- folded away; or
- disconnected/rendered inoperative.

##### 3.1.3 Signage

A permanent, securely attached label shall be provided in a position in the vehicle which is conspicuous to the driver, stating the following:

**CAUTION**

**THE DRIVER CONTROLS OF THIS VEHICLE HAVE BEEN MODIFIED TO PROVIDE FOR THE PARTICULAR REQUIREMENTS OF THE DRIVER. THE VEHICLE MAY NOT BE AS SAFE AS ORIGINALLY MANUFACTURED.**

This sign must be printed in bold black letters, 5 mm high, on a yellow background.

### **3.2 After Installation**

The following points must be observed:

- The car should be fully test driven to establish that all controls operate correctly.
- The user shall be taken for a test drive and any necessary adjustments made.
- The user should be made familiar with the driving controls and their functions. A recommendation that the user seeks ongoing instruction where necessary should be made.
- The user should only accept the vehicle once they are satisfied with all aspects of the vehicle's controls.
- The user shall receive all manufacturers' operating instructions for the driving control.
- The user shall be made aware of any maintenance schedules required for the controls.
- It is important the user ensures all driving controls are returned to their operating position after servicing.

**Checklist LC4**  
**Vehicle controls for persons with a disability (Modification)**  
**CODE LC4**

Form No: LC4  
(Y=Yes, N=No)

<b>Modification Certificate Number :</b>				
<b>1</b>	<b>Modification</b>			
1.1	Has the vehicle been modified in accordance with the plans and specifications issued under:  Design Approval No.....or do the controls meet the General and Product Requirements outlined in AS3954.1-1991 and AS3954.2-1991?		Y	N
<b>2</b>	<b>Signage</b>			
2.1	Has a label been permanently and securely attached to the dashboard in a position conspicuous to the driver?		Y	N
<b>3</b>	<b>Installation</b>			
3.1	Has the installation been carried out in accordance with instructions and plans supplied?		Y	N
<b>4</b>	<b>ADR Compliance</b>			
4.1	Does the modified vehicle continue to comply with the ADRs that applied to it at its first supply to market in Australia?		Y	N
<b>5</b>	<b>Workmanship</b>			
5.1	Does the installation and fabrication comply with the requirements specified in the design?		Y	N
<b>6</b>	<b>Road-Test</b>			
6.1	Has a road test been carried out and the user been made familiar with the driver controls and there function?		Y	N
<b>7</b>	<b>Records</b>			
7.1	Have complete records of the modification been retained in a manner suitable for auditing?		Y	N

**Note:** If the answer to any question is **N (No)** the conversion cannot be certified under modification Code LC4.

CERTIFICATION DETAILS																
<b>Make</b>						<b>Model</b>						<b>Year of Manufacture</b>				
<b>VIN</b>																
<b>Chassis Number (If applicable)</b>																
<b>Brief Description of Modification/s</b>																
<b>Vehicle Modified By</b>																
<b>Certificate Number (If applicable)</b>																
<b>Vehicle Certified By (<i>Print</i>)</b>																
<b>Signatory's Employer (If applicable)</b>																
<b>Signatory's Signature</b>										<b>Date</b>						

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# Street Rod Certification (Concessional)

## CODE LH9

### 1. Scope

The following is a summary of the certifications that may be certified under Code LH9 – Street Rod Certification

#### 1.1 Certifications covered under code LH9

The following certifications may be performed under Code LH9:

- Conversion of a passenger car, passenger car derivative or light goods vehicle (up to 4.5t GVM), built before 1 January 1949, to a street rod configuration.
- Construction of a street rod.

#### 1.2 Certifications not covered under code LH9

The following is a summary of certifications that may not be performed under Code LH9:

- Conversion of a vehicle built from 1 January 1949.
- Construction of a vehicle not in accordance with the *Australian Street Rod Federation Queensland Street Rod LH9 Guidelines*, as approved by the Chief Executive.

### 2. Specific requirements

The following are specific requirements for certification of Street Rod vehicles which can be approved by approved persons under the code LH9.

#### 2.1 Conversion of a pre-1949 vehicle

- Any passenger car, passenger car derivative or light goods vehicle (up to 4.5t GVM) may be converted to a street rod configuration.
- The vehicle must comply with all the requirements specified in the *Australian Street Road Federation Queensland Street Rod LH9 Guidelines*.
- The vehicle is not required to comply with the *Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2010* or the Australian Design Rules unless specified in the *Australian Street Rod Federation Queensland Street Rod LH9 Guidelines*.

#### 2.2 Construction of a new vehicle

- A vehicle newly constructed as a passenger car, passenger car derivative or light goods vehicle (up to 4.5t GVM) may be approved as a street rod.
- The vehicle must comply with all the requirements specified in the *Australian Street Road Federation Queensland Street Rod LH9 Guidelines*.
- The vehicle is not required to comply with the *Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2010* or the Australian Design Rules unless

specified in the *Australian Street Road Federation Queensland Street Rod LH9 Guidelines*.

### **2.3 Inspection**

- The approved person must conduct at least three inspections of the vehicle as described in the *Australian Street Road Federation Queensland Street Rod LH9 Guidelines*.
- A previously modified vehicle must be inspected thoroughly to ensure it complies with all the requirements of the *Australian Street Road Federation Queensland Street Rod LH9 Guidelines*. It would normally be necessary to remove trim, carpets etc. to allow a through inspection.

### **2.4 Records**

The approved person must hold a completed copy of each of the following:

- Proposal to build or modify a street rod; and
- Technical Advisory Committee Inspection Certificate; and
- Inspection Report; and
- Checklist LH9

**Checklist LH9**  
**Street Rod Certification (Concessional)**  
**CODE LH9**

Form No: LH9  
(N/A= Not Applicable, Y=Yes, N=No)

<b>Modification Certificate Number :</b>				
<b>1</b>	<b>ASRF Classification</b>			
1.1	Does the vehicle comply with the definition of a street rod specified in the introduction of the Australian Street Road Federation Queensland Street Rod LH9 Guidelines?		Y	N
<b>2</b>	<b>Design</b>			
2.1	Has the vehicle been built to comply with all technical specifications of the Australian Street Road Federation Queensland Street Rod LH9 Guidelines?		Y	N
<b>3</b>	<b>Welding</b>			
3.1	Has all welding been performed by a qualified tradesperson?		Y	N
<b>4</b>	<b>Workmanship</b>			
4.1	Is all work performed in accordance with recognised engineering standards and to the satisfaction of the Approved Person?		Y	N
<b>5</b>	<b>Inspection</b>			
5.1	Has the vehicle undergone all inspections specified in the introduction of the Australian Street Road Federation Queensland Street Rod LH9 Guidelines?		Y	N
<b>6</b>	<b>Records</b>			
6.1	Are copies of the Proposal to build or modify a street rod, Technical Advisory Committee Inspection Certificate and Inspection Report attached?		Y	N

**Note:** If the answer to any question is **N (No)**, the modification cannot be approved under Code LH9.

CERTIFICATION DETAILS																
<b>Make</b>						<b>Model</b>						<b>Year of Manufacture</b>				
<b>VIN</b>																
<b>Chassis Number (If applicable)</b>																
<b>Brief Description of Modification/s</b>																
<b>Vehicle Modified By</b>																
<b>Certificate Number (If applicable)</b>																
<b>Vehicle Certified By (<i>Print</i>)</b>																
<b>Signatory's Employer (If applicable)</b>																
<b>Signatory's Signature</b>											<b>Date</b>					

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# Street Rod Certification (Full)

## CODE LH10

### 1. Scope

The following is a summary of the certifications that may be certified under Code LH10 – Street Rod Certification

#### 1.1 Certifications covered under code LH10

The following certifications may be performed under Code LH10:

- Conversion of a passenger car, passenger car derivative or light goods vehicle (up to 4.5t GVM), built before 1 January 1949, to a street rod configuration.
- Construction of a street rod.

#### 1.2 Certifications not covered under code LH10

The following is a summary of certifications that may not be performed under Code LH10:

- Conversion of a vehicle built from 1 January 1949.
- Construction of a vehicle not in accordance with the Australian Street Rod Federation Queensland Street Rod LH10 Guidelines, as approved by the Chief Executive.

### 2. Specific requirements

The following are specific requirements for certification of Street Rod vehicles which can be approved by approved persons under the code LH10.

#### 2.1 Conversion of a pre-1949 vehicle

- Any passenger car, passenger car derivative or light goods vehicle (up to 4.5t GVM) may be converted to a street rod configuration.
- The vehicle must comply with all the requirements specified in the Australian Street Road Federation Queensland Street Rod LH10 Guidelines.
- The vehicle is not required to comply with the *Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2010* or the Australian Design Rules unless specified in the Australian Street Road Federation Queensland Street Rod LH10 Guidelines.

#### 2.2 Construction of a new vehicle

- A vehicle newly constructed as a passenger car, passenger car derivative or light goods vehicle (up to 4.5t GVM) may be approved as a street rod.

- The vehicle must comply with all the requirements specified in the Australian Street Road Federation Queensland Street Rod LH10 Guidelines.
- The vehicle is not required to comply with the *Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2010* or the Australian Design Rules unless specified in the Australian Street Road Federation Queensland Street Rod LH10 Guidelines.

### 2.3 Inspection

- The approved person must conduct at least three inspections of the vehicle as described in the Australian Street Road Federation Queensland Street Rod LH10 Guidelines.
- A previously modified vehicle must be inspected thoroughly to ensure it complies with all the requirements of the Australian Street Road Federation Queensland Street Rod LH10 Guidelines. It would normally be necessary to remove trim, carpets etc. to allow a through inspection.

### 2.4 Records

The approved person must hold a completed copy of each of the following:

- Proposal to build or modify a street rod; and
- Technical Advisory Committee Inspection Certificate; and
- Inspection Report; and
- Checklist LH10

**Checklist LH10**  
**Street Rod Certification (Full)**  
**CODE LH10**

Form No: LH10  
(N/A= Not Applicable, Y=Yes, N=No)

<b>Modification Certificate Number :</b>				
<b>1</b>	<b>ASRF Classification</b>			
1.1	Does the vehicle comply with the definition of a street rod specified in the introduction of the Australian Street Road Federation Queensland Street Rod LH10 Guidelines?		Y	N
<b>2</b>	<b>Design</b>			
2.1	Has the vehicle been built to comply with all technical specifications of the Australian Street Road Federation Queensland Street Rod LH10 Guidelines?		Y	N
<b>3</b>	<b>Welding</b>			
3.1	Has all welding been performed by a qualified tradesperson?		Y	N
<b>4</b>	<b>Workmanship</b>			
4.1	Is all work performed in accordance with recognised engineering standards and to the satisfaction of the Approved Person?		Y	N
<b>5</b>	<b>Inspection</b>			
5.1	Has the vehicle undergone all inspections specified in the introduction of the Australian Street Road Federation Queensland Street Rod LH10 Guidelines?		Y	N
<b>6</b>	<b>Records</b>			
6.1	Are copies of the Proposal to build or modify a street rod, Technical Advisory Committee Inspection Certificate and Inspection Report attached?		Y	N

**Note:** If the answer to any question is **N (No)**, the modification cannot be approved under Code LH10.

CERTIFICATION DETAILS														
<b>Make</b>					<b>Model</b>					<b>Year of Manufacture</b>				
<b>VIN</b>														
<b>Chassis Number (If applicable)</b>														
<b>Brief Description of Modification/s</b>														
<b>Vehicle Modified By</b>														
<b>Certificate Number (If applicable)</b>														
<b>Vehicle Certified By (<i>Print</i>)</b>														
<b>Signatory's Employer (If applicable)</b>														
<b>Signatory's Signature</b>										<b>Date</b>				

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# High Lift - Up to 150mm (Design Certification) CODE LS9

Code LS9 applies to ADR category MC, NA and NB1 vehicles.

## 1. Introduction

LS9 code provides modification standards for lifting vehicle ride height by changes to suspension, tyres or body blocks on light vehicles of categories MC (Off Road Passenger Vehicle), NA (Light Goods Vehicle with GVM up to 3,500 kg) and NB1 (Medium Goods Vehicle with GVM up to 4,500 kg).

Increase in ride height due to fitting of alternate tyre and rim that is permitted by the original vehicle manufacturer or otherwise permitted in the relevant Code of Practice without certification is deemed as a **minor modification** and does not require certification.

Increase in ride height (a) up to 50mm due to modified suspension or (b) up to 25mm due to larger tyre or (c) up to 75mm due to combination of (a) and (b) is deemed as a **basic modification** and does not require certification, provided the modification is carried out according to the guidelines in this code and meets the intent of this code. This applies to both vehicles with and without an Electronic Stability Control (ESC) system.

Note that fitting of tyres with larger diameter increases ride height by half that amount. For example, tyres with 50 mm larger diameter increase ride height by 25 mm.

Increase in ride height more than what is stated above and up to 150mm is deemed as a **significant modification** and requires certification according to this code.

Increase in ride height (a) above 75mm due to modified suspension or (b) above 25mm due to larger tyre or (c) above 50mm due to body blocks or (d) above 150mm due to any combination is deemed as an **extensive modification** and requires specific approval from the Department of Transport and Main Roads.

## 2. Scope

This code covers increase in ride height up to 150mm on vehicles of MC, NA and NB1 categories.

Modifications to vehicles with or without an ESC system resulting in a vehicle lift up to 75mm above the original manufacturer's specifications do not require certification, provided the lift is achieved by modified suspension (up to 50mm) and/or larger tyres (up to 25mm). Any lift from body blocks is not included. A person performing this type of modification is encouraged to use the relevant technical requirements of LS9 and LS10 codes as guidance, however no formal certification or lane change test is required.

Codes LS9 and LS10 require that the increase in lift from suspension, tyres and body blocks must not exceed 75mm, 25mm and 50mm respectively. The codes also require that the combined increase in lift must not exceed 150mm. Table LS9-1 further clarifies the above scope.

**Table LS9-1**

Vehicles with and without ESC

Certification	Suspension	Tyres	Body blocks	Total lift
Not required	up to 50mm	up to 25mm	0mm	up to 75mm
Required	up to 75mm	up to 25mm	up to 50mm	up to 150mm

Code LS9 provides for certification of designs that can be used by modifiers and other certifiers as guide to modify a vehicle and to certify a modified vehicle. Code LS10 provides for certification of physical modifications to a vehicle when carried out as specified in the relevant LS9 certification.

Lift modifications that are outside the scope of codes LS9 and LS10 as explained above, require specific approval from the department.

## 2.1 Designs covered by the Code LS9

The following is a summary of the designs allowed to be certified under Code LS9:

- Increase in ride height of vehicles of categories MC, NA and NB1.
- Design that results in the total vehicle height being raised by no more than 150mm.
- Design that results in the total vehicle height being raised by no more than 75mm by modified suspension.
- Design that results in the total vehicle height being raised by no more than 25mm by larger tyres.
- Design that results in the total vehicle height being raised by no more than 50mm by body blocks.
- Design of front suspension modifications using different struts or uprights;
- Design of independent rear suspension modifications using different struts, trailing arms or uprights;
- Design of a conversion using a complete suspension assembly from a different vehicle model;
- Design of a complete rear suspension assembly using components from different vehicle model(s); and
- Alternative wheel and tyre specifications for vehicles with modified axles or suspension.

