

-SQA- SCOTTISH QUALIFICATIONS AUTHORITY

**Hanover House
24 Douglas Street
GLASGOW G2 7NQ**

NATIONAL CERTIFICATE MODULE DESCRIPTOR

-Module Number-	2210520	-Session-1990-91
-Superclass-	XS	

-Title-	BATTERY AND CHARGING SYSTEMS: REMOVAL, REPLACEMENT AND ADJUSTMENT OF COMPONENTS
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-DESCRIPTION-

Purpose	<p>This module is designed to develop the skills and knowledge required to remove, replace and adjust the components in battery charging systems.</p> <p>It is aimed at those intending to pursue a career in the motor vehicle repair industry. The module is also designed to complement RTITB modules LV304B Vehicle Electrical System: Battery and Charging Circuits: Removal and Replacement of Components, HV310B Electrical System - Charging Circuit: Remove and Replace Components and HV305C Electrical Systems - Batteries: Condition Assessment and Charging. This will provide the student with the necessary knowledge and skills to prepare for the RTITB Skills Test. It should be noted however that adequate supporting industrial experience will also be necessary.</p>
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Preferred Entry Level	Modules numbered 94370 through 94377 inclusive and 2210450.
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Outcomes	<p>The student should:</p> <ol style="list-style-type: none">1. identify battery and charging system components by name, function and location;2. outline the operation of the battery and charging system components;3. remove and replace battery and charging system components;4. visually inspect and service battery and charging system components.
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**Assessment
Procedures**

Acceptable performance in the module will be satisfactory achievement of all the Performance Criteria specified for each Outcome.

The following abbreviations are used below:

PC Performance Criteria
IA Instrument of Assessment

Note: The Outcomes and PCs are mandatory and cannot be altered. The IA may be altered by arrangement with SQA. (Where a range of performance is indicated, this should be regarded as an extension of the PCs and is therefore mandatory.)

OUTCOME 1**IDENTIFY BATTERY AND CHARGING SYSTEM
COMPONENT BY NAME, FUNCTION AND LOCATION****PCs**

The student:

- (a) names the components of a vehicle charging system;
- (b) states function and location of charging system components.

IA Objective Test

The student will be presented with an objective test to test the recall of knowledge relating to the identification of battery and charging system components.

The test could take the form of a matching exercise or short answer questions.

The test will consist of the identification, by name, location and function of 3 main components from the following:

- (i) generator
- (ii) external regulator
- (iii) connecting cables
- (iv) battery.

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met. This will be demonstrated by the student producing 3 correct responses to each of Performance Criteria (a) and (b).

IA Practical Exercise

The student will be presented with a series of practical exercises in a workshop environment to test the application of knowledge and skills relating to the removal and replacement of charging system components.

Each student should undertake all tasks from the following list:

- (i) generator
- (ii) external regulator
- (iii) fusible link
- (iv) battery
- (v) cables

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met. This will be demonstrated by the student completing all tasks correctly.

OUTCOME 4**VISUALLY INSPECT AND SERVICE BATTERY AND CHARGING SYSTEM COMPONENTS****PCs**

The student:

- (a) follows recommended procedures outlined in the technical data for carrying out each task;
- (b) follows safe working practices relevant to the task;
- (c) uses vehicle protection as appropriate to the task;
- (d) uses tools appropriate to the task.

IA Practical Exercises

The student will be presented with a series of practical exercises to test the application of skills relating to the inspection and servicing of battery and charging systems.

Each student should undertake all the tasks from the following list:

Visually inspect and service if required:

- (i) battery
- (ii) cables
- (iii) external regulator
- (iv) generator
- (v) drive belt
- (vi) pulleys
- (vii) mountings.

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met. This will be demonstrated by the student completing all tasks correctly.

**The following sections of the descriptor are offered as guidance.
They are not mandatory.**

CONTENT/CONTEXT

Safety regulations, safe working practices and procedures should be observed at all times.

Corresponding to Outcomes 1-4:

This module should be taught in the context most suited to the students' particular needs.

This module is intended to give students an understanding of the reasons for servicing of vehicle battery and charging systems, as a means of promoting vehicle safety, prolonging operational life and maintaining to original specification.

SUGGESTED LEARNING AND TEACHING APPROACHES

This module should be undertaken in a service workshop with an adequate range of vehicles and components to be covered. Students should have full access to relevant service publications, special tools and test equipment for the satisfactory performance of the tasks.

It is not envisaged that generators will be dismantled.

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