

For further information contact: Committee and Administration Unit, SQA, Hanover House, 24 Douglas Street, Glasgow G2 7NQ.

This specification is distributed free to all approved centres. Additional copies may be purchased from SQA (Sales and Despatch section) at a cost of £1.50 (minimum order £5).

NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION**STATEMENT OF STANDARDS****UNIT NUMBER:** 2211033**UNIT TITLE:** SERVICING AND REPAIRING PLANT AND EQUIPMENT (LUBRICANTS AND FLUIDS)

Acceptable performance in this unit will be the satisfactory achievement of the standards set out in this part of the specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

OUTCOME (ELEMENT OF COMPETENCE)

1. INTERPRET TECHNICAL INFORMATION FOR SERVICING MACHINERY AND EQUIPMENT

PERFORMANCE CRITERIA

- (a) Accurate and relevant selection and interpretation is made of technical information from given sources in relation to the task.
- (b) Corrective actions are implemented against deviations from technical information.
- (c) Instructions given to the candidate are correctly interpreted and implemented.

RANGE STATEMENT

Information sources: drawings; instruction or operator's handbooks or manuals; manufacturers' specifications; workshop manuals; lubrication and maintenance charts; symbols; abbreviations; oral or written instructions.

Corrective actions: liaison with line manager or supervisor.

EVIDENCE REQUIREMENTS

Performance evidence of competence under working conditions in extracting information from publications in the range.

Oral or written evidence of knowledge and understanding of:

- (i) types and purposes of information sources.

All the performance criteria must be met and all items in the range statement covered.

OUTCOME (ELEMENT OF COMPETENCE)**2. SELECT MATERIALS AND SUBSTANCES FOR APPLICATION****PERFORMANCE CRITERIA**

- (a) The selection of materials and components complies with the specification in terms of quantity, quality and types.
- (b) Corrective actions are implemented to establish utility of materials.
- (c) Instructions given to the candidate are correctly interpreted and implemented.

RANGE STATEMENT

Information sources: drawings; instruction or operator's handbooks or manuals; manufacturers' specifications; workshop manuals; lubrication and maintenance charts; symbols; abbreviations; oral or written instructions.

Materials and substances: fuels; lubricants; coolants; fluids; protective coatings; cleaning agents.

Safety: personal protection legislation.

Location; workshop or site.

Corrective actions: liaison with line manager or supervisor.

EVIDENCE REQUIREMENTS

Performance evidence of competence under working conditions in selecting materials and substances.

Oral or written evidence of knowledge and understanding of:

- (i) types and purposes of information sources;
- (ii) characteristics, uses and limitations of the materials/substances in the range;
- (iii) methods for reporting defects in materials/substances;
- (iv) responsibilities with regard to statutory regulations.

All the performance criteria must be met and all items in the range statement covered.

OUTCOME (ELEMENT OF COMPETENCE)**3. APPLY MATERIALS AND SUBSTANCES TO MACHINERY AND EQUIPMENT****PERFORMANCE CRITERIA**

- (a) Instructions given to the candidate are correctly interpreted and implemented.
- (b) The selection of materials and components complies with the specification in terms of quantity, quality and types.
- (c) Efficient use of materials minimises waste.
- (d) The selection of tools and equipment is appropriate to the work.
- (e) The method of application provides the specified finish.
- (f) The cleanliness of the work area is maintained.
- (g) Work is carried out without endangering oneself or others.

RANGE STATEMENT

Information sources: manufacturers' specifications; workshop manuals; instruction or operator's handbooks; capacities charts; lubrication and maintenance charts; oral or written instructions.

Records: company forms.

Machinery and equipment: static plant; wheeled plant; tracked plant; small plant; attachments; auxiliary equipment.

Components: power units; transmissions; chassis; controls; attachments; individual parts; ropes; suspension; tracks.

Tools and equipment: hand tools; specialist servicing tools; hand and machine lubrication equipment.

Materials and substances: fuels; lubricants; coolants; fluids.

Preparation processes: replenishing; draining; applying; disposing.

Calculations: simple multiplication; division; addition; subtraction.

Safety regulations: machinery operating, personal protection and materials handling regulations; HASWA (Health and Safety at Work Act); COSHH (Control of Substances Hazardous to Health) Regulations.

Location: workshop or site.

EVIDENCE REQUIREMENTS

Performance evidence of competence under working conditions in:

- (i) applying materials and substances to parts and components of machinery and equipment:
 - grease; oils; coolants; fuels; battery fluids;
- (ii) measuring, decanting and mixing lubricants, fuels, fluids, battery fluids for replenishing:
 - oils; coolants; fuels; battery fluid; anti-freeze solutions;
- (iii) cleaning air and fuel filters to specification;
- (iv) safely disposing waste materials;
- (v) calculating from given information sources, quantities, capacities and volumes.

