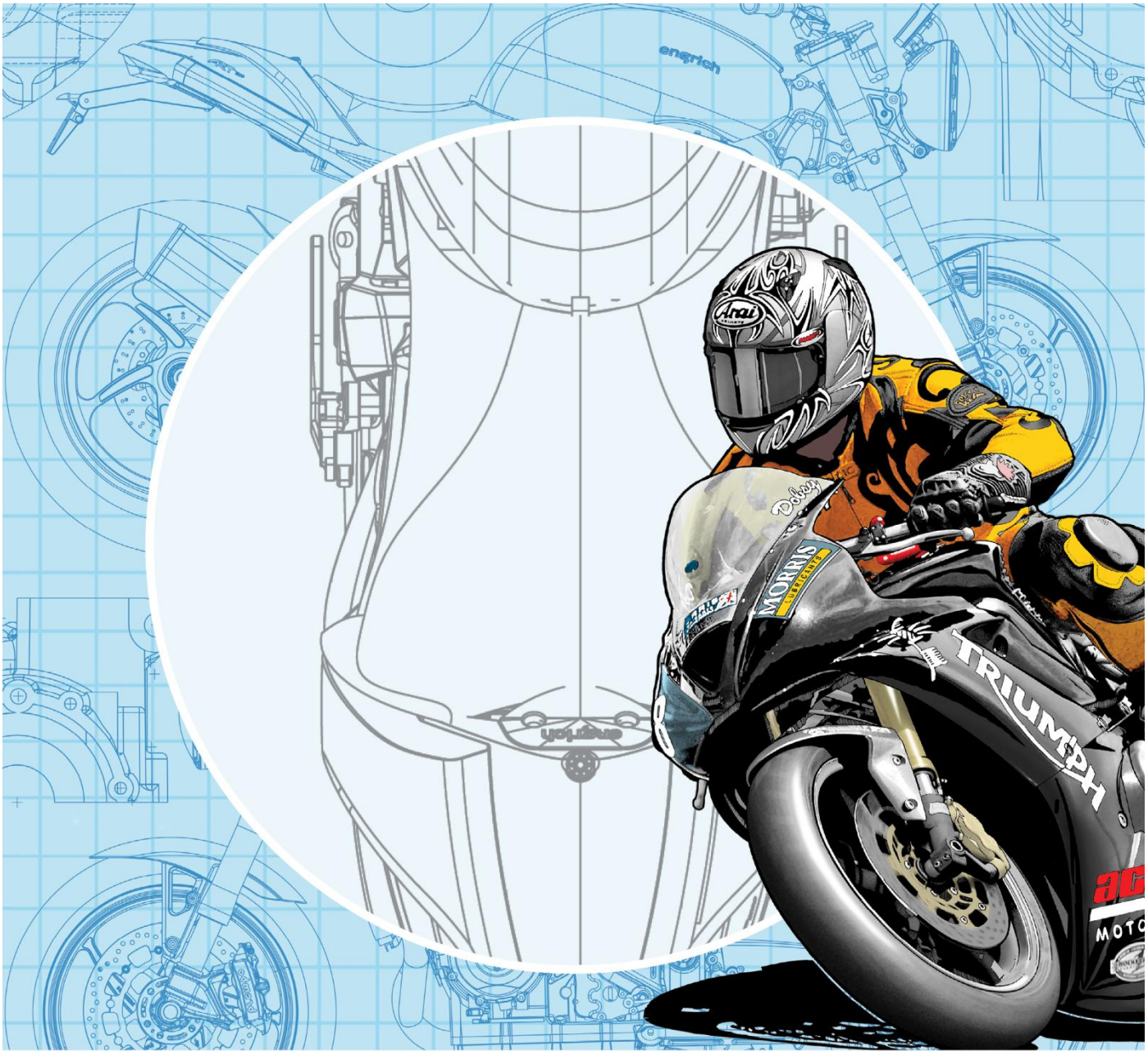
Low Volume Vehicle Technical Association (inc)

