LANLEO14

Service and repair braking systems on land-based equipment

Overview

This standard covers the service and repair of braking systems on land-based equipment. It includes the principles and practice required in maintaining and repairing 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.

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

Performance criteria

You must be able to:

1. remove and replace **braking systems** on land-based equipment and their related **components**
2. dismantle and reassemble **braking systems** and their components
3. service/repair and reinstate braking systems and their components to manufacturers' specification and standards
4. adjust and reset the components used to apply braking mechanisms
5. clean **contamination** from braking systems and components
6. identify and rectify the cause of **faults** in braking systems

Knowledge and understanding

You need to know and understand:

1. the **construction and function** of braking systems on land-based equipment
2. the function and operation of components used in braking systems
3. how to remove and replace braking systems and their components
4. the construction, function and operation of specific braking systems
5. how to dismantle, service/repair and reinstate braking systems and their components to manufacturers' specification and standards
6. **trailer braking** operation and the braking relationship between the towing vehicle and attachment
7. how to recognise and rectify faults in braking systems
8. the **effects that heat has** on braking efficiency and components
9. the methods used to adjust, bleed or balance braking systems and test and assess braking performance
10. how vehicle ballast, loading and weight transfer can influence braking performance

Glossary

braking systems e.g. independent, 2WD, 4WD, tracked, transmission, parking brakes/locks

components used in braking systems, e.g. master and slave cylinders, linkages, self-adjusting and manual brake adjusters, 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])

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

contamination e.g. moisture, incorrect fluids, foreign material

the **effects that heat has** on braking efficiency and components e.g. glazing, brake fade, wear, vapour lock

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)

trailer braking operation e.g. brake advance, fail safe devices, jack-knifing

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