

# LANLEO13 - SQA Unit Code F9EK 04

## Service and repair mechanical transmission on land-based equipment



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### Overview

This standard covers the undertaking of removal, dismantling, repairing and reassembly of gearboxes, transmissions and their component parts (e.g. sliding mesh, constant mesh, synchromesh), the testing, diagnosis and repair practices required for both simple and complex transmissions, as well as the transmission components necessary to transmit power to drive wheels and moving machinery parts, (e.g. rear axle assemblies, front axle assemblies or drive shaft assemblies).

The standard for setting bearing, the relationship of gears and pinions to one another and method of lubrication is covered in LEO4Core land-based engineering principles – Mechanical principles.

### Level and extent of responsibility

This standard is appropriate for people working under supervision.

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### Performance criteria

*You must be able to:*

- P1 remove and replace transmission assemblies and their related components from vehicles and machines
- P2 dismantle, repair and reinstate transmission assemblies and their components to manufacturer's specification and standard
- P3 identify faults in mechanical transmission assemblies and components

### Knowledge and understanding

*You need to know and understand:*

- K1 how to remove and replace transmissions and their components from vehicles and machines
- K2 how to dismantle, repair and reinstate transmissions and their components to manufacturers' specification and standards
- K3 how to follow the drive path through mechanical transmissions and their components using the manufacturer's schematic drawings
- K4 the types, construction, and operating principles of the following gearboxes and their components:
  - K4.1 sliding mesh
  - K4.2 constant mesh
  - K4.3 synchromesh
  - K4.4 range and reduction boxes
  - K4.5 forward and reverse shuttle
  - K4.6 PTO drives
- K5 the types, construction and operating principles of powered front and rear axles and their components:
  - K5.1 front and rear axle reduction units
  - K5.2 differentials
  - K5.3 differential locks
  - K5.4 half shafts
  - K5.5 constant velocity joints
- K6 (the relationship between power, speed and torque (to include relationship to transmission layout – siting of brakes, size components)
- K7 how to identify land-based vehicle and machinery mechanical gearbox and transmission faults

**Glossary**

**Definition of transmissions**

Devices between a power source and driven components on a vehicle or machine which may include but is not limited to clutches, gearboxes, reduction units, drop boxes, differentials and axles

**Clutch less range change**

2-, 3- or 4-speed range changes on the move

**Powershift**

Full range of stepped speeds selectable on the move

**CVT (Constantly Variable Transmission)**

Step less speed changes on the move

**Links to other  
NOS**

Refer to Core Engineering Principles standard for setting bearings and the relationship of gears and pinions to one another and method of lubrication.

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**Developed by** LANTRA

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**Version number** 1

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**Date approved** October 2009

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**Indicative review date** October 2011

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**Validity** Current

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**Status** Original

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**Originating organisation** LANTRA

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**Original URN** LEO13Oct09

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**Relevant occupations** Agriculture, Horticulture and Animal Care; Science and Engineering Technicians

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**Suite** Land-based Engineering Operations

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**Key words** removal; dismantling; reassembly; parts; lubrication