Title	**Demonstrate advanced driving techniques and a professional attitude as a heavy rigid vehicle driver**		
Level	**4**	**Credits**	**10**

Purpose	People credited with this unit standard are able to: explain the operating principles, characteristics and limitations of heavy rigid vehicle systems; demonstrate a professional attitude as a heavy rigid vehicle driver; and demonstrate operating techniques that produce safe and fuel-efficient driving.

Classification	Commercial Road Transport > Goods Service

Available grade	Achieved

Prerequisites	Unit 17972, *Describe heavy rigid vehicle dynamics and handling for safe driving*, or demonstrate equivalent knowledge and skills. Drivers must hold a current full Class 4 driver licence.

Guidance Information

1 Legislation, regulations, references and/or industry standards relevant to this unit standard include but are not limited to the:

- Health and Safety at Work Act 2015;
- Land Transport Act 1998;
- Heavy Motor Vehicle Regulations 1974;
- Land Transport (Driver Licensing) Rule 1999;
- Land Transport (Road User) Rule 2004;
- Land Transport Rule: Work Time and Logbooks 2007;
- Waka Kotahi New Zealand Transport Agency (NZTA). (current edition). *The Official New Zealand Truck Loading Code – Code of Practice for the Safety of Loads on Heavy Vehicles*. Available from: https://www.nzta.govt.nz/roadcode/;
- MITO New Zealand. (2021 edition). *The Truck Book: Professional Skills for Driving Trucks.* Available from: https://www.mito.org.nz/ and public libraries.

Any new, amended or replacement Acts, regulations, Rules, standards, codes of practice, or authority requirements or conditions affecting this unit standard will take precedence for assessment purposes, pending review of this unit standard.

2 Definitions

ABS refers to anti-lock braking system.

Automated transmissions refer to transmissions fitted with a clutch assembly that are shifted electronically and have both ‘manual’ and ‘auto’ gear selection modes.

EBS refers to electronic braking system.

Emission control measures relate to technology that meets European standards for the control of different pollutants produced by engine combustion that have been demonstrated to have significant effects on human, animal, plant, and environmental health and welfare.

Engine brake refers to a compression brake operated electrically and/or hydraulically through the interruption of the valve operation in the engine cylinder head.

Exhaust brake refers to a compression brake operated through a butterfly valve in the exhaust system.

A *hazard* refers to anything that is, or has the potential to be, dangerous to the operation of the vehicle, its load, or other road users and which arises from any of the six driving conditions (vehicle, driver, weather, road, light, traffic).

A *hazard action plan* refers to identifying a potential hazard, predicting what might happen, deciding what to do and then acting upon that decision.

HMV refers to heavy motor vehicle.

Industry best practice refers to an industry accepted method of achieving a high standard outcome that meets industry needs and represents value for money.

Load sensing is a means (mechanical, electronic and/or pneumatic) of proportioning air pressure to heavy vehicle braking systems to reflect load mass over individual axles or axle groups.

Materials handling equipment includes vehicle mounted cranes and side loaders, trolleys, forklifts and loaders and any other mechanical device designed to facilitate the loading or unloading of a vehicle.

Retarder refers to a device mounted between the engine flywheel and the differential that, when operated, retards the driveline speed either hydraulically, electronically or magnetically.

Safe driving relates to managing hazards and minimising risk. This requires a standard of driving that reflects consideration for people, animals, property and the environment in a manner that is courteous to other road users, is in compliance with the law and within the limits of the vehicle and road dimensions.

The *system of vehicle control* refers to placing the vehicle in the correct place on the road, at the right speed and in the right gear in all driving situations but particularly when approaching and negotiating hazards.

Vehicle empathy refers to driving in a way that reflects an appreciation of the effects the driver can have on vehicle performance and the longevity of the vehicle’s systems and components.

Workplace procedures refers to organisation policies and procedures that are documented in memo, electronic, or manual format and available in the workplace. They may include but are not limited to – standard operating procedures, site specific procedures, site safety procedures, equipment operating procedures, quality assurance procedures, product quality specifications, manufacturer’s requirements, references, approved codes of practice, housekeeping standards, environmental considerations, on-site briefings, supervisor’s instructions, and procedures to comply with legislative and local body requirements relevant to the commercial road transport sector.

3 If the vehicle being used is fitted with a non-synchromesh manual (stick-shift) transmission, it is recommended that the candidate is also assessed against, or has successfully completed previously, Unit 15166, *Operate a manual constant mesh non-synchromesh transmission*.

4 Assessment information
Assessment against outcomes 2 and 3 must be conducted under practical transport industry work conditions. Employer verification is required to confirm consistency of performance, with no 'at fault' crashes or incidents, over the six-month period immediately prior to the assessment being conducted.

Practical driving assessments must be conducted in a heavy rigid goods service vehicle that requires a Class 4 licence and is loaded to at least 50% of its maximum payload for at least 50% of the assessment. The vehicle must be driven in open road and restricted speed zones that have the terrain, traffic and road characteristics required to meet the performance criteria of outcomes 2 and 3.

The practical driving assessment must be conducted over two periods of at least two hours each, one with a minimum of one hour during the hours of darkness.

