

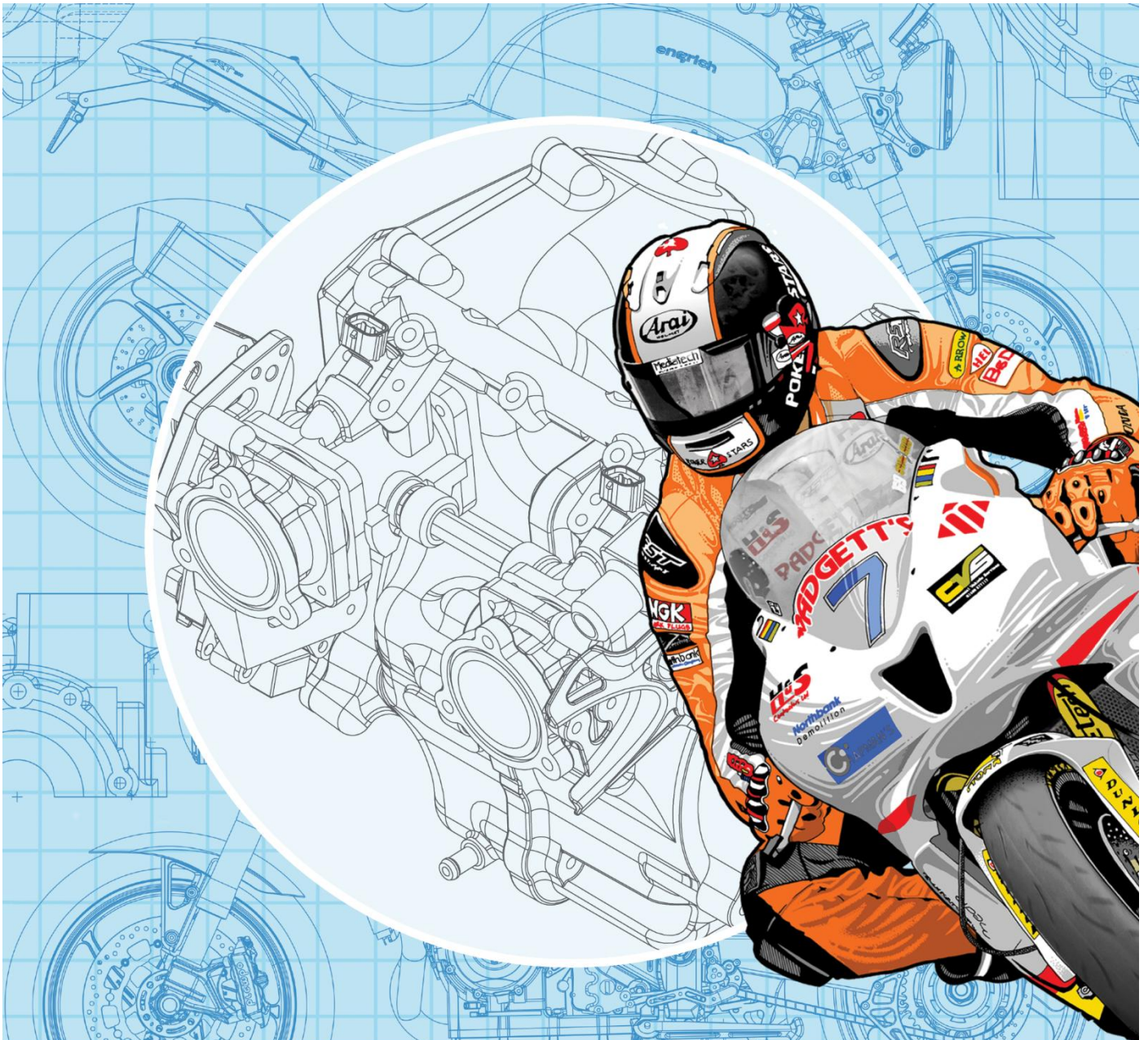
Helping New Zealanders Build & Modify Safe Vehicles

Low Volume Vehicle Standard

145-40(00)

