LANLEO15

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

Overview

This standard covers the service and repair of wheeled and tracked steering systems on land-based equipment. It includes the understanding of the types, construction, function and operation of wheeled and tracked steering systems and their component parts 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 tyre pressure/size, equipment balance/loading/application or steering wheel migration, migration/constant correction [hydrostatic systems]).

This standard is for those working in land-based engineering and is appropriate for persons working under supervision.

Performance criteria

You must be able to:

1. identify the cause of **steering system faults** on wheeled and tracked **steering systems** on land-based equipment
2. remove and replace wheeled and tracked steering systems and their related **components**
3. dismantle and reassemble wheeled and tracked steering systems and their components to manufacturers' specification and standards
4. service/repair wheeled and tracked steering systems to manufacturers' specifications and standards
5. set steering components to manufacturers' specifications
6. check and adjust **steering geometry**

Knowledge and understanding

You need to know and understand:

1. the working principles of mechanical, power assisted and hydrostatic steering systems and their application
2. the types, construction and function of steering system components on wheeled and tracked steering systems
3. principles and geometry of steering systems to include: Ackermann, caster and camber angles, king pin inclination, toe in and toe out (2WD/4WD)
4. methods of checking and adjusting steering geometry
5. how to remove, dismantle, reassemble and replace wheeled and tracked steering systems and their components to manufacturers' specification and standards
6. the symptoms, characteristics and causes of common steering system faults
7. how equipment balance, loading and application can influence steering performance
8. the basic operating principles of auto steer and guidance systems used in land-based equipment

Glossary

components e.g. steering boxes, rack and pinion, steering linkages, steering hub pivot bearings, king pin end-float, power assisted steering actuation, steering axle components, steering system brake units (independent, tracked and zero turn)

steering geometry e.g. steering lock, toe out on turns, toe in, track rod and drag link length

steering system faults e.g. steering pull, wheel wobble/shake, lazy/sluggish steering, heavy steering, steering wheel free play, incorrect tyre pressure and sizes

steering systems e.g. front and/or rear axle steering, crab, pivot, slew, skid steer and zero turn

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