

# COSVR664 - SQA Unit Code H4HB 04

## Diagnose faults in plant or machinery systems or components



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### Overview

This standard is about

- 1 interpreting information
- 2 adopting safe and healthy working practices
- 3 selecting materials, components, consumables and equipment
- 4 diagnosing faults in plant or machinery systems or components

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## Diagnose faults in plant or machinery systems, or components

### Performance criteria

- You must be able to:*
- P1 interpret the given information relating to the work and resources to confirm its relevance
  - P2 comply with the given, relevant legislation and official guidance to carry out your work and maintain safe and healthy work practices
  - P3 select the required quantity and quality of resources for the methods of work
  - P4 comply with organisational procedures to minimise the risk of damage to the work and surrounding area
  - P5 comply with the given contract information to carry out the work efficiently to the required specification
  - P6 complete the work within the allocated time, in accordance with the programme of work

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### Knowledge and understanding

*You need to know and understand:*

#### Performance Criteria 1

##### Interpretation of information

- K1 the organisational procedures developed to report and rectify inappropriate **information** and unsuitable **resources**, and how they are implemented
- K2 the types of **information**, their source and how they are interpreted
- K3 the organisational procedures to solve **problems** with the **information** and why it is important they are followed

#### Performance Criteria 2

##### Safe work practices

*You need to know and understand:*

- K4 the level of understanding operatives must have of **information** for relevant, current **legislation and official guidance** and how it is applied
- K5 how **emergencies** should be responded to and who should respond
- K6 the organisational **security procedures** for tools, equipment and personal belongings
- K7 what the accident reporting procedures are and who is responsible for making the report
- K8 why, when and how **health and safety control equipment** should be used

#### Performance Criteria 3

##### Selection of resources

*You need to know and understand:*

- K9 the characteristics, quality, uses, sustainability, limitations and defects associated with the **resources** and how defects should be rectified
- K10 how the **resources** should be used and how any **problems** associated with the **resources** are reported
- K11 the organisational procedures to select **resources**, why they have been developed and how they are used
- K12 the **hazards** associated with the **resources** and **methods of work** and how they are overcome

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### Performance Criteria 4

#### Minimise the risk of damage

*You need to know and understand:*

K13 how to **protect work** from damage and the purpose of protection

K14 why **disposal of waste** should be carried out safely and how it is achieved

### Performance Criteria 5

#### Meet the contract specification

*You need to know and understand:*

K15 how **methods of work**, to meet the specification, are carried out and **problems** reported

K16 how **maintenance** of tools and equipment is carried out

### Performance Criteria 6

#### Allocated time

*You need to know and understand:*

K17 what the **programme** is for the work to be carried out in the estimated, allocated time and why deadlines should be kept

### Additional Information

#### Scope/range related to performance criteria

##### Performance Criteria 1

- 1 interpretation of drawings, specifications, schedules, method statements, risk assessments, workshop manuals, technical services bulletins, parts manuals and manufacturers' information related to the work to be carried out

##### Performance Criteria 2

- 2 avoidance of risk by complying with the given information relating to at least five of the following
  - 2.1 methods of work
  - 2.2 safe use of health and safety control equipment
  - 2.3 safe use of access equipment
  - 2.4 safe use, storage and handling of materials
  - 2.5 safe use and storage of tools and equipment
  - 2.6 specific risks to health

##### Performance Criteria 3

- 3 selection of resources associated with own work
  - 3.1 materials, components and fixings
  - 3.2 tools and equipment
  - 3.3 consumables

##### Performance Criteria 4

- 4 protection of the work and its surrounding area from damage
- 5 minimise damage and maintain a clean work space
- 6 disposal of waste in accordance with current legislation

##### Performance Criteria 5

- 7 demonstration of work skills to select, investigate, interrogate, observe, listen, smell, feel, apply, identify, collect, analyse, interpret, diagnose, report
- 8 use and maintain hand tools, portable power tools, specialist diagnostic and testing tools and ancillary equipment
- 9 identify and diagnose functional and operational faults in plant or machinery, systems or components to given working instructions for at least four of the following
  - 9.1 power unit
  - 9.2 transmission
  - 9.3 steering

