

Title	Describe, diagnose, and rectify faults in tractor and agricultural machine final drive assemblies		
Level	4	Credits	6

Purpose	This unit standard is for people in the automotive repair industry. People credited with this unit standard are able to: demonstrate knowledge of tractor and agricultural machine final drive assemblies; diagnose tractor and agricultural machine final drive assembly faults and their causes; and rectify tractor and agricultural machine final drive faults.
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Classification	Motor Industry > Automotive Transmission Systems
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Available grade	Achieved
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Entry information	
Critical health and safety prerequisites	Unit 2316, <i>Describe the operation of drivelines and assemblies on heavy vehicles and machines</i> , or demonstrate equivalent knowledge and skills.

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 tractor and agricultural machine final drive assemblies.

Evidence requirements

- 1.1 Final drive assembly construction is described according to manufacturer's specifications.
- Range wheeled tractors, combine harvesters, specialist self-propelled harvesters;
features, identification of components, layout of components.
- 1.2 Tractor differential lock assembly and limited slip differential assembly construction and operation are described according to manufacturer's specifications.
- Range features, identification of components, layout and operation of components, purpose.
- 1.3 Tractor and agricultural machinery drive gear reduction unit construction and operation are described according to manufacturer's specifications.
- Range bull gears, inboard epicyclic gear trains, drive hub epicyclic gear trains.
- 1.4 Tractor and agricultural machinery transfer case construction and operation are described according to manufacturer's specifications.
- Range power divider differential assemblies, direct drive from tractor main drive shaft, manual engagement, hydraulic engagement, electronic engagement.
- 1.5 Tractor and agricultural machinery driveshaft operation, and method of installation are described according to manufacturer's specifications.
- Range universal joints, slip joints, shaft phasing, angles and balancing, safety shear pins, torque shafts.
- 1.6 Tractor front axle differential unit construction and operation are described according to manufacturer's specifications.
- Range crown wheel and pinion, ratios matching front and rear differentials, the influence of tyre sizes.

- 1.7 Tractor four wheel drive front steering and drive axle systems are described according to manufacturer's specifications.
- Range universal joints, tractor constant velocity joints, geared right angle drives.
- 1.8 Tractor front wheel hub construction is identified.
- Range king pin assemblies, hub carrier assemblies, bearings.
- 1.9 Harvesting machine final drive unit with variable speed transmission operation is described according to manufacturer's specifications.
- Range hydraulic drive, continuous variable transmission, friction cones.
- 1.10 Tractor and agricultural machinery final drive assembly, and limited slip differential assembly repair procedures are described according to manufacturer's specifications.
- Range removal, inspection, reassembly, settings, adjustments.

Outcome 2

Diagnose tractor and agricultural machine final drive assembly faults and their causes.

Evidence requirements

- 2.1 Safe working practices are observed throughout the task.
- Range personal safety, safety of others, workshop equipment safety, tractor and agricultural machinery safety.
- 2.2 Suitable tools and workshop equipment are selected and used that enable faults to be diagnosed.
- 2.3 Final drive assembly fault symptoms are verified.
- Range obtaining operator's explanation of fault symptoms, field testing to reproduce fault symptoms.
- 2.4 Faults in tractor and agricultural machine final drive assemblies are identified.
- Range checking machine operation against manufacturer's specifications, visual inspection of components for damage, leakage and wear, checking for abnormal noise, incorrect settings and angles.

Outcome 3

Rectify tractor and agricultural machine final drive faults.

Evidence requirements

- 3.1 Safe working practices are observed throughout the task.
- Range personal safety, safety of others, workshop equipment safety, tractor and agricultural machinery safety.
- 3.2 Suitable tools and workshop equipment are selected and used that enable faults to be rectified.
- 3.3 Tractor and agricultural equipment final drive assembly faults are rectified according to manufacturer's workshop manual instructions.
- Range standard differential unit, transfer case, drive shaft and universal joints, front axle hub.

Replacement information	This unit standard has been replaced by unit standard 24323 and unit standard 24324.
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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 February 2008	31 December 2016
Rollover	4	19 November 2010	31 December 2016
Rollover	5	18 February 2016	31 December 2020

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