

Title	Demonstrate knowledge of heavy machine and equipment tyres and wheels		
Level	4	Credits	4

Purpose	This theory-based unit standard is for people in the automotive heavy and tyre industries. People credited with this unit standard are able to demonstrate knowledge of heavy machine and equipment tyres, types and sizes; abnormal wear on heavy machine and equipment tyres; heavy machine and equipment tyre hazards; tyre repair techniques and maintenance requirements; heavy machine and equipment wheels; and can describe inspection checks for tyres and wheels.
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Classification	Motor Industry > Tyres
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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 manufacturer's specifications, service information, company requirements (this includes the knowledge and use of suitable tools and equipment).
- 2 Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the current version of – Health and Safety at Work Act 2015; Land Transport Rule: Vehicle Repair 1998, Rule 34001; and any subsequent amendments and replacements.
- 3 Land Transport Rules are available online at:
www.nzta.govt.nz.
- 4 Definitions

Company requirements refer to instructions to staff on policy and procedures which are documented in memo or manual format and are available in the workplace. These requirements include but are not limited to – company policies and procedures, work instructions, product quality specifications and legislative requirements.

Service information may include– technical information of a vehicle, machine, or product detailing operation; installation and servicing procedures; manufacturer instructions; technical terms and descriptions; and detailed illustrations. This may be accessed from the manufacturer.

Suitable tools and equipment means 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.

Heavy machines and equipment may include – forklifts, earth moving equipment, grader equipment, loaders, dozers, tractors, and other heavy portable industrial equipment using tubed or tubeless radial and bias ply tyres or industrial cushion solid type (resilient) tyres.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of heavy machine and equipment tyres, types and sizes.

Performance criteria

- 1.1 Types of heavy machine and equipment tyres are described.
- Range includes but is not limited to – solid tyres, pneumatic tyres.
- 1.2 Tyre tread patterns are described and their use is identified.
- Range basic drive and traction pattern; directional; grass or turf pattern; flotation and soil compaction; front steer tyres; smooth.
- 1.3 Side wall markings on a tyre are identified.
- 1.4 Characteristics of heavy machine and equipment tyres are explained.
- Range may include – tyre dimensions (overall diameter, width, nominal wheel diameter), solid tyres, standard compound, electrically conducting tyres, oil resistant tyres, low rolling resistance, anti-static tyres, wet grip tyres, non-marking tyres.
- 1.5 Tyre construction is described and the application identified.
- 1.6 Dynamic rolling circumference is described.
- 1.7 Uses and limitations of resilient and pneumatic tyres are compared.
- 1.8 Tyre valve types are described.
- Range water valves, dry valves, tubeless stems, tube stems, large bore, super large bore.

Outcome 2

Demonstrate knowledge of abnormal wear on heavy machines and equipment tyres.

Performance criteria

- 2.1 Causes of abnormal tyre wear are identified.

2.2 Abnormal tyre wear patterns are described.

Range may include – incorrect wheel alignment; suspension faults; under-inflation, over-inflation; incorrect loading; tyre out of balance; driving technique; terrain conditions; mismatching tyres; incorrect sizes.

2.3 Types of tyre damage are identified.

Range may include – broken tyre walls, lug damage through spinning, staking, ozone cracking, petroleum deterioration.

Outcome 3

Demonstrate knowledge of heavy machine and equipment tyre hazards.

Performance criteria

3.1 Tyre hazards are identified and their causes are described.

Range may include – explosive energy, excessive tyre inflation, impact damage, abnormal heat build-up, haul road hazards.

3.2 Safety precautions when handling and inspecting tyres are described.

Range may include – lifting, jacking, using tools, checking tyre condition, inflating.

Outcome 4

Demonstrate knowledge of tyre repair techniques and maintenance requirements.

Performance criteria

4.1 Tyre repair methods are described.

Range permanent vulcanising, cold chemical cure, retreading.

4.2 Tyre maintenance criteria are described.

Range may include – pressures, hard surface, anti-freeze, water, calcium chloride, petroleum product contamination, deterioration prevention, load and speed ratings, tonnes, kilometre per hour.

4.3 Procedures for removing and replacing tyres on heavy machines and equipment are described.

Range solid tyres, pneumatic tyres.

Outcome 5

Demonstrate knowledge of heavy machine and equipment wheels.

Range includes three of – single well, 2 part component (PC), 3 PC, 4 PC, 5 PC, 7PC.

Performance criteria

- 5.1 Types of heavy machine and equipment wheels or rims are identified.
- 5.2 Procedures for removing and replacing wheels on heavy machines and equipment are described.

Outcome 6

Describe inspection checks for tyres and wheels.

Performance criteria

- 6.1 Inspection checks for tyres and wheels are described in accordance with service information.

Range may include – damage, foreign matter, security, wear patterns, hazards, inflation pressures, compliance with legislation.

Replacement information	This unit standard and unit standard 24462 replaced unit standard 11741 and unit standard 11742.
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Planned review date	31 December 2022
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	25 January 2008	31 December 2019
Review	2	18 May 2017	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 assessment standard.