Helping New Zealanders Build & Modify Safe Vehicles

New Zealand Motorcycle Construction Manual

Chapter 14
Seating

Version 1 | Effective from 1 January 2026



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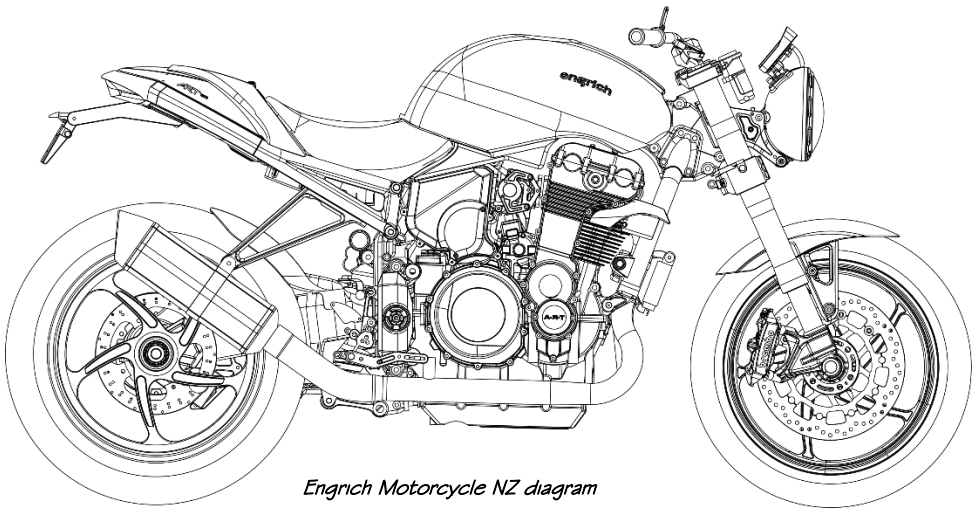

Engrich Motorcycle NZ diagram

Approval Record

Signed in accordance with clause 1.3(5) of the *Low Volume Vehicle Code* of the LVVTA	
On (date)..... on behalf of	
New Zealand Transport Agency	Low Volume Vehicle Technical Association .....

Amendment Record

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• Original Issue	Version 1	1 December 2025	1 January 2026

About Motorcycle Construction Manual Chapters

NZ Motorcycle Construction Manual Chapters (the chapters) provide the necessary detailed technical requirements, and helpful information, to enable a modified or scratch-built motorcycle to comply with the corresponding low volume vehicle standards (LVV standards). The chapters provide modifiers and constructors with the same information that an LVV Certifier will use when inspecting a modified or scratch-built motorcycle which requires LVV certification.

Author, Publisher, & Owner

This chapter 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 motor vehicles, when scratch-built or modified, meet the highest practicable safety standards.

The information in this chapter 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 & Current Version

This chapter 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 chapter, like any other printed LVVTA documents, may have been superseded by an amended version and become out of date. Therefore, this and all other LVVTA documents should not be relied upon without first ensuring that the Version # (on the right-hand side of the header above) is the current version – please visit www.lvvta.org.nz/nzmcm to check that this chapter is in fact the latest version.

Users' Feedback

This chapter 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 chapter to engage in an ongoing consultation process with us by making submissions for any changes, additions, or clarifications which might improve the chapter, 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 chapter in the Subject line.

Supporting Information

This chapter may be supported by other documents (referred to as 'supporting information') on the same subject, which could be helpful to someone using this chapter. Supporting information, if available, can be found at www.lvvta.org.nz/nzmcm and is all free of charge.

Legal Status & Copyright

This chapter supports *LVV Standard 145-60: Seating - Motorcycles*, which is incorporated within the *Low Volume Vehicle Code* (*LVV Code*). The *LVV Code* is, in turn, incorporated by reference within *Land Transport Rule: Vehicle Standards Compliance 2002*.

