

Title	Demonstrate knowledge of the maintenance and repair of steam driven vehicles		
Level	4	Credits	10

Purpose	People credited with this unit standard are able to: explain maintenance and repair requirements for the boiler, engine, structural components, and running and/or steering gear of a steam driven vehicle; and explain record keeping requirements for the maintenance and repair of steam driven vehicles.
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Classification	Commercial Road Transport > Steam Driven Vehicles
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Available grade	Achieved
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Guidance Information

- 1 Range
This unit standard applies to steam driven vehicles, including steam locomotives, steam traction engines, steam cranes, steam trucks, steam cars, steam rollers and steam trams. It applies to both horizontal and vertical type boilers used in steam driven vehicles. Steam driven vehicles fitted with boilers not exceeding 50-litres water capacity, are excluded.
- 2 All tasks must be carried out in accordance with the Land Transport Rule: Traction Engines 2010 (the Rule) <http://www.nzta.govt.nz/resources/rules/traction-engines-2010-index.html>.
- 3 Definitions
Organisational requirements include any legal requirements, standards, codes of practice, organisational and/or site policies and procedures, industry best practice and manufacturers' instructions. These must be available to candidates, providers, and assessors. The applicable standard is the highest standard specified.
Repair refers to diagnosis, identification, and the rectification of faults and defects.
- 4 Achievement of this unit standard does not enable a person to fire up or drive a steam driven vehicle.
- 5 It is recommended that people seeking credit for this unit standard first hold credit for Unit 21755, *Prepare, bring to steam, and operate a steam driven vehicle and steam boiler*.

Outcomes and performance criteria

Outcome 1

Explain maintenance and repair requirements for the boiler of a steam driven vehicle.

Performance criteria

- 1.1 The maintenance required to keep the boiler within the manufacturer's specifications for safe operation is explained.
- Range may include – internal shell, internal feed pipe, internal steam pipe, stays, grate, fire box, crown stays, radial or bridge girder type or corrugated crown, palm and longitudinal stays, broken firebox stays, tube plates, smoke and stay tubes, superheater tubes, superheater header, external shell, boiler casing, steam manifold, lagging, furnace refractory, ash pan, steam pipe to engine, dampers, spark arrestors.
- 1.2 The maintenance required to keep the boiler fittings within the manufacturer's specifications for safe operation is explained.
- Range may include – safety valves, water gauge glass, water gauge glass mountings, regulator, fusible plug, feed injector, feed valve, feed pump, whistle, steam pressure gauge, draught pressure gauge.
- 1.3 The feedwater treatment required to keep the internals of the boiler in good and clean condition and to prevent scale and deterioration is explained.
- Range may include – impurities in feedwater, scale, corrosion, caustic embrittlement, grooving, feedwater treatment, removal of impurities from boiler water, feedwater tests, blow downs, priming.

Outcome 2

Explain maintenance and repair requirements for the engine of a steam driven vehicle.

Performance criteria

- 2.1 The engine maintenance required to maintain function at the manufacturer's rated horsepower is explained.
- Range may include – cylinders, pistons, piston rings, cylinder lubrication, carbonisation, blast pipe, drains, piston rods, glands, cross heads.
- 2.2 The maintenance of the control valves required to obtain the manufacturer's rated horsepower is explained.
- Range valve condition, valve fit, valve setting.

- 2.3 The regulator maintenance required to control the engine during manoeuvring is explained.
- 2.4 The maintenance and adjustment of the engine governor required to allow the engine to maintain a predetermined revolutions per minute is explained.

Outcome 3

Explain maintenance and repair requirements for the structural components and running and/or steering gear of a steam driven vehicle.

Performance criteria

- 3.1 The maintenance and repair of the structural components of the vehicle required to meet the manufacturer's specifications for safe operation is explained.
- Range may include – chassis, funnel, tender, foot plate, apron plate, draw gear.
- 3.2 The maintenance, adjustment, and repair of rolling and running gear required to meet the manufacturer's specifications for safe operation is explained.
- Range may include – drive mechanisms, gear trains, wheels, axles.
- 3.3 The maintenance, adjustment, and repair of steering gear for steam driven road vehicles required to meet the manufacturer's specifications for safe operation is explained.
- Range may include – steering wheel, worm and gear, steering chains and attachments to front axle;
excludes – rail vehicles.

Outcome 4

Explain record keeping requirements for the maintenance and repair of steam driven vehicles.

Performance criteria

- 4.1 The model documents in the Rule and organisational requirements is explained.
- Range record of maintenance, record of repair.
- 4.2 The document and record retention requirements in accordance with organisational requirements is explained.

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	23 January 1998	31 December 2001
Revision	2	16 May 2003	31 December 2016
Review	3	27 May 2005	31 December 2016
Review	4	16 July 2015	31 December 2022
Review	5	29 April 2021	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 MITO New Zealand Incorporated info@mito.org.nz if you wish to suggest changes to the content of this unit standard.