

Title	Demonstrate knowledge of the construction and operation of heavy vehicle and equipment manual transmissions		
Level	3	Credits	4

Purpose	This theory-based unit standard is for people in the automotive repair industry. People credited with this unit standard are able to demonstrate knowledge of heavy vehicle and equipment manual transmission construction, and heavy vehicle and equipment manual transmission and clutch operation.
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Classification	Motor Industry > Automotive Transmission Systems
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Available grade	Achieved
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Guidance Information

Definitions

Heavy vehicle refers to a motor vehicle that is of Class MD3, MD4, ME, NB, NC, TC or TD; or has a gross vehicle mass that exceeds 3500 kg and is not of a class specified in the Table of vehicle classes as listed from Land Transport New Zealand website <http://www.landtransport.govt.nz/publications/infosheets/infosheet-1-10.html#classes>.

Service information may include but is not limited to - technical information of a vehicle, machine, or product detailing operation; installation and servicing procedures; manufacturer instructions and specifications; technical terms and descriptions; and detailed illustrations. This can be accessed in hard copy or electronic format and is normally sourced from the manufacturer.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of heavy vehicle and equipment manual transmission construction.

Performance criteria

- 1.1 The types of gears used in manual transmissions are identified in accordance with service information.

Range spur, helical.
- 1.2 The application of spur and helical gears are explained in accordance with service information.

- 1.3 The component parts of selector mechanisms are identified, and their function described, in accordance with service information.
- Range rails, forks, detents, interlocks, reverse lockout, gear selection control.
- 1.4 Methods of lubricating gears, bearings and bushes are described in accordance with service information.
- Range pressure fed, splash, sealed, impregnated.
- 1.5 Shaft layouts and locations are described in accordance with service information.
- Range single, twin, triple countershaft units.

Outcome 2

Demonstrate knowledge of heavy vehicle and equipment manual transmission and clutch operation.

Performance criteria

- 2.1 The power flow paths for single, twin and triple countershaft units are described in accordance with service information.
- 2.2 The purpose and operation of a syncromesh unit are described in accordance with service information.
- 2.3 The operation of manual transmissions is described in accordance with service information.
- Range main gearbox, epicyclic gear train, range change, splitter.
- 2.4 Clutch assembly operation is described in accordance with service information.
- Range single and dual dry clutch packs, power take off (PTO) clutches, clutch adjustments, clutch levers, shift control system.

Replacement information	This unit standard, unit standard 2319, and unit standard 3385 were replaced by unit standard 31227.
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This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	28 September 1994	31 December 2020
Review	2	21 February 1999	31 December 2020
Review	3	25 February 2008	31 December 2020
Review	4	26 July 2018	31 December 2020

Consent and Moderation Requirements (CMR) reference	0014
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

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