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 motor 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

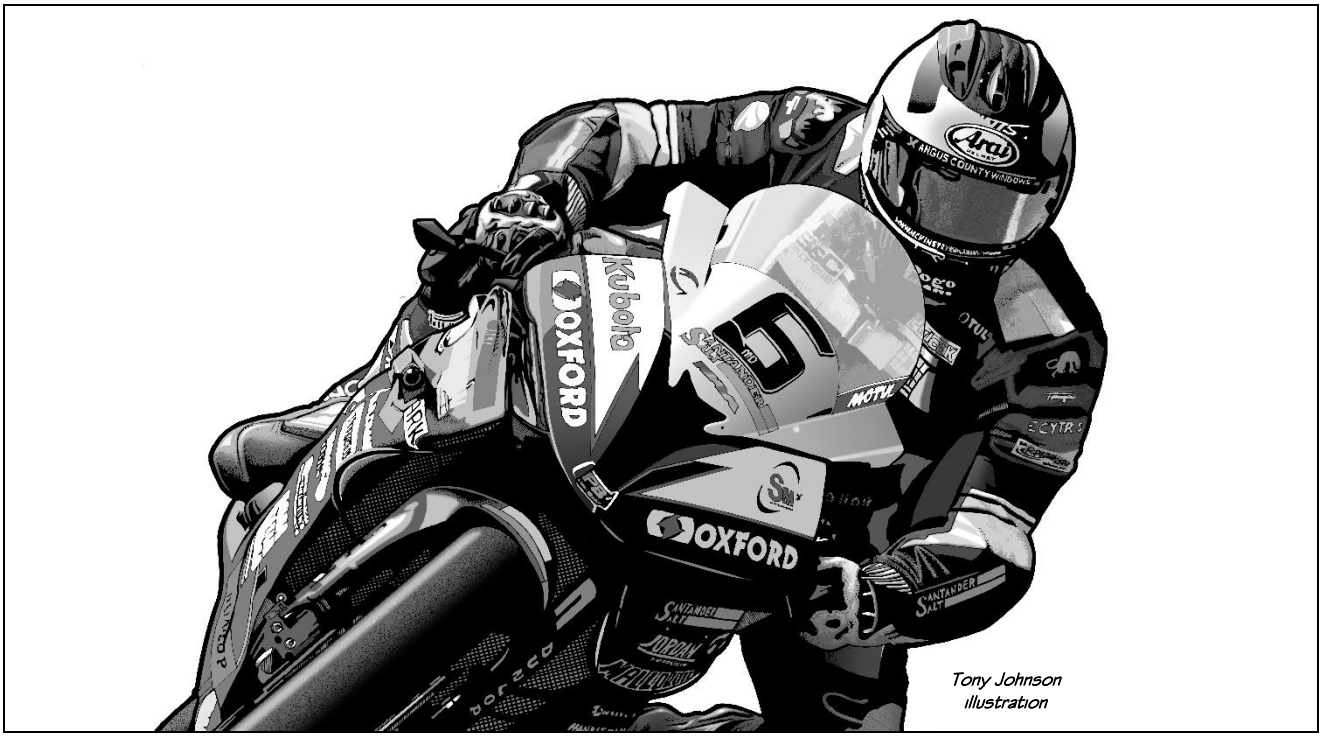
LVVTA acknowledges the following contributors for their assistance in the development of this chapter:

- Technical content: Kiwi Trikers' Social Club (Inc), LVVTA Technical Advisory Committee, LVVTA technical staff
- Cover & page 2 CAD diagram: Engrich Motorcycle New Zealand
- Motorcycle illustrations on the cover, and on pages 4 and 6: Tony Johnson

Type Key (For full details of Type Key, refer to Chapter 2 – About this Manual)

Normal type:	Provisions of the NZ Motorcycle Construction Manual for all motorcycles.
Italicised type:	Used when referencing external documents that are not part of this chapter.
Normal type in shaded box:	Special provisions of the NZ Motorcycle Construction Manual for motorcycles built or modified before specified dates.
Script type:	Helpful hints, tips, explanations, clarifications, and interpretations.
Grey shaded text & grey vertical stroke in margin:	Latest amendments since previous version. Note that text which is highlit in grey shows amendments that have been made since the document's previous version, and a grey vertical stroke to the left of the text denotes new or changed information which is important (rather than just a grammatical, formatting, or numbering change).

