



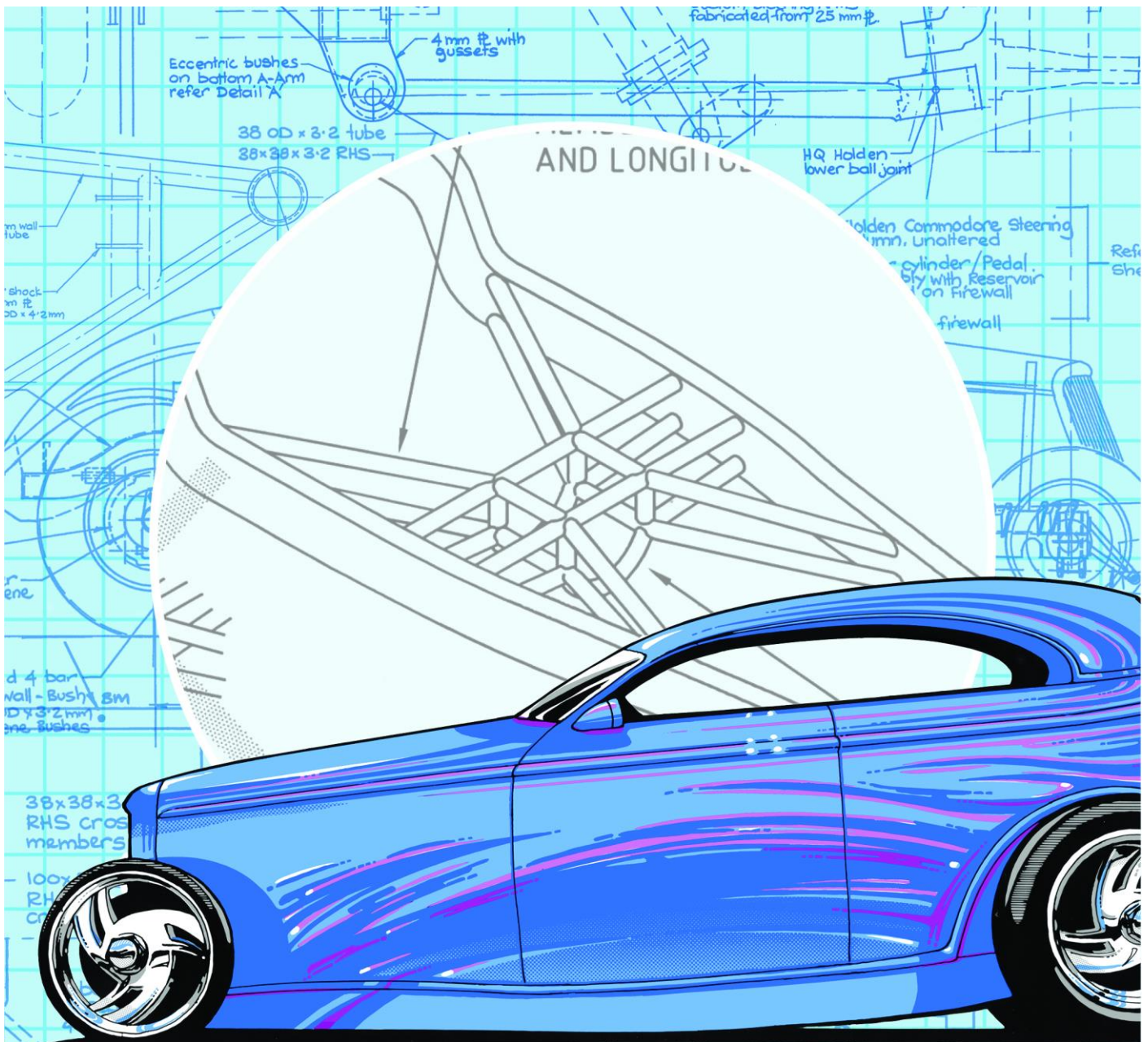
Helping New Zealanders Build & Modify Safe Vehicles

Low Volume Vehicle Standard

40-00(00)