## 2.2 Designs not covered by Code LS9

Note that vehicle lift designs that do not exceed 75mm above the original manufacturer's specifications, and are achieved only from a lift up to 50mm from modified suspension and/or lift up to 25mm from larger tyres and rims do not require certification.

The following is a summary of the designs NOT allowed to be certified under Code LS9:

- For all lift designs that require certification, if a vehicle is equipped with electronic stability control (ESC) system and the lift has not been approved by the vehicle manufacturer or proven through testing;
- Certification of the actual physical modification on a particular vehicle (this is covered by code LS10);
- Design of modifications that increase the ride height by (a) more than 75mm from suspension or (b) more than 25mm from tyres or (c) more than 50mm from body blocks or (d) more than 150mm combined from the original manufactured height;
- Design for modifications that raise the vehicle ride height more than 50mm from the original as-manufactured height on vehicles that have had the wheel track reduced from the as-manufactured width.

### 3. Compliance with applicable vehicle standards

Modified vehicles must continue to comply with the Australian Design Rules (ADRs) to which they were originally constructed, except as allowed for in the *Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2010* (the regulation). These modified vehicles must also comply with the applicable in-service requirements of the regulation. This is not an exhaustive list and other modifications may also affect ADR compliance.

Modified pre-ADR vehicles must continue to comply with the regulation.

Outlined below in Table LS9-2 are areas of the vehicle that may be affected by the modifications and that may require re-certification, testing and/or data to show compliance for the modified vehicle.

**Table LS9-2 Summary of items that, if modified, may detrimentally affect compliance with applicable ADRs**

DETAIL	REQUIREMENTS
Installation of Lighting	ADR 13/..
Braking System	ADR 7, 7/.., 31, 31/.., 35x, 35/..
Speedometer	ADR 18x, 18/..
Tyre Speed Rating	ADR 24x, 24/..
Ground Clearance	ADR 43/..

To determine the ADRs that apply to the vehicle in question, refer to the applicability tables in Section LO of the National Code of Practice: Light Vehicle Construction and Modification (NCOP). Vehicles manufactured on or after 1 January 1969 and prior to 1 July 1988 need to comply with the Second Edition ADRs whilst vehicles manufactured after 1 July 1988 need to comply with the Third Edition ADRs. Section LO has separate applicability tables for each edition.

Alternatively, ADR applicability tables for individual vehicle categories may be referenced on the Department of Infrastructure and Transport *RVCS* website at the following address and under the section titled *ADR Applicability Tables*:

<http://rvcs.dotars.gov.au/>

The ADRs apply according to the vehicle's category and date of manufacture. It is the responsibility of the signatory to refer to the appropriate ADR applicable to the vehicle.

### 4. Specific Requirements

#### 4.1 Vehicle lifts up to 150mm

The following requirements must be met for all vehicle lift modifications that do not exceed 150mm and require certification. Where a modification involves a change to the suspension system *design*, the basic functional requirements for suspension modifications/conversions are provided as a guide to suitably qualified and experienced signatories when designing or certifying such modifications or conversions.

The design should also comply with the general guidelines contained in sub-section 2 *General Requirements, Specific Requirements* in Code LS3 *Front Suspension and Steering Conversion – Design* and *Specific Requirements* in Code LS5 *Rear Suspension Modification – Design*, in the NCOP.

Each design should be fully documented, with drawings, calculations, procedural details, test results, wheel alignment specifications and any other data necessary to fully describe the vehicle modifications and should have a unique design number. The design document should contain:

- Details of all drawings needed to fully describe the full extent of the modification;
- Details of any special modification techniques, procedures or adjustments; and
- Details of any testing of components and performance (e.g. bump steer plots) with related acceptance criteria.

## 4.2 Suspension Modifications

The available suspension travel in either direction must remain at least equivalent to two thirds of that originally available prior to modifying the system.

The available suspension rebound following the addition of increased length coil springs and longer travel shock absorbers must be at least equivalent to two thirds of the original rebound travel.

The rebound must be limited by either the shock absorber maximum travel (providing the component is designed for this type of loading), the technique used by the original manufacturer's design or by the addition of adequately sized straps.

At full rebound the coil springs must still be securely attached to the vehicle by not having reached their free length.

All linkages and brake lines etc. must be adequately designed for the increased movement.

The increase in vehicle ride height due to suspension modifications must not exceed 75mm.

## 4.3 Body Blocks

Body blocks between the vehicle body and the chassis must comply with the following:

- The material must be of similar strength and durability as the original components;
- All assemblies and piping that spans between the body and the chassis must be suitable for the increased distance; and
- The increase in vehicle ride height due to body blocks must not exceed 50mm.

## 4.4 Wheels and Tyres

The overall tyre diameter can be increased up to 50mm for vehicles of category MC, NA and NB1. This will increase the ride height up to 25 mm.

Tyres fitted to such vehicles (category MC, NA, NB1) must not be more than 50% wider than the vehicle manufacturer's widest optional tyre.

The rim width must match the recommendations for the tyre fitted.

The tables of original tyres with the maximum allowable tyre and rim sizes in Clause 4.2 *Non-Standard Tyres and Rims* in the NCOP are applicable.

The wheel track of MC, NA, NB1 category vehicles must not be increased by more than 50mm beyond the maximum specified by the vehicle manufacturer for the particular model.

The wheels must be contained within the bodywork or mudguards (including flares) when the wheels are in the straight-ahead position. Adequate clearance must be available between the tyres and the vehicle bodywork.

Speedometer accuracy must be maintained for the selected tyre and rim combination to within the degree of accuracy specified in the applicable ADR 18/...

#### 4.5 Brakes

Modifications to any of the brake circuitry should meet the requirements of Section LG *Brakes* in the NCOP.

The braking performance of the vehicle should also meet the requirements of Section LG *Brakes* in the NCOP.

#### 4.6 Vehicle Dynamics

These modifications, where the height of the centre of mass (centre of gravity) of an existing vehicle is increased, can have a significant influence on the handling/rollover characteristics of the modified vehicle. The height to which a particular vehicle can be safely raised is limited by the ability of that vehicle to safely negotiate conditions encountered in normal highway driving and under emergency situations. Vehicles certified under LS9 and LS10 must fully comply with the *Lane Change Test* as outlined in Section LT *Test Procedures* (Code LT2) in the NCOP.

While Code LS9 allows for an overall vehicle height increase of 150mm maximum, it is conditional upon the vehicle's ability to safely negotiate the lane change test as mentioned above.

#### 4.7 ESC Testing

In case of vehicles fitted with an ESC system, the ESC system must continue to perform as intended and must continue to comply with the ESC related standards, as applicable before the modification. Appropriate evidence of such continued compliance must be obtained and retained by the certifier. Apart from the ADR testing for ESC compliance by a test facility that is approved by the National Association of Testing Authorities (NATA) or similar, the following other forms of alternative evidence may be accepted:

- (a) Vehicle manufacturer's approval letter or,
- (b) Recalibration of the ESC system by the original vehicle/system manufacturer (or authorised representative) or,
- (c) Combination of computer simulation and diagnostic testing by a recognised test authority or,
- (d) Traceable physical testing by an approved test facility to one of the following standards:  
ADR 31/... or ADR 35/... as appropriate  
ADR 88/00  
UN ECE R 13H  
Global Technical Standard GTR-08 or  
US FMVSS-126
- (e) Any other form of evidence approved by the department.

#### 4.8 Vehicle Lighting

The headlights must comply with the ADR requirements with respect to position and illumination pattern. For vehicles complying with ADR 13/00 the top of the headlamp lens must not be greater than 1200mm from the ground when measured on a level surface.

#### 4.9 Wheel guards (Mudguards)

After all modifications are completed the wheel guards (mudguards) must continue to comply with the requirements of applicable ADR 42/...

## 5.0 Components

Both general and specific requirements specified in any codes of the LS section of the NCOP that are applicable to individual steering and suspension components continue to apply. Important items such as spline engagement, operating angles of drive shaft joints and in the case of CV joints, the range of axial movement, must remain within design limits for the full range of suspension travel. Also other components such as gear levers, brake hoses etc. may need to be extended depending on the nature of the lift.

Steering linkages must continue to operate efficiently and sufficient spline contact surface must be retained for the full range of suspension travel to ensure the safe operation of the vehicle.

Otherwise an appropriate steering shaft extension must be used.

Following the completion of modifications the vehicle attitude must remain as per original specifications – i.e. the original relationship between the front and rear suspension heights must not be changed and therefore the front and rear suspensions must be both raised by a proportionate amount.

**Checklist LS9**  
**High Lift – Up to 150mm (Design Certification)**  
**CODE LS9**

Form No: LS9  
(N/A=Not Applicable, Y=Yes, N=No)

<b>Modification Certificate Number :</b>				
<b>1</b>	<b>Suspension Modifications</b>			
1.1	<b>Front Suspension and Steering</b>			
	Do the front suspension system modifications comply with all of the relevant requirements of Code LS3 in the NCOP?	N/A	Y	N
1.2	<b>Rear Suspension</b>			
	Do the rear suspension system modifications comply with all of the relevant requirements of Code LS5 in the NCOP?	N/A	Y	N
1.3	<b>Suspension travel</b>			
	Is the designed suspension travel at least two thirds of the original in all directions?	N/A	Y	N
	Has adequate rebound limiting been provided?	N/A	Y	N
	At full rebound do the coil springs remain securely attached to the vehicle by not having reached their free length?	N/A	Y	N
	Have all linkages and brake lines been designed to accommodate the increased suspension travel?	N/A	Y	N
<b>2</b>	<b>Body Blocks</b>			
2.1	<b>Mounting</b>			
	Are the replacement body blocks suitably designed to carry the load as per the vehicle's GVM?	N/A	Y	N
	When fitted, will the blocks lift the body no more than 50mm?	N/A	Y	N
2.2	<b>Design</b>			
	Are all assemblies spanning the body and chassis suitably designed to allow for the increased distance?	N/A	Y	N
	Are the body lift blocks suitably braced to the chassis or bodywork so as to prevent excess bending loads being placed on components?	N/A	Y	N

<b>3</b>	<b>Wheels and Tyres</b>			
	<b>Tyres and Rims</b>			
3.1	Are all selected tyres and rims in accordance with Section LS of the NCOP?	N/A	Y	N
	Is the increase in overall tyre diameter less than 50mm for MC, NA and NB1 category vehicles?	N/A	Y	N
	<b>Speedometer</b>			
3.2	Has the speedometer calibration been taken into account and adjusted as necessary?	N/A	Y	N
<b>4</b>	<b>Vehicle Dynamics</b>			
	<b>Lane Change Test</b>			
4.1	Has a vehicle undergone and passed a Lane Change Test as required by Code LT2 in the NCOP?	N/A	Y	N
	Was the driver satisfied that the vehicle was safe to drive?	N/A	Y	N
<b>5</b>	<b>ESC Testing</b>			
5.1	If the vehicle is fitted with an ESC system, is the modified vehicle assessed for continued compliance with ESC performance?	N/A	Y	N
5.2	Is the appropriate evidence of the continued compliance of the ESC system obtained and retained?	N/A	Y	N
<b>6</b>	<b>High Lift</b>			
	<b>Maximum Increase in Vehicle Height</b>			
6.1	Is the design total increase in vehicle height less than 150mm?		Y	N
	Is the top of the dipped beam headlight height less than 1200mm?		Y	N
	Does the dipped beam headlight pattern and position comply?		Y	N
6.2	Do the wheel guards (mudguards) continue to comply with the applicable ADR 42/...?		Y	N
<b>7</b>	<b>Brakes</b>			
7.1	Do the brake modifications comply with Section LG in the NCOP?	N/A	Y	N
7.2	Do the brakes meet the Section LG performance requirements in the NCOP?	N/A	Y	N
<b>8</b>	<b>Fasteners</b>			

8.1	Are high tensile bolts specified for all new critical mountings?		Y	N
8.2	Are self-locking nuts specified for all new critical mountings?		Y	N
8.3	Do all fasteners specified comply with the applicable requirements of Section LZ Appendices - Appendix A Fasteners in the NCOP?		Y	N
<b>9</b>	<b>Design</b>			
9.1	Does the design of the modification comply with all of the requirements outlined in Code LS9?		Y	N
9.2	Has all work, including welding, that has been specified in the certification of the LS9 design, been determined in accordance with recognised engineering standards and the relevant Appendices of Section LZ Appendices?		Y	N
9.3	Have all components affected by the lift such as gear levers, brake hoses etc. been modified to comply with Code LS9?	N/A	Y	N
9.4	Have all items affected by the lift such as drive shaft joint operating angles, spline engagement and axial movement of CV joints been checked or designed to be within design limits over the entire suspension travel?	N/A	Y	N
9.5	Has a detailed Design Approval Package (with unique identifier) been provided for use by the modifier and the LS10 certifier to carry out the physical modifications, tests and checks?		Y	N

**Note:** If the answer to any question is **N (No)**, the design cannot be certified under Code LS9.

CERTIFICATION DETAILS																
<b>Make</b>						<b>Model</b>						<b>Year of Manufacture</b>				
<b>VIN</b>																
<b>Chassis Number (If applicable)</b>																
<b>Brief Description of Modification/s</b>																
<b>Vehicle Modified By</b>																
<b>Certificate Number (If applicable)</b>																
<b>Vehicle Certified By (<i>Print</i>)</b>																
<b>Signatory's Employer (If applicable)</b>																
<b>Signatory's Signature</b>											<b>Date</b>					

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# High Lift - Up to 150mm (Modification Certification)

## CODE LS10

Code LS10 applies to ADR category MC, NA and NB1 vehicles.

### 1. Introduction

LS10 code provides modification standards for lifting vehicle ride height by changes to suspension, tyres or body blocks on light vehicles of categories MC (Off Road Passenger Vehicle), NA (Light Goods Vehicle with GVM up to 3,500 kg) and NB1 (Medium Goods Vehicle with GVM up to 4,500 kg).

Increase ride height due to fitting of alternate tyre and rim that is permitted by the original vehicle manufacturer or otherwise permitted in the Code of Practice without certification is deemed as a **minor modification** and does not require certification.

Increase in ride height (a) up to 50mm due to modified suspension or (b) up to 25mm due to larger tyre or (c) up to 75mm due to combination of (a) and (b) is deemed as a **basic modification** and does not require certification, provided the modification is carried out according to the guidelines in this code and meets the intent of this code. This applies to both vehicles with and without an Electronic Stability Control (ESC) system.

Note that fitting of tyres with larger diameter increases ride height by half that amount. For example, tyres with 50 mm larger diameter increase ride height by 25 mm.