Oral or written evidence of knowledge and understanding of:

- (i) procedures for the correct handling of materials and substances;
- (ii) procedures for the correct storing of fuels, lubricants, anti-freeze solutions and battery fluids;
- (iii) methods and procedures for applying materials and substances;
- (iv) methods of mixing fuels, lubricants, anti-freeze and battery fluid;
- (v) procedures for reporting contamination in materials and substances;
- (vi) types and purposes of source information in the range;
- (vii) procedures for starting and stopping machinery and equipment;
- (viii) application and suitability of tools and equipment;
- (ix) responsibilities regarding statutory regulations.

All the performance criteria must be met and all items in the range statement covered.

OUTCOME (ELEMENT OF COMPETENCE)

- 4. CONTRIBUTE TO THE COMMISSIONING OF PLANT AND EQUIPMENT

PERFORMANCE CRITERIA

- (a) Commissioning of machinery and equipment is carried out to prescribed procedures with regard to safe working practices.
- (b) Commissioning of machinery and equipment conforms with technical information and construction methods.
- (c) Corrective actions are implemented against deviations from commissioning specification.
- (d) Records are complete, accurate, clear and accessible.

RANGE STATEMENT

Information sources: workshop manuals; operator's or instruction books or manuals; manufacturers' specifications, oral or written instructions.

Corrective actions: liaising with line manager or supervisor.

Commissioning: visual inspection; systems operation checking; carrying out minor adjustments to machinery and equipment, following application and replenishment of lubricants and fluids.

Machinery equipment: static plant; wheeled plant; tracked plant; small plant; attachments.

Faults: lubricant, fluid and gas leaks; loose fittings and fastenings; broken fittings and fastenings; controls; linkages; wheels; tyres.

Safety: personal protection and materials handling regulations; HASWA (Health and Safety and at Work Act); COSHH (Control of Substances Hazardous to Health) Regulations.

Location: workshop or site.

EVIDENCE REQUIREMENTS

Performance evidence of competence under working conditions in:

- (i) contributing to the commissioning of machinery and equipment;
- (ii) visual inspections for leaks on:
 - power units (compression ignition; spark ignition; air and liquid cooled engines);
 - power trains (mechanical gear boxes; final drives open gear and pinion drives; belt and chain drives; housings; inspection plates);
 - chassis and frames (steering boxes and rams; lubrication and fluid reservoirs; drum and disc brakes; pipes; hoses; suspension units).
- (iii) visual inspection for:
 - loose and broken fittings (retaining hardware such as nuts, bolts, screws); linkages; cables; controls; wiring; pipes; hoses;
 - carrying out minor repairs and basic adjustments on machinery and equipment.

Oral or written evidence of knowledge and understanding of:

- (i) checking procedures:
 - starting and stopping machinery and equipment;
 - operating machinery and equipment (systems operation);

- sensory (visual; smell; sound; touch);
- (ii) methods and procedures for carrying out minor adjustments and repairs on plant and equipment in the range;
- (iii) types and purposes of information sources;
- (iv) responsibilities regarding statutory regulations;
- (v) procedures for reporting faults on machinery and equipment;
- (vi) application and suitability of hand tools and servicing equipment.

All the performance criteria must be met and all items in the range statement covered.

ASSESSMENT RECORDS

In order to achieve this unit, candidates are required to present sufficient evidence that they have met all the performance criteria for each outcome within the range specified. Details of these requirements are given for each outcome. The assessment instruments used should follow the general guidance offered by the SQA assessment model and an integrative approach to assessment is encouraged. (See references at the end of support notes).

Accurate records should be made of assessment instruments used showing how evidence is generated for each outcome and giving marking schemes and/or checklists, etc. Records of candidates' achievements should be kept. These records will be available for external verification.

SPECIAL NEEDS

In certain cases, modified outcomes and range statements can be proposed for certification. See references at end of Support Notes.

© Copyright SQA 1993

Please note that this publication may be reproduced in whole or in part for educational purposes provided that:

- (i) no profit is derived from the reproduction;
- (ii) if reproduced in part, the source is acknowledged.

NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION**SUPPORT NOTES**

UNIT NUMBER	2211033
UNIT TITLE	SERVICING AND REPAIRING PLANT AND EQUIPMENT (LUBRICANTS AND FLUIDS)

SUPPORT NOTES: This part of the unit specification is offered as guidance. None of the sections of the support notes is mandatory.