Chassis Modification & Construction

Initial Issue – Original Version | Effective from 1 July 2021



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Approval

LVV Standard 40-00 Approval:	
Signed in accordance with clause 1.3(5) of the Low Volume Vehicle Code, on.....by:	
on behalf of New Zealand Transport Agency:	on behalf of Low Volume Vehicle Technical Association:

Amendments

LVV Standard 40-00 Amendment Record:			
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NOTE 1: Text which is high-lit in grey shows amendments that have been made subsequent to the document’s previous version, and a grey vertical stroke to the left of the text denotes new or changed information which is important and needs to be understood.			
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Associated information

Publisher & Owner:

This Low Volume Vehicle Standard is published and owned by the Low Volume Vehicle Technical Association Incorporated (LVVTA). LVVTA is an incorporated society which was established in 1992, that represents a group of specialist automotive organisations (in turn representing approximately 150,000 members) who are dedicated to ensuring that vehicles, when scratch-built or modified, meet the highest practicable safety standards.

The information in these standards has stemmed from work undertaken by LVVTA founding member organisations that commenced prior to 1990 and has been progressively developed as an integral part of New Zealand Government safety rules and regulations by agreement and in consultation with the New Zealand Transport Agency.

As a result, the considerable experience in applied safety engineering built up by LVVTA and the specialist automotive groups over the past several decades can be of benefit to members of the New Zealand public who also wish to build or modify light motor vehicles.

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Availability of low volume vehicle standards:

Low volume vehicle standards are developed by the LVVTA, in consultation with the New Zealand Transport Agency, and are printed and distributed by the LVVTA. The standards are available to the public free of charge from the LVVTA website; www.lvvt.org.nz

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Legal status:

This Low Volume Vehicle Standard is incorporated by reference within *Land Transport Compliance Rule 35001*, and technically corresponds with *Land Transport Rules 32006 (Frontal Impact)* and *32014 (Light Vehicle Brakes)*.

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Credits:

The LVVTA acknowledges the following persons and organisations for their significant contribution toward the development of this low volume vehicle standard:

- Technical content: LVVTA Technical Staff
- Document development, cover artwork: Tony Johnson
- Cover CAD diagram: Graham Walls

Chassis Modification & Construction (40-00[00])

Purpose of this standard

The purpose of this low volume vehicle standard (the standard) is to provide the legal framework for the low volume vehicle certification of a vehicle which has undergone a chassis modification, or features an aftermarket or custom chassis, which may have affected the vehicle's general safe operation or durability. Such a vehicle is required by the *Land Transport Rule (Vehicle Standards Compliance) 2002* to comply with the *Low Volume Vehicle Code*, which in turn, requires compliance with this standard.

This standard sets out:

- which vehicles are required to meet this standard; and
- how this standard is applied to those vehicles; and
- the technical requirements which must be met by vehicles required to comply with this standard.

Section 1 Scope and application of this standard

1.1 Scope of this standard

1.1(1) This low volume vehicle standard applies to all light vehicles other than those specified in 1.1(2), that:

(a) are modified either:

- (i) on or after 1 January 1992 in such a way that the vehicle's safe operation may, directly or indirectly, be affected as a result of a chassis modification or fitment of an aftermarket or custom chassis; or
- (ii) before 1 January 1992 in such a way that the vehicle's safe operation may, directly or indirectly, be affected as a result of a chassis modification or fitment of an aftermarket or custom chassis, and have not been continuously registered since that date;

or

(b) are scratch-built either:

- (i) on or after 1 January 1992; or
- (ii) before 1 January 1992 and have not been continuously registered since that date.

NOTE: For the avoidance of doubt, 1.1(1) specifies that a low volume vehicle (which has been scratch-built, or modified in such a way that its safe operation may, directly or indirectly, be affected as a result of a chassis modification or fitment of an aftermarket or custom chassis) is not required to be certified to this standard only if the vehicle:

- was scratch-built or modified prior to 1 January 1992; and
- has been issued with a valid Modification Declaration Certificate; and
- has been continuously registered since 1 January 1992; and
- has not been subsequently modified.

