

LANLEO24 - SQA Unit Code F9GR 04

Service and repair hydraulic systems and components on land-based equipment



Overview

This standard covers the diagnoses, removal, repair and reinstatement of hydraulic circuits, systems and their components to the manufacturers' specifications, (e.g. high and low pressure hydraulic circuits including combined high/low pressure circuits, fixed and variable displacement circuits, open and closed centre circuits, load sensed circuits or auxiliary systems) and the methods used to control implement working depth and height (e.g. draft or position control).

Basic testing and diagnostics is covered in **LEO30** Inspect and test land-based equipment.

This standard is appropriate to those who work under the direct supervision of a more competent person.

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Performance criteria

You must be able to:

- P1 identify hydraulic systems and their components
- P2 assemble or repair pipes and hoses used within hydraulic systems
- P3 safely release stored energy in hydraulic systems and circuits
- P4 build and test a basic hydraulic circuit (to include pump, control valve, relief valve, hydraulic consumer)
- P5 use hydraulic system diagnostic tools, e.g. high and low pressure gauges, pressure differential gauges and flow meter
- P6 prepare the system to be tested and carry out tests
- P7 remove, dismantle, repair and reinstate hydraulic systems and components to manufacturers' specifications and factory settings

LANLEO24 - SQA Unit Code F9GR 04

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Knowledge and understanding

You need to know and understand:

- K1 the common symbols used in hydraulic circuit diagrams
- K2 how to read and interpret hydraulic circuit diagrams to include open centre, closed centre and load sensing
- K3 how to remove and replace hydraulic components
- K4 how to dismantle, repair and reinstate hydraulic components and systems to manufacturers' specifications.
- K5 the construction, types and function of hydraulic system components, e.g.
 - K5.1 hydraulic pumps and motors, e.g. fixed and variable displacement
 - K5.2 hydraulic pressure maintaining valves, relief valves, shock valves
 - K5.3 hydraulic control valves, e.g. distributors, solenoid valves, proportional valves, pressure differential valves, pilot operated valves
 - K5.4 hydraulic rams, single, acting, double acting
 - K5.5 hydraulic direction flow valves, flow dividers, orbital valves, priority valves, restrictors
 - K5.6 reservoirs
 - K5.7 accumulators
- K6 how to identify hydraulic pipe and hose types and their appropriate fittings
- K7 how to assemble and repair hydraulic hoses and pipes
- K8 how to identify and prepare relevant tests and adjust hydraulic components and systems to manufacturers' specifications, e.g. pressure and flow, adjust pressure limiting and relief valves, set draft and position control valves
- K9 the primary causes of hydraulic failures and their symptoms, (e.g. low oil level, inappropriate oil, contamination, cavitation, overload)

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