NOTIONAL DESIGN LENGTH: SQA allocates a notional design length to a unit on the basis of time estimated for achievement of the stated standards by a candidate whose starting point is as described in the access statement. The notional design length for this unit is 40 hours. The use of notional design length for programme design and timetabling is advisory only.

PURPOSE This unit is designed to enable the candidate to develop skills and knowledge related to servicing and repairing plant and equipment. It is suitable for operatives working in the construction industry or a services or installation industry related to construction.

SQA publishes summaries of NC units for easy reference, publicity purposes, centre handbooks, etc. The summary statement for this unit is as follows:

This module will help you to learn how to interpret technical information, select and apply materials and substances for servicing, repairing and commissioning a range of plant and equipment. On completion of the module you should have a good working knowledge of the relevant current safety, materials handling, personal protection and machine operating regulations.

CONTENT/CONTEXT The candidate successfully completing this module will require underpinning knowledge and skills relating to the interpretation of technical information, the selection of appropriate materials and substances and the servicing, repair and commissioning of a range of plant and equipment.

This unit would be offered to candidates from the construction and related services industries. The skills are transferable within different working environments but the unit is primarily aimed at candidates whose normal place of work would be a site or similar environment.

The range statement is applicable to all areas of construction and other related or similarly structured industries. The competences and underpinning knowledge gained in successfully completing this unit would be transferable across a range of disciplines within the built environment.

The unit deals with servicing and repairing plant and equipment and is complemented by units dealing with related aspects of work in construction plant occupations.

It should be delivered as part of a structured programme of training and orientated to the context of the candidate's work and area of responsibility.

APPROACHES TO GENERATING EVIDENCE The achievement of the underpinning knowledge required for this unit would be assisted by the use of slides and videos, and hands-on experience.

Tutors/trainers should demonstrate practical elements step by step until the candidate feels confident enough to attempt them on his/her own, and the safety factors should be thoroughly emphasised.

Supervisors and employers could also play an important part in assisting candidates to generate evidence.

ASSESSMENT PROCEDURES Candidates will be able to provide evidence of performance using a variety of methods. These will include:

- Performance at work (recorded in Candidate's Assessment and Evidence Record or other methods).
- Performance in training (recorded in Candidate's Assessment and Evidence Record or other methods).
- Simulated exercises (skills/progress test results).
- Past achievement/experiences e.g. letters of endorsement; past certificates.

Evidence gathering from the workplace will be the preferred method; however there may be situations where this is inappropriate or the evidence is insufficient. Supplementary evidence will also be required to demonstrate the underpinning knowledge related to the competences in the unit.

For detailed guidance on assessment, reference should be made to the publications listed at the end of the Support Notes and to the Assessment Guidance Notes available for the delivery of the Scottish Vocational Qualification of which this module is a component.

PROGRESSION

This unit forms part of the level I SVQ in Plant Occupations.

Each module is a separate unit and the modules are not necessarily taken in a prescribed order, although there is a logical sequence to the acquisition of the skills and knowledge concerned.

To gain the award, the candidate must successfully complete all of the following modules:

2211013	Producing Components from Procured Materials (Powered and Non-powered Tools) (x 2)
2211023	Loading and Unloading Materials and Components (Plant Occupations) (x 0.5)
2211033	Servicing and Repairing Plant and Equipment (Lubricants and Fluids)
2211043	Preparing Components (Cleaning and Applying Protective Coatings) (x 0.5)
2211053	Operating Plant and Equipment (Forward Tipping Dumper) (x 2)
4120332	Contributing to Health and Safety in the Workplace (x 0.5)
4120342	Contributing to the Efficiency of the Workplace (x 0.5)
4120282	Working with People in Construction and Related Services (x 0.5)

Progression from the level I SVQ will normally be to the level II SVQ in the appropriate discipline (Plant Maintenance or Plant Occupations).

RECOGNITION Many SQA NC units are recognised for entry/recruitment purposes. For up-to-date information see the SQA guide 'Recognised and Recommended Groupings'.

REFERENCES

1. Guidelines for Module Writers.
2. SQA's National Standards for Assessment and Verification.
3. For a fuller discussion on assessment issues, please refer to SQA's Guide to Assessment.
4. Procedures for special needs statements are set out in SQA's guide 'Students with Special Needs'.

© Copyright SQA 1993

Please note that this publication may be reproduced in whole or in part for educational purposes provided that:

- (i) no profit is derived from the reproduction;
- (ii) if reproduced in part, the source is acknowledged.