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9.4 hydraulics

9.5 pump

9.6 brakes

9.7 pneumatics

9.8 electrics

9.9 electronics

9.10 operating ancillaries or attachments

10 complete functional, operational and safety checks

11 complete and maintain records

#### **Performance Criteria 6**

12 completion of own work within the estimated, allocated time to meet the needs of other occupations and/or client

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### Scope/range related to knowledge and understanding

#### **Disposal of waste**

- 1 environmental responsibilities, organisational procedures, manufacturers' information, statutory regulations and official guidance

#### **Emergencies**

- 2 operative's response to situations in accordance with organisational authorisation and personal skills when involved with
  - 2.1 fires, spillages, injuries
  - 2.2 emergencies relating to occupational activities

#### **Hazards**

- 3 those identified by risk assessment, method of work, manufacturers' technical information, statutory regulations and official guidance

#### **Health and safety control equipment**

- 4 identified by the principles of protection for occupational use, types and purpose of each type, work situations and general work environment
  - 4.1 collective protective measures
  - 4.2 personal protective equipment (PPE)
  - 4.3 respiratory protective equipment (RPE)
  - 4.4 local exhaust ventilation (LEV)

#### **Information**

- 5 drawings, specifications, schedules, method statements, risk assessments, manufacturers' information and current regulations associated with diagnosing faults in plant or machinery systems or components

#### **Legislation and official guidance**

- 6 this relates to the operative's responsibilities regarding potential accidents and health hazards whilst working in the workplace, below ground level, in confined spaces, at height, with tools and equipment, with materials and substances, with movement/storage of materials and by manual handling and mechanical lifting

#### **Maintenance**

- 7 operative care of hand tools and portable power tools, and ancillary equipment

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### Methods of work

- 8 application of knowledge for safe and healthy work practices, procedures and skills relating to the method/area of work and materials used to:
  - 8.1 collect and collate information from operators and users on symptoms and problems
  - 8.2 consider information from existing records
  - 8.3 analyse information to define the diagnosis start point
  - 8.4 investigate and establish the most likely causes of the faults
  - 8.5 observe the operational functions of plant and machinery components and systems
  - 8.6 interpret sounds and smells
  - 8.7 collect and analyse data from diagnostic aids; multi-meters, pressure and flow gauges, computers, test lamps, portable appliance testing equipment and other specialist tools and equipment
  - 8.8 identify faults and determine the cause
  - 8.9 determine and suggest repair requirements for faults in power units, transmissions, steering, hydraulic systems, pumps, brakes, pneumatic systems, electrical systems, electronic components and operating ancillaries and attachments
  - 8.10 categorise faults by type (continual, intermittent or breakdown)
  - 8.11 apply situational awareness to select routine and non-routine fault diagnosis procedures
  - 8.12 determine the implications of faults for other work and the operational safety of the plant or machinery
  - 8.13 report, mark, tag and place notices on plant and machinery systems and components deemed hazardous
  - 8.14 use hand tools, specialist diagnostic and testing tools, portable power tools and equipment
  - 8.15 work at height
  - 8.16 use access equipment
  - 8.17 complete and maintain records
- 9 team work and communication
- 10 needs of other occupations associated with the diagnosis of faults in plant and machinery systems and components



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### **Problems**

- 11 those arising from information, resources and methods of work
  - 11.1 own authority to rectify
  - 11.2 organisational reporting procedures

### **Programme**

- 12 types of progress charts, timetables and estimated times
- 13 organisational procedures for reporting circumstances which will affect the work programme

### **Protect work**

- 14 protect work against damage from general workplace activities, other occupations and adverse weather conditions

### **Resources**

- 15 materials, components and equipment relating to types, quantity, quality, sizes and the sustainability of standard and/or specialist:
  - 15.1 hand tools, portable powered tools, specialist diagnostic and testing tools and ancillary equipment
- 16 methods of calculating quantity, length, area, volume and wastage associated with the method/procedure to diagnose faults in plant and machinery systems and components

### **Security procedures**

- 17 site, workplace, company and operative

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### Diagnose faults in plant or machinery systems, or components

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