

Overview

This standard covers the service and maintenance of engines on land-based equipment. It includes the construction and operating principles of two-stroke and four-stroke spark ignition and compression ignition engines and their configurations. It also includes the identification and function of components, removal and replacement of engine assemblies and components and dismantling and reassembly methods and techniques.

The standard covers engine systems and performance, incorporating the components (types, construction and function) used to deliver fuel and air in the correct proportions for the combustion process. This includes carburettor and injection fuel systems, also naturally aspirated and pressure-charged intake systems.

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

Service and maintain engines on land-based equipment

Performance criteria

You must be able to:

1. remove engine system **components** from land-based equipment in preparation for service and maintenance
2. set and adjust engine components to manufacturers' specifications and standards
3. replace or reinstate engine system components to manufacturers' specifications and standards
4. identify direct and indirect fuel injection systems
5. determine appropriate firing order for multi-cylinder engines

Knowledge and understanding

You need to know and understand:

1. the types, construction and operating principles of **engines** on land-based equipment
2. the types and function of engine system components
3. exhaust emissions, regulations and methods of control
4. how to remove and replace engine system components in preparation for service and maintenance
5. how to set and adjust engine system components to manufacturers' specifications and standards
6. how to identify and select appropriate methods of sealing engine units and components
7. the effects of moisture and contaminants in fuel and ignition systems
8. engine running in procedures
9. engine starting and stopping procedures

Glossary

components e.g.

- carburettors
- spark plugs
- injection pumps
- fuel-delivery pumps
- injectors
- governors
- cold start aids
- air filtration systems
- exhaust systems
- turbo and superchargers

dismantle and reinstate e.g.

- cylinder heads and valve train assemblies
- pistons, rings and liner assemblies
- engine component timing, e.g. camshaft, balancer
- crankshafts
- spark ignition systems
- fuel supply pumps and delivery systems

engines - two-stroke and four-stroke spark ignition and compression ignition engines and their configurations e.g.

- air cooled and water cooled
- wet and dry liners, monoblock
- naturally aspirated and pressure charged (to include turbo compounding and supercharging)
- balancers and vibration suppression

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