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| Title | Demonstrate knowledge of wheel tractor steering systems, and diagnose and rectify faults in them | | |
| Level | 4 | Credits | 4 |

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| Purpose | This unit standard is for people in the automotive repair industry. People credited with this unit standard are able to: demonstrate knowledge of wheel tractor steering systems; diagnose faults in tractor steering systems; and rectify faults in tractor steering systems. |
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| Classification | Motor Industry > Vehicle Steering and Suspension |
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| Available grade | Achieved |
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Explanatory notes

- 1 The following legislation and amendments are to be consulted and followed where applicable:
 - Health and Safety in Employment Act, 1992.
- 2 Reference to *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 to a professional and competent manner with due regard to safe working practices.
- 3 Because of the particular nature of this unit standard, it is essential that the practical assessment evidence is obtained from commercial jobs in the workplace under normal workplace conditions.

Outcomes and evidence requirements

Outcome 1

Demonstrate knowledge of wheel tractor steering systems.

Evidence requirements

- 1.1 Types and construction of manual steering systems are described according to tractor manufacturer's workshop manual descriptions.

Range steering column, steering boxes, drop arms, drag links, tie rods.

- 1.2 Types and construction of pivot steering systems are described according to tractor manufacturer's workshop manual descriptions.
- Range pivot points and king pins, hydraulic systems and circuits, double acting hydraulic actuator rams.
- 1.3 Types and construction of power assisted steering systems are described according to manufacturer's workshop manual descriptions.
- Range integral power assisted steering, external power assisted steering.
- 1.4 Operation of tractor steering systems is described according to tractor manufacturer's workshop manual descriptions.
- Range manual steering boxes, pivot steering, integral power assisted steering system, external power assisted steering box, hydraulic circuits, hydraulic pumps, hydraulic valves, oil filters.
- 1.5 Hydraulic steering fault diagnostic and testing procedures are described as specified by manufacturer's workshop manuals.
- 1.6 Steering geometry as applicable to agricultural tractors is described according to tractor manufacturer's workshop manual descriptions.
- Range caster, camber, toe in, toe out on turns; turning radius for two and four wheel drive machines.

Outcome 2

Diagnose faults in tractor steering systems.

Evidence requirements

- 2.1 Safe working practices are observed throughout the task.
- Range personal safety, safety of others, tractor and equipment safety.
- 2.2 Manual steering system condition is determined according to tractor manufacturer's workshop manual instructions.
- Range visual inspection of components for damage and wear, field testing for operation.
- 2.3 Faults in power assisted steering systems are identified.
- Range hydraulic pressure tests; hydraulic flow test; visual inspection for damage, leakage and wear; field testing for operation.

Outcome 3

Rectify faults in tractor steering systems.

Evidence requirements

- 3.1 Safe working practices are observed throughout the task.
- Range personal safety, safety of others, tractor and equipment safety.
- 3.2 Suitable tools and equipment are selected and used that enable faults to be rectified according to manufacturer's specifications.
- 3.3 Minor faults are rectified and the system adjusted according to manufacturer's specifications.
- Range minor faults are defined as those which do not require extensive dismantling and repair.
- 3.4 Manual steering system faults that require dismantling and repair are rectified according to manufacturer's workshop manual instructions.
- Range safety work area established; tractor steering box area cleaned, steering box removed, worn parts identified and replaced, steering box reassembled and adjusted, steering box refitted to tractor and lubricated, steering movement adjusted, assembly checked for operation; tractor field tested.
- 3.5 Power assisted steering system faults that require dismantling and repair are rectified according to manufacturer's workshop manual instructions.
- Range safety work area established; tractor steering box area cleaned, steering box assembly removed, worn parts and seals identified and replaced; hydraulic pump removed, worn parts identified and replaced; control valves removed, worn parts identified and replaced; steering assembly assembled and refitted to tractor, adjustments made, hydraulic tests; tractor field tested.
- 3.6 Pivot steering system faults that require dismantling and repair are rectified according to manufacturer's workshop manual instructions.
- Range safety work area established; tractor steering system area cleaned, steering components removed, worn parts identified and replaced; hydraulic rams removed, worn parts identified and replaced; steering assembly assembled and refitted to tractor, adjustments made, hydraulic tests; tractor field tested.
- 3.7 Tractor steering geometry is checked and adjusted according to manufacturer's specifications.

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| Replacement information | This unit standard has been replaced by unit standard 24438 and unit standard 24439. |
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This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

| Process | Version | Date | Last Date for Assessment |
|--------------|---------|------------------|--------------------------|
| Registration | 1 | 31 October 1995 | 31 December 2016 |
| Review | 2 | 29 March 1999 | 31 December 2016 |
| Review | 3 | 25 January 2008 | 31 December 2016 |
| Rollover | 4 | 19 November 2010 | 31 December 2016 |
| Rollover | 5 | 18 February 2016 | 31 December 2020 |

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| 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>.

Please note

Providers must be granted consent to assess against standards (accredited) by NZQA, or an inter-institutional body with delegated authority for quality assurance, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Consent requirements and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMR). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

This unit standard is expiring