Fuel Systems – Motorcycles

Version 1 | Effective from 1 January 2026



Approval Record

Signed in accordance with clause 1.3(5) of the <i>Low Volume Vehicle Code</i> of LVVTA, on by:			
New Zealand Transport Agency		Low Volume Vehicle Technical Association	
Name	Signature	Name	Signature
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Amendment Record

Amendments details	Version #	Issue date	Effect date
• LVV Standard 145-40(00) - Original Issue	Version 1	1 December 2025	1 January 2026
Note 1 Text highlighted in grey shows amendments that have been made subsequent to the previous version of this standard, and a grey vertical stroke to the left of the text denotes important new or changed information (which may include information which has been removed).			

About Low Volume Vehicle Standards

The Low Volume Vehicle Standards (the standards) specify that motorcycles (which have been modified or constructed) require low volume vehicle certification, and provide a set of overarching technical requirements that they must meet. The standard refers to the associated *New Zealand Motorcycle Construction Manual chapter*, that sets out the specific technical requirements which must be met in order to achieve compliance with the standard.

Author, Publisher, & Owner

This standard is authored, published, and owned by the Low Volume Vehicle Technical Association Incorporated (LVVTA). LVVTA is an incorporated society 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 this standard has stemmed from work undertaken by LVVTA founding member organisations that commenced in 1989 and has been progressively developed as an integral part of the New Zealand Government's land transport regulatory system, by agreement and in consultation with the New Zealand Transport Agency (NZTA).

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

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Availability and Current Version

This standard is printed and distributed by LVVTA, and is available to the public free of charge from the LVVTA website; www.lvvta.org.nz.

Note that printed copies of this standard, like any other printed LVVTA documents, may have been superseded by a later version and become out of date.

Therefore, this and all other LVVTA documents should not be relied upon without first ensuring that the version number (on the right-hand side of the header above) is the current version – please visit the LVV Standards area of www.lvvta.org.nz to check that this standard is in fact the latest version.

Users' Feedback

This standard is constantly undergoing an evolutionary development process in order to keep pace with changing trends and technology. To assist in this, LVVTA invites users of this standard to engage in an ongoing consultation process with us by making submissions for any changes, additions, or clarifications which might improve the standard, at any time.

Any submissions made via this rolling consultation process will be thoroughly considered, and incorporated, where appropriate, at the next available amendment opportunity.

Submissions should be made to submission@lvvta.org.nz, with the name of this standard in the Subject line.

Supporting Information

This standard should be read in conjunction with *Chapter 10: Fuel Systems* of the *NZ Motorcycle Construction Manual* which provides all necessary requirements and best-practice guidance to enable compliance with this standard.

Legal Status & Copyright

This standard is incorporated by reference, as an integral part of the *Low Volume Vehicle Code*, within *Land Transport Rule: Vehicle Standards Compliance 2002*. This standard corresponds technically with *Land Transport Rule: Vehicle Equipment 2004*.

The content of this standard remains the property of LVVTA, and no part may be reproduced without LVVTA's written consent.

Disclaimer

LVVTA has made all reasonable efforts to provide sound and correct advice, based on the historical knowledge and best practice experiences of all parties involved in the development and production of this chapter.

However, no responsibility or liability is accepted by LVVTA for any error or omission, or any loss suffered by any person relying directly or indirectly on this chapter. Any person who builds or modifies a vehicle accepts that there may be some associated risks, and does so in the full knowledge of this, and accepts full responsibility for their own actions.

Credits

LVVTA acknowledges the following contributors for their assistance in the development of this standard:

- Cover CAD diagrams: Engrich Motorcycle New Zealand
- Cover motorcycle illustration: Tony Johnson

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145-40(00)

Fuel Systems - Motorcycles

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 motorcycle which has been scratch-built or has undergone a fuel system modification or installation which may have affected the motorcycle's safe operation.

Such a motorcycle 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 motorcycles.

This standard sets out:

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

Italics are used throughout this standard when referencing 'external documents' that are not part of this standard.