Chapter 14 Contents



CHAPTER 14: SEATING

Introduction

The purpose of this chapter is to specify sound practical engineering principles and procedures relating to the modification and construction of motorcycle seats.

A motorcycle seat provides more than just a place to sit – it forms the basis of the controllability and riding comfort of the motorcycle. There are many different types of motorcycle seat, and their style and fitment depend on the intended use of the motorcycle – these can range from a simple, thin, lightweight padded squab on a sports bike, to a plush, adjustable sprung seat on a tourer.

Note that where a production motorcycle is fitted with its original seat and associated components in their original locations, the requirements in this chapter do not apply.

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

For conciseness, all references to 'motorcycle' in this chapter mean a motorcycle that, due to being modified or scratch-built, is legally classified as a low volume vehicle.

General Safety Requirements

14.0 Requirements Applicable to all Motorcycles

14.0.1

A motorcycle 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.

14.0.1

This is from *2.3* of *Part 2* of the *Low Volume Vehicle Code* (slightly amended for clarity), which makes it clear that, regardless of what technical requirements are or are not in place, every vehicle certified to the *LVV Code* must be fit for its purpose, and must be safe.

14.0.2

Seats and seat anchorages on a motorcycle must be safe, strong, in sound condition, in good working order and compatible in strength with each other and with the vehicle's structure.

14.0.3

The driver's seat and its anchorages must be designed, constructed, and maintained to enable the rider to have proper control of the motorcycle.

14.0.4

Seats and seat anchorages must be securely attached to the motorcycle's structure.

14.0.2 – 14.0.4

These are the applicable general safety requirements from the *Land Transport Rule 32004 Seats and Seat Anchorages* (slightly amended for clarity), which are required as part of this chapter, and are reproduced here in the interest of convenience.

Seat Requirements

14.1 Seating Limitations

14.1.1

A motorcycle must be fitted with, excluding a seat fitted to a side-car, either one or two seats, for the use of:

(a) a rider only; or

(b) a rider and a pillion passenger.

14.1.1

The *Land Transport Road User Rule* limits a motorcycle to two persons, excluding a side-car occupant.

A 'pillion' is a seat positioned to the rear of the rider, and a 'pillion passenger' is a person seated on a pillion.

14.2 Seat Position

14.2.1

A seat for the rider fitted to a motorcycle must:

(a) enable the motorcycle to be safely operated by a person within the average range of height and stature; and

(b) provide the rider with, as far as practicable, the best available view to the front and both sides of the motorcycle.

14.3 Seat Design

14.3.1

A seat fitted to a motorcycle must be designed in such a way that it can easily withstand all loads which may be imposed on it by the rider, or the combination of both the rider and the pillion passenger.

14.3.2

A seat fitted to a motorcycle that is hinged, must incorporate a latching mechanism that holds the seat securely in the latched position.

14.3.3

A seat fitted to a motorcycle must incorporate padding that is sufficient to:

(a) minimise the likelihood of injury to the rider or pillion passenger from any hard or sharp contactable areas of the seat; and

(b) provide the rider with the necessary degree of comfort to maintain control of the motorcycle.

14.3.3

For rider comfort, it is recommended that a motorcycle with a hard-tail rear end (and which therefore has no rear suspension) incorporates a sprung seat in order to cushion the rider from bumps and road shocks.

14.4 Pillion Requirements

14.4.1

A motorcycle is not required to be fitted with a pillion, however if a pillion is fitted, it must meet the same requirements as those specified for a seat.