Increase in ride height more than what is stated above and up to 150mm is deemed as a **significant modification** and requires certification according to this code.

Increase in ride height (a) above 75mm due to modified suspension or (b) above 25mm due to larger tyre or (c) above 50mm due to body blocks or (d) above 150mm due to any combination is deemed as an **extensive modification** and requires specific approval from the Department of Transport and Main Roads.

### 2. Scope

Code LS10 covers modifications that result in a vehicle lift not exceeding 150mm.

The conversions must be carried out in conformity with designs certified under Code LS9 by an Approved Person accredited by the Department of Transport and Main Roads.

The Table LS10-1 below further clarifies when certification is not required and when it is required.

**Table LS10-1**

Vehicles with and without ESC

Certification	Suspension	Tyres	Body blocks	Total lift
Not required	up to 50mm	up to 25mm	0 mm	up to 75mm
Required	up to 75mm	up to 25mm	up to 50mm	up to 150mm

## 2.1 Modification covered under code LS10

The following is a summary of the modifications that are allowed to be certified under Code LS10, based on a relevant LS9 design certification:

- Increase in ride height of vehicles of categories MC, NA and NB1.
- Modifications resulting in total vehicle height being raised by no more than 150mm.
- Modifications that result in the total vehicle height being raised by no more than 75mm by modified suspension.
- Modifications that result in the total vehicle height being raised by no more than 25mm by larger tyres.
- Modifications that result in the total vehicle height being raised by no more than 50mm by body blocks.
- Modifications of front suspension using different struts or uprights;
- Independent rear suspension modifications using different struts, trailing arms or uprights;
- Conversion using a complete suspension assembly from a different vehicle model;
- Fitting of complete rear suspension assembly using components from different vehicle model(s); and
- Alternative wheel and tyre specifications for vehicles with modified axles or suspension.

## 2.2 Modifications not covered under code LS10

Note that vehicle lift designs that do not exceed 75mm above the original manufacturer's specifications and are achieved only from a lift up to 50mm from modified suspension and/or lift up to 25mm from larger tyres and rims do not require certification.

The following is a summary of the modifications that are NOT allowed to be certified under Code LS10:

- Design of the modification of particular vehicles (this is covered by Code LS9);
- Modifications that do not have a design in accordance with the requirements of Code LS9 and a relevant and appropriate LS9 certification;
- Modifications that increase the ride height by (a) more than 75mm from suspension or (b) more than 25mm from tyres or (c) more than 50mm from body blocks or (d) more than 150mm combined from the original manufactured height.

**Checklist LS10**  
**High Lift – Up to 150mm (Modification Certification)**  
**CODE LS10**

Form No: LS10  
(N/A=Not Applicable, Y=Yes, N=No)

<b>Modification Certificate Number :</b>				
<b>1</b>	<b>Design</b>			
1.1	Insert LS9 Design Approval Package Number.....( the Design)			
1.2	Has the vehicle been modified exactly in accordance with the plans and specifications issued under the LS9 Design Approval Package given above?		Y	N
1.3	If the vehicle was originally equipped with ESC, and if the modification affects the ESC, has the ESC system been assessed/tested and found to operate satisfactorily?	N/A	Y	N
<b>2</b>	<b>Vehicle condition prior to modification</b>			
2.1	Is the front suspension serviceable?		Y	N
2.2	Is the steering box serviceable?		Y	N
2.3	Is the steering linkage serviceable?		Y	N
2.4	Is the chassis serviceable?		Y	N
<b>3</b>	<b>Workmanship</b>			
3.1	Is all work, including welding, of satisfactory quality and has all work been performed in accordance with recognised engineering standards?	N/A	Y	N
3.2	Do all new or replaced fasteners comply with the applicable requirements of Section LZ Appendices, Appendix A Fasteners in the NCOP?		Y	N
3.3	Are high tensile bolts and self-locking nuts used on all critical joints and mountings?		Y	N
<b>4</b>	<b>Modification Details</b>			
4.1	What was the original height of the vehicle body prior to any modification?			
4.2	What is the height of the vehicle body following completion of all lift modifications			
4.3	Is the difference in heights less than 150mm?		Y	N
4.4	What is the largest size tyre on the tyre placard or in the owner's handbook for this vehicle?			

4.5	What size tyre has been fitted?			
4.6	Is the increase in overall tyre diameter less than 50mm for MC, NA and NB1 category vehicles or less than 15mm for other passenger vehicles?	N/A	Y	N
4.7	If the vehicle body has been lifted relative to the chassis, is the overall body lift 50mm or less?	N/A	Y	N
4.8	If the suspension has been modified to provide an increase in vehicle body height, is this increase 75mm or less?	N/A	Y	N
<b>5</b>	<b>Handling Dynamics Test (as specified by LS9 certification)</b>			
5.1	Has the vehicle undergone a Handling Dynamics Test as per LS9 certification?		Y	N
5.2	Did the vehicle pass the test satisfactorily?		Y	N
5.3	Is the driver satisfied that the vehicle is safe to drive?		Y	N
5.4	Is a copy of the handling dynamics test results form attached as required by LS9 certification?		Y	N
<b>6</b>	<b>Vehicle condition after modification</b>			
6.1	Is the front suspension serviceable?		Y	N
6.2	Is the steering box serviceable?		Y	N
6.3	Is the steering linkage serviceable?		Y	N
6.4	Is the chassis serviceable?		Y	N
6.5	Is the dipped beam headlight height less than 1200mm?		Y	N
6.6	Have the headlights been adjusted?		Y	N
6.7	Have all brake tests been satisfactorily completed?	N/A	Y	N
6.8	Is the combined height increase 150mm or less?		Y	N
6.9	Do the mudguards continue to comply as with applicable ADR 42/...?		Y	N
6.10	Have all components affected by the lift such as gear levers, brake hoses etc. been modified and fitted to comply with Code LS9?	N/A	Y	N
6.11	Have all items affected by the lift such as drive shaft joint operating angles, spline engagement and axial movement of CV joints been checked and found to be within design limits over the entire suspension travel?	N/A	Y	N

**Note:** If the answer to any question is **N (No)**, the modification cannot be certified under Code LS10.

CERTIFICATION DETAILS																		
<b>Make</b>						<b>Model</b>						<b>Year of Manufacture</b>						
<b>VIN</b>																		
<b>Chassis Number (If applicable)</b>																		
<b>Brief Description of Modification/s</b>																		
<b>Vehicle Modified By</b>																		
<b>Certificate Number (If applicable)</b>																		
<b>Vehicle Certified By (<i>Print</i>)</b>																		
<b>Signatory's Employer (If applicable)</b>																		
<b>Signatory's Signature</b>												<b>Date</b>						

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# Gross Vehicle Mass Rating of Light Vehicles - Modifications

## CODE LS11

### 1.0 Scope

The LS11 modification code specifies arrangements for re-rating of the Gross Vehicle Mass (GVM) rating of a light vehicle that is, a vehicle having current GVM rating that does not exceed 4,500 kg.

Re-rating of GVM under LS11 code is permitted only on the following type of light vehicles:  
A light vehicle that is constructed on a ladder type chassis frame with a cabin and/or body mounted on it. Vehicles with integrated frame and body, commonly known as unitary or monocoque construction, are not eligible.

The original vehicle manufacturer (OVM) refers to the entity holding the First Stage Identification Plate Approval (IPA). An entity holding the Second Stage Manufacture (SSM) Approval or RAWs Approval is not deemed as the OVM.

In cases where the OVM has not specified a GVM rating, the maximum laden mass at which the OVM has shown compliance with the Australian Design Rules (ADRs) is to be taken as the original GVM rating. This information must be obtained from a reliable and traceable source.

For GVM re-rating purpose, if an SSM approval is used as the basis, the Road Vehicle Descriptor (RVD) showing the SSM vehicle's specifications must be publicly accessible/visible at the time of certification under this code.

#### 1.1 What is permitted

Modifications that may be certified under LS11 code are:

- GVM increase of up to 10% above the rating given by the OVM.
- Restoring the GVM rating to the OVM rating but only after ensuring that all vehicle components are also restored to the OVM specification.
- GVM increase over the rating given by the OVM in following cases:
  - GVM re-rating of an in-service vehicle that is of the same make/model/variant/chassis series as a vehicle having an SSM approval for GVM re-rating
  - Increase in GVM rating where an additional axle has been installed.
  - GVM re-rating to match the OVM's rating for another variant of the same make/model/chassis series.

#### 1.2 What is not permitted

Modifications that must not be certified under LS11 code are:

- Modifications other than those described in Section 1.1.
- Reduction in GVM rating other than (a) the re-rating to OVM's optional GVM rating for that make/model or (b) GVM reduction required because of conversion to motorhome.

#### 1.3 Towing Capacity and LS11 Code

- LS11 code must not be used for re-rating of the Gross Combination Mass (GCM) of a vehicle.
- LS11 Code must not be used for re-rating of Towing Capacity of the vehicle.

## 2.0 General Requirements

The vehicle must be able to safely operate at the re-rated GVM. All affected components including the chassis frame, drive-train, axles, suspension, brakes, steering, rims and tyres must be assessed individually to ensure that they can safely support the loads resulting from the re-rated GVM.

All work must also comply with the requirements contained in sub-section 2 General Requirements of the National Code of Practice (NCOP) – Light vehicle modifications (VSB14).

Increased GVM may affect the warranty provided by the OVM. It is the responsibility of the vehicle operator and the certifying AP to consider any such effect on the warranty. Any effect this modification may have on the product warranty is outside the scope of this code. The certifying AP must clarify this point to the modifier and the vehicle operator.

### 2.1 Compliance with applicable vehicle standards

- 2.1.1** The modified vehicle must continue to comply with the ADRs that apply to it.
- 2.1.2** If different or additional ADRs apply to the modified vehicle, it must comply with those ADRs that apply to it.
- 2.1.3** A modified vehicle must also comply with the applicable in-service requirements of the Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2010 (the Regulation).
- 2.1.4** A modified pre-ADR vehicle must continue to comply with the Regulation.
- 2.1.5** Outlined in Table LS11, are areas of the vehicle that may be affected by the modifications and may require re-certification, testing and/or data to show compliance of the modified vehicle.

This is not an exhaustive list and compliance to other ADRs may also be affected.

**Table LS11 List of items and likely affected ADRs**

DETAIL	REQUIREMENTS
Tyre and Rim Selection	ADR 42/..
Braking Systems	ADR 31/...or ADR 35/...
Brake Performance (for non-ADR vehicles)	<i>Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2010</i>

The ADR applicability is according to the vehicle’s category and date of manufacture. It is the responsibility of the certifying Approved Person to refer to the appropriate ADRs applicable to the vehicle.

Sections 2.2 to 2.5 relate to the general requirements applying to different pathways to re-rate vehicle’s GVM using LS11 code.

## 2.2 Pathway-1 GVM re-rating within 110% of OVM Rating

- 2.2.1 A re-rating of GVM is permitted under this code even if it is not an option by the OVM.
- 2.2.2 At the rerated GVM vehicle must comply with all the applicable standards and must be safe for use on road. Suitability of the chassis, drive-train, axles, suspension, brakes, steering, rims and tyres must be assessed.
- 2.2.3 Re-rated GVM under this pathway must not exceed 110% of the OVM rating.

## 2.3 Pathway-2 GVM re-rating based on SSM approved vehicle

- 2.3.1 The re-rated GVM must be no more than the SSM approved vehicle.
  - 2.3.1.1 All upgraded components relevant to GVM re-rating (for example, brakes, tyres and rims, chassis frame reinforcements etc) must be fitted and identical to those specified on the SSM approved vehicle.
  - 2.3.1.2 Aspects of the modification other than those directly related to GVM re-rating must be certified using the appropriate modification codes or specific approval issued by TMR. For example, suspension lifts, even when they are part of the SSM Approval, must be certified using LS9 and LS10 codes.
  - 2.3.1.3 Use of the SSM approval for this pathway must be permitted, guided and controlled by the entity holding the SSM approval. In addition to the physical modification replicating the SSM approval, all the administrative requirements specified under the SSM approval must also be met. These requirements may include, but are not limited to the following:
    - The vehicle's first Identification Plate Approval number must be identical to that mentioned in the SSM Approval.
    - The SSM approval must cover the variant of in-service vehicle that is being modified and certified.
- 2.3.2 The Road Vehicle Descriptor (RVD) showing the SSM vehicle's specifications must be publicly accessible/visible at the time of certification under this code. A copy of the RVD must be attached to the checklist of this certification.
- 2.3.3 The SSM approval number must be recorded on the modification certificate.
- 2.3.4 The written permission from the SSM approval holder must be retained by the certifying AP as evidence.

## 2.4 Pathway-3 GVM re-rating by installation of an additional axle

- 2.4.1 If an additional axle is fitted to a vehicle (i.e. lazy axle or additional drive axle) the vehicle's GVM rating may be increased.
- 2.4.2 The fitment of an additional rear axle must be certified using the LB2 modification code. Additional supporting evidence including brake testing and chassis strength analysis at the re-rated GVM must be provided.
- 2.4.3 If the additional axle does not have load-sharing suspension with adjacent axle or axle group, the re-rated GVM must not exceed 110% of the GVM rating by the OVM.

## 2.5 Pathway-2 GVM re-rating based on SSM approved vehicle

- 2.5.1 The GVM of a light vehicle may be re-rated to match the OVM's rating for another variant of the same make/model/chassis series.
- 2.5.2 All components, including suspension, transmission, engine, brakes, tyre and rims must be fitted same as those specified for the reference variant.

## 3.0 Specific Requirements

The following specific requirements apply to all pathways.

### 3.1 Chassis

- 3.1.1 A simplified way to look at the frame requirements for GVM re-rating, is to associate the bending strength of the chassis with the load carrying capacity (i.e. GVM).
- 3.1.2 Chassis modifications must be performed in accordance with section LH5 of VSB14. If the necessary information is not available in LH5 code, then the relevant sections of H code of the Heavy Vehicle Modification Code of Practice (VSB6) may be consulted, as appropriate.
- 3.1.3 When modifications such as fitting of additional or replacement axle(s) with higher load rating are carried out, the vehicle frame must be analysed to ensure that it has sufficient strength to support the re-rated GVM. For calculating chassis strength, VSB6 may be consulted.

### 3.2 Engine/Transmission

Where re-rating is by Pathway-4 (comparison with a manufacturer's reference variant), the engine and transmission fitted to the modified vehicle must replicate the reference variant.

### 3.3 Axle Ratings

- 3.3.1 Axle loading at the re-rated GVM must be assessed to ensure that the axles are suitable for the increased loading and that the vehicle is safe to operate on road. While TMR does not specify any specific method for assessment, it is expected that the certifying AP takes full responsibility for the assessment. The resulting axle load assessment, if different than the OVM rating, should be recorded on the Modification Certificate, the Load Capacity Label and updated in the Owner's Handbook.
- 3.3.2 Where re-rating is by Pathway-4 (comparison with a manufacturer's reference variant), the axles fitted to the modified vehicle must replicate those fitted by the manufacturer to the reference variant.
- 3.3.3 If a component manufacturer has published instructions to reduce the rating of a component for safety reasons, the reduced rating must apply.