- 1.1(2) This low volume vehicle standard does not apply to:
- (a) powered bicycles of Class AB; or
 - (b) motorcycles and mopeds of Class LA, LB, LC, LD, or LE; or
 - (c) light trailers of Class TA or TB; or
 - (d) those vehicles specified in section 3.

1.2 **Application of this standard**

1.2(1) A light vehicle that is scratch-built or modified as in 1.1(1), becomes a low volume vehicle, and must either:

- (a) in the case of a vehicle which was scratch-built or modified before 1 January 1992 and has not been continuously registered, or a vehicle which was scratch-built or modified between 1 January 1992 and 1 January 2007:
 - (i) be certified in accordance with the procedures specified in *chapter 2* of the *Low Volume Vehicle Code*; and
 - (ii) comply with the *General Safety Requirements* contained in 2.1 of this standard; and
 - (iii) comply with those technical requirements referred to in 2.2 and 2.3 of this standard, as determined to be appropriate by a Low Volume Vehicle Certifier;

or

- (b) in the case of a vehicle which was scratch-built or modified after 1 January 2007:
 - (i) be certified in accordance with the procedures specified in *chapter 2* of the *Low Volume Vehicle Code*; and
 - (ii) comply with the *General Safety Requirements* contained in 2.1 of this standard, and all applicable technical requirements referred to in 2.2 and 2.3 of this standard.

NOTE 1: The date of 1 January 2007 specified in 1.2(1)(a) and 1.2(1)(b) is the implementation date of *Chapter 5 Chassis Modification & Construction* of the *New Zealand Car Construction Manual (original version)*, which introduced specific technical requirements which must be met in lieu of an applicable low volume vehicle standard. This application date is mandated by the *Application of LVV Standards* section of the *Low Volume Vehicle Code*.

NOTE 2: In the case of a low volume vehicle specified in 1.2(1)(a), an LVV Certifier must apply the applicable technical requirements referred to in 2.2 and 2.3 of this standard as a guideline upon which to base their discretionary judgement on the safety of the vehicle, taking into account the modification or construction date of the vehicle.

Section 2 **Technical requirements of this standard**

2.1 **General safety requirements**

2.1(1) A low volume vehicle must:

- (a) be designed and constructed using materials and components that are fit for their purpose; and
- (b) be safe to be operated on the road.

NOTE: The requirements specified in 2.1(1) are selected from 2.3 of *Part 2 of the Low Volume Vehicle Code*, reproduced here in the interest of convenience, and are over-riding requirements which make it clear that, regardless of what technical requirements are or are not in place, every vehicle certified to the *Low Volume Vehicle Code* must be fit for its purpose, and must be safe.

- 2.1(2) The performance of a motor vehicle in relation to protecting occupants in a frontal impact collision must not be reduced below a safe tolerance of its state when manufactured or modified, by any factors, including corrosion, structural damage, material degradation, inadequate repair, the fitting of additional equipment, or the removal of equipment.

NOTE: The requirements specified in 2.1(2) are the applicable general safety requirements from the *Land Transport Rule 32006 Frontal Impact 2001*, which are required as part of this low volume vehicle standard and are reproduced here in the interest of convenience.

2.2 Overarching technical requirements

- 2.2(1) A production chassis fitted to a low volume vehicle which has been modified must:
- (a) incorporate joins which follow good automotive engineering practice; and
 - (b) where replacement or additional cross-members are fitted, be correctly designed, constructed, positioned, and attached; and
 - (c) where a C-notch is installed, be adequately reinforced; and
 - (d) maintain sufficient torsional stiffness to enable safe and durable operation; and
 - (e) not be modified in any way that could reduce the performance of the chassis in a frontal impact.
- 2.2(2) A custom ladder chassis fitted to a low volume vehicle must:
- (a) be correctly designed and constructed; and
 - (b) where joins are incorporated, follow good automotive engineering practice; and
 - (c) incorporate cross-members which are correctly designed, constructed, positioned, and attached; and
 - (d) incorporate sufficient torsional stiffness to enable safe and durable operation; and
 - (e) be designed so as to incorporate provision for protection of the vehicle occupants in the event of a frontal impact.
- 2.2(3) A custom space-frame chassis fitted to a low volume vehicle must:
- (a) be correctly designed and constructed, and follow good automotive engineering practice; and

- (b) be suitably reinforced where components are attached; and
- (c) incorporate attachment brackets which are suitable for their intended purpose; and
- (d) incorporate sufficient torsional stiffness to enable safe and durable operation; and
- (e) be designed so as to incorporate provision for protection of the vehicle occupants in the event of a frontal impact.