14.4.2

A motorcycle that is fitted with a pillion must incorporate a convenient and well-secured hand-hold for the use of the pillion passenger.

Seat Attachment Requirements

14.5 General Attachment Requirements

14.5.1

A seat that is fitted to a motorcycle must be attached in a manner that provides no less strength and durability than would be expected to be provided for the applicable seat style, weight, configuration, and location, on a modern mass-produced motorcycle.

14.6 Effect on Other Components

14.6.1

The installation and attachment of a seat fitted to a motorcycle must not involve any associated modifications that could weaken the frame or other structure.

14.6.1

This means that any frame strength lost as part of a seat fitment or modification needs to be adequately reinstated. *MCM Chapter 5: Frame Modification & Construction* details the requirements that frame modifications will need to meet, and the Useful Information section at the back of this chapter has more information about seat conversions.

Other Requirements

14.7 Fasteners

14.7.1

All fasteners incorporated within the modification or construction of a motorcycle seat must meet all fastening requirements specified from *18.2* to *18.6* in *MCM Chapter 18: Attachment Systems.*

14.8 Welding

14.8.1

All welding incorporated within the modification or construction of a motorcycle seat must meet all welding requirements specified in *18.7* and *18.8* in *MCM Chapter 18: Attachment Systems.*

14.9 Frame Modifications

14.9.1

Any modifications to the frame of a motorcycle as part of the fitment or construction of a seat must meet the appropriate requirements of *MCM Chapter 5: Frame Modification & Construction.*

Exclusions

No exclusions apply to this chapter.

Useful Information

Seat Conversions

Changing a motorcycle seat can often mean more than just swapping the padded bit you sit on. It's important to take into account the requirements for modifying a motorcycle frame when looking at fitting a different seat to a bike, as invariably, changes will need to be made to the frame in order to fit and attach the seat properly.

A good example of where this happens is, on a café-racer conversion, the rear fairings are often removed and the rear frame is cut and sectioned to allow the fitment of a shorter seat, as well as mounting tabs welded to the frame to match the new lugs moulded into the seat base.

As part of this modification, there is generally a cross-member removed that bridges between the two longitudinal frame rails, and this needs to be properly reinstated – this is often the only lateral support provided for the rear section of the frame, and the seat itself is not generally rigid enough to provide the same resistance to frame twist as the cross-member did.

The same logic applies to a sports bike where the seat is part of the fairing, it's important to ensure the strength of the fairing and the structure behind it is up to the task – you can't always rely on a thin bit of composite material to take the weight of a person.

The requirements for cutting, joining, and welding a frame can be found in *MCM Chapter 5: Frame Modification & Construction.*

Terms & Definitions Chapter 14

Aftermarket	means a component or system made by a manufacturer, other than a high-volume motor vehicle manufacturer, who produces catalogued components or systems on a production-run basis for the mass-market.