### 3.4 Tail Shaft

Changes associated with re-rated GVM may place additional load on a vehicle's tail shaft. For example:

- changes to vehicle's ride height which may alter the tail shaft and pinion angles;
- alterations to a vehicle's wheelbase may result in change in tail shaft length;

- changes to engine and/or transmissions may impose increased torsional loading on the tail shaft. The vehicle's tail shaft strength and its installation must be suitable at the vehicles re-rated GVM.

### 3.5 Suspension

- 3.5.1** When loaded to re-rated GVM, additional loads are placed on the suspension. Vehicle suspension ratings must be adequate for the re-rated GVM. Suspension must be able to accommodate the axle loads resulting from the common and practical load distribution.
- 3.5.2** Effects of changes in ride height must be carefully considered. For example, jounce and rebound travel, hydraulic brake hose length, vehicle handling and roll stability.
- 3.5.3** If the change in ride height is such that it requires certification under another code (for example, LS9 and LS10), LS11 code does not exempt the need for such certification. Also see general requirements under Pathway-2 for the need to certify modifications related to ride height.

### 3.6 Brakes

- 3.6.1** A vehicle's braking performance is directly affected by changes to its GVM. Therefore, the vehicle's braking system must be assessed to determine if the performance of the original system is adequate for the re-rated GVM or the braking system requires to be modified.
- 3.6.2** If a modified braking system is required, it must be designed, installed and certified appropriately.

### 3.7 Steering

- 3.7.1** The entire steering system under Pathway-4 must be identical to that fitted by the vehicle manufacturer to the reference variant.
- 3.7.2** If the steering system is modified or a new steering system is fitted, it must be certified under the LS section of VSB14.

### 3.8 Tyres and Rims

- 3.8.1** The tyres and rims must be selected to comply with the requirements of the relevant ADR (ADR 24/... or ADR 42/04) at the re-rated GVM.
- 3.8.2** The load carrying capacity of all tyres and rims must not be exceeded when the vehicle is loaded to the re-rated GVM and the load is distributed in a practical way.
- 3.8.3** The sum of the load carrying capacities of the tyres fitted must be at least equal to the re-rated GVM. The same applies to the load carrying capacities of the rims.
- 3.8.4** The load capacity of the tyres (and rims) on each axle must be adequate to support the potential maximum mass on that axle.
- 3.8.5** If re-rated GVM and axle masses require a different tyre and rim combination, a new tyre placard must be fitted to indicate the revised tyre and rim specifications for the vehicle at the re-rated GVM.

- 3.8.6** The revised tyre size and load rating must also appear on the modification plate and in the owner's handbook. A tyre and rim assessment report must be retained.
- 3.8.7** If different tyres and rims are specified, their size must be no more than necessary to support the re-rated GVM.
- 3.8.8** The effect of alternate tyres on speedometer/odometer accuracy must be considered.
- 3.8.9** It must be ensured that, with the alternate tyres, the vehicle's ESC performance, if ESC is fitted, is not affected.

## **4.0 Owner's Handbook and Load Capacity Label**

The vehicle operator must be adequately informed of the changes.

### **4.1 Owner's Handbook**

- 4.1.1** To inform the vehicle operator about the vehicle's load capacity and tyre & rim requirements, the vehicle's handbook must be updated. The update must provide specific details of the tyres, rims and the load capacity
- 4.1.2** Of particular importance, is any sliding reduction in legal towing mass as the tow vehicle is loaded to its re-rated GVM and/or vertical load on tow ball (ball weight).
- 4.1.3** If the vehicles handbook is not available, this information must be provided in written form to the owner of the vehicle.
- 4.1.4** A copy of all the information provided to the vehicle owner must retained as part of the evidence of this certification.
- 4.1.5** Re-rated GVM must be shown on the modification plate fitted.

### **4.2 Load Capacity Label**

- 4.2.1** A Load Capacity Label must be fitted to display information as explained below.
- 4.2.2** The Load Capacity Label must be made of durable material and letter size and contrast should be similar to the tyre placard.
- 4.2.3** The Load Capacity Label must be fitted to the vehicle, as close as practicable, to the vehicle's tyre placard.

## Load Capacity Label

Item	Information
SSM Approval Number (if applicable) <sup>1</sup>	
Re-rated GVM <sup>2</sup>	kg
GCM Rating by Original Vehicle Manufacturer (if available) <sup>3</sup>	kg
Maximum Allowed Front Axle Rating <sup>4</sup>	kg
Maximum Allowed Rear Axle/s Rating <sup>5</sup>	kg
For further information regarding towing capacity and operation please refer to the vehicle owner's handbook.	

### Explanatory Notes

1. Applicable only if GVM re-rating is based on SSM approval. If not applicable, indicate XXXX
2. Re-rated GVM certified under LS11 code
3. GCM rating, if published by the OVM in owner's handbook or on OVM website. If not published, indicate XXXX
4. Front axle rating as published by the OVM in owner's handbook/OVM website, or if assessed by the AP, the rerated axle load.
5. Rear axle rating as published by the OVM in owner's handbook/OVM website, or if assessed by the AP, the rerated axle load.

## 5.0 Limitations

Section 1.2 of this code provides information about which types of modifications are not permitted to be certified under the LS11 code. In addition, the following limitations apply.

### 5.1 Electronic Stability Control

If the vehicle is fitted with Electronic Stability Control (ESC) system by the OVM, the following requirements must be met:

- 5.1.1 ESC system must not be disabled.
- 5.1.2 It must be ensured that the modifications being certified do not reduce effectiveness of the ESC system.

## 6.0 Additional Modifications and Changes to Vehicle Category

- 6.1 If additional modifications are made that are not essential for GVM re-rating and have not been separately assessed, all such modifications must be assessed separately and certified using appropriate codes or specific approvals. For example, a change to ride height, requires certification under LS9 and LS10.
- 6.2 If the vehicle's category has changed due to the GVM re-rating, the vehicle must comply with the vehicle standards that apply to it. Certification of such compliance using the appropriate additional code(s) must be provided. For example, the LO1 code.

## 7.0 Use of LS11 code to provide design certification for GVM re-rating

The LS11 code may now be used to provide design certification for GVM re-rating of vehicles of a particular make/model/variant/chassis series. Design certification may be provided for any of the re-rating pathways discussed in Section 2.2 to 2.5 of this code.

The design certification must be comprehensive enough so a suitably qualified and accredited AP holding a relevant trade-based code is able to follow the instructions, inspect & certify a modified vehicle of that same make/model/variant/chassis series and generate the necessary evidence to show that the requirements of the LS11 design certification are met.

When the LS11 code is used to provide design certification, the AP providing the design certification, may not inspect the modified vehicle(s) and is not required to fit an LS11 modification plate on the vehicle(s). Also, the checklist completed as part of the LS11 design certification will not refer to any vehicle by its Vehicle Identification Number.

Below are the minimum outputs of a design certification provided under LS11 code:

- (a) a Design Package
- (b) a Certificate of Modification and
- (c) a completed Checklist.

All these outputs must be preserved as records of the certification and must be made available, on request, for audit and enforcement purposes.

Below are more details about each of the outputs:

### 7.1 Design Package

This output must result in a set of documents that clearly and comprehensively address the following four requirements:

#### 7.1.1 Scope of what is eligible

Design package must clearly identify which make/model/variant/chassis series it applies to. If its applicability is restricted to specific build years that also must be mentioned. Reference must be made to Identification Plate Approval Number, eligible typical VIN(s), eligible variants/chassis series.

Since the certification under the LS11 code is being provided on in-service vehicles, the condition of the vehicle is important when providing the certification. The design package must include instructions about what is to be inspected and the acceptance criteria to decide that the vehicle is in a safe and serviceable condition at the point of certification. Condition of the shock absorbers, suspension, frame, tow equipment and brakes are key areas to inspect. Absence of cracks, deformations, leaks and structural damage due to previous overloading, accidents or rust are critical.

The design package must include a template checklist for use by the AP certifying the physical modification. The checklist will be completed by the AP who certifies the physical modification, to confirm that the vehicle was inspected and was found in safe and serviceable condition at the point of certification.

#### 7.1.2 Evidence package

The design package must include all the test reports and engineering calculations that validate the re-rating, when modified as prescribed. Test reports must be from approved test laboratories, have unique test facility identification number (TFIN) and be signed and dated. All test reports must make unambiguous reference to the specific make/model/variants of the vehicle or component to which they apply. The test reports must contain the criteria or standard against which testing is performed and clear conclusion about pass or fail outcome according to the relevant criteria or standard.

Engineering calculations must be legible and must include assumptions, if any. They must be compiled under a unique identifier document that is dated and signed.

If any evidence is sourced from a third party, the evidence package must include a written permission from that party for use of its reports as evidence.

For reasons of commercial confidence or sensitivity, sometimes the LS11 certifier may choose not to include all the test reports in the design package to be supplied to the client. In such cases the design package must still include a full list of all the test reports and the calculation sheets (using their unique identifiers) and provide written assurance to the client that the full evidence package will be made available, on request, for audit and enforcement purposes.

### **7.1.3 Work instructions for modification**

The design package must include clear and comprehensive work instructions on how to modify the vehicle, what parts to be used, the sequence of actions to be performed, precautions to be taken and what process controls to be applied.

The work instructions must include details of any (non-destructive) testing and inspections to be carried out to ensure that the modification standards are met.

The work instructions must be easy to understand, unambiguous and should include sufficient pictorials such as photos and graphics.

The work instructions must include the contact details of the LS11 certifying AP if enquiries arise needing further clarification during the physical modification and/or its certification process.

### **7.1.4 Checklist for the modifier and the certifier**

This checklist should not be confused with the one that LS11 certifying AP needs to complete and keep. The design package must include template checklist(s) to be completed by the vehicle modifier and the certifier of the physical modification. These may be separate or one combined checklist. The checklist(s), when completed, should provide evidence that the modifier and the certifier of the physical modification have understood and followed the work instructions and the intent of the design package has been met. The LS11 certifying AP may ask for copies of completed checklists from the modifier and the certifier of physical modification as part of his/her own quality assurance or risk management practice. The completed checklist will be retained by the AP who certifies the physical modification.

This checklist should also not to be confused with the checklist that the certifier of the physical modification is required to complete as part his/her certification of the modification under the relevant code.

## **7.2 Checklist for the modifier and the certifier**

The LS11 certifying AP must issue a Certificate of Modification to his client for the LS11 design certification provided. This is like any other Certificate of Modification, except that in this case the Certificate of Modification will not make reference to any specific modification plate number or vehicle by its VIN. Instead, it must include for example the SSM Approval Number as the basis of the design certification and the unique identification number of the Design Package provided to the client, respectively.

## **7.3 Modification Checklist**

The LS11 certifying AP must complete the checklist provided at the end of this code and must retain it as part of his/her records to show that the certification met the objectives of this code.

## Checklist LS11

### Gross Vehicle Mass Re-rating

#### CODE LS11

Form No: LS11  
(Y=Yes, N=No)

<b>1</b>	<b>Suspension</b>		
1.1	Is the vehicle's suspension suitable for the re-rated GVM?	Y	N
<b>2</b>	<b>Chassis</b>		
2.1	Is the chassis frame suitable for the re-rated GVM?	Y	N
<b>3</b>	<b>Axles</b>		
3.1	Are the axles suitable for the re-rated GVM?	Y	N
<b>4</b>	<b>Engine/Transmission</b>		
4.1	Is the engine/transmission suitable for the re-rated GVM?	Y	N
<b>5</b>	<b>Braking System</b>		
5.1	Has a brake test been carried out on the modified vehicle to ensure compliance with ADR 31/.. or 35/.., whichever is applicable? (If re-rating using Pathway-2 or Pathway-4, response can be Y)	Y	N
5.2	Is the vehicles brake system suitable for the re-rated GVM?	Y	N
<b>6</b>	<b>Tyres and Rims</b>		
6.1	Does the Modification Plate record the correct tyre and rim sizes and load ratings for the modified vehicle?	Y	N
6.2	If a revised tyre placard is required, has it been fitted to the vehicle and a copy attached to this checklist? Indicate Y if a revised tyre placard is NOT relevant.	Y	N
6.3	Do the tyres and rims fitted conform to the modification plate and the tyre placard?	Y	N
6.4	Are load ratings of the tyres and rims adequate for the vehicle's re-rated GVM and the potential axle masses?	Y	N
<b>7</b>	<b>Electronic Stability Control System (if fitted)</b>		
7.1	Is it ensured that the ESC system is not disabled?	Y	N
7.2	Is it ensured that the ESC system is not made less effective due to modifications carried out for GVM re-rating?	Y	N
7.3	If the GVM re-rating involves other modifications that require verification of the ESC operation, is such verification provided?	Y	N
<b>8</b>	<b>Load Capacity Information</b>		
8.1	Is the load Capacity label attached to the vehicle?	Y	N
8.2	Has the vehicle's handbook been amended and a copy of the relevant modified content attached to this checklist?	Y	N
<b>9</b>	<b>Re-rating based on Manufacturer's Optional GVM (complete if applicable otherwise GO TO 10)</b>		

9.1	Does the re-rated GVM match an alternative option for the same make, model produced by the vehicle manufacturer?	Y	N
9.2	Are all components relevant to the GVM re-rating (brake, engine, transmission, suspension, chassis, tyres and rims etc) identical to the original vehicle manufacturer's alternative specification?	Y	N
<b>10</b>	<b>Re-rating based on SSM Approval (complete if applicable otherwise GO TO 11)</b>		
10.1	Has the SSM approval holder provided written approval to use that SSM design and a copy of the same attached to this checklist?	Y	N
10.2	Does the re-rated GVM match that of the SSM approval?	Y	N
10.3	Are all components relevant to the GVM re-rating (brake, suspension, tyres and rims, etc) identical to the SSM design?	Y	N
10.4	Have you attached a copy of the SSM Road Vehicle Descriptor (RVD) to this checklist?	Y	N
<b>11</b>	<b>Re-rating based on fitment of an additional axle (complete if applicable otherwise go TO 12)</b>		
11.1	If the re-rated is GVM more than 110% of the OVM rating, does the additional axle share load within its group? (Respond Y if the re-rated GVM is within 110% limit)	Y	N
<b>12</b>	<b>Complete only if LS11 code is used to provide Design Certification</b>		
12.1	Is a comprehensive design package provided?	Y	N
12.2	Does the design package have a unique identification number?	Y	N
12.3	Does the design package clearly describe which make/model/variant/chassis series is covered?	Y	N
12.4	Does the design package include guidance on what to inspect and criteria to decide if the vehicle is in safe and serviceable condition for re-rating?	Y	N
12.5	Does the design package include a complete Evidence Package that forms the basis of this certification?	Y	N
12.6	Does the design package include comprehensive work instructions including work to be done, precautions to be taken, control of processes and tests to be conducted?	Y	N
12.7	Does the design package include a checklist for the modifier of the vehicle?	Y	N
12.8	Does the design package include a checklist for the certifier of the modified vehicle?	Y	N
12.9	Does the design package meet all the requirements of this code?	Y	N

**Note:** If the answer to any question is **N (No)** the design cannot be certified under LS11 code.

CERTIFICATION DETAILS																		
<b>Make</b>						<b>Model</b>						<b>Year(s) of Manufacture</b>						
<b>VIN*</b> (if applicable)																		
<b>Chassis Number</b> (If applicable)																		
<b>Brief Description of Modification/s</b>																		
<b>Vehicle Modified By (if applicable)</b>																		
<b>Certificate Number</b>																		
<b>Vehicle/design Certified By</b> ( <i>Print</i> ) Name																		
<b>Signatory's Employer</b> (If applicable)																		
<b>Signatory's Signature</b>												<b>Date</b>						

\*Or the Unique Design Package Number, if providing LS11 design certification

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# LIGHT TRAILER MODIFICATIONS

## CODE LS12

### 1. Scope

The LS12 code specifies requirements for a suitably qualified Approved Person to certify modifications to trailers with an aggregate trailer mass (ATM) of 4500 kg or less. The modified trailer must continue to comply with the relevant requirements of Vehicle Standards Bulletin 1 – *Building Small Trailers* (VSB1).

