

Low Volume Vehicle Technical Association Incorporated
Low Volume Vehicle Standard
185-40(02)
(Head Restraints)

This Low Volume Vehicle Standard corresponds with: Land Transport Rule 32010 (Head Restraints)

2nd Amendment – effective from: 25 October 2016

Signed in accordance with clause 1.5 of the Low Volume Vehicle Code, on.....by:	
on behalf of the New Zealand Transport Agency:	on behalf on the Low Volume Vehicle Technical Association(Inc):

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4				
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Note that highlighted text shows amendments that have been made subsequent to the document’s previous issue, and a grey vertical stroke to the left of the text denotes information that is of a technical (rather than a formatting) nature.

Overview

Background

The Low Volume Vehicle Technical Association Incorporated (LVVTA) represents ten specialist automotive groups 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 NZ 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 twenty years can be of benefit to members of the NZ public who also wish to build or modify light motor vehicles.

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

Further information on the availability of the low volume vehicle standards may be obtained by contacting the LVVTA at info@lvvt.org.nz.

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Associated information

Other associated information relevant to the subject matter contained in this low volume vehicle standard, which in the interest of comprehensiveness, should be read in conjunction with this standard, includes:	
Document	Page #/Section/Chapter
• LVVTA News August-December 2014 Issue 50	Page 3 Head Restraints in Front of Solid Structures
• LVV Standard 185-00 (Seats & Seat Anchorages)	2.4(9) Rear-facing seats; solid structure behind seats
• LVV Standard 155-40 (Interior Impact)	2.4(9) Roll-cage requirements
• NZ Car Construction Manual	Chapter 14 Seats, Seatbelts, & Anchorages
Note that all documents referred to in this table, with the exception of the NZ Car Construction Manual, can be accessed from www.lvvt.org.nz free of charge. For information on obtaining the NZ Car Construction Manual, contact info@lvvt.org.nz	
Note also that paper copies of documents can become out of date and as such should not be relied upon, therefore LVVTA advises users of this standard to check to ensure that the Associated Information listed here is current, by going to www.lvvt.org.nz/standards.html	

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Head Restraints

(185-40[02])

Purpose of this standard

The purpose of this low volume vehicle standard is to specify requirements for the use of head restraints if fitted, in order to limit the severity of injury to occupants in the event of an impact.

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 low volume vehicles of the classes specified in 1.2 which are fitted with head restraints, except for those vehicles specified in *section 4* that are modified in such a way that certification to the *Low Volume Vehicle Code* is not required. However, this standard does not require low volume vehicles to be fitted with head restraints, unless the presence of a head restraint is required by LVV Standard 185-00 (Seats and Seat Anchorages) or LVV Standard 155-40 (Interior Impact).

1.2 Application of this standard

1.2(1) This low volume vehicle standard applies to all light vehicles other than those specified in 1.2(2), that are:

- (a) modified on or after 1 March 1999 in such a way that any head restraints may, directly or indirectly, be affected; or
- (b) scratch-built on or after 1 March 1999.

1.2(2) This low volume vehicle standard does not apply to:

- (a) powered bicycles of Class AB; or
- (b) motorcycles of Class LA, LB, LC, or LD; or
- (c) light trailers of Class TA or TB; or
- (d) those vehicles specified in *section 4*.

- 1.2(3) A light vehicle that is modified or scratch-built as in 1.1(1), becomes a low volume vehicle, and must:
- (a) be certified in accordance with the procedures specified in *chapter 2* of the *Low Volume Vehicle Code*; and
 - (b) unless *section 3* applies, comply with all applicable technical requirements contained in *section 2* of this standard.

NOTE: Where a light vehicle is required to be certified to the *Low Volume Vehicle Code*, but the modification date precedes the date upon which this standard takes effect (3 April 2000), an LVV Certifier must ensure that the vehicle meets the general safety requirements contained in 2.1 of this standard, and should use the applicable technical requirements of *section 2* of this standard as a guideline upon which to base his judgements on the safety 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.

2.2 **General head restraint requirements**

- 2.2(1) A low volume vehicle fitted with a head restraint, except those specified in *section 3*, must comply with the following general requirements:
- (a) the external surfaces and padding of the head restraint must not have deteriorated to the extent that the likelihood of injury to an occupant of the vehicle to which it is fitted is increased; and
 - (b) an adjustable head restraint must remain able to be adjusted and locked into position in accordance with the manufacturer's specifications.

NOTE: The requirements specified in 2.2(1) are the applicable general safety requirements from 2.2(1) and 2.2(2) of *Land Transport Rule 32010/1* which are required as part of this low volume vehicle standard, are reproduced here in the interest of convenience.

2.3 Technical requirements for head restraints

2.3(1) A low volume vehicle that is modified in such a way as to directly or indirectly affect any head restraints must, in addition to 2.2, comply with either:

- (a) one or more of the approved standards, in the appropriate version as specified in 2.3(2) of *Land Transport Rule 32010 (Head Restraints)*; or
- (b) the low volume vehicle technical requirements specified in 2.3.

Head restraint design and construction

2.3(2) The lateral centre-line of each head restraint fitted to a low volume vehicle must correspond with the centre-line of the relevant seating position.

2.3(3) A head restraint fitted to a low volume vehicle must be constructed and contoured so that in the event of an impact resulting in rearward head displacement, the restraint will:

- (a) reduce rearward horizontal movement of the head; and
- (b) minimise any concentration of load upon the head.

