

# LANLEO28 - SQA Unit Code F9H1 04

## Service and repair land-based air-conditioning/refrigeration equipment



---

### Overview

This standard is for those who work with refrigerants.

This standard covers mobile air-conditioning (MAC) and fixed plant refrigeration including leak testing, (e.g. ultra violet, visual, electronic and oxygen-free nitrogen testing). The standard also covers the operational principles, functional checks and maintenance of MAC and fixed plant refrigeration, (e.g. recovery/drying/charging, cooling rate/effectiveness, air flow/filtration, couplings/pipes/hoses, condensation/insulation/icing, drive systems, TXV/FOT/climate control systems).

Particular attention should be given to health and safety and legislation.

### Performance criteria

*You must be able to:*

- P1 remove and replace air-conditioning and/or refrigeration systems and/or components
- P2 dismantle, inspect and reinstate air-conditioning and/or refrigeration systems and/or components
- P3 select and use the appropriate tools and equipment correctly throughout all activities, e.g. testing (leak, pressure, vacuum) recovery, flushing and recharging
- P4 carry out maintenance activities following manufacturer and/or hygiene procedures
- P5 recognise and rectify air-conditioning, climate control and/or refrigeration faults, e.g. drive/compressor failure, refrigerant loss, restricted refrigerant/air flow, faulty switch and/or temperature controls, under/over charge of refrigerant or lubricant
- P6 carry out operational checks and/or tests to ensure system functionality
- P7 collect, transfer, dispose of any waste material following current legal and environmental requirements
- P8 maintain appropriate records

### Knowledge and understanding

*You need to know and understand:*

- K1 the operating principles of air-conditioning and refrigeration systems and their components, e.g. compressor, couplings, pipes and hoses, condenser, evaporator, receiver drier, heat exchangers, thermostats, control and thermal expansion valves (TXV), fixed orifice tube (FOT), filters/separators
- K2 system types and configuration according to application, e.g. MAC, fixed plant refrigeration TXV and FOT
- K3 how to operate the system effectively and carry out operational checks and/or tests to ensure system functionality, e.g. compressor drive, switches/controls, power supplies, cooling rate/effectiveness, condensation, insulation, icing, air flow, filters
- K4 how to recognise and rectify air-conditioning, climate control and/or refrigeration faults, e.g. compressor/drive failure, refrigerant loss, restricted refrigerant/air flow, unserviceable switch and/or temperature controls, under/over charge of refrigerant or lubricant
- K5 how to select and use the appropriate tools and equipment correctly throughout all activities, e.g. maintenance, leak testing, recovery, flushing, recharging
- K6 how to remove and replace air-conditioning and/or refrigeration components
- K7 how to dismantle, inspect and reinstate air-conditioning and/or refrigeration components
- K8 how to collect, transfer, dispose of any waste material following current legal and environmental requirements
- K9 how to maintain appropriate records

## **LANLEO28** - SQA Unit Code F9H1 04

### Service and repair land-based air-conditioning/refrigeration equipment

---

#### **Glossary**

##### **TXV**

Thermal expansion valves

##### **FOT**

Fixed orifice tube

## LANLEO28 - SQA Unit Code F9H1 04

### Service and repair land-based air-conditioning/refrigeration 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** LEO28Oct09

---

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

---

**Suite** Land-based Engineering Operations

---

**Key words** thermal, insulation; cooling; drying; filtration