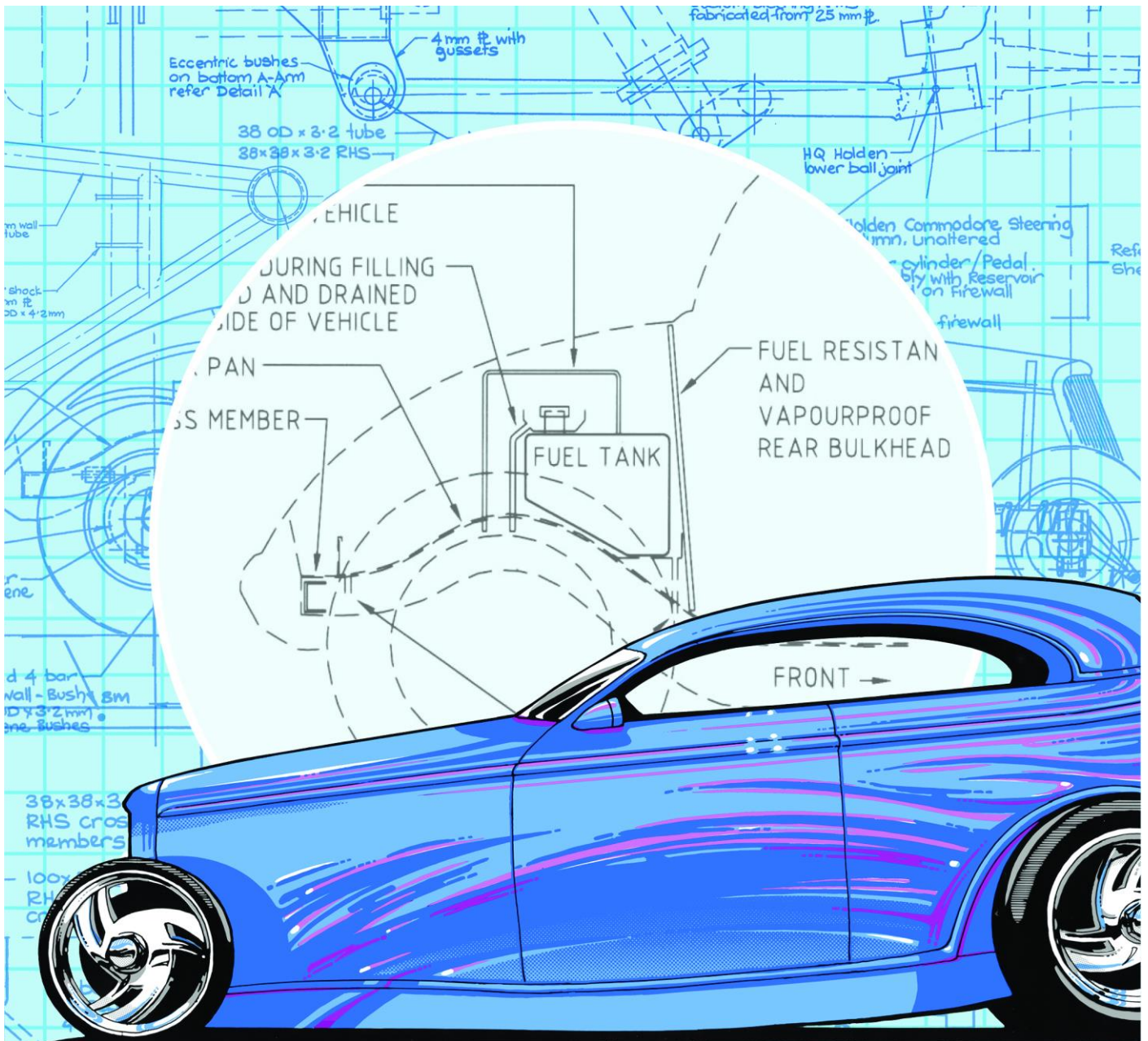


Helping New Zealanders Build & Modify Safe Vehicles

Low Volume Vehicle Standard

105-00(00) Fuel Systems

Initial Issue – Original Version | Effective from 1 July 2021



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Approval

LVV Standard 105-00 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 105-00 Amendment Record:			
Detail of amendments:	Amendment #:	Issue date:	Effect date:
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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.

LVVTA's contact details are below:

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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.lvvtta.org.nz

Disclaimer:

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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 Rule 32017 (Vehicle Equipment)*.

Copyright:

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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

Fuel Systems

(105-00[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 fuel system installation or modification, 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. Note that 'fuel', within the context of this standard, does not refer to electricity so this standard does not apply to electric vehicles.

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 fuel system installation or modification; 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 fuel system installation or modification, 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 fuel system installation or modification) 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 or LB; 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 10 Fuel Systems* of the *LVVTA 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) Fuel tanks, fuel lines, and associated components in a motor vehicle must be:

- (a) securely mounted; and
- (b) made of suitable materials; and
- (c) in good condition; and
- (d) free from significant leaks; and
- (e) positioned so that the risk of mechanical damage or heat gain is minimised.

NOTE: The requirements specified in 2.1(2) are the applicable general safety requirements from the *Land Transport Rule 32017 Vehicle Equipment 2004*, 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 fuel tank fitted to a low volume vehicle must:

- (a) be of good design, be well-constructed, and use appropriate materials; and
- (b) be located in such a position so as to ensure that it is protected from damage and excessive heat; and
- (c) be attached using materials and mounting methods which are appropriate for the weight and capacity of the fuel tank; and
- (d) incorporate a safety venting system to prevent the unsafe discharging of fuel or fuel vapour; and
- (e) incorporate effective baffling.

2.2(2) A fuel tank, filler cap, and all other fuel system components fitted to a low volume vehicle must be designed such that:

- (a) fuel leakage or spillage, either during filling or during vehicle operation, will be prevented; and
- (b) in the event of a fuel rupture or fuel leakage, safety risks will be minimised as a result of the way in which the fuel dispersal occurs.

2.2(3) Fuel pipes and fuel hoses fitted to a low volume vehicle must:

- (a) be of good design and made from an appropriate material; and

(b) be correctly positioned, attached, and protected from damage and heat.

2.2(4) A fuel pump and associated fuel system components fitted to a low volume vehicle must:

(a) be protected from heat; and

(b) separated from the battery and correctly wired.

2.2(5) In order to demonstrate compliance with paragraphs 2.2(1) to 2.2(4), a low volume vehicle must comply with all relevant requirements specified in *Chapter 10 Fuel Systems* of the *LVVTA New Zealand Car Construction Manual*.

NOTE 1: For the avoidance of duplication, all of the relevant technical requirements for fuel system installations and modifications are contained in *Chapter 10 Fuel Systems* of the *New Zealand Car Construction Manual*.

NOTE 2: An electronic version of *Chapter 10 Fuel Systems*, and all other chapters of the *NZ Car Construction Manual*, can be accessed from www.lvvta.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 *LVVTA Low Volume Vehicle Standard 85-40 (Engine & Drive-train Conversions)*.

NOTE 1: All documents referred to in 2.3(1) can be accessed from www.lvvta.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.lvvta.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 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.
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