Modifications that can be certified under this code are explained in Section 1.1

Simple changes to the trailer such as, the fitting of a spare wheel carrier, bolting on a storage box or adding a cage to a box trailer do not require certification. However, when making these changes be aware that the trailer's dimensions may change or lights/number plates may be obscured. It is essential to ensure the trailer remains compliant to VSB-1 after any changes.

#### 1.3 Modifications covered by this Code LS12

- Modifications to suspension, brakes, tow couplings, drawbars, wheels (rims & tyres) and trailer chassis such that the trailer continues to comply with VSB-1
- Rerating of the trailer's ATM such that the trailer continues to comply with VSB-1 and revised ATM does not exceed 4500 kg.

#### 1.4 Modifications not covered by this Code LS12

- Changes resulting in a trailer that does not comply with VSB-1.
- Modifications to a trailer with an ATM greater than 4500 kg.
- Modifications resulting in a change to the trailer's category as defined in Administrator's Circular 0-7-5 (semi, pig, dog etc)\*
- A change to a trailer's registration category (box trailer, boat trailer, caravan)
- Increase in ATM such that the revised ATM exceeds 4500 kg.

**\*Note:** If modifications result in a change of the trailer's category as defined in Circular 0-7-5, or registration type (e.g. pig trailer to dog trailer, semi-trailer to dog trailer, box trailer to boat trailer, caravan to box trailer, and so on) they are regarded as newly manufactured and must be constructed to meet VSB-1 and issued with a new Vehicle Identification Number (VIN) and trailer plate.

### 2. Basic Modifications without Certification

The following modifications may be carried out provided they do not affect compliance with VSB-1 and meet the general safety requirements specified below for each modification:

#### 2.1 Replacement Tyres and Rims

A trailer with an ATM of 4.5 tonnes or less may be equipped with tyres other than those listed for that particular variant 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; and
- the speed rating is of at least 120 km/h; and
- all requirements specified in sections 2.2 - 2.5 are met.

## 2.2 Wheel Attachment

Replacement wheels must be designed for the particular hub/axle and have the same bolt/stud pitch circle diameter and the same centre location method. The wheel nuts or bolts must have the same tapers as the wheel. Wheels with slotted bolt/stud holes must not be used.

Replacement aluminium alloy rims should be located on the hub/axle by the same diameter centre spigot as the original wheel, using suitable 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.

Wheel spacers (or adaptors for dual wheel conversions) between the wheel mounting face and the road wheel must not be used unless fitted as original equipment by the vehicle manufacturer.

Modifications to disc brake calipers, hubs and suspension and steering components to enable the fitting of replacement wheels must not be undertaken.

## 2.3 Clearance

No part of the wheel must touch any part of the body, chassis, braking system or suspension under any operating condition. To check this, the vehicle must be fully laden and capable of negotiating raised obstacles that would normally be encountered whilst driving such as speed humps and driveway entries. The wheels must be contained within the bodywork, or mudguards (including *flares*).

Suspension stops must not be modified to provide clearance for wheels.

## 2.4 Overall Nominal Diameter

The overall diameter of any tyre fitted to a braked on-road trailer originally fitted with passenger car tyres must not be more than 15mm larger or 26mm smaller than that of any tyre designated on the trailer plate.

The overall diameter of any tyre fitted to a trailer specifically designed for off-road use and originally fitted with 4WD tyres or light truck tyres must not be more than 50mm larger or 26mm smaller than that of any tyre designated on the trailer plate.

**Note:** Increases in tyre diameter are subject to compliance with all other requirements specified under this clause and may therefore be limited by other factors such as insufficient clearance.

## 2.5 Tyre and Rim Sizes

Tyres and rims fitted to each axle of a trailer must be of the same diameter, offset, width and mounting configuration (except for spare wheels used in an emergency situation).

Tyres fitted to an on-road trailer originally fitted with passenger car tyres must not be more than 30% wider than vehicle manufacturer's widest optional tyre.

Tyres fitted to a trailer specifically designed for off-road use (and originally fitted with 4WD tyres or light truck tyres) must not be more than 50% wider than vehicle manufacturer's widest optional tyre.

**Note:** The rim width must not exceed the recommendations for the tyre fitted.

## 2.6 Wheel Track

The wheel track of trailer must not be increased by more than 25mm beyond the maximum specified by the trailer manufacturer for the particular model. This means that the rim offset must not be changed by more than 12.5mm.

The wheel track of a trailer specifically designed for off-road use (and originally fitted with 4WD tyres or light truck tyres) must not be increased by more than 50mm beyond the maximum specified by the trailer manufacturer for the particular model.

**Note:** A reduction in wheel track is not permitted on any trailer.

## 3. Coupling

A coupling fitted to a trailer with an ATM of 3500kg or less may be replaced provided the following conditions are met:

- The replacement coupling's mounting position/points are identical to the original coupling; and
- The replacement coupling meets the appropriate standard and is marked accordingly;
- The replacement coupling does not result in an increase in the effective length of the drawbar.

Note: Information relating to the relevant standards and markings for couplings are provided in VSB-1. When replacing a trailer's coupling it is essential that this information is followed.

When replacing the coupling on a trailer with an ATM greater than 3500kg and/or if the replacement coupling's mounting position differs from the original the modification will be required to be certified by an Approved Person under the LS12 code.

## 4. Safety Chains

A trailer's safety chains can be extended or shortened provided the replacement chain/s (including joiners such as hammerlocks):

- Are marked in accordance with the relevant Australian Standard;
- For trailers with an ATM not exceeding 2500kg have at least one safety chain meeting Australian Standard AS 4177.4-1994 or AS 4177.4-2004;
- For trailers with an ATM over 2500kg but not exceeding 3500kg have at least two safety chains meeting Australian Standard AS 4177.4-1994 or AS 4177.4-2004;
- For trailers with an ATM over 3500kg ATM have at least two safety chains made from steel of a minimum 800MPa breaking stress which conforms to Grade T chain as specified in Australian Standard AS 2321-1979 or AS 2321-2006.

**Note:** Each chain must be sized such that the minimum breaking load exceeds the trailer's ATM.

In some cases the safety chain attachment point/s may be modified or new attachment point/s fitted. In such circumstances testing must be conducted to ensure they are capable of withstanding minimum loads specified in VSB-1 and will be required to be certified by an Approved Person under the LS12 code.

## 5. Body Modifications

Storage boxes, cages, carriage racks and so on may be modified or fitted to a trailer provided:

- The trailer's dimensions remain compliant;
- They are fitted securely;
- They are designed and fitted in a way which minimises the risk of injury to vulnerable road users.

Note: When fitting storage boxes, carriage racks, and so on it is important to consider how much weight they will impose on the trailer when loaded.

## 6. Compliance with applicable vehicle standards

Trailers modified under this code LS12 must continue to comply with VSB-1 and the applicable requirements of the Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2010.

VSB-1 establishes a set of design and construction standards for road trailers (with an ATM of 4.5 tonnes or less) that operate as an alternative to the ADRs.

The standards in VSB-1 are based on the ADRs – but are simpler and more practical to use. They offer a low-cost alternative, by eliminating the need for some of the more expensive forms of vehicle testing and evidence that are required under the ADRs.

VSB1 is available at the following address:

[http://www.infrastructure.gov.au/roads/vehicle\\_regulation/bulletin/vsb1/pdf/vsb01\\_June2009.pdf](http://www.infrastructure.gov.au/roads/vehicle_regulation/bulletin/vsb1/pdf/vsb01_June2009.pdf)

## 7. Specific requirements for modifications

Modifications to a trailer must meet the standards set out in VSB1.

Changes to trailer ratings must address necessary changes to all other affected parts. FOR EXAMPLE, increasing ATM rating may involve changes to suspension, tow coupling, brakes, safety chains and chassis rails.

**Checklist LS12**  
**Light Trailer Modifications**  
**Code LS12**

Form No: LS12  
(Y=Yes, N=No)

<b>1</b>	<b>General</b>			
1.1	Does the modified trailer comply with VSB-1?	<input type="checkbox"/>	Y	N
<b>2</b>	<b>Trailer ATM Before Modification _____ kg After Modification _____ kg</b>			
2.1	Was the trailer's original ATM 4500kg or less?	<input type="checkbox"/>	Y	N
2.2	Is the trailer's revised ATM 4500kg or less?	N/A	Y	N
<b>3</b>	<b>Chassis</b>			
3.1	Is the trailer's chassis suitable for the trailer's revised ATM?	N/A	Y	N
3.2	Does the trailer's drawbar meet the VSB1 minimum strength requirements at its revised ATM?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4</b>	<b>Dimensions</b>			
4.1	Are the trailer dimensions within the limits permitted in VSB-1 and ADR 43/04?	<input type="checkbox"/>	Y	N
<b>5</b>	<b>Braking System</b>			
5.1	Does the trailer's braking system comply with the requirements of VSB-1?	<input type="checkbox"/>	Y	N
<b>6</b>	<b>Tyres and Rims</b>			
6.1	Does the Modification Plate show the tyre and rim sizes and load ratings that are suitable for trailer's rating?	<input type="checkbox"/>	Y	N
6.1	Are tyres and rims fitted in conformance to the modification plate?	<input type="checkbox"/>	Y	N
<b>7</b>	<b>Tow Coupling</b>			
7.1	Does the tow coupling, tow coupling mounting and drawbar (if applicable) meet the requirements of ADR 62/..?	<input type="checkbox"/>	Y	N
<b>8</b>	<b>Safety Chains</b> (Please note: N/A is only an option when certifying a dog trailer or fifth wheeler trailer)			
8.1	Are the correct number of safety chains fitted?	N/A	Y	N
8.2	Does/Do the safety chain/s comply with the applicable Australian Standard?	N/A	Y	N
<b>9</b>	<b>Lighting System</b>			
9.1	Do the lights and the reflectors comply with VSB-1?	<input type="checkbox"/>	Y	N

<b>10</b>	<b>Axles and Suspension</b>			
10.1	Is the trailer's suspension type fit for the purpose?		Y	N
10.2	Are all suspension components adequately rated?		Y	N
10.3	Are all axles adequately rated?		Y	N
<b>11</b>	<b>Caravan Requirements</b>			
11.1	Have all caravan requirements of VSB-1 been met?	N/A	Y	N

**Note:** If the answer to any question is **N (No)** the ATM rerating cannot be certified under Code LS12.

CERTIFICATION DETAILS																
<b>Make</b>					<b>Model</b>					<b>Year of Manufacture</b>						
<b>VIN</b>																
<b>Chassis Number (If applicable)</b>																
<b>Brief Description of Modification/s</b>																
<b>Vehicle Modified By</b>																
<b>Certificate Number (If applicable)</b>																
<b>Vehicle Certified By (<i>Print</i>)</b>																
<b>Signatory's Employer (If applicable)</b>																
<b>Signatory's Signature</b>										<b>Date</b>						

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# Re-rating of a Light Trailer Aggregate Trailer Mass/Gross Trailer Mass to Manufacturer's Specifications

## Code LS14

### 1.0 Scope

The LS14 modification code allows Approved Persons to re-rate the aggregate trailer mass (ATM) and/or gross trailer mass (GTM) of a light trailer (ATM 4500kg or less) to the trailer manufacturer's specifications. This can occur by comparison of another trailer model from the same manufacturer or by a letter from the trailer's manufacturer.

### 1.3 Certifications permitted under Code LS14

Light trailer modifications of the following types may be certified under Code LS14:

- Re-rating of a light trailer's ATM and/or GTM by comparing an alternative model of the same trailer manufacturer.
- Re-rating of a light a trailer's ATM and/or GTM in accordance with a letter from the trailers manufacturer for the particular trailer.
- Re-rating of a trailer's ATM and/or GTM by the original trailer manufacturer\*

### 1.4 Certifications not permitted under Code LS14:

Light trailer modifications of the following types must not be certified under Code LS14:

- ATM and/or GTM rating for a trailer which has been modified to change the registration category of the trailer e.g. semitrailer to dog trailer, pig trailer to dog trailer, semi to dolly, etc. Such trailers are regarded as newly manufactured.
- ATM and/or GTM re-rating outside of the trailer manufacturer's specifications.
- ATM and/or GTM re-rating of a trailer with an original ATM greater than 4500kg.
- Re-rating of a trailer's ATM and/or GTM to greater than 4500kg.
- Re-rating of a light trailer's ATM and/or GTM by comparing an alternative model of a different trailer manufacturer.
- Re-rating of a light trailer's ATM and/or GTM by comparing a trailer which has previously been re-rated under a modification code.
- Re-rating of a trailer's ATM/GTM based on trailer component specifications or a component manufacturer's specifications only (this requires LS12 modification code)
- Modifications to a trailer prior to first registration^

**\*Note:** If the original trailer manufacturer re-rates the ATM and/or GTM of a registered trailer two options are available. Option 1 is for the trailer manufacturer to fit an additional trailer plate (adjacent to the original trailer plate) to show the revised ATM and/or GTM rating. This is the preferred option.

Option 2 is to fit an LS14 modification plate (adjacent to the original trailer plate) meeting the requirements of this code.

**^Note:** Modifications prior to first registration are not permitted under the LS14 modification code. For modifications prior to first registration please contact the trailer manufacturer or the Commonwealth Department of Infrastructure and Regional Development for information regarding Second Stage of Manufacture.