Section 1 Scope and Application of this Standard

1.1 Scope of this Standard

1.1(1) This standard applies to all motorcycles of Class LC and LD, other than those specified in section 3, that (see Note 1 below):

(a) are modified either:

- (i) on or after 1 January 1992 in such a way that the motorcycle'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 motorcycle'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 1 For the avoidance of doubt, 1.1(1) specifies that a low volume motorcycle (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 motorcycle:

- 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.

1.2 Application of this Standard

1.2(1) A motorcycle that is scratch-built or modified as in 1.1(1), becomes a low volume vehicle, and must either (see Notes 1 and 2 below):

- (a) in the case of a motorcycle which was scratch-built or modified before 1 January 1992 and has not been continuously registered, or a motorcycle which was scratch-built or modified between 1 January 1992 and 1 January 2026:
 - (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) unless section 3 applies, comply with those technical requirements specified 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 motorcycle which was scratch-built or modified after 1 January 2026:
 - (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) unless section 3 applies, comply with all technical requirements specified in 2.2 and 2.3 of this standard.

Note 1 The date of 1 January 2026 specified in 1.2(1)(a) and 1.2(1)(b) is the implementation date of LVV Standard 145-40: Fuel Systems - Motorcycles (Version 1), which introduced specific technical requirements that must be met.

Note 2 In the case of a motorcycle 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 motorcycle, taking into account the modification or construction date of the motorcycle.

Section 2 Technical Requirements of this Standard

2.1 General Safety Requirements

2.1(1) A low volume motorcycle must (see Note 1 below):

- (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 1 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 (slightly amended for clarity), 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 low volume motorcycle must be (see Note 1 below):

- (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 1 The requirements specified in 2.1(2) are the applicable general safety requirements from *Land Transport Rule 32017 Vehicle Equipment* (slightly amended for clarity), 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 motorcycle 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 an effective filling and venting system to prevent the unsafe discharging of fuel or fuel vapour.
- 2.2(2) Fuel pipes and fuel hoses fitted to a low volume motorcycle 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(3) A fuel pump and associated fuel system components fitted to a low volume motorcycle must:
- (a) be protected from heat; and
 - (b) separated from the battery, and correctly wired.
- 2.2(4) All welding and fastening systems used within any fuel system installation or modification in a low volume motorcycle must follow best-practice engineering principles.
- 2.2(5) In order to demonstrate compliance with paragraphs 2.2(1) to 2.2(4), a low volume motorcycle must comply with all relevant requirements specified in *Chapter 10: Fuel Systems* of the *New Zealand Motorcycle Construction Manual* (see Notes 1 to 3 below).

Note 1 For the avoidance of duplication, all of the relevant technical requirements for fuel system installation or modification are contained in *Chapter 10: Fuel Systems* of the *New Zealand Motorcycle Construction Manual*.

Note 2 An electronic version of *Chapter 10: Fuel Systems*, and all other chapters of the *New Zealand Motorcycle Construction Manual*, can be accessed from www.lvvt.org.nz either individually or as a complete Manual, free of charge.

Note 3 For the avoidance of doubt, a low volume motorcycle to which 1.2(1)(a) applies, must comply with only the relevant requirements specified in *Chapter 10: Fuel Systems* of the *New Zealand Motorcycle Construction Manual* considered appropriate by an LVV Certifier, taking into account the modification or construction date of the motorcycle.

2.3 Associated Technical Requirements

- 2.3(1) A low volume motorcycle that is required to comply with this standard must, where applicable, also comply with *Low Volume Vehicle Standard 145-35: Engine & Drive-train – Motorcycles* (see Notes 1 and 2 below).

Note 1	The document referred to in 2.3(1) is available to the public electronically, free of charge, from www.lvvta.org.nz
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 the latest versions of the documents.

Section 3 Motorcycles Not Required to Meet this Standard

3.1 Motorcycles that Do Not Require LVV Certification

- 3.1(1) A motorcycle is not required to be certified to this standard if the motorcycle 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 LVV Certification

- 3.2(1) A modification to a motorcycle is not required to be certified to the *Low Volume Vehicle Code* if the modification:
- (a) has not compromised the safe performance of the motorcycle; 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.