CCM	(*NZ Car Construction Manual*) means LVVTA's detailed technical standards, incorporated by reference under the *LVV Code*, which must be met to enable an LVV to comply with applicable requirements. The *CCM* is referred to by the corresponding *LVV Standard*.
Custom	means a component or system fabricated by an individual person or small company on a one-off or limited-run basis, and is not intended as a high volume catalogued aftermarket part.
Hard-tail	means an assembly which solidly connects the rear axle to the frame, with the associated removal of the rear suspension system.
L-class	is an NZTA classification, which means, in very simple terms, a two-wheeled motorcycle or three-wheeled motor vehicle with a GVM of under 1000 kg.
Low volume motorcycle	means, in simplest terms, a motorcycle that is built or modified in small numbers, and includes individual home-built or modified motorcycles. See the full low volume vehicle definition contained in the *Low Volume Vehicle Code*.
LVV	(Low Volume Vehicle) means, in simple terms, LVVs which are modified or scratch-built in small numbers, and includes individually modified or scratch-built LVVs. The full definition of an LVV is contained in the *LVV Code*.
LVV Code	(*Low Volume Vehicle Code* or the *Code*) means an LVVTA document which is incorporated by reference into the *Land Transport Rule: Vehicle Standards Compliance 2002*, and all applicable individual *Land Transport equipment rules*, that provides the legal framework to enable the LVV certification of modified and scratch-built LVVs in New Zealand.
LVV Certifier	(Low Volume Vehicle Certifier) means a person appointed by NZTA under the provisions of *Land Transport Rule: Vehicle Standards Compliance 2002*, to carry out low volume vehicle certification of modified and scratch-built LVVs, as specified by *Part 2* of the *LVV Code*.
LVV Certification	(Low Volume Vehicle Certification) means the process specified by the *LVV Code*, by which the design of an LVV is determined to comply with any applicable requirements, and, in recognition of which, an LVV EDP is affixed.
LVV Certify	(Low Volume Vehicle Certify) means the same as LVV certification.
LVV EDP	(Low Volume Vehicle Electronic Data Plate) is an RFID tag, in use from February 2021, fitted to an LVV upon completion of the LVV certification process, which when scanned by an NFC-capable device, displays details and photographs of the modifications and construction features on the LVV to which it is affixed.
LVV Standards	(*Low Volume Vehicle Standards*) means LVVTA's technical standards, incorporated by reference under the *LVV Code*, that set out the legal requirements which vehicles that are modified and scratch-built vehicles in New Zealand must meet. Each *LVV Standard* refers to a corresponding *CCM chapter* or *MCM chapter* for detailed technical requirements.
LVVTA	(Low Volume Vehicle Technical Association) is an incorporated society comprised of specialist vehicle associations. Established in 1992, its objectives are to represent the interests of vehicle modifiers and builders in New Zealand, and to ensure high safety standards for modified and scratch-built LVVs. The LVVTA owns and administers the *LVV Code*.

Mass-produced (motorcycle)	(also known as production vehicle, or high-volume vehicle) means a vehicle which is manufactured in quantities of more than 500 at any one location in any one year for the mass market.
MCM	(*NZ Motorcycle Construction Manual*) means LVVTA's detailed technical standards, incorporated by reference under the *LVV Code*, which must be met to enable an LVV to comply with applicable requirements. The *MCM* is referred to by the corresponding *LVV Standard*.
Modification	is defined in *Land Transport Rule: Vehicle Standards Compliance 2002* to change a vehicle from its original state by altering, substituting, adding or removing any structure, system, component or equipment, but does not include repair. 'Modified' and 'modification' have corresponding meanings.
Modified Production (LVV)	means, in simple terms, a vehicle which, while modified, maintains a sufficient percentage of body or chassis from one primary mass-produced vehicle that it can still be considered to be that vehicle. The full legal definition of a Modified Production LVV is complex and currently under review, and will be incorporated within the *LVV Code* once revised.
Motorcycle	means a vehicle of Table-A class LA, LB, LC, LD, and LE, as defined in *Land Transport Rule: Vehicle Standards Compliance 2002*.
NZTA	(New Zealand Transport Agency) is a Crown entity responsible for managing New Zealand's land transport system.
OE	is an abbreviation for 'original equipment', which, in this context, are the parts and equipment used in the assembly process of a mass-produced vehicle.
OEM	is an abbreviation for 'original equipment manufacturer', which, in this context, is a company that produces parts and equipment used in the assembly process of a mass-produced vehicle.
Pillion	means a seat positioned to the rear of the rider.
Pillion passenger	means a person who rides as a passenger on the pillion.
Scratch-built (LVV)	means, in simple terms, an LVV which has been individually constructed from unrelated components, or a mass-produced vehicle which has been modified to such an extent that it can no longer be considered to be a modified mass-produced vehicle. The full legal definition of a scratch-built LVV is currently under review, and will be incorporated within the *LVV Code* once revised.