## 2.0 General Requirements

Typical changes involved in re-rating of ATM/GTM may include replacement of axle(s), suspension or braking system with alternative components which collectively may permit a different rating.

In some cases re-rating of ATM/GTM may not involve physical changes. For example, where a letter is issued by the trailer manufacturer clearly indicates that no changes are required. This may also apply when a reference trailer (by the same manufacturer) is identical in all respects, thus requiring no changes. Care must be taken when comparing as some properties may not be obvious and evident. In these instances evidence must be retained to demonstrate that the trailer is identical to the manufacturer's letter or the reference trailer used for comparison.

Modified vehicles must continue to comply with the Australian Design Rules (ADRs) or Vehicle Standards Bulletin 1 to which they were originally constructed.

### ○ Tyres and Wheel Rims

The sum of the load carrying capacities of the tyres and rims fitted to an axle or axle group must not be less than the load rating of that axle or axle group or the regulation mass limit on that axle or axle group, whichever is less.

Loading of the trailer to its ATM with load distributed normally, must not result in load on any tyre or rim exceeding its rated capacity.

For trailers manufactured to comply with ADR 24/..or ADR 42/.., the tyres and rims must be selected and must comply in all respects with the requirements of that ADR at the revised ATM rating.

Where a tyre placard is fitted to a trailer, this placard must be replaced with a new placard replicating the manufacturer's alternative model trailer or as specified in the manufacturer's letter for the revised ATM and/or GTM rating. The revised tyre size and load rating must also appear on the modification plate.

### ○ Chassis

The chassis of the modified trailer must be equivalent to the manufacturer's chassis material specification, reinforcement and cross-member installation for the reference trailer to which the modified trailer is being compared.

### ○ Tow coupling

The tow coupling fitted to a modified trailer must be adequate for the proposed ATM and the coupling installation must conform to the trailer manufacturer's specifications.

The drawbar of the trailer must be designed to withstand the forces specified in Vehicle Standard Bulletin 1 or ADR 62/..

### ○ Brakes

The complete braking system must be in good operating condition and identical to manufacturer's specifications.

### ○ Dimensions

The maximum dimensions of an individual trailer must not exceed the dimensions specified in Vehicle Standard Bulletin 1 or the current issue of ADR 43/..

### ○ **Fabrication**

All work must be performed in accordance with recognised engineering standards. Cutting, heating, welding or bending of components should be avoided by choosing unmodified production components wherever possible.

### ▪ **Welding, Fasteners and Electroplating**

Mandatory requirements and guidance on the above items are contained in Section LZ Appendices:

- For the use of fasteners refer to Appendix A Fasteners;
- For welding techniques and procedures refer to Appendix C Heating and Welding of Steering Components; and
- For electroplating refer to Appendix D Electroplating.

### ▪ **Mating Parts**

Standard features such as splines, tapers and keyways must conform to published standards and their mating parts must conform to matching standards.

## **2. Manufacturer's Letter**

Re-rating alternative option 1:

In this option a letter issued by the trailer manufacturer is required.

To be considered acceptable the manufacturer's letter must contain at least the following information:

- Trailer Manufacturer's details (i.e manufacturer's letter head with contact information)
- Make and model of trailer
- Vehicle Identification Number (for the particular trailer being modified)
- Details of any physical changes required to be performed to the trailer (along with specific details of any components required and changes to tow ball rating)
- New ATM and GTM ratings
- Signed and dated by the trailer manufacturer

## **3. Comparison with a manufacturer's alternative model trailer**

Re-rating alternative option 2:

When re-rating a trailer's ATM and/or GTM through the comparison of another trailer produced by the same manufacturer, the following evidence must be retained:

- VIN of the trailer which is being used for comparison
- Make/model of the trailer being used for comparison
- Photos of both trailer (including, but not limited to, trailer plates, suspension, brakes, side and front view of trailers) being used for comparison

- Any measurements or technical specifications of components compared

#### **4. Compliance with applicable vehicle standards**

Trailers modified under code LS14 must continue to comply with the applicable requirements of the Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2010 and either the ADRs (if certified under a commonwealth identification plate) or VSB-1.

VSB-1 establishes a set of design and construction standards for road trailers (with an ATM of 4.5 tonnes or less) that operate as an alternative to the ADRs.

The standards in VSB-1 are based on the ADRs – but are simpler and more practical to use. They offer a low-cost alternative, by eliminating the need for some of the more expensive forms of vehicle testing and evidence that are required under the ADRs.

VSB1 is available at the following address:

[http://www.infrastructure.gov.au/roads/vehicle\\_regulation/bulletin/vsb1/pdf/vsb01\\_June2009.pdf](http://www.infrastructure.gov.au/roads/vehicle_regulation/bulletin/vsb1/pdf/vsb01_June2009.pdf)

**Checklist LS14**  
**Re-rating of a Light Trailer Aggregate Trailer Mass/Gross Trailer**  
**Mass to Manufacturer's Specifications**  
**CODE LS14**

Form No: LS14  
(Y=Yes, N=No)

<b>1</b>	<b>General</b>		
1.1	Have all details of the manufacturer's alternate model trailers or a letter from the trailer manufacturer been retained for future audit?	Y	N
<b>2</b>	<b>Chassis</b>		
2.1	Does the chassis conform to the detail construction, section properties and cross-members of the comparison trailer's chassis or to any specified in the manufacturer's letter?	Y	N
2.2	Are the trailer dimensions within the permitted maximum limits?	Y	N
<b>3</b>	<b>Brake system</b>		
3.1	Is the trailer's entire braking system identical to the braking system of the reference trailer or manufacturer's specifications	Y	N
<b>4</b>	<b>Tyres and Rims</b>		
4.1	Does the tyre placard (if fitted) record the correct tyre and rim sizes, axle configurations, axle loads and inflation pressures for the modified trailer?	Y	N
4.2	Are tyres and rims fitted in conformance to the tyre placard?	Y	N
<b>4</b>	<b>Tow Coupling</b>		
4.1	Does the tow coupling, tow coupling mounting and drawbar (if applicable) meet the requirements of VSB1 or ADR 62/..?	Y	N
<b>5</b>	<b>Mechanical condition</b>		
6.1	Is the trailer in satisfactory mechanical condition?	Y	N
<b>7</b>	<b>Workmanship</b>		
7.1	Is the quality of the workmanship to a satisfactory standard?	Y	N

**Note:** If the answer to any question is **N (No)** the modification cannot be certified under Code LS14.

CERTIFICATION DETAILS																	
Make						Model						Year of Manufacture					
VIN																	
Chassis Number (If applicable)																	
Brief Description of Modification/s																	
Vehicle Modified By																	
TMR In-Principle Approval Number																	
Vehicle Certified By ( <i>Print</i> )																	
Signatory's Employer (If applicable)																	
Signatory's Signature											Date						

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# Gross Vehicle Mass Rating of Light Vehicles - Modifications

## CODE LS15

### 1.0 Scope

The LS15 modification code allows an Approved Person (AP) to certify physical modifications leading to the re-rating of Gross Vehicle Mass (GVM) of a light vehicle (GVM 4500 kg or less) when those modifications are carried out in accordance with instructions in the relevant LS11 design package. In addition to the requirements in this code, the AP providing LS15 certification must follow the instructions in the design package that came with the relevant LS11 design certification.

#### 1.1 Certifications permitted under LS15 code

Light vehicle modifications of the following types may be certified under LS15 code:

- Re-rating of a light vehicle's GVM by modifying it according to the instructions in an LS11 design certification issued for the same/make/model/variant/chassis series.
- Re-rating of a light vehicle's GVM in accordance with a letter from the original vehicle manufacturer.

#### 1.2 Certifications not permitted under LS15 code:

Light vehicle modifications of the following types must not be certified under LS15 code:

- Modifications other than those covered under Section 1.1.

### 2.0 General Requirements

#### 2.1 Typical Modifications

Typical physical modifications under LS15 may include changes to braking system, fitting of alternate suspension and/or additional chassis reinforcement and/or additional axle. These collectively may permit a different GVM rating.

#### 2.2 Re-rating without Modifications

In some cases, re-rating of GVM may involve no physical changes. For example, where a letter is issued by the original vehicle manufacturer clearly indicating that no changes are required for re-rating. Care must be taken when comparing vehicle components, as some properties may not be obvious and evident. In these instances, evidence must be retained to demonstrate that the vehicle is identical to the manufacturer's letter.

#### 2.3 Affected ADRs

The modified vehicle must continue to comply with the Australian Design Rules (ADRs) which are relevant to it. This includes ADRs which applied to it when it was originally constructed and the ADRs that apply to it after it is modified. If there is a conflict, the ADR requirement after modification takes priority.

## 2.4 Work Instructions from the LS11 Design Package

Modifications must be carried out according to the work instructions that are in the design package that came with the relevant LS11 design certification. Replacement parts must conform to the design package.

## 2.5 Testing and Inspection

Testing and inspection specified in the design package must be completed and the evidence of the same must be held by the LS15 certifier. This includes completing the checklist(s) that came with the LS11 design package. Such checklist(s) must not be confused with the LS15 checklist given at the end of this code. The LS15 checklist also must be completed.

## 3.0 Specific Requirements

When certifying the re-rated GVM under LS15, the chassis frame, suspension, axles and drive train components must be suitable for the re-rated GVM. All instructions provided in the LS11 design package or the original vehicle manufacturer's re-rating letter must be followed.

The following specific requirements must be met.

### 3.1 Tyres and Rims

The tyres and rims must be selected to comply with the requirements in the relevant LS11 design package or the original vehicle manufacturer's re-rating letter.

If a revised tyre placard is required to be fitted under the LS11 design package, the revised tyre size and load rating must also appear on the modification plate, the Load Capacity Label and in the owner's handbook.

### 3.2 Chassis Frame

The chassis frame of the modified vehicle must be according to the LS11 design package or identical to the original vehicle manufacturer's alternate model/variant depending on the pathway of certification.

### 3.3 Brakes

The complete braking system must be as specified in the LS11 design package or identical to the vehicle manufacturer's specifications for the alternate model/variant depending on the pathway of certification.

### 3.4 Axles and Suspension

When loaded to the re-rated GVM, additional loads are placed on axles. Axles must conform to the requirements in LS11 design package or the original vehicle manufacturer's re-rating letter.

Where certification is by comparison with a manufacturer's reference vehicle, the axle and suspension assemblies fitted to the modified vehicle must be identical to those fitted by the manufacturer to the reference vehicle.

Axle ratings as specified in the LS11 design package must also be specified on the Load Capacity Label and

in the owner's handbook.

### 3.5 Fabrication

All work must be performed in accordance with recognised engineering standards. Cutting, heating, welding or bending of components should be avoided by choosing unmodified production components wherever possible.

### 3.6 Vehicle Eligibility and In-service Condition

Before carrying out the modifications and certification under LS15 code, the vehicle details (make/model/variant/chassis series) and the in-service condition of the vehicle must be checked, as specified in the LS11 design package or the original vehicle manufacturer's re-rating letter, to ensure that the vehicle is eligible for re-rating and its condition is safe and suitable.

Step-1: Confirm that the vehicle make/model/variant/chassis series and build year is within the scope of the LS11 design package or the original vehicle manufacturer's re-rating letter.

Step-2: Inspect and confirm that the condition of the vehicle is safe and serviceable for re-rating. The instructions in the LS11 design package must be followed to ensure that the chassis frame, suspension, brakes and so on are in a safe and serviceable condition for re-rating. Evidence of this inspection must be recorded in the checklist provided in the design package.

### 3.7 Manufacturer's Letter

If re-rating is based on the original vehicle manufacturer's letter, the manufacturer's letter must contain at least the following information:

- Vehicle manufacturer's details (i.e. manufacturer's letterhead with contact information).
- Make/model/variant of the vehicle.
- Vehicle Identification Number (VIN) of the particular vehicle being re-rated.
- Details of all physical changes required for re-rating (including the details of the specific upgrade parts to be fitted).
- Re-rated GVM.
- Signature and date by the delegate of the original vehicle manufacturer.

## 4.0 Owner's Handbook and Load Capacity Label

The vehicle operator must be adequately informed of the changes.

### 4.1 Owner's handbook

- 4.1.1 To inform the vehicle operator about the vehicle's load capacity and tyre and rim requirements, the vehicle's handbook should be updated. The update must provide specific details of the tyres, rims and the load capacity.
- 4.1.2 Of particular importance, is any sliding reduction in legal towing mass as the tow vehicle is loaded to its re-rated GVM and/or vertical load on the tow ball (ball weight).
- 4.1.3 If the vehicle handbook is not available, this information must be provided in written form to the owner of the vehicle.

4.1.4 A copy of all the information provided to the vehicle owner must be retained as part of the evidence of this certification.

## 4.2 Load capacity Label

4.2.1 A Load Capacity label must be fitted to the display information as explained below.

4.2.2 The Load Capacity Label must be made of durable material and letter size and contrast should be similar to the tyre placard.

4.2.3 The Label must be fitted to the vehicle, as close as practicable, to the vehicle's tyre placard.

### Load Capacity Label

Item	Information
SSM Approval Number (if applicable) <sup>1</sup>	
Re-rated GVM <sup>2</sup>	kg
GCM Rating by Original Vehicle Manufacturer (if available) <sup>3</sup>	kg
Maximum Allowed Front Axle Rating <sup>4</sup>	kg
Maximum Allowed Rear Axle/s Rating <sup>5</sup>	kg
For further information regarding towing capacity and operation please refer to the vehicle owner's handbook.	

#### Explanatory Notes

1. Applicable only if GVM re-rating is based on SSM approval. If not applicable, indicate XXXX
2. Re-rated GVM certified under LS11 design package
3. GCM rating, if published by the OVM in owner's handbook or on OVM website. If not published, indicate XXXX
4. Front axle rating as published by the OVM in owner's handbook/OVM website, or as specified in the LS11 design package.
5. Rear axle rating as published by the OVM in owner's handbook/OVM website, or as specified in the LS11 design package.

