

# LANLEO15 - SQA Unit Code F9EN 04

## Service and repair wheeled and tracked steering systems on land-based equipment



---

### Overview

This standard covers the comprehension of the types, construction, function and operation of wheeled and tracked steering systems and their components parts.

This standard covers the various steering operations found in the land-based sector including mechanical, power assisted and hydrostatic. Steering systems refer to the control of a vehicle or machine's path of travel (e.g. single steering axle, pivot, crab, slew, skid steer or zero turn). Identification and rectification of problems associated with steering is important in this standard (e.g. steering pull, wheel wobble/shake, lazy/heavy steering, loss of self-centering effect, excessive steering wheel play, incorrect type pressure/size, equipment balance/loading/application or steering wheel migration migration/constant correction [hydrostatic systems]).

#### **Level and extent of responsibility**

This unit is appropriate for persons working under supervision.

## LANLEO15 - SQA Unit Code F9EN 04

### Service and repair wheeled and tracked steering systems on land-based equipment

---

#### Performance criteria

*You must be able to:*

- P1 remove and replace steering system components
- P2 dismantle and reassemble steering system components
- P3 repair steering system components to manufacturers' specifications and standards
- P4 set steering components to manufacturers' specifications, e.g. axle lateral movement, steering boxes, steering hub pivot bearings, king pin end-float, power assisted steering actuation
- P5 check and set steering geometry, e.g. steering lock, toe in, track rod and drag link length
- P6 identify the cause of steering faults, e.g. steering pull, wheel wobble/shake, lazy/sluggish steering, heavy steering, steering wheel free play, incorrect tyre pressure and sizes

## LANLEO15 - SQA Unit Code F9EN 04

### Service and repair wheeled and tracked steering systems on land-based equipment

---

#### Knowledge and understanding

*You need to know and understand:*

- K1 the working principles of mechanical, power assisted and hydrostatic steering systems and their application, e.g. front and/or rear axle steering, crab, pivot, slew, skid steer and zero turn
- K2 the types, construction and function of steering system components, e.g. steering boxes, rack and pinion, steering linkages, centre pivot, steering axle components, steering system brake units (independent, tracked and zero turn)
- K3 principles and geometry of steering systems to include: Ackermann, caster and camber angles, king pin inclination, toe in and toe out (2wd/4wd)
- K4 methods of checking and adjusting steering geometry
- K5 how to remove, dismantle, reassemble and replace steering system components
- K6 the symptoms, characteristics and causes of common steering system faults, e.g. steering pull, wheel wobble/shake, lazy/sluggish steering, heavy steering, steering wheel free play, incorrect tyre pressure and sizes
- K7 how equipment balance, loading and application can influence steering performance
- K8 the basic mechanical operating principles of auto steer and guidance systems used in land-based equipment

## LANLEO15 - SQA Unit Code F9EN 04

### Service and repair wheeled and tracked steering systems on land-based equipment

---

**Developed by** LANTRA

---

**Version number** 1

---

**Date approved** October 2009

---

**Indicative review date** October 2011

---

**Validity** Current

---

**Status** Original

---

**Originating organisation** LANTRA

---

**Original URN** LEO15Oct09

---

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

---

**Suite** Land-based Engineering Operations

---

**Key words** construction; steering; vehicle; wheel; equipment