

LANLEO14 - SQA Unit Code F9EL 04

Service and repair braking 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 component parts.

The principles and practice required in maintaining and repairing steering and braking systems in a safe serviceable condition where employed on tracked and wheeled land-based engineering vehicles and machinery.

Braking systems refer to systems used to retard speed, to bring vehicles and machinery to a halt, to retard or stop component rotation as in skid and slew steer systems and to secure vehicles from moving away when stopped. This standard refers to the construction, function, operation, repair and reinstatement of braking systems and their components (the systems could be, wet/dry disk, drum/band, induction/exhaust or overrun brakes). Identifying faults in a braking system is an important part of this standard. Some common faults may be brake grabbing/binding/bias/snatching, fade/failure/spongy/soft pedal or uneven braking/poor performance.

Level and extent of responsibility

This unit is appropriate for persons working under supervision.

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Performance criteria

You must be able to:

- P1 remove and replace braking system components
- P2 dismantle and reassemble braking system components
- P3 repair and reinstate braking systems
- P4 adjust and reset the components used to apply braking mechanisms, e.g. master cylinders, linkages, actuators, self-adjusting and manual brake adjusters, trailer brake valves
- P5 clean contamination from braking systems and components, e.g. moisture, incorrect fluids, foreign material
- P6 identify and rectify the cause of faults in braking systems, e.g. brake grabbing, binding, bias, snatch, fade, failure, spongy and soft pedal uneven braking, poor braking performance (vibration, noise, pitting-scoring, contamination, leaking seals, incorrect fluids, excessive wear)

Knowledge and understanding

You need to know and understand:

- K1 the construction and function of braking systems, e.g. drum/band, wet/dry discs, induction, exhaust, and overrun braking applied by mechanical, hydraulic, pneumatic or hydro-pneumatic actuation
- K2 the function and operation of components used in braking systems, e.g. master and slave cylinders, brake shoes (leading and trailing), brake bands, single and multi discs, actuators, brake reservoirs, couplings, pipes, unions, trailer braking and proportional valves, braking aids (servo, accumulator, pressurised, anti-lock braking systems [ABS])
- K3 the construction, function and operation of specific braking systems, e.g. independent, 2wd, 4wd, tracked, transmission, parking brakes/locks
- K4 trailer braking operation and the braking relationship between towing vehicle and attachment, e.g. brake advance, fail safe devices, jack-knifing
- K5 how to recognise and rectify faults in braking systems, e.g. brake grabbing, binding, bias, snatch, fade, failure, spongy and soft pedal, uneven braking, poor braking performance (vibration, noise, pitting-scoring, contamination, leaking seals, incorrect fluids, excessive wear)
- K6 the effects that heat has on braking efficiency and components, e.g. glazing, brake fade, wear, vapour lock
- K7 the methods used to adjust/bleed/balance braking systems, test and assess braking performance
- K8 how vehicle ballast, loading and weight transfer can influence braking performance

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