**Checklist LS15**  
**Gross Vehicle Mass Rating of Light Vehicles - Modifications**  
**CODE LS15**

Form No: LS15  
(Y=Yes, N=No)

<b>1</b>	<b>General</b>		
1.1	<p>Have you received a copy of one of the below and understood it?</p> <p>Either</p> <p>The LS11 design package with all the instructions to modify, test and re-rate vehicle of this make/model/variant/chassis series?</p> <p>LS11 Design Certification No. _____ Date _____</p> <p>OR</p> <p>A letter from the original vehicle manufacturer for re-rating?</p> <p>Manufacturer's Letter Reference _____ Date _____</p> <p>Note: If you do not have one of the above, you must not certify this vehicle.</p>	Y	N
<b>2</b>	<b>Chassis Frame</b>		
2.1	Does the chassis frame conform to the detail construction, section properties and cross-members of the LS11 design package or the original vehicle manufacturer's letter?	Y	N
2.2	Is the chassis frame structurally sound, free from deformation, cracks and rust perforation? Does the chassis frame pass the inspection requirement mentioned in the LS11 design package?	Y	N
<b>3</b>	<b>Brake system</b>		
3.1	Is the vehicle's braking system as specified in the LS11 design package or the original vehicle manufacturer's letter?	Y	N
3.2	Is the braking system in serviceable condition, free from leaks, wear and fouling/stretching? Does it pass the inspection requirement mentioned in the LS11 design package including any testing specified?	Y	N
<b>4</b>	<b>Tyres and Rims</b>		
4.1	Does the Modification Plate record the correct tyre and rim sizes and load ratings for the modified vehicle?	Y	N
4.2	If a revised tyre placard is required, has it been fitted to the vehicle and a copy attached to this checklist?	Y	N
4.3	Do the tyres and rims fitted conform to the modification plate and the tyre placard?	Y	N
<b>5</b>	<b>Eligibility- Make/model/variant/chassis series</b>		
5.1	Does the vehicle meet the eligibility criteria as specified in the LS11 design package or the original vehicle manufacturer's letter?	Y	N
<b>6</b>	<b>Load Capacity Information</b>		

6.1	Is the Load Capacity Label attached to the vehicle	Y	N
6.1	Has the vehicle's handbook been amended and a copy of the relevant modified content attached to this checklist?	Y	N
<b>7</b>	<b>Workmanship</b>		
7.1	Is the quality of the workmanship to a satisfactory standard?	Y	N
7.2	Is(Are) the checklist(s) required in the LS11 design package completed? OR Are all the parts updated according to the original vehicle manufacturer's re-rating letter?	Y	N
7.3	Are all the inspections and tests as required in the LS11 design package completed? OR Does the modified vehicle conform to the original vehicle manufacturer's re-rating letter?	Y	N
7.4	Have you kept all supporting documents you used to certify this modification and photos of the modified vehicle for future audit?	Y	N

**Note:** If the answer to any question is **N (No)** the design cannot be certified under LS15 code.

CERTIFICATION DETAILS																
<b>Make</b>					<b>Model</b>					<b>Year of Manufacture</b>						
<b>VIN</b>																
<b>Chassis Number (If applicable)</b>																
<b>Brief Description of Modification/s</b>																
<b>Vehicle Modified By</b>																
<b>TMR In-Principle Approval Number</b>																
<b>Vehicle Certified By (<i>Print</i>)</b>																
<b>Signatory's Employer (If applicable)</b>																
<b>Signatory's Signature</b>										<b>Date</b>						

# Modification of Light Vehicles to TMR Individual Approval

## CODE LX1

### 1. Scope

The LX1 modification code allows an Approved Persons to certify modifications in accordance with an administrative approval (initial approval letter) issued by the Department of Transport and Main Roads (TMR). Modifications which require certification under the LX1 code often fall outside the scope of other established codes within the Vehicle Standards Bulletin 14 – National Code of Practice for the Construction and Modification of Light Vehicles or the Queensland Code of Practice – Vehicle Modifications.

The administrative approval issued by TMR contains details of the modification proposed by the applicant along with the conditions of certification under Code LX1. These conditions may include a list of modification codes the Approved Person must be accredited with before certifying the modification under Code LX1.

#### 1.1 Certifications permitted under Code LX1

Light vehicle modifications of the following types may be certified under Code LX1:

- Modifications which have received an administrative approval issued by TMR; and
- Modifications that comply with the conditions contained in the administrative approval

#### 1.2 Certifications not permitted under Code LX1:

Light vehicle modifications of the following types must not be certified under Code LX1:

- A modification for which an administrative approval has not been issued by TMR.
- A modification which has received an administrative approval by TMR but does not comply with one or more of the conditions contained in that administrative approval
- If the Approved Person certifying the modification under Code LX1 does not hold current accreditation to modification codes specified in the TMR administrative approval.
- A modification to a vehicle that is not a vehicle listed in TMR's administrative approval.

Approved Persons must not certify a modification under Code LX1 if they consider that they do not have the skills and competence needed to certify the modification, even though they may have current accreditation to all the codes contained in the administrative approval.

## 2. General Requirements

As the types of modifications which can be certified under the LX1 code can range widely, it is important that the LX1 code is read and applied in conjunction with all other relevant modification codes in the Approved Codes of Practice (for example, if the modification involves engine modification among other things, the relevant code LA must also be complied with, unless the administrative approval issued by TMR provides exemption from specific requirements in LA code).

### 2.1 Compliance with applicable vehicle standards

Modified vehicles must continue to comply with the ADRs to which they were originally constructed, except as allowed for in the *Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2010*. These modified vehicles must also comply with the applicable in-service requirements of the regulation.

Modified pre-ADR vehicles must continue to comply with the *Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2010*.

As modifications to be certified under the LX1 code can range widely it is not possible to list ADRs typically affected. It is the responsibility of the certifying Approved Person to ensure that the vehicle continues to comply with the affected ADRs.

To determine the ADRs that apply to the vehicle in question, refer to the Applicability Tables in Section LO. Vehicles manufactured from 1 January 1969 but prior to 1 July 1988 need to comply with the Second Edition ADRs. Vehicles manufactured from 1 July 1988 need to comply with the Third Edition ADRs. Section LO has separate applicability tables for each edition.

Alternatively, ADR applicability tables for individual vehicle categories may be referenced on the Department of Infrastructure and Transport (Road vehicle Certification Scheme) RVCS website at the following address and under the section titled ADR Applicability tables: <http://rvcs.dotars.gov.au/>

The ADRs apply according to the vehicle's category and date of manufacture. It is the responsibility of the signatory to refer to the appropriate ADR applicable to the vehicle. Particular care must be taken when determining ADR applicability if the vehicle changes category as a result of the modification.

### 2.2 FABRICATION

All work must be performed in accordance with recognised engineering standards. Cutting, heating, welding or bending of components should be avoided by choosing unmodified production components wherever possible.

### 2.3 Welding, Fasteners and Electroplating

Mandatory requirements and guidance on the above items are contained in Section LZ Appendices:

- For the use of fasteners refer to Appendix A Fasteners;
- For welding techniques and procedures refer to Appendix C Heating and Welding of Steering Components; and
- For electroplating refer to Appendix D Electroplating.

### 2.4 Mating Parts

Standard features such as splines, tapers and keyways must conform to published standards and their mating parts must conform to matching standards.

**Checklist LX1**  
**Modification to TMR Individual Approval**  
**Code LX1**

Form No: LX1  
(Y=Yes, N=No, N/A= Not Applicable)

<b>1</b>	<b>TMR Administrative Approval</b>		
1.1	Has a TMR administrative approval been issued for the modification?	Y	N
1.2	Has the TMR administrative approval number been included in the certification details table below?	Y	N
<b>2</b>	<b>Identification</b>		
2.1	Does the chassis or Vehicle Identification Number of the vehicle being modified match the TMR administrative approval?	Y	N
<b>3</b>	<b>Modification</b>		
3.1	Does the modification meet the requirements of the TMR administrative approval including any technical reports?	Y	N
3.2	Is the modification of the type described in the TMR administrative approval?	Y	N
<b>4</b>	<b>Qualifications</b>		
4.1	Do you hold current accreditation to all the modification codes listed in the TMR administrative approval?	Y	N
4.2	Do you consider yourself confident and competent to certify the modifications in the administrative approval?	Y	N
<b>5</b>	<b>Testing</b>		
6.1	Has all relevant testing been performed on the modified vehicle?	Y	N
6.2	Is auditable evidence of the tests and results held by the certifying person?	Y	N

**Note:** If the answer to any question is **N (No)** the design cannot be certified under Code LX1.

CERTIFICATION DETAILS																
<b>Make</b>						<b>Model</b>						<b>Year of Manufacture</b>				
<b>VIN</b>																
<b>Chassis Number (If applicable)</b>																
<b>Brief Description of Modification/s</b>																
<b>Vehicle Modified By</b>																
<b>TMR In-Principle Approval Number</b>																
<b>Vehicle Certified By (<i>Print</i>)</b>																
<b>Signatory's Employer (If applicable)</b>																
<b>Signatory's Signature</b>											<b>Date</b>					

# Heavy Vehicles

# Bus Life Vehicle Rating

## CODE S13

### 1. Scope

This section outlines the minimum standard required for the inspection and issue of a life extension for a heavy bus.

As an alternative to the replacement of an aging bus, owners may wish to consider refurbishing it. Three options are available. However, each will require a commercial decision by the owner to determine if the bus should be replaced, or to upgrade, refurbish and extend its life.

The definition of a heavy bus is a passenger vehicle with a GVM exceeding 5t and having more than 9 seating positions, including the driver.

### 2. General requirements

- The guidelines contained in this code apply to all heavy buses used for public passenger services. These guidelines, referred to in Section 25(2) of the *Transport Operations (Passenger Transport) Standard 2010*, are also contained in Department of Transport and Main Roads information bulletins.
- This code and the information bulletins outline the requirements for either refurbishing a heavy bus to meet the Age Zero requirements, or for carrying out a partial refurbishment to achieve a five year extension to the 15 or 25 year maximum age standards.
- Five Year Life Extension for Open Classification Buses (Age 10)- Requires refurbishment of the bus, including engineer's certification of the structural integrity and serviceability of chassis, body, suspension, steering and brake components and certification that it complies at the time of approval with all Australian Design Rules (ADRs) applicable five years after the bus was first registered. A five year life extension can only be performed once in the life of any bus.
- Five Year Life Extension for Regional Classification Buses (Age 20)- Requires refurbishment of the bus, including the engineer's certification of the structural integrity and serviceability of chassis, body, suspension, steering and brake components and certification that it complies at the time of approval with all ADRs applicable five years after it was first registered. A five year life extension can only be performed once in the life of any bus.
- Age Zero- Requires a new body and the complete refurbishment of the bus including an engineer's certification of structural integrity and serviceability of chassis, body, suspension, steering and brake components and certification that it complies, when completed, with all ADR's applicable to a new bus at that time.
- Any certification work that would amount to a 'Professional Engineering Service' (as defined in *Professional Engineers Act 2002*) must only be provided by a person who is;
  - Registered as a Registered Professional Engineer Queensland (RPEQ); or
  - Under the direct supervision of an RPEQ who is registered in that area of engineering and responsible for the service being certified.
- Vehicle systems and components, which have been recently refurbished or replaced, will not be required to be dismantled or refurbished provided documentary evidence or proof of replacement or refurbishment is made available to the certifying engineer.
- All modifications completed as part of the refurbishment process, or those which have been done in the past, must be in accordance with the standards prescribed in VSB 6, and must be certified by an Approved Person.

- Each bus, prior to reintroduction into service, must undergo a full evaluation and rating by an Approved Person under the requirements of the heavy code sections S4 or S5, and S6 to validate the passenger carrying capacity and compliance with Queensland Transport safety standards.
- For the purposes of this code, bus age is calculated from the date of first registration. If this information is not available, the date of manufacture of the original body is to be used.
- On completion of the refurbishment to the required standard, a modification plate must be attached to the plate in a position adjacent to the original manufacturer's plate or compliance plate. The plate must be marked as follows:
  - Five Year Extension- S13/5/ \* / \*\*\*\* (where \*=month and \*\*\*\*=year of withdrawal from service) ie. An extension of 5 years in November 2001 for a November 1976 vehicle would be displayed as S135/11/2006).
  - Age Zero- S13/0/\*/\*\* (where \*=month and \*\*=year of withdrawal from service) ie. An age zero extension in November 2001 would be displayed as S13/0/11/2026).

### 3. Specific requirements – Five year life extension

- A heavy bus may have its service life extended an extra five years subject to the vehicle undergoing a basic refurbishment, ADR upgrade and certification by the Approved Person, in a number of key areas.
- It should be noted that this five year life extension is not considered a complete refurbishment. The bus will retain its original year of manufacture for the purposes of registration.

Open, Regional or Local classification buses that have a five year life extension between 18 years of age and before turning 25 year of age may continue in the open, regional and local classification use, as applicable until it turns 30 years of age.

## 3.1 Conditions of refurbishment

### 3.1.1 ADRs

The bus must be upgraded to comply with the ADRs applicable five years after the bus was first registered.

The only ADRs which are exempted from this requirement are those related to control of exhaust emissions. Therefore, an engine does not require upgrading to a later exhaust emissions ADR. Owners should carefully consider the potential cost of ADR upgrading before committing to a bus life extension, particularly with regard to ADRs for roll over strength and seat belts as they become applicable. No exemptions will be given from safety related ADRs.

**Note:** While upgrading to later ADRs for exhaust emissions (eg ADR 30 Diesel Engine Smoke Emissions) is not required, the vehicle must continue to comply with in-service regulations. Therefore, the engine must continue to comply with the ADR for exhaust emissions it was originally built to and must not emit smoke for 10 seconds or more. Refer to *Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2010*.

### 3.1.2 Body

- The body must be in good structural condition.
- If the body shows signs of structural damage, or rusting of the frame (eg: rust stains, loose rivets, loose or rusted panels), or if the bus has not passed a frame inspection within the previous five years, a full panel removal and frame inspection is required. See information bulletin titled “Guidelines for the structural inspection and repair of buses” for the requirements for a frame inspection.
- All interior trim material must be free from damage and in good serviceable condition.
- All side facing seats must be removed and replaced with forward or rearward facing seats on buses in the Regional Classification. Open Classification buses must have forward or rearward facing, coach style, high back seats.
- Exposed handrails, seats and partitions must be padded where specified in information bulletin titled “Guidelines for safety padding for bus handrails, seats and partitions”.
- All interior or damaged floor coverings must be replaced with approved non-slip style material.
- Windows and window seating must be in good condition.
- Paintwork must be in good condition.

### 3.1.3 Chassis and Suspension

All components to be cleaned, inspected and crack tested where necessary, to ensure they are rust free, structurally sound and within service wear limits.

### 3.1.4 Steering

- Power steering components must be free of leaks. Cracked or oil affected hydraulic hoses must be replaced.
- Stub axles and all steering arms (including pitman arms and drag links) are to be crack tested. Defective components must be replaced. No repairs using heating or welding processes are considered acceptable.

### 3.1.5 Brakes

- Complete overhaul and refurbishment of the braking system must be carried out.
- Replacement of flexible air or hydraulic lines, valve seals, diaphragms etc is required. All components must comply with acceptable national or SAE standards.
- Physical testing of vehicle braking performance to meet the *Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2010* performance requirements for both service and parking brakes is required. (Minimum service brake efficiency 50%, parking brake to hold on a 12% gradient).

### 3.1.6 Electrical

- All electrical fittings, lights, reflectors, lenses and wiring must be in serviceable condition.
- Light and reflector lenses must be free from cracks and have serviceable and reflective surfaces. Discoloured or cracked lenses must be replaced.
- All electrical wiring and electrical conduit must be secure, shielded from the effects of excessive heat, and in serviceable condition.
- Voltage under load with the engine running at each lamp must not be more than 10% below nominal voltage. Eg. 10.8 volts for a 12 volt system.