2.2(4) A composite chassis, or any highly-loaded composite sections of a unitary-constructed body, fitted to a low volume vehicle must:

- (a) be correctly designed and constructed, and follow good automotive engineering practice; and
- (b) have equal or greater strength, durability, and load-carrying capacity than a chassis or unitary-constructed body made using a conventional design and materials; and
- (c) be resistant to impact by foreign objects, and protected from moisture ingress; and
- (d) incorporate sufficient torsional stiffness to enable safe and durable operation; and
- (e) be designed so as to incorporate provision for protection of the vehicle occupants in the event of a frontal impact.

2.2(5) A chassis fitted to a low volume vehicle must incorporate:

- (a) fasteners which are appropriate for their application, and which cannot compress any sections of material through which they pass; and
- (b) where applicable, a drive-shaft safety-loop of good design, construction, and attachment; and
- (c) body mounts which are sufficient in number, and appropriately designed and attached.
- (d) welding which is of good quality, of an appropriate type, and which will ensure safe and durable operation.
- (e) sufficient corrosion-protection, and be in such condition, that it will provide safe and durable operation.

2.2(6) In order to demonstrate compliance with paragraphs 2.2(1) to 2.2(5), a low volume vehicle must comply with all relevant requirements specified in *Chapter 5 Chassis Modification & Construction* of the *LVVTA New Zealand Car Construction Manual*.

NOTE 1: For the avoidance of duplication, all of the relevant technical requirements for chassis modifications or fitment of an aftermarket or custom chassis are contained in <i>Chapter 5 Chassis Modification & Construction</i> of the <i>New Zealand Car Construction Manual</i> .

NOTE 2: An electronic version of *Chapter 5 Chassis Modification & Construction*, and all other chapters of the *NZ Car Construction Manual*, can be accessed from www.lvta.org.nz either individually or as a complete Manual, free of charge.

2.3 Associated technical requirements

2.3(1) A low volume vehicle that is required to comply with this standard must, where applicable, also comply with:

- (a) *LVVTA Low Volume Vehicle Standard 85-40 (Engine & Drive-train Conversions)*; and
- (b) *LVVTA Low Volume Vehicle Standard 155-30 (Frontal impact)*.

NOTE 1: All documents referred to in 2.3(1) can be accessed from www.lvta.org.nz and are free of charge.

NOTE 2: Printed copies of LVV documents may become out of date, and should not be relied upon without ensuring that the version is current – visit www.lvta.org.nz to check that the associated technical requirements referred to above are contained in the latest versions of the documents.

Section 3 Vehicles not required to be certified to this standard

3.1 Vehicles that do not require certification

3.1(1) A light vehicle is not required to be certified to this low volume vehicle standard, if the vehicle is either:

- (a) modified for the purposes of law enforcement or the provision of emergency services; or
- (b) identified as having been modified by a second-stage vehicle manufacturer, and complies with an approved overseas standard that is listed in *Annex 6* of the *Low Volume Vehicle Code*, and has not been subsequently modified further.

3.2 Modifications that do not require certification

3.2(1) A modification to a light vehicle is not required to be certified to the *Low Volume Vehicle Code* if the modification:

- (a) has not compromised the safe performance of the vehicle; and
- (b) is listed as a modification which does not require low volume vehicle certification, within either:
 - (i) the *LVVTA Modification Threshold Schedule*; or
 - (ii) a relevant *Modification Table* in the *Vehicle Inspection Requirements Manual* of the New Zealand Transport Agency.