Title	**Diagnose faults and overhaul all-terrain vehicle (ATV) transmissions, sub-transmissions, and shaft drives**		
Level	**4**	**Credits**	**10**

Purpose	This unit standard is for people in the motorcycle repair industry. People credited with this unit standard are able to: diagnose faults in an ATV transmission, sub-transmission, and shaft drive; check and overhaul an ATV transmission; check and overhaul ATV secondary bevel gears; check and overhaul an ATV sub-transmission; and check and overhaul ATV final bevel gears.

Classification	Motor Industry > Automotive Transmission Systems

Available grade	Achieved

Prerequisites	Class 6 driver licence.

Guidance Information

1 Legislation and publications relevant to this unit standard include but are not limited to – Health and Safety in Employment Act 1992; Land Transport Rule: Vehicle Repair 1998, Rule 34001; *The Official New Zealand Road Code*, Land Transport New Zealand.

2 Land Transport Rules are produced for the Minister of Transport by Land Transport New Zealand. These rules are available online at http://www.landtransport.govt.nz/rules/.
New Zealand Road Code information can be obtained from the following website http://www.landtransport.govt.nz/roadcode.

3 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 specifications and procedures, work instructions, manufacturer specifications, product quality specifications, and legislative requirements.
Service information may include but is not limited to – technical information of a vehicle, machine, or product detailing operation; installation and servicing procedures; manufacturer instructions and specifications; technical terms and descriptions; and detailed illustrations. This can be accessed in hard copy or electronic format and is normally sourced 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.

4 For this unit standard, it is essential that the practical assessment evidence is obtained in the workplace under normal workplace conditions.

5 Recommended entry information: Unit 24312, Demonstrate knowledge of clutches and transmissions used on all-terrain vehicles (ATVs), or demonstrate equivalent knowledge and skills.

Outcomes and performance criteria

Outcome 1

Diagnose faults in an ATV transmission, sub-transmission, and shaft drive.

Range includes but is not limited to – two wheel drive, four wheel drive, differential lock, constantly variable transmission (CVT), hydrostatic transmission, manual transmission.

Performance criteria

1.1 Safe working and driving practices are observed throughout the task in accordance with legislative requirements.

Range personal safety, safety of others, ATV safety, workshop safety, environmental safety, tools and equipment safety.

1.2 The level and condition of the transmission oil are checked visually, and any problems are noted in accordance with company requirements.

1.3 Clutch operation and gear selection are tested with the ATV stationary and the engine running, and any problems noted, in accordance with service information.

1.4 The ATV is operated on-road or off-road to reproduce the fault symptoms and to test the operation of the clutch and transmission in each of the gears under various conditions, and details of conditions when the symptoms occur are noted in accordance with company requirements.

Range conditions – hilly and level terrain; accelerating, decelerating, cruising.

1.5 The test results are analysed in accordance with service information, to determine the probable causes of any faults found.

Outcome 2

Check and overhaul an ATV transmission.

Performance criteria

2.1 Safe working practices are observed throughout the task in accordance with legislative requirements.

Range personal safety, safety of others, ATV safety, workshop safety, environmental safety, tools and equipment safety.

2.2 Suitable tools and equipment are selected and used to enable the transmission to be overhauled in accordance with service information.

2.3 The transmission assembly is removed from the frame in accordance with service information, and in a manner that avoids personal injury and damage to the assembly and ATV.

2.4 The assembly is drained of oil, and the oil is disposed of in an environmentally safe manner in accordance with company requirements.

2.5 The transmission is cleaned externally in accordance with company requirements, to prevent the ingress of dirt and foreign matter during disassembly.

2.6 The transmission is disassembled, and end play and signs that could indicate causes of faults are identified and noted, in accordance with service information.

2.7 All transmission components are cleaned and inspected for wear, damage, and blockage of passageways, and any faults are rectified to meet manufacturer specifications.

2.8 The transmission is assembled and any clearances adjusted in accordance with service information.

2.9 The transmission assembly is installed in the frame in accordance with service information, and filled with oil to comply with the manufacturer specifications.

2.10 The gear selection linkage is adjusted in accordance with service information.

Outcome 3

Check and overhaul ATV secondary bevel gears.

Performance criteria

3.1 Safe working practices are observed throughout the task in accordance with legislative requirements.

Range personal safety, safety of others, ATV safety, workshop safety, environmental safety, tools and equipment safety.

3.2 Suitable tools and equipment are selected and used to enable the transmission to be overhauled in accordance with service information.

3.3 Secondary bevel gear assembly is cleaned, removed, and disassembled in accordance with service information.

3.4 The assembly is inspected, and faults identified in accordance with service information.

Range may include but is not limited to – wear, damage, improper tooth contact, bearings damaged or worn.

3.5 The assembly is repaired and reassembled in accordance with service information, and operates to manufacturer specifications.

Range may include but is not limited to – parts renewed, parts repaired, shim adjustments, tooth contact, backlash, lubrication.

Outcome 4

Check and overhaul an ATV sub-transmission.

Performance criteria

4.1 Safe working practices are observed throughout the task in accordance with legislative requirements.

Range personal safety, safety of others, ATV safety, workshop safety, environmental safety, tools and equipment safety.

4.2 Suitable tools and equipment are selected and used to enable the transmission to be overhauled in accordance with service information.

4.3 Sub-transmission assembly is cleaned, removed, and disassembled in accordance with service information.

4.4 The assembly is inspected, and faults identified in accordance with service information.

Range may include but is not limited to – wear, damage, main shaft and countershaft bearings, dog-shift fork clearance, coupling.

4.5 The assembly is repaired and reassembled in accordance with service information, and operates to manufacturer specifications.

Range may include but is not limited to – parts renewed, parts repaired, adjustments, lubrication.

Outcome 5

Check and overhaul ATV final bevel gears.

Performance criteria

5.1 Safe working practices are observed throughout the task in accordance with legislative requirements.

Range personal safety, safety of others, ATV safety, workshop safety, environmental safety, tools and equipment safety.

5.2 Suitable tools and equipment are selected and used to enable the gears to be overhauled in accordance with service information.

5.3 Final bevel gear assembly is cleaned, removed, and disassembled in accordance with service information.

5.4 The assembly is inspected, and faults identified in accordance with service information.

Range may include but is not limited to – wear, damage, improper tooth contact, bearings damaged or worn, universal joint damage or wear.

5.5 The assembly is repaired and reassembled in accordance with service information and operates to manufacturer specifications.

Range may include but is not limited to – parts renewed, parts repaired, shim adjustments, tooth contact, backlash, lubrication, rear brake adjustment.

Replacement information	This unit standard, unit standard 24309, unit standard 24310, unit standard 24311, and unit standard 24312 replaced unit standard 926 and unit standard 927.

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	25 February 2008	31 December 2020
Review	2	26 April 2018	31 December 2020

Consent and Moderation Requirements (CMR) reference	0014

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