### 3.1.7 Engine and Driveline

- All components will require visual and physical inspection and may require dismantling, if necessary, to ensure reliability and mechanical integrity.
- The engine must have adequate power output.
- All components must be free of oil, water, air and vacuum leaks.
- The vehicle shall be free of exhaust leakage, excessive noise and smoke emission (Vehicle should be operated under load and not emit visible smoke continuously for more than 10 seconds).
- Transmission and driveline components must be secure. All components must be free of oil leaks, excessive wear or backlash in the drive line.
- Rubber mounts and dampers are to be free of oil impregnation, cracking and deterioration.
- All axle hub assemblies must be removed, dismantled and inspected. All hub oil seals and gaskets must be replaced. Replace wheel bearings where necessary.

## 4. Specific requirements – Age zero refurbishment

A service bus may have its service life returned to age zero subject to the vehicle undergoing a complete refurbishment, ADR upgrade and certification by the Approved Person, in a number of key areas.

Age Zero refurbishment is the complete refurbishment of the rolling chassis, the fitting of a new body and the upgrading of the bus to meet the safety and emission standards applicable to a new heavy bus at the time of refurbishment.

Buses which are completely refurbished in accordance with the following conditions will be considered by Queensland Transport to qualify as Age Zero, for the purposes of the *Transport Operations (Passenger Transport) Standard 2010*.

It should be noted that these buses will retain their original year of manufacture for the purpose of registration.

#### **4.1 Conditions of refurbishment**

##### **4.1.1 ADRs**

The refurbished bus must comply with all ADRs applicable at the date of completion of remanufacture. Buses intended for Open or Regional Classifications must comply with all ADR's applicable to Non Route Service Buses.

##### **4.1.2 Body**

A completely new body (including all interior and exterior fittings and equipment) is required.

##### **4.1.3 Chassis and Suspension**

Structural components (chassis, spring hangers etc.) must be dismantled, visually inspected and crack tested if necessary. All components must then be replaced or refurbished as necessary.

##### **4.1.4 Mechanical**

All mechanical components (engine, gearbox, steering, suspension and axles etc.) must be rebuilt, including the replacement of all seals, gaskets, bearings and wearing components.

##### **4.1.5 Brakes**

The complete braking system must be fully rebuilt including replacement or refurbishment of all wearing components, Replacement of all flexible air or hydraulic lines, valve seals, diaphragms, springs etc. All components must comply with the appropriate national or SAE standards.

**Checklist s13a**  
**Bus Life Vehicle Rating -**  
**5 Year Life Extension**  
**CODE S13**

Form No: S13a  
(Y=Yes, N=No)

<b>Modification Certificate Number :</b>			
<b>1</b>	<b>ADRs</b>		
1.1	Has the bus been upgraded to comply with all ADRs applicable (except exhaust emissions) five years after it was first registered (or manufactured if registration details are not available)?	Y	N
<b>2</b>	<b>Body</b>		
2.1	Is the body in good structural condition?	Y	N
2.2	Is the body free of structural damage, rusting, loose rivets, rusted panels etc?	Y	N
2.3	Has the bus passed a full frame inspection within the previous five years (a copy of the Department of Transport and Main Roads frame inspection certificate must be sighted) or has a full frame inspection been carried out?	Y	N
2.4	Is all interior trim free from damage and in good serviceable condition?	Y	N
2.5	Are all floor coverings approved non-slip type material and in good condition?	Y	N
2.6	Are all window seals and windows in good condition?	Y	N
2.7	Is all paintwork in good condition	Y	N
2.8	Are all applicable areas padded as required in information bulletin "Guidelines for safety padding for bus handrails, seats and partitions"?	Y	N
2.9	If the bus is to be operated under Regional Classification, are all seats forward or rear facing, coach style, high back seats?	Y	N
2.10	If the bus is to be operated in Open Classification, are all seats forward or rear facing, coach style, high back seats?	Y	N

<b>3</b>	<b>Chassis and Suspension</b>		
3.1	Have all components been cleaned, inspected and crack tested, if necessary, to ensure they are rust free, structurally sound and within serviceable wear limits?	Y	N
<b>4</b>	<b>Steering</b>		
4.1	Are all power steering components free from leaks, and have all oil affected hoses been replaced?	Y	N
4.2	Have all stub axles, steering arms, pitman arms and drag links been crack tested? <i>Note: All defective components must be replaced. Repairs using heat or welding processes are NOT acceptable.</i>	Y	N
<b>5</b>	<b>Brakes</b>		
5.1	Has the complete braking system been fully overhauled and refurbished?	Y	N
5.2	Have all flexible air or hydraulic lines, valve seals, diaphragms, wheel cylinder seals etc been replaced? <i>Note: All components must comply with acceptable national or SAE standards.</i>	Y	N
5.3	Has the service brake been tested to show an efficiency not less than 50%?	Y	N
5.4	Has the parking brake been tested to hold the vehicle on a gradient of at least 12%	Y	N
<b>6</b>	<b>Electrical</b>		
6.1	Are all electrical fittings, lights, reflectors, lenses and wiring in a serviceable condition?	Y	N
6.2	Are all lenses free from cracks and have serviceable reflective surfaces?	Y	N
6.3	Is all electrical wiring secure, shielded from the effects of excessive heat, and in a serviceable condition?	Y	N
6.4	Is the voltage under load at each lamp not more than 10% below nominal system voltage?	Y	N
<b>7</b>	<b>Engine and Driveline</b>		
7.1	Have all components been physically inspected and dismantled, where necessary, to ensure mechanical integrity and reliability?	Y	N
7.2	Does the engine have adequate power output?	Y	N
7.3	Is the vehicle free from oil, water, air and vacuum leaks?	Y	N
7.4	Is the vehicle free from exhaust leakage, excessive noise and smoke emission? <i>Note: Vehicle should be operated under load and not emit smoke continuously for 10 seconds or more.</i>	Y	N
7.5	Is the transmission and driveline secure, free of leaks, excessive wear and backlash?	Y	N
7.6	Are all rubber mounts and dampers free of oil impregnation and cracking?	Y	N
7.7	Have all hub and axle assemblies been dismantled, cleaned and have all seals and defective bearings been replaced?	Y	N

<b>8</b>	<b>Vehicle Life Details</b>		
8.1	Date of first Registration (Month and Year)		
8.2	Life extension current up to and including (Month and Year)		
<b>9</b>	<b>General</b>		
9.1	Has the vehicle undergone a full evaluation and rating under the requirements of the Commercial Motor Vehicle Code of Practice modification codes S4 or S5, and S6 to validate the passenger carrying capacity and compliance with Queensland Transport Safety Requirements?	<b>Y</b>	<b>N</b>

**Note:** If the answer to any question is **N (No)**, the five year life extension will not be granted

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**Checklist s13b**  
**Bus Life Vehicle Rating -**  
**Age Zero Refurbishment**  
**CODE S13**

Form No: S13b  
(Y=Yes, N=No)

<b>Modification Certificate Number :</b>			
<b>1</b>	<b>ADRs</b>		
1.1	Does the refurbished bus comply with all ADRs applicable at the date of completion of remanufacture?	<b>Y</b>	<b>N</b>
1.2	Has the vehicle been upgraded to meet the safety and emission standards applicable to a heavy bus at the date of completion of remanufacture?	<b>Y</b>	<b>N</b>
1.3	If the bus is intended for Open or Regional Classification, does it comply with all ADRs applicable to Non Route Service Buses?	<b>Y</b>	<b>N</b>
<b>2</b>	<b>Body</b>		
2.1	Has a new body been fitted (including all interior and exterior fittings and equipment)?	<b>Y</b>	<b>N</b>
<b>3</b>	<b>Chassis</b>		
3.1	Has a complete refurbishment of the rolling chassis been carried out?	<b>Y</b>	<b>N</b>
3.2	Have all structural components (chassis, spring hangers etc.) been dismantled, visually inspected, crack tested, replaced or refurbished as necessary?	<b>Y</b>	<b>N</b>
<b>4</b>	<b>Mechanical</b>		
4.1	Have all mechanical components (engine, gearbox, steering, suspension and axles etc.) been rebuilt, including the replacement of all seats, gaskets, bearings and wearing components?	<b>Y</b>	<b>N</b>
<b>5</b>	<b>Brakes</b>		
5.1	Has the complete braking system been fully rebuilt including replacement or refurbishment of all wearing components, replacement of all flexible or hydraulic lines, valve seals, diaphragms, springs etc?	<b>Y</b>	<b>N</b>
<b>6</b>	<b>Vehicle Life Details</b>		
6.1	Date of first Registration (Month and Year)		
6.2	Life extension current up to and including (Month and Year)		
<b>7</b>	<b>General</b>		
6.1	Has the vehicle undergone a full evaluation and rating under the requirements of the Commercial Motor Vehicle Code of Practice modification codes S4 or S5, and S6 to validate the passenger carrying capacity and compliance with Queensland Transport safety requirements?	<b>Y</b>	<b>N</b>

**Note:** If the answer to any question is **N (No)**, the five year life extension will not be granted

## List of Amendments

### 1. Introduction of section LC – Vehicle Controls [Version 2.0]

*Commenced 1 January 2014*

- General Change                      The template this code of practice is published on was updated to comply with the Queensland Government corporate identity.
- New Section                              Inclusion of new Vehicle Controls section (LC), including two design codes (LC1 and LC3) and two modification codes (LC2 and LC4). This section is included in this version as pages 8-34.

### 2. Changes due to the commencement of the *National Heavy Vehicle Law Act 2012* (Queensland [Version 2.1])

*Commenced 10 February 2014*

(page references cited are pages as in version 2 of this document)

- Table of Contents (pp.3-4)      Updates to reflect changes made by this package.
- Introduction (p.5)                      Minor changes made to reference the National Heavy Vehicle Regulator (NHVR) Code of Practice for the Approval of Heavy Vehicle Modifications and *Heavy Vehicle (Vehicle Standards) National Regulation 2013*.
- Modification Codes (p.6)              Table of heavy vehicle modification codes updated to reflect modification codes removed by this change.
- Section K6 (pp.66-77)                  Section removed as this section is now included as part of the National Heavy Vehicle Regulator (NHVR) Code of Practice for the Approval of Heavy Vehicle Modifications.
- Note: The section is available from the heavy vehicle modification section of the Transport and Main Roads website at [www.tmr.qld.gov.au](http://www.tmr.qld.gov.au)*
- Section S4 (pp.78-105)                  Section repealed as this section is now included as part of the National Heavy Vehicle Regulator (NHVR) Code of Practice for the Approval of Heavy Vehicle Modifications.
- Note: The section is available from the heavy vehicle modification section of the Transport and Main Roads website at [www.tmr.qld.gov.au](http://www.tmr.qld.gov.au)*
- Section S5 (pp.106-137)                  Section repealed as this section is now included as part of the National Heavy Vehicle Regulator (NHVR) Code of Practice for the Approval of Heavy Vehicle Modifications.
- Note: The section is available from the heavy vehicle modification section of the Transport and Main Roads website at [www.tmr.qld.gov.au](http://www.tmr.qld.gov.au)*
- Section S6 (pp.138-159)                  Section repealed as this section is now included as part of the National Heavy Vehicle Regulator (NHVR) Code of Practice for the Approval of Heavy Vehicle Modifications.
- Note: The section is available from the heavy vehicle modification section of the Transport and Main Roads website at [www.tmr.qld.gov.au](http://www.tmr.qld.gov.au)*
- Section S10 (pp.160-224)                  Section repealed as this section is now included as part of the National Heavy Vehicle Regulator (NHVR) Code of Practice for the Approval of Heavy Vehicle Modifications.

### 3. Changes to the LO8 section [Version 2.2]

Commenced 1 June 2014

Section LO8 (p.49) Requirements about seat belts in this section updated.

### 4. Removal of the LL7 section [Version 2.3]

Commenced 1 July 2014

Table of Contents (pp.3) Table of Contents updated to reflect modification code removed by this change.

Modification Codes (p.6) Table of modification codes updated to reflect modification code removed by this change.

Section LL7 (pp. 40-46) Section removed. This modification is now considered a basic modification. Requirements for this modification can be found in the LL section of the NCOP.

Note: page references cited are as in version 2.2.

### 5. Removal of the LO8 section [Version 2.4]

Commenced 1 October 2014

Table of Contents (pp.3) Table of Contents updated to reflect modification code removed by this change.

Modification Codes (p.6) Table of modification codes updated to reflect modification code removed by this change.

Section LO8 (pp. 42-46) Section removed.

Note: page references cited are as in version 2.3.

### 6. Minor amendment to the S13 section [Version 2.4.1]

Commenced 18 November 2014

Section S13 (p.56) 6<sup>th</sup> and 7<sup>th</sup> dot points under section 'General Requirements' combined and updated to reflect the Department of Transport and Main Roads' policy position about professional engineering services.

9<sup>th</sup> dot point under section 'General Requirements' has been updated to refer to the heavy code.

*Note: Changes have resulted in text on pages 56-60 moving. If updating this Code of Practice from version 2.4, this can be done by replacing pages 56-60 and 67-68 with those from this version.*

### 7. Removal of certification details [Version 2.5]

Commenced 16 March 2015

Section LC, LH, LS and S The 'certification details' tables have been removed from each section as this information is captured on the Modification Certificate. An additional row has been included in each checklist to capture the Modification Certificate number.

## 8. Introduction of LS11 and LS12 Modification Codes [Version 2.8]

*Commenced 1 March 2017*

General Change                      The template this code of practice is published on was updated to comply with the Queensland Government corporate identity.

New Sections                        Inclusion of new LS11 - Gross Vehicle Mass Increase and LS12 - Light Trailer Modifications

LS11 and LS12 sections are included in this version as pages 52-66.

## 9. Introduction of LX1 Modification Code

## 10. Changes to LS9 and LS10 Codes [Version 4.0]

*Commenced 19 October 2018*

Section LS9 and LS10              Major revision to increase maximum lift height to 150mm and to include lifts up to 75mm. (pp 41-54)

Section LC3                         The approval to disable airbags that are part of an SRS has been extended to 30 June 2019. (p22)

## 11. Insertion of Certification Details Checklist box [Version 4.1]

*Commenced November 2018*

Section LC1, LC2, LC3, LC4,  
LH9, LH10, LS9 and LS10      Inserted Vehicle details certification box for checklist

## 12 Change to S13 section

Commenced 1/04/2019

Changed the section 3 to reflect the *Transport Operations (Passenger Transport) Standards 2010*

## 12. Introduction of LS15 Modification code [Version 4.2]

Commenced March 2020

Facilitate provision of design package under LS11 so new code LS15 can be used to provide inspection and certification of physical modifications for GVM upgrade.

Prohibit changes to GCM rating and tow capacity rating under LS11 code, restricting it to GVM upgrade only Making the code clearer on its scope & limitations