

Overview

This standard introduces candidates to the identification, selection, maintenance and safe use of hand tools, fixed and portable workshop equipment and the personal protective equipment required to complete tasks presented in land-based engineering.

Hand tools refers to, e.g. files, chisels, punches, pullers, taps and dies, drill bits, reamers, clamps, spanners, wrenches sockets, screw drivers, pliers, cutters and snips, measuring and marking equipment, gauges and extractors.

Reference to powered hand tools includes, e.g. drills, grinders, air tools, heat guns.

Fixed and portable equipment refers to, e.g. presses, powered saws, jacks, axle stands, battery chargers, air compressors, dynamometer or injector testers.

This standard relates to the following application or context:

The selection of tools and equipment appropriate to the task, their use, care and reinstatement to a serviceable state: (as appropriate)

1. hand tools
2. electrical power tools
3. fixed and portable equipment
4. air tools
5. taps and dies
6. reamers
7. drill bits
8. special tools e.g. pullers, presses, seal protectors, locating dollies

Anyone undertaking mains electrical work must comply with current regulations.

Performance criteria

You must be able to:

- P1 select the appropriate hand tools, power tools, fixed and portable equipment for relevant tasks, e.g. cutting, sawing, shaping, measuring, fitting, removing, testing, holding, drilling, lifting
- P2 use tools and equipment effectively for relevant tasks
- P3 use measuring equipment , e.g. dial test indicator, vernier callipers, micrometer, feeler gauges, thermometer, tachometer, multi-meter, dynamometer, hydrometer
- P4 use appropriate tooling and techniques to support, clamp, compress and extract, component parts and assemblies, e.g. stands, clamps, vices, pullers, slide hammers, presses, spring compressors
- P5 select and use special tooling for a given task, e.g. seal protectors, guide studs, placement and centring dollies, splitting rails and trolleys
- P6 inspect hand tools, power tools, fixed and portable equipment to establish condition
- P7 maintain hand and power tools in an appropriate condition, e.g. sharpen, store, clean, de-burr
- P8 inspect and maintain protective equipment and lifting equipment in a serviceable state, e.g. masks, goggles, screens, guards, jacks, engine cranes, lifting platforms, pulley blocks
- P9 recharge portable tool power packs
- P10 identify the correct power supply needed for electrical power tools and equipment

Knowledge and understanding

You need to know and understand:

- K1 the range of hand tools, power tools, fixed and portable equipment available to undertake relevant tasks
- K2 the techniques required to use hand tools, power tools, fixed and portable equipment effectively
- K3 the maintenance requirements for hand tools, power tools, fixed and portable equipment
- K4 how to cut and restore threads, extract broken studs and remove seized fixings
- K5 how to use adjustable and fixed reamers
- K6 how to sharpen hand tools e.g. drill bits, chisels, centre punches
- K7 the techniques used to clamp, hold and secure materials and components whilst engineering tasks are carried out
- K8 how to identify the different power supply requirements for power tools
- K9 how to isolate mains electrical equipment
- K10 how to charge portable tool power packs

LANLEO5 - SQA Unit Code F9EC 04

Core land-based engineering principles – Tools and equipment

Developed by LANTRA

Version number 1

Date approved October 2009

Indicative review date October 2011

Validity Current

Status Original

Originating organisation LANTRA

Original URN LEO5Oct09

Relevant occupations Agriculture, Horticulture and Animal Care; Science and Engineering Technicians

Suite Land-based Engineering Operations

Key words reamers; clamps; reinstatement; electrical; dynamometer