Where the vehicle is fitted with an automated (electronically controlled) transmission, the candidate must demonstrate the efficient use of both 'auto' and 'manual' modes to meet the relevant performance criteria of outcome 3.

Where performance criteria 3.5 and 3.9 cannot be assessed during the drive, they must be assessed in a controlled off-highway environment.

Outcomes and performance criteria

Outcome 1

Explain the operating principles, characteristics and limitations of heavy rigid vehicle systems.

Performance criteria

1.1 Engine characteristics, performance and limitations are explained in terms of efficient vehicle operation.

Range Otto 4 stroke cycle, engine fuel management system, turbocharger, intercooler, engine performance chart, emission control measures.

1.2 Transmission types are explained in terms of operation, vehicle control and efficiency.

Range synchromesh, non-synchromesh, automated, automatic.

1.3 Traction control systems are explained in terms of operation, benefits, limitations, and vehicle control.

Range cross locks, power divider locks, electronic traction control; may include – central tyre inflation.

1.4 Brake and braking system types are explained in terms of operation, vehicle performance, limitations, and safe driving.

Range disc, drum, ABS, EBS, load sensing.

1.5 Auxiliary braking systems are explained in terms of operation, vehicle performance, limitations, and safe driving.

Range exhaust brakes, engine brakes, retarders.

1.6 Information presented on the vehicle certification of a heavy rigid vehicle is explained and related to the vehicle.

Range tare, gross and axle weights, axle spacing, load anchorage point ratings, heavy vehicle brake code and/or rule compliance.

1.7 The basic load restraint criteria is explained in accordance with the Truck Loading Code and specific restraint systems for the load being transported, and their limitations, are explained.

Outcome 2

Demonstrate a professional attitude as a heavy rigid vehicle driver.

Performance criteria

2.1 A responsible and professional attitude is demonstrated.

Range fatigue and health management strategies, personal communication skills, personal and vehicle presentation, HMV legislative compliance, vehicle empathy, interpretation of general driving rules.

2.2 A professional, courteous and safe driving style is demonstrated.

Range hazard detection, system of vehicle control, hazard action plan, interaction with other road users.

2.3 Distractions are avoided or managed to ensure safe and efficient driving.

Range distractions may include – passengers, fitted equipment, radios and cell phones, temperature control, seating position, vehicle housekeeping, smoking, eating and drinking, external factors.

2.4 Work time hours, rest breaks, and logbook entries for the preceding cumulative work period comply with the Work Time and Logbooks Rule or, if appropriate, any Alternative Fatigue Management Plan.

2.5 Safe work practices are applied.

Range may include – use of personal protective equipment, use of materials handling equipment, manual lifting techniques, three points of contact, use of ladders and walkways, handling of dangerous goods.

Outcome 3

Demonstrate operating techniques that produce safe and fuel-efficient driving.

Performance criteria

3.1 Pre-trip vehicle inspection is carried out following a logical sequence.

Range certificates and documentation, vehicle systems and components.

3.2 The load is checked before the drive to ensure compliance with legal requirements and delivery documentation.

Range compliance with Certificate of Loading and Road User Licence information, basic load restraint criteria met, appropriate selection and use of restraint equipment and load anchorage points, load distribution.

3.3 The vehicle is driven in accordance with legal requirements.

Range road user rules, heavy motor vehicle compliance rules.

3.4 Engine and transmission management techniques are applied to achieve fuel efficient driving.

Range gear selection, progressive shifting, skip and/or block shifting; auxiliary brake use, correct use of operating ranges and torque, avoidance of excessive idling periods, avoidance of excessive speed;
may include - use of cruise control and automated gear selection options.

3.5 Traction control devices are used as and when appropriate to ensure safe driving practice and in a manner that minimises risk of damage to property, vehicle or components.

3.6 Safe, efficient operating techniques when negotiating ascents and descents are demonstrated in accordance with industry best practice.

Range appropriate gear selection, auxiliary brake use, service brake use, engine speed, road position, courtesy.

3.7 Safe and efficient cornering techniques are demonstrated in accordance with industry best practice.

Range intersections, reactions to recommended cornering speeds, appropriate cornering line and cornering technique, lane position.

3.8 Safe, effective night driving techniques are applied during the hours of darkness.

Range use of vehicle lighting, responses to other motorists, use of marker posts, vehicle speed for conditions.

3.9 Emergency braking techniques are demonstrated without loss of traction or directional control.

Range cadence braking, progressive braking;
may include – ABS, EBS.

3.10 Vehicle is reversed safely and efficiently to a predetermined point in accordance with industry best practice.

Range in a straight line, 90° to the right, 90° to the left.

Replacement information	This unit standard replaced unit standard 22216.

Planned review date	31 December 2028

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	22 October 2010	31 December 2022
Review	2	29 April 2021	31 December 2025
Review	3	30 November 2023	N/A

Consent and Moderation Requirements (CMR) reference	0014

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact Hanga-Aro-Rau Manufacturing, Engineering and Logistics Workforce Development Council qualifications@hangaarorau.nz if you wish to suggest changes to the content of this unit standard.