2.3(4) Attachment of a head restraint to a low volume vehicle may be either:

- (a) incorporated as a permanently fixed part of the seat or vehicle structure; or
- (b) in the case where the head restraint is an addition to the seat structure, removable without the use of tools.

2.3(5) Adjustment of a head restraint fitted to a low volume vehicle may be provided in:

- (a) the vertical direction; and
- (b) forward from an effective rear-most position.

2.3(6) The width of a head restraint fitted to a low volume vehicle must be no less than:

- (a) 250 mm in the case of a bench seat; or

- (b) 170 mm in the case of an individual seat.

2.4

Sources of head restraints

Head restraints from production vehicles

2.4(1)

A head restraint sourced from a production motor vehicle may be used in a low volume vehicle, provided that:

- (a) the head restraint is unmodified; and
- (b) the head restraint is mounted to the seat or vehicle structure in accordance with either the vehicle manufacturer's design, or the requirements of the *Low Volume Vehicle Standard 185-00 (Seats and Seat Anchorages)* or *Low Volume Vehicle Standard 155-40 (Interior Impact)*; and
- (c) the motor vehicle to which the head restraint was originally fitted was first registered in either:
 - (i) the United States of America on or after January 1971; or
 - (ii) Europe or the United Kingdom on or after January 1978; or
 - (iii) Japan on or after January 1983; or
 - (iv) Australia on or after January 1988.

Aftermarket seats with head restraints

2.4(2)

A **seat and head restraint assembly** sourced from an after-market seat manufacturer may be used in a low volume vehicle, provided that:

- (a) **the seat and head restraint** is unmodified; and
- (b) the seat is mounted in accordance with either the seat manufacturer's design or the requirements of the *LVVTA Low Volume Vehicle Standard 185-00 (Seats and Seat Anchorages)*; and
- (c) the after-market seat has been either:
 - (i) type approved to FIA specifications; or

- (ii) approved for use in motor-sport events by the Low Volume Vehicle Technical Association (Inc).

Head restraints from other sources

2.4(3)

A head restraint from a source other than those specified in **2.4(1)** and **2.4(2)** must:

- (a) be designed to withstand a load applied at the top of the head restraint structure, with any adjustable restraint in its highest position, of 1 kN in both a forward and rearward direction, with any displacement as a result of the load applied not exceeding 100 mm in any direction from the original position; and
- (b) have the area of the head restraint contactable by the occupant's head covered in a non-rigid material with a rating of not less than 50 shore-A.

2.5

Other requirements for head restraints

Compliance with other standards

2.5(1)

A low volume vehicle required to comply with this standard must also comply with the **relevant** requirements of:

- (a) *Low Volume Vehicle Standard 185-00 (Seats and Seat Anchorages)*; and
- (b) ***Low Volume Vehicle Standard 155-40 (Interior Impact)***.

Section 3 Exclusions to this standard

3.1

Seat replacement exclusion

3.1(1)

A modified production low volume vehicle that is retro-fitted with a non-OEM seat in an existing seating position where no head restraint was originally provided by the vehicle manufacturer, is not required to have a head restraint fitted for that seating position.

NOTE: An example of a situation in which 3.1(1) applies is where a more modern bench seat or pair of bucket seats are fitted into an older vehicle which did not originally have head restraints fitted. If no head restraints were originally fitted to that seating position by the vehicle manufacture, then the presence of different seats does not necessitate head restraints to be fitted.

Section 4 Vehicles not required to be certified to this standard

4.1 Vehicles not covered by this standard

4.1(1) A light vehicle is not required to be certified to this low volume vehicle standard, if the vehicle is modified for the purposes of law enforcement or the provision of emergency services.

4.1(2) A light vehicle is not required to be certified to this low volume vehicle standard, if the vehicle is 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.

4.2 Vehicles that pre-date legal requirements

4.2(1) A light vehicle is not required to be certified to this low volume vehicle standard, if the vehicle was fitted with head restraints before 1 March 1999.

4.3 Modifications that do not require certification

4.3(1) Seats originally fitted with head restraints by the original manufacturer which have the head restraints removed are not required to be certified to the Low Volume Vehicle Code, provided that the safe performance of the vehicle is not compromised, and the vehicle was not required to comply with a frontal impact occupant protection standard.

NOTE: The vehicles referred to in 4.3(1) which are required to meet a frontal impact occupant protection standard are the following vehicles which have a GVM of 2500 kg or less:

- a class MA motor vehicle manufactured from 1 March 1999;
- a class MA motor vehicle that was less than 20 years old when it was first registered in New Zealand on or after 1 April 2002;
- a class MB or MC motor vehicle manufactured from 1 October 2003.

4.3(2) Head restraints fitted with aftermarket LCD screens on the rear are not required to be certified to the LVV Code, provided that the safe performance of the vehicle is not compromised, and:

(a) either:

- (i) the performance of the head restraint is not affected (for example, the head restraint still provides sufficient padding for the seat occupant); and

(ii) the screen is fitted in a suitable manner (for example, it appears similar to OE fitments in other vehicles);

or

(b) the screen can be easily attached or removed.

Section 5 Terms and definitions within this standard

mm means an abbreviation for millimeters.

shore-A means a measurement of the shock absorbing resistance of a material.

NOTE: The terms and definitions found in section 5 are limited to those terms and definitions that are unique to this low volume vehicle standard, and are not necessarily contained within the terms and definitions section of the *Low Volume Vehicle Code*.