

Title	Operate a manual constant mesh non-synchromesh transmission		
Level	3	Credits	4

Purpose	People credited with this unit standard are able to: describe the operation of a manual constant mesh non-synchromesh transmission; and demonstrate correct operation of a manual constant mesh non-synchromesh transmission.
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Classification	Commercial Road Transport > Commercial Road Transport Skills
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Available grade	Achieved
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Prerequisites	Candidates must hold a minimum of the class of licence required for the vehicle being driven and comply with the requirements of the Land Transport (Driver Licensing) Rule 1999.
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Guidance Information

1 Definitions

Compound shifting occurs when the driver operates both the gear shift lever, a splitter control and/or a range change control to change to a higher or lower gear; *Countershaft brake* and *clutch brake* are transmission brakes that stop the gears from turning when the vehicle is stationary so that the driver can select a gear to move off from rest;

Manual constant mesh non-synchromesh transmission means a gearbox that is not operated electronically and where a gear can only be selected when the driver operates a normal gear shift lever and/or its associated controls;

Progressive gear shifting impacts positively on fuel economy and is achieved when up-shifting by only using enough engine revolutions per minute to ensure the next gear is selected smoothly within the operating range;

Simple shifting occurs when the driver changes up or down using only the gear shift lever;

Skip shifting occurs when the driver deliberately misses at least one gear when changing up or down;

Splitter shifts occurs when the driver changes up or down only half a gear using the splitter control.

2 For the purposes of assessment against this unit standard, electronically controlled automated transmissions must not be used.

Outcomes and performance criteria

Outcome 1

Describe the operation of a manual constant mesh non-synchromesh transmission.

Performance criteria

- 1.1 Operating techniques for a non-synchromesh transmission are described in terms of correctly matching engine and road speeds to reflect vehicle and road conditions.
- Range use of the tachometer, skip shifting, compound shifting, simple shifting, application of observation techniques.
- 1.2 The procedures for operating a non-synchromesh transmission are described in terms of the different shift patterns.
- Range two of – 18 speed, 15 speed, 13 speed, 10 speed, 9 speed.
- 1.3 Procedures to be followed in the event of a missed gear change are described.
- Range flat ground, uphill grades, downhill grades.

Outcome 2

Demonstrate correct operation of a manual constant mesh non-synchromesh transmission.

Performance criteria

- 2.1 Operation of clutch is demonstrated in accordance with the manufacturer's instructions and the safe and reliable life of the transmission.
- Range includes – double clutching when shifting, clutch stroke, use of countershaft brake or clutch brake;
may include – during splitter shifts and compound shifts.
- 2.2 Use of range change and, where fitted, splitter controls is demonstrated in accordance with the manufacturer's instructions and the safe and reliable life of the transmission.
- 2.3 Gears are selected to avoid clashing or grinding of gears.
- Range engine RPM, timing, anticipating changes in terrain or traffic, selection of proper gear.
- 2.4 Progressive gear shifting is demonstrated in accordance with the manufacturer's instructions and the safe and reliable life of the gearbox.

- 2.5 Correct gear is selected and maintained to reflect road and traffic conditions with consideration given to engine speed, vehicle mass and auxiliary brake performance.

Range moving off, urban driving, rural driving, highway or motorway driving;
may include – ascents and descents.

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	25 May 1999	31 December 2022
Review	2	22 March 2005	31 December 2022
Review	3	22 October 2010	31 December 2022
Review	4	29 April 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.