

Title	Demonstrate knowledge of light vehicle manual and semi-automatic transmission construction and operation		
Level	3	Credits	4

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

- 1 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable service information, and company requirements and legislative requirements. This includes the knowledge and use of suitable tools and equipment.
- 2 Performance of the outcomes of this unit standard must comply with the following: Health and Safety at Work Act 2015.
- 3 Any new, amended or replacement Acts, regulations, standards, codes of practice, guidelines, or authority requirements or conditions affecting this unit standard will take precedence for assessment purposes, pending review of this unit standard.
- 4 Definitions

Company requirements refer to instructions to staff on policy and procedures that are available in the workplace. These requirements may include – company policies and procedures, work instructions, product quality specifications and legislative requirements.

Light vehicle refers to classes MA, MB, MC, MD, MD1, MD2 and NA as specified in the Vehicle equipment standards classifications at <https://www.nzta.govt.nz/vehicles/vehicle-types/vehicle-classes-and-standards/vehicle-classes/>.

Service information refers to information such as technical information for a vehicle, machine, or product detailing operation; installation and servicing procedures; manufacturer instructions; technical terms and descriptions; and detailed illustrations.

Suitable tools and equipment refer to industry approved tools and equipment that are recognised within the industry as being the most suited to complete the task in a professional and competent manner with due regard to safe working practices.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of light vehicle manual and semi-automatic transmission construction.

Performance criteria

- 1.1 The types and application of gears are explained.
Range spur, helical, double helical.
- 1.2 The component parts of selector mechanisms are identified, and their function is described.
Range rails and forks, detents, interlocks, 5th/reverse lockout, remote controls, clutch actuator.
- 1.3 Shaft layout and location are described for an in-line transmission.
Range input, main, counter, reverse idler.
- 1.4 The purpose of a synchromesh unit is described.
- 1.5 Methods of lubricating gears, bearings, and bushes are described.
Range pressure fed, splash, sealed, impregnated.
- 1.6 Shaft layout and the method of incorporating the final drive in a transaxle are described.

Outcome 2

Demonstrate knowledge of light vehicle manual and semi-automatic transmission operation.

Performance criteria

- 2.1 The operation of a synchromesh unit is described.
Range neutral, synchronisation, engagement.
- 2.2 The operations of selector mechanisms are described.
Range selector forks, selector shaft interlocking mechanism, electric gear shift, electronic gear shift control.
- 2.3 Power flow is traced out for any selected gear, from the input shaft to the output shaft.
Range in-line transmission, transaxle.

Planned review date	31 December 2025
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	29 October 1993	31 December 2022
Review	2	4 October 1996	31 December 2022
Review	3	26 February 1999	31 December 2022
Review	4	25 June 2007	31 December 2022
Review	5	27 May 2021	N/A

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>.

Comments on this unit standard

Please contact MITO New Zealand Incorporated info@mito.org.nz if you wish to suggest changes to the content of this unit standard.